



Houston Engineering, Inc.

FOX ISLAND FLOOD CONTROL PRELIMINARY ENGINEERING REPORT

BURLEIGH COUNTY WATER RESOURCE DISTRICT

August 2016



CERTIFICATION

As a Registered Professional Engineer under the laws of the State of North Dakota, I hereby certify that the ***Fox Island Flood Control Preliminary Engineering Report*** was prepared by me or under my direct supervision.

***THIS DOCUMENT WAS ORIGINALLY ISSUED
AND SEALED BY MICHAEL H. GUNSCH,
REGISTRATION NUMBER 3052, ON
AUGUST 9, 2016 AND IS STORED AT THE
OFFICE OF HOUSTON ENGINEERING.***

Michael H. Gunsch, PE
North Dakota Registration Number 3052

Date: August 9, 2016



ACKNOWLEDGMENTS

THE BURLEIGH COUNTY WATER RESOURCE DISTRICT

**WOULD LIKE TO ACKNOWLEDGE THE SUPPORT,
ASSISTANCE AND INPUT PROVIDED BY THE FOLLOWING DURING COMPLETION OF THE
FOX ISLAND FLOOD CONTROL PRELIMINARY ENGINEERING REPORT:**

FOX ISLAND HOMEOWNERS ASSOCIATION

FOX ISLAND RESIDENTS AND STEERING COMMITTEE

RIVERWOOD WEST HOMEOWNERS ASSOCIATION

BURLEIGH COUNTY HIGHWAY DEPARTMENT - TAVIS ROAD GRADE RAISE AND PUMP STATION

BURLEIGH COUNTY COMMISSION

CITY OF BISMARCK – MILLS AVENUE/RIVERWOOD DRIVE GRADE RAISE

NORTH DAKOTA STATE WATER COMMISSION – STUDY FUNDING ASSISTANCE

TABLE OF CONTENTS

PROBLEM DEFINITION	Page 1
ALTERNATIVE FLOOD HAZARD	Page 3
Preferred Alternative - #5 Perimeter Levee & Roadway Grade Raise	Page 5
Preliminary Configuration	Page 9
Segment A – River Levee	Page 9
Segment B – Roadway Grade Raise	Page 9
Opinion of Probable Cost	Page 10
Project Benefit Area	Page 10
INTERIOR DRAINAGE	Page 18
Stormwater Management	Page 18
Whisper Drive Flood Control Structure	Page 18
MISSOURI RIVER FLOODPLAIN IMPACTS	Page 20
Project Funding	Page 20
Special Assessment District	Page 20
Operations and Maintenance Costs	Page 21

FIGURES

Figure 1	2011 Temporary Flood Control Measures	Page 2
Figure 2	Flood Risk Frequency Assessment	Page 4
Figure 3	Alternative #5 Layout	Page 8
Figure 4	River Levee Alignment	Page 11
Figure 5	River Levee Typical Section	Page 12
Figure 6A	Roadway Grade Raise Layout A	Page 13
Figure 6B	Roadway Grade Raise Layout B	Page 14
Figure 7	Roadway Grade Raise Typical Section	Page 15
Figure 8	Unprotected Flood Limits	Page 16
Figure 9	Preferred Alternative Protection Limits	Page 17
Figure 10	Stormwater Easement and Channel Improvements	Page 19

TABLES

Table 1	Historic Flood Levels	Page 6
Table 2	Alternative #5 Flood Benefits	Page 7
Table 3	Preferred Alternative Opinion of Probable Cost	Page 10

APPENDICES

Appendix A	Project Petition, Landowner Opt-Out Petitions and Signatory Map
	Landowner Petitions and Response
Appendix B	Preferred Alternative Preliminary Plan Sets
Appendix C	2011 Temporary Flood Levee Encroachment Impacts
Appendix D	Preferred Alternative Opinion of Probable Cost – August 2016
Appendix E	Resolutions and Special Assessment District
Appendix F	<i>Fox Island Flood Control Feasibility Assessment, February 19, 2014</i> (Included by reference only)
Appendix G	Funding Documentation

FOX ISLAND FLOOD CONTROL PRELIMINARY ENGINEERING REPORT *AUGUST 2016*

PROBLEM DEFINITION

In March 2009, a major ice jam event occurred on the Missouri River south of the City of Bismarck just downstream from the confluence with the Heart River. This resulted in a rapid rise in water levels and the flooding of properties within Fox Island and in South Bismarck. During this event, many Fox Island residents were evacuated and significant damages occurred to their residences. This report focuses on identifying and evaluating potential flood hazard mitigation measures that could be implemented to reduce flood risks on Fox Island. It is also intended to provide the preliminary engineering analysis required to initiate establishing a special assessment district to finance the project in accordance with North Dakota Century Code Chapter 61-16.1. This process requires a vote of the benefitted properties to be assessed to approve a project before it proceeds to construction.

This evaluation was first initiated through a petition filed with the Burleigh County Water Resource District (BCWRD). The first step taken was to assess the level of damages incurred as a result of the 2009 flood event. Subsequently, the Fox Island residents were surveyed to obtain information regarding their lowest floor elevations, outbuildings, and monetary damages. A total of 183 questionnaires were distributed with 100 questionnaires returned, a response rate of approximately 55%. Of the questionnaires returned 59 respondents reported they had a flood insurance policy. The following damage amounts were reportedly incurred:

Primary Residential Damage	\$ 766,961
Garage Damage	\$ 110,753
<u>Outbuilding Damage</u>	<u>\$ 128,230</u>
Total Damages	\$ 1,005,944

In addition, the following monies were reportedly received, either in the form of individual assistance or flood insurance reimbursements.

Individual Assistance	\$ 13,050
<u>Insurance Reimbursements</u>	<u>\$ 395,249</u>
Total Assistance	\$ 408,299

While efforts were underway to evaluate various alternatives to provide flood protection to the level experienced during the March 2009 spring ice jam event, the 2011 summer flood occurred. During the 2011 event a temporary system of TrapBags® and clay levees were constructed along select roadways to protect a portion of the interior properties on Fox Island. This was accomplished in a few days requiring a monumental effort in terms of mobilizing equipment and materials, as well as coordination of construction activities. Residents outside the temporary levees were left to construct individual private protection measures, which had varying degrees of success. The County installed temporary flood control measures, costing approximately \$1.1 Million to construct and remove, are illustrated on **Figure 1**.

Figure 1 – 2011 Temporary Flood Control Measures



Following the 2011 event, a private Steering Committee was formed by a number of Fox Island residents located south of Mills Avenue. They indicated their desire for the BCWRD to refocus its evaluation toward a levee that would provide protection for the entire island to the flood levels experienced during the 2011 event. In addition, a number of property owner's north of Mills Avenue along Harbor Drive expressed interest, through the Riverwood West Homeowners Association, to be included in the evaluation. This area was already included in the Burleigh County Flood Mitigation Plan developed by the Burleigh County Highway Department. These factors necessitated expanding the original project scope and revising the criteria used to evaluate the alternatives. The BCWRD approved expanding the evaluation in November 2011. A number of the Riverwood West Homeowners Association residents subsequently, submitted a petition to opt-out due to the anticipated undesirable impacts to their properties along the river.

A critical component in evaluating any flood hazard mitigation project is identifying the known risks. The Fox Island area is subject to three floodwater sources. The two primary sources are associated with the Missouri River and include ice jams and open water flows. The third, related to local internal storm water runoff from excessive rainfall, is addressed later in this report.

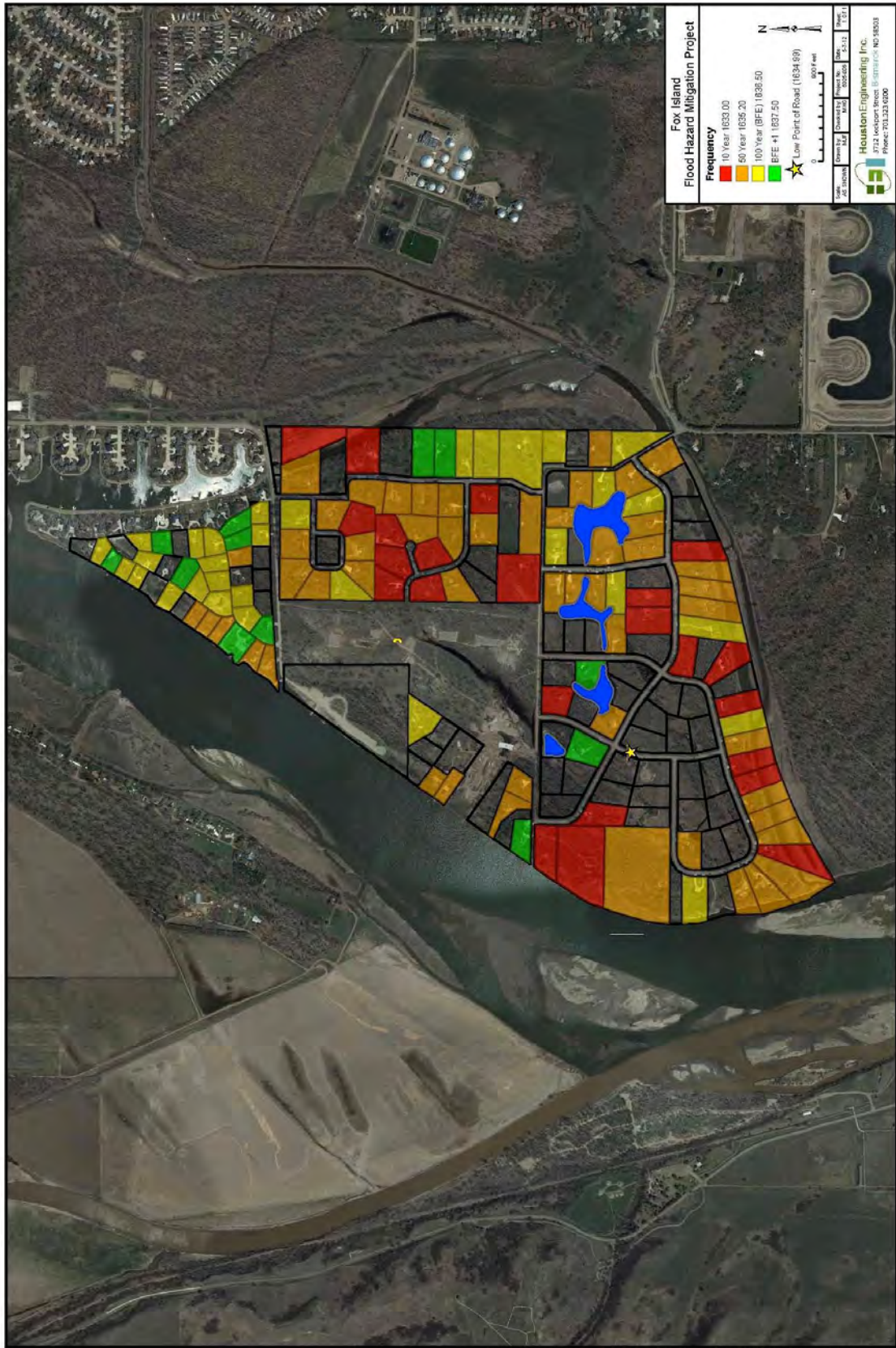
Ice jams are not an unusual occurrence on the Missouri River and are known to reoccur rather frequently along certain river segments. The principal areas of concern in Burleigh County are located downstream from Fox Island below the confluence of the Heart River and Apple Creek. Ice jams have been recorded on a number of occasions and were evaluated as part of the *2005 Flood Insurance Study (2005 FIS)*. The *June 2, 1999 Interim Report, Hydrology, Flood Insurance Restudy of the Missouri River*, prepared for the *2005 FIS* documents an evaluation of the historic ice jams since the closure of Garrison Dam. The highest previously recorded ice jam stage at the USGS Bismarck Gage was 14.8 feet occurring on January 13, 1983.

Based on available historic data, ice jams can be significant, however they do not represent the controlling Base Flood Elevation (BFE) or 100-year flood event used to map this reach of the Missouri. When the *Interim Report* was completed the data indicated ice jam events typically only affected projected flood elevations for frequencies below a 10-year open water event. Notable flood risks exist, however, even at these lower flood elevations. **Figure 2** illustrates a frequency based risk assessment for the residential lots within the study area. Based on measured flood elevations in the Fox Island Area, the 2009 ice jam event represented a 50-year to a 100-year open water flood event. This was the largest recorded flood and ice jam event since the closure of Garrison Dam. The maximum recorded stage at the USGS Bismarck Gage in 2009 was 16.1 feet, which reflected approximately a 17-foot stage at the north end and an 18 to 18.5-foot stage at the southern end of Fox Island. Given the 2009 ice jam and subsequent high waters related to recent ice jams; it appears prudent to reassess this risk with the next flood insurance study update.

ALTERNATIVE FLOOD HAZARD MITIGATION SOLUTIONS

Four alternatives were initially developed and evaluated to provide flood protection for the residents of Fox Island. **Alternative #1** included raising Riverwood Drive and Mills Avenue and constructing flood control structures at Mills Avenue and at the Tavis Road Oxbow outfall to the Missouri River to isolate the Fox Island area during flood events. **Alternative #2** uses the existing roadways to cost effectively provide protection for those areas located within the interior of these roadways. **Alternative #3** included constructing an earthen levee and flood wall system, along the perimeter of the entire island. **Alternative #4** included constructing an earthen levee and floodwall system at a lower protection level, which would allow for the placement of temporary measures when required. **Alternative #5** was then developed based on input obtained during the initial public informational meeting, landowner petitions, funding opportunities, and involves a perimeter levee and a roadway grade raise.

Figure 2
Flood Risk Frequency Assessment



In addition to structural project features, several non-project flood hazard mitigation alternatives were considered, including floodplain ordinance revisions and other measures described later.

PREFERRED ALTERNATIVE - PERIMETER LEVEE / ROADWAY GRADE RAISES (ALTERNATIVE #5)

When designing a flood control levee there are many factors to consider, including but not limited to, the following:

1. No material can be placed in the river or within any wetland areas without a COE Section 404/Section 10 permit.
2. No material can be placed below the Ordinary High Water Mark (OHWM) without obtaining a Sovereign Lands permit from the North Dakota State Engineer.
3. No material can be placed within the regulatory floodway without incorporating compensatory conveyance measures into the project and completion of an analysis documenting no change in total conveyance, and obtaining a “no rise” certification.
4. Placement of material along the bank line cannot obstruct or restrict access to the existing COE bank stabilization projects as there are access easements dedicated to Burleigh County that need to be adhered to. Work in these easement areas that impact these structures would require COE Section 408 review and approval
5. Levee construction cannot affect any structure (including outbuildings, septic systems, etc....) without the impacts being mitigated, including the potential need to remove or relocate the structure. In these cases, consideration of a floodwall should be included during final design to limit impacts and costs.
6. Levee structural stability, seepage and geotechnical integrity.
7. FEMA Certification.
8. Consideration needs to be given to the design criteria on which to base the preliminary design and opinion of probable cost.
9. Landowner questions and expressed concerns – private systems (i.e., septic, electrical, irrigation systems, etc.)

The approach taken with **Alternative #3** and **Alternative #5** is to comply with Item 1 through Item 3 to avoid unnecessary permits, which often require extensive technical and environmental reviews. A construction permit will be required by the North Dakota State Engineer, which will need to comply with the policy of no rise greater than 0.1 feet, without first obtaining easements from affected properties. Item 4 is a given and compliance is in the resident's best interest in order to provide reasonable access to the river and bank stabilization measures. Item 5 is a design constraint that requires additional consideration during final design.

Item 6 requires a geotechnical evaluation on the property where the levee is located to assure the project design is structurally stable and seepage is within acceptable limits. This evaluation is not completed until the design and final alignment have been determined.

FEMA certification noted in Item 7 is not practical in this instance as it would require a levee with three feet of freeboard. Construction of a levee to such a level is not acceptable due to space and aesthetic constraints, as well as not being economically feasible. Subsequently, the final project implementation will not change the flood insurance requirements for properties within the protected area.

Item 8 presents a more significant question related to what this levee and roadway system would look like. Subsequently, the following criteria were considered for the project baseline. These are related to the selected protection levels and the levee and roadway design section:

➤ **Design Section**

- Top Width 10 feet (4-foot minimum)
- Riverward Side Slope 3:1 (OHWM and floodway avoidance)
- Residence Side Slope 4:1 (shaped to existing ground where reasonable)
- Interior Drainage and Pumps Gated culverts and pump structures
- Residential Lot Drainage Final Design Consideration
- Township Roadway Required Standard Roadway Section

A number of considerations went into the proposed design section. First, the top width needed to provide reasonable access for maintenance, as well as to allow the potential placement of additional protective measures such as sandbags. The 10-foot top width would allow for the placement of 4 feet of properly constructed sandbags or various sizes TrapBags®. A four-foot high TrapBags® requires a base footprint of 6 feet. An additional clear width of 20 feet on the landward side of the levee is desirable for equipment access. Where unavailable TrapBags® can be filled from the ends; however, the speed of installation is considerably slower. A four-foot minimum top width is applicable in isolated areas to avoid using higher cost structural floodwalls. The selected side slopes are for embankment stability as well as ease in maintenance while limiting the overall foot print. An important design issue is the geotechnical evaluation to ensure stability of the levee, but the bank line on which it is placed. There will be considerable design challenges with the river sands underlying the alignment.

Item 9 represents questions and concerns brought to our attention through cooperation with the Fox Island Steering Committee and Riverwood West Homeowners Association along with private systems. Specific landowner concerns and lot impacts will likely be a significant factor with final design; however, they cannot be addressed at this stage in project development.

The expressed directive from the residents was to develop a project that provides flood protection up to the water levels experienced in 2011. The adopted Burleigh County Flood Hazard Mitigation Plan incorporates a design that provides protection to the 2011 water surface with 0.7 feet of freeboard. **Table 1** summarizes the pertinent elevations for various events at select locations along the river.

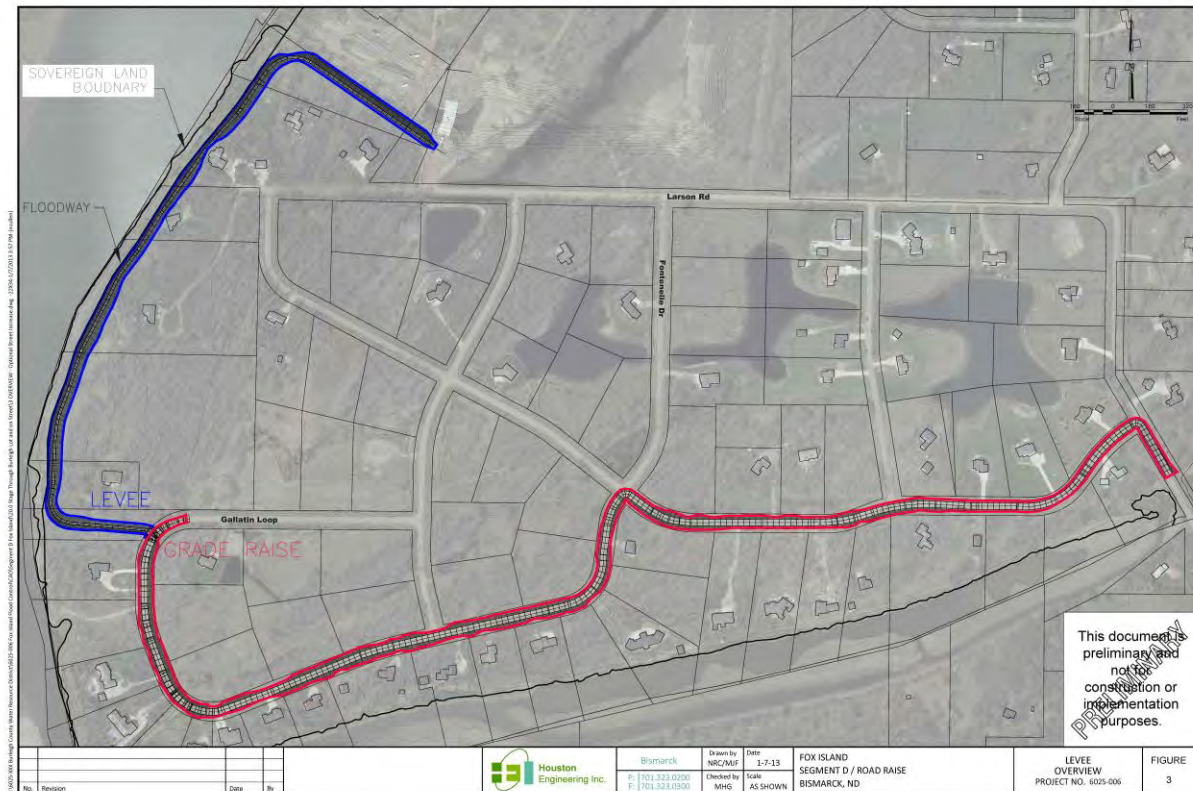
TABLE 1 HISTORIC FLOOD LEVELS			
Event	Bismarck Gage	Mills Avenue	Tavis Road
Base Flood Elevation (DFIRM Sept 2009)	1639.25 (19.62 Gage Height)	1636.53	1636.40
2009 Ice Jam	1635.72 (16.09 Gage Height)	1635.55 (est.)	1635.05 (est.)
2011 Flood Peak	1638.93 (19.30 Gage Height)	1637.15	1635.70
Elevation Datum = NGVD 1988			

During the public informational process, residents living on riverfront exterior lots presented petitions expressing their opposition to the placement of a levee between their homes and the river or, in the case of those residents along the backwater channel, between their homes and the channel. Their petitions requesting to be excluded from the project is included in **Appendix A**.

The two projects were in fact initiated by different mechanisms. The Fox Island Project was initiated through a formal petition process, while the Harbor Drive Project was initiated through the Burleigh County Flood Control Master Plan and interest expressed by the Riverwood West Homeowners Association. Subsequently, **Alternative #5** only provides flood protection for the interior of Fox Island residences south of Mills Avenue. **Table 2** illustrates the number and values of the structures protected by this alternative.

Event	River Elevation (NAVD 88) [1]	# Affected Residences [4]	% Affected	Market Value Affected [2]	# Affected Outbuildings	% Affected
10-year	1633.0	16	25%	\$4,455,700	22	96%
50-year	1635.2	48	75%	\$14,193,300	23	100%
March 2009	1635.3	52	81%	\$15,577,100	23	100%
100-year	1636.5	59	92%	\$17,896,400	23	100%
2011 Event	1637.15	64	100%	\$19,799,900	23	100%
500-year	1639.9	64	100%	\$19,799,900	23	100%

[1] These elevations are based on the upstream end of the project area (Mills Avenue).
 [2] There are some residences not protected by the permanent levee and therefore are not included.
 [3] Market values are based on 2014 values and were not updated for this report.
 [4] There are 108 total developable parcels within the protected area



Alternative #5 – Perimeter Levee and Roadway Grade Raises is the preferred alternative, based on petitions received during the public informational meeting, as well as feedback from the Fox Island Homeowners Association. This proposed system consists of an earthen levee along the south side of the Whispering Bay access channel then traversing southward along the Missouri River and then east across a lot owned by Burleigh County where it then ties into Gallatin Loop. This alternative then includes grade raises along Gallatin Loop, Gallatin, Drive and Far West Drive, and ties into Tavis Road at eastern and southern terminus. This system provides protection to the interior properties south of Mills Avenue, eliminating placement of a levee on the lots owned by those who opted out. This system will not provide protection to a majority of the exterior lots, nor does it include the Harbor Drive area north of Mills Avenue.

The proposed design provides protection to the high water levels experienced during 2011, with 0.7 feet of freeboard. The design is based on observed high water marks along this river reach, though in some areas it does not protect against the designated Base Flood Elevation.

PRELIMINARY CONFIGURATION

The proposed alignment, illustrated in **Figure 3**, is divided into two segments for purposes of review and discussion, specifically the riverward earthen levee and the roadway grade raises. A preliminary plan set for each segment is included in **Appendix B**. A construction permit is required from the North Dakota State Engineer, which requires an impact assessment on Missouri River flood elevations. **Appendix C** contains an analysis of water surface elevation impacts associated with the 2011 temporary flood levees. The State Engineer's current policy is that water surface increases of greater than 0.1 feet will require easements. The 2011 assessment indicated a maximum increase of 0.08 feet at Tavis Road. The application to the State Engineer would include all components including the complementary City's Mills Avenue and Riverwood Drive grade raises. It unknown how the City grade raises were permitted.

SEGMENT A – RIVER LEVEE

The earthen levee runs along the south side of the Whispering Bay access channel and extends south along the Missouri River until it runs east to Gallatin Loop. The levee height averages 2.3 feet above natural ground with a maximum height of 7.6 feet, with a length of around 3,512 feet. The levee alignment was selected outside the regulatory floodway as well as the sovereign lands boundary. There does not appear to be significant issues with this levee. Residents who objected to a levee being placed on their property are not directly impacted, with the exception of two residences where it is understood they generally agree with the proposed levee. Accommodations will be made to fit the proposed levee into the natural topography of this area and around their respective residences. The river levee alignment is illustrated in **Figure 4**, and a typical cross section is illustrated in **Figure 5**.

SEGMENT B – ROADWAY GRADE RAISE

This segment involves a proposed grade raise along Gallatin Loop, Gallatin Drive, and Far West Drive, for a length of just over one mile. There are a number of issues to be resolved as part of the final design and construction such as right of way issues, potential roadway centerline changes and driveway approach grades. The alignment is illustrated in **Figures 6A and 6B**, and a typical section is illustrated in **Figure 7**. Initial indications are that the grade raise can be completed within the currently existing right-of-way, however considerable work and shaping will be required outside this area so temporary construction easements will be required. The acquisition of these temporary easements will require special consideration of issues related to accommodations associated with potential impacts.

OPINION OF PROBABLE COST

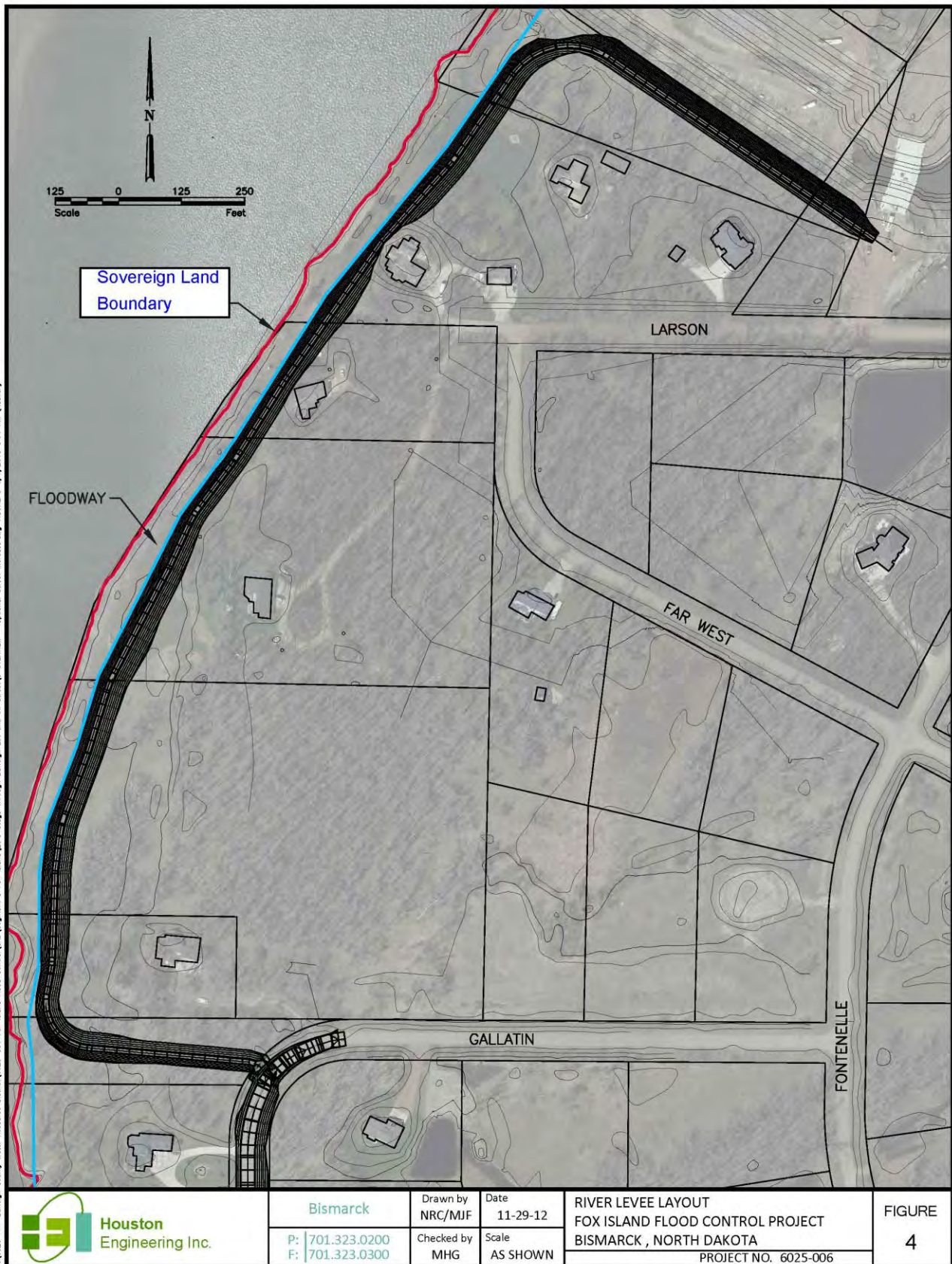
A preliminary Opinion of Probable Cost (OPC) was developed for this preferred alternative. **Appendix D** provides a more detailed unit cost breakdown of the current investment expenditures and the anticipated final project implementation costs.

Table 3 Preferred Alternative (Alternative #5) Opinion of Probable Cost	
Construction	\$2,849,019
Preliminary Engineering Report and related Studies	\$157,000
Engineering (Design, Environmental, Easements and Permits)	\$320,000
Engineering (Construction Management Services)	\$384,000
Administration	\$50,000
Geotechnical	\$58,000
O&M Pumping and Reserve Fund	\$100,000
Total Cost	\$3,918,019

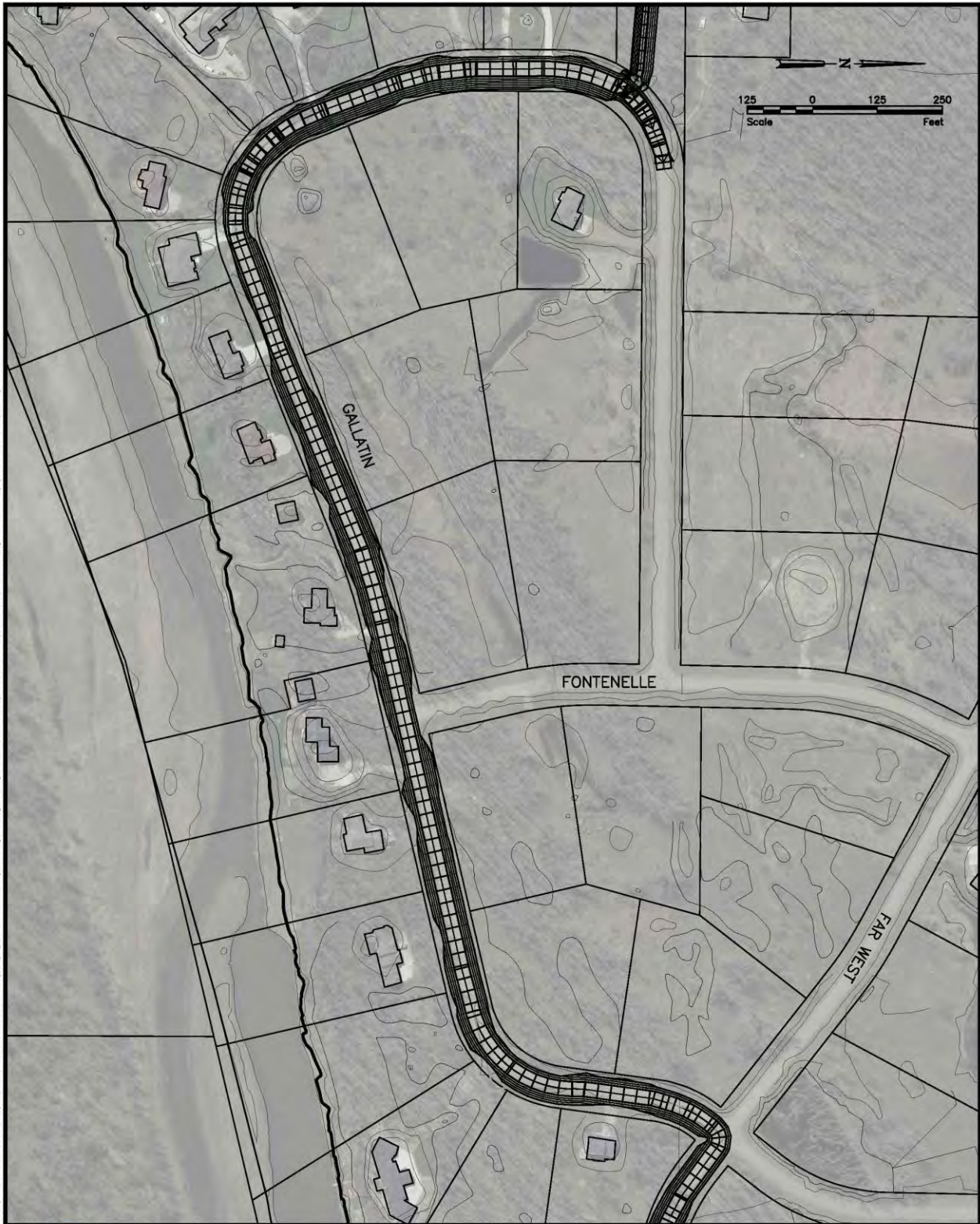
PROJECT BENEFIT AREA

The benefited area for the Preferred Alternative (**Alternative #5**) is bound by the limits of the levee system. This includes the City of Bismarck's grade raises on Mills Avenue and Riverwood Drive, and the new flood control gates and pump system on Tavis Road. **Figure 8** illustrates the unprotected property on Fox Island under existing conditions, while **Figure 9** illustrates the resulting protection provided by the preferred alternative. This inundation mapping is based on the 2011 high water surface elevation.

\\6025-006_Burleigh County Water Resource District\6025-006_Fox Island Flood Control\CAD\Segment D Fox Island\2013 Stage Through Burleigh Lot and on Street\3 OVERVIEW - Optional Street Increase.dwg-FIGURE 4-1/7/2013 3:51 PM-(cullin)



T:\6025-006_Burleigh County Water Resource District\6025-006 Fox Island Flood Control\CAD\Segment 3 Fox Island\2013 Stage Through Burleigh Lot and on Street\3 OVERVIEW - Optional Street Increase.dwg-FIGURE 6A-1/7/2013 1:27 PM-(outlin)



**Houston
Engineering Inc.**

Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
NRC/MJF

Checked by
MHG

Date
11-29-12

Scale
AS SHOWN

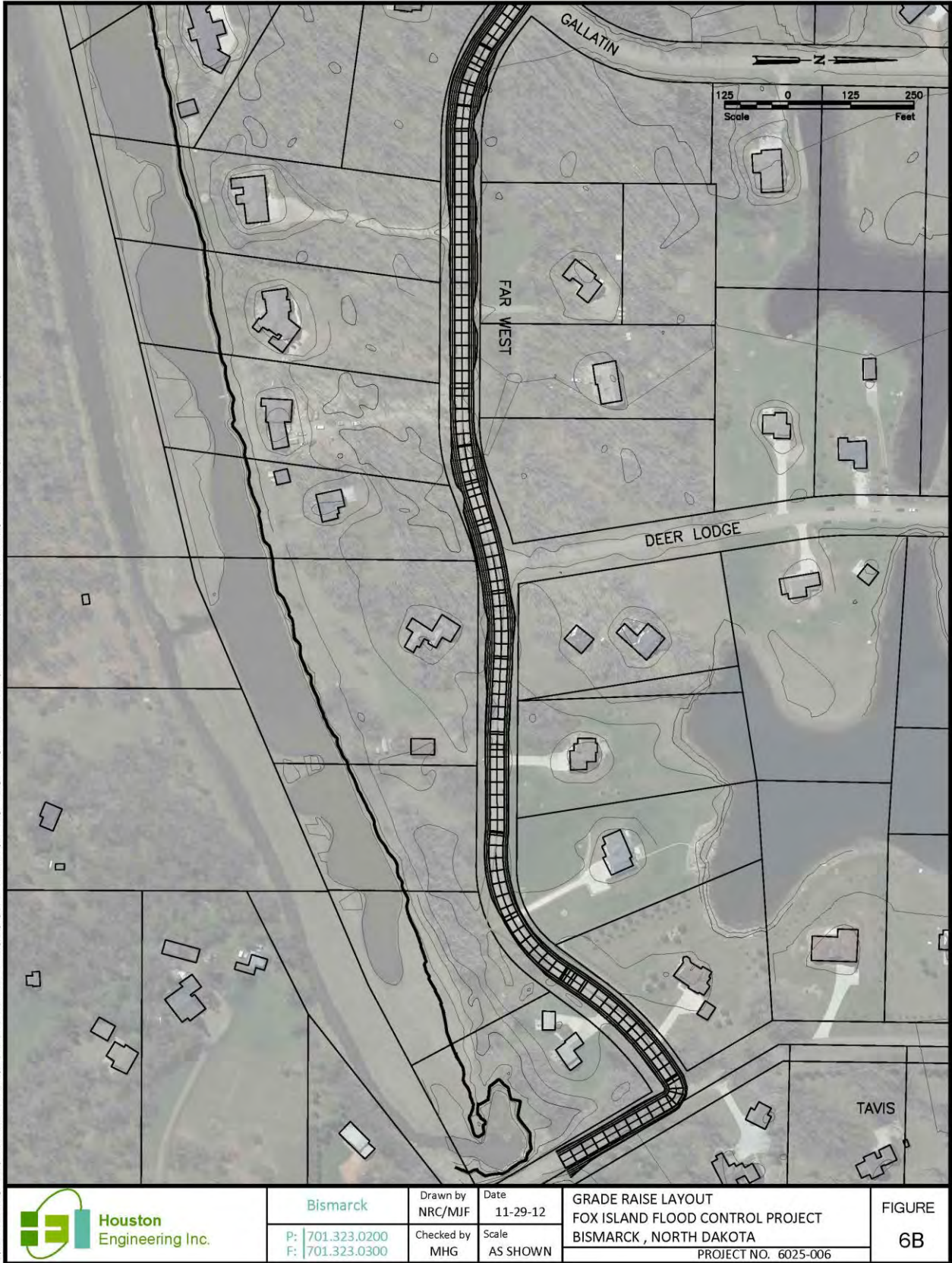
GRADE RAISE LAYOUT
FOX ISLAND FLOOD CONTROL PROJECT
BISMARCK , NORTH DAKOTA

PROJECT NO. 6025-006

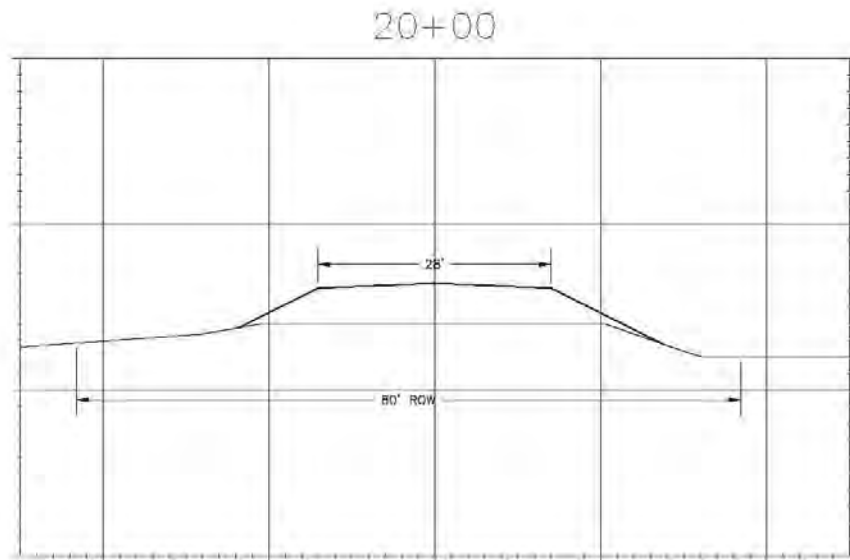
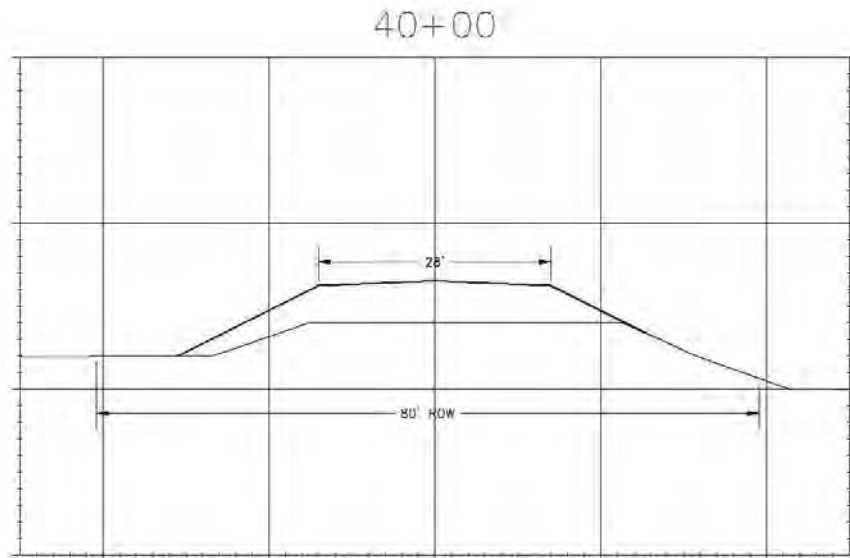
FIGURE

6A

T:\6025-006_Burleigh County Water Resource District\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\2010 Stage Through Burleigh Lot and on Street\3 OVERVIEW - Optional Street Increase.dwg-FIGURE 6B-1/7/2013 3:44 PM-(null)



\\houston-bok\eritech\dwg\water\resources\delvel\6025-006\fig 7.dwg Fox Island Flood Control Through Runway Ltd and on Street\3 Dwg\NEW - Colored Street Increase.dwg-FIGURE 6-171793-3-4-5 (Houlet)



A
1 **PROPOSED ROAD RAISE CROSS SECTIONS**
NOT TO SCALE



Bismarck

Drawn by
NRC/MJF

Date
11-29-12

GRADE RAISE TYPICAL SECTION
FOX ISLAND FLOOD CONTROL PROJECT
BISMARCK, NORTH DAKOTA

FIGURE

7

P: 701.323.0200
F: 701.323.0300

Checked by
MHG

Scale
AS SHOWN

PROJECT NO. 6025-006





INTERIOR DRAINAGE

STORMWATER MANAGEMENT

After the 2009 event, it was clearly evident that the internal drainage system within the Fox Island area is in serious need of improvement. Currently there are no defined stormwater easements within the existing plats. Therefore, every lot owner that places fill for construction of their residence or landscaping does so at the risk of obstructing a natural drainway, not being informed of the need to provide surface drainage through their properties.

It is recommended that stormwater easements be created for surface drainage along the natural drainage within the development. These easements should be signed and recorded on the subject properties. Where existing obstructions exist, it is recommended the BCWRD notify the landowner to have them removed or provide an acceptable alternate path for surface waters to flow through the properties. If an alternative alignment is agreed upon, an easement should be acquired for that path and filed on the subject property. Where no agreement is reached, the BCWRD may consider enforcing removal of the obstruction under their statutory authorities, if the location meets the legal definition of a watercourse. The BCWRD should only proceed with this easement process if the assessment district is approved. Otherwise this is an unfunded action and would be addressed on a case by case basis, when written complaints are filed.

Figure 10 illustrates the projected location of the anticipate stormwater easements. The cost to complete the process of surveying and securing these easements is included in the costs. The removal of materials and cleaning of these drainage paths to restore conveyance and to install erosion control measures has a cost allocation of \$68,200. Due to the nature and extend of this work this is a general estimate only. In addition, a gated control and pump station similar to the Whispering Bay Flood Control Structure is required in a location south of Gallatin Drive or Far West Drive. These costs are included in the preferred alternative as detailed in **Table 3**.

While researching the Fox Island development history it was noted that a lake water freshening system was installed by the developer. It was determined this system has not been routinely used or maintained, and its functional condition is unknown. While it was considered for utilization in floodwater removal, its size and capacity are limited. In addition, since this a privately installed system, it is not recommended that its operation and maintenance be assumed or incorporated as part of a public project. The Fox Island Homeowners Association has been provided information on this system and they may wish to consider assuming ownership and use. Since this system is located within public right of way, approvals may be required for access and operation, as it does not appear that easements were provided. It is unknown what authority was granted with the original installation, therefore, if this system is to be used, a formal agreement should be developed between the operator and Lincoln Township.

WHISPER DRIVE FLOOD CONTROL STRUCTURE

The Burleigh County Highway Department has completed the installation of the Whisper Drive flood control structure. This project includes a manhole structure and gate system with the ability to install a temporary pump when flood conditions require. The system's cost was borne by Lincoln Township under the County's direction. The installation costs for this system are not recoverable under the proposed project assessment district, however it will be included in the project's Emergency Response Plan.



MISSOURI RIVER FLOODPLAIN IMPACTS

A question raised during the evaluation process was the potential impacts on the Missouri River floodplain and flood elevations associated with project implementation. First, no project features will be constructed within the designated regulatory floodway. Therefore, this project is allowable under the adopted floodplain regulations in both Burleigh and Morton Counties. Secondly, during the 2011 event a similar concern was expressed regarding the placement of the temporary flood control levees. Prior to the peak releases, the impacts associated with the installation of the emergency protective measures were assessed. This assessment determined impacts related to increased water surface elevations were not significant, see **Appendix C**. These impacts will be revisited, as part of the State Engineer's permit application.

Another impact is the elimination of floodplain storage including storage volumes within the protected area of Fox Island, Tavis Road Oxbow and Riverwood Golf Course. This storage is in significant when considering the duration and total volume of the 2011 flood event.

PROJECT FUNDING

Project funding is being provided from several sources. Initial feasibility study funding was provided through the North Dakota State Water Commission, resulting in the completion of the *Fox Island Flood Control Feasibility Assessment, February 19, 2014*. During the legislature's 2015-2017 Session they approved a direct allocation of \$2.8 Million toward the project. Then based on previous commitments Lincoln Township's (a.k.a. Burleigh County Commission) approve \$920,456 toward funding a portion of the roadway improvements. All remaining project costs will be funded through special assessments. Related funding documentation is included in **Appendix G**.

SPECIAL ASSESSMENT DISTRICT

When creating the special assessment district several alternatives were reviewed and considered. The first included an equal assessment for all protected properties. The second considered the value of the Lincoln Township's intent to construct roadway improvements that would effectively protect those residences north of Larson Road. After discussions with the Fox Island Homeowners Association and in consideration of Lincoln Township's (a.k.a. Burleigh County Commission) cost share approval toward a portion of the roadway improvements, a recommended assessment district was developed that would not assess construction costs to those properties that would have been protected by the roadway improvements.

There are six publicly owned properties located within the protected area. These properties do not contain any structures, and are not included in the assessment district. In addition, there is one larger 11+ acre undeveloped wooded property owned by a family that has indicated they have no intention to develop the property. Subsequently, it is recommended this property be included in the assessment district, but not assessed for project or O&M costs. Under the NDCC it is possible this parcel could be added at a later time, and assessed, should its status change. There are also six smaller unbuildable parcels that are directly associated with other residential lots, which for the purposes of the assessment district are considered as a single lot.

The recommended Special Assessment District for the Fox Island Flood Control Project is contained in **Appendix E**, which is included as part of the BCWRD's approval of **Resolution #2** and acceptance of this report. The time frame for bond funding of assessed costs, and repayment remains to be determined, however typically this is accomplished in 10 to 15 years.

OPERATION AND MAINTENANCE FUND

After considering the project's configuration and a future emergency response it was deemed that installing permanent pumps was not a necessary expense. This determination was made after evaluating the risks for flooding associated with internal drainage and the anticipated infrequent nature of groundwater and floodwater pumping. Subsequently, it was determined that temporary pumps could be brought in when the situation requires. This approach has already been implemented with the construction of the Whisper Drive Flood Control Structure. The project will include additional seepage and internal floodwater removal structures that are connected the southern lake system.

As a point of reference the floodwater removal expenses during the 2011 were documented to be approximately \$217,000. Given this cost and the need to fund temporary pump systems, when required, it was deemed appropriate to recommend creating an Operation and Maintenance Fund be included as part of the special assessment district process.

The creation of the special assessment district provides the BCWRD the ability to assess for O&M expenses, however the revenue amounts are limited by the NDCC. Based on an assumed average residential value of \$300,000 and 108 protected parcels the maintenance assessment would generate \$54 per residence or \$5,832 annually. *Currently not all parcels are developed therefore, the revenues would be much lower as the assessment is based on taxable valuation.* These revenues would increase as properties values increase or as additional residences are constructed. Creating an O&M fund as part of special assessment district allows the BCWRD to immediately access project funds, versus using public funds, during a flood event. Subsequently, it is recommended that the assessment include establishing an O&M Fund in the amount of \$100,000. These O&M Funds will remain under the control of the BCWRD and dedicated for use only on this project. The O&M Assessments are included in **Resolution #2 (Appendix E)** and will be equally assessed to *all protected rural residential properties*.



Original Project Petition - 2009

FOX ISLAND FLOOD CONTROL AND DRAINAGE IMPROVEMENTS PETITION OF REQUEST FOR A PROJECT

We, the undersigned, hereby request the Burleigh County Water Resource District initiate a project in accordance with North Dakota Century Code Chapter 61-16.1 to evaluate measures to increase flood protection and to restore local surface drainage patterns on Fox Island. This process could result in the creation of a special improvement district to construct and implement flood prevention measures and to construct improvements for surface water drainage. We understand that the cost of any such improvements will need to be approved by a favorable vote of the benefitted landowners and their properties assessed accordingly.

Name	Address	Phone	E-mail
John Lies	2301 Riverwood Dr	222-4435	
Danette McKenzie	1820 Larson Rd	255-4354	philmac@bis.midco.net
Phil McKenzie	1820 Larson Rd	255-4356	" "
Diane & Tom Davis	1807 Fair West Dr	226-6754	davis.legacy@midco.net
Sally A. Henry	2850 Woodland Dr	751-1882	sallyahenry@hotmail.com
Events Heritage	2505 Larson Rd	255-4401	events@heritage.org
CARMEN GLASSER	3202 TAVIS ROAD	223-3870	rugst@bis.midco.net
LARRY GLASSER	"	"	"
Tracy Doe	2462 Timberline Pl	223-9415	doe52@bis.midco.net
BRIAN BJELLA	3465 GALLATIN DR.	202-8532	Kbjella@bis.midco.net
Rosemary Berger	2876 Woodland Pl	222-3571	rberger@bis.midco.net
DARYL WANK	1531 MULTINEER PL	223-8162	cdwank1@bis.midco.net

Original Project Petition - 2009

FOX ISLAND FLOOD CONTROL AND DRAINAGE IMPROVEMENTS

PETITION OF REQUEST FOR A PROJECT

We, the undersigned, hereby request the Burleigh County Water Resource District initiate a project in accordance with North Dakota Century Code Chapter 61-16.1 to evaluate measures to increase flood protection and to restore local surface drainage patterns on Fox Island. This process could result in the creation of a special improvement district to construct and implement flood prevention measures and to construct improvements for surface water drainage. We understand that the cost of any such improvements will need to be approved by a favorable vote of the benefitted landowners and their properties assessed accordingly.

Name	Address	Phone	E-mail
Jan Warren	2882 Woodland Dr	258-0853	warren290@bis.midco.net
Chris & Byron Blowers	9360 Darin Drive	258 2694	bblowers@bis.midco.net
Mark Cunningham	1680 Far West Dr	258-1722	mcunning@nd.6d
Gerry & Barbara Koorbusch	2430 LARSON RD	223-6264	
Mike Egg	1950 Far West	258-2797	meggl@bepc.com
Karen Bjella	3465 Gallatin Dr	258-8868	Kbjella@bis.midco.net
Don Bolon	3005 DEERIDGE	751-3003	rolnon@bis.midco.net
Bob Rein	1707 Larson Rd	222-8868	breis@bis.midco.net
Arla Teske	2471 Timberlane Rd	255-5051	
Kaye Otteson	2525 Snokey Lane	258-6995	Kotte2@bis.midco.net
Katherine A. Hutchens	2424 Timberlane Pl.	223-8010	kahutchens@bis.midco.net
Greg Berger	2876 Woodland Dr	222-3571	gberger@Bis.midco.net

FOX ISLAND FLOOD CONTROL AND DRAINAGE IMPROVEMENTS
PETITION OF REQUEST FOR A PROJECT

[illegible]

Original Project Petition - 2009

FOX ISLAND FLOOD CONTROL AND DRAINAGE IMPROVEMENTS PETITION OF REQUEST FOR A PROJECT

We, the undersigned, hereby request the Burleigh County Water Resource District initiate a project in accordance with North Dakota Century Code Chapter 61-16.1 to evaluate measures to increase flood protection and to restore local surface drainage patterns on Fox Island. This process could result in the creation of a special improvement district to construct and implement flood prevention measures and to construct improvements for surface water drainage. We understand that the cost of any such improvements will need to be approved by a favorable vote of the benefitted landowners and their properties assessed accordingly.

Name

Address

Phone

E-mail

Jim & Cathie VOLK

3397-GALLATIN DR.

255-4910

JAMES.VOLK@
RAYMONDJAMES.COM

Ken Vellenga

2812 WOODLAND DR

255-6321

KZMLK4@Bis.mnco.net

Guy Otteson

2525 Smoky Lane

258-6995

Kotte2@bn.mnco.net

Fox Island Flood Mitigation Steering Committee

Attn: Mike Eggl
1950 Far West Drive
Bismarck, ND 58504

August 2, 2011

Burleigh County Water Resources Board
Attn: Michael H. Gunsch, P.E.
3712 Lockport Street
Bismarck, ND 58503

Dear Mr. Gunsch,

As you are aware, the residents of Fox Island have formed a steering committee to address future flood hazard mitigation. The steering committee would appreciate the Water Resource District's review of the following thoughts on flood mitigation efforts and meet with the steering committee as to the best way to proceed. We would appreciate hearing from the District as to the best time for such a meeting.

The steering committee has agreed that the goal of future flood hazard mitigation should be a joint effort between the various communities along the river along with the county and city working in cooperation. Such coordination would save time and money. While very understandable, given the unprecedented nature of the event, the rapid response to the 2011 flood conditions suffered from a lack of coordination. Below are three options that we would like to discuss with you that we feel could aid in future coordination.

OPTION #1

The first option is to develop a dike/easement system along the perimeter of the Missouri River from Expressway Bridge south to an area near Apple Creek. In many ways, the area south of the Expressway Bridge on the east side of the river has been substantially protected by private development.

The residents of Southport have demonstrated that the outer perimeter of the development is significantly above the flood zone. Further, the residents themselves have demonstrated that the area can be protected through blocking the marina entrance and dewatering the interior area.

This same process could be easily accomplished at Whispering Bay, which is even higher than Southport.

South of Whispering Bay on Fox Island, the elevation has been raised in an inconsistent fashion. Some residents have built their individual lots to elevations well above the 100 year flood, while others remain significantly lower. The steering

committee has discussed this and there is a consensus that the residents on the river would be interested in developing an exterior dike or a system that would provide such protection.

This dike system could be continued across the exterior of the oxbow and across the state land and brought as close to Apple creek in order to protect the maximum area possible.

Advantages of this plan would include:

- Highest number of residences protected.
- Low distance of dikes vis-à-vis area protected.
- Would provide protection for the Southern Burleigh and South Bismarck.
- Would allow for dewatering further away from the city, alleviating the need to dewater on South Washington Street.
- Would eliminate the need for diking in several including the South Bismarck drainage ditch (both sides) south of Solheim school
- Would protect city infrastructure, including the sewage water treatment plant.

Concerns about this plan:

- Would require the development of a plan to block the Southport marina, the Whispering Bay Marina, and the river entrance of the oxbow. While the residents of Southport demonstrated the efficacy of this approach, it would need to be replicated and practical.
- Would require coordination between the City, County and State (as the perimeter of the state property south of Fox Island would be integral to the plan).

OPTION #2

The second option is to develop a dike/easement structure on the perimeter of Fox Island itself. Residents and the steering committee concur this is worth investigating this option. This has been considered in the past. This year's unprecedented flooding makes it all the more reasonable. Residents expended significant resources on an individual basis in protecting their homes. This effort would be better spent and more effective on group or neighborhood protection.

Advantages of this plan would include:

- This plan would be easier to coordinate than Option #1.
- This plan would provide protection and certainty for protection for a larger percentage of Fox Island residents.

Concerns about this plan include:

- Would require significantly more diking on Fox Island itself than Option #1.
- Would not provide protection to other areas such as the City of other sections of Fox Island. However, if the residents of Whispering Bay and

Southport concluded to undertake similar efforts, some level of protection could be coordinated between these areas.

OPTION #3

The third option is to develop only easements along the perimeter of Fox Island. Again, this plan could be coordinated with the Whispering Bay and Southport Island area if those areas demonstrated interest. The easements would be available to facilitate the more rapid installation of protective measures. This plan as well as the others above would also incorporate locking culverts and optimal drainage efforts as previously discussed by the District.

Advantages and concerns of this plan are similar to Option #2. An additional concern would be the active nature of the protection offered. The passive nature of dike would offer more security in a rapid moving emergency such as an ice jam. The timing of an ice jam would likely not allow installation of protective measures.

We appreciate the Water Resource Board's considering these plans and would appreciate meeting with Houston Engineering and the County Engineer to discuss these options in more detail and to develop next steps for protecting our residences. The members of the steering committee are listed below.

Sincerely

Mike Eggl
Evan Mandigo
Dan Privratsky
Brian Bjella
Tracy Doe
Robert Tanous
Everitt Heringer
Jim Volk
Don Wright
Duwayne Ternes
Bob Upgren

cc: Dr. John Warford, Mayor of Bismarck
Mr. Brian Bitner, Burleigh County Commission Chair
Mr. Todd Sando, State Engineer P.E., State Water Commission

Fox Island Residents - Opt Out Petition

July 31, 2012

YOUR COPY

Notice to Burleigh Water Resource Board and Houston Engineering:

WE, the undersigned residents of Fox Island who have lots in segment E and segment D where the proposed levee is to be built, wish to notify the Burleigh Water Resource Board and Houston Engineering, that as land owners along the Missouri River and the Fox Island Oxbow, we are against the proposed permanent dike project for flood protection on our lots. We do not feel that all the alternatives were adequately studied and we believe we were not given adequate representation on the Fox Island Flood Mitigation Steering Committee. We do believe that flood protection for Fox Island is important but since the process that you have undertaken and the decisions you have made were without our input **WE WILL NOT BE GRANTING EASEMENTS FOR THIS PROJECT.** If efforts toward a permanent dike project continues and some members of Fox Island feel the dike proposal needs to proceed, and the vote results would end in favor of the permanent dike, it will require legal intervention to gain access to our property.

Name

Address

Phone No.

<u>John A. Miller</u>	<u>3426 Gallatin Loop</u>	<u>258-6745</u>
<u>Kins T. Pearson</u>	<u>3117 Gallatin Dr</u>	<u>223-9720</u>
<u>Sharon Miller</u>	<u>3333 Gallatin Dr.</u>	<u>667-2164</u>
<u>John Miller</u>	<u>3357 Gallatin Dr</u>	<u>222-4241</u>
<u>Edy Hanson</u>	<u>3401 Gallatin Dr</u>	<u>258-5866</u>
<u>JOHN STANLEY</u>	<u>3436 GALLATIN DR</u>	<u>202-8904</u>
<u>Greg Peterson</u>	<u>3432 Gallatin Dr</u>	<u>223-3300</u>
<u>Paul Dickels</u>	<u>3325 Gallatin Drive</u>	<u>220-7567</u>
<u>Rick B. B. B.</u>	<u>3367 Gouerni Dr</u>	<u>319-8606</u>
<u>Jack Paris</u>	<u>465 Farwest Dr</u>	<u>400 9263</u>
<u>Mike B. B.</u>	<u>1919 Farwest Dr</u>	<u>663-4592</u>
	<u>3349 Gallatin Dr</u>	<u>471-8493</u>

Fox Island Residents - Opt Out Petition YOUR COPY

July 31, 2012

Notice to Burleigh Water Resource Board and Houston Engineering:

WE, the undersigned residents of Fox Island who have lots in segment E and segment D where the proposed levee is to be built, wish to notify the Burleigh Water Resource Board and Houston Engineering, that as land owners along the Missouri River and the Fox Island Oxbow, we are against the proposed permanent dike project for flood protection on our lots. We do not feel that all the alternatives were adequately studied and we believe we were not given adequate representation on the Fox Island Flood Mitigation Steering Committee. We do believe that flood protection for Fox Island is important but since the process that you have undertaken and the decisions you have made were without our input **WE WILL NOT BE GRANTING EASEMENTS FOR THIS PROJECT.** If efforts toward a permanent dike project continues and some members of Fox Island feel the dike proposal needs to proceed, and the vote results would end in favor of the permanent dike, it will require legal intervention to gain access to our property.

Name

Address

Phone No.



1837 Fur West Dr

701-226-9785

TOM DAVIL

1807 FAQUEST DR

701-226-6754



3420 Gallatin Lp

(701) 471-1644

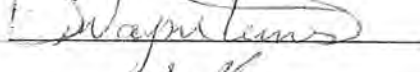
3456 Gallatin Lp.

224-9038



1405 Fur West Dr.

426-4021



2520 LARSON RD.

258-7428



3444 Gallatin Dr

223-3834



1785 Fur West Dr.

255-4119



1705 Fur West Dr.

255-4119

Fox Island Residents - Opt Out Petition YOUR COPY

July 31, 2012

Notice to Burleigh Water Resource Board and Houston Engineering:

WE, the undersigned residents of Fox Island who have lots in segment E and segment D where the proposed levee is to be built, wish to notify the Burleigh Water Resource Board and Houston Engineering, that as land owners along the Missouri River and the Fox Island Oxbow, we are against the proposed permanent dike project for flood protection on our lots. We do not feel that all the alternatives were adequately studied and we believe we were not given adequate representation on the Fox Island Flood Mitigation Steering Committee. We do believe that flood protection for Fox Island is important but since the process that you have undertaken and the decisions you have made were without our input **WE WILL NOT BE GRANTING EASEMENTS FOR THIS PROJECT.** If efforts toward a permanent dike project continues and some members of Fox Island feel the dike proposal needs to proceed, and the vote results would end in favor of the permanent dike, it will require legal intervention to gain access to our property.

Name

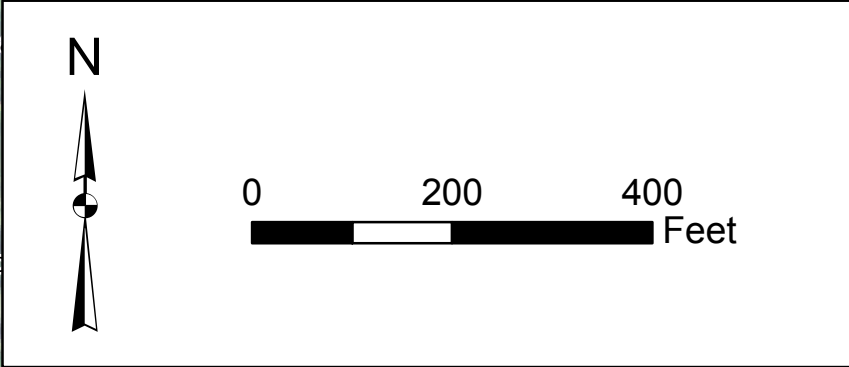
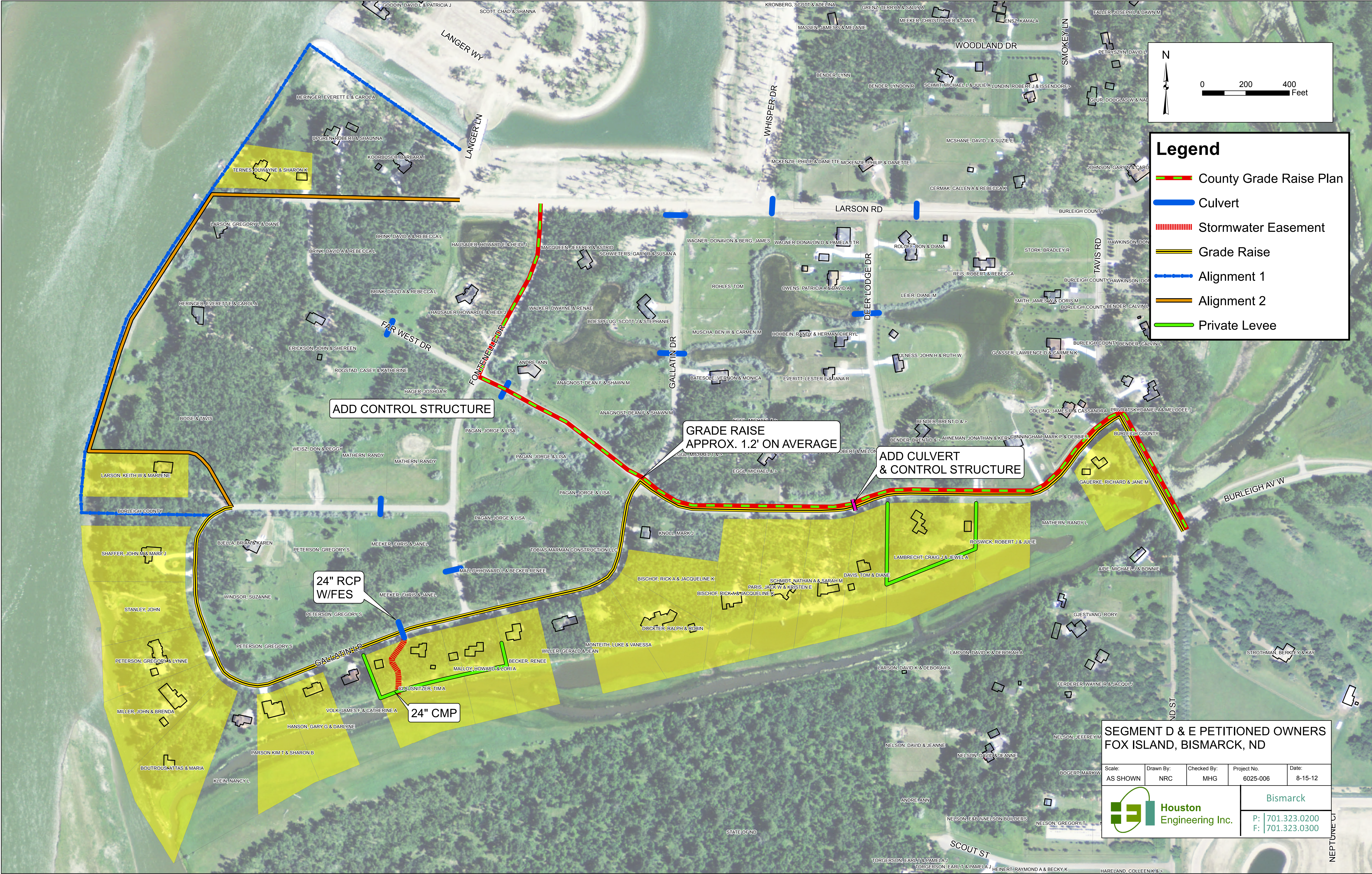
Address

Phone No.

Rich Schuy

3317 Gakitia

4009263



Legend

County Grade Raise Plan

Culvert

Stormwater Easement

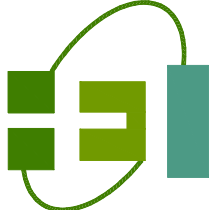
Grade Raise

Alignment 1

Alignment 2

Private Levee

SEGMENT D & E PETITIONED OWNERS
FOX ISLAND, BISMARCK, ND

Scale: AS SHOWN	Drawn By: NRC	Checked By: MHG	Project No. 6025-006	Date: 8-15-12
 Houston Engineering Inc.			Bismarck	
			P: 701.323.0200 F: 701.323.0300	

#1

Harbor Drive Area - Opt Out Petition

We, the undersigned residents of Fox Island, petition the Burleigh County Water Resource Board to **NOT PLACE A PERMANENT DIKE** on the west side (river side) of the homes along West Harbor and Harbor Drives. Our reasons for wishing to avoid a permanent dike include:

- (1) Proven success in privately diking the riverbank during the unprecedented flood event of 2011 by over 80% of the riverside homes on Fox Island
- (2) Universal concern about the stability of the riverbank and the possibility of damage due to the weight of permanent dike materials on untested soils
- (3) A lack of assurance that a permanent dike would protect adjacent homes against the (much more likely) occurrence of an ice jam event, and in fact, may make the consequences of a large ice jam much worse for riverside homeowners than current naturally sloping back yards
- (4) A loss of view, river access, and trees, all of which are vital to the aesthetic appreciation and enjoyment of our homes
- (5) loss of the use of our back yards
- (6) Concern over the problems associated with dike runoff during common normal rain events
- (7) Permanent reduction in the market value of our homes

We believe a possible solution that may be satisfactory to interior home owners and to those living directly along the river would be to elevate Harbor and West Harbor Drives, allowing permanent access to Fox Island properties while providing a "dike" to homes to the east. Riverside homeowners with continual access to their properties would be able to prepare temporary emergency dikes in the unlikely occurrence of another significant flood the magnitude of the 2011 event.

	Name	Address	Phone No.
1.)	Tyler Leser	2250 Harbor Dr.	406-539-2200
2.)	Marlyn Bromogoff	2260 Harbor DR	701-355-0960
3.)	Valerie Kinsley	2120 W Harbor Dr	701-951-2314
4.)	Michael	2130 W Harbor Dr	701-220-5783
5.)	Scott Stalock	2022 W Harbor Dr	701-471-0074
	Colleen Stalock	2022 W. Harbor Dr	701-471-0072
6.)	Shannon McQuade-Alex	1928 W. Harbor Dr	701-471-9440
7.)	Rick DETWILLER	1900 HARBOR DR	701-223-8782
8.)	Lyn D Stronberg	1918 HARBOR DR	701-258-4130

#2

Harbor Drive Area - Opt Out Petition

We, the undersigned residents of Fox Island, petition the Burleigh County Water Resource Board to **NOT PLACE A PERMANENT DIKE** on the west side (river side) of the homes along West Harbor and Harbor Drives. Our reasons for wishing to avoid a permanent dike include:

- (1) Proven success in privately diking the riverbank during the unprecedented flood event of 2011 by over 80% of the riverside homes on Fox Island
- (2) Universal concern about the stability of the riverbank and the possibility of damage due to the weight of permanent dike materials on untested soils
- (3) A lack of assurance that a permanent dike would protect adjacent homes against the (much more likely) occurrence of an ice jam event, and in fact, may make the consequences of a large ice jam much worse for riverside homeowners than current naturally sloping back yards
- (4) A loss of view, river access, and trees, all of which are vital to the aesthetic appreciation and enjoyment of our homes
- (5) loss of the use of our back yards
- (6) Concern over the problems associated with dike runoff during common normal rain events
- (7) Permanent reduction in the market value of our homes

We believe a possible solution that may be satisfactory to interior home owners and to those living directly along the river would be to elevate Harbor and West Harbor Drives, allowing permanent access to Fox Island properties while providing a "dike" to homes to the east. Riverside homeowners with continual access to their properties would be able to prepare temporary emergency dikes in the unlikely occurrence of another significant flood the magnitude of the 2011 event.

	Name	Address	Phone No.
9.)	<i>Siri Helmer</i>	<i>2012 W. Harbor Dr. Bism.</i>	<i>258-7865</i>
10.)	<i>William Bush</i>	<i>West Harbor Dr.</i>	<i>471-0088</i>
11.)	<i>Sherry C. Lehn</i>	<i>2110 W. Harbor</i>	<i>471-6000</i>
12.)	<i>Robert D. Schwartz</i>	<i>2100 Harbor</i>	<i>220-0758</i>
	<i>[Signature]</i>	<i>2240 Harbor Dr.</i>	<i>220-9898</i>

STEVE
SCHWARTZ
13

#3

- (6) Concern over the problems associated with dike runoff during common normal rain events

properties would be able to prepare temporary emergency dikes in the unlikely occurrence of another significant flood the magnitude of the 2011 event.

Phone No.

755.0760

[illegible]

July 24, 2012

Harbor Drive Area - Opt Out Petition

Notice to Burleigh Water Resource Board and Houston Engineering:

WE, the undersigned residents of Fox Island along West Harbor and Harbor Drive, wish to notify the Burleigh Water Resource Board and Houston Engineering, that as land owners along the Missouri River, we are against a proposed permanent dike project for flood protection. **WE WILL NOT BE GRANTING EASMENT FOR THIS PROJECT.** IF efforts toward a permanent dike project continues and some members of Riverwood West Association feel the dike proposal needs to proceed, and the association vote results would end in favor of the permanent dike, it will require legal intervention to gain access to our property.

Name	Address	Phone No.
Lin D. Stombeck	1918 HARBOR DR	701 258 4130
Steve Schwan	2240 Harbor Dr	701 220 9898
Jean Schwan	2240 Harbor Dr	701-223-1817
Judy Detweiler	1900 Harbor Dr	701-223-8782
Colleen Staloch	2022 W. Harbor Dr	701-471-0072
Scott Staloch	2022 W Harbor Dr	701-471-0074
Andrea Balke	2100 W Harbor Dr	701-220-2159
Shannon McQuade-Ely	1928 W. Harbor Dr.	701-471-9440
Don G	1928 W. Harbor Dr.	701-226-5394
Sherry Wilbers	2110 Harbor Dr	701-471-6000
Jeff King	2250 Harbor Dr.	701-223-9249
Matt D.H.	2130 W Harbor Dr	701-224-9989
Lori Chiles	2012 W Harbor Dr	701-258-7865
Lauren K. Schwan	2100 W Harbor Dr	701-220-0758
Valerie Kinlan	2120 W. Harbor Dr	701-751-2314
Margaret Pirog	2260 Harbor Dr	701-355-0960
Jeffrey Jonson	1825 Harbor Dr.	701-226-2
Ruth L. Dumas	1900 HARBOR DR	701-250-1226
Kevin Turnbow	1805 Harbor Dr	701-223-8782
		226-9300



Burleigh County Water Resource District

City/County Office Building - 221 North 5th Street
Bismarck, North Dakota 58501-4028

Harbor Drive - Response Letter

January 14, 2013

TO: Harbor Drive Flood Control Project Petitioners

FROM: Terry Fleck, Chairman
Burleigh County Water Resource District.

RE: Harbor Drive Flood Control Project Petition

Several residents of the Harbor Drive area recently submitted a petition to the Burleigh County Water Resource District (BCWRD) requesting development of a flood control project to protect residential structures north of Mills Avenue. You were among the residents who signed the petition.

As part of our initial consideration of your request, we have met with representatives of the Riverwood West Homeowners Association (RWHA), the Burleigh County Highway Department, as well as the City of Bismarck and their consultant for the Mills Avenue project, Apex Engineering Group. Based on these meetings, we have learned that the City of Bismarck intends to use federal funding to complete a grade raise on Mills Avenue to a point west of West Harbor Drive. Local costs will be borne by the City of Bismarck and any resulting assessment district they establish; no costs will be assessed to the rural residential properties north of Mills Avenue, which are located in the county. This grade raise will include a raise of approximately 150 feet onto West Harbor Drive for transitional purposes.

Given the work to be completed by the City of Bismarck, protection to a level of an 18 foot river stage could be provided by raising another 150 feet of West Harbor Drive. It would not be prudent for the Burleigh County Water Resource District to go through the statutorily mandated steps of establishing such a small project. To do so would only add significant cost to the residents. It makes more sense for the RWHA to work directly with a contractor to complete that work. Ideally, the RWHA could negotiate with the contractor ultimately selected by the City of Bismarck to complete the Mills Avenue Grade Raise. This would hopefully result in cost savings as the contractor would already be mobilized to the site. We understand that the City is willing to allow their contractor to complete such work.

The approach discussed above would be the most practical means of providing protection for the interior West Harbor Drive residents up to a level of 18 feet. If there is still a desire to provide protection up to a level of 20 feet, that would involve a much more extensive project which could be considered as a BCWRD sponsored project. However, we are aware that there are issues with the right of way easement for these privately owned roadways. Before the BCWRD would consider developing a project to provide protection to a 20 foot stage, the right of way issues would need to be resolved so that we do not expend a significant amount of



Burleigh County Water Resource District

City/County Office Building - 221 North 5th Street
Bismarck, North Dakota 58501-4028

public monies attempting to resolve these potentially complicated legal issues, only to end up with no project and no way to recoup those public funds.

In summary, the BCWRD will not develop a project to provide protection to a level of 18 feet. It is recommended that the RWHA work directly with a contractor to raise the required 150 feet of roadway. We would consider developing a project to provide protection to a level of 20 feet, but only if the issues surrounding the easements for the roadway are resolved first. We would also need a clear indication that there is wide spread support for such a project.

This is not an indication that we fail in any way to take your need for flood protection seriously. We fully support and commend your efforts to protect yourselves from the next flood event. It will simply be much more cost effective for you to proceed in a more direct manner than forming a new assessment district to simply raise 150 feet of roadway.

We would also like to take this opportunity to impress upon you the importance of purchasing flood insurance, whether or not your residence is technically located in the Special Flood Hazard Area as defined by FEMA. We are aware that FEMA has been directed within the recent reauthorization of the National Flood Insurance Program to be actuarially sound. Thus it is likely that flood insurance rates will soon rise. Purchasing that insurance now and maintaining that policy may reduce the degree to which you are impacted by the anticipated rate hikes.

If you have any questions, please direct them to Michael Gunsch, of Houston Engineer, at (701) 323-0200.

Sincerely,

/s/

Terry Fleck, Chairman
Burleigh County Water Resource District

C: Marcus Hall, Burleigh County Engineer
Michael Gunsch, HEI
David Tschider
Chad Wachter



Burleigh County Water Resource District

City/County Office Building - 221 North 5th Street
Bismarck, North Dakota 58501-4028

Directly Mailed To:

Steven & Sallie Storslee	2024 Harbor Drive
Shanda Traiser	2000 Harbor Drive
Tim & Deanna Reiten	2200 Harbor Drive
Melvin & Karen Mueller	2209 Harbor Drive
Nicholas & Lynn Mahr	2134 Harbor Drive
Andrew Steichen & Karin Willis	2210 Harbor Drive
Shane Freitag	2160 Harbor Drive
Steven & Becky Lingle	2231 Harbor Drive
Kurt & Bobbi Leier	2115 West Harbor Drive
Sean & Coleen Russell	2250 Traynor Lane
Lance & Laurie Boyer	2201 Harbor Drive



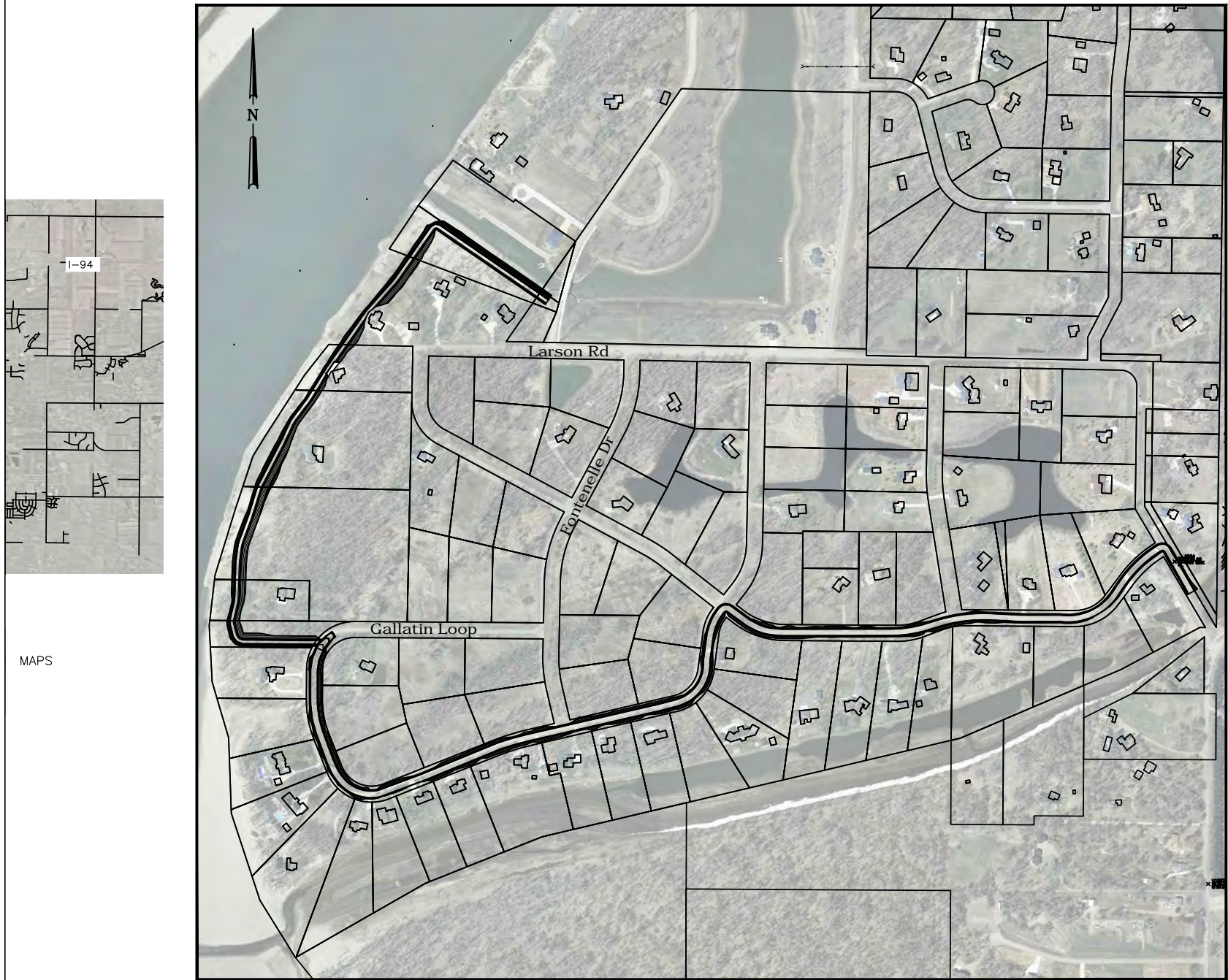
APPENDIX B

PREFERRED ALTERNATIVE PRELIMINARY PLAN SETS



ALTERNATIVE #5 - LEVEE FOX ISLAND FLOOD CONTROL PROJECT

BISMARCK, NORTH DAKOTA
AUGUST, 2016

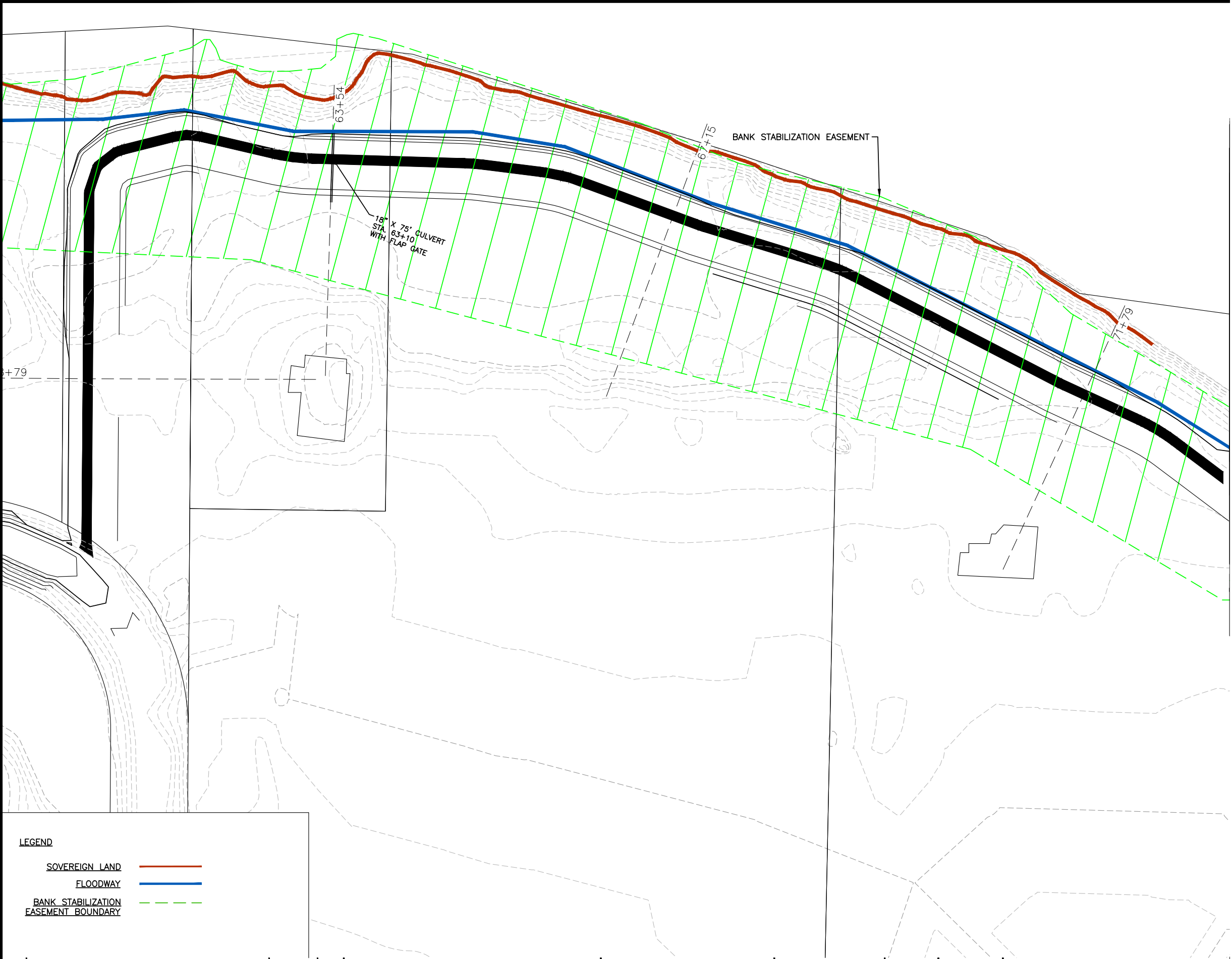


RECORD DRAWING NOTES:

1. BENCHMARKS OR LOCATION COORDINATE POINTS ARE NOTED AS SHOWN, AND USE THE FOLLOWING DATUM AND COORDINATE SYSTEM: NAD83 NORTH DAKOTA STATE PLANE SOUTH INTERNATIONAL FOOT, GEOID 09, AND NAVD 88 VERTICAL DATUM.
2. LOCATION AND DIMENSIONS FOR COMPLETED REPAIRS ARE BASED ON AS CONSTRUCTED FIELD SURVEYS.
3. THE ACTUAL EXTENT OF WORK WAS DIRECTED BY COE FIELD PERSONNEL, AND ADJUSTED IN SOME LOCATIONS BASED ON SITE CONDITIONS ENCOUNTERED AT THE TIME WORK WAS COMPLETED.
4. SEVERAL REVETMENT STRUCTURES WERE NOT IN THE LOCATION DESIGNATED ON THE PLAN SET. SUBSEQUENTLY, THE WORK COMPLETED OCCURED ON THE ACTUAL STRUCTURE, AS IT PHYSICALLY EXISTS, WITH THE LOCATION NOTED ON THE RECORD DRAWING PLAN VIEW.

LOCATION MAP

H:\Bismarck\BN\6025 Burlleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burlleigh Lot and on Street\LEVEE XS.dwg:Plan-8/8/2016 2:42 PM-[avistad]



LEGEND

- SOVEREIGN LAND ———
- FLOODWAY ———
- BANK STABILIZATION
EASEMENT BOUNDARY - - - - -

No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

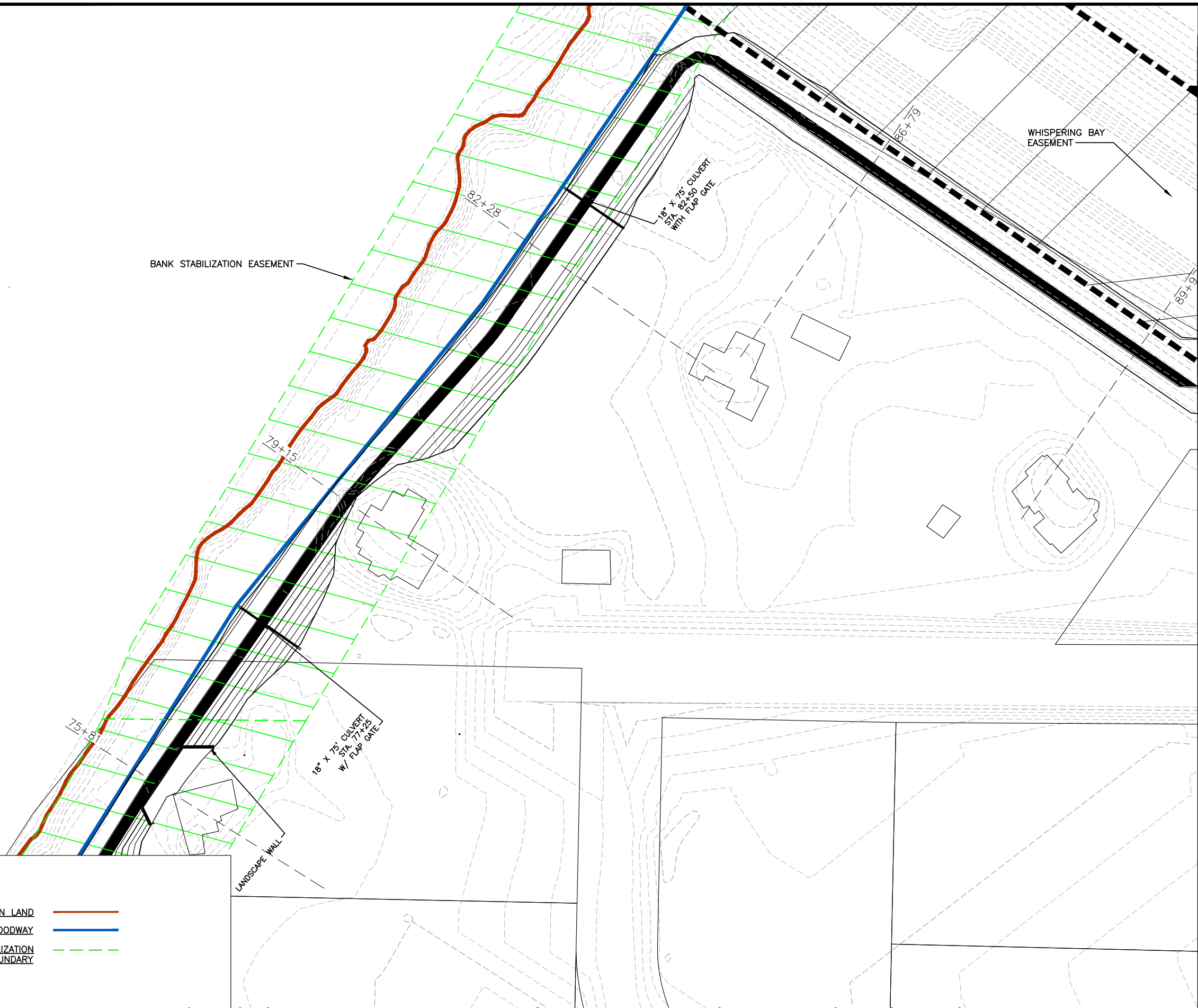
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\BN\6025 Burlleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burlleigh Lot and on Street\LEVEE XS.dwg:Plan (2)-8/8/2016 2:42 PM-[avistad]



LEGEND

- SOVEREIGN LAND
FLOODWAY
BANK STABILIZATION
EASEMENT BOUNDARY

No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

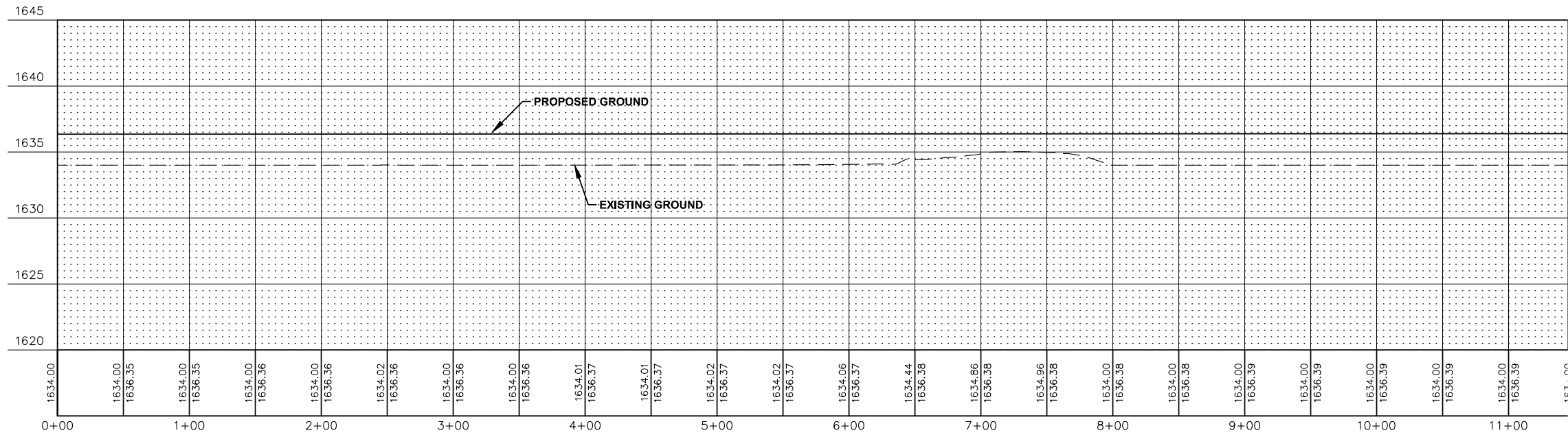
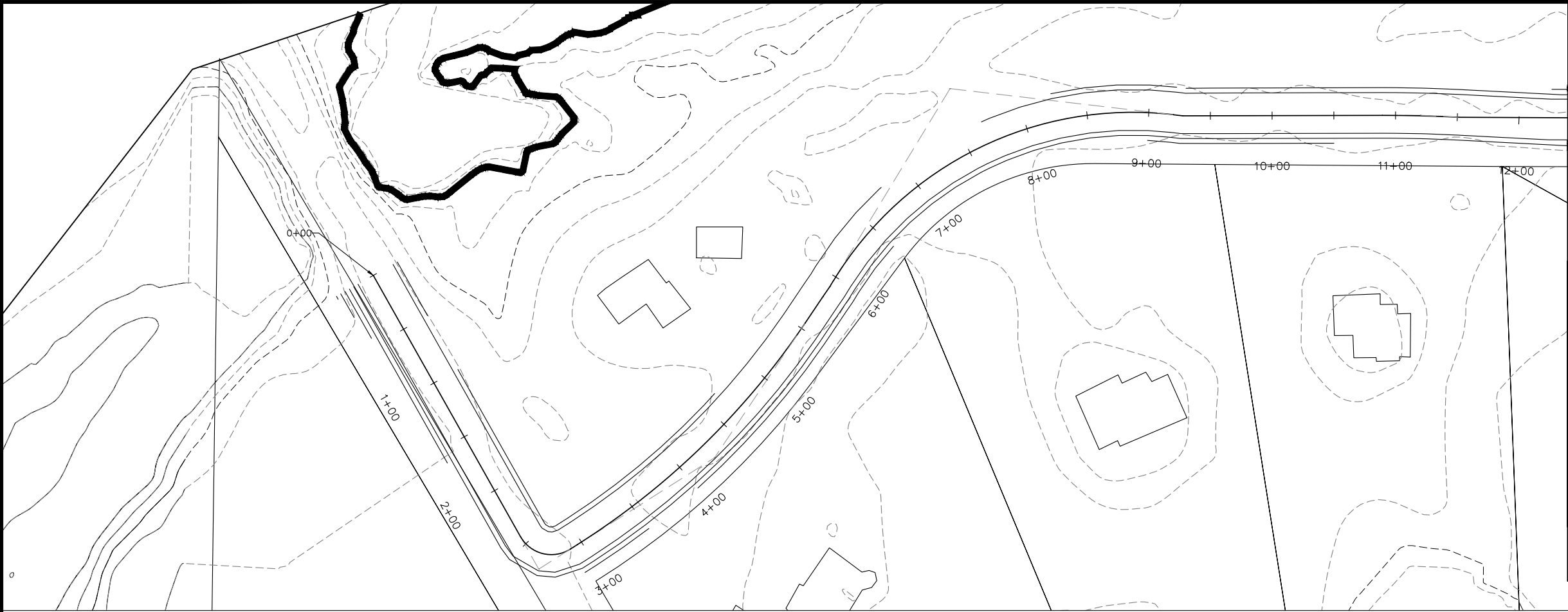
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\BN\6025 Burlleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burlleigh Lot and on Street\LEVEE P&P.dwg-P&P 0-12-8/8/2016 2:42 PM-(avistad)



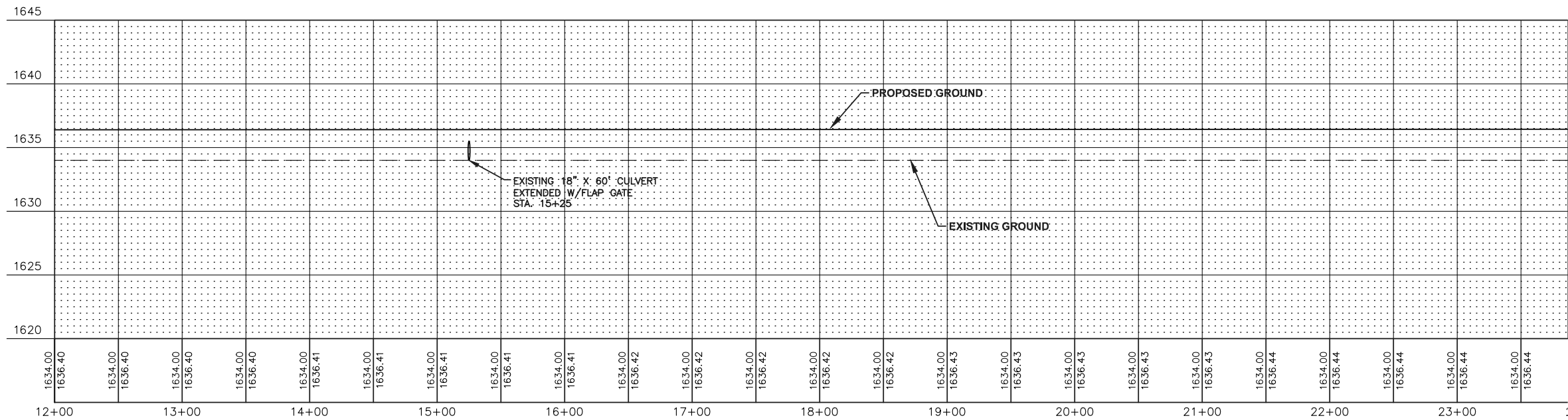
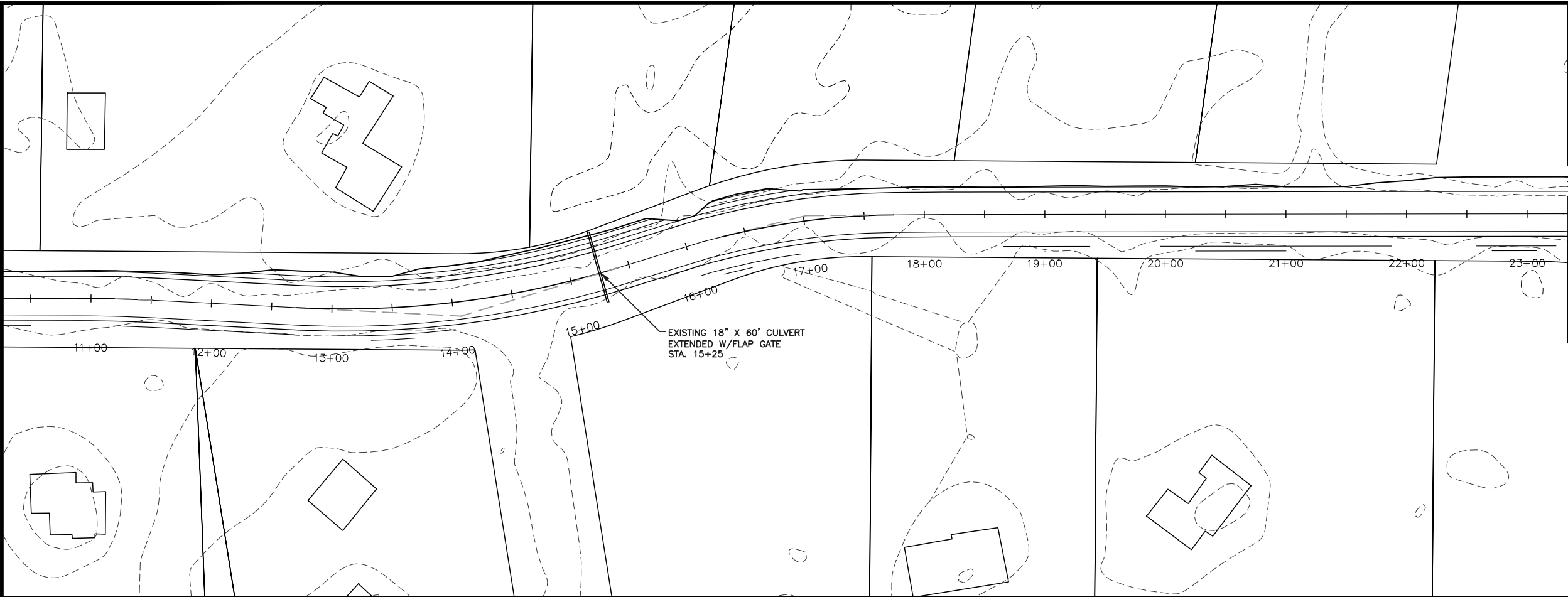
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burleigh Lot and on Street\LEVEE P&P dwg-P&P 12-24-8/2016 2:42 PM-(avistad)



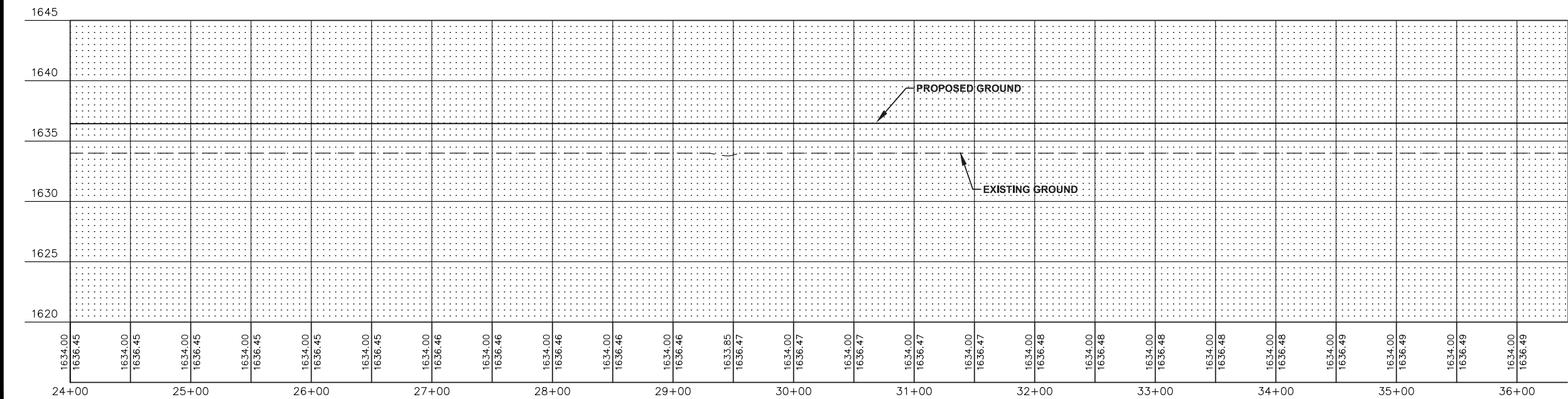
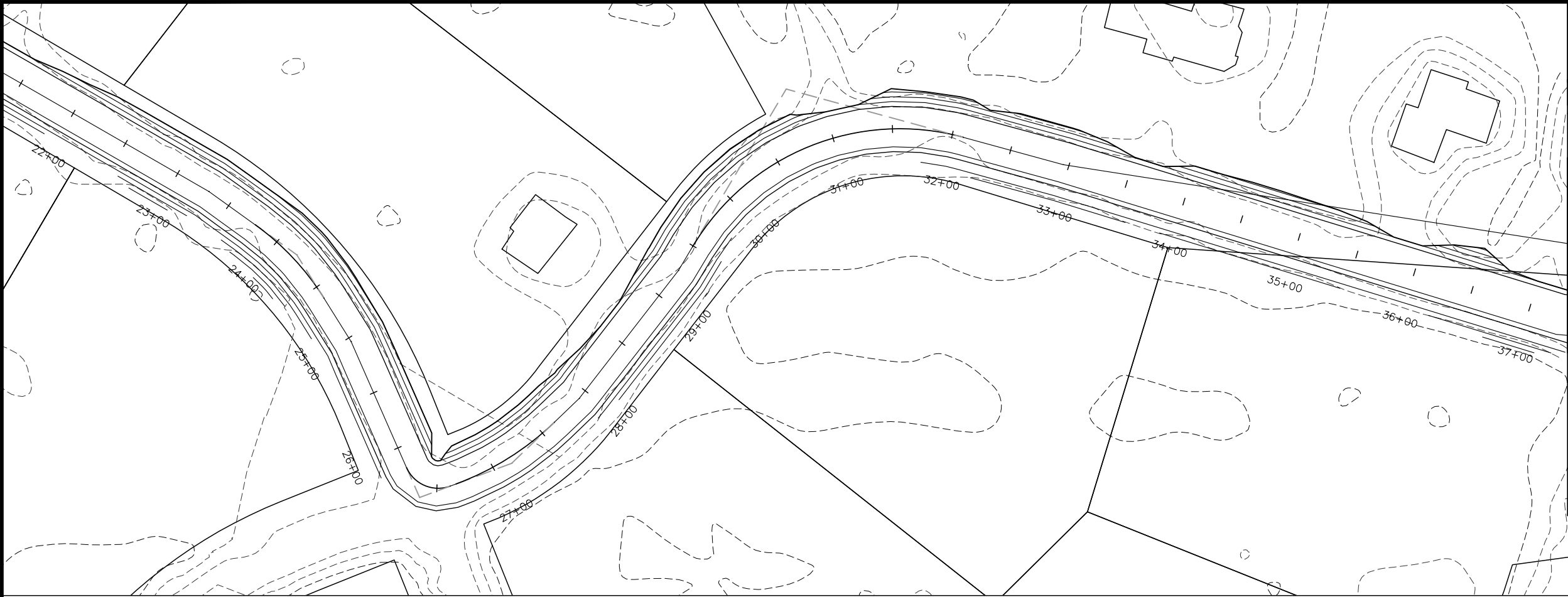
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burleigh Lot and on Street\LEVEE P&P dwg-P&P 24-37-8/8/2016 2:42 PM-[avistad]



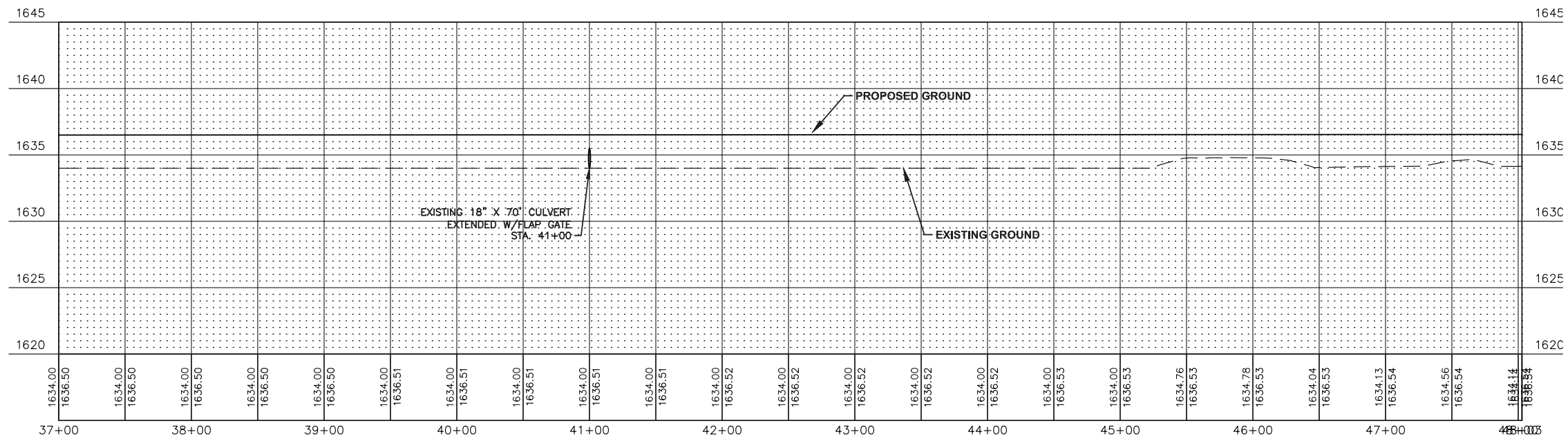
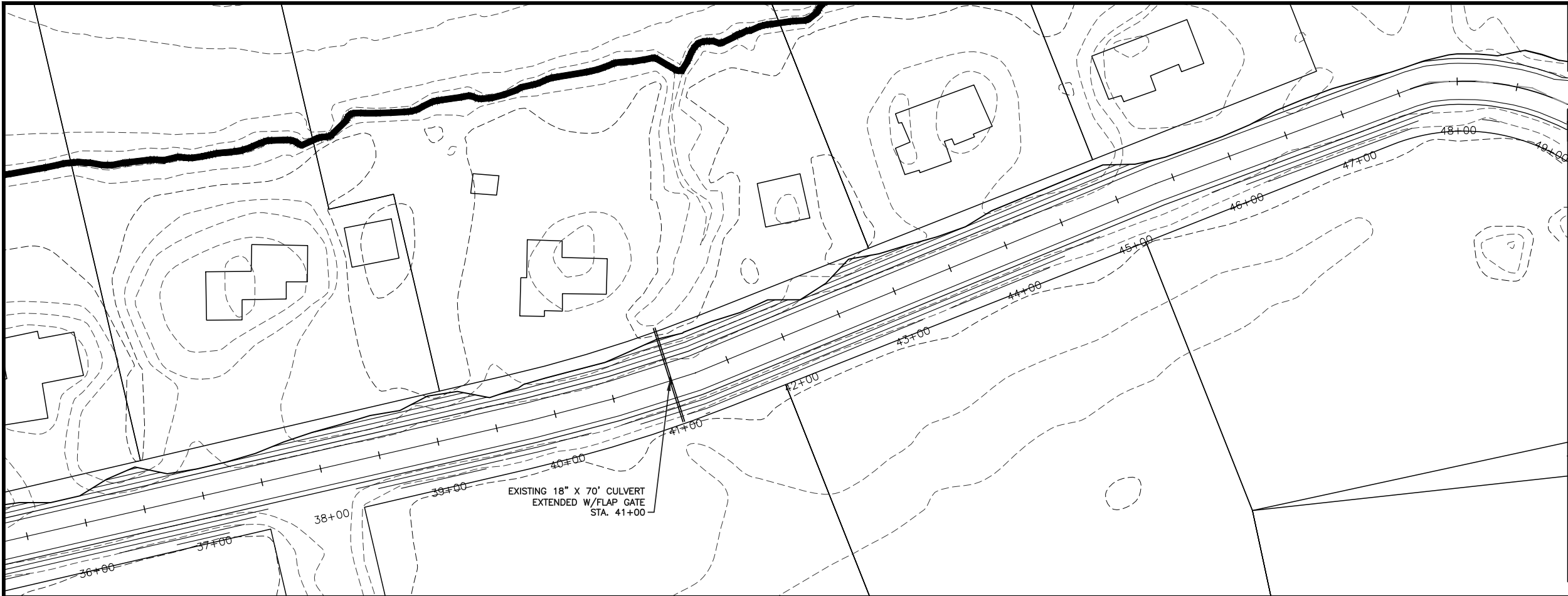
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burleigh Lot and on Street\LEVEE P&P 37-48-8/8/2016 2:42 PM-(avistad)



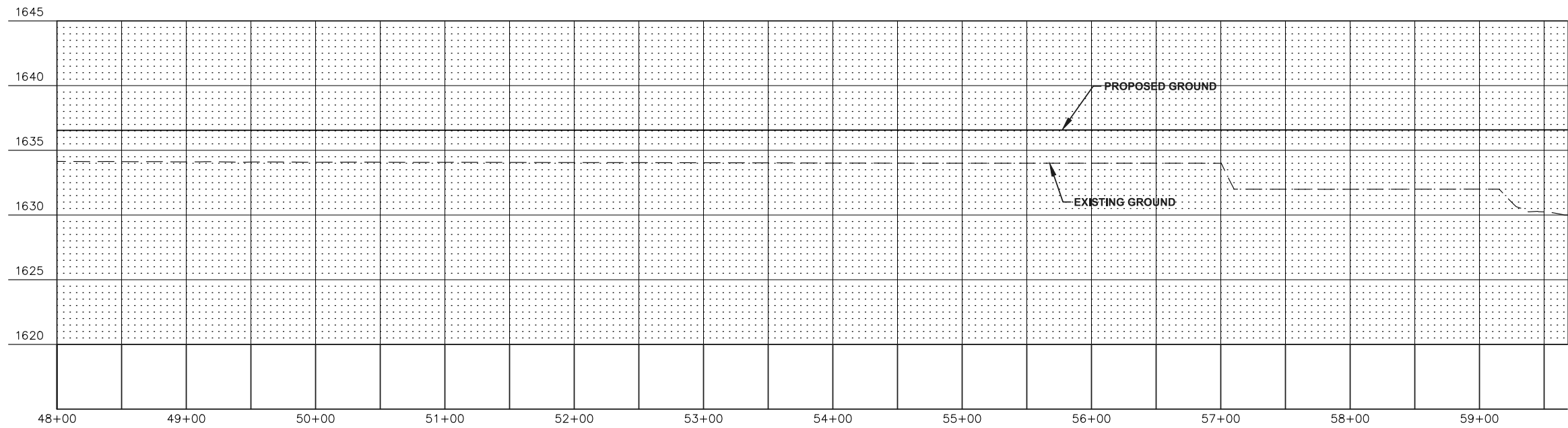
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burleigh Lot and on Street\LEVEE P&P dwg-P&P.dwg, P&P 48-60-8/8/2016 2:42 PM (avistad)



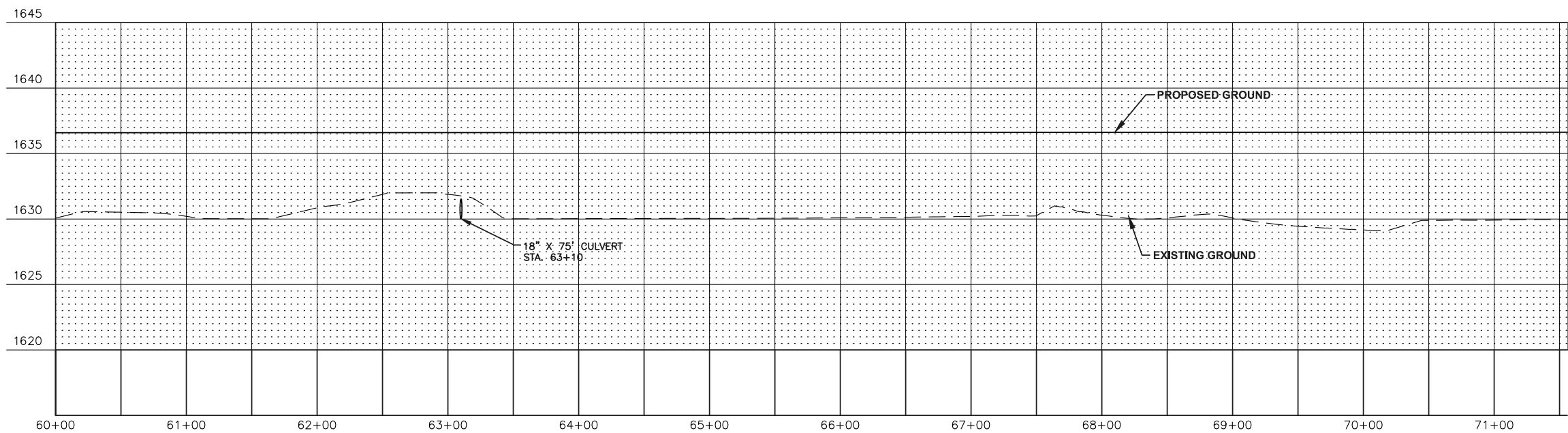
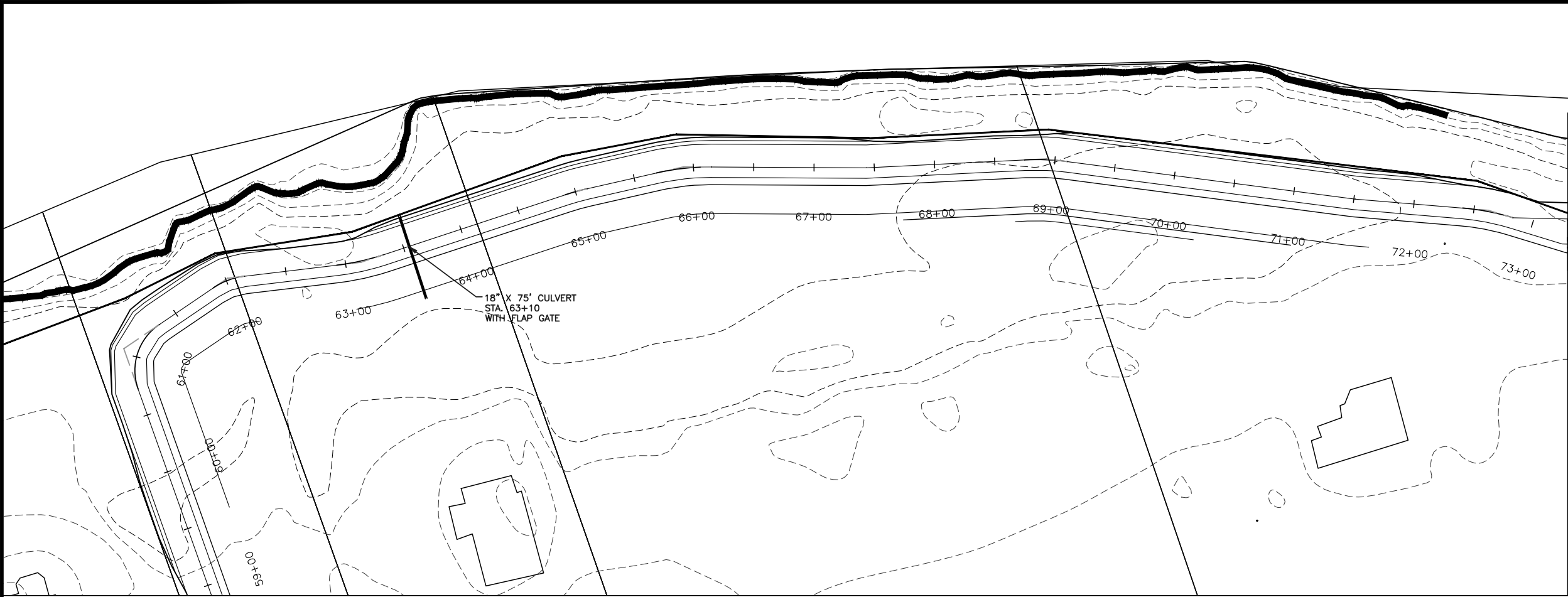
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burleigh Lot and on Street\LEVEE P&P.dwg-P&P 60-72-8/8/2016 2:42 PM-(avistad)



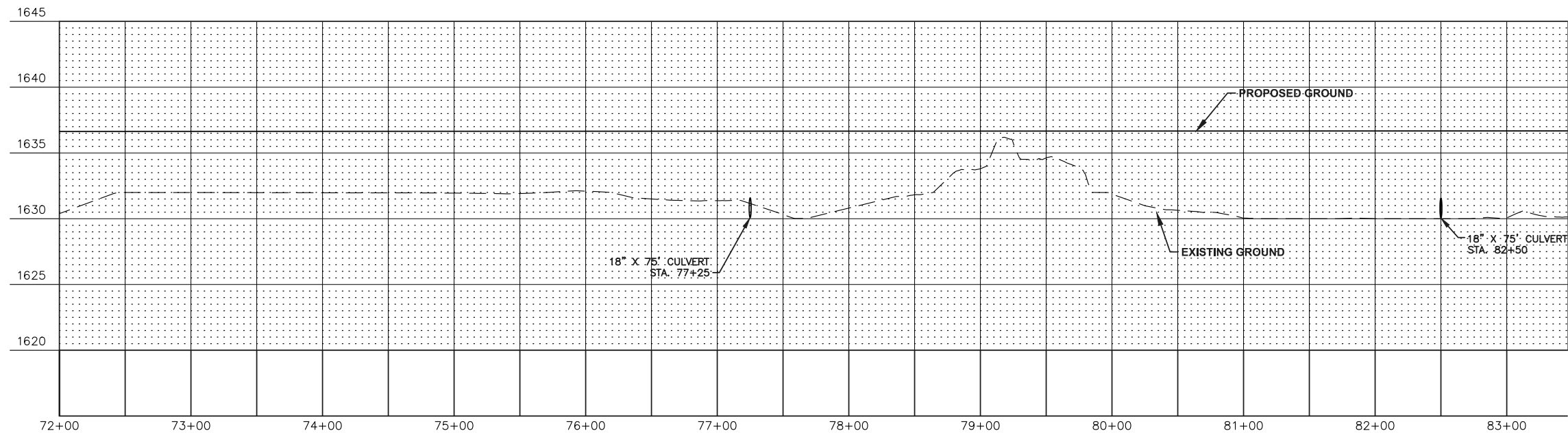
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burrelgh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burrelgh Lot and on Street\LEVEE P&P 72-84-8/2016 2:42 PM-(avistad)



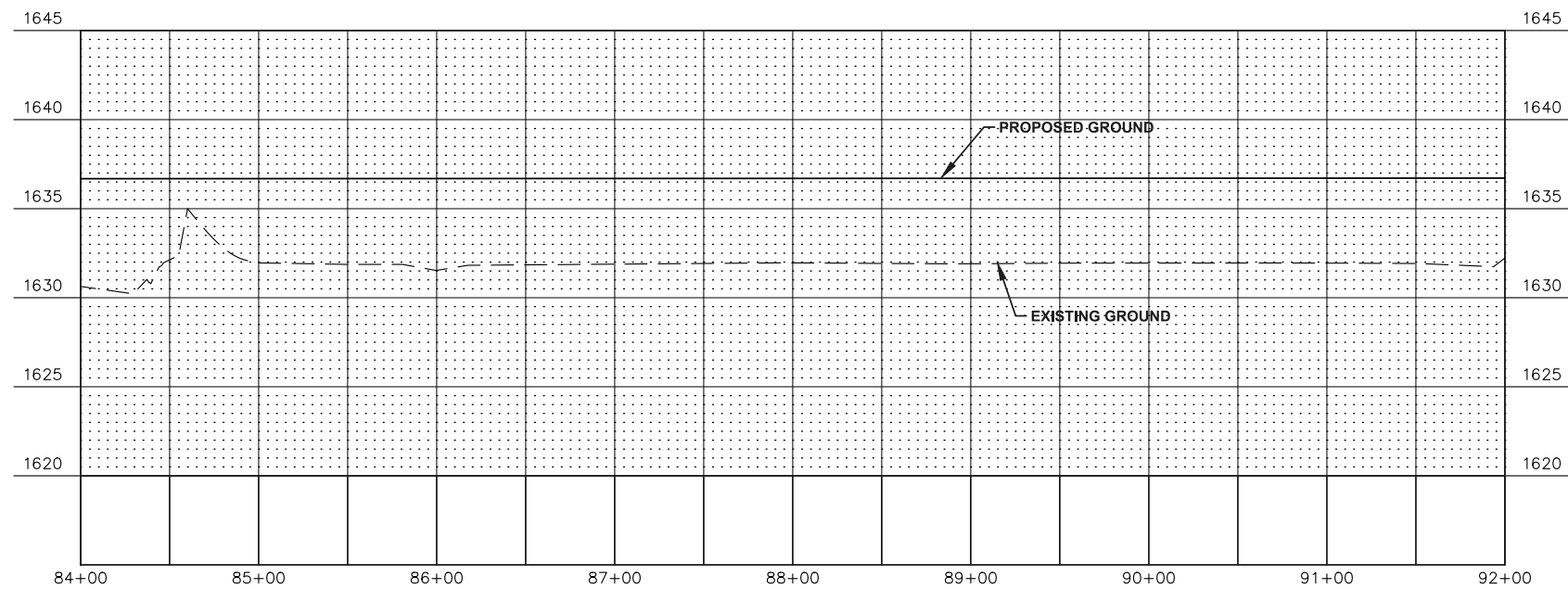
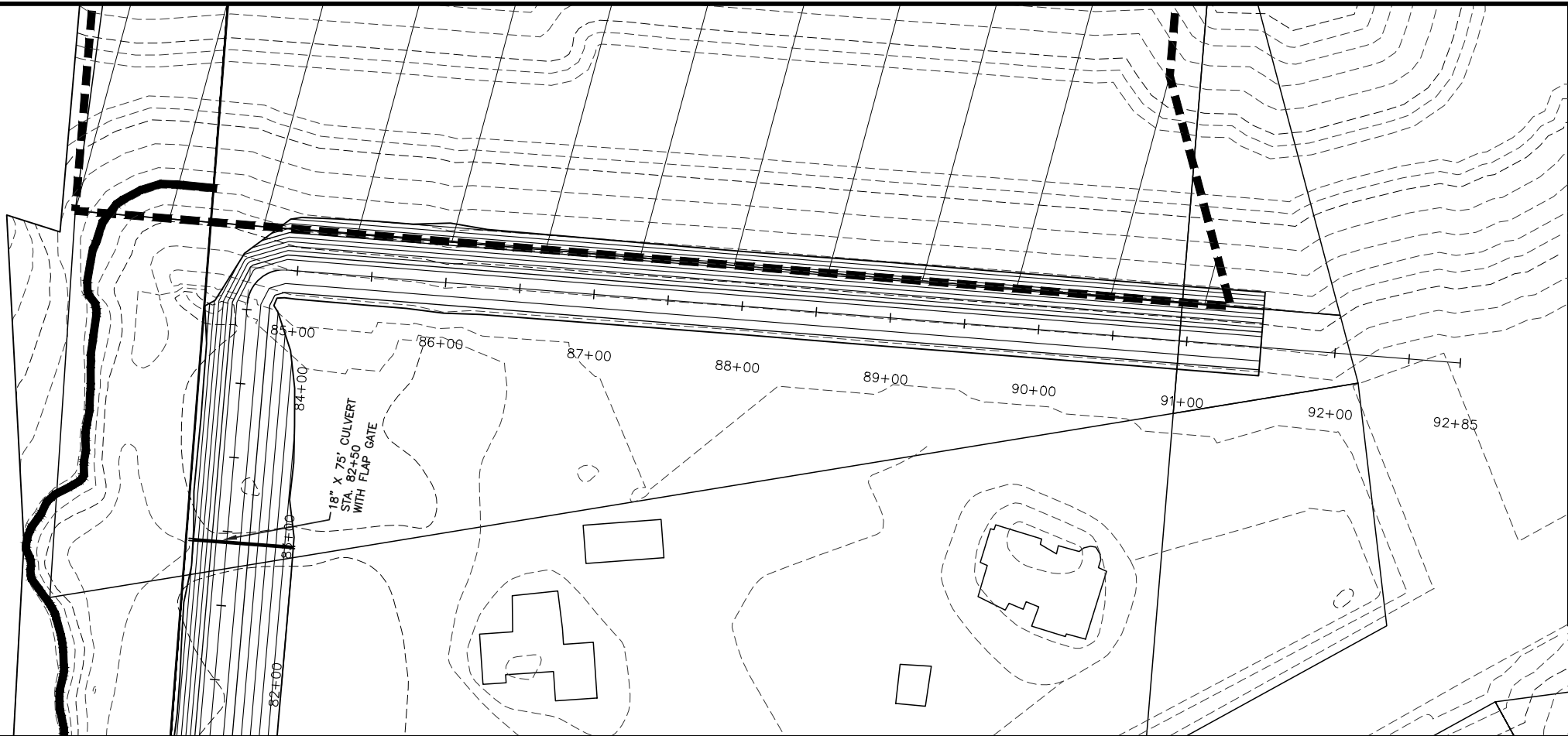
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\JBN\6025 Burleigh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burleigh Lot and on Street\LEVEE P&P dwg-P&P 84-92-8/8/2016 2:42 PM-[avistad]



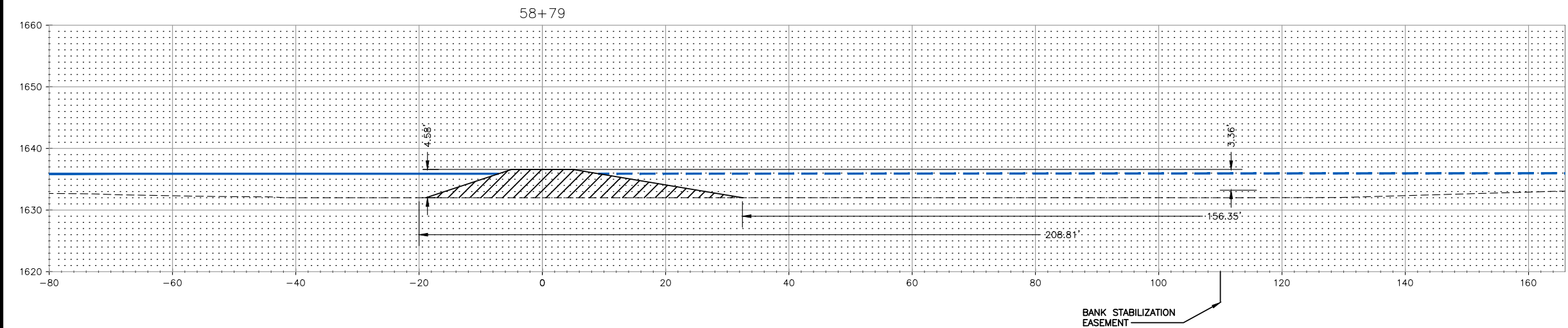
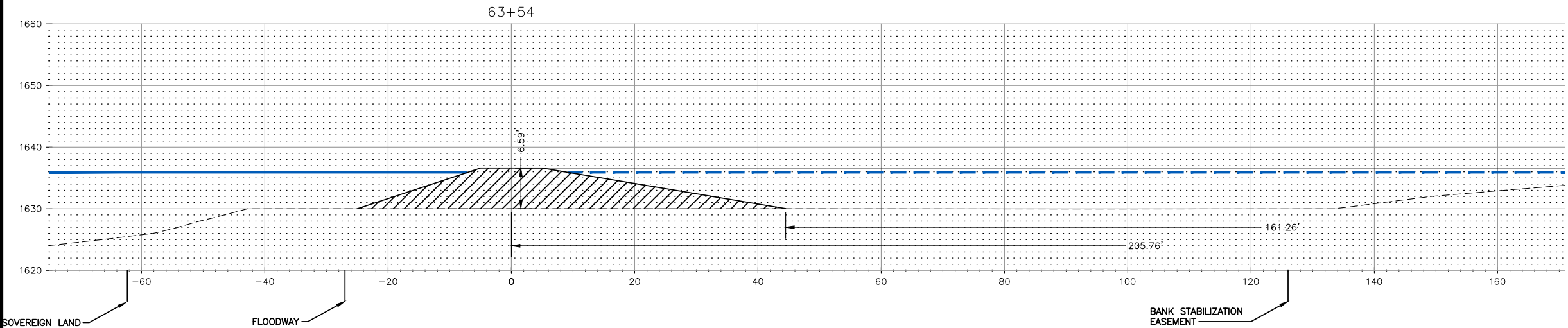
No.	Revision	Date	By



Fargo	Drawn by ARV/NRC	Date 3-25-13
P: 701.237.5065 F: 701.237.5101	Checked by MHG	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
SEGMENT D / ROAD RAISE
BISMARCK, ND

H:\Bismarck\BN\6025 Burligh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island Flood Control\LEVVE XS.dwg;XS-8/8/2016 2:42 PM-(avistad)



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

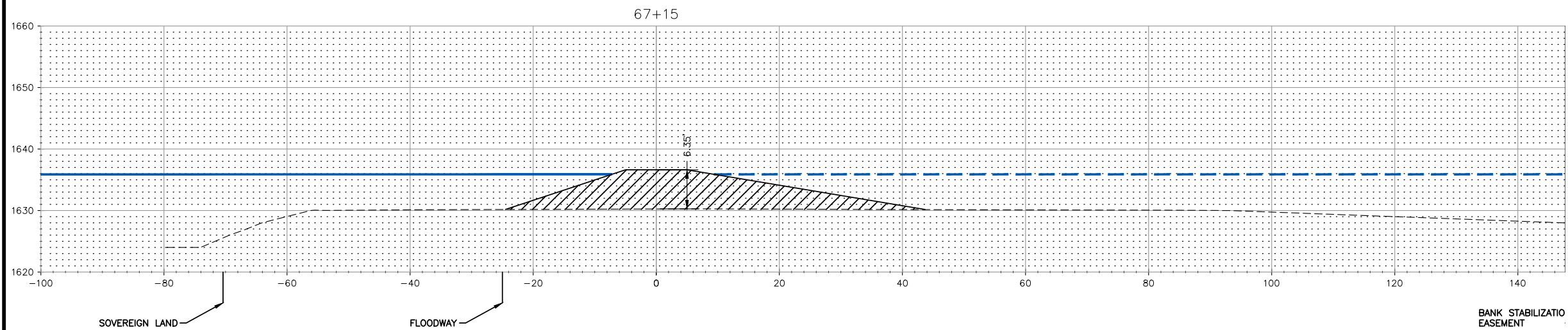
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
3456 GALLATIN DRIVE: GOVIG, PAUL & KREN
BISMARCK, ND

H:\Bismarck\BN\6025 Burling Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island Flood Control\20.0 Stage Through Burleigh Lot and on Street\LEVEE.XS.dwg.XS (2/8/2016 2:42 PM: (avistad))



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

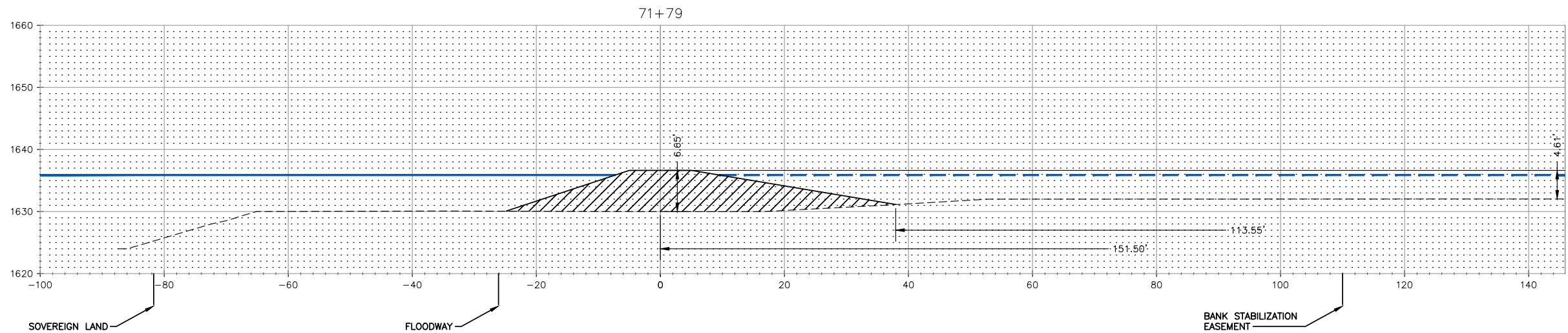
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
3464 GALLATIN DRIVE: BOISE, TRAVIS
BISMARCK, ND

H:\Bismarck\BN\6025 Burling Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burling Lot and on Street\LEVEE XS.dwg:XS (3) 8/8/2016 2:42 PM: (avistad)



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

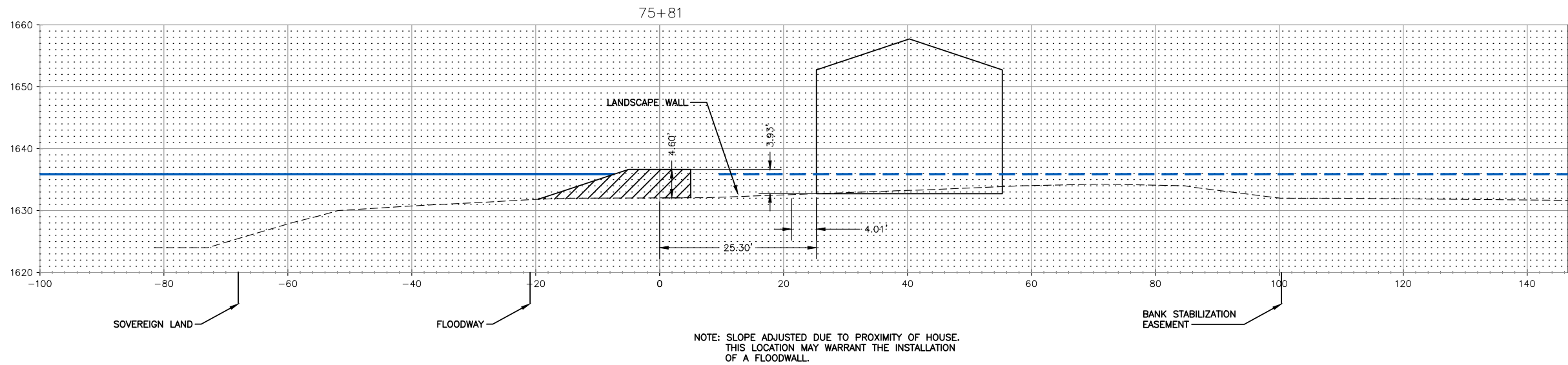
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
2505 LARSON ROAD: HERINGER, EVERETT &
BISMARCK, ND

H:\Bismarck\BN\6025 Burling Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island Flood Control\20.0 Stage Through Burling Lot and on Street\LEVEE XS.dwg.XS (4/8/2016 2:42 PM: avistad)



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

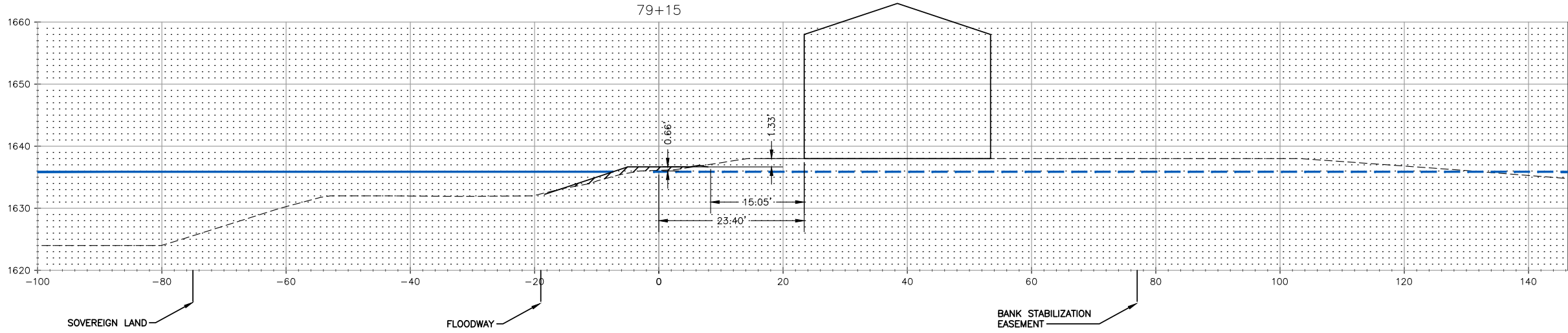
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
2525 LARSON ROAD: LARSON, GREGORY & C
BISMARCK, ND

H:\Bismarck\BN\6025 Burling Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burling Lot and on Street\LEVEE XS.dwg.XS (5) 8/8/2016 2:42 PM (avistad)



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

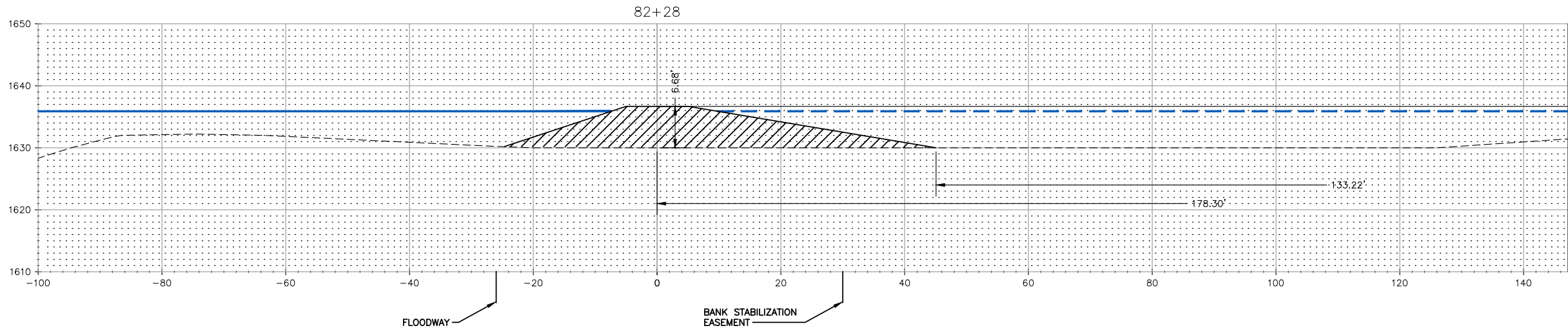
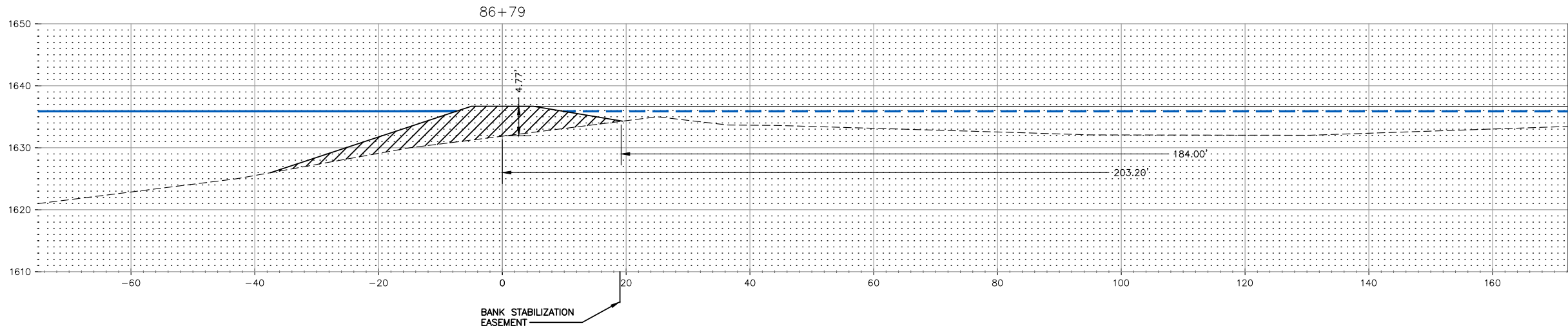
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
2520 LARSON ROAD: TERNES, DUWAYNE & S
BISMARCK, ND

H:\Bismarck\BN\6025-Burligh Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island Flood Control\LEVVE XS.dwg:XS (6) 8/8/2016 2:42 PM: (avistad)



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

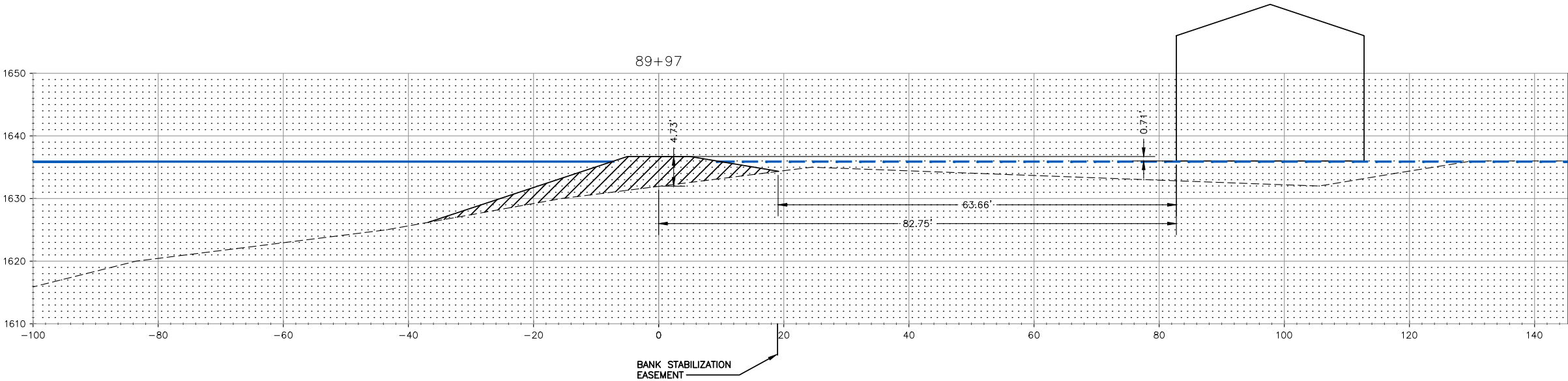
Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT
2450 LARSON ROAD: UPGREN, ROBERT & SH
BISMARCK, ND

H:\Bismarck\BN\6025 Burling Co. WRD\6025-006 Fox Island Flood Control\CAD\Segment D Fox Island\20.0 Stage Through Burling Lot and on Street\LEVEE.XS.dwg.XS (7/8/2016 2:42 PM: avistad)



No.	Revision	Date	By



Bismarck

P: 701.323.0200
F: 701.323.0300

Drawn by
ARV/NRC

Checked by
MHG

Date
3-25-13

Scale
AS SHOWN

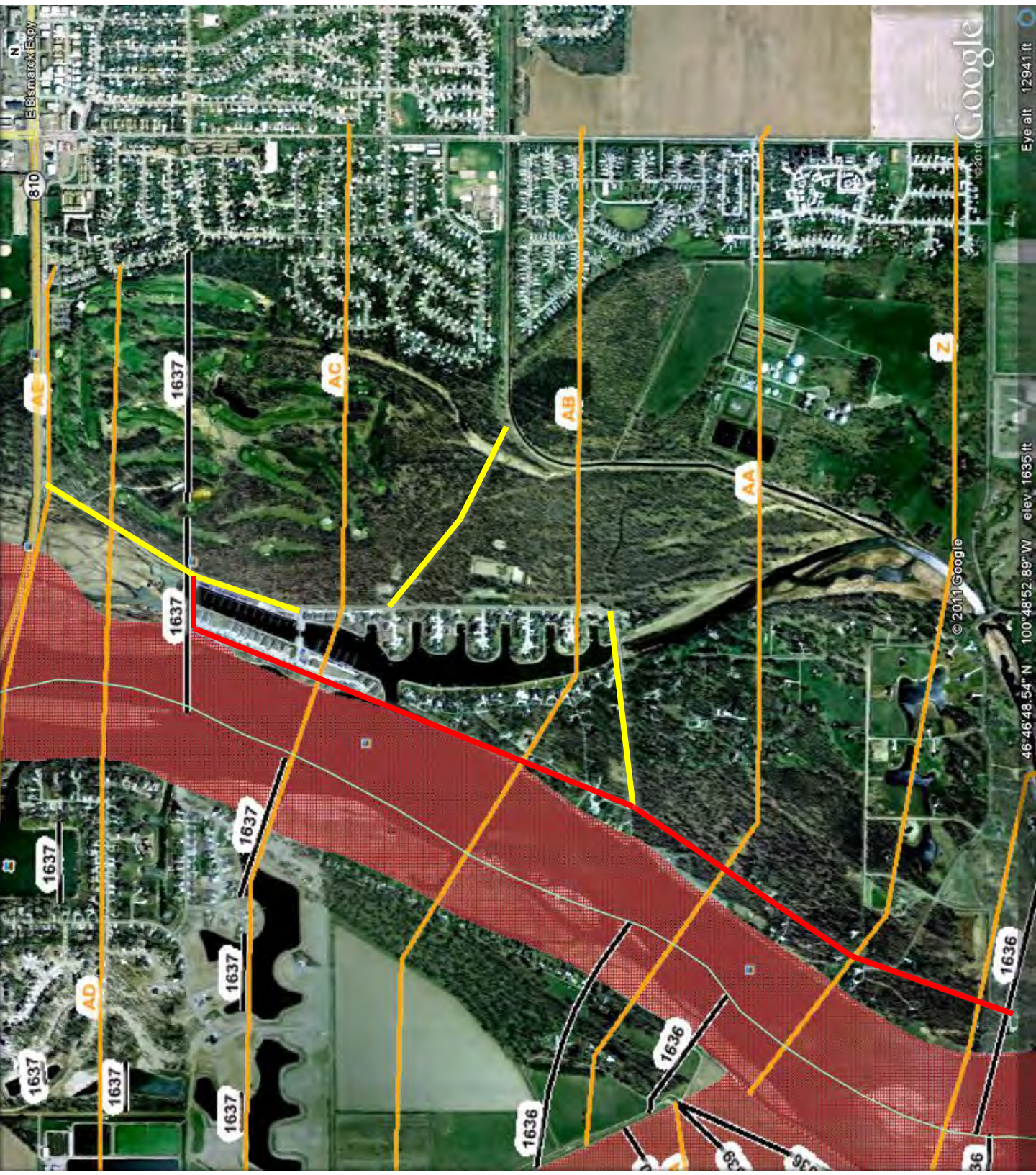
FOX ISLAND FLOOD CONTROL PROJECT
2430 LARSON ROAD: HERINGER, JOSEPH & F
BISMARCK, ND



APPENDIX C

2011 TEMPORARY FLOOD LEVEE ENCROACHMENT IMPACTS





© 2011 Google

Google

46°48'48.54" N 100°48'52.89" W elev. 1635 ft

Eye alt. 12941 ft

Missouri River 2011 Flood Event

City of Bismarck - Emergency Levee Installation

Encroachment Assessment

25-May-11

Location	Cross Section	Model XS	10 Year			50 Year			100 Year			500 Year		
			98' FIS	w/ 2011 Dikes	Δ (ft)	98' FIS	w/ 2011 Dikes	Δ (ft)	98' FIS	w/ 2011 Dikes	Δ (ft)	98' FIS	w/ 2011 Dikes	Δ (ft)
USGS Gage 16342500	AH	131464	1633.59	1633.62	0.03	1636.58	1636.63	0.05	1637.82	1637.88	0.06	1641.11	1641.43	0.32
~ Riverwood Drive	AD	131311	1633.00	1633.03	0.03	1635.98	1636.03	0.05	1637.20	1637.26	0.06	1640.32	1640.65	0.33
~ Southport	AC	131269	1632.80	1632.83	0.03	1635.75	1635.80	0.05	1636.95	1637.01	0.06	1640.10	1640.27	0.17
~ Mills Avenue	AB	131226	1632.37	1632.40	0.03	1635.32	1635.38	0.06	1636.55	1636.63	0.08	1639.83	1639.91	0.08
~ Center Fox Island	AA	131177	1632.23	1632.24	0.01	1635.19	1635.20	0.01	1636.42	1636.42	0.00	1639.61	1639.59	-0.02
~ Tavis Road	Z	131145	1632.11	1632.11	0.00	1635.09	1635.07	-0.02	1636.32	1636.29	-0.03	1639.49	1639.41	-0.08
~ Southend Fox Island	X	131109	1631.84	1631.84	0.00	1634.80	1634.80	0.00	1636.03	1636.03	0.00	1639.13	1639.13	0.00
~ Burleigh Avenue	Y	131072	1631.61	1631.61	0.00	1634.57	1634.57	0.00	1635.78	1635.78	0.00	1638.86	1638.86	0.00

* All elevations in NAVD 88 Datum - Converted from Elevations Below
Conversion to 88 datum1.368Feet

Location	Cross Section	Model XS	10 Year			50 Year			100 Year			500 Year		
			98' FIS	w/ 2011 Dikes	Δ (ft)	98' FIS	w/ 2011 Dikes	Δ (ft)	98' FIS	w/ 2011 Dikes	Δ (ft)	98' FIS	w/ 2011 Dikes	Δ (ft)
USGS Gage 16342500	AH	131464	1632.22	1632.25	0.03	1635.21	1635.26	0.05	1636.45	1636.51	0.06	1639.74	1640.06	0.32
~ Riverwood Drive	AD	131311	1631.63	1631.66	0.03	1634.61	1634.66	0.05	1635.83	1635.89	0.06	1638.95	1639.28	0.33
~ Southport	AC	131269	1631.43	1631.46	0.03	1634.38	1634.43	0.05	1635.58	1635.64	0.06	1638.73	1638.90	0.17
~ Mills Avenue	AB	131226	1631.00	1631.03	0.03	1633.95	1634.01	0.06	1635.18	1635.26	0.08	1638.46	1638.54	0.08
~ Center Fox Island	AA	131177	1630.86	1630.87	0.01	1633.82	1633.83	0.01	1635.05	1635.05	0.00	1638.24	1638.22	-0.02
~ Tavis Road	Z	131145	1630.74	1630.74	0.00	1633.72	1633.70	-0.02	1634.95	1634.92	-0.03	1638.12	1638.04	-0.08
~ Southend Fox Island	X	131109	1630.47	1630.47	0.00	1633.43	1633.43	0.00	1634.66	1634.66	0.00	1637.76	1637.76	0.00
~ Burleigh Avenue	Y	131072	1630.24	1630.24	0.00	1633.20	1633.20	0.00	1634.41	1634.41	0.00	1637.49	1637.49	0.00

* All elevations in NGVD 29 Datum - Direct From HEC-RAS Model



APPENDIX D

PREFERRED ALTERNATIVE OPINION OF PROBABLE COST



Fox Island Flood Control Project - Preferred Alternative

Permanent Levee Construction

Opinion of Probable Cost

Updated: August 8, 2016

Item No.	Description	Quantity	Unit	Unit Price	Amount
1	Contract Bond	1	L SUM	\$ 25,000.00	\$ 25,000.00
2	Mobilization	1	L SUM	\$ 97,000.00	\$ 97,000.00
3	Clearing & Grubbing	1	L SUM	\$ 120,000.00	\$ 120,000.00
4	Tree Removal 12" to 24"	247	EA	\$ 231.00	\$ 57,057.00
5	Tree Removal Over 24"	247	EA	\$ 525.00	\$ 129,675.00
6	Water	2,000	M GAL	\$ 30.00	\$ 60,000.00
7	Unclassified Excavation	14,846	CY	\$ 4.20	\$ 62,353.20
8	Borrow Excavation	50,179	CY	\$ 15.75	\$ 790,319.25
9	Subgrade Preparation	36,300	SY	\$ 1.50	\$ 54,450.00
10	Straw Wattles, 12 Inch Diameter	9,982	LF	\$ 4.20	\$ 41,924.40
11	Class 5 Aggregate Base	5,749	TON	\$ 27.30	\$ 156,947.70
12	AC Stabilized Base (Class A)	1,917	TON	\$ 110.25	\$ 211,349.25
13	AC Surface Course (Class A)	1,917	TON	\$ 105.00	\$ 201,285.00
14	Bituminous Tack Coat	1,724	GAL	\$ 2.63	\$ 4,525.50
15	18" Storm Sewer Pipe	241	LF	\$ 63.00	\$ 15,183.00
16	18" Flared End Section	8	EA	\$ 1,165.50	\$ 9,324.00
17	Erosion Control Levee Armoring	31,799	SY	\$ 6.30	\$ 200,333.70
18	Topsoiling	6,050	CY	\$ 4.20	\$ 25,410.00
19	Seeding Class II	9	AC	\$ 1,785.00	\$ 15,351.00
20	Remove & Reset Sign	10	EA	\$ 136.50	\$ 1,365.00
21	Remove Asphalt	17,245	SY	\$ 7.35	\$ 126,750.75
22	Removal Pipe All Types & Sizes	500	LF	\$ 21.00	\$ 10,500.00
23	Remove & Reset Fence	240	LF	\$ 5.25	\$ 1,260.00
24	8" Toe Drain	4,424	LF	\$ 27.30	\$ 120,775.20
25	4" Cleanout	12	EA	\$ 577.50	\$ 6,930.00
26	Toe Drain Pump Basin	4	EA	\$ 8,925.00	\$ 35,700.00
27	Gate Well Control Structure	4	EA	\$ 50,000.00	\$ 200,000.00
28	Drainage Easement Improvements	1	LS	\$ 68,250.00	\$ 68,250.00
Construction Cost =					\$ 2,849,018.95

Geotechnical (Braun Intertec)	\$ 58,000.00
Preliminary Engineering Report	\$ 157,000.00
Engineering (Design, Environmental, Easements and Permitting Services)	\$ 320,000.00
Engineering (Construction Management Services)	\$ 384,000.00
Administration (ROW, Legal, and General Admin)	\$ 50,000.00
O&M and Pumping Fund Reserve	\$ 100,000.00
Subtotal	\$ 1,069,000.00

Total Levee Cost	\$ 3,918,018.95
SWC Cost Share - Previous	\$ (23,900.00)
Township/County Participation	\$ (920,456.00)
State Legislative Allocation SB2020	\$ (2,800,000.00)
Amount to be Assessed	\$ 173,662.95



APPENDIX E

RESOLUTIONS AND SPECIAL ASSESSMENT DISTRICT





Resolution No. 1

BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA

RESOLUTION OF NECESSITY FOR THE FOX ISLAND FLOOD CONTROL PROJECT

BE IT RESOLVED by the Water Resource Board of the Burleigh County Water Resource District, Burleigh County, North Dakota (the "Board"), as follows:

1. There having been proposed through action of this Board, pursuant to Chapter 61-16.1 of the North Dakota Century Code, the construction of a project, hereafter to be known and referred to as the Fox Island Flood Control Project (the "Project"), which Project is proposed to be financed in whole or in part using legislative and township directed funds, with any remaining funds raised through the collection of special assessments levied against lands and premises benefited by the construction of such Project. This Board having examined the proposed Project, it is hereby declared that further proceedings are warranted and that it is necessary to construct and maintain the Project, which has the following nature and purpose:

The proposed Fox Island Flood Control Project would include the following:

A levee system and all required appurtenant features required to protect those properties located within the defined benefit area, as outlined in the ***Fox Island Flood Control Feasibility Assessment, February 19, 2014***, prepared by Houston Engineering, and located along a line from the Tavis Missouri River Oxbow then north along Tavis Road then east on Far West Drive, then east and then north on Galatian Loop, then west to the Missouri River then north along the river to the Whispering Bay Access channel then east to Whisper Drive, to protect the subject properties from Missouri River flood inundation during an event similar to that experienced in 2011. This system to connect into elevated Tavis Road flood control closure and gates constructed by the Burleigh County Highway Department, and the elevated Whispering Bay Development.

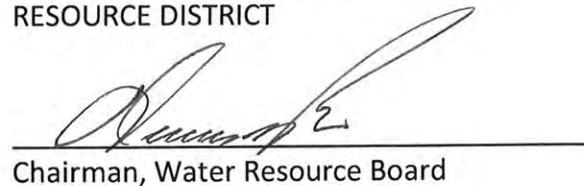
2. Michael H. Gunsch, PE, Houston Engineering, Inc., Bismarck, North Dakota, is hereby designated as the registered professional engineer to assist the Board with the Project and is hereby directed to prepare a preliminary engineering report and preliminary plans for the proposed Project and estimates of the total cost thereof, which estimates shall include the acquisition of any properties or necessary rights-of-way and shall be in sufficient detail to allow the Board to determine the probable share of the total costs that will be assessed against each of the benefitted landowners within the proposed Project assessment district.

Adopted by Board the 8th day of March 2016,

ATTEST:


Secretary

BURLEIGH COUNTY WATER
RESOURCE DISTRICT


Chairman, Water Resource Board

The governing body of the political subdivision acted on the foregoing resolution on March 8, 2016, as follows:

Adoption moved by Larson Seconded by Weixel.

Roll Call Vote (List Last Names)

"Aye" Larson, Weixel, Beck, Reep

"Nay" N/A

Absent Detwiler



Resolution No. 2

**BURLEIGH COUNTY WATER RESOURCE DISTRICT
BURLEIGH COUNTY, NORTH DAKOTA**

**RESOLUTION APPROVING ENGINEER'S REPORT, PLANS, SPECIFICATIONS
AND ESTIMATE OF COST AND DIRECTING THE ASSESSMENT OF THE COST
FOR THE
FOX ISLAND FLOOD CONTROL PROJECT**

BE IT RESOLVED by the Burleigh County Water Resource District, Burleigh County, North Dakota, as follows:

1. The engineer's report, preliminary plans, profiles, and opinion of probable cost received by this Board for the proposed construction of the **Fox Island Flood Control Project (the "Project")** August 10, 2016, are hereby approved and the same shall be forthwith filed in the office of the Secretary.
2. The Board shall proceed with the assessment of the cost of the project and public hearing process in accordance with N.D.C.C. Section 61-16.1-21. The project assessments are to include project costs as well as monies for an operations and maintenance fund account per the recommendation contained in the engineer's report. Said maintenance funds assessed as part of the project vote shall be dedicated and retained for uses outside initial construction to defray future project operational and maintenance expenses.

Dated this ___th day of August, 2016

ATTEST:

BURLEIGH COUNTY WATER
RESOURCE DISTRICT

Secretary

Dennis Reep, Chairman,
Burleigh County Water Resource District

The governing body of the political subdivision acted on the foregoing resolution on this ___th day of August, 2016 as follows:

Adoption moved by _____ Seconded by _____.

Roll Call Vote (List Last Names)

"Aye" _____

"Nay" _____

Absent _____

...and after vote the presiding officer declared the resolution adopted.

Fox Island Flood Control Project - Recommended Assessment District
Updated Costs Based on Preliminary Engineering Report - August 2016

Listing Created 8/7/2016 from 7/22/2016 Parcel Data

Created by NRC

Checked by MHG

Legend	
	Parcel is Exempt From Assessment
	Parcel is South of Larson Road
	Parcel is North of Larson Road
	Parcel is Unbuildable

Parcel_ID	Section	Township	Range	Legal	Owner	Property Address	Acres/Benefit Area	Project % Assessed	Project Assessment Cost	O&M Assessment Cost	Total Cost to Vote On
38-138-80-54-01-020	38	138	80	LARSON Block 01 L2 670435	HERINGER, EVERETT E & CAROL A	2505 LARSON RD	7.5	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-010	38	138	80	FOX ISLAND SECOND Block 02 LOT 1 471402	ERICKSON, JOHN & SHEREEN	2405 FAR WEST DR	2.39	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-050	38	138	80	FOX ISLAND SECOND Block 02 LOT 5 777327	WEISZ, DONALD & PEGGY	3480 GALLATIN DR	2.03	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-54-01-010	38	138	80	LARSON Block 01 L1 #412193	LARSON, GREGORY L & DIANE	2525 LARSON RD	2.4	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-01-010	38	138	80	FOX ISLAND SECOND Block 01 LOT 1	JOHNSON, DENNIS L & GAYLE M	2445 LARSON RD	1.97	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-020	38	138	80	FOX ISLAND SECOND Block 02 LOT 2 729894	ROGSTAD, CASEY & KATHERINE	2375 FAR WEST DR	2.04	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-060	38	138	80	FOX ISLAND SECOND Block 02 LOT 6 700898	WEISZ, DON & PEGGY	3470 GALLATIN DR	2.06	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-03-010	38	138	80	FOX ISLAND SECOND Block 03 LOT 1 666257	PETERSON, GREGORY S	3475 GALLATIN DR	2.31	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-02-040	38	138	80	FOX ISLAND Block 02 LOT 4 778323	GOVIG, PAUL & KRENZ, JULIE	3435 GALLATIN DR	2.35	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-02-020	38	138	80	FOX ISLAND Block 02 LOT 2 666257	PETERSON, GREGORY S	3390 GALLATIN DR	2.21	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-02-030	38	138	80	FOX ISLAND Block 02 LOT 3 649234	PETERSON, GREGORY S	3406 GALLATIN DR	1.97	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-07-010	38	138	80	FOX ISLAND Block 07 LOT 1 709412	COLLING, JAMES R & CASSANDRA	1600 FAR WEST DR	2.23	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-07-020	38	138	80	FOX ISLAND Block 07 LOT 2 555175	CUNNINGHAM, MARK P & DEBBIE L	1680 FAR WEST DR	2.33	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-04-010	38	138	80	FOX ISLAND SECOND Block 04 LOT 1 666600	PAGAN, JORGE & LISA	3233 FONTENELLE DR	2.18	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-07-040	38	138	80	FOX ISLAND Block 07 LOT 4 702876	BENDER, BRENT D & >	3221 DEER LODGE DR	2.23	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-04-030	38	138	80	FOX ISLAND SECOND Block 04 LOT 3 666601	PAGAN, JORGE & LISA	3055 FONTENELLE DR	2.08	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-03-020	38	138	80	FOX ISLAND SECOND Block 03 LOT 2 698060	MEEKER, CHRIS & JANEL	3485 GALLATIN DR	2.09	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-03-020	38	138	80	FOX ISLAND Block 03 LOT 2 698174	TOBIAS MARMAN CONSTRUCTION LLC	3336 GALLATIN DR	1.98	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-03-030	38	138	80	FOX ISLAND Block 03 LOT 3 571702 615562	MALLOY, HOWARD L & BECKER, RENEE	3348 GALLATIN DR	1.96	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-02-010	38	138	80	FOX ISLAND Block 02 LOT 1 698060	MEEKER, CHRIS & JANEL	3370 GALLATIN DR	2.04	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-62-01-010	38	138	80	MEADOW VIEW Block 01 L1 488054	HAWKINSON, DONALD L & J M	3101 TAVIS RD	2	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-05-020	38	138	80	FOX ISLAND SECOND Block 05 LOT 2 825568	WATKINS, DEREK	3020 GALLATIN DR	2.06	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-010	38	138	80	FOX ISLAND SECOND Block 06 LOT 1 655807	WAGNER, DONAVON & BERG, JAMES	3105 GALLATIN DR	1.95	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-020	38	138	80	FOX ISLAND SECOND Block 06 LOT 2 496794 631309 633475	WAGNER, DONAVON D & PAMELA J TR	3002 DEER LODGE DR	1.95	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-020	38	138	80	FOX ISLAND SECOND Block 07 LOT 2 & E40' OF LOT 1 472021	REIS, ROBERT & REBECCA	1707 LARSON RD	2.444	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-030	38	138	80	FOX ISLAND SECOND Block 07 LOT 3 599638	STORK, BRADLEY R	1655 LARSON RD	1.96	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-01-050	38	138	80	FOX ISLAND SECOND Block 01 LOT 5	JOHNSON, DENNIS L & GAYLE M	2370 FAR WEST DR	2.24	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-030	38	138	80	FOX ISLAND SECOND Block 06 LOT 3 527608	OWENS, PATRICIA A & DAVID A	3042 DEER LODGE DR	1.95	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-01-040	38	138	80	FOX ISLAND SECOND Block 01 LOT 4 770907	MIRZAI, MICHAEL AV & EVA MARIE	3114 FONTENELLE DR	2.36	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-58-01-020	38	138	80	MEADOW VIEW FIFTH Block 01 LOT 2 499089 799426	TANOUS, MELONIE R	1900 FAR WEST DR	2	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-06-010	38	138	80	FOX ISLAND Block 06 LOT 1 499089 799426	TANOUS, MELONIE R	1820 FAR WEST DR	2.22	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-060	38	138	80	FOX ISLAND SECOND Block 06 LOT 6 664155	EGGL, MICHAEL T & >	3233 GALLATIN DR	2.52	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-04-020	38	138	80	FOX ISLAND SECOND Block 04 LOT 2 661254	PAGAN, JORGE & LISA	2165 FAR WEST DR	1.97	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-040	38	138	80	FOX ISLAND SECOND Block 02 LOT 4 649190	MATHERN, RANDY	3490 GALLATIN DR	2.08	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-03-010	38	138	80	FOX ISLAND Block 03 LOT 1 661200	PAGAN, JORGE & LISA	2105 FAR WEST DR	2.02	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-86-00-050	38	138	80	TIMBER LANE PLACE Block 00 L5 + 1/9 OF LOT 12 #438176 (LOT 5 ONLY)	HOFF, THOMAS G & RITA K	2444 TIMBERLANE PL	2.22	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-040	38	138	80	TIMBER LANE PLACE Block 00 LOT 4 & 1/9 INTEREST IN LOT 12 818932	ZIMMERMAN, GENE & LILLIAN	2434 TIMBERLANE PL	2.07	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-030	38	138	80	TIMBER LANE PLACE Block 00 L3 + 1/9 OF LOT 12 #381693	HUTCHENS, THOMAS P & KATHERINE	2424 TIMBERLANE PL	2.07	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-010	38	138	80	TIMBER LANE PLACE Block 00 L1 447310	WRIGHT, DONALD J & LINDA	2415 TRAYNOR LN	2.81	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-060	38	138	80	TIMBER LANE PLACE Block 00 LOT 6 + 1/9 OF LOT 12 801725	GUSAAS, SHARLENE	2454 TIMBERLANE PL	1.91	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-120	38	138	80	TIMBER LANE PLACE Block 00 L12 NOT ASSESSED ALONE - TAXED WITH OTHER LOTS	TRAYNOR, D		1.49	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-110	38	138	80	TIMBER LANE PLACE Block 00 L11 & 1/9 OF LOT 12 556527	HAGENESS, JASON & KARA	2500 TRAYNOR LN	1.97	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-020	38	138	80	TIMBER LANE PLACE Block 00 L2 546793	OTTESON, GUY & KAYE	2501 TRAYNOR LN	3.07	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-070	38	138	80	TIMBER LANE PLACE Block 00 L7 + 1/9 OF LOT 12 658072	DOE, TRACY E & SHARI J	2462 TIMBERLANE PL	1.88	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-100	38	138	80	TIMBER LANE PLACE Block 00 L10 + 1/9 OF LOT 12 510978	MANDIGO, EVAN H & TOVE E	2489 TIMBERLANE PL	2.29	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-080	38	138	80	TIMBER LANE PLACE Block 00 L8 + 1/9 OF LOT 12 658901 685558	TESKE, ARLA R	2471 TIMBERLANE PL	1.74	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-86-00-090	38	138	80	TIMBER LANE PLACE Block 00 LOT 9 AND 1/9 INTEREST OF LOT 12	ROBINSON, KYLE W & KATIE S	2481 TIMBERLANE PL	1.85	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-03-020	38	138	80	TIMBER LANE PLACE SECOND Block 03 L2 #449637	OTTESON, GUY G & KAYE M	2525 SMOKEY LN	3.67	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-100	38	138	80	TIMBER LANE PLACE SECOND Block 01 L10 583598	LEIDENIX, SARAH B	2520 SMOKEY LN	2.21	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-010	38	138	80	TIMBER LANE PLACE SECOND Block 01 L1 621847 704472	WARREN, LARRY W & JAN L	2882 WOODLAND DR	2.07	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-020	38	138	80	TIMBER LANE PLACE SECOND Block 01 L2 #438980	BERGER, GREGORY A & ROSEMARY M	2876 WOODLAND PL	2.19	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-030	38	138	80	TIMBER LANE PLACE SECOND Block 01 L3 526601	LEISCHNER, MARK & SUSAN	2866 WOODLAND PL	2.07	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-090	38	138	80	TIMBER LANE PLACE SECOND Block 01 L9 697034	TRAYNOR, KENNETH & MOLLY	2650 SMOKEY LN	2.12	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-040	38	138	80	TIMBER LANE PLACE SECOND Block 01 L4 526568 638062	WILLIAMS, JEB R & COURTNEY L K	2860 WOODLAND PL	2.17	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-02-010	38	138	80	TIMBER LANE PLACE SECOND Block 02 L1 546246	KRONBERG, SCOTT & ADELINA	2875 WOODLAND DR	2	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-080	38	138	80	TIMBER LANE PLACE SECOND Block 01 L8 593970 735211	BERGE, SCOTT A & LAURIE A	2750 SMOKEY LN	2.01	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-010	38	138	80	MEADOW VIEW SECOND Block 00 L1 341126	DONAHUE, MICHAEL & JUDY	2749 SMOKEY LN	2.5	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-050	38	138	80	TIMBER LANE PLACE SECOND Block 01 L5 393974 643893	GRENZ, TERRY A & SALLY A	2850 WOODLAND PL	2.05	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-060	38	138	80	TIMBER LANE PLACE SECOND Block 01 L6 662873	MEEKER, CHRISTOPHER & JANEL	2830 WOODLAND DR	2.09	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-01-070	38	138	80	TIMBER LANE PLACE SECOND Block 01 LOT 7 742969 772769	ENSZ, KAMALA & PEGORS, RANDALL	2812 WOODLAND DR	2.03	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-02-020	38	138	80	TIMBER LANE PLACE SECOND Block 02 L2 #412704	MASSEN, JAMES S & MELANIE	2847 WOODLAND DR	2.01	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-02-030	38	138	80	TIMBER LANE PLACE SECOND Block 02 L3 #422791	BENDER, LYNN	2837 WOODLAND DR	2.03	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-02-040	38	138	80	TIMBER LANE PLACE SECOND Block 02 L4 #387330	BENDER, LYNDON R	2833 WOODLAND DR	2	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-02-050	38	138	80	TIMBER LANE PLACE SECOND Block 02 LOT 5 617266 803601	SCHMIT, JULIE A	2823 WOODLAND DR	2.06	0.00%	\$0.00	\$925.93	\$925.93

38-138-80-87-02-060	38	138	80	TIMBER LANE PLACE SECOND Block 02 L6 515976	LUNDIN, ROBERT J & ISSENDORF,>	2900 SMOKEY LN	2.01	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-060	38	138	80	MEADOW VIEW SECOND Block 00 LOT 6 396443	CERMAK, CALLEN A & REBECCA K	2930 SMOKEY LN	3.14	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-34-01-020	38	138	80	FOX ISLAND SECOND Block 01 LOT 2	JOHNSON, DENNIS L & GAYLE M	2335 LARSON RD	2.01	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-01-030	38	138	80	FOX ISLAND SECOND Block 01 LOT 3 770907	MIRZAI, MICHAEL AV & EVA MARIE	2265 LARSON RD	2.39	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-05-010	38	138	80	FOX ISLAND SECOND Block 05 LOT 1 468278	MACQUEEN, JEFFREY & ASTRID	3007 FONTENELLE DR	1.96	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-05-060	38	138	80	FOX ISLAND SECOND Block 05 LOT 6 466862	WALKER, DWAYNE & RENAE	3103 FONTENELLE DR	2.09	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-070	38	138	80	FOX ISLAND SECOND Block 07 LOT 7 621394	LEIER, DIANE M	3045 DEER LODGE DR	1.98	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-040	38	138	80	FOX ISLAND SECOND Block 07 LOT 4 513425	SMITH, JAMES W & DORIS M	3152 TAVIS RD	2.02	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-05-030	38	138	80	FOX ISLAND SECOND Block 05 LOT 3 627154	BOESPFLUG, SCOTT J & STEPHANIE	3122 GALLATIN DR	2.09	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-040	38	138	80	FOX ISLAND SECOND Block 06 LOT 4 694208	HOHBEIN, RANDY & HERMAN,CHERYL	3110 DEER LODGE DR	1.96	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-060	38	138	80	FOX ISLAND SECOND Block 07 LOT 6 575275	ULNESS, JOHN H & RUTH W	3125 DEER LODGE DR	3.52	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-05-050	38	138	80	FOX ISLAND SECOND Block 05 LOT 5 466952	ANDRE, ANN	2200 FAR WEST DR	1.95	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-050	38	138	80	FOX ISLAND SECOND Block 07 LOT 5 596526	GLASSER, LAWRENCE D & CARMEN K	3202 TAVIS RD	2.65	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-05-040	38	138	80	FOX ISLAND SECOND Block 05 LOT 4 767412	UPGREN, ROBERT & SHAUNNA	2160 FAR WEST DR	2.29	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-030	38	138	80	FOX ISLAND SECOND Block 02 LOT 3 805612	HAGER, JOSHUA R & KIMBERLY	2315 FAR WEST DR	1.96	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-070	38	138	80	FOX ISLAND SECOND Block 06 LOT 7 774910	KOCH, SHAWN & LISA	3147 GALLATIN DR	1.96	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-06-050	38	138	80	FOX ISLAND SECOND Block 06 LOT 5 610797	EVERITT, LESTER E & JANA R	3130 DEER LODGE DR	1.97	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-04-010	38	138	80	FOX ISLAND Block 04 LOT 1 767412	UPGREN, ROBERT & SHAUNNA	2100 FAR WEST DR	2.27	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-07-010	38	138	80	FOX ISLAND SECOND Block 07 LOT 1 LESS E40' 607986 640377	ROLOFF, DON & DIANA	3005 DEER LODGE DR	1.756	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-33-02-050	38	138	80	FOX ISLAND Block 02 LOT 5 671796	BIJELLA, BRIAN & KAREN	3465 GALLATIN DR	1.97	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-63-00-070	38	138	80	MEADOW VIEW SECOND Block 00 LOT 7 727735 825264	MCSHANE, DAVID J	2910 SMOKEY LN	3.53	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-03-015	38	138	80	TIMBER LANE PLACE SECOND Block 03 L1 - THE S 437' #421724	LIES, JOHN N		2	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-87-03-010	38	138	80	TIMBER LANE PLACE SECOND Block 03 L1 - THE N223' #404657	LIES, JOHN N	2301 RIVERWOOD DR	1.79	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-081	38	138	80	MEADOW VIEW SECOND Block 00 L8 E1/2 #279234	MCKENZIE, PHILIP & DANETTE	1820 LARSON RD	2.5	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-080	38	138	80	MEADOW VIEW SECOND Block 00 L8 LESS E1/2 333087	MCKENZIE, PHILIP & DANETTE		2.5	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-58-01-011	38	138	80	MEADOW VIEW FIFTH Block 01 L1 THE SOUTH 281.69 FEET 646807	EGGL, MICHAEL & >	1950 FAR WEST DR	1.81	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-58-01-010	38	138	80	MEADOW VIEW FIFTH Block 01 L1 LESS S281.69' 652780	EGGL, MICHAEL & >	3340 LARSON RD	1.19	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-60-01-010	38	138	80	MEADOW VIEW FOURTH Block 01 LOT 1 LESS N119' & LESS W33' R/W 408565	BENDER, CALVIN L & CARLA M		0.914	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-60-01-011	38	138	80	MEADOW VIEW FOURTH Block 01 L1-N 119' LESS W 33' #488054	HAWKINSON, DONALD & JM		0.91	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-60-01-013	38	138	80	MEADOW VIEW FOURTH Block 01 W 33' OF N 119' L1 #460083	BURLEIGH COUNTY		0.09	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-60-01-012	38	138	80	MEADOW VIEW FOURTH Block 01 W33' OF S113.25' L1 #460082	BURLEIGH COUNTY		0.086	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-87-03-031	38	138	80	TIMBER LANE PLACE SECOND Block 03 L3 - THE S 21.37'(.42 A) ROADWAY ATTACHED TO	DONAHUE, MICHAEL & JUDY		0.42	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-87-03-030	38	138	80	TIMBER LANE PLACE SECOND Block 03 L3 LESS THE S 21.37' TO -031 485223	OTTESON, GUY G & KAYE M	2655 SMOKEY LN	3.29	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-051	38	138	80	MEADOW VIEW SECOND Block 00 S33'OF W300' OF L5 460083	BURLEIGH COUNTY		0.227	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-60-01-020	38	138	80	MEADOW VIEW FOURTH Block 01 L2 LESS W33' TO BUR CO 460082	BENDER, CALVIN L	3201 TAVIS RD	1.775	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-60-01-021	38	138	80	MEADOW VIEW FOURTH Block 01 W 33' OF L2 #460082	BURLEIGH COUNTY		0.176	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-60-01-030	38	138	80	MEADOW VIEW FOURTH Block 01 L3 LESS W33' TO BURLEIGH COUNTY 509647	PRIVRATSKY,DANIEL A& MELODEE J	3305 TAVIS RD	2.023	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-60-01-031	38	138	80	MEADOW VIEW FOURTH Block 01 WEST 33' OF L3 #460084	BURLEIGH COUNTY		0.673	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-63-00-020	38	138	80	MEADOW VIEW SECOND Block 00 LOT 2 686019	FALLER, JOSEPH L & DAWN M	2801 SMOKEY LN	2.5	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-030	38	138	80	MEADOW VIEW SECOND Block 00 L3 & N88' OF LOT 4 570834 728467	PETRYSZYN, DAVID L & >	2809 SMOKEY LN	3	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-040	38	138	80	MEADOW VIEW SECOND Block 00 L4 LESS THE N88' 596565	GLUR, DOUGLAS W & NADINE H	2905 SMOKEY LN	2	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-07-01-025	38	138	80	MILLS 1ST SUB 2ND REPLAT Block 01 AUDITOR'S LOT 2A OF LOT 2 675668 675785	TERNES,D&S %UPGREN, ROBERT & SHAUNNA		0.66	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-65-00-051	38	138	80	MILLS FIRST Block 00 PART OF LOT 5A BEG AT A PT ON THE SOUTH LINE OF LOT 5A THAT	BROWN, SCOTT C & MCCORMICK, PAMELA R	2520 LARSON RD	2.49	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-63-00-050	38	138	80	MEADOW VIEW SECOND Block 00 AUDITOR'S LOT B OF LOT 5 IRR PLAT 777090; 780227	JOHNSON, MELANIE & PATRICK	1600 LARSON RD	3.25	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-63-00-055	38	138	80	MEADOW VIEW SECOND Block 00 AUDITOR'S LOT A OF LOT 5 IRR PLAT 777090; 798763	JOHNSON, GARY N & CAROL V	2925 SMOKEY LN	2.03	0.00%	\$0.00	\$925.93	\$925.93
38-138-80-33-07-031	38	138	80	FOX ISLAND Block 07 TRACT A OF LOT 3 702876	BENDER, BRENT D & >		0.27	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-33-07-030	38	138	80	FOX ISLAND Block 07 TRACT B REPLAT OF L3 574399	AHNEMAN, JONATHAN & KERI	1740 FAR WEST DR	2.17	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-071	38	138	80	FOX ISLAND SECOND Block 02 LOT 7A OF LOT 7 758031	GOVIG, PAUL & KRENZ, JULIE	3456 GALLATIN DR	1.952	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-34-02-080	38	138	80	FOX ISLAND SECOND Block 02 LOT 8 541866	BURLEIGH COUNTY		1.55	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-34-02-070	38	138	80	FOX ISLAND SECOND Block 02 LOT 7 LESS LOT 7A 532265 532266	BOISE & TAVIS	3464 GALLATIN DR	11.518	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-34-06-080	38	138	80	FOX ISLAND SECOND Block 06 LOT 8 & 9 766733	SHILLINGSTAD, JASON	3127 GALLATIN DR	3.9	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-66-05-010	38	138	80	MILLS SECOND Block 05 AUDITOR'S LOT 1A OF LOT 1 IRR PLAT 790306; 692703	HUTCHENS, THOMAS P & KATHERINE		0.27	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-66-05-011	38	138	80	MILLS SECOND Block 05 AUDITOR'S LOT 1B OF LOT 1 IRR PLAT 790306; 818932	ZIMMERMAN, GENE & LILLIAN		0.18	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-66-05-012	38	138	80	MILLS SECOND Block 05 AUDITOR'S LOT 1C OF LOT 1 IRR PLAT 790306; 794364	HOFF, THOMAS & RITA		0.12	0.00%	\$0.00	\$0.00	\$0.00
38-138-80-65-00-052	38	138	80	MILLS FIRST Block 00 AUD LOT B OF LOT 4A; AUD LOT A OF LOT 2 OF LOT 5A; AUD LOTS	HERINGER, JOSEPH A & HEATHER A	2430 LARSON RD	2.06	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-07-01-010	38	138	80	MILLS 1ST SUB 2ND REPLAT Block 01 LOT 1 788390	NESS, SARA & DOUGLAS	2450 LARSON RD	1.65	100.00%	\$2,631.26	\$925.93	\$3,557.18
38-138-80-65-00-040	38	138	80	MILLS FIRST Block 00 AUDITOR'S LOT 1 OF LOT 4A; AUDITOR'S LOT A OF LOT 4A; AUDITO	HERINGER, EVERETT E & CAROL A	2440 LARSON RD	2.8	100.00%	\$2,631.26	\$925.93	\$3,557.18

Total Lots within Assessment District	121
Exempt - County Parcels	6
Exempt - Unbuildable	6
Private 11+ acre parcel - Undevelopable	1
Assessable Parcels	108

Total Lots Assessed	66 South of Larson Road - Full Assessment
	42 North of Larson Road - O&M Only
	108

Total Project Implemenation Cost	\$3,918,018.95
Cost less (Legislative/Linclon Township)	\$173,662.95
Total Assessment Per Lot (66 Lots)	\$2,631.26

O&M Cost	\$100,000.00
O&M Assessment Per Lot	\$925.93



APPENDIX F

FOX ISLAND FLOOD CONTROL FEASIBILITY ASSESSMENT FEBRUARY 19, 2014 (included by reference only)





APPENDIX G

FUNDING DOCUMENTATION





Burleigh County Water Resource District

**1811 East Thayer Avenue
Bismarck, North Dakota 58501
(701) 222-3499
www.bcwr.org**

November 10, 2015

Todd Sando, PE
North Dakota State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue
Bismarck, ND 58505-0850

Re: Fox Island Flood Control Project, Burleigh County

Dear Todd:

The Burleigh County Water Resource District (BCWRD) is proceeding with developing the Fox Island Flood Control Project in cooperation with Lincoln Township, an unincorporated township represented by the Burleigh County Commission. This project has progressed through the development process from its beginning after the record 2009 ice jam event, and expanded after the historic 2011 Missouri River flood. The following is a summary illustrating the project's history, along with project overview maps.

1. The Fox Island Flood Control Project was initiated by a petition from flooded residents following the 2009 Missouri River ice jam. The project was evaluated by the BCWRD and a draft preliminary engineering report was being prepared, with cost share assistance through the North Dakota State Water Commission (NDSWC), when the 2011 Missouri River flood occurred.
2. The 2011 Missouri River Flood reset the evaluation process and the resulting flood protection scope and mission was expanded. In 2012 the BCWRD in consultation and discussion with the Burleigh County Highway Department evaluated a greater protection area. It now included the Harbor Drive area north of Mills Avenue and rural residential development around the perimeter of the island along the river and oxbow. The selected county-wide flood protection criteria is based on a control elevation 0.7 feet above the actual 2011 flood elevation.
3. After extensive evaluation, discussion and public informational meetings the Harbor Drive residents, those residents located along the river and on the south side of the island along the oxbow petitioned the BCWRD to be removed from the project. Their principal concerns were related to property impacts (e.g., tree removal, grading, aesthetics, etc.), as well as costs, individual apathy, and blaming the USACE for the flood. Subsequently, the BCWRD removed these properties from further project consideration, notifying them it was their decision not to be provided protection.
4. The *Fox Island Flood Control Feasibility Assessment, February 19, 2014* contained a review of the 2009 and 2011 flood events, their impacts and the alternative protection measures considered based on known risks and public input from the benefited residents.

Current Board Members:

Terry Fleck, Chairman, Bismarck 223-9768 Dennis Reep, Vice Chairman, Bismarck 557-9621 Gordon Weixel, Secretary/Treasurer, Bismarck 258-5390
Greg Larson, Manager, Bismarck 400-7217 Rick Detwiller, Manager, Bismarck 223-8782

Todd Sando, PE, North Dakota State Engineer
North Dakota State Water Commission
Re: Fox Island Flood Control Project
November 10, 2015
Page -2-

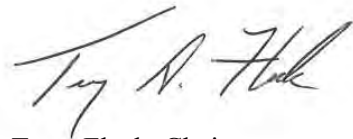
5. In 2013 the City of Bismarck (City) completed grade raises on Riverwood Drive and Mills Avenue to protect the City. These projects also provided flood protection against flows through the Fox Island area. The County designed and constructed the Tavis Road pump station and flood control gates, with funding assistance from the City and NDSWC. During this project development Burleigh County committed to the City that they would close the flood control gap between Tavis Road and Mills Avenue. This closure provides protection for the City's sewage treatment plant and a limited number of residences on Fox Island.
6. On November 18, 2013 the Burleigh County Highway Department requested the Burleigh County Commission defer on their commitment to the Fox Island Project until 2017, due to limited Township funding. Subsequently, following the allocation of legislative funding for the project, the BCWRD requested the Burleigh County Commission formally recommit to funding in 2017. This will facilitate project implementation during the 2015-2017 biennium, and to assist the County in meeting their commitment to the City and some Fox Island residents.
7. The expanded Fox Island Flood Control Project will provide flood protection against another 2009 level ice jam event or a 2011 flood to 116 rural residential properties. It will also provide the necessary corridor and easements for greater emergency flood protection, should that be necessary. The Fox Island Homeowners Association, who represent the largest constituency on the island, recently renewed its project support.
8. The residential damages occurring from the 2009 ice jam event were just over \$1 million. The temporary flood protection measures during the 2011 event costing over \$1.3 Million, which does not include damages to residential structures.
9. The BCWRD has established the following development schedule for the project:
 - a. County Commission commitment on behalf of Lincoln Township
 - i. \$920,456 - Authorized October 19, 2015
 - b. Request appropriated legislative funding – November 10th
 - c. Public Informational Meeting (December 2015/January 2016)
 - i. Update residents on allocated funding, costs, vote and implementation timeline
 - ii. Prepare assessment district summary
 - d. Public Hearing and Assessment District Vote (Early 2016)
 - e. After a favorable project vote
 - i. Survey/Easements and Design – Spring and Summer 2016
 - ii. Advertisement for Bids – Fall 2016
 - iii. Construction – Spring 2017

It is our understanding the funding allocated by the North Dakota Legislature in HB 2020 for the Fox Island Flood Control Project is available to the BCWRD on request. Therefore, we are requesting the release of the \$2.8 Million for this project. The BCWRD will be placing these funds into a separate project account and will upon project completion, or as requested, provide an accounting for the use of these funds. The current projected cost for the project is approximately \$3.8 Million.

Todd Sando, PE, North Dakota State Engineer
North Dakota State Water Commission
Re: Fox Island Flood Control Project
November 10, 2015
Page -3-

Since 2009 the BCWRD has invested over \$127,000 on developing this project and has received approximately \$22,475 in state cost share funding. If requested, we will provide updates on project status and expenditures as the design, bidding and construction occurs.

Respectfully,

A handwritten signature in black ink, appearing to read "Terry N. Fleck". The signature is fluid and cursive, with the first name "Terry" and last name "Fleck" clearly distinguishable.

Terry Fleck, Chairman

Enclosures

Cc: Doug Schonert, Chairman Burleigh County Commission – Letter Only
Marcus Hall, Burleigh County Highway Department – Letter Only
Representative Diane Larson, Bismarck – Letter Only
Don Roloff, President Fox Island Homeowners Association, Letter Only
Kathleen Jones, Burleigh County Commissioner – Letter Only
BCWRD Board Members – Letter Only



Burleigh County Water Resource District

**1811 East Thayer Avenue
Bismarck, North Dakota 58501
(701) 222-3499
www.bcwrdd.org**

Fox Island Flood Control Project Water Topics Policy Committee Briefing Document

The Burleigh County Water Resource District (BCWRD) is proceeding with developing the Fox Island Flood Control Project in cooperation with Lincoln Township, an unincorporated township represented by the Burleigh County Commission. This project has progressed through the development process from its beginning after the record 2009 ice jam event, and expanded after the historic 2011 Missouri River flood. The following is a summary illustrating the project's history, along with project overview maps.

1. The Fox Island Flood Control Project was initiated by a petition from flooded residents following the 2009 Missouri River ice jam. The project was evaluated by the BCWRD and a draft preliminary engineering report was being prepared, with cost share assistance through the North Dakota State Water Commission (NDSWC), when the 2011 Missouri River flood occurred.
2. The 2011 Missouri River flood reset the evaluation process and the resulting flood protection scope and mission was expanded. In 2012 the BCWRD in consultation and discussion with the Burleigh County Highway Department evaluated a greater protection area. It now included the Harbor Drive area north of Mills Avenue and rural residential development around the perimeter of the island along the river and oxbow. The selected county-wide flood protection criteria is based on a control elevation 0.7 feet above the actual 2011 flood elevation.
3. After extensive evaluation, discussion and public informational meetings the Harbor Drive residents, those residents located along the river and on the south side of the island along the oxbow petitioned the BCWRD to be removed from the project. Their principal concerns were related to property impacts (e.g., tree removal, grading, aesthetics, etc.), as well as costs, individual apathy, and blaming the USACE for the flood. Subsequently, the BCWRD removed these properties from further project consideration, notifying them it was their decision not to be provided protection.
4. The *Fox Island Flood Control Feasibility Assessment, February 19, 2014* contained a review of the 2009 and 2011 flood events, their impacts and the alternative protection measures considered based on known risks and public input from the benefited residents.
5. In 2013 the City of Bismarck (City) completed grade raises on Riverwood Drive and Mills Avenue to protect the City. These projects also provided flood protection against flows through the Fox Island area. The County designed and constructed the Tavis Road pump station and flood control gates, with funding assistance from the City and NDSWC. During this project development Burleigh County committed to the City that they would close the flood control gap between Tavis Road and Mills Avenue. This closure to provide protection for the City's sewage treatment plant and a limited number of residences on Fox Island.
6. On November 18, 2013 the Burleigh County Highway Department requested the Burleigh County Commission differ on their commitment to the Fox Island Project until 2017, due to limited Township funding. Subsequently, following the allocation of legislative funding for the project, the BCWRD requested the Burleigh County Commission formally recommit to funding in 2017. This to facilitate project implementation during the 2015-2017 biennium, and to assist the County in meeting their commitment to the City and some Fox Island residents.

Current Board Members:

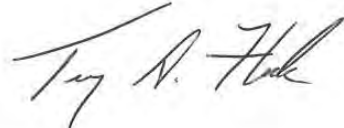
Terry Fleck, Chairman, Bismarck 223-9768 Dennis Reep, Vice Chairman, Bismarck 557-9621 Gordon Weixel, Secretary/Treasurer, Bismarck 258-5390

Greg Larson, Manager, Bismarck 400-7217 Rick Detwiller, Manager, Bismarck 223-8782

7. The expanded Fox Island Flood Control Project will provide flood protection against another 2009 level ice jam event or a 2011 flood to 116 rural residential properties. It will also provide the necessary corridor and easements for greater emergency flood protection, should that be necessary. The Fox Island Homeowners Association, who represent the largest constituency on the island, recently renewed its project support.
8. The residential damages occurring from the 2009 ice jam event were just over \$1 million. The temporary flood protection measures during the 2011 event costing over \$1.3 Million, which does not include damages to residential structures.
9. The BCWRD has established the following development schedule for the project:
 - a. County Commission commitment on behalf of Lincoln Township
 - i. \$920,456 - Authorized October 19, 2015
 - b. Request appropriated legislative funding – November 10th
 - c. Public Informational Meeting (December 2015/January 2016)
 - i. Update residents on allocated funding, costs, vote and implementation timeline
 - ii. Prepare assessment district summary
 - d. Public Hearing and Assessment District Vote (Early 2016)
 - e. After a favorable project vote
 - i. Survey/Easements and Design – Spring and Summer 2016
 - ii. Advertisement for Bids – Fall 2016
 - iii. Construction – Spring 2017

The \$2.8 Million allocated by the North Dakota Legislature in HB 2020 will be formally requested for transfer by the BCWRD at their meeting on November 10th regular meeting. The BCWRD will place these funds into a separate project account and upon project completion, or as requested, will provide an accounting for use of these funds. It is our intent to provide updates on project status and expenditures as the BCWRD proceeds with design, bidding and construction. The current opinion of probable project cost is approximately \$3.8 Million. The final cost is dependent on market conditions in 2017.

Respectfully,



Terry Fleck, Chairman

Slides/Overview

- ✓ 2009 Ice Jam Flood - Missouri Aerial
- ✓ 2009 Ice Jam Flood - Fox Island Aerial
- ✓ 2011 Flood Extents without protection
- ✓ Project Feature and Flood Protection Area



Fox Island

2009 Ice Jam Flood Event



Date: 25MAR09
TOT: 13412
Location: South of Bismarck, ND
Latitude: N 46° 45.82' / Longitude: W 100° 50.91'
Object: Missouri River

Looking west over Fox Island



Larson Road



Unprotected Flood Limits Existing Conditions

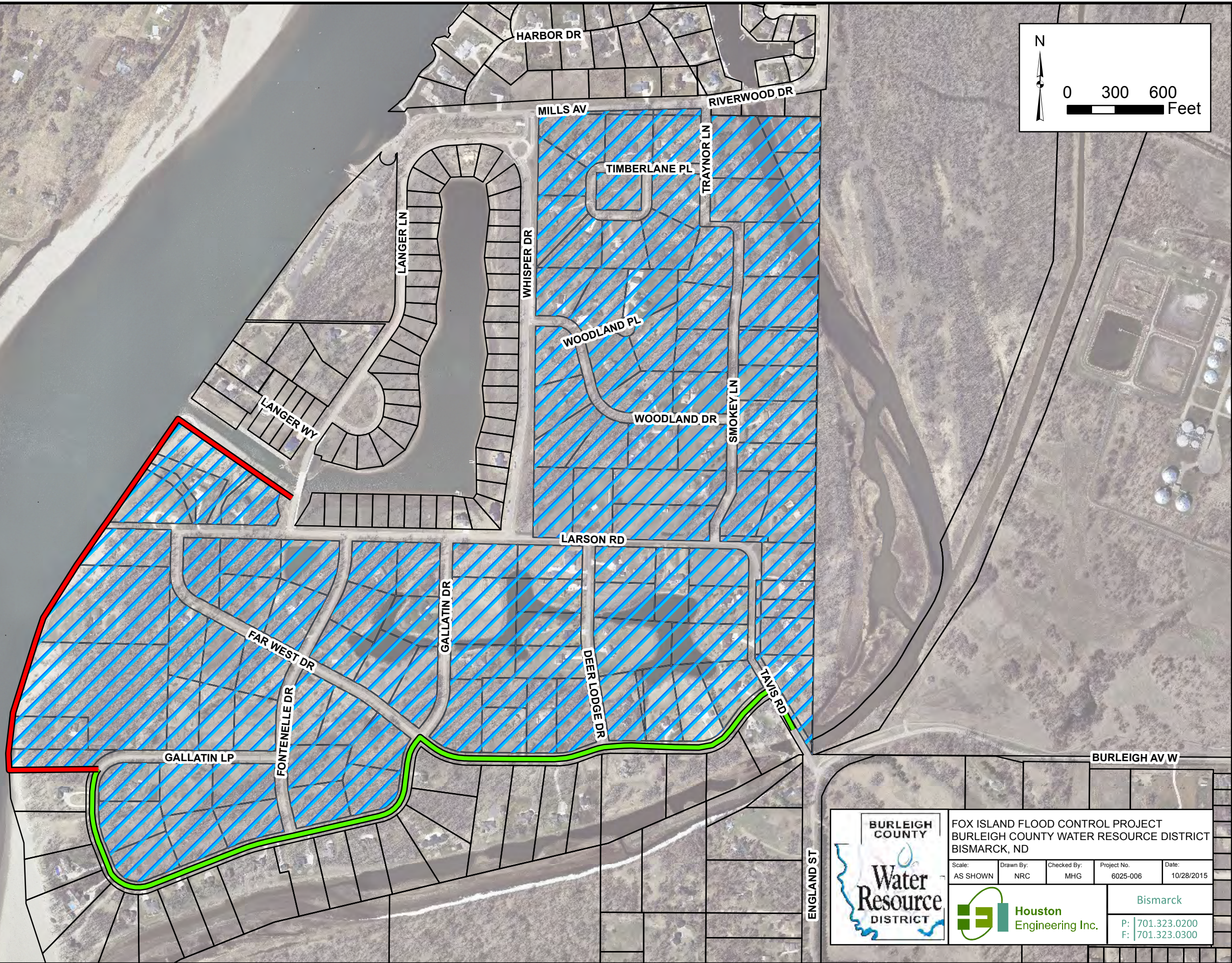
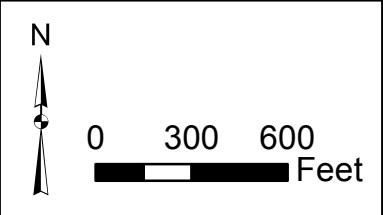
19.5 foot stage




Path: H:\Bismarck\UBN\6025 Burleigh Co. WPD\6025-006 Fox Island Flood Control\GIS\Maps\FINAL Fox Island Flood Control Project Overview.mxd


Legend

- Earthen Levee
- Grade Raise
- Protected Properties





BURLEIGH COUNTY
Water Resource DISTRICT

FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BISMARCK, ND				
Scale: AS SHOWN	Drawn By: NRC	Checked By: MHG	Project No. 6025-006	Date: 10/28/2015
 Houston Engineering Inc.				Bismarck
P: 701.323.0200				F: 701.323.0300



BURLEIGH COUNTY HIGHWAY DEPARTMENT

2000 NORTH 52ND STREET
BISMARCK, ND 58501-7900
701-221-6870
FAX 701-221-6872
www.burleighco.com

Request for County Board Action

DATE: November 18, 2013

TO: Kevin Glatt
County Auditor

FROM: Marcus J. Hall
County Engineer

RE: Direct County officials on how to proceed with the Burleigh County Water Resource District (BCWRD) request for funding of the Fox Island project.

Please include the following item in the November 18, 2013 Burleigh County Board packet.

ACTION REQUESTED:

Direct the proper County officials on how to answer the Burleigh County Water Resource District (BCWRD) request for funding of the Fox Island project.

BACKGROUND:

The summer flooding of 2011 exposed many residents of the Burleigh County area to extensive flood damage. In order to mitigate this damage in the future, Burleigh County staff and the BCWRD have developed a Master Plan for flood protection for the area. The Plan includes the construction of levees, the raising of road grades, and the installation of control structures to protect and provide access to area residents.

Flood protection project # 21 includes the construction of a levee around the south edge of Fox Island. In the time since the adoption of the Master Plan, the BCWRD has worked with the residents of the area in developing a plan that would work with the residents' needs. This plan has resulted in the attached BCWRD request to Lincoln Township. In summarizing the request, BCWRD is asking that Lincoln Township commit \$920,456 to this project. The exact extent of this project will be up to a vote of the residents of the area; however, this request limits the Township expenditure to the minimum required to raise both Tavis and Larson Roads to 20'. It is important to note that on several occasions Burleigh County has committed to protecting the residents of south Bismarck and the Bismarck Waste Water Treatment Plant to 20 ft. To date a project still needs to be defined and planned to meet this commitment.

Nevertheless, the Township Board also needs to take into account their current township fiscal condition. Currently, the township has a usable balance of \$455,000 but they are also already committed to over \$760,000 in projects on the Tavis Road Pump station and the grade raise on 48th Avenue and Washington Street. With this in mind, the Township will be in the red by the end of next year. Under current cash flow projections we should be back in the black by sometime in 2015 and be able to start funding this project by 2017.

Therefore, it is the Highway Department's recommendation that we reject any financial commitment for this project until 2017. If residents wish to proceed with one of the prescribed options they may do so, but the funding would need to be done by a special assessment district and State Water Commission funding.

In order to meet our previous obligation to south Bismarck residents and the protection of the Waste Water Treatment Plant, the Highway Department will develop an action plan that will include the temporary raising of both Tavis and Larson Roads when needed.

RECOMMENDATION:

It is recommended the Board review the attached request and advise the Highway Department on how to proceed.