Photo 39. Typical substrate within Hamilton Ditch A.

Photo 40. Hamilton Ditch B facing north, upstream.

Photo 41. Hamilton Ditch B facing south, downstream.

Photo 42. Typical substrate within Hamilton Ditch B.

Photo 43. Hamilton Ditch C facing north, upstream.

Photo 44. Hamilton Ditch C facing south, downstream.

Photo 45. Typical substrate within Hamilton Ditch C.

Photo 46: Open Water OW-1 facing north.

Photo 47. Open Water OW-2 facing north.

Photo 48. Open Water OW-3 facing north.

Appendix C:

Routine Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-1

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat disturbed ground Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.1028420 Long: -83.195592 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Open Field (new field over disturbed ground). Soil looks disturbed, and aerial imagery from Google Earth confirms that construction was occurring in 2014.

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Festuca rubra*	50%	Y	FACU
2. *Trifolium repens*	20%	Y	FACU
3. *Trifolium pratense*	8%	N	FACU
4. *Cirsium arvense*	5%	N	FACU
5. *Poa pratensis*	5%	N	FAC
6. *Cirsium discolor*	3%	N	FACU
7. *Rumex crispus*	3%	N	FAC
8 *Trifolium sp.*	3%	N	NL
9 *unknown dicot (Brassicaceae?)*	1%	N	NL
10			
	98%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	3	x 3 =	9
FACU species	86	x 4 =	344
UPL species	0	x 5 =	0
Column Totals:	89 (A)		353 (B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.) Patches of bare soil present (approximately 15%).

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1.5	10YR 3/2	100					silty loam	
1.5-2.5	10YR 4/4	100					silty loam	
2.5-10	10YR 2/1	100					silty loam	refusal at 10 in. (fill/compaction)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? Yes ____ No X Depth (inches): ____
(includes capillary fringe)

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-2

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression (roadside) Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0942070 Long: -83.194883 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-1

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Echinochloa muricata*	30%	Y	OBL
2. *Typha angustifolia*	20%	Y	OBL
3. *Schoenoplectus tabernaemontani*	20%	Y	OBL
4. *Rumex crispus*	2%	N	FAC
5.			
6.			
7.			
8			
9			
10			
	72%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	70	x 1 =	70
FACW species	0	x 2 =	0
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	72 (A)		76 (B)

Prevalence Index = B/A = 1.06

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.) Echinochloa muricata is dead stalks from last year.

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	95	10YR 4/6	5	C	PL	clay loam	prominent redox concentrations
5-14	2.5Y 5/1	60	7.5YR 5/8	40	C	M	clay	prominent redox concentrations
14-20	2.5Y 5/1	30	7.5YR 5/8	70	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 5

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 6

Saturation Present? Yes X No ___ Depth (inches): 3
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-3

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat ground Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0941660 Long: -83.194813 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Open Field

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Poa pratensis*	50%	Y	FAC
2. *Setaria viridis*	40%	Y	UPL
3. *Symphyotrichum sp. (c.f. ericoides)*	15%	N	NL
4. *Trifolium sp.*	3%	N	NL
5. *Solidago sp.*	3%	N	NL
6. *Asclepias syriaca*	2%	N	FACU
7. *Taraxacum officinale*	1%	N	FACU
8 *Ambrosia trifida*	1%	N	FAC
9			
10			
	115%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	0	x	1 =	0
FACW species	0	x	2 =	0
FAC species	51	x	3 =	153
FACU species	3	x	4 =	12
UPL species	40	x	5 =	200
Column Totals:	94	(A)		365 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-4

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0941260 Long: -83.194692 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____	Wetland W-2	

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Poa pratensis*	70%	Y	FAC
2. *Alopecurus pratensis*	10%	N	FACW
3. *Schedonorus arundinaceus*	5%	N	FACU
4. *Trifolium repens*	3%	N	FACU
5.			
6.			
7.			
8			
9			
10			
	88%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	70	x 3 =	210
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals:	88	(A)	262 (B)

Prevalence Index = B/A = 2.98

Hydrophytic Vegetation Indicators:

- _____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- _____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- _____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.) Trifolium repens was visibly stressed.

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/1	100					clay loam	
11-16	5Y 5/2	60	10YR 5/8	40	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-5

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0928310 Long: -83.19479 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____	Wetland W-3	

Remarks: PSS

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Populus deltoides*	35%	Y	FAC
2. *Acer saccharinum*	20%	Y	FACW
3. *Fraxinus pennsylvanica*	20%	Y	FACW
4.			
5.			
	75%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Carex vulpinoidea*	8%	Y	FACW
2. *Toxicodendron radicans*	8%	Y	FAC
3. *Solidago sp.*	8%	Y	NL
4. *Fraxinus pennsylvanica*	5%	Y	FACW
5. *Populus deltoides*	5%	Y	FAC
6. *Lysimachia ciliata*	5%	Y	FACW
7. *Carex sp. (Ovales)*	5%	Y	NL
8 *Rumex crispus*	2%	N	FAC
9 *Vitis sp.*	2%	N	NL
10 *Unknown dicot*	2%	N	NL
	50%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	58	x 2 =	116
FAC species	42	x 3 =	126
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		242 (B)

Prevalence Index = B/A = 2.42

Hydrophytic Vegetation Indicators:

- _____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- _____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- _____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	90	10YR 5/6	10	C	M	clay loam	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? Yes X No ___ Depth (inches): 0
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-6

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat land Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0927490 Long: -83.194685 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Agricultural Field

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Zea mays (post harvest)*	70%	Y	UPL
2. *Veronica peregrina*	8%	N	FACW
3. *Ambrosia trifida*	5%	N	FAC
4. *Poaceae sp.*	5%	N	NL
5. *Daucus carota*	3%	N	UPL
6. *Erechtites hieraciifolius*	2%	N	FACU
7.			
8			
9			
10			
	93%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	0	x	1 =	0
FACW species	8	x	2 =	16
FAC species	5	x	3 =	15
FACU species	2	x	4 =	8
UPL species	73	x	5 =	365
Column Totals:	88 (A)			404 (B)

Prevalence Index = B/A = 4.59

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation
_____ 2 - Dominance Test is >50%
_____ 3 - Prevalence Index is ≤3.0[1]
_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/1	100					clay loam	mixed with cobble and/or fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-7

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0925290 Long: -83.194692 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-4

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Xanthium strumarium*	70%	Y	FAC
2. *Poaceae sp.*	15%	N	NL
3. *Veronica peregrina*	10%	N	FACW
4.			
5.			
6.			
7.			
8			
9			
10			
	95%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80	(A)	230 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

- _____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- _____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- _____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	95	7.5YR 3/4	5	C	M	clay loam	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-8

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0915140 Long: -83.194656 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____	Wetland W-5	

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Veronica peregrina*	5%	Y	FACW
2. *Xanthium strumarium*	2%	N	FAC
3. *Poaceae sp.*	2%	N	NL
4. *Solidago sp.*	1%	N	NL
5.			
6.			
7.			
8			
9			
10			
	10%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	7 (A)		16 (B)

Prevalence Index = B/A = 2.29

Hydrophytic Vegetation Indicators:

- _____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- _____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- _____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	100					clay loam	
10-18	10YR 4/1	85	7.5YR 4/6	15	C	M	clay loam	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-9

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat land Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0907660 Long: -83.19457 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Agricultural Field

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Zea mays (post-harvest)*	75%	Y	UPL
2. *Packera glabella*	5%	N	FACW
3.			
4.			
5.			
6.			
7.			
8			
9			
10			
	80%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	0	x	1 =	0
FACW species	5	x	2 =	10
FAC species	0	x	3 =	0
FACU species	0	x	4 =	0
UPL species	75	x	5 =	375
Column Totals:	80	(A)		385 (B)

Prevalence Index = B/A = 4.81

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-10

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0905900 Long: -83.194607 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____	Wetland W-6	

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Glyceria striata*	25%	Y	OBL
2. *Zea mays (post-harvest)*	25%	Y	UPL
3. *Veronica peregrina*	8%	N	FACW
4. *Eleocharis obtusa*	3%	N	OBL
5. *Xanthium strumarium*	3%	N	FAC
6. *Packera glabella*	2%	N	FACW
7. *Acer sp.*	1%	N	NL
8			
9			
10			
	67%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	28	x	1 =	28
FACW species	10	x	2 =	20
FAC species	0	x	3 =	0
FACU species	0	x	4 =	0
UPL species	25	x	5 =	125
Column Totals:	63	(A)		173 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	97	10YR 3/4	3	C	PL/M	clay loam	distinct redox concentrations
8-16	2.5Y 4/2	60	10YR 5/6	40	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 8

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washington Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-11

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0902140 Long: -83.194684 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____	Wetland W-6	

Remarks: PSS

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Fraxinus pennsylvanica*	60%	Y	FACW
2. *Acer saccharinum*	50%	Y	FACW
3.			
4.			
5.			
	110%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Cinna arundinacea*	20%	Y	FACW
2. *Fraxinus pennsylvanica*	5%	N	FACW
3. *Ulmus sp.*	1%	N	NL
4.			
5.			
6.			
7.			
8			
9			
10			
	26%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	135	x 2 =	270
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	135 (A)		270 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- _____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- _____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- _____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.) Ulmus sp. is either U. americana (FACW) or U. rubra (FAC)

SOIL

Sampling Point: SP-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					clay loam	
8-14	10YR 3/1	97	10YR 5/6	3	C	M	clay loam	prominent redox concentrations
14-16	10YR 5/1	75	10YR 6/8	25	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 14

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water (up to 12 inches) in portions of the wetland but not within sample plot.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Washinton Twp, Franklin Sampling Date: May 25, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-12

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): mound Local Relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0900670 Long: -83.194766 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes _____	No X
Hydric Soil Present?	Yes _____	No X			
Wetland Hydrology Present?	Yes _____	No X			

Remarks: Scrub-shrub

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Lonicera morrowii*	80%	Y	FACU
2. *Fraxinus pennsylvanica*	20%	N	FACW
3. *Rosa multiflora*	15%	N	FACU
4.			
5.			
	115%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Aegopodium podagraria*	70%	Y	FAC
2. *Toxicodendron radicans*	20%	Y	FAC
3. *Fraxinus pennsylvanica*	10%	N	FACW
4. *Parthenocissus quinquefolia*	5%	N	FACU
5. *Lonicera morrowii*	5%	N	FACU
6. *Carya sp.*	5%	N	NL
7.			
8			
9			
10			
	115%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	90	x 3 =	270
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column Totals:	225 (A)		750 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	100					silty clay loam	refusal (roots) at 10 in.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-13

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0602990 Long: -83.191166 Datum: WGS 84

Soil Map Unit Name: Lewisburg-Crosby complex, 2 to 6 percent slopes NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No ____		
Wetland Hydrology Present?	Yes X	No ____		Wetland W-7

Remarks: atypical PEM. Vegetation disturbance - herbicide appears to have been used in this agricultural field pre-planting (no till planting).

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Veronica peregrina*	2%	N	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8			
9			
10			
	2%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: #DIV/0! (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	2 (A)		4 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Veronica peregrina is a hydrophyte, but not present in sufficient amounts to be dominant due to assumed recent herbicide application.

SOIL

Sampling Point: SP-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	95	5YR 4/6	5	C	PL	clay loam	prominent redox concentrations
4-16	10YR 4/2	70	7.5YR 4/6	30	C	M/PL	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 4

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water present within wetland outside of sample plot

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-14

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat land Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0601210 Long: -83.191303 Datum: WGS 84

Soil Map Unit Name: Lewisburg-Crosby complex, 2 to 6 percent slopes NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Agricultural Field

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Capsella bursa-pastoris*	70%	Y	FACU
2. *Poaceae sp.*	5%	N	NL
3.			
4.			
5.			
6.			
7.			
8			
9			
10			
	75%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	70 (A)		280 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	100					silty loam	
6-10	2.5Y 4/2	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-15

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0603450 Long: -83.19554 Datum: WGS 84

Soil Map Unit Name: Lewisburg-Crosby complex, 2 to 6 percent slopes (LeB) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-8

Remarks: PSS

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Populus deltoides*	60%	Y	FAC
2. *Acer rubrum*	5%	N	FAC
3.			
4.			
5.			
	65%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Eleocharis palustris*	30%	Y	OBL
2. *Phalaris arundinacea*	15%	Y	FACW
3. *Carex vulpinoidea*	10%	N	FACW
4. *Poaceae sp.*	10%	N	NL
5. *Lythrum salicaria*	5%	N	OBL
6. *Populus deltoides*	3%	N	FAC
7. *Acer rubrum*	1%	N	FAC
8 *Rumex crispus*	1%	N	FAC
9			
10			
	75%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	35	x	1 =	35
FACW species	25	x	2 =	50
FAC species	70	x	3 =	210
FACU species	0	x	4 =	0
UPL species	0	x	5 =	0
Column Totals:	130 (A)			295 (B)

Prevalence Index = B/A = 2.27

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: A. rubrum is likely hybrid with A. saccharinum.

SOIL

Sampling Point: SP-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/1	75	7.5YR 3/4	25	C	M	clay loam	prominent redox concentrations
4-16	10YR 4/1	75	5YR 4/6	20	C	M	clay	prominent redox concentrations
			2.5YR 2.5/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 4

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes X No ___ Depth (inches): 4
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-16

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0603520 Long: -83.195572 Datum: WGS 84

Soil Map Unit Name: Lewisburg-Crosby complex, 2 to 6 percent slopes (LeB) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Old Field

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Acer rubrum*	15%	Y	FAC
2. *Rubus pensilvanicus*	7%	Y	UPL
3. *Malus sp.*	2%	N	NL
4.			
5.			
	24%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Solidago canadensis*	85%	Y	FACU
2. *Poa pratensis*	20%	N	FAC
3. *Rubus pensilvanicus*	10%	N	UPL
4. *Daucus carota*	5%	N	UPL
5. *Dipsacus fullonum*	2%	N	FACU
6.			
7.			
8			
9			
10			
	122%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	87	x 4 =	348
UPL species	22	x 5 =	110
Column Totals:	144 (A)		563 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/1	100					clay loam	
14-18	10YR 3/1	90	7.5YR 3/4	10	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 14

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? Yes ____ No X Depth (inches): ____
(includes capillary fringe)

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-17

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0607420 Long: -83.195418 Datum: WGS 84

Soil Map Unit Name: Lewisburg-Crosby complex, 2 to 6 percent slopes NWI classification: PUBGx

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-8

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Phalaris arundinacea*	95%	Y	FACW
2. *Wolffia borealis*	30%	Y	OBL
3. *Apocynum cannabinum*	1%	N	FAC
4. *Rubus sp.*	1%	N	NL
5.			
6.			
7.			
8			
9			
10			
	127%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	30	x	1 =	30
FACW species	95	x	2 =	190
FAC species	1	x	3 =	3
FACU species	0	x	4 =	0
UPL species	0	x	5 =	0
Column Totals:	126 (A)			223 (B)

Prevalence Index = B/A = 1.77

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/1	75	7.5YR 4/6	25	C	M/PL	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 0

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? Yes X No ___ Depth (inches): 0
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-18

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0602750 Long: -83.196486 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: PUBGx

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-9

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Fraxinus pennsylvanica*	4%	Y	FACW
2. *Acer saccharinum*	2%	Y	FACW
3.			
4.			
5.			
	6%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Typha angustifolia*	90%	Y	OBL
2. *Phalaris arundinacea*	10%	N	FACW
3. *Eleocharis palustris*	5%	N	OBL
4.			
5.			
6.			
7.			
8			
9			
10			
	105%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	95	x	1 =	95
FACW species	16	x	2 =	32
FAC species	0	x	3 =	0
FACU species	0	x	4 =	0
UPL species	0	x	5 =	0
Column Totals:	111 (A)			127 (B)

Prevalence Index = B/A = 1.14

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5Y 3/1	100					mucky loam	
1-14	2.5Y 5/1	60	10YR 5/6	40	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 1

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? Yes X No ___ Depth (inches): 0
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-19

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0600540 Long: -83.196491 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: PUBGx

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-9

Remarks: PSS

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Salix interior*	75%	Y	FACW
2. *Fraxinus pennsylvanica*	5%	N	FACW
3. *Populus deltoides*	5%	N	FAC
4.			
5.			
	85%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Typha angustifolia*	15%	Y	OBL
2. *Phalaris arundinacea*	8%	Y	FACW
3. *Salix interior*	5%	N	FACW
4. *Acer saccharinum*	2%	N	FACW
5. *Eleocharis palustris*	2%	N	OBL
6. *Rubus sp.*	2%	N	NL
7.			
8			
9			
10			
	34%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	17	x	1 =	17
FACW species	95	x	2 =	190
FAC species	0	x	3 =	0
FACU species	0	x	4 =	0
UPL species	0	x	5 =	0
Column Totals:	112 (A)			207 (B)

Prevalence Index = B/A = 1.85

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/1	100					mucky loam	
1-16	2.5Y 5/2	70	10YR 5/8	30	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 1

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 8

Saturation Present? Yes X No ___ Depth (inches): 7
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-20

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0600010 Long: -83.196447 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes _____	No X
Hydric Soil Present?	Yes X	No _____			
Wetland Hydrology Present?	Yes _____	No X			

Remarks: Forest

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	40%	Y	FAC
2. *Acer saccharinum*	30%	Y	FACW
3.			
4.			
5.			
	70%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Acer saccharinum*	35%	Y	FACW
2. *Populus deltoides*	15%	Y	FAC
3. *Acer negundo*	5%	N	FAC
4.			
5.			
	55%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Rubus canadensis*	80%	Y	UPL
2. *Solidago juncea*	10%	N	UPL
3. *Vitis sp. (c.f. aestivalis)*	2%	N	NL
4. *Phalaris arundinacea*	2%	N	FACW
5.			
6.			
7.			
8			
9			
10			
	94%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	67	x 2 =	134
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species	90	x 5 =	450
Column Totals:	217 (A)		764 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					silty loam	
3-10	10YR 3/1	95	7.5YR 3/2	5	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-21

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat land Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0599430 Long: -83.196305 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes _____	No X
Hydric Soil Present?	Yes _____	No X			
Wetland Hydrology Present?	Yes _____	No X			

Remarks: Maintained Lawn

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Poa pratensis*	100%	Y	FAC
2. *Veronica filiformis*	7%	N	UPL
3. *Trifolium repens*	2%	N	FACU
4. *Daucus carota*	1%	N	UPL
5. *Taraxacum officinale*	1%	N	FACU
6.			
7.			
8			
9			
10			
	111%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	0	x	1 =	0
FACW species	0	x	2 =	0
FAC species	100	x	3 =	300
FACU species	3	x	4 =	12
UPL species	8	x	5 =	40
Column Totals:	111 (A)			352 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-22

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): intermittent stream fringe Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0158380 Long: -83.184565 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____		Wetland W-10

Remarks: PEM

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Leersia oryzoides*	80%	Y	OBL
2. *Impatiens capensis*	10%	N	FACW
3. *Cirsium arvense*	2%	N	FACU
4. *Galium aparine*	2%	N	FACU
5.			
6.			
7.			
8			
9			
10			
	94%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	80	x 1 =	80
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	4	x 4 =	16
UPL species	0	x 5 =	0
Column Totals:	94	(A)	116 (B)

Prevalence Index = B/A = 1.23

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10Y 3/1	100					muck	
8-20	10Y 4/1	60	7.5YR 4/4	40	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 8

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 2

Saturation Present? Yes X No ___ Depth (inches): 0
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-23

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace Local Relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 40.0157980 Long: -83.184517 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks: Open Field

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Poa pratensis*	40%	Y	FAC
2. *Schedonorus pratensis*	35%	Y	FACU
3. *Cirsium arvense*	25%	Y	FACU
4. *Dactylis glomerata*	5%	N	FACU
5. *Galium sp.*	5%	N	NL
6. *Oenothera biennis*	2%	N	FACU
7. *Stellaria sp.*	2%	N	NL
8 *Trifolium sp.*	2%	N	NL
9			
10			
	116%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	67	x 4 =	268
UPL species	0	x 5 =	0
Column Totals:	107 (A)		388 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/3	100					silty loam	
10-16	10YR 3/3	95	7.5YR 4/6	5	C	M	silty loam	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-24

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 39.9813720 Long: -83.192135 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X	No _____		
Wetland Hydrology Present?	Yes X	No _____	Wetland W-11	

Remarks: PSS

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Fraxinus pennsylvanica*	30%	Y	FACW
2. *Populus deltoides*	10%	N	FAC
3. *Salix nigra*	5%	N	OBL
4. *Sambucus canadensis*	5%	N	FACW
5. *Acer negundo*	3%	N	FAC
	53%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Phalaris arundinacea*	25%	Y	FACW
2. *Glyceria striata*	15%	Y	OBL
3. *Impatiens capensis*	15%	Y	FACW
4. *Galium obtusum*	15%	Y	FACW
5. *Carex sp.*	10%	N	NL
6. *Carex stipata*	8%	N	OBL
7. *Toxicodendron radicans*	5%	N	FAC
8 *Rubus sp.*	2%	N	NL
9 *Symphyotrichum sp.*	2%	N	NL
10 *Ranunculus sp.*	1%	N	NL
	98%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	28	x 1 =	28
FACW species	90	x 2 =	180
FAC species	18	x 3 =	54
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	136 (A)		262 (B)

Prevalence Index = B/A = 1.93

Hydrophytic Vegetation Indicators:

- _____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- _____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- _____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Shrub stratum also includes 1% Morus alba and 1% Ulmus americana. Carex sp. had hairy leaves.

SOIL

Sampling Point: SP-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					clay loam	
4-16	10YR 3/1	90	7.5YR 3/4	10	C	M	clay	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coastal Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay

Depth (inches): 4

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Amlin Cole City/County: Brown Twp, Franklin Sampling Date: May 26, 2016

Applicant/Owner: Commonwealth Associates, Inc. State: OH Sampling Point: SP-25

Investigator(s): Brian Slaby, ES Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat ground Local Relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): M111A Lat: 39.9813450 Long: -83.192396 Datum: WGS 84

Soil Map Unit Name: Kokomo silty clay loam (Ko) NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland?	Yes _____	No X
Hydric Soil Present?	Yes _____	No X			
Wetland Hydrology Present?	Yes _____	No X			

Remarks: Scrub-shrub

VEGETATION (Four Strata) - Use scientific names of plants.

Tree Stratum: (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Sapling/Shrub Stratum: (Plot size: 15')			
1. *Lonicera maackii*	70%	Y	UPL
2. *Juglans nigra*	15%	N	FACU
3. *Elaeagnus umbellata*	5%	N	FACU
4. *Lindera benzoin*	5%	N	FACW
5. *Quercus rubra*	5%	N	FACU
	100%	= Total Cover	
Herb Stratum: (Plot size: 5')			
1. *Toxicodendron radicans*	15%	Y	FAC
2. *Cryptotaenia canadensis*	7%	Y	FAC
3. *Lonicera maackii*	5%	N	UPL
4. *Impatiens capensis*	5%	N	FACW
5. *Parthenocissus quinquefolia*	5%	N	FACU
6. *Persicaria virginiana*	3%	N	FAC
7. *Rumex sp.*	1%	N	NL
8 *Cardamine sp.*	1%	N	NL
9 *Asteraceae sp.*	1%	N	NL
10			
	43%	= Total Cover	
Woody Vine Stratum: (Plot size: 30')			
1.			
2.			
	0%	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:				Multiply by:
OBL species	0	x	1 =	0
FACW species	10	x	2 =	20
FAC species	25	x	3 =	75
FACU species	30	x	4 =	120
UPL species	75	x	5 =	375
Column Totals:	140 (A)			590 (B)

Prevalence Index = B/A = 4.21

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

x 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: shrub layer also contains 5% Fraxinus pennsylvanica

SOIL

Sampling Point: SP-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					silty loam	refusal (roots, including poison ivy) at 6 in.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL= Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 5 cm Mucky Peat or Peat (S3)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ____ Coastal Prairie Redox (A16)
- ____ Dark Surface (S7)
- ____ Iron-Manganese Masses (F12)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Gauge or Well Data (D9)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix D:

Ohio Rapid Assessment Method for Wetlands v. 5.0 Rating Forms

Background Information

Name:	Brian Slaby
Date:	5/25/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-1 & W-2
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate	**W-1**: 40.094239, -83.194834; **W-2**: 40.094084, -83.194806
USGS Quad Name	Hilliard
County	Franklin
Township	Washington
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/25/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-1 & W-2	
Wetland Size (acres, hectares): **W-1**: 0.038 acres onsite; **W-2**: 0.109 acres onsite	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes: Wetlands W-1 and W-2 were scored together as a mosaic.	
Final score : 15	**Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

W-1 & W-2

Site: Amlin Cole	Rater(s): B. Slaby	5/25/2016

max 6 pts.	subtotal
1	1

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
	3 to <10 acres (1.2 to <4 ha) (3 pts)
	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
1	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

max 14 pts.	subtotal
3	4

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
0	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
3	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

max 30 pts.	subtotal
6	10

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

on/saturation. Score one or dbl check.

	Semi- to permanently inundated/saturated (4)
	Regularly inundated/saturated (3)
2	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
	0.4 to 0.7m (15.7 to 27.6in) (2)
1	<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
3	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

X	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike	X	road bed/RR track
	weir		dredging
X	stormwater input		Other:

max 20 pts.	subtotal
4	14

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
2	Recovering (2)
	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
	Fair (3)
	Poor to fair (2)
1	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

X	mowing	X	shrub/sapling removal
	grazing		herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
	selective cutting	X	dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

14
subtotal this page

Site: Amlin Cole	Rater(s): B. Slaby	5/25/2016

14
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 14 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

1 max 20 pts. | 15 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

	Aquatic bed
1	Emergent
	Shrub
	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
	Low (1)
0	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
-1	Sparse 5-25% cover (-1)
	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

1	Vegetated hummucks/tussucks
	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

15 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	6	
	Metric 4. Habitat	4	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE	15	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/25/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-3, W-4, and W-5
Vegetation Communit(ies):	PSS (W-3) and PEM (W-4 and W-5)
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate	**W-3**: 40.092824, -83.194739; **W-4**: 40.09232, -83.194708; **W-5**: 40.091491, -83.194600
USGS Quad Name	Hilliard
County	Franklin
Township	Washington
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/25/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-3, W-4, and W-5	
Wetland Size (acres, hectares): **W-3**: 0.037 acres onsite; **W-4**: 0.552 acres onsite; **W-5**: 0.403 acres onsite	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes: W-3, W-4, and W-5 were scored together as a mosaic.	
Final score : 16	**Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

W-3, W-4, & W-5

Site: Amlin Cole	Rater(s): B. Slaby	5/25/2016

3	3
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
3	3 to <10 acres (1.2 to <4 ha) (3 pts)
	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

1	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
0	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
1	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

5	9
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

on/saturation. Score one or dbl check.

	Semi- to permanently inundated/saturated (4)
	Regularly inundated/saturated (3)
2	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
	0.4 to 0.7m (15.7 to 27.6in) (2)
1	<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

X	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike		road bed/RR track
	weir		dredging
	stormwater input	X	Other: tilling

3	12
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
	Recovering (2)
1	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
	Fair (3)
	Poor to fair (2)
1	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing	X	herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
	selective cutting	X	dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

12
subtotal this page

Site: Amlin Cole	Rater(s): B. Slaby	5/25/2016

12
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 12 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

4 max 20 pts. | 16 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

	Aquatic bed
1	Emergent
0	Shrub
	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
1	Low (1)
	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
	Sparse 5-25% cover (-1)
0	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

	Vegetated hummucks/tussucks
1	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
1	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

16 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	5	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	4	
	TOTAL SCORE	16	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/25/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-6
Vegetation Communit(ies):	PSS/PEM
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate	40.089886, -83.194525
USGS Quad Name	Hilliard
County	Franklin
Township	Washington
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/25/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-6	
Wetland Size (acres, hectares): 0.965 acres onsite	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 26	**Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Amlin Cole	Rater(s): B. Slaby	5/25/2016

max 6 pts.	subtotal
2	2

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
	3 to <10 acres (1.2 to <4 ha) (3 pts)
2	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

max 14 pts.	subtotal
3	5

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
0	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
5	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
1	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

max 30 pts.	subtotal
7.5	12.5

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
2	0.4 to 0.7m (15.7 to 27.6in) (2)
	<0.4m (<15.7in) (1)

on/saturation. Score one or dbl check.

	Semi- to permanently inundated/saturated (4)
3	Regularly inundated/saturated (3)
2	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
3	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

X	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike	X	road bed/RR track
	weir	X	dredging
X	stormwater input	X	Other: tilling

max 20 pts.	subtotal
6.5	19

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
2	Recovering (2)
1	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
3	Fair (3)
	Poor to fair (2)
	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
3	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing	X	herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
X	selective cutting	X	dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

19
subtotal this page

Site: Amlin Cole	Rater(s): B. Slaby	5/25/2016

19
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 19 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

7 max 20 pts. | 26 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

	Aquatic bed
1	Emergent
2	Shrub
	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
1	Low (1)
	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
	Sparse 5-25% cover (-1)
0	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

1	Vegetated hummucks/tussucks
1	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
1	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

26 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	7.5	
	Metric 4. Habitat	6.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	7	
	TOTAL SCORE	26	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/26/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-7
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate 40.060258, -83.191008	
USGS Quad Name	Hilliard
County	Franklin
Township	Brown
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/26/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-7	
Wetland Size (acres, hectares): 0.442 acres offsite but near landing zone	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 14	**Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
	3 to <10 acres (1.2 to <4 ha) (3 pts)
2	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

1	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
0	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
1	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

5	8
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

on/saturation. Score one or dbl check.

	Semi- to permanently inundated/saturated (4)
	Regularly inundated/saturated (3)
2	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
	0.4 to 0.7m (15.7 to 27.6in) (2)
1	<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike		road bed/RR track
	weir		dredging
	stormwater input	X	Other: tilling

3	11
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
	Recovering (2)
1	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
	Fair (3)
	Poor to fair (2)
1	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing	X	herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
	selective cutting		dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

11
subtotal this page

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

11
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 11 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

3 max 20 pts. | 14 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

	Aquatic bed
1	Emergent
	Shrub
	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
	Low (1)
0	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
	Sparse 5-25% cover (-1)
	Nearly absent <5% cover (0)
1	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

	Vegetated hummucks/tussucks
	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
1	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

14 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	5	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	3	
	TOTAL SCORE	14	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/26/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-8
Vegetation Communit(ies):	PEM, PSS, and Open Water
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate 40.061057, -83.19552	
USGS Quad Name	Hilliard
County	Franklin
Township	Brown
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/26/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-8	
Wetland Size (acres, hectares): 0.177 acres onsite	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 32 **Category:**	1 or 2 grey zone

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

max 6 pts.	subtotal
2	2

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
	3 to <10 acres (1.2 to <4 ha) (3 pts)
2	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

max 14 pts.	subtotal
4	6

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
1	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
5	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
1	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

max 30 pts.	subtotal
11	17

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

3	>0.7 (27.6in) (3)
	0.4 to 0.7m (15.7 to 27.6in) (2)
	<0.4m (<15.7in) (1)

on/saturation. Score one or dbl check.

4	Semi- to permanently inundated/saturated (4)
	Regularly inundated/saturated (3)
	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
3	Recovering (3)
	Recent or no recovery (1)

Check all disturbances observed

X	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike	X	road bed/RR track
	weir	X	dredging
X	stormwater input		Other:

max 20 pts.	subtotal
8	25

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
2	Recovering (2)
	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
3	Fair (3)
	Poor to fair (2)
	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
3	Recovering (3)
	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing		herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
	selective cutting	X	dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

subtotal this page
25

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

25
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 25 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

7 max 20 pts. | 32 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

0	Aquatic bed
1	Emergent
0	Shrub
	Forest
	Mudflats
1	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

5	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
	Low (1)
	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
-3	Moderate 25-75% cover (-3)
	Sparse 5-25% cover (-1)
	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

1	Vegetated hummucks/tussucks
	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
2	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

32 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	4	
	Metric 3. Hydrology	11	
	Metric 4. Habitat	8	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	7	
	TOTAL SCORE	32	Category based on score breakpoints 1 or 2 grey zone

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/26/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-9
Vegetation Communit(ies):	PEM/PSS
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetlands and water resources map.

Lat/Long or UTM Coordinate	40.060549, -83.196645
USGS Quad Name	Hilliard
County	Franklin
Township	Brown
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/26/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-9	
Wetland Size (acres, hectares): 0.556 acres offsite near work area	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 20.5	**Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

max 6 pts.	subtotal
2	2

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
	3 to <10 acres (1.2 to <4 ha) (3 pts)
2	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

max 14 pts.	subtotal
3	5

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
0	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
3	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

max 30 pts.	subtotal
8.5	13.5

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

on/saturation. Score one or dbl check.

4	Semi- to permanently inundated/saturated (4)
3	Regularly inundated/saturated (3)
	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
2	0.4 to 0.7m (15.7 to 27.6in) (2)
	<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
3	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

X	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike	X	road bed/RR track
	weir	X	dredging
X	stormwater input		Other:

max 20 pts.	subtotal
7	20.5

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
2	Recovering (2)
	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
	Fair (3)
2	Poor to fair (2)
	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
3	Recovering (3)
	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing		herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
	selective cutting	X	dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

20.5

subtotal this page

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

20.5
subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) | 20.5 (subtotal)

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

0 (max 20 pts.) | 20.5 (subtotal)

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

0	Aquatic bed
1	Emergent
0	Shrub
	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
2	Moderately low (2)
	Low (1)
	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

-5	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
	Sparse 5-25% cover (-1)
	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

	Vegetated hummucks/tussucks
	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
2	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

20.5 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	8.5	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	0	
	TOTAL SCORE	20.5	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/26/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-10
Vegetation Communit(ies):	PEM
HGM Class(es):	Stream fringe

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate	40.015810, -83.184575
USGS Quad Name	Hilliard
County	Franklin
Township	Brown
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/26/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-10	
Wetland Size (acres, hectares): 0.013 acres offsite near access driveway	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Please refer to site wetlands and water resources map.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 22 **Category:**	1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

max 6 pts.	subtotal
0	0

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
	3 to <10 acres (1.2 to <4 ha) (3 pts)
	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
0	<0.1 acres (0.04ha) (0 pts)

max 14 pts.	subtotal
1	1

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
0	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
1	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

max 30 pts.	subtotal
13	14

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
3	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

1	100 year floodplain (1)
1	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
1	Part of riparian or upland corridor (1)

on/saturation. Score one or dbl check.

	Semi- to permanently inundated/saturated (4)
3	Regularly inundated/saturated (3)
	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
	0.4 to 0.7m (15.7 to 27.6in) (2)
1	<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

	None or none apparent (12)
	Recovered (7)
3	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

X	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike	X	road bed/RR track
	weir	X	dredging
X	stormwater input		Other:

max 20 pts.	subtotal
7	21

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
	Recovered (3)
2	Recovering (2)
	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
	Moderately good (4)
3	Fair (3)
	Poor to fair (2)
	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
	Recovered (6)
3	Recovering (3)
1	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing		herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
	selective cutting	X	dredging
X	woody debris removal	X	farming
X	toxic pollutants	X	nutrient enrichment

subtotal this page
21

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

21
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 21 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

1 max 20 pts. | 22 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

	Aquatic bed
1	Emergent
	Shrub
	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
	Low (1)
0	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
	Sparse 5-25% cover (-1)
0	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

	Vegetated hummucks/tussucks
	Coarse woody debris >15cm (6in)
	Standing dead >25cm (10in) dbh
	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

22 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	13	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE	22	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brian Slaby
Date:	5/26/2016
Affiliation:	EnviroScience Inc.
Address:	5070 Stow Road, Stow, Ohio 44224
Phone Number:	330-688-0111
e-mail address:	bslaby@EnviroScienceInc.com
Name of Wetland:	W-11
Vegetation Communit(ies):	PSS onsite, PFO offsite (unmapped)
HGM Class(es):	Depression

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Please refer to site wetland s and water resources map.

Lat/Long or UTM Coordinate	39.981379, -83.192182
USGS Quad Name	Galloway
County	Franklin
Township	Brown
Section and Subsection	
Hydrologic Unit Code	05060001
Site Visit	5/26/2016
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	X

Name of Wetland: W-11	
Wetland Size (acres, hectares): 0.145 acres onsite	

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Please refer to site wetlands and water resources map.

Comments, Narrative Discussion, Justification of Category Changes:

Stopped delineation at the PSS boundary just outside of the ROW; wetland continues both east and west as PFO.

Final score : 47 **Category:**	2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

max 6 pts.	subtotal
3	3

Metric 1. Wetland Area (size).

Select one size class and assign score.

	>50 acres (>20.2ha) (6 pts)
	25 to <50 acres (10.1 to <20.2ha) (5 pts)
	10 to <25 acres (4 to <10.1 ha) (4 pts)
3	3 to <10 acres (1.2 to <4 ha) (3 pts)
	0.3 to < 3 acres (012 to <1.2ha) (2 pts)
	0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
	<0.1 acres (0.04ha) (0 pts)

max 14 pts.	subtotal
9	12

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

	WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7)
4	MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
	NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
	VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

7	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
	LOW. Old field (>10 years), shrubland, young second growth forest. (5)
3	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
	HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

max 30 pts.	subtotal
13.5	25.5

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

	High pH groundwater (5)
	Other groundwater (3)
1	Precipitation (1)
	Seasonal/Intermittent surface water (3)
	Perennial surface water (lake or stream (5)

3b. Connectivity. Score all that apply.

	100 year floodplain (1)
	Between stream/lake and other human use (1)
	Part of wetland/upland (e.g. forest), complex (1)
	Part of riparian or upland corridor (1)

on/saturation. Score one or dbl check.

	Semi- to permanently inundated/saturated (4)
	Regularly inundated/saturated (3)
2	Seasonally inundated (2)
	Seasonally saturated in upper 30cm (12in) (1)

3c. Maximum water depth. Select only one and assign score.

	>0.7 (27.6in) (3)
	0.4 to 0.7m (15.7 to 27.6in) (2)
1	<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

12	None or none apparent (12)
7	Recovered (7)
	Recovering (3)
	Recent or no recovery (1)

Check all disturbances observed

	ditch		point source (nonstormwater)
X	tile	X	filling/grading
	dike		road bed/RR track
	weir		dredging
	stormwater input	X	Other: clearing

max 20 pts.	subtotal
10.5	36

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

	None or none apparent (4)
3	Recovered (3)
2	Recovering (2)
	Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

	Excellent (7)
	Very good (6)
	Good (5)
4	Moderately good (4)
	Fair (3)
	Poor to fair (2)
	Poor (1)

4c. Habitat alteration. Score one or double check and average.

	None or none apparent (9)
6	Recovered (6)
3	Recovering (3)
	Recent or no recovery (1)

Check all disturbances observed

	mowing	X	shrub/sapling removal
	grazing		herbaceous/aquatic bed removal
X	clearcutting	X	sedimentation
X	selective cutting		dredging
X	woody debris removal	X	farming
	toxic pollutants		nutrient enrichment

subtotal this page
36

Site: Amlin Cole	Rater(s): B. Slaby	5/26/2016

36
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 36 subtotal

Check all that apply and score as indicated.

	Bog (10)
	Fen (10)
	Old growth forest (10)
	Mature forested wetland (5)
	Lake Erie coastal/tributary wetland -unrestricted hydrology (10)
	Lake Erie coastal/tributary wetland-restricted hydrology (5)
	Lake Plain Sand Prairies (Oak Openings) (10)
	Relict Wet Prairies (10)
	Known occurrence state/federal threatened or endangered species (10)
	Significant migratory songbird/water fowl habitat or usage (10)
	Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

11 max 20 pts. | 47 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

	Aquatic bed
2	Emergent
2	Shrub
2	Forest
	Mudflats
	Open Water
	Other_____

6b. Horizontal (plan view) Interspersion.
Score only one.

	High (5)
	Moderately high (4)
	Moderate (3)
	Moderately low (2)
1	Low (1)
	None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

	Extensive >75% cover (-5)
	Moderate 25-75% cover (-3)
-1	Sparse 5-25% cover (-1)
	Nearly absent <5% cover (0)
	Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

1	Vegetated hummucks/tussucks
2	Coarse woody debris >15cm (6in)
1	Standing dead >25cm (10in) dbh
1	Amphibian breeding pools

Vegatation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality.
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality.

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present in very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

47 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3	
	Metric 2. Buffers and surrounding land use	9	
	Metric 3. Hydrology	13.5	
	Metric 4. Habitat	10.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	11	
	TOTAL SCORE	47	Category based on score breakpoints 2

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Appendix E:

Stream Habitat Forms

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 47

SITE NAME/LOCATION Amlin Cole

SITE NUMBER Hamilton Ditch RIVER BASIN _____ DRAINAGE AREA (mi²) <0.1 not mapped in streamstats

LENGTH OF STREAM REACH (ft) 200 LAT. 40.015766 LONG. -83.184885 RIVER CODE_ RIVER MILE 5.2

DATE 5/26/16 SCORER B. Slaby, ES COMMENTS _____

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

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

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☑	SILT [3 pt]	30
☐	BOULDER (>256 mm) [16 pts]		☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]		☑	MUCK [0 pts]	45
☐	SAND (<2 mm) [6 pts]	15	☐	ARTIFICIAL [3 pts]	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 3 (B) 4

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

HHEI Metric Points — **Substrate Max = 40**: 7 (A + B)

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

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

COMMENTS avg depth 7.5 cm **MAXIMUM POOL DEPTH (centimeters):** 19

Pool Depth Max = 30: 25

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

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

COMMENTS 5.5ft, 5ft, 4ft, 2ft, avg 4.125 **AVERAGE BANKFULL WIDTH (meters)** 1.3

Bankfull Width Max=30: 15

This information must also be completed

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

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

COMMENTS _____

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

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

COMMENTS _____

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

☐ None	☑ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

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

October 24, 2002 Revision

10 ft / 6,253 100 ft 0.16 ft / 100 ft.

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

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Hilliard NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Franklin Township / City: Brown Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 5/21/16 Quantity: 0.53 in

Photograph Information: Self explanatory Upstream from center ofreach _____

Elevated Turbidity? (Y/N): N Canopy (% open): 70

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

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

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

Additional comments/description of pollution impacts: Nutrient enrichment & pesticides likely from surrounding row crops

BIOTIC EVALUATION

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

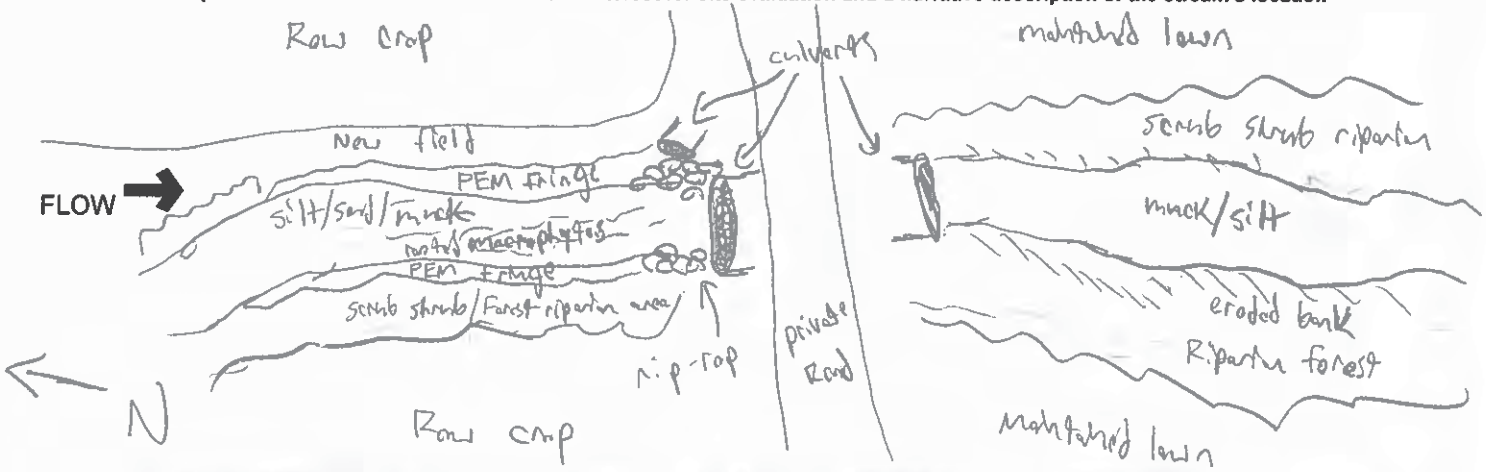
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

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

Comments Regarding Biology: _____

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

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



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 45.75 (Fair)

Stream & Location: Amlin Cole Hamilton Ditch (north crossing) **RM:** L3 **Date:** 05/27/2016

Scorers Full Name & Affiliation: Brian Slab, ES

River Code: __-__-__ **STORET #:** _____ **Lat./Long.:** 39.9633 / 83.1855 (NAD 83 - decimal °) Office verified location ☑

1] SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]			☐☐ HARDPAN [4]	2	
☐☐ BOULDER [9]			☐☐ DETRITUS [3]		
☐☐ COBBLE [8]	5	15	☐☐ MUCK [2]		
☐☑ GRAVEL [7]	20	40	☐☐ SILT [2]	10	
☑☐ SAND [6]	63	30	☐☐ ARTIFICIAL [0]		15
☐☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☐ 3 or less [0]

Check ONE (Or 2 & average)

ORIGIN: ☐ LIMESTONE [1] ☑ TILLS [1] ☐ WETLANDS [0] ☐ HARDPAN [0] ☐ SANDSTONE [0] ☐ RIP/RAP [0] ☐ LACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]

QUALITY: SILT: ☐ HEAVY [-2] ☐ MODERATE [-1] ☑ NORMAL [0] ☐ FREE [1]; EMBEDDEDNESS: ☑ EXTENSIVE [-2] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ NONE [1]

Comments

Substrate: 12 (Maximum 20)

2] INSTREAM COVER

Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

__ UNDERCUT BANKS [1]	__ POOLS > 70cm [2]	__ OXBOWS, BACKWATERS [1]
2 OVERHANGING VEGETATION [1]	__ ROOTWADS [1]	__ AQUATIC MACROPHYTES [1]
1 SHALLOWS (IN SLOW WATER) [1]	__ BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]
__ ROOTMATS [1]		

AMOUNT Check ONE (Or 2 & average): ☐ EXTENSIVE >75% [11] ☐ MODERATE 25-75% [7] ☑ SPARSE 5-<25% [3] ☐ NEARLY ABSENT <5% [1]

Comments

Cover: 6 (Maximum 20)

3] CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☑ LOW [2]	☑ FAIR [3]	☑ RECOVERING [3]	☑ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel: 9 (Maximum 20)

4] BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☑☐ NONE / LITTLE [3]	☐☐ WIDE > 50m [4]	☐☐ FOREST, SWAMP [3]	☐☐ CONSERVATION TILLAGE [1]
☑☑ MODERATE [2]	☑☑ MODERATE 10-50m [3]	☐☐ SHRUB OR OLD FIELD [2]	☐☐ URBAN OR INDUSTRIAL [0]
☐☐ HEAVY / SEVERE [1]	☐☐ NARROW 5-10m [2]	☐☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐☐ MINING / CONSTRUCTION [0]
2.5 2 = 2.25	☐☐ VERY NARROW < 5m [1]	☐☐ FENCED PASTURE [1]	
	☐☐ NONE [0]	☑☑ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian: 5.25 (Maximum 10)

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check ONE (ONLY!): ☐ > 1m [6] ☐ 0.7-<1m [4] ☑ 0.4-<0.7m [2] ☐ 0.2-<0.4m [1] ☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (Or 2 & average): ☐ POOL WIDTH > RIFFLE WIDTH [2] ☐ POOL WIDTH = RIFFLE WIDTH [1] ☑ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply: ☐ TORRENTIAL [-1] ☐ VERY FAST [1] ☑ FAST [1] ☑ MODERATE [1] ☑ SLOW [1] ☐ INTERSTITIAL [-1] ☐ INTERMITTENT [-2] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential: Primary Contact / Secondary Contact (circle one and comment on back)

Comments

Pool / Current: 5 (Maximum 12)

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: ☐ NO RIFFLE [metric=0]

Check ONE (Or 2 & average).

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☑ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☑ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☑ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☑ MODERATE [0]
			☑ EXTENSIVE [-1]

Comments

Riffle / Run: 2.5 (Maximum 8)

6] GRADIENT

(9.05 ft/mi) ☑ VERY LOW - LOW [2-4] ☑ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (3.7 mi²)

%POOL: 0 %GLIDE: 35 %RUN: 25 %RIFFLE: 40

Gradient: 6 (Maximum 10)

890 - 910 = 20 ft / 2.21 mi

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE (1st -sample pass- 2nd)

- [ ] HIGH
- [ ] UP
- [x] NORMAL
- [ ] LOW
- [ ] DRY

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

100 meters

CLARITY (1st --sample pass-- 2nd)

- [ ] < 20 cm
- [ ] 20-<40 cm
- [ ] 40-70 cm
- [ ] > 70 cm/ CTB
- [ ] SECCHI DEPTH

1st _____ cm
2nd _____ cm

CANOPY

- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [x] 10%-<30%
- [ ] <10%- CLOSED

B] AESTHETICS

- [x] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [x] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: [ ] >100ft² [ ] >3ft

D] MAINTENANCE

Circle some & COMMENT

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

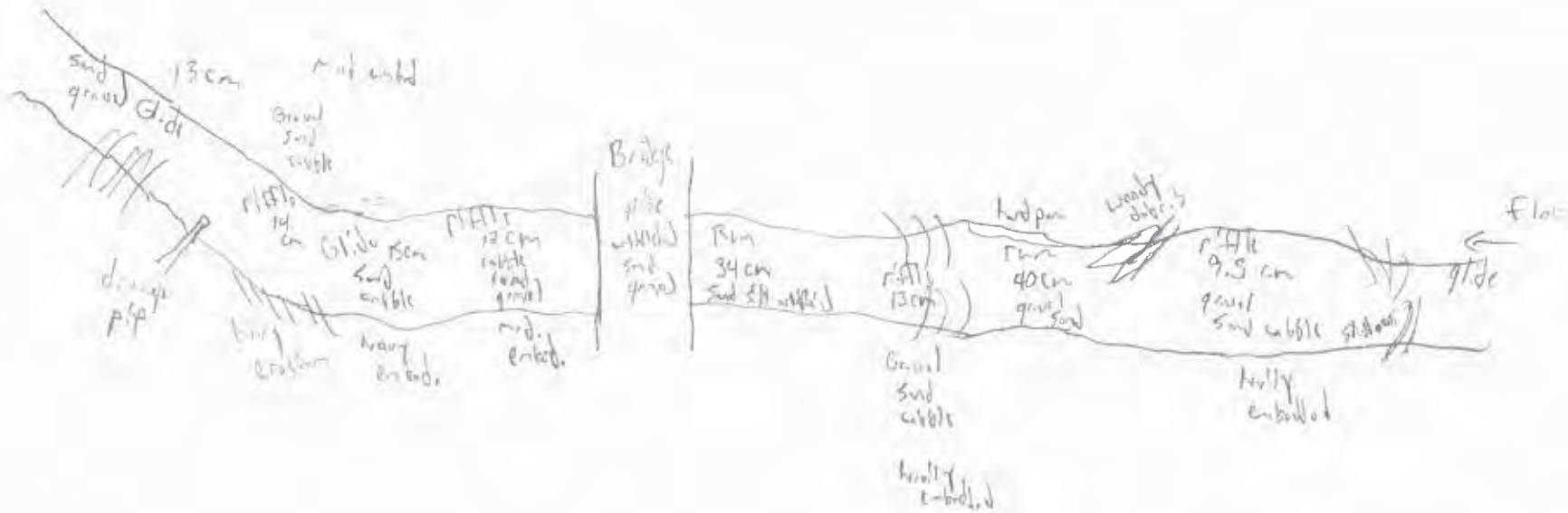
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_2O / TILE / H_2O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

$\bar{x}$ width
$\bar{x}$ depth
max. depth
$\bar{x}$ bankfull width
bankfull $\bar{x}$ depth
W/D ratio
bankfull max. depth
floodprone x^2 width
entrench. ratio

Legacy Tree:

Stream Drawing:



Fair

Ohio EPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 50.25

Stream & Location: Amelia Cole Hamilton Ditch (South Crossing) **RM:** L.1 **Date:** 05/27/2016

Scorers Full Name & Affiliation: Brian Slabe, ES

River Code: __ - __ - __ **STORET #:** _____ **Lat./Long.:** (NAD 83 - decimal °) 39.9583 / 83.1941 **Office verified location** ☑

1] SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]			☐☐ HARDPAN [4]		7
☐☐ BOULDER [9]		1	☐☐ DETRITUS [3]		2
☐☐ COBBLE [8]		20	☐☐ MUCK [2]		
☐☑ GRAVEL [7]		20	☐☐ SILT [2]		15
☑☐ SAND [6]		30	☐☐ ARTIFICIAL [0]		5
☐☐ BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☑ 3 or less [0]

Comments

Check ONE (Or 2 & average)

ORIGIN: ☐ LIMESTONE [1] ☑ TILLS [1] ☐ WETLANDS [0] ☐ HARDPAN [0] ☐ SANDSTONE [0] ☐ RIP/RAP [0] ☐ LACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]

QUALITY

SILT: ☐ HEAVY [-2] ☑ MODERATE [-1] ☐ NORMAL [0] ☐ FREE [1]

EMBEDDEDNESS: ☐ EXTENSIVE [-2] ☑ MODERATE [-1] ☐ NORMAL [0] ☐ NONE [1]

Substrate: 12 (Maximum 20)

2] INSTREAM COVER

Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

__ UNDERCUT BANKS [1]	__ POOLS > 70cm [2]	__ OXBOWS, BACKWATERS [1]	
1 OVERHANGING VEGETATION [1]	__ ROOTWADS [1]	__ AQUATIC MACROPHYTES [1]	
1 SHALLOWS (IN SLOW WATER) [1]	1 BOULDERS [1]	2 LOGS OR WOODY DEBRIS [1]	
1 ROOTMATS [1]			

AMOUNT Check ONE (Or 2 & average): ☐ EXTENSIVE >75% [11] ☐ MODERATE 25-75% [7] ☑ SPARSE 5-<25% [3] ☐ NEARLY ABSENT <5% [1]

Comments

Cover: 8 (Maximum 20)

3] CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☑ LOW [2]	☑ FAIR [3]	☑ RECOVERING [3]	☑ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel: 9 (Maximum 20)

4] BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☑☐ NONE / LITTLE [3]	☐☐ WIDE > 50m [4]	☐☐ FOREST, SWAMP [3]	☐☐ CONSERVATION TILLAGE [1]
☐☑ MODERATE [2]	☑☑ MODERATE 10-50m [3]	☐☐ SHRUB OR OLD FIELD [2]	☐☐ URBAN OR INDUSTRIAL [0]
☐☐ HEAVY / SEVERE [1]	☐☐ NARROW 5-10m [2]	☑☑ RESIDENTIAL, PARK, NEW FIELD [1]	☐☐ MINING / CONSTRUCTION [0]
0.5 / 2 (0.25)	☐☐ VERY NARROW < 5m [1]	☐☐ FENCED PASTURE [1]	
	☐☐ NONE [0]	☐☐ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian: 6.25 (Maximum 10)

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check ONE (ONLY!): ☐ > 1m [6] ☐ 0.7-<1m [4] ☐ 0.4-<0.7m [2] ☑ 0.2-<0.4m [1] ☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (Or 2 & average): ☑ POOL WIDTH > RIFFLE WIDTH [2] ☑ POOL WIDTH = RIFFLE WIDTH [1] ☐ POOL WIDTH < RIFFLE WIDTH [0] (1.5)

CURRENT VELOCITY Check ALL that apply: ☐ TORRENTIAL [-1] ☐ VERY FAST [1] ☑ FAST [1] ☑ MODERATE [1] ☑ SLOW [1] ☐ INTERSTITIAL [-1] ☐ INTERMITTENT [-2] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current: 5.5 (Maximum 12)

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH: ☑ BEST AREAS > 10cm [2] ☐ BEST AREAS 5-10cm [1] ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH: ☐ MAXIMUM > 50cm [2] ☑ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE: ☐ STABLE (e.g., Cobble, Boulder) [2] ☑ MOD. STABLE (e.g., Large Gravel) [1] ☑ UNSTABLE (e.g., Fine Gravel, Sand) [0] (0.5)

RIFFLE / RUN EMBEDDEDNESS: ☐ NONE [2] ☐ LOW [1] ☑ MODERATE [0] ☐ EXTENSIVE [-1]

Comments

Riffle / Run: 3.5 (Maximum 8)

6] GRADIENT

(9.05 ft/mi) ☑ VERY LOW - LOW [2-4] ☑ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (3.75 mi²)

%POOL: 0 %GLIDE: 75 %RUN: 5 %RIFFLE: 20

Gradient: 6 (Maximum 10)

EPA 4520

06/16/06

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☑ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass- 2nd

- ☐ HIGH ☐
- ☐ UP ☐
- ☑ NORMAL ☐
- ☐ LOW ☐
- ☐ DRY ☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☑ OTHER

100 meters

CLARITY

1st --sample pass-- 2nd

- ☐ < 20 cm ☐
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ☐ > 70 cm/ CTB ☐
- ☐ SECCHI DEPTH ☐

1st pass _____ cm

2nd _____ cm

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☑ 10%-<30%
- ☐ <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

B] AESTHETICS

- ☑ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☑ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

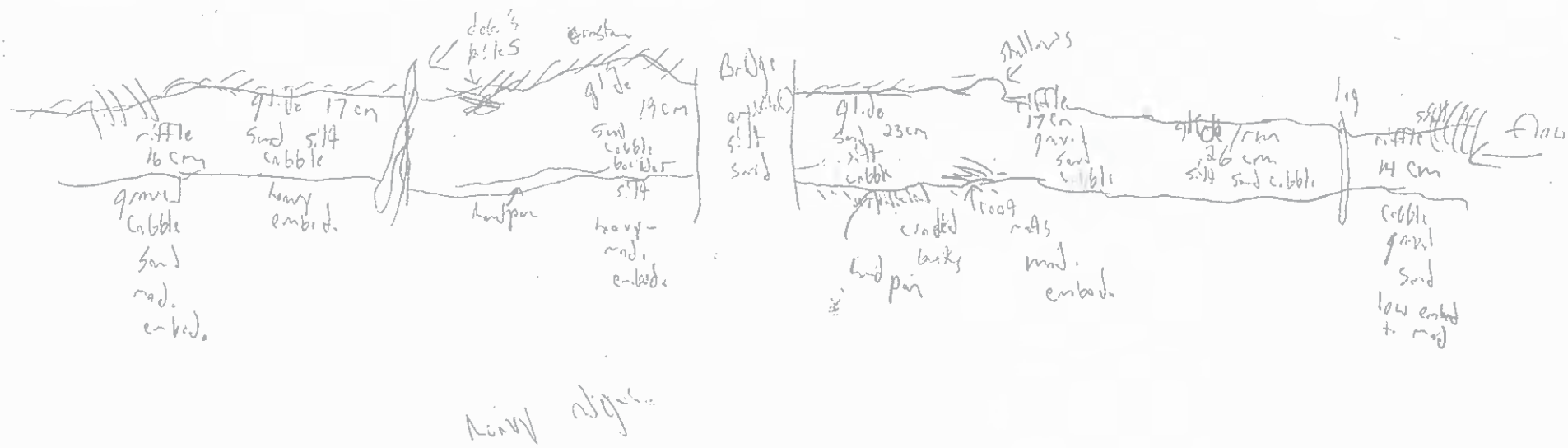
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_2O / TILE / H_2O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

$\bar{x}$ width
$\bar{x}$ depth
max. depth
$\bar{x}$ bankfull width
bankfull $\bar{x}$ depth
W/D ratio
bankfull max. depth
floodprone x^2 width
entrench. ratio

Legacy Tree:

Stream Drawing:



heavy algae

Appendix F:

ODNR and USFWS Consultation

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife
Raymond W. Petering, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

March 25, 2016

Mark Walker
Commonwealth Associates, Inc.
2700 W. Argyle St.
Jackson, MI 49202

Dear Mr. Walker,

Per your request, I have e-mailed you a set of shapefiles with our Natural Heritage Program data for the Amlin-Cole 138 kV Transmission Line project, including a one mile radius, in Washington, Brown, Norwich and Prairie Townships, Franklin County, Ohio. This data will not be published or distributed beyond the scope of the project description on the data request form.

Records included in the data layer may be for rare and endangered plants and animals, geologic features, high quality plant communities and animal assemblages. Fields included are scientific and common names, state and federal statuses, as well as managed area and date of the most recent observation. State and federal statuses are defined as: E = endangered, T = threatened, P = potentially threatened, SC = species of concern, SI = special interest, FE = federal endangered, FT = federal threatened and A = recently added to inventory, status not yet determined.

The managed areas layer includes state, federal and county lands, as well as areas owned by non-profits, museums and other entities. Managed areas are sites under formal protection for their natural resources. Please be aware that this layer may not be complete and we are continually updating it as new information becomes available to us.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke

Debbie Woischke
Ohio Natural Heritage Program

Office of Real Estate
Paul R. Baldridge, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6649
Fax: (614) 267-4764

April 22, 2016

Mark Walker
Commonwealth Associates, Inc.
2700 West Argyle Street
Jackson, MI 49202

Re: 16-218; Amlin-Cole 138 kV Project

Project: The proposed project involves the construction of a new above ground electric transmission circuit that extends approximately 10 miles from the existing Amlin Station to the proposed Cole Station.

Location: The proposed project is located in Washington Township, Franklin County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following data at or within a one mile radius of the project area.

Pale umbrella-sedge (*Cyperus acuminatus*), State potentially threatened
Heritage Trail Metro Park – Columbus & Franklin Co. Metro Parks
Alton Road Parkland – Columbus Recreation & Parks
Blauser Clean Ohio Parkland – Columbus Recreation & Parks
Clover Parkland – Columbus Recreation & Parks
Clover Groff Natural Area – Columbus Recreation & Parks
Frank's Park – Columbus Recreation & Parks

The review was performed on the project area you specified in your request as well as an additional one mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity. Additional comments on some of the features may be found in pertinent sections below.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that

rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the purple cat's paw (*Epioblasma o. obliquata*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel species, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federal endangered mussel, the long solid (*Fusconaia maculata maculata*), a state endangered mussel, the Ohio pigtoe (*Pleurobema cordatum*), a state endangered mussel, the pocketbook (*Lampsilis ovata*), a state endangered mussel, the washboard (*Megalonaias nervosa*), a state endangered mussel, the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, the pondhorn (*Uniomerus tetralasmus*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, the popeye shiner (*Notropis ariommus*), a state endangered fish, the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, the spotted darter (*Etheostoma maculatum*), a state endangered fish, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the tongue tied minnow (*Exoglossum laurae*), a state threatened fish, the paddlefish (*Polyodon spathula*) a state threatened fish, and the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. The DOW recommends no in-water work in perennial

streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these or other aquatic species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife
Raymond W. Petering, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

June 14, 2016

Brian Slaby
EnviroScience, Inc.
5070 Stow Rd.
Stow, OH 44224

Dear Mr. Slaby,

I have reviewed the Natural Heritage Database for the Amlin-Cole Transmission Line project area, including a one mile radius, in Washington, Brown, Norwich and Prairie Townships, Franklin County, Ohio. The numbers/letters on the list below correspond to the areas marked on the accompanying map. Common name, scientific name and status are given for each species.

A. Heritage Trail Metro Park – Columbus & Franklin Co. Metro Parks
B. Frank's Park – Columbus Recreation & Parks
C. Clover Groff Natural Area – Columbus Recreation & Parks
D. Clover Parkland – Columbus Recreation & Parks
E. Alton Road Parkland – Columbus Recreation & Parks
F. Blauser Clean Ohio Parkland – Columbus Recreation & Parks
1. *Cyperus schweinitzii* – Pale Umbrella-sedge, potentially threatened

We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests or national wildlife refuges, parks or forests within a one mile radius of the project area.

We have a record for an Indiana Bat (*Myotis sodalis*) capture location within a five mile radius of the project site. Due to the sensitivity of this species, we do not provide the precise location of the observation. We have no records for Indiana Bat hibernacula within a ten mile radius of the project site. We do not have sufficient data to respond to your request concerning the Northern Long-eared Bat (*Myotis septentrionalis*).

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

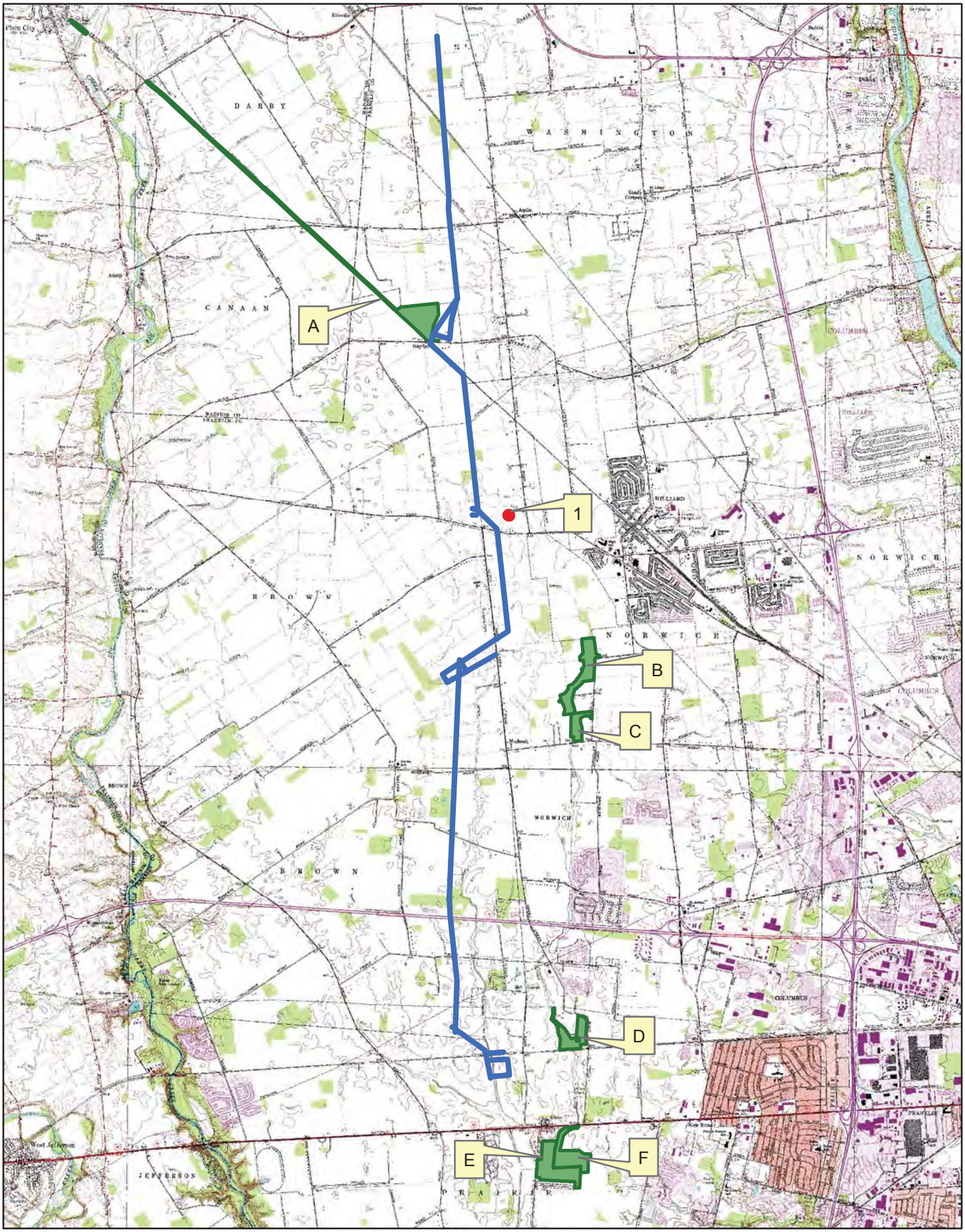
Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke

Debbie Woischke
Ohio Natural Heritage Program

Amlin-Cole Transmission Line Project



Mark E. Walker

From: Finfera, Jennifer <jennifer_finfera@fws.gov>
Sent: Tuesday, April 26, 2016 8:16 AM
To: Mark E. Walker
Subject: Amlin-Cole 138 kV Franklin County

April 26, 2016

TAILS: 03E15000-2016-TA-0970
03E15000-2016-CPA-0768

Dear Mr. Walker:

This is in response to your March 23, 2016 email and additional information provided on April 22, 2016 regarding the proposed Amlin-Cole 138kV above ground transmission line. The project will be located in Franklin County and will be built within the existing right-of-way (ROW). The project area currently consists of a landscape of rural residential development, agricultural fields, and limited commercial development and forested habitat.

There are no Federal wildlife refuges, wilderness areas, or Critical Habitat within the vicinity of this project.

You have indicated that no in-water work is required. The Service recommends that impacts to wetlands and streams be avoided and buffers surrounding streams and wetlands be preserved. Streams and wetlands provide valuable habitat for fish and wildlife resources. Buffers of native vegetation surrounding these systems are also important in preserving their wildlife-habitat and water quality-enhancement properties. We recommend that any proposed projects use best construction techniques to minimize erosion. Prevention of non-native, invasive plant establishment is critical in maintaining quality habitats. All disturbed areas should be mulched and re-vegetated with native plants.

MIGRATORY BIRD COMMENTS:
The project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*), a species protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Due to the location of eagle nests in the area no significant impacts are expected for this species. Relative to this species, this precludes the need for further action on this project as required by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

LISTED SPECIES COMMENTS:
All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches dbh that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

The existing ROW has been previously cleared of trees. You have indicated that 0.96 acres of trees will need to be cleared within the vicinity of the Cole station.

The proposed project is in the vicinity of one or more confirmed records of Indiana bats. Therefore, we recommend that trees ≥3 inches dbh be saved wherever possible. Because the project will result in a small amount of forest clearing

relative to the available habitat in the immediately surrounding area, habitat removal is unlikely to result in significant impacts to this species. Since Indiana bat presence in the vicinity of the project has been confirmed, clearing of trees ≥3 inches dbh during the summer roosting season may result in direct take of individuals. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and tree removal is unavoidable, we recommend that removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Following this seasonal tree clearing recommendation should ensure that any effects to Indiana bats and northern long-eared bats are insignificant or discountable. **Please note that, because Indiana bat presence has already been confirmed in the project vicinity, any additional summer surveys would not constitute presence/absence surveys for these species.**

This project may require a federal permit if wetlands will be impacted. In addition, it may require permitting from the Ohio Power Siting Board. If there is a federal nexus for the project (federal funding provided, federal permits required to construct, etc.) then no tree clearing on any portion of the parcel should occur until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend that the federal action agency submit to this office a determination of effects to the Indiana bat and northern long-eared bat for our review and concurrence.

The proposed project lies within the range of the **clubshell** (*Pleurobema clava*), **northern riffleshell** (*Epioblasma torulosa rangiana*), **rabbitsfoot** (*Quadrula c. cylindrica*), **rayed bean** (*Villosa fabalis*), and **snuffbox** (*Epioblasma triquetra*) mussel species. All of these species have been documented in Big Darby Creek. You have indicated that no in-water work is required. This will avoid direct impacts to these species. We recommend the use of best construction techniques to minimize erosion and prevent sedimentation and reduce indirect impacts to these species.

The proposed project area lies within the range of the **Scioto madtom** (*Noturus trautmani*), a federally listed endangered species. The Scioto madtom is known only from Big Darby Creek in Jackson Township of Pickaway County. Habitat for this species includes riffles where the water velocity is decreasing and the substrate is composed of sandy gravel with some small stones no larger than 4 inches in diameter. However, this species has not been seen since 1957. Therefore, we do not anticipate that any impacts to the Scioto madtom will occur as a result of the proposed project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973, as amended, and are consistent with the intent of the National Environmental Policy Act of 1969 and the U.S. Fish and Wildlife Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@dnr.state.oh.us.

If you have any questions regarding this response or if you need additional information, please contact me.

Sincerely,

--

Jenny Finfera
Wildlife Biologist
Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230

Phone: 614-416-8993 ext.13
Fax: 614-416-8994

APPENDIX D

CULTURAL RESOURCES SURVEY REPORT

Phase I Cultural Resource Management Investigations for American Electric Power's Proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio

Ryan Weller

April 6, 2016

1395 West Fifth Ave.
Columbus, OH 43212
Phone: 614.485.9435
Fax: 614.485.9439
Website: www.wellercrm.com

Phase I Cultural Resource Management Investigations for American Electric Power's Proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio

By

Ryan Weller

Submitted By:

Ryan Weller, P.I.
Weller & Associates, Inc.
1395 West Fifth Ave.
Columbus, OH 43212
Phone: 614.485.9435 Fax: 614.485.9439
Website: www.wellercrm.com

Prepared for:

Commonwealth Associates, Inc.
2700 West Argyle Street
Jackson, MI 49202

Lead Agency:

Ohio Power Siting Board

Ryan Weller, P.I.

April 6, 2016

W-1896

Abstract

In March of 2016, Commonwealth Associates, Inc. (CAI) contracted Weller & Associates, Inc. (Weller) to conduct Phase I cultural resource management investigations for American Electric Power's proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio. The fieldwork was conducted over several discontinuous locations from late March into early April. This involved a literature review and field investigations to satisfy requirements pertinent to the lead involved agency, Ohio Power Siting Board. A cultural resources management (CRM) survey was conducted in a manner that is reflective of Section 106 of the National Historic Preservation Act to identify any sites or properties relative to this undertaking and to evaluate them for the National Register of Historic Places (NRHP). No buildings or structures older than 50 years are being taken, impacted, or directly affected by this project. There were 27 archaeological sites identified, 33FR3008-3034, during these investigations.

The project will include the installation of an additional electric line on an open arm associated with the existing Amlin–Cole transmission line within Franklin County, Ohio. Much of the work will be accomplished through the use of helicopters stringing the new line onto the open arms. Preliminarily provided information indicates that the route will cross a mixture of agricultural and residential properties along its 16.1 km (10 mi) long route. Cultural resources survey was considered to be necessary for any areas of proposed new ground disturbance. This work will include access roads, work areas, laydown yards, and helicopter landing areas. An architectural survey was not deemed necessary for the open arm sections as they are on existing structures; however, a limited architectural survey was conducted along the three reroute areas since they will be new construction. The reroutes will be going around an existing and a proposed future substation.

The literature review conducted for this project identified sites and surveys that involve or partially include the current project. There are few previously recorded sites in the study area. There was a survey for the Clover-Groff Housing development conducted that involves part of this project (Weller 2004); site 33FR2372 was identified in close proximity to the project, but this is an isolated find, not significant, and has since been destroyed. Johnston et al. (1995) conducted survey for a road widening project that appears to be tangently involved in this project; no relative sites are involved. The area of potential effect is limited because most of the electric lines are extant and the planned work is to establish a new and additional line on existing structures. There are no National Register or Determined Eligible sites within the study area.

These investigations resulted in the identification of 27 previously unrecorded archaeological sites including 33FR3008-3034. None of these sites meet the minimum criteria to be regarded as significant cultural resources. These sites are not considered to be eligible for the National Register of Historic Places (NRHP) and no further cultural resource management work is recommended for these sites.

Several architectural resources greater than 50 years of age were identified in the field that may have a direct line-of-sight to the new construction portions of the project.

Of these, only one, FRA0021108, appears to meet the eligibility requirements for listing in the National Register of Historic Places. Upon analyzing the Application of Criteria of Effect, it was determined that the project would have no adverse effects on the property. Therefore, Weller & Associates, Inc. recommends that no historic properties will be adversely affected by the project.

Table of Contents

APPENDIX A:

Photographs of Properties Not Advanced to Detailed Study

List of Tables and Figures

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Introduction

In March of 2016, Commonwealth Associates, Inc. (CAI) contracted Weller & Associates, Inc. (Weller) to conduct Phase I cultural resource management investigations for American Electric Power's (AEP) proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio (Figures 1-5). The lead agency for this project is the Ohio Power Siting Board (OPSB) and the work is being submitted to AEP Transco. This report summarizes the results of the fieldwork and literature review and the report format and design are similar to that established in *Archaeology Guidelines* (Ohio Historic Preservation Office [OHPO] 1994).

Ryan Weller served as the Principal Investigator and Chris Nelson was the Project Manager. The field crew included Jon Walker, Brittany Vance, Craig Schaefer, Matt Sanders, and Ryan Weller. Jacquelyn Lehmann conducted the architectural survey. Chad Porter compiled the literature review in March of 2016. The figures were completed by Jon, while the report preparation was by Ryan.

Project Description

The project will include the installation of an additional line on an open arm associated with the existing Amlin–Cole transmission line within Franklin County, Ohio. Much of the work will be accomplished through the use of helicopters stringing the new line onto the open arms. Preliminarily provided information indicates that the route will cross a mixture of agricultural and residential properties along its 16.1 km (10 mi) long route. Cultural resources survey was considered to be necessary for any areas of proposed new ground disturbance. This work will include access roads, work areas, laydown yards, and helicopter landing areas. An architectural survey was not deemed necessary for the open arm sections as they are on existing structures; however, a limited architectural survey was necessary along the three reroute areas since they will be new construction. The reroutes will be going around an existing and a proposed future substation. The total area for this project is 37.7 ha (93.2 ac).

Environmental Setting

Climate

Franklin County, not unlike all of Ohio, has a continental climate, with hot and humid summers and cold winters. About 97 cm (38 in) of precipitation fall annually on the county with the average monthly precipitation about 8 cm (3.2 in). January, February and October are the driest months, while July is the wettest month for Franklin County (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1980).

Physiography, Relief, and Drainage

Franklin County is located within several physiographic regions such as the Columbus Lowland region of Ohio, Galion Glaciated Low Plateau to the east, and the Darby Plain, which is found on the western portion of the county. The Columbus

Lowland region includes the northern part of the project area; this is consistent with relative lowlands that are surrounded in all directions by higher terrain and land that gently slopes towards the Scioto River (Brockman 1998). The southern part of the project is within the Darby Plain region; which as "moderately low relief, broadly hummocky ground moraine with several broad, indistinct recessional moraines, between hummocks are broad, poorly drained swales which held wet prairies/meadows in pioneer days; few large streams" (Brockman 1998). The project area is drained by the Hamilton Ditch, Clover Groff Ditch, South Fork Indian Run, and Hayden Run. The two ditches drain southward to Hellbranch Run, which flows into Big Darby Creek before emptying into the Scioto River. South Fork Indian Run and Hayden Run flow eastward to the Scioto River.

Geology

The surface soils of Franklin County are comprised of late Wisconsinan-age till. The soils are predominately clayey with a higher concentration of lime. Below the till are lacustrine deposits that cap Paleozoic-aged rocks. The underlying bedrock of the project area can be of either Silurian- or Devonian-age material as it is at the boundaries of these two formations Brockman 1998; USDA, SCS 1980).

Soils

The project is located in upland areas that are within the Crosby-Kokomo and Kokomo-Crosby-Lewisburg Associations. These are soils that are present in nearly level to very gently undulating glacial till uplands. The project area is located in nearly level terrain with slope gradients ranging from 0-6 percent. There are no deep, alluvial situations present within the project area; the work will be conducted in ground moraine situations. There are five soil series types involved in this project (Table 1). It is expected that the topsoil would be consistent with the plowzone in this area.

Table 1. Soils in the Project.

Soil Symbol	Soil Name	% Slope	Location
CrA,CrB	Crosby silt loam	0-2,2-6	Upland Till Plains slight rises
CeB	Celina silt loam	2-6	Upland Till Plains slight rises
LeB	Lewisburg		Upland Till Plains slight rises
Ko	Kokomo silty clay loam	0	Upland low-lying areas

Flora

There is great floral diversity in Ohio. This diversity is relative to the soils and the terrain that generally includes the till plain, lake plain, terminal glacial margins, and unglaciated plateau (Forsyth 1970). Three major glacial advances, including the Kansan, Illinoisan, and Wisconsinan, have affected the landscape of Ohio. The effects of the Wisconsin glaciation are most pronounced and have affected more than half of the state (Pavey et al. 1999).

The least diverse part of Ohio extends in a belt from the northeast below the lake-affected areas through most of western Ohio (Gordon 1966). These areas are part of the

late Wisconsin ground moraine and lateral end moraines. It is positioned between the lake plains region and the terminal glacial moraines. This area included broad forested areas of beech maple forests interspersed with mixed oak forests in elevated terrain or where relief is greater (Forsyth 1970; Gordon 1966). Prairie environments such as those in Wyandot and Marion County areas would contain islands of forests, but were mostly expansive open terrain dominated by grasses.

The northwestern Ohio terrain is nearly flat because of ancient glacial lakes and glaciation, which affected the flora. However, the vegetation was more diverse than the till plain to the south and east because of the variety of factors that contributed to its terrain. Forests within the Black Swamp were generally comprised of elm/ash stands; however, dissected areas along drainages and drier, elevated areas from beach deposits would contain mixed forests of oak and hickory (Gordon 1966, 1969). There was little upland floral diversity in the lake plains (Black Swamp region) except for the occasional patches of oak and hickory. Floral variety was most evident in narrow sleeves along larger stream valleys where there is relief.

The most biological diversity in Ohio is contained within the Allegheny Plateau, which encompasses the southeastern two-thirds of the state (Sheaffer and Rose 1998). Because this area is higher and has drier conditions, it is dominated by mixed oak forests. Some locations within the central part of this area contain beech and mixed mesophytic forests. There are large patches of oak and sugar maple forests to the south of the terminal moraine from Richland to Mahoning County (Gordon 1966).

Southwestern Ohio from about Cincinnati to Bellefontaine east to the Scioto River historically contained a very diverse floral landscape. This is an area where moraines from three glacial episodes are prevalent (Pavey et al. 1999). Forests in this area include elm-ash swamp, beech, oak-sugar maple, mixed mesophytic, prairie grasslands, mixed oak, and bottomland hardwoods (Core 1966; Gordon 1966, 1969). These forest types are intermingled with prairies being limited to the northern limits of this area mostly in Clark and Madison Counties.

Generally, beech forests are the most common variety through Ohio and could be found in all regions. Oak and hickory forests dominated the southeastern Ohio terrain and were found with patchy frequency across most of northern Ohio. Areas that were formerly open prairies and grasslands are in glacial areas, but are still patchy. These are in the west central part of the state. Oak and sugar maple forests occur predominantly along the glacial terminal moraine. Elm-ash swamp forests are prevalent in glaciated areas including the northern and western parts of Ohio (Gordon 1966; Pavey et al. 1999).

Northwestern and west-central Franklin County, including the project area, is generally within what is considered to be a beech forest area. The southern part of the project extends into grasslands and mixed oak forestation areas (Gordon 1966).

Fauna

The upland forest zone offered a diversity of mammals to the prehistoric diet. This food source consisted of white-tailed deer, black bear, Eastern cottontail rabbit,

opossum, a variety of squirrels, as well as other less economically important mammals. Several avian species were a part of the upland prehistoric diet as well (i.e. wild turkey, quail, ruffed grouse, passenger pigeon, etc.). The lowland zone offered significant species as well. Raccoon, beaver, and muskrat were a few of the mammals, while wood duck and wild goose were the economically important birds. Fishes and shellfish were also an integral part of the prehistoric diet. Ohio muskellunge, yellow perch, white crappie, long nose gar, channel catfish, pike, and sturgeon were several of the fish, whereas, the Ohio naiad mollusc, butterfly's shell, long solid, common bullhead, knob rockshell, and cod shell were the major varieties of shellfish. Reptiles and amphibians, such as several varieties of snakes, frogs, and turtles, were also part of the prehistoric diet (Trautman 1981; Lafferty 1979; Mahr 1949).

Cultural Setting

The first inhabitants of Ohio were probably unable to enter this land until the ice sheets of the Wisconsin glacier melted around 14,000 B.C. Paleoindian sites are considered rare due to the age of the sites and the effects of land altering activities such as erosion. Such sites were mostly used temporarily and thus lack the accumulation of human occupational deposits that would have been created by frequent visitation. Paleoindian artifact assemblages are characteristic of transient hunter-gatherer foraging activity and subsistence patterns. In Ohio, major Paleoindian sites have been documented along large river systems and near flint outcrops in the Unglaciated Plateau (Cunningham 1973). Otherwise, Paleoindian sites in the glaciated portions of Ohio are encountered infrequently and are usually represented by isolated finds or open air scatters.

The Paleoindian period is characterized by tool kits and gear utilized in hunting Late Pleistocene megafauna and other herding animals including but not limited to short-faced bear, barren ground caribou, flat-headed peccary, bison, mastodon, giant beaver (McDonald 1994; Bamforth 1988; Brose 1994). Groups have been depicted as being mobile and nomadic (Tankersley 1989 dissertation); artifactual remains reflective of Paleoindian activity include projectile points, multi-purpose unifacial tools, burins, gravers, and spokeshaves (Tankersley 1994). The most diagnostic artifacts affiliated with this period are fluted points that exhibit a groove or channel positioned at the base to facilitate hafting. The projectiles dating from the late Paleoindian period generally lack this trait; however, the lance form of the blade is retained and is often distinctive from the following Early Archaic period (Justice 1987).

The Archaic period has been broken down into three sub-categories including the Early, Middle, and Late Archaic. During the Early Archaic period (ca. 10000-8000 BP), the environment was becoming increasingly arid as exhibited by the canopy (Shane 1987). This period of dryness allowed for the exploitation of areas that were previously inaccessible or undesirable. The Early Archaic period does not diverge greatly from the Paleoindian regarding the type of settlement. Societies still appear to be largely mobile with reliance on herding animals (Fitting 1963). For these reasons, Early Archaic artifacts can be encountered in nearly all settings throughout Ohio. Tool diversity increased at this time including hafted knives that are often re-sharpened by the process of beveling the utilized blade edge and intense basal grinding (Justice 1987). There is a basic transition from lance-shaped points to those with blades that are triangular.

Notching becomes a vogue aspect of hafting. Another characteristic trait occurring almost exclusively in the Early and Middle Archaic periods is basal bifurcation and large blade serrations. Tool forms begin to vary more and may be a reflection of differential resource exploitation. Finished tools from this period can include bifacial knives, points, drills/perforators, utilized flakes, and scrapers.

The Middle Archaic period (8000-6000 BP) is poorly known or understood in archaeological contexts within Ohio. Some (Justice 1987) regard small bifurcate points as being indicative of this period. Groundstone artifacts become more prevalent at this time. Other hafted bifaces exhibit large side notches with squared bases, but this same trait can extend back to the Paleoindian period. The climate at this time is considered to be reflective of today's. The Middle Archaic period subsistence tended to be affiliated with small patch foraging involving a consistent need for mobility with a shift towards stream valleys (Stafford 1994). Sites encountered from this time period through most of Ohio tend to be reflective of lithic scatters or isolated finds. The initial reflection of regional traits may be apparent at this time.

The Late Archaic period in Ohio (ca 6000-3000 BP) diverges from the previous periods in many ways. Preferred locations within their regional setting appear to have been repeatedly occupied. The more intensive and repeated occupations often resulted in the creation of greater social and artifact complexity. The environment at this time is warmer and drier. Most elevated landforms in northeastern Ohio have yielded Archaic artifacts (Prufer and Long 1986: 7) and the same can be stated for the remainder of Ohio.

Various artifacts are diagnostic of the Late Archaic period. Often, burial goods provide evidence that there was some long-distance movement of materials, while lithic materials used in utilitarian assemblages are often from a local chert outcrop. There is increased variation in projectile point styles that may reflect regionalism. Slate was often used in the production of ornamental artifacts. Ground and polished stone artifacts reached a high level of development. This is evidenced by such artifacts as grooved axes, celts, bannerstones, and other slate artifacts.

It is during the Terminal Archaic period (ca 3500-2500 BP) that extensive and deep burials are encountered. Regional expressionism within Ohio is observed in the forms of the Crab Orchard (southwest), Glacial Kame (northern), and Meadowood (central to Northeastern). Along the Ohio River the Riverton Culture is considered and can exemplify intensive occupations. Pottery makes its first appearance during the Terminal Late Archaic.

The Early Woodland period (ca 3000-2100 BP) in Ohio is often affiliated with the Adena Culture and the early mound builders (Dragoo 1976). Early and comparably simple geometric earthworks first appear with mounds spread across the landscape. Pottery at this time is often thick and tempered with grit, grog, or limestone; however, it becomes noticeably thinner towards the end of the period. There is increased emphasis on gathered plant material including maygrass, chenopodium, sunflower, and squash. Habitation sites have been countered that include structural evidence. Houses that were constructed during this period were circular, having a diameter of up to 18.3 m (Webb and Baby 1963) and often with paired posts (*sui generis* Cramer 1989). Artifacts dating

from this period include leaf-shaped blades with parallel to lobate hafting elements, drilled slate pieces, ground stone, thick pottery, and increased use of copper. Early Woodland artifacts can be recovered from every region of Ohio.

The Middle Woodland period (ca 2200-1600 BP) is often considered to be equivalent with the Hopewell Culture. The largest earthworks in Ohio date from this time period. There is dramatic increase in the appearance of exotic materials that appear most often in association with earthworks and burials. Artifacts representative of this period include grit-tempered and thinner pottery, dart-sized projectile points (Lowe Flared, Steuben, Snyders, and Chesser) [Justice 1987], exotic materials (mica, obsidian, and marine shell, etc.). The points are often thin, bifacially beveled, and with flat-cross sections. There seems to have been a marked increase in the population as well as increased levels of social organization. Middle Woodland sites seem to reflect a seasonal exploitation of the environment. There is a notable increase in the amount of Eastern Agricultural Complex plant cultigens including chenopodium, knotweed, sumpweed, and little barley. This seasonal exploitation may have followed a scheduled resource extraction year in which the populations moved camp several times per year, stopping at known resource extraction loci. Middle Woodland land use appears to center or focus in the regions surrounding earthworks (Dancey 1992; Pacheco 1996); however, there has been evidence of repeated occupation away from earthworks (Weller 2005a). Household structures at this time vary with many of them being squares with rounded corners (Weller 2005a). Exotic goods are often attributed to funerary activities affiliated with the mounds and earthworks. Utilitarian items are more frequently encountered outside of funerary/ritual contexts. The artifact most diagnostic of this period is the bladelet (and their cores), a prismatic and thin razor-like tool. Middle Woodland remains are more commonly recovered from central Ohio south and lacking from most areas in the northern and southeastern part of the State.

The Late Woodland period (ca 400-900 AD) is separable from the previous period in several ways. There appears to be a population increase and a more noticeable aggregation of groups into formative villages. The villages are often positioned along large streams, on terraces, and likely were occupied seasonally (Cowan 1987; Weller 2005b). This increased sedentism was due in part to a greater reliance on horticultural garden plots, much more so than in the preceding Middle Woodland period. The early Late Woodland groups were growing a wide variety of crop plants that are collectively referred to as the Eastern Agricultural Complex. These crops included maygrass, sunflower, and domesticated forms of goosefoot and sumpweed. This starch and protein diet was supplemented with wild plants and animals. Circa A.D. 800 to 1000, populations adopted maize agriculture and around this same time, shell-tempered ceramics appear. Other technological innovations and changes during this time period included the bow and arrow and changes in ceramic vessel forms.

The Cole complex (ca 1000-1300 AD) has been identified in central and south central Ohio. Sites that have been used to define the Cole complex include the W.S. Cole (33DL11), Ufferman (33DL12), and Decco (33DL28) sites along the Olentangy; the Zencor Village site, located along the Scioto River in southern Franklin County; and the Voss Mound site (33FR52), located along the Big Darby Creek in southwestern Franklin County. It has been suggested that this cultural manifestation developed out of the local

Middle Woodland cultures and may have lasted to be contemporaneous with the Late Prehistoric period (Barkes 1982; Baby and Potter 1965; Potter 1966). Cole is a poorly defined cultural complex as its attributes are a piecemeal collection gathered from various sites. Some have suggested that it may be affiliated with the Fort Ancient period (Pratt and Bush 1981). Artifacts recovered from sites considered as Cole include plain and cordmarked pottery, triangular points, Raccoon-notched points, chipped slate discs, rectangular gorgets, and chipped stone celts. The vessels often have a globular form with highly variable attributes and rim treatment. There have been few structures encountered from this period, but those that have are typically rounded or circular (Pratt and Bush 1981; Weller 2005b). Dates affiliated with Cole occupations are considered to be from 1100 AD to about 1300 AD, the late prehistoric period.

The Late Prehistoric period (ca 1000-1550 AD) is distinctive from former periods. At this time, regions were a major focus of specific groups. Large and sometimes palisaded villages were usually tied to a regional focus such as Fort Ancient (southern half of Ohio), Cole (?) [central Ohio], or Monongahela (east and southeast Ohio). There is a marked increase of evidence supporting residential sedentism. Population density rose sharply with new and more effective means of resource and land exploitation. Communal aggregations such as villages are comparably marked after 700 AD (Fuller 1981; Pollack and Henderson 2000). Maize or corn agriculture as well as other cultigens made up a significant portion of the prehistoric diet. There appears to be an increase in domestic pottery production. Social organization is presumed to have become more complex and possibly moved towards a chiefdom model during the Late Prehistoric period. Artifact types are similar to those from the previous period; however, pottery is often thinner with differing décor often affiliated with their respective regional expression. Structures can be round or elongated ovals with larger sites often being located in large stream valleys.

Protohistoric to Settlement

By the mid-1600s, French explorers traveled through the Ohio country as trappers, traders, and missionaries. They kept journals about their encounters and details of their travels. These journals are often the only resource historians have regarding the early occupants of seventeenth century Ohio. The earliest village encountered by the explorers in 1652 was a Tionontati village located along the banks of Lake Erie and the Maumee River. Around 1670, it is known that three Shawnee villages were located along the confluence of the Ohio River and. the Little Miami River. Because of the Iroquois Wars, which continued from 1641-1701, explorers did not spend much time in the Ohio region and little else is known about the natives of Ohio during the 1600s. Although the Native American tribes of Ohio may have been affected by the outcome of the Iroquois Wars, no known battles occurred in Ohio (Tanner 1987).

French explorers traveled extensively through the Ohio region from 1720-1761. During these expeditions, the locations of many Native American villages were documented. In 1751, a Delaware village known as Maguck existed near present-day Chillicothe. In 1758, a Shawnee town known as Lower Shawnee 2 existed at the same location. The French also documented the locations of trading posts and forts, which were typically established along the banks of Lake Erie or the Ohio River (Tanner 1987).

While the French were establishing a claim to the Ohio country, many Native Americans were also entering new claims to the region. The Shawnee were being forced out of Pennsylvania because of English settlement along the eastern coast. The Shawnee created a new headquarters at Shawnee Town, which was located at the mouth of the Scioto River. This headquarters served as a way to pull together many of the tribes which had been dispersed because of the Iroquois Wars (Tanner 1987).

Warfare was bound to break out as the British also began to stake claims in the Ohio region by the mid-1700s. The French and Indian War (1754-1760) affected many Ohio Native Americans; however, no battles were recorded in Ohio (Tanner 1987). Although the French and Indian War ended in 1760, the Native Americans continued to fight against the British explorers. In 1764, Colonel Henry Bouquet led a British troop from Fort Pitt, Pennsylvania to near Zanesville, Ohio.

In 1763, the Seven Years' War fought between France and Britain, also known as the French and Indian War ended with The Treaty of Paris. In this Peace of Paris, the French ceded their claims in the entire Ohio region to the British. When the American Revolution ended with the Second Treaty of Paris in 1783, the Americans gained the entire Ohio region from the British; however, they designated Ohio as Indian Territory. Native Americans were not to move south of the Ohio River but Americans were encouraged to head west into the newly acquired land to occupy and govern it (Tanner 1987).

By 1783, Native Americans had established fairly distinct boundaries throughout Ohio. The Shawnee tribes generally occupied southwest Ohio, while the Delaware tribes stayed in the eastern half of the state. Wyandot tribes were located in north-central Ohio, and Ottawa tribes were restricted to northeast Ohio. There was also a small band of Mingo tribes in eastern Ohio along the Ohio River, and there was a band of Mississauga tribes in northeastern Ohio along Lake Erie. The Shawnee people had several villages within Ross County along the Scioto River (Tanner 1987). Although warfare between tribes continued, it was not as intense as it had been in previous years. Conflicts were contained because boundaries and provisions had been created by earlier treaties.

In 1795, the Treaty of Greenville was signed as a result of the American forces defeat of the Native American forces at the Battle of Fallen Timbers. This allocated the northern portion of Ohio to the Native Americans, while the southern portion was opened for Euro-American settlement. Although most of the battles which led up to this treaty did not occur in Ohio, the outcome resulted in dramatic fluctuations in the Ohio region. The Greenville Treaty line was established, confining all Ohio Native Americans to northern Ohio, west of the Tuscarawas River (Tanner 1987).

Ohio Native Americans were again involved with the Americans and the British in the War of 1812. Unlike the previous wars, many battles were fought in the Ohio country during the War of 1812. By 1815, peace treaties began to be established between the Americans, British, and Native Americans. The Native Americans lost more and more of their territory in Ohio. By 1830, the Shawnee, Ottawa, Wyandot, and Seneca were the only tribes remaining in Ohio. These tribes were contained on reservations in

northwest Ohio. By the middle 1800s, the last of the Ohio Native Americans signed treaties and were removed from the Ohio region.

Franklin County History

Lucas Sullivant was the first American to survey Franklin County and was the first settler to build a cabin in August 1797 in what would become Franklinton, later the state capitol of Columbus. Sullivant laid out the town of Franklinton that same year. Much of Central Ohio was part of the U.S. Military Lands which also included the Refugee Tract. The state legislature organized Franklin County on April 30, 1803, although its borders changed many times until 1857. The county's name honors Benjamin Franklin. Most of the early settlers of Franklin County were from Pennsylvania, Virginia, and New England. Immigrants in the late 1800s and early 1900s were mostly Germans, Italians, and Russians (Lee 1892; Martin 1858; Rickey 1983; Vesey 1901).

Early settlers of Franklin County settled in rich bottomlands of the Scioto and Olentangy Rivers, the Big Darby, Walnut, Big Walnut, and Alum Creeks. Most of the earliest settlers were farmers producing corn, wheat, cattle, and hogs. Agriculture remained a major source of income for the county until 1930 when urban expansion began. Today, with Columbus engulfing most of the county, little land is agricultural (Dodds 1952; Lee 1892; Martin 1858; Moore 1930; Rickey 1983).

During the late eighteenth century and early nineteenth century, trade with the Native Americans was an important source of income. The town of Worthington was platted and settled by 1803 and Dublin in 1818. In 1811, Worthington had a woolen mill. By 1815, several gristmills, sawmills, and distilleries were scattered along the rivers and streams throughout Franklin County. The work on the National Road (today US 40), which passes through Franklin County, came to completion in 1834. The Ohio Canal that passed through the southern portion of the county also operated in the 1830s. In 1850, the Columbus and Xenia Railroad was the first railroad to pass through the county. All of these modes of transportation improved the economy of the region and stimulated the development of businesses and industries during the late 1800s and early 1900s. The improved transportation and economy led to population increases and as a result, new communities developed as the old ones expanded. Between 1830 and 1880, the following communities grew up in Franklin County: Groveport, Grove City, New Albany, Reynoldsburg, Hilliard, Gahanna, and Lockbourne (Anonymous 2005; Dodds 1952; Lee 1892; Martin 1858; Moore 1930; Rickey 1983; Vesey 1901).

Various businesses and industries developed in the different communities of Franklin County during the late 1800s. Columbus was the center of the economic development. After becoming the state capital in 1812, state political agencies also located in the city. Quarries were an important early industry for the county. In 1880, a sandstone quarry opened near Blacklick followed by the Marble Cliff quarries in Norwich Township. The twentieth century has seen the continued development and expansion of Columbus and surrounding urban areas. Suburbs dominate the landscape and the construction of freeways such as I-70, I-71, I-270, I-670, US 33, SR 161, SR 315, and SR 104 has eased the flow of transportation to and from the capitol further

stimulating their growth (Anonymous 2005; Dodds 1952; Moore 1930; Rickey 1983; Vesey 1901).

Washington Township History

Washington Township was organized in 1809 and originally included Perry, Norwich, and part of Brown Township. Settlement in the vicinity actually began eight years prior to the township organization. In 1801 the area now referred to as Dublin was settled. One of the first settlers was Ludwick Sells who arrived from Pennsylvania. His older brother, John Sells, laid out Dublin in 1818 and was platted by J. Shield. Shield was originally from Ireland that contributed to the towns naming. The first post office was constructed in 1820 (Martin 1858).

There are several early settlers or families mentioned. George Ebey arrived in the early 1800s. Alexander Bassett arrived in the 1810s and later sold the property to Mr. Tuttle. Joel Hayden also came to this area about this time and probably settled around Hayden Run. The Joeseph Corbin family owned the first mill built by Sells, which was abandoned in 1869. This mill was located along the banks of the Scioto River.

There are individuals mentioned in the township history that are relative to the project area. Joseph Cosgray came from Pennsylvania to Washington Township in 1837 and bought 100 a. in the western portion of the county. This parcel is noted as being on the west side of Cosgray Road and outside of the current project area (Wheeler 1842). This activity occurred to the north of the project area.

A Methodist Church was organized in 1879. The trustees include a D. H. Cosgray, Z. Amlin (founder of Amlin?), John Cramer, John Westerweller, and J. Milligan. John Westerweller owned the parcel of land that would include the southeastern part of the project area. There is one railroad located in the township that is still in operation. This is the Toledo and Ohio Central. One of the major early events that took place in the township was the execution of Chief Leatherlips. The major community and central location of development is Dublin (Moore 1930; Martin 1858; Williams Bros. 1880).

Currently, the central portion of Dublin is small business shops and older residences. Extending towards the outerbelt are more recent developments including plazas, restaurants, and housing developments. The urban sprawl is rapidly encroaching upon the rural agricultural setting that is western Washington Township. This pertains to those areas west of Avery Road.

Norwich Township History

Originally part of the Virginia Military District, Norwich Township was created in 1813 from parts of Franklin and Washington Townships, Franklin County. In 1820, the creation of Perry Township reduced its size and the current layout of the township was not solidified until 1830. The principal village in the township, Hilliard, was established in 1853 when the Columbus, Piqua, and Indiana Railroad was constructed. John R. Hilliard of Piqua, a member of the board of directors for the railroad, saw the

opportunity for the location and laid out the town (Norwich Township 2009). Originally known as "Hilliard's Station," it was the first village in Norwich Township (Taylor 1909).

By the 1790s, settlement in the region had began and the first Euro-Americans to settle in the township arrived in 1807. The area was established as Washington Township in 1809. The township began as a mostly rural area with subsistence farming being practice almost entirely throughout. Norwich Township benefited from infrastructure improvements in the area, although many were not specifically within the township. Early mills were scarce. Before 1804, the closest mill was located in Chillicothe, but by 1805, mills were established at Franklinton and Worthington, and soon many mills were located on the Scioto River (Caldwell et al 1872). The earliest known mills within the township were also located on the Scioto. Joseph Corban erected a grist mill on the Scioto in 1843 where Samuel Wilcox had already built a saw mill. The mills were later known as Howard's Mills. In Hilliard, a steam powered saw mill is known to have existed at least by 1857 (Taylor 1909). Other mills are known to exist in other areas of the township. Due to the scarcity of mills in early years of settlement, many citizens used handmills, graters, and hominy mortars to grind or pound grain in order to make bread (Sullivant 1871).

The construction of the National Road in 1836 running through Prairie Township provided a gateway for travel, settlement, and trade in the area. The early roads in the township include Scioto Darby Creek Road and Hilliard-Rome Road. In 1852 at Smiley's Corners, the first post office in the township was established with David Smiley working as postmaster. In 1854, with the construction of a new post off in Hilliard, the Smiley's Corners post office was discontinued (Martin 1858).

The project area lies in the north of Norwich Township, on the border with Washington Township. In Washington Township, the city of Dublin was laid out in 1818, although early settlement of the site began in 1801 by Ludwick Sells from Pennsylvania. Members of the Sells family were large property owners in the area of both Norwich and Washington Townships. They also operated a mill in Dublin. Caldwell's 1872 Atlas shows the project area being part of Joseph Armstead's property (Caldwell et al. 1872). The Armsteads, along with Davis', Brittons, and Wilcox's were all some of the first Euro-American families to live in the area and all owned land near the project area (Martin 1858).

Large limestone deposits are located along the Scioto River in the southeast portion of the township. Italian immigrants were brought in during the early 1900s by the Columbus Stone Company to work at the quarries. Much of the township was poorly drained when Euro-American settlement arrived. For this reason, the area was locally known as "Mudsock" (Norwich Township 2009). The use of ditches and tiles made the land much more arable with the tiles being obtained from S.J. Wooley in Brown Township. His operations, called the Apple Dale Tile Works, were located just a short distance from Hilliard across the township line. Abundant, high-quality, slate-colored clay was taken from nearby as is available in much of Ohio (Howe 1888).

After World War II, small subdivisions sprouted up outside of Columbus. As time passed, much of Norwich Township changed from rural to suburban as farms began

to disappear. The construction of the interstate system in the 1960s further increased access from the now suburban areas to the city of Columbus.

Prairie Township History

Prairie Township, the smallest township in Franklin County, was separated from Franklin Township on December 28, 1819 (Martin 1858, Moore 1930). Some of the early settlers in the township included Samuel Higgins and family, Shadrick Postle and family, William Mannon and family, and the Clover family, which later formed the Clover settlement. In 1836, the National Road (US 40) was built through the township. This was an impetus in the organization of new towns in Prairie Township. Thomas Graham laid out the town of Alton along the National Road in 1836. James Bryden and Adam Brotherlin laid out Rome, also in 1836. Soon after, the small station of Galloway was formed. Galloway was said to be a place of excellent prospects and numerous opportunities (Williams Bros. 1880).

The township was and still is primarily a farming community. Its level surface, varied soils, and adequate drainage provide an ideal growing environment. Major waterways include Darby Creek in the western half of the township, Darby Run, which runs north/south through the township, and the Scioto Run, which meanders around the eastern portion of the township. Neighboring townships include Brown and Norwich to the north, Pleasant to the south, Franklin and Jackson to the east, and its western border by Jefferson Township, Madison County (Williams Bros. 1880). Columbus is rapidly expanding into the township from the northeast, and it will only be a matter of time before more industrial, commercial, and residential developments exist.

The community of Galloway was developed between 1856 and 1872 when the Cincinnati, Springfield, & Cleveland Railroad traversed the Samuel Galloway property. The community was initially known as Galloway Station (Caldwell et al.1872). The railroad bisected the town, and Galloway Free Turnpike was developed at about the same time (i.e., 1872). This later became Galloway Road; it runs in a north-south manner through the community. Alkire Road existed, but was not developed at this time, and O'Harra Road was not present as of 1872. By the early twentieth century, both of these roads were developed. Today, this area has largely remained undeveloped and is primarily contained in farmland or former farmland.

Brown Township History

Brown Township was formed in 1830 from portions of Norwich, Washington, and Prairie Townships. It was the last township to be formed in Franklin County. The Big Darby Creek flows along the western boundary of Brown Township, which is where the first settlers to the township settled. Some early settlers to the township include: Joseph Belchey, John Hayden, James Rinier, Adam Reese and wife, and Charles A. Holmes (Vesey 1901; Caldwell et al.1872). The majority of the township contains nearly level uplands associated with the Columbus Lowlands Region.

The first school in Brown Township was held in 1820 on the farm of Adam Blount. The first schoolhouse was built in 1840 near the Welsh church. The McCoy

Methodist Episcopal Church was the first church in the township. Sylvester Brown opened the first store located in Brown Township. In 1834, Henry Alder built the first frame house (Vesey 1901). However, the township never really had a community that took off. Agriculture remains the primary pursuit of the area with many farmsteads dotting the landscape.

Modern Brown Township remains primarily rural and affiliated with agricultural activity. For the most part, it has been resistant to the westward expansion of abutting Hilliard and it is clear from inspection of modern maps of Franklin County, that this is intentional. Further supporting the rural aspect of the township is the presence of the Prairie Oaks Metro Parks within and along its western border.

Research Design

The purpose of a Phase I survey is to locate and identify and evaluate cultural resources that are involved in the proposed project. This includes archaeological deposits as well as architectural properties that are older than 50 years. Once these resources are identified and sampled, they are evaluated for their eligibility or potential eligibility to the National Register of Historic Places (NRHP). These literature review part of the work is directed to answer or address the following questions:

1) Did the literature review reveal anything that suggests the project corridor has been previously surveyed and what is the relationship of previously recorded properties to the project area?
2) Are cultural resources likely to be identified in the project area?

These two questions can be addressed in the section following the literature review.

Archaeological Field Methods

The survey conducted within the project area used four methods of sampling and examination to verify conditions and evaluate cultural resources. These included shovel test unit excavation, shovel probes, surface collection, and visual inspection.

Shovel test unit excavation. Shovel test units were excavated in all the locations that were located within the project corridor where surface visibility was insufficient for surface collection. This can include fallow conditions, manicured lawn, corn stubble fields, and possibly soybean stubble fields. These units were spaced at about 15 m intervals (50') and generally located on the centerline of the project corridor. Units are manually excavated until they extend 5 cm into the subsoil. Individual shovel test units were documented regarding their depth, content, and color (Munsell). Wherever sites were encountered, Munsell color readings were taken per shovel test unit. All of the undisturbed soil matrices from shovel test units were screened through .6 cm hardware mesh. Additional or radial shovel test units will be excavated in areas where cultural remains are identified. These will be placed at 7.5 m intervals and within the project corridor.

Shovel Probe. This method was used to delineate areas of disturbance. A shovel test probe measured 30 cm square and was excavated in areas where surface visibility is lacking, but disturbance is not evident on the surface. If natural soils are identified, the probe is expanded and sampled like a shovel test unit.

Surface Collection. This method was used in situations where bare ground visibility was sufficient for surface collection/sampling. This can include any tilled fields, occasional soybean stubble or mature soybean situations, and winter wheat. Situations where repeated no-till agriculture is practiced typically precludes the opportunity to conduct surface collection methods. It is typically necessary for conditions to offer a minimum of 50 percent bare ground visibility. Pedestrian transects were spaced at 7.5 m intervals. Artifact locations and site boundaries were plotted using a Trimble GeoXT global positioning system.

Visual inspection. Locations where cultural resources were not expected, such as disturbed areas, steeply sloped areas, and low/wet areas were walked over and visually inspected. This method was used to verify the absence or likelihood of any cultural resources being located in these areas as well as the potential for such resources. This method was also utilized to document the general terrain and the surrounding area.

The application of the resulting field survey methods was documented in field notes, field maps, and permit maps.

Prehistoric Artifact Analysis

An artifact inventory was accomplished upon completion of the fieldwork. This involved identifying the functional attributes of individual artifacts, as well as the artifact cluster(s) or site assemblage collectively. The prehistoric artifact types and material were identified during the inventory process. The lithic artifact categories are modeled after Flenniken and Garrison (1975) and include the following:

Biface. A biface is defined as an artifact that has been culturally modified on two faces (ventral and dorsal). Complete and fragmentary preforms, manufacturing rejects, projectiles, or knives are included in this category.

Blocky Irregular. These are chunks and amorphous chert fragments that are produced during core reduction. These frequently occur during the creation of a striking platform or by accident. They represent a transitional core reduction stage similar to that of primary thinning.

Broken Flake. This flake type is common. Flakes for this investigation are considered broken when diagnostic attributes (e.g., flake scarring or platform) are absent from the artifact. Therefore, a flake that is broken in half and retains the platform is considered complete because the function can be ascertained regardless of its obvious fragmentary nature.

Core. A core represents the initial stage of chert procurement and reduction. A core has evidence of flake removal or checking present to delineate that the object has been culturally modified. Cores can be recovered from bedded outcrops or gathered from alluvial and glacial deposits.

Primary Decortication Flake. This flake type represents the initial reduction of a core. Generally, these flakes have a natural patina or cortex over most of the dorsal side and are void of other flake scars. Artifact assemblages with chert resources obtained from bedded resources usually do not have decortication flakes of any kind because there is no patina/cortex formation.

Primary Thinning Flake. This flake type represents a transitional mode of chert reduction. The intent of this reduction activity is to reduce a core to a crude biface. Flakes have a steep platform angle (i.e., >65°) and lack cortex. However, occasional small remnants of cortex are prevalent at this point, especially on the striking platform.

Secondary Decortication Flake. These flakes occur as a by-product of patina/cortex removal of a core. They are differentiated from the previous flake type by a lesser amount of cortex evident on the dorsal side and at least one or part of one previous flake scar. These flakes have steep flake platform angles (>75°).

Secondary Thinning Flake. These flake types represent a reduction mode that is a direct result of the previous reduction activities (i.e., primary thinning). Soft, antler billet percussion and pressure flaking are used for this mode of reduction. At this point, the chert artifact being reduced or thinned is a biface rather than a core. The striking platform for this flake type is commonly represented by the edge of the biface. The platform angle is typically acute but can range from 30° to 65°. Previously removed flake scars are common on the dorsal side.

Shatter or Angular Shatter. These artifacts most frequently occur during percussion flake reduction of cores. These artifacts lack striking platforms, are thin, narrow, and triangular. They cannot be definitively associated with a specific functional category of chert reduction due to their ubiquity.

Uniface. A uniface only has evidence of use-wear on one side of the artifact. Unifacial artifacts include utilized flakes, end and side scrapers, and bladelets. However, bladelets are typically categorized as blades or lamellar flakes and are diagnostic of the Middle Woodland period.

Identification of the material type of individual artifacts is based on several attributes, including color, inclusions, and luster. Several resources were used to aid in the inventory of the material types, including Converse (1994), DeRegnaucourt and

Georgiady (1998), and Stout and Schoenlaub (1945). Chert outcrops have been identified in the immediate and surrounding terrain to this project corridor.

Historic Period Artifact Analysis

The artifacts recovered during these investigations will be inventoried and analyzed. The inventory will be specific to type and age if the artifact is temporally diagnostic. The functional inventory of the site will be similar to that of South (1977) where artifacts are segregated into categories such as kitchen, arms, architecture, and etcetera. South's (1977) theoretical approach also emphasizes the development and interpretation of artifact patterns found at sites. This method can be used to understand depositional patterning on the intra- and inter-site level. Ball (1984) modified this approach, making it applicable for use in the Ohio Valley.

Artifacts recovered from the subsurface testing will be inventoried and the results analyzed to identify differential patterning of functionally specific artifact groups within areas of high and low artifact density. The specific historic period temporal affiliation of the artifacts will be determined by relative dating. The identification of historic artifacts for purposes of determining age is guided by ceramic/artifact analyses or source books by Carskadden et al. (1985); Cushion (1980); Dalrymple (1989); Deiss (1981); Esary (1982); Ewins (1997); Greer (1981); Hughes and Lester (1981); Hume (1991); Lang (1995); Majewski and O'Brien (1987); Mansberger (1981); Manson and Snyder (1997); McConnell (1992); McCorvie (1987); Miller (1987); Newman (1970); Ramsay (1976); Sonderman (1979); Spargo (1926); Sprague (2002); Stelle (2001); Sunbury (1979); Sussman (1977); Visser (1997); and Zimler (1987).

Curation

A letter regarding the disposition of the cultural materials identified and collected during survey for this project was sent to the landowners. A return letter outlining the disposition of these materials had not been received at the time of this report. Notes and maps affiliated with this project will be maintained at Weller & Associates, Inc. files.

Literature Review

The literature review study corridor accounted for a 305 m (1,000 ft) area extending from the planned work area/areas of disturbance. This allows for an understanding of the previously recorded resources that are in close proximity to the project (Figures 2-3). In conducting the literature review, the following resources were consulted at SHPO and the State Library of Ohio:

1) *Archeological Atlas of Ohio* (Mills 1914);
2) SHPO United States Geological Survey (USGS) 7.5' series topographic maps;
3) Ohio Archaeological Inventory (OAI) files;
4) Ohio Historic Inventory (OHI) files;
5) National Register of Historic Places (NRHP) files;
6) Determinations of Eligibility (DOE) files;
7) SHPO CRM/contract archaeology files; and

8) Franklin County atlases, histories, historic USGS 15'series topographic map(s), and current USGS 7.5' series topographic map(s).

The *Archeological Atlas of Ohio* (Mills 1914) did not indicate any resources that were located within or adjacent the project.

A review of the SHPO topographic maps indicated that there are seven sites recorded in the study area (Table 2; Figures 2-3). Site 33FR2372 is located in close proximity to the project, but this is a temporally unassigned isolated find spot that was not regarded as being significant. All of these previously recorded sites date from the prehistoric period and lack temporally diagnostic materials.

Table 2. Archaeological sites identified within the study area.

OAI #	General Age	Specific Temporal Affiliation	Site Type	Area
FR2846	Prehistoric	Unassigned	Isolated find spot	1
FR2847	Prehistoric	Unassigned	Open-lithic scatter	520
FR2372	Prehistoric	Unassigned	Isolated find spot	1
FR2373	Prehistoric	Unassigned	Isolated find spot	1
FR2374	Prehistoric	Unassigned	Isolated find spot	1
FR2375	Prehistoric	Unassigned	Open-lithic scatter	2500
FR2376	Prehistoric	Unassigned	Open-lithic scatter	8000

The OHI files indicated no previously recorded OHIs located in the project; however, there are six resources that are located within the study area (Figure 2 and 3; Table 3). Many of these were identified and evaluated during a professional survey, (Johnston et al. 1995). None of these resources will be impacted by the current project. There are no extant buildings involved in this project.

Table 3. OHI resources recorded within the study area.

OHI #	Present Name	Other Name	Address	Place Name	Architectural style	Historic use	Activity	Date
FRA0576408	Jerman House		6287 Scioto Darby Creek Rd	Hilliard (RR name Hilliards)	Vernacular	Single Dwelling	Original Construction	1920
FRA0576508	Turnbell & Halley House		6400 Scioto Darby Creek Rd	Hilliard (RR name Hilliards)	Craftsman/ Arts and Crafts	Single Dwelling	Original Construction	1920
FRA0576608	Darby Creek Nursery		6400 Scioto Darby Creek Rd	Hilliard (RR name Hilliards)	Vernacular	Barn	Original Construction	1840
FRA0576708	Fox House		6497 Scioto Darby Creek Rd	Hilliard (RR name Hilliards)	Queen Anne	Single Dwelling	Original Construction	1890
FRA0576807	Akers House	Vanschoyck House	6594 Scioto Darby Creek Rd	Hilliard (RR name Hilliards)	Vernacular	Single Dwelling	Original Construction	1860
FRA0021108	Sturgill House	Jones House	3240 Alton Darby Creek Rd	Mudsock	Italianate	Single Dwelling	Original Construction	1850

There were no NRHP properties or DOE resources located in the project area or its study area.

A review of the SHPO online contract files indicated that four previous surveys that have been conducted within the study area (Weller 2013; Keener 2011; Johnston et al. 1995; Weller 2004). Weller's (2013) investigations were for an electric line project that was north of the Amlin Station area; this is north of the entire project area. Keener's (2011) work was for a development tract that is adjacent to part of the current project area; he did not identify any sites that are within or near the project and in the vicinity of Amlin Station. Weller's 2004 investigations were for the Clover-Groff Housing development that includes aspects of the current project. These investigations identified several archaeological sites (33FR2372-2376) and none of these were regarded as being significant.

Cartographic/atlas resources were reviewed for the project. The *Illustrated Historical Atlas of Franklin County, Ohio* (Caldwell et al. 1872) does not indicate any buildings or structures within the project. The USGS *1901 Dublin* and the *1923 West Columbus, Ohio 15 Minute Series (Topographic)* maps were reviewed and there does not appear to be any sites identified in the project area (Figure 6). The USGS *1973 Hilliard, Ohio 7.5 Minute Series (Topographic)* map and the USGS *1994 Galloway, Ohio 7.5 Minute Series (Topographic)* map do not indicate any structures/buildings within the project (Figures 2 and 3).

Evaluation of Research Questions 1 and 2

Based on the results of the literature review, the first two research questions can be addressed.

1) Did the literature review reveal anything that suggests the project corridor has been previously surveyed and what is the relationship of previously recorded properties to the project area?
2) Are cultural resources likely to be identified in the project area?

The project area is located in a fairly homogenous area with little differentiation regarding relief. Sites have been somewhat frequently identified in this type of area and especially in the vicinity of Hayden Run. However, most of the sites were no considered to be significant as they are a byproduct of transient/short-termed prehistoric land use. Weller expects to identify similar types of sites, low-density lithic scatters and isolated find spots dating from the prehistoric period. Historic period materials are not expected as there are no buildings indicated on atlases that are involved in this area.

Archaeological Survey Results

The field investigations for this project were conducted from March 29-April 1, 2016 (Figures 7-44). The work was conducted in good weather conditions except the last day where there were intermittent bouts of precipitation; still, the weather was of little hindrance regarding the completion of the field investigations. Much of the field investigations involved surface collection and/or visual inspection as the areas were

mostly farm fields or disturbed. The fieldwork progressed fairly quickly as a result. Shovel testing was appropriate in several locations due to dense ground cover. There is an area that was contained within an area that had been previously investigated. The work resulted in the identification of 27 previously unrecorded archaeological sites, 33FR3008-3034.

The northern part of the project area involves a small work area that is located between Cosgray and Houchard Roads and immediately adjacent to the recently constructed Amlin Station. Part of this area may have been previously investigated (Kenner 2011) for a housing development; there were no significant sites identified by the older survey. Visual inspection verified the disturbed nature of this area. Disturbance is partially relative to the existing substation. The remaining disturbances are associated with pond excavation backfill and business laydown yards. No sites were identified during the survey of this area.

Survey was conducted for an access corridor and work area that is about midway between Houchard Road and Cosgray Road and north of a railroad (Figure 7 and 8). This is an area that is very poorly drained. The conditions include a recently graded lawn and a farm field. Shovel testing of the northern grassy part of this area encountered standing water and severe disturbance. Grading and possibly tiling of this area may have taken place during the abutting constructions (i.e., water tower, park, and road). The southern part of this area was contained in an agricultural field that was in corn stubble. The bare ground visibility was not suitable for surface collection. The shovel testing encountered sub-angular blocky soil extending through the plowzone into the subsoil. Testing this area was limited due to the deep standing water that was prevalent as this is very poorly drained, nearly level uplands. Cultural materials would not be expected from such situations. There were no cultural materials identified from this area.

Survey was conducted in the vicinity of the defunct Community of Hayden, to the north and south of Hayden Run Road (Figures 9 and 10). One of these survey areas extends to the south of Hayden Run Road and to the southwest of a railroad corridor. This area is very minimally involved in a grassy/disturbed lot (previously existing gravel drive), but is mostly an agricultural field. Surface collection was conducted in this area as it was tilled and offered 100 percent bare ground surface visibility. The results of the investigations in this area were the identification of historic period site 33FR3034. This is interpreted as a secondary trash disposal area. Investigations conducted to the north of Hayden Run Road were for access roads, work areas, and a helicopter landing zone. The northern and eastern aspects of this part of the survey involved surface collection of soybean stubble fields that offered 75 percent bare ground surface visibility. The southern and western parts of this area were subject to shovel testing as it is in fallow and scrubland-filled conditions. This area has been partially disturbed by grading/filling activity affiliated with ponds as well as the existing Hayden Station. The terrain in this area is nearly level. There were no cultural deposits identified in this area.

Comparably small areas of this project area are located to the north of the Alton Road and Scioto-Darby Creek Road intersection (Figures 11 and 12). About 12 years ago, Weller (2004) conducted CRM investigations for a housing development that incorporated part of the current project area. This survey identified several

archaeological sites, 33FR2372-2376, during surface collection methods. Site 33FR2372 is recorded near one of the survey areas, but this is an isolated prehistoric period artifact and was not considered to be an important resource. This area has since been disturbed by the planned development. There is a small access road stemming in a northwesterly direction from Scioto-Darby Creek Road and this area has been severely disturbed by previous construction activity as well as being partially contained within a previously investigated area (Johnston et al. 1995). None of these sites were considered to be significant.

There is a small work area located to the east of Darby Creek Road (Figure 12). This is within an existing housing development. Investigations within this area were limited to visual inspection and a couple shovel probes to verify disturbance. The area is flat and apparently graded with no intact soils present. There were no cultural deposits identified in this area.

Investigations for access roads and work areas were conducted to the west of Darby Creek Road (Figures 12 and 13). This is an area that is a combination of single-family residences and an equine farm/pastures. The terrain in this area is nearly level and not well drained. A large part of the planned access roads involved existing and paved driveways; these were visually documented. Shovel testing was conducted through horse pastures, which encountered plowzone-depth topsoils with some disturbances expectedly nearer modern constructions. Surface collection of a soybean stubble field was conducted for the northernmost work area; surface visibility in this area was at 75 percent. There were no cultural deposits identified in this area.

Survey conducted for an area that extends from Walker Road to the I-70 right-of-way relied upon subsurface testing methods (Figures 14-15). The work was conducted for a helicopter landing zone, access corridors, and work areas. This is a nearly level to depressional area that is to the west of Hamilton Ditch. The northern and majority of this segment is contained in an alfalfa field. The southern part of the area bisects swampy, wooded conditions and fallow field before meeting with the interstate highway. Testing in the southern part was somewhat limited by the standing water and severe disturbances that were identified nearer the interstate right-of-way. There were no cultural deposits identified in this area.

Survey was conducted directly to the south of the previously addressed area (Figure 16). The northern end of this segment is at the I-70 right-of-way and the southern end is at Feder Road. This is a very slightly undulating upland area that is west of Hamilton Ditch. This entire area was surface collected as it was contained in winter wheat with 50 percent bare ground surface visibility. There were no cultural deposits identified in this area.

Investigations for access roads, a helicopter landing zone, and work areas were conducted to the west of Cole Road and north of a railroad (Figures 17-19). This is an area that involves a previously existing farm access drive, extant laydown yard, and agricultural fields. This crosses Hamilton Ditch via a former driveway bridge. The terrain in this area is nearly level and not well drained. Surface collection of soybean

stubble fields was conducted for most of this area; surface visibility in these areas was at 50 percent. The landing zone is within the laydown yard and has been fully disturbed. There were no cultural deposits identified in this area.

The southernmost aspect of these investigations involved a cluster of access roads and work areas (Figures 18-19). This area is located to the west of Cole Road and south of a railroad. This area includes two soybean stubble fields that are split by a narrow farm access drive and that was likely originally served as a driveway. The electric line is located on the west side of Hamilton Ditch and the field investigations were completed on both sides of the stream. Excellent and well weathered surface conditions were experienced in this area. Weller investigated a block area that is 24.1 ha (59.5 ac) and encompassed the planned construction activities. Surface collection of soybean stubble fields was conducted for most of this area; surface visibility in these areas was at 50 percent. Survey of this area identified numerous archaeological sites and all of which are associated with the prehistoric period. The individual location of each artifact was plotted using a GPS system. Site determination was based on spatial relationships and landforms. This area is comparably undulating to slightly rolling as it is bisected by Hamilton Ditch. There is more pronounced relief nearer this drainage; otherwise, the upland landforms gradually drain towards it. There were 26 archaeological sites identified in this area, 33FR3008-3033. These sites are described in greater detail in the following text.

Archaeological Site Descriptions

Archaeological sites were identified in the upland aspects of the surveyed areas. The majority of these sites were identified in the southern part of the surveyed area where it is a comparably larger tract, subject to excellent surface collection conditions, and bisected by a Hamilton Ditch. There were 27 archaeological sites identified (33FR3008-3034) during these investigations (Figures 10, 18, and 19; Table 4). There was one historic period artifact scatter identified, 33FR3034. Isolated finds (n=18) and they are described first followed by artifact scatters (n=8). The following is a description of these sites, details of their conditions/locations, artifacts, and their individual consideration/evaluation regarding their National Register significance.

Prehistoric Period Isolated Find Spots

There were 18 isolated finds identified during these investigations. Isolated find spots, by definition, have a site size that is 1 sq m. These all date from the prehistoric period, and some are tools and temporally diagnostic. These particular sites/artifacts are textually described in greater detail in chronological order as they occur in Table 6 and immediately following this table.

None of these sites are considered to be individually significant in regards to the NRHP. They lack integrity and the ability to yield additional and important information regarding the history or prehistory of this area/region. No further work is deemed necessary at any of the sites that are considered as isolated finds.

Table 4. Isolated Finds Identified Within the Project Area.				
Site: 33FR…	**Bag**	**Artifact**	**Material**	**Count**
3011	18	Primary Thinning Flake	Flint Ridge	1
3017	1	Primary Thinning Flake	Delaware	1
3018	2	Secondary Thinning Flake	Flint Ridge	1
3019	3	Primary Thinning Flake	Delaware	1
3020	4	Primary Thinning Flake	Flint Ridge	1
3021	5	Primary Thinning Flake	Upper Mercer	1
3022	6	Utilized Flake	Flint Ridge	1
3023	7	Primary Thinning Flake	Delaware	1
3024	8	Serrated biface midsection	Nellie	1
3025	9	Secondary Thinning Flake	Delaware	1
3026	10	Primary Thinning Flake	Upper Mercer	1
3027	11	Primary Thinning Flake	Delaware	1
3028	12	Secondary thinning Flake	Delaware	1
3029	13	Secondary thinning Flake	Delaware	1
3030	14	Madison Point	Delaware	1
3031	15	Primary Thinning Flake	Upper Mercer	1
3032	16	Primary Thinning Flake	Delaware	1
3033	17	Brewerton Side Notched Point	Flint Ridge	1

Site 33FR3022 is a utilized flake that was manufactured from Flint Ridge chert. These types of artifacts are indicative of expedient cutting and scraping activity and are the result of using a flake for a tool. This artifact is not considered to be temporally diagnostic.

Site 33FR3024 is a biface midsection that was made from Nellie chert (a sub-type of Upper Mercer chert). The majority of this artifact has been fractured mechanically. Inspection of the cross-section suggests that the blade may have been beveled. The blade edge evidences deep and wide serrations, which is a trait that is similar to Early Archaic forms. This tool fragment was likely used as a knife. This artifact is not considered to be temporally diagnostic.

Site 33FR3030 is a Madison point that was manufactured from Delaware chert (Figure 43). One of the base corners has been fractured through agriculture/mechanical activity. The remaining basal corner protrudes, which is partially a result of having a concave base. The edge is irregular through use or attrition. The blade is very thin and the artifact might have been made from a flake. The dorsal side is convex and the ventral side is nearly flat. This artifact likely functioned as a projectile point or true arrowhead. Madison points date from the Late Woodland to Mississippian periods from about 800-1350 AD (Justice 1987:225-227).

Site 33FR3033 is the majority of a Brewerton Side Notched point of Flint Ridge chert (Figure 43). Mechanical damage has resulted in the distal portion and a lateral side being removed. The remaining blade edge is straight and has worn serrations, suggesting its former use was as a knife. It has a biconvex cross-section. The expanding base is not ground. Brewerton points are indicative of the Brewerton Phase of the Late Archaic Laurentian Tradition and date from about 3000-1700 BC (Justice 1987:115).

Prehistoric and Historic Period Artifact Scatters

33FR3008

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from a slight elevation in this setting. The site is located to the west of Cole Road, south of a railroad corridor, and east of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The site size is considered to be 5.8 sq m, which is also the distance between the two artifacts that were identified from this site.

There were two artifacts identified from this site (Table 5). The material assemblage is limited to Delaware chert. One artifact is a flake that is functionally indicative of core reduction activities. The other artifact is a hafted biface that is temporally and functionally distinctive.

A nearly complete Brewerton Side Notched point (Figure 43) of Delaware chert was identified from this site. The blade is comparably thick and has somewhat irregular lateral edges; this suggests that the blade edges have been reworked. These edges have been finely serrated. The base is not ground, but it has been partially fractured. The distal aspect of this point is not symmetrical from the perspective of the cross-section. There is a convex dorsal side and a nearly flat ventral side. Brewerton points are indicative of the Brewerton Phase of the Late Archaic Laurentian Tradition and date from about 3000-1700 BC (Justice 1987:115).

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage from a plowzone context. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

Table 5. Artifact Inventory for the sites identified during the Amlin-Cole 138kV project.

Site 33FR…	Easting	Northing	Artifact	Material	Count
3008	313720.391	4425372.523	Brewerton Side Notched Point	Delaware	1
“	313716.441	4425369.294	Primary thinning flake	Delaware	1
3009	313658.05	4425368.005	Primary thinning flake	Flint Ridge	1
“	313660.613	4425378.582	Primary thinning flake	Flint Ridge	1
“	313661.478	4425379.994	Utilized flake	Upper Mercer	1
3010	313596.561	4425377.427	Primary thinning flake	Upper Mercer	1
“	313571.37	4425376.667	Utilized flake	Flint Ridge	1

“	313554.576	4425378.885	Secondary thinning flake	Upper Mercer	1
“	313551.613	4425376.313	Secondary thinning flake	Upper Mercer	1
“	313548.246	4425376.386	Blocky irregular	Flint Ridge	1
“	313543.891	4425388.917	Primary thinning flake	Upper Mercer	1
“	313536.384	4425374.777	Primary thinning flake	Upper Mercer	1
“	313536.681	4425371.217	Primary thinning flake	Delaware	1
“	313530.27	4425363.551	Primary thinning flake	Upper Mercer	1
“	313517.691	4425386.661	Secondary thinning flake	Upper Mercer	1
“	313514.208	4425386.314	Secondary thinning flake	Flint Ridge	1
“	313508.81	4425385.811	Primary thinning flake	Delaware	1
“	313505.075	4425386.64	Biface midsection	Upper Mercer	1
3012	313391.516	4425279.349	Primary thinning flake	Upper Mercer	1
“	313374.463	4425269.787	Primary thinning flake	Delaware	1
“	313384.161	4425264.9	Primary thinning flake	Upper Mercer	1
“	313386.81	4425266.378	Secondary thinning flake	Delaware	1
“	313395.623	4425267.862	Secondary thinning flake	Upper Mercer	1
“	313398.952	4425271.702	Primary thinning flake	Delaware	1
“	313398.703	4425272.501	Secondary thinning flake	Delaware	1
“	313399.952	4425272.15	Primary thinning flake	Delaware	1
“	313400.047	4425271.122	Secondary decortication flake	Delaware	1
“	313401.462	4425267.578	Biface edge fragment	Upper Mercer	1
“	313400.623	4425266.881	End scraper	Delaware	1
“	313402.542	4425265.715	Secondary thinning flake	Flint Ridge	1
“	313405.083	4425266.144	Biface corner fragment	Upper Mercer	1
“	313409.447	4425266.89	Secondary thinning flake	Upper Mercer	1
“	313408.182	4425261.599	Secondary thinning flake	Flint Ridge	1
“	313407.616	4425260.776	Secondary thinning flake	Upper Mercer	1
“	313416.664	4425255.141	Primary thinning flake	Delaware	1
“	313432.263	4425255.397	Broken flake	Upper Mercer	1
“	313406.211	4425243.28	Primary thinning flake	Upper Mercer	1
“	313383.97	4425255.001	Secondary thinning flake	Flint Ridge	1
“	313397.856	4425262.626	Primary thinning flake	Upper Mercer	1
“	313381.342	4425260.79	Broken flake	Delaware	1
“	313391.516	4425279.349	Primary thinning flake	Delaware	1
3013	313418.097	4425235.983	Primary thinning flake	Delaware	1
“	313428.457	4425232.28	Secondary thinning flake	Upper Mercer	1
“	313429.065	4425232.145	Primary thinning flake	Upper Mercer	1
“	313425.581	4425225.901	Secondary thinning flake	Upper Mercer	1
“	313418.596	4425208.867	Secondary thinning flake	Upper Mercer	1
“	313427.799	4425237.43	Secondary thinning flake	Upper Mercer	1
3014	313491.914	4425189.664	Secondary thinning flake	Upper Mercer	1

“	313489.11	4425181.18	End/side scraper	Delaware	1
“	313477.545	4425180.265	Secondary thinning flake	Upper Mercer	1
“	313495.082	4425163.468	Primary thinning flake	Upper Mercer	1
3015	313485.212	4425046.968	Primary thinning flake	Upper Mercer	1
”	313496.818	4425049.581	Primary thinning flake	Flint Ridge	1
3016	313866.591	4425324.838	Primary thinning flake	Delaware	1
“	313866.369	4425325.089	Primary thinning flake	Delaware	1
“	313866.962	4425323.62	Distal biface fragment	Upper Mercer	1

33FR3009

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from a slight elevation in this setting. It is located to the west of Cole Road, south of a railroad corridor, and east of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The dimensions of this site are 13.2 m north-south by 1.8 m east-west; the site size is considered to be 20 sq m.

There were three artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=1) and Flint Ridge (n=2) chert. There are two flake artifacts that are functionally indicative of core reduction activities. The other artifact is a utilized flake. Utilized flakes are expedient cutting or scraping implements. None of the artifacts identified from this site are temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage from a plowzone context. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3010

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from an elevation that is next to a drainage. It is located to the west of Cole Road, south of a railroad corridor, and east of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The dimensions of this site are 24.6 m north-south by 67 m east-west; the site size is considered to be 777 sq m.

There were 13 artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=8), Delaware (n=2) and Flint Ridge (n=3) chert. The majority of the artifacts are functionally indicative of core reduction and bifacial reduction activities. There were two tools identified including a utilized flake and a biface fragment. Utilized flakes are expedient cutting or scraping implements. None of the artifacts identified from this site are temporally diagnostic.

A biface midsection of Upper Mercer chert was identified from this site. There are no remnants of the base or distal portions. Inspection of the cross-section and lateral edges indicates that the blade has been reworked and beveled as a result of its re-sharpening. Typically, beveled artifacts of this nature are indicative of the Early Archaic period; however, this artifact is too fragmented to be regarded as temporally diagnostic. Functionally, this artifact would have been used as a knife.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3012

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from an elevation that is next to a drainage; the eastern aspect of this elevation is truncated by the ditch. It is located to the west of Cole Road, south of a railroad corridor, and west of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The dimensions of this site are 31.1 m north-south by 59.6 m east-west; the site size is considered to be 1,120 sq m.

There were 23 artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=10), Delaware (n=10) and Flint Ridge (n=3) chert. The majority of the artifacts are functionally indicative of core reduction and bifacial reduction activities. There was one decortication flake identified, which depicts early stage reduction activities and from a float source (gathered resource) versus an outcrop. There were several tool/tool fragments identified from this site.

There were several non-diagnostic tool and tool fragments identified from this site. One artifact is an end scraper that was made from Delaware chert. This is indicative of general scraping activity and it may have been hafted. There were two biface fragments of Upper Mercer chert identified. One is the corner of a finished or nearly finished tool form; it is the corner of what may be a preform. The other biface fragment is an edge piece that has been reworked and evidences heavy use-wear. This appears to

have functioned as a knife. None of the artifacts identified from this site are temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically limited artifact assemblage and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3013

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from an elevation that is next to a drainage. The southern part of the site has been at least partially disturbed by a former driveway and farm access drive. The site is located to the west of Cole Road, south of a railroad corridor, and west of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The dimensions of this site are 30 m north-south by 11.6 m east-west; the site size is considered to be 166 sq m.

There were six artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=5) and Delaware (n=1) chert. All of the artifacts are functionally indicative of core reduction and bifacial reduction activities. There were no tools identified from this site and none of the artifacts are considered to be temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3014

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from an elevation that is next to a drainage. The site is located to the west of Cole Road, south of a railroad corridor, and east of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The dimensions of this

site are 26.3 m north-south by 15.3 m east-west; the site size is considered to be 203 sq m.

There were six artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=3) and Delaware (n=1) chert. Three of the four artifacts are indicative of core and bifacial reduction activities. There was one tool identified from this site. This is an oval-shaped scraper that is made from Delaware chert. This is a unifacial tool form with evidence of use-wear and attrition along the lateral and distal portion. Its function is self-evident (scraping). There were no temporally diagnostic artifacts identified from this site.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3015

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from a low-lying area that is next to a drainage. The site is located to the west of Cole Road, south of a railroad corridor, and east of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The site size is considered to be 12.2 sq m, which is the distance between the two artifacts.

There were two artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=1) and Flint Ridge (n=1) chert. These artifacts are indicative of core reduction activities. None of the artifacts associated with this site are temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3016

This site is a prehistoric period lithic scatter that was identified during surface collection of a well-weathered soybean stubble field (Figure 18 and 19). The bare ground

surface visibility in this field was estimated to be about 75 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from an elevation that is next to a drainage. The site is located to the west of Cole Road, south of a railroad corridor, and east of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. The site size is considered to be 1.6 sq m as the three artifacts affiliated with this site were very close to one another.

There were three artifacts identified from this site (Table 5). The material assemblage includes Upper Mercer (n=1) and Delaware (n=2) chert. There are two artifacts that are indicative of core reduction activities. There was a single tool fragment identified from this site. This is a distal biface fragment of Upper Mercer chert. The lateral edges have been reworked. The blade has a biconvex cross-section and it likely served as a knife. None of the artifacts associated with this site are temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory as it lacks integrity. The site has a numerically and functionally limited artifact assemblage and lacks temporally diagnostic materials. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3034

This is a historic period scatter that was identified during surface collection of a chisel-plowed field. The bare ground surface visibility in the field was at 100 percent and it was well-weathered. The artifact scatter was grab-sampled for diagnostic and representative materials; the boundaries of the site were plotted using a global positioning system. The site is located in a nearly level, upland till plain setting and to the southwest of a railroad corridor. It is to the southeast of the collection of several residences that is considered as 'Hayden'. This nearly level upland area is drained by Hayden Run, to the east. This drainage flows directly into the Scioto River. The dimensions of the site are 54 m north-south by 14 m east-west. The site size is considered to be 758 sq m.

Cartographic and topographic resources were inspected as this is a historic period component. The site area is located on the F.E. Linn property in the late nineteenth century (Caldwell et al.1872); there were no buildings indicated on this parcel or near the site location. The railroad is present and the site is to the southeast of the community of Hayden. Inspection of the early twentieth century topographic resource (Figure 10), does not indicate any buildings at this location. The historic period materials present at this site appear to be affiliated with a trash deposit/disposal area; especially with its location in close proximity to a railroad track.

A representative sample of artifacts was obtained from a grab-sampled survey of this site. The boundaries of this deposit was plotted using a global positioning system.

Some materials were observed at this site, but not collected. This included machine-made brick fragments and duplicate artifact types. These were not collected as they were either cumbersome and/or was not deemed necessary for the purposes of evaluating this resource. There is a proportionately high number of kitchen-related items in this assemblage. Given the proximity to a railroad easement and the fact that there are no buildings or structures evident on cartographic resources, this site is regarded as being a secondary trash deposit.

The artifacts that were identified from this site appear to date from the early to middle part of the twentieth century. This is inferred by the identification of machine-made brick fragments, electric wall porcelain insulator fragment, terra cotta ware, and a thick toilet-bowl like porcelain fragment. The other artifacts that were collected include canning jar porcelain seal fragment and stoneware, which are not aberrant findings at a site dating to the twentieth century. The collected artifact inventory consists of stoneware (n=3), terra cotta ware (n=2), thick porcelain, blue bottle glass, green canning jar glass, clear canning jar glass, canning jar porcelain seal glass, and electric wall insulator fragment.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding the historic period. The artifact assemblage is functionally and numerically limited (i.e., primarily kitchen-related) and is interpreted as being a secondary trash deposit. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

Fieldwork Summary

The field investigations for this project were conducted in upland till plain conditions that were generally flat and involving agricultural fields. Much of the examined area is consistent with agricultural, row-crop farming such as corn and soybeans and occasionally, winter wheat. Surface collection methods were accomplished whenever possible as this has proven to be the most effective means of identifying archaeological deposits in this setting. Surface collection was accomplished in areas that offered suitable (i.e., 50 percent) bare ground visibility; otherwise, shovel testing was accomplished. Visual inspection was conducted as necessary to document obvious disturbances and their nature. There were 155 shovel test units and 18 shovel probes excavated during these investigations. These investigations were conducted for the construction of access easements/corridors, helicopter landing zones, and work areas. The subsurface testing was pertinent to locations where surface visibility was wanting. The access corridors do not always conform to existing electric line corridors and also consist of a series of disconnected segments. Many of the locations involving existing structures without demarcated access corridors are being strung via helicopter. These investigations identified 27 previously unrecorded archaeological sites (Figures 45-46), which are very common site types in this type of upland setting.

All but one of the sites identified during these investigations are associated with the prehistoric period. There were 18 isolated find spots identified and eight lithic

scatters. There was a total of 74 prehistoric artifacts identified from this survey, all of which were collected from the southern 'block'. The chert types included Upper Mercer, Flint Ridge, Delaware, and Nellie (a sub-variety of Upper Mercer). The artifact assemblage range is from 1-23 artifacts (discounting isolated finds would make it 2-23). None of these sites appear to have clustered or patterned depositions with potlidding and fire-cracked rock lacking. Though the majority of the collective assemblage is associated with lithic reduction activities (n=61), there is a high number of tool forms present (n=13); tools account for 17.6 percent. According to Binford (1980), high evidence of tool forms, scattered/unpatterned materials, and low functional expression are indicators of short-termed and logistical-based foraging behavior. This area was evidently repeatedly occupied, which is clearly evidenced by the presence of at least Late Archaic (n=2) and Late Woodland (n=1) temporal diagnostics; this is also part of a foraging behavior strategy. Given the upland nature of this setting and the limited environment, these types of sites would be expected. These types of sites are less likely to leave much more than trace elements of their past use with occasional, but temporally limited occupations. Additional work at such sites is unlikely to produce significant non-redundant information. Sites such as villages, habitations, and base camps should be expected in neighboring areas where there is access to a greater diversity of environments, productive patches, or convergences of streams. Sites such as were identified in the project area are sometimes regarded as 'satellites' to these occupations.

Site 33FR3034 is an historic period site that was identified along the side of a railroad right-of-way. This is the only site that was identified that is not in the southern aspect of the project area. The material assemblage is largely comprised of kitchen-related material at a percent that is greater than 85 percent. South (1977) has regarded such deposits as being the byproduct of secondary deposition

Architectural Survey Results

The project APE, defined as 1,000 feet to either side of the project centerline per OPSB rules, consisted of modern housing developments, rural residential areas and rural agricultural landscapes. The residences within the APE were predominantly modern structures. In total, 14 individual properties 50 years of age or older were identified within the survey APE that may have a direct line-of-sight to the project (Figures 4-6). Summarized data for all documented structures within the APE is provided in Table 6.

The records review for this project indicated that there are six previously recorded OHI within the APE for this project. In addition to surveying the APE for properties that have not been subject to previous recordation, the OHI properties were visited during the survey. Two previously recorded OHI sites were found to be demolished in the field. These two previously recorded houses, FRA0576508 and FRA0576807, were originally documented in 1994. The four remaining previously recorded OHI were found to be intact in the field. Three of the previously recorded properties were recorded in 1994 and one in 1975.

Thirteen properties were determined not eligible for listing in the National Register of Historic Places. These architectural resources are not individually eligible for inclusion in the NRHP under Criteria A, B, or C due to a lack of associative significance,

a loss of integrity, or a lack of character defining features. A large portion of these resources have experienced multiple alterations that have compromised their historic integrity. Photographs of each of these resources are provided in Appendix A.

Following is a summary of the thirteen structures that were not advanced to detailed study. The houses dated to an age range of 1850 to 1940, with most structures dating to within the later nineteenth and early twentieth centuries. All resources were of vernacular design with no specific subtypes represented, or had deteriorated beyond identification. The thirteen resources were dominated by farm house types, with the exception of a barn currently in use as a landscaping business complex.

The numbers of stories on the resources were represented by one story (4) two story (7) and one and a half story (1) dwellings, as well as a one and a half story former barn. All non-eligible resources were of wood frame (12) or wood construction/Mortise and Tenon (1). Foundation materials included concrete block (7), cut stone (2), brick (2) and unknown foundation types (2). Windows within the structures had various arrangements, but consisted predominantly of modern windows, as well as a few examples of 6/6, 3/1, and 2/2 sash windows. All of the structures featured alterations of some type and many had additions. Most of the homes lacked integrity either through replacement of their historic materials, significant alterations, or physical deterioration. All of the properties lacked character defining features or have since otherwise undergone significant alterations.

The remaining identified resource, FRA0021108, exhibited potential NRHP significance and as such was advanced to detailed study and discussed below. The resource was placed within the historic context and Weller evaluated the resource to determine if it had potential for inclusion in the NRHP. Since Weller did not have access to the interiors of the properties and access to resources was generally restricted to the public right-of-way during the survey, no documentation for any resource interiors are included unless available through archival records.

FRA0021108/Evan Jones Residence/James R. Sturgill Residence

Location: 3240 Alton Darby Creek Rd, Hilliard, OH

Construction Date: 1850

Description: FRA0021108 is a two story Italianate house built in 1850, and located just outside a modern subdivision in a rural setting at 3240 Alton Darby Creek Rd, Hilliard, Ohio (Figure 46). The house was originally recorded to the OHI in 1975. The two story, three bay, brick house rests on a cut stone foundation, and is sheltered by a hipped asphalt shingled roof with slightly projecting eaves and a brick chimney. Fenestration on the front façade is dominated by two over two sash windows with straight stone sills and splayed lintels with three voussoirs of stone. This lintel design is additionally present above the entry door, of wood construction that lights the interior with three six symmetrical glass panels and a transom above. An outer screen door with a large glass panel protects the main entry door. The lintels and sills on the remaining facades are straight in contrast to the more ornamental front facade. The entryway is

sheltered by a wraparound porch decorated with curved brackets, turned posts, and a lattice apron.

Two outbuildings are located at the rear elevation of the house, including a remodeled, single story gabled, brick kitchen wing, and a detached garage.

History: Currently owned by James Sturgill, the house rests on a property that is 4.72 acres in size per the Franklin County Auditor's Office. The gabled kitchen wing located at the rear elevation of the house was originally built in 1901 and has since been remodified for use as a detached garage. Another outbuilding utilized as a detached garage was similarly built in 1901. The 1872 Caldwell's Atlas of Franklin County shows the property belonging to Evan F. Jones. The agricultural area in which the property is located, was informally referred to as "Mudsock" as noted by the SHPO GIS, with the name since having fallen out of use.

NRHP Evaluation: The James R. Sturgill residence serves as an example of a mid-nineteenth century Italianate farm house within the agricultural community of Mudsock in the Ohio region. Outbuildings built in the early twentieth century placed within close proximity of the farm house remain intact. This proximity was typical for a farm of the era. As noted in the OHI form, the wing outbuilding has been modified, however it still remains intact. When originally recorded in 1975, the house was recommended at that time as eligible for listing in the NRHP. Integrity of the resource remains and Weller concurs with that recommendation. The farmhouse itself is a well preserved example of an Italianate architecture of the period and area, and having maintained integrity of location, design, setting, materials, workmanship, feeling, and association, is eligible under Criterion C.

Assessment of Effects

Because there are historic properties present, Weller applied the determination of effect for each of these identified resources. According to OAC Chapter 4906-15-06(F), which concerns socioeconomic and land use impact analysis in applications for certificates for electric transmission facilities through the Ohio Power Siting Board, "the applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on cultural resources." However, there are no guidelines provided as to how to accomplish this task. Therefore, for this report, the guidelines established in 36 CFR Part 800 are used to guide the assessment of effects (impacts) on cultural resources for the project. These guidelines are well-established in their use for projects that fall under Section 106 of the National Historic Preservation Act of 1966. While OPSB projects do not fall under Section 106, the established guidelines provide an appropriate and consistent avenue to assess effects.

As the eventual development of the proposed AEP Amlin-Cole transmission line upgrade may affect historic properties, Weller applied the Criteria of Adverse Effect (36 CFR Part 800.5). The potential effects were analyzed utilizing a combination of field verification and aerial mapping of the location of historic properties in relation to the proposed AEP Amlin-Cole transmission line. Current conditions in the field were used to determine the level of existing infrastructure and other intrusions, the condition of the

historic properties, as well as the nature of the properties significance (NRHP Criteria A, B, C, or D).

Table 7. FRA0021108, 3240 Alton Darby Creek Rd, Hilliard, OH – Evaluation of Criteria of Effect Recommended NRHP-Eligible, Criterion C.

Criteria of Effect	*Evaluation*
An undertaking shall be considered to have an effect on a National Register property or National Register-eligible property whenever any condition of the undertaking:	*Figure 46*
(A) Causes or may cause any change, beneficial or adverse, in the quality of the historical, architectural, archaeological, or cultural character that qualifies the property under the National Register Criteria.	(A) The house at 3240 Alton Darby Creek, is NRHP-eligible under Criterion C. The proposed project will not cause a change in the qualifying characteristics of the house. The property's significant architectural resources will remain unaffected.
(B) Changes the integrity of location, design, setting, materials, workmanship, feeling, or association of the property that contribute to its significance in accordance with the National Register criteria.	(B) The proposed project may change the resource's integrity of setting by introducing visual effects such as the proposed reroute/installation of structures within the viewshed.
(C) Changes (direct or indirect) in patterns of land use, population density, or growth rate that may affect properties of historical, architectural, archaeological, or cultural significance.	(C) The proposed project will not introduce changes in land use patterns or demographics that may affect the house at 3240 Alton Darby Creek, as the proposed Project will be a reroute of the existing transmission line.
Determination: The undertaking will have an EFFECT on the house at 3240 Alton Darby Creek.	

Table 8. FRA0021108, 3240 Alton Darby Creek Rd, Hilliard, OH – Application of Criteria of Effect.

Criteria of Adverse Effect	Determination of Adverse Effect
Physical destruction of or damage to all or part of the property?	No Effect The house at 3240 Alton Darby Creek is located approximately 550 feet from the nearest visible section of proposed transmission line. The nearest proposed segment will be visible from the resource, with tree lines partially blocking the visibility. However, no part of the line will cause destruction or damage to any part of the property.
Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access?	No Effect Construction of the proposed project will not result in any alterations to the contributing resources of the house at 3240 Alton Darby Creek. The proposed construction will not inhibit or impede any current function of the property.
Removal of the property from its historic location?	No Effect Construction of the proposed project will not cause the removal of any of the contributing resources of the house at 3240 Alton Darby Creek property from their historic location.

Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance?	No Effect Construction of the proposed project will not alter the character of the resource's use or any physical features within the setting of the property.
Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features	No Adverse Effect The nearest visible proposed transmission line is located approximately 550 feet to the east of the house at 3240 Alton Darby Creek. Proposed towers and transmission lines will be visible from the property. In addition, the project is an update of an existing line that is partially shielded by the tree line. The introduction of the proposed Project will not introduce any harmful visual, atmospheric, or audible elements that will diminish the significance of the property.
Neglect of the property, which results in its demolition or deterioration?	No Effect Construction of the transmission line will not result in neglect leading to demolition or deterioration of the house at 3240 Alton Darby Creek.
Transfer, lease, or sale of property out of federal ownership or control?	No Effect Since the house at 3240 Alton Darby Creek is not federally controlled, construction of the transmission line cannot result in the transfer, lease, or sale of the historic property out of federal control.
Determination: The undertaking will have NO ADVERSE EFFECT on the house at 3240 Alton Darby Creek. The undertaking will not introduce any negative impacts that will diminish the historical and architectural significance of the property that qualifies it for NRHP listing.	

APE Definition and NRHP Determination

The APE is a term that must be applied on an individual project basis. The nature of the project or undertaking is considered in determining the APE. This may include areas that are off the property or outside of the actual project's boundaries to account for possible visual impacts. When construction is limited to underground activity, the APE may be contained within the footprint of the project. The APE includes the footprint of the project and a limited area surrounding it. The project involves the stringing of an electric line onto an existing open arm and the construction of several new structures (southern end). This is being conducted in an urban setting in parts of the northern and north central part of the project as it goes through aspects of Hilliard and Dublin. The southern parts and remaining areas are located in a primarily rural, upland setting.

The proposed work for the Amlin-Cole 138kV line is considerate of the existing above ground electric corridor. The Cole Substation is a prospective, but likely endeavor. It is to be located at the southern terminus of this project and is in the area where new electric line structures are planned.

While most of the project will involve adding an additional line to open arms of the existing structures, there are some areas that will involve new construction around existing or proposed substations. An architectural survey was conducted for the areas of new construction that extended 1,000 feet to either side of the centerline for each new build section. One resource identified during the survey, FRA0021108, appears to meet the eligibility requirements for listing in the National Register of Historic Places. Upon analyzing the Application of Criteria of Effect, it was determined that the project would have no adverse effects on the property.

The current project plans do not involve the removal of any residences or buildings that are older than 50 years. There were 27 archaeological resources identified in association with this project, however, none are considered to be eligible for the NRHP. This project is not considered to have any adverse effect on historic properties. The re-utilization of the existing electric line for service improvements is congruent with the current use of this corridor.

Recommendations

In April of 2016, Weller & Associates, Inc. completed Phase I cultural resource management investigations for American Electric Power's proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio. The cultural resource management work included history/architectural review and archaeological work. The archaeological investigations resulted in the identification of 27 previously unrecorded archaeological sites including 33FR3008-3034. These sites are upland, ephemeral prehistoric period isolated finds or lithic scatters. No further work is recommended for these sites as they do not possess qualities and aspects of integrity or significance that are necessary to meet the minimum requirements to be considered eligible for the National Register of Historic Places (33 CFR 60.4). These sites are not historic properties as defined by 36 CFR 800.16(l).

Several architectural resources greater than 50 years of age were identified in the field that may have a direct line-of-sight to the new construction portions of the project. Of these, only one, FRA0021108, appears to meet the eligibility requirements for listing in the National Register of Historic Places. Upon analyzing the Application of Criteria of Effect, it was determined that the project would have no adverse effects on the property. Therefore, Weller & Associates, Inc. recommends that no historic properties will be adversely affected by the project.

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Table 6. Summary Data Survey Results

Field #	County	Figure #	Classification	Historic Function	Current Function	Date	Stylistic Influence	Type	Bays	Rooms Deep	Stories	Roof Type	Construction	Foundation	Walls	Roof	Windows	Additions	Altered	Individual NRHP Status
S-1	Franklin	Appendix A: Figure 5	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	Ca. 1920	Vernacular	Ranch	5	2	1	Cross Gable	Wood Frame	Concrete Block	Aluminum	Asphalt Shingle	Modern Replacement	Yes	Yes	Not Eligible
S-2	Franklin	Appendix A: Figure 5	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	1920	Vernacular	Cross Gable	4	2	2	Cross Gable	Wood Frame	Cut Stone	Vinyl	Asphalt Shingle	Modern Replacement	Yes	Yes	Not Eligible
S-3	Franklin	Appendix A: Figure 5	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	1850	Vernacular	Side Gable House	3	2	2	Side Gable	Wood Frame	Brick	Vinyl	Metal	6/6	Yes	Yes	Not Eligible
S-4	Franklin	Appendix A: Figure 5	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	1875	Vernacular	Cross Gable House	4	2	2	Cross Gable	Wood Frame	Unknown	Vinyl	Asphalt Shingle	Unknown	No	Yes	Not Eligible
S-5	Franklin	Appendix A: Figure 4	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	Ca. 1920	Vernacular	Bungalow	3	2	1	Side Gable	Wood Frame	Concrete Block	Vinyl	Asphalt Shingle	Modern Replacement	Yes	Yes	Not Eligible
S-6	Franklin	Appendix A: Figure 4	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	Ca. 1900	Vernacular	American Four Square	3	1	2	Side Gable	Wood Frame	Brick	Vinyl	Asphalt Shingle	2/2	Yes	Yes	Not Eligible
S-7	Franklin	Appendix A: Figure 4	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	Ca. 1900	Vernacular	Gabled Ell House	3	2	2	Gabled Ell	Wood Frame	Concrete Block	Aluminum	Asphalt Shingle	Modern Replacement	Yes	Yes	Not Eligible
S-8	Franklin	Appendix A: Figure 4	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	Ca. 1900	Vernacular	Ranch	3	2	1	Side Gable	Wood Frame	Cut Stone	Aluminum	Asphalt Shingle	Modern Replacement	No	Yes	Not Eligible
S-9	Franklin	Appendix A: Figure 4	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	Ca. 1900	Vernacular	American Four Square	3	1	2	Side Gable	Wood Frame	Concrete Block	Vinyl	Metal	Modern Replacement	Yes	Yes	Not Eligible
S-10	Franklin	Appendix A: Figure 4	Building	Domestic - Single Dwelling	Domestic - Single Dwelling	1940	Vernacular	Gable Front Bungalow	3	2	1.5	Gable	Wood Frame	Concrete Block	Vinyl	Asphalt Shingle	Modern Replacement	Yes	Yes	Not Eligible

Figures

Figure 1. Political map of Ohio showing the approximate location of the project.

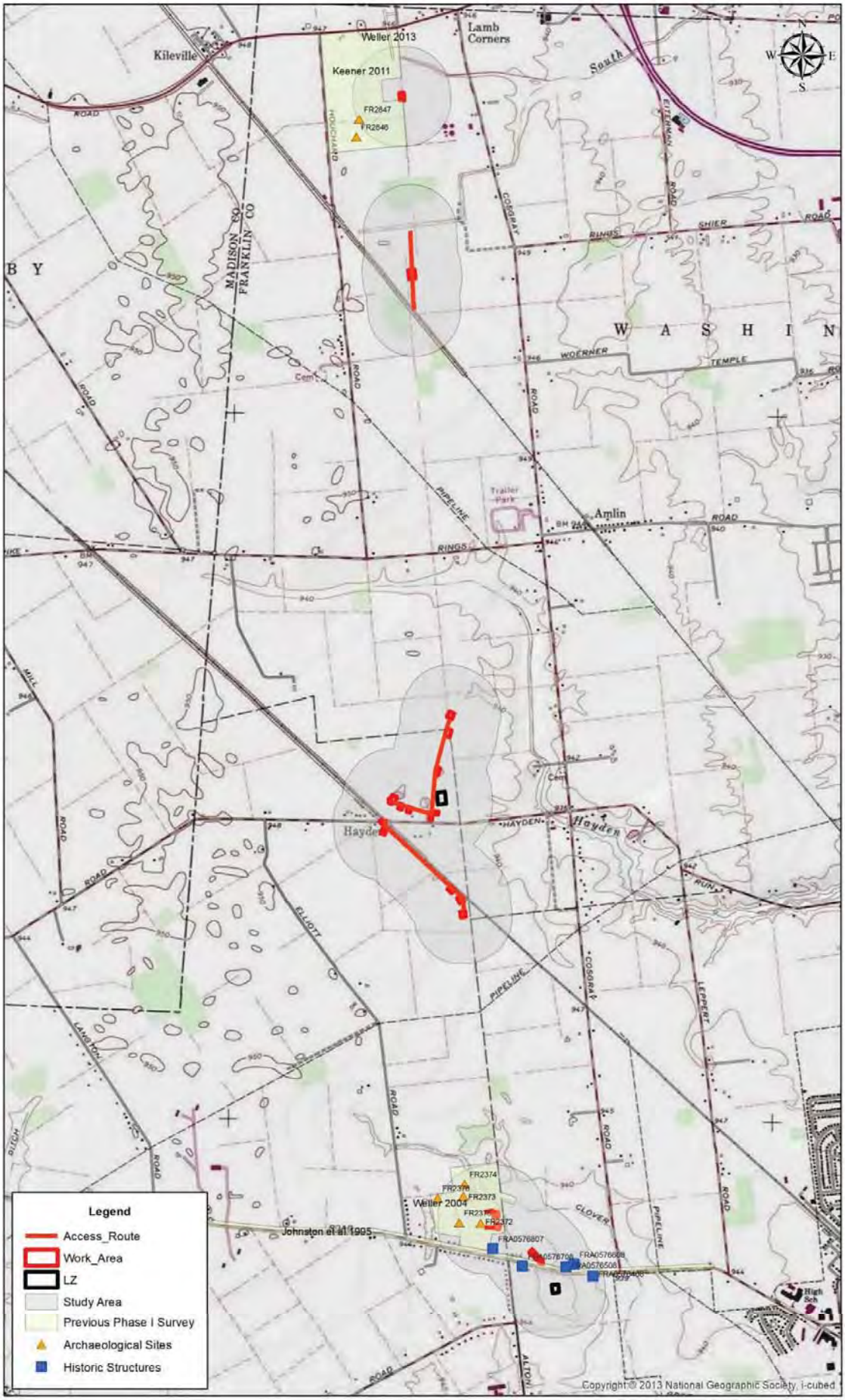

Figure 2. Portion of the USGS *1973 Hilliard, Ohio 7.5 Minute Series (Topographic)* map indicating the location of the project and previously recorded resources in the study area.

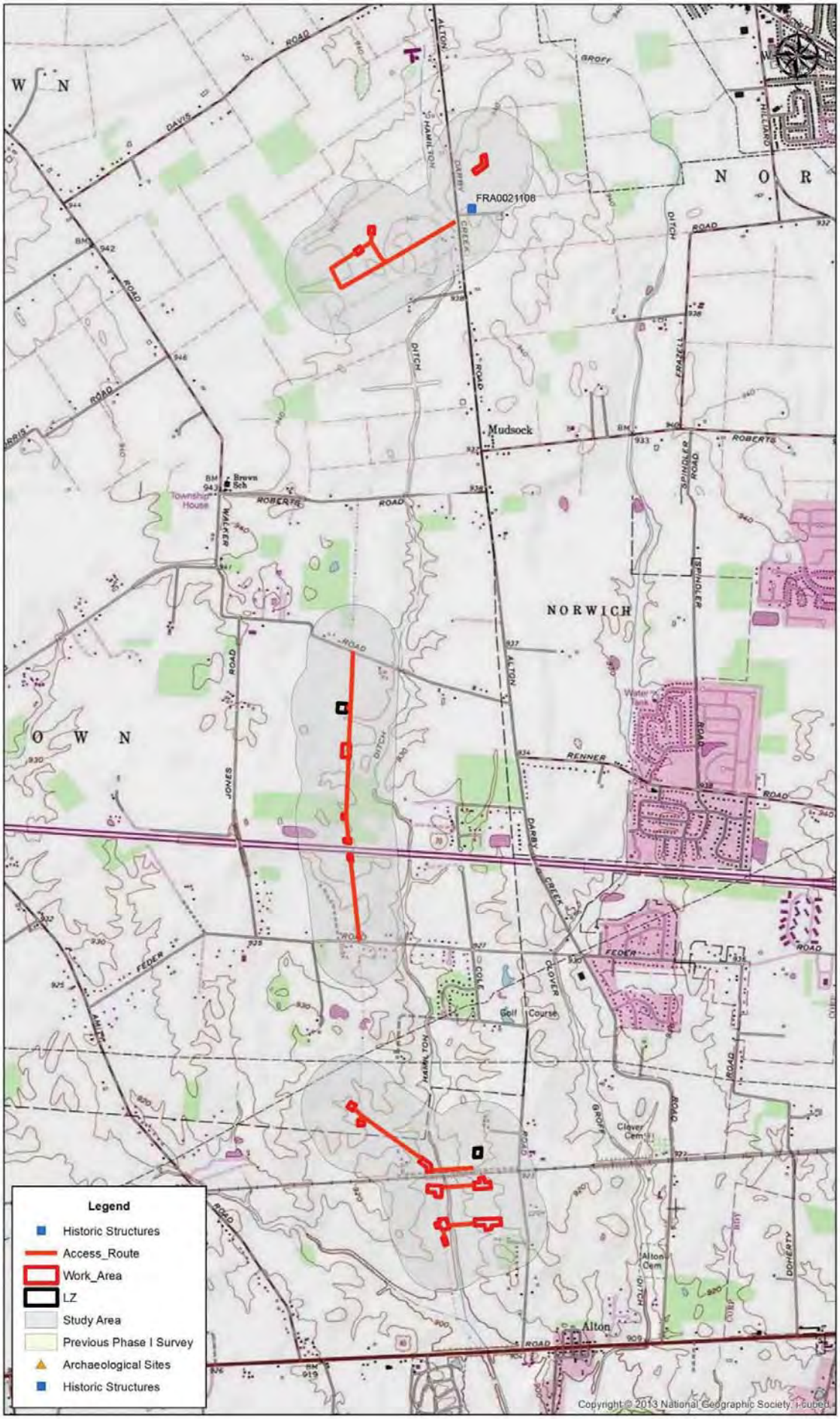

Figure 3. Portion of the USGS *1994 Galloway, Ohio 7.5 Minute Series (Topographic)* map indicating the location of the project and previously recorded resources in the study area.

0 1,000 2,000 4,000 Feet

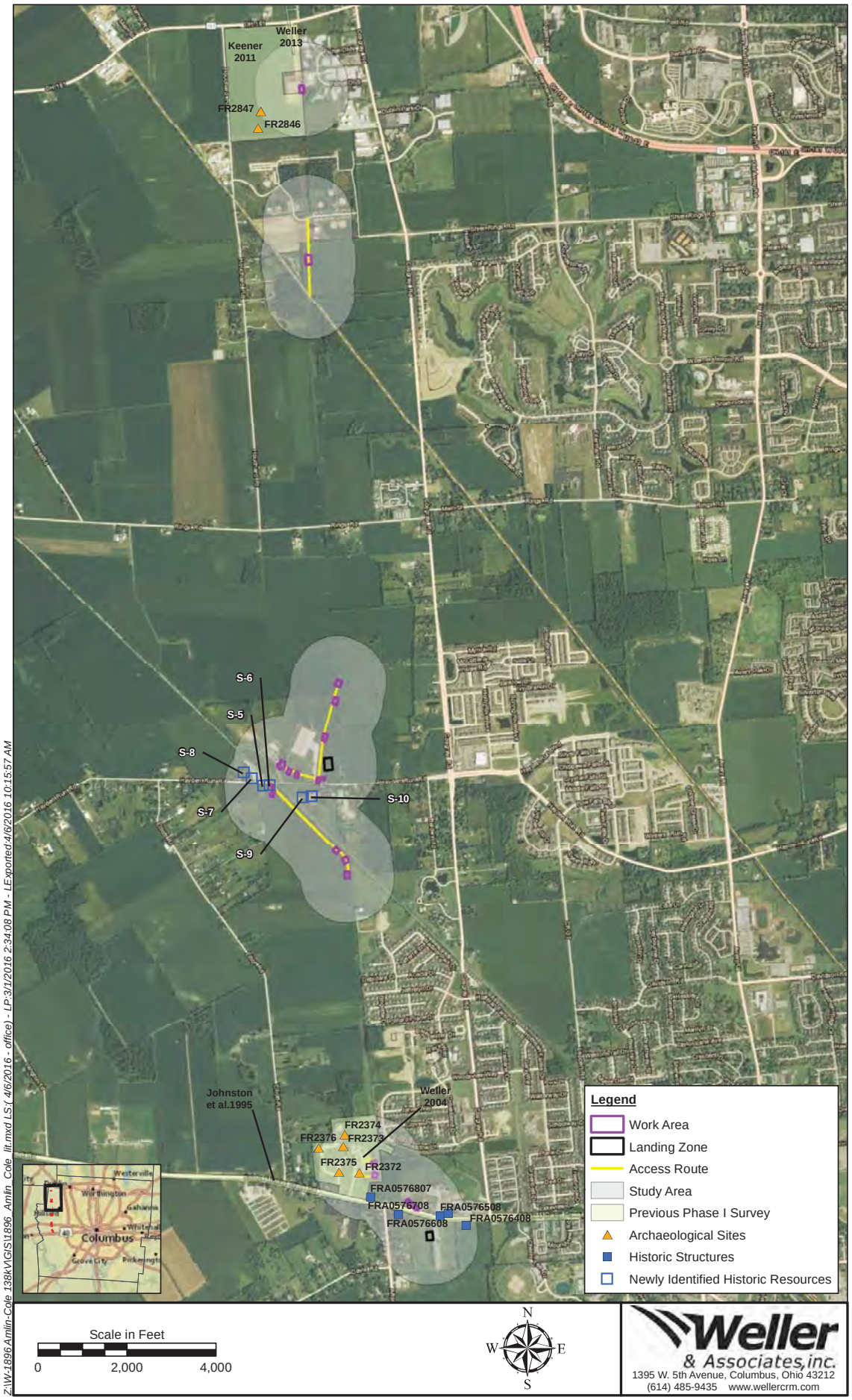

Figure 4. Aerial map indicating the location of the project and previously recorded resources in the study area.

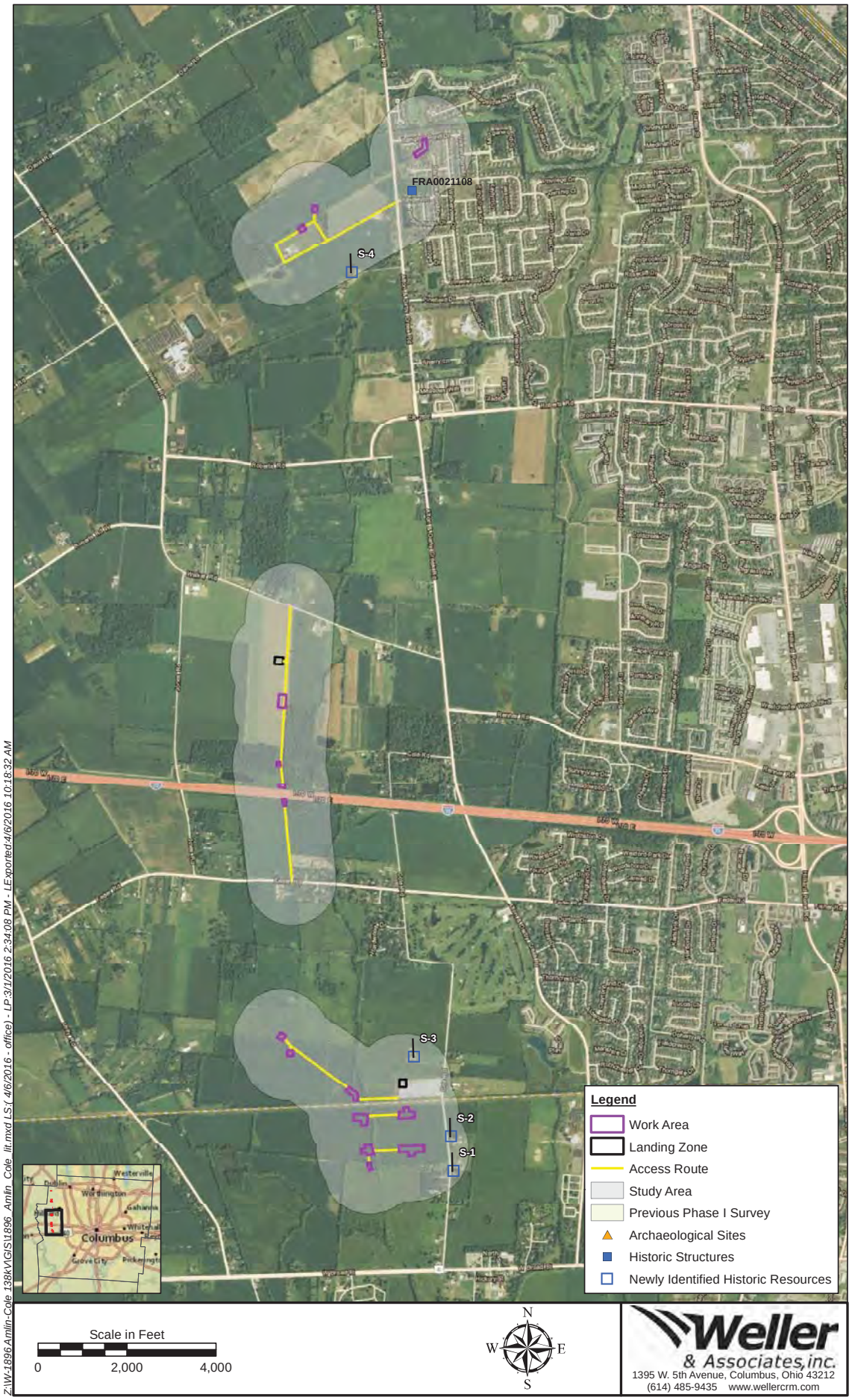

Figure 5. Aerial map indicating the location of the project and previously recorded resources in the study area.

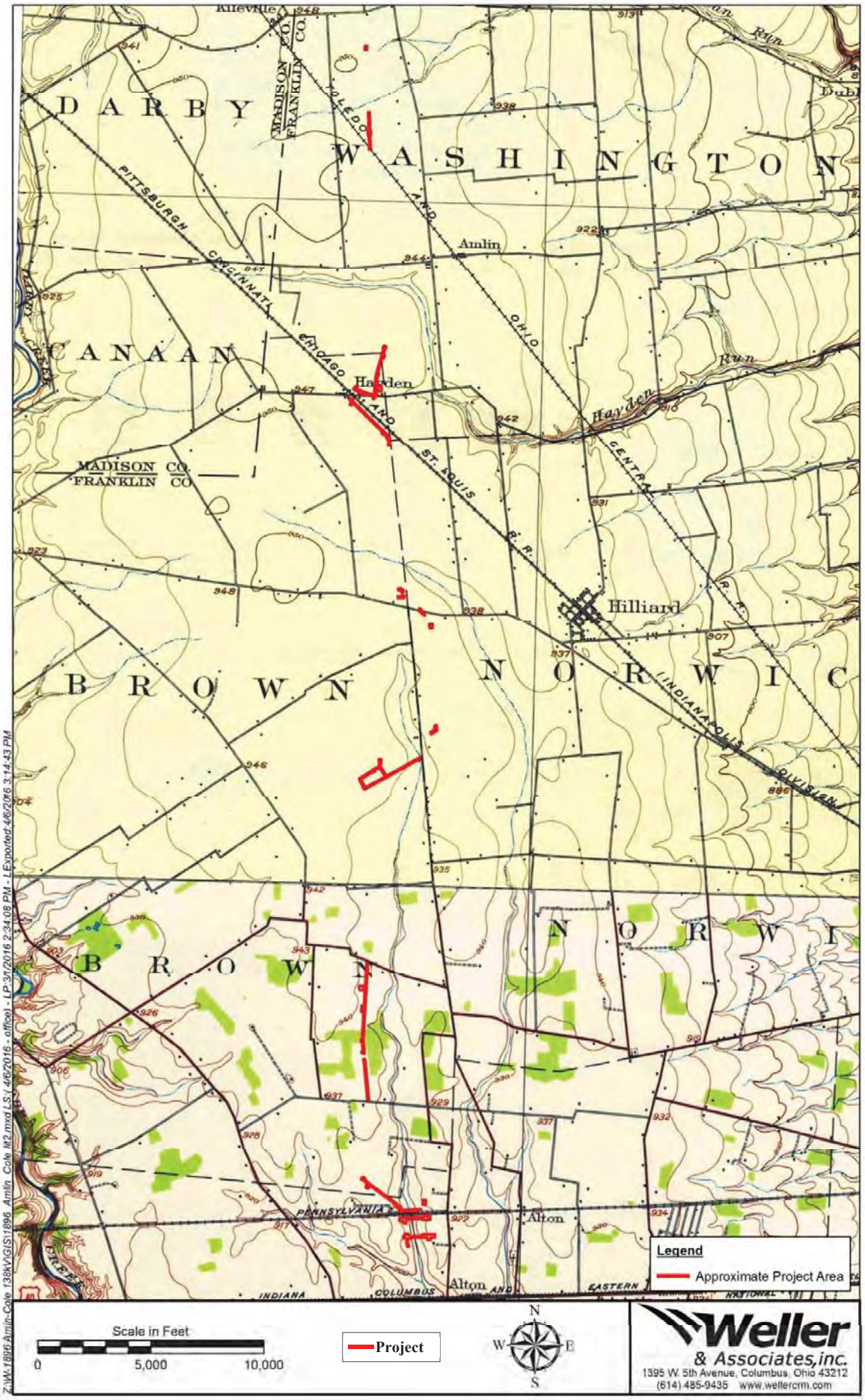

Figure 6. Portions of the USGS *1901 Dublin* and the *1923 West Columbus, Ohio 15 Minute Series (Topographic)* map indicating the location of the project.

Figure 7. Fieldwork results & photo orientation for Sheet 1.

Figure 8. Fieldwork results & photo orientation for Sheet 2.

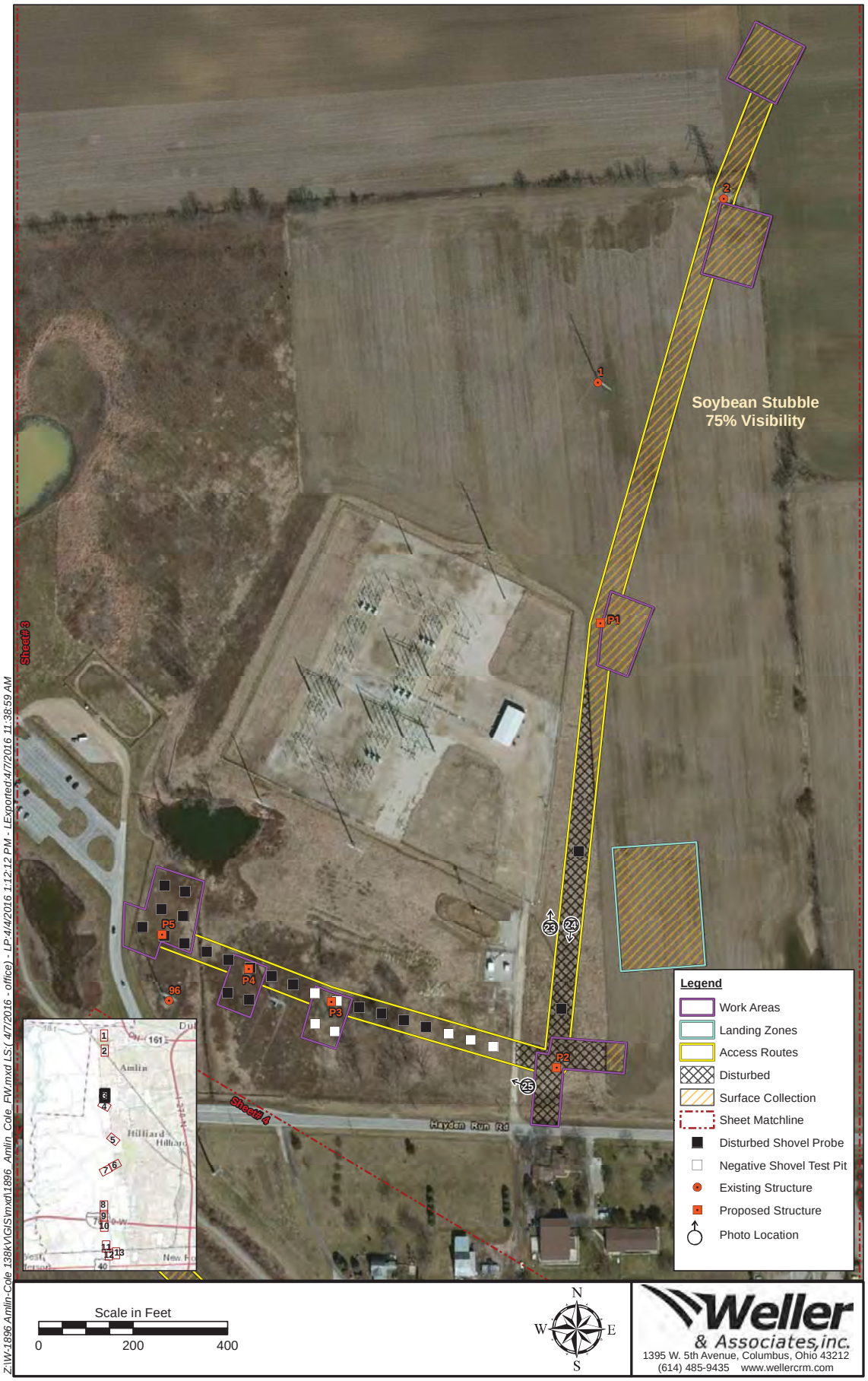

Figure 9. Fieldwork results & photo orientation for Sheet 3.

Figure 10. Fieldwork results & photo orientation for Sheet 4.

Figure 11. Fieldwork results & photo orientation for Sheet 5.

Figure 12. Fieldwork results & photo orientation for Sheet 6.

Figure 13. Fieldwork results & photo orientation for Sheet 7.

Figure 14. Fieldwork results & photo orientation for Sheet 8.

Figure 15. Fieldwork results & photo orientation for Sheet 9.

Figure 16. Fieldwork results & photo orientation for Sheet 10.

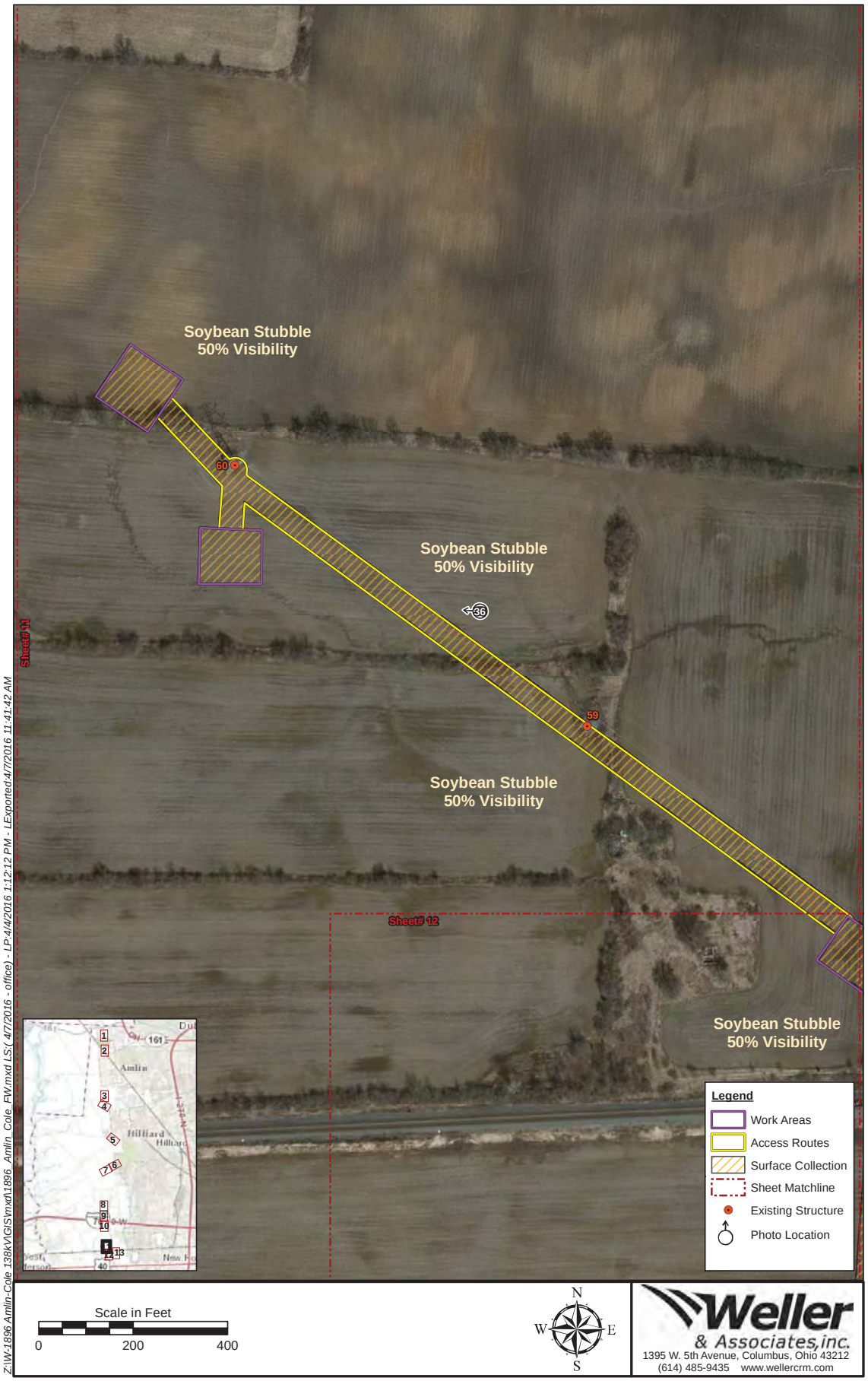

Figure 17. Fieldwork results & photo orientation for Sheet 11.

Figure 18. Fieldwork results & photo orientation for Sheet 12.

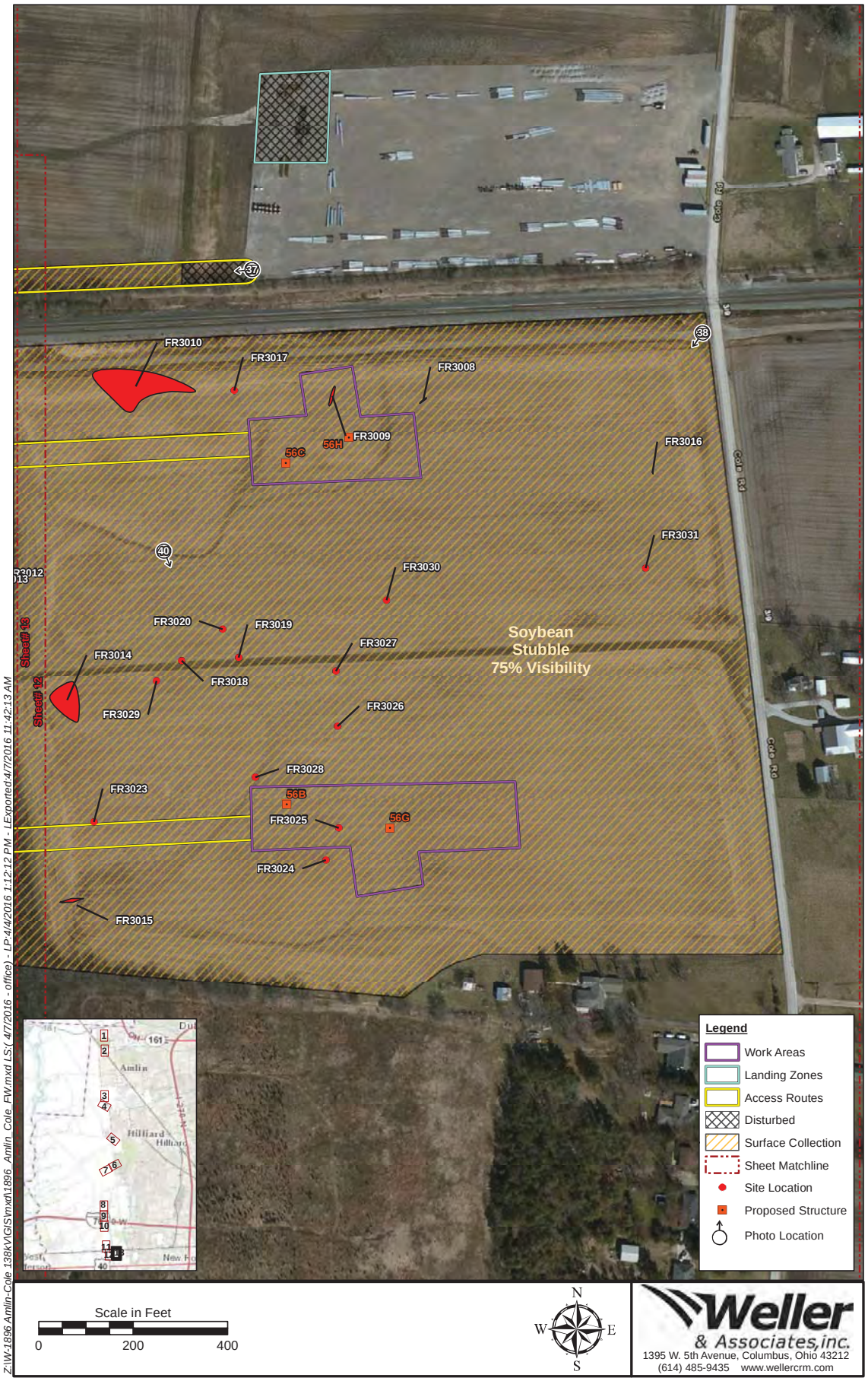

Figure 19. Fieldwork results & photo orientation for Sheet 13.

Figure 20. View of the conditions near structure 14-1 and a work area.

Figure 21. View of the surface collected area south of structure 12.

Figure 22. View of the surface collected cornfield north of structure 10.

Figure 23. View of some of the conditions north of structure P2.

Figure 24. Another view of some of the conditions north of structure P2.

Figure 25. View of the shovel tested area west of structure P2.

Figure 26. View of the surface collected tilled field near structures 95-93 and Site FR3034.

Figure 27. View of the disturbed conditions near structure 87.

Figure 28. View of the disturbed conditions west of structure 87.

Figure 29. View of the disturbed conditions near structure 86.

Figure 30. View of the existing access drive on sheets 6 and 7.

Figure 31. View of the shovel tested area on sheet 7.

Figure 32. Another View of the shovel tested area on sheet 7.

Figure 33. View of the shovel tested areas near structures 70-68.

Figure 34. View of the surface collected winter wheat field near structure 64-65.

Figure 35. View of the typical visibility within the surface collected wheat fields.

Figure 36. View of the conditions near structures 59 and 60.

Figure 37. View of the conditions within the structure 58 access corridor.

Figure 38. View of the surface collected soybean stubble field within the southern portion of the project.

Figure 39. View of the western portion of the surface collected soybean stubble field within the southern portion of the project.

Figure 40. Another view of the surface collected soybean stubble field within the southern portion of the project.

Figure 41. The visibility within the surface collected soybean stubble field within the southern portion of the project.

Figure 42. A typical disturbed shovel probe from the project.

33FR3008

Brewerton Side Notched Point

Length:	**25.1mm**
Width:	**21.8mm**
Stem Length:	**9.0mm**
Neck Width:	**15.0mm**
Thickness:	**7.4mm**
Material:	**Delaware**

Justice 1987: 115-116

33FR3030

Madison Point

Length:	**28.3mm**
Width:	**n/a**
Stem Length:	**n/a**
Neck Width:	**n/a**
Thickness:	**4.3mm**
Material:	**Delaware**

Justice 1987: 224-227

33FR3033

Brewerton Side Notched Point

Length:	**n/a**
Width:	**n/amm**
Stem Length:	**10.8mm**
Neck Width:	**14.4mm**
Thickness:	**6.8mm**
Material:	**Flint Ridge**

Justice 1987: 115-116

Scale

0 12.7mm 25.4mm

0 ½” 1”

Figure 43. Some of the artifacts from the project.

Schematic of a Test Unit Profile

Lewisburg Silt Loam (LeB)

Ap 10YR4/3 Dark Brown silt loam

B 10YR4/6 Dark Yellowish Brown silty clay loam

Scale

0cm 10cm 20cm 30cm 40cm 50cm

Provenience: Test Unit 5
Depth to Subsoil: 34 cm
Excavator: RW

Figure 43. A typical shovel test unit excavated within the project.

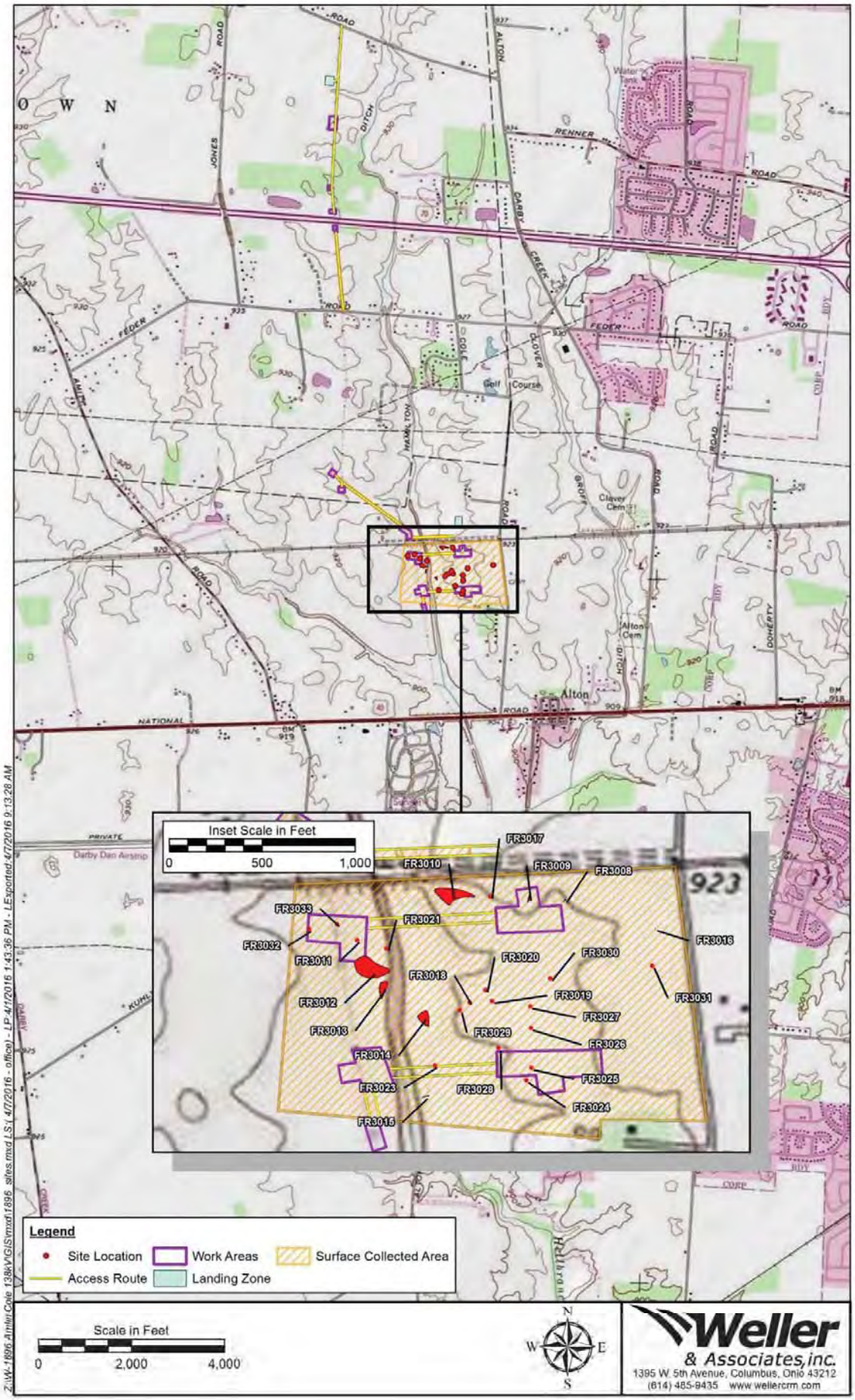

Figure 45. Portion of the USGS *1966 Galloway, Ohio 7.5 Minute Series (Topographic)* map indicating the location of Sites FR3008-3033.

Figure 46. View of FRA0021108.

APPENDIX A:

Photographs of Properties Not Advanced to Detailed Study

S-1

S-2

S-3

S-4

S-5

S-6

S-7

S-8

S-9

S-10

FRA0576408

FRA0576608

FRA0576708

Addendum Report for: Phase I Cultural Resource Management Investigations forAmerican Electric Power's Proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio

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Phase I Archaeological Investigations for American Electric Power's 15.9 km (9.9 mi) Hayden-Hyatt 345 kV Line Project in Washington Township, Franklin County, Jerome Township, Union County and Concord and Liberty Townships, Delaware County, Ohio

By

Ryan Weller

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Ohio Power Siting Board

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October 16, 2013

W-1266

i. Abstract

In September of 2013, Commonwealth Associates, Inc. (CAI) contracted Weller & Associates, Inc. (Weller) to conduct Phase I archaeological investigations for American Electric Power's 15.9 km (9.9 mi) Hayden-Hyatt 345 kV Line Project in Washington Township, Franklin County, Jerome Township, Union County, and Concord and Liberty Townships, Delaware County, Ohio. The work was conducted over a few sporadic days extending from September to early October. This involved a literature review and field investigations to satisfy requirements pertinent to the lead involved agency, Ohio Power Siting Board. A cultural resources management (CRM) survey was conducted in a manner that is reflective of Section 106 of the National Historic Preservation Act to identify any sites or properties relative to this undertaking and to evaluate them for the National Register of Historic Places (NRHP). No buildings or structures older than 50 years are being taken, impacted, or directly affected by this project. These investigations identified six previously unrecorded archaeological sites including 33FR2911 and 33DL2811-2815.

The project involves the construction/installation of new structures, access corridors, and the addition of a second circuit line to the existing Hayden-Hyatt 138kV electric line corridor. The corridor is mostly located in upland terrain that is a mixture of developed situations and farmland. The cultural resource work is planned in the areas where ground disturbance is eminent, but excludes segments that are involved in previously surveyed (post-1994) tracts. The terrain in this area includes ground moraine, traverses a lateral end moraine, and involves inter-moraine conditions. The corridor crosses the Scioto River/O'Shaunessy Reservoir, but does not include any deep floodplain or terrace situations. The project does not account for the entirety of the existing corridor.

The literature review conducted for this project identified sites and surveys that involve or partially include the current project corridor work. There are numerous previously recorded sites in the study radius with three that are either within or very near the project area (i.e., 33FR2851, 33UN242, 33UN297, 33DL1522; Appendix A). These sites are all contained in developed tracts and have been destroyed and were not deemed significant. The corridors intercept or involve six CRM survey areas (Weller Von Molsdorff 1999, 2000; Weller 2002a, 2002b; Derick 2003a; Keener 2011a). The area of potential effect is limited because most of the electric lines are extant and the planned work is to establish a new line on existing structures. Areas that were the subject of previous investigations conducted after 1994 were field verified, but generally omitted from any additional CRM investigations.

These investigations resulted in the identification of six previously unrecorded archaeological sites including 33FR2911 and 33DL2811-2815. These sites are not considered to be eligible for the National Register of Historic Places (NRHP) and no further cultural resource management work is recommended for these sites.

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Introduction

In June of 2016, Weller & Associates, Inc. conducted addendum Phase I investigations for the Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio (Figures 1-3). These addendum investigations are related to previous a previous survey (Weller 2016) titled: *Phase I Cultural Resource Management Investigations for American Electric Power's Proposed Amlin-Cole Transmission Upgrade Project in Washington, Norton, Prairie, and Brown Townships, Franklin County, Ohio*. This addendum document includes the results of the additional work in the areas that are located outside of those that were previously investigated. The lead agency for this project is the Ohio Power Siting Board (OPSB). This report summarizes the results of the additional fieldwork and literature review. The report format and design is similar to that established in *Archaeology Guidelines* (Ohio Historic Preservation Office [OHPO] 1994).

The addendum investigations are for newly proposed reroutes and ancillary activities that are being proposed for this project. The project plans are to string a second circuit on a vacant arm, which will be constructed via the use of helicopters. However, not all of the work will be aerial. Weller is responsible for addressing the cultural resources associated with any relative ground disturbances. The addendum work included access road relocations, landing zone relocations, and construction limit expansions.

Ryan Weller served as the Principal Investigator and project manager. The field crew included Chad Porter, Alex Thomas, John Walker, and Matt Sanders. Chad Porter did a brief review of the previous literature review. The report preparation was by Ryan Weller, with Chad and John completing the figures.

Archaeological Survey Results

The addendum field investigations for this project were conducted on June 16, 2016 (Figures 4-22). The weather on that day was hot and humid, but it was not a factor in the completion of the archaeological work. The fieldwork involved visual inspection, surface collection, and subsurface testing as deemed appropriate per the conditions. The archaeological field investigations were conducted as described by Weller (2016). Subsurface testing was conducted where bare ground surface visibility was lacking. Visual inspection was conducted in locations where disturbance was apparent on the surface including the aspects of this project that has been subject to previous investigations. The work resulted in the identification of six previously unrecorded archaeological sites, 33FR3054-3059.

Surface collection methods of sampling were conducted in the majority of the addendum survey areas (Figures 4-9). The survey took advantage of the spring planting season conditions that consisted for immature soybean and corn fields. The bare ground surface visibility in these fields was greater than 50 percent and typically greater than 70 percent. Pedestrian transects were spaced at 5-7.5 m intervals throughout these areas. Any cultural materials that were identified were plotted using a global positioning

system. All of the sites identified during this survey were located during surface collection including 33FR3054-3059.

Some aspects of the project were found to be severely disturbed and this was documented through visual inspection and photographs. The most common form of severe disturbance involved grading activity for developments. This was typically evident at the surface and through inspection of aerial mapping, but it was necessary to conduct subsurface testing in some locations to verify the nature and extent of the disturbance.

Subsurface testing was necessary and appropriate in part of the survey area (Figure 5). There were 2 shovel test units and 14 shovel probes excavated during these investigations. The testing of relative intact areas identified silt loam soils that were limited to the plowzone (i.e., 23-30 cm below ground surface). Shovel testing was conducted for an access road and work area that is located to the south of Scioto-Darby Road. The testing was conducted in public sports field that was designated for soccer. The majority of this area was fully disturbed by grading activity for this development; the soils were severely mottled and/or there was a complete lack of topsoil. There were 14 shovel probes and two shovel test units excavated in this area. The testing identified plowzone-depth topsoil that was free of any rock. There were no cultural deposits identified during the subsurface testing part of these investigations.

Site Descriptions

Archaeological sites were identified in the upland aspects of the surveyed areas. There were six archaeological sites identified (33FR3054-3059) (Figures 7 and 9; Table 1). These sites are all prehistoric period isolated find spots finds. The following is a description of these sites, details of their conditions/locations, artifacts, and recommendations.

33FR3054

This site is a prehistoric period isolated find spot that was identified during surface collection of an immature corn field (Figure 9). The bare ground surface visibility in this field was estimated to be about 80 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from a slight elevation in this setting. It is located to the west of Cole Road, north of a railroad, and west of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. By definition, the site size for isolated find spots is 1 sq m.

The artifact identified from this site is a secondary thinning flake of Upper Mercer chert (Table 1). This is functionally indicative of bifacial thinning activity. This artifact is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI,

NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site is functionally and numerically limited regarding the artifact assemblage, lacks temporally diagnostic materials, and was identified in plowzone contexts. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

Table 1. Artifact inventory of sites 33FR3054-3059.

Site #	Artifact Type	Material	Count
33FR3054	Secondary thinning flake	Upper Mercer	1
33FR3055	Secondary thinning flake	Delaware	1
33FR3056	Secondary thinning flake	Delaware	1
33FR3057	Sharpening flake	Delaware	1
33FR3058	Secondary thinning flake	Delaware	1
33FR3059	Levanna Point	Delaware	1

33FR3055

This site is a prehistoric period isolated find spot that was identified during surface collection of an immature corn field (Figure 9). The bare ground surface visibility in this field was estimated to be about 80 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from a slight elevation in this setting. It is located to the west of Cole Road, north of a railroad, and west of Hamilton Ditch. Hamilton Ditch is the closest drainage, which flows into Clover-Groff Ditch and is part of the Hellbranch-Darby Creek-Scioto River watershed. By definition, the site size for isolated find spots is 1 sq m.

The artifact identified from this site is a secondary thinning flake of Delaware chert (Table 1). This is functionally indicative of bifacial thinning activity. This artifact is not regarded as being temporally diagnostic.

This site was evaluated for its eligibility for the NRHP. This site lacks integrity (Little et al. 2000:39-43; U.S. Department of the Interior, National Park Service [USDI, NPS] 1997:44-45) and the ability to yield further and important information regarding prehistory. The site is functionally and numerically limited regarding the artifact assemblage, lacks temporally diagnostic materials, and was identified in plowzone contexts. This site is not considered to be eligible for inclusion into the NRHP, and further work at this site is not deemed necessary.

33FR3056

This site is a prehistoric period isolated find spot that was identified during surface collection of an immature corn field (Figure 9). The bare ground surface visibility in this field was estimated to be about 80 percent. This site is located in an upland, till plain situation that is generally indicative of nearly level to very gently undulating terrain. The artifacts are from a slight elevation in this setting. It is located to

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Summary: Letter of Notification 4 electronically filed by Mr. Hector Garcia on behalf of AEP Ohio Transmission Company