



Real People. Real Solutions.

Engineer's Report

Drainage District Warren No. 11

Main Open Ditch Repair

Story County, Iowa

OT7.130925

Filed: February 6, 2024

Submitted by:

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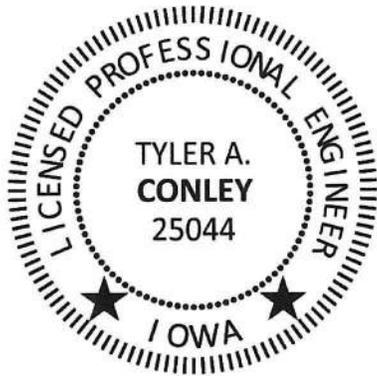
Certification

Engineer's Report

for

Drainage District Warren No. 11
Main Open Ditch Repair
Story County, Iowa

February 6, 2024



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa. My renewal date is December 31, 2025.

By: 
Tyler A. Conley, P.E.
License No. 25044

Date: 2/6/2024

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I. INTRODUCTION

A. SCOPE OF WORK

The purpose of this report is to provide information relative to drainage relief requested by landowners of Drainage District Warren No. 11, Story County, Iowa (DD11). The Board of Supervisors, acting as trustees appointed Tyler A. Conley, P.E., Bolton & Menk, Inc. to complete the necessary preliminary survey, study, and engineering report.

This report addresses landowner requests for facility repairs associated with the Main Open Ditch of DD11. This report examines the conditions that would be necessary to restore the drainage efficiency of the district facility to the original planned capacity. A copy of the drainage petition is attached with this report in Appendix A.

B. LOCATION & DISTRICT FACILITIES

The watershed of DD11 lies within Story County located generally between McCallsburg and Roland. The watershed of DD11 is located in sections 3 and 4 of Richland Township (T-84-N, R-22-W), sections 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 33, and 34 of Warren Township (T-85-N, R-23-W), and sections 25, 13, 12, 1 of Howard Township (T-85-N R-23-W).

The primary facilities of Drainage District No. 11 consist of the Main Open Ditch and 6 Lateral Tiles. The Main Open Ditch of Warren DD11 also serves as the outlet of internal Drainage Districts Warren 57, Warren 54, Warren 49, Warren 34, and Warren 26. Additionally, Hardin County Drainage District 34 outlets to a ditch that flows into the Main Open Ditch of Warren DD11. The Main Open Ditch of DD11 ends in section 3 of Richland township at the intersection with County Road S27 (660th Ave.) From the outlet of the Drainage District water flows into East Indian Creek eventually merging to Indian creek then the South Skunk River followed by the Skunk River and finally the Mississippi River.

C. HISTORY SUMMARY

A brief history of the district was obtained from the Story County Auditor's Office. This information was gathered in order to better understand the original drainage district and any notable changes that have occurred over the lifetime of the district. A summary of events based on these records is as follows:

1907	Drainage District Warren No. 11 Established
1951	Main Open Ditch was cleaned and extended to County Road S27. The District was also reclassified as part of the project.
1963 – 1990	Several small spot repairs for bank sloughing and tile extension replacement.
August 2010	Fox Engineering Report for Repair of the Main Open Ditch
March 2011	Public Hearing on Repairs to Main Open Ditch. Discussion of annexation and reclassification. No action was taken due to landowner concerns about the cost breakdown of the project.
2011-2021	Several small spot repairs that include spot tree clearing. Bank sloughing and repairing tile extensions.

May 19, 2021 Public Hearing on Repairs to Main Open Ditch. Discussion of why small spot repairs are not feasible and why a full repair on the Main Open Ditch should be performed. Discussion of annexation and reclassification. Landowner discussion of dissolving the District. No action was taken as landowners pursued more support to dissolve the district.

Warren 11 has been assessed 19 times since it was established in 1907. The Main Open Ditch has been fully cleaned once in 1951 and was also reclassified that same year. Since that time there have been only spot repairs to the Main Open Ditch. The current assessment schedule for Warren 11 lists 296 parcels with 8,450 benefitted acres.

II. INVESTIGATION

A. SURVEY & INVESTIGATION

During the Summer of 2023 a field review and preliminary survey were performed on the Main Open Ditch of Warren DD11. Topographic data was collected along the open ditch to determine the existing sediment levels. Additionally, topographic data was obtained for the inline structures on the open ditch as well as pipe elevation entering the ditch.

B. CAPACITY ANALYSIS

From the information gathered in the field investigation and history search the capacity of the current system could be determined. The existing dimensions of the Main Open Ditch vary along the length of the ditch. The Main Open Ditch is wider in the downstream sections and narrowing as it continues farther upstream. The grade for the facility was found in past records and is relatively flat with a grade of between 0.10% and 0.20%. The original bank side-slopes were relatively steep, with a slope of 1½: 1 for the length of the facility.

Due to factors like bank sloughing, silt accumulation and bank erosion, there is significant meandering of the facility. This meandering causes the original straight ditch facility to take on a serpentine shape causing a wider channel, more bank sloughing, and additional bank erosion. This combination of factors results in less flow capacity in the channel. Silt accumulation also causes problems for tile facilities that use the open ditch as their outlet. As silt accumulates the outlets become restricted causing the tile system to lose drainage capacity. There are several tiles outlets that are inundated with excess silt accumulation.

There are also long stretches of mature tree growth along the open ditch. This can also affect the capacity of the facility when large branches fall and dam the Open Ditch. They are also impairments because large machinery is not able to access the Open Ditch to repair the facility.

III. PROPOSED REPAIRS

A. MAIN OPEN DITCH REPAIR

DITCH CLEANOUT

The investigation has confirmed the need for drainage relief in the district. A clean out of the Main Open Ditch should be performed to restore the original slope, shape, and capacity by creating the appropriate cross sections along the open ditch. The spoil material would be

uniformly leveled and shaped to a typical cross section with a relatively flat top (2% slope) that is 14-18 feet wide, adjacent to the ditch with a 10:1 back-slope onto adjacent lands. These leveled berms would be placed in locations that would minimize disturbance. Where needed, new CMP tile extensions would be placed at the ends of field tile, entering the open ditch and new CMP surface drains would be installed at required locations, as well as replacing existing damaged surface drains. Tile extensions being replaced that currently have animal guards will have the guards replaced. Trees in the Open Ditch ROW will also need to be removed and disposed of. Iowa Code Chapter 468.126 states: "... the board shall keep the improvement in repair" and "may order done whatever is necessary to restore or maintain a drainage or levee improvement in its original efficiency or capacity". Appendix B contains a cost estimate for repair of the Main Open Ditch.

B. WORK LIMITS & DAMAGES

Landowners are entitled to full reimbursement for damages resulting from the work on their lands outside of the district right-of-way. These damages will be established at a project completion hearing after the work is complete. The work limits for the open ditch will be set at approximately 35 to 50 feet outside of the toe of the spoil pile of the ditch.

It is anticipated that the work will commence in the summer of 2024 and continue into the fall/winter. Crops that are damaged during construction would be paid for by the District based on crop appraisals. The construction zone would be minimized, and the work scheduled to minimize the loss of crops.

Buffer Strips may exist within the work area. Seeding of these areas is typically performed by the landowner with reimbursement being made at the project completion hearing. Seed mixes for these lands is often very specific for the type of conservation practice which is utilized.

IV. OPINIONS OF PROBABLE COST

The cost estimate for the repairs is contained in Appendix B. This estimate represents our best judgment of the probable cost based upon our experience with similar projects. The quantities and unit costs for construction are believed to be reasonably accurate for use in this report and hearing. Actual costs are subject to the market for the respective components and to other economic forces. These estimates carry no actual or implied guarantees.

V. DISTRICT RIGHT-OF-WAY

Open ditch Right-of-Ways are essential to maintain district quality and efficiency. These right-of-way purchases include the right of ingress and egress across adjoining land and the right of access for maintenance, repair, improvement, and inspection. A review of the existing right-of-way for DD11 Main Open Ditch was performed starting with the district history found at the Story County Courthouse. The landowner records for each $\frac{1}{4}$, $\frac{1}{4}$ section of land were examined for the existence of open ditch right-of-way. It was determined that right-of-way does exist however, the width can vary from parcel to parcel along the length of the facility. These Right-of-Way calculations can be found in Appendix C.

Under Iowa Code Section 468.27 Dismissal or Establishment – Permanent Easement – second paragraph "Following its establishment, the drainage district is deemed to have acquired by permanent easement all right-of-way for drainage district ditches, tile lines, settling basins, and other improvements, unless they are acquired by fee simple, in the dimensions shown on the survey, plan and profile, if one is made." And, under section 468.126 Repair, Subsection 8

– “If the drainage records on file in the auditor’s office for a particular district do not define specifically that land taken for right of way for drainage purposes, the Board may at any time upon its own motion employ a land surveyor to make a survey and report of the district and actually define the right or way taken for drainage purposes.” Typically, it is necessary to have a minimum width of right-of-way to contain the top width of the open ditch and have 20 feet on each side for access to the ditch. The current top width of the open ditch varies from 40 to 60 feet. Therefore, to provide 20 feet on each side of the open ditch 100 feet of right-of-way width would be necessary in the wider sections of the channel. To provide consistency in the district right-of-way, it is recommended the district establish an easement to the lands necessary to provide a uniform 100-foot right-of-way along the entire length of the ditch.

Drainage district open ditch right-of-way are exempt from real estate taxes and drainage assessments. Therefore, deduction should be made to the acres of those affected parcels and the property records for those affected parcels should be adjusted accordingly. Under Iowa law, landowners have the right to beneficial use of the spoil bank in the right-of-way subject only to the districts use of the right-of-way to protect and maintain the open ditch.

VI. ANNEXATION

Upon review of the existing watershed and assessment boundary, it was found that lands that benefit from the existing district facilities are not assessed for the benefit they receive. The areas that are outside the existing district assessment boundary but drain to the existing facilities of the district should be added to the schedule of Warren DD11. The Board of Supervisors as Trustees of the District are able to annex these lands under Section 468.119 of the Iowa Code which states “... if the board become convinced that additional lands contiguous to the district, and without regard to county boundaries, are benefited by the improvement to said district as contemplated in Section 468.126, the board may adopt with or without a petition from owners of the proposed annexed lands, a resolution of necessity for annexation of such additional land.”

A map of the proposed annexation area can be found in Appendix D. It would be cost effective to perform this annexation as part of the proposed project. Most landowners now in the drainage district would likely support the annexation; those being annexed would tend to be opposed. It should be emphasized to the owners of the annexed lands that the assessments are based upon relative benefit and that if the benefit is small, the assessment is also relatively small.

From the preliminary investigation there are approximately 6,734 acres in Story County, 3,537 acres in Hardin County, and 315 acres in Hamilton County that has water that drains through the facilities of Warren DD11 that are not currently assessed for the benefit they receive. It should be noted that the number of acres shown to be annexed in the report is just a preliminary estimate. The actual number of acres annexed is subject to change as our watershed model is farther defined. A separate hearing is held for annexation which would include separate landowner notifications.

We recommend annexation of all those materially benefitting areas as they have the specific benefits of being able to drain their land to the facilities of the district and have surface drainage which flow to the facilities of the district.

VII. RECLASSIFICATION

If a large area of land is annexed into the district, it may be in the best interest of the district to order a reclassification. Section 468.65 of the Iowa Code allows the Board of Supervisors to order a reclassification if they become convinced of inequities in the current assessment schedule, “... the board may consider whether the existing assessments are equitable as a basis for payment of the expense of maintaining the district and of making the repair, improvement or extension. If they find the same to be inequitable in any particular, they shall by resolution express such findings and, ... order a reclassification”. Reclassification would develop schedules that would be used to allocate project expenses based off benefit received. Benefit is determined by reviewing factors for each 40-acre parcel or subdivide thereof. These factors include but are not limited to property wetness, facility usage, facility proximity, land use, and property area. Additionally, a separate schedule would be developed for each facility so that only those landowners who benefit from a facility would pay for facility installation and maintenance. A separate hearing is held for reclassification which would include separate landowner notifications.

Typically, reclassifications are performed after a project is completed to avoid the possibility of potential changes during construction that could alter the calculations of benefit.

VIII. BUFFER STRIPS

It appears there are farm program buffer strips in place along the open ditch. There are some manageable drawbacks which must be addressed by the owners of the buffer strips and conservation acres.

The destruction of buffer strip vegetation by spoil placement or leveling along the open ditch and tile installation places the landowner in violation of farm program conservation rules. The penalties can include loss of the CRP contract, forfeiture of back CRP payments, and penalties. To avoid these, landowners must request a waiver from the USDA Farm Service Agency County Committee. The county committee will grant waivers for ditch maintenance and tile installation if seeding restoration in compliance with NRCS requirements, is done. If the work on the open ditch is authorized, all farm program owners on the repair portion of the ditch must independently seek the FSA County Committee waivers. This process can take two or three months and should be initiated immediately if this repair is authorized.

IX. WATER QUALITY

The hydrologic impacts to tile drainage entails a complex interaction of processes dependent upon landscape, climatic and human influences, watershed scale, soil permeability and rainfall event size. There is a popular and often accepted idea that an increase in subsurface drainage facilities adds to an increase in both peak and total rainfall values thereby increasing flooding. Recently published research from the University of Iowa’s IIHR – Hydroscience and Engineering Center refutes that perception. This University of Iowa report was the result of a water model study of the Clear Creek Watershed in Iowa and Johnson Counties and found that an increase in field tile and subsurface drainage decreases peak flows for most storm events. The field scale DRAINMOD model was used in the research in conjunction with a simplified routing equation to analyze the impact of tile drains in the Clear Creek Watershed.

However, additional steps are required to slow, impound, or infiltrate water in order to receive benefits in water quality. Water quality is a growing topic throughout the nation and more recently throughout Iowa. The particle loads and nutrient levels within drainage water

is a concern that is receiving increased scrutiny. Processes and reduction practices are being developed and incorporated on farms and into projects throughout Iowa which reduce nitrogen loss and improve water quality. Enhancement of water quality is possible through many different drainage applications that can see both immediate and long-term benefits.

We encourage the landowners of this District to consider multi-purpose drainage management, which incorporates Best Management Practices (BMPs) which utilize effective measures aimed at reducing sediment and nutrient loading and improving water quality. These BMPs are divided into three (3) areas: preventative measures, control measures, and treatment measures.

Preventative measures that can be applied throughout the watershed include crop rotation, cover crops, residue management, and nutrient management. These measures are aimed at controlling sediment, minimizing erosion and nutrient loss, and sustaining the soils health, all without dramatically changing the current land use of the landscape.

Control measures are practices aimed at improving water quality directly associated with the flow of water by reducing peak flows, providing in stream storage, sedimentation, and nutrient uptake. Examples of control measures include alternative tile intakes, grassed waterways, two (2) stage ditches, water control structures, and controlled subsurface drainage. These practices are directly linked to the conveyance of subsurface tile water or open channel ditch flow.

The function of **treatment measures** is to improve water quality by directly removing sediment and nutrients from the subsurface or surface water flow throughout a watershed. Examples of treatment measures include surge basins (storage ponds), filter/buffer strips, wetland restorations, woodchip bioreactors, and water and sediment control basins (WASCOBs).

These practices may be incorporated to either the public or private drainage systems.

Funding options are available to landowners through the Environmental Quality Incentives Program (EQIP) and the Iowa Water Quality Initiative. EQIP is a voluntary program that provides financial assistance to individual landowners for various conservative practices as identified above. Also, the State of Iowa through the Iowa Water Quality Initiative provides cost share funds to participating landowners to voluntarily install nutrient reduction practices.

A unique opportunity may exist when a wetland is created within the district for the treatment of the tile and/or surface waters of the watershed. A properly sized and created wetland may be able to be utilized as a mitigation site for any farmed wetlands that are found within the drainage district. With the possibility of a large share of the created wetland being funded by the Iowa Water Quality Initiative program, any potential farmed wetlands could be mitigated at a much reduced cost.

If there is landowner interest in any of these water quality features and funding options, further study and review would be required to select, site, and fund the water quality measures appropriate for the area.

X. SUMMARY & DISCUSSION

This report has confirmed the need for drainage relief for Drainage District Warren No. 11. The work described herein can accomplish that relief. We recommend proceeding with the Repair Option. The proposed repair is considered to be of public benefit and are conducive to the public health, convenience or welfare.

Recommendations

Repair Recommended

This report has confirmed the need for drainage relief for Drainage District No. 11. The Main Open Ditch has significant sediment accumulation and erosion that should be removed and shaped to the appropriate cross sections. Trees in the Open Ditch ROW should also be removed and disposed of as part of the repair project. The proposed repair is the most cost-effective option and considered to be of public benefit and is conducive to public health, convenience, or welfare.

Reclassification and Annexation Recommended

There are material inequities in the current Main Open Ditch assessment schedules used by the district. The Iowa Code states *“When, after a drainage or levee district has been established... or a repair, improvement, or extension has become necessary, the board may consider whether the existing assessments are equitable as a basis for payment of the expense of maintaining the district and of making the repair, improvement or extension. If they find the assessments to be generally inequitable they shall order a reclassification of all property subject to assessment.”* Additionally, if these inequities were to be fixed it is recommended that annexation be considered to fairly distribute the costs of future maintenance, as well as any repair or improvements to lands not currently included in the assessment schedule.

Installment Payments

Iowa drainage law allows for drainage district costs for large projects to be spread over ten to twenty years at the discretion of the Board of Supervisors. Typically, the Board would spread assessments of the magnitude contemplated in this report over ten years. Be reminded that final individual assessments are based upon benefits and that some parcels will likely bear two to three times the average per acre costs.

Recommended Steps

It is recommended that the Board of Supervisors acting as trustees for Drainage District Warren No. 11 take appropriate action, with legal guidance, to accomplish the following:

1. Tentatively approve this engineer's report and schedule a public hearing to receive and consider the input of the district landowners.
2. Establish a uniform width of the Main Open Ditch Right-of-Way.
3. Adopt the repair option recommended for construction, modified as deemed appropriate, to satisfy the desires of the District.
4. Direct the engineer to prepare final plans and specifications for the adopted plan and proceed toward a bid letting.

Respectfully submitted,
Bolton & Menk, Inc.

Tyler A. Conley, P.E.
Project Manager

Appendix A: Petition

DRAINAGE MEETING
DISTRICTS SHERMAN #83 & WARREN #11
MARCH 14, 2023

The Story County Drainage District Trustees met in the Public Meeting Room of the Story County Administration Building in Nevada, IA to consider requests to replace damaged tile in Drainage District Sherman #83 and to repair a collapse of the open ditch bank in Drainage District Warren #11. Members present were Latifah Faisal, chair, Lisa Heddens, and Linda Murken. Also present were Story County Engineer Darren Moon, Drainage Clerk Scott Wall, Communications and Media Intern Bryce Garman, and Steve Johnson of Hertz Farm Management representing a landowner in Sherman #83.

Faisal called the meeting to order at 8:33 a.m.

Heddens moved, seconded by Murken, to approve the agenda. Motion carried unanimously (MCU).

Moon spoke about the situation in Sherman #83. The project is pretty straightforward but Moon wants to establish how similar projects will be handled moving forward. Hertz Farm Management had a tile crew on land they managed and uncovered problems with the 8" district tile. On investigation the 8" tile was in reasonably good shape but there is a 12" tile downstream that is in poor condition. Replacing the existing district tile with single-wall tile would cost \$14,000. The tile is relatively shallow, making it prone to damage from heavy equipment. Moon contacted Tyler Conley at Bolton and Menk for advice. Moon and Conley met with Hertz and Hertz pushed for single-wall tile which both Moon and Conley said was not acceptable. They recommended dual-wall tile which has a smooth interior or concrete pipe. Replacing the original clay tiles with 12" corrugated tile will reduce the tile capacity by 30%.

They reached a compromise with a new product, 12" dual-wall flexible tile. Moon was at a conference recently and learned of another county that had used plastic tile to replace original clay tile in a project almost identical to this one. The clay tile came in short lengths and allowed water to enter at the joints. Plastic is continuous and you lose the joints so the landowners are now suing because the tile isn't working properly. That project had used an engineer to design it and, once the landowners realized that suing the district was suing themselves, they filed suite against the engineer. That worries Moon if we do not use Bolton and Menk or another firm for design of larger projects as it would open the County Engineer up to lawsuits for drainage. He favors use of the district watchman program for this reason plus drainage district engineering is really outside the purview of his department.

The new estimate for the repair is \$28,000 which includes an 8" branch tile that needs to be at least partially replaced. They estimated 500' of 8" tile for \$6,000 but they may not have to replace that much of it. Moon is not comfortable approving a project with this large a cost without trustee approval. He also has concerns about how projects of this size will be financed. Secondary Roads covers drainage district repairs they perform out of their budget and are reimbursed when the districts are levied but they have never paid for a project this expensive. The legislature is raising the limits on how much road departments can spend on drainage projects which will put more pressure on Moon's department to do more of these kinds of projects in-house because they are less expensive than private contractors. In the past the trustees would meet on any project over \$10,000 but the state has been raising that limit (see attached sheet) to match the competitive bid threshold which is currently \$196,000. Moon just wants the trustees to be aware of the current thresholds.

Moon said larger projects like this will require the inspection services that Bolton and Menk's district watchman service can provide. Conley's assistance in dealing with Hertz has already been a big help in negotiating on Sherman #83. He recommends approving the bid (attached) by Hill's Backhoe & Tiling for

\$28,519.00 Moon noted that Sherman #83 is a small district with very few landowners (8-10) to share the costs.

Faisal asked for confirmation that the landowners would pay for this work.

Moon said that, ultimately, the landowners will pay but Secondary Roads pays from their budget and it takes 6 months to a year for them to be reimbursed by the district.

Wall said, assuming we can levy this district in May, the assessments are not due until September 30 so Secondary Roads will not be reimbursed until October. Because we have an estimate and Hertz wants the work done before planting begins it should not be a problem to have the numbers needed to levy the district this year.

Murken asked about Secondary Road's funding of the project.

Moon said he had a concern about the legality of his department paying for work that they were not doing themselves. This is the part that makes him uncomfortable about the cost. While they can absorb the cost of this project there will probably be more and drainage projects are becoming more expensive due to the aging infrastructure.

Murken asked if Moon had an estimate for the watchman services.

Moon did not. They've never paid for watchman services before though this should be a relatively simple, brief project. It will not include any engineering design fees but the next topic today, Warren #11, will also utilize the watchman service and will need some engineering design work.

Murken asked if the agenda for this meeting had been posted. She'd had some issues that led her to ask.

Wall said it was not posted on line but had been posted in this building last week. It was his error that the on-line posting was not done. Steve Johnson at Hertz had not been able to find the agenda which is how the error was discovered and Wall had emailed Johnson the agenda so he could join the meeting and he was showing up as being on-line now.

Murken moved, seconded by Heddens, to use Bolton and Menk, Inc.'s District Watchman Program for the Sherman #83 tile replacement project as described by the County Engineer. MCU.

Murken recommended that the trustees seek legal advice on what is an appropriate use of Secondary Road funds to cover claims from outside contractors for drainage district repairs until Secondary Roads can be reimbursed by the districts.

Moon spoke about the issue in Warren #11. A landowner, Alan Twedt, had in late February or early March complained that the berm of the open ditch south of County Road E18 and east of S14 had collapsed, allowing water from the ditch to flood his land and leave behind refuse from upstream (sand, rock, tree limbs). Moon met on site with Tyler Conley last week and the damage was much worse than he'd expected. Secondary Roads had repaired the ditch bank in this area 6-8 years ago but now it was worse than the first time. Conley suspects there is something in the soil, a sand pocket perhaps, that makes it highly erodible. Secondary Roads had been reluctant to make localized repairs to the open ditch because an Engineer's Report was done in August 2010 recommending a cleanout and repair of the entire ditch and nothing has been done on those recommendations due to landowner objections. The Code of Iowa does not allow large projects to be broken down into smaller ones to avoid the \$50,000 threshold above which engineer's reports and project bids are required.

In this case Moon believes an exemption can be made as this is an emergency repair unrelated to the broader issues of siltation and trees in the open ditch but it still raises questions of how much more his department can do in Warren #11. This is another project for which Moon recommends Bolton and Menk's watchman service be utilized.

Because of siltation and trees in the open ditch there will be more and more situations like this if nothing is done so the issues in the larger district need to be addressed in the near future.

Faisal asked if an engineer's report is needed.

Moon said not for this repair though there will be some engineering design work necessary. We do have engineering reports on this district.

Wall said we have an August 2010 report from Fox Engineering. By Code, reports are valid for 10 years so there would have to be a new report done for Warren #11. Hopefully, Bolton and Menk would be able to use the 2010 report as a starting point, reducing their costs.

Moon and Wall both said that before any money is spent on engineering for the entire district there should be a meeting with the landowners to see what progress they've made with legislation or dissolution of the district. If there had been progress with legislation in 2022 we would know about it since they wanted to change the way properties in drainage districts are assessed.

Wall said the last meeting with the landowners was in 2021 and they were given until June 2022 to pursue legislative changes or dissolve the district. Obviously, we are well past that deadline and we haven't heard from the landowners.

Faisal asked if a landowner meeting was something Conley could assist with.

Wall said if the trustees want him to be present he could certainly facilitate any discussion.

Murken asked if this repair to the ditch bank could be seen as violating the intent of the Code section prohibiting spot repairs?

Moon said that was a concern but the trustees are also obligated to maintain the district and this is an area that could rapidly get worse if nothing is done.

Murken asked when the last report was done.

Wall said it was dated August 2010 and was presented to the landowners in January 2011.

Murken said by requesting that the report be updated the trustees would be showing that it is not their intent to circumvent the Code.

Moon said they can also point to the current damage as an example of what can be expected to continue to happen if the open ditch is not repaired in its entirety. In the long run repairs like this will cost more than a complete repair.

Wall said the landowners' biggest objection to the ditch repair has been the way properties are billed in drainage districts. They want the cost to be spread equally over every acre in the district but the legislature has not addressed that in 2022 or this year and the Iowa Drainage District Association will

fight any such proposal that is put forth. The only way to change assessments currently is reclassification and that carries no guarantees that any individual's benefits to drainage will be lowered.

Murken asked if the landowners can request reclassification.

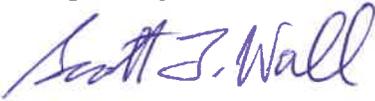
Wall said they can but he does not expect that to happen as they are well aware that they will pay for it and they don't want to pay for anything unless the cost is billed on a per acre basis.

Heddens moved, seconded by Murken, to approve the use of the Bolton and Menk, Inc. District Watchmen Program for an emergency repair to the open drainage ditch in Warren #11 as discussed today with the County Engineer. MCU.

Murken moved, seconded by Heddens, to direct Bolton and Menk to update the August 2010 Engineer's Report by Fox Engineering on the condition of the open ditch in Warren #11. MCU.

Murken moved, seconded by Heddens, to adjourn. MCU. Meeting adjourned at 9:00 a.m.

Respectfully submitted,



Scott T. Wall

Appendix B: Opinions of Probable Costs

**Engineer's Opinion of Probable Cost
Drainage District Warren No. 11
Main Open Ditch Repair
Story County, Iowa
2023**

Main Open Ditch Repair

Item	Description	Unit	Quantity	Unit Price	Total
101	Open Ditch Excavation	STA	450	\$450	\$202,500
102	Spoil Bank Leveling (Two Sides)	STA	402	\$250	\$100,500
103	Spoil Bank Leveling (One Side)	STA	48	\$200	\$9,600
104	Open Ditch Seeding & Fertilizing	STA	450.0	\$150	\$67,500
105	CMP Tile Extension, 12" Dia.	LF	1,500	\$30	\$45,000
106	CMP Tile Extension, 15" Dia.	LF	400	\$35	\$14,000
107	CMP Tile Extension, 18" Dia.	LF	200	\$40	\$8,000
108	CMP Tile Extension, 24" Dia.	LF	200	\$50	\$10,000
109	CMP Tile Extension, 30" Dia.	LF	100	\$70	\$7,000
110	CMP Tile Extension, 42" Dia.	LF	20	\$80	\$1,600
111	Animal Guards, 12" Dia.	EA	20	\$100	\$2,000
112	CMP 15" Dia. Surface Drain	LF	200	\$40	\$8,000
113	CMP 18" Dia. Surface Drain	LF	800	\$45	\$36,000
114	CMP 24" Dia. Surface Drain	LF	400	\$50	\$20,000
115	CMP 15" Dia. Surface Drain Apron	EA	5	\$250	\$1,250
116	CMP 18" Dia. Surface Drain Apron	EA	20	\$300	\$6,000
117	CMP 24" Dia. Surface Drain Apron	EA	10	\$350	\$3,500
118	Geotextile Fabric	SY	1,000	\$4.00	\$4,000
119	Clearing and Grubbing	LS	1	\$240,000	\$240,000
120	Riprap, IDOT Class E	TN	1,000	\$40	\$40,000
121	Removal of Fence, Field	LF	100	\$1	\$100
122	Fence Cuts	EA	10	\$100	\$1,000
123	Mobilization	LS	1	\$40,000	\$40,000
124	Construction Contingency	LS	1	\$82,450	\$82,450

Total Estimated Main Open Ditch Repair Construction Costs \$950,000

Non-Construction Costs

Construction Related Damages	\$46,000
Engineering Services	
Survey, Study, & Report. Meeting & Hearing	\$50,000
Construction Plans, Specifications, & Bid Letting	\$75,000
Construction Engineering Services, Staking, & Inspection	\$75,000
Annexation	\$15,000
Reclassification	\$45,000
Legal & Auditor Services, Publication, Misc.	\$6,000
Finance, Interest & Contingency	\$48,000

Total Estimated Assessable DD120 Repair Project Cost \$1,310,000

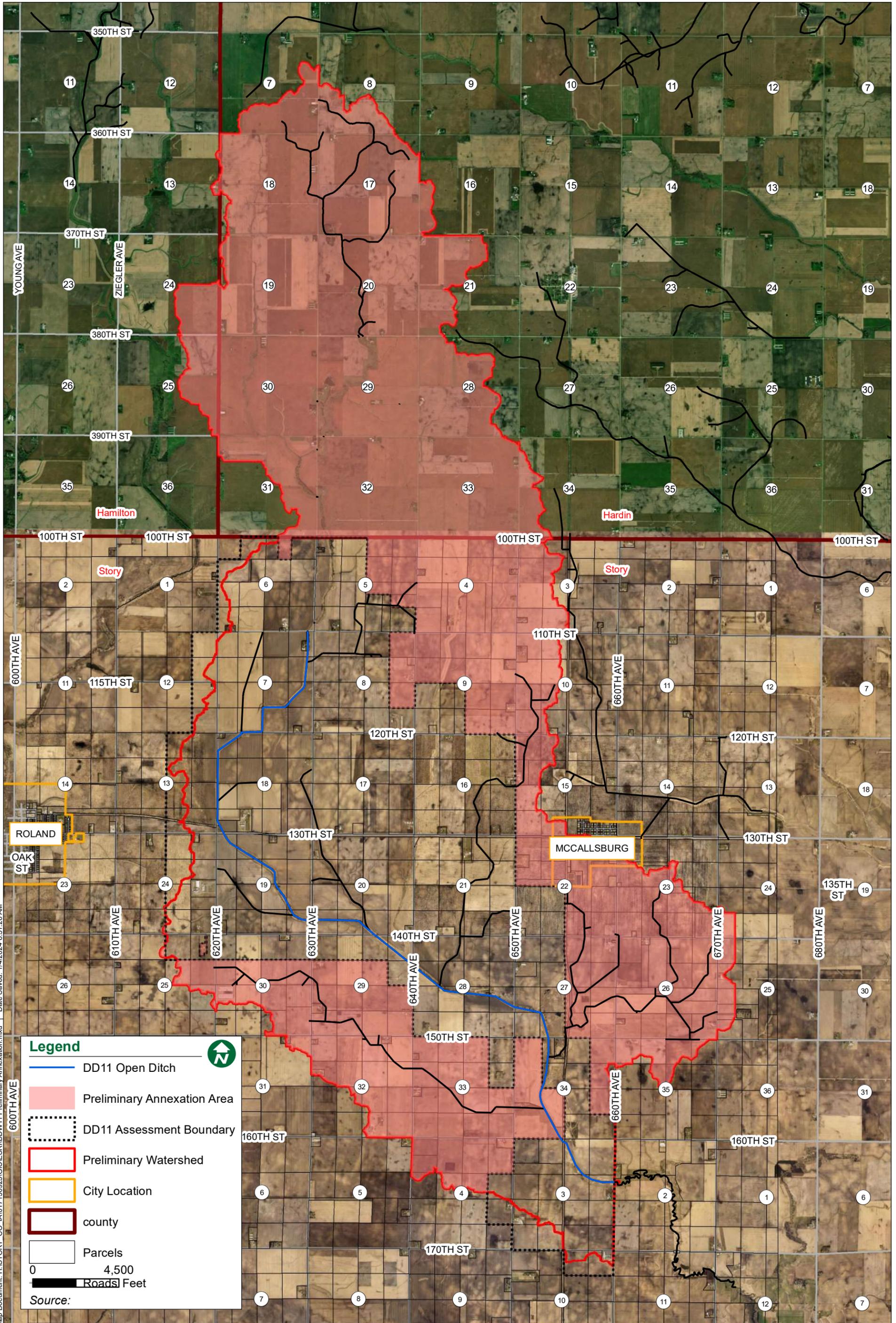
Estimated Average Cost Per Currently Assessed Acre (8,500 ac)	\$154.12
Estimated Average Cost Per Acre Per Year (10 years, 5% interest)	\$19.96
Estimated Average Cost Per Acre Per Year (20 years, 5% interest)	\$12.37

Appendix C: Right Of Way Calculations

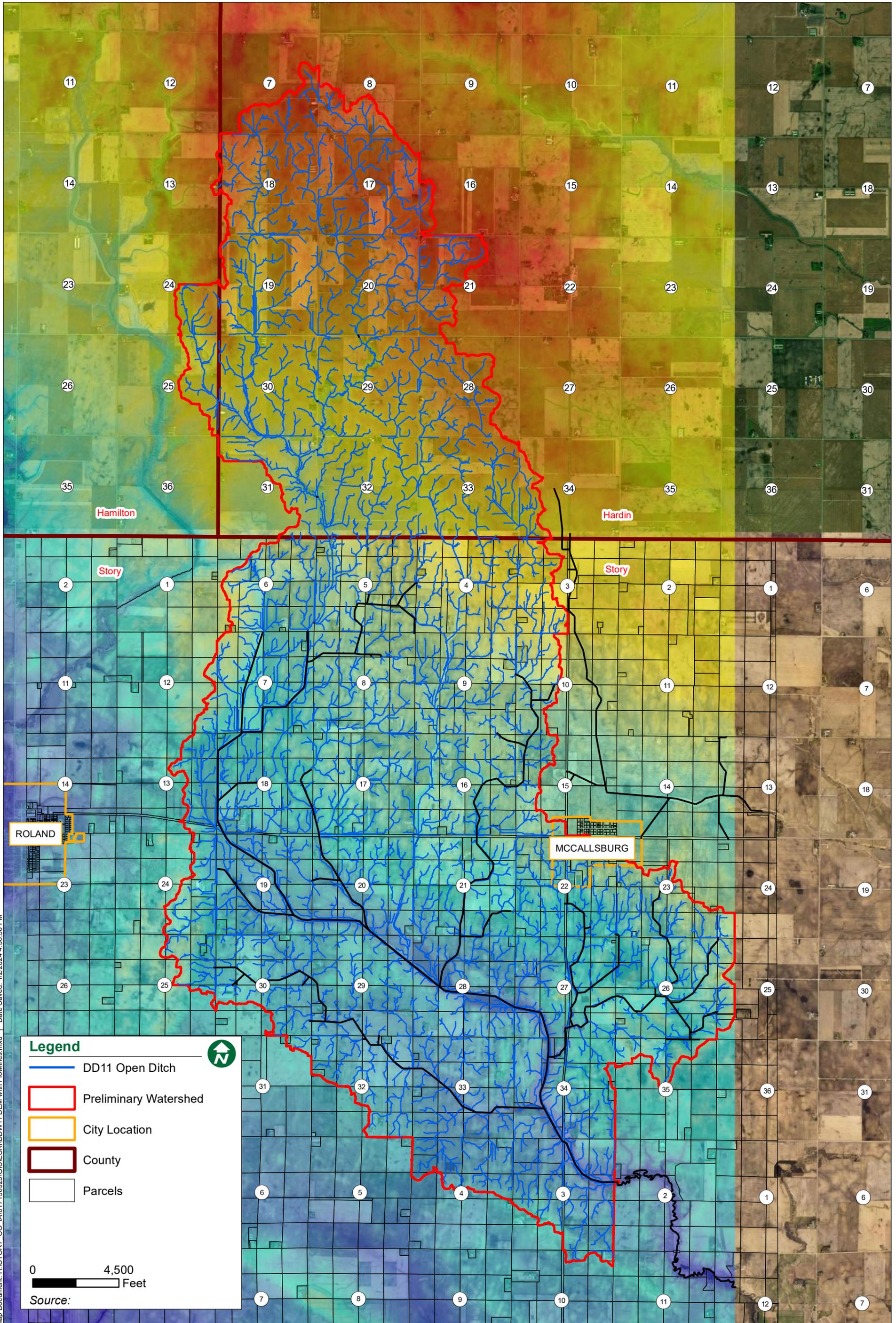
**Open Ditch Right of Way
Drainage District Warren No. 11
Story County**

Story County Landowner	Parcel ID	Legal Description	Total Proposed		
			Establishment From Ditch Centerline (ft)	Existing Ditch ROW (ac)	Proposed Ditch ROW (ac)
ARMKNECHT, ANNE P 1/2	0703200100	SECTION:03 TOWNSHIP:84 RANGE:22 NW NE EX RY	50	0.00	4.66
ARMKNECHT, ANNE P 1/2	0703200300	SECTION:03 TOWNSHIP:84 RANGE:22 SW NE EX RY	50	0.00	0.72
ARMKNECHT, ANNE P 1/2	0703200400	SECTION:03 TOWNSHIP:84 RANGE:22 SE NE	50	0.85	3.15
BECKMAN, MARY E & DENNIS V COTRUSTEES	0319100100	SECTION:19 TOWNSHIP:85 RANGE:22 NW NW	50	0.20	2.27
BETHANY LUTHERAN CHURCH	0328300100	SECTION:28 TOWNSHIP:85 RANGE:22 NW SW	50	0.00	0.03
BETHANY LUTHERAN CHURCH	0328300200	SECTION:28 TOWNSHIP:85 RANGE:22 NE SW	50	0.00	3.16
DECOOK, STEPHEN K TRUST	0307300200	SECTION:07 TOWNSHIP:85 RANGE:22 NE SW	50	0.00	0.04
DECOOK, STEPHEN K TRUST	0307300400	SECTION:07 TOWNSHIP:85 RANGE:22 SE SW	50	0.00	4.36
DECOOK, STEPHEN K TRUST	0307400300	SECTION:07 TOWNSHIP:85 RANGE:22 SW SE	50	0.00	1.72
ELLINGSON, PHILLIP D & MARY C	0307200205	SECTION:07 TOWNSHIP:85 RANGE:22 NE NE EX PARCEL"A"CFN 13-254	50	0.91	0.69
ELLINGSON, PHILLIP D & MARY C	0307200400	SECTION:07 TOWNSHIP:85 RANGE:22 SE NE	50	1.82	3.07
HENDRICK FAMILY IRREVOCABLE TRUST	0334100320	SECTION:34 TOWNSHIP:85 RANGE:22 PARCEL D W1/2	50	0.00	3.36
HILBERT, GRANT	0334300210	SECTION:34 TOWNSHIP:85 RANGE:22 PARCEL E 1/2	50	0.00	3.36
HILBERT, GRANT JOSEPH	0334100210	SECTION:34 TOWNSHIP:85 RANGE:22 NE NW E34 1/2 AC EX RR & EX BEG NE CORW550' S1084' E TO QTR LINE N TO BEG	50	1.91	3.03
HILBERT, GRANT JOSEPH	0334100410	SECTION:34 TOWNSHIP:85 RANGE:22 E34 1/2 AC EX RY SE NW	50	0.00	3.03
HILL, JERRY L	0328400100	SECTION:28 TOWNSHIP:85 RANGE:22 NW SE	50	1.83	3.06
HILL, JERRY L	0328400200	SECTION:28 TOWNSHIP:85 RANGE:22 NE SE	50	1.98	3.39
JOHNSON, GARY G & MARION A	0318100105	SECTION:18 TOWNSHIP:85 RANGE:22 COMM NW COR E1335.6' SW1649.7' N953.7' N1/2 NW EX PARCEL"A" SLIDE 373 PG 3	50	1.15	2.09
KENNEY BROTHERS PARTNERSHIP	0703100205	SECTION:03 TOWNSHIP:84 RANGE:22 N38.94 AC NE NW EX RY	50	0.00	0.37
KIMBERLY FARM ENTERPRISES LLC	0328100300	SECTION:28 TOWNSHIP:85 RANGE:22 SW NW	50	0.00	3.87
KIMBERLY FARM ENTERPRISES LLC	0328100400	SECTION:28 TOWNSHIP:85 RANGE:22 SE NW	50	0.00	0.10
LOTT, BETH RENIE & JEFFREY ALLEN 1/2	0320400300	SECTION:20 TOWNSHIP:85 RANGE:22 SW SE	50	1.38	1.97
RISDAL ENTERPRISES LP	0319100200	SECTION:19 TOWNSHIP:85 RANGE:22 NE NW EX RY	50	1.82	2.71
RISDAL ENTERPRISES LP	0319100400	SECTION:19 TOWNSHIP:85 RANGE:22 SE NW	50	0.00	0.85
RISDAL ENTERPRISES LP	0319200300	SECTION:19 TOWNSHIP:85 RANGE:22 SW NE	50	0.00	3.38
RISDAL FARMS INC	0319400100	SECTION:19 TOWNSHIP:85 RANGE:22 NW SE	50	0.00	2.53
RISDAL FARMS INC	0319400200	SECTION:19 TOWNSHIP:85 RANGE:22 NE SE	50	0.25	1.00
RISDAL FARMS INC	0319400400	SECTION:19 TOWNSHIP:85 RANGE:22 SE SE	50	0.50	3.11
SHOLD FARMS INC	0318300100	SECTION:18 TOWNSHIP:85 RANGE:22 NW SW	50	1.30	2.86
SHOLD FARMS INC	0318300310	SECTION:18 TOWNSHIP:85 RANGE:22 PT S1/2 SW LYING NW OF PARCEL COMM SW COR SEC 18 E1839.9' N1320' W626' S598.5' W1213.9' S721.5' TO BEG	50	0.00	1.21
STORY COUNTY	0318300500	SECTION:18 TOWNSHIP:85 RANGE:22 ABAND R R ROW S1/2 SEC 18 (PRAERI RAIL TRAIL)	50	3.32	0.57
SWANSON TRUST #1	0329200100	SECTION:29 TOWNSHIP:85 RANGE:22 NW NE	50	1.32	1.94
SWANSON TRUST #1	0329200200	SECTION:29 TOWNSHIP:85 RANGE:22 NE NE	50	0.00	2.94
SWANSON TRUST #1	0329200400	SECTION:29 TOWNSHIP:85 RANGE:22 SE NE	50	0.00	0.94
SWANSON, ANDREW J	0327300100	SECTION:27 TOWNSHIP:85 RANGE:22 NW SW	50	0.00	2.95
SWANSON, ANDREW J	0327300200	SECTION:27 TOWNSHIP:85 RANGE:22 NE SW	50	0.00	0.09
SWANSON, ANDREW J	0327300400	SECTION:27 TOWNSHIP:85 RANGE:22 SE SW	50	0.00	3.19
TJELMELAND, DWAYNE E LEST 1/2	0307400100	SECTION:07 TOWNSHIP:85 RANGE:22 NW SE	50	0.00	2.40
TJELMELAND, DWAYNE E LEST 1/2	0307400200	SECTION:07 TOWNSHIP:85 RANGE:22 NE SE	50	0.00	3.44
TJELMELAND, DWAYNE E LEST 1/2	0318100160	SECTION:18 TOWNSHIP:85 RANGE:22 NW NW EX TRACT COMM NW COR E1335.6'SW1649.7' N953.7' TO BEG	50	1.02	2.02
TJELMELAND, DWAYNE E LEST 1/2	0318100210	SECTION:18 TOWNSHIP:85 RANGE:22 NE NW EX BEG NW COR E312.14' SW TO PT APX230'S OF NW COR N230' TO BEG	50	0.28	0.35
TJELMELAND, DWAYNE E LEST 1/2	0318100300	SECTION:18 TOWNSHIP:85 RANGE:22 SW NW	50	1.32	2.91
VOGA, GREGORY E & LANA K	0318300360	SECTION:18 TOWNSHIP:85 RANGE:22 SW SW S721.6' & RR ROW CONTAINED THEREIN EX HY & EX PT TO STORY CO	50	0.00	1.26
WELLMAN, RICHARD W HERITAGE TRUST	0327300300	SECTION:27 TOWNSHIP:85 RANGE:22 SW SW	50	0.00	0.14
WOSTER, MARCUS D	0307200225	SECTION:07 TOWNSHIP:85 RANGE:22 NE NE PARCEL"A"CFN 13-254	50	0.00	2.34
WT & RW SPAHR FAMILY LIMITED PARTNERSHIP	0320300300	SECTION:20 TOWNSHIP:85 RANGE:22 SW SW	50	0.00	3.05
WT & RW SPAHR FAMILY LIMITED PARTNERSHIP	0320300400	SECTION:20 TOWNSHIP:85 RANGE:22 SE SW	50	0.00	3.20

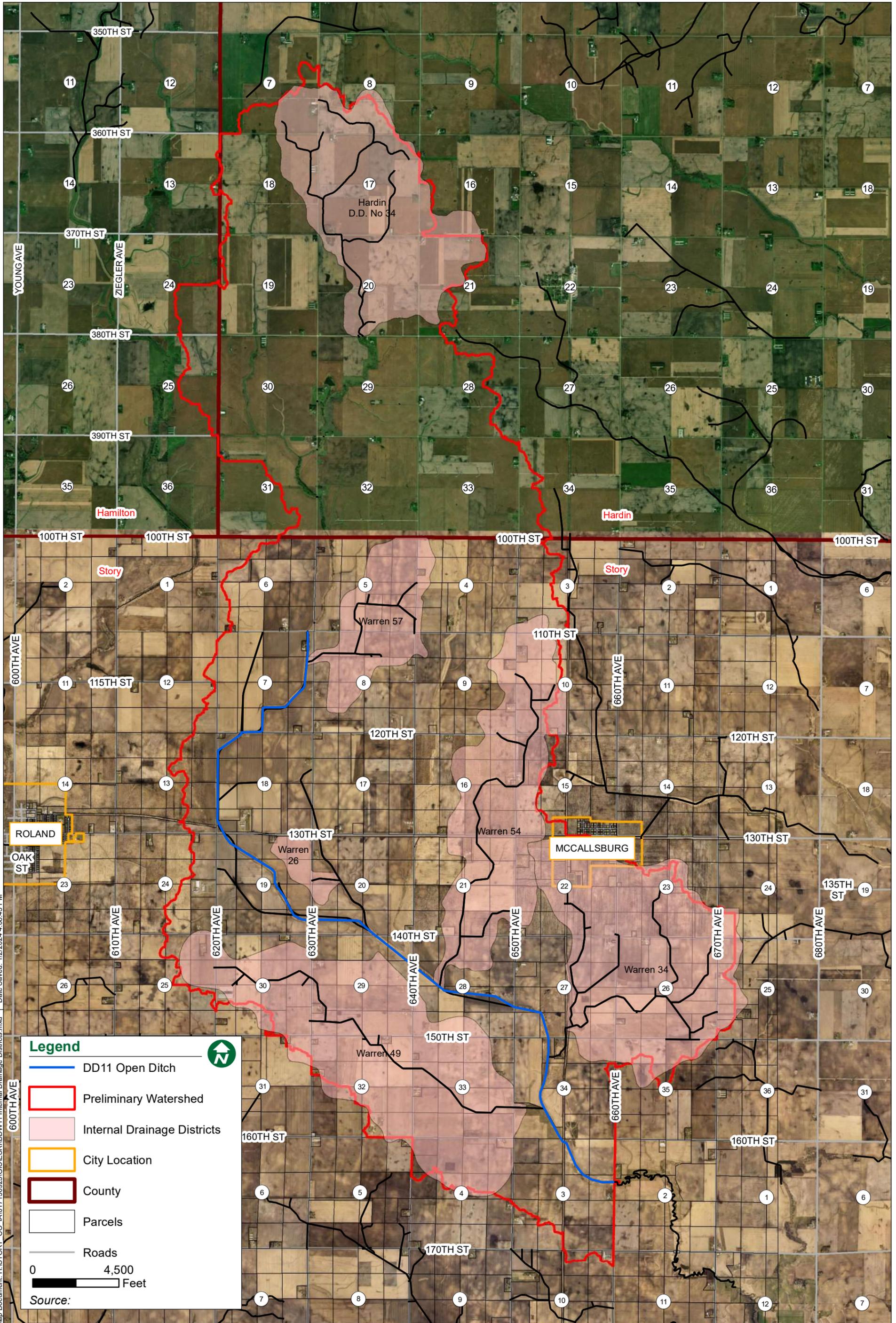
Appendix D: Proposed Annexation Map



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Appendix E: Preliminary Plans