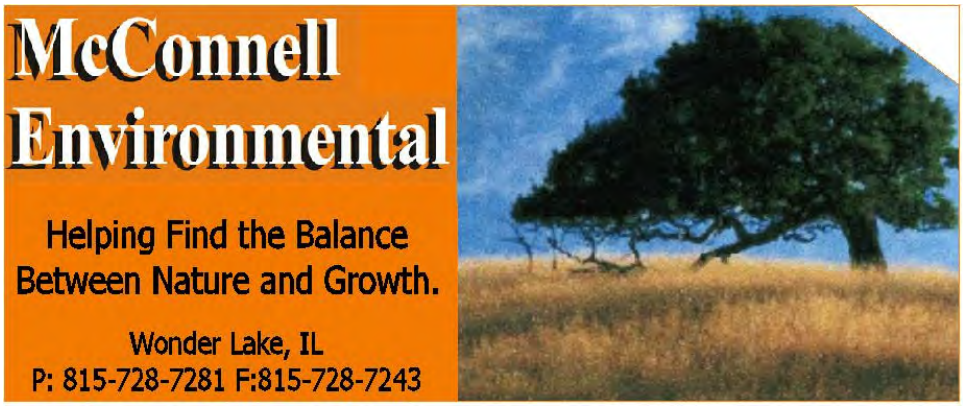


WETLAND DELINEATION REPORT

IOWA ARMY AMMUNITIONS PLANT SITE
MIDDLETOWN, DES MOINES COUNTY, IOWA

Prepared For:

Stanley Consultants
225 Iowa Avenue
Muscatine, IA 52761

June 1, 2012

McConnell Environmental LLC
8608 W. Sunset Dr.
Wonder Lake, IL 60097
Office (815) 728-7281
Fax (815) 728-7243

WETLAND DELINEATION REPORT

Project Name: Iowa Army Ammunition Plant Site

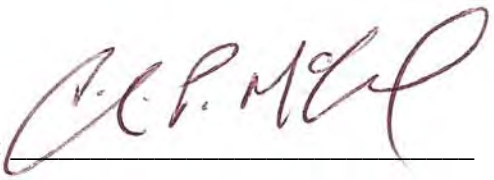
Project Client: Stanley Consultants

Project Number: 120029-Wet

Location: Flint River Township, Des Moines County, IA – S 30 & 31-T70N-R6E

Date of Site Delineation: May 23rd & 24th, 2012

Field Investigator: Coilin McConnell & Tom Mattingly

Certified Wetland Specialist: 

Coilin McConnell

Introduction

The project area is approximately 300 acre area within the Army Ammunition Plant (Exhibit A), approximately wetland area is 3.7 acres. The wetland is located throughout the 300 acres. The project area is located within in the Mississippi River watershed. This site is a farm parcel with commercial and industrial areas surrounding it.

Coilin McConnell delineated the wetlands on this property on February 27, 2009, using the procedures outlined in the 1987 Corps of Engineers' Wetland Delineation Manual and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region. The entire site was inspected for hydric soils prior to field identification. Field inspection identified wetland vegetative species within the drainage channels and within the depressional wetland areas. The soil borings and hydrology indicators were utilized to verify the wetland and upland vegetative species. The hydric soils contained thick dark surface, depleted below dark surface, loamy gleyed surface, and dark surface. The hydrology indicators that were identified were high water table, saturation, water stained leaves, inundation visible on aerial, geomorphic positions, and FAC-Neutral Test.

Plot locations were collected per the Wetland Delineation Manual. The nine plot locations were picked to define the wetland boundaries throughout the property. The wetland locations showed hydric soils, as indicated on the Web Soil Survey map (Exhibit C). The vegetation was mostly Facultative Wetland species and Obligate because they were within depressional areas or within drainage channels.

A native vegetative quality rating was calculated for the wetland using the Floristic Quality Assessment (FQA) of Swink and Wilhelm as published in Plants of the Chicago Region, 1994. The native species is given a rating based on commonality. This rating determines the Floristic Quality Index (FQI) of that wetland. The FQI is broken into 3 categories: 1-19 indicates low quality, 20-35 indicates high quality, and 35 and above indicates "Natural Area" quality.

RESULTS

Two different types of wetland ecosystems were found. The first wetland ecosystem had the standard wetland characteristics. The two wetland areas had a depressional topography that holds water for months at a time. The other wetland ecosystem was a drainage channel ecosystems that has deep sides with flowing water traveling down during rain events. These channels are also deep enough and shaded so that they don't dry out during a typical summer weather pattern.

There were wetland like ecosystems in the road and railroad track drainage gullies. In my opinion these are not wetland areas. These areas if maintained would drain correctly and there would be no wetland species growing within the sediment of the field and gravel run-off. But since these areas have lacked maintenance, one views cattails and other opportunistic wetland species in the bottom flat areas.

The two standard wetland areas are mapped on the NWI Map (Exhibit E) as a freshwater emergent wetland and freshwater pond.

The plants that were identified within the drainage channel showed high quality species possibly because these channel has been around and has been left untouched for a long period of time. The wildlife habitat quality score is a 3.5 because of the biological highways for the animals to move through and hide in.

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LEGEND

PROJECT AREA

Location Map

Google Earth

Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

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Exhibit A

C:\Users\Coilin\Documents\My Documents\Jobs\2012\120029-Wet\Drawing\Wetland Maps.dwg-Location Map-8/15/2007 1:19 PM

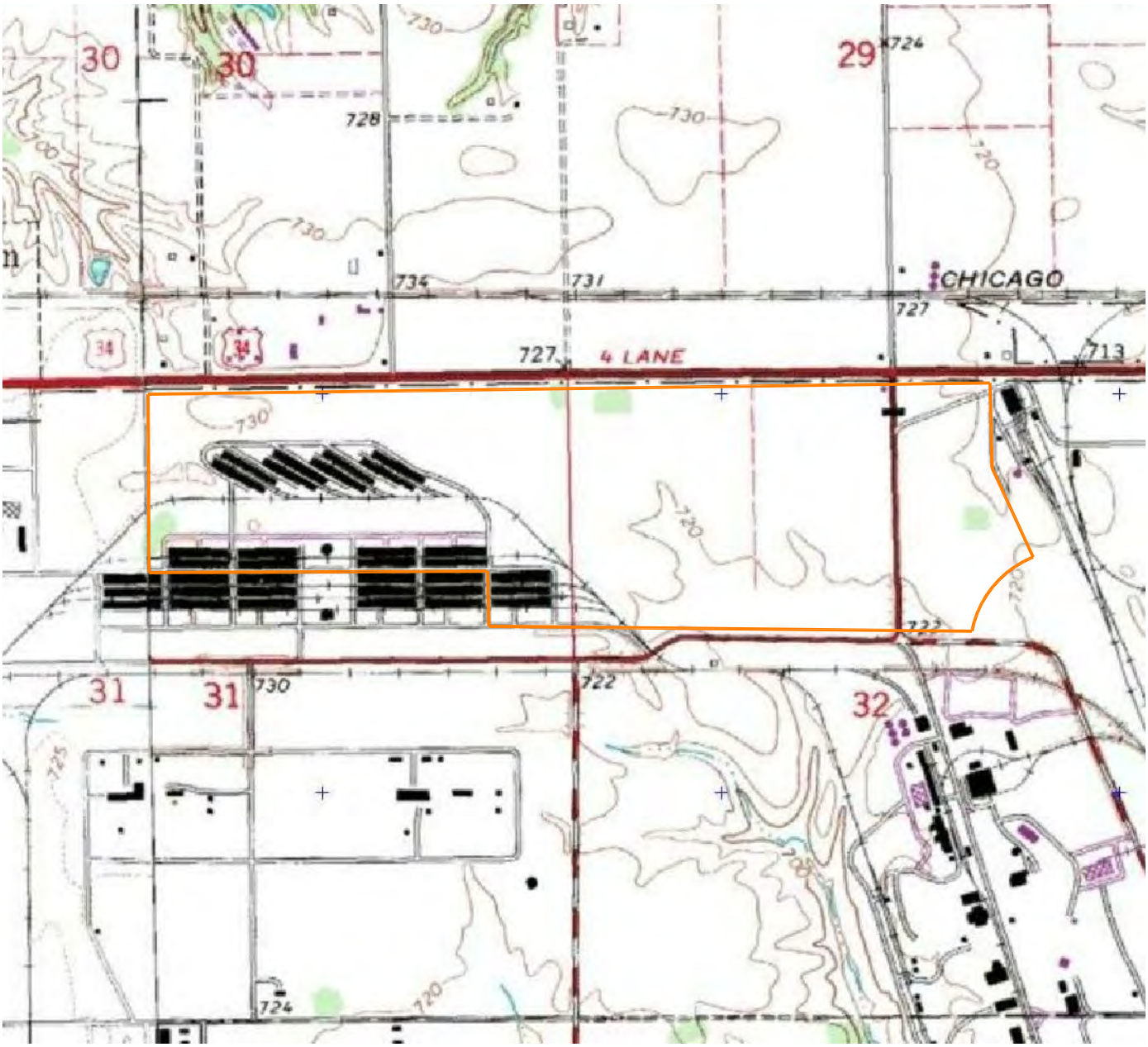
MAP REVIEW

- United States Geologic Survey (USGS) Quadrangle Map (Exhibit B) shows the area as fairly flat. The eastern property does drain slowly to the southeast where there are storm culverts going underneath the roads and railroad tracks. Eventually, all water drains to the southwest into a creek system. The western portion drains into the drainage channels and then into the pond and continues further to the west.

- McHenry County soil survey (Exhibit E) shows eight soil types throughout the property: Colo Silty Clay Loam and Taintor Silty Clay Loam which is located in the drainage area of the creek and throughout the farm fields. These two soil types are hydric soil. Givin Silt Loam, Mahaska Silty Clay Loam, Nira Silty Clay Loam, and Hedrick Silt Loam are non-hydric soil. Urban Land and Orthents Loamy are soils that have been disturbed by manmade construction.

- The wetland delineation (Exhibit H) shows the wetland delineation lines throughout the 300 acres. The wetland lines were determined by the investigation plots and through the typical ecosystems that were found based off of the plot determinations.

- The Fish & Wildlife Service Map (Exhibit I) shows two mapped wetland areas. The freshwater pond in the southwest corner of the property and the freshwater emergent wetland area in the depressional area within the northeastern portion of the property.



USGS Quadrangle Map

USGS Quadrangle Map, Flint River TWN
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

LEGEND

PROJECT AREA

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Exhibit B

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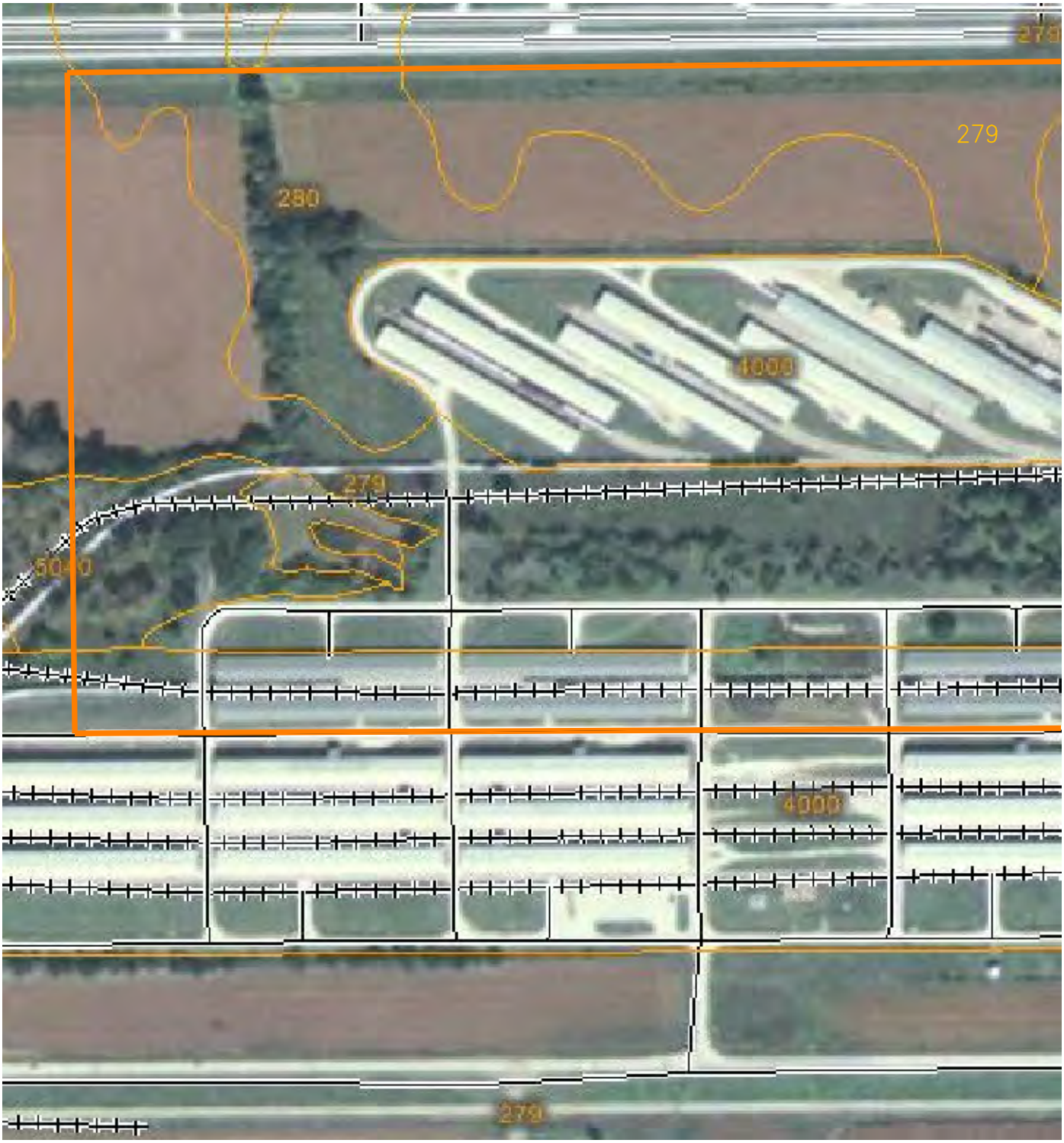

Soil Map

Web Soil Survey
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

LEGEND

PROJECT AREA

279 – Taintor Silty Clay Loam
280 – Mahaska Silty Clay Loam
4000 – Urban Land
5040 – Orthents, Loamy

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Exhibit C-1

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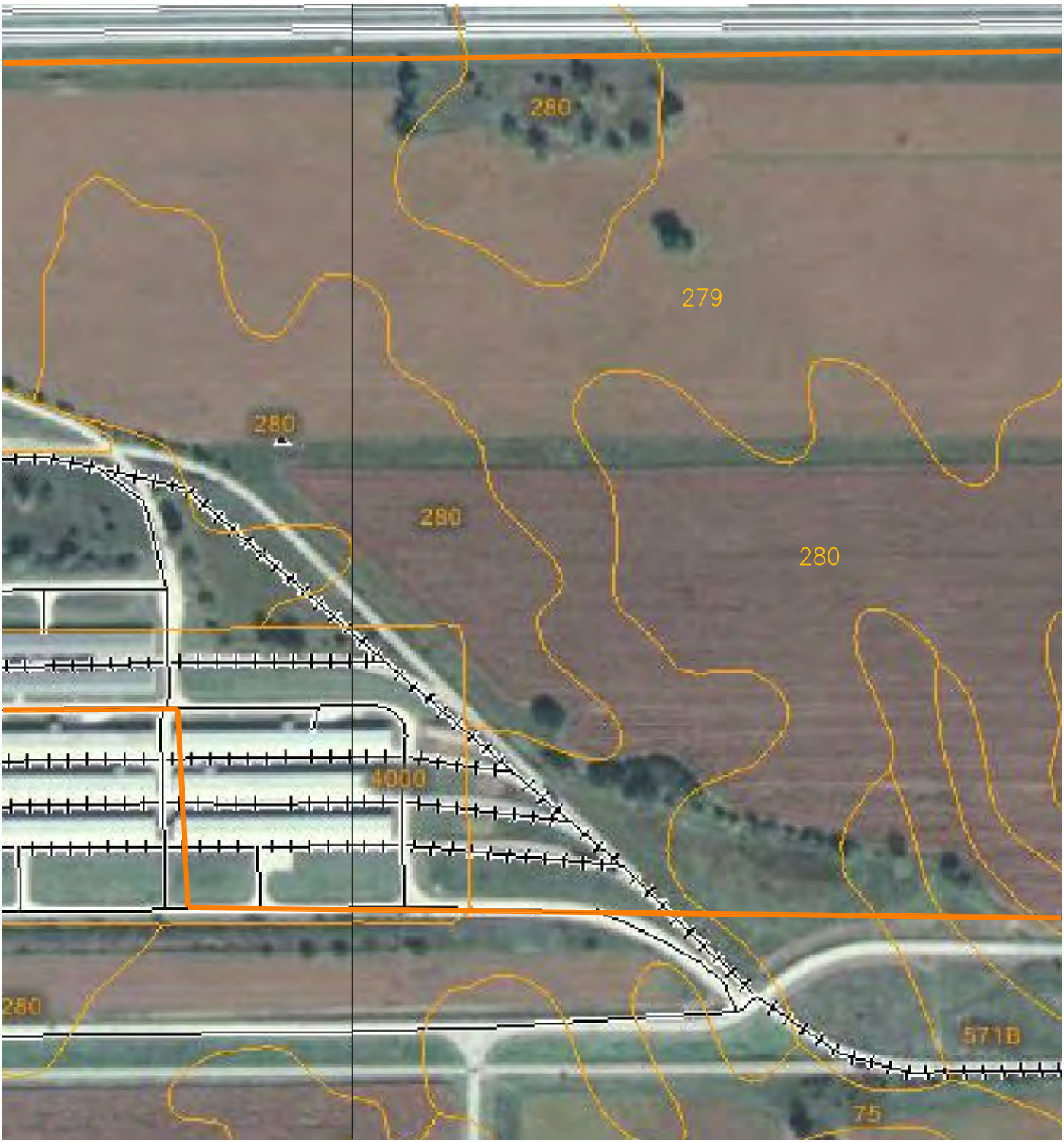

Soil Map

Web Soil Survey
Des Moines County, Iowa

Old Hwy 34, Middletown

120029—Wet

Stanley Consutlants

PROJECT AREA

75	–	Givin Silt Loam
133B	–	Colo Silty Clay Loam
279	–	Taintor Silty Clay Loam
280	–	Mahaska Silty Clay Loam
571B	–	Hedrick Silt Loam
4000	–	Urban Land

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Exhibit C-2

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Soil Map

Web Soil Survey
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

PROJECT AREA

- 133B – Colo Silty Clay Loam
- 279 – Taintor Silty Clay Loam
- 280 – Mahaska Silty Clay Loam
- 570B – Nira Silty Clay Loam
- 571B – Hedrick Silt Loam

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Exhibit C-3

C:\Users\Coilin\Documents\My Documents\Jobs\2012\120029-Wet\Drawing\Wetland Maps.dwg-Soil Map-8/15/2007 1:19 PM

Wetland Delineation

McConnell Environmental
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

LEGEND

PROJECT AREA
Plot Number (#)
Wetland Line
Transect Line
Transect No. (#)

MCCONNELL ENVIRONMENTAL

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Exhibit D-1

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Wetland Delineation

McConnell Environmental
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

LEGEND

PROJECT AREA
Plot Number (#)
Wetland Line
Transect Line
Transect No. (#)

MCCONNELL ENVIRONMENTAL

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Exhibit D-2

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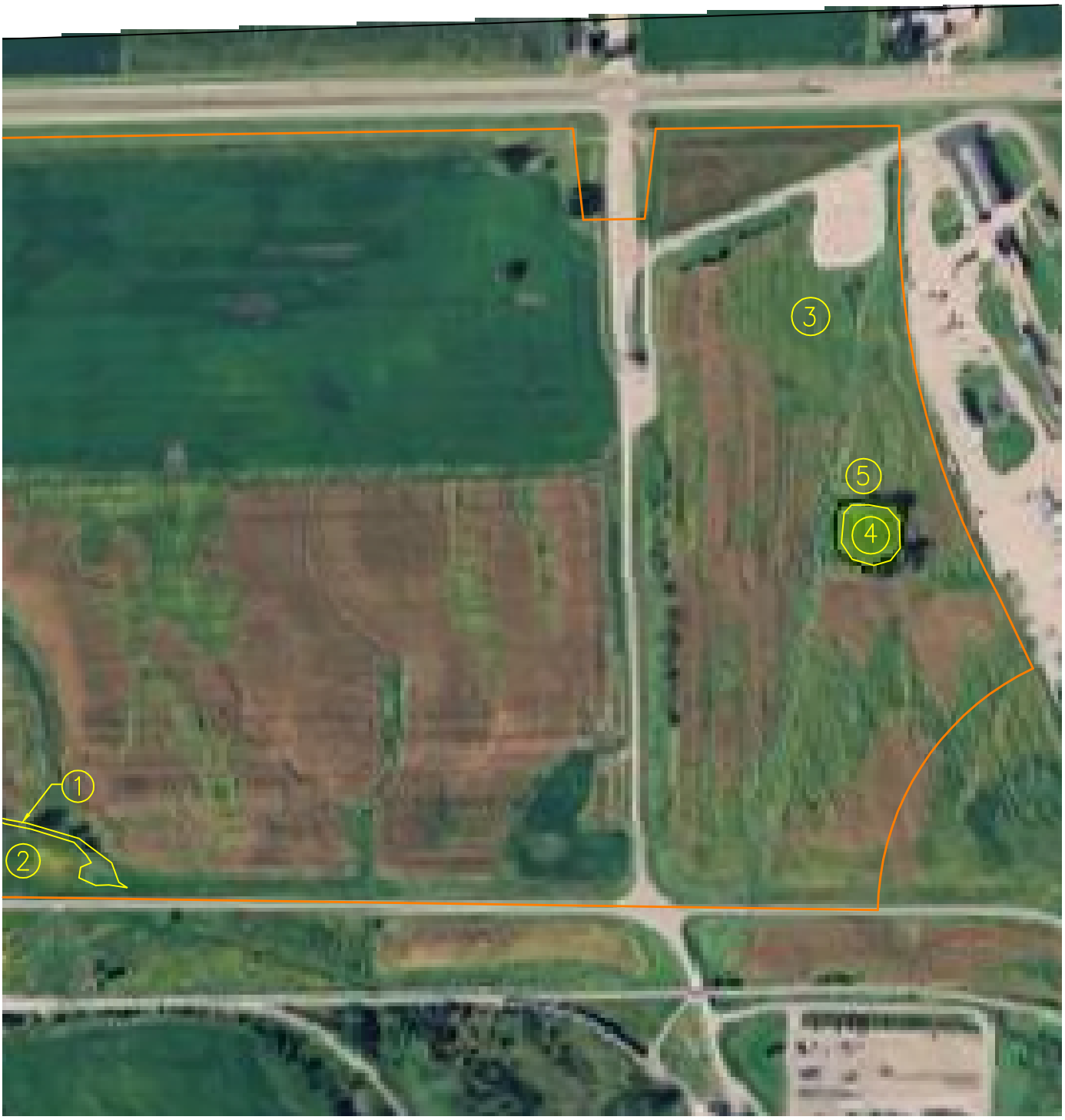

Wetland Delineation

McConnell Environmental
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

LEGEND

PROJECT AREA
Plot Number #
Wetland Line
Transect Line
Transect No. #

MCCONNELL ENVIRONMENTAL

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Exhibit D-3

C:\Users\Colin\Documents\My Documents\Jobs\2012\120029-Wet\Drawing\Wetland Maps.dwg-Delineation-8/15/2007 1:19 PM

US Fish & Wildlife Wetland Map

US Fish & Wildlife Services
Des Moines County, Iowa

Old Hwy 34, Middletown

120029–Wet

Stanley Consutlants

PROJECT AREA

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

MCCONNELL ENVIRONMENTAL

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Exhibit E

C:\Users\Colin\Documents\My Documents\Jobs\2012\120029-Wet\Drawing\Wetland Maps.dwg-USFW-8/15/2007 1:19 PM

Location: Iowa Army Ammunitions Plant Site
Date of Photographs: 5-23&24-12 Investigator: Coilin McConnell & Tom Mattingly

Photograph 1: This photo shows the drainage channel flowing southeast into a wetland area.

Photograph 2: This area is the upland area within the triangle of the intersection. This photo is facing southwest.

Photograph 3: This shows the depressional area within the farm field. There is corn started to coming up.

Photograph 4: This shows the depressional area within the wetland area.

Photograph 5: This shows the upland area surrounding the depressional wetland area within the farm field to the East.

Photograph 6: This shows the drainage channel system within the property. This is typical throughout the western portion of the property.

Photograph 7: This shows the typical upland ecosystem that is adjacent to the drainage channel system within the property.

Photograph 8: This shows the drainage channel system within the property. This is typical throughout the western portion of the property.

Photograph 9: This shows the upland area north of the pond in the southwest corner.

Photograph 10: This shows the pond ecosystem within the southwest corner of the property.

Photograph 11: This shows the western portion of the pond.

Photograph 12: This shows the drainage channel system running north/south within the western portion of the property.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/23/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 1
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Drainage Swale | Local relief (concave, convex, none):
Slope (%): | Lat: 40.82155 N | Long: 91.23371 W | Datum:
Soil Map Unit Name: Mahaska Silty Clay Loam | NWI Classification:
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☑ **No** ☐
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☑	No ☐		

Remarks:
Drainage Ditch

VEGETATION - 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*	10	Yes	FACW
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex granularis*	40	Yes	FACW
2. *Carex tribuloides*	15	Yes	OBL
3. *Solidago altissima*	5	No	FACU
4. *Asclepias syriaca*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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 15	x 1 =	15
FACW species 50	x 2 =	100
FAC species 0	x 3 =	0
FACU species 10	x 4 =	40
UPL species 0	x 5 =	0
Column Totals: 75 (A)		155 (B)

Prevalence Index = B/A = 2.07

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is >50%
☑ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☐

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 1.

SOIL

Sampling Point: 1

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
0-13	10yr 2/1	100	5yr 4/6	40	C	PL	CL	
13-36	Gley 1 2.5N/0	100	5yr 4/6	5	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☑ **No** ☐

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

Remarks:

Drainage Ditch

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/23/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 2
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): ____
Slope (%): 5 | Lat: 40.82140 N | Long: 91.23379 W | Datum: ____
Soil Map Unit Name: Mahaska Silty Clay Loam | NWI Classification: ____
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☑	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☑
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☑		

Remarks:

VEGETATION - 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. *Lychnis alba*	5	No	UPL
2. *Poa compressa*	35	Yes	FACU
3. *Solidago altissima*	60	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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	0	x 3 =	0
FACU species	95	x 4 =	380
UPL species	5	x 5 =	25
Column Totals:	100 (A)		405 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☑

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 2.

SOIL

Sampling Point: 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
0-7	10yr 2/1	100	5yr 4/6	75	C	M	SICL	
7-12	2.5y 6/3	70	7.5yr 6/8	30	CS	M	CL	
	2.5y 5/1	30						
12-28	10yr 6/2	100	10yr 5/8	75	CS	M	CL	
28-36	10yr 6/1	100	10yr 5/8	50	CS	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☐ **No** ☑

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/23/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 3
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Farm Field | Local relief (concave, convex, none):
Slope (%): | Lat: | Long: | Datum:
Soil Map Unit Name: Taintor Silty Clay Loam | NWI Classification:
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☑ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ 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 ☑	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☑
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☑		

Remarks:

VEGETATION - 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*	50	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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 0	x 4 =	0
UPL species 50	x 5 =	250
Column Totals: 50 (A)		250 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☑

Remarks: (Include photo numbers here or on a separate sheet.)
Farm field with planted corn. See photograph number 3.

SOIL

Sampling Point: 3

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 2/1	100					SIL	
16-25	10yr 4/2	100	7.5yr 4/6	>5	CS	M	SIL	
25-34	10yr 5/4	100	10yr 5/8	25	CS	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☐ **No** ☑

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/23/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 4
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Depressional Area | Local relief (concave, convex, none): concave
Slope (%): | Lat: | Long: | Datum:
Soil Map Unit Name: Mahaska Silty Clay Loam | NWI Classification:
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☑ **No** ☐
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☑	No ☐		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	20	Yes	FACW
2. *Salix nigra*	20	Yes	OBL
3. *Populus deltoides*	40	Yes	FAC
4.			
5.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	120	x 2 =	240
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	180 (A)		380 (B)

Prevalence Index = B/A = 2.11

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is >50%
☑ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☐

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 4.

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-12	10yr 4/1	100	5yr 3/4	50	C	PL	SIL	
12-26	Gley 1 2.5N/0	100	7.5yr 4/6	>5	C	PL	SIL	
26-36	2.5y 7/2	100	10yr 5/8	50	C	PL	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☑ **No** ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/23/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 5
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Depressional Area | Local relief (concave, convex, none):
Slope (%): | Lat: 40.82389 N | Long: 91.22551 W | Datum:
Soil Map Unit Name: Mahaska Silty Clay Loam | NWI Classification:
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☑	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☑
Hydric Soil Present?	Yes ☐	No ☑		
Wetland Hydrology Present?	Yes ☐	No ☑		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Morus alba*	60	Yes	FAC
2.			
3.			
4.			
5.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera tatarica*	20	Yes	FACU
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	45	Yes	FACW
2. *Solidago altissima*	25	Yes	FACU
3. *Arctium minus*	5	No	FACU
4. *Galium aparine*	25	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 45	x 2 =	90
FAC species 60	x 3 =	180
FACU species 75	x 4 =	300
UPL species 0	x 5 =	0
Column Totals: 180 (A)		570 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☑

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 5.

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-16	10yr 3/2	100					SIL	
16-26	10yr 5/3	100	7.5yr5/8	10	C	PL	SIL	
26-36	10yr 8/2	100	7.5yr 4/6	40	C	PL	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☑

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☐ **No** ☑

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/24/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 6
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Bottom of Drainage Channel | Local relief (concave, convex, none):
Slope (%): | Lat: 40.82361 N | Long: 91.24049 W | Datum:
Soil Map Unit Name: Mahaska Silty Clay Loam | NWI Classification:
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ 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 ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☑ **No** ☐
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☑	No ☐		

Remarks:
Drainage channel

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja occidentalis*	60	Yes	FACW
2.			
3.			
4.			
5.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus obliqua*	35	Yes	FACW
2.			
3.			
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex convoluta*	45	Yes	FACW
2. *Carex crus corvi*	55	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	140	x 2 =	280
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	195 (A)		335 (B)

Prevalence Index = B/A = 1.72

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is >50%
☑ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☐

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 6.

SOIL

Sampling Point: 6

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
0-13	10yr 5/2	100	7.5yr 4/6	>5	C	M	Cl	
13-28	7.5yr 7/6	100	7.5yr 8/2	5	C	M	SIL	
28-36	7.5yr 6/6	100	7.5yr 4/6	>5	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☑ **No** ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/24/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 7
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none):
Slope (%): | Lat: 40.82405 N | Long: 91.24718 W | Datum:
Soil Map Unit Name: Taintor Silty Clay Loam | NWI Classification:
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☑	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☑
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☑		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	10	Yes	FACU
2.			
3.			
4.			
5.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Asclepias syriaca*	15	No	UPL
2. *Poa compressa*	45	Yes	FACU
3. *Solidago altissima*	20	No	FACU
4. *Daucus carota*	20	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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 0	x 3 =	0
FACU species 75	x 4 =	300
UPL species 35	x 5 =	175
Column Totals: 110 (A)		475 (B)

Prevalence Index = B/A = 4.32

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☑

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 7.

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-18	10yr 2/1	100					SIL	
18-24	10yr 4/1	100	10yr 8/6	20	D	PL	CL	
24-30	10yr 5/1	100	5yr 5/8	>5	C	M	CL	
30-36	10yr 5/2	100	10yr 5/8	40	C	PL	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☐ **No** ☑

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/24/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 8
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): _____
Slope (%): _____ | Lat: 40.82424 N | Long: 91.24801 W | Datum: _____
Soil Map Unit Name: Taintor Silty Clay Loam | NWI Classification: _____
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☑	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☑
Hydric Soil Present?	Yes ☐	No ☑		
Wetland Hydrology Present?	Yes ☐	No ☑		

Remarks:

VEGETATION - 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. *Asclepias syriaca*	5	No	UPL
2. *Bromus tectorum*	60	Yes	UPL
3. *Solidago altissima*	30	Yes	FACU
4. *Polytaenia nuttallii*	5	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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 0	x 3 =	0
FACU species 30	x 4 =	120
UPL species 70	x 5 =	350
Column Totals: 100 (A)		470 (B)

Prevalence Index = B/A = 4.7

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☑

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 9.

SOIL

Sampling Point: 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
0-15	10yr 3/2	100					SIL	Rocky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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: Gravel

Depth (inches): 15"

Hydric Soil Present?

Yes ☐ **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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present?

Yes ☐ **No** ☑

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

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Iowa Army Ammunitions Plant Site | City: Middletown | Sampling Date: 5/24/2012
Applicant: Stanley Consultants | State: Iowa | Sampling Point: 9
Investigator(s): Coilin McConnell & Tom Mattingly | Section, Township, Range: 31 & 32-70-6
Landform (hillslope, terrace, etc.): Pond Edge | Local relief (concave, convex, none): ____
Slope (%): ____ Lat: 40.82405 N | Long: 91.24813 W | Datum: ____
Soil Map Unit Name: Taintor Silty Clay Loam | NWI Classification: ____
Are climate/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (if no, explain in Remarks.)
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ 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 ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☑ **No** ☐
Hydric Soil Present?	Yes ☑	No ☐		
Wetland Hydrology Present?	Yes ☑	No ☐		

Remarks:

VEGETATION - 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. *Alisma triviale*	5	No	OBL
2. *Carex crus corvi*	10	No	OBL
3. *Phalaris arundinacea*	15	Yes	FACW
4. *Wolffia columbiana*	25	Yes	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	55	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	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	40	x 1 =	40
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	55 (A)		70 (B)

Prevalence Index = B/A = 1.27

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is >50%
☑ 3 - Prevalence Index is ≤ 3.0'
☐ 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** ☐

Remarks: (Include photo numbers here or on a separate sheet.)
See photograph number 10.

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-7	Gley 1 2.5N/0	70					CL	
	Gley 1 5G7/1	30	10yr 4/6	30	C	PL		
7-22	10yr 2/1	100	7.5yr 5/8	5	D	PL	CL	
			10yr 8/4	>5	C	PL		
22-31	10yr 4/1	100	10yr 5/8	>5	C	PL	CL	
			10yr 5/3	15	D	PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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]

- ☐ Coast 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** ☐

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)
- ☐ Oxid. Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soil (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)
- ☐ Sat. Visible on Aerials (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☐	Depth (inches):	
Water Table Present?	Yes ☑	No ☐	Depth (inches):	1
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches):	0

Wetland Hydrology Present?

Yes ☑ **No** ☐

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

Remarks:

THE OBSERVED SPECIES LIST

The following species list, prepared by McConnell Environmental, follows the nomenclature given by Swink and Wilhelm, Plants of the Chicago Region, 1994. Each species is classified by its: common name, indicator, physiognomy, wetness (W), and coefficient of conservatism (C). The C value is given to each plant depending on what type of species (0 = weedy, 10 = conservative). The wetness coefficient is given to each species by the location of where the species grows (-5 = wet, +5 = dry) corresponding to the National Wetland Category (OBL = Obligate Wetland, FAC = Facultative Species, UPL = Upland).

The floristic quality data states: the native species, total species, native mean of C, mean of C for total species, Floristic Quality Index (FQI), FQI for total species, native mean of wetness coefficient (W), W for total species, and the National Wetland Category based off of the wetness coefficient.

Site: Iowa Army Ammunitions Plant Site
Date: 5-23-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 1

FLORISTIC QUALITY DATA

5	Native Species
5	Total Species
2	Native Mean C
2	w/ adventive
4.0	Native FQI
4.0	w/ adventive
-1	Native Mean W
-1	w/ adventive
Fac-	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
1	-3	Facw	Salix interior	Native Shrub
4	-3	Facw	Carex granularis	Perennial Native Grass Like
3	-5	Obl	Carex tribuloides	Perennial Native Grass Like
1	3	Facu	Solidago altissima	Perennial Native Forb
0	3	Facu	Asclepias syriaca	Perennial Native Forb

Site: Iowa Army Ammunitions Plant Site
Date: 5-23-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 2

FLORISTIC QUALITY DATA

1	Native Species
3	Total Species
1	Native Mean C
0	w/ adventive
1.0	Native FQI
0.6	w/ adventive
11	Native Mean W
4	w/ adventive
Facu-	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
1	3	Facu	Solidago altissima	Perennial Native Forb
0	5	Upl	Lychnis alba	Introduced Forb
0	3	Facu	Poa compressa	Perennial Introduced Grass

Site: Iowa Army Ammunitions Plant Site
Date: 5-23-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 4

FLORISTIC QUALITY DATA

4	Native Species
4	Total Species
2	Native Mean C
2	w/ adventive
3.0	Native FQI
3.0	w/ adventive
-3	Native Mean W
-3	w/ adventive
Facw-	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
0	-3	Facw	Acer saccharinum	Native Tree
4	-5	Obl	Salix nigra	Native Tree
2	0	Fac	Populus deltoides	Native Tree
0	-3	Facw	Phalaris arundinacea	Perennial Native Grass

Site: Iowa Army Ammunitions Plant Site
Date: 5-23-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 5

FLORISTIC QUALITY DATA

2	Native Species
5	Total Species
1	Native Mean C
0	w/ adventive
1.4	Native FQI
0.9	w/ adventive
6	Native Mean W
2	w/ adventive
Facu+	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
0	0	Fac	Morus alba	Introduced Tree
0	3	Facu	Lonicera tatarica	Introduced Shrub
1	3	Facu	Solidago altissima	Perennial Native Forb
0	3	Facu	Arctium minus	Biannual Introduced Forb
1	3	Facu	Galium aparine	Annual Native Forb

Site: Iowa Army Ammunitions Plant Site
Date: 5-24-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 6

FLORISTIC QUALITY DATA

4	Native Species
4	Total Species
9	Native Mean C
9	w/ adventive
18.0	Native FQI
18.0	w/ adventive
-4	Native Mean W
-4	w/ adventive
Facw+	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
10	-3	Facw	Thuja occidentalis	Native Tree
6	-3	Facw	Cornus obliqua	Native Shrub
10	-3	Facw	Carex conjunta	Perennial Native Grass Like
10	-5	Obl	Carex crus corvi	Perennial Native Grass Like

Site: Iowa Army Ammunitions Plant Site
Date: 5-24-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 7

FLORISTIC QUALITY DATA

3	Native Species
5	Total Species
2	Native Mean C
1	w/ adventive
4.0	Native FQI
3.1	w/ adventive
6	Native Mean W
3	w/ adventive
Facu	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
5	3	Facu	Quercus alba	Native Tree
0	3	Facu	Asclepias syriaca	Perennial Native Forb
1	5	Upl	Daucus carota	Perennial Introduced Forb
0	3	Facu	Poa compressa	Perennial Introduced Grass
1	3	Facu	Solidago altissima	Perennial Native Forb

Site: Iowa Army Ammunitions Plant Site
Date: 5-24-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 8

FLORISTIC QUALITY DATA

3	Native Species
4	Total Species
5	Native Mean C
4	w/ adventive
9.2	Native FQI
8.0	w/ adventive
5	Native Mean W
4	w/ adventive
Facu+	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
5	5	Upl	Bromus tectorum	Perennial Introduced Grass
0	3	Facu	Asclepias syriaca	Perennial Native Forb
10	5	Upl	Polytaenia nuttallii	Perennial Native Forb
1	3	Facu	Solidago altissima	Perennial Native Forb

Site: Iowa Army Ammunitions Plant Site
Date: 5-24-12
Investigator: Coilin McConnell & Tom Mattingly
Transect Line
Plot 9

FLORISTIC QUALITY DATA

3	Native Species
4	Total Species
7	Native Mean C
5	w/ adventive
12.1	Native FQI
10.5	w/ adventive
-5	Native Mean W
-5	w/ adventive
Obl	AVERAGE

C	W	Indicator	Scientific Name	Physiognomy
4	-5	Obl	Alisma triviale	Perennial Introduced Grass
10	-5	Obl	Carex crus corvi	Perennial Native Grass Like
0	-4	Facw+	Phalaris arundinacea	Perennial Native Grass
7	-5	Obl	Wolffia columbiana	Perennial Native Floating Forb

WILDLIFE HABITAT QUALITY

Wildlife habitat Quality as determined using the Michigan Department of Natural Resources (MIDNR) wildlife habitat evaluation method (MRWQ).

A. Utilization by Wildlife

Wildlife	Score	
Significant	3	
Evident	2	
Low	1	
Occasional	0.5	
Non-Existent	0	Sub-Total Score – 0.5

B. Interspersion of Vegetative Cover

Interspersion	Score	
High	3	
Medium	2	
Low	1	Sub-Total Score – 1

C. Vegetative Cover to Open Water

Cover	Score	
> 95% Cover	0.5	
76%-95% Cover, Peripheral	1.5	
76%-95% Cover, Various	2.5	
26%-75% Cover, Peripheral	2.0	
26%-75% Cover, Patches	3.0	
5%-25% Cover, Peripheral	1.0	
< 5% Cover	0.5	Sub-Total Score – 2.0

Total Score (A+B+C) = 3.5

METHODS

1987 USACE Wetland Delineation Manual.

Prior to the visit, a preliminary site evaluation is performed using aerial photography and natural resource mapping. Potential wetland areas identified by these resources are evaluated in the field to determine if they meet the requirements for a wetland based on the USACE parameters of vegetation, hydrology and soils. In general, positive indication of each of the three parameters must be demonstrated to classify an area as wetland. Each of these parameters is discussed below.

- **Vegetation** – To be considered a wetland, more than 50% of the dominant plant species must be hydrophytic (water tolerant). The U.S. Fish Wildlife Service (USFWS) has prepared a regional list of plants occurring in wetlands which assigns the plant species different indicators. Wetland plants fall into three indicator classes based on differing tolerances to water level and soil saturation. These indicators are obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Dominant plant species are recorded at sample points within investigated areas.

- **Hydrology** – The hydrology criterion for a wetland is met when inundation or saturation occurs for more than 5% of the growing season. Soil is considered to be saturated when a pit dug to a depth of 16 inches accumulates standing water within a major part of the root zone or with in 12 inches of the ground surface. Both primary and secondary indicators of wetland hydrology (see USACE data forms) are investigated in the field. Seasonal factors are considered when evaluating hydrology.

- **Soils** - To be considered a hydric soil, sufficient saturation, flooding or ponding must occur during the growing season to develop anaerobic (lacking oxygen) conditions which favor growth, reproduction and persistence of hydrophytic vegetation. Field indicators of hydric soils include but are not limited to presence of a gleyed or low chroma soil colors, presence of sulfidic odor, and the presence of redoximorphic features. Field indicators are usually examined in the top 18 inches of the soil. Soil colors are determined using *Munsell Soil Color Charts.* The most current edition of the *Field Indicators of Hydric Soils in the United States* may be used for supplemental identification of hydric soils.

Areas meeting these three criteria are staked in the field for surveying purposes. Boundaries are demarcated in the field with pink flagged pin stakes labeled "WETLAND DELINEATION." Staked boundaries are mapped on an aerial photograph included in this report. Approximate off-site wetland boundaries are identified on the aerial photograph and were determined using available aerial photographs, wetlands maps and field observation.

Farmed Wetland Determinations.

A March 25, 2005 Joint Guidance Agreement between USACE and Natural resources Conservation Service (NRCS) states that the USACE shall assume responsibility for determining farmed wetland areas for all projects processed under the Clean Water Act, which includes all developments that propose to convert cropland into another use.

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