Appendix K

1.0 Public Comments on SEA #2

The Draft Supplemental Environmental Assessment (DSEA) dated August 2018 was released for a 30 day public review on August 27, 2018. The review period closed on September 26, 2018. The review period generated a number of questions and comments on the DSEA and covered a wide range of topics. These comments are provided in Appendix J. The comments have been separated into these categories:

A. Alternatives
B. Impacts
C. Modeling/Technical
D. Project Management
E. Miscellaneous

The comments appear in the subsequent sections as categorized above. All comments have been reviewed by the Corps of Engineers. Many of the responses provide a general overview and may direct the reader to the NEPA documents where more detailed information can be found. Some comments are unique and some are reiterated by multiple commenters. In an attempt to provide clear and understandable responses, comments have been condensed, paraphrased, and addressed once.

It should be noted that multiple terms for alternatives proposed by the Richland-Wilkin Joint Powers Authority (JPA) are used in this appendix, to include: NW alignment, northern alignment, southern dam alignment, southern alignment, Alternative C, Alternative 30, and Alternative 31. Commenters used different terms, and generally this appendix uses the term provided by the commenter.

2.0 Comment Category A: Alternatives

A-1 Alternative C Would Protect Existing Development

The JPA's alternative would protect existing development, allow reasonable future growth, and preserve large amounts of undeveloped floodplain. It would remove impacts from Richland and Wilkin Counties.

Response:

As described in the SEA, including appendices C and E, the JPA's alternatives were screened out due to greater social and environmental impacts when compared to Plan B.

A-2 The DSEA Does Not Describe Alternatives Considered

The bulleted points of the Alternatives Considered section do not describe the alternatives considered. Instead, the section justifies why “Plan B” is the best alternative. These statements appear as pre-decisional and come before any analysis of effects of the proposed action.

Response:

As stated in the SEA, a complete description and analysis of the alternatives considered is contained in appendices A, B, C and E. The SEA main report includes a summary of those findings.

A-3 DSEA Must Disclose the Full Environmental Effects of Each Alternative

The DSEA must disclose the full environmental effects of each alternative, not merely the incremental effects from one alternative to another. Because the DSEA only describes the incremental impacts of the project relative to the 2016 proposed project, rather than the 2011 EIS No Action Alternative, the DSEA underestimates the environmental effects of the currently proposed project. The No Action Alternative should be the same as what was in the 2011 FEIS.

Response:

The SEA was written as a tiered document. Impacts of the project were addressed in the 2011 FEIS as well as the 2013 SEA. Most of the modifications in the 2013 SEA continue to be a part of the project, including the alignment of the diversion channel, gates on the inlet structure, the Oxbow-Hickson-Bakke ring levee, and more flow through town. It would not be feasible, nor would it clearly convey the impacts, to address Plan B without the modifications in the 2013 SEA. Re-addressing changes in impacts from the modifications in the 2013 SEA would obscure the impacts from the modifications from Plan B. Further, for most categories of impacts the SEA does include information on the impacts compared to the current without project condition. These categories include business and home relocations, water quantity, wetlands, aquatic habitat, fish passage, upland/riparian habitat, threatened/endangered species, and prime and unique farmland.

A-4 Eastern Tieback Relocation and Potential Impacts to Wolverton Creek

What are the potential impacts to Wolverton Creek from the tieback? The DSEA describes the intersection of the eastern tieback levee and Wolverton Creek at 500 feet north of 180th Ave S. (County Road 50). The eastern tieback levee and associated culverts introduce new culverts on Wolverton Creek. Culverts have both direct and indirect impacts to the public waters and fish passage. The Minnesota Department of Natural Resources (MnDNR) recommends assessing the feasibility of aligning this segment of the eastern tieback with County Road 50 to minimize culvert crossing and associated impacts.

Response:

Impacts to aquatic habitat and fish passage at Wolverton Creek are addressed in sections 5.3.4 and 5.3.5 of the SEA, respectively. Further optimization of the alignment will occur during the detailed design phase, and additional NEPA documents may be prepared as needed.

A-5 Screening

Diversion is not necessary; floodwalls are sufficient.

Response:

As described in Section 3.4.5.1 of the FEIS, flood barriers, similar to those implemented in Grand Forks-East Grand Forks, were eliminated from further consideration for several reasons. The cost of building flood barriers that would contain the 1-percent chance event with 90% assurance (Corps criteria) is very high since you either need to build barriers very high near the current emergency-measures alignment or build somewhat lower barriers farther away from the river which requires acquiring a significant amount of developed property. The residual risk involved in having over 100,000 people living behind a

barrier that could be overtopped by events larger than the 1-percent chance event was also considered. The chances of success in fighting a flood larger than the 1-percent chance event are much greater with the Project than with a barrier-only system.

A-6 Consideration of the Northwest Diversion Channel Alignment

The JPA's northern alignment would provide significant benefits, but the Diversion Authority announced it would not consider the JPA's alignment just as modelling was nearing completion.

Response:

The JPA's alignments were considered in the SEA and screened out due to greater social and environmental impacts when compared to Plan B.

A-7 Cost of the Northwest Diversion Channel Alignment

Claims that the JPA's northern alignment would increase costs are not true; it would remove the Maple River Aqueduct and two crossings of the Rush River, replacing those with a single river crossing.

Response:

As stated in Appendix E, the estimated additional cost associated with the JPA's NW alignment is $112 million for land and construction. That cost analysis took into account that the northern alignment would remove the Maple River Aqueduct and the Rush River crossings.

A-8 Alternative 30

Although Alternative 30 is said to include both the NW diversion and the southern dam alignments proposed by the JPA, the brief discussion only included references to aspects of the NW alignment. I assume this is because the JPA southern dam alignment was discussed in detail under Alternative 31.

Response:

Concur.

A-9 Hydrologic Impacts of the JPA Northwest Diversion Channel Alignment

The JPA NW alignment significantly reduced the hydrologic impact of the project. Modeling done by the TAG demonstrated that, using the same Plan B dam alignment and with the same downstream elevations, the JPA NW diversion alignment lowered the 100-year pool elevation 1.37 feet, reduced the pool area by 5,200 acres, and reduced the storage volume by about 35,000 acre-feet.

Response:

The hydraulic impacts of the JPA NW alignment were analyzed by the Technical Advisory Group (TAG) in support of its alignment discussions using a modified version of the Phase 8.1 CLOMR hydraulic model that was revised to include the full Period of Record Hydrology in accordance with the recommendations of the Governors' Task Force. The stage reduction of 1.37 feet during the 100-year event (1 % Annual Chance Exceedance (ACE) event) noted in the comment is consistent with the data developed by the TAG for Plan B (Option 7A/10D) and the JPA-NW (Option 7A/10D/JPA-NW) alignment. The reduced pool area of 5,200 acres is consistent with the total staging area acreage change between

Plan B (Option 7A/10D) and the JPA-NW (Option 7A/10D/JPA-NW) alignment developed by the TAG. The TAG did not report the storage volume reduction, but it appears the 35,000 acre-feet referred to in the comment was computed using the average of the total staging area acreage for Plan B (Option 7A/10D) of 28,005 acres and for JPA-NW (Option 7A/10D/JPA-NW) of 22,774 acres times the stage reduction of 1.37 feet. The modeling developed by the TAG for the JPA-NW (Option 7A/10D/JPA-NW) alignment was not optimized to the same level as the Plan B (Option 7A/10D) modeling in terms of downstream impacts during Project Operation. Using optimization that is more consistent with Plan B (Option 7A/10D), the stage reduction for the JPA-NW (Option 7A/10D/JPA-NW) alignment is reduced to 1.2 feet. As stated in SEA section 3, Alternatives Considered, the JPA alternative was screened out for several reasons including the increased number of structures left unprotected, increased number of structures impacted by the footprint of the alignment, increased likelihood of environmental, stream stability, cultural resource, and maintenance impacts associated with the at-grade crossing of the Sheyenne river, and greater additional cost for land and construction.

A-10 Northwest Diversion Channel Alignment/Alternative C pool elevations

Alternative 30 includes both the JPA NW and JPA southern alignments. When combined, we have estimated a 100-year pool elevation of 916.2 compared to Plan B elevation of 921.0. Therefore, the JPA proposal would result in a pool elevation about 4.8 feet lower than Plan B.

Response:

Detailed modeling for a combined JPA-NW and JPA southern alignment has not been performed. It appears the 916.2 pool elevation provided in the comment was estimated by combining the stage reduction calculated by TAG for the JPA-NW (Option 7A/10D/JPA-NW) of 1.37 feet and the stage reduction of 3.4 feet that was estimated by the commenter and his staff for the JPA-southern alignment as part of the TAG discussions. The reported 4.8 feet reduction is an estimate and is not based on detailed hydraulic modeling. It should be noted that the dam/southern embankment is also designed to accommodate floods larger than the 100-year event (1 % ACE event), such as the 0.2 % ACE event and the PMF and similar reductions will not occur during these larger flood events. The modeling developed by the TAG for the JPA-NW (Option 7A/10D/JPA-NW) alignment was not optimized to the same level as the Plan B (Option 7A/10D) modeling in terms of downstream impacts during project operation. Using optimization that is more consistent with Plan B (Option 7A/10D), the stage reduction for the JPA-NW (Option 7A/10D/JPA-NW) alignment is reduced to 1.2 feet. Using the same methodology as the commenter and combining with the more detailed modeling results for the JPA-southern alignment (stage reduction of 3.1 feet) vs. Plan B (Option 7A/10D), the combined JPA-NW and JPA southern alignment (Alternative 30) reduction would be closer to 4.3 feet. As stated in SEA section 3, Alternatives Considered, the JPA alternative was screened out for several reasons including the increased number of structures left unprotected, increased number of structures impacted by the footprint of the alignment, increased likelihood of environmental, stream stability, cultural resource, and maintenance impacts associated with the at-grade crossing of the Sheyenne river, and greater additional cost for land and construction.

A-11 Plan B

Rather than making substantial changes, Plan B is basically the original plan.

Response:

As described in the SEA, changes associated with Plan B include modifications to the alignment of the Southern Embankment as well as allowing RS37' through Fargo and Moorhead.

A-12 Public Interest

Project does not meet the public interest requirements of Section 404(b); there are multiple practicable alternatives including a Minnesota diversion channel and alternatives advanced by the JPA.

Response:

As determined in Section 8.0 of the 2011 FEIS, the Project is in the public interest as it greatly reduces flood risk for 200,000 people. Congress determined the Project was in the public interest when it authorized the Project in the Water Resources Reform and Development Act of 2014. As described in the 2011 Section 404(b)(1) Evaluation, the Minnesota diversion channel is not a practicable alternative because it does not address flooding from the North Dakota tributaries. As detailed in Section 3, Appendix C, and Appendix E of the SEA, the alternatives to Plan B advanced by the JPA result in engineering and environmental concerns.

A-13 Fewer Impacts with other Alternatives

Project does not minimize adverse impacts; other alternatives would have fewer impacts.

Response:

The Corps extensively studied alternatives in the 2011 FEIS, and determined that a diversion channel in North Dakota is the only alternative that will address flooding from the Red River and the five North Dakota tributaries for a 1% ACE. The alignment continues to be refined to minimize adverse impacts as reflected in the 2013 and 2018 SEAs.

A-14 Screening of the NED Plan

A Minnesota diversion channel (the NED plan) is the best alternative and was improperly excluded as an alternative. It consumes less land, develops less floodplain, is cheaper, and does not flood areas upstream. The NED plan should have been improved with storage, more flow through town, and distributed storage.

Response:

As described in the 2011 Section 404(b)(1) Evaluation, the Minnesota diversion channel is not a practicable alternative because it does not address flooding from the North Dakota tributaries. Furthermore, it is not the plan that was authorized by Congress. Issues related to selection of the Locally Preferred Plan over the National Economic Development plan have been thoroughly litigated and ruled upon in Federal court.

A-15 Dredging the Red River

Why can't the Red River be dredged?

Response:

This alternative was looked at and screened out in the 2011 FEIS, section 3.4.5.4. The reasons for screening this alternative out include: This alternative would have very limited hydraulic effectiveness and would likely have negative effects on the stability of the riverbanks throughout the length of the project. Dredging and widening the channel would have a variety of potential adverse environmental effects. Increased sedimentation, displacement of mussels, erosion issues, riparian forest habitat loss, aquatic habitat, and wildlife mortality issues would need to be addressed. This alternative would also have a large potential impact on archeological resources, which are typically located on riverbanks and would be disturbed. Because of the extreme environmental impacts, this alternative would violate many local and national policies and is not acceptable.

A-16 Staging Area

The staging area is due to the elimination of northern floodplain, which created downstream impacts. The staging area could be eliminated with restoration of the northern floodplain, 37 feet through town, and restoring Storage Area 1.

Response:

A staging area would still be required with the JPA's NW alignment, 37' through town, and restoring Storage Area 1.

A-17 Wild Rice and Red River Structure Construction

The Wild Rice and Red River structures are currently proposed for construction off-channel and include abandonment of sections of river channel. MnDNR recommends assessing the feasibility of placing these structures within the existing channel as measures to avoid river channel abandonment.

Response:

The Plan B alignment was chosen based in part on the embankment crossing the Wild Rice and Red rivers at river bend locations where it would be conducive to constructing the structures in the dry and rerouting the rivers. In order to construct the structures in the existing channel, the structures would need to be sited at locations with a relatively straight section of river to provide adequate approach and discharge channels, and so would require a significant relocation of the embankment alignment. Building off-channel also reduces potential water quality impacts. Building in channel would still require at least a temporary re-route of the river, cost far more, would have additional impacts on water quality, and includes risks of flooding during construction, which could take up to three flood seasons.

A-18 Duration of Pool Flooding Associated with Alternative C

The storage area immediately upstream of the Alternative C Dam Southern embankment would fill quickly with Wild Rice River peak flood flows and would require longer to drain. But enlarging the Wild Rice River Structure (WRRS) would address the issue of how much time it takes to drain.

Response:

Alternative C has a longer duration of pool flooding when the Project is operated compared to Plan B. It moves the Southern Embankment about two miles further north. This creates a larger local drainage area that must run off and go through either the WRRS or the Diversion Inlet Structure (DIS). Simply enlarging the WRRS would not decrease the flood duration because the WRRS already has the capacity

needed to pass its share of the total allowable flow into Fargo-Moorhead. Maintaining a reasonable duration of pool flooding depends on getting water to the DIS. The more northerly pool associated with Alternative C makes it harder to get water to the DIS and therefore increases the duration of pool flooding.

3.0 Comment Category B: Impacts

B-1 Acres Impacted by the Project

Fargo's proposed Plan B, as outlined in the Diversion Authority's press release and the TAG documents reflecting the size and shape of 7A/10D, would actually increase the Diversion project from the 72,923-acre project that was denied a permit, to a 76,812-acre project with the dam located further south.

Response:

The footprint of the Southern Embankment and temporary easement areas needed to construct project features would increase by approximately 850 acres with Plan B. The area receiving flood risk reduction downstream of the Southern Embankment would be reduced by 6,000 acres when compared to the proposed alignment from the 2013 SEA.

B-2 Agricultural Drainage

Please insure yourselves and the general public that unauthorized agricultural drainage as defined under North Dakota law is being properly considered in decisions related to the FM Diversion project.

Response:

Drainage is generally a local development issue and regulated at the local level, unless it requires a Section 404 permit due to a discharge of dredged or fill material into a water of the U.S. It is generally believed that ditching may contribute to smaller summer flood events, however it is unlikely that ditching plays a significant role during large spring flood events. It is unlikely that drain improvements in the future would play a significant role in increases in flooding, as many areas are currently well drained today. Local drainage issues along the entire diversion channel will be addressed in detail during the design and implementation phase.

B-3 Air Quality

We urge USACE to commit to employing all applicable construction emission reduction measures.

Response:

USACE includes specifications in contracts to ensure contractor equipment performs in accordance with air emission laws and standards. The construction emission reduction measures provided by the EPA will be considered with future contracts.

B-4 Cost Savings from Additional Flow Through Town

There should be a cost savings from increasing the flow through town to 37 feet.

Response:

Due to additional measures required to pass 37 feet through town, the project costs have increased, not decreased.

B-5 Downstream Effects

Please assure those downstream that there will be still "ZERO" impacts in the future!!

Response:

The 2011 FEIS and subsequent Supplemental Environmental Assessments in 2013 and 2018 have consistently demonstrated that impacts will be no more than 0.3 foot up through the 0.2% ACE event (500-year flood).

B-6 Drainage

Further discussion on drainage infrastructure and length of time that would be required to fully drain the staging area, allow for cleanup, and resume normal activities is needed.

Response:

Gravity drainage is the method of drainage upstream of the dam, and there is no planned pumping. Existing roadside ditches, legal drains, and legal ditches, will continue to provide drainage. Where the Southern Embankment (the entire dam including the Western Tieback and the Eastern Tieback) intercepts drainage, ditches constructed along to the Southern Embankment will direct flow to the Wild Rice River, Red River, Wolverton Creek, or the Diversion Inlet Structure. Appendix D of the SEA contains figures (5 and 6) showing the drainage paths provided by the ditches along the dam and figures (7, 9, 11 and 13) showing the vertical profiles of these ditches.

The maximum additional duration of flooding compared to existing conditions for flood events up through the 1% ACE event (100-year flood) will be about 12 days. Much of the pool will experience an additional duration of flooding much less than 12 days.

After project operation, the Diversion Authority will complete a post-operation cleanup of debris. An option under this cleanup process will include providing the land owner and/or tenant farmer the opportunity to sign a "right of entry" to allow the Diversion Authority contractors to enter the property to remove eligible debris that was deposited during project operation. Full details of the post operation debris clean-up plan can be found in the Property Rights Acquisition and Mitigation Plan, version 4, dated August 13, 2018 located at www.fmdiversion.com.

B-7 Legal Drainage Systems

Plan B seems to have eliminated legal drainage systems from our previous list of concerns.

Response:

Comment noted.

B-8 Fish Passage Impacts

The DSEA analysis of aquatic organism passage underestimates fish passage impacts. The DSEA states that passage will be impacted for 10 to 14 days following operation of the structures. At a September

13, 2018 interagency meeting, the agencies collectively learned that the high velocities would continue to occur while the staging area is draining following structure operations. This would extend the unpassable period to a total of 12 to 26 days. This is likely to bring high velocities into the beginning of May. MnDNR recommends further clarification of these impacts in the Final SEA.

The DSEA also states that velocities during the 10% ACE event through the culverts at Wolverton Creek and Wild Rice River are estimated to be 3.5 feet per second (fps) and 4 fps respectively for a length of approximately 106 feet. These velocities, along with the length of the structures, would adversely affect upstream migration of Red River basin species. For example, northern pike have very high burst speeds but are unable to sustain these speeds over long distances. Velocities over 3 fps would generally start inhibiting northern pike upstream migrations at distances more than approximately 30 feet.

Response:

The premise of the comment regarding days of impact is incorrect: The DSEA states that "The duration of this blockage [due to operation] would typically be 10-14 days." (DSEA at section 5.3.5). The comment incorrectly states that the DSEA states there would be 10 to 14 days of impact "following operation of the structures." An unpassable period of 12 to 26 days was based on model results available at the time of the September 13, 2018 interagency meeting when some issues on how to drain the pool with the Plan B alignment were still being worked out. Updated modeling confirms a typical duration of impact of 10 to 14 days without changing the pool elevation, stage at the Fargo gage, and downstream impacts reported in the SEA, and therefore the SEA does not need to be updated. The duration results of the updated modeling are:

2% ACE Event (50-yr flood): 10 - 11 days

1% ACE Event (100-yr flood): 12 - 13 days

2009 Historic Event: 9 - 10 days

2011 Historic Event: 9 - 10 days

1997 Historic Event: 16 - 17 days

These results confirm the stated typical duration of operation (gates in the water) of 10-14 days still applies. In the case of a large-volume, longer duration event like the 1997 historic flood event, the duration could be a little longer. However, 1997 is an unusual event, and a flood like this has only happened once since 1901.

At the Red River Structure the velocity through the structure is under 2 feet per second once the gates are out of the water. At the Wild Rice River Structure the velocity through the structure would be in the 2 to 4 feet per second range an extra couple of days.

The comment regarding the velocity through the Wild Rice River Structure and the Wolverton Creek Crossing is not clear regarding the length of the higher velocity zone through each structure. The comment could be interpreted to mean that the DSEA states the velocity through the Wolverton Creek

Crossing is estimated to be 3.5 (fps) for a length of approximately 106 feet. The SEA's statement regarding the 106 in length impact only applies to the Wild Rice River Structure. As shown in Figure 14 of the SEA, the average velocity through the Wild Rice River Structure at the 10 % ACE event would be just under 3 feet per second, not 4 feet per second. The average velocity through the Wolverton Creek Crossing at the 10 % ACE event would be about 3.4 feet per second (Figure 16 of the SEA). This 3.4 feet per second velocity at the Wolverton Creek Crossing is well below those at existing adjacent bridge crossings, where velocities under existing condition would be about 4.7 feet/second (170th Ave) and 5.7 feet/sec (180th Ave). Velocities at the existing bridge crossings likely limit fish movement at the 10 % ACE event under baseline conditions. Moreover, velocities at a 10 % ACE event would be extremely brief, and any velocity effects would not be expected to measurably affect long-term fish population trends of either Wolverton Creek or the Wild Rice River.

B-9 Fish Spawning Impacts

High velocities into May would disrupt the migration period of nearly all species depicted in the DSEA's Figure 15. Spawning timelines are also more varied than described in the DSEA. While the main spawning period for lake sturgeon is from mid-April through mid-June, upstream migration starts earlier due to the large migratory distances. MnDNR recommends further discussion of potential impacts to early migrating species.

The proposed diversion channel might also be a barrier to successful fish spawning. Designed to contain flows from the Rush and Lower Rush rivers as well as over-flows from the Sheyenne and Maple rivers, it may be an attractant to spawning fish with or without project operation. The SEA should provide a discussion of these potential impacts to fish passage from proposed structures without project operation.

Response:

The spawning timelines described in the SEA (Figure 15) are based on information available from MnDNR. These timelines were originally provided in the 2011 FEIS, and have formed the basis for agency discussion of connectivity impacts for the last eight years. No updated or more current information has been provided or referenced.

Based on the historical Period of Record (1901-2018), there has only been one flood where the project might have potentially operated close to May. That was the 1997 flood. Based on hydraulic modeling for the 1997 flood, the Project (with Plan B alignment) would have operated a total of 16-17 days where gates would be in the water. With 17 days of operation, the project would have ceased operating on or around April 30, 1997. The other four floods during the period of record where the project would have operated would have seen operations cease (gates removed from the water) earlier in April. The time of operation also would be notably shorter - about 9-10 days for the 2009 and 2011 floods; and even fewer days for the 1969 and 2010 floods. Historical floods where the flood project would have operated occur infrequently, generally for a short duration, and early in the season before the primary migration periods of key Red River species such as lake sturgeon and channel catfish.

While early migrating species such as northern pike and walleye could be affected, the infrequent nature of project operation would not be expected to result in dramatic changes to the long-term population trends of these species. In addition, the generally short duration of project operations

(during the infrequent flood events that do occur) would not be expected to impact the entire spawning migration period of these fish.

With regard to potential impacts for drawing fish into the diversion channel, this will be discussed briefly in the Final SEA. However, any such effects would not be expected to adversely affect long-term population trends of Red River fish.

B-10 Biological Connectivity Impacts

MnDNR finds the impacts to biological connectivity and fish passage to be underestimated in the DSEA. The proposed mitigation may be insufficient. The previous USACE analysis identified construction of fish passage at Drayton Dam as mitigation for fish passage impacts with project operation triggered at 17,000 cubic feet per second (cfs). "Plan B" modifies the project to operate at a reduced frequency when flow reaches 21,000 cfs. In assessing mitigation needs and the implications of the proposed operating changes, it is important to recognize that fish passage impacts will occur both with and without project operation.

Response:

Avoiding and reducing impacts are widely regarded as mitigation measures. If the frequency of operation is lowered from a 10 % ACE event to a 5 % ACE event (as recommended by the MnDNR to reduce impacts in previous State EIS) it is substantially reducing the impacts and could be considered as a measure which mitigates impacts, at least to some extent. Even though project operations and associated impacts will now be reduced even further to levels unlikely to measurably impact long-term trends of Red River fish communities, Drayton Dam fish passage will be implemented as a project feature.

B-11 Additional Gates on Wild Rice River Structure

Additional gates on the Wild Rice River Structure would lower velocities through the structure, which we expect would improve fish passage during periods of inoperation.

Response:

While additional gates or wider gates would lower velocities through the Wild Rice River Structure, the fish passage effects associated with two 40 feet wide gates during periods of inoperation are not sufficient to warrant changes to these features.

B-12 Environmental Degradation due to Project

Project degrades the environment by flooding massive areas of North Dakota and Minnesota and inflicting major unnecessary changes in the ecosystem.

Response:

As discussed in the 2011 FEIS and the subsequent NEPA documents, the Project would change what areas are inundated with floodwater. The Corps extensively studied alternatives in the 2011 FEIS, and determined that a diversion channel in North Dakota is the only alternative that will address flooding from the Red River and the five North Dakota tributaries for a 1% ACE. The alignment continues to be refined to minimize adverse impacts as reflected in the 2013 and 2018 SEAs.

B-13 Mitigation of Aquatic Habitat

The Index of Biological Integrity (IBI) score should not be used in isolation to evaluate mitigation adequacy. Rather, a holistic approach to assessing stream habitat should be used that considers the five components of a stream ecology (biology, hydrology, connectivity, geomorphology and water quality). Using these techniques, in combination with the IBI protocols, would provide a more robust, quantitative assessment of the meander of the Red River being abandoned at the Red River structure. After a more robust assessment is complete, it can then be used as a baseline to measure the success of mitigation measures.

Response:

USACE is required to quantify habitat loss, including a quantitative factor for habitat quality. USACE and project sponsorship have long discussed the need for appropriate tools to measure aquatic habitat quality, which would be used to measure quality of both impact and mitigation areas. All agency partners including the MnDNR have had every opportunity to participate in these discussions and provide recommendations. IBIs (both fish and invertebrate), developed specifically for Red River tributaries, were selected as the tool to assess habitat quality based on input from this agency team. This included support from North Dakota Game and Fish and North Dakota Department of Health. Two large scale pre-project sampling events have already occurred using IBI, based on the path forward established at many agency meetings.

Just prior to the release of the DSEA, MnDNR has recommended a tool called the Missouri Stream Mitigation Method (MSMM) to assess habitat quality. The model documentation for this tool includes the following: "The MSMM is applicable to regulatory actions requiring compensatory mitigation for adverse ecological effects where more rigorous, detailed studies (e.g., Hydrogeomorphic Approach, Rapid Stream Assessment Technique, Index of Biologic Integrity) are not considered practical or necessary." Therefore, the IBI may be a more rigorous, detailed tool for assessing stream impacts and mitigation needs.

It can be noted that many river parameters are being evaluated through project monitoring including IBI (biota), hydrology, geomorphology, connectivity and water quality. USACE has agreed to discuss with agency partners the potential to consider specific aspects of geomorphology, namely deeper pool habitat, as a part of describing habitat quality. However, given the discussion above, IBIs should remain the central tool to quantify habitat quality for river impact and mitigation areas.

B-14 Mitigation using Engineered Channels

The DSEA proposes to use new channels created on the Red River and Wild Rice River for non-habitat purposes to mitigate for in-stream habitat impacts. Constructed channels would not replace the habitat abandoned by cutting off a meander of the Red River. Straightened channels function differently from natural meandering channels and do not provide the same self-forming, self-maintaining sediment flow, pool and riffle formation, and microhabitat features. The 2011 FEIS assumed no habitat value in these constructed channels. Given the lack of detail regarding how these features will be constructed and absence of any plan to construct habitat features within those channels, MnDNR does not see mitigation potential associated with the constructed channels. We believe the more conservative approach reflected in the 2011 FEIS is more appropriate.

Response:

Sections 5.2.1.7.1.1, 5.2.1.7.1.2, and 5.2.1.7.1.3 of the 2011 FEIS describe habitat in the newly constructed channel: "Riverine habitat would be created within the newly constructed channel through the control structure. However, it is not fully known to what extent the habitat created might replace that which is lost. As such, mitigation would be implemented to offset this impact." Adaptive management would determine the extent of impacts and the appropriate level of mitigation.

B-15 Monitoring Triggers

MnDNR believes the AMMP should include more specific management triggers for off-site mitigation, on-site restoration, or project alteration based on monitoring results.

Response:

Section 5 of the AMMP discusses criteria for measuring impacts and mitigation success, including the threshold for which mitigation success is measured.

B-16 Floodplain Forest Mitigation

The AMMP states floodplain forest mitigation sites would be protected and managed into perpetuity by an agreement for management as a MnDNR wildlife management area. MnDNR has not entered into any agreement with the USACE regarding the management of mitigation lands, nor have we been approached for such an agreement.

Response:

The AMMP is a living document and will be revised to state that the sites "may be protected and managed" instead of "would be protected and managed" by MnDNR.

B-17 Fish Passage Mitigation

MnDNR continues to believe that fish passage on Drayton Dam would be a more suitable mitigation measure for the proposed project's impact to fish passage and biological connectivity, compared to the mitigation contemplated in the DSEA.

Response:

As outlined in the SEA, disruptions to connectivity have been reduced to the extent that the project would not be expected to result in any measurable changes to long-term fish community trends of the Red River. However, Drayton Dam Fish Passage will now be implemented as a project feature.

B-18 Bank Stability

Will the storage of more water make banks more vulnerable to erosion and failure?

Response:

The banks would be inundated whether or not the project operates. Soils in the existing banks during flood periods are expected to be fully saturated, and the minor increase in depth and duration of flooding would not increase that degree of saturation. Furthermore, the pool drawdown will be drawn down at a rate no faster than what occurs naturally. The susceptibility of bank erosion and/or bank

failure is expected to be very similar between pre-project and post-project conditions. It should also be noted that the more critical condition for bank instability is typically observed during low river conditions. During flood conditions, higher water levels act as a resisting force against the bank slopes, which helps reduce the "vulnerability" of bank-failure.

B-19 Structure Counts

The Corps used a "unique and inaccurate" structure count.

Response:

Structure presence and elevations that were used for the analysis were developed based on a combination of existing information and data extracted from LIDAR and aerial photos. Additional detail and updates to this data will continue to be done as the mitigation plan is implemented. The structure analysis utilizes a boundary that was created based on a with-project depth difference of 0.1 foot that was drawn along property lines. The 100-year total depth was determined at each structure location using a GIS raster file, which is used to classify the structures. For each site, the structure with the greatest impact was identified and used to classify the entire site.

B-20 Road Signage During Construction

Concerns for construction management were expressed based on the lack of signage for road closures at the Inlet Structure construction site.

Response:

Comment noted. A contract was underway to permanently reconnect CR16/17 but was also stopped due to the preliminary injunction; at that time the temporary bypass was installed and signed.

B-21 Transportation Plan

Is the Transportation Plan in the MnDNR EIS the current plan?

Response:

The most current version of the Transportation Master Plan (dated June 7, 2018) is Appendix H of the SEA and Appendix D of the MnDNR's SEIS. However, it is important to note that this is a living document and additional detail will be added to subsequent versions as refinements to the project design are made.

B-22 Access to Services during Road Closures

When the roads in the staging area are closed how are the homes and farms going to get to necessary services?

Response:

When the project is not in operation, homes, farms, and businesses would be able to cross the Southern Embankment at several road raise locations distributed along the alignment. During project operation roads within the staging area would be closed as unsafe driving conditions develop. The frequency and duration of road closures will be dependent on the size of the flood event and the location of the

roadway. As road closures occur the appropriate road signage would be deployed to direct traffic to alternative routes. Interstate 29 would allow transportation through the staging area for up to an approximately 1% ACE (100-year) event. During operation, north/south connectivity will be maintained on 167th Ave SE, west of Fargo, Interstate 29 and US Hwy 75. Additional north/south crossings of the embankment are provided at Cass County Road 17, Cass County Road 81, and 3rd St S in Clay County. However, these roadways will not be raised within the staging area and will become inundated during project operation. Full details on the proposed road improvements along the dam/southern embankment can be seen in Appendix H of the SEA, FM Diversion Plan B Transportation Master Plan, dated June 7, 2018.

B-23 Road Raises

We will need more information on which roads are going to be raised or maintained in the storage area in Minnesota and what structures in these roads will need to be increased in capacity to release the staging area water.

Response:

The Plan B Transportation Master Plan is provided as Appendix H of the SEA. Figure 1 in that appendix shows the road modifications that are known to be part of Plan B. The exact size of culverts and bridges associated with these road modifications will be determined during detailed design. Within Clay County, 3rd St S, 140th Ave S and 160th Ave S will be raised to pass over the embankment. However, roadway elevations within the staging area will remain unchanged. Therefore, during project operation, the roadways will be inundated within the staging area. 130th Ave S, 150th Ave S and 170th Ave S will dead end at the embankment. With the Plan B realignment, functionality of US Hwy 75 and BNSF will be maintained during project operation without impacting or need for improving the existing facilities.

B-24 Coordination with MNDOT and BNSF on Transportation

To our knowledge, no discussions have taken place with the Minnesota Department of Transportation or the Burlington Northern Santa Fe (BNSF) Railroad regarding possible impacts to their facilities on the Minnesota side of the Red River of the North.

Response:

With the Plan B realignment, functionality of US Hwy 75 and BNSF will be maintained during project operation without impacting or need for improving the existing facilities. Full details on the proposed road improvements along the dam/southern embankment can be seen in Appendix H of the SEA, FM Diversion Plan B Transportation Master Plan, dated June 7, 2018. Ensuring the impermeability of the crossing of the BNSF railroad may require a modification to the railroad ballast and subgrade and will be coordinated with BNSF during design.

B-25 Drainage Patterns

We note on Figure 6, Preliminary Plan for Dike along Embankment in Minnesota, that in the southeast corner of Section 32, on the west side of Trunk Highway (T.H.) No. 75, you have drainage arrows going west. Recently, we've worked with these landowners, and they have installed a new drainage ditch on the south side of the County line. However, this system has very limited capacity. The project should

either consider taking this area water either directly north in the project ditch, or the County line ditch may have to be increased in size to accommodate any additional drainage.

Response:

As noted by the commenter, Figure 6 shows a preliminary plan. We concur that as detailed design progresses the plan may have to change slightly to accommodate what is currently on the ground.

B-26 Mitigation for Road Closures

What is the mitigation plan for road closures?

Response:

Overall, the impacts will be similar to those described in the 2011 FEIS, however, the impacts will be reduced in Minnesota and increased in North Dakota due to the southern embankment alignment changes associated with Plan B. The primary north/south transportation route through the staging area during project operation will continue to be Interstate 29. The edge of driving lanes for Interstate 29 will be raised to the 100-year flood elevation as outlined in Appendix H of the SEA, FM Diversion Plan B Transportation Master Plan, June 7, 2018. Other planned roadway improvements in the staging area are also outlined in the Plan B Transportation Master Plan. Properties within the staging area will be mitigated as outlined in SEA section 5.2.1 Mitigation of Land and Structures Upstream of the Southern Embankment. This will result in the acquisition and removal of a majority of the structures within the staging area, and therefore there will not be a need for access to structure within the staging area during construction. Specific to how the transportation changes affect school bus routes, it should be noted that school bus routes change over time due to changing student populations, so anything that is developed now would likely need revision after the project is constructed due to changing demographics. Additionally, due to the acquisition of structures within the staging area, much of the affected area will no longer have residential structures requiring school bus access.

B-27 Water Quality

Project could have a major impact on water quality.

Response:

Best Management Practices (BMPs) would be used during construction to reduce runoff and adverse impacts to water quality. Section 5.4.1.3 of the 2011 FEIS describes the likely impacts to water quality. The impacts from Plan B would not be anticipated to be appreciably different. A water quality monitoring plan is currently being developed and will be used to determine any water quality impacts caused by the Project.

B-28 Wetlands

The description of wetland impacts in the inundation area does not address impacts to natural oxbows that would be separated from the main channel along the Red River, north of Fargo and near the city of Oxbow. The geomorphology monitoring focuses on the active channel and not remnant channels. The wetland assessment has focused on depressional wetlands, but does not address whether sedimentation or channel geomorphology impacts may affect water levels or increase sedimentation in these oxbow remnant wetlands. The MnDNR recommends the USACE convene a group of wetland

experts to further elucidate wetland impacts (such as rare natural plant communities, sedimentation, and hydrology), monitoring needs, and mitigation.

Response:

The oxbows that would be separated from the main channel are addressed in section 5.3.4 Aquatic Habitat in the SEA. As described, mitigation for aquatic impacts would be achieved through construction of the new river channel and other offsite mitigation.

During development of the 2013 SEA, the MnDNR expressed concern for potential increases in sedimentation in the staging area during project operation which could result in indirect impacts to wetlands. An analysis of sedimentation in the staging area found that there was relatively little sedimentation likely to occur during project operation. Based on these results, it is not believed that sedimentation in the staging area would result in any appreciable indirect impacts to wetlands.

During preparation of their Draft SEIS the MnDNR had requested information on wetlands that would be inundated in the staging area for a 1% ACE flood event. Using the NWI database a total of 253.1 acres of non-riverine wetland were identified in the staging area for the 1% ACE event; 47.1 acres of these wetlands were located in Minnesota.

While it is unlikely there would be any indirect impacts to wetlands within the staging area, wetlands that are inundated more frequently would have a higher likelihood of being affected. Wetlands inundated during the 2%, 5%, and 10% ACE were quantified to get a better understanding of acreages for those events (Table 1).

Table 1. Acreages of wetland inundated in the staging area during various flood events with Plan B.

Flood Event	MN Wetland Acres	ND Wetland Acres	Total Acres
1% ACE	47.1	206.1	253.2
2% ACE	46.5	193.7	240.2
5% ACE	38.9	143.6	182.5
10% ACE	33.4	102.0	135.4

The acreages of wetlands were only reduced by a small percentage for higher frequency flood events. The reason for this is that many of the NWI wetlands within the staging area occur in close proximity to the Red and Wild Rice Rivers and therefore become inundated in the higher frequency events. It is likely that many of these wetlands are also inundated during equivalent events with existing conditions. To compare differences between with and without project, acreages for existing conditions were also reviewed (Table 2).

Table 2. Acreages of wetland inundated in the staging area for existing conditions.

Flood Event	MN Wetland Acres	ND Wetland Acres	Total Acres
1% ACE	45.3	181.3	226.5
2% ACE	44.7	169.7	214.4
5% ACE	38.4	139.6	178.0

10% ACE	33.4	94.2	127.6

The acreages of wetlands inundated are very similar for floods of similar magnitudes when comparing existing conditions with project operation. The numbers are almost identical when looking at the higher frequency events in Minnesota specifically. Similar acreages of wetland inundation between existing conditions and project operation further support the previous determination that no appreciable indirect impacts to wetlands in the staging area are likely.

4.0 Comment Category C: Modeling/Technical

C-1 Other Solutions

There is a flood solution that does not involve a high hazard dam.

Response:

Appendix O of the 2011 FEIS outlines the array of measures and alternatives that were evaluated, compared and screened out. A screening process was used again for additional alternatives during preparation of the 2013 and 2018 SEAs. As a result of these screening exercises a diversion with upstream staging of floodwaters (dry dam) is the only feasible alternative to provide flood risk management system that can be accredited for the 1% ACE event and provide a reasonable chance of a successful flood fight effort for the 0.2% ACE event.

C-2 Overtopping Designs

The DSEA should include a further description of overtopping designs and potential impacts associated with eastern and western tieback levees.

Response:

A portion of the Western Tieback will be constructed at the maximum pool level. Except for some wave action, which will be limited due to the shallower depths and possibly wave reduction measures integrated into the constructed embankment, the Western Tieback would not overtop unless there is a significant gate failure associated with a flood in excess of the 0.2% ACE event (500-year flood). The type of erosion protection required for minor wave-induced overtopping and velocities that would occur for the gate failure scenario mentioned will be determined during detailed design.

The Eastern Tieback will be constructed to overtop such that existing condition breakout flows from the Red River to Wolverton Creek, which occur starting at about the 0.2% ACE event (500-year flood), are maintained but not made worse. The stage impact due to the project is only a few tenths of a foot at the location of the Eastern Tieback. Since the Eastern Tieback is part of the dam, it will be designed to prevent breaching due to overtopping, but the risk associated with a breach would be only slightly worse than a breach of any road holding back flow near the Eastern Tieback. The erosion protection required for the Eastern Tieback will be determined during detailed design.

C-3 Maximum Pool Elevation

The DSEA should include consistent maximum pool elevation throughout the document (currently there are inconsistencies).

Response:

The SEA indicates that the maximum pool will be no greater than 924.0 feet and that the non-Federal sponsors are using 923.5 feet at this time for planning purposes. If it turns out that a maximum pool elevation of 923.5 feet cannot be achieved and that the maximum pool elevation does need to be as high as 924.0 feet, the portion of the Western Tieback planned to be at 923.5 feet will have to be raised to 924.0 feet and the easement work will need to be redone, but at this time it does appear that 923.5 feet is achievable and is therefore being used in the SEA.

C-4 Breach and Evacuation

There needs to be a description of potential impacts associated with a breach and evacuation plan for the Oxbow community for events greater than the 100-year event (the Draft SEA notes Interstate 29 will be elevated to be above the elevation for a 100-year flood event. Interstate 29 is the primary evacuation route for the Oxbow community, which is embedded within the staging area).

Response:

The Project is designed and constructed to current Corps criteria. The levee will be comprised of clay soils, which are resistant to erosion and therefore the probability of a breach is very low. Should an issue occur, erosion is expected to occur slowly, allowing time for evacuation and/or intervention. The second floor elevation of many structures within the ring levee will be above the maximum pool level. Therefore a vertical evacuation to structures with second floors is an effective means for limiting exposure of the population at risk to the flood hazard and preventing life loss.

An evacuation plan for the entire Project Area, including OHB and the protected area, will be developed as part of the Operations and Maintenance Plan for the Project upon its completion. This will be a requirement of the final Letter of Map Revision and Accreditation through FEMA that will be sought after Project completion. It should be noted that access to the OHB area will be provided via grade raises to Interstate 29 through the staging area and Cass County Highways 18 and 81 south of the OHB area.

C-5 Oxbow-Hickson-Bakke Ring Levee

The JPA's alignments may eliminate or reduce the need for the Oxbow-Hickson-Bakke ring levee.

Response:

The alignments proposed by the Richland / Wilkin JPA were thoroughly reviewed as a comprehensive alternative and as separate parts referred to as the JPA-NW and Alternative C alignments. The table below presents stage and stage impact results upstream of the Southern Embankment. Despite the stage reductions associated with the alternatives proposed by the JPA, water levels at OHB are still above existing conditions when the Project operates. At the north side of the OHB levee, the increase is +5.9 feet over existing conditions for Plan B; +4.7 feet over existing conditions for the JPA-NW Alignment; and +3.1 feet over existing conditions for Alternative C for the 100-year flood event as noted in the table below. Given this, a ring levee for the OHB area would be needed for all of the alternatives, including those proposed by the JPA. When considering these requirements, the Oxbow-Hickson-Bakke ring levee is required for both Plan B and the JPA alternatives.

	Upstream Staging Elevation (100-year) at the Southern Embankment		
Condition	Elevation (NAVD88, feet)	Stage Change vs. Existing (feet)	Stage Change vs. Noted Condition (feet)
Existing Condition	914.1	--	
Pre-Task Force	921.7	7.6	--
Plan B	921.0	6.9	-0.7 vs. Pre-Task Force
Plan B + JPA-NW	919.8	5.7	-1.2 vs. Plan B
Alt. C	917.9	3.8	-3.1 vs. Plan B

	Upstream Staging Elevation (100-year) at the north side of OHB (HEC-RAS Cross Section 2548627)		
Condition	Elevation (NAVD88, feet)	Stage Change vs. Existing (feet)	Stage Change vs. Noted Condition (feet)
Existing Condition	915.3	--	
Pre-Task Force	922.2	6.9	--
Plan B	921.2	5.9	-1.0 vs. Pre-Task Force
Plan B + JPA-NW	920.0	4.7	-1.2 vs. Plan B
Alt. C	918.4	3.1	-2.8 vs. Plan B

C-6 Inlet Structure Location

The inlet structure is not located in the most efficient location to accommodate the JPA's southern alignment, and hindered any real analysis of the JPA's alternative.

Response:

The inlet structure is located to avoid the existing Sheyenne Diversion, stay south of Horace, and is in alignment with the location of the Sheyenne aqueduct. A more northern location would impact the existing Sheyenne Diversion project, would still require an aqueduct at the Sheyenne River crossing, would sever the communities of Horace/West Fargo, and the footprint would impact Horace and/or the West Fargo area.

C-7 Drainage of Staging Area

How is the DA going to drain and release water from the new staging area upstream of the Plan B southern embankment? Pumping water to drain the staging area is inefficient.

Response:

Gravity drainage is the method of drainage upstream of the dam, and there is no planned pumping. Existing roadside ditches, legal drains, legal ditches, road crossings, and railroad crossings will continue to provide drainage. Where the Southern Embankment (the entire dam including the Western Tieback and the Eastern Tieback) intercepts drainage, ditches constructed along the Southern Embankment will direct flow to the Wild Rice River, Red River, Wolverton Creek, or the Diversion Inlet Structure. Appendix D of the SEA contains figures (5 and 6) showing the drainage paths provided by the ditches along the dam and figures (7, 9, 11 and 13) showing the vertical profiles of these ditches. As detailed

design progresses, additional modeling and drainage detail will be developed for the remainder of the upstream inundation area to ensure positive drainage is maintained during non-operational conditions, to minimize the duration of flooding in the upstream inundation area, and to target a drawdown of 2 feet per day that is consistent with the drawdown for historic flood events.

C-8 Possible Outlet Channel or Other Conveyance Channels

We still don't know the details about an outlet channel constructed on the Minnesota side of the tieback embankment to aid and assist in drawdown of the staging area or if the existing facilities will need to handle the stored water release. If there is a channel, will there be conveyance channels constructed in certain areas to get the water into the diversion channel?

Response:

In addition to the natural drainage paths, there will be a ditch along the dam in Minnesota as shown in Appendix D of the SEA (see figure 6 for a plan view of the ditch and see figure 13 for the vertical profile of this ditch). The exact size of the ditch and culverts and any connections needed to get water into this ditch will be determined during detailed design. As detailed design progresses, additional modeling and drainage detail will be developed for the remainder of the storage area to ensure positive drainage is maintained during non-operational conditions and to minimize the duration of flooding in the storage area and to target a drawdown of 2 feet per day that is consistent with the drawdown for historic flood events.

C-9 Sheyenne River Crossing for JPA Alignment

For purposes of simplicity, the at-grade crossing was selected for preparing the concept-level unsteady flow HEC-RAS model. The JPA alignment does not require an at-grade crossing. It simply makes an at-grade crossing possible, which seemed to us to be an advantage. The stated concerns with an at-grade crossing certainly need to be considered and addressed, if significant. They may not be that significant. However, if they are, the crossing can be modified to eliminate the ponding at the crossing and the backup of water within the diversion with a design that would still be much simpler than the proposed Maple River Aqueduct included in Plan B.

Response:

The stated concerns with an at-grade crossing are significant. A weir in the diversion just upstream of the Sheyenne River crossing could be used to keep Sheyenne River water from backing up into the diversion but this weir would induce additional backup of local drainage water entering the diversion upstream of the at-grade crossing and would promote at least some additional deposition. A vertically offset crossing would either involve an aqueduct, which would not be simpler than the Maple River aqueduct, or a siphon crossing of the Sheyenne River, which would present flooding challenges upstream of the siphon and raise other environmental concerns.

C-10 Sheyenne River Crossing Water Backup for JPA Alignment

The level of backup would depend on the water level in the Sheyenne River at the crossing location. At those times when the Sheyenne River stage exceeds 8 feet, it would back up to the Sheyenne River Aqueduct.

Response:

It is not clear what gage zero or bed elevation is being referred to for the stage of 8 feet.

C-11 Diversion Channel Size

With 37 feet through town, the diversion channel should be smaller.

Response:

The following are considerations in determining the depth, slope, and size of the diversion channel: safe passage of the probable maximum flood (PMF) event through the project area (a required consideration under dam safety guidance), minimizing duration of flooding upstream of the dam, minimizing stage impacts to areas west of the diversion, geotechnical stability and non-erosion of channel side slopes and bottom, transport of sediments to minimize future conveyance issues and maintenance requirements, and providing a channel profile that allows for grassed lining in lieu of riprap protection except at bridges/aqueducts and inlet/outlets. The diversion channel is sized appropriately to address all of these issues.

C-12 JPA's Northern Alignment Diversion Channel Width

The JPA's northern alignment would not require a wider diversion channel, other than at the Sheyenne River crossing.

Response:

As stated in Appendix E of the SEA, a shallower but wider diversion channel would be required which will likely increase cost, including the need for significantly longer bridges.

C-13 JPA's Northern Alignment Diversion Channel Width

Regarding the JPA's northern alignment alternative, the reason the bottom width of the diversion channel would need to be increased with an at-grade crossing is not due to backup. It is to provide adequate conveyance with a higher channel bottom. Therefore, the channel would only need to be widened based on the raise in bottom grade at any location. The width increase at the Sheyenne River Aqueduct would be very little.

Response:

An at-grade crossing of the Sheyenne River north of West Fargo would result in a diversion that has a flatter slope upstream of this crossing. The increase in bottom width upstream of this crossing is necessary to maintain the conveyance capacity of the diversion channel. The wider channel will generally be required from this crossing to just downstream of the other Sheyenne River crossing near Horace where the diversion would go under the Sheyenne River and an aqueduct would be constructed. Since the wider channel is not needed at and upstream of the proposed aqueduct, the length of the proposed aqueduct (the total length of opening under the Sheyenne River near Horace) would not need to change.

C-14 Sedimentation for JPA Alignment

Regarding the JPA's northern alignment alternative, although slow moving pools do tend to trap more sediment, the significance depends on the amount of sediment being carried by the stream. The diversion channel would carry very little bed load sediment because there is almost no potential source. The channel itself is certainly designed to be stable. The flow entering at the diversion inlet would have already lost its sediment within the flood pool. The flow entering at the Sheyenne River Aqueduct would be skimmed off the top, so bed load would remain in the river. The only other potential source would be local ditch inflows. Sediment from those sources, if significant, could easily be trapped by providing sedimentation ponds at their entry points to the diversion channel.

Response:

Concur that water entering the diversion at the Diversion Inlet Structure would not be a large source of sediment. However sediment measurements upstream of the Sheyenne River near Horace indicate that the sediment carried by the Sheyenne River at this location is pretty well evenly distributed in the water column so it is incorrect to conclude that the Sheyenne River will not be a source of sediment. Also the sediment coming in from the local ditch inflows will be fine silts and clays that tend to stay suspended in the water column until they find low-velocity, low-turbulence areas. It likely would not be easy to trap these fine sediments near their entry points.

C-15 Sedimentation for JPA Alignment

For the JPA's northern alignment alternative, increased sedimentation would not seem to be a significant issue. Deeper standing water would certainly change wetland type, but not necessarily make them less beneficial.

Response:

The fine sediments that would enter the diversion from the Sheyenne River and the local ditch inflows will likely deposit in the low-velocity, low-turbulence area of the diversion. A back-up of water from an at-grade crossing of the Sheyenne River downstream of West Fargo would produce low-velocity, low-turbulence conditions along much of the diversion.

C-16 JPA's Northern Alignment Scour Potential

For the JPA's northern alignment alternative, we cannot envision why proximity to the Sheyenne confluence creates additional scour potential. As with any new outlet, some scour protection measures may be necessary to assure stability. This is a detail that can be engineered properly.

Response:

The JPA's northern alignment outlets immediately south of the Sheyenne River confluence. The Sheyenne River enters the Red River at a southeasterly direction. The JPA's northern alignment would enter the Red River at a northeasterly direction. This has the potential to create excessive channel scour within the Red River and the Sheyenne River due to these opposite flow directions and the creation of eddies with this turbulent flow condition. As a result, the JPA's northern alignment would require more scour protection than the Plan B Diversion outlet, where no other tributary river outlets into the Red River at the Diversion outlet.

C-17 Spillway Capacity to Pass the PMF

It is unrealistic for any dam to be designed to “hold” the PMF. Rather, typical practice is to include sufficient spillway capacity to pass the PMF.

Response:

The dam/southern embankment is designed to safely pass the PMF in accordance with USACE dam safety requirements, along with applicable dam safety requirements for the states of North Dakota and Minnesota. This will be accomplished by passing the PMF flows through the Red River Structure, Wild Rice River Structure, and Diversion Inlet Structure, and over the Eastern Tieback.

C-18 Increase Gate and Emergency Spillway Capacities

The remedy that will lower PMF elevations is to increase gate and emergency spillway capacities. This also reduces dam height and footprint. Lower PMF elevations also reduce dam safety concerns and the size of the Property Rights Mitigation Area.

Response:

The tradeoff is a significant increase in the cost of gates/spillway and not having an opportunity to flood fight for events up to about 90,000 cfs of inflow.

5.0 Comment Category D: Project Management

D-1 Economic Analysis

Since Plan B is being considered a "new" project, then shouldn't USACE consider a new or amended economic analysis?

Response:

Plan B is not considered a new project. It is a proposed modification to the project authorized in WRRDA 2014.

D-2 Cost

The Project is too costly, costs will keep going up; costs will be passed on to future generations.

Response:

The cost estimates prepared to date reflect the expected costs to construct the Project. Contingencies are included to account for the risks and uncertainties associated with the current level of design detail. The potential exists for both cost increases and cost savings as details are developed during the design phase.

D-3 EO 11988

The Corps ignored, and failed to comply with, EO 11988 and its 8 step process. Because President Trump rescinded Executive Order 13690 of January 30, 2015, the Corps cannot rely on that executive order to ignore EO 11988.

Response:

The Corps considered and complied with EO 11988, as described in FEIS sections 3.7.3.6, 3.7.4, and 3.8.3.4.5, as well as in the 2013 and 2018 SEAs. Executive Order 11988 prohibits support of floodplain development if there is a practicable alternative. If no practicable alternative exists, then impacts to the floodplain must be minimized. There is not a practicable alternative located outside the floodplain and, as such, EO 11988 requires that impacts to the floodplain be minimized. Floodplain impacts and EO 11988 were discussed in the 2011 FEIS, and as described in the SEA, Plan B further refines and minimizes floodplain impacts. The Corps did not rely on EO 13690 or ignore EO 11988; instead throughout the years we have described how the project complies with EO 11988. The issues asserted regarding EO 11988 have been thoroughly litigated and ruled upon in Federal court.

D-4 Local Land Use Plan

The DSEA includes little information on the project's ability to demonstrate compatibility with local land use and water management plans. The SEA is an opportunity to provide this information. Consistency with state and local plans remains an important consideration under Minnesota law.

Response:

The SEA was written as a tiered document, and permits were addressed in the FEIS. In implementing a federal project, the USACE is required to comply with state and local laws, regulations, and ordinances only to the extent specifically required by federal law. In addition, the Corps has invoked Clean Water Act Section 404(r) for this Project. The Project is not inconsistent with any approved state or local plans and laws.

D-5 Areas of Controversy

MnDNR requests that the disagreements regarding the nature and scope of appropriate mitigation be included in the SEA under "areas of controversy".

Response:

Efforts to resolve differences regarding mitigation are ongoing and will continue to be ongoing as an Adaptive Management approach is used for this project. The Adaptive Management team is set up to collaborate on mitigation and monitoring projects and methods. To address this comment, the following addition will be made to the controversy section: "The MnDNR believes the mitigation recommended in the Draft SEA was inadequate and requested this be identified as an area of controversy. However, the amount of mitigation has been revisited pursuant to input from MnDNR and other agency partners, including implementing fish passage at Drayton Dam."

D-6 Permitting

Why is the MnDNR spending taxpayer money again to do an environmental review of a dam when they have no intention to permit any dam?

Response:

MnDNR is better positioned to respond to questions regarding Minnesota law and process.

D-7 Water Permit

A Water Permit will not be required for the proposed flood control operations proposed by the Plan B operations as long as the intentions of holding back water remain in detention capacity for short periods of time and there is no beneficial use of the detained water proposed. If, however, the intention of Plan B changes to a retention capacity of water for long periods of time or there is a proposed beneficial use of the detained or retained water, then a flood control or other corresponding beneficial use Water Permit will be required under North Dakota Administrative Code Part 89-03-01-01.3.

Response:

Comment noted.

D-8 Permit Applications

DA has not applied for a permit to the Buffalo-Red River Watershed District.

Response:

The DA applied for a permit from the Buffalo-Red River Watershed District on January 24, 2019.

D-9 Permitability

The LPP is not permittable by Minnesota.

Response:

The Minnesota Department of Natural Resources is better positioned to respond to questions regarding Minnesota law.

D-10 Permitting

Minnesota law demands the least impact solution, not the solution that has the least impact on Minnesota. Allowing Minnesota to assert that no federal project can be permitted in Minnesota unless the Minnesota benefits are justified by the Minnesota harms would set a dangerous and probably unconstitutional precedent.

Response:

The Minnesota Department of Natural Resources is better positioned to respond to questions regarding Minnesota law.

D-11 Section 404(b)(1) Hearing Request

Request for a 404(b) hearing.

Response:

The request for a hearing was denied by way of a letter to the commenter. The basis for the denial included that the public has had ample opportunity to comment on issues related to this project and an additional public hearing would not serve any valid interest. During the recent 30-day comment period, the public had the opportunity to submit written comments on the supplemental NEPA document, including the Section 404(b)(1) analysis. In addition to the public comment period, a public meeting was held on September 13, 2018 regarding issues related to Plan B, alternatives, and other concerns.

D-12 Project Description

The DSEA does not describe the entirety of the proposed Fargo-Moorhead Diversion project in sufficient detail to convey the full scope of the proposed project. The project description should be amended to include the diversion channel, diversion inlet, aqueducts, staging area, and associated ring dikes, drainage ditches, and infrastructural changes. These descriptions can be brief, but should be included to provide a reader with a comprehensive picture of Plan B and the relationships of its components.

Response:

The SEA was written as a tiered document. Section 2.1 of the SEA was updated to include more information on the overall project.

D-13 Purpose and Need

MnDNR recommends that the SEA restate the primary project purpose of evaluating flood mitigation strategies for the Fargo-Moorhead Metropolitan area, as well as describing the need for the proposed project.

Response:

The SEA was written as a tiered document. Consistent with the 2013 SEA, the purpose and need focuses on the reason for the modifications proposed since the last NEPA document.

D-14 Project Purpose

All evaluated alternatives, including Plan B, need to meet the original purpose for the project proposal.

Response:

The SEA was written as a tiered document. It addresses proposed modifications to the previously described plan. Plan B does meet the original purpose described in the 2011 FEIS.

D-15 Development in Floodplain

Project intended to develop 40-50 square miles of undeveloped floodplain. Fargo has plenty of land outside the floodplain that can be developed.

Response:

The intent of the Project is not floodplain development. The purpose of the project is flood risk management for the Fargo-Moorhead metropolitan area. The assertion that the Project was intended for floodplain development has been raised and refuted many times throughout the project planning process, including in Federal court.

D-16 Sustainability Provisions of WRDA 2007

The Corps ignored the sustainability provisions of WRDA 2007 (42 U.S.C. 1962-3).

Response:

The Project complies with the planning policy in 42 U.S.C. 1962-3. The Corps considered, avoided, and minimized floodplain use as described in FEIS sections 3.7.3.6, 3.7.4, and 3.8.3.4.5, as well as in the 2013 and 2018 SEAs.

D-17 Comparative Information Requested

The DSEA should include updated information on funded and recently constructed flood damage reduction projects to determine the extent of impacts associated with each alternative.

Response:

No recently constructed flood damage risk reduction projects have been constructed in the project area other than features of the Project such as the in-town levees and the Oxbow-Hickson-Bakke ring levee.

D-18 Protection Level

Diversion channel was designed for a 500-year event.

Response:

The Project is designed for permanent protection up to the 1-percent (100-year) ACE event and would significantly reduce flood damages and emergency related costs. A 0.2-percent (500-year) ACE event would require emergency flood fighting efforts.

D-19 Cost-Benefit Ratio

Protecting extensive areas of floodplain was the only method of increasing the cost-benefit ratio.

Response:

Project alignments are selected for technical and policy reasons. The intent is to benefit as much existing development as possible while minimizing overall impacts to the floodplain and the environment, while at the same time minimizing costs. A small amount of future development was included in the economic analysis, consistent with Corps policy, based on current growth rates. All future development was assumed to be constructed consistent with Federal and State law above the one percent chance (100-year) floodplain, and represents a small portion of the economic benefits.

D-20 Allocation of Dollars

For every dollar spent on the project you don't get anything back.

Response:

As stated in the FEIS dated July 2011, for every dollar spent, approximately 1.78 dollars in benefits would be realized on an annual basis for flood risk management.

D-21 BRRWD's Revised Watershed Management Plan

Is project consistent with the BRRWD's Revised Watershed Management Plan, dated 6/23/2010; is it consistent with the goals and policies identified in the Flood Damage Reduction Work Group Mediation Agreement, dated 12/09/98?

Response:

The Project, as with most projects, would not further every goal in the Revised Watershed Management Plan, but would further goals such as minimizing potential flood damages to property, public safety, and water resources. With respect to the 1998 Mediation agreement, as described in the 2011 FEIS, the Corps' planning process is compatible with the process laid out in that Agreement, which primarily addressed planning efforts by Minnesota watershed districts in the Red River Basin. Both processes are designed to ensure that all stakeholders can participate in scoping and conducting the study and reviewing and commenting on the study findings prior to making final decisions. The Fargo-Moorhead study team actively coordinated with federal and state agencies, local water resource jurisdictions, the non-federal sponsors and the general public throughout the study. The Fargo-Moorhead study considered a wide range of alternatives, including those described in the Red River Flood Damage Reduction Work Group's Technical and Scientific Advisory Committee (TSAC) technical papers. Further, basin-wide flood risk reduction is not the purpose of this project. As stated in Sections 1.2 and 2.5 of the FEIS, the purpose and scope of the Project is to implement measures to reduce flood risk and flood damages in the Fargo-Moorhead Metropolitan area. The Corps and other agencies continue to investigate measures that could be implemented throughout the basin to help reduce overall flood risk.

D-22 Land/Easement Acquisition

What is the plan and process to obtain landowner approval/easements to store water on?

Response:

Information on mitigation for upstream areas can be found in section 5.2.1 of the SEA. The process is also detailed in the non-Federal sponsors' Draft Property Rights Acquisition and Mitigation Plan and is posted at www.fmdiversion.com.

D-23 Economic Development

Economic development of the Fargo metropolitan area is at the expense of rural farmers and businesses upstream.

Response:

The intent of the Project is not economic development. The purpose of the project is flood risk management for the Fargo-Moorhead metropolitan area. Any flood risk management project will have positive benefits for some and negative impacts for others. There is no alternative that has no impacts and there is no alternative that has only positive impacts.

D-24 Economic Development of Horace North Dakota

Plan B would prevent economic development of Horace, North Dakota.

Response:

According to the hydraulic modeling utilized for the Project, the Project will reduce the 100-year floodplain within the city limits of Horace outside the benefitted area of the existing Sheyenne River diversion project by 1,530 acres. The project alignment being reviewed does include a modification of the Southern Embankment that utilizes property within the city limits of the City of Horace. Based on

the Metropolitan Council of Governments' Southwest Metro Transportation Plan, which has been approved by Horace, the project footprint utilizes 1,543 acres of land planned as Agricultural and 12 acres planned as Industrial. This is necessary to reduce the risk of flooding that threatens the metro area and those surrounding communities who share in the socioeconomic benefits of that reduced threat. While Plan B reduces land development opportunities for Horace compared to the Pre-Task Force alternative, Plan B still improves the opportunity for economic development in Horace due to reduced flood risk.

D-25 Risks of a High Hazard Dam

A high hazard dam poses too great a risk for already vulnerable communities.

Response:

The risk of flooding and that associated with the miles of flood fighting required without a Project is much higher than the low probability that an engineered and well-constructed dam might fail.

D-26 Flood Insurance

Without the project, flood plain remapping for FEMA certification will place an inordinate insurance burden on middle income residents of the Fargo-Moorhead Metro area, forcing many of them out of the market place.

Response:

Comment noted.

D-27 Project Maintenance

Who is going to take care of the diversion channel?

Response:

Per FEIS section 3.13.5 and the Project Partnership Agreement, the non-Federal sponsors would be responsible for all operations, maintenance, repair, rehabilitation and replacement of project features, including the diversion channel.

D-28 Public Representation

People should get to vote on the project.

Response:

Project decisions were made locally by elected officials with input from the public. In addition, the Project was authorized by Congress.

D-29 Public Outreach

Project will dislodge people from their land and disrupt their lives; no one associated with the Project has talked with people upstream.

Response:

Comment noted. There have been numerous public meetings associated with the project and opportunity to comment.

D-30 Support for Plan B

Support for Plan B, and the thoroughness of the review.

Response:

Comment noted.

6.0 Comment Category E: Miscellaneous

E-1 General/Administrative

Flood protection is vital for this community to continue to grow and thrive. I recommend that the Department of Natural Resources approve the project under the rubric of plan B this time around.

Response:

Comment noted.

E-2 Tribal Consultation

There is no mention of outreach to consulting tribes on this project. Our office requests a record of consultation requests to the Northern Cheyenne Tribe during the initial scoping period of this project.

Response:

The SEA was written as a tiered document, and Section 6 indicates that discussion of consultation was provided in both the 2011 FEIS and 2013 SEA. Investigations for Traditional Cultural Properties were conducted in 2011 by members of three tribes in accordance with the Programmatic Agreement, to which the Northern Cheyenne and fifteen other tribes are concurring parties. Consultation with all sixteen tribes was initiated between 2009 and 2011. Annual work summaries were submitted to THPOs for 2011, 2012, and 2013. Tribes, including the Northern Cheyenne, were contacted telephonically with a project update as recently as the fall of 2017.

E-3 Task Force

The Corps and Diversion Authority wasted MnDNR's time with the Task Force by not exploring major changes to the project and distributing a press release before Plan B before the final meeting.

Response:

The USACE and Diversion Authority have been working extensively with MnDNR and other stakeholders as part of the Task Force as well as throughout the planning process for the project, and value their input.

E-4 Fargo Unfairly Benefits

Fargo has not had to give up any acres for the project.

Response:

The cities of Fargo and Moorhead have purchased numerous properties in flood prone areas and have constructed in-town features on lands within city limits. In addition, while not part of city proper, the City of Fargo's Extra Territorial area where it has zoning authority generally extends to 112th Ave in the South, and would be affected by the new alignment.

E-5 Equities of the Project

People who have not experienced flooding are losing their land and homes for the Staging Area.

Response:

Comment noted. Any flood risk management project will have positive benefits for some and negative impacts for others. There is no alternative that has no impacts and there is no alternative that has only positive impacts.

E-6 JPA Alternative

Alternative C would increase costs without providing additional protection for the area. It would impact more homes, and it creates the need for more ring levees to protect buildings.

Response:

Comment noted.