

Appendix 2G

Wetland Delineation Reports – Pennsylvania and New Jersey Facilities

Pennsylvania
Wetlands and Waterbodies Report

**Wetlands and Waterbodies Report
Northeast Supply Link Project**

**Monroe, Lycoming, Clinton, and
Luzerne Counties, Pennsylvania**

**August 2011
Revised December 2011**

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List of Abbreviations and Acronyms

AMSL	above mean sea level
CFR	Code of Federal Regulations
CWF	coldwater fishery
CWA	Clean Water Act
Dt/day	dekatherms per day
E & E	Ecology and Environment, Inc.
EV	exceptional value water
FAC	facultative
FACW	facultative wetland
FERC	Federal Energy Regulatory Commission
GPS	global positioning system
hp	horsepower
HQ	high quality water
HUC	Hydrologic Unit Code
JD	Jurisdictional Determination
Mdt/d	one thousand dekatherms per day
MF	migratory fish
MP	milepost
NHD	National Hydrography Dataset
NJDEP	New Jersey Department of Environmental Protection
NWI	National Wetland Inventory

List of Abbreviations and Acronyms (cont.)

NRCS	National Resource Conservation Service
NSL	Northeast Supply Link
NYSDEC	New York State Department of Environmental Conservation
OBL	obligate wetland
PADEP	Pennsylvania Department of Environmental Protection
PAFBC	Pennsylvania Fish and Boat Commission
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
POW	palustrine open water wetland
PSS	palustrine scrub-shrub wetland
ROW	right of way
SPGP	state programmatic general permit
SVAP	Stream Visual Assessment Protocol
Transco	Transcontinental Gas Pipe Line Company, LLC
TSF	trout stocking water
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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Introduction

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to construct and operate the Northeast Supply Link (NSL) Project (Project) in order to provide an additional 250,000 dekatherms per day (dt/day) of firm incremental transportation service from various receipt points on Transco's Leidy Line in Pennsylvania to various delivery points along Transco's Mainline and Leidy systems in Pennsylvania, New Jersey, and New York. The facilities required to provide this service include approximately 12.03 miles of 42-inch diameter pipeline looping extension, 26.95 miles of pipeline uprate, 0.46 mile of 36-inch diameter pipeline replacement, construction of a new compressor station and new electrical substation, and modification of several aboveground facilities.

Figure 1-1 provides a general overview of facilities proposed as part of this Project. As shown, the Project includes the following components in Pennsylvania, New Jersey, and New York.

Proposed Pipeline Facilities

- **Muncy Loop¹ (Lycoming County, Pennsylvania):** Approximately 2.22 miles of 42-inch diameter pipeline, extending the existing Leidy Line "D" loop between mileposts (MPs) 128.97 and 131.19.
- **Palmerton Loop (Monroe County, Pennsylvania):** Approximately 3.17 miles of 42-inch diameter pipeline, extending the existing Leidy Line "D" loop between MPs 40.50 and 43.67.
- **Stanton Loop (Hunterdon County, New Jersey):** Approximately 6.64 miles of 42-inch diameter pipeline, extending the existing Leidy Line "C" loop between MPs 6.90 and 13.54.
- **Caldwell B Replacement (Essex County, New Jersey):** An approximately 0.46-mile replacement of the existing 36-inch diameter Caldwell B Loop.

¹ A loop is a segment of pipe that is usually installed adjacent to an existing pipeline and connected to it at both ends. The loop allows more gas to be moved through the system.

Proposed Pipeline Uprates

- **Caldwell Uprate² (Essex, Passaic, Bergen, and Hudson counties, New Jersey):** Pressure uprate along approximately 25.55 miles of the existing 36-inch Caldwell B Loop, Mainline B, and 72nd Street Lateral.
- **Long Island Extension Uprate (Richmond County, New York):** Pressure uprate along approximately 1.40 miles of the existing 26-inch diameter Long Island Extension pipeline.

New Compressor Station: New Jersey

- **Compressor Station 303 (Essex County, New Jersey):** A new single-unit 25,000-horsepower (hp) electric-drive compressor station.

New Electrical Substation: New Jersey

- **Electrical Substation (Essex County, New Jersey):** A new high voltage electric substation to be constructed on an existing PSE&G transmission ROW to transmit power from the PSE&G grid to Compressor Station 303.

Compressor Station Modification: Pennsylvania

- **Compressor Station 515 (Luzerne County, Pennsylvania):** An additional 15,000-hp compressor unit at Transco's existing Compressor Station 515.

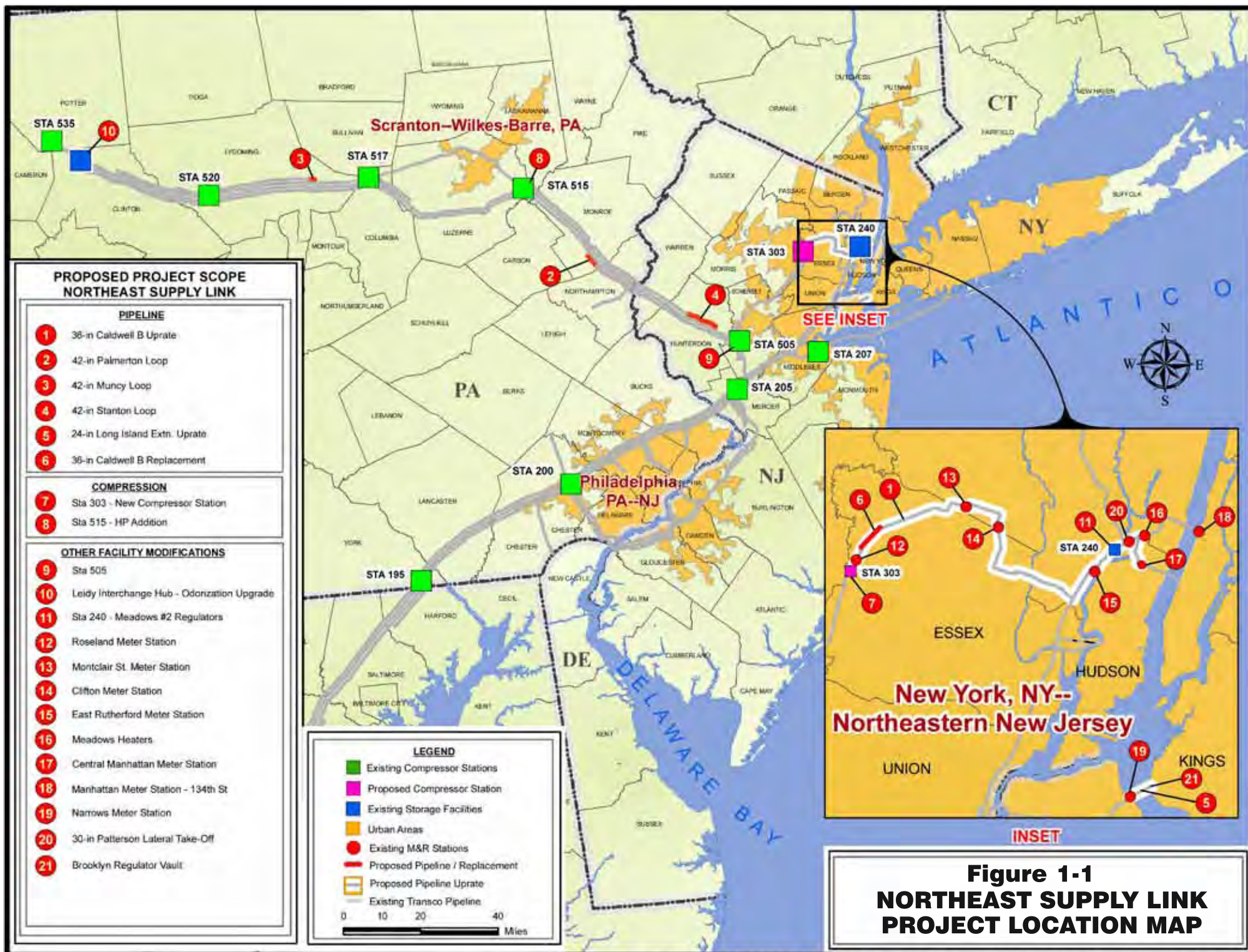
Compressor Station Modification: New Jersey

- **Compressor Station 505 (Somerset County, New Jersey):** Facility modifications at Transco's existing Compressor Station 505.

Other Aboveground Facility Modifications: Pennsylvania

- **Leidy Interchange Hub (Clinton County, Pennsylvania):** Facility modification associated with upgrading the odorization system due to increased flow volumes.

² An uprate is a process by which an existing pipeline is approved to operate at a higher pressure, thus increasing the capacity of the pipeline. To obtain an uprate, pipeline operators must determine and document that the pipeline can safely operate at the increased pressure.



- **Mainline Valves (MLVs) (Lycoming and Monroe Counties, Pennsylvania):** Relocation and modification of MLVs along the Muncy and Palmerton pipeline loops.

Other Aboveground Facility Modifications: New Jersey

- **Roseland Meter and Regulator (M&R) Station (Essex County, New Jersey):** Facility modification due to the Caldwell Uprate including valve and piping replacement and regulation installation. It may also include modification related to the proposed Compressor Station 303.
- **Montclair State University M&R Station (Passaic County, New Jersey):** Facility modification due to the Caldwell Uprate including valve replacement and isolation of the station during testing of the Caldwell Loop.
- **East Rutherford M&R Station (Bergen County, New Jersey):** Isolation of the scrubbers and heaters during testing of the Caldwell Loop. Facility modification due to the Caldwell Uprate including additional regulation installation.
- **Regulator Station 240 (Bergen County, New Jersey):** Isolation of Regulator Station 240 piping during testing of the Caldwell Loop; pressure testing of Meadows Regulator No. 2 and installation of valves and other equipment.
- **Meadows Heaters (Bergen County, New Jersey):** Modification of existing heaters and installation of a new heater to accommodate increased flow volumes.
- **Mainline Valve (MLV) 505B60 (Essex County, New Jersey):** Modifications and testing to accommodate increased pressure.
- **Paterson Lateral Take-off (Bergen County, New Jersey):** Installation of overpressure protection from Mainline B.
- **MLVs (Hunterdon County, New Jersey):** Relocation and modification of MLVs along the Stanton Loop.

Other Aboveground Facility Modifications: New York

- **Narrows M&R Station (Richmond County, New York):** Modification to accommodate proposed increased delivery volumes.
- **Brooklyn Regulating Vault (Kings County, New York):** Addition of below-grade, downstream regulation facility adjacent to an existing facility to accommodate proposed increased delivery volumes.

- **134th Street Manhattan M&R Station (New York County, New York):**
Facility modification due to the proposed increased delivery volumes, including piping replacement, building replacement, and ancillary modifications.

In support of the environmental permits and approvals required for the proposed Project, Ecology and Environment, Inc. (E & E), on behalf of Transco, delineated and evaluated all wetlands, ponds, rivers, and streams within proximity to the proposed Project. Each feature was evaluated as to whether it was, or had the potential to be, regulated by the Pennsylvania Department of Environmental Protection (PADEP), the New Jersey Department of Environmental Protection (NJDEP), the New York State Department of Environmental Conservation (NYSDEC), or the United States Army Corps of Engineers (USACE).

The Project is located within three different states, thus there are three different federal and state regulatory jurisdictions. For those Project components in Pennsylvania, the agencies with regulatory jurisdiction are the PADEP and the Philadelphia and Baltimore Districts of the USACE. This report describes only those wetland and waterbody resources within Pennsylvania Project components.

For those Project components in New Jersey, the NJDEP and the USACE, New York District, are the agencies with regulatory jurisdiction. For Project components in New York, NYSDEC and the USACE, New York District, are the agencies with regulatory jurisdiction. It is due to this overlap in USACE regulatory districts that the New Jersey and New York facilities have been combined into one separate report.

The proposed Pennsylvania facilities for the NSL Project are described below.

1.1 Pennsylvania Pipeline Facilities

1.1.1 Palmerton Loop

The proposed Palmerton Loop will consist of construction of the Leidy Line “D” Pipeline between MPs 40.50 and 43.67. This looping consists of 3.17 miles of 42-inch pipeline parallel to the existing Leidy pipeline in Ross Township in Monroe County, Pennsylvania. An existing pig receiver and related appurtenances will be moved from MP 40.50 to MP 43.67.

1.1.2 Muncy Loop

The proposed Muncy Loop will consist of construction of the Leidy Line “D” Pipeline between MPs 128.97 and 131.19. This looping consists of 2.22 miles of 42-inch pipeline parallel to the existing Leidy pipeline in Wolf and Penn townships in Lycoming, Pennsylvania. An existing pig receiver and related appurtenances will be moved from MP 131.19 to MP 128.97.

1.2 Pennsylvania Aboveground Facilities

1.2.1 Compressor Station 515

Transco will modify existing compressor units at Compressor Station 515 in Buck Township in Luzerne County, Pennsylvania. These modifications will include the addition of a new 16,000-hp Solar Mars 100S gas turbine compressor to supplement the existing six compressor units at the station.

1.2.2 Leidy Interchange Hub

Transco will modify the existing odorization system at the Leidy Interchange Hub located in Clinton County, Pennsylvania, in order to accommodate the additional volumes that will be associated with the looping in this Project. These modifications will include installation of either one 20,000-gallon or two 10,000-gallon vertical storage tanks that will contain a natural gas odorant; a new 10-foot-by-27-foot pump building with five new pumps; a new 15-foot by 30-foot analyzer/control building adjacent to the pump building; a new back-up generator for the analyzer, control, and pumping equipment; and two new gas sample points upstream of the existing odorant injection points with heat trace tubing. Modifications at the Leidy Interchange Hub may also include the removal of the replaced facilities including the existing pump building, remote telemetry unit building, and old pumping equipment.

1.3 Report Purpose and Organization

This report is intended to provide the results of field surveys conducted in 2010 and 2011 to determine the location of wetlands and waterbodies within and adjacent to proposed disturbed areas. This report will also be used to support Transco's Application for a Certificate of Public Convenience and Necessity under Sections 7(c) and 7(b) of the Natural Gas Act from the Federal Energy Regulatory Commission (FERC), a joint application to the USACE and PADEP pursuant to the Clean Water Act (CWA) and the Dam Safety and Encroachments Act, and any other relevant applications for permits or approvals necessary for construction and operation of the Project in Pennsylvania.

This report was initially drafted and submitted to USACE in August 2011 as part of a request for a Jurisdictional Determination. Field visits of the Project components to verify the wetlands and waterbodies described in this report were conducted on September 26, 2011, and November 8, 2011, by the USACE. As a result of the field verification visits, revisions were made to this report in December 2011.

Section 1 of this report provides a general Project description; Section 2 outlines the regulatory framework that governs activities in wetlands and waterbodies in Pennsylvania; Section 3 outlines the methodologies used to conduct field surveys; Section 4 provides a description of the ecological setting of the Project Area, including the results of a preliminary data review; Section 5 provides the results of wetland and stream surveys; and Section 6 provides the references used in compil-

ing this report. Appendices A through D contain the mapping, datasheets, and photo log supplements for each Project component.

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Regulatory Review and Permit Requirements

This report was prepared to support submittal of permit applications for authorizations under Sections 401 and 404 of the Federal CWA of 1977 and the Commonwealth of Pennsylvania's Dam Safety and Encroachments Act (Act 325 of 1978). The following is a summary of these federal and state regulations related to waterbody and wetland permitting.

2.1 Clean Water Act

The CWA was implemented to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Under Sections 401 and 404 of the CWA, permits must be issued for certain activities that may impact wetlands and waterways. Section 401 of the CWA requires state approval for any federally permitted action impacting waters of the United States to ensure that the permitted action will not violate the state's water quality standards or impair designated uses. The Pennsylvania State agency responsible for administering the Section 401 program is the PADEP. Section 404 of the CWA requires that a permit be obtained for the discharge of dredged or fill material into waters of the United States, including wetlands and streams. Waters of the United States are defined under 33 Code of Federal Regulations (CFR), and wetlands are specifically defined under 33 CFR Part 328.3(b). Depending on the type of activity to be undertaken, responsibility for Section 404 permitting in Pennsylvania can fall to either the USACE or the PADEP (see below).

For projects involving federal review, the USACE will make a jurisdictional determination (JD) for delineated features following a field review of the Project. Based on guidance issued by the USACE in June 2008, the applicant may request either a Preliminary JD or an Approved JD (USACE 2008).

If an applicant requests a Preliminary JD, all wetlands and waters delineated during field surveys will be considered federally jurisdictional regardless of surface water connections to waters of the United States or potential impacts on the physical and/or chemical nature of traditional navigable waters. Any permits sought or issued will be based on the assumption that all wetlands and waters are federally jurisdictional. In the event that an applicant later determines that an Approved JD

2. Regulatory Review and Permit Requirements

is required, the request for a Preliminary JD may be revised to a request for an Approved JD.

If an applicant requests an Approved JD, the USACE will make a determination for each wetland and waterbody, based on the surface connections and the potential importance of water quality, within traditional navigable waterways (USACE 2007).

Transco requested a Preliminary JD from USACE for the proposed NSL Project in August 2011. The following Project components in Pennsylvania include wetlands that fall under USACE jurisdiction, and as such, will be included in the Preliminary JD request: Palmerton Loop, Muncy Loop, and Compressor Station 515. The USACE Philadelphia District conducted a field verification of the wetlands and streams on the Palmerton Loop and Compressor Station 515 on September 26, 2011. On November 8, 2011, the USACE Baltimore District verified the wetlands and streams traversed by the Muncy Loop. This delineation report has been revised according to changes requested by the USACE.

2.2 Pennsylvania Dam Safety and Encroachments Act

The Dam Safety and Encroachments Act provides the primary framework for the state's wetlands protection and regulation, with the program's rules and regulations detailed in Title 25, Pennsylvania Code, Chapter 105. Under the Dam Safety and Encroachments Act, Pennsylvania regulates wetlands and other bodies of water. The act contains both permitting criteria and mitigation requirements to be followed for any project impacting a regulated body of water.

State Programmatic General Permit

Section 404(e) of the CWA allows for the issuance of general permits from a state level that operate in conjunction with a state regulatory program to protect waters of the State, as long as they are in compliance with the USACE (USACE 2008). In order to streamline the permitting process so that it complies with both federal and state guidelines, Pennsylvania created a "State Programmatic General Permit" (SPGP) in 1995. The implementation of the SPGP eliminates the need for dual state and federal reviews, processing, and permit issuance procedures (PADEP 2010a).

Within the SPGP there are three categories of activities based on the size of the activity and the compliance with state and federal permit review standards: Category I, Category II, and Category III (PADEP 2010a). The PADEP, or the delegated county conservation district, will generally review Category I activities, without the need to notify USACE. The applicant can be issued an SPGP if the project complies with all applicable regulations and requirements. Category II activities are those that impact less than 250 linear feet of stream. They are also reviewed by the PADEP or the delegated county conservation district, but further require publication in the *Pennsylvania Bulletin* for public commentary and to notify federal agencies. Through this, the USACE and federal agencies can com-

2. Regulatory Review and Permit Requirements

ment on and review the Category II permit application, as well as require the applicant to obtain an individual permit application if the project involves unique circumstances. Prior to issuance of a permit for any Category III activity, individual project review by the USACE and full federal coordination are required. The USACE will then make an evaluation determining if the application either qualifies for a SPGP or requires an individual Section 404 permit review (PADEP 2010a).

An individual permit (Water Obstruction and Encroachment Permit) is required for activities impacting more than 1 acre of water or individual wetlands, or which are located within the Delaware River, Beaver River, Little Beaver River, Mahoning River, Monongahela River, Ohio River, Lake Erie, or portions of Schuylkill River, Lehigh River, Youghiogheny River, Allegheny River, Kiskiminetas River, or Ten Mile Creek. The USACE and PADEP will process separate Section 404 and Chapter 105 authorizations in these waters (PADEP 2010a). An individual Water Obstruction and Encroachment Permit also may be required based on site-specific conditions, and may be required for crossing wild trout streams or streams stocked with trout.

Section 401 Water Quality Certification

Disturbances to wetlands and streams have the potential to degrade water quality; therefore, in addition to the federal CWA Section 404 permit for direct impacts to wetlands and streams, a Section 401 Water Quality Certification (Section 401 certification) is also required. The Project must comply with Pennsylvania's Water Quality Standards (25 PA Code §93) and not potentially result in an adverse impact on water quality in order for PADEP to issue a Section 401 Certification. Section 401 Certification is required for all SPGP applicants, and must be secured by the applicant prior to any discharge of dredged or fill material relating to the project. PADEP initiates review for each submitted general permit application. If PADEP and USACE approve an individual Water Obstruction and Encroachment Permit, the review for the Section 401 certification will be complete and the Section 401 certification will be included with the permit (PADEP 2009).

The Water Quality Standards include established statewide and protected water, as well as the State's Anti-degradation Requirements. All water uses are separated into five categories: Aquatic Life, Water Supply, Recreation and Fish Consumption, Special Protection, and Other. Protected uses falling under the Special Protection category include High Quality Waters (HQ) and Exceptional Value Waters (EV). HQ and EV waters must meet certain conditions related to chemistry, biology, use, or location, including (but not limited to) high bioassessment scores, the Class A wild trout stream qualifier, and being located within federal or state protected areas. HQ and EV waters are afforded additional considerations to maintain and protect their existing water quality above and beyond those afforded to streams with existing uses falling under one of the other four Protected Use categories.

3

Methodology

3.1 Environmental Survey Areas

3.1.1 Pennsylvania Pipeline Facilities

Palmerton Loop

Surveys for wetland and waterbody resources along the Palmerton Loop were conducted within a typical 300-foot-wide corridor. The survey corridor included the full extent of Transco's existing maintained right of way (ROW) and additional buffer area on either side of the ROW to cover construction work areas associated with the new pipeline loop. The survey corridor was widened, as appropriate, to include features, such as access roads and equipment staging areas. A total of approximately 185 acres was included in the Palmerton Loop environmental survey area.

Appendices A-1 and A-2 show the location of the environmental survey area for the Palmerton Loop overlaid on United States Geological Survey (USGS) 7.5-Minute Quadrangle maps and aerial photography, respectively.

Muncy Loop

Surveys for wetland and waterbody resources along the Muncy Loop were conducted within a typical 300-foot-wide corridor. The survey corridor included the full extent of Transco's existing maintained ROW and additional buffer area on either side of the ROW to cover construction work areas associated with the new pipeline loop. The survey corridor was widened, as appropriate, to include features, such as access roads and equipment staging areas. A total of approximately 142 acres was included in the Muncy Loop environmental survey area.

Appendices B-1 and B-2 show the location of the environmental survey area for the Muncy Loop overlaid on USGS 7.5-Minute Quadrangle maps and aerial photography, respectively.

3.1.2 Pennsylvania Aboveground Facilities

Compressor Station 515

The environmental survey area for Compressor Station 515 covered approximately 13 acres. The survey area covers the existing facility footprint and surrounding area that will be used for construction workspace. Appendices C-1 and C-2 show the location of the environmental survey area for Compressor Station 515 overlaid on USGS 7.5-Minute Quadrangle maps and aerial photography, respectively.

Leidy Interchange Hub

The environmental survey area for the Leidy Interchange Hub covered approximately 42 acres. The survey area covers the existing facility footprint and surrounding area that will be used for construction workspace. Appendices D-1 and D-2 show the location of the environmental survey area for the Leidy Interchange Hub overlaid on USGS 7.5-Minute Quadrangle maps and aerial photography, respectively.

3.2 Background Information Review

Prior to performing fieldwork, background information was reviewed to assist in the initial identification of wetlands and waterbodies. Information sources used to determine the possible presence of wetlands included color-infrared aerial photographs; USGS 7.5-Minute Series topographic maps; United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps; Federal Emergency Management Agency (FEMA) floodplain maps; and the local soil surveys.

3.3 Wetland and Waterbody Field Surveys

Field surveys were conducted during in April through June 2010 and in May 2011 to:

- Delineate the boundaries of and characterize the functions of wetlands to obtain sufficient data about individual wetlands within the Survey Corridor to allow for a complete assessment of potential Project-related impacts;
- Characterize all waterbodies and watercourses that occur within the Survey Corridor; and
- Classify the vegetation cover types into distinctive upland, wetland, and aquatic ecological communities.

The surveys were conducted using delineation procedures in the *USACE Wetland Delineation Manual* (Environmental Laboratory 1987). This manual is commonly referred to as the “87 Manual.” In 2009, the Draft *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* was released for field testing. In July 2010, the USACE adopted the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation*

Manual: Eastern Mountains and Piedmont Region (U.S. Army Engineer Research and Development Center 2010). As a result, the surveys conducted prior to July 2010 utilized the draft regional supplement in addition to the 87 Manual. The surveys conducted after July 2010 utilized the interim regional supplement. Some of the facilities appeared to be located near the boundary of the spatial extent of the Eastern Mountains and Piedmont Region. Due to the characteristics of the land use, soils, and ecological region, the Eastern Mountains and Piedmont Region was the most appropriate Regional Supplement to implement in the field.

Waterbodies were characterized using a modified version of the Natural Resource Conservation Service's (NRCS's) *Stream Visual Assessment Protocol* (SVAP; USDA NRCS 1998). The specific procedures used to evaluate the soils, vegetation, and hydrology at each potential wetland location is described below.

3.3.1 Soils

Soils were examined by using a tile spade shovel, or "sharpshooter," to a depth of at least 18 inches. Soil characterization was performed in adjacent, undisturbed areas within the potential wetlands wherever disturbance of the soils, caused by past excavation or fill activity, was evident. Soils were characterized at a depth immediately below the A-horizon or at 18 inches of depth, whichever was shallower. Soil colors were identified using a Munsell Soil Color Chart (Munsell Color Company 2000). Other characteristics, such as the presence of mottles and soil texture were recorded. Hydric characteristics, such as organic soil layers, gleying, mottling, and oxidized rhizospheres, were noted where they occurred. The soils were evaluated both within and outside the wetland boundaries.

Hydric soil indicators described in the *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils Version 7.0* (USDA 2010) were used to identify and document hydric soils per the Eastern Mountains and Piedmont Regional Supplement.

3.3.2 Hydrology

The *Wetland Delineation Manual* (Environmental Laboratory 1987) provides guidelines for determining the presence of wetland hydrology. In general, the criteria for wetland hydrology are met if the area is inundated or saturated at the soil surface during the growing season for a time sufficient to develop hydric soils and if the area supports hydrophytic vegetation. In some instances, it is necessary to use other field characteristics to identify wetland hydrology. These characteristics may include water staining, sediment deposits, drainage patterns, or drift lines. Hydrologic characteristics, as well as the depth of surface water or depth to soil saturation, were recorded for each wetland area.

The Eastern Mountain and Piedmont Regional Supplement allows a variety of hydrology indicators to be used. Examples of indicators that can be used include, but are not limited to, saturations; surface water; sediment, drift, and iron deposits; surface soil cracks; presence of reduced iron; and stunted or stressed

plants. This expanded list of hydrology indicators was used to observe and document wetland hydrology.

3.3.3 Vegetation

To determine the presence of hydrophytic vegetation, the dominant species in each major vegetative stratum (e.g., tree, shrub/sapling, herbaceous, and woody vine) were identified and recorded. Each plant was then assigned a wetland indicator status (i.e., obligate wetland, facultative wetland, facultative, facultative upland, or upland) from the USFWS's *National List of Vascular Plant Species that Occur in Wetlands* (Reed 1988). A prevalence of dominant species that are facultative (FAC), facultative wetland (FACW), or obligate wetland (OBL) indicates the presence of hydrophytic vegetation.

The presence of hydrophytic vegetation was determined using the procedures described in the Eastern Mountains and Piedmont Regional Supplement. Vegetation in each of the strata were sampled in the following plot sizes:

- Tree stratum: 30-foot radius
- Sapling/shrub stratum: 15-foot radius
- Herb stratum: 5-foot radius
- Vine stratum: 30-foot radius

Within each stratum, the abundance of each species within the plot was recorded and determined by using areal cover estimates. The Rapid Field Test was applied and if the majority of the species in each strata had an indicator of FACW or OBL, hydrophytic vegetation was present. If the sampled area did not contain all species with an indicator status of FACW or OBL, the Dominance Test was applied. Most plant communities occurring within areas with hydric soils and indicators of hydrology will meet the qualifications of the Rapid Field Test or the Dominance Test. If a site with hydric soils and indicators of hydrology failed the Rapid Field Test and the Dominance Test, the vegetation was evaluated using the Prevalence Index. If necessary, plant morphological adaptations were observed and re-evaluated using the Prevalence Index.

3.3.4 Wetland Delineation

If the soils, hydrology, and vegetation at a survey point indicated that it was within a wetland, the boundary of the wetland was determined, and it was flagged with wetland delineation tape. The approximate boundary was recorded on site maps, and the flagged boundary was surveyed using a Trimble GeoXT global positioning system (GPS) unit. The electronic files generated from the GPS survey were then downloaded and integrated into the existing alignment drawings to identify where the delineated wetlands and the proposed Project overlapped. Photographs

were taken at each wetland and stream, and at other points of interest within the survey area.

3.3.5 Stream Assessment

In order to document the existing conditions of streams delineated during the field surveys, a modified version of the SVAP was utilized. Upon identifying a stream within the survey area, the following characteristics were estimated visually: active channel width; bankfull width; floodprone width; and flow regime (perennial, intermittent, or ephemeral). Field teams then identified a representative reach (i.e., a length of stream 12 times the active channel width), and visually assessed up to 15 assessment elements. Each element was rated with a value from 1 to 10, with lower values corresponding with lower value stream conditions. An overall assessment score was then calculated for each assessment reach.

4

Project Area Descriptions

4.1 Pennsylvania Pipeline Facilities

4.1.1 Palmerton Loop

4.1.1.1 General Site Description

The Palmerton Loop is located in the towns of Ross Township in Monroe County, Pennsylvania, approximately 40 miles southeast of Wilkes-Barre and 16 miles northeast of Allentown. The Palmerton Loop is situated to the north of Blue Mountain and the Kittatinny Valley. It is located on a portion of Chestnut Ridge and within the valley to the northwest of the ridge and is entirely within the broader Delaware River watershed.

The Palmerton Loop is generally characterized by mature forested stands fragmented by residential developments, mostly in the northwestern half of the Project Area; few agricultural fields are present along the loop. There are few wetlands and open water features, such as streams, located mainly in the lower lying valleys. The general population pattern in the area is rural, with some residential subdivisions scattered throughout the northern portion of the loop. Agriculture within along the loop consists mainly of hay production fields and active pastures. While successional forest stands are present throughout the area, most forested areas are mature stands. The forested communities along the loop are Hemlock/White-Pine Northern Hardwood Forests (Fike 1999). The wetlands are a mixture of herbaceous emergent wetlands and broad-leaved deciduous forested wetlands. Topography along the Palmerton Loop is generally rolling hills with steeper elevations along the ridge-tops. Elevations crossed by the Palmerton Loop range from approximately 620 feet above mean sea level (AMSL) to just over 1,200 feet AMSL, though elevations in the vicinity of the proposed Loop reach as high as 1,265 feet AMSL along Chestnut Ridge and 1,576 feet AMSL at Blue Mountain (see Appendix A-1 for the USGS topographic map of the Palmerton Loop). Slopes crossed by a large portion of the Palmerton Loop are moderate (11-20%) to high (above 21%), as the area consists of many large, steep sided hills. More level areas (slopes below 10%) are scattered along the proposed line along the valley floors between the hills.

The Palmerton Loop is located within the Delaware River watershed and, more specifically, is located entirely within the Lehigh River watershed (USGS 8-digit

4. Project Area Descriptions

Hydrologic Unit Code [HUC8] - 02040106). The Lehigh River watershed generally drains south towards the Delaware River. The Palmerton Loop falls within the Pohapoco and Aquashicola Creeks portion of the Middle Lehigh River watershed (ID - 02B) under Pennsylvania's State Water Plan (PADEP 2010a).

4.1.1.2 Existing Wetland and Soils Information

Maps depicting NWI mapped wetlands in proximity to the Palmerton Loop are included in Appendix A-3. As shown on this mapping series, the Palmerton Loop crosses several NWI mapped wetlands. All NWI mapped wetlands are identified as freshwater wetlands, comprising four wetland types: palustrine emergent (PEM), palustrine scrub-shrub (PSS), palustrine forested (PFO), and palustrine open water (POW). Maps depicting FEMA 100-year floodplains are included in Appendix A-4.

Maps depicting soil mapping units crossed by the Palmerton Loop are provided in Appendix A-5. Table 4-1 lists the soil characteristics associated with each mapping unit crossed by the Palmerton Loop by MP. The Palmerton Loop does cross areas with hydric soils as well as areas that have potential hydric inclusions.

Based on the results of the desktop review of existing wetland and soils data, it was determined that field surveys would be required to document the presence and extent of wetlands along the Palmerton Loop.

4.1.1.3 Ecological Community Descriptions

The Palmerton Loop is located within the Eastern Broadleaf Forest Ecoregion Providence (Bailey 1995). The vegetation is characterized by deciduous broadleaf trees with tall thick canopies that shade the forest floor resulting in sparse vegetation in the understory except in early spring. The portion of the Palmerton Loop that lies within Pennsylvania is within the Valley and Ridge Region; it is characterized by forest-covered mountain ridges running in a northeast-southwest direct with farmland and large streams and rivers within the valleys between the ridges (Bailey 1995; Merrit 1987).

Pennsylvania Uplands

The dominant terrestrial community that occurs along the Palmerton Loop is Hemlock/White Pine Northern Hardwood Forest. Dominant trees observed in this community include red maple (*Acer rubrum*), black birch (*Betula lenta*), white pine (*Pinus strobus*), chestnut oak (*Quercus prinus*), and red oak (*Quercus rubra*). Canadian silverberry (*Amelanchier canadensis*) and black gum (*Nyssa sylvatica*) were observed dominants at the highest elevations. Blue huckleberry (*Gaylussacia frondosa*) and the invasive Japanese barberry (*Berberis thunbergii*) were the dominant shrubs, and eastern hayscented fern (*Dennstaedtia punctilobula*) and the invasive garlic mustard (*Alliaria petiolata*) and Japanese stiltgrass (*Microstegia vimineum*) were the dominant herbs.

Table 4-1 Soil Characteristics by Milepost Segment for each Soil Map Unit along the Palmerton Loop of the Northeast Supply Link Project

MP Begin	MP End	Map Unit Symbol	Percent Slope	Hydric Soil ^{a, b}	Rutting Potential ^{a, c}	Erosion Potential ^{a, c}	Depth to Bedrock ^a (inches)	Stony/Rocky Soils ^{a, d}	Prime Farmland ^{a, e}
40.50	40.51	BxC	8 - 25	I	MO	SE	60+	H	N
40.51	40.59	BuB	3 - 8	I	SL	MO	60+	M	Y
40.59	40.62	CpC	8 - 15	N	SL	SE	60+	L	SWI
40.62	40.64	BuB	3 - 8	I	SL	MO	60+	M	Y
40.64	40.70	CpC	8 - 15	N	SL	SE	60+	L	SWI
40.70	40.73	Wb	0 - 1	Y	SE	SL	60+	L	N
40.73	40.85	SmA	0 - 3	Y	SE	SL	60+	L	N
40.85	40.91	BuB	3 - 8	I	SL	MO	60+	M	Y
40.91	40.94	CpC	8 - 15	N	SL	SE	60+	L	SWI
40.94	41.42	HxC	8 - 25	N	MO	MO	60+	H	N
41.42	41.46	DxE	25 - 80	N	SE	SE	20 - 40	H	N
41.46	41.52	HxC	8 - 25	N	MO	MO	60+	H	N
41.52	41.59	DxE	25 - 80	N	SE	SE	20 - 40	H	N
41.59	41.62	HxC	8 - 25	N	MO	MO	60+	H	N
41.62	41.63	DxE	25 - 80	N	SE	SE	20 - 40	H	N
41.63	41.71	HxC	8 - 25	N	MO	MO	60+	H	N
41.71	41.87	DxE	25 - 80	N	SE	SE	20 - 40	H	N
41.87	41.98	DxC	8 - 25	N	MO	MO	20 - 40	H	N
41.98	42.16	HxC	8 - 25	N	MO	MO	60+	H	N
42.16	42.20	BxB	0 - 8	I	MO	MO	60+	H	N
42.20	42.23	SpB	0 - 8	Y	SE	MO	60+	L	N
42.23	42.29	Wb	0 - 1	Y	SE	SL	60+	L	N
42.29	42.34	Hy	0 - 1	Y	SE	SL	60+	L	N
42.34	42.37	RuD	15 - 30	N	MO	SE	36+	H	N
42.37	42.41	WeC3	8 - 15	N	SL	SE	40 - 60	H	N
42.41	42.44	WKE	25 - 80	N	SE	SE	40 - 60	H	N
42.44	42.54	WeC3	8 - 15	N	SL	SE	40 - 60	H	N

Table 4-1 Soil Characteristics by Milepost Segment for each Soil Map Unit along the Palmerton Loop of the Northeast Supply Link Project

MP Begin	MP End	Map Unit Symbol	Percent Slope	Hydric Soil ^{a, b}	Rutting Potential ^{a, c}	Erosion Potential ^{a, c}	Depth to Bedrock ^a (inches)	Stony/Rocky Soils ^{a, d}	Prime Farmland ^{a, e}
42.54	42.67	WKE	25 - 80	N	SE	SE	40 - 60	H	N
42.67	42.82	WhB	3 - 8	N	SL	MO	40 - 60	H	SWI
42.82	42.87	WhC	8 - 15	N	SL	SE	40 - 60	H	SWI
42.87	42.90	WKE	25 - 80	N	SE	SE	40 - 60	H	N
42.90	42.92	WhC	8 - 15	N	SL	SE	40 - 60	H	SWI
42.92	42.98	WeB3	3 - 8	N	SL	MO	40 - 60	H	SWI
42.98	43.05	WeC3	8 - 15	N	SL	SE	40 - 60	H	N
43.05	43.14	WKE	25 - 80	N	SE	SE	40 - 60	H	N
43.14	43.15	WhC	8 - 15	N	SL	SE	40 - 60	H	SWI
43.15	43.31	WhB	3 - 8	N	SL	MO	40 - 60	H	SWI
43.31	43.39	WhC	8 - 15	N	SL	SE	40 - 60	H	SWI
43.39	43.44	AnC	8 - 20	N	SL	SE	60+	H	SWI
43.44	43.47	WhC	8 - 15	N	SL	SE	40 - 60	H	SWI
43.47	43.48	HaB	2 - 8	N	SL	SL	40 - 60	H	SWI
43.48	43.57	HaC	8 - 20	N	SL	MO	40 - 60	H	SWI
43.57	43.66	MeB	3 - 8	N	SL	MO	60+	H	Y
43.66	43.67	LkB	2 - 8	N	SL	MO	40 - 72	H	Y

Notes:

^a As identified in USDA - NRCS Soil Survey of Munroe County, Pennsylvania; or NRCS SSURGO database.

^b Hydric Soils: Y = yes; N = no; I = inclusions; NR = not rated.

^c Rutting/Erosion Potentials: SL = slight; MO = moderate; SE = severe; NR = not rated.

^d Stony/Rocky Soils: H = large amount of gravel/stone/rock; M = appreciable amount of gravel/stone/rock; L = free of gravel/stone/rock.

^e Prime Farmland Soils: Y = yes; N = no; SWI = statewide importance; NR = not rated.

4. Project Area Descriptions

Pennsylvania Freshwater Wetlands

As discussed in Section 4.1.1.2, several freshwater wetlands are mapped along the Palmerton Loop according to NWI mapping. Section 5.1 provides a detailed summary of delineated wetland communities for the Palmerton Loop.

4.1.2 Muncy Loop Project Area

4.1.2.1 General Site Description

The Muncy Loop is located in Penn, and Wolf townships in Lycoming County, Pennsylvania, approximately 14 miles east of Williamsport. The Muncy Loop is situated along a series of undulating hills with narrow to wide valleys in between, to the south of Huckleberry Mountain.

The Muncy Loop is generally characterized by large, intact, forested hillsides amongst rural/agricultural developments. There are also some reverting fields in several stages of succession (old field, shrubland, and young forest), wetlands, and open water features, such as man-made ponds. Agriculture along the loop consists of a mixture of hay production, pasture, and row cropping. The dominant forested community found adjacent to the Muncy Loop is a hemlock/white pine northern hardwood forest. The general population pattern in the area is rural, consisting of scattered residences along roads. Residences are primarily a mixture of active farmsteads, seasonal, and year-round residences.

Topography along the Muncy Loop ranges from generally flat within the floodplains of the creeks crossed by the loop to gradual and steeper slopes along the hills ridges. Elevations along the Muncy Loop range between approximately 650 feet AMSL at Muncy Creek to over 1,300 feet AMSL (see Appendix B-1 for the USGS topographic map of the Muncy Loop). Slopes crossed by the Muncy Loop are generally between 21 and 40%, though there are steep slopes (over 41%) found throughout the Project Area.

The Muncy Loop is located within the Upper/Middle Susquehanna River watershed and, more specifically, is located entirely within the Lower West Branch Susquehanna River watershed (HUC8 - 02050206). The Lower West Branch Susquehanna River watershed generally drains east towards the main branch of the Susquehanna River, which drains south towards the Chesapeake Bay. The Project Area falls within the Muncy Creek portion of the Muncy - Chillisquaque Creeks watershed (ID - 10D) under Pennsylvania's State Water Plan (PADEP 2010a).

4.1.2.2 Existing Wetland and Soils Information

Maps depicting NWI mapped wetlands in proximity to the Muncy Loop are included in Appendix B-3. As shown on this mapping series, the Muncy Loop crosses several NWI mapped wetlands. All NWI mapped wetlands are identified as freshwater wetlands, comprising two wetland types: PEM and PFO. Maps depicting FEMA 100-year floodplains are included in Appendix B-4.

4. Project Area Descriptions

Maps depicting soil mapping units crossed by the Muncy Loop are provided in Appendix B-5. Table 4-2 lists the soil characteristics associated with each mapping unit crossed by the Muncy Loop by MP. The Muncy Loop does not cross any areas with hydric soils; however, the loop does cross several soil types that have potential hydric inclusions.

Based on the results of the desktop review, it was determined that field verification would be required to determine the presence and extent of wetlands along the Muncy Loop.

4.1.2.3 Ecological Community Descriptions

Similar to the Palmerton Loop, the Muncy Loop also falls within the Ridge and Valley ecoregion in the eastern forest formation (Bailey 1995; Merritt 1987). The vegetation is characterized by deciduous broadleaf trees with tall thick canopies that shade the forest floor resulting in sparse vegetation in the understory except in early spring.

Pennsylvania Uplands

Besides agricultural fields, the dominant ecological community is hemlock/white pine northern hardwood forest. Other communities present include little bluestem - Pennsylvania sedge opening and low heath shrubland (Fike 1999). These communities are found on the high elevation ridge tops.

Pennsylvania Freshwater Wetlands

As discussed in Section 4.1.2.2, according to NWI mapping, several freshwater wetlands are mapped along the Muncy Loop. Section 5.2 provides a detailed summary of delineated wetland communities for the Muncy Loop.

4.2 Pennsylvania Aboveground Facilities

4.2.1 Compressor Station 515 Project Area

4.2.1.1 General Site Description

Compressor Station 515 is located in Buck Township in Luzerne County, Pennsylvania, approximately 12 miles southeast of Wilkes-Barre. Compressor Station 515 is situated along a plateau between Stony Run and Shades Creek.

The Compressor Station 515 site contains existing compressor equipment surrounded by gravel within the fence line. Outside of the fence line, there is an area of lawn surrounded by dense, mature, forest. There are some residential homes near the site. The forested area in the survey corridor of Compressor Station 515 consists of mature hardwoods.

Topography of the site is generally flat. Elevations on the site range between approximately 1,900 feet AMSL to over 1,940 feet AMSL (see Appendix C-1 for the USGS topographic map of the site).

Table 4-2 Soil Characteristics by Milepost Segment for each Soil Map Unit along the Muncy Loop of the Northeast Supply Link Project

MP Begin	MP End	Map Unit Symbol	Percent Slope	Hydric Soil ^{a, b}	Rutting Potential ^{a, c}	Erosion Potential ^{a, c}	Depth to Bedrock ^a (inches)	Stony/Rocky Soils ^{a, d}	Prime Farmland ^{a, e}
128.97	129.10	Wy	0 - 3	N	SL	SL	60+	H	SWI
129.10	129.13	BeD	15 - 25	N	MO	vSE	20 - 40	H	N
129.13	129.26	BeC	8 - 15	N	SL	SE	20 - 40	H	SWI
129.26	129.33	AvB	3 - 8	I	MO	MO	40+	H	SWI
129.33	129.46	WkE	25 - 80	N	SE	vSE	10 - 20	H	N
129.46	129.52	WeD	15 - 25	N	MO	SE	10 - 20	H	N
129.52	129.55	WeB	3 - 8	I	SL	MO	10 - 20	H	SWI
129.55	129.66	BeC	8 - 15	N	SL	SE	20 - 40	H	SWI
129.66	129.70	WeD	15 - 25	N	MO	SE	10 - 20	H	N
129.70	129.85	WkE	25 - 80	N	SE	vSE	10 - 20	H	N
129.85	129.95	WeD	15 - 25	N	MO	SE	10 - 20	H	N
129.95	130.02	BeB	3 - 8	N	SL	MO	20 - 40	H	SWI
130.02	130.03	WeD	15 - 25	N	MO	SE	10 - 20	H	N
130.03	130.05	BeB	3 - 8	N	SL	MO	20 - 40	H	SWI
130.05	130.08	BeC	8 - 15	N	SL	SE	20 - 40	H	SWI
130.08	130.26	TuA	0 - 3	N	SL	SL	40+	H	Y
130.26	130.32	Ba	0 - 3	I	SL	SL	60+	H	Y
130.32	130.33	Water	NR	NR	NR	NR	NR	NR	NR
130.33	130.49	Ba	0 - 3	I	SL	SL	60+	H	Y
130.49	130.54	WkE	25 - 80	N	SE	vSE	10 - 20	H	N
130.54	130.59	BeD	15 - 25	N	MO	vSE	20 - 40	H	N
130.59	130.62	BeC	8 - 15	N	SL	SE	20 - 40	H	SWI
130.62	130.67	BeB	3 - 8	N	SL	MO	20 - 40	H	SWI
130.67	130.70	BeC	8 - 15	N	SL	SE	20 - 40	H	SWI
130.70	130.78	BeD	15 - 25	N	MO	vSE	20 - 40	H	N

Table 4-2 Soil Characteristics by Milepost Segment for each Soil Map Unit along the Muncy Loop of the Northeast Supply Link Project

MP Begin	MP End	Map Unit Symbol	Percent Slope	Hydric Soil ^{a, b}	Rutting Potential ^{a, c}	Erosion Potential ^{a, c}	Depth to Bedrock ^a (inches)	Stony/Rocky Soils ^{a, d}	Prime Farmland ^{a, e}
130.78	130.99	WkE	25 - 80	N	SE	vSE	10 - 20	H	N
130.99	131.19	BeC	8 - 15	N	SL	SE	20 - 40	H	SWI
131.19	131.19	BeB	3 - 8	N	SL	MO	20 - 40	H	SWI

Notes:

^a As identified in USDA - NRCS Soil Survey of Lycoming County, Pennsylvania; or NRCS SSURGO database.

^b Hydric Soils: Y = yes; N = no; I = inclusions; NR = not rated.

^c Rutting/Erosion Potentials: SL = slight; MO = moderate; SE = severe; vSE = very severe; NR = not rated.

^d Stony/Rocky Soils: H = large amount of gravel/stone/rock; M = appreciable amount of gravel/stone/rock; L = free of gravel/stone/rock.

^e Prime Farmland Soils: Y = yes; N = no; SWI = statewide importance; NR = not rated.

4. Project Area Descriptions

Compressor Station 515 is located within the Upper Lehigh River watershed (HUC8 02040106). The watershed drains to the southeast towards the main branch of the Delaware River. The site falls within the Stony Run watershed, which is a tributary to the Lehigh River.

4.2.1.2 Existing Wetland and Soils Information

A map depicting NWI mapped wetlands in proximity to Compressor Station 515 is included in Appendix C-3. As shown, several NWI mapped wetlands are present within the environmental survey area for this site. All NWI wetlands are identified as freshwater wetlands, comprising one wetland type: PEM. Maps depicting FEMA 100-year floodplains are included in Appendix C-4.

A map depicting the soil mapping units within Compressor Station 515 is provided in Appendix C-5. Table 4-3 lists the soil characteristics associated with each mapping unit for the site. Hydric soils are not located within the Compressor Station 515 site; however, there is one soil type that has the potential for hydric inclusions.

Table 4-3 Soil Characteristics for those Soil Mapping Units underlying Compressor Station 515

Mapping Unit Name	Map Unit Symbol	Per-cent Slope	Hydric Soil ^{a, b}	Rutting Potential ^{a, c}	Erosion Potential ^{a, c}	Depth to Bedrock ^a (inches)	Stony/Rocky Soils ^{a, d}	Prime Farmland ^{a, e}
Oquaga and Lordstown extremely stony silt loam	OpD	8 – 25	N	SL	SL	20 - 40	H	N
Wellsboro very stony silt loam	WmB	3 – 8	I	SL	SL	60+	M	N

Notes:

^a As identified in USDA - NRCS Soil Survey of Luzerne County, Pennsylvania; or NRCS SSURGO database.

^b Hydric Soils: Y = yes; N = no; I = inclusions; NR = not rated.

^c Rutting/Erosion Potentials: SL = slight; MO = moderate; SE = severe; vSE = very severe; NR = not rated.

^d Stony/Rocky Soils: H = large amount of gravel/stone/rock; M = appreciable amount of gravel/stone/rock; L = free of gravel/stone/rock.

^e Prime Farmland Soils: Y = yes; N = no; SWI = statewide importance; NR = not rated.

Based on the results of the desktop review of existing wetland and soils data, as well as review of aerial photography, it was determined that field surveys would be required to document the presence and extent of wetlands at Compressor Station 515.

4.2.1.3 Ecological Community Descriptions

The Compressor Station 515 falls within the Ridge and Valley ecoregion in the Eastern Deciduous Forest formation (Bailey 1995; Merrit 1987).

Pennsylvania Uplands

Terrestrial communities present in the Compressor Station 515 environmental survey area include maintained herbaceous habitats (mowed areas) surrounded by

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forest. The forested community onsite is a northern hardwood forest (Fike 1999). Representative tree species include red oak, white oak (*Q. alba*), red maple, sugar maple (*Acer saccharum*), and black gum.

Pennsylvania Freshwater Wetlands

As discussed in Section 4.2.1.2, NWI mapped wetlands are present within the environmental survey area of the site. Section 5.3 provides a detailed summary of delineated wetland communities for this site.

4.2.2 Leidy Interchange Hub

4.2.2.1 General Project Area Description

The Leidy Interchange Hub is located in Leidy Township in Clinton County, Pennsylvania, approximately 80 miles north of State College, Pennsylvania. The Leidy Interchange Hub is located in a valley and is a large (approximately 40-acre) site with existing aboveground facilities for Transco's existing Leidy Pipeline system. The surrounding area consists of high, rugged, forested terrain of the Susquehannock State Forest and Kettle Creek State Park.

The 40.33-acre Leidy Interchange Hub site is mainly composed of odorization equipment, pumps, and buildings. Approximately 1.47 acres of the site is undeveloped. The undeveloped area is mostly maintained lawn with a small area of forest cover consisting of mature hardwoods.

Topography of the site is generally flat. Elevations in the overall Project Area range between approximately 1,760 feet AMSL to over 1,790 feet AMSL (see Appendix D-1 for the USGS topographic map of the site).

The Leidy Interchange Hub is located within the Middle West Branch Susquehanna Watershed (HUC8 02050203). The watershed drains to the southwest towards the main branch of the Susquehanna River. The Project Area falls within the Kettle Creek watershed, which is a tributary to the West Branch of the Susquehanna River.

4.2.2.2 Existing Wetland and Soils Information

A map depicting NWI mapped wetlands in proximity to the Leidy Interchange Hub is included in Appendix D-3. As shown, there are no mapped wetlands within the environmental survey area for the Leidy Interchange Hub. Maps depicting FEMA 100-year floodplains are included in Appendix D-4.

A map depicting soil mapping units within the Leidy Interchange Hub is provided in Appendix D-5. Table 4-4 lists the soil characteristics associated with each mapping unit for the site. No hydric soils or soils with potential hydric inclusions are mapped within the environmental survey area for this site.

Based on the results of the desktop review of existing wetland and soils data, as well as review of aerial photography, it was determined that field surveys would

4. Project Area Descriptions

be required to document the presence and extent of wetlands at the Leidy Interchange Hub.

Table 4-4 Soil Characteristics for the Soil Mapping Units Underlying Leidy Interchange Hub

Mapping Unit Name	Map Unit Symbol	Percent Slope	Hydric Soil ^{a, b}	Rutting Potential ^{a, c}	Erosion Potential ^{a, c}	Depth to Bedrock ^a (inches)	Stony/Rocky Soils ^{a, d}	Prime Farmland ^{a, e}
Calvin channery silt loam	CaB	3 – 8	N	SL	MO	20 - 40	H	SWI
Hustontown silt loam	HuB	3 – 8	N	SL	MO	60+	L	Y
Ungers loam	UnB	3 – 8	N	SL	MO	40 - 80+	M	Y
Ungers-Meckesville complex, extremely stony	UpF	25 – 50	N	SL	SE	40 - 60+	H	N

^a As identified in USDA - NRCS Soil Survey of Clinton County, Pennsylvania; or NRCS SSURGO data base.

^b Hydric Soils: Y = yes; N = no; I = inclusions; NR = not rated.

^c Rutting / Erosion Potentials: SL = slight; MO = moderate; SE = severe; NR = not rated.

^d Stony/Rocky Soils: H = large amount of gravel/stone/rock; M = appreciable amount of gravel/stone/rock; L = free of gravel/stone/rock; NR = not rated.

^e Prime Farmland Soils: Y = yes; N = no; SWI = statewide importance; UI = unique importance; NR = not rated.

4.2.2.3 Ecological Community Descriptions

The Leidy Interchange Hub falls within the Ridge and Valley ecoregion in the Eastern Deciduous Forest formation (Bailey 1995).

Pennsylvania Uplands

Terrestrial communities present at the Leidy Interchange Hub site include maintained herbaceous habitats (mowed areas) surrounded by forest. The forested community on the site is a northern hardwood forest (Fike 1999). Representative tree species include red oak, white oak, red maple, sugar maple, and black gum.

Pennsylvania Freshwater Wetlands

As discussed in Section 4.2.2.2, no NWI mapped wetlands are present within the environmental survey area of the site.

5

Wetland and Waterbody Delineation Results

5.1 Palmerton Loop Delineation Results

Appendix A-6 includes wetland and waterbody delineation maps showing the environmental survey area, stream locations, wetland boundaries, and the location of all flag and data points gathered during the Palmerton Loop field surveys. Stream and wetland data sheets are provided in Appendix A-8, and photographs of delineated features are provided in Appendix A-7.

5.1.1 Waterbodies

Eight waterbodies were delineated within the Palmerton Loop environmental survey area. Table E-1 in Appendix E provides a summary of each delineated waterbody. The streams range from well-defined stream channels to poorly defined headwater channels and man-made ditches with defined beds and banks. Three of the delineated streams along the Palmerton Loop were considered to be perennial, channeling surface flow throughout the year. Three streams were considered to be intermittent channels, with surface flow only present during times when the water table is above the ground surface. The remaining two streams were considered to be ephemeral channels, showing signs that they only held flow during or directly after a precipitation event.

Almost all of the streams delineated along the Palmerton Loop show signs of previous channel modifications. The ephemeral stream to the north of Aquashicola Creek is a man-made drainage in a yard. Stream S-PA-42-003 is intermittent to the north side of the ROW and dissipates into the ROW. Both streams delineated to the north of Chestnut Ridge have also been straightened and apparently dredged and deepened. Stream S-PA-42-002 has also been dammed to form a small, shallow Koi pond in a residential yard and has landscaping plants planted around it. As a result of these previous channel modifications, the majority of the streams (eight) received a poor SVAP score, two streams received a fair score, and two streams received a good SVAP score (S-PA-40-007 and S-PA-42-001).

Six streams delineated along the Palmerton Loop fall within the Aquashicola Creek watershed and two fall within the Buckwha Creek watershed.

5. Wetland and Waterbody Delineation Results

Aquashicola Creek and all of its tributaries on the south side of Chestnut Ridge have designated uses for high-quality coldwater fisheries (HQ-CWF) and have migratory fish (MF). Thus, the unnamed tributary streams to Aquashicola Creek within the survey area (, S-PA-40-005, and S-PA-40-006/A) are considered to have these designations. Waters with a protected use of CWF are capable of maintaining and propagating fish species (including salmon) and other species indigenous to cold water habitats. Those with the HQ qualifier are provided additional anti-degradation requirements. Aquashicola Creek (S-PA-40-007 and S-PA-40-008) is also considered Class A trout stream by the Pennsylvania Fish and Boat Commission (PAFBC), meaning it supports a naturally reproducing population of trout of sufficient size and abundance to support a long-term sport fishery. Aquashicola Creek is also listed as a stream capable of supporting naturally reproducing populations of trout, or a natural reproducing trout stream, by the PAFBC.

Buckwha Creek and its tributaries to the north of Chestnut Ridge are all designated as CWF, MF streams. Thus, the unnamed tributary streams to Buckwha Creek within the survey area (S-PA-42-002 and S-PA-42-003) In addition, Buckwha Creek (S-PA-42-001) is listed as an approved trout stream by the PAFBC, meaning they are open for public fishing and are actively stocked with trout, as well as natural reproducing trout streams.

5.1.2 Wetlands

Three wetlands were delineated within the environmental survey area of the Palmerton Loop, totaling approximately 4.45 acres. These wetlands range from forested floodplain and riparian wetlands, to shrub/scrub and emergent wetlands with hydrologic input from abutting stream channels and surface water runoff; these wetlands include four wetland types: PFO, PEM, PSS, and OW. The column entitled “Description” in Table E-2 provides a summary of each delineated wetland (see Appendix E). All three of these wetlands are located directly adjacent to a surface waterbody within the survey area (i.e., those labeled as “Abutting” under the “Location Relative to Stream Reach” column in Table E-2). No isolated wetlands were delineated along the Palmerton Loop. Two wetlands are located within the Buckwha Creek watershed and one is located within the Aquashicola Creek watershed.

In addition to the wetlands that were delineated in the field and discussed above, one wetland (W-PA-40-001) was extended to cover additional areas outside the environmental survey corridor under consideration for various crossing methodologies. This wetland was extended based on a review of aerial photography and topographic maps and then with field surveys in September 2011. Supplemental mapping is provided in Appendix A.

5.2 Muncy Loop Delineation Results

Appendix B-6 includes waterbody and wetland delineation maps showing the environmental survey area, stream locations, wetland boundaries, and the location of

5. Wetland and Waterbody Delineation Results

all flag and data points gathered during the Caldwell B Replacement field surveys. Stream and wetland data sheets are provided in Appendix B-8, and photographs of delineated features are provided in Appendix B-7.

5.2.1 Waterbodies

Nine waterbodies were delineated within the Muncy Loop environmental survey area including one man-made pond. Table E-1 provides a summary of each delineated waterbody (see Appendix E). The streams range from well-defined stream channels to poorly defined headwater channels and man-made ditches with defined beds and banks. Five of the delineated streams along the Muncy Loop were considered to be perennial, channeling surface flow throughout the year. Four of the delineated streams were considered to be intermittent channels. All nine delineated streams are located within the Little Muncy Creek watershed.

Many large, high-quality streams are present throughout the area at the toes of large, steep hills, including S-MU-130-002 (Pine Run). All of these flow to the south out of the survey area, but eventually drain into Muncy Creek (identified as S-MU-130-001 within the survey area). SVAP scores for these higher quality streams were rated good and excellent.

The Muncy Loop comprises a ridge and valley landscape, with a mixture of agricultural fields and mature forest dominating the land cover. As such, many of the delineated streams that are located in areas of intense agricultural usage, or in areas adjacent to reverting fields, show signs of previous disturbance and channel alterations. Some streams show much more apparent alterations, including bank grading and riparian clearing around S-MU-129-003 and the placement of riprap along the banks of many of the larger order streams. This stream received a SVAP score of fair. Generally, streams were found in their natural condition outside of the maintained ROW. All streams show evidence of channel straightening across the existing ROW.

Muncy Creek is the only stream within the Muncy Loop survey area that has been designated by the PAFBC as a fishery resource. Muncy Creek is considered a sensitive stream with a state-designated water quality classification. It is classified as having protected uses of aquatic life for trout stocking (TSF). Waters with a use for TSF are able to maintain stocked trout from February 15 to July 31 of any given year, as well as maintain and propagate species indigenous to warm water habitat.

5.2.2 Wetlands

Seven wetlands were delineated within the environmental survey corridor along the Muncy Loop, totaling approximately 0.94 acres. These wetlands range from linear riparian wetlands, to small emergent wetlands with hydrologic input from abutting stream channels, groundwater seeps, and surface water runoff. The column entitled "Description" in Table E-2 provides a summary of each delineated wetland (see Appendix E). Four of these wetlands are located directly adjacent to

5. Wetland and Waterbody Delineation Results

a surface waterbody within the survey area (i.e., those labeled as “Abutting” under the “Location Relative to Stream Reach” column in Table E-2). One wetland is not directly abutting a surface waterbody, but is connected to one. One wetland has an unknown location relative to stream reach. No isolated wetlands were delineated in the vicinity of the Muncy Loop. All seven delineated watersheds are located within the Little Muncy Creek watershed.

5.3 Compressor Station 515 Delineation Results

Appendix C-6 includes waterbody and wetland delineation maps showing the environmental survey area, stream locations, wetland boundaries, and the location of all flag and data points gathered during the Compressor Station 515 field surveys. Stream and wetland data sheets are provided in Appendix C-8, and photographs of delineated features are provided in Appendix C-7.

5.3.1 Waterbodies

Four waterbodies were delineated within the Compressor Station 515 environmental survey area. Table E-1 provides a summary of the delineated waterbodies (see Appendix E). The streams delineated along the Compressor Station 515 site are poorly defined headwater channels and man-made ditches with defined beds and banks, and ordinary high water marks. All four streams were classified as ephemeral streams, as they exhibited evidence of flow only during or directly after a precipitation event. The SVAP does not apply to intermittent and ephemeral streams. All waterbodies are located within the Stony Run watershed.

The majority of the delineated streams were likely created by runoff created from the adjacent compressor station and surrounding paved and impervious surfaces. Two of the streams start at or near the fence of the compressor station and are modified channels at that point, becoming more natural downstream. Two other channels appear to be natural, but are still largely influenced from runoff originating at the compressor station.

5.3.2 Wetlands

Four wetlands were delineated within the environmental survey area of Compressor Station 515, totaling approximately 0.9 acres. These wetlands are all small emergent wetlands with hydrologic input from a high groundwater table and seasonal flooding of adjacent waterbodies; these wetlands include one wetland type: PEM. The column entitled “Description” in Table E-2 provides a summary of each delineated wetland (see Appendix E). Three of these wetlands are directly adjacent to a surface waterbody within the survey area (i.e., those labeled as “Abutting” under the “Location Relative to Stream Reach” column in Table K-2). One of these wetlands (W-CS-515-002) has surface flow connections to an unnamed tributary to Stony Run. No isolated wetlands were delineated in the survey area of Compressor Station 515. All wetlands are located within the Stony Run watershed.

5. Wetland and Waterbody Delineation Results

5.4 Leidy Interchange Hub Delineation Results

5.4.1 Waterbodies

No waterbodies were identified at the Leidy Interchange Hub.

5.4.2 Wetlands

No wetlands were identified at the Leidy Interchange Hub.

6

References

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6. References

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A

Palmerton Loop Wetland and Stream Datasheets and Photomaps

A-1: USGS Topographic Maps

A-2: Aerial Photography Maps

A-3: NWI Wetland Map

A-4: FEMA Floodplain Map

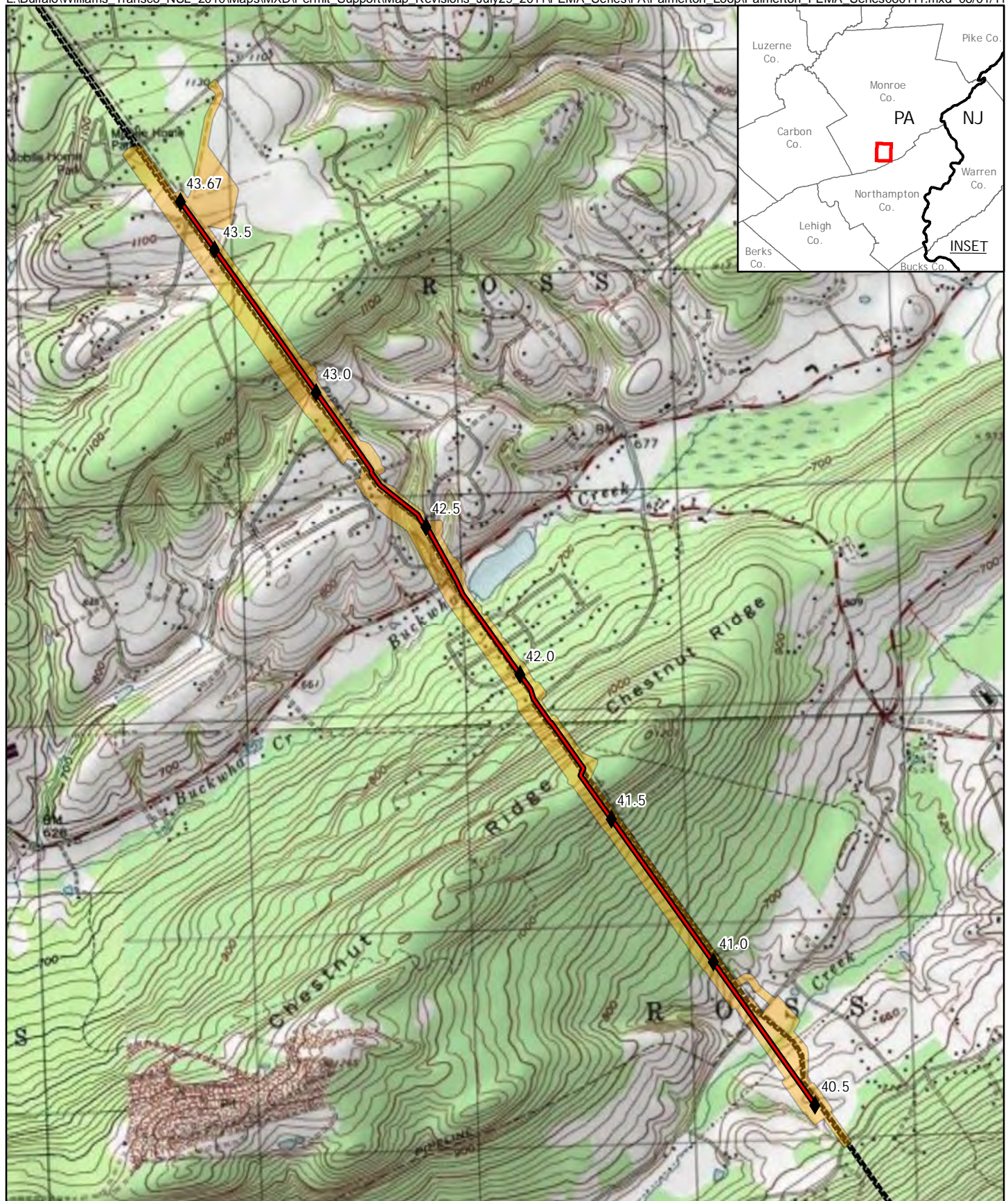
A-5: NRCS Soil Series Map

A-6: Stream and Wetland Delineation Maps

A-7: Stream and Wetland Photo Log

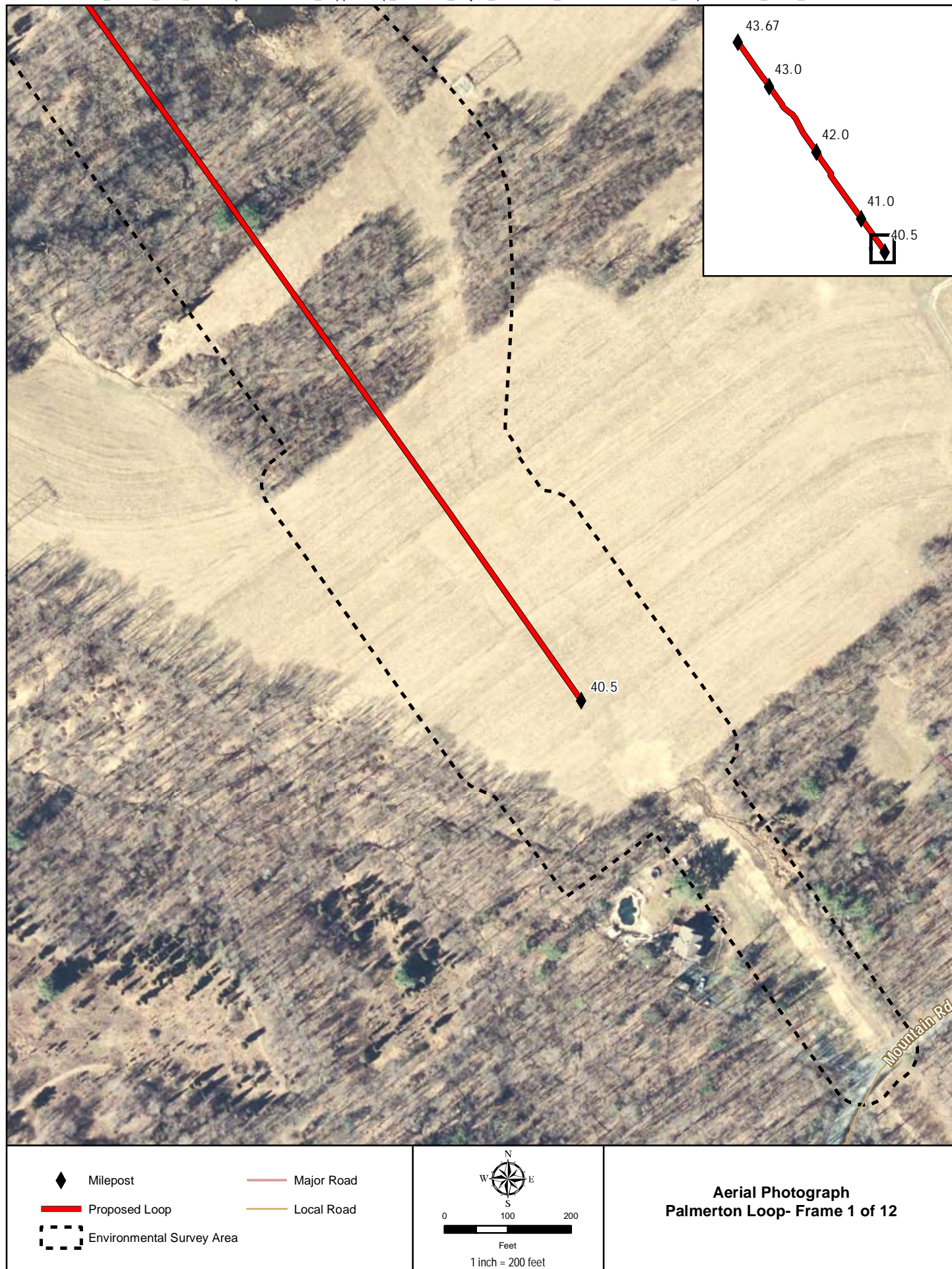
A-8: Stream and Wetland Data Sheets

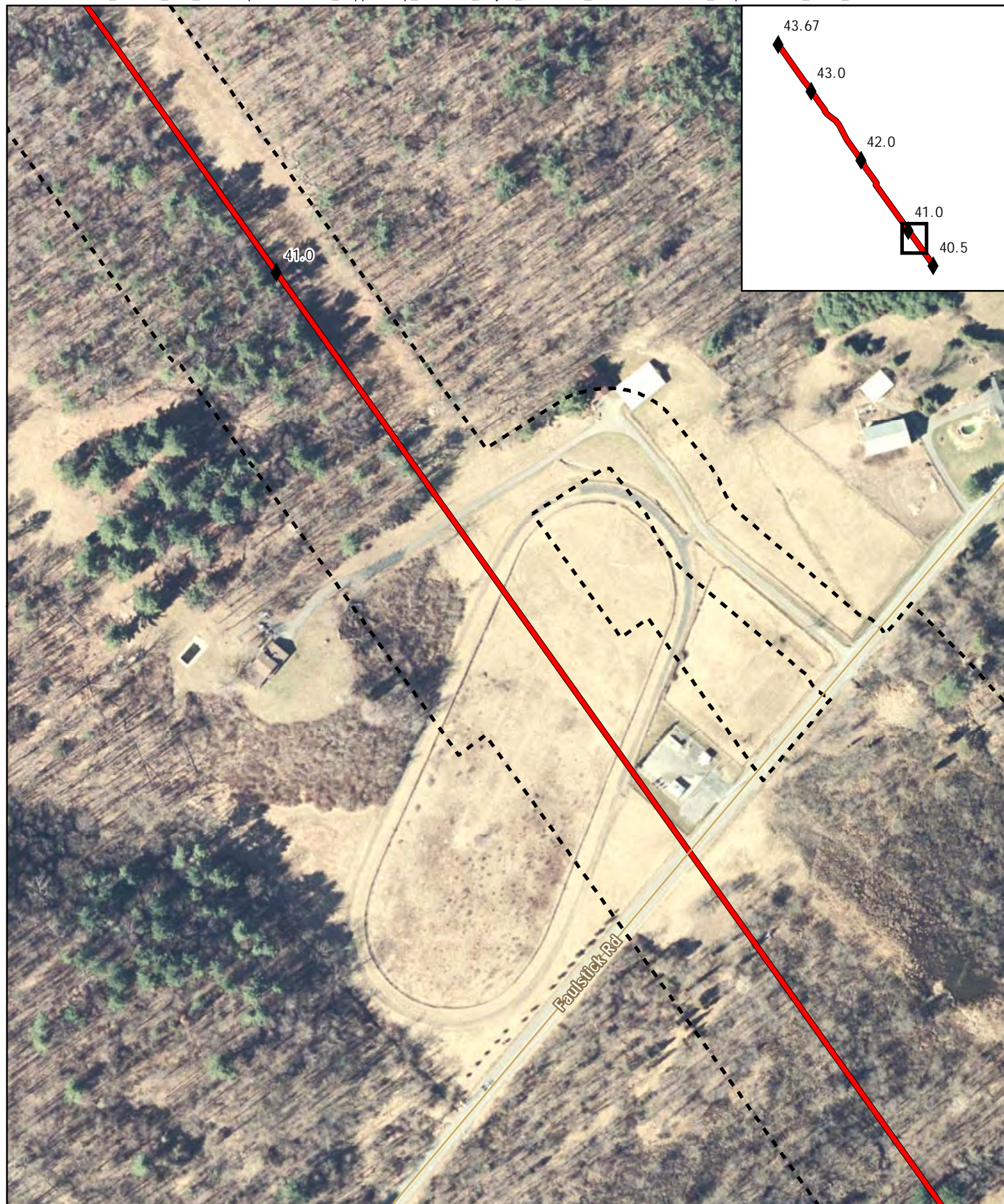
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USGS Topographic Maps



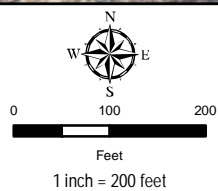
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A-2
Aerial Photography Maps





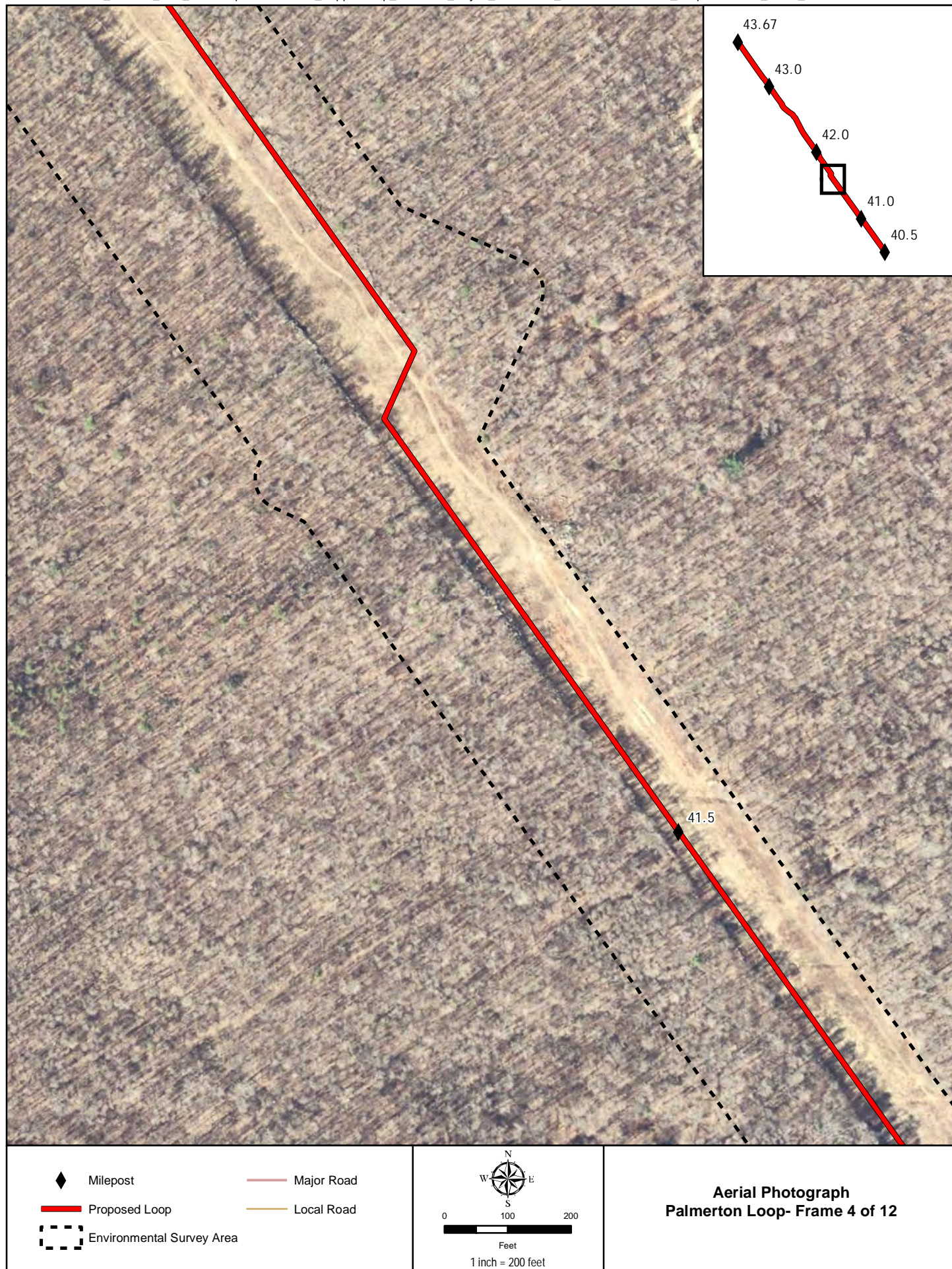
- | | |
|-------------------------------|--------------|
| ◆ Milepost | — Major Road |
| — Proposed Loop | — Local Road |
| --- Environmental Survey Area | |

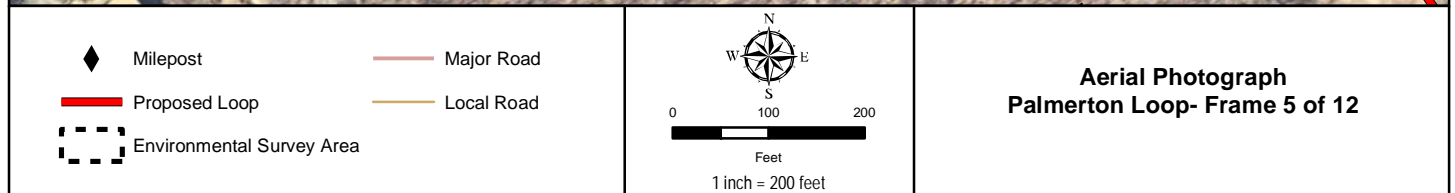
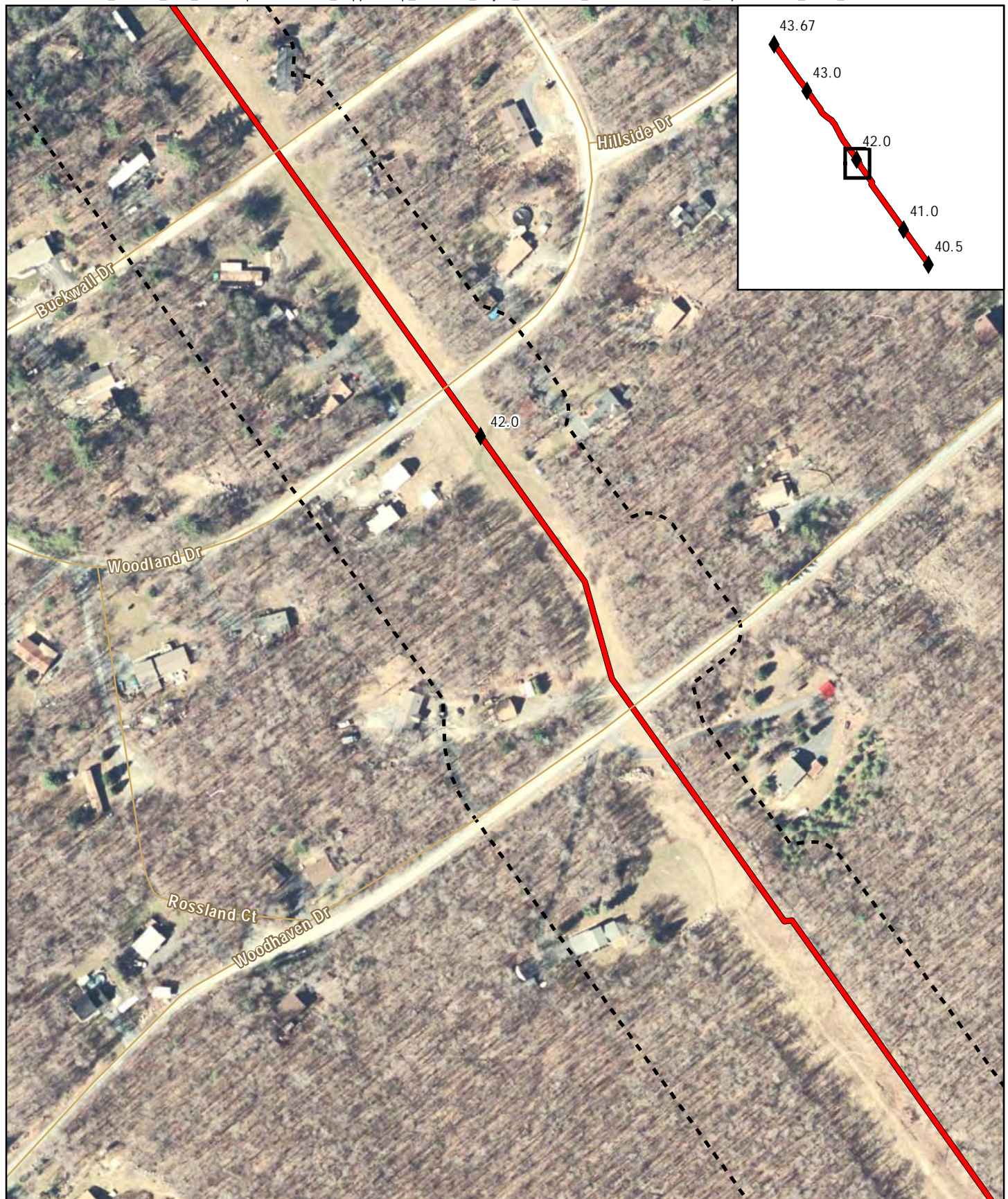


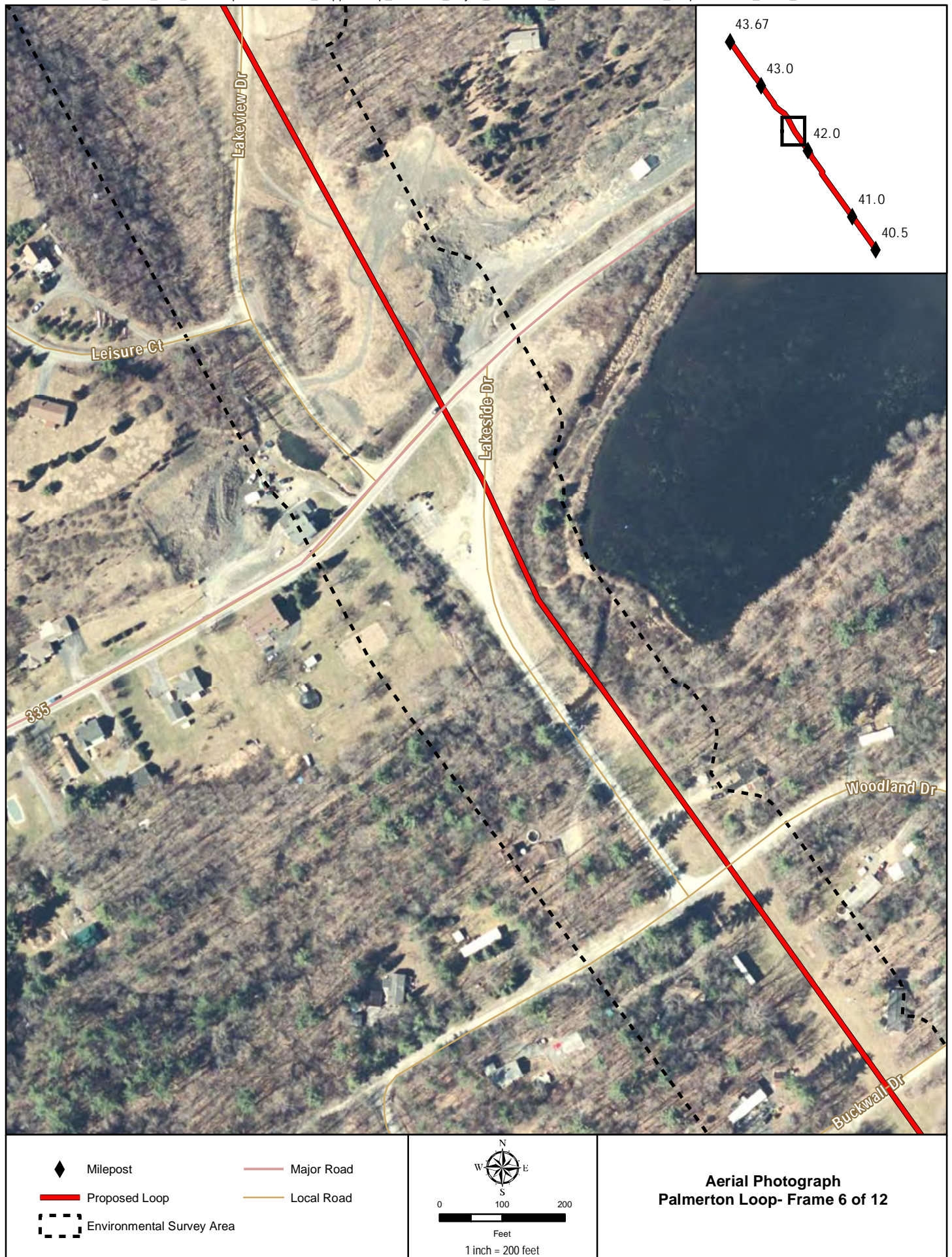
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 Palmerton Loop- Frame 2 of 12**



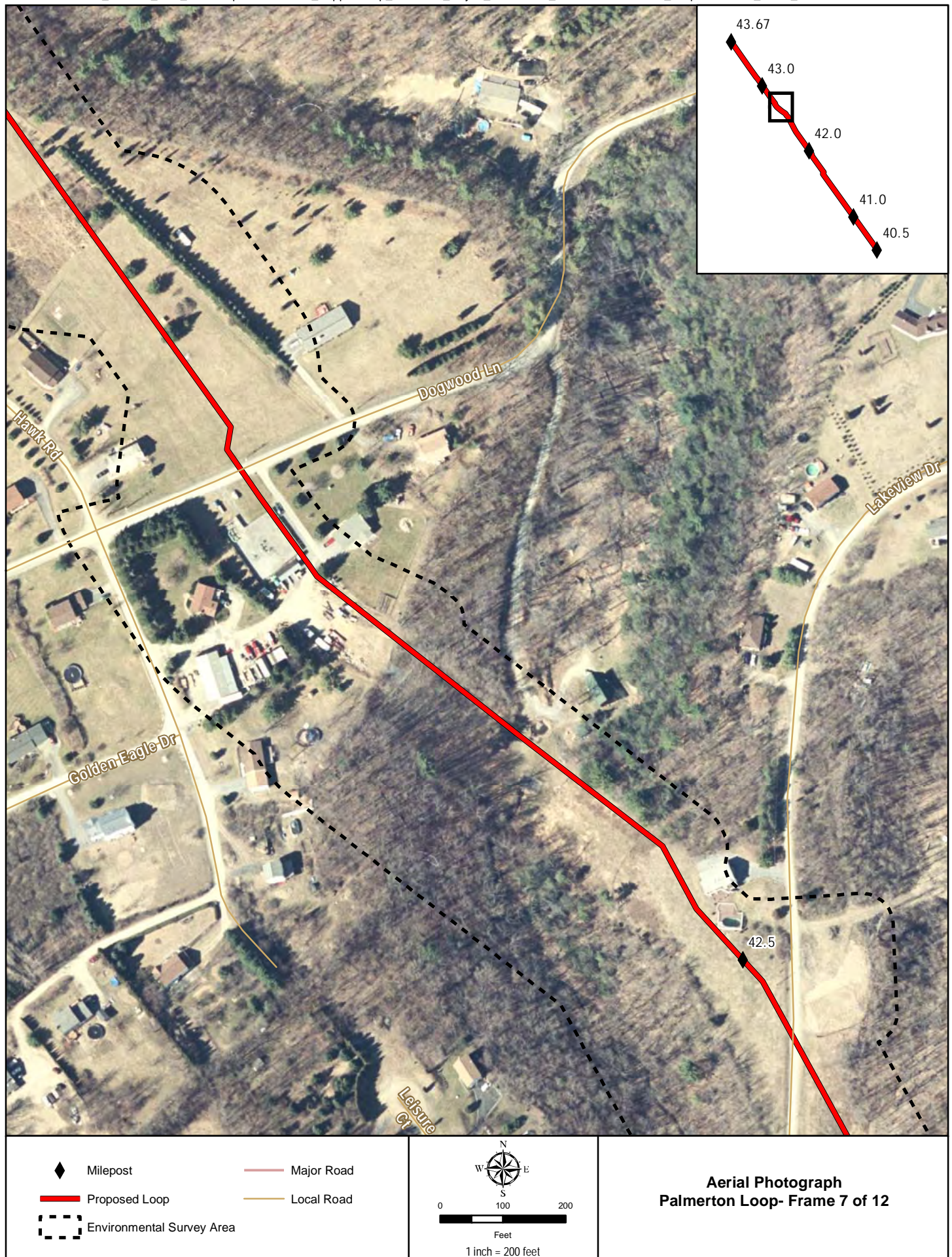
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 Palmerton Loop- Frame 3 of 12**



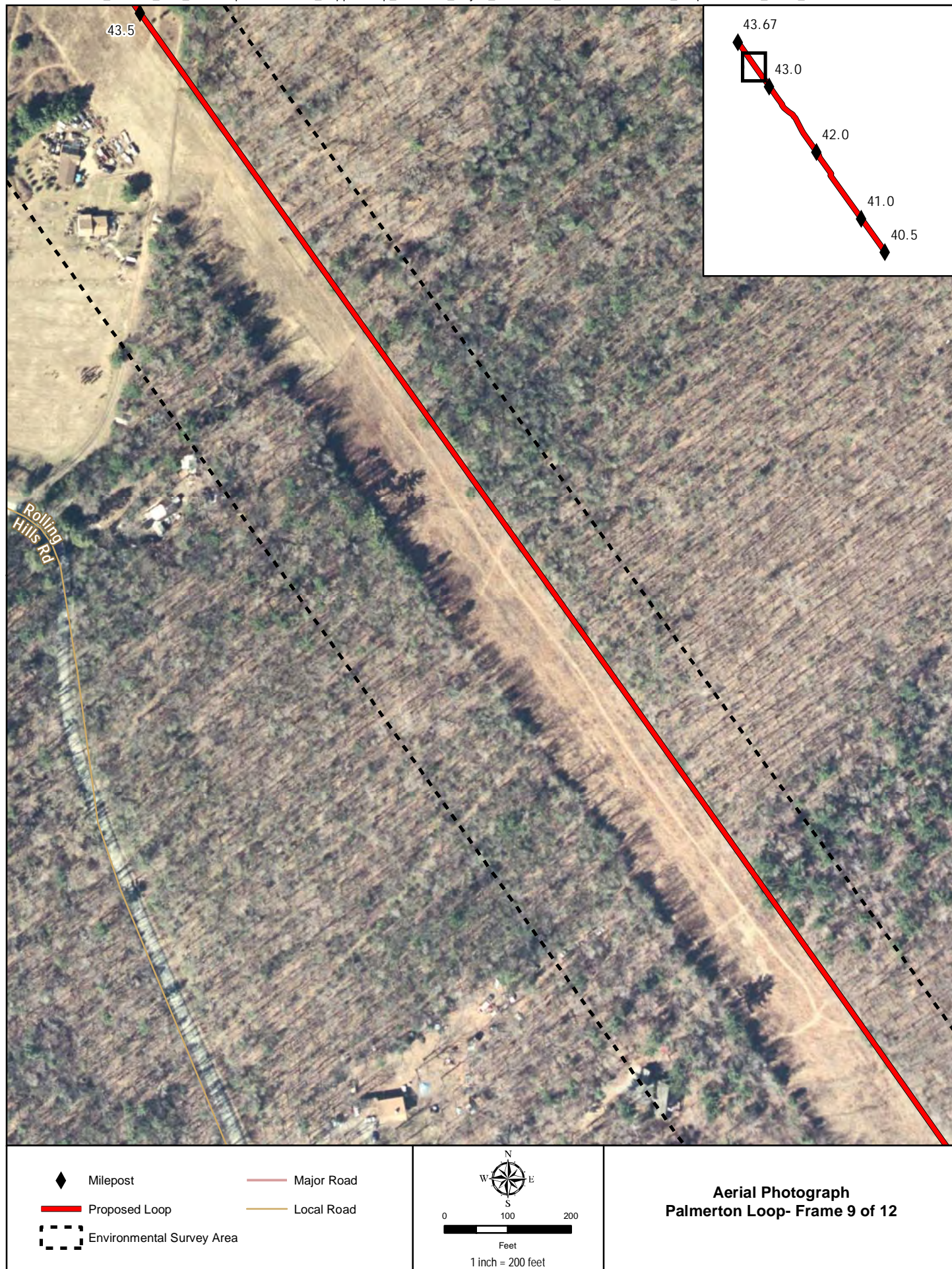


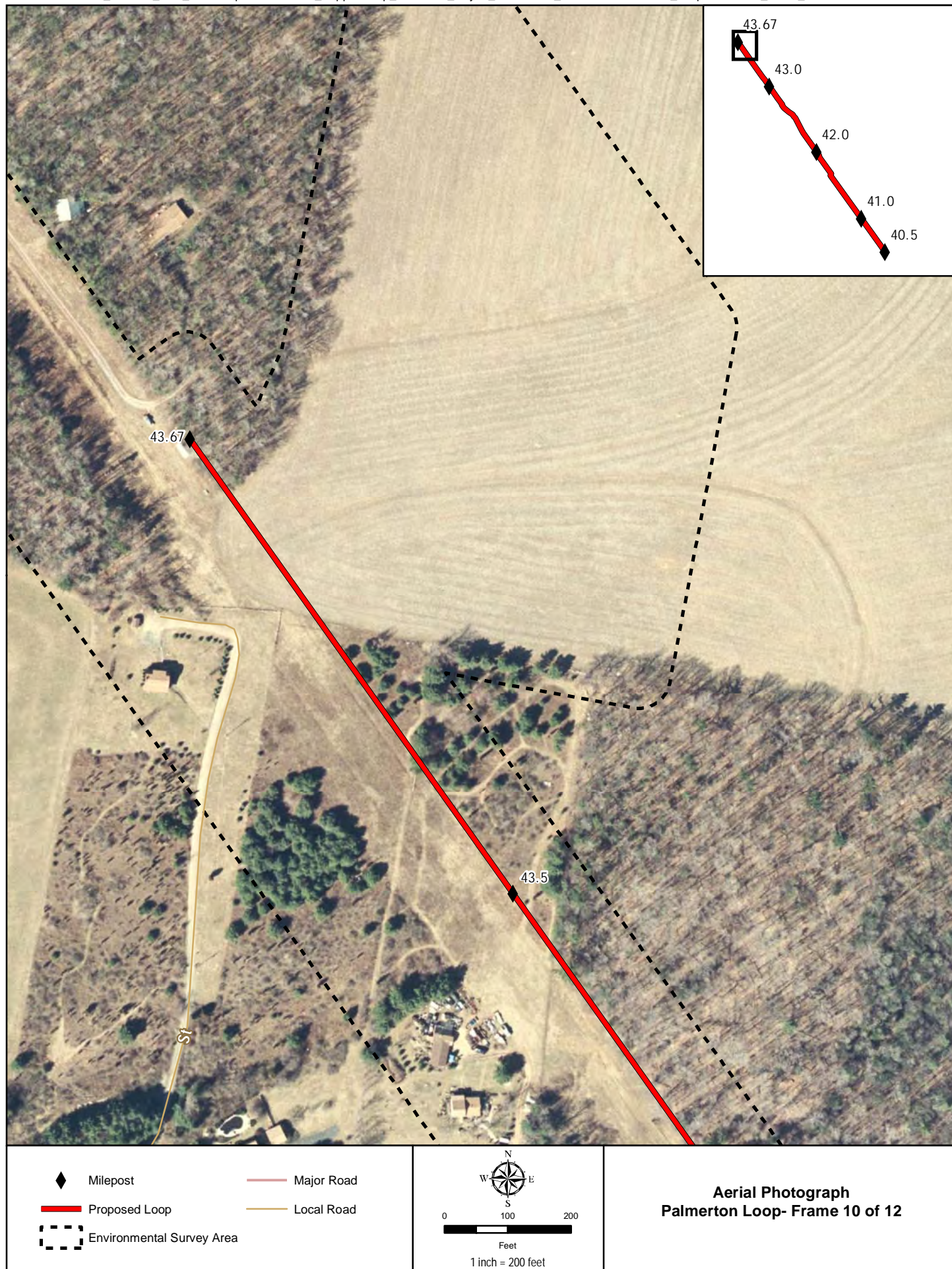


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 Palmerton Loop- Frame 6 of 12**

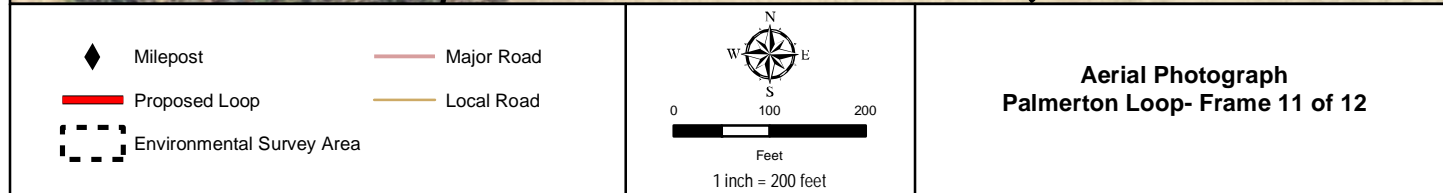








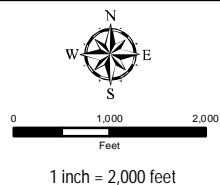
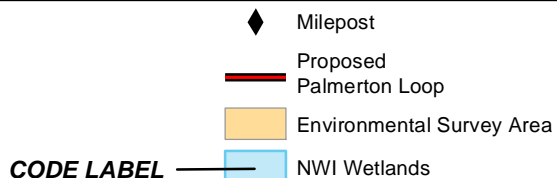
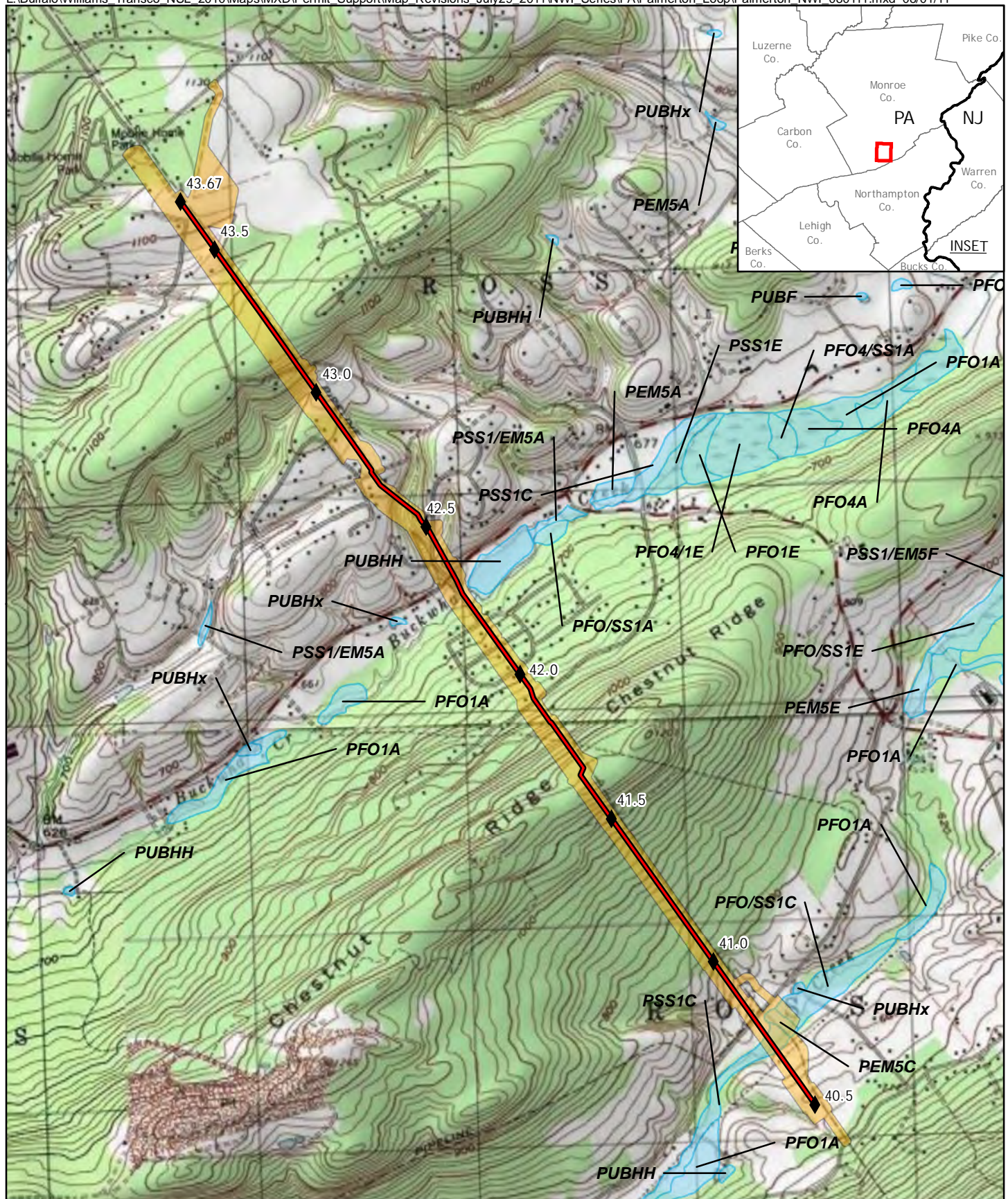
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 Palmerton Loop- Frame 10 of 12**





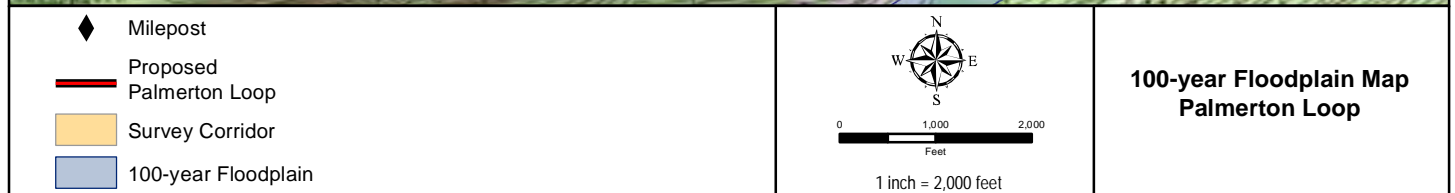
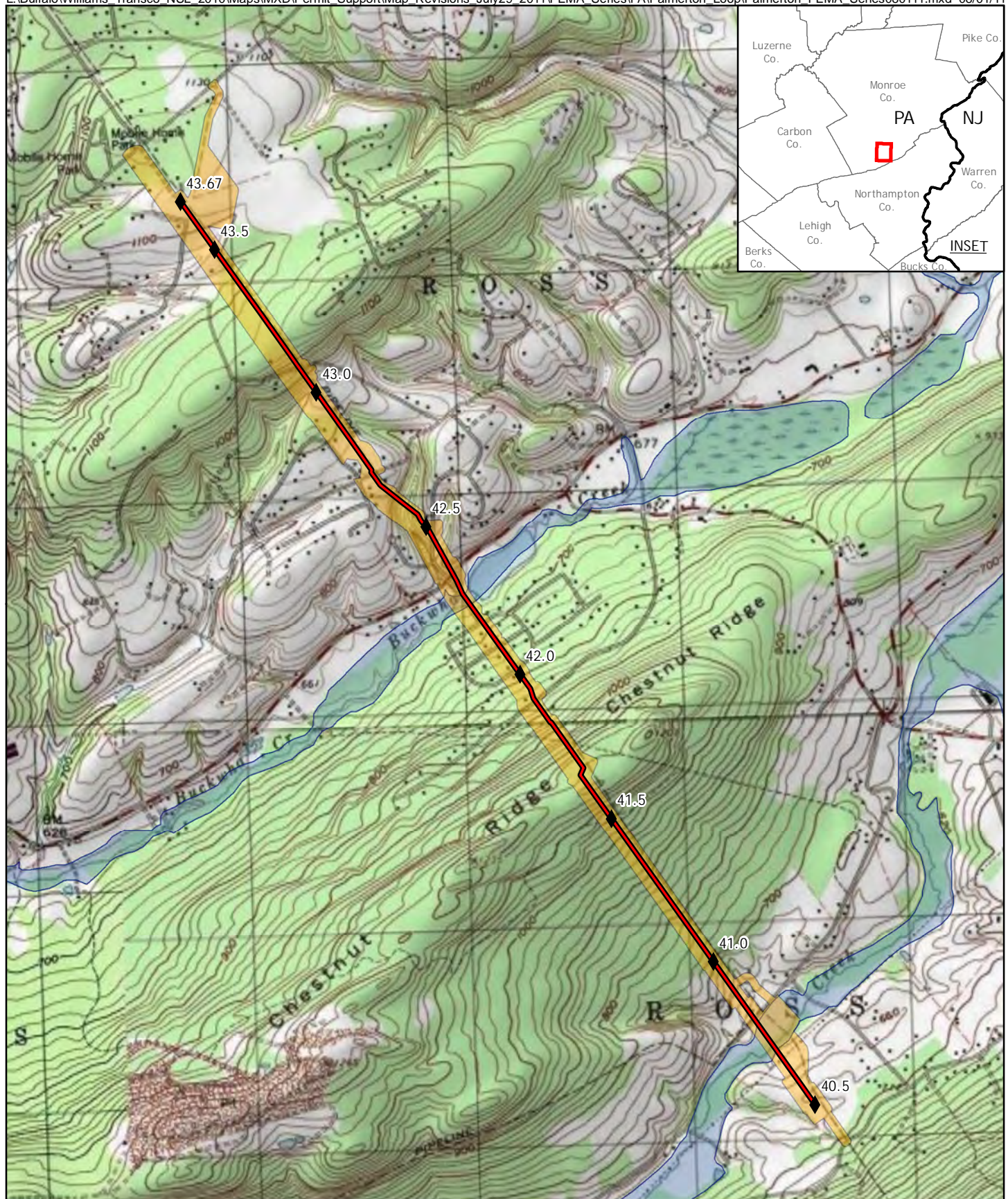
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NWI Wetland Map

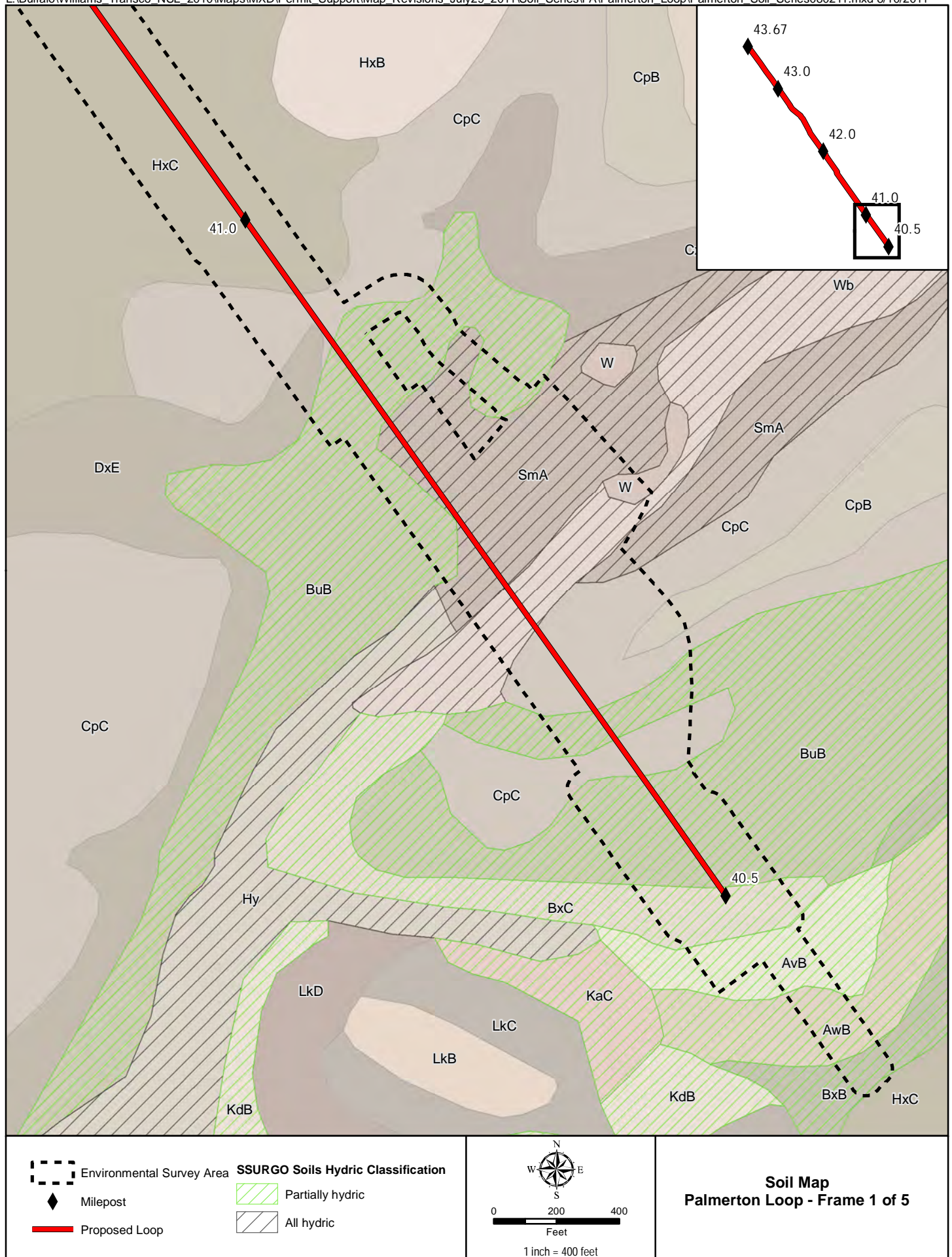


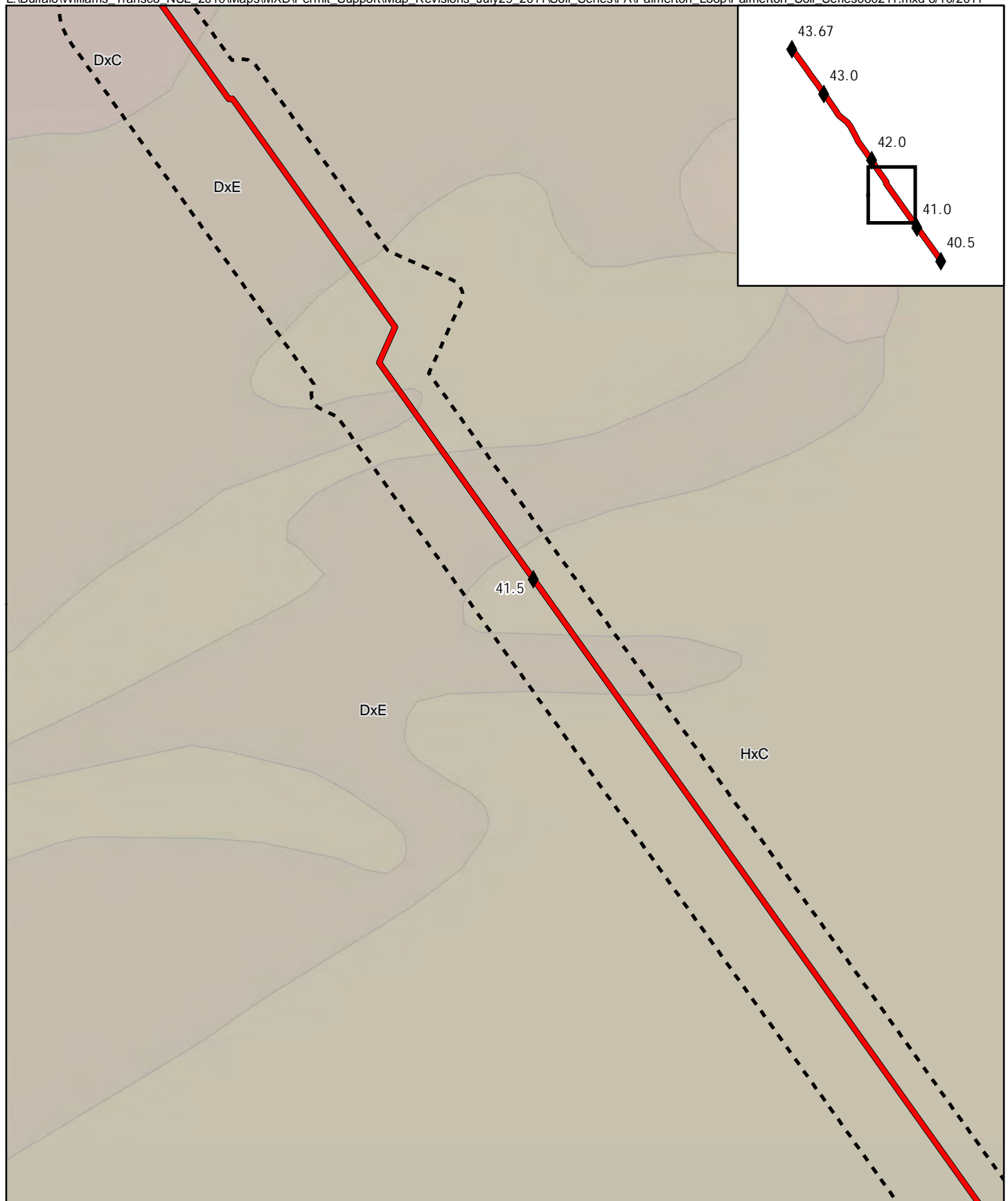
NWI Wetlands Palmerton Loop

A-4
FEMA Floodplain Map



A-5
NRCS Soil Series Map





Environmental Survey Area



Milepost



Proposed Loop

SSURGO Soils Hydric Classification



Partially hydric



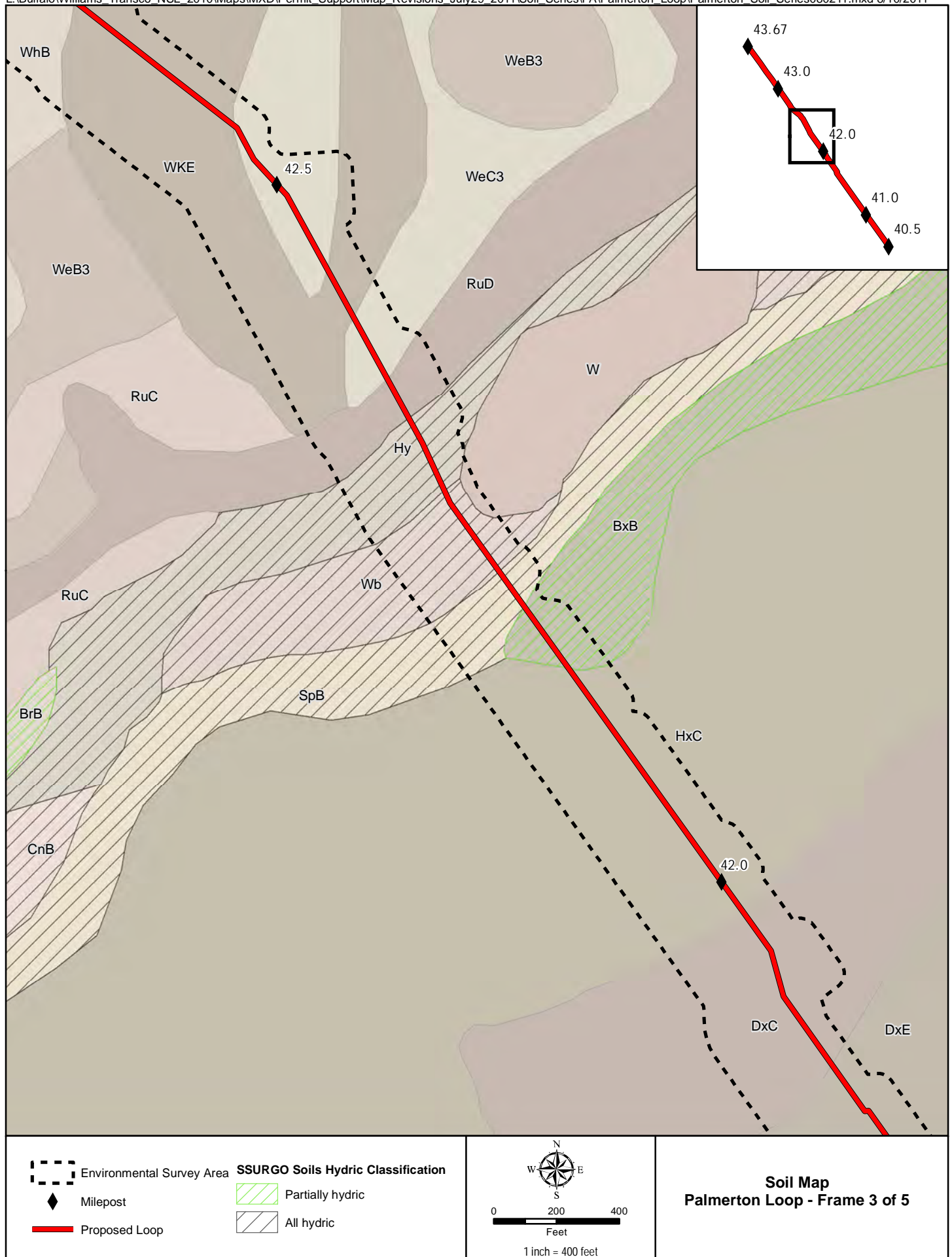
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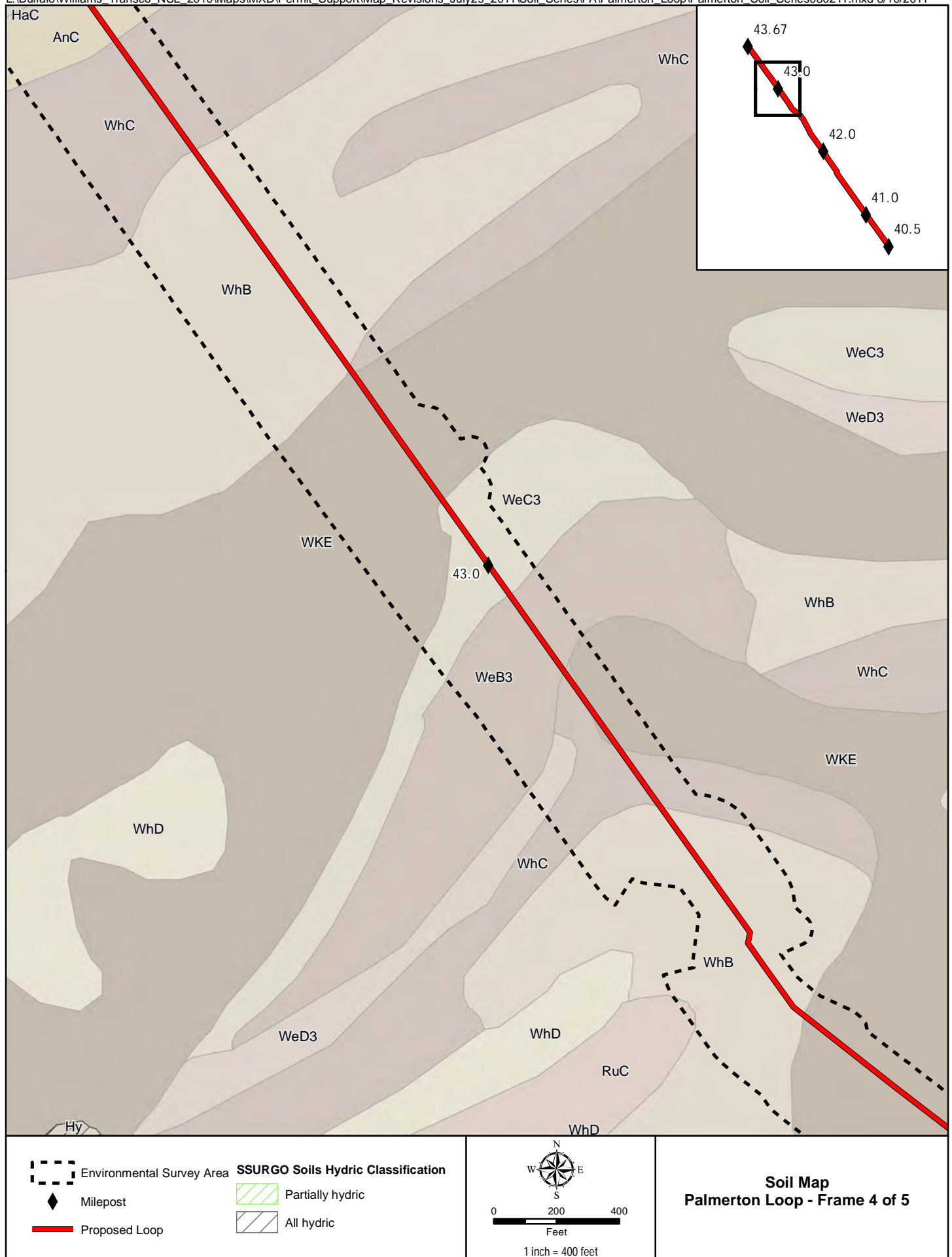


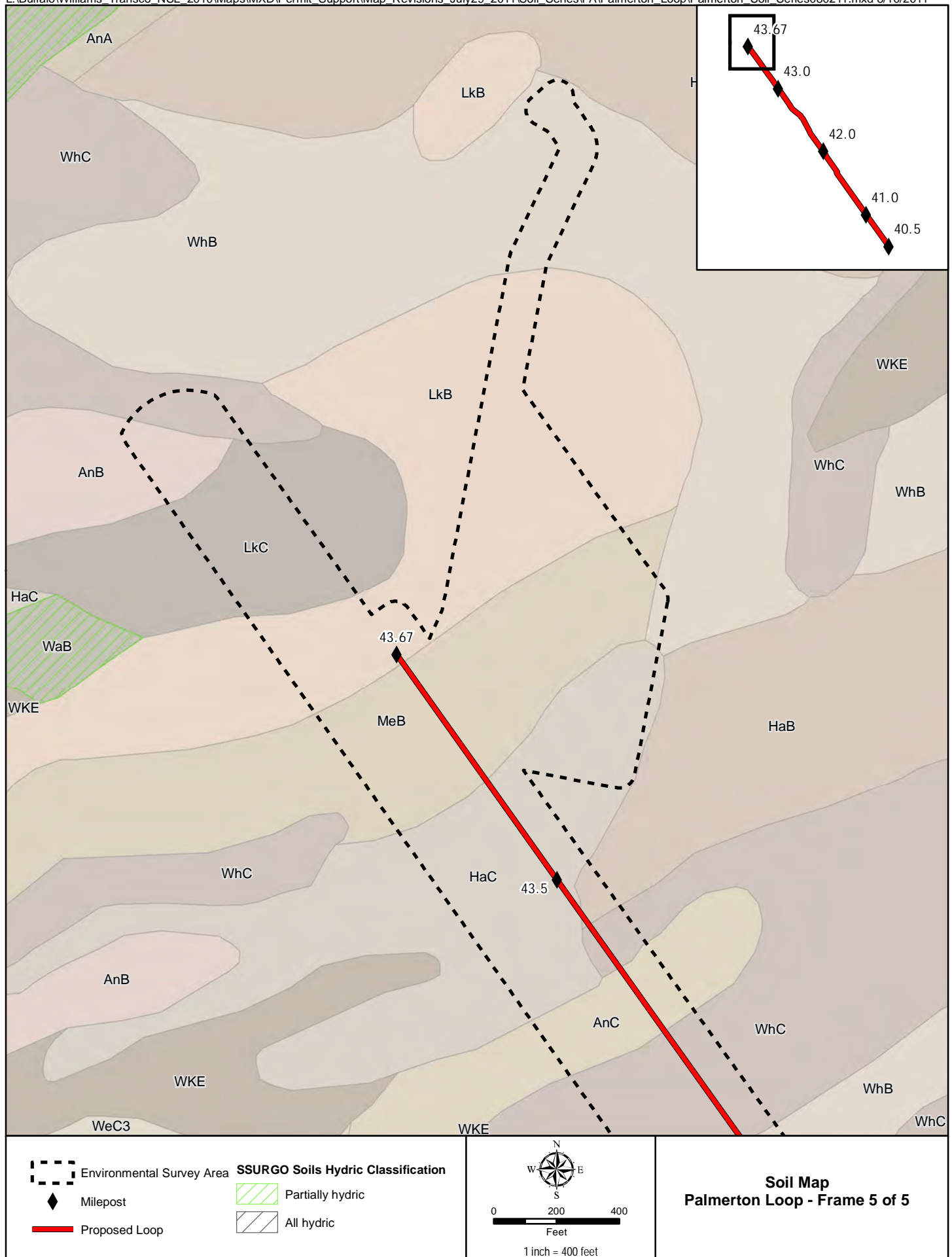
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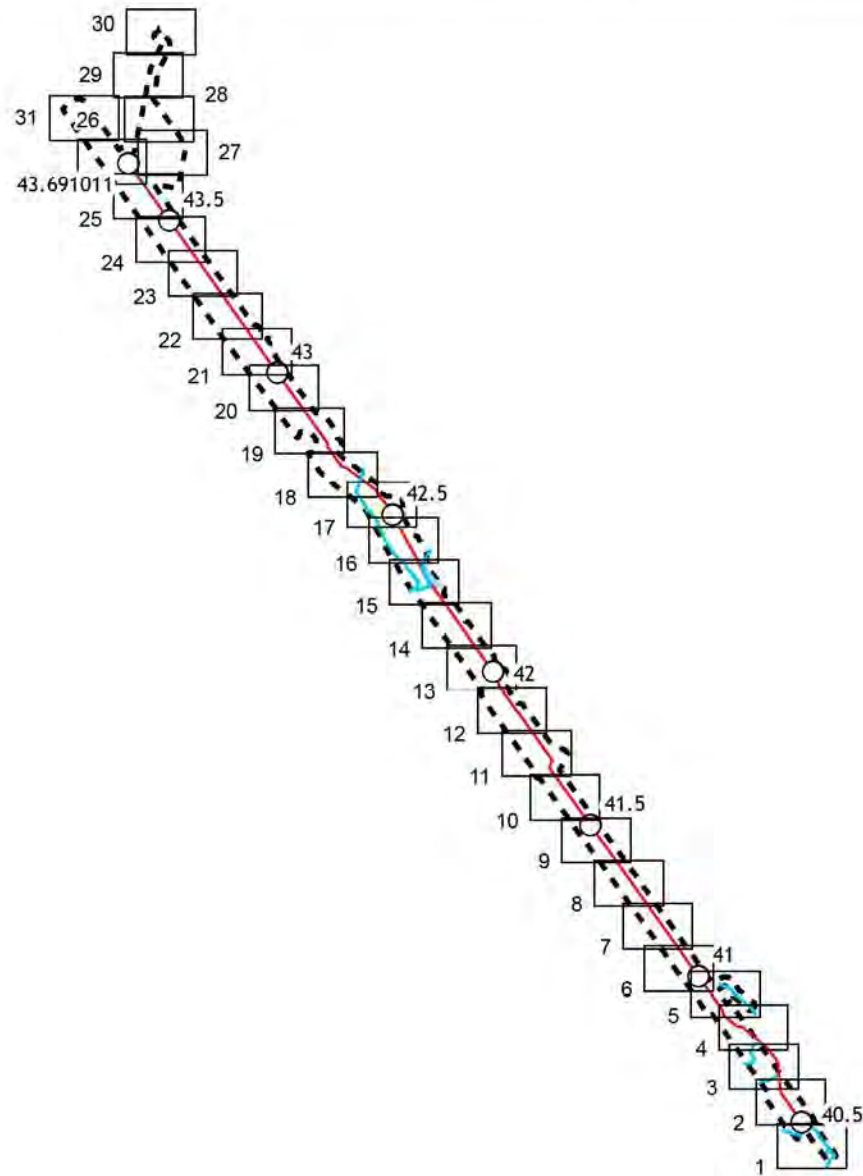
**Soil Map
Palmerton Loop - Frame 2 of 5**







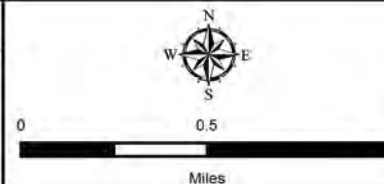
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Stream and Wetland Delineation Maps



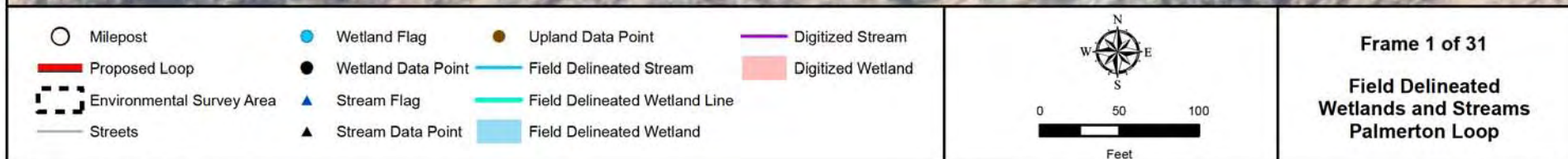
- Milepost
- Proposed Loop
- Field Delineated Stream
- Field Delineated Wetland
- Environmental Survey Area
- Index Frame

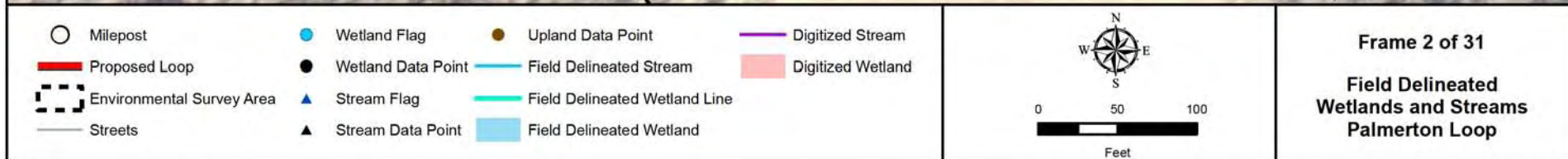
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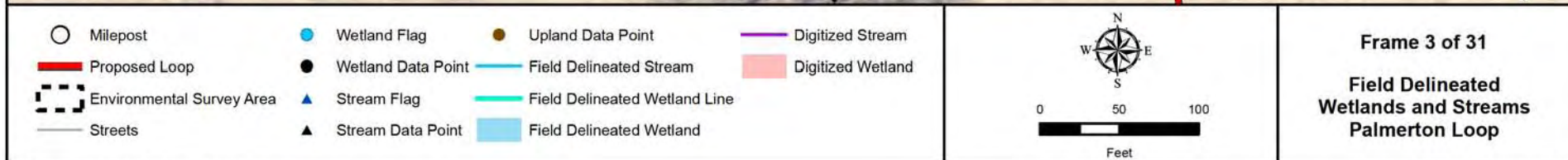
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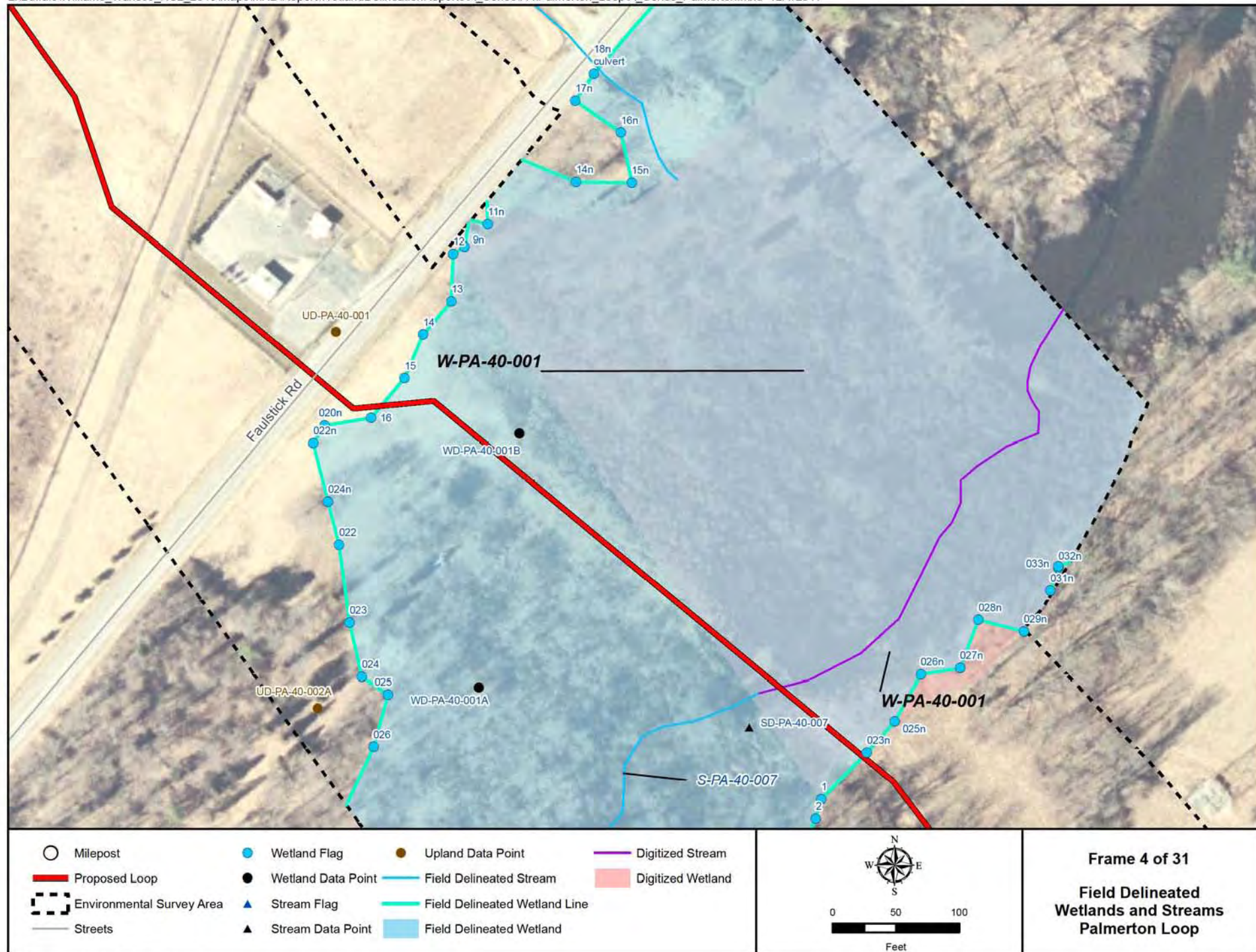


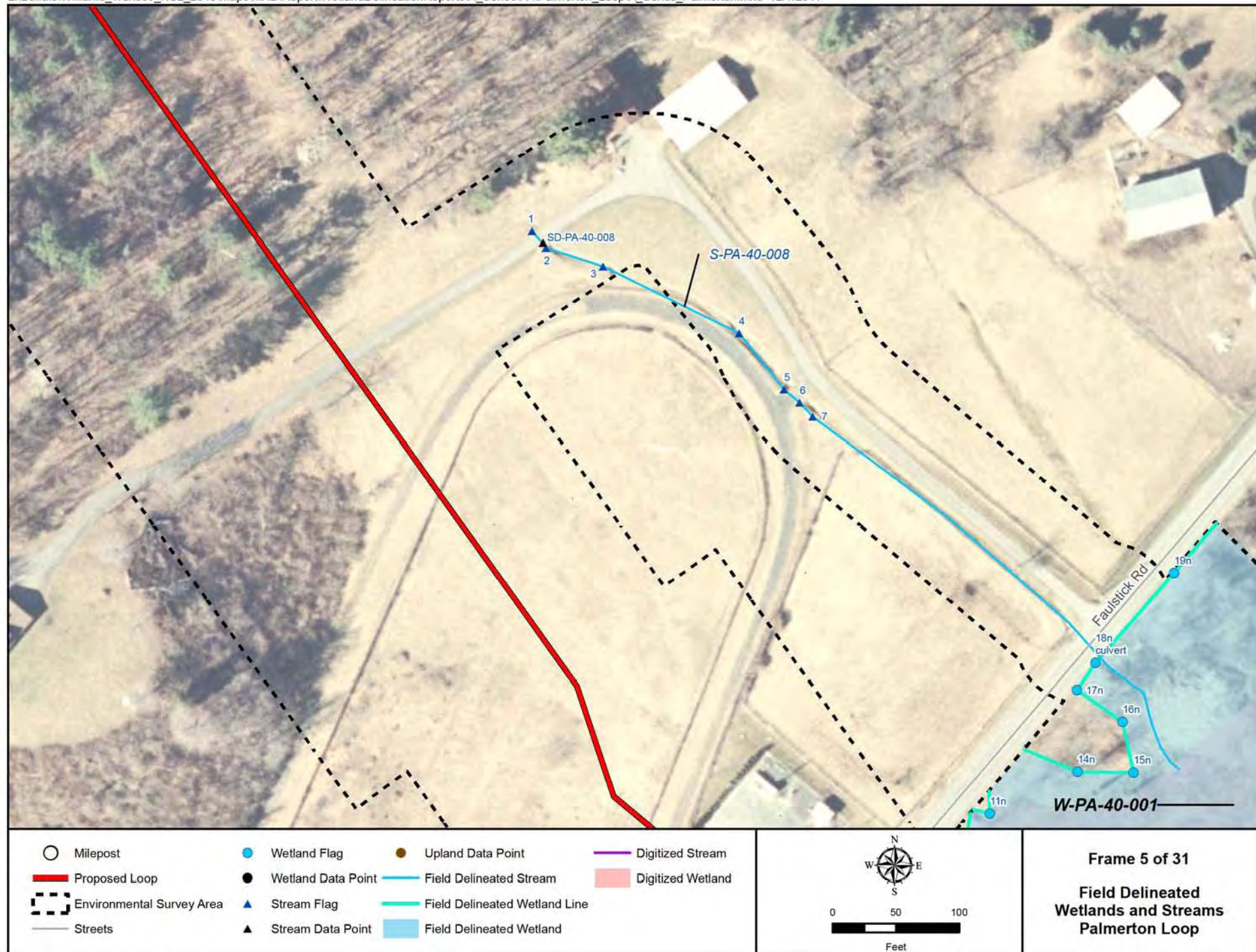
Field Delineated Wetlands and Streams Palmerton Loop Map Index

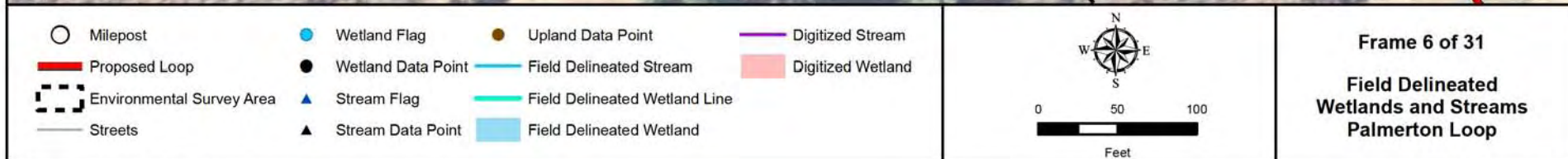


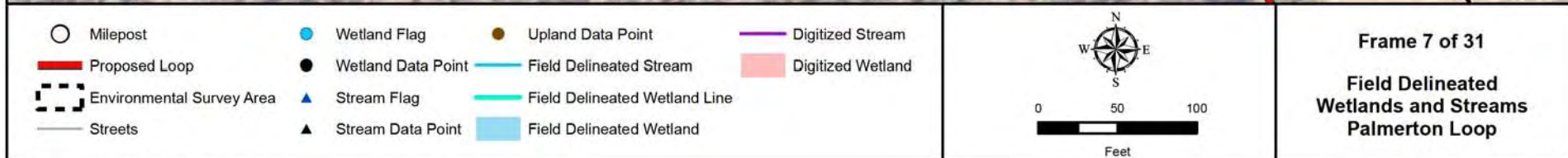


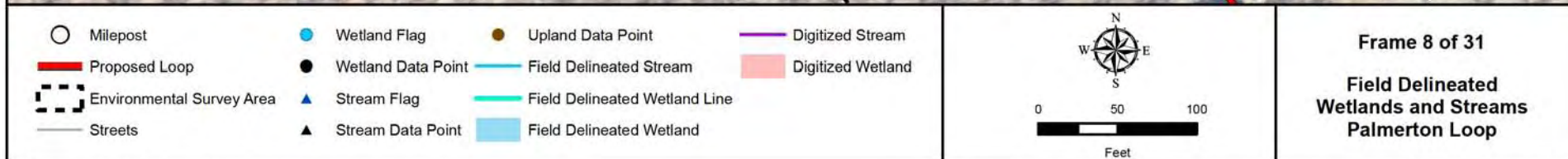


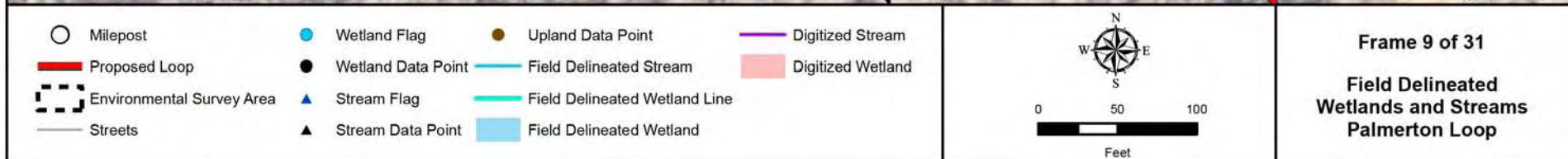


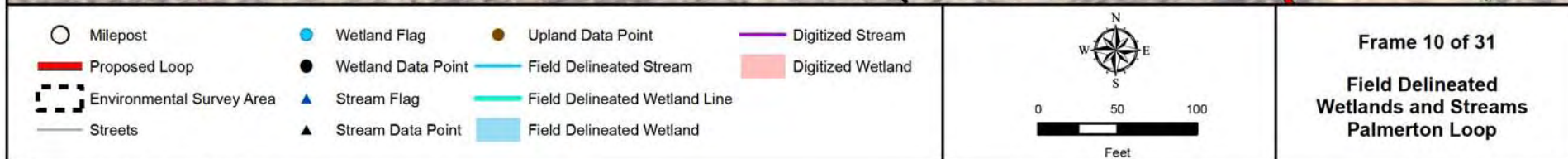


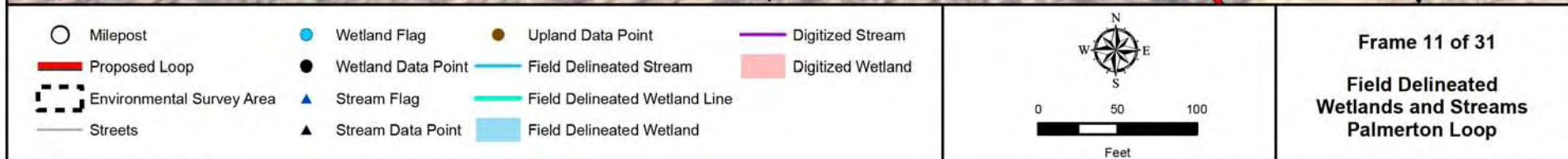


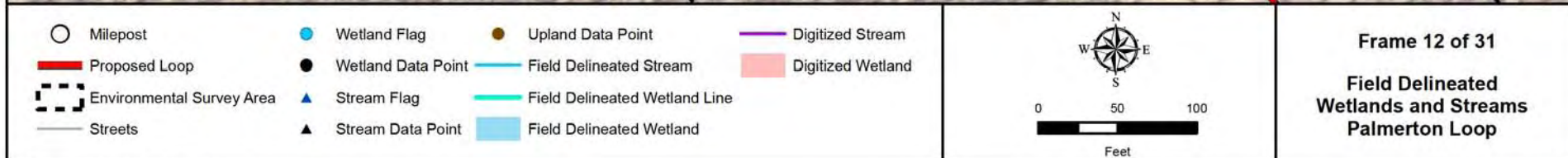


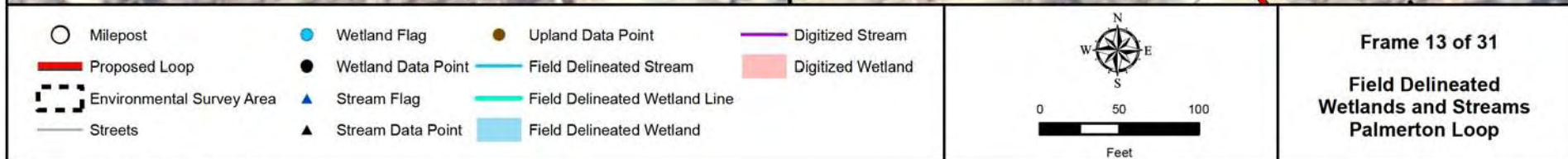


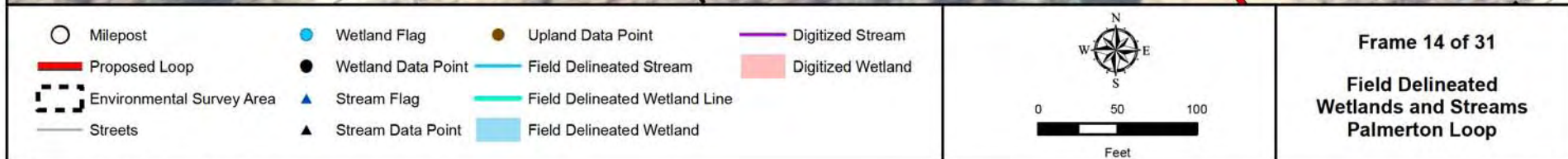


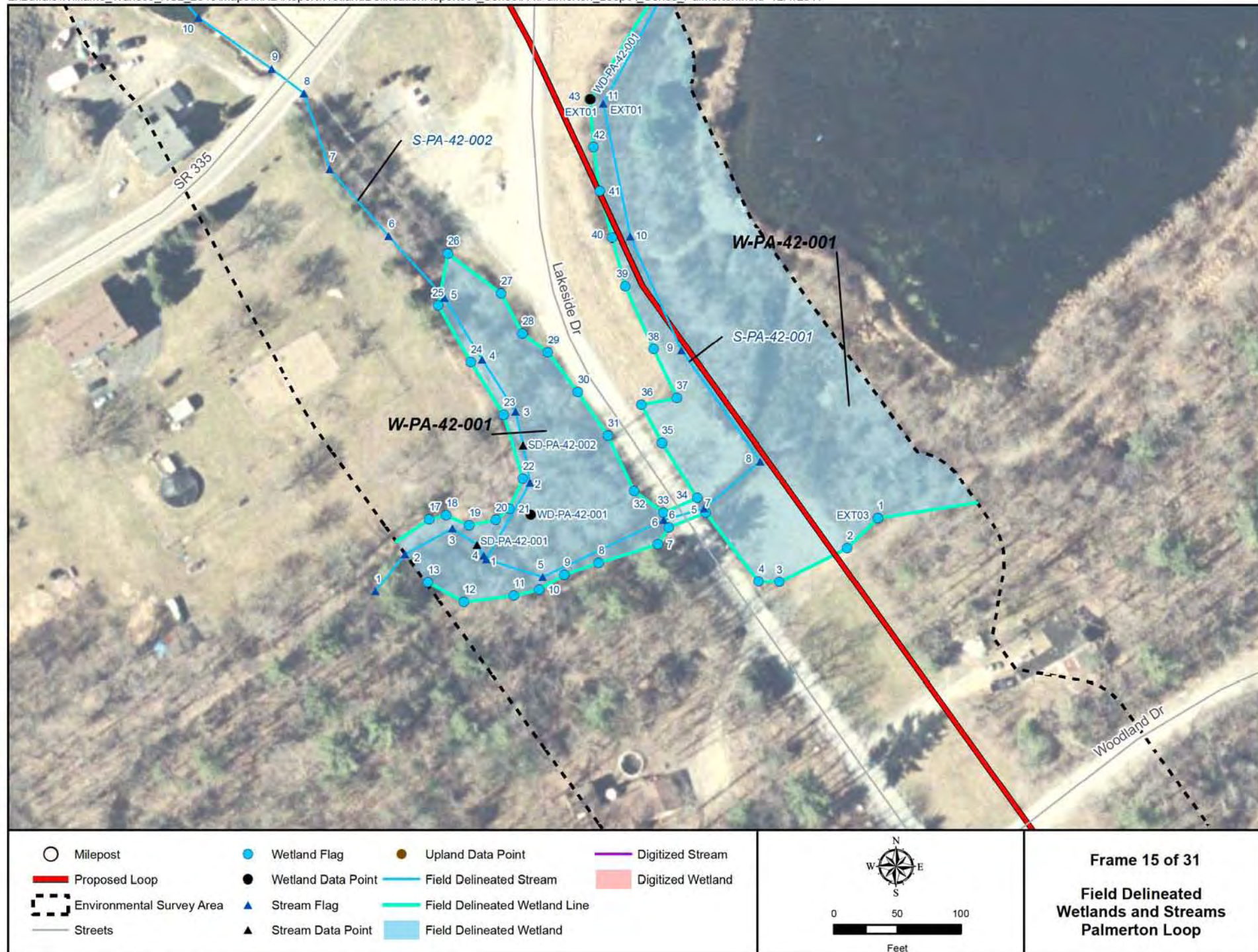


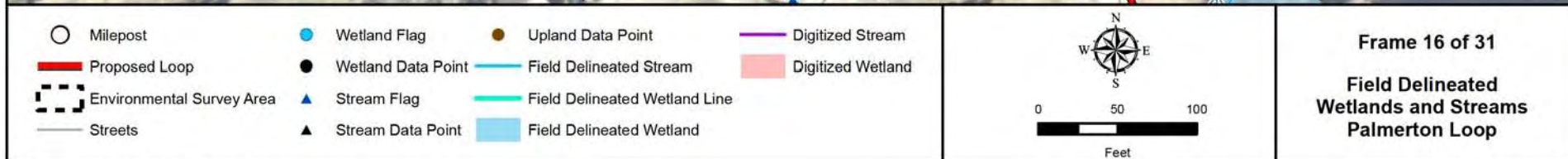












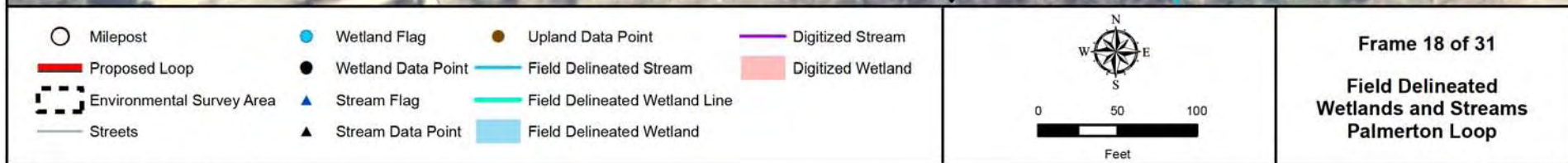


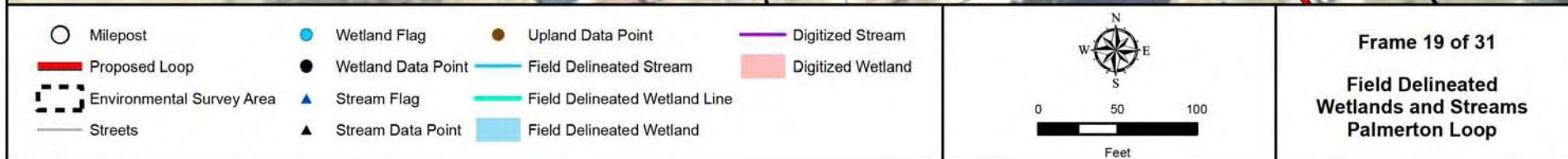
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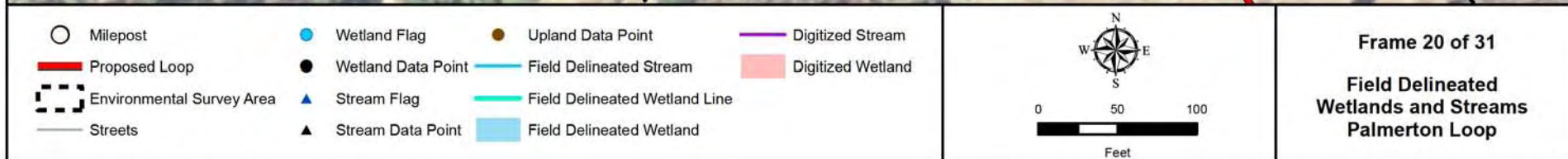
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Feet

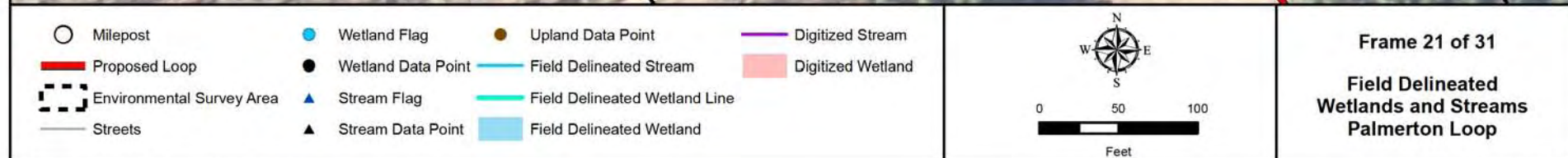
Frame 17 of 31

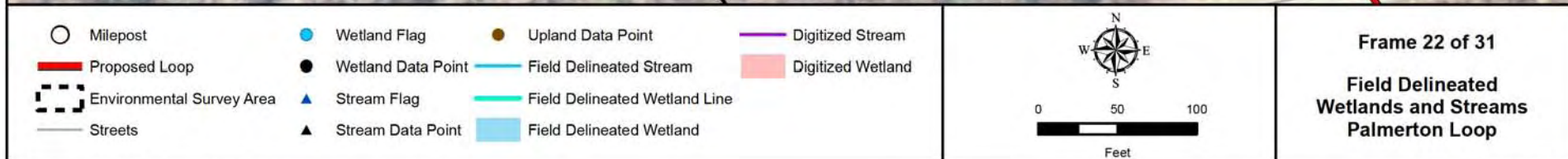
**Field Delineated
Wetlands and Streams
Palmerton Loop**

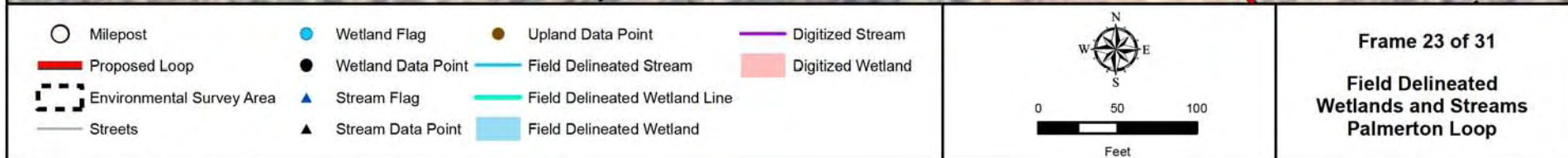


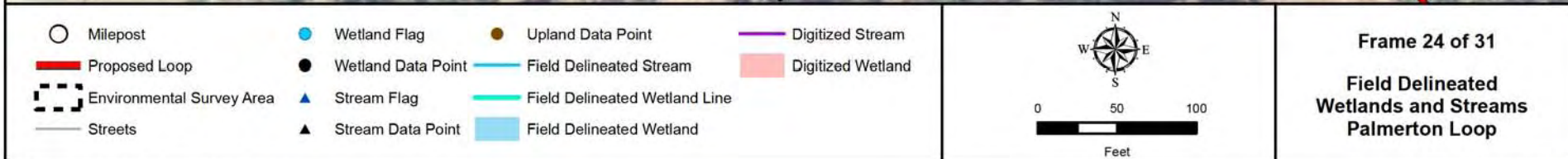


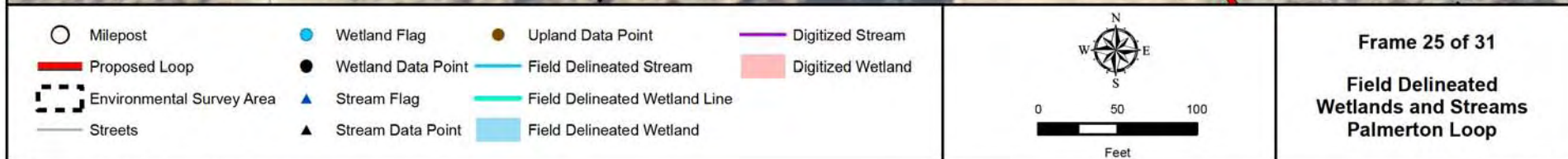


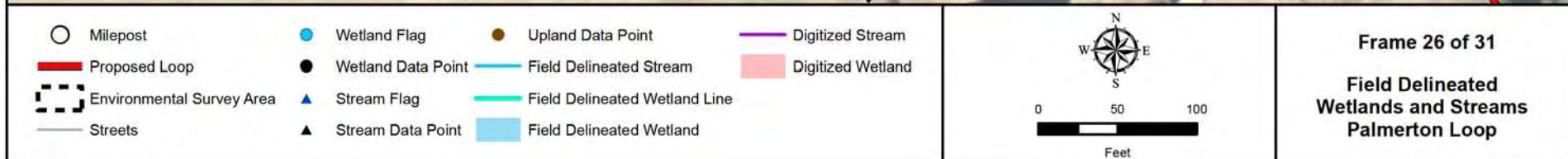


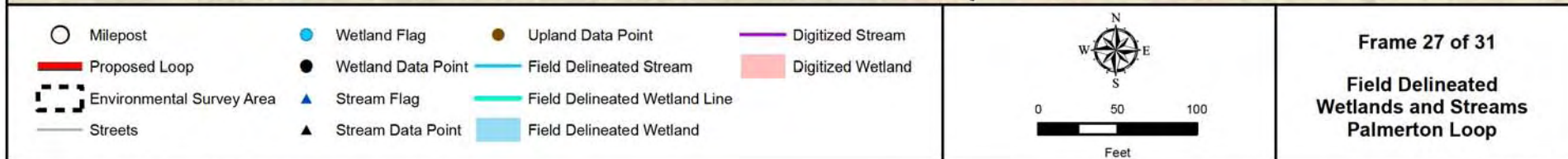


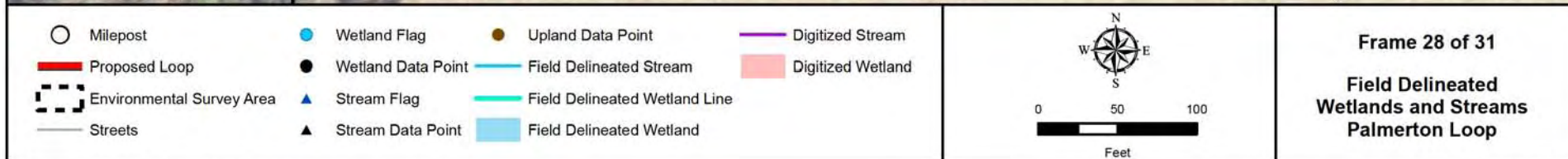


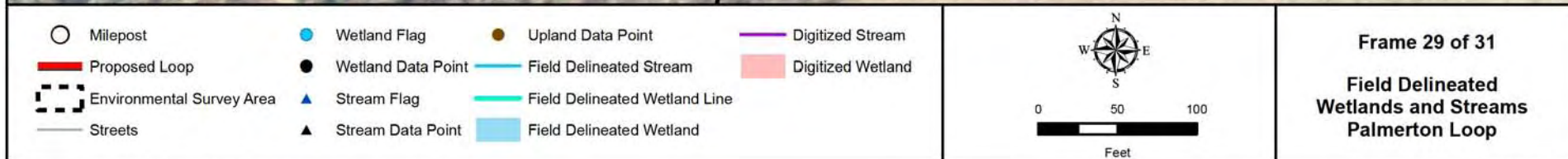


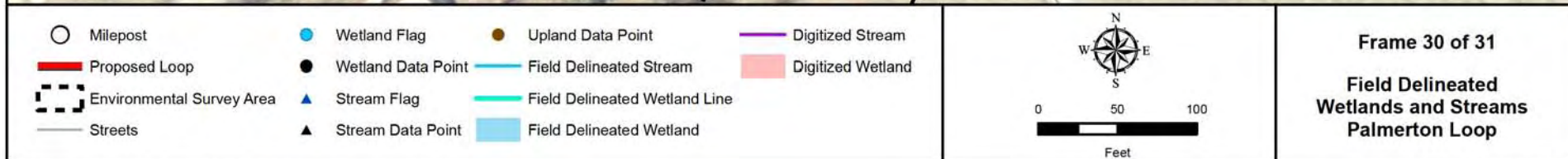


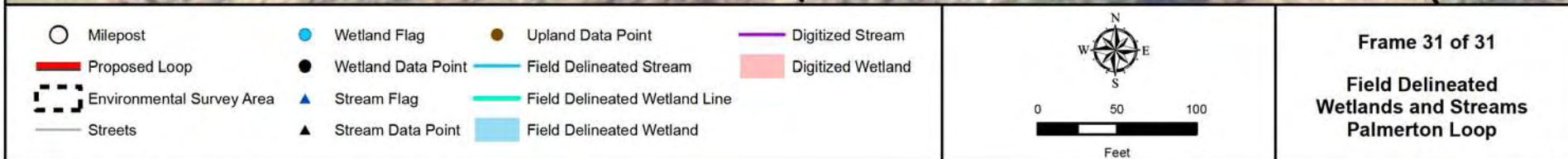




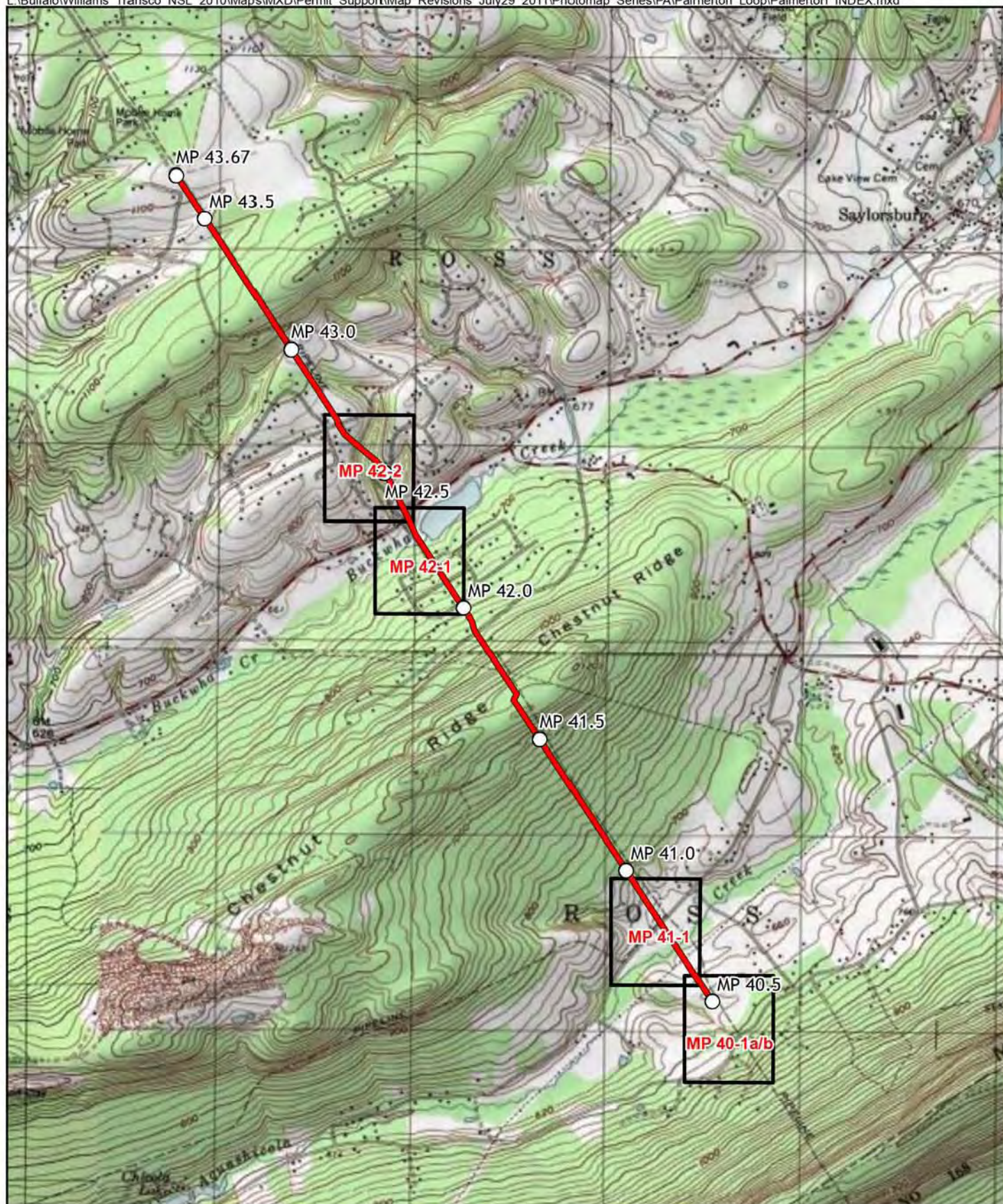








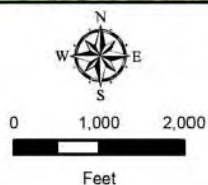
A-7
Stream and Wetland Photo Log



○ Milepost

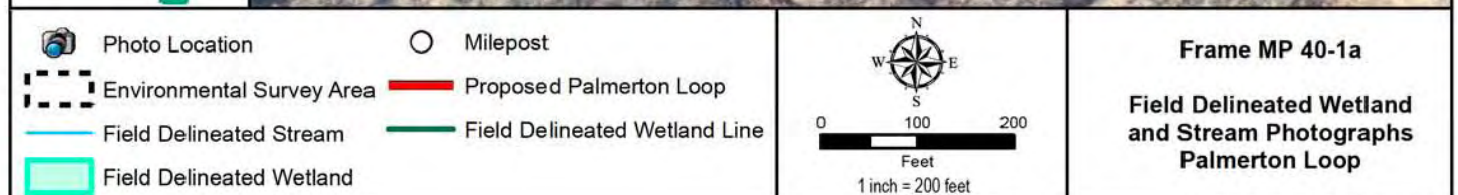
— Proposed Palmerton Loop

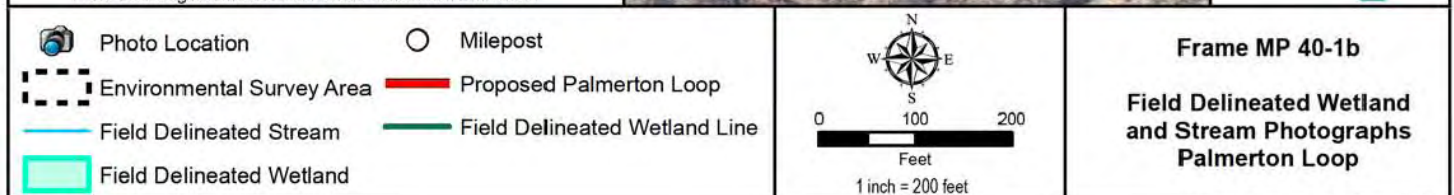
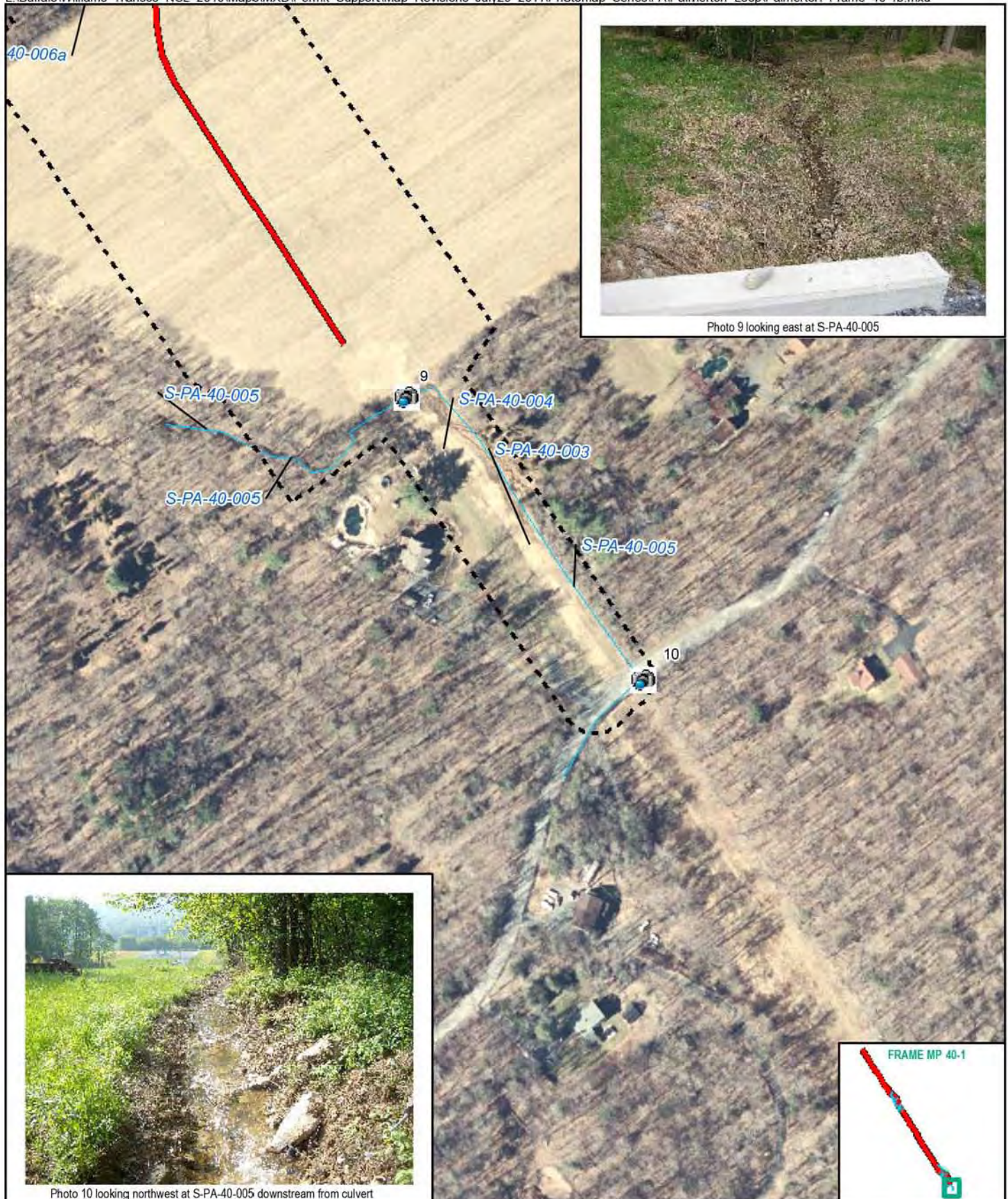
□ Palmerton Index Frame



Index Frames

Field Delineated Wetland
and Stream Photographs
Palmerton Loop





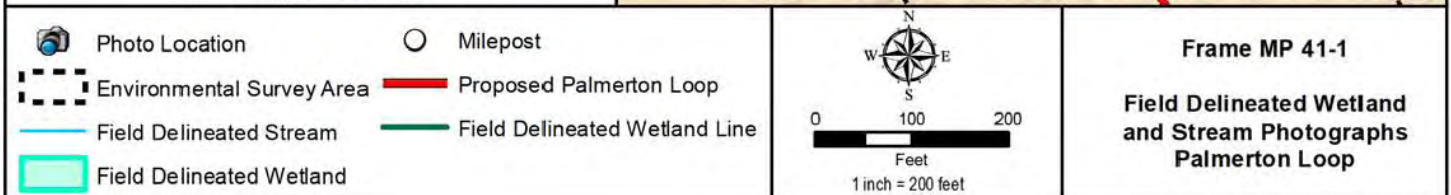
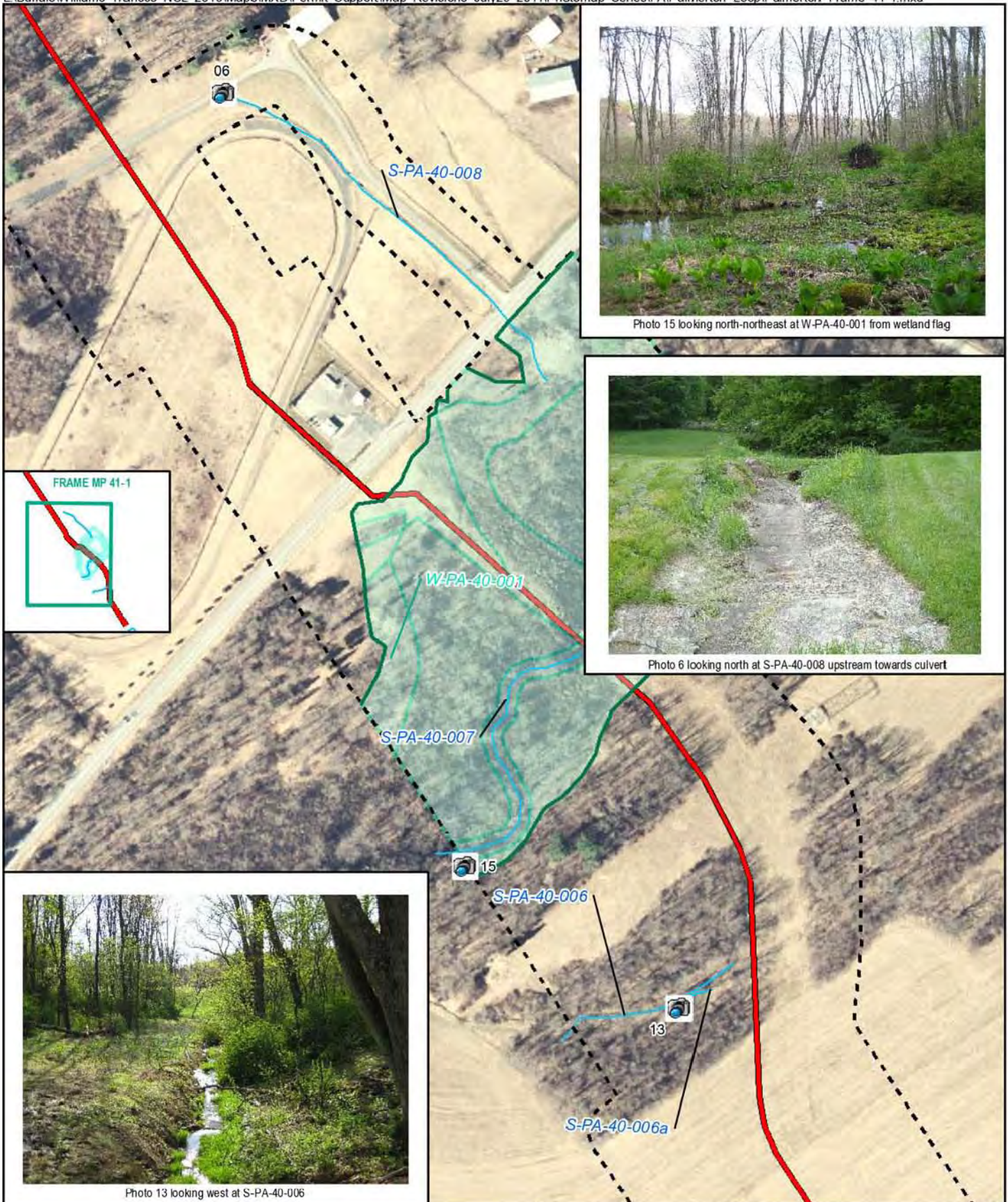




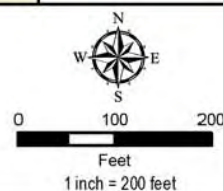
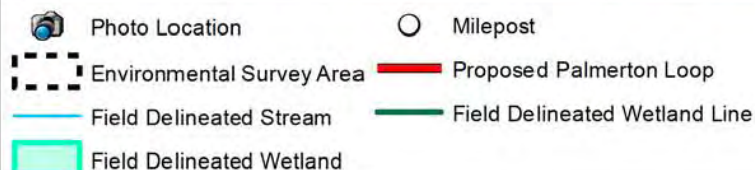
Photo 37 looking south at S-PA-42-002 from culvert under Kunkletown Rd.



Photo 35 looking southeast at S-PA-42-001 from datapoint at confluence with S-PA-42-002

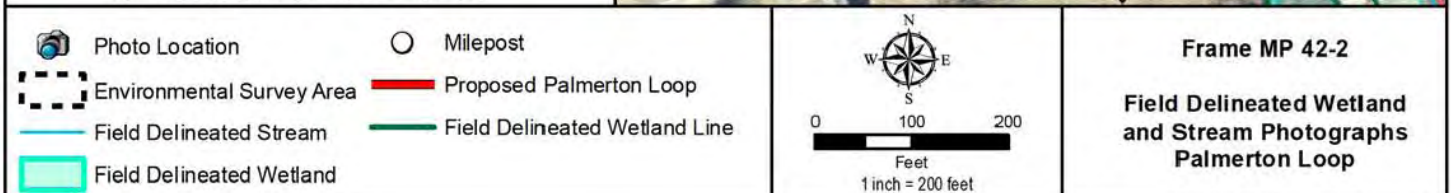
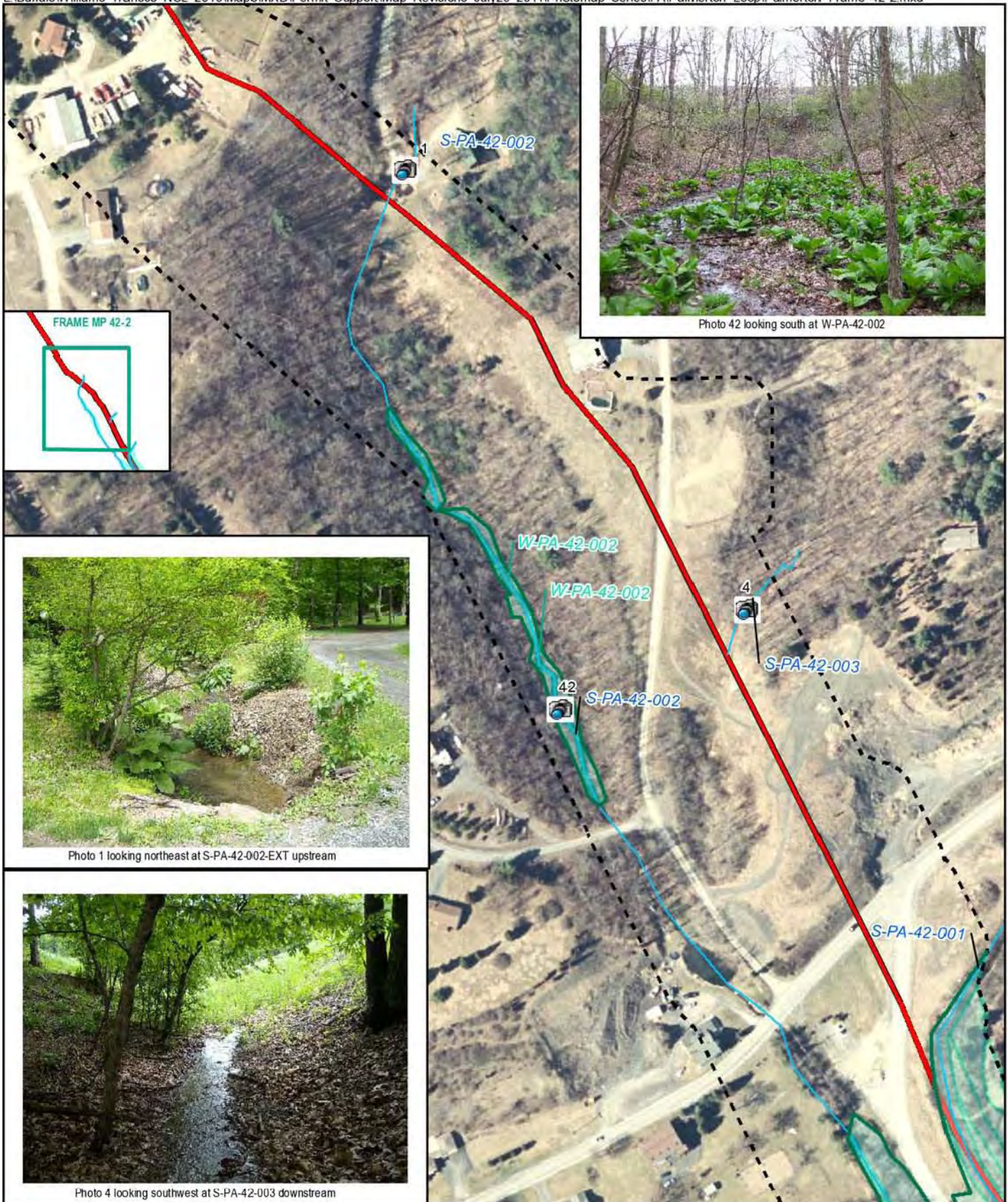


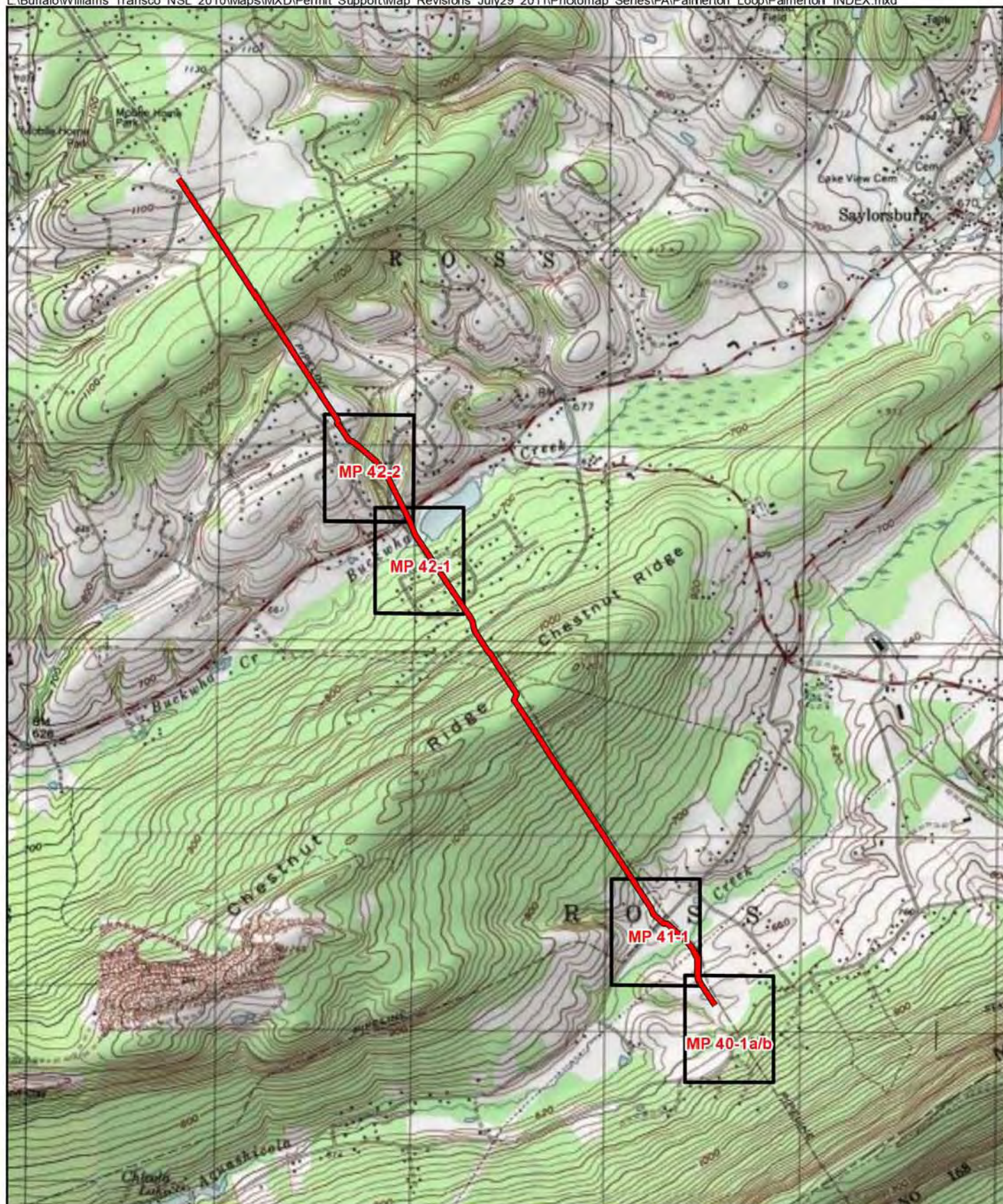
Photo 32 looking at W-PA-42-001



Frame MP 42-1

Field Delineated Wetland and Stream Photographs Palmerton Loop

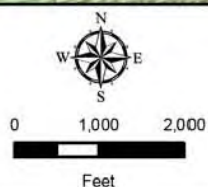




○ Milepost

— Proposed Palmerton Loop

□ Palmerton Index Frame



Index Frames

Field Delineated Wetland
 and Stream Photographs
 Palmerton Loop