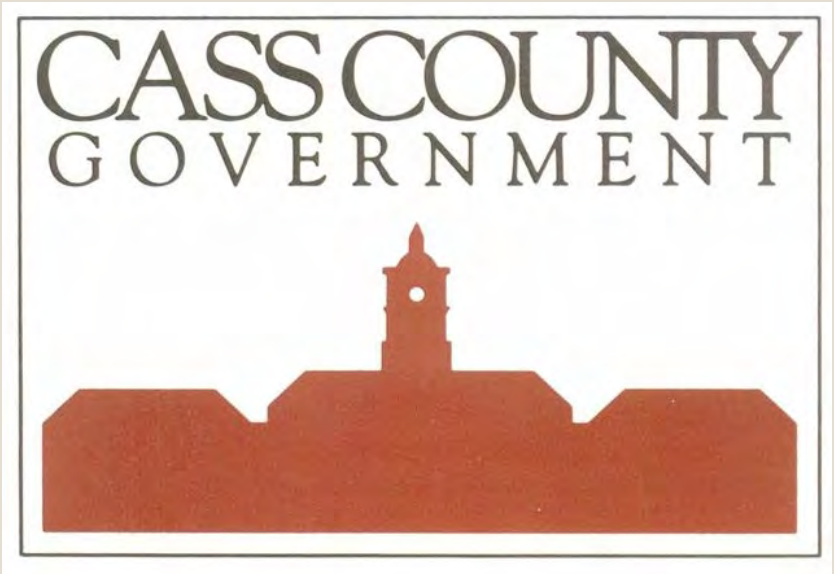


Rush River Watershed
Flood Risk Reduction Meeting

Governor's Inn, Casselton, ND
9:00 a.m.

Cass County Joint Water Resource District
April 8th, 2014

Welcome!

Bill Hejl - Introductions

- Please silence your cell phones
- Please sign the record of attendance
- Introduction of board members & staff
- Introduction of presenters

Introduction

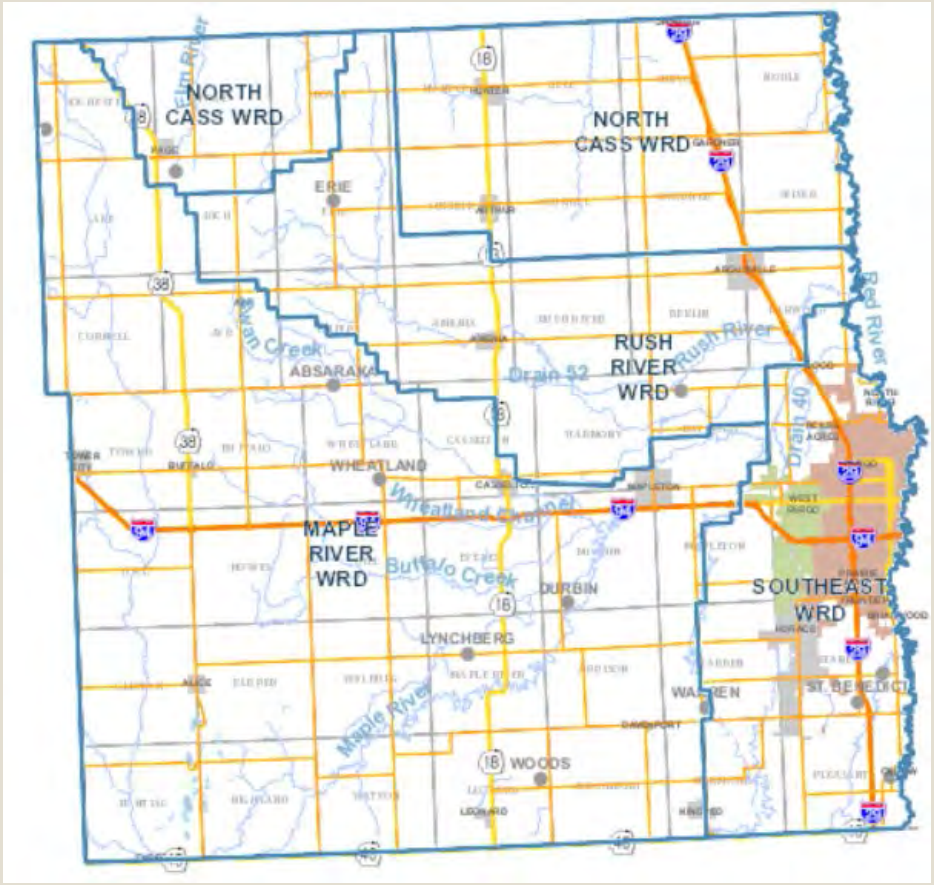
Rush River Watershed

- **Rush River Water Resource District**
  - Ray Wolfer, Chair
  - William Hejl, Vice Chair
  - Richard Sundberg

  - Appointed by Cass County Commission
  - Owns, operates, and collects assessments for several existing projects in the Rush River Watershed within Cass County

Introduction

- **Water Resource District Organization**
  - Cass County Joint WRD
  - Maple River
  - Rush River
  - North Cass
  - Southeast Cass



Introduction

- **Cass County Joint Water Resource District**
  - Mark Brodshaug, Chair (Southeast Cass)
  - Rodger Olson, Vice Chair (Maple River)
  - Raymond Wolfer (Rush River)
  - Michael Buringrud (North Cass)
  - Dan Jacobson (Southeast Cass)

  - Appointed by individual WRD boards
  - Constructed the Maple River Dam
  - Develops detention projects within Cass County

Introduction

- **Presenters**
  - Chad Engels – Moore Engineering
  - Pat Downs – Red River Retention Authority
  - Jon Roeschlein – Bois De Sioux Watershed District
    Wheaton, MN

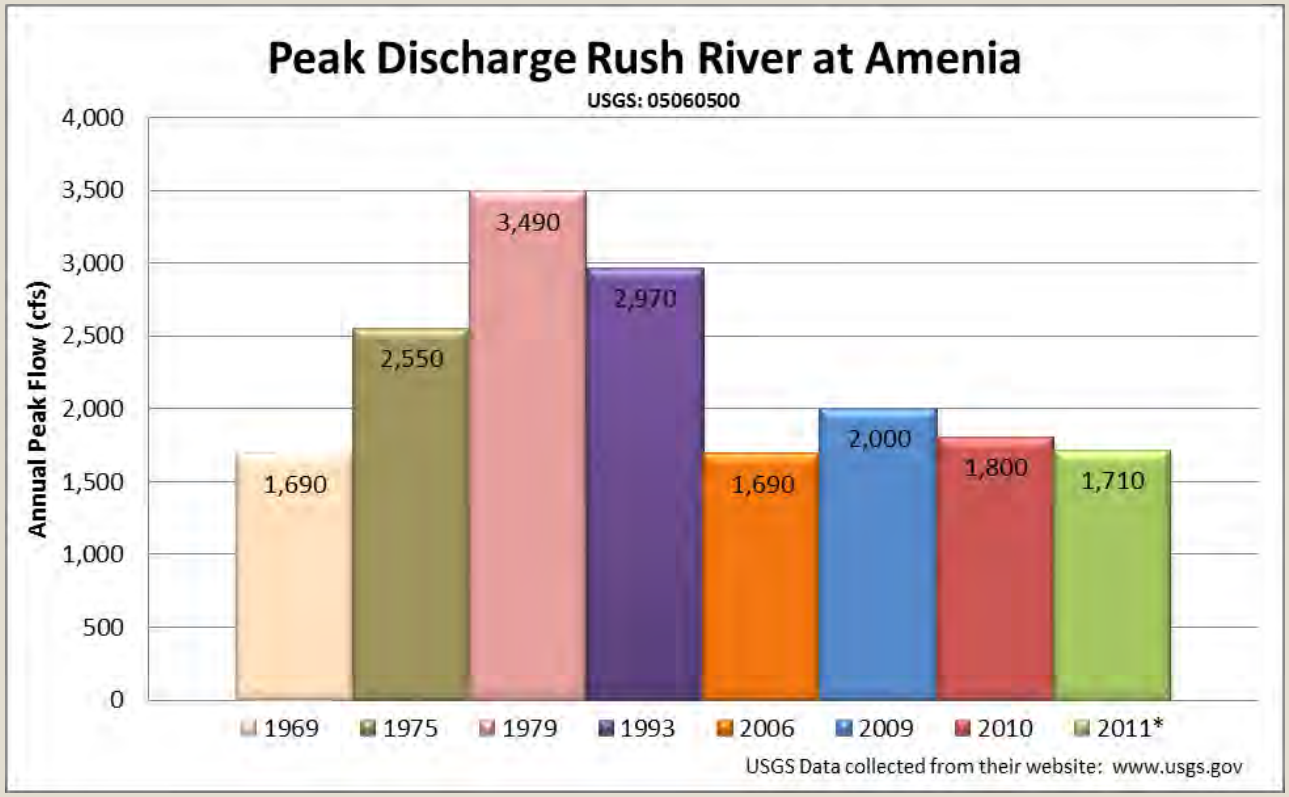
Introduction

- **Questions we hope to answer…….**
  - Why are we having this meeting?
  - Why now?
  - What is the cost?
  - What are the benefits?
  - What is the schedule?
  - How would these projects work?
  - What would these projects look like?
  - Who are flood risk reduction projects for?

Chad Engels, PE
Moore Engineering, Inc.

Why.....

- **Why are we having this meeting?**
  - Repetitive flooding - 4 historic floods in past 9 years
  - Record floods occur in the summer too
  - July 2, 1975



<u>Top 8 Floods</u>
1947 – Current
(67 year gage record)

2009 Spring Flood

2010 Spring Flood

2009 Spring Flood

2011 Spring Flood

2011 Spring Flood

2011 Spring Flood

2009 Spring Flood

2011 Spring Flood

2009 Spring Flood

Delayed Planting

Summer Floods - Crops

- **Why now?**
  - Frequent flooding…spring & summer
  - Affordability…new funding sources!
    - New ND State Water Commission cost share policy
    - New Federal Farm Bill funding
    - Increased Red River Joint WRD cost share (recent)
    - Cass County sales tax (recent)
  - Technology
    - Recent completion of LiDAR and G.I.S. based watershed models

Who will benefit?

- **Who will flood risk reduction be for?**
  - Any future flood risk reduction project constructed in the Rush River Watershed should be built for the purpose of reducing flooding in the Rush River Watershed.
  - Projects should be constructed for the primary purpose of benefitting local agriculture and the local rural community in the Rush River Watershed. Projects should also benefit the City of Amenia.
  - Projects should <u>not</u> be constructed for the primary purpose of benefitting Red River communities, although these areas would benefit secondarily.
  - Local benefits must outweigh local costs!

Funding……

Pat Downs

Red River Retention Authority

- Cost Share Partners
  - **North Dakota State Water Commission**
    - 60% cost share (no federal participation)
    - 50% (with federal participation)
    - Easements and lands are cost share eligible

Funding……

- Cost Share Partners
  - **Federal Farm Bill**
    - PL-566 (NRCS Small Watershed Protection Program)
    - Absaraka Dam was a PL-566 project
    - $5 Million cap per project likely (existing rule)
    - 4,000 AC-FT project cap likely (existing rule)

Funding……

- Cost Share Partners
  - **Red River Joint Water Resource District**
    - Collects 2 mills from each member county annually
    - 65% cost share (non-state, non-federal)
    - Easements and lands are cost share eligible

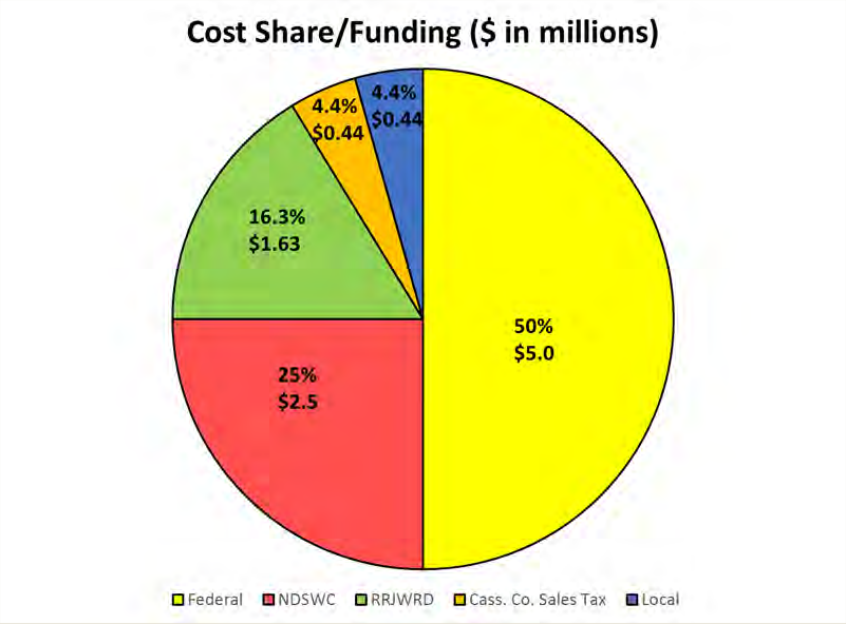
Funding……

- Cost Share Partners
  - **Cass County Funding**
    - Flood Control Measure Sales Tax (1/2 cent)
    - 20 years: April 1, 2011 – March 31, 2031
    - 50% Cost Share (non-federal, non-state, non-RRJWRD)

Example $10.0 Million Project

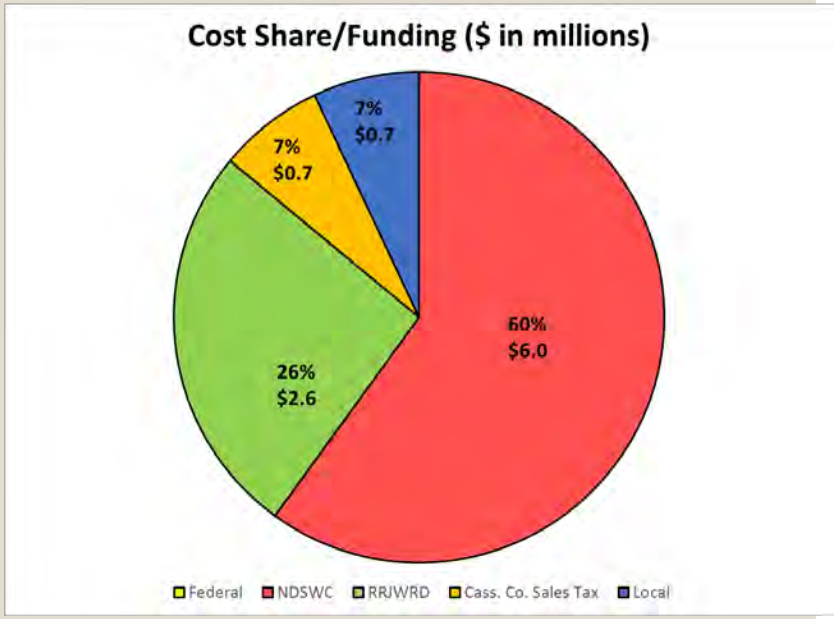
With Federal Funding

	Cost Share (%)	Total Funding ($ in millions)
Federal	50	5
NDSWC (50% non-federal)	25	2.5
RRJWRD (65% non-federal, non-state)	16.3	1.6
Cass Co. Sales Tax	4.4	437.5 k
Local*	4.4	437.5 k
Total	**100**	**10**



Without Federal Funding

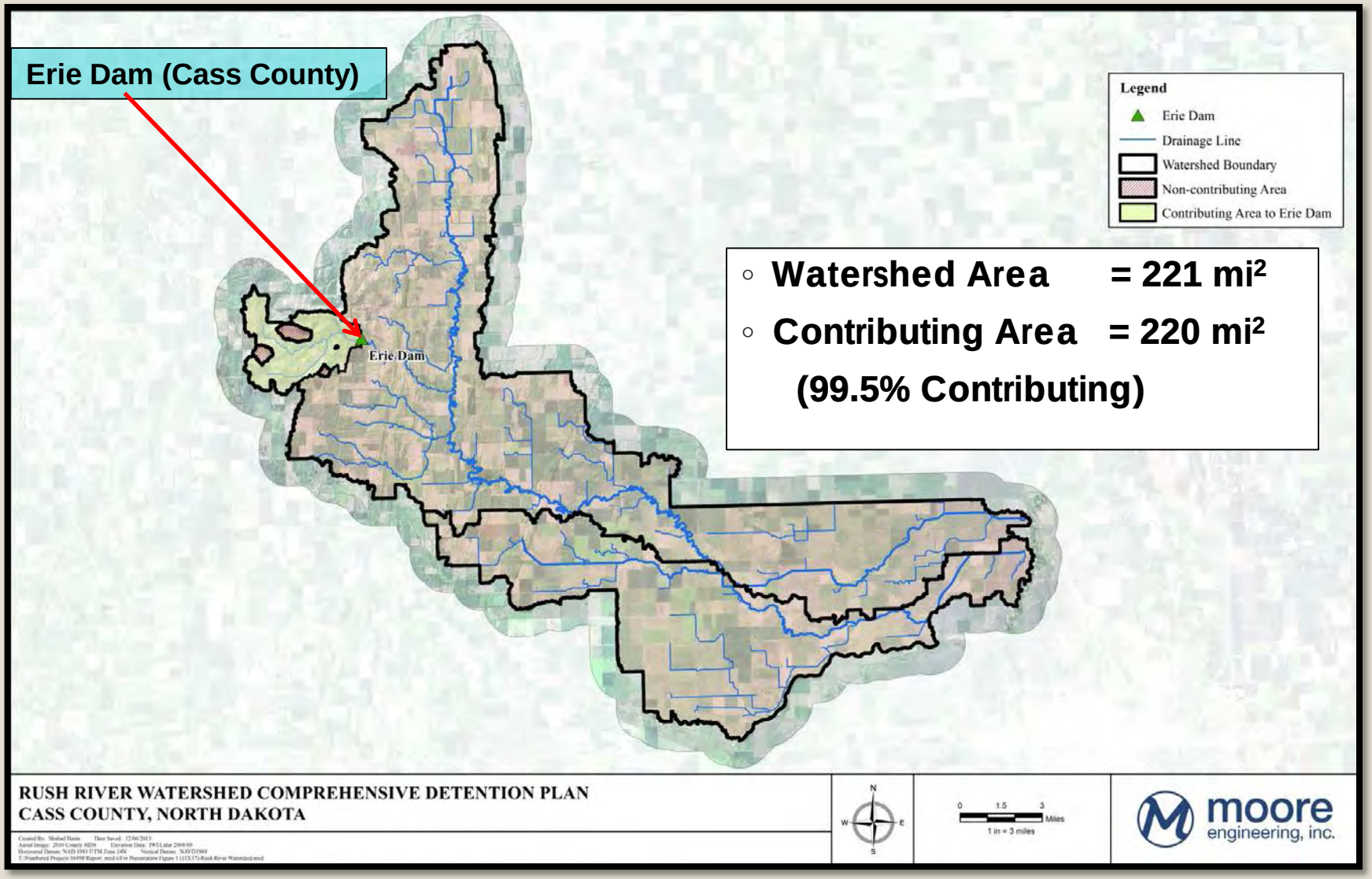
	Cost Share (%)	Total Funding ($ in millions)
Federal	0	0
NDSWC (60% non-federal)	60	6
RRJWRD (65% non-federal, non-state)	26	2.6
Cass Co. Sales Tax	7	700 k
Local*	7	700 k
Total	**100**	**10**



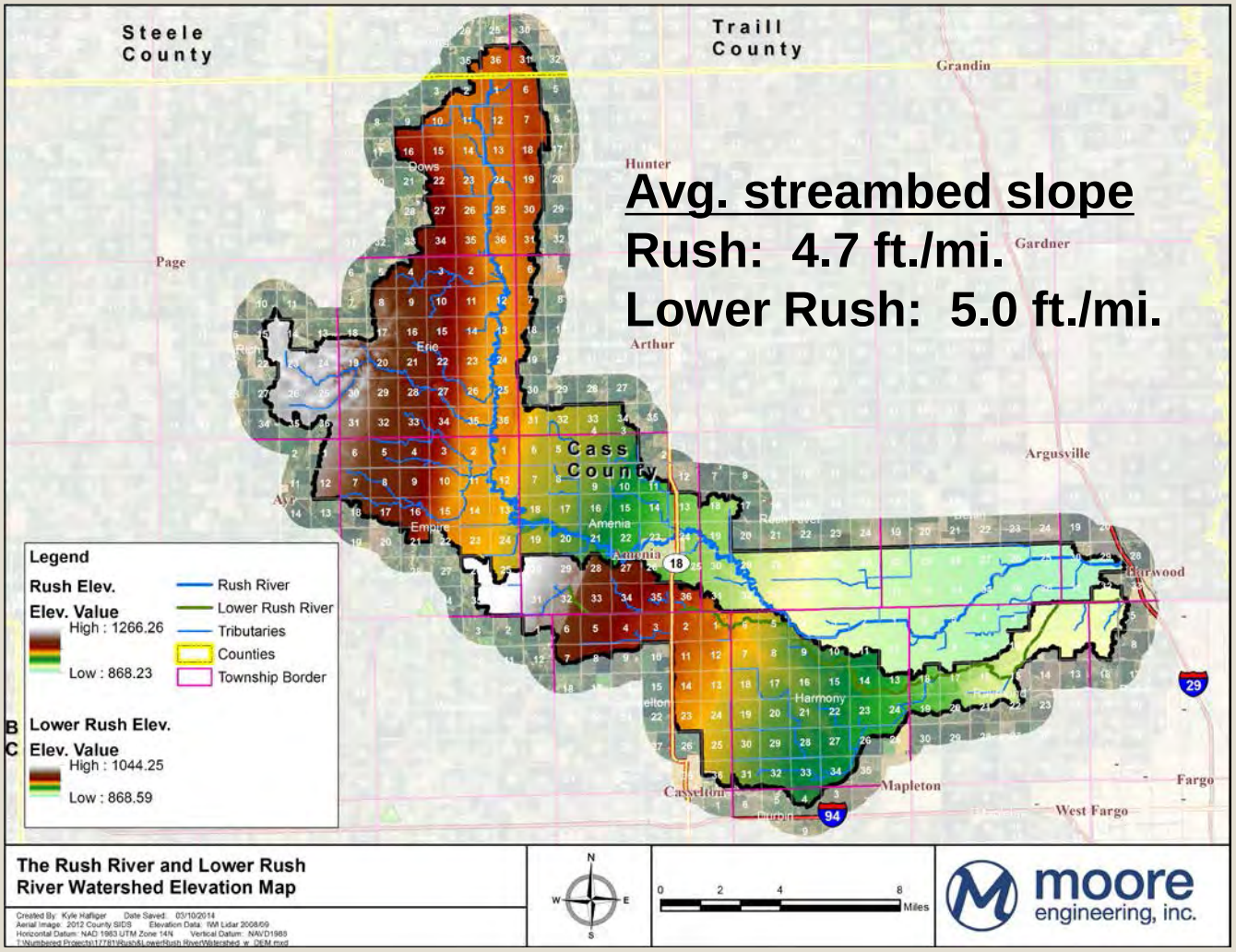
Funding……

- **Funding Summary**
  - Local cost relatively small for Detention Projects
  - With federal funding, local cost can be less than 5% of the total project cost
  - Without federal funding, local cost can be less than 10% of the total project cost

Rush River Watershed



Rush River Watershed



Rush Watershed:

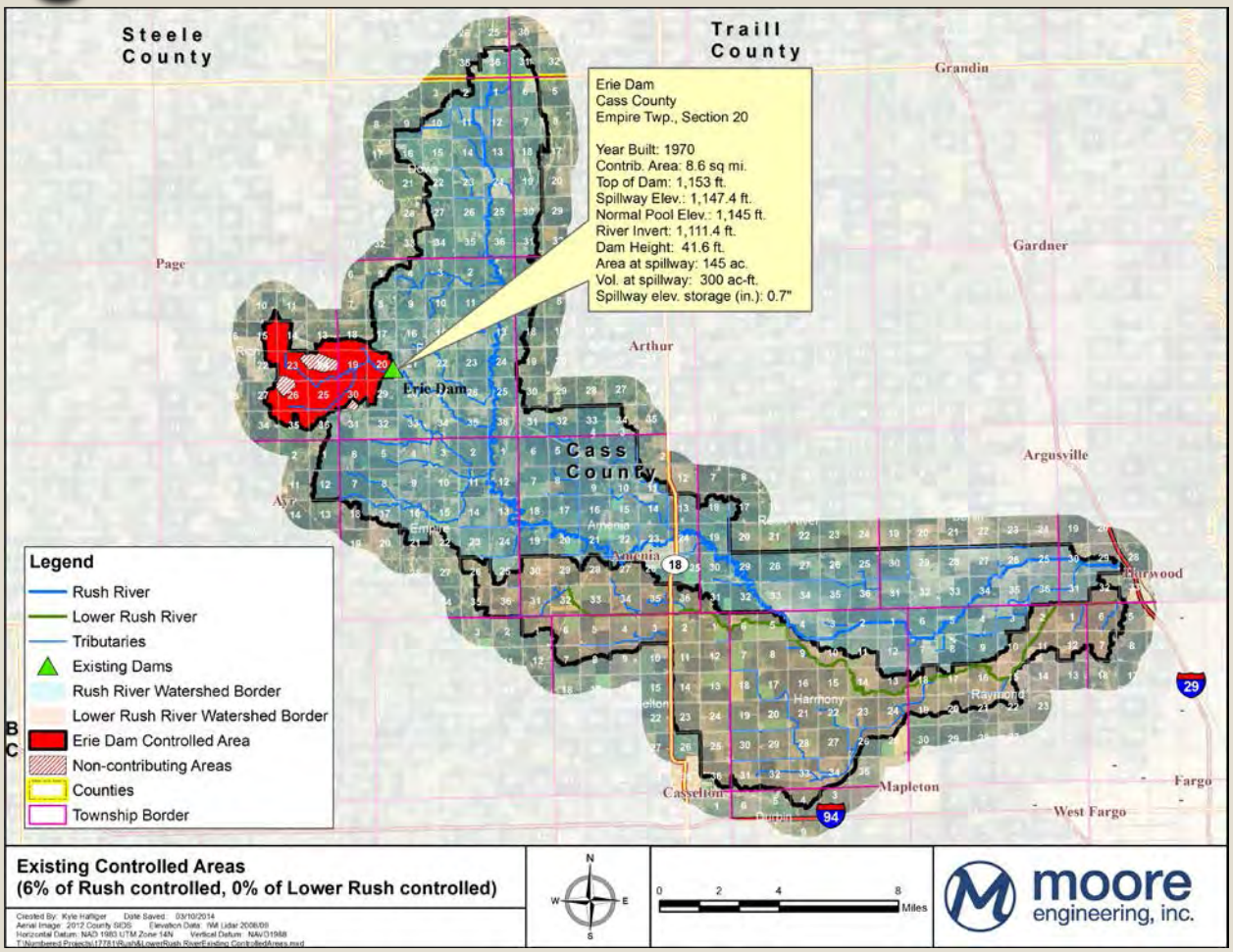
Highest Elev:	1,266 ft.
Lowest Elev.:	868 ft.
Fall:	398 ft.

Lower Rush Watershed:

Highest Elev.:	1,044 ft.
Lowest Elev.:	869 ft.
Fall:	176 ft.

* Based on 2008 LiDAR data

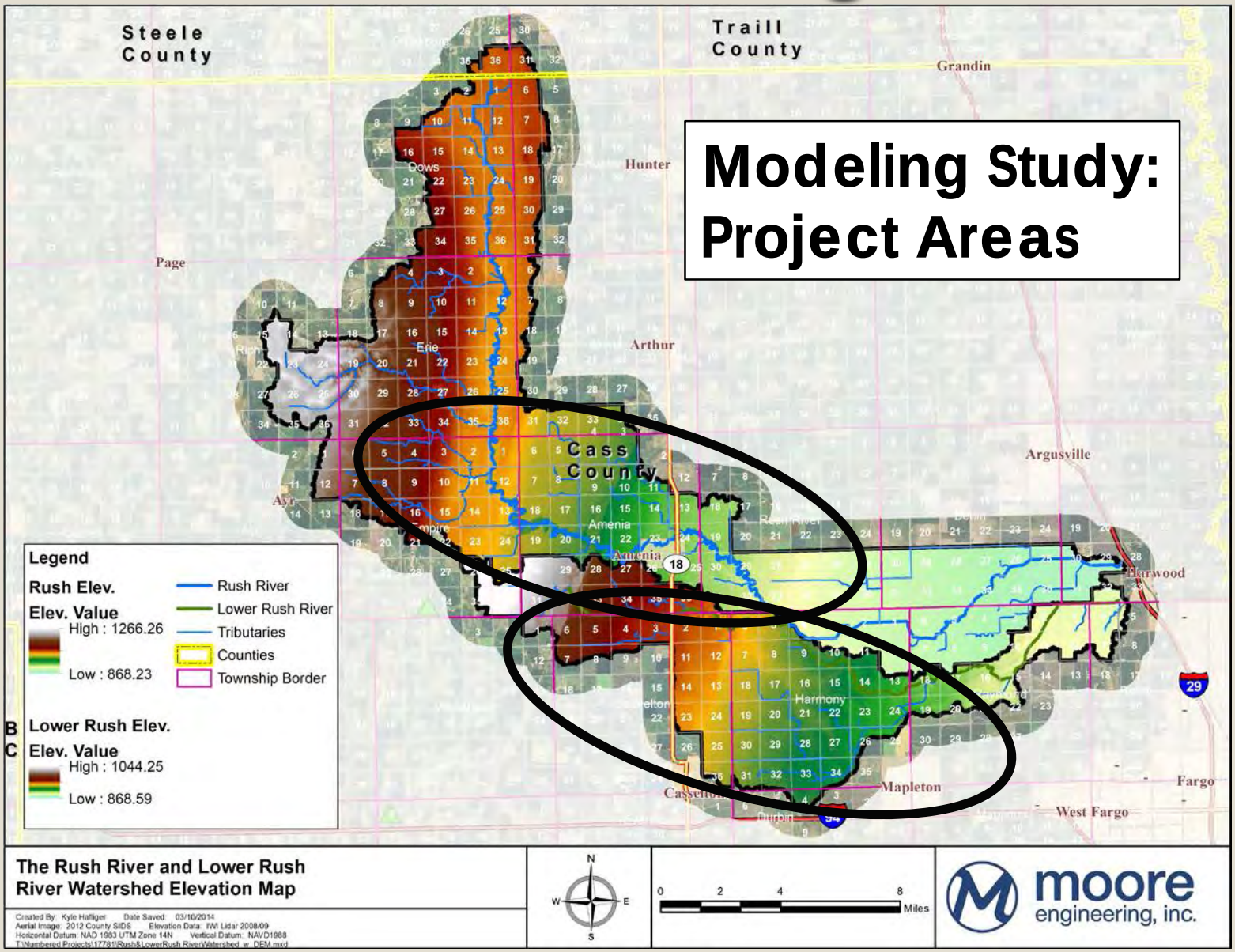
Existing Dam – Erie Dam



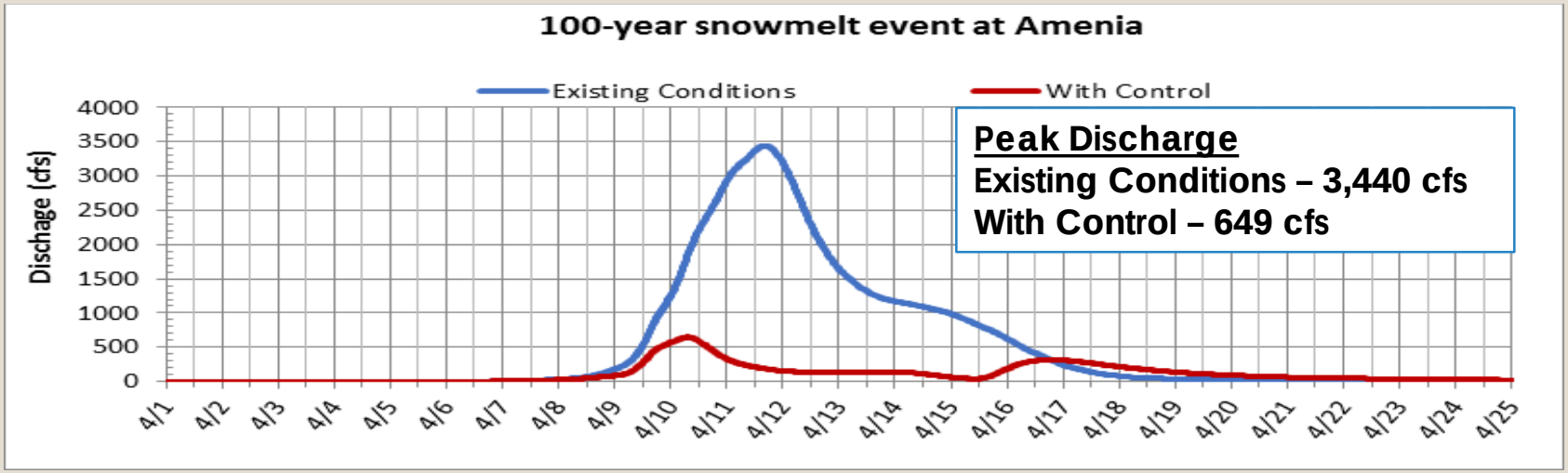
Erie Dam controls less than 5% of the Watershed

Primary Purpose is Recreation

Flood Reduction Modeling

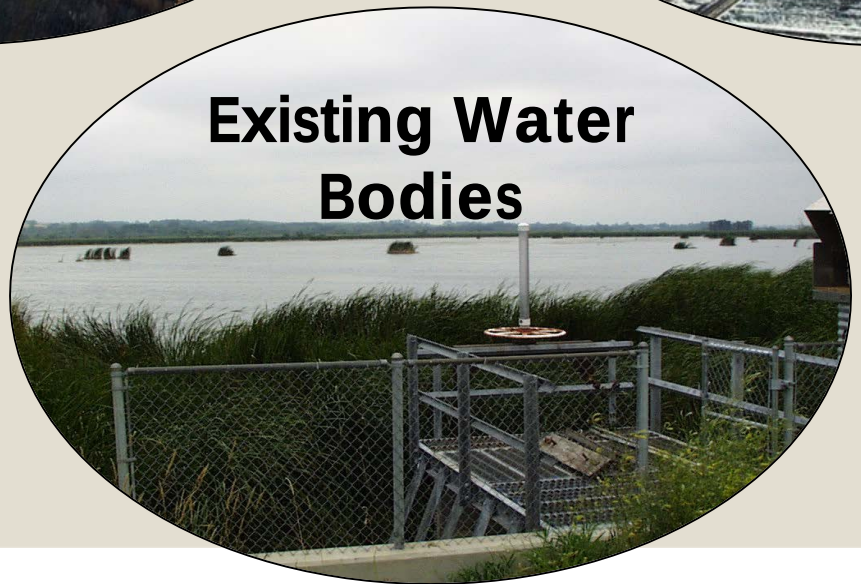


Flood Reduction Benefits



Peak reduction: 81% **Volume reduction: 80%**

How Does it Work?



Example Off-Channel Detention

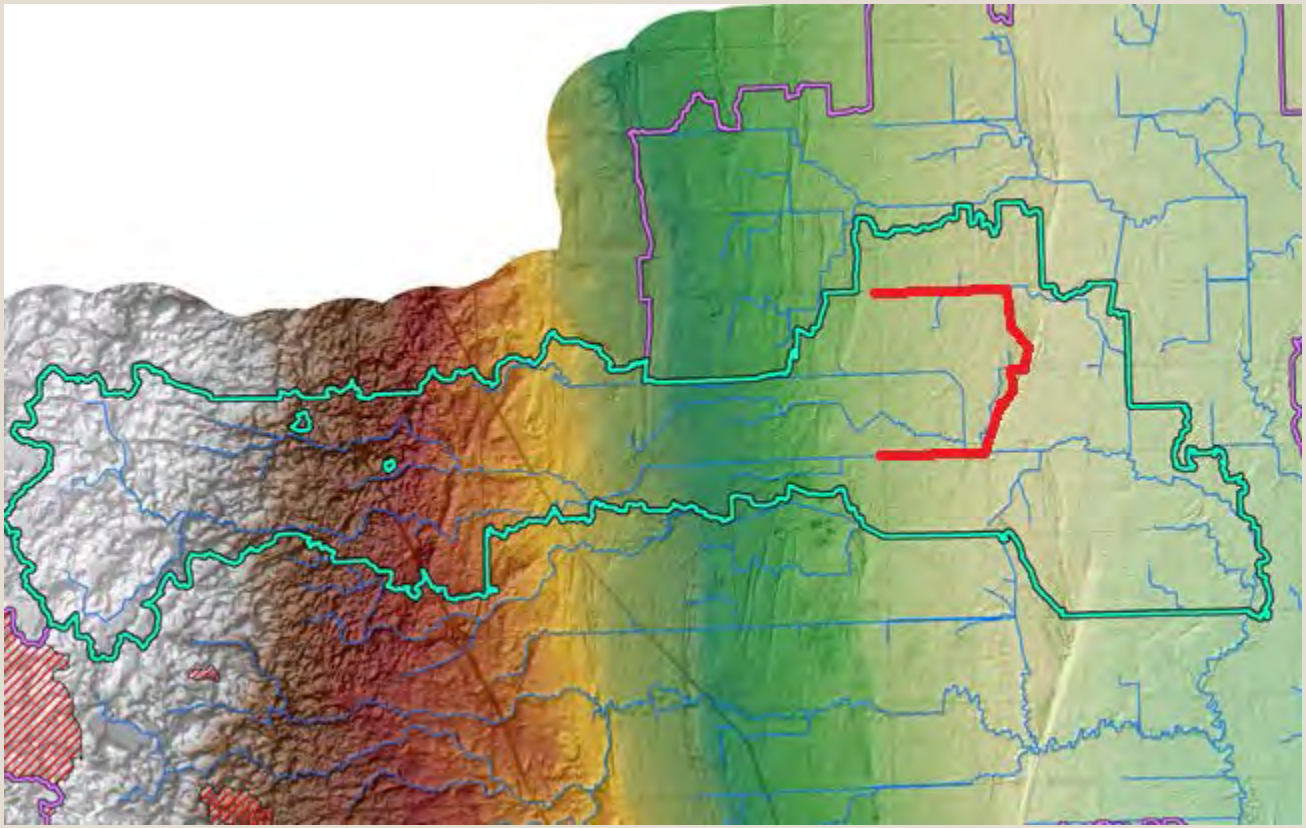
Example Off-Channel Detention

Site Selection Method

- **Site Identification Criteria**
  - **Control minimum of 20 square miles (if possible)**
  - **Store a minimum of 3 inches of runoff (if possible)**
  - **Avoid impact to residential structures / infrastructure**
  - **Avoid mainstem locations where permitting will be overly burdensome if possible**
  - **Primarily select sites with less environmental impacts where practical**
  - **Minimize impacts to farmland**
  - **Reasonable levee heights & inundation impacts**
  - **Sites can be gated or ungated depending on circumstances**
  - **Dry storage concept for majority of storage area**

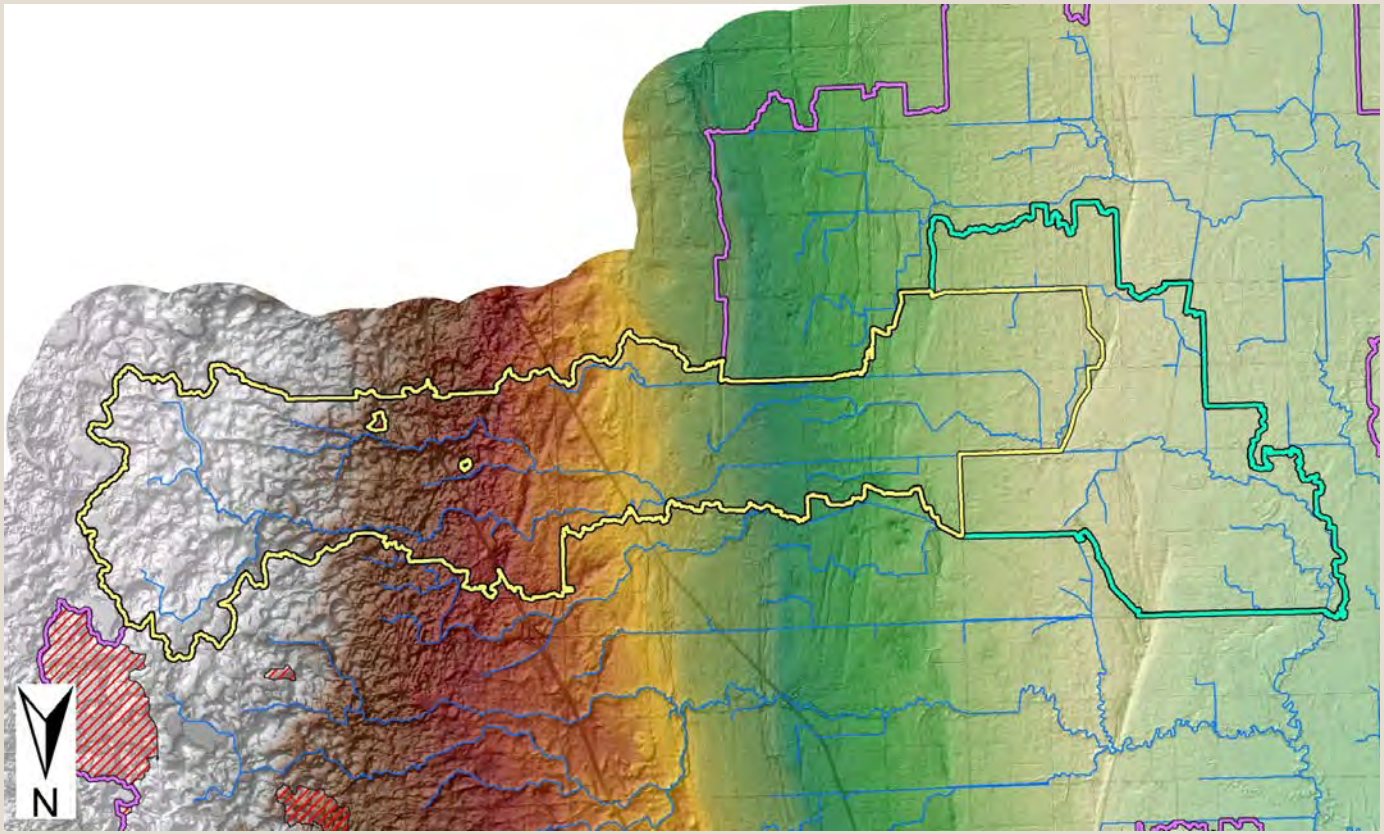
Example Site Selection

Identify Project Location



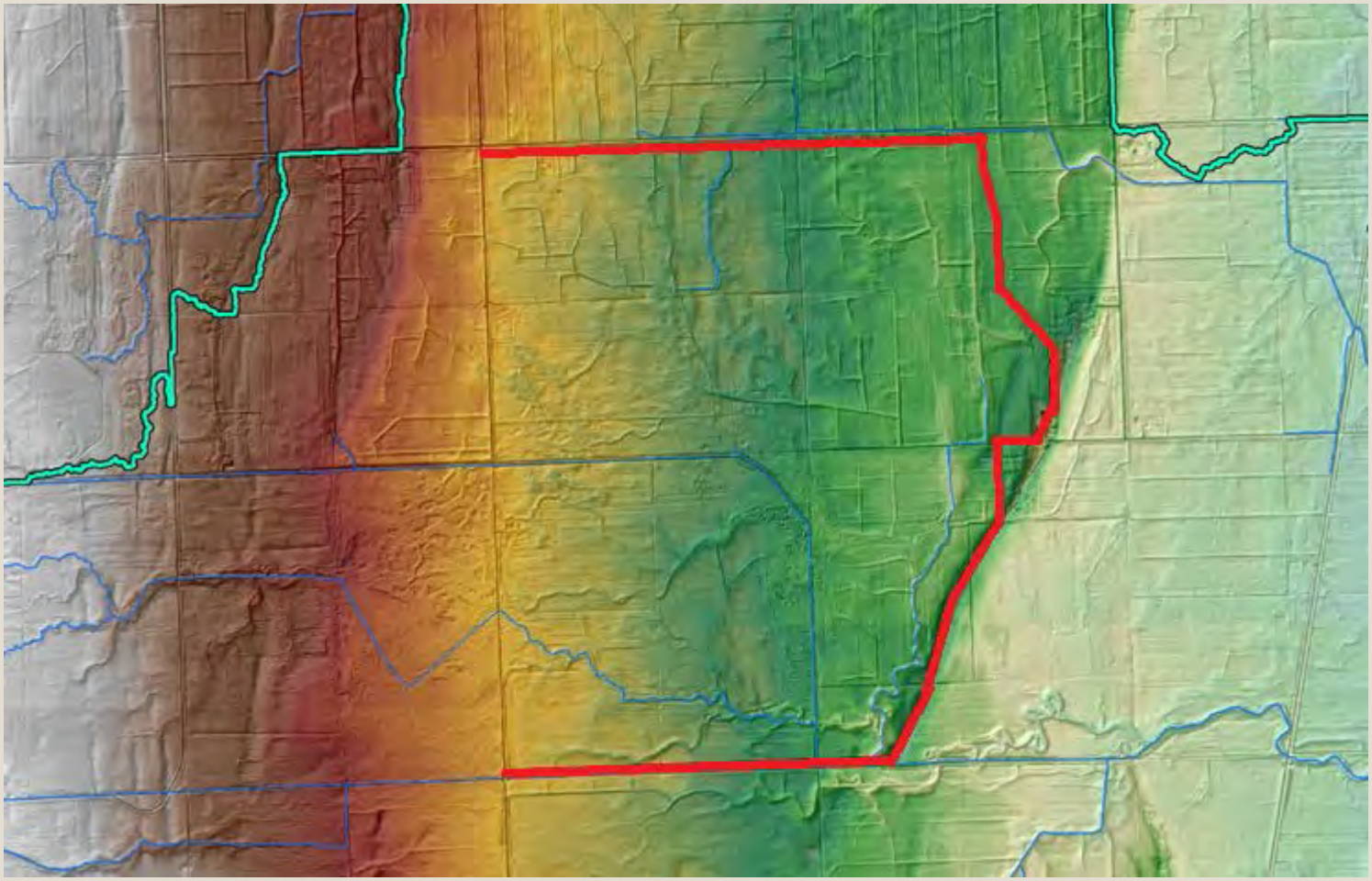
Example Site Selection

Determine Contributing Area



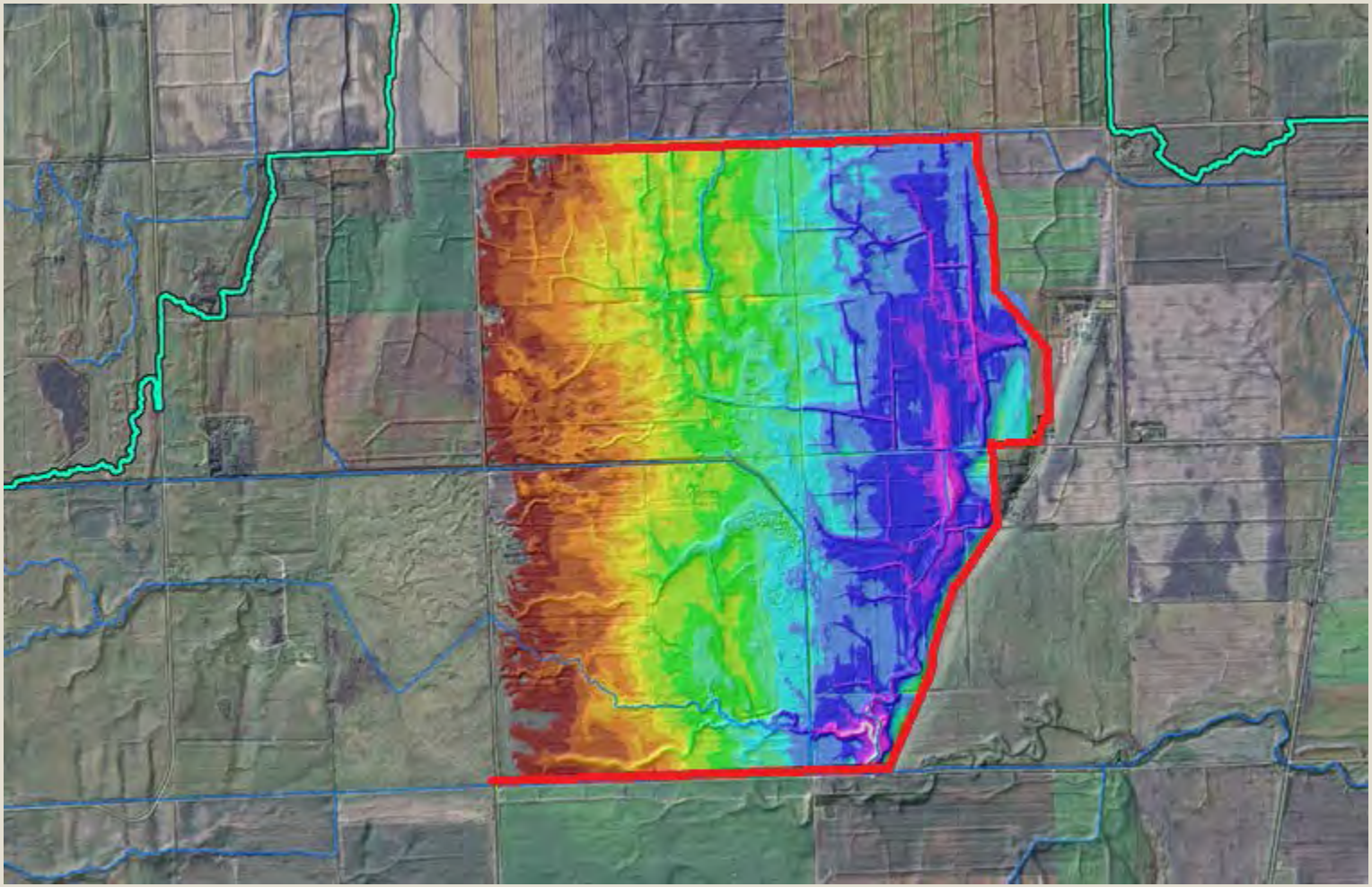
Example Site Selection

Refine Site to Meet Storage Goal



Example Site Selection

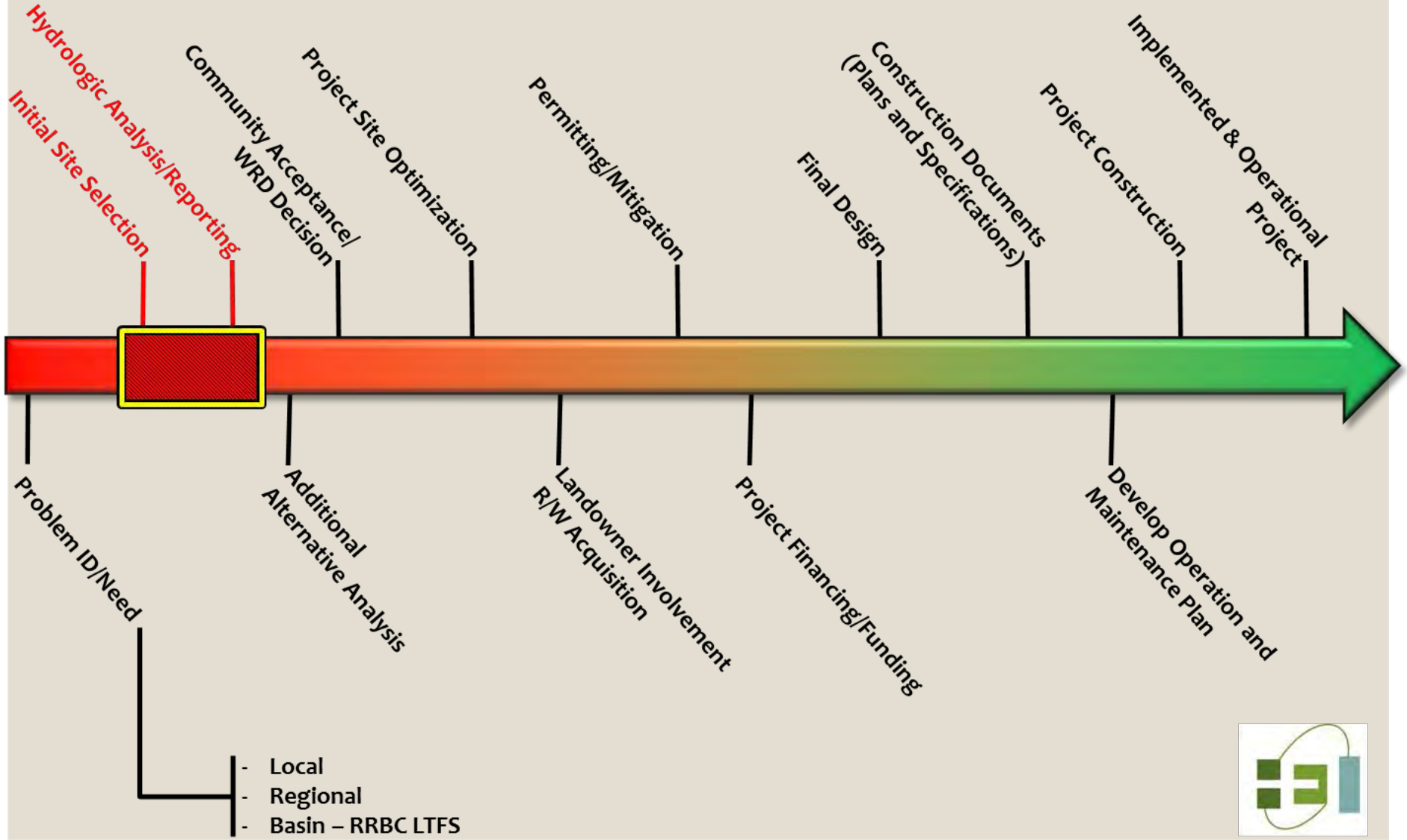
Inundation Depth



Goals……

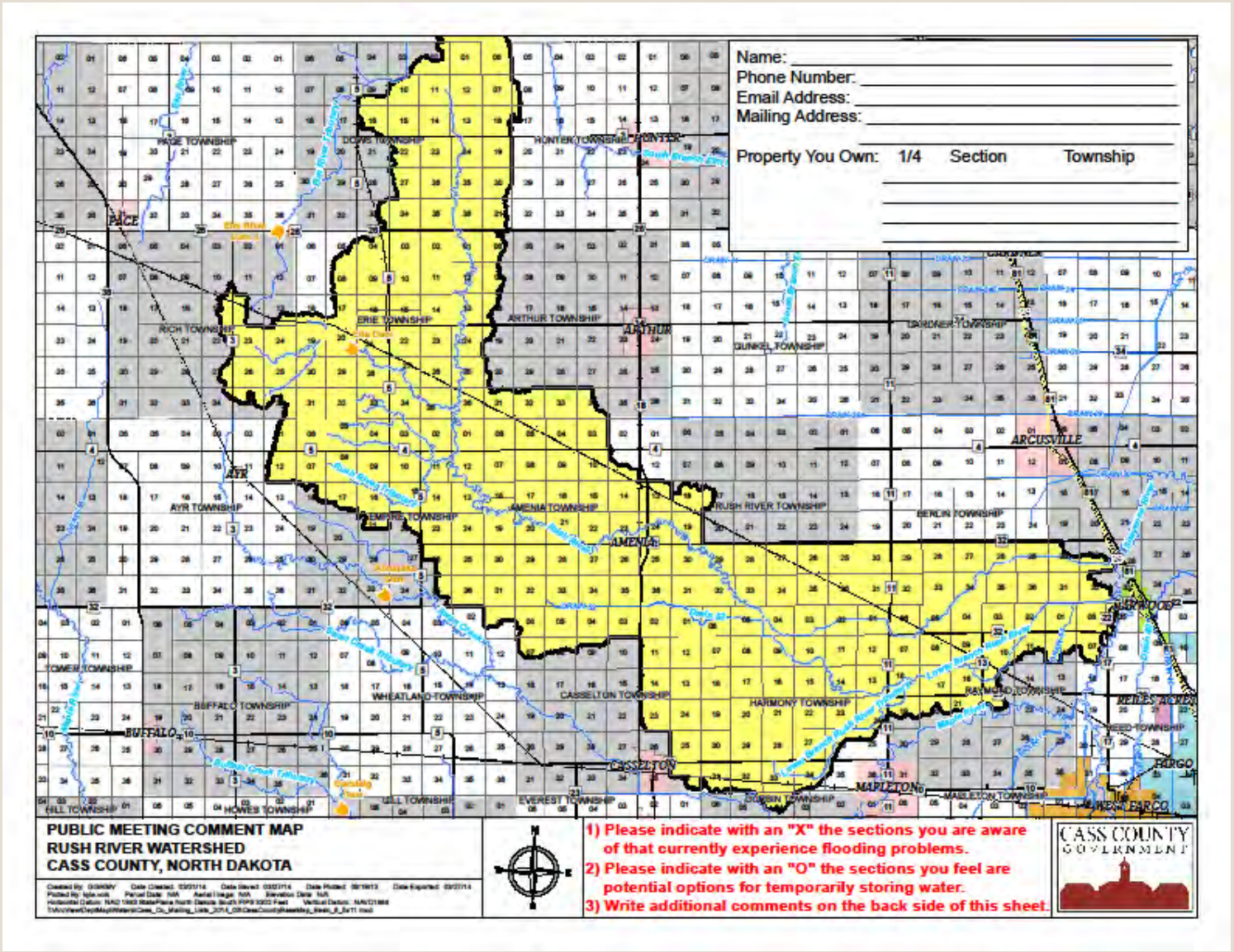
- **Project Goals**
  - **Fairly compensate landowners**
  - **Continue to farm majority of project interior!**
  - **Tile interior of project**
  - **Utilize entire project for spring runoff**
  - **Utilize a portion of the project for frequent summer flood reduction benefits**
  - **Determine fair compensation method if project is needed for extreme summer flooding**
  - **Incorporate water quality benefits within a portion of the project.**

Schedule

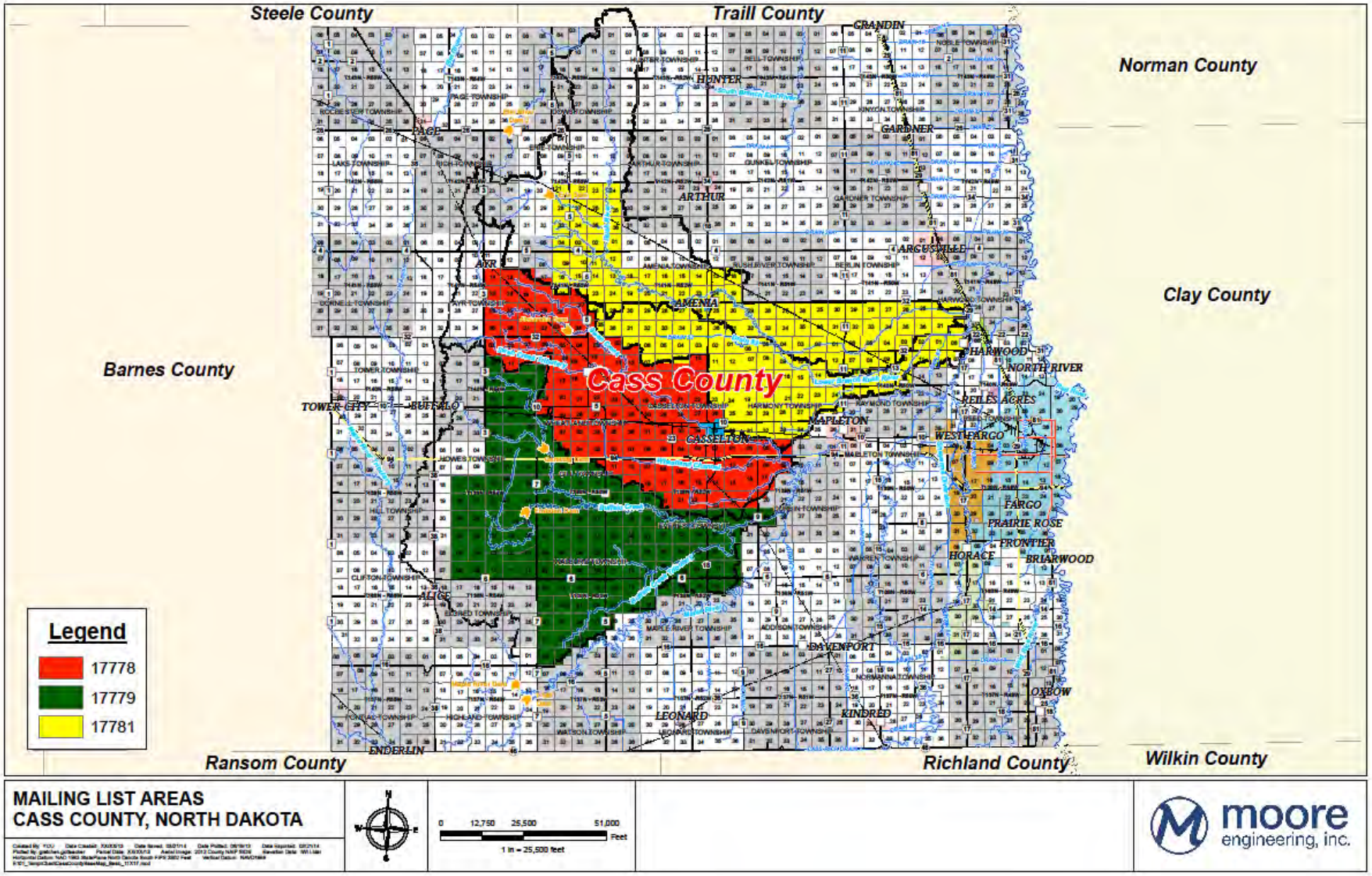

Hydrologic Analysis/Reporting
Initial Site Selection
Community Acceptance/ WRD Decision
Project Site Optimization
Permitting/Mitigation
Final Design
Construction Documents (Plans and Specifications)
Project Construction
Implemented & Operational Project
Problem ID/Need
Additional Alternative Analysis
Landowner Involvement R/W Acquisition
Project Financing/Funding
Develop Operation and Maintenance Plan
- Local
- Regional
- Basin – RRBC LTFS

North Ottawa Presentation

Handout Map


Name:
Phone Number:
Email Address:
Mailing Address:
Property You Own: 1/4 Section Township
PUBLIC MEETING COMMENT MAP
RUSH RIVER WATERSHED
CASS COUNTY, NORTH DAKOTA
1) Please indicate with an "X" the sections you are aware of that currently experience flooding problems.
2) Please indicate with an "O" the sections you feel are potential options for temporarily storing water.
3) Write additional comments on the back side of this sheet.
CASS COUNTY GOVERNMENT
PAGE TOWNSHIP
DAVIS TOWNSHIP
HUNTER TOWNSHIP
HUNTER
ERIE TOWNSHIP
ARTHUR TOWNSHIP
ARTHUR
GUNKEL TOWNSHIP
ARCUSVILLE
AYR TOWNSHIP
AMENIA TOWNSHIP
AMENIA
RUSH RIVER TOWNSHIP
BERLIN TOWNSHIP
TOWER TOWNSHIP
WHEATLAND TOWNSHIP
BUFFALO TOWNSHIP
BUFFALO
CASSELTON TOWNSHIP
CASSELTON
HARMONY TOWNSHIP
REILES ACRES
REED TOWNSHIP
FARGO
MAPLETON
MAPLETON TOWNSHIP
WEST FARGO
HILL TOWNSHIP
HOWES TOWNSHIP
EVEREST TOWNSHIP

Mailings


Steele County
Traill County
Norman County
Clay County
Barnes County
Ransom County
Richland County
Wilkin County
Cass County
GRANDIN
HUNTER
PAGE
GARDNER
ARTHUR
AYR
ARGUSVILLE
AMENA
HARWOOD
NORTH RIVER
RIETZ ACRES
TOWER CITY
BUFFALO
KAPPLETON
CASSELTON
WEST FARGO
FARGO
PRAIRIE ROSE
FRONTIER
HORACE
BRIARWOOD
DAVENPORT
OXBOW
KINDRED
LEONARD
ENDERLIN
Legend
17778
17779
17781
MAILING LIST AREAS
CASS COUNTY, NORTH DAKOTA
0 12,750 25,500 51,000 Feet
1 in = 25,500 feet
moore engineering, inc.

Flood Related Costs

Cass County Highway Department

- 2009 County Road & Bridge Total $4.3 Million
- 2010 County Road & Bridge Total $2.4 Million
- 2011 County Road & Bridge Total $3.4 Million

Townships

- ???

Agriculture

- ???