

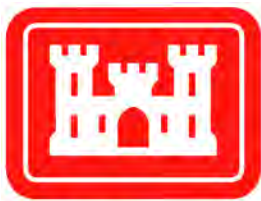
# Appendix L

## Cost Engineering

### Fargo-Moorhead Metropolitan Area Flood Risk Management

#### Final Feasibility Report and Environmental Impact Statement

July 2011



**US Army Corps  
of Engineers®**

*Prepared by:*

U.S. Army Corps of Engineers  
St. Paul District  
180 Fifth Street East, Suite 700  
St. Paul, Minnesota 55101-1678

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## **APPENDIX L FARGO-MOORHEAD METRO FEASIBILITY STUDY COST ENGINEERING**

### **L1.0 INTRODUCTION**

This appendix contains a summary of the detailed Phase 4 cost estimates prepared for the Final Fargo-Moorhead Metro Feasibility Study for the Flood Risk Management Report on the Red River of the North (RRN) in the cities of Fargo, ND, Moorhead, MN and the surrounding Metro area. Input for the cost estimates was obtained primarily from the Project Delivery Team (PDT) consisting of the St Paul District, US Army Corps of Engineers (USACE), the City of Fargo, North Dakota, the City of Moorhead, Minnesota, the team of consulting engineering firms lead by Moore Engineering of West Fargo, ND, and the Resource Agencies (in particular the Minnesota Department of Natural Resources, the North Dakota Fish and Game Department, and the US Fish and Wildlife Service) during several meetings with the design team. Guidance for the preparation of the estimates was obtained from ER 1110-2-1150, Engineering and Design for Civil Works Projects and ER 1110-2-1302, Civil Works Cost Engineering. The estimates were prepared using Micro-Computer Aided Cost Estimating System (MCACES), MII, version 3.01.

Cost estimates were conducted for the two different Phase 4 diversion channel alternatives, one is located in Minnesota around the city of Moorhead, MN, known as the Federal Comparable Plan (FCP) and the other alternative is the Local Sponsor's selected Locally Preferred Plan (LPP) located in North Dakota around the city of Fargo, ND with upstream storage. For a discussion of how the FCP is related to the National Economic Development (NED) plan, see the main feasibility report write-up.

A cost estimate summary for a third diversion channel alternative in North Dakota known as the ND35K Phase 3, which did not have any upstream storage but had significant downstream impacts, is included for reference only. Work on the ND35K Phase 3 estimate was halted when downstream impacts stretched all the way to the Canadian border and still had not reached a point of zero impacts. The ND35K Phase 3 cost estimate, while not finalized, was developed to the same comprehensive level of work as the LPP ND Phase 4 cost estimate.

Cost estimate calculations for this Feasibility Estimate of the Fargo-Moorhead Metro Flood Risk Management Feasibility Study, Phase 4 have been prepared and completed for the two diversion channel alignments using the approved Corps of Engineers Micro-Computer Aided Cost Estimating System (MCACES) MII, ver. 3.01, cost estimating program. The designs have been carried out to a feasibility level using general hydrologic, hydraulic, environmental, geotechnical and structural considerations.

The cost estimates discussed here are for the construction costs of the proposed diversion channel excavation, hydraulic structures, tie-back levees, roadway bridges, railroad bridges, utility relocations, mitigation efforts and recreational features for inclusion in the overall feasibility level cost estimates. Dimensions shown on the drawings and the quantities are at a feasibility level.

## **L2.0 PRICE LEVEL**

Project costs are presented in August 2010 dollars and all project costs have been indexed to October 2011 price levels. Labor rates for the estimates have been adjusted from the local Davis-Bacon wage determinations to account for a competitive labor market and for the likelihood of large contracts attracting a regional and/or national workforce. After analyzing local, regional and Twin Cities wage determinations, labor rates for skilled workers, such as equipment operators, use a Twin Cities Davis-Bacon wage rate (Hennepin County) for work in both MN and ND. The skilled workers wage rates include a \$7.50/hour subsistence or per diem allowance to account for needing to attract a workforce from a larger pool than from the local area. For basic common laborers, enough of a local workforce should be available that the estimates apply a Cass County, ND Davis-Bacon wage rates for work in North Dakota and a Clay County, MN wage rate for work in Minnesota. The work schedule is assumed to be 10 hour shifts including overtime for over 8 hours per shift.

Equipment rates used for the work are from the 2009 Region 4 Equipment rates in EP-1110-1-8 Construction Equipment Ownership and Operating Expense Schedule.

The estimates use the 2008 MII English Cost Book.

The costs in the FCP MN Plan and the LPP ND Plan estimates are considered fair and reasonable to a prudent and capable contractor and include overhead and profit.

## **L3.0 ESTIMATE STRUCTURE**

The cost estimates for both the FCP MN Plan and the LPP ND Plan have been estimated jointly by the St Paul District Corps of Engineers (USACE-MVP) and by the Consultant Team.

The St Paul District completed the portions of the cost estimates in this Appendix L for constructing the following project features in the Total Project Cost Summary (TPCS) according to the Civil Works – Work Breakdown Structure:

- 01 Lands and Damages. Includes the real estate acquisition of project lands, easements and right-of-ways.
- 02 Relocations – Utility Relocations. Includes the cost for the relocation of utility lines that will be impacted by the project.
- 06 Fish and Wildlife Features. Includes the estimated cost for Environmental Mitigation features associated with project impacts caused by the proposed diversion channel.
- 11 Levees, Floodwalls and Flood Proofing – Non-Structural Flood Proofing. Provides cost estimates for non-structural flood proofing alternatives as developed by the members of the Corps of Engineers National Nonstructural/Flood Proofing Committee (NFPC ) with the Omaha District Corps of Engineers.
- 14 Recreation Facilities. Includes costs for recreational features such as trails, trail facilities and recreational landscaping.

- 30 Planning, Engineering and Design (PED). Provides the estimated engineering design costs based on a percentage of the construction cost features.
- 31 Construction Management (CM). Provides the estimated Construction Management or Supervision and Administration costs based on a percentage of the construction cost features.

Contingencies are added to the cost estimates in the TPCS based on the results of the Cost and Schedule Risk Analysis. Escalation factors to the Effective Price Level Date and the Fully Funded Project Estimate Amount to the end of construction have also been included as part of the TPCS.

Appendix L has limited discussion for the parts of the jointly estimated costs provided by the Consultant Team for the features list below. For a more in-depth discussion of these features, refer to the Appendix G of Attachment 5 of this Feasibility Report.

- 02 Relocations – Roadway Bridges. Includes the costs for roadway bridges and road raises constructed as result of the proposed diversion channel.
- 08 Roads, Railroads and Bridges. Provides estimated costs associated with constructing railroad bridges and track raises over the proposed diversion channel and the relocation of a railroad yard impacted by the project.
- 09 Channels and Canals. Includes estimated costs to excavate the proposed diversion channel and to construct the inlet and outlet control structure on the Red River of the North (RRN) and the other required hydraulic structures on the tributaries that the diversion channel intersects with.
- 11 Levees, Floodwalls and Flood Proofing - Levees. Includes the estimated costs for the tie-back levees and the containment levees for the Floodwater Storage Area 1 of the LPP ND Plan.

The general format of the cost estimate and key assumptions were formulated to reflect the Civil Works Breakdown Structure (CWBS) to the extent possible for this feasibility level of design. Key assumptions for the process of estimating the construction costs of the proposed diversion channel alternative components are as follows:

- Work analyses were performed on the major cost items based on the feasibility level of design.
- Lesser cost items (lump sum user costs) were allocated an assumed percentage of Labor, Material and Equipment, where possible.
- Price levels for materials were based on quotes from suppliers, conversations with contractors, costs from similar projects, historical cost data, published aggregate cost data and other sources appropriate for a feasibility level estimate.
- Digital 3-D grading models for the volume of each type of excavation were calculated based on the stratigraphic profiles developed, which were based on a number of soil borings performed by the Corps of Engineers.
- Cost estimates for the hydraulic structures were developed using quantity calculations based primarily on the hydraulic structure drawings and engineering quantity calculations.
- Direct costs for major work features were determined.

- Indirect costs were calculated as percentages, applied to either direct costs or as running total percentages.

#### **L4.0 01 – LANDS AND DAMAGES**

The cost estimate for Lands and Damages is based on the estimated acres impacted by the project footprints at a unit cost per acre and by the number of property sites impacted at a unit cost per structure. The estimated costs, before contingencies, were provided by the St Paul District Real Estate Division for the real estate easements and ROW required plus the estimated administrative costs. See Appendix G – Real Estate for more detailed information regarding the development of the cost for Lands and Damages.

#### **L5.0 02 – RELOCATIONS**

This section summarizes cost estimate information related to relocating utilities, transportation bridges, and road raises as a result of the Feasibility Study Project.

##### **L5.1 Utility Relocations**

Multiple utilities will be impacted by the excavation of the proposed diversion channel for either the FCP diversion alternative in Minnesota or the LPP diversion alternative in North Dakota. A list of the known utilities was assembled by the PDT and costs were developed by contacting the utilities to provide an estimate of the relocation costs and the methods involved to relocate the utility. Many of the utilities indicated that the preferred method to relocate would be to bore under the proposed diversion channel location. Some utilities indicated they would hang a conduit under one of the proposed bridges if it was located along the utility alignment. For the high voltage electric overhead power lines it was assumed that new towers would have to be relocated on each side of the proposed diversion channel to span it. It is possible that existing high voltage overhead power line towers may be outside of the proposed diversion channel footprint and not be impacted, but until a final alignment is laid out, it was assumed that the towers would have to be relocated.

##### **L5.2 Road Bridges and Road Raises**

Bridge costs for roadways and road raises were developed by the Consultant Team for each feasibility alternative using historical bridge cost data indicating that costs are in the range of \$105/SF to \$125/SF. Conversations with contractors indicate that a cost (before contingency) of \$120/SF is in the upper range of typical road bridge costs. A preliminary review by the Office of Bridges and Structures at the Minnesota Department of Transportation (MnDOT) agreed with the methodology used for the estimated cost of bridges exhibited in a feasibility level estimate. Further discussion on the roadway bridges can be found in Appendix G of Attachment 5.

## **L6.0 06 – FISH AND WILDLIFE FACILITIES**

An estimated cost for Environmental Mitigation features associated with the proposed diversion channel is based on preliminary discussions with the resource agencies for the expected environmental impacts, mitigation planning and adaptive implementation, all of which are intended to ensure adverse effects from the project are off-set with environmental mitigation features. Given the limitations of the project schedule, specific environmental mitigation sites have not been finalized. Candidate environmental mitigation sites have been preliminarily identified and additional specific sites will be pursued in the months ahead during detail design. Until specific sites are finalized, costs are based on typical values of impacted environmental mitigation features from other projects of a similar nature. See Appendix F – Environmental, for more detailed information regarding the development of the mitigation features and costs.

## **L7.0 08 – RAILROAD BRIDGES**

Comprehensive feasibility level railroad bridge costs were developed for the FCP diversion alternative in Minnesota and for the LPP diversion alternative in North Dakota by the BNSF Railroad's consulting engineering firm of TKDA. The cost estimates for the railroad bridges includes appropriate track raises and shoo-fly costs. For the FCP diversion alternative in Minnesota, the cost information includes relocating the Dilworth railroad yard that is impacted by the diversion channel alignment. The railroad yard would be shifted to the east and most likely be relocated to the south side of the BNSF mainline tracks. Railroad signal system estimated costs were supplied by the BNSF Railroad. Additional discussion on the railroad bridges can be found in Appendix G of Attachment 5.

## **L8.0 09 – DIVERSION CHANNEL COST CONSIDERATIONS**

### **L8.1 Diversion Channel Excavation**

The cost estimate information related to constructing the diversion channel was completed by the Consultant Team and a more detailed discussion of the estimate assumptions, unit costs, quantities, excavation productivity rates, crew sizes, material hauling, disposal spoil areas and project costs can be found in Appendix G of Attachment 5.

### **L8.2 Hydraulic Structures**

The cost estimate information related to constructing the hydraulic structures was completed by the Consultant Team and a more detailed discussion can be found in Appendix G of Attachment 5. Detailed assumptions, unit costs, quantities, material prices, pile and foundation design, loading condition, hydraulic gates, erosion control, fish passage considerations and project costs are included in the discussion. Considerations specific to each individual hydraulic structure can also be found in Appendix G of Attachment 5.

For additional discussion on the purpose and operation of the hydraulic structures, see also Appendix B – Hydraulic Engineering.

## **L9.0 11 – LEVEES AND FLOODPROOFING**

### **L9.1 Levees**

The levees associated with the proposed project are for tie-back levees on the upstream part of the project to keep flows contained in the diversion channel and to contain water within Storage Area 1. The same crews that are developed for the diversion channel earthwork are used for tie-back levees. However, additional crews are included to compact levee material. Additional information is included in the Consultant Appendix G of Attachment 5.

### **L9.2 Non-Structural Flood Proofing Assessment**

A non-structural flood proofing analysis was performed and for the FCP Minnesota diversion alternatives plan there was an economic area tentatively deemed to have a feasible benefit cost ratio. Members of the Corps of Engineers National Nonstructural/Flood Proofing Committee (NFPC ) in the Omaha District, Corps of Engineers, developed the Non-Structural Assessment, Appendix P, which details the analysis of existing conditions, evaluation, comparison, screening, costs and selection of the alternative non-structural flood proofing plan. There was not a non-structural flood proofing plan deemed feasible for the North Dakota diversion alternative. See Appendix P – Non-Structural, for the detailed information regarding the non-structural flood proofing assessment.

## **L10.0 14 – RECREATIONAL FEATURES**

Project recreation features will provide four-season amenities for the community and its visitors and will enhance the recreational opportunities of the region by also utilizing the diversion channel and adjoining material spoil piles areas as recreational project features. Recreational features associated with the diversion alternatives include multipurpose trails, parking areas and trailhead facilities at a conceptual level of design and costs. General features to be included as part of a recreational plan, have been assigned costs without site specific design or information. It is assumed that general grading for the trails, parking areas and facilities would be accomplished during the excavation of the diversion channel or the construction of the levees. Costs for the approximate miles and types of trails, number of public use facilities and amenities were estimated for the project based on its size and expected use. See Appendix M – Recreation & Aesthetics, for more detailed information regarding the features of the recreational plan.

## **L11.0 CONTRACTOR AND INDIRECT COST CONSIDERATIONS**

The cost estimate assumes the work is performed by a prime general contractor performing management duties, and a layer of discipline-specific subcontractors performing work tasks, which often occurs on large, complex projects. The estimates are divided into \$200M/year funding scenarios based on the Draft Phasing Project Schedule as developed by HDR Engineering for the Corps of Engineers in June 2010. A brief discussion of the different indirect cost assumptions is presented here with a more detailed discussion presented in the Consultant Appendix G, Exhibit K of Attachment 5.

### **L11.1 Prime Contractor**

The Prime Contractor Job Office Overhead (JOOH) is assumed to be 5% of construction costs. This percentage assumes the prime contractor functions as a management company in this estimate and only handles things like the field office administration and quality control (QC) and does not incur significant costs to manage the fleet of construction equipment (rather, this cost is incurred by the subcontractors). JOOH, sometimes referred to as Field Office Overhead, are those costs incurred at the project site specifically as a result of the costs encountered at a particular project site to carry out and manage the day to day operations.

The Home Office Overhead (HOOH) are those cost incurred by the Prime Contractor for the overall business management of its main office expenses and was set at 5% of the construction costs. The typical estimated costs associated with HOOH are for the contractor's main office building, furniture and equipment, equipment yard, management and staff, office utilities, corporate vehicles, business insurance and taxes.

The profit for the Prime Contractor was calculated to be 9% of the construction costs as determined by using the weighted guidelines method in ETL 1110-2-573. See Appendix G in Attachment 5 for calculations related to develop the profit rate.

Performance and Payment Bonding is required on all Government contracts and for the Prime Contractor it has been assumed to be 1% of the construction costs.

### **L11.2 Subcontractor**

JOOH rates for the subcontractors vary dependent on the job specialty performed by each of them. The earthwork subcontractor JOOH is assumed to be 7% of the construction costs since the Prime Contractor is assumed to handle the items mentioned above like the field office administration and QC. Other subcontractor specialties vary up to 10% of construction costs for JOOH.

Mobilization and Demobilization is included as a separate markup from JOOH for subcontractors and is assumed to be 5% of construction costs. Mob/demob typically covers items the contractor requires to transfer equipment to the construction site, unload and get it ready, field office set-up and winter and seasonal preparation costs.

HOOH for the subcontractors is assumed to be 5% of construction costs to cover the subcontractor's business management and main office expenses. The HOOH for the subcontractors is in addition to that considered for the Prime Contractor.

Profit for the subcontractors varies from 5% to 9% of the construction costs.

## **L12.0 30 – PLANNING, ENGINEERING & DESIGN**

The Planning, Engineering & Design (PED) costs are determined as a percentage of the estimated construction costs. For this feasibility level estimate, a percentage of 15% of the estimated construction costs was used. This percentage has been typically used in the District for Feasibility estimates of PED. The final configurations and designs for the

hydraulic structures on the Red River of the North and the tributary structures will require physical model studies, which are assumed to be included in the PED.

## **L13.0 31 – CONSTRUCTION MANAGEMENT**

The Construction Management costs are determined as a percentage of the estimated construction costs. For this feasibility level estimate, a percentage of 7% of the estimated construction costs was used. This percentage has been typically used in the District for large civil works construction projects in the past.

## **L14.0 CONTINGENCY**

Current Headquarters USACE guidance requires a formal analysis on all projects where the projected cost exceeds \$40 million. The initial Cost and Schedule Risk Analysis (CSRA) meeting was held the beginning of January 2010 to determine the preliminary risk registers and was attended by the Project Delivery Team members from the Corps of Engineers, representatives from the local sponsors of the cities of Fargo and Moorhead and the key members of the consulting engineering firms engaged in the development of the feasibility study. The meeting was facilitated by a member of the Corps of Engineers Cost Engineering Center Directory of Expertise, Walla Walla (Cost Engineering Dx). The preliminary risk register indicates the perceived risks and the perceived impacts to the project. Cost and Schedule Risk Analysis models were developed for each alternative to determine an initial contingency level for the Alternative Formulation Briefing (AFB) phase, which at that stage of the draft feasibility study process really was best suited to pin-point areas of concern to mitigate and manage efforts to reduce the cost and schedule risks (contingencies) for the Final Feasibility Study Report.

The final CSRA was coordinated with the Cost Engineering Dx based on the Phase 4 Feasibility Study Cost Estimate to determine the appropriate amount of contingencies to be utilized in the project cost estimates. Based on the results of the CSRA analysis, the Cost Engineering Dx recommended that for the both the FCP and the LPP, a contingency level of 26% should be used in the cost estimates. The *Project Cost and Schedule Risk Analysis Report* for the Minnesota Option and the North Dakota Option are both presented in Appendix N.

Contingencies used are intended to identify an estimated construction cost amount that is not likely to be exceeded, given the current project scope. The CSRA contingency developed for this project is not a means of adding costs to the project for possible schedule slippage or future cost growth, or to cover items that are not specifically being considered in the current scope.

Unknowns that have been identified that could affect project costs and designs could affect design assumptions, pending a detailed design, include the following:

- actual structure site selection and topography;
- unanticipated construction phasing requirements;
- variation in estimated quantities;

- uncertain seasonal flood prevention requirements associated with operating construction sites near the Red River of the North and its tributaries; currently it is assumed that a minimum protection level will be required in the construction plans for the contractor to provide;
- minor operational appurtenances, safety requirements and permanent signage or lighting for hydraulic structures;
- development of detailed operational and maintenance procedures;
- dewatering and control of water uncertainties;
- seasonal working condition uncertainties and extended schedule;
- potential fluctuations in labor costs;
- unanticipated utilities at hydraulic structure locations, including communications utilities or unmarked or abandoned utilities;
- future design refinement resulting from further hydraulic modeling;
- unanticipated fluctuations in fuel costs and material costs;
- construction contracting structure (i.e. single, multiple, joint ventures, etc.);
- unexpected geotechnical or groundwater issues;
- unexpected hazardous waste;
- threat of lawsuits;
- new design requirements resulting from permitting;
- unexpected presence of historic sites, archaeological sites, endangered species or wetlands;
- delays in property, utility and easement acquisition;
- requirements from drinking water supply protection measures;
- unexpected contaminated soils;
- unexpected seismic considerations;
- subsurface drain tile flows and abandonment/rerouting measures;
- investigation into geomorphology and sediment delivery;
- requirements resulting from unsteady flow modeling;
- further investigation of ice behavior;
- unanticipated local, regional, national or global economic conditions;
- additional information resulting from investigations of allowable pile capacity design criteria, such as pile driving tests
- further investigation of ecological impacts and required mitigation
- changes to contractor assumptions;

## **L15.0 PROJECT SCHEDULE**

Project schedules included in this appendix were initially developed by HDR Engineering for the Corps of Engineers in June 2010 and were updated in July 2011 for the final report. The schedule for the FCP alternative in Minnesota shows a 7.5 year scenario to construct the project from the downstream end to the upstream end which would require an approximate annual funding level of \$170M. The LPP alternative in North Dakota shows an 8.5 year scenario to construct the project from the downstream to the upstream end that would require an approximate annual funding level of \$233M.

An additional schedule for the LPP 8.5 year scenario, not shown in this report, was also developed with construction starting at the upstream end of the diversion channel through Storage Area 1 and then completing the rest of the diversion from the

downstream end, upstream to meet at Storage Area 1. This scenario was developed at the request of the local sponsor to investigate if project benefits could possibly be realized earlier during construction. A separate cost estimate was not prepared, but the schedule assumed the cost information elements would be the same as the LPP downstream to upstream scenario.

#### **L16.0 OPERATIONS, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION (OMRR&R)**

A detailed OMRR&R cost estimate for this project has been prepared and is attached to this appendix. The estimate is to account for future project costs to operate and maintain project features and to recognize costs for the repair, replacement and rehabilitation that will be required in the future to maintain the diversion channel flood reduction project.

#### **L17.0 FINAL FEASIBILITY ESTIMATE**

The Final Feasibility Estimates as presented in the Total Project Cost Summary (TPCS) for the Fargo-Moorhead Metro Feasibility Study have been reviewed by the Cost Engineering Dx during the Agency Technical Review (ATR) and have been certified to meet the regulations in accordance with ER 1110-2-1150 Engineering and Design for Civil Work and with ER 110-2-1302 Civil Works Cost Engineering. The final feasibility estimated costs for the project report are:

##### **FCP**

FY2012 Price Level:	\$1,236,700,000
Fully Funded Amount:	\$1,363,631,000

##### **LPP**

FY2012 Price Level:	\$1,781,347,000
Fully Funded Amount:	\$2,007,791,000

**\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\***  
**FCP MN Phase 4**


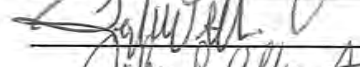
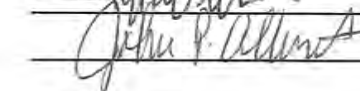
Printed:6/28/2011

PROJECT: Fargo-Moorhead Metro Feasibility Study  
 LOCATION: Fargo, ND & Moorhead, MN

DISTRICT: St Paul District - MVP  
 POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE  
 PREPARED: 4/28/2011

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement.

WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	BASE COST TOTAL (\$K)	Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
						FIRST COST				Spent Thru: 1-Oct-2011				
						ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)		COST (\$K)	CNTG (\$K)	FULL (\$K)	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
02	RELOCATIONS	\$84,956	\$22,089	26%	\$107,045	2.5%	\$87,071	\$22,638	\$109,709			\$94,141	\$24,477	\$118,618
06	FISH & WILDLIFE FACILITIES	\$19,424	\$5,050	26%	\$24,474	2.4%	\$19,884	\$5,170	\$25,053			\$21,531	\$5,598	\$27,129
08	ROADS, RAILROADS & BRIDGES	\$127,294	\$33,097	26%	\$160,391	2.5%	\$130,463	\$33,920	\$164,383			\$140,281	\$36,473	\$176,754
09	CHANNELS & CANALS	\$469,948	\$122,187	26%	\$592,135	2.0%	\$479,473	\$124,663	\$604,135			\$526,920	\$136,999	\$663,920
11	LEVEES, FLOODWALLS & FLOODPROOFING	\$19,634	\$5,105	26%	\$24,739	2.4%	\$20,101	\$5,226	\$25,328			\$21,917	\$5,698	\$27,615
14	RECREATION FACILITIES	\$19,969	\$5,192	26%	\$25,160	2.7%	\$20,512	\$5,333	\$25,845			\$22,406	\$5,826	\$28,232
CONSTRUCTION ESTIMATE TOTALS:		\$741,225	\$192,719		\$933,944	2.2%	\$757,502	\$196,951	\$954,453			\$827,197	\$215,071	\$1,042,268
01	LANDS AND DAMAGES	\$57,007	\$14,822	26%	\$71,829	2.5%	\$58,426	\$15,191	\$73,617			\$61,913	\$16,097	\$78,010
30	PLANNING, ENGINEERING & DESIGN	\$111,186	\$28,908	26%	\$140,094	1.5%	\$112,896	\$29,353	\$142,249			\$129,268	\$33,610	\$162,878
31	CONSTRUCTION MANAGEMENT	\$51,886	\$13,490	26%	\$65,376	1.5%	\$52,684	\$13,698	\$66,382			\$63,869	\$16,606	\$80,475
PROJECT COST TOTALS:		\$961,305	\$249,939	26%	\$1,211,244	2.1%	\$981,508	\$255,192	\$1,236,700			\$1,082,247	\$281,384	\$1,363,631
		CHIEF, COST ENGINEERING, James D Sentz, PE, CCE												
		PROJECT CO- MANAGERS, Brett R Coleman & Terryl L Williams												
		CHIEF, REAL ESTATE, John P. Albrecht												
											ESTIMATED FEDERAL COST <sup>(1)</sup> :		64.6%	\$881,140
											ESTIMATED NON-FEDERAL COST:		35.4%	\$482,491
											ESTIMATED TOTAL PROJECT COST:			\$1,363,631

(1) Estimated Federal Cost is limited to 65% of the Fully Funded Cost without Recreation plus 50% of the Recreation costs.

O&M OUTSIDE OF TOTAL PROJECT COST:

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

FCP MN Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 1 - 2013

PROJECT: Fargo-Moorhead Metro Feasibility Study  
LOCATION: Fargo, ND & Moorhead, MN  
This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP  
POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 1 - 2013													
02	RELOCATIONS	\$6,870	\$1,786	26%	\$8,657	2.5%	\$7,041	\$1,831	\$8,872	2013Q4	2.8%	\$7,237	\$1,882	\$9,118
06	FISH & WILDLIFE FACILITIES	\$3,237	\$842	26%	\$4,079	2.4%	\$3,314	\$862	\$4,176	2014Q2	3.7%	\$3,436	\$893	\$4,329
08	ROADS, RAILROADS & BRIDGES	\$15,382	\$3,999	26%	\$19,381	2.5%	\$15,764	\$4,099	\$19,863	2014Q2	3.7%	\$16,344	\$4,249	\$20,593
09	CHANNELS & CANALS	\$12,283	\$3,194	26%	\$15,476	2.0%	\$12,532	\$3,258	\$15,790	2014Q2	3.7%	\$12,992	\$3,378	\$16,370
11	LEVEES, FLOODWALLS & FLOODPROOFING	\$5,491	\$1,428	26%	\$6,919	2.4%	\$5,622	\$1,462	\$7,083	2014Q2	3.7%	\$5,828	\$1,515	\$7,344
14	RECREATION FACILITIES	\$3,328	\$865	26%	\$4,193	2.7%	\$3,419	\$889	\$4,307	2014Q4	4.6%	\$3,574	\$929	\$4,504
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	\$46,591	\$12,114	26%	\$58,705		\$47,692	\$12,400	\$60,092			\$49,411	\$12,847	\$62,258
01	LANDS AND DAMAGES	\$9,501	\$2,470	26%	\$11,972	2.5%	\$9,738	\$2,532	\$12,269	2013Q1	1.5%	\$9,888	\$2,571	\$12,459
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$466	\$121	26%	\$587	1.5%	\$473	\$123	\$596	2012Q3	1.0%	\$478	\$124	\$602
2.0%	Planning & Environmental Compliance	\$932	\$242	26%	\$1,174	1.5%	\$946	\$246	\$1,192	2012Q3	1.0%	\$956	\$248	\$1,204
8.0%	Engineering & Design	\$3,727	\$969	26%	\$4,696	1.5%	\$3,784	\$984	\$4,768	2012Q3	1.0%	\$3,821	\$994	\$4,815
1.0%	Engineering Tech Review ITR & VE	\$466	\$121	26%	\$587	1.5%	\$473	\$123	\$596	2012Q3	1.0%	\$478	\$124	\$602
1.0%	Contracting & Reprographics	\$466	\$121	26%	\$587	1.5%	\$473	\$123	\$596	2012Q3	1.0%	\$478	\$124	\$602
1.0%	Engineering During Construction	\$466	\$121	26%	\$587	1.5%	\$473	\$123	\$596	2014Q2	7.7%	\$509	\$132	\$642
1.0%	Planning During Construction	\$466	\$121	26%	\$587	1.5%	\$473	\$123	\$596	2014Q2	7.7%	\$509	\$132	\$642
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$3,261	\$848	26%	\$4,109	1.5%	\$3,311	\$861	\$4,172	2014Q2	7.7%	\$3,565	\$927	\$4,492
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	\$66,342	\$17,249		\$83,592		\$67,837	\$17,638	\$85,475			\$70,093	\$18,224	\$88,318

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

FCP MN Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 2 - 2014

PROJECT: Fargo-Moorhead Metro Feasibility Study  
LOCATION: Fargo, ND & Moorhead, MN  
This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP  
POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
02	REACH 2 - 2014													
06	RELOCATIONS	\$11,894	\$3,092	26%	\$14,987	2.5%	\$12,190	\$3,169	\$15,360	2014Q4	4.6%	\$12,746	\$3,314	\$16,060
08	FISH & WILDLIFE FACILITIES	\$3,237	\$842	26%	\$4,079	2.4%	\$3,314	\$862	\$4,176	2015Q2	5.4%	\$3,494	\$908	\$4,403
09	ROADS, RAILROADS & BRIDGES	\$0	\$0	26%	\$0	2.5%	\$0	\$0	\$0	2015Q2	5.4%	\$0	\$0	\$0
11	CHANNELS & CANALS	\$35,208	\$9,154	26%	\$44,361	2.0%	\$35,921	\$9,339	\$45,261	2015Q2	5.4%	\$37,874	\$9,847	\$47,722
14	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$3,328	\$865	26%	\$4,193	2.7%	\$3,419	\$889	\$4,307	2015Q4	6.3%	\$3,635	\$945	\$4,580
CONSTRUCTION ESTIMATE TOTALS:		\$53,667	\$13,953	26%	\$67,621		\$54,844	\$14,259	\$69,103			\$57,750	\$15,015	\$72,764
01	LANDS AND DAMAGES	\$9,501	\$2,470	26%	\$11,972	2.5%	\$9,738	\$2,532	\$12,269	2014Q1	3.2%	\$10,053	\$2,614	\$12,666
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$537	\$140	26%	\$677	1.5%	\$545	\$142	\$687	2013Q3	4.3%	\$569	\$148	\$717
2.0%	Planning & Environmental Compliance	\$1,073	\$279	26%	\$1,352	1.5%	\$1,089	\$283	\$1,373	2013Q3	4.3%	\$1,136	\$295	\$1,432
8.0%	Engineering & Design	\$4,293	\$1,116	26%	\$5,409	1.5%	\$4,359	\$1,133	\$5,492	2013Q3	4.3%	\$4,546	\$1,182	\$5,728
1.0%	Engineering Tech Review ITR & VE	\$537	\$140	26%	\$677	1.5%	\$545	\$142	\$687	2013Q3	4.3%	\$569	\$148	\$717
1.0%	Contracting & Reprographics	\$537	\$140	26%	\$677	1.5%	\$545	\$142	\$687	2013Q3	4.3%	\$569	\$148	\$717
1.0%	Engineering During Construction	\$537	\$140	26%	\$677	1.5%	\$545	\$142	\$687	2015Q2	12.1%	\$611	\$159	\$770
1.0%	Planning During Construction	\$537	\$140	26%	\$677	1.5%	\$545	\$142	\$687	2015Q2	12.1%	\$611	\$159	\$770
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$3,757	\$977	26%	\$4,734	1.5%	\$3,815	\$992	\$4,807	2015Q2	12.1%	\$4,275	\$1,112	\$5,387
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$74,976	\$19,494		\$94,470		\$76,571	\$19,908	\$96,480			\$80,688	\$20,979	\$101,667

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

FCP MN Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 3 - 2015

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
02	REACH 3 - 2015													
06	RELOCATIONS	\$19,103	\$4,967	26%	\$24,070	2.5%	\$19,579	\$5,090	\$24,669	2015Q4	6.3%	\$20,819	\$5,413	\$26,232
08	FISH & WILDLIFE FACILITIES	\$3,237	\$842	26%	\$4,079	2.4%	\$3,314	\$862	\$4,176	2016Q2	7.2%	\$3,554	\$924	\$4,477
09	ROADS, RAILROADS & BRIDGES	\$83,787	\$21,785	26%	\$105,572	2.5%	\$85,873	\$22,327	\$108,199	2016Q2	7.2%	\$92,082	\$23,941	\$116,023
11	CHANNELS & CANALS	\$103,556	\$26,925	26%	\$130,480	2.0%	\$105,655	\$27,470	\$133,125	2016Q2	7.2%	\$113,294	\$29,456	\$142,751
14	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$3,328	\$865	26%	\$4,193	2.7%	\$3,419	\$889	\$4,307	2016Q4	8.1%	\$3,697	\$961	\$4,658
CONSTRUCTION ESTIMATE TOTALS:		\$213,012	\$55,383	26%	\$268,395		\$217,838	\$56,638	\$274,476			\$233,445	\$60,696	\$294,141
01	LANDS AND DAMAGES	\$9,501	\$2,470	26%	\$11,972	2.5%	\$9,738	\$2,532	\$12,269	2015Q1	5.0%	\$10,223	\$2,658	\$12,882
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$2,130	\$554	26%	\$2,684	1.5%	\$2,163	\$562	\$2,725	2014Q3	8.8%	\$2,352	\$612	\$2,964
2.0%	Planning & Environmental Compliance	\$4,260	\$1,108	26%	\$5,368	1.5%	\$4,326	\$1,125	\$5,450	2014Q3	8.8%	\$4,705	\$1,223	\$5,928
8.0%	Engineering & Design	\$17,041	\$4,431	26%	\$21,472	1.5%	\$17,303	\$4,499	\$21,802	2014Q3	8.8%	\$18,820	\$4,893	\$23,714
1.0%	Engineering Tech Review ITR & VE	\$2,130	\$554	26%	\$2,684	1.5%	\$2,163	\$562	\$2,725	2014Q3	8.8%	\$2,352	\$612	\$2,964
1.0%	Contracting & Reprographics	\$2,130	\$554	26%	\$2,684	1.5%	\$2,163	\$562	\$2,725	2014Q3	8.8%	\$2,352	\$612	\$2,964
1.0%	Engineering During Construction	\$2,130	\$554	26%	\$2,684	1.5%	\$2,163	\$562	\$2,725	2016Q2	16.6%	\$2,521	\$655	\$3,176
1.0%	Planning During Construction	\$2,130	\$554	26%	\$2,684	1.5%	\$2,163	\$562	\$2,725	2016Q2	16.6%	\$2,521	\$655	\$3,176
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$14,911	\$3,877	26%	\$18,788	1.5%	\$15,140	\$3,936	\$19,077	2016Q2	16.6%	\$17,648	\$4,588	\$22,236
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$269,375	\$70,037		\$339,412		\$275,159	\$71,541	\$346,700			\$296,941	\$77,205	\$374,145

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

FCP MN Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 4 - 2016

PROJECT: Fargo-Moorhead Metro Feasibility Study  
LOCATION: Fargo, ND & Moorhead, MN  
This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP  
POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE  
PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 4 - 2016													
02	RELOCATIONS	\$16,638	\$4,326	26%	\$20,964	2.5%	\$17,052	\$4,434	\$21,486	2016Q4	8.1%	\$18,441	\$4,795	\$23,236
06	FISH & WILDLIFE FACILITIES	\$3,237	\$842	26%	\$4,079	2.4%	\$3,314	\$862	\$4,176	2017Q2	9.1%	\$3,617	\$940	\$4,558
08	ROADS, RAILROADS & BRIDGES	\$18,436	\$4,793	26%	\$23,229	2.5%	\$18,895	\$4,913	\$23,807	2017Q2	9.1%	\$20,623	\$5,362	\$25,985
09	CHANNELS & CANALS	\$77,076	\$20,040	26%	\$97,115	2.0%	\$78,638	\$20,446	\$99,084	2017Q2	9.1%	\$85,831	\$22,316	\$108,147
11	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$3,328	\$865	26%	\$4,193	2.7%	\$3,419	\$889	\$4,307	2017Q4	10.1%	\$3,765	\$979	\$4,744
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	\$118,715	\$30,866	26%	\$149,581		\$121,317	\$31,543	\$152,860			\$132,277	\$34,392	\$166,669
01	LANDS AND DAMAGES	\$9,501	\$2,470	26%	\$11,972	2.5%	\$9,738	\$2,532	\$12,269	2016Q1	6.8%	\$10,397	\$2,703	\$13,100
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$1,187	\$309	26%	\$1,496	1.5%	\$1,205	\$313	\$1,519	2015Q3	13.2%	\$1,364	\$355	\$1,719
2.0%	Planning & Environmental Compliance	\$2,374	\$617	26%	\$2,991	1.5%	\$2,411	\$627	\$3,037	2015Q3	13.2%	\$2,728	\$709	\$3,438
8.0%	Engineering & Design	\$9,497	\$2,469	26%	\$11,966	1.5%	\$9,643	\$2,507	\$12,150	2015Q3	13.2%	\$10,915	\$2,838	\$13,753
1.0%	Engineering Tech Review ITR & VE	\$1,187	\$309	26%	\$1,496	1.5%	\$1,205	\$313	\$1,519	2015Q3	13.2%	\$1,364	\$355	\$1,719
1.0%	Contracting & Reprographics	\$1,187	\$309	26%	\$1,496	1.5%	\$1,205	\$313	\$1,519	2015Q3	13.2%	\$1,364	\$355	\$1,719
1.0%	Engineering During Construction	\$1,187	\$309	26%	\$1,496	1.5%	\$1,205	\$313	\$1,519	2017Q2	21.1%	\$1,459	\$379	\$1,838
1.0%	Planning During Construction	\$1,187	\$309	26%	\$1,496	1.5%	\$1,205	\$313	\$1,519	2017Q2	21.1%	\$1,459	\$379	\$1,838
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$8,310	\$2,161	26%	\$10,471	1.5%	\$8,438	\$2,194	\$10,632	2017Q2	21.1%	\$10,214	\$2,656	\$12,870
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	\$154,333	\$40,126		\$194,459		\$157,573	\$40,969	\$198,542			\$173,543	\$45,121	\$218,664

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

FCP MN Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 5 - 2017

PROJECT: Fargo-Moorhead Metro Feasibility Study  
LOCATION: Fargo, ND & Moorhead, MN  
This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP  
POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
02	REACH 5 - 2017													
06	RELOCATIONS	\$4,434	\$1,153	26%	\$5,586	2.5%	\$4,544	\$1,181	\$5,725	2017Q4	10.1%	\$5,004	\$1,301	\$6,305
08	FISH & WILDLIFE FACILITIES	\$3,237	\$842	26%	\$4,079	2.4%	\$3,314	\$862	\$4,176	2018Q2	11.1%	\$3,682	\$957	\$4,640
09	ROADS, RAILROADS & BRIDGES			26%										
11	CHANNELS & CANALS	\$105,318	\$27,383	26%	\$132,701	2.0%	\$107,452	\$27,938	\$135,390	2018Q2	11.1%	\$119,393	\$31,042	\$150,435
14	LEVEES, FLOODWALLS & FLOODPROOFING	\$14,143	\$3,677	26%	\$17,820	2.4%	\$14,480	\$3,765	\$18,244	2018Q2	11.1%	\$16,089	\$4,183	\$20,272
	RECREATION FACILITIES	\$3,328	\$865	26%	\$4,193	2.7%	\$3,419	\$889	\$4,307	2018Q4	12.1%	\$3,833	\$997	\$4,829
CONSTRUCTION ESTIMATE TOTALS:		\$130,460	\$33,920	26%	\$164,380		\$133,209	\$34,634	\$167,843			\$148,001	\$38,480	\$186,481
01	LANDS AND DAMAGES	\$9,501	\$2,470	26%	\$11,972	2.5%	\$9,738	\$2,532	\$12,269	2017Q1	8.7%	\$10,580	\$2,751	\$13,331
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$1,305	\$339	26%	\$1,644	1.5%	\$1,325	\$345	\$1,670	2016Q3	17.7%	\$1,559	\$405	\$1,965
2.0%	Planning & Environmental Compliance	\$2,609	\$678	26%	\$3,287	1.5%	\$2,649	\$689	\$3,338	2016Q3	17.7%	\$3,118	\$811	\$3,928
8.0%	Engineering & Design	\$10,437	\$2,714	26%	\$13,151	1.5%	\$10,597	\$2,755	\$13,353	2016Q3	17.7%	\$12,472	\$3,243	\$15,714
1.0%	Engineering Tech Review ITR & VE	\$1,305	\$339	26%	\$1,644	1.5%	\$1,325	\$345	\$1,670	2016Q3	17.7%	\$1,559	\$405	\$1,965
1.0%	Contracting & Reprographics	\$1,305	\$339	26%	\$1,644	1.5%	\$1,325	\$345	\$1,670	2016Q3	17.7%	\$1,559	\$405	\$1,965
1.0%	Engineering During Construction	\$1,305	\$339	26%	\$1,644	1.5%	\$1,325	\$345	\$1,670	2018Q2	25.5%	\$1,664	\$433	\$2,096
1.0%	Planning During Construction	\$1,305	\$339	26%	\$1,644	1.5%	\$1,325	\$345	\$1,670	2018Q2	25.5%	\$1,664	\$433	\$2,096
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$9,132	\$2,374	26%	\$11,506	1.5%	\$9,272	\$2,411	\$11,683	2018Q2	25.5%	\$11,641	\$3,027	\$14,668
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$168,664	\$43,853		\$212,517		\$172,091	\$44,744	\$216,834			\$193,817	\$50,392	\$244,210

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

FCP MN Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 6 - 2018

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 6 - 2018													
02	RELOCATIONS	\$26,017	\$6,764	26%	\$32,781	2.5%	\$26,664	\$6,933	\$33,597	2018Q4	12.1%	\$29,894	\$7,772	\$37,666
06	FISH & WILDLIFE FACILITIES	\$3,237	\$842	26%	\$4,079	2.4%	\$3,314	\$862	\$4,176	2019Q2	13.1%	\$3,748	\$975	\$4,723
08	ROADS, RAILROADS & BRIDGES	\$9,690	\$2,519	26%	\$12,209	2.5%	\$9,931	\$2,582	\$12,513	2019Q2	13.1%	\$11,233	\$2,921	\$14,153
09	CHANNELS & CANALS	\$136,508	\$35,492	26%	\$172,000	2.0%	\$139,275	\$36,211	\$175,486	2019Q2	13.1%	\$157,536	\$40,959	\$198,496
11	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$3,328	\$865	26%	\$4,193	2.7%	\$3,419	\$889	\$4,307	2019Q4	14.1%	\$3,902	\$1,014	\$4,916
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	<b>\$178,780</b>	<b>\$46,483</b>	<b>26%</b>	<b>\$225,263</b>		<b>\$182,602</b>	<b>\$47,477</b>	<b>\$230,079</b>			<b>\$206,313</b>	<b>\$53,641</b>	<b>\$259,955</b>
01	LANDS AND DAMAGES	\$9,501	\$2,470	26%	\$11,972	2.5%	\$9,738	\$2,532	\$12,269	2018Q1	10.6%	\$10,771	\$2,800	\$13,571
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$1,788	\$465	26%	\$2,253	1.5%	\$1,815	\$472	\$2,288	2017Q3	22.2%	\$2,218	\$577	\$2,795
2.0%	Planning & Environmental Compliance	\$3,576	\$930	26%	\$4,506	1.5%	\$3,631	\$944	\$4,575	2017Q3	22.2%	\$4,436	\$1,153	\$5,590
8.0%	Engineering & Design	\$14,302	\$3,719	26%	\$18,021	1.5%	\$14,522	\$3,776	\$18,298	2017Q3	22.2%	\$17,743	\$4,613	\$22,356
1.0%	Engineering Tech Review ITR & VE	\$1,788	\$465	26%	\$2,253	1.5%	\$1,815	\$472	\$2,288	2017Q3	22.2%	\$2,218	\$577	\$2,795
1.0%	Contracting & Reprographics	\$1,788	\$465	26%	\$2,253	1.5%	\$1,815	\$472	\$2,288	2017Q3	22.2%	\$2,218	\$577	\$2,795
1.0%	Engineering During Construction	\$1,788	\$465	26%	\$2,253	1.5%	\$1,815	\$472	\$2,288	2019Q2	30.0%	\$2,361	\$614	\$2,975
1.0%	Planning During Construction	\$1,788	\$465	26%	\$2,253	1.5%	\$1,815	\$472	\$2,288	2019Q2	30.0%	\$2,361	\$614	\$2,975
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$12,515	\$3,254	26%	\$15,769	1.5%	\$12,707	\$3,304	\$16,011	2019Q2	30.0%	\$16,525	\$4,297	\$20,822
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	<b>\$227,614</b>	<b>\$59,180</b>		<b>\$286,794</b>		<b>\$232,278</b>	<b>\$60,392</b>	<b>\$292,670</b>			<b>\$267,165</b>	<b>\$69,463</b>	<b>\$336,627</b>

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT and REHABILITAION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT

### CHANNEL DIVERSION - FCP MN Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	PROJECT UNIT PRICE	O&M AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$71,566,798	\$3,548,079	
Percentage of Construction 0.38%											
00	PERIODIC INSPECTIONS										
	Periodic Inspections										
	1 <sup>st</sup> 5 years	1 Year	1.00	1	1	JOB	\$50,000	\$50,000	220,266	10,920	Cost of periodics decreases after the 1st 5 years.
	Year 7, 9 and 11	2 Years	1.00	1	1	JOB	\$40,000	\$40,000	81,823	4,057	
	Every 5 years beginning year 15	5 Years	1.00	1	1	JOB	\$30,000	\$30,000	67,119	3,328	
	Routine Annual Inspections	1 Year	1.00	1	1	JOB	\$10,000	\$10,000	201,706	10,000	
	Total Inspections								570,913	28,304	
02	RELOCATIONS										
	ROADS										
	Interstate 29 (NB-South)	10 Years	0.10	1.0	0.10	LS	\$2,479,200.00	\$247,920	409,323	20,293	
	Interstate 29 (SB-South)	10 Years	0.10	1.0	0.10	LS	\$2,303,600.00	\$230,360	380,331	18,856	
	State Highway 75 (South)	10 Years	0.10	1.0	0.10	LS	\$4,627,800.00	\$462,780	764,063	37,880	
	110th Avenue S	10 Years	0.10	1.0	0.10	LS	\$2,303,600.00	\$230,360	380,331	18,856	
	80th Avenue S	10 Years	0.10	1.0	0.10	LS	\$3,718,800.00	\$371,880	613,984	30,440	
	60th Avenue S	10 Years	0.10	1.0	0.10	LS	\$3,605,200.00	\$360,520	595,229	29,510	
	CSAH 52	10 Years	0.10	1.0	0.10	LS	\$3,687,800.00	\$368,780	608,866	30,186	
	50th Avenue S	10 Years	0.10	1.0	0.10	LS	\$3,646,500.00	\$364,650	602,047	29,848	
	Interstate 94 (EB)	10 Years	0.10	1.0	0.10	LS	\$4,948,100.00	\$494,810	816,945	40,502	
	Interstate 94 (WB)	10 Years	0.10	1.0	0.10	LS	\$4,948,100.00	\$494,810	816,945	40,502	
	US Highway 10 (EB)	10 Years	0.10	1.0	0.10	LS	\$5,113,400.00	\$511,340	844,237	41,855	
	US Highway 10 (WB)	10 Years	0.10	1.0	0.10	LS	\$5,113,400.00	\$511,340	844,237	41,855	
	28th Avenue N	10 Years	0.10	1.0	0.10	LS	\$4,101,000.00	\$410,100	677,087	33,568	
	57th Avenue N	10 Years	0.10	1.0	0.10	LS	\$3,491,500.00	\$349,150	576,456	28,579	
	CR 14	10 Years	0.10	1.0	0.10	LS	\$3,388,200.00	\$338,820	559,401	27,734	
	90th Avenue N	10 Years	0.10	1.0	0.10	LS	\$3,408,900.00	\$340,890	562,819	27,903	
	100th Avenue N	10 Years	0.10	1.0	0.10	LS	\$3,512,200.00	\$351,220	579,874	28,749	
	State Highway 75 (North)	10 Years	0.10	1.0	0.10	LS	\$4,844,800.00	\$484,480	799,890	39,656	
	110th Avenue NW	10 Years	0.10	1.0	0.10	LS	\$3,450,200.00	\$345,020	569,638	28,241	
	15 Street NW	10 Years	0.10	1.0	0.10	LS	\$3,346,900.00	\$334,690	552,583	27,395	
06	FISH AND WILDLIFE FACILITIES										
	Aquatic Footprint Maintenance	10 Years	0.01	3.6	0.04	LS	\$742,650.00	\$26,364	43,528	2,158	
	Fish PassageOperation	10 Years	0.01	1.0	0.01	LS	\$0.00	\$0	0	0	
	Wetlands Footprint Maintenance	10 Years	0.01	905.0	9.05	LS	\$14,000.00	\$126,700	209,185	10,371	
	Riparian Forest Footprint Maintenance	10 Years	0.01	89.0	0.89	LS	\$9,750.00	\$8,678	14,327	710	
	Adaptive Management	10 Years	1.00	1.0	1.00	LS	\$5,100,000.00	\$5,100,000	8,420,243	417,452	
08	RAILROAD BRIDGE										
	RR Bridge 1 BNSF P-Line Subdivision	10 Years	0.10	1.0	0.10	LS	\$4,400,000.00	\$440,000	726,452	36,015	
	RR Bridge 2 BNSF Mainline	10 Years	0.10	1.0	0.10	LS	\$18,435,900.00	\$1,843,590	3,043,819	150,904	
	RR Bridge 3 OTVR	10 Years	0.10	1.0	0.10	LS	\$4,462,700.00	\$446,270	736,804	36,529	
	RR Bridge 4 BNSF Moorhead Subdivision	10 Years	0.10	1.0	0.10	LS	\$4,469,000.00	\$446,900	737,844	36,580	

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT and REHABILITAION

Life Cycle 50 Years  
Rate of Return 4.375%

Date Prepared: 28-Apr-2011

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT CHANNEL DIVERSION - FCP MN Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	PROJECT UNIT PRICE	O&M AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$71,566,798	\$3,548,079	

Percentage of Construction 0.38%

09

### CHANNELS & CANALS

#### CHANNELS

#### DIVERSION CHANNEL EXCAVATION & SPOIL BERMS

##### REACH 1 - 2013

Channel Slope Maintenance - Type 1	10	Years	0.05	727,151.0	36357.55	LS	\$3.50	\$127,251	210,096	10,416	
Excavate Sediment from Channel - Type 2	10	Years	0.05	338,286.0	16914.30	LS	\$3.95	\$66,811	110,308	5,469	
Channel Slope Maintenance - Type 3	10	Years	0.05	0.0	0.00	LS	\$0.00	\$0			
Excavate Sediment from Channel - Type 4	10	Years	0.10	0.0	0.00	LS	\$0.00	\$0			
Repair Riprap Channel Bank Protection	10	Years	0.05	13,410.0	670.50	LS	\$122.11	\$81,875	135,178	6,702	
Repair Low Flow Channel Riprap Protection	5	Years	0.05	629.0	31.45	LS	\$106.39	\$3,346	12,367	613	
Channel Topsoil Maintenance	10	Years	0.10	51,762.0	5176.20	LS	\$1.91	\$9,887	16,323	809	
Spoil Berm Topsoil Maintenance	25	Years	0.05	278,571.0	13928.55	LS	\$1.84	\$25,629	11,799	585	
Turf Maintenance / Replacement	10	Years	0.05	198.0	9.90	LS	\$4,260.00	\$42,174	69,630	3,452	
Mowing	1	Year	2.00	198.0	396.00	ACRE	\$20.00	\$7,920	159,751	7,920	2 mowings per year @ \$20 / acre

##### REACH 2 - 2014

Channel Slope Maintenance - Type 1	10	Years	0.05	2,017,993.0	100899.65	LS	\$3.50	\$353,149	583,059	28,906	
Excavate Sediment from Channel - Type 2	10	Years	0.05	2,369,143.0	118457.15	LS	\$3.95	\$467,906	772,525	38,300	
Channel Slope Maintenance - Type 3	10	Years	0.05	0.0	0.00	LS	\$0.00	\$0			
Excavate Sediment from Channel - Type 4	10	Years	0.10	0.0	0.00	LS	\$0.00	\$0			
Repair Riprap Channel Bank Protection	10	Years	0.05	34,222.0	1711.10	LS	\$122.11	\$208,942	344,970	17,103	
Repair Low Flow Channel Riprap Protection	5	Years	0.05	1,605.0	80.25	LS	\$106.39	\$8,538	31,558	1,565	
Channel Topsoil Maintenance	10	Years	0.10	161,259.0	16125.90	LS	\$1.91	\$30,800	50,852	2,521	
Spoil Berm Topsoil Maintenance	25	Years	0.05	945,023.0	47251.15	LS	\$1.84	\$86,942	40,026	1,984	
Turf Maintenance / Replacement	10	Years	0.05	669.0	33.45	LS	\$4,260.00	\$142,497	235,267	11,664	
Mowing	1	Year	2.00	669.0	1,338.00	ACRE	\$20.00	\$26,760	539,765	26,760	2 mowings per year @ \$20 / acre

##### REACH 3 - 2015

Channel Slope Maintenance - Type 1	10	Years	0.05	3,755,851.0	187792.55	LS	\$3.50	\$657,274	1,085,178	53,800	
Channel Slope Maintenance - Type 2	10	Years	0.05	11,119,325.0	555966.25	LS	\$3.95	\$2,196,067	3,625,768	179,755	
Channel Slope Maintenance - Type 3	10	Years	0.05	0.0	0.00	LS	\$0.00	\$0			
Excavate Sediment from Channel - Type 4	10	Years	0.10	1,404,324.0	140432.40	LS	\$6.70	\$940,897	1,553,447	77,016	
Repair Riprap Channel Bank Protection	10	Years	0.05	57,363.0	2868.15	LS	\$122.11	\$350,230	578,239	28,667	
Repair Low Flow Channel Riprap Protection	5	Years	0.05	2,691.0	134.55	LS	\$106.39	\$14,315	52,911	2,623	
Channel Topsoil Maintenance	10	Years	0.10	321,616.0	32161.60	LS	\$1.91	\$61,429	101,420	5,028	
Spoil Berm Topsoil Maintenance	25	Years	0.05	2,209,112.0	110455.60	LS	\$1.84	\$203,238	93,566	4,639	
Turf Maintenance / Replacement	10	Years	0.05	1,541.0	77.05	LS	\$4,260.00	\$328,233	541,922	26,867	
Mowing	1	Year	2.00	1,541.0	3,082.00	ACRE	\$20.00	\$61,640	1,243,314	61,640	2 mowings per year @ \$20 / acre

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT and REHABILITAION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT

### CHANNEL DIVERSION - FCP MN Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	PROJECT UNIT PRICE	O&M AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$71,566,798	\$3,548,079	

Percentage of Construction 0.38%

09

#### REACH 4 - 2016

Channel Slope Maintenance - Type 1	10 Years	0.05	2,600,814.0	130040.70	LS	\$3.50	\$455,142	751,453	37,255	
Channel Slope Maintenance - Type 2	10 Years	0.05	6,511,502.0	325575.10	LS	\$3.95	\$1,286,022	2,123,258	105,265	
Channel Slope Maintenance - Type 3	10 Years	0.05	795,024.0	39751.20	LS	\$5.21	\$207,104	341,934	16,952	
Excavate Sediment from Channel - Type 4	10 Years	0.10	1,861,980.0	186198.00	LS	\$6.70	\$1,247,527	2,059,701	102,114	
Repair Riprap Channel Bank Protection	10 Years	0.05	28,664.0	1433.20	LS	\$122.11	\$175,008	288,943	14,325	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	1,345.0	67.25	LS	\$106.39	\$7,155	26,446	1,311	
Channel Topsoil Maintenance	10 Years	0.10	207,663.0	20766.30	LS	\$1.91	\$39,664	65,486	3,247	
Spoil Berm Topsoil Maintenance	25 Years	0.05	1,288,260.0	64413.00	LS	\$1.84	\$118,520	54,564	2,705	
Turf Maintenance / Replacement	10 Years	0.05	913.0	45.65	LS	\$4,260.00	\$194,469	321,074	15,918	
Mowing	1 Year	2.00	913.0	1,826.00	ACRE	\$20.00	\$36,520	736,629	36,520	2 mowings per year @ \$20 / acre

#### REACH 5 - 2017

Channel Slope Maintenance - Type 1	10 Years	0.05	2,144,380.0	107219.00	LS	\$3.50	\$375,267	619,575	30,717	
Channel Slope Maintenance - Type 2	10 Years	0.05	3,635,924.0	181796.20	LS	\$3.95	\$718,095	1,185,595	58,778	
Channel Slope Maintenance - Type 3	10 Years	0.05	147,721.0	7386.05	LS	\$5.21	\$38,481	63,534	3,150	
Excavate Sediment from Channel - Type 4	10 Years	0.10	623,200.0	62320.00	LS	\$6.70	\$417,544	689,377	34,177	
Repair Riprap Channel Bank Protection	10 Years	0.05	20,533.0	1026.65	LS	\$122.11	\$125,364	206,980	10,261	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	963.0	48.15	LS	\$106.39	\$5,123	18,935	939	
Channel Topsoil Maintenance	10 Years	0.10	129,444.0	12944.40	LS	\$1.91	\$24,724	40,820	2,024	
Spoil Berm Topsoil Maintenance	25 Years	0.05	871,562.0	43578.10	LS	\$1.84	\$80,184	36,915	1,830	
Turf Maintenance / Replacement	10 Years	0.05	611.0	30.55	LS	\$4,260.00	\$130,143	214,870	10,653	
Mowing	1 Year	2.00	611.0	1,222.00	ACRE	\$20.00	\$24,440	492,969	24,440	2 mowings per year @ \$20 / acre

#### REACH 6 - 2018

Channel Slope Maintenance - Type 1	10 Years	0.05	6,984,125.0	349206.25	LS	\$3.50	\$1,222,222	2,017,922	100,043	
Channel Slope Maintenance - Type 2	10 Years	0.05	5,599,732.0	279986.60	LS	\$3.95	\$1,105,947	1,825,950	90,525	
Channel Slope Maintenance - Type 3	10 Years	0.05	5,336,045.0	266802.25	LS	\$5.21	\$1,390,040	2,294,994	113,779	
Excavate Sediment from Channel - Type 4	10 Years	0.10	2,246,186.0	224618.60	LS	\$6.70	\$1,504,945	2,484,706	123,185	
Repair Riprap Channel Bank Protection	10 Years	0.05	84,858.0	4242.90	LS	\$122.11	\$518,101	855,398	42,408	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	3,981.0	199.05	LS	\$106.39	\$21,177	78,275	3,881	
Channel Topsoil Maintenance	10 Years	0.10	1.0	0.10	LS	\$2,788,300.00	\$278,830	460,356	22,823	
Spoil Berm Topsoil Maintenance	25 Years	0.05	2,905,687.0	145284.35	LS	\$1.84	\$267,323	123,069	6,101	
Turf Maintenance / Replacement	10 Years	0.05	2,033.0	101.65	LS	\$4,260.00	\$433,029	714,943	35,445	
Mowing	1 Year	2.00	2,033.0	4,066.00	ACRE	\$20.00	\$81,320	1,640,271	81,320	2 mowings per year @ \$20 / acre

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT and REHABILITAION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT CHANNEL DIVERSION - FCP MN Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	PROJECT UNIT PRICE	O&M AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$71,566,798	\$3,548,079	
										Percentage of Construction 0.38%	

09

### RED RIVER INLET CONTROL STRUCTURE

#### RRN GATED INLET CONTROL STRUCTURE

##### Gated Structure

Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$3,900,300.00	\$1,950,150	229,215	11,364	
Gates and Bulkheads - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$5,638,400.00	\$2,819,200	331,361	16,428	
Gates and Bulkheads - Annual O & M	1 Year	1.00	1	1	LS	\$30,000	\$30,000	605,117	30,000	
Wingwalls - Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$5,644,700.00	\$2,822,350	331,731	16,446	
Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$2,788,300.00	\$139,415	230,178	11,412	
Fish Passage System Miantenance	10 Years	0.05	1.0	0.05	LS	\$5,487,200.00	\$274,360	452,976	22,457	
Mech, Elect, SCADA, Ice Control & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$5,677,500.00	\$113,550	2,290,369	113,550	Annual O&M costs = 2.0% of construction

#### RRN INLET WEIR TO DIVERSION

Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$4,522,000.00	\$226,100	373,297	18,507	
SCADA	1 Year	0.02	1.0	0.02	LS	\$77,700.00	\$1,554	31,345	1,554	Annual O&M costs = 2.0% of construction

#### RRN INLET WEIR TO EXTENSION CHANNEL

Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$1,884,100.00	\$94,205	155,535	7,711	
SCADA	1 Year	0.02	1.0	0.02	LS	\$77,700.00	\$1,554	31,345	1,554	Annual O&M costs = 2.0% of construction

### RED RIVER DIVERSION CHANNEL DROP STRUCTURE

Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$1,730,300.00	\$86,515	142,839	7,082	
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### RED RIVER OUTLET CONTROL STRUCTURE

Repair Riprap Erosion Protection	10 Years	0.05	9,722.0	486.10	LS	\$146.41	\$71,170	117,503	5,825	
SCADA	1 Year	0.02	1.0	0.02	LS	\$15,200.00	\$304	6,132	304	Annual O&M costs = 2.0% of construction

SMALL DRAINS	10 Years	0.05	3.0	0.15	LS	\$261,800.00	\$39,270	64,836	3,214	
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SIDE CHANNEL INLET MANHOLES - 72-INCH	10 Years	0.05	7.0	0.35	LS	\$454,400.00	\$159,040	262,579	13,018	
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SIDE CHANNEL INLET MH - TWIN 72-INCH	10 Years	0.05	11.0	0.55	LS	\$825,100.00	\$453,805	749,245	37,145	
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### DIVERSION LANDSCAPE PLANTINGS

Main Diversion Channel Plantings	10 Years	0.01	24.6	0.25	LS	\$30,000.00	\$7,380	12,185	604	
Extension Diversion Channel Plantings	10 Years	0.01	3.0	0.03	LS	\$30,000.00	\$900	1,486	74	

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### LEVEES, FLOODWALLS & FLOODPROOFING

#### LEVEES

##### TIE-BACK LEVEES

Levee Embankment Maintenance	10 Years	0.05	575,000.0	28750.00	LS	\$17.17	\$493,638	815,009	40,406	
Levee Topsoil Maintenance	10 Years	0.05	165,000.0	8250.00	LS	\$11.55	\$95,288	157,322	7,800	
Levee Turf Maintenance / Replacement	10 Years	0.05	170.0	8.50	LS	\$4,217.00	\$35,845	59,180	2,934	
Mowing	1 Year	4.00	170.0	680.00	ACRE	\$20.00	\$13,600	274,320	13,600	4 mowings per year @ \$20 / acre
Fertilizing & Weed Control	1 Year	1.00	170.0	170.00	ACRE	\$250.00	\$42,500	857,250	42,500	
Floodwall										
Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$1,016,200.00	\$508,100	59,721	2,961	

### NON-STRUCTURAL FLOODPROOFING

Floodwall										
Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$348,000.00	\$174,000	20,451	1,014	

USACE-MVP-0000088005

<b>OPERATION, MAINTENANCE, REPAIR, REPLACEMENT and REHABILITAION</b>										Life Cycle 50 Years Rate of Return 4.375%	Date Prepared: 28-Apr-2011
<b>FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT</b> <b>CHANNEL DIVERSION - FCP MN Phase 4</b>											
<b>FARGO-MOORHEAD METRO FEASIBILITY REPORT</b>					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	PROJECT UNIT PRICE	O&M AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$71,566,798	\$3,548,079	
										Percentage of Construction	0.38%

14	<b>RECREATIONAL FACILITIES</b>										
	Multi-Purpose Trails	20 Years	0.05	30.0	1.50	MI	\$270,000.00	\$405,000	263,826	13,080	
	Soft Trails	10 Years	0.05	18.0	0.90	MI	\$105,400.00	\$94,860	156,617	7,765	
	Trail River Crossing	20 Years	0.05	2.0	0.10	EA	\$2,850,000.00	\$285,000	185,656	9,204	
	Trailhead Facilities	20 Years	0.05	3.0	0.15	EA	\$152,600.00	\$22,890	14,911	739	
	Parking Facilities										
	Car Parking Lots	10 Years	0.10	3.0	0.30	EA	\$88,100.00	\$26,430	43,637	2,163	
	Car/Trailer Park Lots	10 Years	0.10	2.0	0.20	EA	\$193,100.00	\$38,620	63,763	3,161	
	Interpretive Siganage	5 Years	0.10	1.0	0.10	LS	\$33,100.00	\$3,310	12,235	607	
	Landscaping	25 Years	0.05	100.0	5.00	ACRE	\$31,300.00	\$156,500	72,049	3,572	
<b>Total O&amp;M</b>									<b>\$71,566,798</b>	<b>\$3,548,079</b>	

**\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\***  
**LPP North Dakota Phase 4**

Printed:6/28/2011

PROJECT: Fargo-Moorhead Metro Feasibility Study  
 LOCATION: Fargo, ND & Moorhead, MN


DISTRICT: St Paul District - MVP  
 POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

This Estimate reflects the scope and schedule in report:

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	BASE COST TOTAL (\$K)	Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
						ESC (%)	COST (\$K)	CNTG (\$K)	FIRST COST TOTAL (\$K)	Spent Thru: 1-Oct-2011 (\$K)	L	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	K		M	N	O
02	RELOCATIONS	\$119,480	\$31,065	26%	\$150,544	2.5%	\$122,453	\$31,838	\$154,291			\$137,127	\$35,653	\$172,779
06	FISH & WILDLIFE FACILITIES	\$48,059	\$12,495	26%	\$60,555	2.4%	\$49,196	\$12,791	\$61,987			\$54,244	\$14,103	\$68,347
08	ROADS, RAILROADS & BRIDGES	\$46,498	\$12,089	26%	\$58,587	2.5%	\$47,655	\$12,390	\$60,045			\$51,605	\$13,417	\$65,023
09	CHANNELS & CANALS	\$609,689	\$158,519	26%	\$768,209	2.0%	\$622,046	\$161,732	\$783,778			\$693,331	\$180,266	\$873,597
11	LEVEES, FLOODWALLS & FLOODPROOFING	\$111,191	\$28,910	26%	\$140,100	2.4%	\$113,837	\$29,598	\$143,435			\$131,521	\$34,196	\$165,717
14	RECREATION FACILITIES	\$23,024	\$5,986	26%	\$29,011	2.7%	\$23,650	\$6,149	\$29,800			\$26,308	\$6,840	\$33,148
CONSTRUCTION ESTIMATE TOTALS:		\$957,941	\$249,065		\$1,207,005	2.2%	\$978,838	\$254,498	\$1,233,336			\$1,094,136	\$284,475	\$1,378,611
01	LANDS AND DAMAGES	\$215,565	\$56,047	26%	\$271,612	2.5%	\$220,930	\$57,442	\$278,372			\$238,338	\$61,968	\$300,306
30	PLANNING, ENGINEERING & DESIGN	\$143,703	\$37,363	26%	\$181,066	1.5%	\$145,913	\$37,937	\$183,850			\$175,332	\$45,586	\$220,919
31	CONSTRUCTION MANAGEMENT	\$67,056	\$17,435	26%	\$84,491	1.5%	\$68,087	\$17,703	\$85,790			\$85,679	\$22,277	\$107,956
PROJECT COST TOTALS:		\$1,384,265	\$359,909	26%	\$1,744,174	2.1%	\$1,413,768	\$367,580	\$1,781,347			\$1,593,485	\$414,306	\$2,007,791



CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PROJECT CO-MANAGERS, Brett R Coleman & Terry L Williams

CHIEF, REAL ESTATE, John P Albrecht

ESTIMATED FEDERAL COST <sup>(1)</sup>: 44.0% **\$884,272**

ESTIMATED NON-FEDERAL COST: 56.0% **\$1,123,519**

**ESTIMATED TOTAL PROJECT COST: \$2,007,791**

(1) Estimated Federal Cost is limited to 65% of the FCP MN Phase 4 Fully Funded Cost without Recreation costs plus 50% of the LPP ND Phase 4 Recreation costs

**O&M OUTSIDE OF TOTAL PROJECT COST:**

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 1 - 2013

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	RISK BASED				ESC	COST	CNTG	TOTAL	Mid-Point	ESC	COST	CNTG	FULL
		COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	(%)	(\$K)	(\$K)	(\$K)	Date	(%)	(\$K)	(\$K)	(\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
02	REACH 1 - 2013													
06	RELOCATIONS	\$3,259	\$847	26%	\$4,106	2.5%	\$3,340	\$868	\$4,208	2013Q4	2.8%	\$3,432	\$892	\$4,325
08	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2014Q2	3.7%	\$6,375	\$1,658	\$8,033
09	ROADS, RAILROADS & BRIDGES			26%										
11	CHANNELS & CANALS	\$24,015	\$6,244	26%	\$30,259	2.0%	\$24,502	\$6,370	\$30,872	2014Q2	3.7%	\$25,402	\$6,605	\$32,007
14	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2014Q4	4.6%	\$3,091	\$804	\$3,895
CONSTRUCTION ESTIMATE TOTALS:		\$36,159	\$9,401	26%	\$45,560		\$36,947	\$9,606	\$46,554			\$38,301	\$9,958	\$48,259
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2013Q1	1.5%	\$28,043	\$7,291	\$35,334
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$362	\$94	26%	\$456	1.5%	\$368	\$96	\$463	2012Q3	1.0%	\$371	\$97	\$468
2.0%	Planning & Environmental Compliance	\$723	\$188	26%	\$911	1.5%	\$734	\$191	\$925	2012Q3	1.0%	\$741	\$193	\$934
8.0%	Engineering & Design	\$2,893	\$752	26%	\$3,645	1.5%	\$2,937	\$764	\$3,701	2012Q3	1.0%	\$2,966	\$771	\$3,737
1.0%	Engineering Tech Review ITR & VE	\$362	\$94	26%	\$456	1.5%	\$368	\$96	\$463	2012Q3	1.0%	\$371	\$97	\$468
1.0%	Contracting & Reprographics	\$362	\$94	26%	\$456	1.5%	\$368	\$96	\$463	2012Q3	1.0%	\$371	\$97	\$468
1.0%	Engineering During Construction	\$362	\$94	26%	\$456	1.5%	\$368	\$96	\$463	2014Q2	7.7%	\$396	\$103	\$499
1.0%	Planning During Construction	\$362	\$94	26%	\$456	1.5%	\$368	\$96	\$463	2014Q2	7.7%	\$396	\$103	\$499
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$2,531	\$658	26%	\$3,189	1.5%	\$2,570	\$668	\$3,238	2014Q2	7.7%	\$2,767	\$719	\$3,486
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$71,062	\$18,476		\$89,538		\$72,643	\$18,887	\$91,530			\$74,724	\$19,428	\$94,152

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 2 - 2014

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
02	REACH 2 - 2014													
06	RELOCATIONS	\$4,288	\$1,115	26%	\$5,403	2.5%	\$4,395	\$1,143	\$5,537	2014Q4	4.6%	\$4,595	\$1,195	\$5,790
08	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2015Q2	5.4%	\$6,484	\$1,686	\$8,170
09	ROADS, RAILROADS & BRIDGES	\$7,868	\$2,046	26%	\$9,913	2.5%	\$8,063	\$2,096	\$10,160	2015Q2	5.4%	\$8,502	\$2,210	\$10,712
11	CHANNELS & CANALS	\$50,130	\$13,034	26%	\$63,164	2.0%	\$51,146	\$13,298	\$64,444	2015Q2	5.4%	\$53,928	\$14,021	\$67,949
14	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2015Q4	6.3%	\$3,144	\$817	\$3,961
CONSTRUCTION ESTIMATE TOTALS:		\$71,171	\$18,504	26%	\$89,676		\$72,710	\$18,905	\$91,615			\$76,652	\$19,929	\$96,581
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2014Q1	3.2%	\$28,509	\$7,412	\$35,922
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$712	\$185	26%	\$897	1.5%	\$723	\$188	\$911	2013Q3	4.3%	\$754	\$196	\$950
2.0%	Planning & Environmental Compliance	\$1,423	\$370	26%	\$1,793	1.5%	\$1,445	\$376	\$1,821	2013Q3	4.3%	\$1,507	\$392	\$1,899
8.0%	Engineering & Design	\$5,694	\$1,480	26%	\$7,174	1.5%	\$5,782	\$1,503	\$7,285	2013Q3	4.3%	\$6,030	\$1,568	\$7,598
1.0%	Engineering Tech Review ITR & VE	\$712	\$185	26%	\$897	1.5%	\$723	\$188	\$911	2013Q3	4.3%	\$754	\$196	\$950
1.0%	Contracting & Reprographics	\$712	\$185	26%	\$897	1.5%	\$723	\$188	\$911	2013Q3	4.3%	\$754	\$196	\$950
1.0%	Engineering During Construction	\$712	\$185	26%	\$897	1.5%	\$723	\$188	\$911	2015Q2	12.1%	\$810	\$211	\$1,021
1.0%	Planning During Construction	\$712	\$185	26%	\$897	1.5%	\$723	\$188	\$911	2015Q2	12.1%	\$810	\$211	\$1,021
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$4,982	\$1,295	26%	\$6,277	1.5%	\$5,059	\$1,315	\$6,374	2015Q2	12.1%	\$5,669	\$1,474	\$7,143
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$113,776	\$29,582		\$143,357		\$116,226	\$30,219	\$146,445			\$122,250	\$31,785	\$154,034

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 3 - 2015

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

<div> <div>Estimate Prepared: 1-Aug-2010</div> <div>Effective Price Level: 1 OCT 2010</div> </div>						<div> <div>Program Year (Budget EC): 2012</div> <div>Effective Price Level Date: 1 OCT 11</div> </div>				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 3 - 2015													
02	RELOCATIONS	\$15,500	\$4,030	26%	\$19,530	2.5%	\$15,886	\$4,130	\$20,016	2015Q4	6.3%	\$16,892	\$4,392	\$21,284
06	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2016Q2	7.2%	\$6,594	\$1,714	\$8,309
08	ROADS, RAILROADS & BRIDGES	\$20,743	\$5,393	26%	\$26,136	2.5%	\$21,259	\$5,527	\$26,786	2016Q2	7.2%	\$22,796	\$5,927	\$28,723
09	CHANNELS & CANALS	\$30,525	\$7,937	26%	\$38,462	2.0%	\$31,144	\$8,097	\$39,241	2016Q2	7.2%	\$33,396	\$8,683	\$42,079
11	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2016Q4	8.1%	\$3,197	\$831	\$4,028
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	\$75,653	\$19,670	26%	\$95,323		\$77,394	\$20,123	\$97,517			\$82,875	\$21,548	\$104,423
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2015Q1	5.0%	\$28,994	\$7,538	\$36,532
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$757	\$197	26%	\$954	1.5%	\$769	\$200	\$968	2014Q3	8.8%	\$836	\$217	\$1,053
2.0%	Planning & Environmental Compliance	\$1,513	\$393	26%	\$1,906	1.5%	\$1,536	\$399	\$1,936	2014Q3	8.8%	\$1,671	\$434	\$2,105
8.0%	Engineering & Design	\$6,052	\$1,574	26%	\$7,626	1.5%	\$6,145	\$1,598	\$7,743	2014Q3	8.8%	\$6,684	\$1,738	\$8,422
1.0%	Engineering Tech Review ITR & VE	\$757	\$197	26%	\$954	1.5%	\$769	\$200	\$968	2014Q3	8.8%	\$836	\$217	\$1,053
1.0%	Contracting & Reprographics	\$757	\$197	26%	\$954	1.5%	\$769	\$200	\$968	2014Q3	8.8%	\$836	\$217	\$1,053
1.0%	Engineering During Construction	\$757	\$197	26%	\$954	1.5%	\$769	\$200	\$968	2016Q2	16.6%	\$896	\$233	\$1,129
1.0%	Planning During Construction	\$757	\$197	26%	\$954	1.5%	\$769	\$200	\$968	2016Q2	16.6%	\$896	\$233	\$1,129
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$5,296	\$1,377	26%	\$6,673	1.5%	\$5,377	\$1,398	\$6,776	2016Q2	16.6%	\$6,268	\$1,630	\$7,898
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	\$119,245	\$31,004		\$150,249		\$121,913	\$31,697	\$153,610			\$130,792	\$34,006	\$164,798

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 4 - 2016

PROJECT: Fargo-Moorhead Metro Feasibility Study  
LOCATION: Fargo, ND & Moorhead, MN  
This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP  
POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE  
PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
REACH 4 - 2016														
02	RELOCATIONS	\$16,770	\$4,360	26%	\$21,131	2.5%	\$17,188	\$4,469	\$21,656	2016Q4	8.1%	\$18,587	\$4,833	\$23,420
06	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2017Q2	9.1%	\$6,712	\$1,745	\$8,457
08	ROADS, RAILROADS & BRIDGES	\$10,548	\$2,743	26%	\$13,291	2.5%	\$10,811	\$2,811	\$13,622	2017Q2	9.1%	\$11,800	\$3,068	\$14,868
09	CHANNELS & CANALS	\$108,550	\$28,223	26%	\$136,773	2.0%	\$110,750	\$28,795	\$139,545	2017Q2	9.1%	\$120,880	\$31,429	\$152,309
11	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
14	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2017Q4	10.1%	\$3,256	\$847	\$4,102
CONSTRUCTION ESTIMATE TOTALS:		\$144,754	\$37,636	26%	\$182,390		\$147,854	\$38,442	\$186,297			\$161,235	\$41,921	\$203,156
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2016Q1	6.8%	\$29,487	\$7,667	\$37,153
30 PLANNING, ENGINEERING & DESIGN														
1.0%	Project Management	\$1,448	\$376	26%	\$1,824	1.5%	\$1,470	\$382	\$1,853	2015Q3	13.2%	\$1,664	\$433	\$2,097
2.0%	Planning & Environmental Compliance	\$2,895	\$753	26%	\$3,648	1.5%	\$2,940	\$764	\$3,704	2015Q3	13.2%	\$3,327	\$865	\$4,192
8.0%	Engineering & Design	\$11,580	\$3,011	26%	\$14,591	1.5%	\$11,758	\$3,057	\$14,815	2015Q3	13.2%	\$13,309	\$3,460	\$16,769
1.0%	Engineering Tech Review ITR & VE	\$1,448	\$376	26%	\$1,824	1.5%	\$1,470	\$382	\$1,853	2015Q3	13.2%	\$1,664	\$433	\$2,097
1.0%	Contracting & Reprographics	\$1,448	\$376	26%	\$1,824	1.5%	\$1,470	\$382	\$1,853	2015Q3	13.2%	\$1,664	\$433	\$2,097
1.0%	Engineering During Construction	\$1,448	\$376	26%	\$1,824	1.5%	\$1,470	\$382	\$1,853	2017Q2	21.1%	\$1,780	\$463	\$2,243
1.0%	Planning During Construction	\$1,448	\$376	26%	\$1,824	1.5%	\$1,470	\$382	\$1,853	2017Q2	21.1%	\$1,780	\$463	\$2,243
	Project Operations			26%										
31 CONSTRUCTION MANAGEMENT														
7.0%	Construction Management	\$10,133	\$2,635	26%	\$12,768	1.5%	\$10,289	\$2,675	\$12,964	2017Q2	21.1%	\$12,455	\$3,238	\$15,693
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$203,548	\$52,922		\$256,470		\$207,808	\$54,030	\$261,839			\$228,365	\$59,375	\$287,740

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 5 - 2017

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
02	REACH 5 - 2017													
06	RELOCATIONS	\$4,466	\$1,161	26%	\$5,627	2.5%	\$4,577	\$1,190	\$5,767	2017Q4	10.1%	\$5,041	\$1,311	\$6,351
08	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2018Q2	11.1%	\$6,833	\$1,777	\$8,609
09	ROADS, RAILROADS & BRIDGES			26%										
11	CHANNELS & CANALS	\$58,912	\$15,317	26%	\$74,229	2.0%	\$60,106	\$15,628	\$75,734	2018Q2	11.1%	\$66,785	\$17,364	\$84,149
14	LEVEES, FLOODWALLS & FLOODPROOFING			26%										
	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2018Q4	12.1%	\$3,314	\$862	\$4,176
CONSTRUCTION ESTIMATE TOTALS:		\$72,263	\$18,788	26%	\$91,052		\$73,789	\$19,185	\$92,974			\$81,973	\$21,313	\$103,286
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2017Q1	8.7%	\$30,006	\$7,802	\$37,808
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$723	\$188	26%	\$911	1.5%	\$734	\$191	\$925	2016Q3	17.7%	\$864	\$225	\$1,089
2.0%	Planning & Environmental Compliance	\$1,445	\$376	26%	\$1,821	1.5%	\$1,467	\$381	\$1,849	2016Q3	17.7%	\$1,727	\$449	\$2,176
8.0%	Engineering & Design	\$5,781	\$1,503	26%	\$7,284	1.5%	\$5,870	\$1,526	\$7,396	2016Q3	17.7%	\$6,908	\$1,796	\$8,704
1.0%	Engineering Tech Review ITR & VE	\$723	\$188	26%	\$911	1.5%	\$734	\$191	\$925	2016Q3	17.7%	\$864	\$225	\$1,089
1.0%	Contracting & Reprographics	\$723	\$188	26%	\$911	1.5%	\$734	\$191	\$925	2016Q3	17.7%	\$864	\$225	\$1,089
1.0%	Engineering During Construction	\$723	\$188	26%	\$911	1.5%	\$734	\$191	\$925	2018Q2	25.5%	\$922	\$240	\$1,161
1.0%	Planning During Construction	\$723	\$188	26%	\$911	1.5%	\$734	\$191	\$925	2018Q2	25.5%	\$922	\$240	\$1,161
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$5,058	\$1,315	26%	\$6,373	1.5%	\$5,136	\$1,335	\$6,471	2018Q2	25.5%	\$6,448	\$1,676	\$8,124
	Project Operation:			26%										
	Project Management			26%										
CONTRACT COST TOTALS:		\$115,108	\$29,928		\$145,036		\$117,549	\$30,563	\$148,111			\$131,497	\$34,189	\$165,686

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 6 - 2018

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

<div> <div>Estimate Prepared: 1-Aug-2010</div> <div>Effective Price Level: 1 OCT 2010</div> </div>						<div> <div>Program Year (Budget EC): 2012</div> <div>Effective Price Level Date: 1 OCT 11</div> </div>				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 6 - 2018													
02	RELOCATIONS	\$18,595	\$4,835	26%	\$23,429	2.5%	\$19,057	\$4,955	\$24,012	2018Q4	12.1%	\$21,366	\$5,555	\$26,921
06	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2019Q2	13.1%	\$6,956	\$1,809	\$8,764
08	ROADS, RAILROADS & BRIDGES	\$7,339	\$1,908	26%	\$9,247	2.5%	\$7,522	\$1,956	\$9,477	2019Q2	13.1%	\$8,508	\$2,212	\$10,720
09	CHANNELS & CANALS	\$235,434	\$61,213	26%	\$296,647	2.0%	\$240,206	\$62,454	\$302,659	2019Q2	13.1%	\$271,701	\$70,642	\$342,344
11	LEVEES, FLOODWALLS & FLOODPROOFING	\$6,802	\$1,768	26%	\$8,570	2.4%	\$6,964	\$1,811	\$8,774	2019Q2	13.1%	\$7,877	\$2,048	\$9,925
14	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2019Q4	14.1%	\$3,374	\$877	\$4,251
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	<b>\$277,055</b>	<b>\$72,034</b>	<b>26%</b>	<b>\$349,089</b>		<b>\$282,854</b>	<b>\$73,542</b>	<b>\$356,396</b>			<b>\$319,781</b>	<b>\$83,143</b>	<b>\$402,924</b>
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2018Q1	10.6%	\$30,546	\$7,942	\$38,488
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$2,771	\$720	26%	\$3,491	1.5%	\$2,814	\$732	\$3,545	2017Q3	22.2%	\$3,438	\$894	\$4,331
2.0%	Planning & Environmental Compliance	\$5,541	\$1,441	26%	\$6,982	1.5%	\$5,626	\$1,463	\$7,089	2017Q3	22.2%	\$6,874	\$1,787	\$8,661
8.0%	Engineering & Design	\$22,164	\$5,763	26%	\$27,927	1.5%	\$22,505	\$5,851	\$28,356	2017Q3	22.2%	\$27,496	\$7,149	\$34,645
1.0%	Engineering Tech Review ITR & VE	\$2,771	\$720	26%	\$3,491	1.5%	\$2,814	\$732	\$3,545	2017Q3	22.2%	\$3,438	\$894	\$4,331
1.0%	Contracting & Reprographics	\$2,771	\$720	26%	\$3,491	1.5%	\$2,814	\$732	\$3,545	2017Q3	22.2%	\$3,438	\$894	\$4,331
1.0%	Engineering During Construction	\$2,771	\$720	26%	\$3,491	1.5%	\$2,814	\$732	\$3,545	2018Q2	25.5%	\$3,532	\$918	\$4,451
1.0%	Planning During Construction	\$2,771	\$720	26%	\$3,491	1.5%	\$2,814	\$732	\$3,545	2018Q2	25.5%	\$3,532	\$918	\$4,451
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$19,394	\$5,042	26%	\$24,436	1.5%	\$19,692	\$5,120	\$24,812	2018Q2	25.5%	\$24,724	\$6,428	\$31,152
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	<b>\$364,954</b>	<b>\$94,888</b>		<b>\$459,843</b>		<b>\$372,362</b>	<b>\$96,814</b>	<b>\$469,176</b>			<b>\$426,799</b>	<b>\$110,968</b>	<b>\$537,767</b>

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 7 - 2019

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 7 - 2019													
02	RELOCATIONS	\$8,911	\$2,317	26%	\$11,227	2.5%	\$9,132	\$2,374	\$11,507	2019Q4	14.1%	\$10,423	\$2,710	\$13,133
06	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$7,569	2.4%	\$6,150	\$1,599	\$7,748	2020Q2	15.1%	\$7,081	\$1,841	\$8,922
08	ROADS, RAILROADS & BRIDGES			26%										
09	CHANNELS & CANALS	\$42,301	\$10,998	26%	\$53,299	2.0%	\$43,158	\$11,221	\$54,379	2020Q2	15.1%	\$49,695	\$12,921	\$62,616
11	LEVEES, FLOODWALLS & FLOODPROOFING	\$76,992	\$20,018	26%	\$97,010	2.4%	\$78,825	\$20,494	\$99,319	2020Q2	15.1%	\$90,766	\$23,599	\$114,365
14	RECREATION FACILITIES	\$2,878	\$748	26%	\$3,626	2.7%	\$2,956	\$769	\$3,725	2020Q4	16.2%	\$3,435	\$893	\$4,328
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	<b>\$137,089</b>	<b>\$35,643</b>	<b>26%</b>	<b>\$172,732</b>		<b>\$140,221</b>	<b>\$36,457</b>	<b>\$176,678</b>			<b>\$161,400</b>	<b>\$41,964</b>	<b>\$203,363</b>
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$33,951	2.5%	\$27,616	\$7,180	\$34,796	2019Q1	12.6%	\$31,096	\$8,085	\$39,181
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$1,371	\$356	26%	\$1,727	1.5%	\$1,392	\$362	\$1,754	2018Q3	26.7%	\$1,763	\$458	\$2,222
2.0%	Planning & Environmental Compliance	\$2,742	\$713	26%	\$3,455	1.5%	\$2,784	\$724	\$3,508	2018Q3	26.7%	\$3,527	\$917	\$4,444
8.0%	Engineering & Design	\$10,967	\$2,851	26%	\$13,818	1.5%	\$11,136	\$2,895	\$14,031	2018Q3	26.7%	\$14,106	\$3,668	\$17,773
1.0%	Engineering Tech Review ITR & VE	\$1,371	\$356	26%	\$1,727	1.5%	\$1,392	\$362	\$1,754	2018Q3	26.7%	\$1,763	\$458	\$2,222
1.0%	Contracting & Reprographics	\$1,371	\$356	26%	\$1,727	1.5%	\$1,392	\$362	\$1,754	2018Q3	26.7%	\$1,763	\$458	\$2,222
1.0%	Engineering During Construction	\$1,371	\$356	26%	\$1,727	1.5%	\$1,392	\$362	\$1,754	2020Q2	34.6%	\$1,874	\$487	\$2,362
1.0%	Planning During Construction	\$1,371	\$356	26%	\$1,727	1.5%	\$1,392	\$362	\$1,754	2020Q2	34.6%	\$1,874	\$487	\$2,362
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$9,596	\$2,495	26%	\$12,091	1.5%	\$9,744	\$2,533	\$12,277	2020Q2	34.6%	\$13,118	\$3,411	\$16,529
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	<b>\$194,194</b>	<b>\$50,491</b>		<b>\$244,685</b>		<b>\$198,461</b>	<b>\$51,600</b>	<b>\$250,060</b>			<b>\$232,286</b>	<b>\$60,394</b>	<b>\$292,680</b>

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:6/28/2011

LPP North Dakota Phase 4

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

REACH 8 - 2020

PROJECT: Fargo-Moorhead Metro Feasibility Study

LOCATION: Fargo, ND & Moorhead, MN

This Estimate reflects the scope and schedule in report;

Final Fargo-Moorhead Metro Feasibility Report and Environmental Impact Statement

DISTRICT: St Paul District - MVP

POC: CHIEF, COST ENGINEERING, James D Sentz, PE, CCE

PREPARED: 4/28/2011

Estimate Prepared: 1-Aug-2010 Effective Price Level: 1 OCT 2010						Program Year (Budget EC): 2012 Effective Price Level Date: 1 OCT 11				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
	REACH 8 - 2020													
02	RELOCATIONS	\$47,692	\$12,400	26%	\$ 60,092	2.5%	\$48,879	\$12,709	\$61,588	2020Q4	16.2%	\$56,790	\$14,766	\$71,556
06	FISH & WILDLIFE FACILITIES	\$6,007	\$1,562	26%	\$ 7,569	2.4%	\$6,150	\$1,599	\$7,748	2021Q2	17.2%	\$7,208	\$1,874	\$9,083
08	ROADS, RAILROADS & BRIDGES			26%	\$ -									
09	CHANNELS & CANALS	\$59,822	\$15,554	26%	\$ 75,376	2.0%	\$61,034	\$15,869	\$76,903	2021Q2	17.2%	\$71,544	\$18,602	\$90,146
11	LEVEES, FLOODWALLS & FLOODPROOFING	\$27,397	\$7,123	26%	\$ 34,520	2.4%	\$28,049	\$7,293	\$35,341	2021Q2	17.2%	\$32,879	\$8,549	\$41,427
14	RECREATION FACILITIES	\$2,878	\$748	26%	\$ 3,626	2.7%	\$2,956	\$769	\$3,725	2021Q4	18.3%	\$3,497	\$909	\$4,406
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	<b>\$143,796</b>	<b>\$37,387</b>	<b>26%</b>	<b>181,183</b>		<b>\$147,068</b>	<b>\$38,238</b>	<b>\$185,306</b>			<b>\$171,919</b>	<b>\$44,699</b>	<b>\$216,618</b>
01	LANDS AND DAMAGES	\$26,946	\$7,006	26%	\$ 33,951	2.5%	\$27,616	\$7,180	\$34,796	2020Q1	14.6%	\$31,656	\$8,231	\$39,886
30	PLANNING, ENGINEERING & DESIGN													
1.0%	Project Management	\$1,438	\$374	26%	1,812	1.5%	\$1,460	\$380	\$1,840	2019Q3	31.2%	\$1,916	\$498	\$2,414
2.0%	Planning & Environmental Compliance	\$2,876	\$748	26%	3,624	1.5%	\$2,920	\$759	\$3,679	2019Q3	31.2%	\$3,831	\$996	\$4,827
8.0%	Engineering & Design	\$11,504	\$2,991	26%	14,495	1.5%	\$11,681	\$3,037	\$14,718	2019Q3	31.2%	\$15,324	\$3,984	\$19,309
1.0%	Engineering Tech Review ITR & VE	\$1,438	\$374	26%	1,812	1.5%	\$1,460	\$380	\$1,840	2019Q3	31.2%	\$1,916	\$498	\$2,414
1.0%	Contracting & Reprographics	\$1,438	\$374	26%	1,812	1.5%	\$1,460	\$380	\$1,840	2019Q3	31.2%	\$1,916	\$498	\$2,414
1.0%	Engineering During Construction	\$1,438	\$374	26%	1,812	1.5%	\$1,460	\$380	\$1,840	2021Q2	39.2%	\$2,033	\$529	\$2,561
1.0%	Planning During Construction	\$1,438	\$374	26%	1,812	1.5%	\$1,460	\$380	\$1,840	2021Q2	39.2%	\$2,033	\$529	\$2,561
	Project Operations			26%										
31	CONSTRUCTION MANAGEMENT													
7.0%	Construction Management	\$10,066	\$2,617	26%	12,683	1.5%	\$10,221	\$2,657	\$12,878	2021Q2	39.2%	\$14,230	\$3,700	\$17,930
	Project Operation:			26%										
	Project Management			26%										
	<b>CONTRACT COST TOTALS:</b>	<b>\$202,378</b>	<b>\$52,618</b>		<b>254,996</b>		<b>\$206,807</b>	<b>\$53,770</b>	<b>\$260,576</b>			<b>\$246,773</b>	<b>\$64,161</b>	<b>\$310,934</b>

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT CHANNEL DIVERSION - LLP ND Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	UNIT PRICE	AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$73,241,069	\$3,631,084	
00	PERIODIC INSPECTIONS										
	Periodic Inspections										
	1 <sup>st</sup> 5 years	1 Year	1.00	1	1	JOB	\$50,000	\$50,000	220,266	10,920	Cost of periodics decreases after the 1st 5 years.
	Year 7, 9 and 11	2 Years	1.00	1	1	JOB	\$40,000	\$40,000	81,823	4,057	
	Every 5 years beginning year 15	5 Years	1.00	1	1	JOB	\$30,000	\$30,000	67,119	3,328	
	Routine Annual Inspections	1 Year	1.00	1	1	JOB	\$10,000	\$10,000	201,706	10,000	
	Total Inspections								570,913	28,304	
02	RELOCATIONS										
	ROADS										
	County Hwy 81 (South)	10 Years	0.10	1.0	0.10	LS	\$3,670,000.00	\$367,000	605,927	30,040	
	Interstate 29 (NB-South)	10 Years	0.10	1.0	0.10	LS	\$3,660,000.00	\$366,000	604,276	29,958	
	Interstate 29 (SB-South)	10 Years	0.10	1.0	0.10	LS	\$3,650,000.00	\$365,000	602,625	29,876	
	48th Street SE	10 Years	0.10	1.0	0.10	LS	\$2,500,000.00	\$250,000	412,757	20,463	
	170th Avenue SE	10 Years	0.10	1.0	0.10	LS	\$2,750,000.00	\$275,000	454,033	22,510	
	46th Street SE	10 Years	0.10	1.0	0.10	LS	\$3,280,000.00	\$328,000	541,537	26,848	
	44th Street SE	10 Years	0.10	1.0	0.10	LS	\$3,010,000.00	\$301,000	496,959	24,638	
	41st Street SE	10 Years	0.10	1.0	0.10	LS	\$3,530,000.00	\$353,000	582,813	28,894	
	Interstate 94 (EB)	10 Years	0.10	1.0	0.10	LS	\$3,690,000.00	\$369,000	609,229	30,204	
	Interstate 94 (WB)	10 Years	0.10	1.0	0.10	LS	\$3,690,000.00	\$369,000	609,229	30,204	
	36th Street SE	10 Years	0.10	1.0	0.10	LS	\$3,310,000.00	\$331,000	546,490	27,093	
	33rd Street SE	10 Years	0.10	1.0	0.10	LS	\$3,560,000.00	\$356,000	587,766	29,140	
	31st Street SE	10 Years	0.10	1.0	0.10	LS	\$2,890,000.00	\$289,000	477,147	23,656	
	28th Street SE	10 Years	0.10	1.0	0.10	LS	\$2,840,000.00	\$284,000	468,892	23,246	
	Interstate 29 (SB-North)	10 Years	0.10	1.0	0.10	LS	\$3,720,000.00	\$372,000	614,182	30,449	
	Interstate 29 (NB-North)	10 Years	0.10	1.0	0.10	LS	\$3,730,000.00	\$373,000	615,833	30,531	
	County Hwy 81 (North)	10 Years	0.10	1.0	0.10	LS	\$3,360,000.00	\$336,000	554,745	27,503	
	25th Street SE	10 Years	0.10	1.0	0.10	LS	\$2,900,000.00	\$290,000	478,798	23,737	
	173rd Avenue SE	10 Years	0.10	1.0	0.10	LS	\$2,880,000.00	\$288,000	475,496	23,574	
06	FISH AND WILDLIFE FACILITIES										
	Aquatic Footprint Maintenance	10 Years	0.01	1.0	0.01	MI	\$2,518,200.00	\$25,182	41,576	2,061	
	Fish Passage Operation	10 Years	0.01	1.0	0.01	LS	\$25,350,000.00	\$253,500	418,536	20,750	
	Wetlands Footprint Maintenance	10 Years	0.01	998.0	9.98	ACRE	\$13,750.00	\$137,225	226,562	11,232	
	Riparian Forest Footprint Maintenance	10 Years	0.01	199.0	1.99	ACRE	\$11,550.00	\$22,985	37,948	1,881	
	Adaptive Management	10 Years	1.00	1.0	1.00	LS	\$6,440,000.00	\$6,440,000	10,632,620	527,135	
08	RAILROAD BRIDGES										
	RR Bridge 1 BSNF Hillsboro Subdivision	10 Years	0.10	1.0	0.10	LS	\$3,463,100.00	\$346,310	571,767	28,347	
	RR Bridge 2 BNSF Prosper Subdivision	10 Years	0.10	1.0	0.10	LS	\$3,728,200.00	\$372,820	615,536	30,517	
	RR Bridge 3 BNSF KO Subdivision	10 Years	0.10	1.0	0.10	LS	\$6,607,700.00	\$660,770	1,090,950	54,086	
	RR Bridge 4 RRVW 4th Subdivision	10 Years	0.10	1.0	0.10	LS	\$3,987,300.00	\$398,730	658,314	32,637	

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT CHANNEL DIVERSION - LLP ND Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	UNIT PRICE	AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$73,241,069	\$3,631,084	

Percentage of Construction 0.31%

### 09 CHANNELS & CANALS

#### CHANNELS

#### DIVERSION CHANNEL EXCAVATION & SPOIL BERMS

##### REACH 1

Channel Slope Maintenance - Type 1	10 Years	0.05	34,231.0	1,712.0	CY	\$3.40	\$5,821	9,610	476	
Excavate Sediment from Channel - Type 2	10 Years	0.10	68,334.0	6,833.0	CY	\$3.83	\$26,170	43,208	2,142	
Repair Riprap Channel Bank Protection	10 Years	0.05	815.0	41.0	CY	\$119.90	\$4,916	8,116	402	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	38.0	2.0	CY	\$104.42	\$209	772	38	
Channel Topsoil Maintenance	10 Years	0.10	2,702.0	270.0	CY	\$1.86	\$502	829	41	
Spoil Berm Topsoil Maintenance	25 Years	0.05	18,620.0	931.0	CY	\$1.78	\$1,657	763	38	
Turf Maintenance / Replacement	10 Years	0.05	13.0	1.0	ACRE	\$4,156.00	\$4,156	6,862	340	
Mowing	1 Year	2.00	13.0	26.00	ACRE	\$20.00	\$520	10,489	520	2 mowings per year @ \$20 / acre

##### REACH 2

Channel Slope Maintenance - Type 1	10 Years	0.05	161,848.0	8,092.0	CY	\$3.40	\$27,513	45,424	2,252	
Channel Slope Maintenance - Type 2	10 Years	0.05	192,083.0	9,604.0	CY	\$3.83	\$36,783	60,730	3,011	
Excavate Sediment from Channel - Type 3	10 Years	0.10	204,197.0	20,420.0	CY	\$5.03	\$102,713	169,581	8,407	
Repair Riprap Channel Bank Protection	10 Years	0.05	3,096.0	155.0	CY	\$119.91	\$18,586	30,686	1,521	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	145.0	7.0	CY	\$104.47	\$731	2,703	134	
Channel Topsoil Maintenance	10 Years	0.10	12,824.0	1,282.0	CY	\$1.86	\$2,385	3,937	195	
Spoil Berm Topsoil Maintenance	25 Years	0.05	80,881.0	4,044.0	CY	\$1.78	\$7,198	3,314	164	
Turf Maintenance / Replacement	10 Years	0.05	58.0	3.0	ACRE	\$4,156.00	\$12,468	20,585	1,021	
Mowing	1 Year	2.00	58.0	116.00	ACRE	\$20.00	\$2,320	46,796	2,320	2 mowings per year @ \$20 / acre

##### REACH 3

Channel Slope Maintenance - Type 1	10 Years	0.05	1,042,050.0	52,103.0	CY	\$3.40	\$177,150	292,480	14,500	
Channel Slope Maintenance - Type 2	10 Years	0.05	1,638,021.0	81,901.0	CY	\$3.83	\$313,681	517,896	25,676	
Channel Slope Maintenance - Type 3	10 Years	0.05	1,473,360.0	73,668.0	CY	\$5.03	\$370,550	611,788	30,331	
Excavate Sediment from Channel - Type 4	10 Years	0.10	27,490.0	2,749.0	CY	\$6.47	\$17,786	29,365	1,456	
Repair Riprap Channel Bank Protection	10 Years	0.05	21,511.0	1,076.0	CY	\$119.91	\$129,023	213,021	10,561	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	1,009.0	50.0	CY	\$104.46	\$5,223	19,305	957	
Channel Topsoil Maintenance	10 Years	0.10	89,967.0	8,997.0	CY	\$1.86	\$16,734	27,629	1,370	
Spoil Berm Topsoil Maintenance	25 Years	0.05	664,769.0	33,238.0	CY	\$1.78	\$59,164	27,237	1,350	
Turf Maintenance / Replacement	10 Years	0.05	467.0	23.0	ACRE	\$4,156.00	\$95,588	157,818	7,824	
Mowing	1 Year	2.00	467.0	934.00	ACRE	\$20.00	\$18,680	376,786	18,680	2 mowings per year @ \$20 / acre

##### REACH 4

Channel Slope Maintenance - Type 1	10 Years	0.05	3,111,316.0	155,566.0	CY	\$3.40	\$528,924	873,269	43,294	
Channel Slope Maintenance - Type 2	10 Years	0.05	3,898,771.0	194,939.0	CY	\$3.83	\$746,616	1,232,685	61,113	
Channel Slope Maintenance - Type 3	10 Years	0.05	5,622,796.0	281,140.0	CY	\$5.03	\$1,414,134	2,334,775	115,752	
Excavate Sediment from Channel - Type 4	10 Years	0.10	278,668.0	27,867.0	CY	\$6.47	\$180,299	297,680	14,758	
Repair Riprap Channel Bank Protection	10 Years	0.05	83,111.0	4,156.0	CY	\$119.91	\$498,346	822,783	40,791	
Repair Low Flow Channel Riprap Protection	5 Years	0.05	3,899.0	195.0	CY	\$104.46	\$20,370	75,291	3,733	
Channel Topsoil Maintenance	10 Years	0.10	311,941.0	31,194.0	CY	\$1.86	\$58,021	95,794	4,749	
Spoil Berm Topsoil Maintenance	25 Years	0.05	2,680,432.0	134,022.0	CY	\$1.78	\$238,559	109,827	5,445	
Turf Maintenance / Replacement	10 Years	0.05	1,855.0	93.0	ACRE	\$4,156.00	\$386,508	638,136	31,637	
Mowing	1 Year	2.00	1,855.0	3,710.00	ACRE	\$20.00	\$74,200	1,496,657	74,200	2 mowings per year @ \$20 / acre

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT

### CHANNEL DIVERSION - LLP ND Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	UNIT PRICE	AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$73,241,069	\$3,631,084	
Percentage of Construction 0.31%											
09	REACH 5										
	Channel Slope Maintenance - Type 1	10 Years	0.05	881,257.0	44,063.0	CY	\$3.40	\$149,814	247,347	12,263	
	Channel Slope Maintenance - Type 2	10 Years	0.05	1,406,889.0	70,344.0	CY	\$3.83	\$269,418	444,816	22,053	
	Excavate Sediment from Channel - Type 3	10 Years	0.10	575,447.0	57,545.0	CY	\$5.03	\$289,451	477,892	23,693	
	Repair Riprap Channel Bank Protection	10 Years	0.05	22,978.0	1,149.0	CY	\$119.91	\$137,777	227,473	11,277	
	Repair Low Flow Channel Riprap Protection	5 Years	0.05	1,078.0	54.0	CY	\$104.46	\$5,641	20,850	1,034	
	Channel Topsoil Maintenance	10 Years	0.10	75,899.0	7,590.0	CY	\$1.86	\$14,117	23,308	1,156	
	Spoil Berm Topsoil Maintenance	25 Years	0.05	759,026.0	37,951.0	CY	\$1.78	\$67,553	31,100	1,542	
	Turf Maintenance / Replacement	10 Years	0.05	517.0	26.0	ACRE	\$4,156.00	\$108,056	178,403	8,845	
	Mowing	1 Year	2.00	517.0	1,034.00	ACRE	\$20.00	\$20,680	417,128	20,680	2 mowings per year @ \$20 / acre
	REACH 6										
	Channel Slope Maintenance - Type 1	10 Years	0.05	5,204,698.0	260,235.0	CY	\$3.40	\$884,799	1,460,828	72,424	
	Channel Slope Maintenance - Type 2	10 Years	0.05	5,405,183.0	270,259.0	CY	\$3.83	\$1,035,092	1,708,966	84,726	
	Channel Slope Maintenance - Type 3	10 Years	0.05	9,514,452.0	475,723.0	CY	\$5.03	\$2,392,887	3,950,723	195,866	
	Excavate Sediment from Channel - Type 4	10 Years	0.10	3,521,106.0	352,111.0	CY	\$6.47	\$2,278,158	3,761,303	186,475	
	Repair Riprap Channel Bank Protection	10 Years	0.05	110,081.0	5,504.0	CY	\$119.91	\$659,985	1,089,653	54,022	
	Repair Low Flow Channel Riprap Protection	5 Years	0.05	5,164.0	258.0	CY	\$104.46	\$26,951	99,616	4,939	
	Channel Topsoil Maintenance	10 Years	0.10	486,703.0	48,670.0	CY	\$1.86	\$90,526	149,461	7,410	
	Spoil Berm Topsoil Maintenance	25 Years	0.05	3,461,308.0	173,065.0	CY	\$1.78	\$308,056	141,821	7,031	
	Turf Maintenance / Replacement	10 Years	0.05	2,468.0	123.0	ACRE	\$4,156.00	\$511,188	843,986	41,842	
	Mowing	1 Year	2.00	2,468.0	4,936.00	ACRE	\$20.00	\$98,720	1,991,239	98,720	2 mowings per year @ \$20 / acre
	REACH 7										
	Channel Slope Maintenance - Type 1	10 Years	0.05	538,568.0	26,928.0	CY	\$3.40	\$91,555	151,160	7,494	
	Channel Slope Maintenance - Type 2	10 Years	0.05	256,705.0	12,835.0	CY	\$3.83	\$49,158	81,161	4,024	
	Excavate Sediment from Channel - Type 3	10 Years	0.10	290,406.0	29,041.0	CY	\$5.03	\$146,076	241,176	11,957	
	Repair Riprap Channel Bank Protection	10 Years	0.05	23,874.0	1,194.0	CY	\$119.91	\$143,173	236,382	11,719	
	Repair Low Flow Channel Riprap Protection	5 Years	0.05	1,120.0	56.0	CY	\$104.46	\$5,850	21,622	1,072	
	Channel Topsoil Maintenance	10 Years	0.10	52,244.0	5,224.0	CY	\$1.86	\$9,717	16,042	795	
	Spoil Berm Topsoil Maintenance	25 Years	0.05	58,838.0	2,942.0	CY	\$1.78	\$5,237	2,411	120	
	Turf Maintenance / Replacement	10 Years	0.05	128.0	6.0	ACRE	\$4,156.00	\$24,936	41,170	2,041	
	Mowing	1 Year	2.00	128.0	256.00	ACRE	\$20.00	\$5,120	103,273	5,120	2 mowings per year @ \$20 / acre
	REACH 8										
	Slope Maintenance - Type 1	10 Years	0.05	100,000.0	5,000.0	CY	\$3.40	\$17,000	28,067	1,392	
	Slope Maintenance - Type 2	10 Years	0.05	30,884.0	1,544.0	CY	\$3.83	\$5,914	9,763	484	
	Excavate Sediment from Channel - Type 3	10 Years	0.10	135,516.0	13,552.0	CY	\$5.03	\$68,167	112,545	5,580	
	Repair Riprap Channel Bank Protection	10 Years	0.05	13,363.0	668.0	CY	\$119.91	\$80,100	132,247	6,556	
	Repair Low Flow Channel Riprap Protection	5 Years	0.05	627.0	31.0	CY	\$104.46	\$3,238	11,969	593	
	Channel Topsoil Maintenance	10 Years	0.10	33,493.0	3,349.0	CY	\$1.86	\$6,229	10,284	510	
	Spoil Berm Topsoil Maintenance	25 Years	0.05	220,624.0	11,031.0	CY	\$1.78	\$19,635	9,040	448	
	Turf Maintenance / Replacement	10 Years	0.05	157.0	8.0	ACRE	\$4,156.00	\$33,248	54,893	2,721	
	Mowing	1 Year	2.00	157.0	314.00	ACRE	\$20.00	\$6,280	126,671	6,280	2 mowings per year @ \$20 / acre

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT CHANNEL DIVERSION - LLP ND Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	UNIT PRICE	AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$73,241,069	\$3,631,084	

Percentage of Construction 0.31%

### 09 RED RIVER INLET CONTROL STRUCTURE RRN GATED CONTROL STRUCTURE

#### Gated Structure

Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$3,619,300.00	\$1,809,650	212,701	10,545	
Gates and Bulkheads - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$5,931,200.00	\$2,965,600	348,569	17,281	
Gates and Bulkheads - Annual O & M	1 Year	1.00	1.0	1.0	LS	\$30,000	\$30,000	605,117	30,000	
Wingwalls - Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$5,633,000.00	\$2,816,500	331,044	16,412	
Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$3,398,700.00	\$169,935	280,567	13,910	
Fish Passage System Miantenance	10 Years	0.05	1.0	0.05	LS	\$5,950,300.00	\$297,515	491,206	24,353	
Mech, Elect, SCADA, Ice Control & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$1,024,600.00	\$20,492	413,335	20,492	Annual O&M costs = 2.0% of construction

### WOLVERTON CREEK CLOSURE/DRAINAGE STRUCTURE

#### WOLVERTON CREEK STRUCTURE

#### Gated Structure

Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$1,627,400.00	\$813,700	95,640	4,742	
Gates and Bulkheads - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$637,300.00	\$318,650	37,453	1,857	
Gates and Bulkheads - Annual O & M	1 Year	1.00	1.0	1.0	LS	\$30,000	\$30,000	605,117	30,000	
Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$57,200.00	\$2,860	4,722	234	
Mech, Elect, SCADA, Ice Control & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$256,200.00	\$5,124	103,354	5,124	Annual O&M costs = 2.0% of construction

### WILD RICE RIVER CONTROL STRUCTURES

#### WWR GATED CONSTROL STRUCTURE

#### Gated Structure

Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$1,505,600.00	\$752,800	88,482	4,387	
Gates and Bulkheads - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$1,753,900.00	\$876,950	103,074	5,110	
Gates and Bulkheads - Annual O & M	1 Year	1.00	1.0	1.0	LS	\$30,000	\$30,000	605,117	30,000	
Wingwalls - Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$2,545,400.00	\$1,272,700	149,590	7,416	
Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$1,632,000.00	\$81,600	134,724	6,679	
Fish Passage System Miantenance	10 Years	0.05	1.0	0.05	LS	\$4,550,300.00	\$227,515	375,634	18,623	
Mech, Elect, SCADA, Ice Control & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$3,962,000.00	\$79,240	1,598,317	79,240	Annual O&M costs = 2.0% of construction

### EAST WEIR (at Connecting Channel)

#### EAST WEIR STRUCTURE

Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$47,600.00	\$2,380	3,929	195	
SCADA	1 Year	0.02	1.0	0.02	LS	\$75,100.00	\$1,502	30,296	1,502	Annual O&M costs = 2.0% of construction

### INLET WEIR TO DIVERSION STRUCTURE

#### INLET WEIR STRUCTURE

Concrete Rollway Structure	50 Years	0.50	1.0	0.50	LS	\$956,800.00	\$478,400	56,230	2,788	
Structure Walls	50 Years	0.50	1.0	0.50	LS	\$2,118,100.00	\$1,059,050	124,478	6,171	
Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$171,300.00	\$8,565	14,141	701	
Mech, Electrical, SCADA & Misc. Features	1 Year	0.02	1.0	0.02	LS	\$2,322,700.00	\$46,454	937,004	46,454	Annual O&M costs = 2.0% of construction

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

Rate of Return

4.375%

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT CHANNEL DIVERSION - LLP ND Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	UNIT PRICE	AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$73,241,069	\$3,631,084	
Percentage of Construction 0.31%											
09	<b>SHEYENNE RIVER AQUEDUCT STRUCTURES</b>										
	<b>SHEYENNE RIVER AQUEDUCT STRUCTURE</b>										
	Gated Aqueduct Structure & Wingwalls										
	Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$13,193,300.00	\$6,596,650	775,352	38,440	
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$1,569,900.00	\$78,495	129,597	6,425	
	Mech, Elect, SCADA, Ice Control & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$2,722,000.00	\$54,440	1,098,086	54,440	Annual O&M costs = 2.0% of construction
	<b>SHEYENNE RIVER SPILLWAY WEIR TO DIVERSION CHANNEL</b>										
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$2,727,500.00	\$136,375	225,159	11,163	
	Concrete Wall & Steel Reinforcement Rehab	50 Years	0.50	1.0	0.50	LS	\$394,700.00	\$197,350	23,196	1,150	
	<b>MAPLE RIVER CONTROL STRUCTURE</b>										
	<b>MAPLE RIVER GATED CONTROL STRUCTURE</b>										
	Gated Aqueduct Structure & Wingwalls										
	Concrete - Major Rehab	50 Years	0.50	1.0	0.50	LS	\$13,036,200.00	\$6,518,100	766,120	37,982	
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$1,411,300.00	\$70,565	116,505	5,776	
	Mech, Elect, SCADA, Ice Control & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$2,621,300.00	\$52,426	1,057,463	52,426	Annual O&M costs = 2.0% of construction
	<b>MAPLE RIVER SPILLWAY WEIR TO DIVERSION CHANNEL</b>										
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$2,362,800.00	\$118,140	195,052	9,670	
	Concrete Wall & Steel Reinforcement Rehab	50 Years	0.50	1.0	0.50	LS	\$153,200.00	\$76,600	9,003	446	
	<b>DRAIN 14 - LARGE DRAIN STRUCTURE</b>										
	<b>DRAIN 14 STRUCTURE</b>										
	Drop Structure & Walls - Concrete Major Rehab	50 Years	0.50	1.0	0.50	LS	\$2,915,900.00	\$1,457,950	171,363	8,496	
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$164,100.00	\$8,205	13,547	672	
	SCADA, & Misc. Safety Items	1 Year	0.02	1.0	0.02	LS	\$35,200.00	\$704	14,200	704	Annual O&M costs = 2.0% of construction
	<b>LOWER RUSH RIVER DROP STRUCTURE</b>										
	Drop Structure & Walls - Concrete Major Rehab	50 Years	0.50	1.0	0.50	LS	\$3,005,900.00	\$1,502,950	176,653	8,758	
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$428,200.00	\$21,410	35,349	1,752	
	Fish Passage System Maintenance	10 Years	0.05	1.0	0.05	LS	\$1,826,800.00	\$91,340	150,805	7,476	
	Mech, Elect, SCADA, & Misc. Items	1 Year	0.02	1.0	0.02	LS	\$477,200.00	\$9,544	192,508	9,544	Annual O&M costs = 2.0% of construction
	<b>RUSH RIVER DROP STRUCTURE</b>										
	Drop Structure & Walls - Concrete Major Rehab	50 Years	0.50	1.0	0.50	LS	\$3,436,300.00	\$1,718,150	201,947	10,012	
	Repair Riprap Erosion Protection	10 Years	0.05	1.0	0.05	LS	\$475,300.00	\$23,765	39,237	1,945	
	Fish Passage System Maintenance	10 Years	0.05	1.0	0.05	LS	\$1,247,200.00	\$62,360	102,958	5,104	
	Mech, Elect, SCADA, & Misc. Items	1 Year	0.00	1.0	0.00	LS	\$447,100.00	\$0	0	0	
	<b>LARGE DRAIN</b>	10 Years	0.05	1.0	0.05	EA	\$447,400.00	\$22,370	36,933	1,831	
	<b>SMALL DRAINS</b>	10 Years	0.05	2.0	0.10	EA	\$127,200.00	\$12,720	21,001	1,041	
	<b>SIDE CHANNEL INLET MANHOLES - 72-INCH</b>	10 Years	0.05	19.0	0.95	EA	\$444,900.00	\$422,655	697,815	34,596	
	<b>SIDE CHANNEL INLET MH - TWIN 72-INCH</b>	10 Years	0.05	7.0	0.35	EA	\$808,900.00	\$283,115	467,431	23,174	
	<b>RED RIVER OUTLET CONTROL STRUCTURE</b>										
	Riprap Erosion Protection	10 Years	0.05	1.0	0.05	CY	\$1,260,300.00	\$63,015	104,040	5,158	
	<b>DIVERSION LANDSCAPE PLANTINGS</b>	10 Years	0.01	36.6	0.37	MI	\$30,000.00	\$10,980	18,128	899	

USACE-MVP-0000088005

# OPERATION, MAINTENANCE, REPAIR, REPLACEMENT AND REHABILITATION

Life Cycle

50 Years

Date Prepared: 28-Apr-2011

## FARGO-MOORHEAD METRO FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT

Rate of Return

4.375%

### CHANNEL DIVERSION - LLP ND Phase 4

FARGO-MOORHEAD METRO FEASIBILITY REPORT					O&M and MAJOR REPLACEMENT COSTS				EQUIVALENT AVERAGE ANNUAL O&M / MAJOR REPLACEMENT VALUE		COMMENTS
CODE	ITEM DESCRIPTION	ESTIMATED O&M CYCLE	QUANTITY FACTOR	PROJECT QUANTITY	O&M QUANTITY	UNIT	UNIT PRICE	AMOUNT	PRESENT VALUE	ANNUAL COST	
									\$73,241,069	\$3,631,084	

Percentage of Construction 0.31%

#### 11 LEVEES & FLOODWALLS

##### LEVEES

##### TIE-BACK LEVEES

Levee Embankment Maintenance	10 Years	0.05	835,320.0	41766.00	CY	\$17.51	\$731,323	1,207,434	59,861	
Levee Topsoil Maintenance	10 Years	0.05	110,024.0	5501.20	CY	\$1.81	\$9,957	16,440	815	
Levee Turf Maintenance / Replacement	10 Years	0.05	1.0	0.05	ACRE	\$2,750,700.00	\$137,535	227,074	11,258	
Mowing	1 Year	4.00	1.0	4.00	ACRE	\$20.00	\$80	1,614	80	4 mowings per year @ \$20 / acre
Fertilizing & Weed Control	1 Year	1.00	1.0	1.00	ACRE	\$250.00	\$250	5,043	250	

#### 14 RECREATIONAL FACILITIES

Multi-Purpose Trails	10 Years	0.05	19.0	0.95	MI	310,600.00	\$295,070	487,169	24,152	
Soft Trails	10 Years	0.05	25.0	1.25	MI	106,400.00	\$133,000	219,587	10,886	
Trail River Crossing	10 Years	0.05	3.0	0.15	EA	2,850,000.00	\$427,500	705,814	34,992	
Trailhead Facilities	5 Years	0.05	3.0	0.15	EA	166,600.00	\$24,990	92,369	4,579	
Restroom Facilities Maintenance	1 Years	1.00	3.0	1.00	LS	42,500.00	\$42,500	857,250	42,500	Maint person = 1 FT @ 60K / yr + 1 PT @ 25K / yr for 6 mo
Restroom Facilities Operating Utilitites	1 Years	1.00	3.0	3.00	EA	1,200.00	\$3,600	72,614	3,600	Utilities each site @ \$200 / month for 6 months
Parking Facilities										
Car Parking Lots	10 Years	0.10	4.0	0.40	EA	45,900.00	\$18,360	30,313	1,503	
Car/Trailer Park Lots	10 Years	0.10	2.0	0.20	EA	146,800.00	\$29,360	48,474	2,403	
Wildlife Viewing Overlooks	10 Years	0.10	2.0	0.20	EA	7,900.00	\$1,580	2,609	129	
Interpretive Siganage	10 Years	0.10	30.0	3.00	LS	1,100.00	\$3,300	5,448	270	
Fishing Sites	10 Years	0.10	4.0	0.40	EA	32,000.00	\$12,800	21,133	1,048	
Landscaping Maintenance	10 Years	0.01	150.0	1.50	ACRE	31,300.00	\$46,950	77,516	3,843	

#### Total O&M

\$73,241,069 \$3,631,084

**PROJECT COST SUMMARY SHEET**  
**FARGO MOORHEAD METRO FEASIBILITY STUDY**  
**CHANNEL DIVERSION - ND35K Phase 3**  
(Included for REFERENCE ONLY)

Project: Fargo Moorhead Metro Draft Feasibility Study Cost Estimate  
Location: Fargo, North Dakota and Moorhead, Minnesota

Date: September 1, 2010

PREPARED BY: Moore Engineering, Inc.  
Jeffrey L. Hansen, CEMVP-EC-D

Item	Item Description	Total Estimated Amount	Contingency		Estimated Amount Plus Contingency	Index Factor To 10 / 2011	Index Cost To 10 / 2011	Midpoint Of Feature Year	Index to Midpoint Factor	Fully Funded Amount Plus Contingency
			Amount	Percent						
01	Lands & Damages	\$48,200,000	\$12,050,000	25%	\$60,250,000	0.017	\$61,274,000	OCT 2014	0.070	\$65,563,000
02	Relocations	\$80,564,000	\$20,142,000	25%	\$100,706,000	0.017	\$102,418,000	DEC 2015	0.093	\$111,943,000
06	Fish & Wildlife Facilities	\$73,136,000	\$18,284,000	25%	\$91,420,000	0.017	\$92,974,000	APR 2016	0.099	\$102,179,000
08	Roads, Railroads and Bridges	\$47,845,000	\$11,961,000	25%	\$59,806,000	0.017	\$60,823,000	APR 2016	0.099	\$66,844,000
09	Channels & Canals	\$640,208,000	\$160,055,000	25%	\$800,263,000	0.017	\$813,867,000	APR 2016	0.099	\$894,440,000
11	Levees and Floodwalls	\$2,905,000	\$726,000	25%	\$3,631,000	0.017	\$3,693,000	APR 2016	0.099	\$4,058,000
14	Recreation Facilities	\$23,220,000	\$5,805,000	25%	\$29,025,000	0.017	\$29,518,000	APR 2016	0.099	\$32,441,000
30	Planning, Engineering and Design	\$130,182,000	\$32,546,000	25%	\$162,728,000	0.039	\$169,074,000	DEC 2015	0.164	\$196,803,000
31	Construction Management	\$60,751,000	\$15,188,000	25%	\$75,939,000	0.039	\$78,901,000	APR 2016	0.245	\$98,231,000
Estimated Project Cost		\$1,107,011,000	\$276,757,000	25%	\$1,383,768,000		\$1,412,542,000			\$1,572,502,000

**NOTES:**

Costs are based on August 2010 unit pricing.

The ND35K Phase 3 cost estimate is included for REFERENCE ONLY. Work was halted in September 2010 when downstream impacts stretched all the way to the Canadian border and still had not reached a point of zero impacts.

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	2010	2011				2012				2013				2014				2015				2016				2017				2018				2019				2020			
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
FCP																																													
FCP01000	Outlet Structure	872*	03JAN12	06MAY15																																									
FCP01010	L&D - Outlet Structure	239	03JAN12	30NOV12																																									
FCP01020	Design - Outlet Structure	239	03JAN12	30NOV12																																									
FCP01030	Bid & Award - Outlet Structure	90	01JAN13	06MAY13																																									
FCP01040	Construction - Outlet Structure	388	07MAY13	06MAY15																																									
FCP01090	Complete - Outlet Structure	0		06MAY15																																									
FCP02000	15th Street NW Crossing	499*	03JAN12	29NOV13																																									
FCP02010	L&D - 15th Street NW Crossing	216	03JAN12	30OCT12																																									
FCP02020	Design - 15th Street NW Crossing	216	03JAN12	30OCT12																																									
FCP02030	Bid & Award - 15th Street NW Crossing	90	01JAN13	06MAY13																																									
FCP02040	Construction - 15th Street NW Crossing	178	07MAY13	29NOV13																																									
FCP02090	Complete - 15th Street NW Crossing	0		29NOV13																																									
FCP03000	MN FCP Channel Seg 1	649*	03JAN12	27JUN14																																									
FCP03010	L&D - MN FCP Channel Seg 1	250	03JAN12	17DEC12																																									
FCP03020	Design - MN FCP Channel Seg 1	250	03JAN12	17DEC12																																									
FCP03030	Bid & Award - MN FCP Channel Seg 1	90	18DEC12	22APR13																																									
FCP03040	Construction - MN FCP Channel Seg 1	250	23APR13	27JUN14																																									
FCP03050	Utilities - MN FCP Channel Seg 1	250	23APR13	27JUN14																																									
FCP03090	Complete - MN FCP Channel Seg 1	0		27JUN14																																									
FCP04000	110th Avenue NW Crossing	499*	03JAN12	29NOV13																																									
FCP04010	L&D - 110th Avenue NW Crossing	225	03JAN12	12NOV12																																									
FCP04020	Design - 110th Avenue NW Crossing	225	03JAN12	12NOV12																																									
FCP04030	Bid & Award - 110th Avenue NW Crossing	90	01JAN13	06MAY13																																									
FCP04040	Construction - 110th Avenue NW Crossing	178	07MAY13	29NOV13																																									
FCP04090	Complete - 110th Avenue NW Crossing	0		29NOV13																																									
FCP05000	MN FCP Channel Seg 2	759*	03JAN12	28NOV14																																									
FCP05010	L&D - MN FCP Channel Seg 2	280	03JAN12	28JAN13																																									
FCP05020	Design - MN FCP Channel Seg 2	280	03JAN12	28JAN13																																									

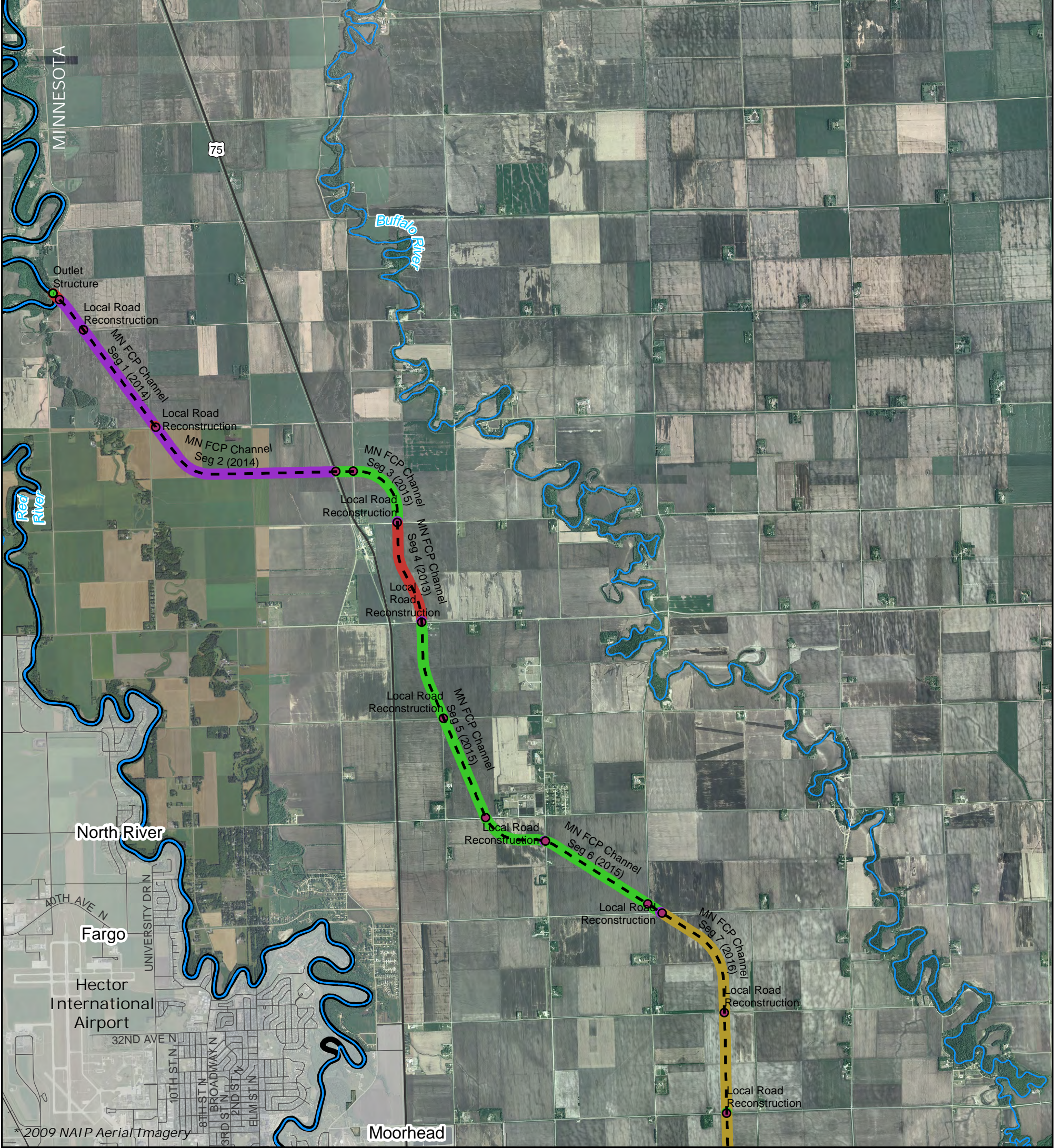
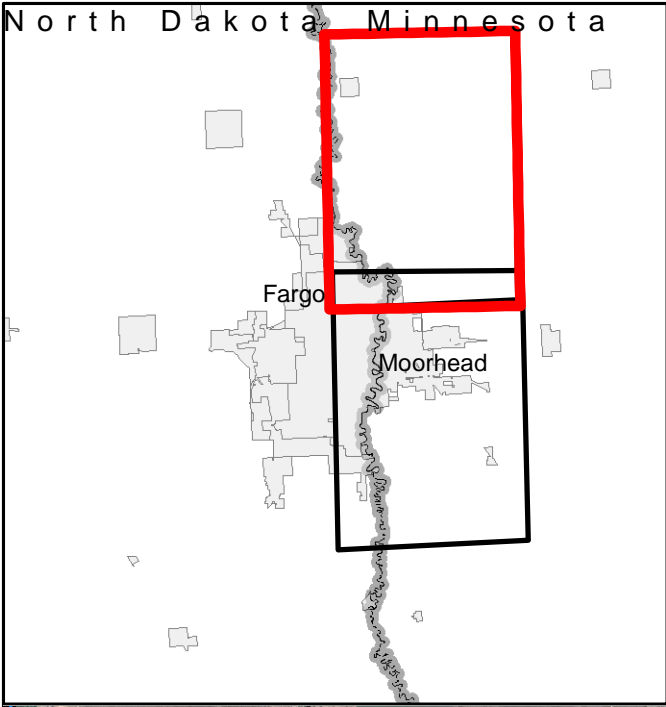
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Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	2010	2011					2012				2013				2014				2015				2016				2017				2018				2019				2020			
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
FCP26030	Bid & Award - MN FCP Channel Seg 10	90	01JAN16	05MAY16																																										
FCP26040	Construction - MN FCP Channel Seg 10	375	06MAY16	30NOV17																																										
FCP26050	Utilities - MN FCP Channel Seg 10	375	06MAY16	30NOV17																																										
FCP26090	Complete - MN FCP Channel Seg 10	0		30NOV17																																										
FCP27000	50th Avenue S (CR 75) Crossing	587*	01SEP14	29NOV16																																										
FCP27010	L&D - 50th Avenue S (CR 75) Crossing	250	01SEP14	14AUG15																																										
FCP27020	Design - 50th Avenue S (CR 75) Crossing	250	01SEP14	14AUG15																																										
FCP27030	Bid & Award - 50th Avenue S (CR 75) Crossing	90	01JAN16	05MAY16																																										
FCP27040	Construction - 50th Avenue S (CR 75) Crossing	178	06MAY16	29NOV16																																										
FCP27050	Utilities - 50th Avenue S (CR 75) Crossing	178	06MAY16	29NOV16																																										
FCP27090	Complete - 50th Avenue S (CR 75) Crossing	0		29NOV16																																										
FCP28000	Rail Bridge 3 - BNSF OVTR	1,022*	01JAN14	30NOV17																																										
FCP28010	L&D - RR Crossing 3 (OVTR)	259	01JAN14	29DEC14																																										
FCP28020	Design - Railroad Bridge 3 - BNSF OVTR	259	01JAN14	29DEC14																																										
FCP28030	Bid & Award - Railroad Bridge 3 - BNSF OVTR	90	01JAN15	06MAY15																																										
FCP28040	Construction - Railroad Bridge 3 - BNSF OVTR	568	07MAY15	30NOV17																																										
FCP28090	Complete - Railroad Bridge 3 - BNSF OVTR	0		30NOV17																																										
FCP29000	CSAH 52 Crossing	500*	01JAN16	30NOV17																																										
FCP29010	L&D - CSAH 52 Crossing	230	01JAN16	17NOV16																																										
FCP29020	Design - CSAH 52 Crossing	230	01JAN16	17NOV16																																										
FCP29030	Bid & Award - CSAH 52 Crossing	90	02JAN17	05MAY17																																										
FCP29040	Construction - CSAH 52 Crossing	179	06MAY17	30NOV17																																										
FCP29090	Complete - CSAH 52 Crossing	0		30NOV17																																										
FCP30000	MN FCP Channel Seg 11	761*	01JAN15	30NOV17																																										
FCP30010	L&D - MN FCP Channel Seg 11	197	01JAN15	02OCT15																																										
FCP30020	Design - MN FCP Channel Seg 11	197	01JAN15	02OCT15																																										
FCP30030	Bid & Award - MN FCP Channel Seg 11	90	01JAN16	05MAY16																																										
FCP30040	Construction - MN FCP Channel Seg 11	375	06MAY16	30NOV17																																										
FCP30050	Utilities - MN FCP Channel Seg 11	371	06MAY16	25NOV17																																										
FCP30090	Complete - MN FCP Channel Seg 11	0		30																																										

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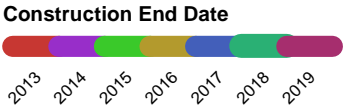


**FMM Flood Control Alternatives**  
**FCP Alignment Option**  
**\$170M Funding Stream**

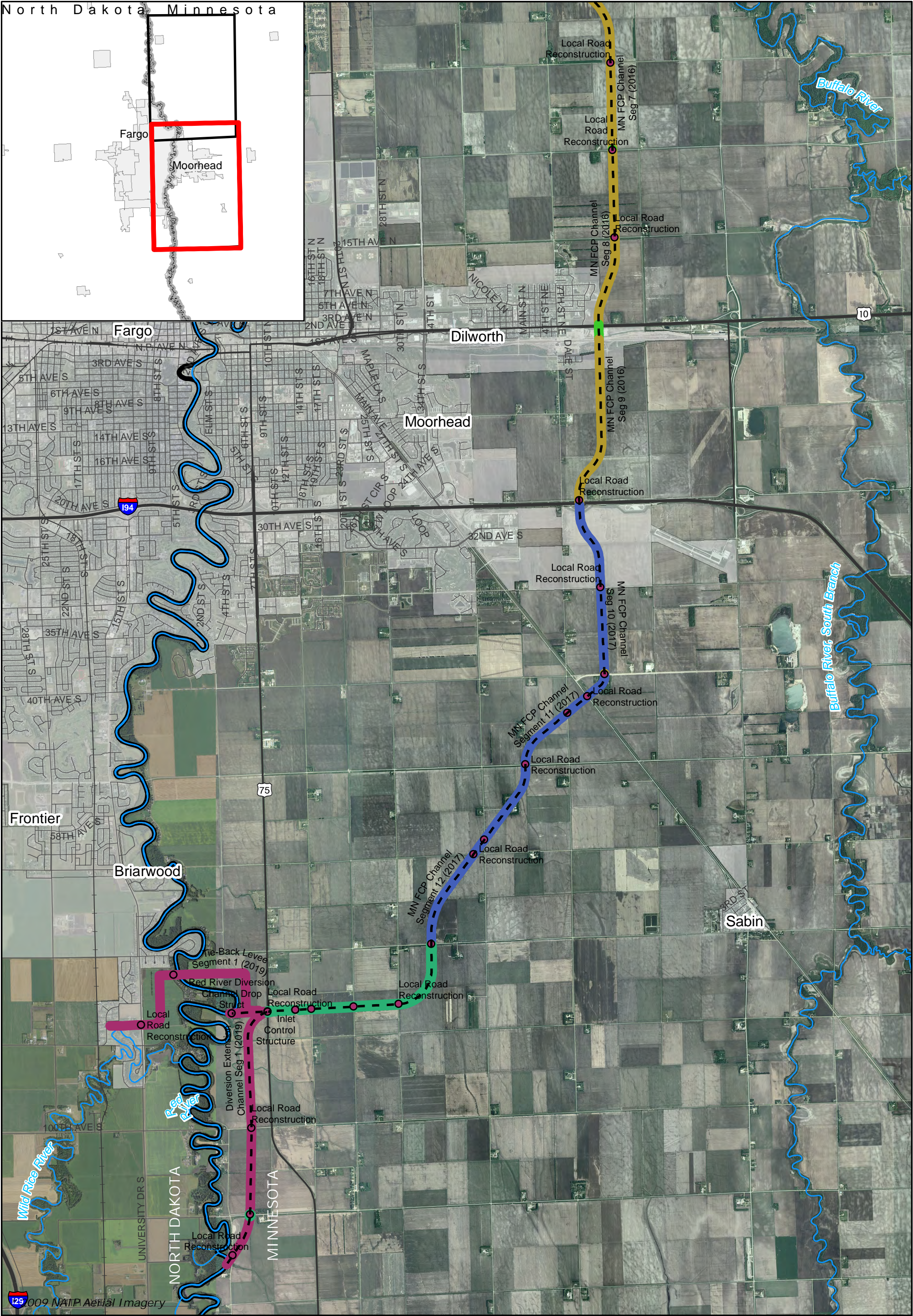


0 0.5 1 Miles

- |  |                    |  |            |
|--|--------------------|--|------------|
|  | River              |  | State      |
|  | Proposed Alignment |  | Major Road |
|  | Proposed Structure |  | City Road  |
|  | Municipal Boundary |  | Railroad   |



USACE-MVP-0000088005



0 0.5 1 Miles

River

Proposed Alignment

Proposed Structure

Municipal Boundary

State

Major Road

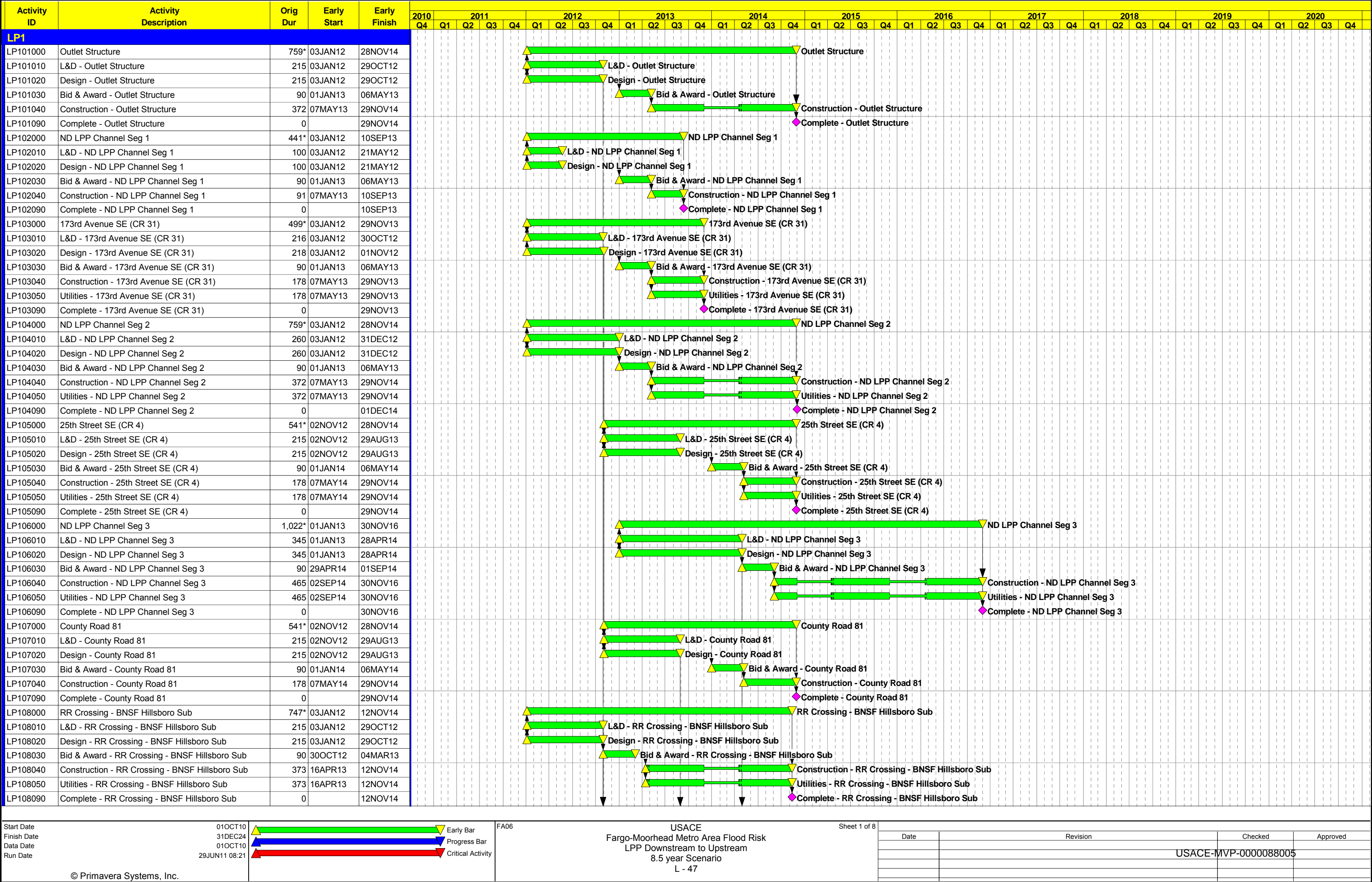
City Road

Railroad

Construction End Date

**FMM Flood Control Alternatives**  
**FCP Alignment Option**  
**\$170M Funding Stream**

USACE-MVP-0000088005



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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LP109000	I-29 NB Bridge	586*	30AUG13	27NOV15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

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LP117050	Utilities - ND LPP Channel Seg 6	179	06MAY16	30NOV16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

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Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	2010	2011				2012				2013				2014				2015				2016				2017				2018				2019				2020			
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4								
LP134000	46th Street (CR 14)	552*	19OCT16	29NOV18																																									
LP134010	L&D - 46th Street (CR 14)	215	19OCT16	15AUG17																																									
LP134020	Design -46th Street (CR 14)	215	19OCT16	15AUG17																																									
LP134030	Bid & Award - 46th Street (CR 14)	90	01JAN18	04MAY18																																									
LP134040	Construction - 46th Street (CR 14)	179	05MAY18	29NOV18																																									
LP134090	Complete - 46th Street (CR 14)	0		29NOV18																																									
LP135000	RR Crossing - RRVW 4th Sub	525*	01JAN15	04JAN17																																									
LP135010	L&D - RR Crossing - RRVW 4th Sub	120	01JAN15	17JUN15																																									
LP135020	Design - RR Crossing - RRVW 4th Sub	120	01JAN15	17JUN15																																									
LP135030	Bid & Award - RR Crossing - RRVW 4th Sub	90	18JUN15	21OCT15																																									
LP135040	Construction - RR Crossing - RRVW 4th Sub	315	22OCT15	04JAN17																																									
LP135090	Complete - RR Crossing - RRVW 4th Sub	0		04JAN17																																									
LP136000	ND LPP Channel Seg 14	609*	01AUG17	29NOV19																																									
LP136010	L&D - ND LPP Channel Seg 14	215	01AUG17	28MAY18																																									
LP136020	Design - ND LPP Channel Seg 14	215	01AUG17	28MAY18																																									
LP136030	Bid & Award - ND LPP Channel Seg 14	90	29MAY18	01OCT18																																									
LP136040	Construction - ND LPP Channel Seg 14	248	02OCT18	29NOV19																																									
LP136090	Complete - ND LPP Channel Seg 14	0		29NOV19																																									
LP137000	Sheyenne River Aqueduct	1,000*	01JAN15	31OCT18																																									
LP137010	L&D - Sheyenne River Aqueduct	345	01JAN15	27APR16																																									
LP137020	Design - Sheyenne River Aqueduct	345	01JAN15	27APR16																																									
LP137030	Bid & Award - Sheyenne River Aqueduct	90	28APR16	31AUG16																																									
LP137040	Construction - Sheyenne River Aqueduct	445	01SEP16	31OCT18																																									
LP137090	Complete - Sheyenne River Aqueduct	0		31OCT18																																									
LP138000	ND LPP Channel Seg 15	609*	01AUG17	29NOV19																																									
LP138010	L&D - ND LPP Channel Seg 15	215	01AUG17	28MAY18																																									
LP138020	Design - ND LPP Channel Seg 15	215	01AUG17	28MAY18																																									
LP138030	Bid & Award - ND LPP Channel Seg 15	90	29MAY18	01OCT18																																									
LP138040	Construction - ND LPP Channel Seg 15	248	02OCT18	29NOV19																																									
LP138050	Utilities - ND LPP Channel Seg 15	248	02OCT18	29NOV19																																									
LP138090	Complete - ND LPP Channel Seg 15	0		29NOV19																																									
LP139000	170th Avenue SE (CR 17)	551*	28APR16	07JUN18																																									
LP139010	L&D - 170th Avenue SE (CR 17)	215	28APR16	22FEB17																																									
LP139020	Design - 170th Avenue SE (CR 17)	215	28APR16	22FEB17																																									
LP139030	Bid & Award - 170th Avenue SE (CR 17)	90	23FEB17	28JUN17																																									
LP139040	Construction - 170th Avenue SE (CR 17)	179	29JUN17	07JUN18																																									
LP139090	Complete - 170th Avenue SE (CR 17)	0		07JUN18																																									
LP140000	Inlet Wier to Diversion	551*	28APR16	07JUN18																																									
LP140010	L&D - Inlet Wier to Diversion	215	28APR16	22FEB17																																									



[illegible]

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	2010	2011					2012				2013				2014				2015				2016				2017				2018				2019				2020			
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
LP161000	Wolverton Creek Structure	621*	16JAN18	02JUN20																																										
LP161020	Design - Wolverton Creek Structure	250	16JAN18	31DEC18																																										
LP161030	Bid & Award - Wolverton Creek Structure	90	01JAN19	06MAY19																																										
LP161040	Construction - Wolverton Creek Structure	219	07MAY19	02JUN20																																										
LP161090	Complete - Wolverton Creek Structure	0		02JUN20																																										
LP162000	East Weir Structure	634*	16JAN18	19JUN20																																										
LP162020	Design - East Weir Structure	250	16JAN18	31DEC18																																										
LP162030	Bid & Award - East Weir Structure	90	01JAN19	06MAY19																																										
LP162040	Construction - East Weir Structure	235	07MAY19	20JUN20																																										
LP162090	Complete - East Weir Structure	0		20JUN20																																										
LP163000	Upstream Storage Area	326*	16JAN18	16APR19																																										
LP163010	L&D - Upstream Storage Area	250	16JAN18	31DEC18																																										
LP163090	Complete - Upstream Storage Area	0		16APR19																																										
LP164000	Drain 14 Structure	634*	16JAN18	19JUN20																																										
LP164020	Design - Drain 14 Structure	250	16JAN18	31DEC18																																										
LP164030	Bid & Award - Drain 14 Structure	90	01JAN19	06MAY19																																										
LP164040	Construction - Drain 14 Structure	235	07MAY19	20JUN20																																										
LP164090	Complete - Drain 14 Structure	0		20JUN20																																										
LP165000	Storage Area 1 Embankment	634*	16JAN18	19JUN20																																										
LP165010	L&D - Upstream Storage Area	250	16JAN18	31DEC18																																										
LP165020	Design - Storage Area 1 Embankment	250	16JAN18	31DEC18																																										
LP165030	Bid & Award - Storage Area 1 Embankment	90	01JAN19	06MAY19																																										
LP165040	Construction - Storage Area 1 Embankment	235	07MAY19	20JUN20																																										
LP165090	Complete - Storage Area 1 Embankment	0		20JUN20																																										
LP166000	Storage Area 1 Inlet	634*	16JAN18	19JUN20																																										
LP166020	Design - Storage Area 1 Inlet	250	16JAN18	31DEC18																																										
LP166030	Bid & Award - Storage Area 1 Inlet	90	01JAN19	06MAY19																																										
LP166040	Construction - Storage Area 1 Inlet	235	07MAY19	20JUN20																																										
LP166090	Complete - Storage Area 1 Inlet	0		20JUN20																																										
LP167000	Storage Area 1 Close/Drain N	634*	16JAN18	19JUN20																																										
LP167020	Design - Storage Area 1 Close/Drain N	250	16JAN18	31DEC18																																										
LP167030	Bid & Award - Storage Area 1 Close/Drain N	90	01JAN19	06MAY19																																										
LP167040	Construction - Storage Area 1 Close/Drain N	235	07MAY19	20JUN20																																										
LP167090	Complete - Storage Area 1 Close/Drain N	0		20JUN20																																										
LP168000	Storage Area 1 Close/Drain S	634*	16JAN18	19JUN20																																										
LP168020	Design - Storage Area 1 Close/Drain S	250	16JAN18	31DEC18																																										
LP168030	Bid & Award - Storage Area 1 Close/Drain S	90	01JAN19	06MAY19																																										
LP168040	Construction - Storage Area 1 Close/Drain S	235	07MAY19	20JUN20																																										
LP168090	Complete - Storage Area 1 Close/Drain S	0		20JUN20																																										
LP169000	Storage Area 1 Levee Road Raise	634*	16JAN18	19JUN20																																										
LP169020	Design - Storage Area 1 Levee Road Raise	250	16JAN18	31DEC18																																										
LP169030	Bid & Award - Storage Area 1 Levee Road Raise	90	01JAN19	06MAY19																																										
LP169040	Construction - Storage Area 1 Levee Road Raise	235	07MAY19	20JUN20																																										
LP169090	Complete - Storage Area 1 Levee Road Raise	0		20JUN20																																										

Start Date01OCT10

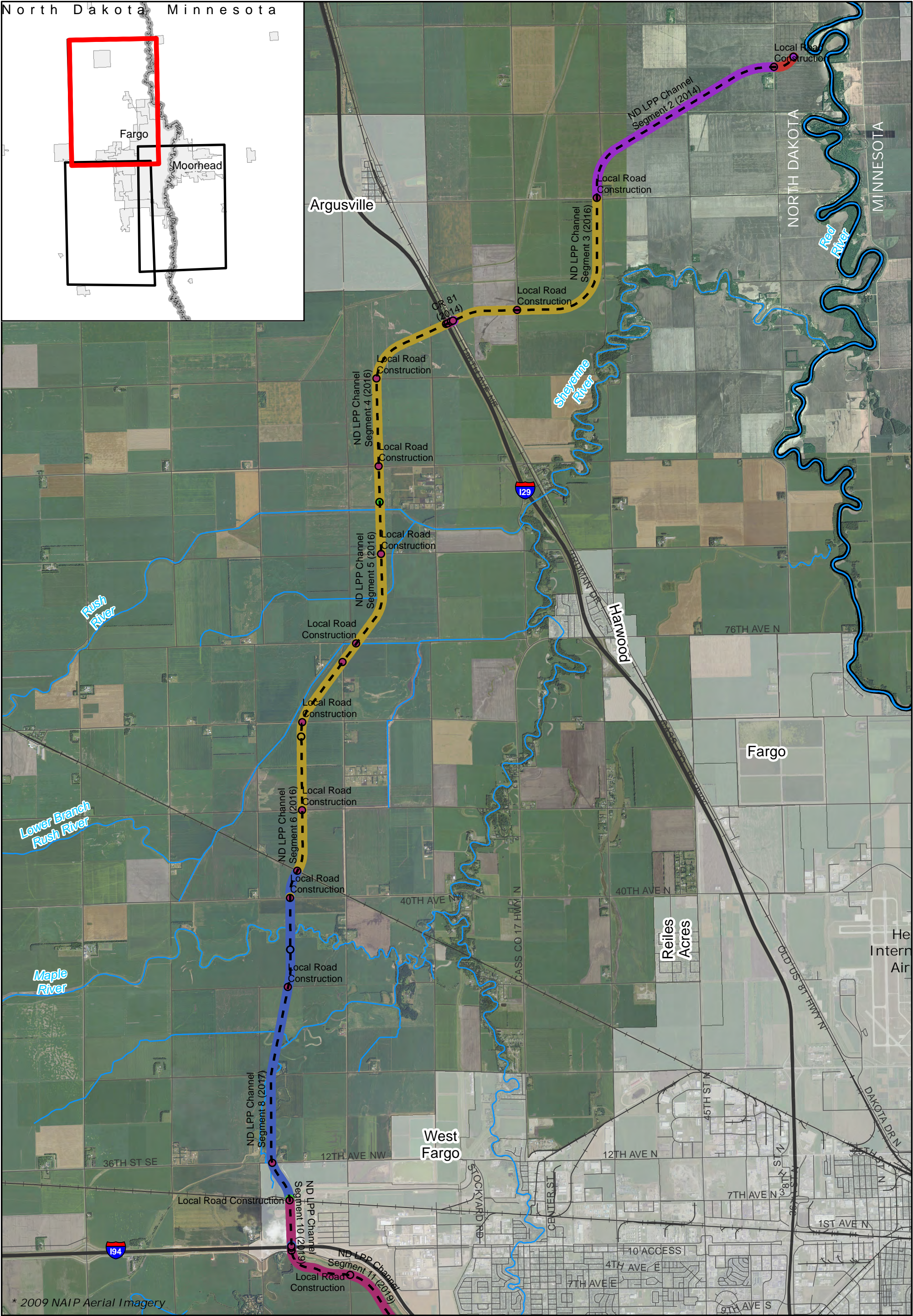
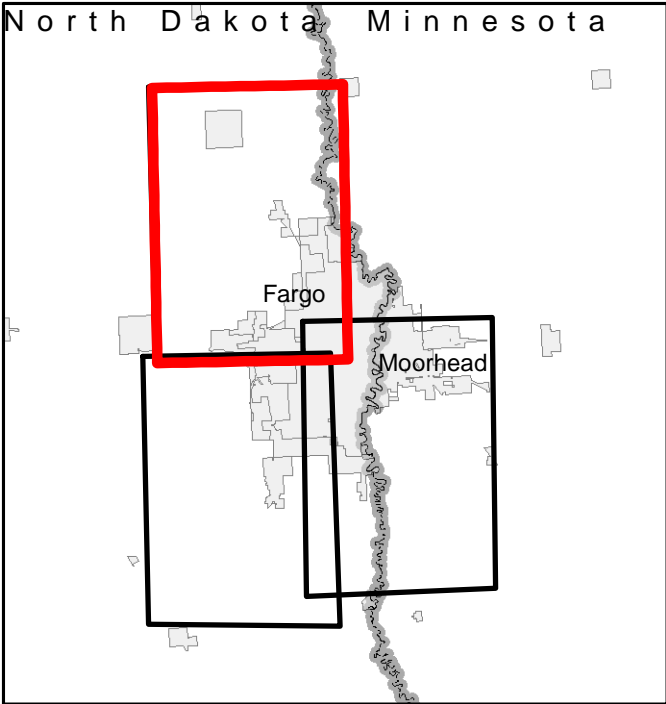
Finish Date31DEC24

Data Date01OCT10

Run Date29JUN11 08:21



Date	Revision	Checked	Approved
		USACE-MVP-0000088005	



0 0.5 1 Miles

River

Proposed Channel

Proposed Structure

Municipal Boundary

State

Major Road

City Road

Railroad

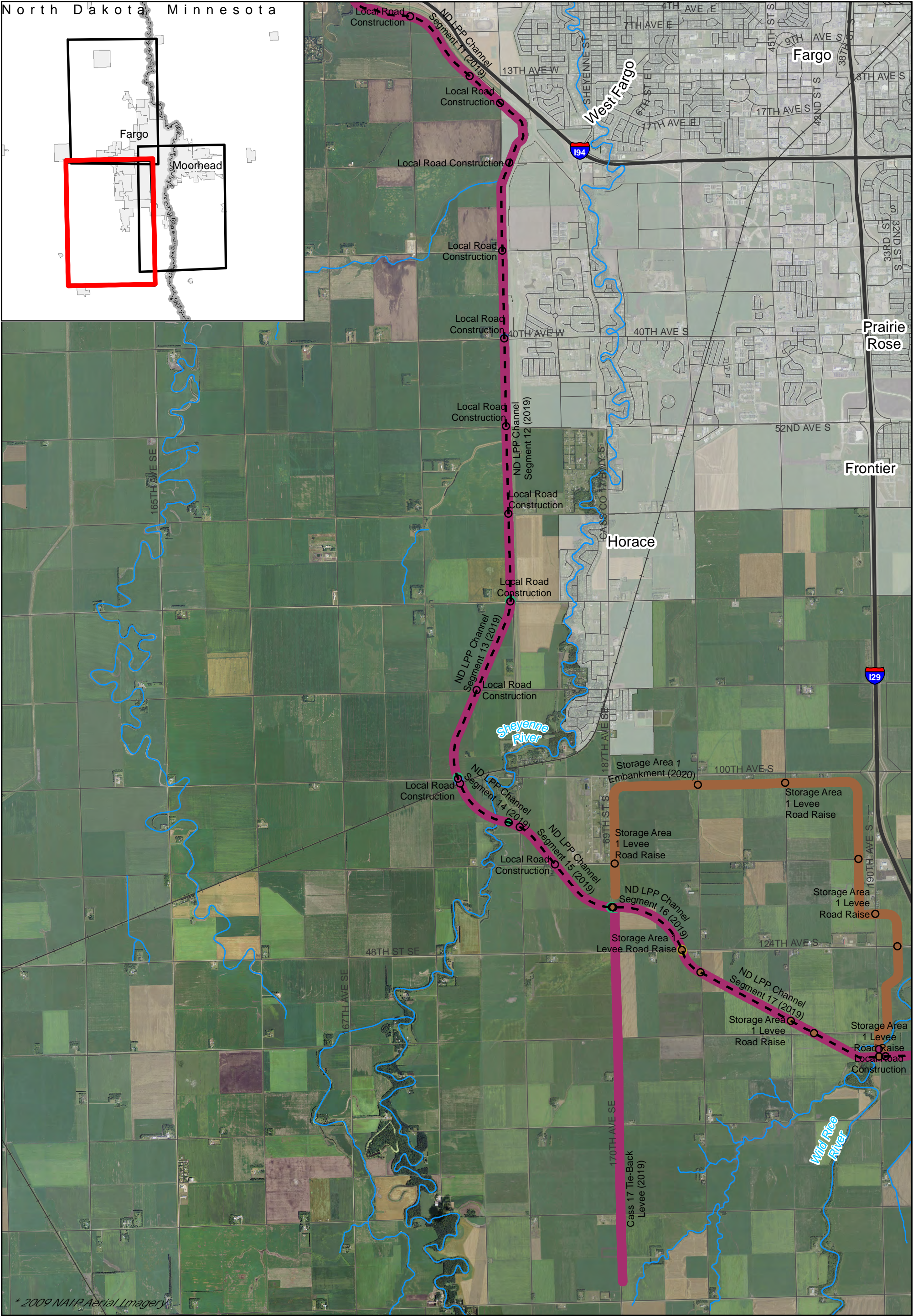
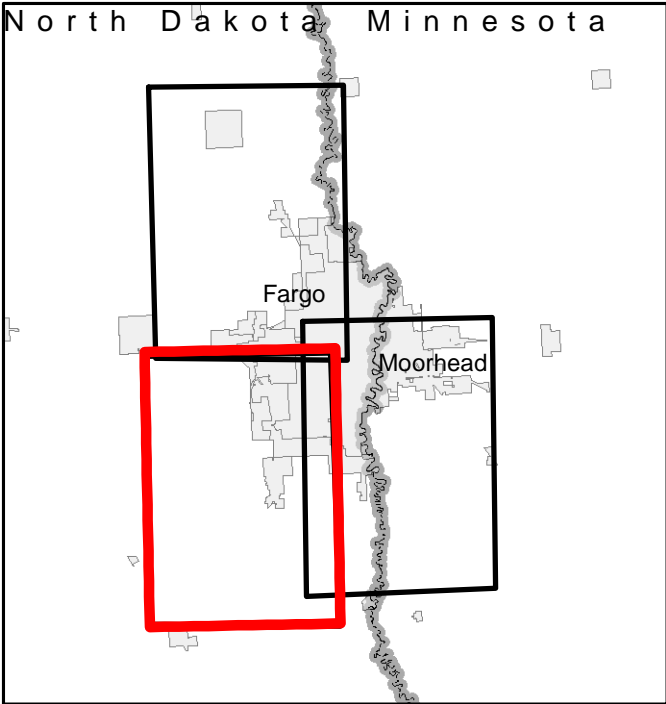
Construction End Date

**FMM Flood Control Alternatives**  
**LPP Alignment Option**  
**\$233M Funding Stream (DS-US)**

USACE-MVP-0000088005

Map Document: (\\mspe-gis-file\gisproj\USACE\139433\map\_docs\mxd\2011\_06JUN\_28\_map\_RedRiver\_11x17\_L\_ND.mxd)  
6/30/2011

L - 55



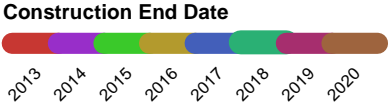
\* 2009 NAI/P Aerial Imagery

**FMM Flood Control Alternatives**  
**LPP Alignment Option**  
**\$233M Funding Stream (DS-US)**



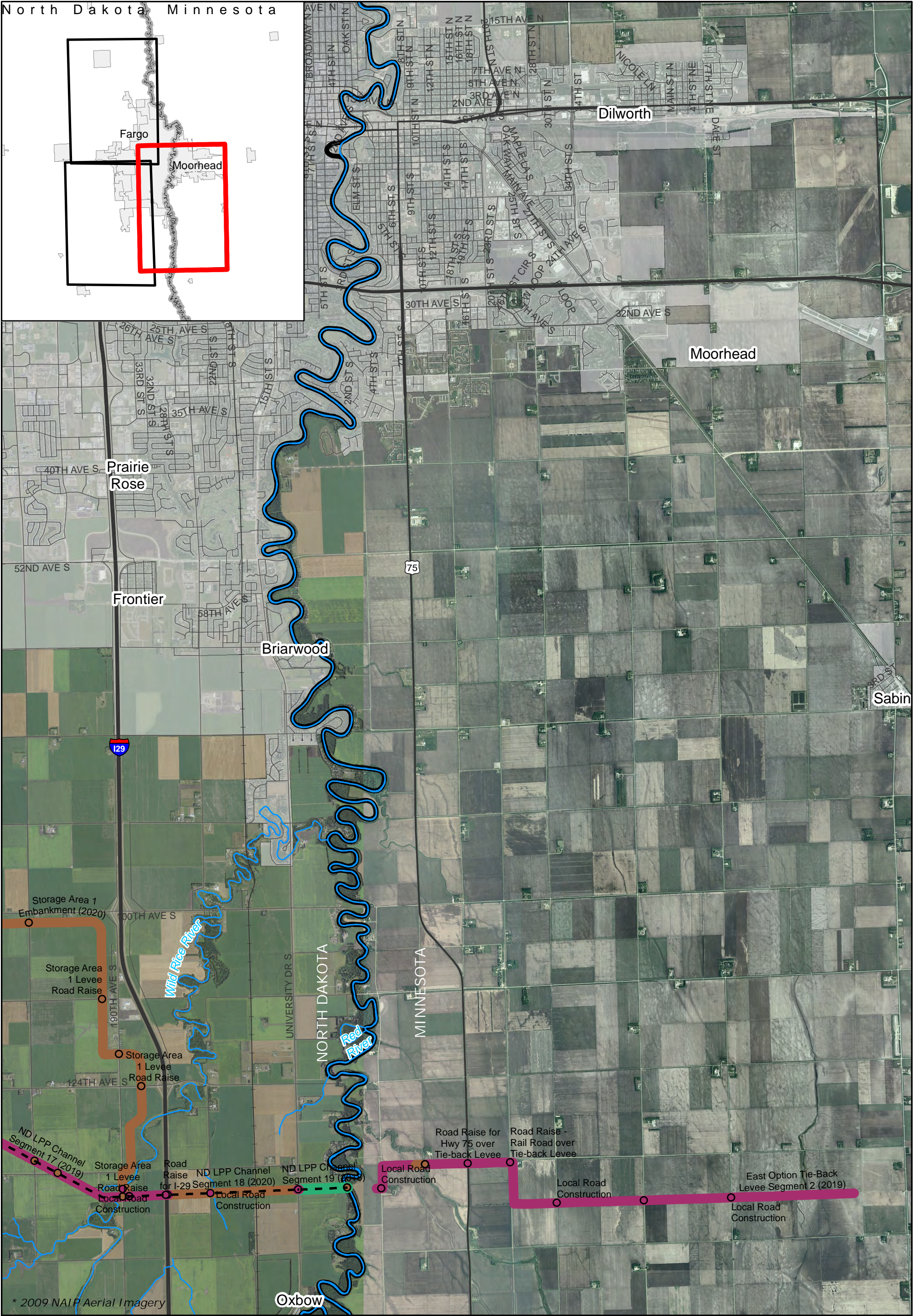
0 0.5 1 Miles

- River
- Proposed Channel
- Proposed Structure
- Municipal Boundary
- State
- Major Road
- City Road
- Railroad



USACE-MVP-0000088005

North Dakota Minnesota



0 0.5 1 Miles

River

Proposed Channel

Proposed Structure

Municipal Boundary

State

Major Road

City Road

Railroad

**FMM Flood Control Alternatives**  
**LPP Alignment Option**  
**\$233M Funding Stream (DS-US)**

**Construction End Date**

USACE-MVP-0000088005

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**FARGO MOORHEAD METRO STUDY  
USACE – ST PAUL DISTRICT**

**COST ENGINEERING DX - TPCS ATR CERTIFICATION**

For the Fargo Moorhead Metro Study, as presented by St Paul District, the Walla Walla Cost Dx representatives have completed an Agency Technical Review (ATR) of the 2012 Budget and Total Project Cost. The ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies in accordance with ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of 21 June 2011, the Walla Walla District, Cost Engineering Directory of Expertise (Dx) for Civil Works, certifies the estimated total project cost of the Fargo Moorhead Metro Study estimated values of:

**FCP**

FY 2012 Price Level:	\$1,236,700,000
Fully Funded Amount:	\$1,363,631,000

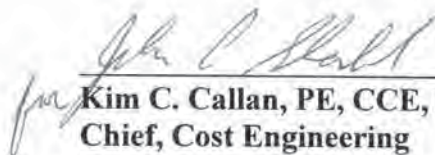
**LPP**

FY 2012 Price Level	\$1,781,347,000
Fully Funded:	\$2,007,791,000

It remains the responsibility of the District to correctly reflect these cost values within the Final Report.

21 Jun 2011

**Date**

  
\_\_\_\_\_  
**Kim C. Callan, PE, CCE, PM1**  
**Chief, Cost Engineering**  
**Walla Walla District**