Design Manual

Chapter II – Section IV: WETLANDS, VEGETATION & ENVIRONMENTAL PERMITTING

North Dakota Department of Transportation

2014

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Purpose

This section outlines the process for which wetland and other water delineations are completed and the procedures to obtain the needed federal and state agency authorizations. The manual is designed to be a source of information relative to wetland and other water delineations, permitting for sovereign lands, floodplains, floodways, USFWS easement and fee title, 404 permitting, wetland mitigation, and wetland monitoring for NDDOT. It is intended to be used by NDDOT personnel and consultants conducting wetland delineations and permitting. This manual geared to individuals with a basic understanding of wetland hydrology, hydrophytic plants, hydric soils and the permitting process.

Section 1. *Definitions*

1.1 Wetland

1.1.1 The United States Army Corps of Engineers (USACE)[1] and the Environmental Protection Agency (EPA)[2] jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water 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 generally include swamps, marshes, bogs, and similar areas.

1.1.2 The Federal Highway Administration (FHWA) includes wetlands as defined in 23 CFR 777.2[3]. The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

1.2 Presidential Executive Order (EO) 11990[4], "Protection of Wetlands", requires that federal agencies avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative and to take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. EO 11990 defines wetlands as:

> *Those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.*
>
> *Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.*

FHWA's interpretation of EO 11990 is that the wetlands requiring protection are "natural" wetlands. Many of the wetlands impacted by highway projects are contained within existing right of way, and are the result of the ditches not draining properly as they were intended to do. These wetlands that are the result of highway construction are wetlands that could be considered "artificially created." Because these wetlands may not be considered natural, the NDDOT may not be required to mitigate for impacts to artificially created wetlands unless the USACE claims jurisdiction. However, impacts to wetlands created for mitigation purposes will need to be mitigated.

1.3 Wetland Determination - the process or procedure by which an area is determined to be a wetland or non-wetland

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[1] Federal Register 1982 - 33 CFR Part 328: Definition of Waters of the United States - http://www.nap.usace.army.mil/Portals/39/docs/regulatory/regs/33cfr328.pdf

[2] 40 CFR 230.3(s) http://water.epa.gov/lawsregs/guidance/wetlands/CWAwaters.cfm

[3] 23 CFR Highways, Chapter I, Subchapter H, Part 777 – Mitigation of Impacts to Wetlands and Natural Habitat http://www.environment.fhwa.dot.gov/ecosystems/laws_23cfr777.asp

[4] Executive Order 11990 – Protection of Wetlands: http://www.archives.gov/federal-register/codification/executive-order/11990.html

1.4 Wetland Delineation - A survey conducted to determine the extent of the wetland boundary and type.

1.5 Jurisdictional Wetland – Term used by the USACE referring to wetlands that fall under the regulatory authority of Section 404 of the Clean Water Act for the purpose of permit issuance or other legal matters.

1.6 Limits of USACE Jurisdiction[5] - Jurisdiction is determined by connectivity to traditional navigable waters. The lateral limit of jurisdiction in non-tidal waters is the ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands. Therefore, it should be concluded that in the absence of wetlands the upstream limit of USACE jurisdiction also stops when the high water mark is no longer perceptible.

1.7 Scope and Effect Determination – The process of determining the extent of hydrological manipulation to a natural wetland. Manipulation includes, but may not be limited to, surface and subsurface drainage, fill and other man made features.

1.8 Natural Wetland– Wetlands naturally occurring on the landscape

1.8.1 **Lacustrine Wetland System**[6] - Includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but ocean derived salinity is always less than 0.5 ‰. Lacustrine wetlands may be considered Other Waters (OW) by USACE.

1.8.2 **Palustrine Wetland System**[7] - includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ‰. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; and (3) water depth in the deepest part of basin less than 2 m at low water; salinity due to ocean –derived salts less than 0.5 $_{0/00.}$

1.8.3 **Basin** – A wetland that occurs in topographic depressions and is hydrologically isolated with little or no flooding from streams, rivers or

[5] USACE Clean Water Act Guidance http://www.usace.army.mil/missions/civilworks/regulatoryprogramandpermits/relatedresources/cwaguidance.aspx
[6] Cowardin, 1979
[7] Ibid.

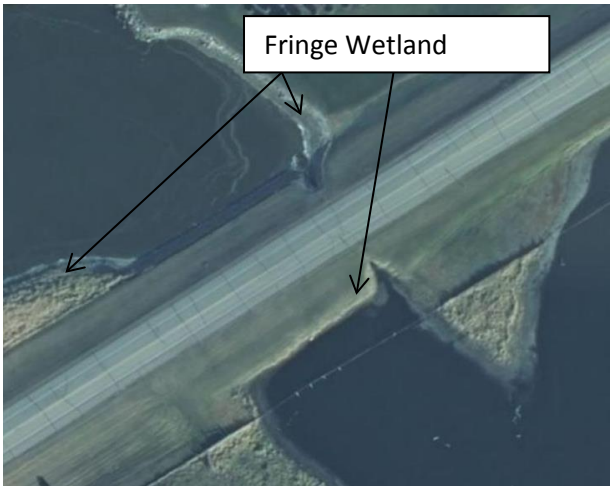
tides. Dominant water sources are precipitation, ground water discharge, and both interflow and overland flow from adjacent uplands. The direction of flow is normally from the surrounding uplands toward the center of the depression. Elevation contours are closed, thus allowing the accumulation of surface water. These wetlands may have any combination of inlets and outlets or lack them completely. Size and depth is highly variable. Prairie potholes are a common example of basin wetlands. Basins are typically classified as palustrine wetlands by the United States Fish and Wildlife Service National Wetlands Inventory (NWI). ***See Appendix B4 for Wetland Classification Illustrations and Charts.***

1.8.4 **Slope** – Slope wetlands normally are found where there is a discharge of ground water to the land surface. They normally occur on sloping land; elevation gradients may range from steep hillsides to slight slopes. Slope wetlands are usually incapable of depressional storage because they lack the necessary closed contours. Principal water sources are usually ground water return flow and interflow from surrounding uplands, as well as precipitation. Hydrodynamics are dominated by downslope unidirectional water flow. Slope wetlands can occur in nearly flat landscapes if ground water discharge is a dominant source to the wetland surface. Slope wetlands lose water primarily by subsurface and surface flows and by evapotranspiration. Slope wetlands may develop channels, but the channels serve only to convey water away from the slope wetland. Slope wetlands are typically classified as palustrine wetlands by NWI. ***See Appendix B4 for Wetland Classification Illustrations and Charts.***

1.8.5 **Riverine** - Riverine wetlands occur in flood plains and riparian corridors in association with stream channels. Dominant water sources are often out-of-bank flow from the channel or subsurface hydraulic connections between the stream channel and wetlands. However, sources may be interflow and return flow from adjacent uplands,

occasional overland flow from adjacent uplands, tributary inflow, and precipitation. At their headwater, riverine wetlands often are replaced by slope or basin wetlands where the channel is no longer present. Perennial flow in the channel is not a requirement. Riverine wetlands are typically classified as palustrine wetlands by NWI. Only the river or stream channel is considered Riverine by NWI and considered other waters (OW) by United States Army Corps of Engineers (USACE). ***See Appendix B4 for Wetland Classification Illustrations and Charts.***

1.8.6 **Fringe** – Lacustrine Fringe wetlands are adjacent to lakes where the water elevation of the lake maintains the water table in the wetland. In some cases, these wetlands consist of a floating mat attached to land. Additional sources of water are precipitation and ground water discharge, the latter dominating where fringe wetlands intergrade with uplands or slope wetlands. Surface water flow is bidirectional, usually controlled by water-level fluctuations such as seiches in the adjoining lake. Fringe wetlands lose water by flow returning to the lake after flooding, by saturation surface flow, and by evapotranspiration. Fringe wetlands are typically classified as Palustrine wetlands by NWI. ***See Appendix B4 for Wetland Classification Illustrations and Charts.***



1.9 Artificial Wetland - Wetlands created where one did not exist before by excavation or diking/damming. NDDOT may not be required to mitigate for impacts to artificially created wetlands unless the USACE claims jurisdiction or the wetlands were created for mitigation purposes.

1.9.1 **Ditch** – Ditch wetlands that are the result of highway construction are considered "artificially created."

1.9.2 **Preamble Wetlands**[8] **–**Generally not considered "Waters of the United States" by the USACE including: a) non-tidal drainage and irrigation ditches excavated on dry land. b) Artificially irrigated areas which would revert to upland if the irrigation ceased. c) Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing. d) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons. e) Water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meeting the definition of waters of the United States. Note: The USACE will determine if a water or feature is non-jurisdictional preamble water on a case by case basis.

1.9.3 **Artificial Wetlands -** The following criteria to identify artificially created wetlands within existing right of way will be used by the NDDOT and have been concurred in with FHWA under E0 11990 and USFWS:

- **Backslope** – If there is a backslope and a portion of wetland basin does not extend outside of the highway right of way there is a very high probability that the entire ditch has been manipulated and any wetland found in the ditch at such a location may be identified as an artificially created wetland. Wetland basins in the road right of way where the ditch does not have a backslope are likely naturally occurring prairie pothole wetlands. If these basins are affected by highway construction activities mitigation is required.
- **Original Plans** – The original highway construction plans typically identified the larger natural wetlands and contain flow arrows that indicate the direction a ditch was intended to drain. Current wetlands located entirely in the ditches that are not identified on the original plans and were indicated to drain by the original plans may be identified as artificially created wetlands.
- **Landscape** – If a wetland is entirely in the right of way, appears to be constructed and is not part of an adjacent natural wetland outside of the right of way, it may be identified as artificially created.
- **National Wetlands Inventory Maps** – If the wetland type listed on the NWI maps ends with an "x", the wetland is excavated. If the wetland is excavated and inside the existing right of way, the wetland may be identified as artificially created. Artificially created or excavated wetlands in the highway right of way are typically linear wetlands. Created wetlands in the highway right of way may be designated as temporary (PEMAx) or seasonal (PEMCx) wetlands on the NWI maps.

Soils - In addition, when on-site wetland delineations are completed, a soil pit can be dug to determine if the original soil profile is intact or if the site has been modified to create a wetland.

1.10 Wetland impacts

[8] Pg. 41217 Federal Register, Vol. 51, No. 219, Thursday, November 13, 1986, Rules and Regulations

- **Temporary** – Impacts to wetlands that are temporary in nature. In order to be considered temporary the wetland will revert to the same soil, vegetation, and water regime after the impact is removed (e.g. Fill placed on existing inslope to existing toe of slope; excavation within a wetland that will not drain wetland or impact hydrology or change wetland class; fill placed in a wetland that is completely removed to original contour). NOTE: Temporary also depends on time. Impacts lasting longer than 180 days may not be considered temporary and may require mitigation and a mitigation plan for loss of function. Temporary impacts associated with NDDOT projects are usually for the length of the project but may require additional coordination with the Corps of Engineers, in order to determine the appropriate time frame relative to the proposed project on a case by case basis.

- **Permanent** – Unavoidable wetland impacts that are converting the wetland area to non-wetland (e.g. fill converting wetland to upland; fill beyond the existing toe of slope; excavation or impounding water converting wetland to deep-water > 2.0 meters (6.6 ft. changing wetland class. Draining an existing wetland by lowering the natural outlet elevation reducing the wetland size or hydrology (inside or outside existing ROW) to any degree is considered a permanent impact, lasting longer than 180 days. In addition, any placement of fill that changes the bottom elevation and contours is also considered a permanent impact.

1.11 **Wetland Mitigation** – Actions taken to avoid, minimize, or deter the need to adversely affect existing wetlands. Mitigation deals in three primary areas: avoidance, minimization, and compensation, described below under mitigation sequencing.

1.11.1 **Mitigation Sequencing** - The process of avoiding impacts to wetlands, minimizing impacts that cannot be avoided and compensating for unavoidable impacts. Mitigation sequencing will be used to mitigate impacts to all natural and/or jurisdictional wetlands permanently impacted by highway projects. Mitigation sequencing is completed through a 3 step process. Additional information on mitigation sequencing can be found on the USEPA - Compensatory Mitigation webpage[9].

Steps in mitigation sequencing include:

1. **Avoidance** - Adverse impacts to wetlands are to be avoided if there is a practicable alternative with less adverse impact. Avoid adverse impacts by not placing road fill into a wetland, OW or stream if there is a practicable alternative with less adverse impacts (e.g. adjusting the geometry or alignment of the road to avoid wetland impacts).

2. **Minimization** - If impacts cannot be avoided, appropriate and practicable steps to minimize adverse impacts must be taken to the extent possible. Examples of minimizing adverse impacts could include: lowering the profile of the road; steepening in slopes; following existing land contours to minimize grading; span as much of the wetland as possible; consider keeping existing bridge abutments by building new abutment behind the old abutment; sinking box culverts 1.0 ft. below the bottom elevation of the channel to allow for aquatic species movement.

[9] USEPA Compensatory Mitigation Factsheet : http://www.epa.gov/owow/wetlands/pdf/CMitigation.pdf

3. **Compensation** - Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after avoidance and minimization. The amount and quality of compensatory mitigation does not substitute for avoiding and minimizing impacts. Compensate for impacts that cannot be avoided or minimized. Appropriate and practicable compensatory mitigation will be completed for unavoidable adverse impacts which remain.

1.11.2 **Compensatory Mitigation** - Compensatory mitigation includes in order of preference: restoration, establishment (creation), enhancement and preservation of a wetland. Compensatory mitigation will be based on the credit calculation using the ratios obtained from the *Wetland Mitigation Banking in North Dakota – Interagency Guidance for Mitigation Bank Sponsors.* ***Appendix E6***

1.11.3 **Wetland Mitigation Type**

- **Restoration** - The rehabilitation of a degraded wetland or the reestablishment of a wetland so that soils, hydrology, vegetative community, and habitat are a close approximation of the original natural condition that existed prior to modification to the extent practicable.
- **Creation** - The creation of a wetland on a site that was historically non-wetland.
- **Enhancement -** Enhancement methods are designed to improve the functions of restored and existing wetland basins without increasing their acreage.
- **Preservation** - Preservation typically involves acquiring land in fee title or purchasing conservation easements to ensure existing wetlands will not be adversely affected in the future.

1.11.4 **Mitigation Ratio** – the ratio of restored or created wetland with adjacent buffer and upland compared to wetland area lost.

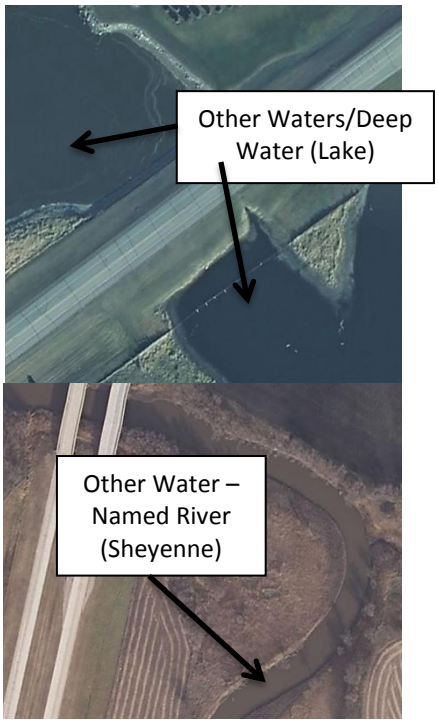
1.11.5 **Regional Service Area (RSA)** – A geographic area where mitigation can reasonably be expected to provide appropriate compensation for wetlands and other aquatic resources impacts. RSA's are used for mitigation banks, in-lieu-fee programs or other compensatory mitigation as designated in the banking instrument or umbrella agreement. Mitigation should be located within the same RSA as the impacted wetland. North Dakota has six service areas as outlined in the *Wetland Mitigation Banking in North Dakota – Interagency Guidance for Mitigation Bank Sponsors.* ***Appendix E6***

1.11.6 **Mitigation Sites** – Mitigation developed in conjunction with specific project impacts and usually located adjacent to those impacts. Wetland mitigation sites may be located within existing or newly purchased Right of Way (ROW). Typically referred to as on-site mitigation and need to be created prior to or concurrent with the wetland impacts.

1.11.7 **Mitigation Bank Site** - A wetland or a group of wetlands that have been restored, created, or enhanced to provide compensation for unavoidable impacts to wetland resources established under the Umbrella Banking Instrument approved by the USACE in 2013. Sites are amended to the Umbrella Banking Instrument. Sites have an established number of mitigation credits available to offset or compensate for

unavoidable wetland losses for multiple projects. Mitigation bank site are developed independently from project impacts. Mitigation bank sites can be purchased in fee title or held by NDDOT as a perpetual (99 year) easement.

1.11.8 **Mitigation Bank –** A wetland or a group of wetlands that have been restored, created, or enhanced to provide compensation for unavoidable impacts to wetland resources. A mitigation bank is developed for impacts to FHWA policy wetlands and/or impacts to USFWS wetland/grassland easements and fee title lands.



1.12 Other Waters (OW)

OW includes the following:

- Traditional navigable waters (named rivers, streams, and lakes)
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)
- Lakes – Deepwater habitat (greater than 2 meters) not dominated by persistent, emergent vegetation. NDDOT determines deepwater at the time of design survey.
- Typically classified as riverine or lacustrine by NWI.

1.13 Ordinary High Water Mark (OHWM) –

1.13.1 **USACE -** The term ordinary high water mark means the line on the shore established by the fluctuations of water and indicated by physical characteristics. Physical characteristics of an OHWM: natural line impressed on the bank; sediment sorting; shelving; leaf litter disturbed or washed away; changes in the character of soil; scour; destruction of terrestrial vegetation; deposition; presence of litter or debris; multiple observed flow events; wracking; bed and bank; vegetation matted down, bent, or absent; water staining; or change in plant community. More information can be found on OHWM in the USACE Regulatory Guidance Letter (RGL) No. 05-05 from December 7, 2005[10].

1.13.2 **State of North Dakota -** Ordinary high watermark" means that line below which the action of the water is frequent enough either to prevent the growth of vegetation or to restrict its growth to predominantly wetland species. Islands in navigable waters are considered to be below the ordinary high watermark in their entirety. (ND Century Code 89-10-01-03)

[10] USACE Regulatory Guidance Letter (RGL) No. 05-05 from December 7, 2005 at http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf

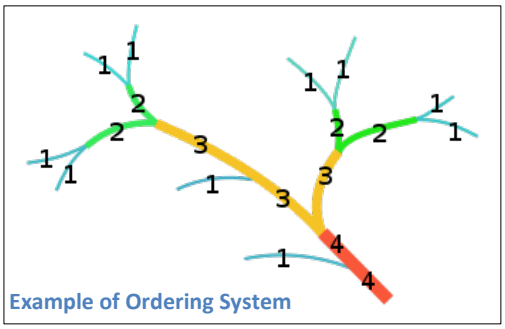
1.14 **<u>Relatively Permanent Flow (RPF)</u>** – Flow year-round or at least seasonally (e.g. typically three months). Term used to help determine extent of the USACE wetland jurisdiction for excavated ditches and other waters.

1.15 **<u>Floodway</u>** - ND Century Code 9 (Chapter 61-16.2-02) defines a floodway as the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot (.30 meter)

1.16 **<u>Floodplain</u>** - An area of land adjacent to a stream or river that stretches from the banks of its channel to the base of the enclosing valley walls and experiences flooding during periods of high discharge. It includes the floodway, which consists of the stream channel and adjacent areas that actively carry flood flows downstream, and the **flood fringe**, which are areas inundated by the flood, but which do not experience a strong current. In other words, a floodplain is an area near a river or a stream which floods when the water level reaches flood stage.

1.17 **<u>Sovereign lands</u>** - Those areas, including beds and islands, lying within the ordinary high watermark of navigable lakes and streams. (ND Century Code 61-33-01)

1.18 **<u>Stream Order System</u>** - a measure of the relative size of a stream. Each increase in stream order is an order of magnitude increase in size. The smallest tributaries are referred to as first-order streams, increasing in number going downstream.



Example of Ordering System

Section 2. Wetland and Other Waters (OW) Delineations

2.1 Applicability

Wetland and OW delineations are required for all projects that disturb the soil outside of the road surface. Wetland delineations are generally not required for the median of existing four lane highway projects. However wetland delineations may be required for medians exceeding typical design widths (84 ft. – 104 ft. from center of road to center of road) to avoid landscape features (e.g. Highway US 83 at the intersection with ND 23 or Interstate 94 at mile markers 95 and 96).

2.2 Office Delineations are conducted to determine the presence or absence of wetlands and OW within the project corridor and may be used to facilitate project development due to seasonal limitations or scheduling constraints that prevent field delineation from being completed. Office delineations are conducted off-site using readily available information to determine where wetlands and OW lie within the project area.

Office delineations may be considered appropriate for a project if the following criteria are met:

- The project and impact area is confined to the replacement and/or maintenance of a single structure (bridge, box culvert, pipe culvert).
- The project and impact area is confined to a single tributary or wetland / aquatic area.
- The footprint of the wetland or OW, (permanent and/or temporary impact) is anticipated to be 0.10 acres per basin or less.
- The wetland, OW, or tributary boundary must be clearly evident in the office delineation and defined by abrupt elevation changes, plant community changes, or ordinary high water marks.
- Existing drainage facilities and patterns will not be altered.

For both office and field delineations, the wetlands shall be identified by location using latitude and longitude coordinates (decimal degrees) and the Cowardin Classification System.

Office delineations should not be used to determine the location of on-site mitigation. Office delineations for mitigation purposes will require field verification.

2.3 Conducting Office Delineations

The following is a list of resources to be used when conducting an Office Delineations:

- **National Wetland Inventory (NWI) maps** – are produced by the United States Fish and Wildlife Service (USFWS) and provide historical information on wetlands. NWI Maps can be found on the USFWS National Wetlands Inventory Webpage[11] or by contacting the local USFWS office. NWI maps were developed in the 1980s and 1990s. Consideration should be given to the potential wetland changes (changes in hydrology due to drainage, climate, etc.) since the development of the maps.
- **USFWS Easement Wetland maps** may be used to ensure that USFWS easement wetlands will be avoided. If there is potential for impacts to USFWS easement wetlands, an office delineation will not be appropriate.

[11] USFWS National Wetlands Inventory Webpage http://www.fws.gov/wetlands/data/index.html

- **Natural Resources Conservation Service (NRCS) Web Soil Survey** – All hydric soils mapped as a single map unit will be considered wetland. Map units with hydric soil inclusions will not be considered wetland without other supporting data such as NWI or aerial photography.
- **USGS topographic maps** – Areas mapped with the marsh symbol will be considered wetland.
- **Aerial photography** – Review current years of photography (as of 2012, 7 years are available) as outlined on page 120 section (f) of the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)[12]. Areas meeting criteria will be labeled wetland.
- **NDDOT VideoLog** (where available) – For areas adjacent to State roads review VideoLog to verify wetland signatures.

2.4 **Delineation Report** - The Delineation Report will provide justification for any mapped hydric soils or NWI wetlands that did not meet wetland criteria. These areas will require test-hole documentation on the USACE Wetland Determination Data Form – Great Plains Region – Version 2.0. Refer to ***Appendix A1 for an example of a Field Wetland Report.***

- The Delineation Report will provide information to assist with the USACE jurisdictional determination for individual wetlands within the project area.
- Forms - Waterbody Data Form will be completed for each waterbody or stream that meets OW criteria. Any additional information that will help determine jurisdiction will be recorded in the comments section of the Waterbody Data Form.

2.4.1 Delineation Maps

Wetland and OW Delineation Map(s): The most recent year aerial photography will be used for the wetland and OW delineation map.

The map will include hollow polygons for the following:

- Office delineated wetland boundary
- NWI delineating all wetland polygons and linear wetland features
- Project survey limits
- Map scale can range from 1:2400 to 1:3600 depending on needed detail (when printed on an 11x17 page).

Additional Map(s)

- A 1:24,000 USGS Topographical map
- A soils map based on NRCS Web soil survey or equivalent and map legend

See Appendix A1 - Example wetland report map for more detail.

GIS Standards - Spatially rectified to UTM Zone 14; field equipment specifications; specifications for data will be provided to NDDOT as shape (shp) files as outlined in Appendix A3.

2.4.2 Wetland Numbering

- All wetlands will be individually numbered. Wetlands segmented by road feature such as approaches, culverts, intersections, etc. will use an alpha numeric system. Segments of the same wetland will be labeled using alpha characters

[12] Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0). http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

(e.g. 1a, 1b, 1c). Linear wetlands will receive one number per reach segment unless segmented by road features such as: approaches; culverts; intersections; etc. Segmented reaches will use an alpha numeric system. Numbering will begin on the west or south ends of a linear project proceeding east or north, ensuring that when complete, you have collected information on both sides of the road.

2.4.3 **OW Numbering** - All OW will be individually numbered using an alpha numeric system. To the extent possible OW numbers should correspond to abutting wetlands. Begin numbering with OW followed by the segment number (e.g. OW1). OWs that are segmented by road feature such as approaches, culverts, intersection, etc. will use an additional alpha character (e.g. OW1a, OW1b) to delineate the segment. Numbering will correspond to the abutting wetland whenever possible.

2.4.4 If the delineation includes "**other waters**", identify the waters by name: Green River; Clear Creek; Kulmbach Lake; or tributary to Cedar Creek, Bruns Slough; etc.

2.4.5 **Tables** - Wetland Delineation and OW Tables will be developed based upon required attributes listed in ***Appendix A4 – Wetland/OW Table Template***

2.4.6 **Contents**

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List of Tables (i.e. NDDOT Wetland Table; OW Table)
List of Exhibits (i.e. Aerial photos with NWI data)
List of Appendices (i.e. NDDOT Additional Information for Wetland Jurisdictional Requests)

2.5 **Field Delineation** is a wetland or OW delineation conducted on-site. Field wetland and OW delineations are the preferred delineation method. Wetland and OW delineations will be completed in the field to the extent possible. Field delineations are used to verify findings of office delineations; mitigation sites, mitigation banks or where office delineations have questionable findings.

All field wetland and OW delineations will be conducted in accordance with the United States Army Corps of Engineers (USACE) publication "Corps of Engineers Wetlands Delineation Manual" January 1987 – Final Report (87 Manual)[13], the "Regional Supplement to the Corps of Engineers Wetland

[13] US Army Corps of Engineers Wetlands Delineation Manual" January 1987 – Final Report (87 Manual) http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf

Delineation Manual: Great Plains Region (Version 2)" (Regional Supplement)[14], and North Dakota Century Code 43-36 - Professional Soil Classifiers[15].

Delineations will be conducted to determine the extent of wetlands (location, type, acreage, etc.) or OW area of impact and mitigation location within the project area.

Field delineations will begin after the growing season has begun and will end when the soil is frozen and a soil test hole can no longer be dug. Growing season is defined on page 70 of the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)[16].

2.6 Conducting Field Delineations

The following is a list of resources to be used when conducting a Field Delineation:

- **National Wetland Inventory (NWI) maps** – are produced by the United States Fish and Wildlife Service (USFWS) and provide historical information on wetlands NWI Maps can be found on the USFWS National Wetlands Inventory Webpage[17] or by contacting the local USFWS office. Based on the field delineation, wetlands may need to be added or may need to be reclassified as compared to the National Wetlands Inventory maps.
- **Natural Resources Conservation Service (NRCS) Web Soil Survey** – All hydric soils mapped as a single map unit will be considered wetland. Map units with hydric soil inclusions will not be considered wetland without other supporting data such as NWI or aerial photography.
- **USGS topographic maps** – Areas mapped with the marsh symbol will be considered wetland.
- **Aerial photography** – Review current years of photography as outlined on page 120 section (f) of the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)[18]. Areas meeting criteria will be labeled wetland.
- Any other applicable field or office records as required for documentation by the 87 Manual and Regional Supplement.

2.7 Delineation Report

- The Delineation Report will provide justification for sites meeting offsite wetland conventions, such as, any mapped hydric soils or NWI wetlands that did not meet wetland criteria during an on-site investigation. These areas will require test-hole documentation on the USACE Wetland Determination Data Form – Great Plains Region – Version 2.0. ***Refer to Appendix A2 for an example of an Office Wetland Report.***

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[14] Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)" (Regional Supplement) http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

[15] Pursuant to NDCC 43-36, "Professional Soil Classifiers", when applicable, determination of hydric soils must be performed by a registered soil classifier in the State of North Dakota.

[16] Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)" (Regional Supplement) http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

[17] USFWS National Wetlands Inventory Webpage http://www.fws.gov/wetlands/data/index.html

[18] Ibid.

- The Delineation Report will provide information to assist with the USACE jurisdictional determination for individual wetlands within the project area.

- **Forms** - Waterbody Data Form will be completed for each waterbody or stream that meets OW criteria. Any additional information that will help determine jurisdiction will be recorded in the comments section of the ***Waterbody Data Information sheet.***

2.7.1 **Wetland Numbering** - All wetlands will be individually numbered. Wetlands segmented by road features such as approaches, culverts, intersections, etc. will use an alpha numeric system. Segments of the same wetland will be labeled using alpha characters (e.g. 1a, 1b, 1c). Linear wetlands will receive one number per reach segment unless segmented by road features such as, approaches; culverts; intersections; etc. Segmented reaches will use an alpha numeric system. Numbering will begin on the west or south ends of a linear project proceeding east or north, ensuring that when complete, you have collected information on both sides of the road.

2.7.2 **OW Numbering** - All OW will be individually numbered using an alpha numeric system. To the extent possible OW numbers should correspond to abutting wetlands. Begin numbering with OW followed by the segment number (e.g. OW1). OWs that are segmented by road feature such as approaches, culverts, intersection, etc. will use an additional alpha character (e.g. OW1a, OW1b) to delineate the segment. Numbering will correspond to the abutting wetland whenever possible. If applicable, identify the waters by name: Green River; Clear Creek; Kulmbach Lake; or tributary to Cedar Creek, Bruns Slough; etc.

2.7.3 **Forms** –Documentation of wetland criteria will be completed on the *USACE Wetland Determination Data Form* – Great Plains Region – Version 2.0 (USACE Form). At a minimum one data set (paired data sheets will be completed - one test-hole form for wetland and corresponding upland) will be completed per wetland. Additional forms may be required for wetland basins with complex boundaries or wetlands that are segmented by road features. Linear wetlands dissected by road features may need additional forms to document wetland criteria for individual wetland segments, especially for changes in wetland type, slope or width. Areas not determined wetlands but mapped as hydric soils or as NWI wetlands will require test-hole documentation on the ***USACE Great Plains Regional Supplement Wetland Data Form***.

2.7.4 **Test holes** – A sufficient number of test holes will be made to understand the soil-hydrologic relationships at the site. Test holes should be dug for each wetland segment. All test holes will be paired, i.e. wetland and upland test hole and numbered consecutively for the entire project. Odd numbers will be used for the wetland and even numbers for the paired upland**.**

2.7.5 **Maps**

Wetland and OW Delineation Map(s): The most recent year aerial photography will be used for the wetland and OW delineation map.

The map will include the following layers:

- Field delineated wetland boundary
- Test hole locations (upland and wetland points)
- NWI delineating all wetland polygons and linear wetland features

- Project survey limits
- Map scale can range from 1:2400 to 1:3600 depending on needed detail (when printed on an 11x17 page).

Additional Map(s)

- A 1:24,000 USGS Topographical map
- A soils map based on NRCS Web soil survey or equivalent and map legend
- ***See Appendix A1 - Example wetland report map for more detail.***

2.7.6 **GIS Standards** -Spatially rectified to UTM Zone 14; field equipment specifications; specifications for data will be provided to NDDOT as a shape (shp) files as outlined in Appendix A3. Minimum GPS accuracy is <1.0 meters.

2.7.7 **Table -** Tables - Wetland Delineation and OW Tables will be developed based upon required attributes listed in ***Appendix A4 – Wetland/OW Table Template.***

2.7.8 **Photos** - Representative photos of each wetland will be taken during the growing season. . NDDOT approved photo template will be used for description of photography. For linear wetland systems, include photography depicting the delineation between OW. Also, include photos depicting features to assist the USACE jurisdictional wetland determination. Photo points will include GPS coordinates along with cardinal direction of photo. Only one cardinal direction is required. ***See forms section for photo template***.

2.7.9 **Potential Mitigations Sites** – Note in the report potential mitigation sites that may be needed for the project. Photos of potential mitigation sites should be taken at the time of the wetland delineation.

2.7.10 **Contents**

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List of Appendices (i.e. USACE Data Forms and NDDOT form titled "Additional Information for Wetland Jurisdictional Requests", Waterbody Form))
List of Tables (i.e. NDDOT Wetland Table)
List of Exhibits (i.e. Photos)

2.8 Types of Other Waters

2.8.1 **Named rivers** - Rivers are usually considered traditional navigable waters (TNW's) by the USACE. These areas generally exhibit an Ordinary High Water Mark (OHWM) and are bounded by uplands, wetlands and tributaries. They are usually delineated on USGS topographic map as a blue line stream and on NWI as part of a riverine wetland system. NOTE: The portions of the named river, stream or creek that have emergent hydrophytic vegetation are classified as palustrine wetland and are not included as OW. They are

typically classified as Riverine by NWI. ***See Appendix B4 for Wetland Classification Illustrations and Charts.***

2.8.2 **Tributaries to named rivers** - Tributaries are bound by uplands or wetlands and generally have an ordinary high water mark (OHWM). Tributaries usually do not extend past the delineated wetland boundary. OHWM mark criteria needs to be documented beyond the delineated wetland boundary to be delineated as a tributary. They are usually delineated on USGS topographic map as a blue line stream and on NWI as part of a riverine wetland or palustrine wetland system. NOTE: Tributaries that have emergent hydrophytic vegetation are classified as palustrine wetland and are not included as OW. ***See Appendix B4 for Wetland Classification Illustrations and Charts.***

2.8.3 **Lakes and ponds** - Lakes and ponds are deep-water habitats that do not meet wetland criteria. They are found in topographic depressions or a dammed river channel and lack persistent emergent vegetation. Water depth exceeds 2.0 meters. They are bounded by upland or wetland. They are typically classified as Lacustrine by NWI. ***See Appendix B4 for Wetland Classification Illustrations and Charts.***

Section 3. *Wetland and Stream Mitigation Requirements*

3.1 Mitigation – NDDOT is required by Federal Agencies to mitigate certain wetland impacts. Mitigation deals in three primary areas: avoidance, minimization, and compensation, which are described below under mitigation sequencing.

3.2 Sequencing - The process of avoiding impacts to wetlands, minimizing impacts that cannot be avoided and compensating for unavoidable impacts. Mitigation sequencing will be used to mitigate impacts to all natural and/or jurisdictional wetlands permanently impacted by highway projects. Mitigation sequencing is completed through a 3 step process[19].

Steps in mitigation sequencing include:

1. **Avoidance** - Adverse impacts to wetland are to be avoided if there is a practicable alternative with less adverse impact. Avoid adverse impacts by not placing road fill into a wetland or OW if there is a practicable alternative with less adverse impacts (e.g. adjusting the geometry or alignment of the road to avoid wetland impacts).
2. **Minimization** - If impacts cannot be avoided, appropriate and practicable steps to minimize adverse impacts must be taken to the extent possible. Examples of minimizing adverse impacts could include: lowering the profile of the road; steepening in slopes; following existing land contours to minimize grading; span as much of the wetland as possible; consider keeping existing bridge abutments by building new abutment behind the old abutment; sinking box culverts 1.0 ft. below the bottom elevation of the channel to allow for aquatic species movement.
3. **Compensation** - Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after avoidance and minimization. The amount and quality of compensatory mitigation does not substitute for avoiding and minimizing impacts. Compensate for impacts that cannot be avoided or minimized. Appropriate and practicable compensatory mitigation will be completed for unavoidable adverse impacts which remain.

3.3 Compensatory Mitigation - Compensatory mitigation includes in order of preference: restoration, establishment (creation), enhancement and preservation of a wetland. Compensatory mitigation will be based on the credit calculation using the ratios obtained from the *Wetland Mitigation Banking in North Dakota – Interagency Guidance for Mitigation Bank Sponsors.* The following table is found in that document:

RATIO	MITIGATION METHOD
1:1	Restoration of completely drained or filled wetlands by plugging the outlet and/or removing accumulated sediment, and implementing a revegetation plan.
1:1	Restoration of the outer, completely drained portion of a partially drained wetland, removing accumulated sediment, and implementing a wetland revegetation plan.
2:1	Restoration of the deeper portion of a partially drained wetland basin that continued to pond water after completion of the drainage project.
2:1	Restoration of an impaired wetland by removing the sediment accumulated in the basin.

[19] USEPA Wetlands Compensatory Mitigation Factsheet contains additional information on mitigation sequencing: http://www.epa.gov/owow/wetlands/pdf/CMitigation.pdf

2:1* Creation of a new wetland by excavation, establishment of ditch blocks, or construction of small dams along non-wetland drainageways.

5:1 Enhancement of a wetland basin by establishing and maintaining a 50-foot vegetated, upland buffer around the perimeter of each mitigation wetland.

10:1 Preservation of existing wetland habitat as a minor component of a mitigation bank featuring restored and/or created wetlands.

20:1 Enhancement of a mitigation tract by establishing permanent grassland cover outside of the 50-foot buffer to square off the boundaries of a mitigation bank and develop a reasonable land use plan for the surrounding property.

*****_USACE and FHWA have agreed that creation at a 1:1 ratio can occur if the creation occurs at the same wetland being impacted. (E.g. excavating upland adjacent to the impacted wetland or expanding the existing wetland to create wetland hydrology conditions similar to the impacted wetland)._

3.4 Location of Compensatory Mitigation

Compensatory mitigation can occur in the following areas: off-site at mitigation banks, in-lieu-fee or on-site within project boundaries and RSA.

1. **Off-site at Wetland Mitigation Banks** – Unavoidable wetland impacts may be compensated with the use of approved mitigation banks. Withdrawal of credits from the bank will be equal to the acres impacted at a 1:1 ratio. Compensatory mitigation for unavoidable wetland impacts covered under FHWA policy is not restricted to RSA's. For USACE jurisdictional wetland impacts, the bank must be in the same RSA as the wetland being impacted. ***See section 4.0 for further information on mitigation banks.***

2. **In-lieu-fee Wetland Banks** – If available, use of in-lieu-fee wetland banks will be coordinated with the FHWA and USACE. For more information regarding in-lieu-fee banking see Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act[20].

3. **On-site mitigation** – Wetlands are mitigated within the project ROW

    a. On-site mitigation by expanding the impacted wetland into upland areas usually within the NDDOT ROW. On-site compensatory mitigation via creation at the same wetland being impacted can occur at a 1:1 ratio. ***See Section 5.0 Wetland Creation***

    b. On-site mitigation within project area and within the same RSA but not at the same wetland as being impacted will follow the mitigation ratios as outlined in *Wetland Mitigation Banking in North Dakota – Interagency Guidance for Mitigation Bank Sponsors.* ***Please Refer Appendix E6.*** Mitigation may be outside of ROW. NDDOT will acquire mitigation site via easement or fee title purchase.

    c. On-site mitigation by removing existing roadbed within wetland usually within NDDOT ROW. Considered restoration at 1:1 ratio.

[20] Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 1- of the Rivers and Harbors Act. http://www.fws.gov/habitatconservation/Corps%20In-lieu-fee%20guidance.pdf

3.5 Streams and Tributaries

Box culverts and associated rip-rap will be lowered 1.0 ft. below the natural channel elevation to allow for aquatic species movement during low flow periods. Lowering the box culvert and riprap 1 foot below the bottom channel elevation is considered minimization and does not require compensatory mitigation for impacts associated with the box culvert and up to 60 linear feet total of riprap upstream and downstream. Riprap totaling greater than 60 linear feet within the channel will require compensatory mitigation. Permanent impacts are shown within the footprint of the box culvert and proposed riprap but will not require compensatory mitigation. ***Please refer to Appendix B6 for Stream Mitigation Culvert Detail.***

3.6 Temporary By-Pass Channels

When a temporary bypass culvert(s) is required to maintain flows and provide aquatic species movement for an extended period of time (greater than two weeks) the following criteria will be used:

- Set culverts 4" below existing stream bed elevation
- Size culvert for a 2 year peak discharge (Q2) event, and adjust size as needed to provide a velocity of 3 ft. /sec. or less at the Q2H discharge. Q2H will be calculated as (0.2 to 0.4)*Q2. Typically, it is recommended that Q2H be calculated as 0.3*Q2.
- Riprap should be placed on the temporary bypass embankment below the water line upstream and downstream.
- Other erosion and sediment controls should be used on the temporary bypass above the water line upstream and downstream.

3.7 Maintaining Drainage

- **Connectivity for aquatic life movements** - No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

- **Management of water flows**: To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except:

  1. The activity must be constructed to withstand expected high flows.
  2. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows.
  3. The activity may alter the pre-construction course; condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

Section 4. *Developing Mitigation Banks*

4.1 Policy

NDDOT will follow the mitigation banking process as outlined in the North Dakota Interagency Review Team (NDIRT) Wetland Mitigation Banking Guidance Document. ***Please Refer Appendix E6.*** The goal of a mitigation bank site is to provide a diverse wetland complex of temporary, seasonal and semi-permanent wetlands with associated grassland buffers and upland to replace unavoidable wetland losses with wetlands that provide similar functions. Mitigation banks are also developed to mitigate impacts to USFWS grassland easements and fee title lands.

4.2 Proposed Mitigation Bank Sites

- The proposed mitigation bank site location will preferably have a high ratio of restorable wetlands compared to created or existing wetlands. Restorable wetlands provide NDDOT with cost effective mitigation credits.
- The reviewer will inventory the offer based on possible restoration, creation and preservation of wetlands. Based on the review outcome, NDDOT will determine whether to pursue the proposed bank location. A short decision document will be developed for management's review. The decision document will outline the reasons to pursue or reject the offered area.

4.3 Criteria

<u>The proposed mitigation bank site will be evaluated based on the following criteria:</u>

- Ratio of restorable wetlands compared to all other wetlands on the site.
- Potential of the site to establish wetland physical, chemical, and biological functions.
- Adequate source of water (i.e. sufficient ground water, surface flows, snowmelt, or rainfall) to support the development of wetland vegetation, hydrology and wetland soil characteristics.
- Landowner interest for NDDOT long term (99 year) easement, USFWS perpetual easement, or land purchase in fee title with management transfer to the North Dakota Game and Fish Department (NDGFD).
- Bank location relative to Regional Service Areas (RSA's).
- The presence of unique plant communities, cultural sites, and/or threatened and endangered species habitat.
- Restored wetland hydrology relative to site boundary.
- Amount of wetland not protected by site boundary.
- Ability to establish a minimum 50-foot grassland buffer around the perimeter of each wetland basin.
- Landowner interest in land use change from cropland to hayland or pastureland.
- Amount of ongoing maintenance needed to maintain wetland functions. Wetland restoration or maintenance should not rely on pumping, tile water outlets or other methods requiring ongoing maintenance. Wetland restoration should be designed to establish self-sustaining wetland conditions.

4.4 Procedure

Steps 1 – Remote Sensing for the proposed mitigation bank site:

A. Review the soil survey via Web Soil Survey[21] to determine if the proposed bank includes hydric soils or hydric soil inclusions.
B. If provided by the landowner, review the NRCS certified wetland determination map(s) (do not request if not provided).
C. Review USFWS National Wetland Inventory (NWI) maps to identify drained and existing wetlands.
D. Review Farm Service Agency (FSA) slides or ortho-imagery to determine preexisting man made drainage features.
E. Review USGS topography maps and LIDAR (Light Detection and Ranging) data if available for the site.

Step 2 – Complete preliminary mitigation bank site review

A. Estimate extent of drained vs. existing wetlands.
B. Estimate % upland vs. total wetlands.

Step 3 - Decision point to determine if NDDOT should continue with offer[22]

A. Discontinue for offers meeting following criteria:

i. No restorable wetlands, or
ii. Offers where restorable wetland basins are less than 25% of total wetland basins,

OR

iii. Greater than 4:1 upland to all wetlands ratio;

*Send letter or phone call notifying applicant – document phone call

B. Obtain NDIRT support to continue for offers meeting minimum criteria:

i. Restorable wetlands greater than 25% of total wetland basins
ii. Less than 4:1 upland to all wetlands ratio

Step 4 - Complete on-site review to determine whether to continue with offer –

A. Personal phone call with landowner to set up on-site visit.
B. Discuss procedure/options with landowner - Determine if landowner is interested in:
   - NDDOT easement
   - Sale in fee title with NDGFD management
   - USFWS perpetual easement

Step 5 – Verify:

Potential wetland manipulation, drains, tile, fill, and labels as outlined in the WETLAND MITIGATION BANKING IN NORTH DAKOTA, Interagency Guidance for Mitigation Bank Sponsors Guidance Document. ***Please Refer Appendix E6.***

[21] Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
[22] Decision maker: ETS Division

A. Complete Scope and Effect Data Sheet for Drained or Partially Drained Wetland ***See Forms Section***.
B. Provide information release waiver for applicant's signature enabling NDDOT to obtain current USDA/NRCS wetland information applicable to offer.
C. Determine acres of each category (wetlands, buffers and uplands).

Step 6 – Complete map outlining wetlands, buffers and offered acreage

Step 7 – Complete excel spreadsheet outlining wetland types, acres, mitigation, credits types (preservation, restoration, etc.)

Step 8 – Determine if NDDOT should continue with process.

A. If no – contact landowner via letter or phone call, document phone call.
B. If yes - develop decision document for management decision.
C. If management agrees proceed to step 9.

Step 9 – Review credits with NDIRT after decision document is signed and landowner expresses interest to continue to sell in fee title or easement.

Step 10 - Complete ECL pending Cultural Resource Review.

Step 11 – Request Cultural Resources Review and USACE jurisdictional determination.

Step 12– Right of Way to begin acquisition process.

Step 13 -

USFWS Easements

- Obtain ownership information and title insurance of the property to be acquired, including an endorsement on behalf of the USFWS covering clear title as of the date of signing the indentures that grant or convey easement rights by the landowner to USFWS.
- Prepare the survey and plat of the interests to be acquired.
- Prepare appraisals.
- Negotiate and acquire the necessary property rights.
- Prepare an agreement for the seller's signature stating the seller agrees to sell, at a specified price and provide to USFWS perpetual wetland and or grassland easement, as applicable.

OR

NDDOT Purchase or 99 year Easement:

- Obtain ownership information and title insurance of the property to be acquired.
- Prepare the survey and plat of the interests to be acquired.
- Prepare appraisals.
- Negotiate and acquire the necessary property rights.
- Prepare an agreement for the seller's signature stating the seller agrees to sell, at a specified price, and provide to NDDOT 99 year wetland and or grassland easement, as applicable.

Step 14 – **For USACE Mitigation Bank Sites to be amended to the Umbrella Mitigation Banking Agreement (UMBI) (easement or purchase)**

- NDIRT field review
- Develop ledger
- Develop Mitigation Bank Site Addendum to UMBI
- Develop wetland restoration plan
- Submit to all NDIRT for formal review

For FWS Easements

- Develop ledger for wetland easement.
- Develop Prospectus
- Request Cultural Resource Review
- Develop wetland restoration plan

4.5 Performance Criteria

Refer to ***Section 5.3***

4.6 Monitoring

Refer to ***A6 for NDDOT Monitoring Report and Success Criteria***

Section 5. *Creating a Wetland Mitigation Site*

5.1 Planning

Planning should be oriented toward creation of an ecologically, biologically and hydrologically functioning wetland. Consideration should be given to creating wetlands that can provide functions including: water storage, groundwater recharge, retain particulates, remove, convert and sequester dissolved substances, provide floral and faunal habitat and carbon cycling.

Determine wetland type to be created. Wetland type should be based on impacted wetland being mitigated. At a minimum, surface and subsurface hydrology needs to be created and maintained at a frequency and duration to create anaerobic conditions typical of a wetland. Inundation or saturation must occur for a minimum of seven consecutive days during the growing season in most years. Hydrology can be created by containing surface runoff or by excavating into a water table. Hydrological goals must be consistent with the planned wetland type and the impacted wetland type. Following are ponding duration guidelines for various wetland water regimes from United States Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, Cowardin, Lewis M. 1979.[23]

- Temporary wetlands have surface water present for brief periods (>7 days but < 30 days) during the growing season, but the water table is well below the soil surface for most of the season.
- Seasonal wetlands have water present for extended (>30 days) periods especially early in the growing season, but is absent by the end of the season in most years.
- Semi-permanent wetlands have water persisting throughout the growing season in most years.
- In order to create these water regimes, water depths should range as follows:
    - Temporary wetlands - 0.5 to 1.5 feet
    - Seasonal wetlands - 1.5 to 2.5 feet
    - Semi-permanent wetlands - 2.5 to 5.0 feet

5.2 Construction

5.2.1 Embankments

An earth embankment (dam) may be constructed to create a pool storage volume consistent with water regime of impacted wetland. Soils must be capable of holding water for duration sufficient to create anaerobic conditions. Soils rated as severe for any of the factors for pond reservoir areas should not be considered for wetland creation. In most cases, soils rated as slight should meet the seepage criteria for a successful wetland creation based on soils. Soils rated as moderate for seepage should be investigated on-site prior to any wetland creations. Pond reservoir ratings can be found in NRCS Web Soil Survey[24].

[23] United States Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, Cowardin, Lewis M. 1979
http://www.fws.gov/wetlands/_documents/gNS DI/ClassificationWetlandsDeepwaterHabitatsUS.pdf

[24] NRCS Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Consideration should be given to removing the topsoil prior to wetland creation to reduce the phosphorus loading within the created wetland. Topsoil removal is especially critical when the created wetland is located in cropland. Removing phosphorus will reduce the potential of cattail dominated wetlands.

Embankments will meet design criteria for Classification I dams in the North Dakota State Water Commission (SWC) North Dakota Dam Design Handbook[25].

5.2.2 Excavations

Excavation can be used to pond water by capturing surface runoff or exposing the water table. If hydrology is being provided by water table alone, depth to water table and the time of year the water table is apparent in the soil profile are the two main factors determining acceptable site soil conditions. As the apparent water table becomes deeper in the soil profile, the likelihood of a successful wetland creation decreases. Cost of excavation increases and wetland aesthetics decrease as depth to water table increases. Depth to water table can be found in NRCS Web Soil Survey[26].

5.2.2.1 Excavations adjacent to existing wetlands

- The created wetland should emulate the hydrology of the impacted wetland. The area will be graded with a gradual transition from the created area to the existing grade and contours of the adjacent uplands surrounding the mitigation site. Consideration should be given to creating micro-topography within the wetland creation. The created wetland bottom will be over excavated by a minimum of 6 inches if topsoil from the impacted wetland is used. If wetland topsoil is not used, only 4 inches of topsoil is needed.
- Consideration should also be given to the ability of the soil to resist slumping.
- Side slopes should not exceed 10:1 and should match the existing contours of the wetland or meet roadway design standards if within NDDOT ROW.

5.3 Performance Criteria

5.3.1 Hydrological criteria can be met with embankment or excavation type creation. Hydrological criteria are met when any one primary indicator or two secondary indicators, are met as outlined in United States Army Corps of Engineers. March 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*[27]. Wetland hydrology regime of created wetland will be based on the wetland being impacted. Every effort should be made to create the same hydrological regime as the impacted wetland.

5.3.2 Hydrophytic vegetation criteria is met when the plant community meets the requirements as outlined in the United States Army Corps of Engineers, March 2010, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0).*

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[25] North Dakota State Water Commission (SWC) North Dakota Dam Design Handbook. http://www.swc.nd.gov/4dlink9/4dcgi/GetContentPDF/PB-77/damdesign.pdf

[26] NRCS Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

[27] United States Army Corps of Engineers. March 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0). http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

- Natural regeneration of vegetative cover on created wetland sites will not provide adequate hydrophytic vegetation establishment.
- Wetland topsoil from impacted wetland(s) should be placed immediately in the created wetland area. Six to ten inches of topsoil should be removed from the impacted wetland. If the wetland soil is stockpiled it must be separated from upland soil. The stock pile should not exceed 3 ft. high. Maximum time in the stock pile should not exceed 30 days. Care should be taken to avoid the stock pile from composting. Wetland seed mix should not be needed when wetland topsoil that has been stockpiled for less than four weeks. Wetland seeds and root material in the wetland topsoil should revegetate the site.
- For more information on using topsoil from "donor" wetlands see References - NRCS, Wetland Restoration, Enhancement, and Management.[28]
- The created wetland must be over excavated to compensate for the placement of topsoil.
- If donor wetland topsoil is not used, or the wetland topsoil has been stockpiled for greater then four weeks, wetland seeding will be used. Select wetland species according to water regime zones. Seed must be drilled into the wetland soil per seeding specifications found in the NDDOT Standards and Specifications for Road and Bridge Construction.
- Following are wetland seeding recommendations:

[28] Natural Resources Conservation Service, USDA. January 2003. Wetland Restoration, Enhancement, and Management, Part I.D.2. Available online at http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_010838.pdf

Wetland Mix East of Highway 83					
Grass			Full Seeding Rate	% of full	
Common Name	Scientific Name	Variety	PLS/Acre	seeding rate	PLS lbs./Ac
Prairie Cord Grass	Spartina pectinata	Red River	7.0	15	1.1
American Slough Grass	Beckmannia syzigachne	Common	0.9	20	0.2
Virginia Wild-rye	Elymus virginicus	Omaha	10.0	20	2.0
Fowl Blue Grass	Poa palustris	Common	1.0	20	0.2
Fox Sedge	Carex vulpinoidea	Common	1.0	15	0.2
American Manna Grass**	Glyceria grandis	Common	1.5	10	0.2
Fowl Manna Grass**	Glyceria striata	Common	1.0	10	0.1
Bluejoint Grass***	Calamagrostis canadensis	Common	1.0	10	0.1
			Total	120	3.9
Wetland Mix West of Highway 83					
Grass			Full Seeding Rate	% of full	
Common Name	Scientific Name	Variety	PLS/Acre	seeding rate	PLS lbs./Ac
Prairie Cord Grass	Spartina pectinata	Red River	7.0	15	1.1
American Slough Grass	Beckmannia syzigachne	Common	0.9	20	0.2
Canada Wild-rye	Elymus canadensis	Mandan	6.5	20	1.3
Fowl Blue Grass	Poa palustris	Common	1.0	20	0.2
Fox Sedge	Carex vulpinoidea	Common	1.0	15	0.2
American Manna Grass**	Glyceria grandis	Common	1.5	10	0.2
Fowl Manna Grass**	Glyceria striata	Common	1.0	10	0.1
Bluejoint Grass***	Calamagrostis canadensis	Common	1.0	10	0.1
			Total	120	3.1
**American, fowl or both may be used. If only one is used the seeding rate of other species does not need to be increased.					
***seed may not be available and can be removed without increasing the seeding rate of other species					

- Vegetative plugs may be used in lieu of seeding or donor topsoil. Specifications will be developed on a case-by case basis.

5.3.3 Hydric Soils Criteria are met when the soils meet the requirements as outlined in United States Army Corps of Engineers. March 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*[29]

- In many cases, hydric soils indicators will not be present within the first 5 year monitoring period. Therefore, hydric soils criteria are also met when conditions of saturation, flooding, or ponding are long enough during the growing season to develop anaerobic conditions in the upper part.

5.4 Monitoring

- Monitoring will be conducted annually for the first five years unless performance criteria are obtained on all aspects of the mitigation site and the USACE agrees to discontinue annual monitoring. In addition no other issues needing annual review such as noxious weeds, easement encroachment, dike repairs, etc. are observed. ***Refer to A6 for Wetland Monitoring Report.***

[29] United States Army Corps of Engineers. March 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

Section 6. *Mitigation Tracking*

6.1 Mitigation Tracking

It is the responsibility of the NDDOT – ETS Environmental and Local Government Divisions - to track wetland and other water (OW) impacts. These impacts are tracked by the bank/site that they are mitigated at. The banks/sites are then reported to NDIRT for review and acceptance. Detailed guidance as to how the NDDOT tracks wetland and OW impacts are included below.

6.1.1 Environmental Services (ES) maintains the NDDOT mitigation bank/site ledgers, is responsible for monitoring and maintaining the banks/sites, and provides annual reports to the North Dakota Interagency Team (NDIRT). ES tracks wetland impacts and mitigation for State highway projects and local entity developed projects that use a NDDOT mitigation bank/site. Projects which require the use of a NDDOT mitigation bank/site, including local entity developed projects, shall be coordinated with Environmental Transportation Services for environmental review (environmental documentation, permits, PS&E, etc.) and allocation of mitigation through the Local Government Division Technical Support Contact.

6.1.2 Local Government Division maintains the Urban and County mitigation bank/site ledgers and provides annual reports to the NDIRT. Local Government Division tracks wetland impacts and mitigation for Urban and County highway projects that use an Urban or County mitigation bank/site. Projects which require the use of an Urban or County mitigation bank/site shall be coordinated with the Local Government Division Technical Support Contact for environmental review and allocation of mitigation.

6.1.3 Both Divisions track the data using the same format for reporting purposes to NDIRT. Estimated impacts must be noted during the environmental review process, actual impacts as determined by the designer are used for mitigation and permanent records. Wetland impacts and the associated information may be necessary to fulfill other obligations such as the Section 404 Permit information, application, and obtaining the Section 404 Permit as well as the impacts to wetlands protected under the EO 11990. State highway projects or projects that require ES review should provide wetland information to ES during environmental documentation review (Project Development Phase).

6.1.4 Local Government will allocate urban or county project mitigation to the applicable urban or county bank/site. Urban and County highway projects that require use of State bank/site will be coordinated with ES for environmental review and identification of mitigation. Coordination should occur during the Project Development Phase.

Section 7. *Wetland Impacts, Permits and Authorizations*

7.1 ENVIRONMENTAL TRANSPORTATION SERVICES – ES Review

ES will coordinate all permit applications for impacts to Federal and State resources as outlined in this section. In addition, the checklists for each permit application and resource of concern will be completed with all required information provided to ES.

7.2 Checklists

The following checklists contain detailed information on the materials needed to complete a permit application and/or permit review.

- Wetland Information and/or 404 Permit Application Checklist
- Floodplain Permit Application Check List
- Floodway Authorization Information Check List
- Sovereign Lands Permit Application Check
- USFWS Easement Exchange Information Checklist

7.3 INTERAGENCY REVIEW

NDDOT will provide for interagency review of proposed wetland mitigation projects during the development phase based on the following thresholds:

7.3.1 Projects not requiring interagency review

- Creation of wetlands wholly located in current ROW, unless requested by agency during the project development phase.

7.3.2 Projects requiring the option for interagency review

- Wetland mitigation where additional ROW will be purchased solely for mitigation purposes
- Wetland mitigation where NDDOT will acquire a 99 year easement
- Wetland mitigation banks

7.4 FEDERAL HIGHWAY ADMINISTRATION

Federal Highway Administration (FHWA) approval of the project reports and plans includes approval for the mitigation features.

7.4.1 <u>Determining Wetland Impacts</u>

- Wetland impacts are determined by referencing the delineated wetland(s) and the construction limits. Areas of overlap identify locations of temporary and/or permanent fill. Impacts may also occur from culvert placements, excavation or dredging that deepens the wetland, etc.
- All unavoidable permanent impacts to natural wetlands, regardless of size, require mitigation. Wetland mitigation sequencing will be followed. Compensatory mitigation will be used for unavoidable impacts that cannot be avoided or minimized.
- Impacts to artificial/non-jurisdictional wetlands created by previous road construction do not require mitigation.

7.4.2 Types of Wetland Impacts

- Permanent Wetland Impacts - Permanent wetland impacts change any of the existing wetland area into an upland area. E.g. Fill placed beyond the existing toe of slope or draining wetlands within and/or outside NDDOT ROW. A change in wetland class can also be considered a permanent wetland impact.
- Temporary Wetland Impact - Temporary impacts result from fill placed in the wetland during construction. All fill must be removed to original contour. E.g. Fill placed on the existing inslope to the existing toe of slope within the wetland are also considered temporary since the new proposed inslope is expect to return to wetland vegetation. ***See Appendix B5.*** Cofferdams, bypasses, and other temporary fill needs to be removed to original contours to be considered temporary. Temporary impacts also depend on time. Any impacts lasting longer than 180 days are not considered temporary and may require mitigation for loss of function.

- **Impact tables** – Separate tables will be developed depicting impacts to wetlands and OW based on the required attributes listed below or otherwise provided by NDDOT. Impact tables will be developed as outlined in Appendix A5. ES staff will use the information to apply for and secure the needed permits from applicable state and federal agencies.

7.4.3 Preferred Compensatory Mitigation

- Should occur at a mitigation bank site within the RSA for USACE jurisdictional wetland impacts; however, FHWA does not restrict use of a mitigation bank or mitigation bank site outside the RSA**.**
- Compensatory mitigation can occur on-site or within the project areas.
- All compensatory mitigation features will be shown in the project reports and plans.

7.4.4 Streams, Tributaries and OW

- Streams and tributaries requiring box culverts and associated rip-rap will be buried 1.0 ft. below the natural channel elevation to allow for aquatic species passage during low flow periods.
- All other impacts to OW do not require mitigation.

7.5 US ARMY CORPS OF ENGINEERS (USACE)

This information is not direct guidance from the USACE and those searching for direct guidance should contact the USACE.

7.5.1 Wetlands and OW - Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States, including wetlands, without a permit from the U.S. Army Corps of Engineers.

- USACE may require compensatory mitigation for unavoidable impacts to natural and artificial jurisdictional wetlands and OW. Mitigation sequencing will be followed in order to compensate for unavoidable wetland impacts. Required compensatory mitigation can occur off-site at a USACE approved wetland mitigation bank within the RSA, on site or within project area and within RSA. Compensatory mitigation is generally not required for jurisdictional wetland impact <0.1 acres.

7.5.2 **Requesting a JD**[30] - A request for a JD is made through the solicitation of views process.

- For projects that do not have wetlands with the project boundaries, SOV Letter 2b shall be submitted to the USACE to solicit comments.
- For projects with wetlands or OWs present, a request for jurisdictional determination shall be submitted to the USACE utilizing SOV Letter #2, including the Delineation Report.
- **The USACE will assert jurisdiction over the following waters**:
  - Traditional navigable waters (TNW)
  - Wetlands adjacent to traditional navigable waters
  - Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)
  - Wetlands directly abutting an RPW that flows directly or indirectly into TNWs.
- **The USACE will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:**
  - Non RPW
  - Wetlands adjacent to RPW that flows year round
  - Wetlands adjacent to RPW that flows year seasonally
  - Wetlands adjacent/abutting RPW
- **The USACE generally will not assert jurisdiction over the following features:**
  - Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)
  - Ditches (including roadside ditches) that are classified as Preamble Waters if they meet the following criteria:
    - excavated wholly in uplands **and**
    - draining only uplands **and**
    - do not carry a relatively permanent flow of water (flow lasting longer than 3 months)
  - Artificial wetlands found in road ditches meeting criteria are not regulated. These three criteria should be applicable to numerous artificial wetlands located in road ditches impacted by road projects.
  - Saturated artificial slope wetlands that do not carry a relatively permanent flow of water do not meet the criteria and therefore not regulated by USACE.
- **The USACE applies the significant nexus standard as follows**:
  - A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters.

[30] Project Development Manual - Chapter II: Environmental, Section III: Public Involvement and Coordination

- Significant nexus includes consideration of hydrologic and ecologic factors.
    - ❖ Further information on USACE significant nexus analysis can be found on page 8[31] of the Supreme Court Decision in Rapanos v. U.S. & Carabell v. U.S. dated 2 December 2008.

- **Field Information** - Information should be collected to assist the USACE in making a jurisdictional determination.
    - NDDOT wetland delineations should have sufficient information for the USACE to accurately make a jurisdictional determination. The most difficult criteria to document will be the **relatively permanent flow of water**. The delineator should look for indicators of ordinary high water mark to help determine if the relatively permanent flow of water criteria is met. In addition, photo documentation of the site is important to help the USACE determine jurisdiction.
    - Delineators need to make a professional judgment if there is a continuous or contiguous surface connection from wetlands/waters to waters of the United States (WOUS). Example: Wetland 1 was observed to have no connection to WOUS and appears to be confined by uplands….or Wetland 1 appears to flow into a manmade drainage ditch that flows directly into a tributary to Clear Creek. ……or, Wetland 1 appears to overflow onto adjacent uplands and through a slight upland swale and eventually drains to Baker Slough.

7.5.3 NDDOT Review of the USACE Jurisdictional Determination (JD)

- **Preliminary JD** - At the request of the NDDOT, the USACE will provide a preliminary JD. If NDDOT concurs in the preliminary JD, a concurrence letter will be sent to USACE.

- **Approved JD** - If NDDOT does not concur in the preliminary JD, NDDOT will draft a letter to USACE requesting an Approved JD. USACE will provide an Approved JD. If NDDOT does not concur in the approved JD, NDDOT has 60 days to appeal the determination. If appealed, NDDOT will draft a letter, with supporting documentation, to USACE within the 60 day time period. An approved JD is also completed by the USACE if he project includes isolated waters with no discernible connect to Waters of the United States (WOUS). An approved JD is required for all non-jurisdictional waters.

- **Appealing a JD** [32]– If the NDDOT does not concur in the Approved JD, consideration will be given to appealing the determination. USACE Administrative Appeals Process will be followed.

7.5.4 Determining Need for a 404 Permit

1. The wetland table, shape files and attributes must be updated based on the USACE jurisdictional determination:

[31] USACE Clean Water Act Guidance Document on Jurisdiction following the Supreme Court Decision in Rapanos v. U.S. & Carabell v. U.S. dated 2 December 2008.
http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/cwa_juris_2dec08.pdf
[32] USACE Administrative Appeals Process - 33 CFR Part 331
http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/appeals/33cfr331.pdf

a. No jurisdictional waters lie within the project area; no further action is necessary by NDDOT.
b. Jurisdictional waters within the project area; further action is necessary by NDDOT

2. If jurisdictional waters are present, wetland impacts are determined by referencing the delineated wetland(s) and the construction limits. Areas of overlap identify locations of temporary and/or permanent. The designer will determine the extent of the impacts to the wetlands or other waters of the U.S. All necessary data and information outlined in the ***Wetland Information and/or 404 Permit Application Checklist, Appendix D1*** and the permit application will then be forwarded by NDDOT designer or technical support to the ES for the necessary action to obtain the permit. ES, in consultation with the USACE, will decide what type of 404 permits applies.
3. If the designer determines there are no impacts within Corps' jurisdictional waters, then no 404 permit will be required for the project. A copy of the determination is to be forwarded by NDDOT designer or technical support to ES upon completion, with the exception of local entity projects who are solely responsible.

7.5.5 Determining Wetland Impacts

- All unavoidable permanent jurisdictional wetland impacts greater than 0.1 acres require mitigation. Wetland mitigation sequencing will be followed. Compensatory mitigation will be used for unavoidable impacts that cannot be avoided or minimized.

  Impacts to artificial/non-jurisdictional wetlands created by previous road construction do not require mitigation.

  - **Ditch wetland mitigation outside project limits - 0.1 to 0.24 acre -** Prepare the 12 component plan if the mitigation site is of significant distance (determined case-by-case) from wetland impact. The plan will include
    - In kind 1:1 ratio or higher (determined case-by-case)
    - Mitigation outside the RSA in extreme cases may be applicable. This would require a thorough explanation from NDDOT. The explanation shall discuss the mitigation issues associated with the RSA where the project is located and the reason for requesting permission for mitigation outside of the RSA.
  - **Ditch mitigation greater than or equal to 0.25 acre**
    - In kind 1:1 ratio if not a significant distance outside the project limits.
    - If significant distance (determined case-by-case) a higher ratio may be applied.
    - Mitigation outside the RSA in extreme cases may be applicable. This would require a thorough explanation from NDDOT. The explanation shall discuss the mitigation issues associated with the RSA where the project is located and the reason for requesting permission for mitigation outside of the RSA.
  - **Streams and Tributaries** - Streams and tributaries requiring box culverts will be buried 1.0 ft. below the natural channel elevation to allow for aquatic species passage during low flow periods.
  - **Deepwater** (>2 meters, 6.6 ft.)-Impacts to deepwater usually do not require mitigation.
  - **Other** – Impacts to OW with an OHWM are mitigated on a case by case basis. Mitigation is triggered when impacts to tributaries exceed 300 ft. in length.

7.5.6 Types of Wetland Impacts

- Permanent Wetland Impacts - Permanent wetland impacts change any of the existing wetland area into an upland area. E.g. Fill placed beyond the existing toe of slope or draining wetlands within and/or outside NDDOT ROW. A change in wetland class can also be considered a permanent wetland impact.
- Temporary Wetland Impact - Temporary impacts result from fill placed in the wetland during construction. All fill must be removed to original contour. E.g. Fill placed on the existing inslope to the existing toe of slope within the wetland are also considered temporary since the new proposed inslope is expect to return to wetland vegetation. ***See Appendix B5.*** Cofferdams, bypasses, and other temporary fill needs to be removed to original contours to be considered temporary. Temporary impacts associated with NDDOT projects are usually for the length of the project but may require additional coordination with the Corps of Engineers, in order to determine the appropriate time frame relative to the proposed project on a case by case basis.

7.5.7 **Section 10 of the Rivers and Harbors Act** - Approved March 3, 1899, section 10 of the Act (33 CFR 320.2(b)) states prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The instrument of authorization is designated a permit.

A list of section 10 Waters for North Dakota[33] can be found on the USACE Omaha District webpage under Media/Fact Sheets, Section 10 of the Rivers and Harbors

7.5.8 USACE Wetland Mitigation Plan – 12 Components

The 12 component wetland mitigation plan will be developed per 40 CFR Part 230 - *Compensatory Mitigation for Losses of Aquatic Resources*; Final Rule[34]. Mitigation plan guidance is located in paragraph 230.94(c). **See *Appendix A9* for the 12 components of a mitigation plan and *Appendix A10* for a NDDOT example plan. This example has been developed in conjunction with the Bismarck Regulatory Office of the USACE.**

7.6 **Documentation** – Final permitting information should be submitted to ES staff for review and permit application submittal.

- **Checklist** - The Wetland Information and/or 404 Permit Application Check List will be completed for all projects impacting wetlands. ***See Appendix D1/D2 for Checklists.***

[33] A list of section 10 Waters for North Dakota can be found at http://www.nwo.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2034/Article/2652/section-10-waterways.aspx

[34] 40 CFR Part 230 - Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. Mitigation plan guidance is located in paragraph 230.94(c). http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf

- **Impact tables** – Separate tables will be developed depicting impacts to wetlands and OW based on the required attributes listed below or otherwise provided by NDDOT. Impact tables will be developed as outlined in Appendix A5. ES staff will use the information to apply for and secure the needed permits from applicable state and federal agencies.

7.7 US COAST GUARD

A US Coast Guard (USCG) permit is needed for any bridge, dam, dike, or causeway over or in any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the United States. Navigable streams and waters include waters that were navigable at the time of statehood including the Missouri River, Yellowstone River, and Red River north of Wahpeton to the Canadian border, James River, Upper Des Lacs Lake, and Devils Lake.

- For NDDOT projects, ES is responsible for obtaining the USCG permit. If it is a local entity project, the local entity completing the project is solely responsible.
- If the designer determines there are project impacts within any navigable streams or waters of the United States, a USCG permit is required.
- Upon confirmation for the need of a USCG permit, project details should be given to ES to be included in the permit application including the project location map and plan sheets. ES will take the necessary action to obtain the permit.

7.8 US FISH AND WILDLIFE SERVICE (USFWS)

7.8.1 **USFWS Easement Land** - Transportation projects impacting USFWS wetland or grassland easements are typically outside the existing ROW.

- For highway projects that will occur or will have impacts outside the ROW, NDDOT designer or consultant will notify the appropriate USFWS, Wetland Management District (WMD) office to determine if USFWS easements exist within the project area using Solicitation of Views (SOV) Letter #7. ***Please refer to E3 for map of WMD offices.*** The notification will include: the narrative describing the nature of the construction activities resulting in impacts to the affected easement; an aerial photograph(s) of the project site and location of the anticipated construction impacts.
- The USFWS WMD manager will provide an aerial photograph(s) identifying the protected wetlands indicated by points or grassland easement area polygon. For wetland easements, the WMD manager should ensure the aerial photograph provided by NDDOT is the best available representation of typical water levels.
- NDDOT will conduct field wetland delineations unless unusual circumstances require the initial determination to be conducted in the office. An on-site determination must be made if the project results in impacts that will require an easement exchange.
- NDDOT will avoid and minimize impacts to USFWS easements to the extent practicable.

- The NDDOT designer or consultant must include measures to avoid or minimize impacts to easement wetlands and grassland. Where avoidance and minimization do not mitigate for all impacts, NDDOT will calculate impacts and provide the information to the USFWS WMD manager for confirmation/concurrence. The determination of impacts is a collaborative process between NDDOT and the USFWS WMD manager. However, NDDOT will make the initial estimate.
- For unavoidable impacts to USFWS easements, NDDOT ES staff will work with USFWS WMD manager to complete an easement exchange.
- Checklist - The USFWS Easement Exchange checklist will be used to assure all steps are completed. ***Please see Appendix D9 – USFWS Easement Exchange Information Checklist***.
- **Compensatory Compensation –**
  - USFWS Easement Bank will be used if available.
  - If an Easement Bank is not available, NDDOT will work with USFWS to locate suitable wetlands or grassland to complete an easement exchange. Mitigation does not need to be within the same RSA.

7.8.2 **<u>USFWS Fee Owned Land</u>** – In March of 2012, NDDOT and USFWS entered into a Memorandum of Understanding outlining the process for unavoidable impacts to USFWS Fee Owned land. NDDOT will avoid impacts to USFWS fee owned land to the extent practicable. When unavoidable impacts will occur, NDDOT will follow the process outlined in the MOU. ***Please see Appendix E5 - Memorandum of Understanding between the U. S. Fish and Wildlife Service and the North Dakota Department of Transportation.***

7.9 STATE OF NORTH DAKOTA

7.9.1 Wetlands

- Drain Permit – A drain permit is required from the North Dakota State Water Commission - Office of the State Engineer for wetlands with greater than 80 acres of drainage **and** only when the impacts include wetland drainage. North Dakota does not have any permitting requirements for fill placed in a wetland. Drainage permit forms can be found at the North Dakota State Water Commission - Permits and Applications – Drain Permits Webpage[35].
- Wetland Restoration Permit – A wetland restoration permit is not required if the wetland is restored to original size. However the North Dakota Water Commission will be notified using the following form: Application/Notification to Construct or Modify a Dam, Dike, Ring Dike, or Other Water Resource Facility[36].
- Wetland Creation Permit - Wetland creations capable of storing greater than 25 acre-feet will need a permit from the State Water Commission. The State Water Commission will be notified for wetland creations storing less than 25 acre feet. The

[35] North Dakota State Water Commission - Permits and Applications – Drain Permits Webpage: http://www.swc.state.nd.us/4dlink9/4dcgi/GetSubCategoryRecord/Permits%20and%20Applications/Drain%20Permits

[36] North Dakota State Water Commission – Permits and Applications: http://www.swc.state.nd.us/4dlink9/4dcgi/GetContentPDF/PB-76/Construction%20Permit%20Form%20Fillable.pdf

same form, Application/Notification to Construct or Modify a Dam, Dike, Ring Dike, or Other Water Resource Facility[37], is used for both situations.

7.9.2 Sovereign Lands

Sovereign lands consist of islands and beds of navigable streams and waters areas where vegetation is restricted by the action of water or where vegetation consists primarily of wetland species. *"Sovereign lands" means those areas, including beds and islands, lying within the OWHM* of navigable lakes and streams. Lands established to be riparian accretion or reliction lands pursuant to section 47-06-05 are considered to be above the OHWM and are not sovereign lands. For more information see North Dakota State Water Commission, Sovereign Lands Management[38]. Using the letter SOV #6, contact the North Dakota State Water Commission - Office of the State Engineer to find out if the project is located on sovereign land.

- **Permit Needed** - A Sovereign Lands Permit is needed from the Office of the State Engineer when a portion of a transportation project lies partially or wholly below the OHWM of a navigable stream or water.
- For in-house projects, NDDOT ES is responsible for obtaining the Sovereign Land Permit. If the designer determines there are any project impacts within a Sovereign Lands, then a Sovereign Lands permit is required.
- Information Required - Upon confirmation of sovereign lands within a project a detailed set of plans should be given to the ES to be included in the permit application including the project location map and plan sheets. ES will take the necessary action to obtain the permit. Permit applications can be found on the North Dakota State Water Commission Webpage[39.]
- Checklist – The Sovereign Lands checklist will be used to assure all steps are completed. ***Please see Appendix D7/D8 – Sovereign Lands Permit Application Checklist***

7.9.3 Dike Modification

North Dakota defines a dike as an embankment, including appurtenant works, constructed to protect real or personal property. See North Dakota State Water Commission, Article 89-08: Dams, Dikes, and Other Devices[40] for more information. Using the SOV letter #6, contact the North Dakota State Water Commission - Office of the State Engineer to find out if the project will impact a dike.

- **Permit Needed** - Any modifications to dikes will require a permit from the North Dakota State Water Commission - Office of the State Engineer.
- For in house projects, ES is responsible for obtaining the Dike Modification permit. If the designer determines there are any project impacts, a dike permit is required

[37] Ibid.
[38] North Dakota State Water Commission , Sovereign Lands: http://www.legis.nd.gov/cencode/t61c33.pdf?20130320144101
[39] Application to construct a project within islands and beds of navigable streams and waters: http://www.swc.state.nd.us/4dlink9/4dcgi/GetContentPDF/PB-232/Sovereign%20Lands%20Application%202009.pdf
[40] North Dakota State Water Commission, Article 89-08: Dams, Dikes, and Other Devices: http://www.legis.nd.gov/information/acdata/pdf/89-08-01.pdf?20130320144927

Permit applications can be found on the North Dakota State Water Commission – Permits and Applications[41].

- **Checklist** – The Dike Modification checklist will be used to assure all steps are completed. ***Please see Appendix C5 – Dike Permit Example.***

7.9.4 Floodplain Development

- **Permit Needed** - For projects located in a regulated floodplain, a floodplain development permit must be received from the local floodplain coordinator before construction can take place. Using the SOV letter # 6, contact the North Dakota State Water Commission - Office of the State Engineer to find out if the project is in a regulated floodplain. The Office of the State Engineer can also provide the FIRM map and contact information for the local floodplain coordinator. If the Office of the State Engineer was sent a Solicitation of Views letter, they normally provide this information in their response. In some cases, they may need to be contacted. For more information see the North Dakota State Water Commission – Floodplain Management Webpage[42].
  - If the designer determines there are project impacts within a floodplain, then a floodplain permit is required.
  - Additional information may be required from the designer before ES can complete the permit application. If the project scope of work changes from that originally proposed in the environmental document, the author should advise and discuss the proposed changes with ES.
  - Cities, counties, townships, and reservations are normally responsible for regulating floodplains within their boundaries. When a project involves a floodplain, the permitting community documents compliance by a signed floodplain permit.
  - **Floodplain Permit Application(s):** Non-NDDOT entities working on NDDOT projects must submit a completed Floodplain Permit application to ES. This ensures that the completed permit application can be obtained prior to the project bid opening. Upon review and acceptance of the Floodplain Permit application, it will be sent to the appropriate Floodplain Administrator.
  - **Checklist** – The Floodplain checklist will be used to assure all steps are completed. ***Please see Appendix D3/D4 – Floodplain Authorization Information Checklist.*** All necessary data, information, and, if applicable, the permit application will then be forwarded by NDDOT designer or technical support to the Environmental Section immediately for the necessary action to obtain the permit.

[41] North Dakota State Water Commission – Permits and Applications: http://www.swc.state.nd.us/4dlink9/4dcgi/GetContentPDF/PB-76/Construction%20Permit%20Form%20Fillable.pdf
[42] North Dakota State Water Commission – Floodplain Management Webpage at: http://www.swc.state.nd.us/4dlink9/4dcgi/GetCategoryRecord/Floodplain%20Management

7.9.5 Floodways

ND Century Code 9 (Chapter 61-16.2-02) defines a floodway as the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot (.30 meter). Using the SOV #6 letter, contact the North Dakota State Water Commission - Office of the State Engineer to find out if the project will impact a floodway.

- **Permit Needed** - For NDDOT projects that may affect a floodway, a permit must be received from the local floodplain coordinator before construction can take place. Contact the Office of the State Engineer to find out if the project is in a regulated floodway. Office of the State Engineer can also provide contact information for the local floodplain coordinator. If the Office of the State Engineer was sent a Solicitation of Views letter, they normally provide this information in their response. In some cases, the Federal Emergency Management Agency (FEMA) may need to be contacted. For more information see the North Dakota State Water Commission – Floodplain Management Webpage[43].
- If the designer determines there are project impacts to a floodway within a floodplain, then a floodway authorization is required.
- Additional information may be required from the designer before ES can complete the permit application. If the project scope of work changes from that originally proposed in the environmental document, the author should advise and discuss the proposed changes with ES.
- **Checklist** – The Floodway checklist will be used to assure all steps are completed. ***Please see Appendix D5/D6 – Floodway Authorization Information Checklist.*** All necessary data, information, and, if applicable, the permit application will then be forwarded by NDDOT designer or technical support to the Environmental Section immediately for the necessary action to obtain the permit.

[43] Ibid.

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ection 8. *Emergency Projects*

8.1 Emergency projects include repair work necessary to immediately protect remaining facilities, re-open roadways, and restore essential transportation needs.

- Initial emergency repair work should address only the work necessary to protect the remaining roadway or to re-open the roadway.
- For emergency repair work procedures and guidelines see NDDOT Emergency Relief Manual Procedures for Administering Federal Emergency Relief (Draft) Funds Section 7 – Regulatory Compliance and Environmental Guidelines[44].

[44] NDDOT Emergency Relief Manual Procedures for Administering Federal Emergency Relief (Draft) Funds Section 7 – Regulatory Compliance and Environmental Guidelines: https://www.dot.nd.gov/divisions/localgov/docs/ddir/DraftERManual.pdf

Section 9. *Woody Vegetation Mitigation*

10.1 **Impacts** to woody vegetation will be determined to ensure that projects along riparian corridors and in urban areas are reviewed for potential impacts. Woody vegetation can include trees and/or shrubs.

10.1.1 For projects completed in house, ES will and determine whether or not the project will result in the loss of woody vegetation. For projects completed by a consultant, the work will be coordinated through the NDDOT Technical Support Contact.

10.1.2 Impacts to woody vegetation will be collected at the time of wetland delineation.

- Deciduous trees – if the diameter breast height (dbh) of the tree is 3 inches or more and the tree is 15 feet or more in height
- Evergreen trees – if the tree is 5 feet or more in height
- Shrubs – all other woody vegetation

10.1.3 If it is impractical or impossible to count each individual tree and/or shrub, the following methodology may be used:

- Choose a representative area(s)
- Measure the area(s) in whatever unit is most practical (square footage, acreage, etc.)
- Count the number of trees or shrubs in the area
- Use this as a representative number of trees or shrubs for all other areas which are similar in characteristics to the area(s). Use the appropriate ratio of number of trees or shrubs to the size of the area.

10.1.4 Woody vegetation impacts on Federal or State owned lands will be determined according to procedures outlined by the governing agency. (Example: USACE Guidance - SOP #14 – Garrison Project Tree/Vegetation Mitigation, September 26, 2011 - ***See Appendix E7)***

10.2 **Mitigation** – Only the loss of trees and/or shrubs along riparian corridors will be mitigated as directed by the resource agencies or as outlined by the governing agency. Mitigation requirements will be incorporated environmental document for the project.

10.2.1 In urban areas, trees will be mitigated at a 1:1 ratio in a location identified by the municipality, in conjunction with the NDDOT.

10.2.2 Riparian Areas – ES will review all tree/shrub impacts with NDGF to determine need for mitigation. NDDOT will coordinate with NDDOT regarding mitigation site location, tree/shrub species, planting requirements, monitoring, etc.

10.2.3 Federal or State owned lands - woody vegetation mitigation requirements will be determined according to procedures outlined by the governing agency. (Example: USACE Guidance - SOP #14 – Garrison Project Tree/Vegetation Mitigation, September 26, 2011 - ***See Appendix E7)***

Section 10. List of Acronyms Used in this Manual

CATEX	FWHA Categorical Exclusion Determination
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETS	Environmental Transportation Section of NDDOT
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FSA	USDA Farm Service Agency
GIS	Geographic Information Systems
GPS	Global Positioning System
HUC	Hydrologic Unit Code
NDDOT	North Dakota Department of Transportation
NDGFD	North Dakota Game and Fish Department
NDIRT	North Dakota Interagency Review Team
NRCS	USDA Natural Resources Conservation Service
NWI	United States Fish and Wildlife Service National Wetlands Inventory
OW	Other Waters
OHWM	Ordinary High Water Mark
PCN	Project Control Number
RGL	USACE Regulatory Guidance Letter
RPF	Relatively Permanent Flow
ROW	North Dakota DOT Right of Way
RSA	Regional Service Area
SOV	Solicitation of Views
SWC	North Dakota State Water Commission
UMBI	Umbrella Mitigation Banking Agreement)
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USGS	United States Geological Survey
USFWS	US Fish and Wildlife Service
WMD	Wetland Management District of the USFWS

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