





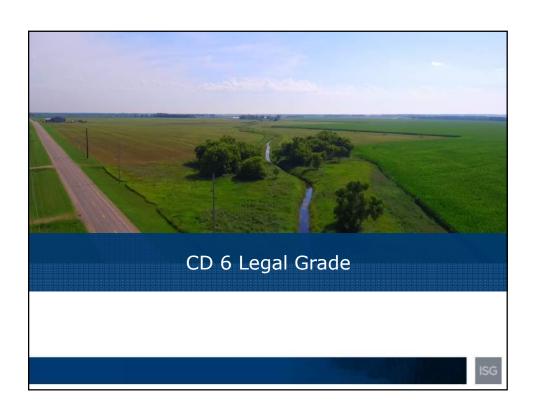
1907 Original Construction

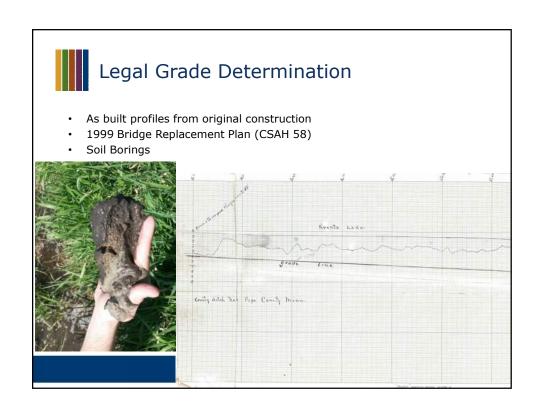
- 45,350 feet of Open DitchMainline, Branch 1, Branch 2

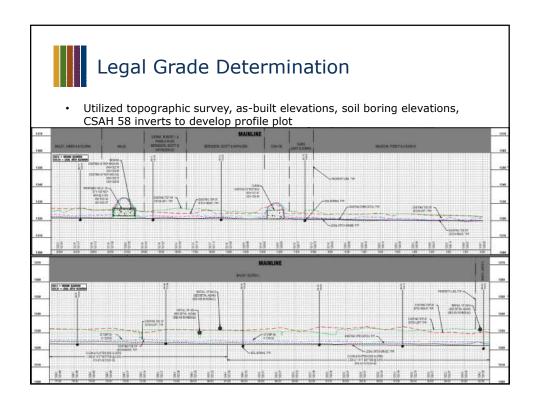
1996 Minor RepairsSome cleaning and bank slope repairs

- Other Minor Repairs
 1999 Bridge Replacement (CSAH 58)
 - Other undocumented repairs













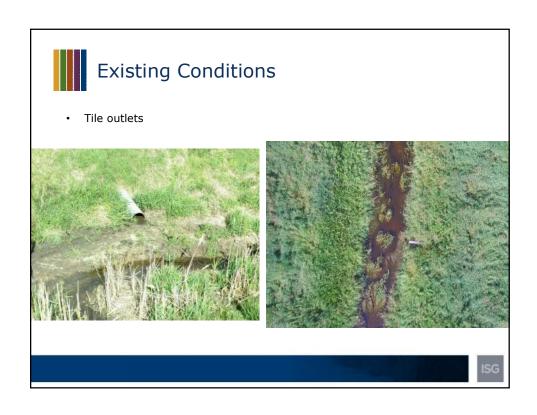




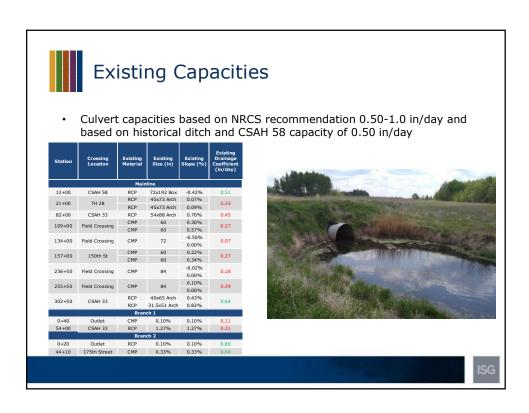










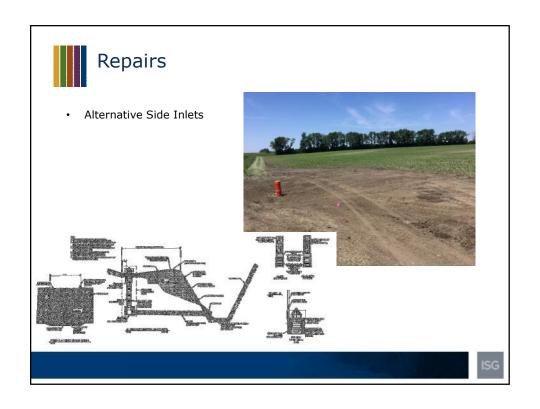


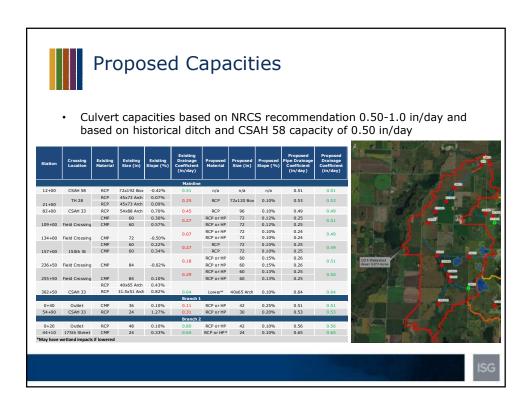












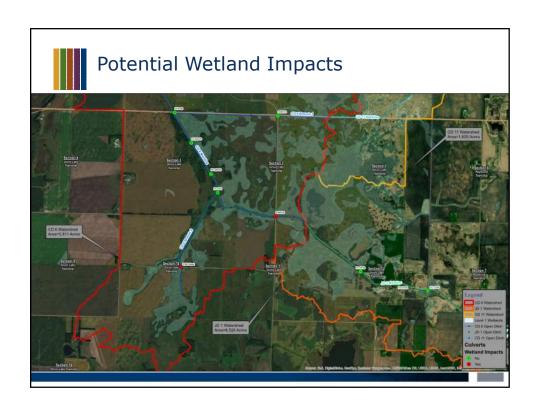




- Identified wetlands through level 1 aerial review-Types 1 through 4
- Potential wetland impacts calculated with Van Schifgaarde equation
- Compared lateral effects of lowering culverts and cleaning ditch
- Future review with BWSR/WCA for impacts and potential mitigation

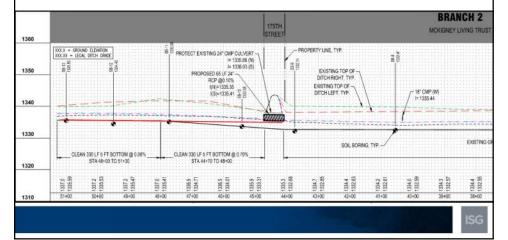
Station	Crossing Location	Lateral Effect From Lowering Culvert (ft)	Potentail Lateral Effect Area (AC)		
Mainline					
237+00	Field Crossing	1.5	0.04		
256+00	Field Crossing	2.4	0.02		
302+00	CSAH 33	18.3	2.27		
Branch 1					
0+00	Field Crossing	1.2	0.02		
Branch 2					
0+00	Field Crossing	3.4	0.03		
44+50	175th Street	16.1	1.21		

SG





- 175th Street-Branch 2
- 0.04 acre impacts under this option

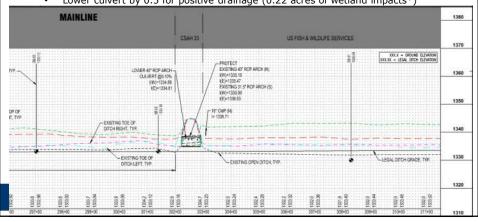




Potential Wetland Impacts

- · CSAH 33-Mainline
- Has major impacts on DNR Public Waters and USFWS
- Culvert is over 2-feet high with upstream areas of JD 1 over excavated
- Lower culvert by 0.2 feet for flat drainage from 490th Ave (0.02 acres of wetland impacts

Lower culvert by 0.5 for positive drainage (0.22 acres of wetland impacts*)









Public Waters Impacts

- Repairs in Public Waters will be avoided
- · No repairs to outlet structures or berm structures
- · No fill placed in Public Waters or wetlands

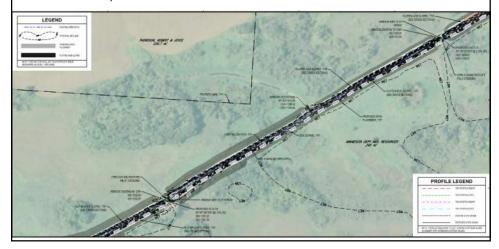


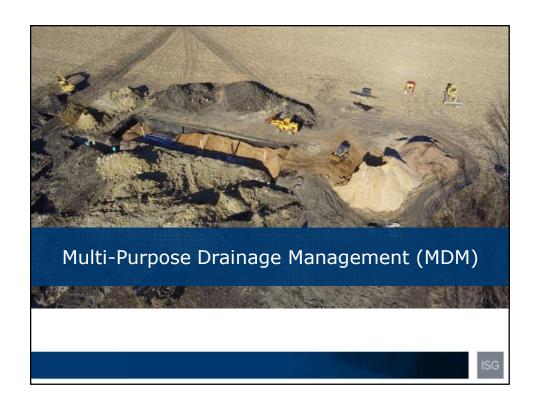
SG



Public Waters Impacts

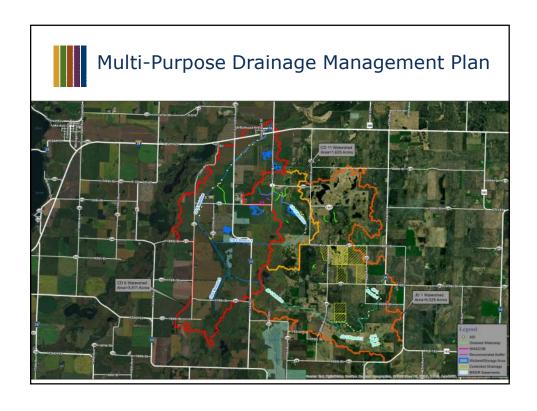
- · Repairs in Public Waters will be avoided
- No repairs to outlet structures or berm structures
- No fill placed in Public Waters or wetlands





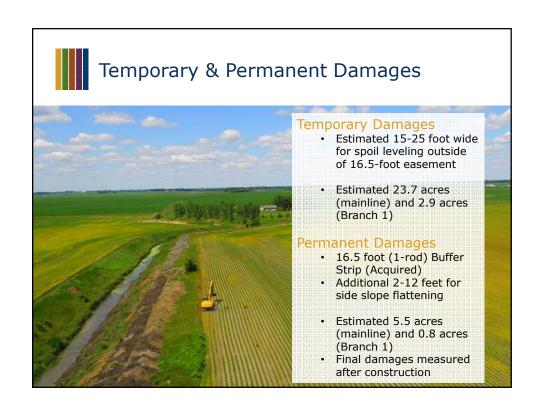


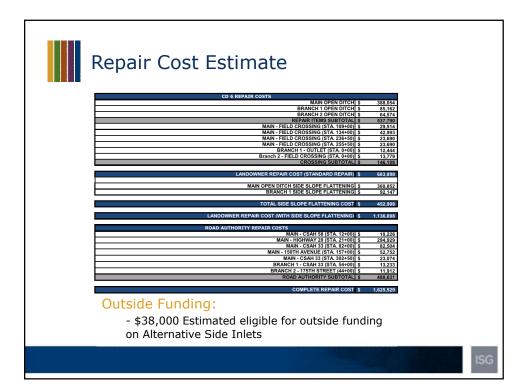






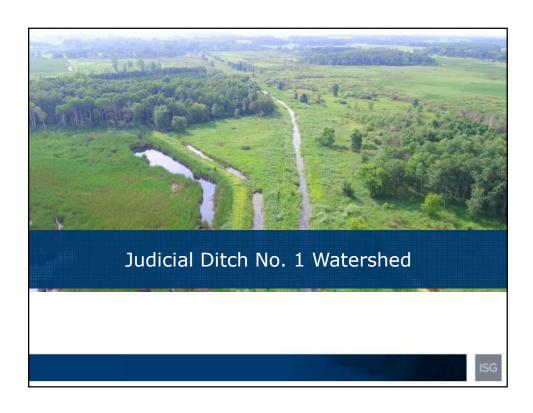








- CD 6 is in need of repair to address sedimentation, vegetation, culvert repairs, and erosion
- Typical ditch repairs occur 8-10 years, CD 6 is beyond average maintenance period
- Repairs to CD 6 should follow the items listed in the repair report to address ditch maintenance, and limit wetland and public water impacts









JD 1 History

1907 Original Construction

- 36,100 feet of Open Ditch
- Mainline, Branch 1, Branch 1 Fork, Branch 2, Branch 2 Fork
- Branch 1 Fork-Abandoned

1940s Minor Repairs

1982 Open Ditch Repairs

Mainline and Branch 2

1992 Open Ditch Repairs

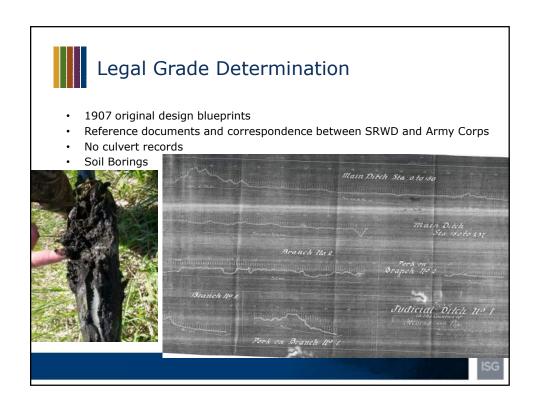
- Mainline and Branch 2
- · Cease and desist order by Army Corps for over excavation

1995 Army Corps Permit

 Weirs and wetland restorations as mitigation for over excavation



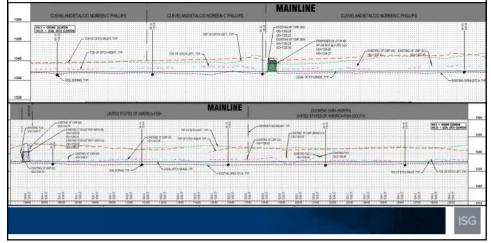






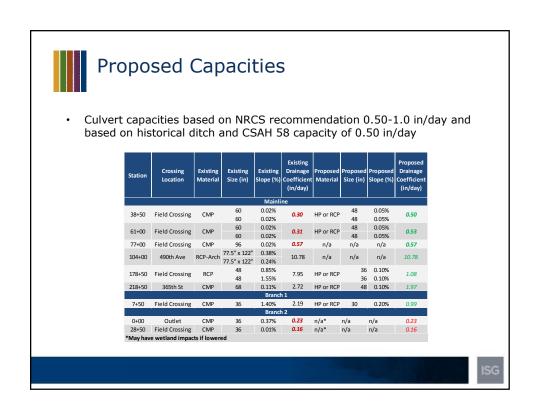
Legal Grade Determination

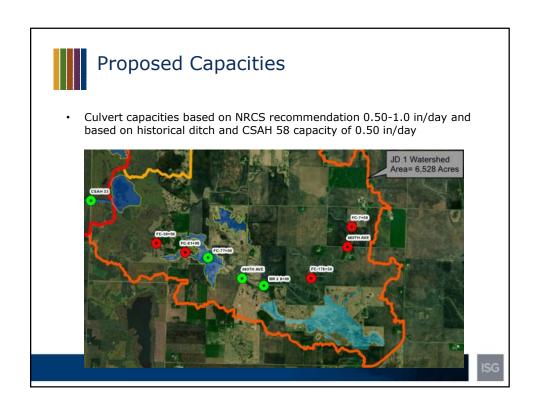
- Utilized topographic survey, original design profile, soil boring elevations, correspondence documents, to develop profile plot
- Majority of mainline and Branch 2 determined to be over excavated















- Identified wetlands through level 1 aerial review-Types 1 through 4
- Potential wetland impacts calculated with Van Schifgaarde equation
- Compared lateral effects of lowering culverts and cleaning ditch
- Future review with BWSR/WCA for impacts and potential mitigation
- Assumed if CSAH 33 culvert is lowered

Station	Crossing Location	Lateral Effect From Lowering Culvert (ft)	Potentail Lateral Effect Area (AC)		
Mainline					
38+50	Field Crossing	1.8	0.02		
61+00	Field Crossing	0.5	0.01		
178+00	Field Crossing	0.5	0.00		

ISG

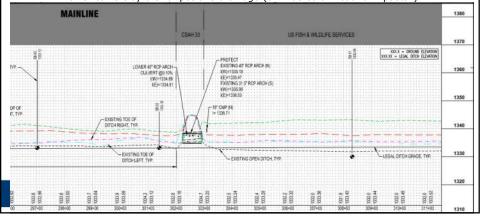


Potential Wetland Impacts





- CSAH 33-Mainline
- Has major impacts on DNR Public Waters and USFWS
- Culvert is over 2-feet high with upstream areas of JD 1 over excavated
- Lower culvert by 0.2 feet for flat drainage from 490th Ave (0.02 acres of wetland impacts
- Lower culvert by 0.5 for positive drainage (0.22 acres of wetland impacts*)



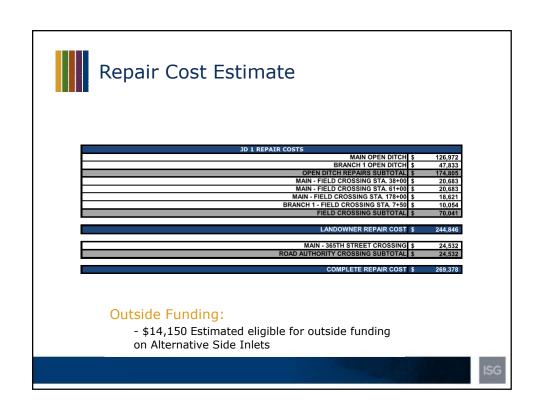


Public Waters/USFWS Impacts

- · Repairs in Public Waters will be avoided
- No repairs to outlet structures, weirs, or berm structures
- No fill placed in Public Waters or wetlands
- No cleaning through DNR or USFWS areas









- JD 1 is in need of repair to address sedimentation, vegetation, culvert repairs, and erosion
- Majority of mainline is below legal grade
- Tree clearing on Branch 2 and areas of mainline
- Branch 1 in need of full repair
- Repairs to JD 1 should follow the items listed in the repair report to address ditch maintenance, limit wetland, public water, and USGWS impacts







County Ditch No. 11 Watershed

CD 11 primarily lies within Westport, Grove Lake Townships (Pope County) and Ashley Township (Stearns County)

Direct Watershed Area 1,625 acres

Hydrologic soil classification ranges between: "A" and "B"

Land use predominately: Agricultural Row Crops

Outlets into: County Ditch No. 6 Branch 1





1907 Original Construction16,500 feet of Open Ditch

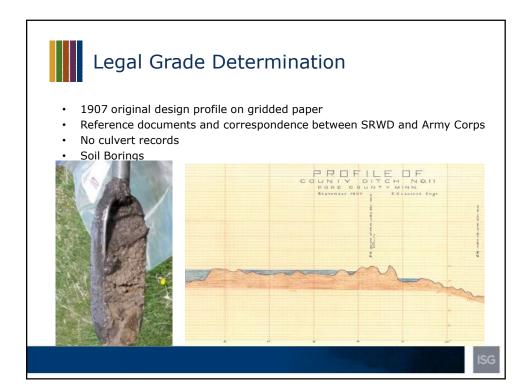
1993 Open Ditch Repairs
Small cleaning

2016 Open Ditch RepairsSmall cleaning near outlet into

Undocumented ditch reroutes





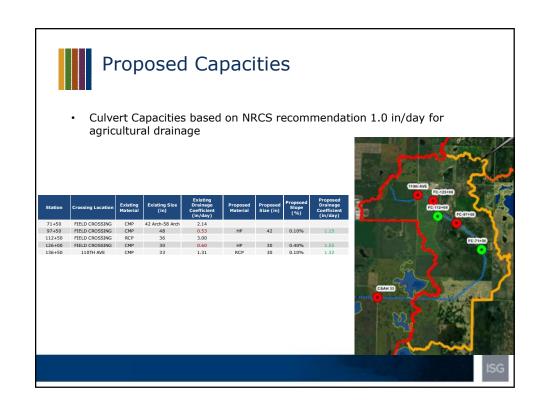


Legal Grade Determination - Utilized topographic survey, original design profile, soil boring elevations, to develop profile plot - Minor adjustments to grade lengths from soil borings, straightened ditch areas - MARKINE - MARK

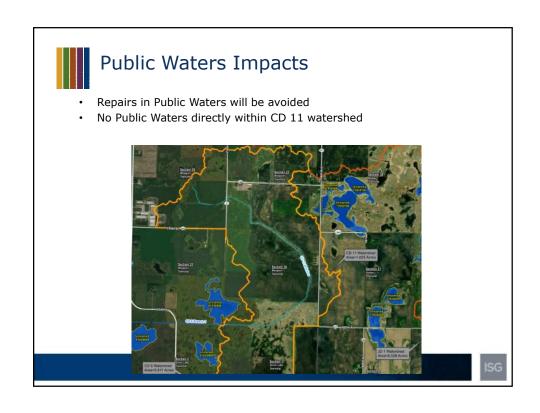




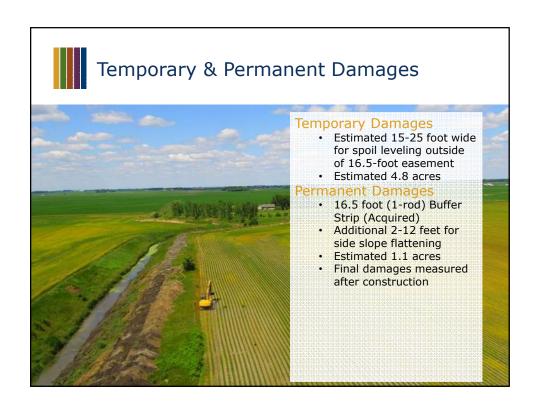














Repair Cost Estimate

CD 11 REPAIR COSTS	
MAIN OPEN DITCH \$	203,696
FIELD CROSSING (STA. 97+50) \$	17,527
FIELD CROSSING (STA. 125+00) \$	14,330
LANDOWNER REPAIR COST (STANDARD REPAIR) \$	235,554
MAIN OPEN DITCH SIDE SLOPE FLATTENING \$	79,368
TOTAL SIDE SLOPE FLATTENING COST \$	79,368
LANDOWNER REPAIR COST (WITH SIDE SLOPE FLATTENING) \$	314,921
ROAD AUTHORITY REPAIR COSTS	
110TH AVENUE \$	18,631
COMPLETE REPAIR COST \$	333,553

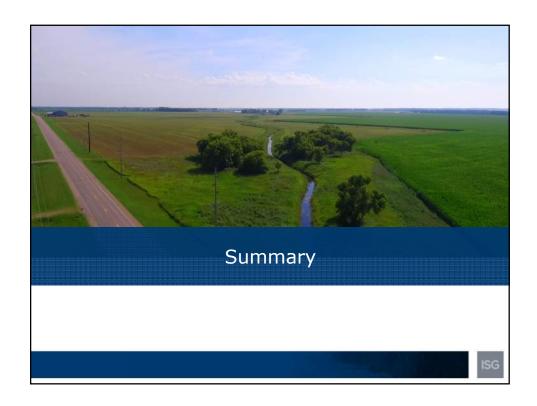
Outside Funding:

- \$16,000 Estimated eligible for outside funding on Alternative Side Inlets

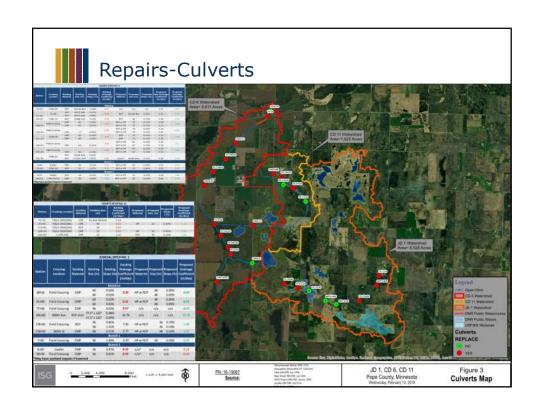


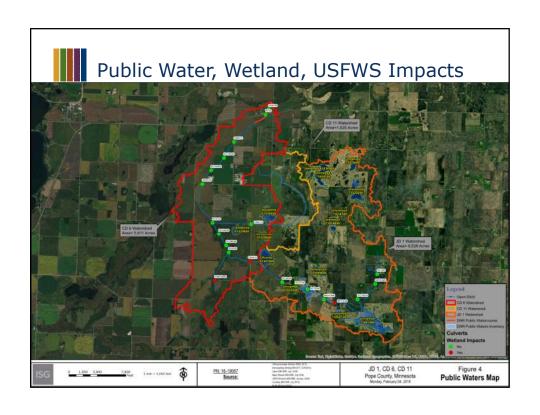


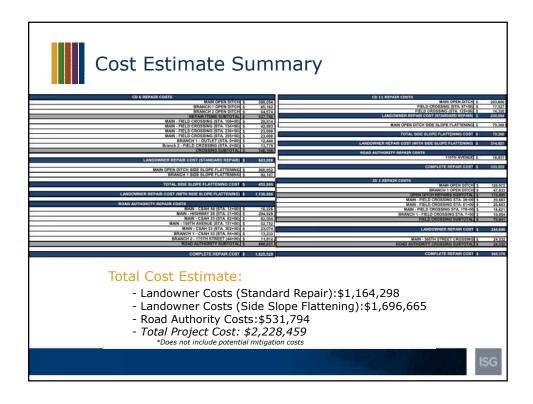
- · CD 11 is in need of repair to address sedimentation, vegetation, culvert repairs, and erosion
- Repairs include open ditch cleaning, vegetation removal, side slope flattening, tile outlets, culverts, and buffer seeding
- Typical ditch repairs occur 8-10 years, CD 11 is beyond average maintenance period
- Repairs to CD 11 should follow the items listed in the repair report to address ditch maintenance, limit wetland and public water impacts













- CD 6, JD 1, and CD 11 are in need of repairs to address sedimentation, vegetation, culvert repairs, and erosion
- Repairs include open ditch cleaning, vegetation removal, side slope flattening, tile outlets, culverts, and buffer seeding
- Repairs should follow the items listed in the repair report to address ditch maintenance, limit wetland and public water impacts
- Currently 3 separate ditch systems-recommend consolidating to 1 system if approved by the Board to treat as 1 system given the hydraulic connections