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ENGINEER'S REPORT

JOINT DRAINAGE DISTRICT NO. 1
MAIN OPEN DITCH REPAIRS
PALO ALTO & KOSSUTH COUNTY, IOWA

PROJECT NO: E23114

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Collin Klingbeil Date 6/17/24

Collin J. Klingbeil, P.E.
License number 24741
My license renewal date is December 31, 2025
Pages or sheets covered by this seal:
ALL

I. INTRODUCTION/HISTORY

A. Scope

Several repair requests (enclosed) have been filed for the Main Open Ditch of Joint Drainage District No. 1 (JDD1) of Palo Alto and Kossuth County, Iowa. A major flood event occurred in May of 2023, which caused significant damage to the ditch, which had recently undergone a major repair project (work was primarily done in 2020 & 2021). The Kossuth and Palo Alto County Boards of Supervisors, acting as trustees for JDD1, subsequently appointed Jacobson-Westergard & Associates, Inc. to determine the full extent of damages to the ditch, and complete the necessary survey, study, plan, and report to determine the most feasible means of making repairs. We also note that additional damages to the ditch have been sustained in the spring of 2024.

JDD1 includes over 42,000 acres of land within Palo Alto, Kossuth, and Humboldt County, Iowa. The Main Open Ditch (also known as Lotts Creek) begins northwest of Fenton and extends southward and eastward approximately 30 miles before it ends at the Kossuth / Humboldt County line.

B. History

History of JDD1 relative to the scope of this project is summarized below:

- May 2017 – requests for repairs were made for a ditch cleanout, straightening, and tree removal.
- December 2017 – Bolton & Menk, Inc. was appointed as the engineer for the Main Open Ditch Repair
- April 2019 – Engineer's report filed
- June 2019 – hearing held regarding engineer's report
    - Report approved
    - Proceed with annexation and reclassification
- September 2019 – plans and specifications approved and bid letting set
- November 2019 – bid letting, low bid by Cory Juergens Construction, LLC who was awarded the contract. Contract completion date set for December 1, 2021.
- March 2022 – completion report filed
- April 2022 – completion hearing held, work under the contract accepted, damage reimbursements to landowners approved
- May 2023 – major flood event in JDD1, causing substantial damage
- Summer 2023 – Drone flight of Main Open Ditch completed by Bolton & Menk, Inc.
- September/October 2023 – Jacobson-Westergard & Associates, Inc. appointed as engineer
- November/December 2023 – entire Main Open Ditch of JDD1 inspected for damages
- Spring 2024 – multiple major storm/flood events have occurred, causing additional damages to the ditch. At the writing of this report the full extent of additional damages has not been determined.

II. INVESTIGATION

The full extent of the 30 mile open ditch was inspected, and damages sustained in 2023 have been inventoried. JDD1 history and records, engineer's reports and plats, plans, and profiles of district facilities were reviewed. A summer 2023 drone flight completed by Bolton & Menk, Inc. was also reviewed.

A. Main Open Ditch Design

We researched the records of JDD1 to find the original design of the Main Open Ditch. Generally, the design was a trapezoidal channel with bottom width ranging from 24 feet at the lower end to 10 feet at the upper end.

The original profile and grades for the Main Open Ditch were unable to be located. Various grades have been used throughout the years as repairs have been completed in different reaches of the ditch. It appears in general the grade of the Main Open Ditch ranges from 0.04 – 0.15%. This is fairly typical of drainage district open ditches in north-central Iowa.

The original Main Open Ditch was constructed with side (bank) slopes of 1:1 (horizontal feet:vertical feet). It appears that 1:1 side slopes were not stable, and over the years the banks have eroded to flatter slopes. The construction plans for several repairs completed in the late 1980's and early 1990's by McClure Engineering called for 2:1 side slopes. The plans for the recently completed repair project called primarily for 1.5:1 side slopes, with one reach of 2:1 side slopes. It is our understanding that these side slopes were set by attempting to match the existing side slopes of the Main Open Ditch at the time it was surveyed.

According to Iowa Code Chapter 468, a repair to a drainage district facility is anything that is necessary to restore the facility to its original design or intended efficiency/capacity, or to prolong its useful life. The Board of Trustees for the district has a legal responsibility to maintain the district facilities in a reasonable state of repair.

B. Causes of Damages

The purpose of this report is to evaluate the damages to the Main Open Ditch of JDD1, and to recommend the most appropriate and feasible means of making repairs. However, it is also of value to attempt to understand what led to the damages that occurred.

We are aware that a major repair project was completed primarily in 2020 and 2021 to the Main Open Ditch. That work resulted in leaving the ditch banks bare of vegetation, which put the banks at higher risk of being damaged during a high flow or flood event. This is normal for a ditch repair project. However, in our opinion this ditch was at an elevated risk due to the prevalence of sand and gravel in its banks. This made the banks less stable, and also slowed the re-establishment of vegetation.

In looking at the ditch, we believe that the melting of snow and ice from the winter of 2022/2023 caused damages to surface drain and tile outlet pipes, and may have also harmed the ditch banks to some degree, leaving them even more susceptible to damages from the flood that would follow.

In May 2023 a major flood event occurred in the watershed of JDD1. We understand there were reports of up to 5 inches of rain within a couple of hours and about 7 inches for the storm total. Based on NOAA flood frequency estimates for this area a 5-inch rain in 2 hours should occur only once every 100 to 200 years. When the flood occurred many of the banks appeared to have grass growing on them, but it is likely that their root systems were not well developed. This flood event, combined with the other previously described conditions appear to have been the primary causes of the damages that occurred.

C. Open Ditch Damages

We have found that the Main Open Ditch of JDD1 has sustained major damages and is in need of repairs. The banks have sloughed in many locations/reaches along the ditch, with the extent of damage being variable. In some locations the bank has completely failed, in others the bank damage is minor and is likely to heal on its own.

In general, the most severe damages appear to be located in the following areas:

1. Where sand and gravel are present in the soil adjacent to the ditch or in the ditch banks
    a. Layers of sand and gravel can be seen in the eroded banks
2. At locations where the ditch changes direction where the banks are not lined with riprap
    a. Many of the inside bends are not currently lined with riprap, and sustained damage
3. At the upstream and downstream extents of where riprap is currently placed (typically entering or exiting bends in the ditch).
4. Where water ran over the banks of the ditch

In the center of the ditch we gathered bottom shots intermittently and found that generally the ditch is near plan grade/elevations called for in the prior repair project. However, in various locations the bank sloughing deposited sediment in the bottom of the ditch, either adjacent to locations with bank damages or further downstream.

We note that in some reaches the banks of the ditch are bare, and grasses have not yet been established but the bank does not otherwise appear to be damaged.

D. Pipe Damages

In addition to the flood event in May 2023, we found evidence of damages likely caused by ice/snow in the process of melting after the historic winter of 2022/2023. It is also possible that Numerous tile and surface drain pipes in the Main Open Ditch have been damaged/bent/kinked/broke off. This includes pipes installed as part of the previous repair project. This could have been caused in part by debris in the ditch during the major flood event in May 2023, but we believe it in large part was caused by snow and ice melt. We did not observe that the pipes were extending too far out into the ditch, except where the bank has eroded significantly. We feel this also may have contributed to the other damages sustained along the open ditch.

Fortunately, many of the pipes are salvageable and we believe it would be sufficient to cut off the bent ends with a torch or grinder. See photos below.

E. Miscellaneous Damages

1. Failed riprap
   We note one area where the riprap installed as part of the prior repair project has failed (Site's 29 and 30). These sites are located in Section 26 of Garfield Township (T-94-N, R-30-W). It appears the primary reason for failure is the use of small riprap. These sites should be repaired, and larger riprap added.

2. Rock chute
   There is a rock chute located in Section 5 of GarfieldTownship (T-94-N, R-30-W) in Kossuth County that is damaged. We understand the rock chute was constructed prior to the 2020 – 2021 Main Open Ditch repair project, to address the headcutting erosion that was taking place.

   As can be seen in the photo below, taken in November 2023, at the downstream extent of the rock chute (which terminates about 50-60 feet before it reaches the Main Open Ditch) significant erosion has occurred, and the chute has been undermined. This issue needs to be addressed, or will continue to worsen. Surface runoff from approximately 2,000 acres drains to this point, and enters the Main Open Ditch through this rock chute. When that amount of water drops multiple feet into this chute it has a large amount of erosive energy.

We recommend that the rock chute be repaired and extended to the Main Open Ditch. This would include digging down to create a stilling basin to lower the energy of the water before it enters the Main Open Ditch. We also recommend that the chute be extended uphill (west), to form an inlet curtain. This will help ensure the chute will not be undermined on the inlet side.

F. Spring 2024 Additional Damages

We are aware that there may have been additional damages sustained by the Main Open Ditch in May and June of 2024. We have not inspected the damages. If damages are severe enough a drone flight may be advisable. If landowners are aware of additional damages sustained in 2024 please let us know.

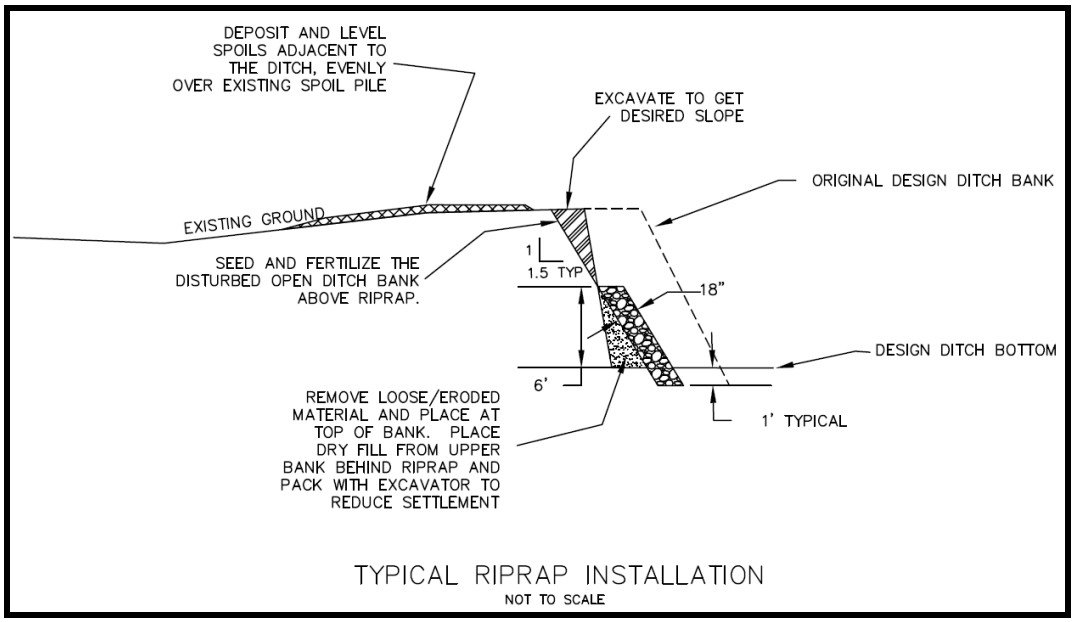
III. DITCH BANK REPAIR DISCUSSION

As a result of our investigation, we conclude that repairs to the Main Open Ditch of JDD1 are needed. In our opinion, some of the minor bank sloughs will heal and are better off left alone. However, the moderate and severe bank sloughing / failure must be addressed. These areas have raw and vertical banks, often with poor material, and will continue to degrade and create larger problems if nothing is done. Additionally, the material that has sloughed into the channel should be cleaned out. This is located primarily along the toe of the ditch bank in areas where the bank has sloughed. We also recommend that tile outlets and surface drains that have been damaged be either repaired (if possible) or replaced.

We are well aware of the large expense of the recent complete Main Open Ditch repair project, and seek to find a solution that is both effective and cost efficient. The largest cost item for this project is the repair of the ditch banks that have sloughed or failed. Options are presented and discussed below:

A. Riprap

In our opinion, the severe bank failures should be repaired using riprap. Riprap provides a solid anchor for the bank, and holds up the bank above it. It also helps overcome the issue of poor bank material. See typical riprap installation detail, below.

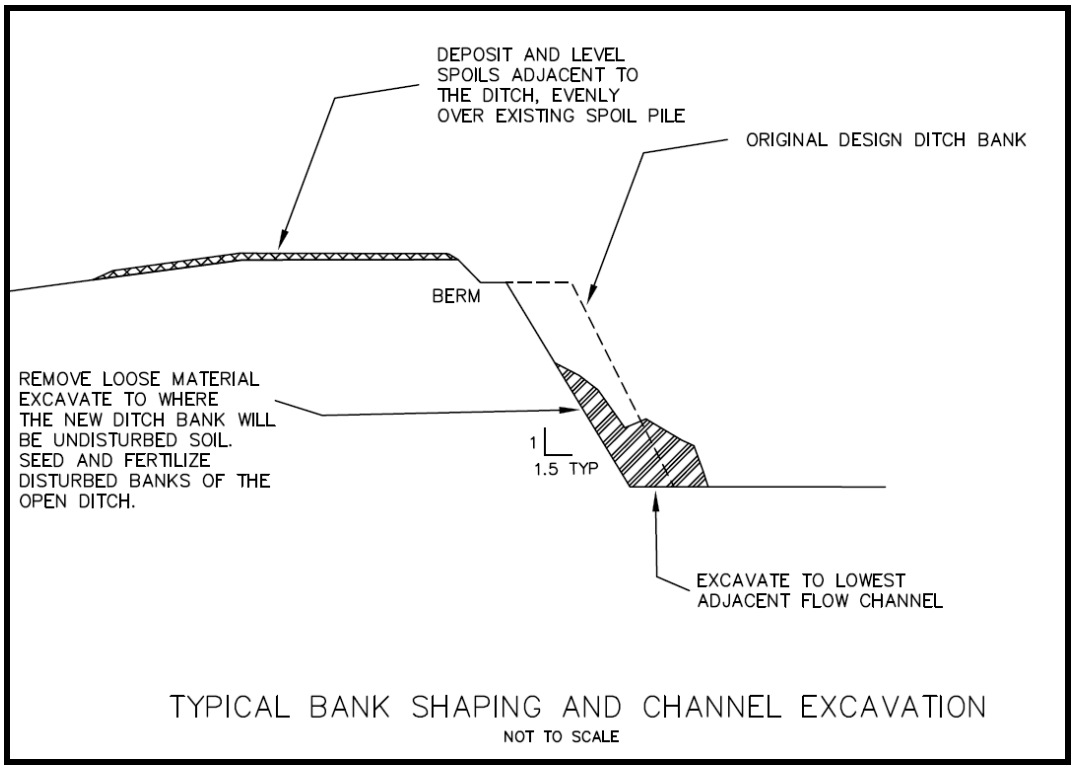


We note that shaping the ditch bank above the riprap will often result in widening the ditch, and some amount of land will be lost (to the ditch). The only way to prevent this would be to import fill, which would be very expensive. Additionally, imported fill used to rebuild ditch banks would be susceptible to being washed away in a flood event before vegetation is well established.

Riprap is reliable, but expensive. There are many long reaches of ditch bank that have completely failed, and a large amount of riprap would be needed. Riprap was used in several locations as part of the recent repair project, and in general helped to protect the banks quite well from the flooding and snowmelt in the spring of 2023 that contributed to the damages to the remainder of the ditch.

B. Bank Shaping

Another option for repairing the ditch banks would be to re-shape the ditch bank, particularly for long continuous reaches of minor to moderate damages. See detail below.



The major advantage of bank shaping as compared to riprap is the lower price. However, there are several disadvantages to consider. As with riprap, the ditch would be widened and land lost to the channel, however the extent of land lost would be greater with bank shaping. Another disadvantage with bank shaping is it may only be a temporary fix. If we move the bank back (widen the ditch) but keep the bank slope the same, the new bank may be prone to sloughing / failing again. Particularly in areas with poor bank materials such as sand, gravel, and cobble. We could consider flattening the bank slopes in these areas, however this would result in even more land being lost to the channel, more sand and gravel being deposited adjacent to the ditch, and the banks at the upstream and downstream extents (at transitions between different bank slopes) may be more prone to future damages. See further discussion regarding flattening bank slopes in the section below.

C. Flatten Bank Slopes

Based on the Bolton & Menk repair construction plans the existing side slopes of the Main Open Ditch are approximately 1.5:1 (horizontal feet:vertical feet) and in one reach 2:1. The original ditch was dug at 1:1 side slopes and the ditch has obviously eroded wider and flattened the bank slopes somewhat. As has been previously discussed, many of the banks that have been damaged are comprised of poor bank materials such as sand and gravel. According to the Iowa Drainage Guide, 1.5:1 side slopes are appropriate for clay and other heavy soils, 2:1 side slopes are suitable for silty soils, and 3:1 side slopes are appropriate for sand.

An alternative worth considering is flattening the bank slopes of the entirety of the Main Open Ditch. As previously discussed, the original ditch was dug with 1:1 (horizonal feet:vertical feet) but has generally eroded to 1.5:1 and in one reach 2:1. Flatter banks are less prone to blowouts and damages. We would recommend going to 2:1 slopes throughout, except for banks that run parallel and adjacent to roads. Riprap would still be required in areas of severe damage.

The disadvantages of flattening the banks include losing land to the channel, and poor material being excavated and deposited on adjacent lands. The width of land lost to the channel depends on the depth of the ditch at a particular location, and the existing bank slope, but would average approximately 5-6 feet on each side of the ditch. We estimate that approximately 40 acres of land would be lost to the channel.

IV. RIGHT-OF-WAY (ROW)

Iowa Code grants drainage district a permanent right of egress and ingress, and right of access for maintenance, repair, improvement, and inspection of drainage district facilities. Unless right-of-way is acquired, landowners are to be reimbursed for any damages caused in the process of maintenance, repair, improvement, or inspection.

Bolton & Menk, Inc.'s 2019 engineer's report included an extensive discussion on the ROW of the Main Open Ditch of JDD1, and action was taken at the hearing in June 2019. Generally, it was determined that the ROW is the greater of the original ROW width, and 115 feet. The actual ROW widths vary and include widths of 148.5 feet, 132 feet, or 115 feet along the Main Open Ditch.

Drainage district open ditch ROW is an exclusive use easement that is generally not exercised outside the channel. Iowa Code specifically allows the landowner beneficial use of this land as long as the use does not interfere with the easement or rights of the drainage district.

We have discussed repairs to the Main Open Ditch in this report that would result in varying amounts of land being lost to the channel. We do not anticipate that any of the work considered would result in land outside the existing ROW being lost to the channel. However, it is possible that bank flattening in areas with severe bank failure may result in the channel extending beyond the existing ROW line.

We do acknowledge the land lost is currently able to be used for beneficial use (farmed, buffer program, etc.), and the loss of the land to the channel will mean that beneficial use is lost as well. It could be argued that this should be compensated for. Additionally, if the channel is widened some poor quality excavated material will be deposited adjacent to the ditch, some likely outside the existing ROW. It could also be argued that this should be compensated for. In our opinion, no compensation should be made for bank shaping and riprap repairs. However, further discussion may be warranted if the bank flattening project is pursued.

The district will need an area to perform the proposed work. The work limits for this project will generally be set at approximately 100 feet from each side of the center of the open ditch. Compensation for damages within the work limits, but outside the ROW is normally determined at the completion hearing and is subject to approval by the Board of Supervisors. The work limits will need to be wide enough to accommodate heavy equipment traffic, including trucks hauling riprap.

We note that buffer strips exist along the Main Open Ditch. Seed mix requirements vary, thus it is more practical to leave reseeding these areas to the individual landowner and reimburse the costs through the drainage district.

V. PERMITTING

Iowa floodplain rules state that excavations for the repair and maintenance of a drainage district open ditch, and stream bank protective devices are exempt and do not require approval from the Iowa Department of Natural Resources (Iowa DNR) so long as the ditch drains less than 100 square miles (which is the case here). We therefore do not anticipate that a permit will be required from the Iowa DNR for riprap or bank shaping.

We are hopeful that a permit would not be required for bank flattening, although at the writing of this report a determination from the Iowa DNR has not been made. If a permit is required we are hopeful that it would not be restrictive or add cost to the project.

We anticipate that in excess of 2,000 feet of ditch bank will be stabilized as part of this project. It appears likely that an individual permit through the United States Army Corps of Engineers (USACE) may be required. We are in the process of applying for the permit. We are hopeful that permit requirements will not be restrictive or add cost to the project. We are working with the USACE and hope to have additional information for the public hearing.

V. COST ESTIMATES

We have completed two construction cost estimates, one where riprap is the primary method for repairing damaged ditch banks and the other where bank shaping is predominantly used (riprap is only used for severe bank failures). We are in the process of completing a cost estimate for flattening the bank slopes of the entire Main Open Ditch, which will be covered in an amendment to be issued prior to the public hearing.

Option #1 – Primarily Riprap Bank Repairs

SECTION 1: CONSTRUCTION ASSESSABLE TO PRIVATE LANDS

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	CHANNEL EXCAVATION	53,690	LF	$5.00	$268,450.00
2	BANK SHAPING	5,549	LF	$4.00	$22,196.00
3	BANK SHAPING, UNDER RIPRAP	35,599	LF	$4.00	$142,396.00
4	RIPRAP, CLASS E	35,599	TN	$45.00	$1,601,955.00
5	GEOTEXTILE FABRIC	47,465	SY	$3.00	$142,395.00
6	12" DIA. CMP TILE OUTLET, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	144	LF	$32.00	$4,608.00
7	15" DIA. CMP TILE OUTLET, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	44	LF	$34.00	$1,496.00
8	15" DIA. CMP SURFACE DRAIN, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	196	LF	$34.00	$6,664.00
9	18" DIA. CMP SURFACE DRAIN,	166	LF	$35.00	$5,810.00

10	24" DIA. CMP SURFACE DRAIN,	88	LF	$36.00	$3,168.00
11	CUT OFF END OF EXISTING CMP, 12"	2	EA	$75.00	$150.00
12	CUT OFF END OF EXISTING CMP, 15"	6	EA	$80.00	$480.00
13	CUT OFF END OF EXISTING CMP, 18"	13	EA	$90.00	$1,170.00
14	CUT OFF END OF EXISTING CMP, 24"	7	EA	$100.00	$700.00
15	CUT OFF END OF EXISTING CMP, 36"	1	EA	$120.00	$120.00
16	SEEDING & FERTILIZING, OPEN	41,128	LF	$0.50	$20,564.00
17	ROCK CHUTE SITE EXCAVATION &	1	LS	$3,000.00	$3,000.00
18	GROUT (FOR ROCK CHUTE)	10	CY	$300.00	$3,000.00
19	FENCE REMOVAL	1,840	LF	$1.00	$1,840.00
20	MOBILIZATION	1	LS	$111,000.00	$111,000.00
ESTIMATED SUBTOTAL CONSTRUCTION COST:					$2,341,000
ESTIMATED SUBTOTAL CONSTRUCTION COST:					**$2,341,000**
CONSTRUCTION CONTINGENCIES					**$234,000**
ESTIMATED TOTAL ASSESSABLE CONSTRUCTION COST					**$2,575,000**
NON-CONSTRUCTION COSTS					
ENGINEERING - (REPORT, HEARINGS, PLANS & SPECS, BID LETTING, CONSTRUCTION, COMPLETION)					$200,000
PERMITTING ASSISTANCE					$10,000
LEGAL, PUBLICATIONS, MAILINGS, ETC.					$5,000
REIMBURSABLE CONSTUCTION DAMAGES					$50,000
INTEREST					$170,000
ESTIMATED TOTAL DISTRICT COST FOR OPTION #1					**$3,010,000**
AVG COST PER ACRE (BASED ON 42,721.23 ACRES):					$70
AVERAGE COST PER ACRE PER YEAR AT 5% INTEREST FOR 10 YEARS:					$9
AVERAGE COST PER ACRE PER YEAR AT 5% INTEREST FOR 20 YEARS:					$6

Option #2 – Primarily Bank Shaping Repairs

SECTION 1: CONSTRUCTION ASSESSABLE TO PRIVATE LANDS

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	CHANNEL EXCAVATION	53,690	LF	$5.00	$268,450.00
2	BANK SHAPING	29,700	LF	$4.00	$118,800.00
3	BANK SHAPING, UNDER RIPRAP	11,212	LF	$4.00	$44,848.00
4	RIPRAP, CLASS E	11,212	TN	$45.00	$504,540.00
5	GEOTEXTILE FABRIC	14,949	SY	$3.00	$44,847.00
6	12" DIA. CMP TILE OUTLET, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	144	LF	$32.00	$4,608.00
7	15" DIA. CMP TILE OUTLET, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	44	LF	$34.00	$1,496.00
8	15" DIA. CMP SURFACE DRAIN, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	196	LF	$34.00	$6,664.00
9	18" DIA. CMP SURFACE DRAIN, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	166	LF	$35.00	$5,810.00

10	24" DIA. CMP SURFACE DRAIN, RIVETED, ANNULAR CORRUGATIONS, 14 GAGE	88	LF	$36.00	$3,168.00
11	CUT OFF END OF EXISTING CMP, 12" DIA.	2	EA	$75.00	$150.00
12	CUT OFF END OF EXISTING CMP, 15" DIA.	6	EA	$80.00	$480.00
13	CUT OFF END OF EXISTING CMP, 18" DIA.	13	EA	$90.00	$1,170.00
14	CUT OFF END OF EXISTING CMP, 24" DIA.	7	EA	$100.00	$700.00
15	CUT OFF END OF EXISTING CMP, 36" DIA.	1	EA	$120.00	$120.00
16	SEEDING & FERTILIZING, OPEN DITCH, ONE-SIDE	41,128	LF	$0.50	$20,564.00
17	ROCK CHUTE SITE EXCAVATION & GRADING	1	LS	$3,000.00	$3,000.00
18	GROUT (FOR ROCK CHUTE)	10	CY	$300.00	$3,000.00
19	FENCE REMOVAL	1,840	LF	$1.00	$1,840.00
20	MOBILIZATION	1	LS	$52,000.00	$52,000.00

ESTIMATED SUBTOTAL CONSTRUCTION COST:	$1,086,000
ESTIMATED SUBTOTAL CONSTRUCTION COST:	**$1,086,000**
CONSTRUCTION CONTINGENCIES	**$109,000**
ESTIMATED TOTAL ASSESSABLE CONSTRUCTION COST	**$1,195,000**
NON-CONSTRUCTION COSTS	
ENGINEERING - (REPORT, HEARINGS, PLANS & SPECS, BID LETTING, CONSTRUCTION, COMPLETION)	$200,000
PERMITTING ASSISTANCE	$10,000
LEGAL, PUBLICATIONS, MAILINGS, ETC.	$5,000
REIMBURSABLE CONSTUCTION DAMAGES	$50,000
INTEREST	$88,000
ESTIMATED TOTAL DISTRICT COST FOR OPTION #1	**$1,548,000**
AVG COST PER ACRE (BASED ON 42,721.23 ACRES):	$36
AVERAGE COST PER ACRE PER YEAR AT 5% INTEREST FOR 10 YEARS:	$5
AVERAGE COST PER ACRE PER YEAR AT 5% INTEREST FOR 20 YEARS:	$3

Option #3 – Flatten Bank Slopes

To be addressed in an amendment to this Engineer's report, to be issued prior to the public hearing.

VI. BUFFER STRIPS

It appears likely that farm program buffer strips exist along the Main Open Ditch, and may be disturbed by the work necessary to make repairs. Further, land lost to the channel may pose a problem for buffer contracts. This puts landowners in potential violation, and at risk of being penalized.

The United States Department of Agriculture (USDA) issued a memo (enclosed) on April 12, 2023 regarding drainage district activities on CRP during the primary nesting season, (May 15 – August 1). It outlines a process by which a landowner can request for approval for CRP disturbance during this period, which includes making a written request to the Iowa State Technical Committee (Iowa STC),

which meets approximately every 3 months. An environmental review and approval by the Iowa STC is required for every request.

We understand this places a burden on the landowner, however for work of this nature May 15 – August 1 is a very important timeframe for construction. To prohibit work during this time would greatly extend the timeframe required to complete the work, and would add to the cost of the project. JDD1 has permanent right-of-way and easement, giving it the legal right to access its facilities to make repairs. The district does not want to cause undue hardship, but ultimately it does not have the responsibility to adhere to farm program rules applicable to buffer strip contracts which were voluntarily entered into by landowners.

In order to ensure that landowners remain in compliance, we strongly encourage owners of lands with buffer strips along the Main Open Ditch independently make a request to the Iowa STC to allow CRP disturbance during the primary nesting season, for the purpose of making drainage district open ditch repairs. We also ask that the contract holder be notified of the potential loss of lands to the channel. We will coordinate and work with the USDA / NRCS to attempt to minimize issues that could occur.

VII. FUNDING

We have reached out to several potential sources of outside funding to help defray the costs of repairing the damages to the Main Open Ditch of JDD1 sustained in 2023. We also asked for assistance from the Iowa Farm Bureau, the Iowa Drainage District Association, and Senator Ernst's office to help find funding.

The most realistic source of funding for a project like this would normally be through the Federal Emergency Management Agency (FEMA). However, in order for a project to be eligible for funding through FEMA, both State of Iowa and Presidential disaster declarations are necessary for the county affected. Unfortunately, no disaster was declared in Kossuth or Palo Alto County for the May 2023 flooding that occurred. Typically, we would expect between FEMA and the state that 85% of disaster repair costs would be covered. We also reached out to Iowa Homeland Security, the Iowa Department of Agriculture, and the Natural Resources Conservation Service (NRCS), and were not able to find funding sources this project would be eligible for.

The 2024 damages were sustained occurred during a disaster period for Kossuth County, which was declared by Governor Kim Reynolds. At the writing of this report the President has not made a disaster declaration to make the 2024 damages eligible for FEMA funding. However, we have received word that some United States Department of Agriculture (USDA) Emergency Watershed Protection Program (EWPP) funding has become available for damages in 2024. If any damages that occurred in 2024 are in need of repair we will attempt to secure funding.

VIII. ASSESSMENT SCHEDULE REVIEW

JDD1 recently was reclassified and additional lands were annexed into the district. Any expenses accrued for this project should be levied against the Main Open Ditch assessment schedule of JDD1.

IX. CONCLUSION/RECOMMENDATIONS

This report confirms the need for repairs to the Main Open Ditch of Joint Drainage District No. 1 in Kossuth and Palo Alto County, Iowa.

As previously discussed, the minor damages will likely heal on their own and are better off left alone. However, many of the damaged banks require repairs or their condition will only worsen. In addition, there are numerous damaged tile outlets and surface drains that need to be repaired or replaced. Eroded material has also been deposited in the bottom of the channel and should be removed. Regarding repairs to the ditch banks, we looked at three options. A summary comparison of the options is shown in the table below.

Comparison Factor	Option #1	Option #2	Option #3

Regarding repairs to the ditch banks, we looked at three options. A summary comparison of the options is shown in the table below.

Comparison Factor	Option #1	Option #2	Option #3
Primary Bank Repair Method	Riprap	Bank Shaping	Flatten Bank Slopes
Project Cost Estimate	$3,010,000	$1,548,000	– *
Avg. Cost Per Acre	$70	$36	– *

*: To be included in an amendment to this report, to be issued prior to the public hearing.

The costs shown in the table above illustrate the major cost difference between riprap and bank shaping. We expect the total project cost to flatten the bank slopes will fall between the cost of Option #1 & #2. The cost will be heavily influenced by the unit price of the large amount of material to be excavated.

If it is determined that Option #3 is not desirable, we recommend that we be allowed to use our best professional judgment in deciding how to repair each individual site, taking into account the severity of the damages, the composition of the existing bank (sand/gravel/silt/clay), cost, effectiveness and longevity of the repairs and other pertinent factors. We are hopeful since the time of our damage survey (November – December 2023) the ditch has healed itself more than anticipated and less repairs will ultimately be necessary. With so many unknowns it is difficult to estimate a project cost, but we believe it could be in the range of **$2 – 2.5 million**. We are hopeful that it would end up being less.

The Palo Alto and Kossuth County Boards of Supervisors, as trustees, for Joint Drainage District No. 1, should tentatively approve this report and set a date for a public hearing. At the hearing, the trustees should seek input from landowners. Once modifications to the report are made, if any, the proposed repairs project should be approved, the engineer should be directed to develop plans and specifications and proceed toward bid letting.

Sincerely,

JACOBSON-WESTERGARD & ASSOCIATES INC.

Collin J. Klingbeil, P.E.

Encl. Repair Requests
USDA CRP Nesting Season Memo 23-07
Preliminary Construction Plans

CN

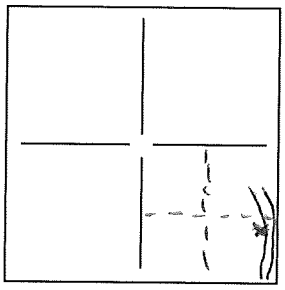
REQUEST FOR REPAIRS

IN THE MATTER OF DRAINAGE DISTRICT NO. PAR 1 OD No. 33
Lateral or Sub-District

To the Honorable Board of Supervisors,
Kossuth County, Iowa

I, THE UNDERSIGNED, hereby state that I am the tenant/owner/trustee (circle one) of NE SE 1/4 Sec. 20, Twp. 95, Range 30W, (Whittemore Twp.) and that repairs are necessary on account of

Washout on West bank needs repairs



*rough drawing

and I hereby request that repairs be made at the earliest possible date.

Dated at Algona this 15 day of May, 20 23

Aaron Montag 515-200-9248
Print name and phone number

ACKNOWLEDGED: [signature]
Supervisor

[signature]
Signature

CN

REQUEST FOR REPAIRS

IN THE MATTER OF DRAINAGE DISTRICT NO. PAK 1 OD No. 34
Lateral or Sub-District

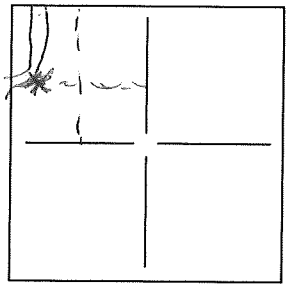
To the Honorable Board of Supervisors,
Kossuth County, Iowa

I, THE UNDERSIGNED, hereby state that I am the tenant/owner/trustee (circle one) of NW NW 1/4 Sec. 9, Twp. 95, Range 30W, (Whittemore Twp.) and that repairs are necessary on account of

Section 8 and 9

Wash out on east & South bank of open ditch

Need Rip Rap



*rough drawing

and I hereby request that repairs be made at the earliest possible date.

Dated at Algona this 15 day of May, 20 23

Quinn Dahlhauser 515-320-3195
Print name and phone number

ACKNOWLEDGED: [signature]
Supervisor

Quinn Dahlhauser by phone
Signature

CN

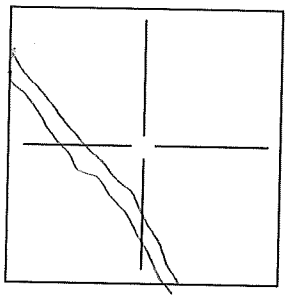
REQUEST FOR REPAIRS

IN THE MATTER OF DRAINAGE DISTRICT NO. PAK, 1 OD No. 16
Lateral or Sub-District

To the Honorable Board of Supervisors,
Kossuth County, Iowa

I, THE UNDERSIGNED, hereby state that I am the tenant/owner/trustee (circle one) of W½ Sec. 9, Twp. 94, Range 30, (Garfield Twp.) and that repairs are necessary on account of

West side of
Open Ditch
Sloughing off large
chunks missing



*rough drawing

and I hereby request that repairs be made at the earliest possible date.

Dated at Algona this 6 day of March, 20 24

Duane Berninghaus 515-320-2201
Print name and phone number

ACKNOWLEDGED: Carter Nutt
Supervisor

Duane Berninghaus
Signature

RT

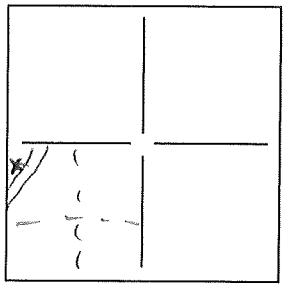
REQUEST FOR REPAIRS

IN THE MATTER OF DRAINAGE DISTRICT NO. PAK 1 OD No. 37
Lateral or Sub-District

To the Honorable Board of Supervisors,
Kossuth County, Iowa

I, THE UNDERSIGNED, hereby state that I am the tenant/owner/trustee (circle one) of NW SW 1/4 Sec. 9, Twp. 96, Range 30W, (Lotts Creek Twp.) and that repairs are necessary on account of

Surface drain
Broken washed out
needs repaired/replaced



*rough drawing

and I hereby request that repairs be made at the earliest possible date.

Dated at Algona this 9 day of May, 20 24

Mike Marso 515-368-1412
Print name and phone number

ACKNOWLEDGED: Roger Nott
Supervisor

Mike Marso dtg. phone
Signature

REQUEST FOR REPAIRS

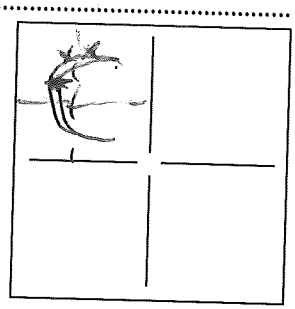
CN

IN THE MATTER OF DRAINAGE DISTRICT NO. PAK 1 OD No. 47
Lateral or Sub-District

To the Honorable Board of Supervisors,
Kossuth County, Iowa

I, THE UNDERSIGNED, hereby state that I am the tenant/owner/trustee (circle one) of NW ¼ Sec. 8, Twp. 95N, Range 30 W, (Whittemore Twp.) and that repairs are necessary on account of

CRP West Bank
north of lane
washed dist out



*rough drawing

and I hereby request that repairs be made at the earliest possible date.

Dated at Algona this 28 day of May, 20 24

Duane Metzger 712-358-1094
Print name and phone number

ACKNOWLEDGED: Curtis Matt
Supervisor

Duane D. Metzger
Signature

United States Department of Agriculture

Farm Production and Conservation

Farm Service Agency

Iowa State FSA Office
10500 Buena Vista Court
Des Moines, IA 50322-3782

Voice:515-254-1540
Fax:855-218-8672

Iowa Conservation Memo 23-07

TO: All Iowa FSA Service Centers

FROM: Matt Russell,
State Executive Director

DATE: April 12, 2023

SUBJECT: Drainage District Activities on CRP During the Primary Nesting Season

DAFP has approved a request by Iowa FSA to allow drainage ditch maintenance during the Primary Nesting Season (PNS). Requests for Drainage Districts to perform activities on CRP during the PNS are permitted only after following the steps outlined in this memo:

Step 1: The producer must provide a detailed request in writing to the State Committee for approval of any activity on the CRP in conjunction with the drainage ditch maintenance conducted during the primary nesting season. See the end of the memo for a list of items that must be in the producers written request.

Step 2: Send all requests to Adriana Alcorn and Curt Goettsch for assistance in completing the environmental review process. An environmental review and approval by the State Committee is required for every request. See the end of the memo for a list of items to send.

Step 3: A memo from the STC will be returned to the County Office with approval or disapproval. No activity can proceed until the environmental review is completed and approval by STC is received by the county office.

NOTE: If FSA must consult with an outside agency(s) this may delay the determination.

Information needed in request by CRP participant:

- Request to complete activity on CRP
- Specific action on the CRP ground such as tiling, spreading spoils, etc.
    - Be as specific as possible of the request may be sent back to the county office.
- Acknowledgement of their responsibility to ensure that the approved cover is restored. Acknowledging that if not fully restored may result in a demand for refund of all CRP payments made to date, along with possible liquidated damages.

Information to send to State Office:

- Request from the producer
- Copy of CRP-1
- FSA farm map with affected areas highlighted.
- Nearest 911 address to the farm

USDA is an equal opportunity provider, employer and lender.