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"Bettering Iowa since 1970"

February 10, 2025

To: Palo Alto County Board of Supervisors
1010 Broadway St, PO Box 95
Emmetsburg, IA 50536

Re: Drainage District No. 62 Main Open Ditch Improvements **Draft** Report
Palo Alto County, Iowa
JWA PROJECT NO: E24175

Dear Board Members and Landowners:

A petition for drainage improvements to the Main Open Ditch of Drainage District No. 62 (DD62) of Palo Alto County, Iowa was filed with the Board of Supervisors on December 3, 2024 (enclosed). The Palo Alto County Board of Supervisors, acting as trustees for DD62, appointed Jacobson-Westergard & Associates, Inc. on December 17, 2024 to complete a "preliminary engineer's report" for the project at a cost not to exceed $10,000. This letter report addresses said request.

A. Private vs. Drainage District Project

There has been discussions regarding whether a project of this nature could be done privately, as opposed to through the drainage district. Namely, the project proposed is to deepen the existing Main Open Ditch of DD62.

1. The Main Open Ditch of DD62 is a ditch designed, constructed, maintained and paid for by DD62. This includes permanent right-of-way which was acquired by the district, and a permanent right of egress and ingress, and right of access for maintenance, repair, improvement, and inspection (Iowa Code 468.27). The Palo Alto County Board of Supervisors act as trustees for DD62, and have a legal responsibility to protect, oversee and maintain its facilities. Permission is required for any work on the DD62 Main Open Ditch.

2. Iowa Code specifically addresses improvements to existing drainage district facilities.

   Iowa Code 468.126(4)"a" defines a drainage district improvement as:

   > *"a project intended to expand, enlarge, or otherwise increase the capacity of any existing ditch, drain, or other facility above that for which it was designed."*

   Iowa Code 468.126(4)"b" states the following regarding drainage improvements:

   > *"When the board determines that an improvement is necessary or desirable, and feasible, the board shall appoint an engineer to make surveys as seem appropriate to determine the nature and extent of the improvement, and to file a report showing what improvement is recommended and its estimated cost, which report may be amended before final action."*

   Iowa Code 468.126(4)"c" – "e" further sets forth requirements for drainage district improvements including hearing and notice requirements, reclassification, & remonstrance.

The proposed project definitely falls within the definition of a drainage district improvement. A petition has been filed, letting the Board know that an improvement is desired and necessary. Therefore, the Board must follow the procedures set forth in Iowa Code, including appointing an engineer.

B. History

- 1913 – DD62 was established June 2, 1913 and included construction of a Main Open Ditch and district tile. The Main Open Ditch was constructed for 4,940 feet.
- 1917 – a petition was filed to clean out the ditch, as it was in bad condition.
- 1917 – a petition to construct an overflow ditch or drain over the tile was filed, claiming that the present tile was not large adequate.
- 1919 – landowners asked again for the ditch to be cleaned out, then requested that the open ditch be converted into a "little ditch" and tile of sufficient size be installed. The appointed engineer recommended that the petition be denied, saying that the cost would be greater than the benefits.
- 1920 – Report on Main Open Ditch cleanout filed, stated that "the ditch at the outlet of the tile is filled with sand to about one center of the tile, and for about one half mile it is filled from two to four feet above grade." The ditch cleanout was completed.
- 1956 – a private surface waterway was constructed with the assistance of the Palo Alto County Soil Conservation Service.
- 1980 – the original Main Open Ditch was cleaned out.
- 1982 – a petition was filed for repairs or improvements to the Main Open Ditch. The ditch was extended over 3 miles as an improvement project and replacement of a large portion of the original Main Tile. The original open ditch was also cleaned out.
- 1983 – reclassification was completed.
- 1986 – Right-of-way (ROW) Issues
    - Complaints from landowners regarding rights-of-way still being on the tax roll.
    - October 24th Don Etler submitted a letter in regard to his evaluation of the ROW situation. Concluded that ROW was not formally approved or purchased.
    - December 3rd, motion was made to appoint appraisers for acquisition of right-of-way in DD62, but motion failed. Rick Hopper with Jacobson-Westergard was to investigate and report back to the board. There is no further record on this issue.
- 1995 – petition filed for repairs by Roger Baker, for ditch cleanout in Section 2 and 11 of Booth Township. No record found of whether this was completed.
- 2011 – MichaelSon Inc. under contract to clean out DD62 Main Open Ditch. Appears that work was done in the fall of 2011.

C. Existing Main Open Ditch Design

The Main Open Ditch begins at the north line of the NW SW ¼ of Section 26 of Silver Lake Township (T-95-N, R-34-W) in Palo Alto County, Iowa where it outlets into a natural creek that empties into Silver Creek, which flows into the Main Open Ditch of Drainage District No. 175, which flows into the West Fork Des Moines River just south of Emmetsburg.

From it's beginning point, it extends generally southward crossing 440th St, then passing through the NW NW ¼ of Section 35 of Silver Lake Township before crossing County Road N28, then Section 34 before it enters Section 3 of Booth Township (T-94-N, R-34-W). It continues south and east, crossing N28 again, then into the SW SW ¼ of Section 2 of Booth Township, then crossing 460th St into Section 11, and ends at the south line of Section 11 at 470th Street. In total, the Main Open Ditch extends nearly 22,000 feet and drains approximately 4,650 acres.

Drainage District No. 62 Existing Main Open Ditch Design					
Start Station	End Station	Bottom Width (feet)	Bank Slope (horizon : vert)	Grade, %	Fall, feet
31+40	80+80	6	1 : 1	0.09%	4.4
80+80	140+80	6	1.5 : 1	0.06%	10.0
140+00	248+08	4			

D. Investigation & Analysis

A survey of the ditch was completed by Luft & Sons Farm Drainage, Inc. in 2024 which they provided to us. We completed additional survey on January 13 and 30, 2025. We also reviewed Engineer's reports and plats, plans, profiles, and records related to DD62. Additionally, we reviewed a drone video from August 2024 which was done as part of a Federal Emergency Management Agency (FEMA) project for disaster damages to drainage district open ditches in Palo Alto County.

1. Luft & Sons Survey

   Survey information was provided to us on January 8 and 15, 2025. The equipment, software, and format of the data were unfamiliar and needed to be processed and modified to have any chance of being useful. The data was provided with a latitude and longitude reference point, and data points a certain distance east/west and north/south from the reference point. We attempted to transform the data to a different coordinate system but the points did not line up with the open ditch. We found that elevations at locations we both surveyed did not match, and were also not consistently different. We spent more time than we would have preferred trying to make use of the data, but unfortunately at this point feel it is of little use. If this project continues past the informational meeting, a more comprehensive survey will need to be conducted by our staff.

2. Drone Video

   The entire Main Open Ditch of DD62 was flown with a drone on August 13, 2024. We have uploaded the video on our company YouTube channel (@jacobsonwestergard3718).

   From the drone footage we note that a majority of the Main Open Ditch bottom appears to be overgrown with grass and silt, with a scarcely discernible channel. The intended design ditch bottom width ranges from 4 – 6 feet. At a minimum, the drone footage shows that the DD62 Main Open Ditch would benefit from a cleanout to clear grass from the bottom of the channel. See pictures below.

3. Survey Discussion

   We collected survey information including several ditch bottom shots, crossing culverts, etc. Surveying in the bottom of the ditch was difficult due to ice approximately 1 foot thick. We also shot several benchmarks from the 1980's ditch extension project in order to determine the design bottom of the ditch. In comparing our survey shots with the design bottom, we surprisingly found that for most of the ditch the existing bottom is actually below the design bottom (at least in the middle of the channel). We speculate that the ditch was overdug in the past, especially at the lower (north) end. This indicates that a repair of the ditch to its original design would have a minimal impact on the drainage issues relating to the Main Open Ditch of DD62.

4. Ditch Design Considerations

Several factors should be considered to determine whether the existing Main Open Ditch of DD62 is adequate for current and future drainage needs. The ditch should be of adequate size and grade to carry away excess surface and subsurface water from the watershed such that crops are not negatively impacted. It should be deep enough to allow for drainage of adjacent low-lying lands with tile of adequate depth and grade that can operate efficiently and not be restricted by high water levels in the ditch.

According to the Iowa Drainage Guide, published by Iowa State University, the design criteria for an open ditch for agricultural drainage is that the flow depth resulting from a 2-year 48-hour peak flow should be at least 1-foot below adjacent fields. Based on our preliminary analysis the existing DD62 Main Open Ditch appears to meet this criterion.

It is essential to ensure that the ditch is sufficiently deep so that tile outlets can discharge freely into the channel under normal flow conditions. Based on surveys, discussions with several landowners, and calculations, it has been determined that the water depth in the ditch under normal flow conditions does not permit free discharge of the tile into the channel. This limitation hinders the efficient operation of the tile drainage system. Improving the functionality of the tile may require lowering the water level in the ditch, which could be achieved by either deepening or widening the ditch, or both.

5. Crossing Culverts

There are several road and private crossings along the ditch, with culverts varying in size. See table below.

Station	Crossing	Material	Shape	Dimensions	Area of Opening, ft^2	Elev vs. Ditch Design, ft
26+50	440th Street	CMP	Round	120” dia.	78.5	2.28 low
39+60	N28 (380th Ave)	Concrete	Box	96” x 144”	96.0	**0.57 high**
63+20	Private	CMP	Round	60” dia.	19.6	**0.72 high**
102+85	Private	CMP	Round	60” dia.	19.6	**0.41 high**
144+20	N28 (380th Ave)	CMP	Arch	117” x 79”	54.2	**0.18 high**
156+75	460th Street	CMP	Arch	117” x 79”	54.2	**0.62 high**
191+90	Private	CMP	Round	48” dia.	12.6	0.73 low

It is apparent that the road crossing culverts are much larger than the private crossing culverts. Road crossing culverts are typically designed to a larger design flow (design storm) than a private crossing. With that being said, the private culverts certainly slow down the flow of water, particularly during high flow conditions, and in our opinion the two 60” diameter culverts under private crossings are undersized. The landowner has said that the private crossing with a 48” diameter culvert could be removed, which would be beneficial.

Many of the crossings also appear to be above the existing design bottom of the Main Open Ditch. They act as a small dam and also hold back water, and promote sedimentation of the ditch bottom upstream from the culvert.

6. Initial Improvement Evaluation

In our opinion, there would be benefit to completing improvements to the DD62 Main Open Ditch. The goal would be to deepen and/or widen the ditch as necessary to provide an adequate outlet for the lands that drain to it, at the lowest possible cost. We have looked at two basic scenarios for a ditch improvement thus far:

i. Grade of 0.057% for the entire ditch, but start approximately 1 foot below the design bottom at the outlet (north) end. Based on our survey, it appears that the lower end of the existing Main Open Ditch is deeper than the design, making this possible. This would result in approximately 3 feet of additional depth at the head of the open ditch.

ii. Grade of 0.040% starting at the 8' x 12' box culvert under County Road N28 and continuing south to the head of the open ditch. This would result in approximately 3.2 feet of additional depth at the head of the open ditch. With less grade the ditch may need to be widened to provide adequate drainage, particularly for the lands draining to the lower (north) end of the ditch.

If an improvement is done, it is important to make sure it will meet the drainage needs of the district now and in the future. Additional analysis is needed to evaluate depth necessary to accommodate potential future tile improvements in the district. Larger diameter tile typically need to be set deeper in the ditch. Additional analysis is also needed to determine appropriate bottom widths of for an improved ditch.

With any improvement option involving deepening the ditch, culverts at crossings (both private and at roads) would need to be lowered. At road crossings the cost would be incurred by County Secondary Roads. With any improvement the private crossing in Section 11 of Booth Township would be permanently removed, as agreed upon by the landowner.

7. Downstream Investigations

We are aware that the list of petitioners includes owners of land downstream (north) of the extents of the DD62 Main Open Ditch. These lands drain into a natural meandering stream. Iowa Code 468.146 allows a drainage district to purchase downstream right-of-way in order to obtain a satisfactory outlet, if necessary.

From the end of the ditch to the next road crossing (430th Street) there is approximately 7 feet of fall over 3,900 feet, equivalent to a grade of nearly 0.18% even with the meanders.

In addition to the meanders, the stream has trees in the channel that are likely slowing the flow somewhat.

We are open to discussing the drainage issues of the lands that drain into the natural stream north of the DD62 Main Open Ditch. It's possible that work could be done on the stream, but would likely need to be limited to tree removal and minor excavation / cleanout in the existing channel. Any straightening of the channel would add large amounts of stream mitigation cost to the project. At this point in time we have doubts whether work in the stream would be worthwhile.

8. Utilities

We have completed a design information request through Iowa One Call, to try to identify any utilities that could be in conflict if the ditch is deepened. There are electrical and fiber lines in road rights-of-way that cross the ditch. Additionally, Iowa Lakes Regional Water has a 6" water main on the south side of 460th Street that crosses the ditch. The depths are unknown, and the water main would have to be exposed to determine how deep under the ditch it is. We hope the water main is a minimum of 5 feet below the design grade of the Main Open Ditch, in accordance with the requirements of the "Palo Alto County Underground Utility Permit Application Across Drainage District".

We note that Iowa Code 468.186 requires that in the case of a drainage district improvement, if a utility is required to be relocated it is at the expense of the utility company.

E. 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. 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. Drainage ditch ROW is not to be included in property tax rolls or to be considered in drainage district assessments.

When DD62 was originally established ROW was acquired as shown in the table below.

1913 Right-of-Way Acquisition for Original Main Open Ditch						
Owner at Establishment	Legal Description	S-T-R	Acres	Approx. Length of Ditch, feet	Approx. Width of ROW, feet	Damages Awarded
Peter Spittal	NE NE	34-95-34	1.50	850	77	$250
Fred Kassel	NW NW	35-95-34	1.70	1,210	61	$275
D.M. Triggs	NW SW	26-95-34	2.10	1,330	69	$600
	SW SW	26-95-34	1.90	1,290	64	

For the early 1980's Main Open Ditch extension / improvement project, the April 20, 1983 Engineer's Report submitted by Kim Buell of Jacobson-Westergard & Associates, Inc. includes discussion of ROW acquisition. A 100-foot ROW was recommended along the Main Open Ditch extension. We found no records of the ROW being acquired. However, in 1984 Jacobson-Westergard & Associates, Inc. provided a table listing parcel-by-parcel 100-foot ROW acres, average ditch widths, and actual ditch acres.

As discussed in the history section (B) of this report, in 1986 landowners complained that the open ditch ROW had not been removed from property tax rolls. Drainage engineer Don Etler was asked to evaluate the situation and submitted a letter concluding that the ROW was not formally approved or purchased. He noted that the 100-foot ROW acres had incorrectly been removed from the taxable acres for the parcels along the Main Open Ditch extension.

At a later Board meeting a motion was made to appoint appraisers for ROW acquisition, but the motion failed. Rick Hopper of Jacobson-Westergard was directed to investigate and report back to the Board. We were unable to find any additional record of action or discussion regarding ROW. We reviewed the current taxable acres taxed for parcels along the DD62 Main Open Ditch extension. It appears that currently the "Actual Ditch Area" from the 1984 table is removed from the tax rolls and not the 100-foot ROW area.

We speculate that since the 100-foot ROW area was never formally acquired, as a compromise only the actual area occupied by the Main Open Ditch was removed from the taxable acres. Since a grassed waterway existed prior to the Main Open Ditch extension, perhaps it was concluded that if ROW was acquired for the area occupied by the ditch no compensation would be necessary. It

appears that any widening of the ditch would require ROW acquisition for the area outside the existing top of bank. It may be advisable to ask for a drainage attorney's opinion on the issue.

If an improvement is pursued, the width and acres required would depend on the improved ditch design. Any ROW acquisition would need to be done before construction could commence. This would be an additional cost for the project. We would need to have a design in place to determine how much ROW would need to be acquired, and to estimate a cost.

F. Permitting

1. Iowa Department of Natural Resources (Iowa DNR)
   Approval from the Iowa DNR is not required for repairs/cleanouts of a drainage district ditch (as long as the area drained is less than 100 square miles, or 64,000 acres).

   For an improvement to the Main Open Ditch, an application would need to be made to the Iowa DNR floodplain permitting section, however we anticipate that a permit would not be required in this case because the drainage area of the DD62 Main Open Ditch is less than 10 square miles (6,400 acres). If approval is required, we would anticipate not being allowed to increase the elevation of the historical bank overflow locations. This means in essence that spoils would not be allowed to be placed at locations where surface runoff accumulates along the ditch, typically at locations where surface drains are currently located.

2. United States Army Corps of Engineers (USACE)
   A permit application would need to be made for any potential improvement project. We would expect the project would qualify under Nationwide Permit No. 41 for "Reshaping Existing Drainage and Irrigation Ditches".

   One uncertainty and concern is whether the USACE would require compensatory stream mitigation for an improvement project. Our hope is that it would not require mitigation. We would need to reach out to the USACE once we have a design and plan to get an official determination.

G. Buffer Strips

It appears possible that farm program buffer strips exist along the Main Open Ditch and may be disturbed by the work necessary to make improvements. 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 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. DD62 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, if the project proceeds, we strongly encourage owners of land 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 improvements. 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.

H. Farm Program Wetland Compliance

If any farmed wetlands exist on your property within Drainage District No. 62, the construction of the proposed Main Open Ditch improvements may be considered by the NRCS to be a conversion and place you in jeopardy of being in violation of farm program rules and may be required to forfeit and/or refund farm program payments received after the work commences.

If the improvements are constructed and you have farmed wetlands that are converted, your options are to either cease farming the wetland acres or purchase mitigation credits through a wetland mitigation bank. The current fee is approximately $20,000 per acre. If you believe the wetland determination to be in error, you may request a review by the NRCS.

It is solely the responsibility of the landowner to keep themselves in farm program compliance, but because of the potential impacts to landowners within the district, we ask that you provide a certified wetland determination prior to a formal improvement hearing for the Board to consider.

I. Reclassification

DD62 was reclassified in 1983, as part of the Main Open Ditch extension improvement project. For informational purposes, we have enclosed a map showing the existing Main Open Ditch assessment schedule, based on a levy of $1,000,000. The dollars can be proportionately adjusted based on any levy amount.

If an improvement project is pursued, in our opinion reclassification would be advisable. This would ensure that the cost of the improvement is equitably assessed based on the benefit received. Before any final decision is made on the project, we could complete a preliminary classification to give landowners a better estimate of their potential bill for the project.

In completing reclassification, to determine benefit we look at several factors, including but not limited to parcel land area, facility use, distance to the facility, runoff, soil type, and other factors as needed. The benefit factors are combined for each individual parcel to determine its relative benefit.

J. Next Steps

A meeting has been scheduled for February 18, 2025 to discuss the project with the petitioners, and other interested parties. We note that we are not able to provide a full design and cost estimate within the $10,000 limit. One decision that should come out of that meeting is whether to proceed forward and allow for the expenditure of additional engineering costs. If we continue moving forward, next steps will generally include the following:

1. Complete additional survey (will need to wait for warmer weather)
2. Complete design
3. Determine right-of-way needs
4. Determine whether permits or stream mitigation would be required for an improvement
5. Complete cost estimate
6. Complete the preliminary report
7. (Optional) Complete preliminary classification
8. Hold a meeting with the landowners of DD62

Sincerely,

JACOBSON-WESTERGARD & ASSOCIATES, INC.

Collin J. Klingbeil, PE

Encl: DD62 Petition
DD62 Map
DD62 Existing Assessment Schedule Map

FILE

DEC 03 2024

PALO ALTO COUNTY
AUDITOR'S OFFICE

DRAINAGE PETITION

TO: THE BOARD OF TRUSTEES OF PALO ALTO COUNTY, IOWA, ACTING ON BEHALF OF Drainage No 62 DISTRICT IN PALO ALTO COUNTY, IOWA

COMES NOW, the undersigned Petitioners, being owners of the real estate in this drainage district and in making this petition for drainage relief for the drainage of said lands respectfully state to the Board of Trustees of Palo Alto County, Iowa:

1. That the lands of these petitioners are a part of and are included in Drainage No. 62 District, Palo Alto County, Iowa, and that said lands are assessed for drainage tax by virtue of the improvements in said district.

2. That the drainage facilities in their present condition in this district are not sufficient to properly drain the water from the lands of these petitioners as well as other lands; that such lands are subject to overflow, too wet for cultivation, and are subject to erosion and flood danger; that if the improvements in said drainage district were properly repaired or otherwise properly constructed to correct the current situation, the public benefit, utility, health and welfare would be promoted.

3. That these petitioners do not have exact knowledge or information as to the exact nature of the work to be done to correct the situation, but that these petitioners are of the belief that an investigation of the situation by a qualified independent engineer would determine the exact nature of the work required to provide adequate drainage for the lands of these petitioners and adjoining lands.

4. That these petitioners respectfully request that the Board of Trustees of Palo Alto County, Iowa, acting on behalf of Drainage No 62 District, in Palo Alto County, appoint an independent qualified engineer to make the necessary investigation, report and survey in this situation.

5. That these petitioners, being the owners of lands which are a part of this drainage district, are entitled to adequate drainage from improvements in this drainage district for such lands.

6. That these petitioners are signing this petition pursuant to Section 468.126 of the Code of Iowa.

WHEREFORE, these petitioners respectfully request that the Board of Trustees of Palo Alto County, Iowa, acting on behalf of Drainage No 62 District appoint an independent qualified engineer to investigate the drainage situation herein referred to with respect to petitioners' land and other lands; and that the board of trustees order that district facilities be improved, reconstructed, or repaired to provide adequate drainage relief for the lands of these petitioners and adjoining lands as above described.

Dated this 27th day of November, 2024.

LANDOWNERS	DESCRIPTION OF LAND
El Noonan 712-298-1583	Section 10 Booth
KENJO FARMS Dreggy Barrels	~~PR~~ 1 Sect 26 SL
Adirondack Farmland Kathy Joly	14 Booth
Paul Markers	Booth 1, 2, 3 SL, 34, 35
Carmen Cave Palmer by daughter Debra Lee	Sec 26 Silver Lake
Dave Kassel	Silverlake 27, 34,
	Booth #3

Drainage District No. 62
Main Open Ditch Map

Palo Alto County, Iowa

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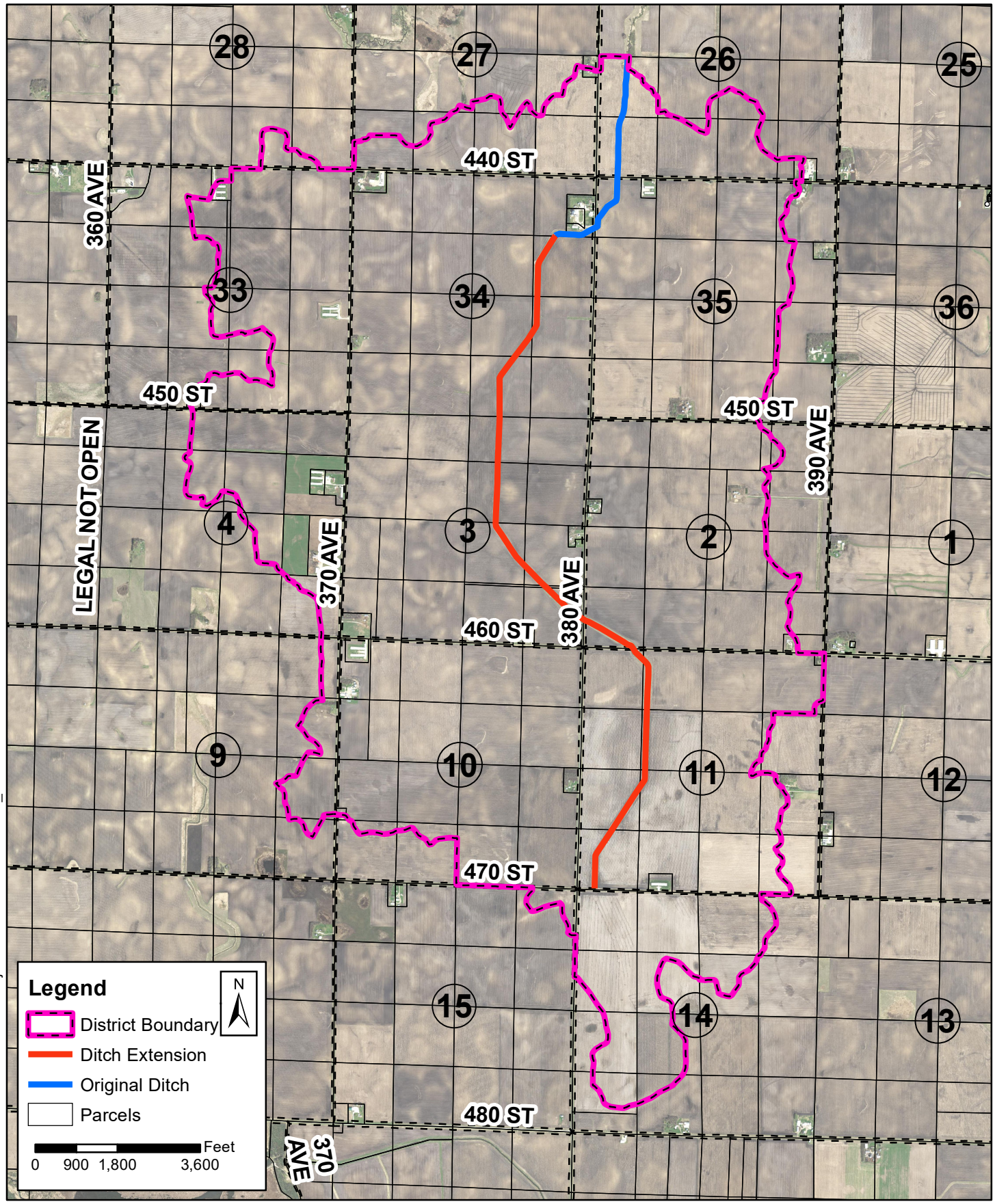

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Drainage District No. 62
Main Open Ditch Existing Schedule
Costs Based on $1,000,000 Levy

Palo Alto County, Iowa

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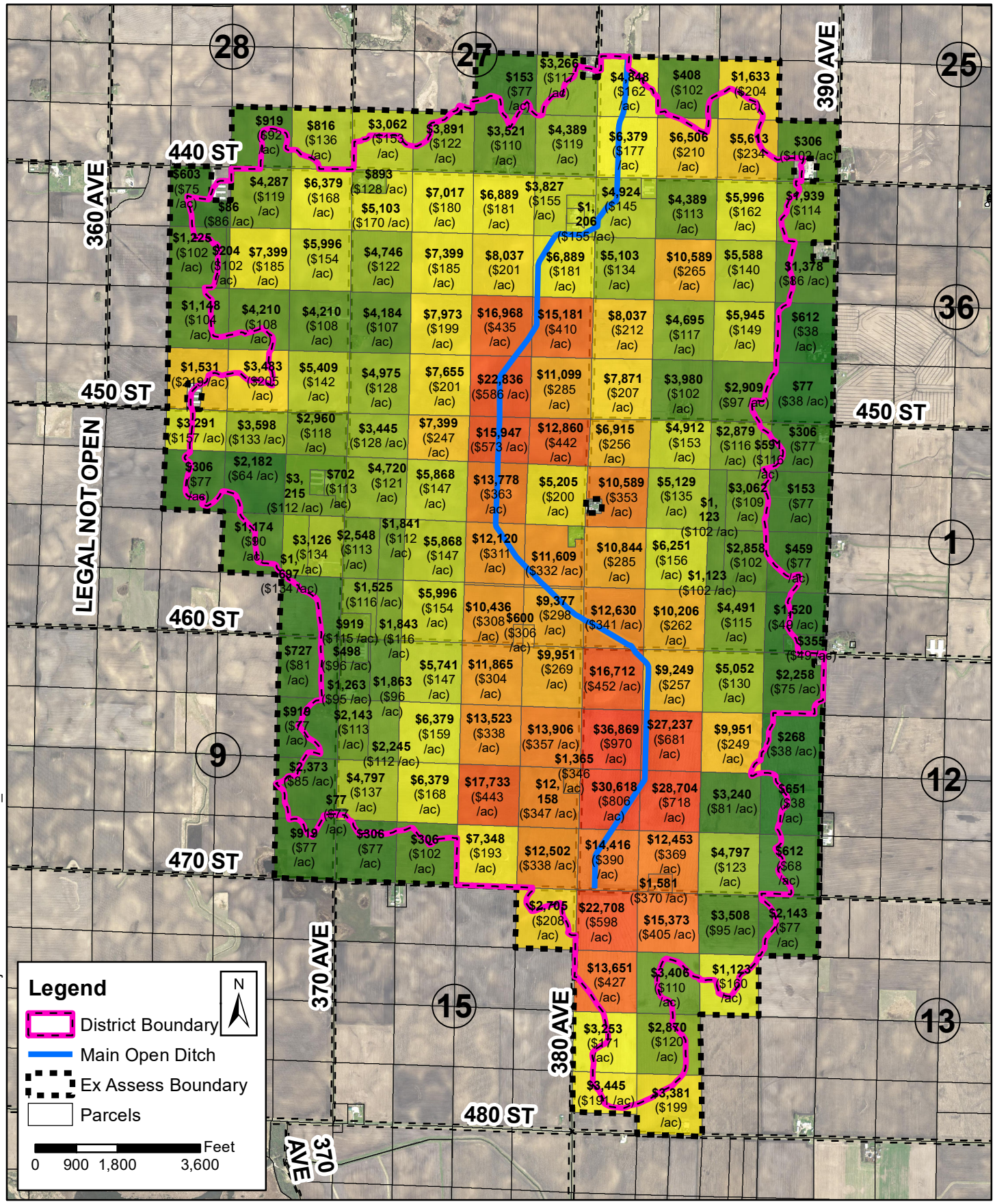

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