

Story County Board of Supervisors  
900 6<sup>th</sup> Street  
Nevada, IA 50201



Marshall County Board of Supervisors  
1 East Main Street  
Marshalltown, IA 50158

Re: Amendment No. 1 to Engineer's Report  
Joint Drainage District No. 1  
Story and Marshall Counties

Dear Joint Board Members:

On May 1, 2014 an Engineer's Report was presented to the Board Members of Joint Drainage District No. 1, Story and Marshall Counties. This report outlined two options for a repair or an improvement of the existing main open ditch and main tile within Joint Drainage District No. 1. At a hearing on June 24, 2014 with the landowners of the district, the landowners requested investigation into a third option. This third option was to include an extension of the existing open ditch to replace the existing 30" main tile up to a point at its intersection with Branch C. The Joint Boards then directed I+S Group to proceed with preparation of an amendment to the report addressing an Option 3.

### **Option 3 – Open Ditch Improvement**

This option includes cleaning the existing main open ditch to restore its original slope and capacity and replacing the main tile with an extension of the open ditch from the current tile outlet location to the upstream end of the 30 inch tile at the junction with Branch C. This would require removal of the existing drop structure at the outlet of the main tile and constructing a similar drop structure at the upstream end of the new open ditch.

The existing open ditch would be cleaned from the existing culvert under 220<sup>th</sup> Street at Binford Avenue upstream approximately 3,050 feet to the outlet of the main drain tile to a bottom width of 8 feet with 2:1 side slopes. This cross section is based on our cross sections of the existing ditch at several locations.

The open ditch would then be extended along approximately the same route as the existing 30" tile and with the same cross section to a point where it meets Branch C. The dirt spoil would be placed on both sides of the ditch and leveled to a farmable condition. The existing topsoil would be removed from the area of excavation, salvaged and then respread on top of the new leveled spoil. Corrugated Metal Pipe (CMP) surface drains would be installed along both sides of the ditch beneath the spoil berms and would direct surface runoff into the open

ditch. Existing intercepted tiles would be outlet into the ditch with a 20 foot CMP tile extension.

The open ditch would be designed according to current drainage standards. Drainage design criteria are based on the fact that crops can tolerate a limited amount of flooding but must not be flooded for long periods of time, usually no longer than 24 to 48 hours.

The Joint District should acquire the necessary right of way to establish a permanent 100 foot right of way for the existing open ditch segment as well as the new open ditch to allow for future maintenance. The area along the new ditch is separated into the area between the top of banks of the open ditch and the area outside the top of banks that would remain farmable. The area between the top of banks would be acquired according to its full value while the remaining area would have a reduced value due to its continued use and reduced taxes.

This new ditch extension would be considered an improvement rather than maintenance, and the extension could trigger NRCS review of upstream farmed wetlands for potential consequences of additional draining. Landowners would be responsible to check and delineate their own wetlands on their property to document their compliance with all farm program requirements. Noncompliance with this wetland review requirement by a landowner could potentially disqualify their property from future farm program payments.

All other aspects of the report that are required for the first two options are applicable for this additional option. Attached to this amendment is the Engineer's Opinion of Probable Project Cost of the additional Option 3. The list is itemized and includes land acquisitions. The price for the land acquisition of the area within the top of banks was based on the Ag Decision Maker 2013 Farmland Value Survey by Iowa State University Extension for the average of all grades of land within the central Iowa region (\$10,000). Likewise, the price breakdown shows the diminished value of the land that would be divided by the extension of an open ditch system. Based on conversations with a land appraiser, the price per acre was estimated to diminish the value by \$500 because of the inconvenience brought about by the open ditch cut and the resulting point rows. It was determined that 245 acres would be impacted by the addition of the open ditch.

## **Recommendation**

Upon completing the investigation of Option 3 for Joint Drainage District No. 1, it is recommended that the original report recommendations be upheld. This includes the adoption of Option 2 along with the recommended right-of-way acquisition, annexation and reclassification. Option No. 2 includes a tile and open ditch improvement which would clean and widen the open ditch, and would replace the existing 30 inch tile with new 42 inch tile. This improved system would increase the drainage capacity of the main tile and ditch to the modern criteria of 3/8 inch per day drainage capacity. The cost of Option 3 exceeds that of Option 2 by over \$130,000 while providing very little additional benefit. Likewise, the diminished

land value and inconvenience associated with Option No. 3 makes the construction of an open ditch much less desirable.

Respectfully Submitted,

A handwritten signature in black ink that reads "Kent L. Rode". The signature is written in a cursive style with a large, prominent initial 'K'.

Kent L. Rode, P.E.

I+S Group, Inc.

Encl: Engineer's Opinion of Probable Project Cost

**OPTION NO. 3 - OPEN DITCH IMPROVEMENT**

**MAIN TILE AND OPEN DITCH  
JOINT DRAINAGE DISTRICT NO. 1  
STORY AND MARSHALL COUNTIES**

**ENGINEER'S OPINION OF PROBABLE PROJECT COST**

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1.	Mobilization	1	LS	\$25,000	\$25,000
2.	Clearing and Grubbing	1	LS	\$2,500	\$2,500
3.	Open Ditch Excavation	74,100	CY	\$3.00	\$222,300
4.	Corrugated Metal Pipe Tile Extension	240	LF	\$25.00	\$6,000
5.	Spoil Bank Leveling (Two Sides)	80.5	STA	\$110	\$8,855
6.	Open Ditch Fertilizing & Seeding	80.5	STA	\$175	\$14,088
7.	Drop Structure (Removal, Installation, and Riprap)	1	LS	\$50,000	\$50,000
8.	18" CMP Surface Drain	1,800	LF	\$30	\$54,000
9.	Removal of Existing Tile	5,186	LF	\$5	\$25,930
11.	Construct Private Crossing at Main Open Ditch Sta 50+00	1	LS	\$17,000	\$17,000
10.	Contingencies @ 10%				\$38,274

**ESTIMATED CONSTRUCTION COST**

**\$463,947**

Engineering Services:

Survey	\$4,000
Engineer Report, Preliminary Plans and Hearings	\$18,000
Plans, Specifications, and Bidding	\$28,500
Wetland Administration	\$5,000
Construction Staking	\$4,100
Resident Observation Services	\$8,000
Construction Admin Services	\$17,500

Legal & Auditor Services, Publication, Misc.

\$3,000

Crop and Seeding Damages

\$10,000

Finance Costs

\$25,000

**PROJECT COST SUBTOTAL**

**\$587,047**

Other District Costs:

Land Acquisition Within Top of Bank(7 AC @ \$10,000.00) \$70,000

Additional District Right-of-Way out to 100' (8 AC @ \$1000.00) \$8,000

Diminished Land Value (245 AC @ \$500.00) \$122,500

Engineering Services:

Right-of-Way Acquisition \$4,000

Annexation \$4,500

Reclassification \$35,000

**TOTAL ESTIMATED PROJECT COST**

**\$831,047**

Average Cost per Currently Assessed Acres (4573 AC) =

**\$182**

Average Cost per Acre for 10 years =

**\$23.53**

Average Cost per Benefited Acre (4798 AC) =

**\$173**

Average Cost per Acre for 10 years =

**\$22.43**