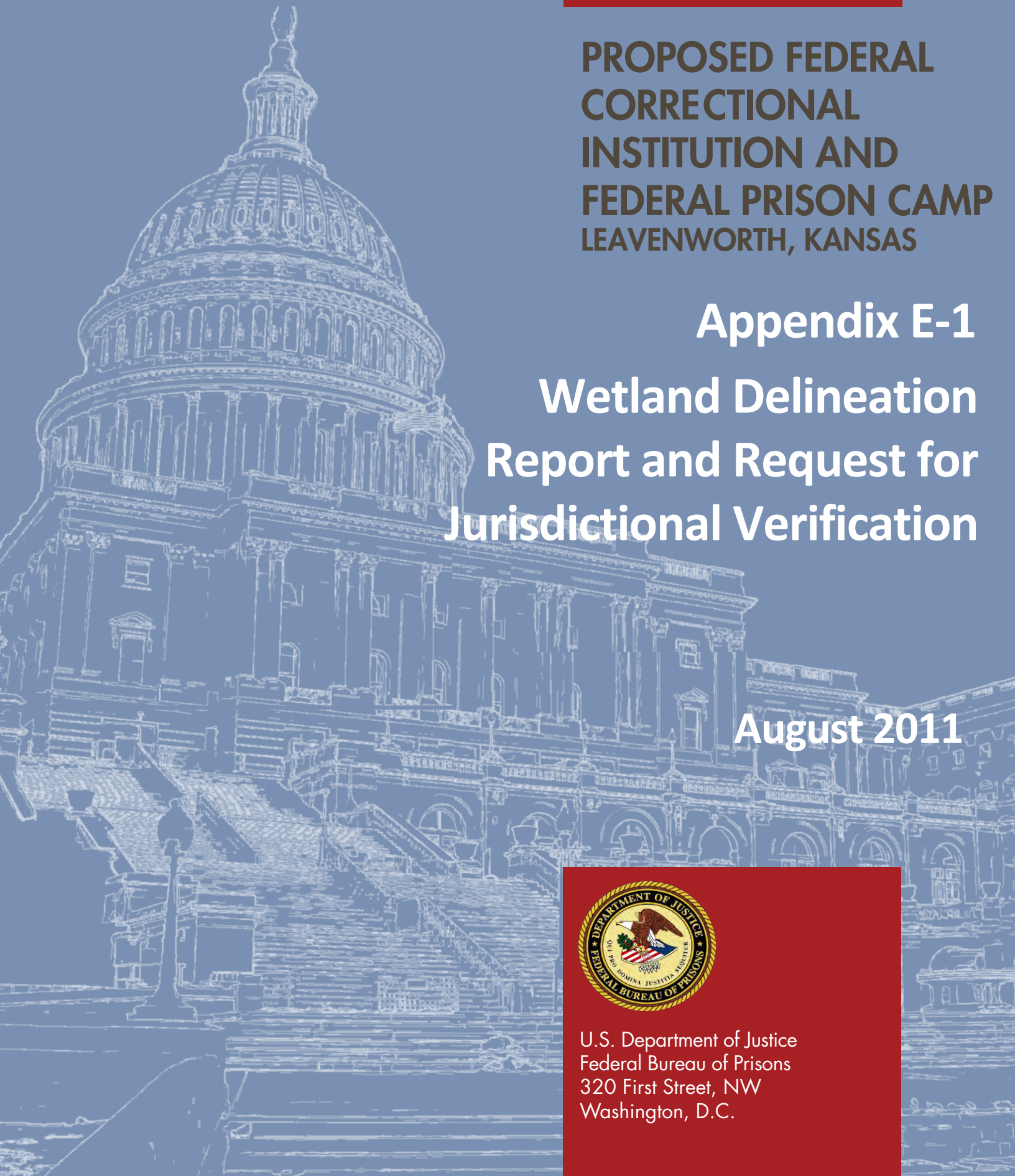

PROPOSED FEDERAL CORRECTIONAL INSTITUTION AND FEDERAL PRISON CAMP
LEAVENWORTH, KANSAS

Appendix E-1
Wetland Delineation Report and Request for Jurisdictional Verification

August 2011

U.S. Department of Justice
Federal Bureau of Prisons
320 First Street, NW
Washington, D.C.

APPENDIX E-1
WETLAND DELINEATION REPORT AND REQUEST FOR JURISDICTIONAL VERIFICATION
AUGUST 2011

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1.0 INTRODUCTION

1.0 INTRODUCTION

The U.S Department of Justice, Federal Bureau of Prisons (BOP) is considering the development of a new Federal Correctional Institution (FCI) and Federal Prison Camp (FPC) within two alternative development sites located within the existing Leavenworth United States Penitentiary (USP) property in Leavenworth, Kansas. The USP property and proposed development sites are situated in east-central Leavenworth County (Exhibit 1), west of the Missouri River and east of the Santa Fe Trail. The southern limit of the property is US Highway 73. Using the North American Datum, Universal Transverse Mercator (UTM) 15, the project area centers on Latitude: 39.3349° N and Longitude: -94.9274° W.

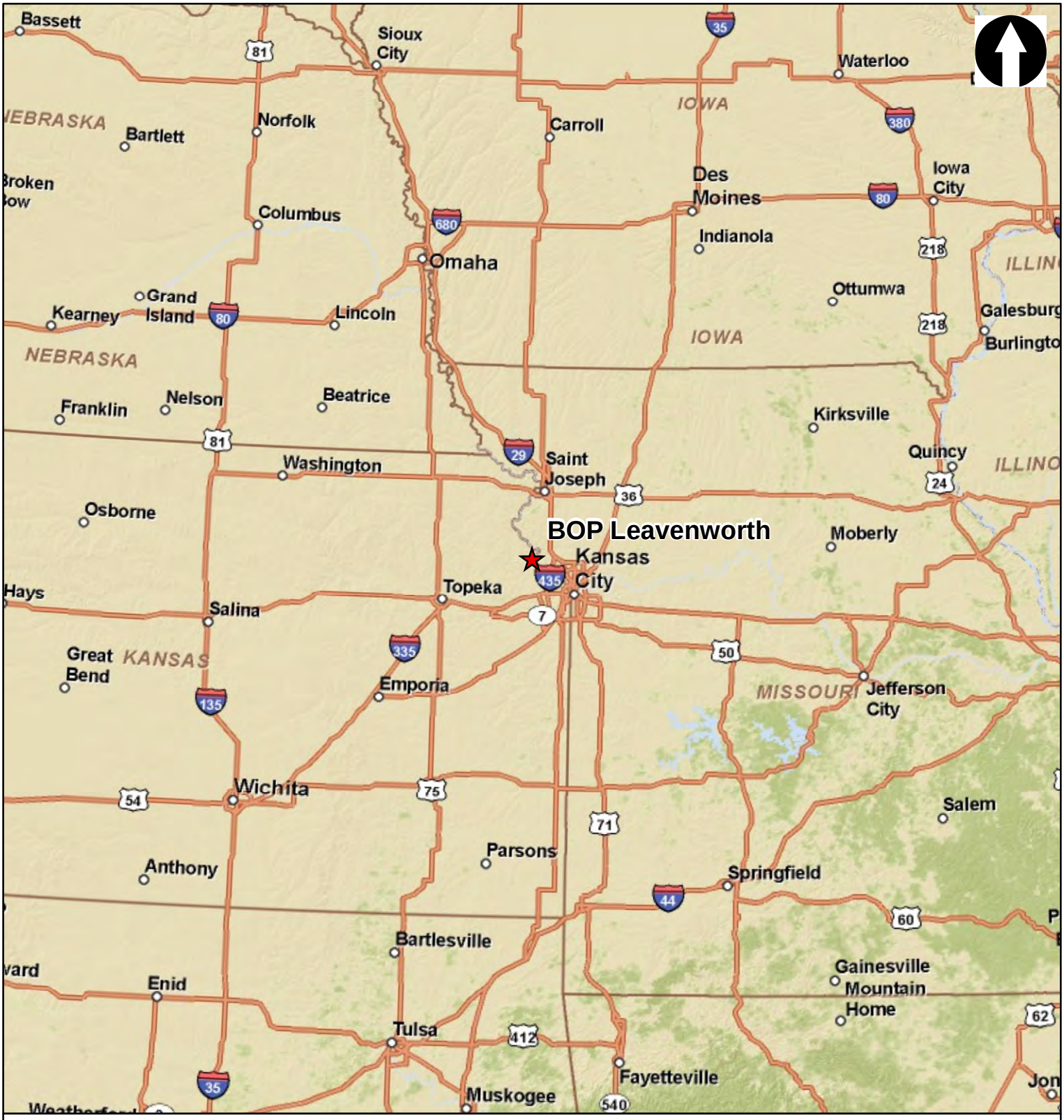
Development of the FCI and FPC is proposed as a means of better managing the present crowding within the federal prison system and meeting anticipated growth in the federal inmate population. A 382-acre project study area was investigated for jurisdictional features. The project study area, known as the East and West sites, is located east and west of the existing institution. The BOP property is generally bordered by Corral Creek to the north, Grant Avenue to the east, Metropolitan Avenue with commercial and residential area to the south, and the newly realigned Santa Fe Trail to the west.

The project study area contains a complex of upland communities, freshwater wetlands, open water systems, and riparian corridors. Topography of the project study area ranges from nearly level to gently sloping. Land use within the project study area consists primarily of mowed/maintained pasture land and grassland that were once in agricultural production.

The BOP contracted with The Louis Berger Group, Inc. (LBG) to survey the site for jurisdictional waters. Field surveys took place the week of March 21, 2011. Approximately 20,182 linear feet (1.311 acres) of tributary, 0.746 acre of wetlands, and 2.990 acres of open water impoundments were identified within the project study area boundaries.

This report includes the following documentation:

- Wetland delineation report;
- Site vicinity map (Exhibit 1);
- Leavenworth County USGS Topographic map (Exhibit 2);
- Leavenworth County Soil Survey map (Exhibit 3);
- National Wetland Inventory map (Exhibit 4);
- Aerial map indicating the surveyed aquatic resources (Exhibits 5A and 5B);
- Field Data Sheets (Appendix A);
- Photographs of the site (Appendix B).



Source: ESRI World Street Map

0 20 40 60 120
Miles

Federal Bureau of Prisons

Proposed FCI and FPC
USP Leavenworth

Regional Location Map

Date: June 2011

Exhibit 1

2.0 METHODOLOGY

2.0 METHODOLOGY

LBG conducted a field survey and jurisdictional waters identification of two study areas at USP Leavenworth. The wetland identification was conducted using the methodology outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE, 2007a). The project study area is located in Sections 22, 23, 26 and 27, Township 8 South, Range 22 East in Leavenworth County, Kansas. The determination included an office review of resource maps, on-site vegetation identification, soil interpretation, site photography, and general observations of topographic and hydrologic conditions. Tributaries were identified by observing the presence of a defined bed and bank, as well as a discernible ordinary high water mark (OHWM). The jurisdictional status of aquatic resources is based on the U.S. Army Corps of Engineers (USACE) *Jurisdictional Determination Form Instructional Guidebook* (USACE, 2007b). This report includes a discussion of the aquatic resources within the project study area.

As an initial guide to the extent and nature of the project area wetlands, existing federal and state documentation was reviewed. Agency resources included: U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle of Leavenworth, Kansas (USGS, 2009); U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soils data for Leavenworth County, Kansas through the Soil Data Mart (USDA NRCS, 2011b); and aerial photography available from the USDA National Agriculture Imagery Program (NAIP).

The wetlands were delineated in accordance with the procedures outlined in the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (USACE, 1987) and in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region Version 2.0* (USACE, 2007). Wetlands, as defined in the manual are: *Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions*. Wetlands possess three characteristics: 1) hydric soils; 2) wetland hydrology; and 3) hydrophytic vegetation.

The wetland delineation was performed to determine the probable federal jurisdictional boundaries of all wetlands, streams, and open waters identified within the project study areas. The boundaries of the wetlands were surveyed in the field by LBG biologists using a Trimble Geo XH Global Positioning System (GPS) unit.

Data points for all aquatic resources were taken and field data sheets documenting the vegetative, soils, and hydrologic characteristics of potential jurisdictional features were completed and are included as Appendix A. Photographs taken at representative points along the delineation are included as Appendix B.

3.0 EXISTING INFORMATION

3.0 EXISTING INFORMATION

The following section summarizes the review of various resources including U.S. Geological Survey (USGS) topographic survey, NRCS soil survey, National Wetlands Inventory (NWI) maps, aerial imagery, hydrology and vegetation.

3.1 TOPOGRAPHY

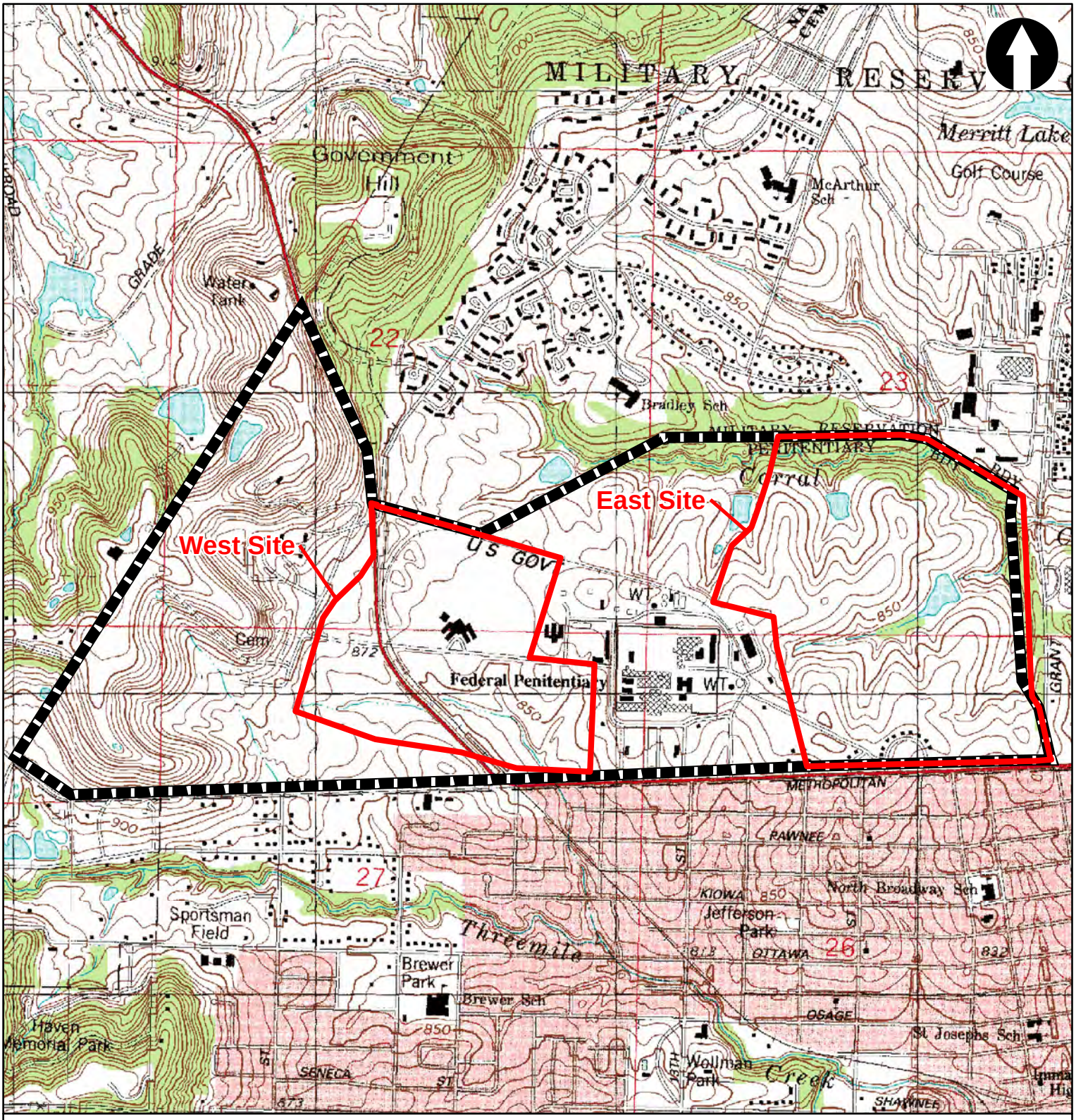
The USGS topographic survey for the Leavenworth, Kansas, Quadrangle (USGS, 2009) shows that three tributaries are located in the project area (Exhibit 2). The property is located in the Missouri River Basin in the Independence-Sugar Watershed. The topography consists of gently rolling terrain that slopes from west to east on the eastern portion of the project study area, with relatively level terrain in the western portion sloping to the southeast. Runoff from the eastern portion of the project study area flows into Corral Creek and eventually to the Missouri River. Runoff from the western portion of the project study area flows south off-site into Threemile Creek. Runoff from the contributing watershed flows into the Missouri River, located approximately one mile east of the project study area. Surface drainage patterns were identified by conducting a thorough survey of the project area and by reviewing topographic maps.

3.2 SOILS

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) web soil survey map (USDA NRCS, 2011b) was used to determine the soil information for the project area (Exhibit 3). Mapped soil types for the project study area were compared to the Hydric Rating by Map Unit on the web soil survey map site and the Hydric Soils list for Leavenworth County (NRCS, 2011c). None of the soils mapped on the project study area are hydric soils. The project area contains the following soil types:

- **7050—Kennebec silt loam, occasionally flooded:** The Kennebec component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains on river valleys. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 42 inches during February, March, April and May. Organic matter content in the surface horizon is about 3 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

- **7051—Kennebec silt loam, frequently flooded:** The Kennebec component makes up 95 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains on river valleys. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 42 inches during February, March, April and May. Organic matter content



Source: USGS 24k Topographic Map

Study Area

BOP Leavenworth Property Boundary (approximate)

0 550 1,100 2,200 Feet

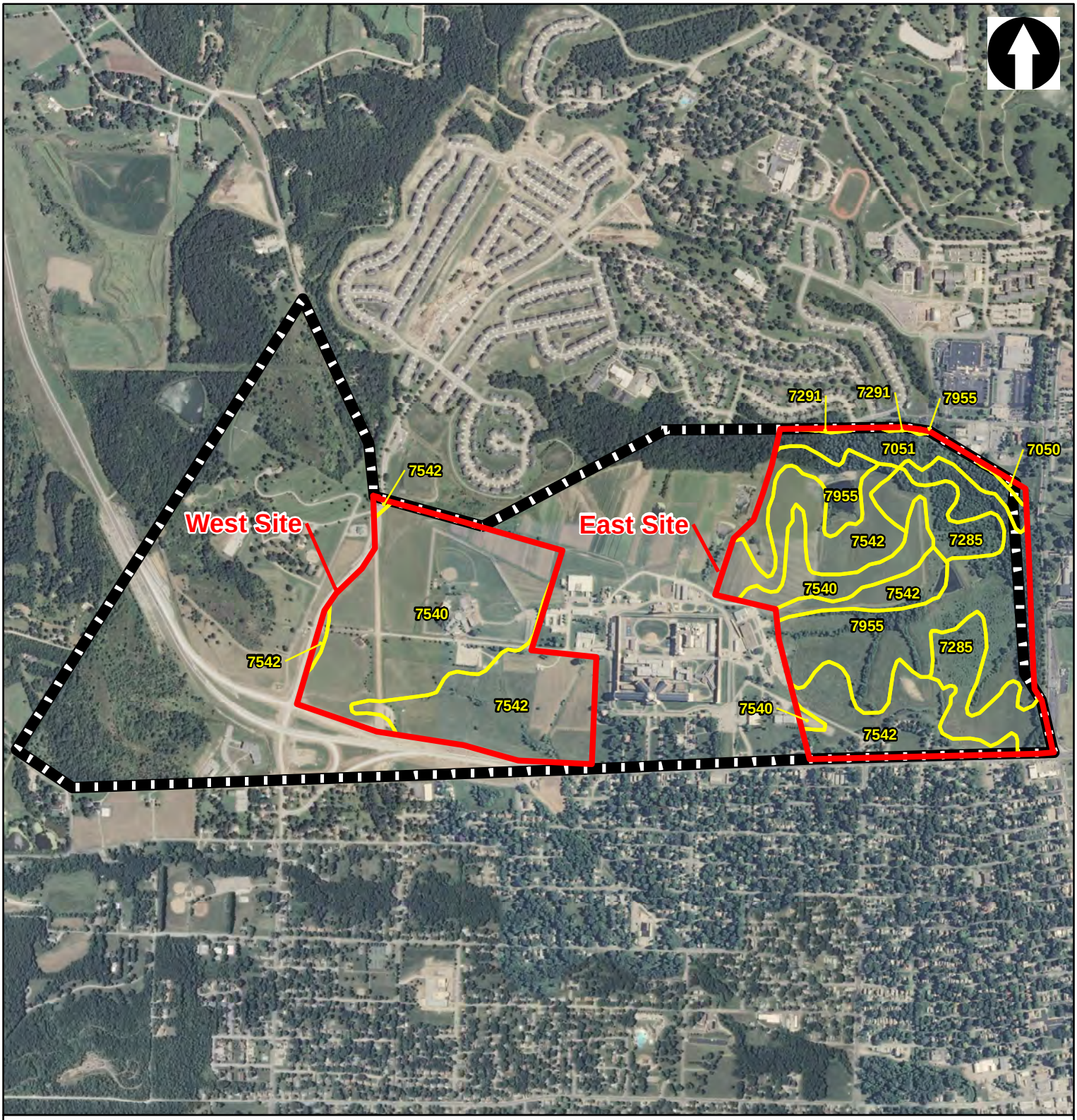
Federal Bureau of Prisons

Proposed FCI and FPC
USP Leavenworth

Topography

Date: August 2011

Exhibit 2



Source: National Agriculture Imagery Program (NAIP) 2010, USDA NRCS Leavenworth County, KS Soil Survey 2010

BOP Leavenworth Property Boundary (approximate)

Study Area

Soils

0 550 1,100 2,200 Feet

7050 - Kennebec silt loam, occasionally flooded
7051 - Kennebec silt loam, frequently flooded
7285 - Ladoga silt loam, 3 to 8 percent slopes
7291 - Marshall silt loam, 5 to 9 percent slopes
7540 - Sharpsburg silty clay loam, 1 to 4 percent slopes
7542 - Sharpsburg silty clay loam, 4 to 8 percent slopes, eroded
7955 - Knox silt loam, 7 to 12 percent slopes

Federal Bureau of Prisons

Proposed FCI and FPC
USP Leavenworth

Soil Survey of Leavenworth County

Date: August 2011

Exhibit 3

in the surface horizon is about 3 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

- **7285—Ladoga silt loam, 3 to 8 percent slopes:** The Ladoga component makes up 80 percent of the map unit. Slopes are 4 to 7 percent. This component is on hillslopes on uplands. The parent material consists of silty and clayey loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

- **7291—Marshall silt loam, 5 to 9 percent slopes:** The Marshall component makes up 90 percent of the map unit. Slopes are 4 to 9 percent. This component is on hillslopes on uplands. The parent material consists of fine-silty loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

- **7540—Sharpsburg silty clay loam, 1 to 4 percent slopes:** The Sharpsburg component makes up 94 percent of the map unit. Slopes are 1 to 4 percent. This component is on hillslopes on uplands. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 47 inches during February, March, April, May. Organic matter content in the surface horizon is about 3 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

- **7542—Sharpsburg silty clay loam, 4 to 8 percent slopes, eroded:** The Sharpsburg, eroded component makes up 85 percent of the map unit. Slopes are 4 to 8 percent. This component is on hillslopes on uplands. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 47 inches during February, March, April, and May. Organic matter content in the surface horizon is about 3 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

- **7955—Knox silt loam, 7 to 12 percent slopes:** The Knox component makes up 80 percent of the map unit. Slopes are 7 to 12 percent. This component is on hillslopes on uplands. The parent material consists of fine-silty loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria (USDA NRCS 2011c).

3.3 NATIONAL WETLANDS INVENTORY

The NWI map for the Leavenworth, Kansas, quadrangle (U.S. Department of the Interior [USDOI, 2009]) was reviewed to identify the location of potential wetlands (Exhibit 4). Six NWI features were identified in the project boundary: one palustrine, emergent, temporarily flooded, diked/impounded (PEMAh); two palustrine, scrub-shrub, temporarily flooded (PSSA); one palustrine, forested, temporarily flooded, diked/impounded (PFOAh); and two palustrine, aquatic bed, semipermanently flooded, diked/impounded (PABFh).

3.4 VEGETATION

Field investigations indicate habitat diversity is limited on the project study area and the surrounding vicinity due to the dominance of maintained fields and retired cropland. Most of the upland areas are regularly mowed and maintained. Mostly pasture land herbaceous species were identified in these areas. The remaining land includes riparian corridors along the non-perennial tributaries. The riparian corridors are dominated by white oak (*Quercus alba*), American elm (*Ulmus americana*), hackberry (*Celtis occidentalis*), honey locust (*Gleditsia triacanthos*), sycamore (*Platanus occidentalis*), Osage orange (*Maclura pomifera*), grape species (*Vitis* spp.), and buckbrush (*Symphoricarpos orbiculatus*). The understory is mostly dominated by non-native shrub species including bush honeysuckle (*Lonicera mackii*) and multiflora rose (*Rosa multiflora*). The most significant riparian corridor is on the northern portion of the East site adjacent to Corral Creek.

Source: National Agriculture Imagery Program (NAIP) 2010, USFW, National Wetlands Inventory

NWI Wetlands

Study Area

BOP Leavenworth Property Boundary (approximate)

PABFh - Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded
PEMAh - Palustrine, Emergent, Temporarily Flooded, Diked/Impounded
PFOAh - Palustrine, Forested, Temporarily Flooded, Diked/Impounded
PSSA - Palustrine, Scrub-Shrub, Temporarily Flooded

0 750 1,500 3,000
Feet

Federal Bureau of Prisons

Proposed FCI and FPC
USP Leavenworth

National Wetlands Inventory

Date: August 2011

Exhibit 4

4.0 AQUATIC RESOURCES

4.0 AQUATIC RESOURCES

The project study area is located within the watershed of the Missouri River. Most of the study area drains via intermittent and ephemeral streams and non-jurisdictional drainages. Aquatic resources on the two alternative project sites include ten ephemeral tributaries (4,663 linear feet, 0.235 acres), 11 intermittent tributaries (15,519 linear feet, 1.076 acres), five palustrine emergent (PEM) wetlands (0.746 acres), and two open waters (2.990 acres). Data sheets and photographs for these features can be found in Appendix A and Appendix B, respectively. Table 1 summarizes the aquatic resources in the project study area.

The USACE places tributaries into one of three categories: Traditional Navigable Waters (TNW), Relatively Permanent Waters (RPW), or Non-Relatively Permanent Waters (Non-RPW). This report describes the tributaries on-site. The USACE will make the final determination whether the tributaries are TNW, RPW, or Non-RPW. Wetlands are classified as abutting a tributary, adjacent to a tributary, or isolated. A wetland that abuts a tributary has no distinction between the immediate edge of the tributary and the wetland itself. An adjacent wetland has a barrier between itself and the tributary, but is connected by surface flow. Isolated wetlands may or may not be jurisdictional WOUS. There are four abutting wetlands and one adjacent wetland on the project study area (Exhibits 5A and 5B).

4.1 TRIBUTARIES

The project study area includes six RPW intermittent tributaries (12,054 linear feet, 0.981 acre), four intermittent Non-RPW tributaries (3,465 linear feet, 0.095 acre), and ten Non-RPW ephemeral tributaries (4,663 linear feet, 0.235 acre). For intermittent tributaries, groundwater and rainfall runoff are both sources of hydrology. Ephemeral tributaries are only supplied hydrology by rainfall runoff. Twenty non-perennial tributaries are found within the project study area (see Exhibits 5A and 5B).

- **Ephemeral-1 (E-1):** E-1 is an unnamed meandering tributary with a silt bed with 10 percent cover by herbaceous vegetation and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 719 linear feet (0.025 acre) and is one foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows northeast through the project study area, and discharges within the project study area into I-4.
- **Ephemeral-2 (E-2):** E-2 is an unnamed relatively straight tributary with a silt bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 154 linear feet (0.007 acre) and is one foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows northeast through the project study area, and discharges within the project study area into I-4.
- **Ephemeral-3 (E-3):** E-3 is an unnamed meandering tributary with a silt bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 367 linear feet (0.042 acre) and is four feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows north through the project study area, and discharges within the project study area into I-4.

Source: National Agriculture Imagery Program (NAIP) 2010

- Data Point
- Drainage
- Ephemeral Tributary
- Intermittent Tributary
- Non-wetland
- Open Water
- Palustrine Emergent Wetland
- Study Area
- BOP Leavenworth Property Boundary (approximate)

0 185 370 740 Feet

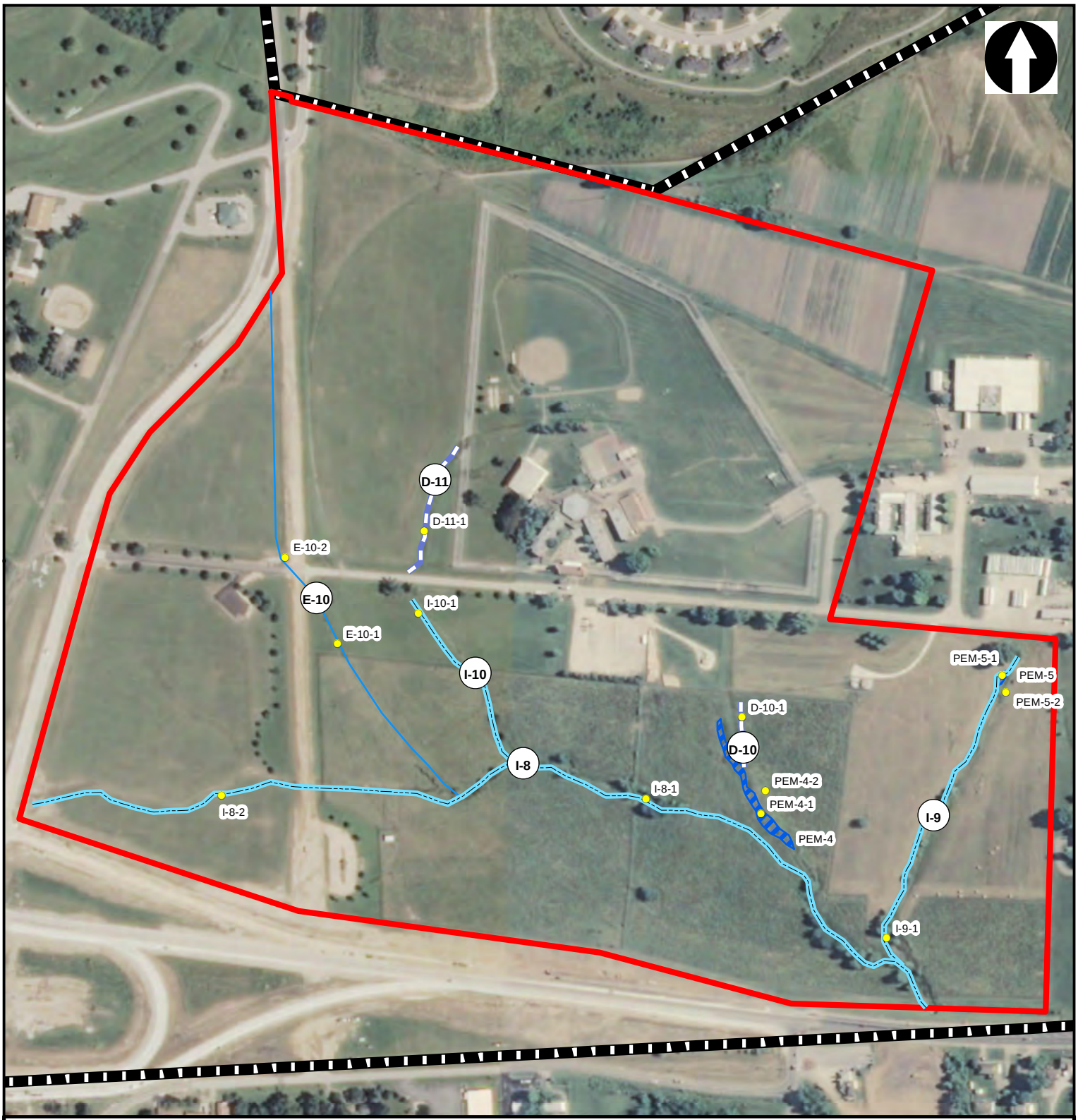
Federal Bureau of Prisons

Proposed FCI and FPC
USP Leavenworth

Aquatic Resources Map - East Site

Date: August 2011

Exhibit 5A



Source: National Agriculture Imagery Program (NAIP) 2010

- Data Point
- Drainage
- Ephemeral Tributary
- Intermittent Tributary
- Non-wetland
- Open Water
- Palustrine Emergent Wetland
- Study Area
- BOP Leavenworth Property Boundary (approximate)

0 150 300 600 Feet

Federal Bureau of Prisons

Proposed FCI and FPC
USP Leavenworth

Aquatic Resources Map - West Site

Date: August 2011

Exhibit 5B

TABLE 1
AQUATIC RESOURCES WITHIN THE PROJECT STUDY AREA

Feature ID	Resource Type	Classification	Length (linear feet)	Area* (acres)
Tributaries				
E-1	Ephemeral Tributary	Non-RPW	719	0.025
E-2	Ephemeral Tributary	Non-RPW	154	0.007
E-3	Ephemeral Tributary	Non-RPW	367	0.042
E-4	Ephemeral Tributary	Non-RPW	271	0.019
E-5	Ephemeral Tributary	Non-RPW	183	0.002
E-6	Ephemeral Tributary	Non-RPW	34	0.001
E-7	Ephemeral Tributary	Non-RPW	302	0.003
E-8	Ephemeral Tributary	Non-RPW	252	0.006
E-9	Ephemeral Tributary	Non-RPW	594	0.007
E-10	Ephemeral Tributary	Non-RPW	1,787	0.123
I-1	Intermittent Tributary	Non-RPW	268	0.006
I-2	Intermittent Tributary	Non-RPW	2,018	0.069
I-3	Intermittent Tributary	RPW	991	0.114
I-4	Intermittent Tributary	RPW	3,644	0.585
I-5	Intermittent Tributary	Non-RPW	253	0.009
I-6	Intermittent Tributary	RPW	1,913	0.088
I-7	Intermittent Tributary	Non-RPW	926	0.011
I-8	Intermittent Tributary	RPW	3,236	0.111
I-9	Intermittent Tributary	RPW	1,125	0.052
I-10	Intermittent Tributary	RPW	625	0.007
I-11	Intermittent Tributary	RPW	520	0.024
Wetlands				
PEM-1	Palustrine Emergent Wetland	Abutting I-1	-	0.047
PEM-2	Palustrine Emergent Wetland	Abutting E-8	-	0.012
PEM-3	Palustrine Emergent Wetland	Abutting I-6	-	0.431
PEM-4	Palustrine Emergent Wetland	Adjacent to I-8	-	0.236
PEM-5	Palustrine Emergent Wetland	Abutting to I-9	-	0.020
Open Waters				
OW-1	Open Water	Impoundment	-	1.203
OW-2	Open Water	Impoundment	-	1.787
Total: Waters of the U.S.			**20,182**	**5.047**

* Area is calculated by multiplying the length by the OHWM and converting to acres.

- **Ephemeral-4 (E-4):** E-4 is an unnamed meandering tributary with a silt and sand bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 271 linear feet (0.019 acre) and is one foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested land. The tributary flows north through the project study area, and discharges within the project study area into I-4.
- **Ephemeral-5 (E-5):** E-5 is an unnamed meandering tributary with a silt, sand, and gravel bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 183 linear feet (0.002 acre) and is one foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows north through the project study area, and discharges within the project study area into I-4.
- **Ephemeral-6 (E-6):** E-6 is an unnamed meandering tributary with a silt and sand bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 34 linear feet (0.001 acre) and is one foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows northwest through the project area, and discharges offsite into I-4.
- **Ephemeral-7 (E-7):** E-7 is an unnamed meandering tributary with a silt bed and is bounded by pasture land. The portion of the tributary that lies within the project area is approximately 302 linear feet (0.003 acre) and is one foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding pasture land. The tributary flows northwest through the project study area, and discharges offsite into an open water.
- **Ephemeral-8 (E-8):** E-8 is an unnamed meandering tributary with a silt bed and is bounded by pasture land. The portion of the tributary that lies within the project area is approximately 252 linear feet (0.006 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding pasture land. The tributary flows northeast through the project study area, and discharges within the project study area into PEM-2 and then into OW-2.
- **Ephemeral-9 (E-9):** E-9 is an unnamed meandering tributary with a silt bed and is bounded by a forested riparian buffer and pasture land. The portion of the tributary that lies within the project area is approximately 594 linear feet (0.007 acre) and is one-half foot wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows north through the project study area, and discharges within the project study area into I-6.
- **Ephemeral-10 (E-10):** E-10 is an unnamed relatively straight tributary with a silt and sand bed and is bounded by a managed grassland and pasture land. The portion of the tributary that lies within the project area is approximately 1,787 linear feet (0.123 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding grassland and pasture land. The tributary flows south, enters a culvert under the roadway, and flows southeast through the project study area, and discharges within the project study area into I-8. The portion of the tributary above the roadway has a discontinuous OHWM and has been straightened and stabilized with sod.
- **Intermittent-1 (I-1):** I-1 is an unnamed relatively straight tributary with a silt bed and is bounded by grassland with scattered tree species. The portion of the tributary that lies within the project area is approximately 268 linear feet (0.006 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding pasture land. The tributary flows southeast through the project study area and discharges within the project study area into PEM-1 and ultimately into I-3.

- **Intermittent-2 (I-2):** I-2 is an unnamed meandering tributary with a silt, sand, and gravel bed and is bounded by a narrow forested riparian buffer surrounded by pastureland. The portion of the tributary that lies within the project area is approximately 2,018 linear feet (0.069 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding pasture land. The tributary flows northeast through the project study area, discharges from the project area for a short distance, and reenters the project study area flowing northwest, discharging within the project study area into I-3.
- **Intermittent-3 (I-3):** I-3 is an unnamed meandering tributary with a silt bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 991 linear feet (0.114 acre) and is four feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows northeast through the project study area, and discharges within the project study area into I-4.
- **Intermittent-4 (I-4):** I-4 (Corral Creek) is a meandering tributary with a silt, sand, gravel, cobble, and bedrock bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 3,644 linear feet (0.585 acre) and is eight feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and agricultural land. The tributary flows east through the project study area and discharges offsite to the east into the Missouri River, approximately one mile from the project study area.
- **Intermittent-5 (I-5):** T-5 is an unnamed meandering tributary with a silt, sand, gravel, and cobble bed and is bounded by a forested riparian buffer. The portion of the tributary that lies within the project area is approximately 253 linear feet (0.009 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows north through the project study area and discharges within the project area into I-4.
- **Intermittent-6 (I-6):** I-6 is an unnamed meandering tributary with a silt, sand, and gravel bed and is bounded by a forested riparian buffer surrounded by pasture land. The portion of the tributary that lies within the project area is approximately 1,913 linear feet (0.088 acre) and is three feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows east-northeast through the project study area and discharges within the project area into PEM-3.
- **Intermittent-7 (I-7):** I-7 is an unnamed meandering tributary with a silt bed and is bounded by a narrow forested riparian buffer surrounded by pasture land. The portion of the tributary that lies within the project area is approximately 926 linear feet (0.011 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding forested and pasture land. The tributary flows north-northeast through the project study area, and discharges within the project study area into I-6.
- **Intermittent-8 (I-8):** I-8 is an unnamed meandering tributary with a silt, sand, and gravel bed that is periodically vegetated by herbaceous vegetation with a discontinuous OHWM. The downstream portion of the tributary is partially diverted underground through a brick drainage pipe with the remainder flowing aboveground bounded by pasture land. The portion of the tributary that lies within the project area is approximately 3,236 linear feet (0.111 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding managed grassland and pasture land. The tributary flows east-southeast through the project study area and discharges offsite to the south into Threemile Creek, approximately one-third of a mile from the project study area.
- **Intermittent-9 (I-9):** I-9 is an unnamed meandering tributary with a silt, sand, and gravel bed and is bounded by a managed grassland. The portion of the tributary that lies within the project

area is approximately 1,125 linear feet (0.052 acre) and is two feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding grassland and stormwater runoff from the existing facilities. The tributary flows southwest through the project study area and discharges within the project area into I-8.

- **Intermittent-10 (I-10):** I-10 is an unnamed relatively straight to meandering tributary that is partially enclosed in a brick drainage pipe in the upstream portion, with a silt bed in the downstream portion and is bounded by a managed grassland and pasture land. The portion of the tributary that lies within the project area is approximately 625 linear feet (0.007 acre) and is one and one-half feet wide on average at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding grassland and pasture land. The tributary flows southeast through the project area, discharges from the project area for a short distance, flows into the project area and discharges within the project area into I-8.
- **Intermittent-11 (I-11):** I-10 is an unnamed meandering tributary with a silt, sand, gravel and cobble bed and is bounded by a narrow forested riparian buffer surrounded by pastureland. The portion of the tributary that lies within the project area is approximately 520 linear feet (0.024 acre) and averages two feet wide at the OHWM (USACE, 2005). Drainage through the tributary comes from runoff from the surrounding grassland and pasture land. The tributary flows southeast through the project area and discharges within the project area into I-2.

4.2 WETLANDS

As stated previously, wetlands are defined as those areas "...inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands on the project study area were identified through review of USGS topographic quadrangles, soil survey information for Leavenworth County, Kansas, aerial photography, and field reconnaissance in March 2011.

The project study area includes five PEM wetlands (0.746 acre) (Cowardin *et al*., 1979). Palustrine emergent wetlands include predominantly herbaceous vegetation. A summary of wetland vegetation can be found in Table 2. Dominant upland vegetation observed within the project study area is included on data sheets found in Appendix A. Corresponding upland data sheets were completed for each wetland data point.

- **Palustrine Emergent Wetland-1 (PEM-1):** PEM-1 is adjacent to I-1 and I-2. Hydrology flows into the wetland from the surrounding uplands. The vegetation was a mixture of emergent wetland species. The vegetation was predominantly hydrophytic and dominated by scouringrush horsetail (*Equisetum hyemale*) and yellow nutsedge (*Cyperus esculentus*). Hydrology indicators included surface water, high water table, saturation, an algal mat or crust, oxidized rhizospheres on living roots, and the FAC-neutral test. Soils sampled at the wetland displayed morphological features of a depleted matrix hydric soil indicator. PEM-1 is a palustrine emergent wetland that has developed in a wet depression near the confluence of I-1 and I-2. The wetland has an area of approximately 0.047 acre.
- **Palustrine Emergent Wetland-2 (PEM-2):** PEM-2 is abutting to E-8. Hydrology flows into the wetland from the surrounding uplands. The vegetation was a mixture of emergent wetland species. The vegetation was predominantly hydrophytic and dominated by broadleaf cattail (*Typha latifolia*) and yellow nutsedge (*Cyperus esculentus*). Hydrology indicators included surface water, water stained leaves, and the FAC-neutral test. Soils sampled at the wetland

displayed morphological features of a depleted matrix hydric soil indicator. PEM-2 is a palustrine emergent wetland that has developed in a low area in the floodplain of E-8 above OW-2. The wetland has an area of approximately 0.012 acre.

TABLE 2
WETLAND VEGETATION OBSERVED IN THE PROJECT STUDY AREA DURING FIELD INVESTIGATIONS

Forbs					
Scientific Name	**Common Name**	**Indicator Status***	**Scientific Name**	**Common Name**	**Indicator Status***
Alliaria petiolata	garlic mustard	FACW	*Polygonum penslyvanicum*	Pennsylvania knotweed	FACW
Galium aparine	stickwilly	FACU	*Ranunculus sceleratus*	cursed buttercup	OBL
Osmorhiza claytonii	Clayton's sweetroot	FACU	*Typha latifolia*	broadleaf cattail	OBL
Polygonum hydropiper	marshpepper knotweed	OBL			
Grasses, Sedges, and Rushes					
Cyperus esculentus	yellow nutsedge	FACW	*Leersia oryzoides*	rice cutgrass	OBL
Elymus virginicus	Virginia wildrye	FAC	*Phalaris arundinacea*	reed canarygrass	FACW
Equisetum hyemale	scouringrush horsetail	FACW	*Schoenoplectus fluviatilis*	river bulrush	OBL
Trees, Shrubs, and Woody Vines					
Acer negundo	box elder	FAC	*Salix amygdaloides*	peachleaf willow	FACW
Gleditsia triacanthos	honey locust	FAC	*Ulmus americana*	American elm	FACW
Lonicera mackii	Amur honeysuckle	NL	*Vitis riparia*	riverbank grape	FAC

*Source: USDA Plants Database, 2011.

Key to indicator categories:

OBL: Obligate Wetland, occur almost always (estimated probability >99%) under natural conditions in wetlands.
FACW: Facultative Wetland, usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC: Facultative, equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU: Facultative Upland, usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).
NL: Not listed.

- **Palustrine Emergent Wetland-3 (PEM-3):** PEM-3 is abutting to I-6. Hydrology flows into the wetland from the surrounding uplands. The vegetation was a mixture of emergent wetland species. The vegetation was predominantly hydrophytic and dominated by river bulrush (*Schoenoplectus fluviatilis*). Hydrology indicators included surface water, saturation, an algal mat or crust, water stained leaves, aquatic fauna, true aquatic plants, oxidized rhizospheres in living roots, drainage patterns, and the FAC-neutral test. Soils sampled at the wetland displayed morphological features of a depleted matrix hydric soil indicator. PEM-3 is a palustrine emergent wetland that has developed in a depression at the discharge point of I-6 into OW-1. The wetland has an area of approximately 0.431 acre.
- **Palustrine Emergent Wetland-4 (PEM-4):** PEM-4 is adjacent to I-8. Hydrology flows into the wetland from the surrounding uplands and outfall from pump station located to the north of the wetland. The vegetation was a mixture of emergent wetland species. The vegetation was predominantly hydrophytic and dominated by reed canarygrass (*Phalaris arundinacea*). Hydrology indicators included surface water, saturation, an algal mat or crust, and the FAC-

neutral test. Soils sampled at the wetland displayed morphological features of a depleted matrix hydric soil indicator. PEM-4 is a palustrine emergent wetland that has developed in a low linear swale area. The wetland has an area of approximately 0.236 acre.

- **Palustrine Emergent Wetland-5 (PEM-5):** PEM-5 is adjacent to I-9. Hydrology flows into the wetland from stormwater runoff from the facilities to the north of the wetland. The vegetation was a mixture of emergent wetland species. The vegetation was predominantly hydrophytic and dominated by reed canarygrass (*Phalaris arundinacea*). Hydrology indicators included surface water, saturation, an algal mat or crust, the FAC-neutral test. Soils sampled at the wetland displayed morphological features of a depleted matrix hydric soil indicator. PEM-5 is a palustrine emergent wetland that has developed in a low area in an old pond that has a breached dam. The wetland has an area of approximately 0.020 acre.

Two areas were located on the project study area that were evaluated to determine if they met the criteria outlined in the *Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1*, (January, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (2007). Non-wetland 1 did not exhibit any indicators of wetland hydrology at the time of the survey and non-wetland 2 did not meet the criteria for a dominance of hydrophytic vegetation. These findings are preliminary until a final jurisdictional determination of these two areas is made by the USACE.

4.3 OPEN WATERS

Two open water features were located on the project study area (2.990 acres). Both of the open water features (OW-1 and OW-2) are impoundments of a tributary and could be jurisdictional WOUS. Open water photographs are provided in Appendix B.

4.4 NON-JURISDICTIONAL DRAINAGES

Drainages include swales, erosional features, or small washes that are characterized by low-flow volume as well as by infrequent and short duration flow; ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water; and uplands transporting overland flow generated from precipitation (USACE, 2007). Drainages are non-jurisdictional. There are 11 drainages within the project study area (see Exhibits 5A and 5B).

5.0 CONCLUSIONS

5.0 CONCLUSIONS

Based on a review of USGS maps, soil survey information for Leavenworth County, aerial photography, and a site survey undertaken the week of March 21, 2011, five PEM wetland areas totaling 0.746 acre were identified within the project study area boundaries. Each of the delineated wetlands is dominated by hydrophytic vegetation and contains hydric soils and evidence and/or presence of wetland hydrology.

Corral Creek (I-4), 16 unnamed tributaries to Corral Creek, and four unnamed tributaries to Threemile Creek were identified in the project study area, as well as two open water impoundments and 11 non-jurisdictional drainages. Approximately 20,182 linear feet of streams were delineated. The total area of all aquatic resources is 5.047 acres. The locations of aquatic resources are shown on Exhibits 5A and 5B. Field data sheets are presented in Appendix A. Site photographs are presented in Appendix B.

TABLE 3
SUMMARY OF AQUATIC RESOURCES IN THE PROJECT STUDY AREA

Feature	Linear Feet	Acreage
Tributary	20,182	1.311
Palustrine Emergent Wetlands	-	0.746
Open Waters	-	2.990
Total Aquatic Resources	**20,182**	**5.047**

6.0 REFERENCES

6.0 REFERENCES

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7.0 LIST OF PREPARERS

7.0 LIST OF PREPARERS

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APPENDIX A
FIELD DATA SHEETS

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-1	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 1.5 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: <0.5 fps	
Top of bank to top of bank width: 15 ft.	Top of Bank height: 12 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 10%, herbaceous	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☒ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft.	
Buffer (adjacent bank) vegetation: Forested buffer including *Ulmus americana, Maclura pomifera, Celtis occidentalis, Quercus alba, Lonicera mackii, Rosa multiflora,* and *Symphoricarpos orbiculatus*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Topography undulating.

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-2	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 2 ft.
Hydrology: ☐Flowing ☒Standing ☐None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 25 ft.	Top of Bank height: 15 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 5%, shrubs	
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Forested buffer consisting of *Carya ovata, Celtis occidentalis, Quercus alba, Ulmus americana, Maclura pomifera* with moderately dense shrub cover mostly *Lonicera mackii*.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Topography undulating. Flows northwest directly to Corral Creek (I-4).

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-3	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 4 ft.	OHWM depth: 5 ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 20 ft.	Top of Bank height: 6 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	

Buffer (adjacent bank) vegetation: Forested buffer consisting of *Gleditsia triacanthos, Quercus alba, Celtis occidentalis,* and *Ulmus americana* with heavy to moderate shrub cover mostly *Lonicera mackii* and *Rosa multiflora*.

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Topography undulating. Tributary drains directly to Corral Creek (I-4). Extremely heavy, large woody downfall in channel. May be from trees cleared for adjacent powerline easement.

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-4		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 3 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: <0.5 fps	
Top of bank to top of bank width: 30 ft.	Top of Bank height: 15 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft.	
Buffer (adjacent bank) vegetation: Forested buffer consisting of *Ulmus Americana, Celtis occidentalis,* and *Quercus alba* with heavy shrub cover mostly *Lonicera mackii.*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Topography undulating. Drains directly to Corral Creek (I-4), Upstream end dry with knickpoint on edge of hay field going into forested area. Also severe erosion downstream near confluence with Corral Creek (I-4).

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-5	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 0.5 ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 8 ft.	Top of Bank height: 7 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☒ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☒leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	

Buffer (adjacent bank) vegetation: Forested buffer consisting of *Ulmus americana, Quercus alba, Platanus occidentalis,* and *Juniperus virginiana* with moderately dense shrub cover mostly *Lonicera mackii*.

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Knick point at edge of forest with heavy erosion noted. Deep, narrow drainage with manhole located in drainage. Sewer line noted to the east of manhole that daylights in several locations. Drainage is to the north directly to Corral Creek (I-4). Topography is undulating.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-6	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 1 ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 3.5 ft.	Top of Bank height: 2.5 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☒leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☒no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft.	

Buffer (adjacent bank) vegetation: Forested buffer consisting of *Celtis occidentalis, Ulmus Americana, Platanus occidentalis* with moderately dense shrub cover mostly *Lonicera mackii.*

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Tributary deep but narrow with sparse to moderate bank erosion. Drainage flows north directly to Corral Creek (I-4). Topography undulating.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-7	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 0.5 ft.
Hydrology: ☐Flowing ☒Standing ☐None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 3 ft.	Top of Bank height: 1 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	

Buffer (adjacent bank) vegetation: Herbaceous buffer consisting of managed pasture land species with a small area with single *Fraxinus americana, Vitis* spp., and *Lonicera mackii.*

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-8	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2 ft.	OHWM depth: 1 ft.
Hydrology: ☐Flowing ☒Standing ☐None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 6 ft.	Top of Bank height: 3 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☒no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 20 ft.	

Buffer (adjacent bank) vegetation: Forested buffer consisting of *Gleditsia triacanthos, Juniperus virginiana, Populus deltoides,* and *Celtis occidentalis* with moderate amount of shrub cover and mixed forbs and graminoids in the understory.

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☒Abutting Wetlands (list and draw): PEM-2

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-9		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 0.5 ft.	OHWM depth: <0.5 ft.
Hydrology: ☐Flowing ☒Standing ☐None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 20 ft.	Top of Bank height: 3 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☒leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 10-50 ft.	

Buffer (adjacent bank) vegetation: Forested buffer consisting of *Ulmus americana, Platanus occidentalis, Gleditsia triacanthos, Juniperus virginiana,* with sparse *Lonicera mackii* and *Symphoricarpos orbiculatus.*

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Tributary flows north into I-6 from upland area. The tributary on the upstream end is buffered by a narrow forested buffer that is surrounded by managed pasture land.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-10		Unique Site ID: E-10-1
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage		Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 3 ft.	OHWM depth: 3 ft.
Hydrology: ☒Flowing ☐Standing ☐None		Approximate water velocity: <0.5 fps
Top of bank to top of bank width: 10 ft.		Top of Bank height: 2 ft.
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >		Stream Bottom Composition: ☒silt ☒sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes		Tributary Geometry: ☒Relatively Straight ☐Meandering
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >		Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent		☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☒no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field		Riparian Buffer Width: 100 ft. +
Buffer (adjacent bank) vegetation: Managed pasture land.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Data taken in portion of the tributary downstream of the culvert.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: E-10	Unique Site ID: E-10-2	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☒Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: <0.5 ft.
Hydrology: ☐Flowing ☒Standing ☐None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 20 ft.	Top of Bank height: 6 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☒no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Managed grassland.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

This is portion of tributary above road culvert that has been straightened and banks stabilized with sod. No OHWM for much of this section.

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-1		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2 ft.	OHWM depth: 1 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: <0.5 fps	
Top of bank to top of bank width: 50 ft.	Top of Bank height: 25 ft.	
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 75%, herbaceous	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	

Buffer (adjacent bank) vegetation: Few scattered trees including *Ulmus americana, Maclura pomifera, Juniperus virginiana, Juglans nigra,* with herbaceous understory consisting of *Bromus inermis, Panicum virgatum,* and *Schizachyrium scoparium.* Invasives noted include *Rosa multiflora, Lonicera japonicus, and Lespedeza cuneata.*

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☒Abutting Wetlands (list and draw): PEM-1

Hillside south of tributary was wet at time of survey. Tributary flowing at time of survey with dry upland above. Suspect groundwater source for flow at time of survey.

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-2	Unique Site ID: I-2-1	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: 3 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1 fps	
Top of bank to top of bank width: 50 ft.	Top of Bank height: 20 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☒cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☒20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	

Buffer (adjacent bank) vegetation: Upper end is herbaceous vegetation consisting of mixed graminoids including *Bromus inermis, Schizachyrium scoparium,* and *Panicum virgatum.* Downstream end is a buffer with forested species including *Ulmus americana, Juniperus virginiana, Quercus palustris,* and *Quercus alba,* with shrubs and herbaceous ground cover.

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

No rainfall within the past week but flowing fairly swiftly at time of survey with dry uplands above. Suspect flow is from groundwater source.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-2		Unique Site ID: I-2-2
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage		Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 0.5 ft.	OHWM depth: <0.5 ft.
Hydrology: ☐Flowing ☒Standing ☐None		Approximate water velocity: 0 fps
Top of bank to top of bank width: 8 ft.		Top of Bank height: 5 ft.
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >		Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type):10%, herbaceous and forested
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes		Tributary Geometry: ☐Relatively Straight ☒Meandering
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >		Surface Flow: ☒Discrete ☐Confined ☐Discrete and Confined ☐Overland Sheet Flow
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent		☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field		Riparian Buffer Width: 15 ft.
Buffer (adjacent bank) vegetation: Narrow forested buffer surrounded by managed pasture land.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

No noticeable groundwater flow at data point taken at the headwater.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-2	Unique Site ID: I-2-3	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: <0.5 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1 fps	
Top of bank to top of bank width: 15 ft.	Top of Bank height: 4 ft.	
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type):10%, herbaceous and forested	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or >20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 10-20 ft.	
Buffer (adjacent bank) vegetation: Narrow forested buffer surrounded by managed pasture land.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Relatively good flow at time of survey and no rainfall for at least the past week.

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-3	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 4 ft.	OHWM depth: 5 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1 fps	
Top of bank to top of bank width: 25 ft.	Top of Bank height: 10 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☒cobble ☒bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or >20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☒leaf litter disturbed ☐sediment deposits ☒litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☒ wrack line ☒scour ☒multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 50 ft.	
Buffer (adjacent bank) vegetation: Forest buffer consisting of *Quercus alba, Celtis occidentalis, Ulmus americana, Maclura pomifera,* with shrubs including dense *Lonicera mackii, Rosa multiflora,* and *Symphoricarpos orbiculatus*. Ground cover includes mixed forbs and graminoids.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-4 (Corral Creek)	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 8 ft.	OHWM depth: 7 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1 fps	
Top of bank to top of bank width: 50 ft.	Top of Bank height: 20 ft.	
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☒cobble ☒bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or >20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☒leaf litter disturbed ☐sediment deposits ☒litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☒ wrack line ☒scour ☒multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 50-100 ft.	
Buffer (adjacent bank) vegetation: Forest buffer consisting of *Ulmus americana, Maclura pomifera, Celtis occidentalis, Quercus alba, Gleditsia triacanthos*, with moderately dense shrub layer consisting of *Lonicera mackii, Rosa multiflora*, and *Symphoricarpos orbiculatus*.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Topography undulating. Sparse herbaceous cover at time of survey with moderate leaf litter and some down woody debris.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-5		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2 ft.	OHWM depth: 1.5 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: <0.5 fps	
Top of bank to top of bank width: 20 ft.	Top of Bank height: 8 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☒cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or >20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☒leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Forest buffer consisting of *Platanus occidentalis, Gleditsia triacanthos, Celtis occidentalis, Juniperus virginiana, Quercus alba* with moderately dense shrub cover mostly *Lonicera mackii.*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Tributary flowing at time of survey with overflow noted at OW-1 above and pipe coming out of pond with flow also. Knick point at edge of forested area with erosion and bank collapse. Flow is north directly into Corral Creek.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-6		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage		Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 3 ft.	OHWM depth: 2 ft.
Hydrology: ☒Flowing ☐Standing ☐None		Approximate water velocity: <0.5 fps
Top of bank to top of bank width: 35 ft.		Top of Bank height: 5 ft.
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >		Stream Bottom Composition: ☒silt ☒sand ☒gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes		Tributary Geometry: ☐Relatively Straight ☒Meandering
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or >20		Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent		☒leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field		Riparian Buffer Width: 40 ft.
Buffer (adjacent bank) vegetation: Forest buffer consisting of *Gleditsia triacanthos, Acer negundo, Salix nigra, Ulmus americana,Populus deltoides, Platanus occidentalis* with sparse shrub cover, vines, and good ground cover of mixed forbs and graminoids.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☒Abutting Wetlands (list and draw): PEM-3

Tributary flows through forested area to the east into PEM-3 at the mouth of OW-1. Tributary in broad mostly flat swale area.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-7		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage		Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2 ft.	OHWM depth: 0.5 ft.
Hydrology: ☒Flowing ☐Standing ☐None		Approximate water velocity: <0.5 fps
Top of bank to top of bank width: 20 ft.		Top of Bank height: 6 ft.
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >		Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes		Tributary Geometry: ☐Relatively Straight ☒Meandering
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or		Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent		☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field		Riparian Buffer Width: 10-50 ft.
Buffer (adjacent bank) vegetation: Forest buffer consisting of *Ulmus americana, Acer negundo, Lonicera mackii, Vitis* sp. Sparse herbaceous ground cover with moderate leaf litter and down woody debris.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Tributary flows north into I-6 from uplands. Upstream end is buffered by narrow forest corridor surrounded by managed pasture land. Small linear backwater to the east of tributary. Flow disappears approximately 10 feet from bank of I-6. Assume continues underground into I-6.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-8	Unique Site ID: I-8-1	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2.5 ft.	OHWM depth: 2 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1.5 fps	
Top of bank to top of bank width: 40 ft.	Top of Bank height: 7 ft.	
Side Slopes: ☐1:1 ☒2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or >20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☒litter/debris ☐water staining ☒no terrestrial veg. ☐sediment sorting	☒ wrack line ☒scour ☒multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Buffer consists of managed pasture land with a few scattered trees including *Juglans nigra, Ulmus americana, Salix nigra,* and *Acer negundo.*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☒Adjacent Wetlands (list and draw): PEM-4

☐Abutting Wetlands (list and draw):

Piped partially in large diameter brick pipe.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-8	Unique Site ID: I-8-2	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1.5 ft.	OHWM depth: <0.5 ft.
Hydrology: ☐Flowing ☒Standing ☐None	Approximate water velocity: 0 fps	
Top of bank to top of bank width: 2-5 ft.	Top of Bank height: 2-4 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 95%, herbaceous	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☐Confined ☒Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☒no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Managed grassland.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☒Adjacent Wetlands (list and draw): PEM-4

☐Abutting Wetlands (list and draw):

Mowed grassy area. No OHWM below culvert at old road bed. Bottom of drainage vegetated with no evident scouring. Approximately 80 yards upstream OHWM appears and continues until offsite on the west boundary. Drainage is to the southeast.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-9		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage		Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2 ft.	OHWM depth: 2 ft.
Hydrology: ☒Flowing ☐Standing ☐None		Approximate water velocity: 1 fps
Top of bank to top of bank width: 15 ft.		Top of Bank height: 4 ft.
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >		Stream Bottom Composition: ☒silt ☒sand ☒gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes		Tributary Geometry: ☐Relatively Straight ☒Meandering
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or > 20		Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent		☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☒scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☒no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field		Riparian Buffer Width: 100 ft. +
Buffer (adjacent bank) vegetation: Managed grassland.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☒Abutting Wetlands (list and draw): PEM-5

Upper end of tributary flow coming from pipe under road. Good flow from pipe at time of survey. Below pipe is old pond and dam. Dam has been breached and flow has been diverted on the west side of old dam in highly eroded channel. PEM-5 is on old pond site.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-10		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1.5 ft. / OHWM depth: <0.5 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1.5 fps
Top of bank to top of bank width: 20 ft.	Top of Bank height: 5 ft.
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or > 20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film	
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +
Buffer (adjacent bank) vegetation: Managed grassland.	

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☒Abutting Wetlands (list and draw): PEM-5

Flow visible at fenceline but piped above fence to road culvert. Above fence and also road no OHWM so recorded as drainage above and intermittent from fence to confluence with I-8.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: I-11	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☒Intermittent ☐Ephemeral ☐Drainage	Stream Classification: ☐TNW ☒Relatively Permanent Water ☐Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 2 ft.	OHWM depth: <0.5 ft.
Hydrology: ☒Flowing ☐Standing ☐None	Approximate water velocity: 1.5 fps	
Top of bank to top of bank width: 25 ft.	Top of Bank height: 6.5 ft.	
Side Slopes: ☐1:1 ☒2:1 ☒3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☒cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☐11-20 ☐20 or > 20	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☒Bed/Bank ☒OHWM: OHWM has: ☒clear, natural line on bank ☐shelving ☒veg. matted down or absent	☐leaf litter disturbed ☒ wrack line ☐sediment deposits ☐scour ☒litter/debris ☒multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☒Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 25 ft. +	
Buffer (adjacent bank) vegetation: Narrow forested buffer surrounded by managed pasture land.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-1	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 4 ft.	Top of Bank height: 7 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 100%, herbaceous with scattered trees	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☒ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Few scattered trees, including *Juniperus virginiana, Maclura pomifera, Acer negundo,* with *Rosa* spp. Ground cover *Bromus inermis, Trifolium repens,* and *Schizachyrium scoparium.*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-2	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 15 ft.	Top of Bank height: 12 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☒ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting	
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 25 ft.	
Buffer (adjacent bank) vegetation: Forested buffer with *Ulmus americana, Fraxinus pennsylvanica, Maclura pomifera*, and *Gleditsia triacanthos*. Moderate amount of shrub cover mostly *Lonicera mackii* and *Rosa multiflora.*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-3		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 6 ft.	Top of Bank height: 6 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☒ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 50 ft.	

Buffer (adjacent bank) vegetation: Forest buffer consisting of *Ulmus americana, Maclura pomifera, Celtis occidentalis, Quercus alba, Gleditsia triacanthos*, with moderately dense shrub layer consisting of *Lonicera mackii, Rosa multiflora*, and *Symphoricarpos orbiculatus*.

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/22/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-4	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 15 ft.	Top of Bank height: 20 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 80%, forested	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☒2-5 ☐6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Forested buffer consisting of *Ulmus americana, Gleditsia triacanthos,* and *Platanus occidentalis*. Moderately heavy shrub cover mostly of *Lonicera mackii*.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Steep-sided drainage to Corral Creek (I-4).

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-5	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 15 ft.	Top of Bank height: 8 ft.	
Side Slopes: ☒1:1 ☐2:1 ☐3:1 ☐4:1 or >	Stream Bottom Composition: ☒silt ☒sand ☒gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☒erosion ☒bank collapse ☐cut-off channels ☐riffles/runs ☒ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☐Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft.	
Buffer (adjacent bank) vegetation: Forested buffer consisting of *Ulmus americana, Fraxinus pennsylanicum, Quercus alba* with dense shrub cover mostly *Lonicera mackii*		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Knick point with severe bank collapse and erosion on edge of forested area. Drainage runs north to Corral Creek (I-4). Topography undulating.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-6	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 4 ft.	Top of Bank height: 2 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☒silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☐vegetation (% cover, type):	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☐Relatively Straight ☒Meandering	
Estimated Flow Events per year: ☐1 ☒2-5 ☐6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☐Confined ☐Discrete and Confined ☒Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft.	
Buffer (adjacent bank) vegetation: Buffer consists of common pasture land species.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Broad swale that comes from surrounding uplands that narrows immediately above OW-1 into a slightly more confined drainage area.

Date: 03/23/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-7	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 20 ft.	Top of Bank height: 6 ft.	
Side Slopes: ☐1:1 ☐2:1 ☒3:1 ☐4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 100%, herbaceous	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☒2-5 ☐6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft.	
Buffer (adjacent bank) vegetation: Buffer consists mostly of managed pasture land species with scattered tree species at confluence with I-6.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Drainage runs north into I-6 from uplands.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-8	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 5 ft.	Top of Bank height: 1 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 100%, herbaceous with a few scattered trees	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☒2-5 ☐6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Managed pasture land.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-9		Unique Site ID:
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage		Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: 1 ft.	OHWM depth: <0.5 ft.
Hydrology: ☐Flowing ☒Standing ☒None		Approximate water velocity: fps
Top of bank to top of bank width: 5-15 ft.		Top of Bank height: 2-3 ft.
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >		Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 100%, herbaceous with a few scattered trees and shrubs on upper end
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes		Tributary Geometry: ☒Relatively Straight ☐Meandering
Estimated Flow Events per year: ☐1 ☒2-5 ☐6-10 ☐11-20 ☐20 or >		Surface Flow: ☐Discrete ☐Confined ☒Discrete and Confined ☐Overland Sheet Flow
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent		☐leaf litter disturbed ☐ wrack line ☐sediment deposits ☐scour ☐litter/debris ☐multiple flow events ☐water staining ☐change in plant community ☐no terrestrial veg. ☐other: ☐sediment sorting
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☒Forested ☒Herbaceous ☐Ag. field		Riparian Buffer Width: 100 ft. +
Buffer (adjacent bank) vegetation: Buffer consisting of mainly managed pasture land but upper end has narrow forested buffer consisting of Populus deltoides, Salix nigra, Lonicera mackii, Rosa multiflora, Juniperus virginiana, and Gleditsia triacanthos.		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Upper end in forest area has OHWM 1 foot wide by <0.5 foot tall with bank width of 5 feet by 2 feet deep. Some standing water in upper end. Sheet flow once out of forested area across pasture land then knickpoint at edge of treeline at confluence with I-7.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-10	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☒Natural ☐Artificial ☐Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 10 ft.	Top of Bank height: 4 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 100%, herbaceous	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☒6-10 ☐11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: 100 ft. +	
Buffer (adjacent bank) vegetation: Managed grassland		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

Drain runs from culvert south to fenceline and past fenceline to PEM-4.

Date: 03/24/11 Delineators: Laura Totten/Chris Thomas

Stream Survey Data Sheet

Feature ID: D-11	Unique Site ID:	
Project Name and #: Leavenworth USP/ CJA2875	State: Kansas	County: Leavenworth

Stream Characteristics

Stream Type: ☐Perennial ☐Intermittent ☐Ephemeral ☒Drainage	Stream Classification: ☐TNW ☐Relatively Permanent Water ☒Non-RPW	
Stream Characteristics: ☐Natural ☐Artificial ☒Manipulated	OHWM width: ft.	OHWM depth: ft.
Hydrology: ☐Flowing ☐Standing ☒None	Approximate water velocity: fps	
Top of bank to top of bank width: 10 ft.	Top of Bank height: 3 ft.	
Side Slopes: ☐1:1 ☐2:1 ☐3:1 ☒4:1 or >	Stream Bottom Composition: ☐silt ☐sand ☐gravel ☐cobble ☐bedrock ☐concrete ☐muck ☐other: ☒vegetation (% cover, type): 100%, herbaceous	
Stream Condition/Stability: ☐erosion ☐bank collapse ☐cut-off channels ☐riffles/runs ☐ steep side slopes	Tributary Geometry: ☒Relatively Straight ☐Meandering	
Estimated Flow Events per year: ☐1 ☐2-5 ☐6-10 ☒11-20 ☐20 or >	Surface Flow: ☐Discrete ☒Confined ☐Discrete and Confined ☐Overland Sheet Flow	
Stream has: ☐Bed/Bank ☐OHWM: OHWM has: ☐clear, natural line on bank ☐shelving ☐veg. matted down or absent	☐leaf litter disturbed ☐sediment deposits ☐litter/debris ☐water staining ☐no terrestrial veg. ☐sediment sorting	☐ wrack line ☐scour ☐multiple flow events ☐change in plant community ☐other:
Water Color/Quality: ☐Clear ☐Discolored ☐Oily film		
Riparian Type: ☐Forested ☒Herbaceous ☐Ag. field	Riparian Buffer Width: ft.	
Buffer (adjacent bank) vegetation: Managed grassland		

Adjacent and Abutting Wetland/Significant Nexus Analysis/Notes/Drawing

Explain significant nexus (pollution filtration, flood water retention, feeding/nesting/spawning ground for TNW species, other biological, physical or chemical relationships):

☐Adjacent Wetlands (list and draw):

☐Abutting Wetlands (list and draw):

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/22/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-1-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave

Slope (%): 40 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: NA

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	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. 2			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Equisetum hyemale*	80	Y	FACW
2. *Cyperus esculentus*	40	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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: PEM-1-1

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
0-4	10YR4/1	70	10YR4/4	30	C	M	CL	
4-8	10YR5/1	70	10YR5/4	30	C	M	CL	
8-14	2.5Y4/1	80	10YR4/4	20	C	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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)
- ___ 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)
- 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)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 5

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

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Abutting to I-1

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/22/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-1-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 80 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: NA

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 X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

Out point on hillslope to the south of PEM-1.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. 2			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 30m sq)			
1. *Rosa multiflora*	1	Y	UPL
2. *Symphoricarpos orbiculatus*	2	Y	FACU
3. *Maclura pomifera*	1	Y	UPL
4.			
5.			
	4 = Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Bromus inermis*	90	Y	NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= 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: 4 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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.)

Predominantly upland species present.

SOIL

Sampling Point: PEM-1-2

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
0-10	10YR3/2	95	10YR4/4	<5	C	M	SCL	
10-14	10YR4/1	95	10YR5/6	5	C	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** X

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

Remarks:

No visible flow, signs of past flow, or prolonged saturation at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-2-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave-Linear

Slope (%): 10 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: PSSA

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	

Remarks:

Small emergent wetland in low depression abutting E-8.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Typha latifolia*	30	Y	OBL
2. *Cyperus esculentus*	60	Y	FACW
3. *Polygonum hydropiper*	20	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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.)

2 pole size sycamore directly above wetland in stream bottom with 3 sapling Salix sp.

SOIL

Sampling Point: PEM-2-1

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
0-6	10YR3/1	100					SCL	
6-10	10YR3/2	65	10YR4/4	5	C	M	SCL	
			10YR5/2	30	RM			
10-14	10YR5/1	60	10YR5/4	40	C	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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)
- ___ 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)

- ___ 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)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Only small area in very bottom of stream with standing water.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-2-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 20 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: NA

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 X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

Out point on hillslope to the south of wetland in managed hay pasture land.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. 2			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schedonorus phoenix*	100	Y	FACU
2. *Setaria pumila*	20	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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.)

Predominantly upland species present.

SOIL

Sampling Point: PEM-2-2

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
0-10	10YR3/2	100					SCL	
10-14	10YR3/2	50	10YR4/3	50	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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 _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ **No** X

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

Remarks:

No visible flow, signs of past flow, or prolonged saturation at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-3-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave

Slope (%): 30 Lat: Long: Datum:

Soil Map Unit Name: Sharpsburg Silty Clay Loam NWI or WWI classification: PEMAh

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	

Remarks:

Intermittent tributary I-6 abutting wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schoenoplectus fluviatilis*	20	N	OBL
2. *Leersia oryzoides*	90	Y	OBL
3. *Phalaris arundinacea*	25	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	135 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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: PEM-3-1

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/1	100					CL	
10-14	5Y5/1	60	7.5YR4/6	40	C	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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)
- ___ 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)
- X Aquatic Fauna (B13)
- X 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)
- X 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0-3

Water Table Present? Yes X No ___ Depth (inches): 14

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

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: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-3-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 20 Lat: Long: Datum:

Soil Map Unit Name: Sharpsburg Silty Clay Loam NWI or WWI classification: NA

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 X	No	
Wetland Hydrology Present?	Yes	No X	

Remarks:

Out point on hillslope to the south of wetland in managed hay pasture land.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. 2			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schedonorus phoenix*	100	Y	FACU
2. *Setaria pumila*	20	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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.)

Predominantly upland species present.

SOIL

Sampling Point: PEM-3-2

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
0-10	10YR3/2	100					SCL	
10-14	10YR3/2	50	10YR4/3	50	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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 _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ **No** X

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

Remarks:

No visible flow, signs of past flow, or prolonged saturation at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/24/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-4-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 27, T8S, R22E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave-Linear

Slope (%): 10 Lat: Long: Datum:

Soil Map Unit Name: Sharpsburg Silty Clay Loam NWI or WWI classification: NA

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	

Remarks:

Occurs in a wetland swale that runs southwest to I-8. Adjacent to I-8.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Phalaris arundinacea*	90	Y	FACW
2. *Polygonum hydropiper*	5	N	OBL
3. *Ranunculus sceleratus*	2	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	97 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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: PEM-4-1

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	100					CL	
3-6	10YR4/2	95	10YR4/6	5	C	M	CL	
6-10	2.5Y5/1	80	10YR4/6	20	C	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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)
- ___ 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)
- ___ 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 3

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

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Pipe noted at head of wetland below pump station where hydrology source starts. Suspect outfall from facilities.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/24/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-4-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 27, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 15 Lat: Long: Datum:

Soil Map Unit Name: Sharpsburg Silty Clay Loam NWI or WWI classification: NA

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 X	No	
Wetland Hydrology Present?	Yes	No X	

Remarks:

Out point on hillslope to the east of wetland in managed pasture land.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. 2			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schedonorus phoenix*	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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.)

Predominantly upland species present.

SOIL

Sampling Point: PEM-4-2

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/2	100					SCL	
4-10	10YR3/2	95	7.5YR4/4	5	C	M	SCL	
10-14	10YR3/2	85	7.5YR4/4	15	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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 _____ Depth (inches): _____

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

Wetland Hydrology Present? **Yes** _____ **No** X

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

Remarks:

No visible flow, signs of past flow, or prolonged saturation at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/24/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-5-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 27, T8S, R22E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave

Slope (%): 25 Lat: Long: Datum:

Soil Map Unit Name: Sharpsburg Silty Clay Loam NWI or WWI classification: NA

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	

Remarks:

Abutting to intermittent tributary I-9 in old pond that has a breached dam.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Phalaris arundinacea*	85	Y	FACW
2. *Polygonum pensylvanicum*	20	N	FACW
3. *Ranunculus sceleratus*	10	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	115 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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: PEM-5-1

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/1	100					CL	
4-7	10YR4/2	90	10YR4/6	10	C	M	CL	
7-14	2.5Y5/1	85	10YR4/6	15	C	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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)
- ___ 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)
- ___ 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2-10

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

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

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: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/24/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: PEM-5-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 27, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 15 Lat: Long: Datum:

Soil Map Unit Name: Sharpsburg Silty Clay Loam NWI or WWI classification: NA

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 X	No	
Wetland Hydrology Present?	Yes	No X	

Remarks:

Out point on hillslope to the east of wetland in managed pasture land.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. 2			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schedonorus phoenix*	100	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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.)

Predominantly upland species present.

SOIL

Sampling Point: PEM-5-2

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/2	100					SCL	
4-10	10YR3/2	95	7.5YR4/4	5	C	M	SCL	
10-14	10YR3/2	85	7.5YR4/4	15	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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 _____ Depth (inches): _____

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

Wetland Hydrology Present? **Yes** _____ **No** X

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

Remarks:

No visible flow, signs of past flow, or prolonged saturation at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: Non-Wet-1-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave-Linear

Slope (%): 30 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: PFOAh

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:
Slopes directly above I-6 have moderate degree of slope and are not likely to hold hydrology for prolonged periods as most would runoff in OW-1 and PEM-3 downstream. Meets vegetation and hydric soils criteria but does not meet hydrology criteria so currently labeled as non-wetland until final USACE determination.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 50m sq)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Ulmus americana*	60	Y	FAC
3. *Salix amygdaloides*	5	N	FACW
4. *Gleditsia triacanthos*	10	N	FAC
5.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30m sq)			
1. *Lonicera mackii*	30	Y	NA
2.			NA
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 20m sq)			
1. *Alliaria petiolata*	5	N	FACW
2. *Galium aparine*	10	N	FACU
3. *Osmorhiza claytonii*	15	N	FACU
4. *Elymus virginicus*	75	Y	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: 30m sq)			
1. *Vitis riparia*	10	Y	FAC
2.			
	10	= 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	10	x 2 =	20
FAC species	175	x 3 =	525
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	210 (A)		645 (B)

Prevalence Index = B/A = 3.07

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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.)

Does not pass FAC neutral test. Passes dominance test but does not pass prevalence test.

SOIL

Sampling Point: Non-Wet-1-1

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR4/2	100					SL	
5-10	10YR4/2	70	10YR5/2	30	RM		SL	
10-15	10YR5/2	90	10YR 4/4	10	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

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

Remarks:

No visible signs of flow, past flow, or prolonged saturation at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: Non-Wet-1-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None

Slope (%): 5 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: PFOAh

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:

Only one secondary hydrology indicator noted at time of survey but hydrophytic vegetation dominant in the overstory and hydric soils present. Shrub layer mostly upland species. Currently labeled as non-wetland until final USACE determination.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 50m sq)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Gleditsia triacanthos*	10	N	FAC
2. *Ulmus americana*	60	Y	FAC
3. *Platanus occidentalis*	25	Y	FAC
4. *Populus deltoides*	20	N	FAC
5.			
	115	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30m sq)			
1. *Lonicera mackii*	30	Y	NA
2. *Juniperus virginiana*	5	N	NA
3. *Rosa multiflora*	2	N	UPL
4. *Cornus drummondii*	10	Y	FAC
5.			
	47	= Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Woody Vine Stratum (Plot size: 20m sq)			
1. *Vitis riparia*	5	Y	FAC
2.			
	5	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ 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.)

Does not pass FAC neutral test.

SOIL

Sampling Point: Non-Wet-1-2

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR4/2	100					SL	
5-10	10YR4/2	70	10YR5/2	30	RM		SL	
10-15	10YR5/2	90	10YR 4/4	10	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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

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

Remarks:

Currently hydrology is not indicative of wetland. It could hold water and have hydrology indicators at a wetter time.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: Non-Wet-2-1

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave-Linear

Slope (%): 10 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: NA

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 X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:

Small ponded area directly below with willow tree and cattails with large wetland area abutting open water in off-site area to the west.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schedonorus phoenix*	60	Y	FACU
2. *Polygonum pensylvanicum*	10	N	FACW
3. *Cyperus esculentus*	30	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	100 (A)		320 (B)

Prevalence Index = B/A = 3.20

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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.)

Cyperus and Polygonum in areas of saturation and inundation. Does not meet hydrophytic vegetation criteria or pass FAC neutral test. .

SOIL

Sampling Point: Non-Wet-2-1

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
0-4	10YR3/2	100					CL	
4-8	10YR3/2	70	5YR3/4	30	C	M	CL	
8-14	10YR3/2	80	10YR6/3	20	RM	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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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)
- ___ 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)
- ___ Water-Stained Leaves (B9)
- X 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)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1-2

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

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Frogs noted at time of survey.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth USP/CJA2875 City/County: Leavenworth/Leavenworth Sampling Date: 03/23/11

Applicant/Owner: Bureau of Prisons State: KS Sampling Point: Non-Wet-2-2

Investigator(s): Laura Totten/Chris Thomas Section, Township, Range: Sec. 23, T8S, R22E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 20 Lat: Long: Datum:

Soil Map Unit Name: Knox Silt Loam NWI or WWI classification: NA

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 X	No	
Wetland Hydrology Present?	Yes	No X	

Remarks:

Out point on slope to the north of swale in managed hay pasture land.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20m sq)			
1. *Schedonorus phoenix*	100	Y	FACU
2. *Setaria pumila*	20	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= 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	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	0
UPL species	x 5 =	0
Column Totals: (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ 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: Non-Wet-2-2

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	100					SCL	
10-14	10YR3/2	50	10YR4/3	50	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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ 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 _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ **No** X

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

Remarks:

No visible flow, signs of past flow, or prolonged saturation at time of survey.

APPENDIX B
SITE PHOTOGRAPHS

PHOTO LOG

Proposed FCI and FPC USP Leavenworth Determination Report

PHOTO #	1
DATE:	3/22/11
DIRECTION:	West

FEATURE NAME
I-1
DESCRIPTION
Intermittent Tributary
NOTES
Datasheet I-1-1

PHOTO #	2
DATE:	3/22/11
DIRECTION:	West

FEATURE NAME
I-1
DESCRIPTION
Intermittent Tributary
NOTES
Datasheet I-1-2

PHOTO LOG

Proposed FCI and FPC USP Leavenworth Determination Report

PHOTO #	3
DATE:	3/24/11
DIRECTION:	Northeast

FEATURE NAME
I-2
DESCRIPTION
Intermittent Tributary
NOTES
Tributary headwaters. Datasheet I-2-3

PHOTO #	4
DATE:	3/22/11
DIRECTION:	Northeast

FEATURE NAME
I-2
DESCRIPTION
Intermittent Tributary
NOTES
Potential Groundwater Source Datasheet I-2-3

PHOTO LOG

Proposed FCI and FPC USP Leavenworth Determination Report

PHOTO #	5
DATE:	3/22/11
DIRECTION:	Northeast

FEATURE NAME
I-2
DESCRIPTION
Intermittent Tributary
NOTES
Datasheet I-2-1

PHOTO #	6
DATE:	3/22/11
DIRECTION:	Southwest

FEATURE NAME
I-3
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	7
DATE:	3/22/11
DIRECTION:	Southwest

FEATURE NAME
I-3
DESCRIPTION
Intermittent Tributary
NOTES
Downstream Portion

PHOTO #	8
DATE:	3/22/11
DIRECTION:	East

FEATURE NAME
I-4
DESCRIPTION
Intermittent Tributary
NOTES
Corral Creek

PHOTO #	9
DATE:	3/22/11
DIRECTION:	West

FEATURE NAME
I-4
DESCRIPTION
Intermittent Tributary
NOTES
Corral Creek

PHOTO #	10
DATE:	3/23/11
DIRECTION:	South

FEATURE NAME
I-5
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	11
DATE:	3/23/11
DIRECTION:	East

FEATURE NAME
I-6
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	12
DATE:	3/23/11
DIRECTION:	West

FEATURE NAME
I-6
DESCRIPTION
Intermittent Tributary
NOTES
Portion of tributary flowing out of riparian area into PEM-3.

PHOTO #	13
DATE:	3/23/11
DIRECTION:	Southwest

FEATURE NAME
I-7
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	14
DATE:	3/23/11
DIRECTION:	Southwest

FEATURE NAME
I-7
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	15
DATE:	3/24/11
DIRECTION:	East

FEATURE NAME
I-8
DESCRIPTION
Intermittent Tributary
NOTES
Portion in upstream end of tributary above culvert in old road bed

PHOTO #	16
DATE:	3/24/11
DIRECTION:	Northwest

FEATURE NAME
I-8
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	17
DATE:	3/24/11
DIRECTION:	South

FEATURE NAME
I-8
DESCRIPTION
Intermittent Tributary
NOTES
Broken pipe

PHOTO #	18
DATE:	3/24/11
DIRECTION:	Southeast

FEATURE NAME
I-8
DESCRIPTION
Intermittent Tributary
NOTES
Enclosed portion of tributary down-stream of datapoint I-8-1.

PHOTO #	19
DATE:	3/24/11
DIRECTION:	South

FEATURE NAME
I-8
DESCRIPTION
Intermittent Tributary
NOTES
Downstream of confluence with I-9.

PHOTO #	20
DATE:	3/24/11
DIRECTION:	North

FEATURE NAME
I-9
DESCRIPTION
Intermittent Tributary
NOTES
Culvert above PEM-5 under road-way.

PHOTO #	21
DATE:	3/24/11
DIRECTION:	South

FEATURE NAME
I-9
DESCRIPTION
Intermittent Tributary
NOTES
Portion of tributary below PEM-5.

PHOTO #	22
DATE:	3/24/11
DIRECTION:	North

FEATURE NAME
I-9
DESCRIPTION
Intermittent Tributary
NOTES
Directly upstream of confluence with I-8.

PHOTO #	23
DATE:	3/24/11
DIRECTION:	Northwest

FEATURE NAME
I-10
DESCRIPTION
Intermittent Tributary
NOTES
Tributary daylights at this location from enclosed pipe. D-11 upstream above road.

PHOTO #	24
DATE:	3/24/11
DIRECTION:	Northeast

FEATURE NAME
I-10
DESCRIPTION
Intermittent Tributary
NOTES
Flowing out of underground pipe

PHOTO #	25
DATE:	3/24/11
DIRECTION:	Southeast

FEATURE NAME
I-10
DESCRIPTION
Intermittent Tributary
NOTES
Portion of tributary that is free flowing below fenceline.

PHOTO #	26
DATE:	3/24/11
DIRECTION:	Southwest

FEATURE NAME
I-11
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	27
DATE:	3/24/11
DIRECTION:	South

FEATURE NAME
I-11
DESCRIPTION
Intermittent Tributary
NOTES

PHOTO #	28
DATE:	3/22/11
DIRECTION:	South

FEATURE NAME
E-1
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	29
DATE:	3/22/11
DIRECTION:	South

FEATURE NAME
E-2
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	30
DATE:	3/22/11
DIRECTION:	North

FEATURE NAME
E-3
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	31
DATE:	3/22/11
DIRECTION:	South

FEATURE NAME
E-4
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	32
DATE:	3/23/11
DIRECTION:	North

FEATURE NAME
E-5
DESCRIPTION
Ephemeral Tributary
NOTES
Daylighted manhole present within tributary

PHOTO #	33
DATE:	3/23/11
DIRECTION:	North

FEATURE NAME
E-6
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	34
DATE:	3/23/11
DIRECTION:	Southwest

FEATURE NAME
E-7
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	35
DATE:	3/23/11
DIRECTION:	Southwest

FEATURE NAME
E-8
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	36
DATE:	3/23/11
DIRECTION:	North

FEATURE NAME
E-9
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	37
DATE:	3/23/11
DIRECTION:	South

FEATURE NAME
E-9
DESCRIPTION
Ephemeral Tributary
NOTES

PHOTO #	38
DATE:	3/24/11
DIRECTION:	South

FEATURE NAME
E-10
DESCRIPTION
Ephemeral Tributary
NOTES
Culvert over E-10 near datapoint E-10-2.

PHOTO #	39
DATE:	3/24/11
DIRECTION:	North

FEATURE NAME
E-10
DESCRIPTION
Ephemeral Tributary
NOTES
Datasheet E-10-2. discontinuous OHWM in upstream portion.

PHOTO #	40
DATE:	3/24/11
DIRECTION:	Southeast

FEATURE NAME
E-10
DESCRIPTION
Ephemeral Tributary
NOTES
Datasheet E-10-1.

PHOTO #	41
DATE:	3/24/11
DIRECTION:	East

FEATURE NAME
D-8
DESCRIPTION
Typical Drainage
NOTES

PHOTO #	42
DATE:	3/22/11
DIRECTION:	South

FEATURE NAME
D-2
DESCRIPTION
Typical Drainage
NOTES

PHOTO #	43
DATE:	3/24/11
DIRECTION:	North

FEATURE NAME
Wetland Outpoint
DESCRIPTION
Uplands
NOTES
Typical outpoint photo for wetlands. Taken near PEM-4.

PHOTO #	44
DATE:	3/22/11
DIRECTION:	West

FEATURE NAME
PEM-1
DESCRIPTION
Palustrine Emergent Wetland
NOTES

PHOTO #	45
DATE:	3/23/11
DIRECTION:	Northeast

FEATURE NAME
PEM-2
DESCRIPTION
Palustrine Emergent Wetland
NOTES

PHOTO #	46
DATE:	3/24/11
DIRECTION:	East

FEATURE NAME
PEM-3
DESCRIPTION
Palustrine Emergent Wetland
NOTES

PHOTO #	47
DATE:	3/24/11
DIRECTION:	South

FEATURE NAME
PEM-4
DESCRIPTION
Palustrine Emergent Wetland
NOTES

PHOTO #	48
DATE:	3/24/11
DIRECTION:	North

FEATURE NAME
PEM-5
DESCRIPTION
Palustrine Emergent Wetland
NOTES

PHOTO #	49
DATE:	3/23/11
DIRECTION:	Northeast

FEATURE NAME
Nonwetland-1
DESCRIPTION
Nonwetland
NOTES
Datasheet Non-Wetland-1-2

PHOTO #	50
DATE:	3/23/11
DIRECTION:	Northwest

FEATURE NAME
Nonwetland-2
DESCRIPTION
Nonwetland
NOTES
Datasheet Non-Wetland-2-1

PHOTO #	51
DATE:	3/23/11
DIRECTION:	East

FEATURE NAME
OW-1
DESCRIPTION
Open Water
NOTES
Looking toward dam.

PHOTO #	52
DATE:	3/23/11
DIRECTION:	South

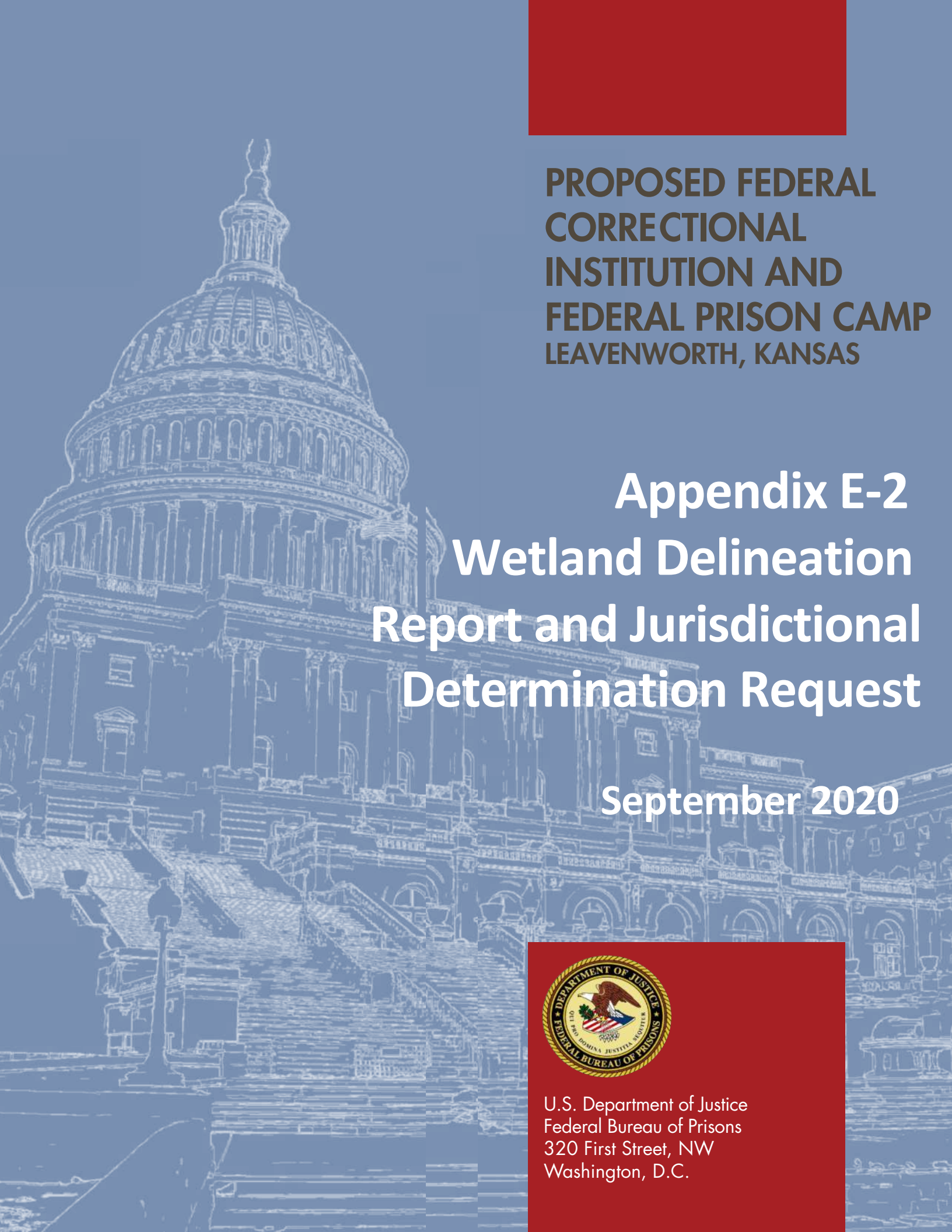
FEATURE NAME
OW-2
DESCRIPTION
Open Water
NOTES

PHOTO #	53
DATE:	3/23/11
DIRECTION:	Northeast

FEATURE NAME
OW-2
DESCRIPTION
Open Water
NOTES
Southeast point of open water near D-4.

PHOTO #	54
DATE:	3/23/11
DIRECTION:	Northeast

FEATURE NAME
OW-2
DESCRIPTION
Open Water
NOTES
Southwest point of open water below PEM-2 with lower portion of E-8 shown.



PROPOSED FEDERAL CORRECTIONAL INSTITUTION AND FEDERAL PRISON CAMP
LEAVENWORTH, KANSAS

Appendix E-2 Wetland Delineation Report and Jurisdictional Determination Request

September 2020

U.S. Department of Justice
Federal Bureau of Prisons
320 First Street, NW
Washington, D.C.

APPENDIX E-2
WETLAND DELINEATION REPORT AND JURISDICTIONAL DETERMINATION REQUEST
SEPTEMBER 2020

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LIST OF ACRONYMS AND ABBREVIATIONS

BOP	Federal Bureau of Prisons
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
FCI	Federal Correctional Institution
FPC	Federal Prison Camp
KDWPT	Kansas Department of Wildlife, Parks, and Tourism
msl	Mean sea level
Non-RPW	Non-Relatively Permanent Waters
NWI	National Wetlands Inventory
OWUS	Other Waters of the United States
ppt	Parts per trillion
RPW	Relatively Permanent Waters
TNW	Traditional Navigable Waters
USDA-NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 SUMMARY

The U.S. Department of Justice, Federal Bureau of Prisons (BOP) is proposing to develop a new Federal Correctional Institution (FCI) and a Federal Prison Camp (FPC) within BOP-owned property in the City of Leavenworth, Leavenworth County, Kansas. Once development is completed and the new facilities are activated, inmates currently housed at the U.S. Penitentiary (USP) in Leavenworth will be transferred to the new facilities along with the complement of correctional officers, administrative staff, and others at which time the existing USP and prison camp will be deactivated.

On behalf of the BOP, WSP USA, Inc. (WSP) conducted an investigation of the property in Leavenworth proposed for FCI/FPC development, to determine the presence or absence of wetlands and other waters of the United States (OWUS). A wetland delineation was performed following guidance outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Midwest Region* (August 2010). A desktop review of resource maps, soil interpretation, site photography, National Wetlands Inventory (NWI) data, and general observations of topographic and hydrologic conditions was conducted. Field investigations were conducted by WSP wetland scientists from July 27 to July 31, 2020.

This report documents the findings of the wetland delineation conducted of the portion of the overall USP property proposed for FCI/FPC development (Study Area) and requests a Preliminary Jurisdictional Determination from the U.S. Army Corps of Engineers (the Corps). Based on the desktop analysis and field determination, approximately 8.72 acres of palustrine wetland under federal jurisdiction were identified within the Study Area along with approximately 10,348 linear feet of stream under federal jurisdiction.

2.0 INTRODUCTION

2.1 Background

The U.S. Department of Justice, Federal Bureau of Prisons (BOP) is proposing to further develop the property comprising the U.S. Penitentiary (USP) Leavenworth, located north of the City of Leavenworth, Kansas by constructing and operating a new Federal Correctional Institution (FCI) and Federal Prison Camp (FPC). The FCI would be designed to house approximately 1,152 medium-security inmates and the FPC would be designed to house 256 minimum-security inmates for a total population of 1,408 inmates along with approximately 338 full-time staff necessary for operation. Once development is completed and the new facilities are activated, inmates currently housed at USP Leavenworth will be transferred to the new facilities along with the complement of correctional officers, administrative staff, and others at which time the existing USP and prison camp will be deactivated.

On behalf of the BOP, WSP USA, Inc. (WSP) conducted an investigation of the property in Leavenworth proposed for FCI/FPC development, to determine the presence or absence of wetlands and other waters of the United States (OWUS). A wetland delineation was performed following guidance outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Midwest Region* (August 2010). A desktop review of resource maps, soil interpretation, site photography, National Wetlands Inventory (NWI) data, and general observations of topographic and hydrologic conditions was conducted. Field investigations were conducted by WSP wetland scientists from July 27 to July 31, 2020.

This report documents findings of the wetland delineation conducted at the property herein described as the FCI/FPC Study Area and requests a Preliminary Jurisdictional Determination from the Corps.

2.2 Site Description

The 754-acre USP Leavenworth property is bordered by Metropolitan Avenue to the south and is immediately north of the City of Leavenworth and south and west of the Fort Leavenworth U.S. Army Base. The BOP property is generally bordered by Corral Creek to the north, Grant Avenue to the east, Metropolitan Avenue to the south, and Santa Fe Trail to the west.

Much of the southern portion of the USP Leavenworth property has already been developed with the USP, minimum-security prison camp, warehouses, BOP staff housing, internal roadways, parking areas, and ancillary support facilities. Within the USP Leavenworth property, an area consisting of about 247 acres is under consideration for FCI/FPC development. Comprising undeveloped land, the FCI/FPC Study Area is east of the USP, north of Metropolitan Street, west of Grant Avenue, and south of Corral Creek.

Lands surrounding the Study Area consist of mixed commercial and residential uses. Military family housing associated with Fort Leavenworth is found to the north, with two schools situated northeast (Eisenhower Elementary) and east (Patton Junior High) of the Study Area. Commercial development fronting on Metropolitan Avenue forms a buffer between the USP Leavenworth property and the concentration of residential housing located south of Metropolitan Avenue. The USP abuts the western

boundary of the FCI/FPC Study Area. Exhibit 1 is a United States Geological Survey (USGS) topographic map of the Study Area and Exhibit 2 is an aerial view of the same area.

2.3 Regulatory Authority

The Corps administers and enforces Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. The procedure for identifying and locating jurisdictional waters that are regulated by the Corps under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act is commonly referred to as a "jurisdictional determination." Regulated areas include wetlands, stream channels, rivers, lakes, ponds, and coastal and offshore waters. Wetlands and OWUS are considered jurisdictional by the Corps if they are relatively permanent waters (RPW); are intermittent, or perennial stream; or are adjacent to RPW.

2.4 Jurisdictional Determination Request

A *Request for Corps Jurisdictional Determination Form* is included as Appendix A. The *Corps' Preliminary Jurisdictional Determination Form* is provided as Appendix B and was used to ensure all required information was provided with this request. The checklist of information to include with a Request for Jurisdictional Determination includes the name, address, telephone number, and email address of the property owner's representative, the applicant, and the wetland delineator are as follows:

USP Leavenworth Property Address:	1300 Metropolitan Avenue, Leavenworth, Kansas 66048
Current Property Owner:	Federal Bureau of Prisons
Attention:	Kimberly S. Hudson, COR, Site Selection Specialist
Address:	320 First Street, NW, Room 901-5, Washington, D.C. 20534
Telephone:	202-616-2574
Email:	kshudson@bop.gov
Applicant:	Federal Bureau of Prisons
Attention:	Kimberly S. Hudson, COR, Site Selection Specialist
Address:	320 First Street, NW, Room 901-5, Washington, D.C. 20534
Telephone:	202-616-2574
Email:	kshudson@bop.gov
Wetland Delineator:	WSP USA, Inc.
Attention:	Craig Hanlon
Address:	412 Mount Kemble Avenue, Morristown, New Jersey 07962
Telephone:	973-407-1462
Email:	craig.hanlon@wsp.com

The FCI/FPC Study Area consists of three parcels as shown in Table 1. The BOP owns all three parcels.

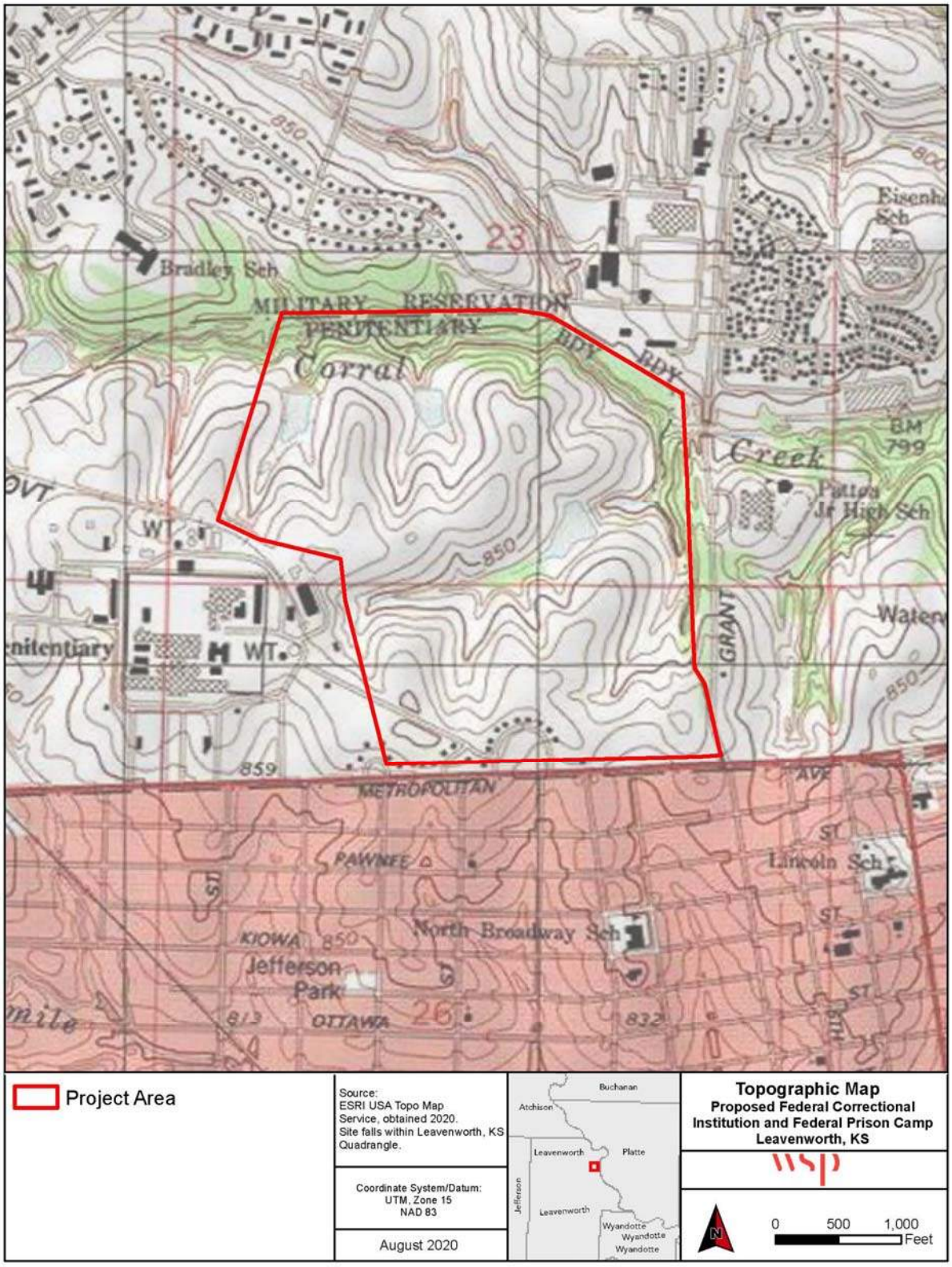

Exhibit 1: Topographic Map

Exhibit 2: Aerial View

Table 1: Site Parcels

Parcel ID	Land Area	Legal Description
076-23-0-00-00-002.00-0	156.62 acres	S23, T08, R22E, ACRES 181.57, PT SEC 23; BEG SW COR N2040'(S), NE100'(S), E2750'(S), SE1400'(S), S1500'(S), W4140'(S) TO POB (SCALED)
077-26-0-20-01-001.00-0	86.99 acres	S26, T08, R22E, ACRES 141.16, THAT PT OF N1/2 OF SECT 26 LYING N OF METRO AVE & W OF MILITARY RESERVATION
077-26-0-10-01-001.00-0	1.83 acres	S26, T08, R22E, ACRES 35.21, THAT PT OF N1/2 OF SECT 26 LYING N OF METRO AVE & E OF FEDERAL PENITENTIARY

Source: Geocortex, 2020.

3.0 METHODS

The wetland delineation was performed following guidance outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Midwest Region* (August 2010). Prior to field investigations, a desktop review of resource maps, soil interpretation, site photography, National Wetlands Inventory (NWI) data, and general observations of topographic and hydrologic conditions was conducted. Field investigations were conducted by WSP wetland scientists from July 27 to July 31, 2020, searching for wetland indicator parameters (vegetation, soils, or hydrology) of wetlands or OWUS. Water courses are categorized as either TNW, RPW, or non-RPW (U.S. Environmental Protection Agency, 2006).

TNWs are all tidal waters and waters that have been, could be, or are used in interstate or foreign commerce. TNWs are jurisdictional by the Corps, and any tributary that continually flows directly or indirectly, at least seasonally, into a TNW is also jurisdictional. RPWs are tributaries that flow year-round or have continuous flow at least seasonally, and that flow directly or indirectly into a TNW. Non-RPWs are tributaries that have less than seasonal flow, and that flow directly or indirectly into a TNW.

Wetlands can also be classified as abutting a tributary, adjacent to a tributary, or isolated (U.S. Environmental Protection Agency, 2006). A wetland that abuts a tributary has no distinction between the immediate edge of the tributary and the wetland itself. An adjacent wetland has a barrier between itself and the tributary but is connected by surface flow. Abutting and adjacent wetlands are jurisdictional waters of the U.S. Isolated wetlands are wetlands that satisfy the three criteria but have no direct surface connection to navigable waters or their tributaries that are not jurisdictional waters of the U.S. (EPA/USACE April 21, 2020).

If evidence was observed that suggested at least one positive wetland indicator parameter (vegetation, soils, or hydrology) is present, then further investigation, as detailed below, was performed to make a positive wetland determination. An area would not be considered a regulatory wetland if indicators for any one of these three parameters are not observed under normal environmental conditions.

3.1 Determining Hydric Vegetation

A plant community is hydrophytic (wetland) vegetation if the vegetation displays indicators of hydrophytic vegetation, as defined in the delineation methodology (Corps, 2008). Most often the "Dominance Test" is used as the indicator. A sample plot is evaluated at each possible wetland area and meets the dominance test for hydrophytic vegetation if more than 50 percent of the dominant species from all strata have obligate wetland, facultative wetland, and/or facultative indicator status. Indicator status is provided by the Corps' *National Wetland Plant List* (Corps, 2018). Dominant species are identified as the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum (absolute percent cover), plus any other species that, by itself, accounts for at least 20 percent of the total. The wetland indicator status for each dominant species is then used to determine whether the plant community is dominated by hydrophytic

vegetation. The “Prevalence Index” may also be used as the indicator of hydrophytic vegetation. The Prevalence Index is a weighted-average of all plant species in the sample plot.

3.2 Determining Hydric Soils

Soil test pits are hand dug with a spade to approximately 18 inches deep to examine soils for hydric soil indicators. These soil test pits are labelled with a data point number and located on a site map. Colors of the soil, including concentrations, depletions, or gleying, if present, are identified using a Munsell color chart (Munsell, 2000). Field Indicators of Hydric Soils in the United States (USDA-NRCS, 2017) are used to determine the presence or absence of hydric soils, and soil pits helped reveal where the approximate wetland boundaries occur.

3.3 Determining Hydrology

The hydrology of an area is evaluated by recording the depth to shallow groundwater and/or soil saturation in each soil test pit. Other indicators of hydrology are observed, including but not limited to, water marks, water-stained leaves, sediment deposits, crayfish burrows, and drainage patterns. These data provided information on timing and duration of ponding and/or saturation in the site.

Ephemeral streams and drainage features, which include swales, erosional features, or small washes, were documented but are not jurisdictional water of the U.S under the April 21, 2020 guidance from EPA/Corps. Ditches (including roadside ditches) draining only uplands and without a relatively permanent flow of water, and uplands transporting overland flow generated from precipitation, are also non-jurisdictional.

4.0 FINDINGS

Investigations included a desktop/office review of resource maps, on-site vegetation identification, soil interpretation, site photography, and general field observations of hydrologic and other environmental conditions. Findings are described below with site photographs taken during the July 27 to July 31, 2020, field investigations included as Appendix C. Results of desktop review of potential Threatened and Endangered Species at the property are including in Appendix D.

4.1 Site Description

The FCI/FPC Study Area is located within the eastern portion of the overall 754-acre USP Leavenworth property in east-central Leavenworth County, west of the Missouri River. The USP Leavenworth property is bordered by Metropolitan Avenue, immediately north of the City of Leavenworth and south and west of the Fort Leavenworth U.S. Army Base. The property is generally bordered by Corral Creek to the north, Grant Avenue to the east, Metropolitan Avenue to the south, and the realigned Santa Fe Trail to the west. Comprising approximately 247 acres, the FCI/FPC Study Area is in BOP ownership and undeveloped.

4.2 Topography

The USGS 7.5-minute Topographic Quadrangle Map for Leavenworth, Kansas (ESRI 2020) shows the overall USP Leavenworth property at an average elevation of 860 feet above mean sea level (msl). The topography of the FCI/FPC Study Area generally consists of rolling hill slopes, some of which are moderately steep with elevations ranging from 825 to 890 feet above msl (see Exhibit 1).

The property is located in the Missouri River Basin in the Independence-Sugar Watershed. The topography consists of gently rolling terrain that slopes from west to east on the eastern portion of the site, with relatively level terrain in the western portion sloping to the southeast. Runoff from the eastern portion of the site flows into Corral Creek and eventually to the Missouri River. Runoff from the contributing watershed flows into the Missouri River, located approximately one-mile east of the Study Area.

4.3 Geology and Soils

Geologic resources within the area of USP Leavenworth consist of loess deposits underlain by residual clay soils and the Lawrence Shale Member. The majority of the Lawrence Formation is comprised of gray shale and sandstone with minor red shale, coal, gray limestone and conglomerate. The thickness of this formation ranges from 140 to 250 feet. The potential for seismic activity is low to moderate in the Leavenworth County area.

The U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Custom Soil Resource Report for Leavenworth County, Kansas, indicates that there are seven soil units comprising the FCI/FPC Study Area (Exhibit 3). Descriptions of each soil, the extent of coverage, and the hydric soil and prime farmland status of each mapping unit are identified in Table 2. A hydric soil is one that

Exhibit 3: Soils Map

formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. One on-site soil map units (7050 – Kennebec silt loam, occasionally flooded) has minor hydric components.

USDA defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Approximately 54 percent of soils at the FCI/FPC Study Area are considered prime farmland (Table 2). Land that does not meet the criteria for prime or unique farmland but includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods, as determined by the appropriate State agencies, is considered farmland of statewide importance. The Knox silt loam, 7 to 12 percent slopes component comprises approximately 37 percent of the Study Area and is considered farmland of statewide importance (Table 2).

Table 2: Soil Types and Characteristics

Soil Unit Symbol	Soil Unit Name	Percentage of Site	Hydric Soil	Prime Farmland
7050	Kennebec silt loam, occasionally flooded	0.4%	5% hydric component	Yes
7051	Kennebec silt loam, frequently flooded	8.8%	No	No
7285	Ladoga silt loam, 3 to 8% slopes	14.7%	No	Yes
7291	Marshall silt loam, 5 to 9% slopes	0.4%	No	No
7540	Sharpsburg silty clay loam, 1 to 4% slopes	7.4%	No	Yes
7542	Sharpsburg silty clay loam, 4 to 8% slopes, eroded	31.6%	No	Yes
7955	Knox silt loam, 7 to 12% slopes	36.7%	No	No*

* Farmland of statewide importance

Source: USDA-NRCS, Web Soil Survey, Leavenworth County, Kansas, 2020.

4.4 Hydrology

The overall USP Leavenworth property is located within the Missouri River Basin and the Independence-Sugar Watershed. The surface waters that drain the area consist of drainages, ephemeral streams, intermittent streams and a perennial stream. According to Federal Emergency Management Agency flood maps, no portion of the Study Area is located within the 100-year or 500-year flood zones.

A total of 12 ephemeral tributaries were identified within the FCI/FPC Study Area. Within the northern portion of the Study Area, several ephemeral tributaries flow north-northeast to the confluence with

Corral Creek which runs along the northern boundary of the USP Leavenworth property. The remaining ephemeral tributaries drain into other water resources such as an intermittent tributary. Most of these tributaries have a forested riparian buffer. Under the April 21, 2020 Corps notice on Waters of the U.S. these ephemeral tributaries are considered non-jurisdictional by the Corps and therefore are not protected by Clean Water Act regulations.

Eight intermittent tributaries were identified within the Study Area. The two intermittent tributaries (Aquatic Resources J and L) flow mostly north from pond outfalls, are direct indirect tributaries of Corral Creek (perennial tributary Aquatic Resource K). Aquatic Resource M, P, V and T in the central portion of the area, drains through palustrine forested wetland (Aquatic Resource O) and palustrine emergent wetlands/open waters (Aquatic Resources N, U, and W) and into Aquatic Resource R which flows north into Corral Creek (Aquatic Resource K). Aquatic Resource S flows north into Aquatic Resource R which flows north into Corral Creek (Aquatic Resource K). At the time of the site visit in July 2020, approximately half of the intermittent tributaries were flowing. The riparian buffer of all tributaries consisted of forested vegetation.

Previous investigations have shown the groundwater throughout the overall USP Leavenworth property is close to the surface, with the depth to groundwater typically within 10 feet of the ground surface. The direction of groundwater flow is variable although the topography generally determines flow direction. Within the FCI/FPC Study Area, groundwater flow direction is variable. In the northern portion of the area, the groundwater generally flows north or northeast towards Corral Creek while in the southern portion, groundwater typically flows east. The Missouri River alluvial aquifer is close to Leavenworth, Kansas however the walls of the aquifer end before the USP Leavenworth property boundary. Groundwater, likely collected from surficial runoff, is the suspected source of several of the intermittent tributaries that run through the property.

4.5 Vegetation

The majority of the FCI/FPC Study Area and the surrounding vicinity is dominated by maintained fields and retired cropland that are regularly mowed and maintained. Mostly pastureland herbaceous species were identified in these areas. The remaining land includes riparian corridors along perennial and non-perennial tributaries with palustrine emergent wetlands and scrub-shrub wetlands abutting and adjacent to the non-perennial tributaries. The palustrine emergent and scrub-shrub wetlands include predominantly hydrophytic herbaceous and shrub vegetation. The riparian corridors are dominated by white oak (*Quercus alba*), American elm (*Ulmus americana*), common hackberry (*Celtis occidentalis*), honey locust (*Gleditsia triacanthos*), American sycamore (*Platanus occidentalis*), Osage orange (*Maclura pomifera*), grape (*Vitis* spp.), and coral-berry (*Symphoricarpos orbiculatus*). The understory is mostly dominated by non-native shrub species including bush honeysuckles (spp.), and rambler rose (*Rosa multiflora*). The most significant riparian corridor is adjacent to Corral Creek.

Vegetation observed within the site is listed in Table 3 along with the species' wetland indicator status. This is not a complete list of all vegetation present within the Study Area, but rather it provides a summary of the dominant species observed.

Table 3: Vegetation Observed within the Jurisdictional Determination Area

Scientific Name	Common Name	Wetland Indicator Status[a]
Acer negundo	Ash-leaf maple	FAC
Acer rubrum	Red maple	FAC
Acer saccharinum	Silver maple	FACW
Agrimoniagryposepala	Tall hairy agrimony	FACU
Alliaria petiolata	Garlic mustard	FAC
Asclepias incarnata	Swamp milkweed	OBL
Asclepias syriaca	Common milkweed	UPL
Asimina triloba	Common paw paw	FAC
Carex lupulina	Hop sedge	OBL
Carex stipata	Stalk-grain sedge	OBL
Carya ovata	Shag-bark hickory	FACU
Catalpa specious	Northern catalpa	FACU
Celtis occidentalis	Common hackberry	FAC
Cirsium arvense	Canada thistle	FACU
Cornus florida	Flowering dogwood	FACU
Cyperus esculentus	Yellow nut sedge	FACW
Daucus carota	Queen Anne's-lace	UPL
Echinochloa crus-galli	Large barnyard grass	FACW
Eleusine indica	Indian goose grass	FACU
Elymus virginicus	Virginia wild rye	FACW
Equisetum arvense	Field horsetail	FAC
Erigeron annuus	Eastern daisy fleabane	FACU
Eupatorium perfoliatum	Common boneset	OBL
Festuca arundinacea	Tall fescue	NI
Fraxinus pennsylvanica	Green ash	FACW
Galium sp.	Bed-straw	--
Galium aparine	Goosegrass	FACU
Gleditsia triacanthos	Honey locust	FACU
Juncus effusus	Lamp rush	OBL
Juniperus virginiana	Eastern red cedar	FACU
Leersia oryzoides	Rice cut grass	OBL
Lepidium latifolium	Broad-leaf pepperwort	FACW
Lespedeza cuneata	Chinese bushclover	FACU
Ligustrum sinense	Chinese privet	FAC
Lonicera japonica	Japanese honeysuckle	FACU
Lythrum salicaria	Purple loosestrife	OBL
Maclura pomifera	Osage-orange	FACU
Mentha arvensis	American wild mint	FACW
Microstegium vimineum	Japanese stilt grass	FAC
Morus rubra	Red mulberry	FACU
Parthenocissus quinquefolia	Virginia-creeper	FACU

Scientific Name	Common Name	Wetland Indicator Status[a]
Persicaria hydropiperoides	Swamp smartweed	OBL
Phalaris arundinacea	Reed canary grass	FACW
Phleum pratense	Common timothy	FACU
Phytolacca americana	American pokeweed	FACU
Platanus occidentalis	American sycamore	FACW
Poa sp.	Bluegrass	--
Podophyllum peltatum	May-apple	FACU
Polygonum lapathifolium	Pale smartweed	FACW
Polygonum sagittatum	Arrowleaf tearthumb	OBL
Populus deltoides	Eastern cottonwood	FAC
Populus tremuloides	Quaking aspen	FAC
Potamogeton nodosus	Long-leaf pondweed	OBL
Prunus serotina	Black cherry	FACU
Quercus alba	White oak	FACU
Quercus palustris	Pin oak	FACW
Reynoutria japonica	Japanese-knotweed	UPL
Rosa multiflora	Rambler rose	FACU
Rubus allegheniensis	Black berry	UPL
Salix amygdaloides	Peach-leaf willow	FACW
Salix babylonica	Weeping willow	FAC
Scirpus atrovirens	Dark-green bulrush	OBL
Setaria pumila	Yellow bristle grass	FAC
Solidago spp.	Goldenrods	--
Symphoricarpos orbiculatus	Coral-berry	FACU
Tilia americana	American basswood	FACU
Toxicodendron radicans	Poison ivy	FAC
Trifolium repens	White clover	FACU
Typha latifolia	Broad-leaved cattail	OBL
Ulmus rubra	Slippery elm	FAC
Urtica dioica	Stinging nettle	FACW
Verbesina alternifolia	Wingstem	FAC
Viburnum dentatum	Southern arrow-wood	FAC
Vitis labrusca	Fox grape	FAC
Zanthoxylum clava-herculis	Hercules-club	FAC

Key to indicator categories:

OBL: Obligate, almost always occur in wetlands.

FACW: Facultative Wetland, usually occur in wetlands, but may occur in non-wetlands.

FAC: Facultative, occur in wetlands and non-wetlands.

FACU Facultative Upland, usually occur in non-wetlands, but may occur in wetlands.

UPL: Upland, almost never occur in wetlands.

NI: Not found on national listings of plants occurring in wetlands.

Source: Corps, 2018.

4.6 Wetlands

Relevant USGS 7.5-minute topographic quadrangle maps, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, the "*Web Soil Survey of Leavenworth County, Kansas*," and aerial photographs were gathered and reviewed to determine the likelihood that jurisdictional areas would exist on site. These data sources were used to assess the site for the possible presence of hydric soils, wetland areas, and streams and other watercourses that may provide an indication of jurisdictional areas. NWI maps depict freshwater forested/shrub, emergent, pond, and riverine wetlands within the Study Area as listed below and shown on Exhibit 4.

- Freshwater forested/shrub wetlands classified as Palustrine, Forested, Temporarily Flooded (PFOA).
- Freshwater forested/shrub wetland and classified as Palustrine, Scrub-Shrub, Temporarily Flooded (PSSA).
- Freshwater emergent wetlands classified as Palustrine, Emergent, Persistent, Temporarily Flooded (PEM1A).
- Freshwater emergent wetlands classified as Palustrine, Emergent, Persistent, Temporarily Flooded, Diked/Impounded (PEM1Ah).
- Freshwater emergent wetlands classified as Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated (PEM1Cx).
- Freshwater pond classified as Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded (PABFh).
- Riverine wetlands classified as Riverine, Intermittent Streambed, Seasonally Flooded (R4SBC).
- Riverine wetlands classified as Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded (R5UBH).

A field wetland delineation of aquatic resources within the FCI/FPC Study Area was conducted in July 2020 to determine precise extent and boundaries of wetlands. As part of this effort, vegetative community types were recorded, dominant plant species were inventoried, descriptions of wetlands and open waters delineated were noted, and extensive photo-documentation was recorded. Also, soil profiles and hydrologic indicators were documented. Wetland determination data forms documenting the vegetative, soil, and hydrologic characteristics of each wetland are included as Appendix E. Aquatic resource boundaries were demarcated in the field using sequentially numbered surveyor flags and drawn on a field sketch map. Flags were located to sub-meter accuracy using a Trimble GEO global positioning system. Wetlands were classified in accordance with the *USFWS Manual FWS/OBS-79/31 Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Table 4 lists each aquatic resource identified within the site along with the Cowardin classification, flow regime, acreage, linear footage, and location. Aquatic resources are described below, and Exhibit 5 shows their location. An additional 3,287 linear feet of non-jurisdictional ephemeral stream was mapped within the Study Area (see Exhibit 5). Appendix F represents a large-scale Wetland Delineation Plan showing the location of each wetland flag and data point, the area of each wetland, and linear feet of each stream.

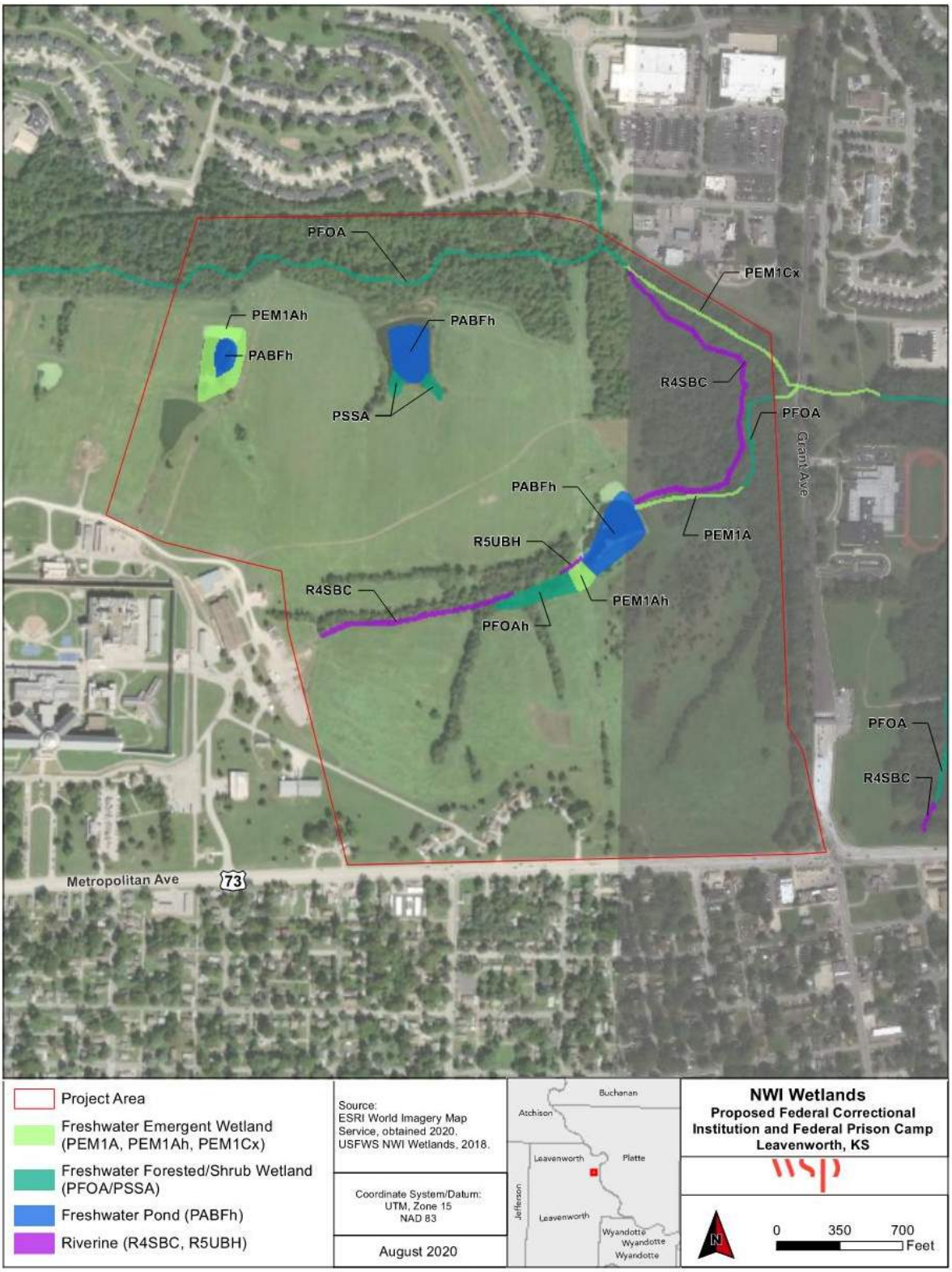

Exhibit 4: National Wetland Inventory Map

Table 4: Aquatic Resources Identified within the Jurisdictional Determination Area

Aquatic Resource	Cowardin Classification	Flow Regime	Area (Acres)	Length (Linear Feet)	Location (Latitude/Longitude)
A	PEM1B	Seasonally Saturated	0.557	n/a	39.334/-94.934
B	PABFh	Semipermanently Flooded	1.047	n/a	39.335/-94.934
D	PABFh	Semipermanently Flooded	1.440	n/a	39.336/-94.933
E	PEM1B	Seasonally Saturated	0.104	n/a	39.335/-94.933
G	PEM1B	Seasonally Saturated	0.144	n/a	39.335/-94.933
I	PABFh	Semipermanently Flooded	2.431	n/a	39.336/-94.929
J	R4SBC	Seasonally Flooded	0.107	n/a	39.337/-94.933
K	R3UBH	Permanently Flooded	1.807	4,066	39.337/-94.928
M	R4SBC	Seasonally Flooded	0.942	1,503	39.332/-94.928
L	R4SBC	Seasonally Flooded	0.099	221	39.332/-94.928
MM	PABFh	Semipermanently Flooded	0.004	n/a	39.337/-94.929
N	PABFh	Semipermanently Flooded	2.404	n/a	39.337/-94.930
O	PFO1B	Saturated	0.220	n/a	39.333/-94.926
P	R4SBC	Seasonally Flooded	0.445	771	39.331/-94.928
Q	R4SBC	Seasonally Flooded	0.042	174	39.332/-94.928
R	R4SBC	Seasonally Flooded	1.526	2,413	39.333/-94.923
S	R4SBC	Seasonally Flooded	0.170	490	39.332/-94.922
T	R4SBC	Seasonally Flooded	0.191	450	39.334/-94.924
U	PEM1B	Seasonally Saturated	0.192	n/a	39.334/-94.924
V	R4SBC	Seasonally Flooded	0.097	258	39.334/-94.924

Aquatic Resource	Cowardin Classification	Flow Regime	Area (Acres)	Length (Linear Feet)	Location (Latitude/Longitude)
W	PSS1B	Seasonally Saturated	0.066	n/a	39.334/-94.924

Source: WSP USA, Inc. September 2020.

Aquatic Resource A is a Palustrine Emergent Persistent (PEM1B) wetland demarcated in the field by flags A-1 through A-22. The Palustrine System includes all freshwater wetlands (such as marshes, bogs, and swamps) dominated by trees, shrubs, emergent herbaceous plants, floating leaved and submergent plants, and mosses and lichens. It also includes wetlands lacking such vegetation, but with all of the following characteristics: (1) area <20 acres; (2) maximum water depth, 6.6 feet; and (3) salinity <0.5 parts per thousand (ppt). The vegetative class Emergent, which is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. The subclass is Persistent, which includes species that normally remain standing at least until the beginning of the next growing season. This subclass is found only in the Estuarine and Palustrine systems. The water regime is Seasonally Saturated, where water is saturated to the surface for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for most of the season. Dominant species include broadleaf cattail (*Typha latifolia*), darkgreen bulrush (*Scirpus atrovirens*), swamp milk weed (*Asclepias incarnata*) and stalk-grain sedge (*Carex stipata*).

Aquatic Resource B is a Palustrine Aquatic Bed Semipermanently Flooded Diked/Impounded (PABFh) wetland/pond demarcated in the field by flags B-1 through B-18. Palustrine Systems are defined above for Aquatic Resource A. The vegetative class Aquatic Bed, which is characterized by wetlands and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. The subclass is Semipermanently Flooded, in which surface water persists throughout the growing season in most years. The special modifier Diked/Impounded notes that these wetlands have been created or modified by a man-made barrier or dam that obstructs the inflow or outflow of water. Dominant species include broadleaf cattail, sedges, grasses and aquatic algae.

Aquatic Resource D is a PABFh wetland/pond demarcated in the field by flags D-1 through D17. Dominant species include broadleaf cattail, dark green bulrush, sedges, grasses, and aquatic algae.

Aquatic Resource E is a PEM1B wetland demarcated in the field by flags E-1 through E-8. Palustrine Systems are defined above for Aquatic Resource A. Dominant species include darkgreen bulrush, yellow nut sedge (*Cyperus esculentus*), awl-fruited sedge, reed canary grass (*Phalaris arundinacea*) and purple loosestrife (*Lythrum salicaria*).

Aquatic Resource G is a PEM1B wetland demarcated in the field by flags G-1 through G-7. Dominant species include darkgreen bulrush, yellow nut sedge, awl-fruited sedge, reed canary grass and purple loosestrife.

Aquatic Resource I is a PABFh wetland/pond demarcated in the field by flags I-1 through I-30. Dominant species include long-leaf pondweed (*Potamogeton nodosus*), sedges, grasses, and aquatic algae.

Aquatic Resource J is a Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC) feature demarcated in the field by flags J-2S through J-5S, and associated with the outfall of Aquatic Resource D (pond), and flows int Aquatic Resource K (Corral Creek). This classification includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens; and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. A channel is an open conduit either naturally or artificially created that periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water. This subsystem includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent. The Streambed class includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide. The water regime is Seasonally Flooded, where surface water is present for extended periods especially early in the growing season but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to well below the ground surface.

Aquatic Resource K is Corral Creek, a Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded (R3UBH) system demarcated in the field by flags K-1-S through K-23a-S and KK-1-SS through KK-13-S. Riverine Systems are defined above for Resource J. Within Upper Perennial systems, the gradient is high and velocity of the water fast, with very little floodplain development. There is no tidal influence and some water flows throughout the year. The substrate consists of rock, cobbles, or gravel with occasional patches of sand. The natural dissolved oxygen concentration is normally near saturation. The Permanently Flooded water regime shows that water covers the substrate through the year in all years.

Aquatic Resource L is a R4SBC feature demarcated in the field by flags L1-S through L5-S associated with the outfall of Aquatic Feature I (pond) and flows into Corral Creek.

Aquatic Resource M is a R4SBC feature demarcated in the field by flags M1-S through M19-S associated with channel drainage that flows through Aquatic Feature O (forested wetland) and into Aquatic Feature N (pond).

Aquatic Resource MM is a PEM1B wetland demarcated in the field by flags MM-1 through MM-5 in which Aquatic Resource L flows through. Dominant species include darkgreen bulrush, purple loosestrife, yellow nut sedge, and awl-fruited sedge.

Aquatic Resource N is a PABFh wetland/pond demarcated in the field by flags N-1 through N-20. Dominant species include algae, reed canary grass, and yellow nut sedge.

Aquatic Resource O is a Palustrine Forested Persistent (PFO1B) wetland demarcated in the field by flags O1 through O9 in which Aquatic Resource M flows through. Palustrine Systems are defined above for

Aquatic Resource A. The vegetative class Forested, which is characterized by woody vegetation that is 6 meters tall or taller. They occur only in the Palustrine and Estuarine Systems and normally possess an overstory of trees, an understory of young trees or shrubs, and a herbaceous layer. The subclass is Persistent, which includes species that normally remain standing at least until the beginning of the next growing season. This subclass is found only in the Estuarine and Palustrine systems. The water regime is Saturated, which is saturated to the surface for extended periods during the growing season, but surface water is seldom present. Dominant species include green ash (*Fraxinus pennsylvanica*), slippery elm (*Ulmus rubra*), and common paw paw (*Asimina triloba*).

Aquatic Resource P is a R4SBC feature demarcated in the field by flags P1 through P10, which flows north into Aquatic Resource M, and is associated with a drainage in the southern project area.

Aquatic Resource Q is a R4SBC feature that demarcated in the field by flags Q1-S through Q4-S and connects Aquatic Resource M and Aquatic Resource P.

Aquatic Resource R is a R4SBC feature demarcated in the field by flags R1-S through R27-S and associated with a drainage in the southeastern portion of the project area, flowing north into Aquatic Resource K (Corral Creek).

Aquatic Resource S is a R4SBC feature demarcated in the field by flags S1-S through S6-S and associated with a drainage in the southeastern portion of the project area and flows into Aquatic Resource R.

Aquatic Resource T is a R4SBC feature demarcated in the field by flags T1-S through T7-S and associated with the outfall of the pond identified as Aquatic Resource N and flows into Aquatic Resource R.

Aquatic Resource U is a PEM1B wetland demarcated in the field by flags U1 through U6 and adjacent to Aquatic Resource V (stream). Dominant species include darkgreen bulrush, common boneset (*Eupatorium perfoliatum*), yellow nut sedge, and field horsetail (*Equisetum arvense*).

Aquatic Resource V is a R4SBC feature demarcated in the field by flags V1-S through V4-S and associated with a drainage to the east of Aquatic Resource N (pond) and flows into Aquatic Resource T.

Aquatic Resource W is a Palustrine Scrub Shrub Broad-leaved Deciduous Seasonally Saturated (PSS1B) wetland demarcated in the field by flags W1 through W4 and located between Aquatic Resource V and Aquatic Resource T (streams). Palustrine Systems are defined above for Aquatic Resource A. The vegetative class Broad-leaved Deciduous, dominated by woody vegetation less than 20 feet tall. Plant species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. The water regime is Seasonally Saturated, where water is saturated to the surface for brief periods (from a few days to few weeks) during the growing season, but the water table usually lies well below the ground surface for most of the season. Dominant species in this wetland include Chinese privet (*Ligustrum sinense*), flowering dogwood (*Cornus florida*), horsetail, and darkgreen bulrush.

Exhibit 5: Delineation Map

4.7 Wildlife

Based on field surveys conducted in 2011, 2015 and 2020, wildlife using the overall USP Leavenworth property (including the FCI/FPC Study Area) include wild turkey (*Meleagris gallopavo*), muskrat (*Ondatra zibethicus*), white-tailed deer (*Odocoileus virginiana*), and eastern gray squirrel (*Sciurus carolinensis*). Avian species observed include great blue heron (*Ardea herodias*), downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), northern cardinal (*Cardinalis cardinalis*), brown thrasher (*Toxostoma rufum*), killdeer, (*Charadrius vociferus),* canada goose (*Branta canadensis*), eastern bluebird (*Sialia sialis*), and mallard (*Anas platyrhynchos*). Raptor species observed flying over the area include the red-tailed hawk (*Buteo jamaicensis*) and vultures (*Cathartes* spp). The following aquatic species or reptiles and amphibians observed during field visits in July 2020: green frog (*Rana clamitans*), bull frog (*Lithobates catesbeianus*), and crayfish (*Procambarus* sp.).

According to the Kansas Department of Wildlife, Parks, and Tourism (KDWPT) other common wildlife that are likely to inhabit the Study Area include striped skunk (*Mephitis mephitis*), snakes, eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), cotton mouse, short-tailed shrew (*Blarina hylophaga*), white-footed deermouse (*Peromyscus leucopus*), woodland vole (*Microtus pinetorum*), eastern chipmunk (*Tamias striatus)*, and woodchuck (*Marmota monax*). Common birds not seen during field investigations that likely use the project area include tufted titmouse (*Baeolophus bicolor)*, wood thrush (*Hylocichla mustelina*), blue-gray gnatcatcher (*Polioptila caerulea*), Carolina wren (*Thryothorus ludovicianus*), summer tanager (*Piranga rubra)*, and warblers (*Dendroica* spp.) (KDWPT, 2020).

4.8 Threatened and Endangered Species

The USFWS IPaC system was accessed to assess the potential presence of species under the jurisdiction of the USFWS within the area of the Study Area. According to IPaC, four species listed under the Endangered Species Act may occur in the area: the federally listed as threatened northern long-eared bat (*Myotis septentrionalis*); the federally listed as endangered pallid sturgeon (*Scaphirhynchus albus*); the federally listed as threatened Mead's milkweed (*Asclepias meadii*); and the federally listed as threatened western prairie fringed orchid (*Platanthera praeclara*) (USFWS, 2020a). There is no USFWS designated critical habitat for these or any other listed species within the area of the Study Area. WSP also obtained the KDWPT lists of State Threatened and Endangered Species and Species in need of Conservation in Leavenworth County (Appendix D). None of these species were observed during field wetland investigations, although species-specific surveys were not conducted.

5.0 CONCLUSION

Based on the desktop analysis and field determination, regulated wetlands of the United States are present within the Study Area. Approximately 8.72 acres of palustrine wetland under federal jurisdiction were identified within the FCI/FPC Study Area boundary. Approximately 10,348 linear feet of stream under federal jurisdiction were identified within the property boundary. The delineated wetlands are dominated by hydrophytic vegetation and contain hydric soils and evidence and/or presence of wetland hydrology and are subject to a Jurisdictional Determination by the Corps. An additional 3,287 linear feet of non-jurisdictional ephemeral stream was also mapped within the property. This wetland delineation report and preliminary jurisdictional determination request is hereby submitted to the Corps for concurrence and approval of jurisdictional limits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

6.0 REFERENCES

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7.0 PREPARERS

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APPENDIX A

REQUEST FOR CORPS JURISDICTIONAL DETERMINATION

U.S. ARMY CORPS OF ENGINEERS

REQUEST FOR CORPS JURISDICTIONAL DETERMINATION

*__Authorities__: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332. __Principal Purpose__: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above. __Routine Uses__: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website. __Disclosure__: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

CORPS USE ONLY:
DATE RECEIVED:

PROJECT NO.:

1. PROPERTY LOCATION:

Street Address: 1300 Metropolitan Avenue

City/Township/Parish: Leavenworth

County: Leavenworth State: Kansas

Acreage of Parcel/Review Area for JD: 247

Section: 0 Township: O Range: RO

Latitude: 39.333249 Longitude: -94.927633

(For linear projects, please include the center point of the proposed alignment.)

2.REQUESTOR CONTACT INFORMATION:

Typed or Printed Name: Craig Hanlon

Company Name: WSP USA

Street Address: 412 Mount Kemble Avenue

City: Morristown State: NJ ZIP: 07960

Phone Number: (973) 407-1462

E-mail: craig.hanlon@wsp.com

3. MAP: Please attach a survey/plat map and vicinity map identifying location and review area for the JD.

4. REASON FOR REQUEST (check as many as applicable):

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☐ A Corps JD is required in order to obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other: _____

5. TYPE OF DETERMINATION BEING REQUESTED:

- ☐ I am requesting an approved JD.
- ☒ I am requesting a preliminary JD.
- ☐ I am requesting a “no permit required” letter as I believe my proposed activity is not regulated.
- ☐ I am unclear as to which JD I would like to request and require additional information to inform my decision.

6. OWNERSHIP DETAILS:

- ☐ I currently own this property.
- ☐ I plan to purchase this property.
- ☒ I am an agent/consultant acting on behalf of the requestor.
- ☐ Other (please explain:)

_____

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

Signature: _____ Date: _____

APPENDIX B

CORPS APPROVED JURISDICTIONAL DETERMINATION FORM

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Craig Hanlon, 412 Mt Kemble Ave, Morristown NJ 07960

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Kansas County/parish/borough: Lafayette City: Lafayette

Center coordinates of site (lat/long in degree decimal format):

Lat.: 39.333249 Long.: -94.927633

Universal Transverse Mercator: x: 851031.897166; y: 4361673.0685 (UTM, Zone 15, NAD 83)

Name of nearest waterbody: Corral Creek

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- ☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: _____.
- ☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report. Rationale: _____.
- ☐ Data sheets prepared by the Corps: _____.
- ☐ Corps navigable waters' study: _____.
- ☐ U.S. Geological Survey Hydrologic Atlas: _____.
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name: _____.
- ☐ Natural Resources Conservation Service Soil Survey. Citation: _____.
- ☐ National wetlands inventory map(s). Cite name: _____.
- ☐ State/local wetland inventory map(s): _____.
- ☐ FEMA/FIRM maps: _____.
- ☐ 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): _____.
  or ☐ Other (Name & Date): _____.
- ☐ Previous determination(s). File no. and date of response letter: _____.
- ☐ Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

_____	_____
Signature and date of Regulatory staff member completing PJD	Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

APPENDIX C

SITE PHOTOGRAPHS

PHOTOGRAPHS

Photo 1 – View of northwest portion of proposed FCI facility from perimeter road around existing facility.

Photo 2 - View of north portion of proposed FCI facility from perimeter road around existing facility.

Photo 3 - View of northeastern portion of proposed FCI facility from perimeter road around existing facility.

Photo 4 - View of eastern portion of proposed FCI facility from perimeter road around existing facility.

Photo 5 - View of Wetland A, facing north.

Photo 6 - View of Wetland A, facing south.

Photo 7 – View of Wetland B, facing north.

Photo 8 - View of Wetland B, facing southwest.

Photo 9 - View of Wetland D, facing north.

Photo 10 - View of Wetland D, facing south.

Photo 11 - View of Wetland E, facing west.

Photo 12 - View of Wetland E, facing west.

Photo 13 – View of Wetland G, facing north.

Photo 14 - View of Wetland I, facing northeast.

Photo 15 - View of Wetland I, facing northwest.

Photo 16 - View of Wetland MM, facing west.

Photo 17 - View of Wetland N, facing south.

Photo 18 - View of Wetland N, facing southeast.

Photo 19 – View of Wetland O, facing north.

Photo 20 - View of Wetland O, facing south.

Photo 21 - View of Wetland U, facing northeast.

Photo 22 - View of Wetland W, facing east.

Photo 23 - View of Stream J, facing northeast.

Photo 24 - View of Stream K at confluence with stream J, facing west.

Photo 25 – View of Stream K, west of stream L, facing east.

Photo 26 - View of Stream K at confluence with stream L, facing east.

Photo 27 - View of Stream K west of gas line crossing, facing east.

Photo 28 - View of Stream K at gas line crossing, facing north.

Photo 29 - View of Stream K, east of gas line crossing, facing northwest.

Photo 33 - View of Stream K at eastern boundary of site, facing east.

APPENDIX D

THREATENED AND ENDANGERED SPECIES CORRESPONDENCE

Kansas
Department of Wildlife, Parks and Tourism

Print This Page | Back to Site

Leavenworth County

Threatened and Endangered (T&E) Species

Critical Habitat Designated

MUCKET MUSSEL *Actinonaias ligamentina*
State: Endangered **Federal:** N/A **Critical Habitat:** Yes

STURGEON CHUB *Macrhybopsis gelida*
State: Threatened **Federal:** Candidate **Critical Habitat:** Yes

SHOAL CHUB *Macrhybopsis hyostoma*
State: Threatened **Federal:** N/A **Critical Habitat:** Yes

PALLID STURGEON *Scaphirhynchus albus*
State: Endangered **Federal:** Endangered **Critical Habitat:** Yes

SICKLEFIN CHUB *Macrhybopsis meeki*
State: Endangered **Federal:** Candidate **Critical Habitat:** Yes

WESTERN SILVERY MINNOW *Hybognathus argyritis*
State: Threatened **Federal:** N/A **Critical Habitat:** Yes

PLAINS MINNOW *Hybognathus placitus*
State: Threatened **Federal:** N/A **Critical Habitat:** Yes

FLATHEAD CHUB *Platygobio gracilis*
State: Threatened **Federal:** N/A **Critical Habitat:** Yes

SILVER CHUB *Macrhybopsis storeriana*
State: Endangered **Federal:** N/A **Critical Habitat:** Yes

No Critical Habitat Designated

SNOWY PLOVER *Charadrius alexandrinus*
State: Threatened **Federal:** N/A **Critical Habitat:** No

EASTERN SPOTTED SKUNK *Spilogale putorius*
State: Threatened **Federal:** N/A **Critical Habitat:** No

AMERICAN BURYING BEETLE *Nicrophorus americanus*
State: Endangered **Federal:** Endangered **Critical Habitat:** No

LEAST TERN *Sterna antillarum*
State: Endangered **Federal:** Endangered **Critical Habitat:** Yes

PIPING PLOVER *Charadrius melodus*
State: Threatened **Federal:** Threatened **Critical Habitat:** Yes

Species In Need of Conservation (SINC)

There are no SINC species with critical habitat in Leavenworth county

River Shiner *Notropis blennius*
State: SINC **Federal:** N/A **Critical Habitat:** No

Southern Bog Lemming *Synaptomys cooperi*
State: SINC **Federal:** N/A **Critical Habitat:** No

Black Tern *Chlidonias niger*
State: SINC **Federal:** N/A **Critical Habitat:** No

Short-eared Owl *Asio flammeus*
State: SINC **Federal:** N/A **Critical Habitat:** No

Golden Eagle *Aquila chrysaetos*
State: SINC **Federal:** N/A **Critical Habitat:** No

Highfin Carpsucker *Carpiodes velifer*
State: SINC **Federal:** N/A **Critical Habitat:** No

Timber Rattlesnake *Crotalus horridus*
State: SINC **Federal:** N/A **Critical Habitat:** No

Southern Flying Squirrel *Glaucomys volans*
State: SINC **Federal:** N/A **Critical Habitat:** No

Blue Sucker *Cycleptus elongatus*
State: SINC **Federal:** N/A **Critical Habitat:** No

Eastern Hognose Snake *Heterodon platirhinos*
State: SINC **Federal:** N/A **Critical Habitat:** No

Bobolink *Dolichonyx oryzivorus*
State: SINC **Federal:** N/A **Critical Habitat:** No

Henslow's Sparrow *Ammodramus henslowii*
State: SINC **Federal:** N/A **Critical Habitat:** No

Yellow-throated Warbler *Setophaga dominica*
State: SINC **Federal:** N/A **Critical Habitat:** No

Cerulean Warbler *Setophaga cerulean*
State: SINC **Federal:** N/A **Critical Habitat:** No

Brassy Minnow *Hybognathus hankinsoni*
State: SINC **Federal:** N/A **Critical Habitat:** No

Eastern Whip-poor-will *Antrostomas vociferus*
State: SINC **Federal:** N/A **Critical Habitat:** No

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

Last login August 13, 2020 06:13 PM MDT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Leavenworth County, Kansas

Local office

Kansas Ecological Services Field Office

(785) 539-3474
(785) 539-8567

2609 Anderson Avenue
Manhattan, KS 66502-2801

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Pallid Sturgeon Scaphirhynchus albus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Mead's Milkweed Asclepias meadii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8204	Threatened
Western Prairie Fringed Orchid Platanthera praeclara No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1669	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31

Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted

Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

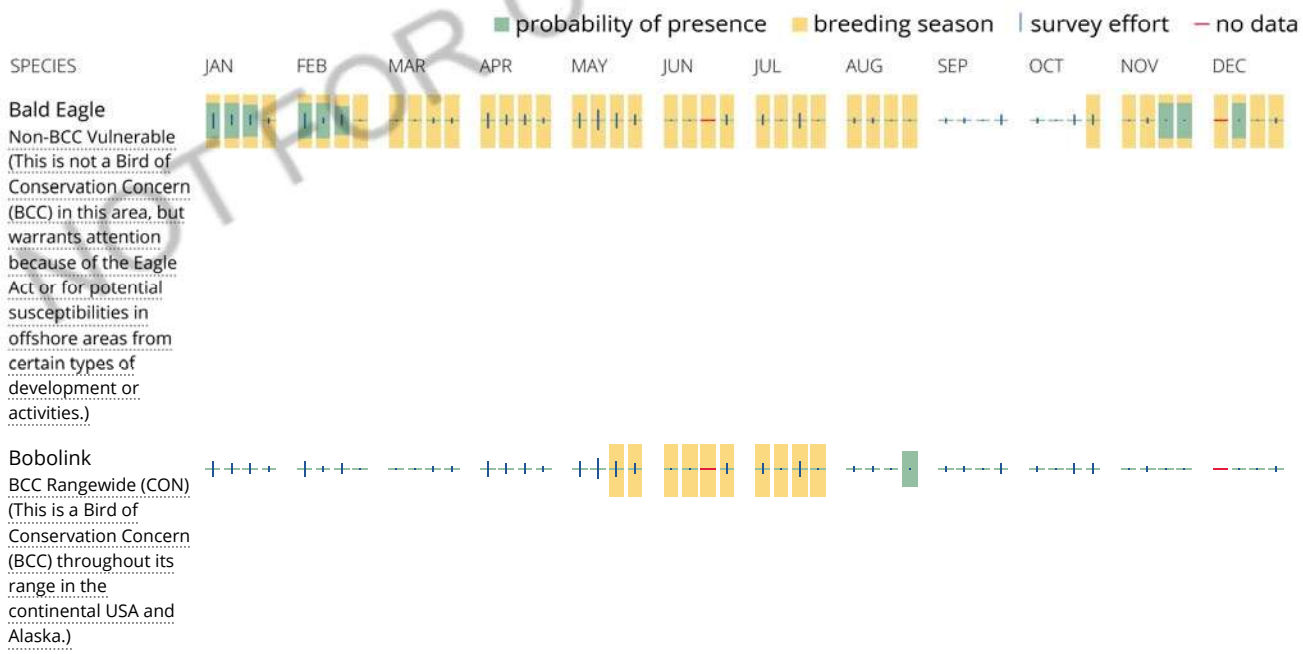
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects,

and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the *migratory birds potentially occurring in my specified* location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX E

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/28/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: WET A

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 5 | Lat: 39.333478 | Long: -94.934474 | Datum: WGS 84

Soil Map Unit Name: Sharpsburg silty clay loam, 4-8% 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Hydrology is from hillside seeps and outfall. Wetland drains north into pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Typha latifolia*	30	Yes	OBL
2. *Scirpus atrovirens*	30	Yes	OBL
3. *Asclepias syriaca*	5	No	FACU
4. *Carex stipata*	10	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	75	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	75 (A)		90 (B)

Prevalence Index = B/A = 1.20

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: WET A

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 4/2	100					Loamy/Clayey	
3-14	5Y 5/1	95	10YR 5/6	5	RM	M	Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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)
- X 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): 8
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/28/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: UPL A

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 5 | Lat: 39.33454 | Long: -94.934391 | Datum: WGS 84

Soil Map Unit Name: Sharpsburg silty clay loam, 4-8% 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	10	No	FACW
2. *Festuca arundinacea*	60	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Toxicodendron radicans*	1	No	FAC
2.			
	1	=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: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	1	x 3 =	3
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	71 (A)		263 (B)

Prevalence Index = B/A = 3.70

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: UPL A

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 4/3	100					Loamy/Clayey	
4-11	10YR 5/3	100					Loamy/Clayey	
11-16	10YR 5/3	90	10YR 5/6	10	RM	M	Loamy/Clayey	

[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)
___ Dark Surface (S7)
___ 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)
___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ 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:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/28/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: WET E

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 5 | Lat: 39.335338 | Long: -94.933187 | Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% slopes | NWI classification: PEM1Ah

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 ____	

Remarks:
Wetland hydrology is from hillside seeps and outfall from upstream pond. Wetland flows north into pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	40	Yes	FACW
2. *Scirpus atrovirens*	30	Yes	OBL
3. *Carex stipata*	10	No	OBL
4. *Cyperus esculentus*	5	No	FACW
5. *Carex lurida*	3	No	OBL
6. *Lythrum salicaria*	2	No	OBL
7.			
8.			
9.			
10.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		135 (B)

Prevalence Index = B/A = 1.50

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: WET E

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
0-2	10YR 4/2	100					Loamy/Clayey	
2-12	5Y 4/1	80	10YR 4/6	10	RM	M	Loamy/Clayey	
			10YR 5/6	10	RM	M		
12-18	5Y 4/1	95	10YR 4/6	5	RM	M	Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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)

- ___ Surface Soil Cracks (B6)
- X 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? (includes capillary fringe) Yes X No ___ Depth (inches): 0

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/28/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: UPL E

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 5 | Lat: 39.335282 | Long: -94.933154 | Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	40	Yes	FACW
2. *Festuca arundinacea*	30	Yes	FACU
3. *Carex stipata*	1	No	OBL
4. *Lespedeza thunbergii*	15	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	86 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =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: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	15	x 5 =	75
Column Totals:	86 (A)		276 (B)

Prevalence Index = B/A = 3.21

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: UPL E

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 4/2	100					Loamy/Clayey	
3-11	10YR 4/3	95	10YR 5/6	5	RM	M	Loamy/Clayey	
11-16	10YR 4/3	90	10YR 5/6	10	RM	M	Loamy/Clayey	

[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)
___ Dark Surface (S7)
___ 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)
___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ 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:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/28/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: WET G

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 3 | Lat: 39.334979 | Long: -94.932720 | Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Wetland hydrology is from hillside seeps and outfall from upstream pond. Wetland flows north into pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	45	Yes	FACW
2. *Scirpus atrovirens*	40	Yes	OBL
3. *Carex stipata*	7	No	OBL
4. *Polygonum amphibium*	2	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	94	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	47	x 1 =	47
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	92 (A)		137 (B)

Prevalence Index = B/A = 1.49

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: WET G

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
0-1	10YR 4/3	100					Loamy/Clayey	
1-11	5Y 4/2	95	10YR 5/6	5	RM	M	Loamy/Clayey	
11-16	5Y 5/1	90	10YR 5/6	10	RM	M	Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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)
- ___ 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)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X 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: Leavenworth FCI City/County: Leavenworth/Leavenworth Sampling Date: 7/28/2020

Applicant/Owner: FBOP State: KS Sampling Point: UPL G

Investigator(s): C.Hanlon, S. Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 39.333903 Long: -94.923802 Datum: WGS 84

Soil Map Unit Name: Knox silt laom, 7-12% 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	10	No	FACW
2. *Festuca arundinacea*	60	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Toxicodendron radicans*	5	Yes	FAC
2.			
	5	=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: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	5	x 3 =	15
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	75 (A)		275 (B)

Prevalence Index = B/A = 3.67

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: UPL G

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 4/3	100					Loamy/Clayey	more silt present
14-18	10YR 4/3	100					Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/28/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: WET MM

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 2 | Lat: 39.336450 | Long: -94.932629 | Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Wetland hydrology is from hillside seeps and outfall from upstream pond. Wetland flows into stream L.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Scirpus atrovirens*	40	Yes	OBL
2. *Lythrum salicaria*	10	No	OBL
3. *Carex stipata*	30	Yes	OBL
4. *Scirpus atrovirens*	10	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=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: 100.0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = 1.00

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.)

SOIL

Sampling Point: WET MM

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 5/1	100					Loamy/Clayey	
14-18	10YR 5/2	95	10YR 5/6	5	RM	M	Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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

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: Leavenworth FCI City/County: Leavenworth/Leavenworth Sampling Date: 7/30/2020

Applicant/Owner: FBOP State: KS Sampling Point: WET U

Investigator(s): C.Hanlon, S. Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 39.333749 Long: -94.924196 Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% 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 ____	

Remarks:
Wetland hydrology is from hillside seeps. Wetland flows into stream V.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix babylonica*	10	Yes	FAC
2.			
3.			
4.			
5.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15")			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Scirpus atrovirens*	40	Yes	OBL
2. *Eupatorium perfoliatum*	10	No	OBL
3. *Carex stipata*	30	Yes	OBL
4. *Equisetum hyemale*	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	85	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	5	x 2 =	10
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		120 (B)

Prevalence Index = B/A = 1.26

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: WET U

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
0-12	10YR 5/1	100					Loamy/Clayey	
12-18	10YR 5/2	100					Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ 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)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X 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? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**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: Leavenworth FCI City/County: Leavenworth/Leavenworth Sampling Date: 7/29/2020

Applicant/Owner: FBOP State: KS Sampling Point: WET O

Investigator(s): C.Hanlon, S. Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 39.332834 Long: -94.926283 Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% NWI classification: PFOAh

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 ____	

Remarks:
Wetland hydrology is from hillside seeps and stream M. Wetland flows into pond N.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	40	Yes	FACW
2. *ulmus rubra*	30	Yes	FAC
3.			
4.			
5.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex stipata*	5	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	40	x 2 =	80
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		175 (B)

Prevalence Index = B/A = 2.33

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: WET O

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 5/1	100					Loamy/Clayey	
8-13	10YR 5/2	95	10YR 5/6	5	RM	M	Loamy/Clayey	
13-18	10YR 5/2	90	10YR 4/6	10	RM	M	Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ 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)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X 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? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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: Leavenworth FCI City/County: Leavenworth/Leavenworth Sampling Date: 7/29/2020

Applicant/Owner: FBOP State: KS Sampling Point: UPL O

Investigator(s): C.Hanlon, S. Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 39.332913 Long: -94.926438 Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2. *Celtis occidentalis*	20	Yes	FAC
3.			
4.			
5.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *ligustrum sinense*	15	Yes	FACU
2.			
3.			
4.			
5.			
	15	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Agrimonia gryposepala*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	75 (A)		220 (B)

Prevalence Index = B/A = 2.93

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: UPL O

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
1-10	10YR 4/3	100					Loamy/Clayey	more silt present
10-16	10YR 4/4	100					Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/30/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: WET W

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 3 | Lat: 39.333913 | Long: -94.923627 | Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% | 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 ____	

Remarks:
Wetland hydrology is from hillside seeps. Wetland flows into stream M.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Catalpa bignonioides*	2	No	FACU
2.			
3.			
4.			
5.			
	2	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15")			
1. *Ligustrum sinense*	5	Yes	FACU
2. *Cornus florida*	10	Yes	FACU
3.			
4.			
5.			
	15	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Scirpus atrovirens*	5	No	OBL
2. *Phalaris arundinacea*	20	Yes	FACW
3. *Carex stipata*	30	Yes	OBL
4. *Equisetum hyemale*	40	Yes	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	95	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=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: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	17	x 4 =	68
UPL species	0	x 5 =	0
Column Totals:	112 (A)		223 (B)
Prevalence Index = B/A =			1.99

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: WET W

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 4/1	100					Loamy/Clayey	
3-12	10YR 4/2	95	10YR 5/4	5	RM	M	Loamy/Clayey	
12-16	10YR 4/2	90	10YR 5/6	10	RM	M	Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ 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)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X 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): 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: Leavenworth FCI City/County: Leavenworth/Leavenworth Sampling Date: 7/30/2020

Applicant/Owner: FBOP State: KS Sampling Point: UPL U/W

Investigator(s): C.Hanlon, S. Section, Township, Range:

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 39.333903 Long: -94.923802 Datum: WGS 84

Soil Map Unit Name: Knox silt laom, 7-12% 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	10	No	FACW
2. *Festuca arundinacea*	60	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70	=Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Toxicodendron radicans*	5	Yes	FAC
2.			
	5	=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: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	5	x 3 =	15
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	75 (A)		275 (B)

Prevalence Index = B/A = 3.67

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: UPL U/W

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 4/3	100					Loamy/Clayey	more silt present
14-18	10YR 4/3	100					Loamy/Clayey	

[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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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

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: Leavenworth FCI | City/County: Leavenworth/Leavenworth | Sampling Date: 7/30/2020

Applicant/Owner: FBOP | State: KS | Sampling Point: UPL 1

Investigator(s): C.Hanlon, S. | Section, Township, Range:

Landform (hillside, terrace, etc.): hillside | Local relief (concave, convex, none): convex

Slope (%): 2 | Lat: 39.334028 | Long: -94.932293 | Datum: WGS 84

Soil Map Unit Name: Knox silt loam, 7-12% | 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex stipata*	40	Yes	OBL
2. *Eleusine indica*	10	No	FACU
3. *Echinochloa crus-galli*	10	No	FACW
4. *Setaria faberi*	10	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	70 (A)		140 (B)

Prevalence Index = B/A = 2.00

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: UPL 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
0-4	10YR 4/2	100					Loamy/Clayey	
4-13	10YR 4/3	90	10YR 5/6	10	RM	M	Loamy/Clayey	
13-18	10YR 4/3	90	10YR 5/6	5	RM	M	Loamy/Clayey	
			5Y 5/6	5	RM	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)
- ___ Dark Surface (S7)
- ___ 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)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

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- ___ Water Marks (B1)
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- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

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- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ 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? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

APPENDIX F

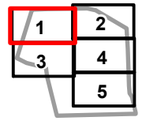
WETLAND DELINEATION PLAN

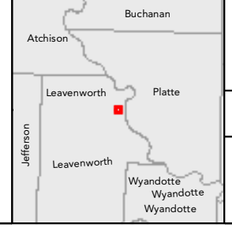
Project Area
Wetland Flag
Soil Point
Delineated Wetland
Delineated Stream
Ephemeral Stream

Sources:
ESRI World Imagery Map Service, obtained 2020.
WSP, 2020.

Coordinate System/Datum:
UTM, Zone 15
NAD 83

September 2020

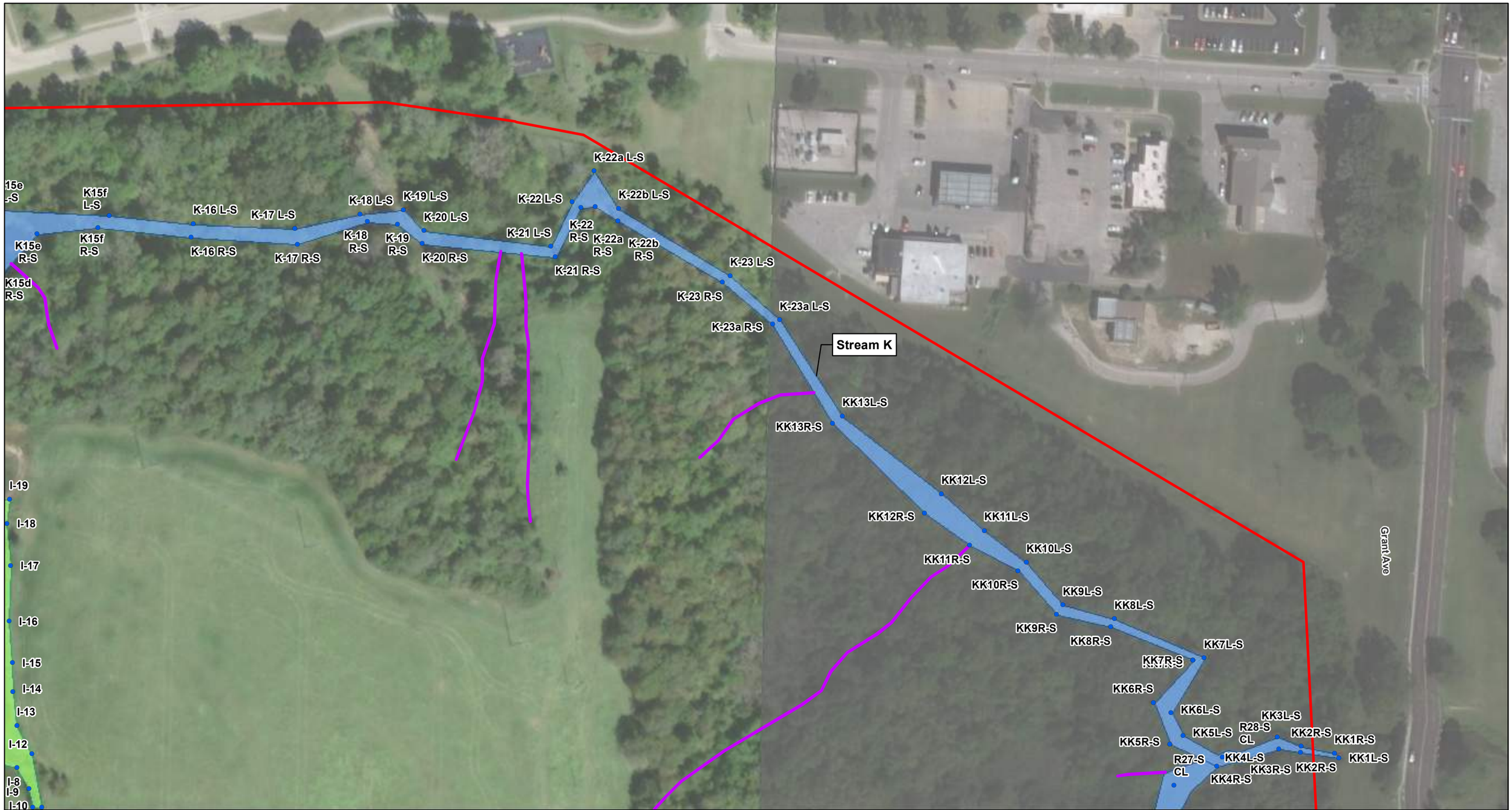




Wetland Delineation: Sheet 1 of 5

Proposed Federal Correctional Institution and Federal Prison Camp
Leavenworth, KS

0 50 100 Feet

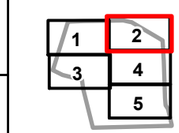


Project Area
Wetland Flag
Soil Point
Delineated Wetland
Delineated Stream
Ephemeral Stream

Sources:
ESRI World Imagery Map Service, obtained 2020.
WSP, 2020.

Coordinate System/Datum:
UTM, Zone 15
NAD 83

September 2020



Wetland Delineation: Sheet 2 of 5
Proposed Federal Correctional Institution and Federal Prison Camp
Leavenworth, KS

wsp

N

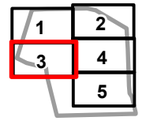
0 50 100
Feet

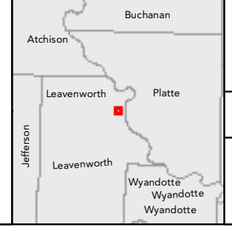
Project Area
Wetland Flag
Soil Point
Delineated Wetland
Delineated Stream
Ephemeral Stream

Sources:
ESRI World Imagery Map Service, obtained 2020.
WSP, 2020.

Coordinate System/Datum:
UTM, Zone 15
NAD 83

September 2020



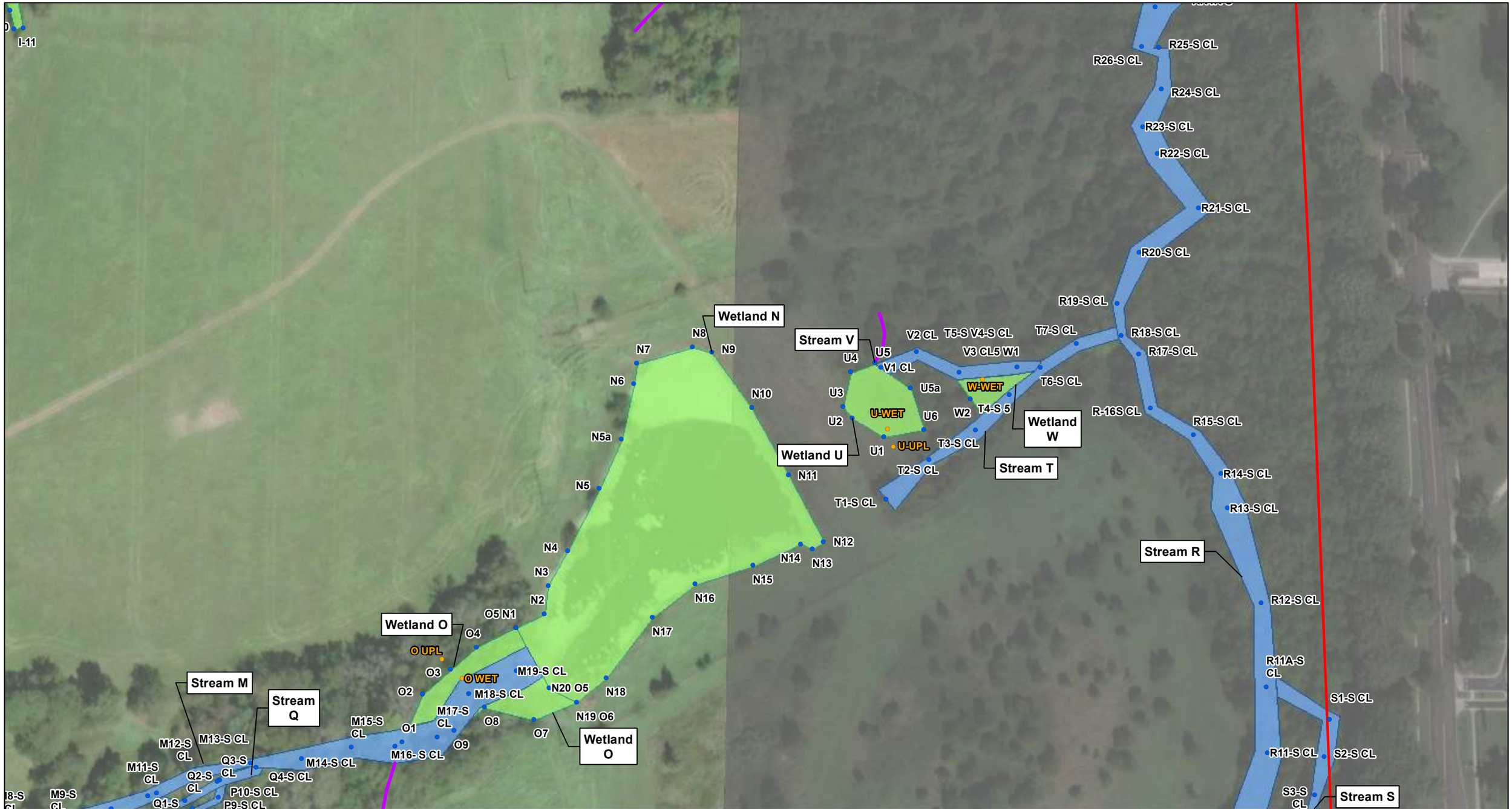


Wetland Delineation: Sheet 3 of 5
Proposed Federal Correctional Institution and Federal Prison Camp
Leavenworth, KS

wsp

N

0 50 100 Feet



Project Area
Wetland Flag
Soil Point
Delineated Wetland
Delineated Stream
Ephemeral Stream

Sources:
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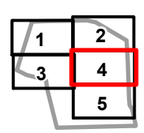
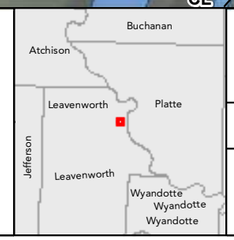
WSP, 2020.

Coordinate System/Datum:
UTM, Zone 15
NAD 83

September 2020





Wetland Delineation: Sheet 4 of 5
Proposed Federal Correctional Institution and Federal Prison Camp
Leavenworth, KS

wsp

N

0 50 100 Feet

Project Area
Wetland Flag
Soil Point
Delineated Wetland
Delineated Stream
Ephemeral Stream

Sources:
ESRI World Imagery Map Service, obtained 2020.
WSP, 2020.

Coordinate System/Datum:
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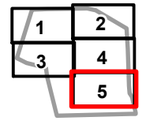
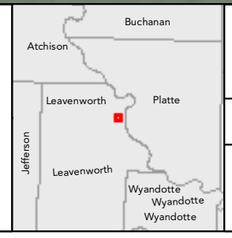
September 2020





Wetland Delineation: Sheet 5 of 5
Proposed Federal Correctional Institution and Federal Prison Camp
Leavenworth, KS

wsp

N

0 50 100 Feet