

## Memorandum

DATE **January 9, 2020**

TO Dillon Dittmer, Rich Geschwender, Tony Kessler

FROM Jodi Kocher, Felsburg, Holt & Ullevig

THRU Julie Ramirez, NDOT

SUBJECT Floodplain Certification—Merriman to Eli, 20-2(145), CN 81027

Merriman to Eli is a mill and overlay project located in Cherry County, Nebraska, along Highway US-20. This project is 10.15 miles in length, starting 0.01 miles west of the east junction of US-20 and N-61 at mile marker (MM) 135.84, and extending east to MM 146.00, the intersection of US-20 and Eli Road. This project will mill off four (4) inches of mainline pavement and two (2) inches of shoulder pavement and then resurface the roadway with four (4) inches of mainline pavement and two (2) inches of shoulder pavement, for the length of the project. The project will result in no change to the highway grade elevation.

Cherry County has no FEMA Floodplain mapping and does not participate in the National Flood Insurance Program (NFIP). NDOT policy in unmapped communities is to classify drainages with greater than 640 acres of watershed upstream of the highway and drainages that the Nebraska Department of Natural Resources has identified as Flood Awareness Areas as potential Zone A Floodplains. State Minimum Standards require that all activity within potential Zone A Floodplains meet a "Less Than 1-foot Rise" criteria.

This project does not encroach on any drainages identified by the Nebraska Department of Natural Resources as Flood Awareness Areas. The project is located within the Nebraska Sandhills. As a topographic region, this area is characterized by well-watered, grass-stabilized dunes of predominantly sandy soils. The combination of highly permeable soils (which limit surface runoff and enhance infiltration) and thick, permeable, subsurface deposits (which facilitate percolation and recharge the groundwater supply) have infiltration rates a hundred times higher than in the clayey loams of the Platte basin and other like river basins around the state. Sandhill streams are fed by groundwater and streamflow in the region is predominantly from subsurface percolation instead of surface runoff (Atlas of the Sand Hills, Bleed and Flowerday, 1998). Traditional methods of determining drainage areas by topographic maps and determining peak flows of surface runoff are not applicable in much of this area; precipitation in the region rarely results in overland runoff that reaches streams. Instead it quickly infiltrates porous soils and moves according to subsurface groundwater gradients. Because of these characteristics within this topographic region, there are limited potential Zone A floodplains along this project. To be conservative, however, there are two stream crossings with fine sandy loam soils along this project which convey Dry Creek/Horseshoe Ditch and Bear Creek. These crossings are certified as potential Zone As.

Please review the attached mapping showing where this project encroaches into potential flood zones with potential drainage areas greater than 640 acres. Enclosed you will find certifications for these encroachments:

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**Dry Creek/Horseshoe Ditch, Cherry County, Section 16 T34N R37W, MM 137.22**

The project encroaches the potential Zone A Floodplain for Dry Creek/Horseshoe Ditch at this location. The base flood (100-year flood event) is conveyed through the highway by a twin 8 ft. x 6 ft. concrete box culvert, approximately 44 feet in length. At this location, the project will extend the culvert 12 ft. left and 25 ft. right, and mill and overlay the roadway as described above. There will be no grade change. With no change to the conveyance capacity of the box culvert and no change to the roadway profile, there will be negligible effect to the Base Flood Elevation (BFE) at this location. This change falls within the Zone A Floodplain regulations for up to a one-foot (1 ft) cumulative increase in the Base Flood Elevation (BFE) for changes in a floodplain.

**Bear Creek, Cherry County, Section 14 T34N R36W, MM 144.41**

The project encroaches the potential Zone A Floodplain for Bear Creek at this location. The base flood (100-year flood event) is conveyed through the highway by a 6 ft. x 7 ft. concrete box culvert, approximately 69 feet in length. At this location, the project will mill and overlay the roadway as described above. There will be no grade change and no work to the box culvert. Since there will be no change to the highway profile or the culvert, there will be no change to the Base Flood Elevation (BFE) at this location. This change falls within the Zone A Floodplain regulations for up to a one-foot (1 ft) cumulative increase in the Base Flood Elevation (BFE) for changes in a floodplain.

The project will not have any rise in a floodplain that potentially impacts an adjacent structure.

Enclosures:      Certificates (2)  
                     Maps covering project (2)  
                     Location Map

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**Permit Information:**

Is the work Substantial Improvement?

Dry Creek/Horseshoe Ditch

No

Bear Creek

No

Is the work in an Identified Floodplain?

Dry Creek/Horseshoe Ditch

Yes

Bear Creek

Yes

Elevation of the Base Flood (100-Year flood/storm event)?

Dry Creek/Horseshoe Ditch

No Change

Bear Creek

No Change

Elevation/Floodproofing Requirement (if applicable)?

Dry Creek/Horseshoe Ditch

NA

Bear Creek

NA

Is the work in a designated Floodway?

Dry Creek/Horseshoe Ditch

No

Bear Creek

No

*Certification of Compliance  
Floodplain and Floodway Regulations*

FLOODPLAIN/ FLOODWAY LOCATION

Project Name Merriman to Eli Stream Dry Creek/Horseshoe Ditch  
Project No. 20-2(145) County Cherry  
Control No. 81027 Section(s) 16 T 34N R 37W

FEMA LOCATION

County/Community Cherry County, Nebraska  
Panel No. N/A  
Effective Date N/A

TYPE OF STRUCTURE

☐ Bridge ☒ Culvert Twin 8 ft. x 6 ft. conc. box culvert ☐ Roadway

Structure No.                      ☐                     

TYPE OF IMPROVEMENT

☒ Modify Existing ☐ Replace Existing ☒ Other

Details Mill 4"/Overlay 4"; Extend box culvert 12 ft. left and 25 ft. right.

Highway Profile Change: ☐ Yes ☒ No

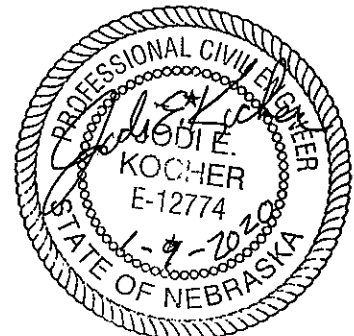
THE FOLLOWING IS HEREBY CERTIFIED

- ☒ Floodplain in Un-mapped Community (State Minimum Standards Apply)  
Proposed construction will not increase the base  
(100 year) flood heights more than one foot at any location.
- ☐ Floodplain (without Designated Floodway) or Flood Fringe  
Proposed construction will not increase the base  
(100 year) flood heights more than one foot at any location.
- ☐ Designated Floodway  
Proposed construction will result in no rise along the base  
(100 year) floodway water surface profile.

Signature

Jodi E. Kocher  
Jodi E. Kocher  
Sr. Water Resources Engineer

Registration Number E-12774  
Date 1/9/2020



*Certification of Compliance  
Floodplain and Floodway Regulations*

FLOODPLAIN/ FLOODWAY LOCATION

Project Name Merriman to Eli Stream Bear Creek  
Project No. 20-2(145) County Cherry  
Control No. 81027 Section(s) 14 T 34N R 36W

FEMA LOCATION

County/Community Cherry County, Nebraska  
Panel No. N/A  
Effective Date N/A

TYPE OF STRUCTURE

☐ Bridge ☒ Culvert 6 ft. x 7 ft. conc. box culvert ☐ Roadway  
Structure No.                      ☐                     

TYPE OF IMPROVEMENT

☐ Modify Existing ☐ Replace Existing ☒ Other  
Details Mill 4"/Overlay 4"; No box culvert work.

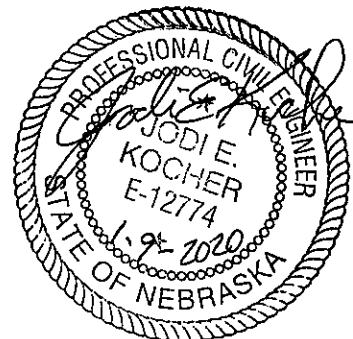
Highway Profile Change: ☐ Yes ☒ No

THE FOLLOWING IS HEREBY CERTIFIED

- ☒ Floodplain in Un-mapped Community (State Minimum Standards Apply)  
Proposed construction will not increase the base  
(100 year) flood heights more than one foot at any location.
- ☐ Floodplain (without Designated Floodway) or Flood Fringe  
Proposed construction will not increase the base  
(100 year) flood heights more than one foot at any location.
- ☐ Designated Floodway  
Proposed construction will result in no rise along the base  
(100 year) floodway water surface profile.

Signature Jodi E. Kocher  
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Sr. Water Resources Engineer

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Bear Creek

Hwy US 20

N

Bridges to Buttes Byway

20

Dry Creek/Horseshoe Ditch  
MM 137.22  
Twin 8'x 6' Box Culvert



N



Hwy US 20

20

Bridges to Buttes Byway

Bear Creek  
MM 144.41  
6'x 7' Box Culvert

# MERRIMAN - ELI (TK) 20-2(145)

C.N. 81027 BOOK N/A  
CHERRY COUNTY

