



JACOBSON-WESTERGARD & ASSOCIATES, INC.
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ENGINEER'S REPORT

JOINT DRAINAGE DISTRICT NO. 35-89 LATERAL 12 WATERWAY WINNEBAGO & KOSSUTH COUNTY, IOWA

PROJECT NO: E26056



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

7/29/26

Collin J. Klingbeil, P.E.

License number 24741

My license renewal date is December 31, 2027

Pages or sheets covered by this seal:

ALL

I. INTRODUCTION/HISTORY

A. Scope

A repair request was submitted on July 24, 2024 with the Winnebago County Board of Supervisors requesting a full survey and investigation of the Joint Drainage District No. 35-89 (Winnebago and Kossuth) Lateral 12 waterway. It is believed that portions of the waterway have filled in with sediment, resulting in restricted drainage. Our firm, Jacobson-Westergard & Associates, Inc. was appointed on May 5, 2026 to conduct the necessary survey, study, plan, and report. The repair request is enclosed.

B. History

District Establishment & the Lateral 12 Tile System

- July 1, 1914: Joint Drainage District No. 35-89 (JDD35-89) was established, including a Main Open Ditch and numerous tile laterals
 - Lateral 12 Tile includes nearly 30,000 feet (5.64 miles) of tile ranging in diameter from 32" down to 8". There are also numerous branches to the Lateral 12 tile of various sizes and lengths.

Lateral 12 Waterway Proposed and Constructed

- August 29, 1944: Petition filed to replace a portion of the Lateral 12 tile with an open ditch. No action was taken.
- September 8, 1954: Petition filed by numerous landowners reporting that the main tile outlet into the Main Open Ditch was submerged from 2 to 4 feet, and that the Main Open Ditch is silted and filled in. It was requested that the Main Open Ditch be cleaned and deepened.
- March 30, 1955: Engineer Ralph H. Wallace filed a report:
 - Recommended that the Main Open Ditch be cleaned out and also widened to drain more efficiently
 - Found the Lateral 12 Tile to be "grossly overloaded" and recommend it be replaced with an open ditch
- June 14, 1955: Hearing on engineer's report and proposals
 - Various landowners withdrew their name from the September 8, 1954 petition
 - Numerous landowners objected to the proposal to replace the Lateral 12 tile with an open ditch
 - Engineer Douglas Barr, employed by a group of objectors, suggested that the open ditch could be substituted with a waterway.
- July 21, 1955: Ralph H. Wallace, engineer, filed a report amendment recommending a surface waterway be constructed generally following the Lateral 12 tile for a distance of 26,800 feet (5.08 miles)
- July 22, 1955: Proposal for waterway described in the July 21, 1955 report was approved and was constructed in 1955. Total cost of \$52,360.99 assessed to Lateral 12 on an assessment schedule that included 3,634 acres of benefited lands.
- August 29, 1955: right-of-way acquired for Lateral 12 waterway

Continuing Petitions and Drainage Issues in Lateral 12

- September 10, 1963: Meeting held to examine the Lateral 12 waterway where it empties into the Main Open Ditch in Section 24 of German Township of Kossuth County (T-98-N, R-27-W). The waterway in this location was found to be eroded, in bad condition, and in need of repair. Ralph H. Wallace was later appointed as the engineer, and recommended that an inlet structure be constructed where the waterway outlets into the Main Open Ditch. This was approved and constructed.
- December 6, 1963: Petition was filed stating that the Lateral 12 tile from the Main Open Ditch to Branch 3 is inadequate, overloaded, and insufficient and that the surface waterway constructed is not of sufficient depth and capacity.

- November 4, 1970: Gerald W. Hollander, engineer, filed a report for Lateral 12 between the Main Open Ditch and junction of the Branch 3 and Lateral 12 tiles, in the NE NE ¼ of Section 19 of Grant Township of Winnebago County (T-98-N, R-26-W).
 - He found that the Lateral 12 tile and waterway are inadequate in the area investigated and recommended they be replaced with 6,200 feet of open ditch.
 - A waterway was recommended to be constructed over the Branch 3 tile.
- July 19, 1972: Hearing on proposed improvements.
 - A very large number of objections were filed, estimated to represent more than 70% of the total land involved.
 - The engineer was directed to investigate cleanouts of both the Main Open Ditch and the Lateral 12 waterway.
- September 11, 1972: Report filed by Gerald W. Hollander recommended 3,600 ft of cleanout in the Main Open Ditch (up to 3 ft of material to remove) and a cleanout for the Lateral 12 waterway in Section 19 of Grant Township with an average cut of 0.3 ft (max of 0.7 ft). These repairs were approved at a hearing held on September 13, 1972 and were completed.
- September 6, 1991: Engineer's report by Brent W. Johnson (McClure Engineering) addressing a petition for repairs submitted by 38 landowners.
 - Several lateral tile outlets were found to be partially or completely submerged in the ditch. Recommended a cleanout of the upper 8,400 ft of the Main Open Ditch. The cleanout was completed.
 - Also provided an updated cost estimate for replacing a portion of the Lateral 12 tile and waterway with 6,200 ft of open ditch (as proposed by engineer Gerald W. Hollander in the 1970's).
 - At a public meeting on November 26, 1991 a majority of landowners indicated opposition to any further study of the Lateral 12 tile at this time.
- March 6, 1996: Petition filed requesting improvement of Lateral 12
- September 23, 1996: Engineer's report by Brent W. Johnson with findings and recommendations regarding Lateral 12
 - Recommended replacement of the Lateral 12 tile and waterway with an open ditch from the Kossuth-Winnebago County line to the Main Open Ditch, approximately 1,450 ft.
 - Remonstrance met at December 17, 1996 hearing and project was terminated.
- September 9, 1997: Petition filed for extension of the open ditch. Petition was rejected by the trustees of the district.
- 1998: Headwall replaced, where Lateral 12 waterway enters the JDD35-89 Main Open Ditch in Kossuth County.
- June 8, 1999: Petition filed for cleanout for a portion of the upper end of the Lateral 12 waterway, located in Sections 15 and 16 of Grant Township of Winnebago County.
- 2000: McClure Engineering filed a report
 - Evaluated the drainage coefficient of the Lateral 12 Tile, generally at 1/8 inch per day but at the outlet less than 1/16 inch per day. Concluded to be wholly inadequate.
 - Recommended a change in grades at the upper end of the waterway, and cleaning the waterway in Sections 15 and 16 of Grant Township of Winnebago County. A total of 6,300 ft was recommended to be cleaned out. This work was approved and completed.
- August 20, 2015: Engineer's report submitted by Andrew J. Smith with Veenstra & Kimm, Inc.
 - Engineer was appointed to investigate the waterway to see if it needed cleaning in Sections 19 and 20 of Grant Township in Winnebago County (repair request submitted by landowner in April 2014)
 - Waterway was surveyed from its outlet to 370th St crossing.
 - The waterway was found to be generally within 0.1 – 0.2 ft of the original design elevations and overall "looked to be in very good condition". Recommended that nothing be done.

- Identified a three locations where the waterway appeared to be deeper than the original design elevations, one just east of 250th Ave, about a 1,000 ft long grassed reach near the center of Section 19 of Grant Township in Winnebago County, and lastly about 1,800 ft in the NW ¼ of Section 20 of Grant Township in Winnebago County.
- August 1, 2017: Engineer's report submitted by Andrew J. Smith with WHKS & Co.
 - Engineer was appointed to investigate the Lateral 12 tile and determine if the waterway could be lowered to better drain several low-lying areas in Section 19 and 20 of Grant Township in Winnebago County.
 - Lateral 12 tile drainage coefficient ranges from 1/32" to 1/8" per day, drastically undersized.
 - Concluded that the existing tile and waterway system, *"is simply not capable of handling the volume of water that is currently desired to be conveyed by the system"*
 - Discussed lowering the waterway 1 – 1.5 ft and replacing some of the Lateral 12 tile with reinforced concrete pipe (RCP) due to cover limitations (as little as 2 ft).
 - Also discussed filling in low-lying lands (potholes) in Section 19 and 20 adjacent to the Lateral 12 waterway.
 - At the September 19, 2017 informal hearing it was decided that nothing be done.
- July 24, 2024: Repair request submitted for the Lateral 12 waterway. A contractor was asked to look at it. On May 5, 2026 Jacobson-Westergard was appointed to survey and investigate.

II. LATERAL 12 WATERWAY STARTING POINT, ROUTE AND TERMINUS

See also the enclosed map.

The Lateral 12 waterway of JDD35-89 (Winnebago-Kossuth) empties into the Main Open Ditch of JDD35-89 in the SW corner of the NE SE ¼ of Section 24 of German Township of Kossuth County (T-98-N, R-27-W) and commences generally in an east northeasterly direction 26,800 feet (5.08 miles) through Sections 19, 20, 16 and 15 of Grant Township in Winnebago County, Iowa (T-98-N, R-26-W), terminating at the east line of the NE NW ¼ of Section 15.

III. INVESTIGATION

We conducted a survey of the Lateral 12 waterway in May 2026. This included over 8,000 ground elevation measurements along the path of the Lateral 12 waterway. We also collected information on the road crossings and the headwall. In addition, drainage district records, Engineer's reports and plats, plans, and profiles of district facilities were reviewed.

Lateral 12 Waterway Existing Design:

The waterway was designed as a trapezoidal channel with bottom widths varying from 40 feet near the outlet (west end) to 20 feet at the upper (east) end. The design side slopes were set at 8:1 (horizontal:vertical) except for reaches with depths of excavation (cuts) greater than 2 ½ feet, where the side slopes were set at 6:1.

Existing Design of Lateral 12 Waterway			
Start Station ¹	End Station	Bottom Width, ft	Grade, %
3+00	71+00	40	0.02%
71+00	79+20		0.05%
79+20	97+00		0.111%
97+00	115+00		0.0235%
115+00	120+00		0.16%
120+00	129+00		0.0433%
129+00	144+20		0.155%
144+20	157+00	30	0.133%
157+00	166+00		0.20%
166+00	187+00		-- ²
187+00	197+00		0.04%
197+00	203+00		0.39%
203+00	208+00	20	0.236%
208+00	226+50		0.04%
226+50	255+00		0.04% ³
255+00	265+00		0.16% ⁴
265+00	268+00		0.50%

¹: Stationing based on original design from 1955.

²: No construction was necessary in this reach, based on ground elevations there is an estimated grade of 0.36%

³: Original grade was 0.00% (flat); changed in 2000 repair

⁴: Original grade was 0.273%; changed in 2000 repair

From the outlet to the upper end of the Lateral 12 waterway there is total estimated fall of approximately 31 feet.

It appears that nearly the entire length of the waterway is farmed and is not grassed. Based on the combination of topography, soils, dimensions of the waterway, etc. this does not appear to have caused any major problems over the years. This is in large part due to the minimal grades and ability for the water to spread very wide (pond) and flow with very minimal velocity. The slow drainage allows the waterway to be farmed (vs. being grassed) but the slow drainage also makes it harder to get full crop production particularly in a wet year.

Review of Survey:

The goal of our review is to determine whether the Lateral 12 waterway has filled in or has any restrictions to the drainage of surface water that are in need of repairs. We completed an extensive survey of the waterway in May of 2026. The elevations were collected primarily with a GPS mounted on a four-wheeler.

A. Waterway Centerline Profile/Elevations

In order to compare the existing condition of the waterway to its original design grades and elevations we re-created the original design profile to the best of our abilities. This proved to be a challenge. A plat of the original alignment was not able to be found, and the stationing of the apparent current alignment of the waterway does not match the original well, with stationing at road crossings off by as much as 600 feet. Additionally, the original profiles show jumps in the elevation at all but one road crossing that are not explicitly stated but can be estimated. Lastly, the bulkhead/outlet structure was replaced in 1998 and it is unclear whether elevations were changed from the prior structure. Despite these challenges, we used best professional judgment to re-create the design profile to the best of our ability.

In comparing the existing ground to the design profile of the Lateral 12 waterway we observe that generally the waterway is either very near design elevations (not filled in) or has positive drainage with no obstruction. However, we do find a number of locations where the waterway may be somewhat obstructed. See enclosed map, plan sheets, and table below. Note that these reaches listed in the table represent the approximate length that would need to be re-graded in order to remove the obstruction, and do not necessarily represent the length of the obstruction itself. As part of our evaluation, we determined that it would be more practical to create a new best fit profile for the reaches with obstructions rather than use our best professional judgment original design profile.

Lateral 12 Waterway Obstruction Reaches					
Start Station	End Station	Length, ft	Avg Depth, ft	Max Depth, ft*	Ponding Length, ft**
14+50	66+00	5,150	1.0	1.5	2,500
122+00	123+50	150	0.5	0.5	600
129+50	132+00	250	0.5	1.0	400
208+00	229+50	2,150	0.7	1.5	1,000
233+00	245+50	1,250	0.5	0.9	1,900
Total		8,950 ft			

*: Maximum depth of obstruction is based on comparison of existing ground to proposed best fit profile.

**: Represents the estimated length that water could back up/pond above the obstruction. This may be within the reach itself or extend above it.

We also created a new “best fit” profile for the entire length of the Lateral 12 waterway, to see if there were any improvements that could be made to the existing condition and design. However, in our opinion fixing the obstructions is the most effective and economical approach to repairs at this time.

B. Waterway Shape / Cross Sections

We also reviewed cross-sections for the entire length of the Lateral 12 waterway, to evaluate whether the existing bottom width matches the original design. This helped us to determine whether a flow restriction exists due to the design channel dimensions not being maintained. A restriction could exist even if the elevation of the center of the channel matches the original design. Cross-section views from the obstructed reaches previously described are enclosed.

With a few exceptions, in general there do not appear to be major restrictions of the design cross sections along the waterway. The waterway has not maintained a perfectly trapezoidal shape, which is to be expected. The existing shape of the waterway is more parabolic. As long as positive grade is maintained throughout the length of the waterway this should not materially affect its flow capacity.

As can be seen in the enclosed cross-sectional views, in the reach from approximately STA 34 – 42 the waterway is quite deep and does not appear to have anywhere near a 40 foot wide bottom. We speculate that perhaps this reach was never excavated with a 40 foot wide bottom. The narrow corridor likely eroded, causing it to deepen below the design bottom elevation and was eventually seeded to grass (the only portion of the entire waterway that is grassed and not farmed). The original cut in this reach was over 2 ½ feet, which means the side slopes of the waterway was allowed to be 6:1 (rather than the 8:1 called for elsewhere). Widening/re-widening the waterway in this reach should strongly be considered.

In some reaches of the waterway there is no defined channel, as it passes through very flat depressional areas. Several of these reaches also have minimal grade. After a large runoff event the reaches located in depressional areas with limited grade likely fill up and act more like a slowly draining pond than a waterway, in particular if this occurs in mid to late summer when the crop is mature and slows (resists) the flow of the water.

Adequacy Review and Discussion:

In 1914 the Lateral 12 Tile system was constructed with a drainage coefficient generally of 1/8 inch per day but less than 1/16 inch per day near the outlet (about 0.05 inches per day). These values assume the system is clean and in good condition. For reference, according to the Iowa Drainage Guide, the drainage coefficient is the rate at which water can be removed from the land and is expressed as the equivalent depth of water covering the surface of the drained area that can be removed in 24 hours. A drainage coefficient of 1/2 – 1 inches per day is commonly used today in Iowa for agricultural drainage tile system design. Typically lands with a large proportion of depressional / pothole area need a tile main with a drainage coefficient at the higher end of that range. Because this land has some level of surface relief (due to the waterway) we would likely recommend a tile with a drainage coefficient in the range of 1/2 to 3/4 inch per day. For the lower reach of the Lateral 12 tile that means a minimum of 10X the current capacity would be required, which at the existing grade would require at least a 78” diameter tile.

A few decades after the Lateral 12 tile system was installed, a petition was filed from improvements. The Lateral 12 waterway was constructed in 1955 as a lower cost and much less effective alternative to the engineer's proposal to construct an open ditch (due to strong opposition). Although the waterway certainly helped, since its construction numerous petitions have been filed to improve drainage. Replacing a portion of the tile and waterway with various lengths of an open ditch has been explored several times but has never had enough support to proceed to construction. The waterway has received maintenance and repairs on a few occasions, but no major work has ever been needed or done. Deepening the waterway was also explored but found to be impractical due to depth of cover concerns with the Lateral 12 tile.

There is overwhelming evidence to support the fact that the existing Lateral 12 tile and waterway system cannot provide adequate drainage to the lands it serves. We can certainly pursue repairs to the waterway to ensure it functions as well as possible, but it still will not be capable of providing adequate drainage.

We understand that having an open ditch sever farmland is undesirable, and that a major improvement project would be costly. We simply wish to make it clear that we do not believe the existing Lateral 12 tile and waterway system is capable of providing adequate drainage, even in perfect condition. Someday major improvements will be needed. The cost will only continue to increase, and the future regulatory environment for agricultural drainage is uncertain.

If an improvement is desired, a formal petition should be filed by one or more landowners within the district. All that being said, until such a time a major improvement is pursued, the tile and waterway should be maintained in order to ensure they continue to provide as much drainage as possible.

IV. OPTIONS

1. Cleanout / re-grade the Lateral 12 waterway for approximately 8,950 feet, where obstructions have been identified via survey. This represents about 1/3rd of the length of the overall waterway. We would use our proposed best fit profile for this work rather than trying to recreate the original design profile.
2. If there is a desire to pursue drainage improvements in Lateral 12, a petition would need to be filed by one or more landowners in its benefited area.

We are certainly open to discussing other ideas and options at a public hearing.

V. RIGHT-OF-WAY

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.

The district will need an area to perform the proposed work. Compensation for damages within the work limits is normally determined at the completion hearing and is subject to approval by the Board of Supervisors. If repairs are made to the Lateral 12 waterway we would make every effort to complete the work outside the cropping season in order to avoid crop damages.

VI. COST ESTIMATE

SECTION 1: CONSTRUCTION ASSESSABLE TO PRIVATE LANDS

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	WATERWAY EXCAVATION, SHAPING, AND SPOIL LEVELING	10,829	CY	\$4.50	\$48,730.50
2	MOBILIZATION	1	LS	\$3,000.00	\$3,000.00
ESTIMATED SECTION 1 COST:					\$51,730.50

CONSTRUCTION CONTINGENCIES \$5,000
ESTIMATED TOTAL CONSTRUCTION COST \$57,000

NON-CONSTRUCTION COSTS	
ENGINEERING - (REPORT, HEARINGS, PLANS & SPECS, BID LETTING, CONSTRUCTION, COMPLETION)	\$35,000
LEGAL, PUBLICATIONS, MAILINGS, ETC.	\$1,000
DAMAGES	\$1,000
INTEREST	\$6,000

ESTIMATED TOTAL DISTRICT COST \$100,000

AVERAGE COST PER ACRE (BASED ON 3,634 ACRES): \$27.52
AVERAGE COST PER ACRE PER YEAR AT 5% INTEREST FOR 10 YEARS: \$3.56
AVERAGE COST PER ACRE PER YEAR AT 5% INTEREST FOR 20 YEARS: \$2.21

The repairs would be paid for through assessments based on the existing JDD35-89 Lateral 12 schedule. See enclosed map of per parcel estimated assessments based on a \$100,000 levy.

VII. CONCLUSION/RECOMMENDATIONS

This report confirms the need for repairs to the Joint Drainage District No. 35-89 Lateral 12 Waterway. The estimated project cost for the recommended repairs is **\$100,000**. The Winnebago and Kossuth County Boards of Supervisors, as trustees, for Joint Drainage District No. 35-89, should tentatively approve this report and set a date for an formal hearing. At the meeting, the project will be discussed and the trustees should seek input from landowners. In particular, whether there is interest in pursuing an improvement to the existing Lateral 12 tile and waterway system (instead of a repair). If improvements are not desired, at the formal hearing the proposed repairs should be approved, and the engineer should be directed to develop plans and specifications and proceed toward bid letting / soliciting competitive quotes.

Sincerely,

JACOBSON-WESTERGARD & ASSOCIATES INC.



Collin J. Klingbeil, P.E.

Encl. Repair Request
Lateral 12 Waterway Map
Lateral 12 Elevation Maps
Lateral 12 Obstructed Reaches Map
Map of Estimated Assessments Based on a \$100,000 Levy
Plan & Profile Sheets of Obstructed Reaches
Cross-Section View Sheets of Obstructed Reaches

PETITION FOR REPAIRS

Date 7-24-24

I wish to call your attention to the necessity for repair to Drainage District

No. 35 Lat. No. main Waterway

Located in Section 15, 16, 19, 20

Township Grant

Owner/Tenant Laurence Doder

Phone 641-425-3440

Requested by _____

Phone _____

Signature Laurence Doder

Approved by Supervisor _____

Location of problem _____

Notes tile is working but waterway done in 50's is not draining done in 1955

9-10-63 - petitioned because in bad repair - put in box culvert

12-15-65 - petitioned to have waterway looked at -

11-4-70 - report stating waterway be a ditch - remastered - will repair to original

7-2-91 - report to clean main ditch - remastered - just a cleanout

9-23-96 report to make lat 12 more ditch - remastered - Laurence on list

6-22-99 - petition by Laurence Doder to repair - get engineer - went through as repair

8-20-15 - report to see how waterway working - works fine

1-3-17 - report to see how waterway working given to engineer

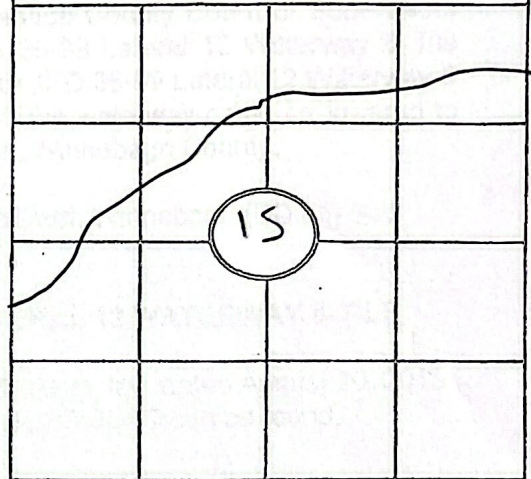
8-1-17 - recommended 4 options - landowners decided to do nothing

8-14-24 - asked Latharu to look at -

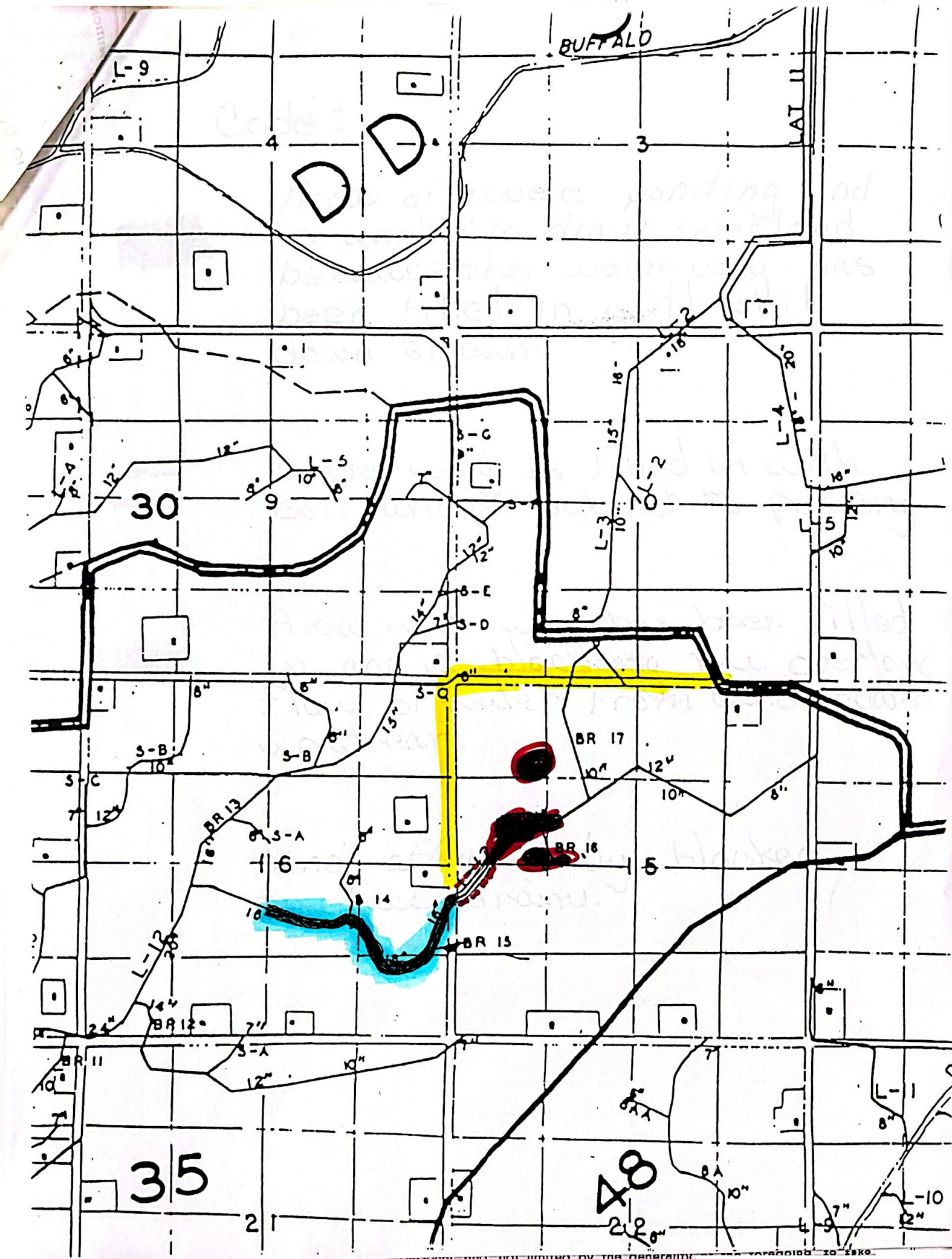
4-14-26 - Laurence called again to check - texted Latharu

4-24-26 - Laurence in - on agenda

Fill in the section below as to where the repair is needed



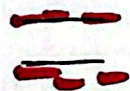
Lat 12



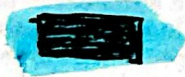
Code :



Area of severe ponding and is unable to drain overland because the water way has been filled in with soil down stream



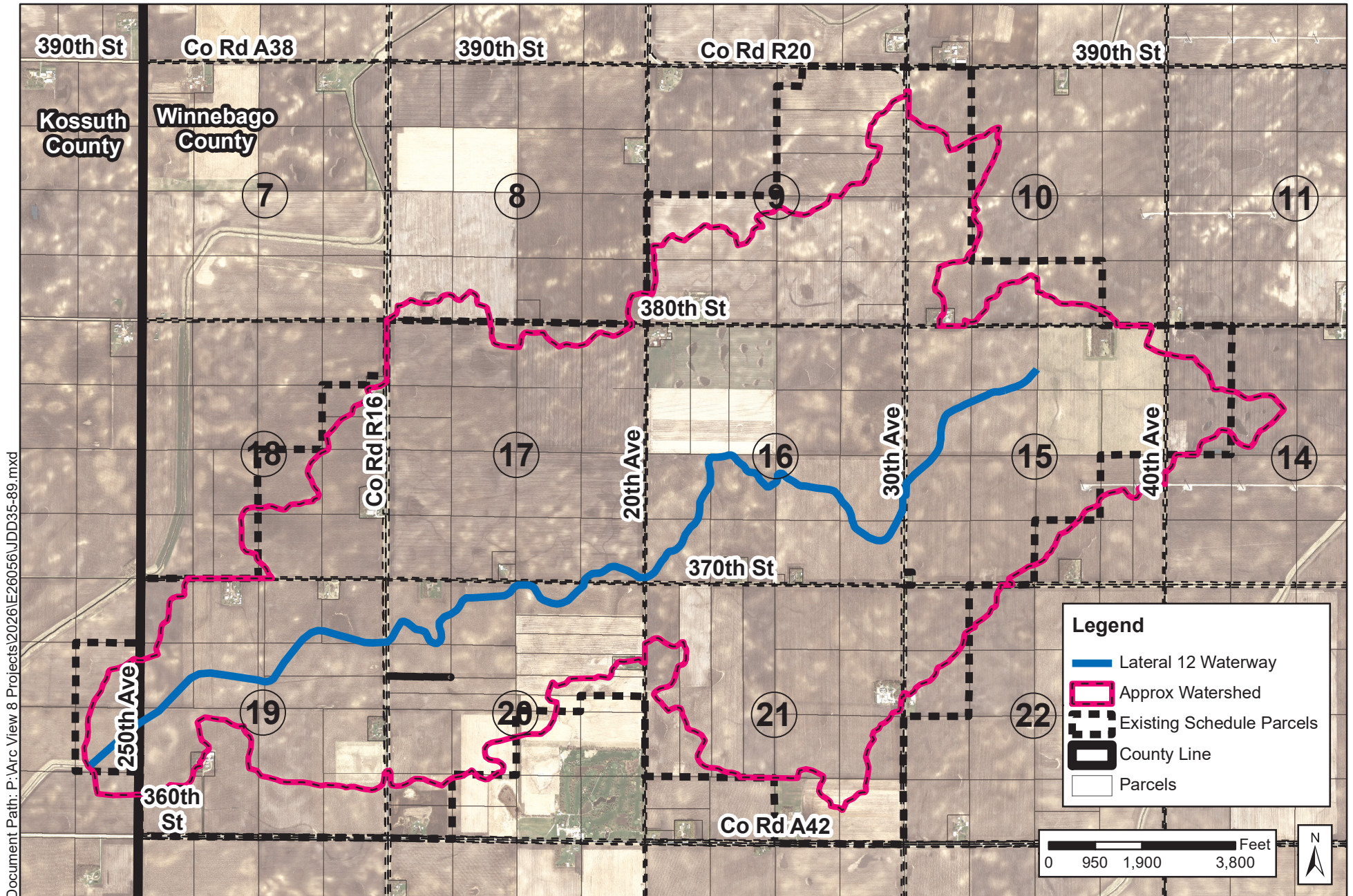
Water way is filled in with soil and is subject to ponding



Area water way has been filled in and is blocking the overland flow of water from land located upstream

land affected by blocked surface drain.

Joint Drainage District No. 35-89
Lateral 12 Waterway Map
Winnebago and Kossuth County, Iowa

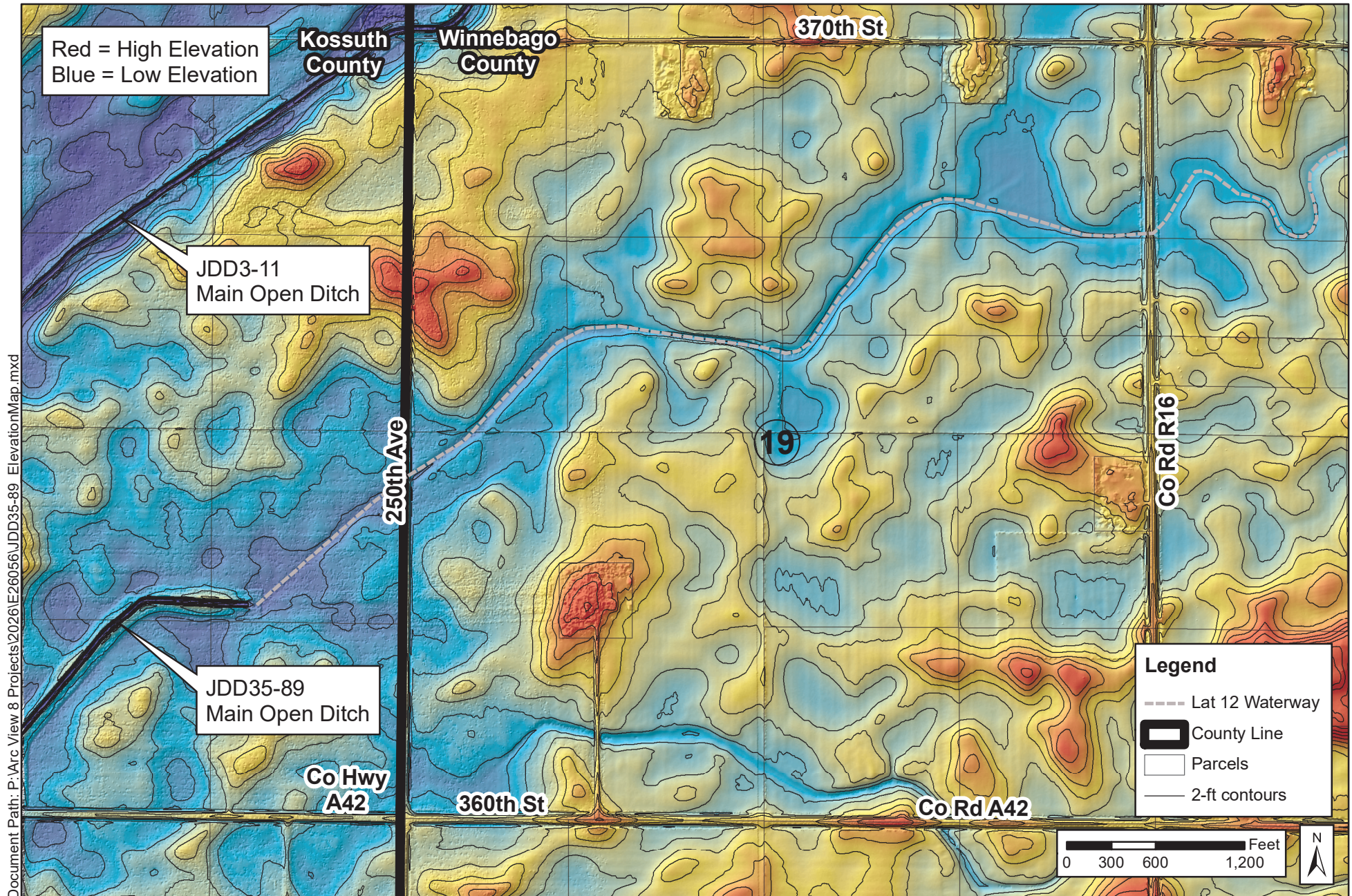


Joint Drainage District No. 35-89

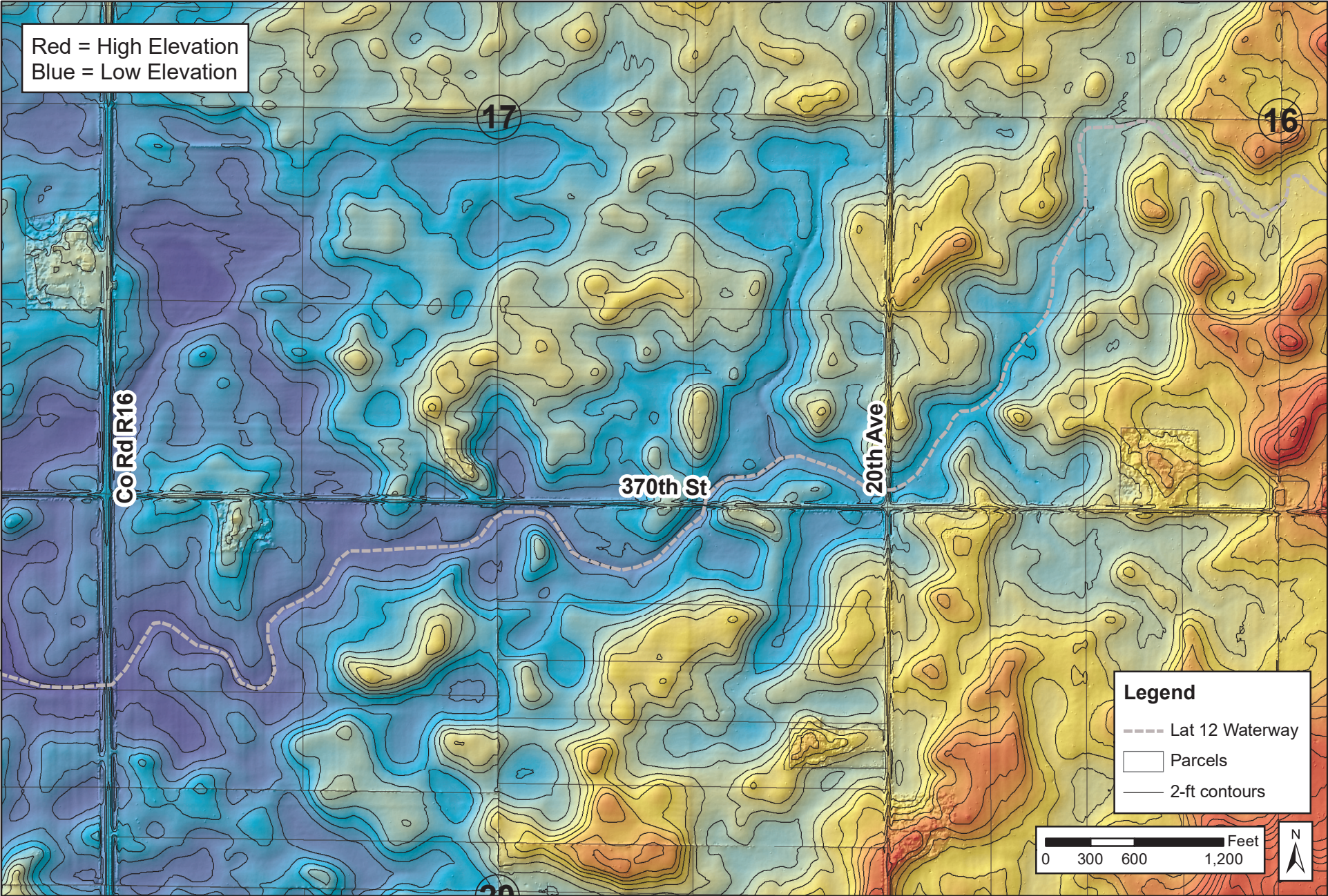
Lateral 12 Waterway

Elevation Map 1

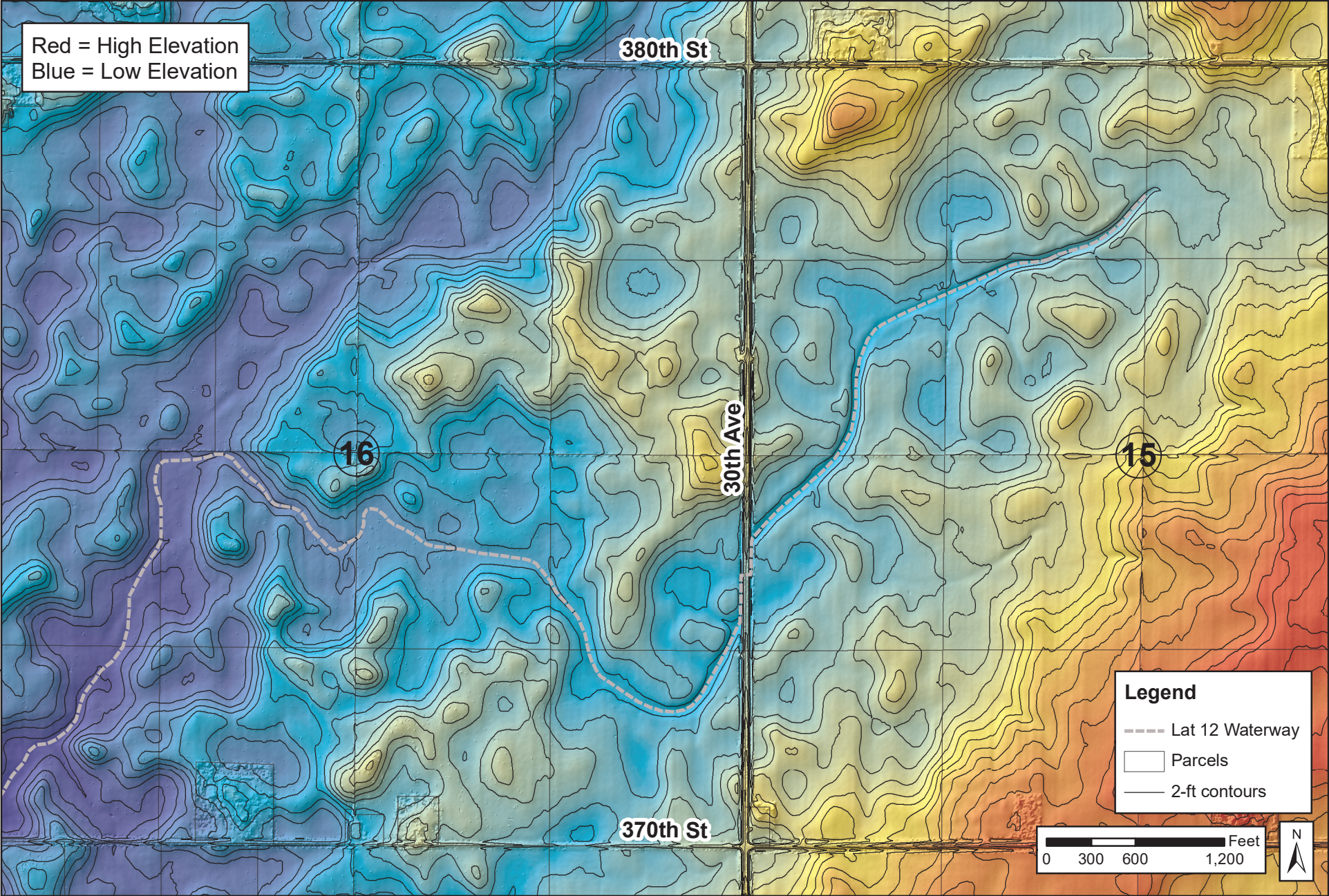
Winnebago & Kossuth County, Iowa



Joint Drainage District No. 35-89
Lateral 12 Waterway
Elevation Map 2
Winnebago & Kossuth County, Iowa

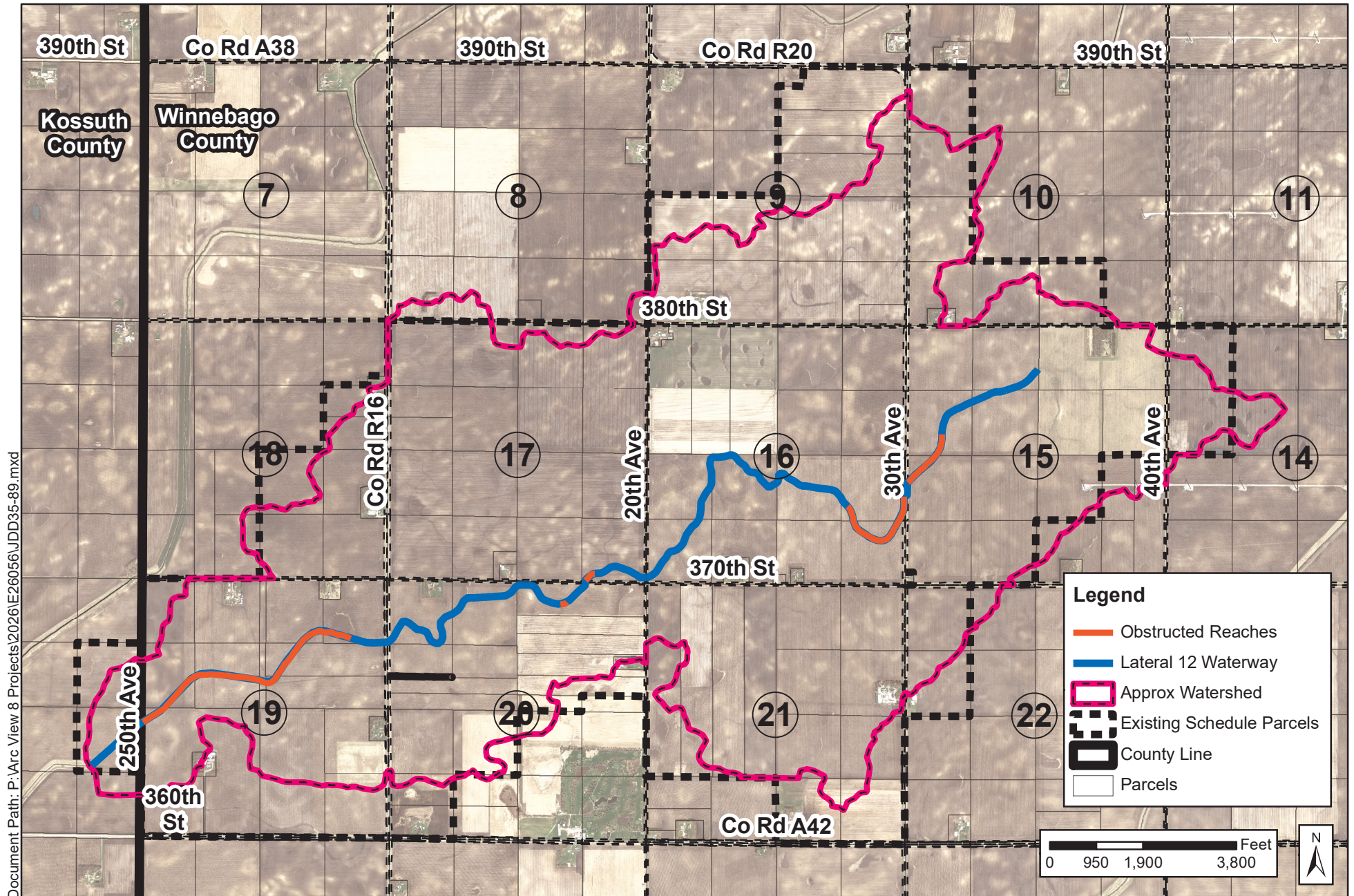


Joint Drainage District No. 35-89
Lateral 12 Waterway
Elevation Map 3
Winnebago & Kossuth County, Iowa



Joint Drainage District No. 35-89 Lateral 12 Obstructed Reaches Map

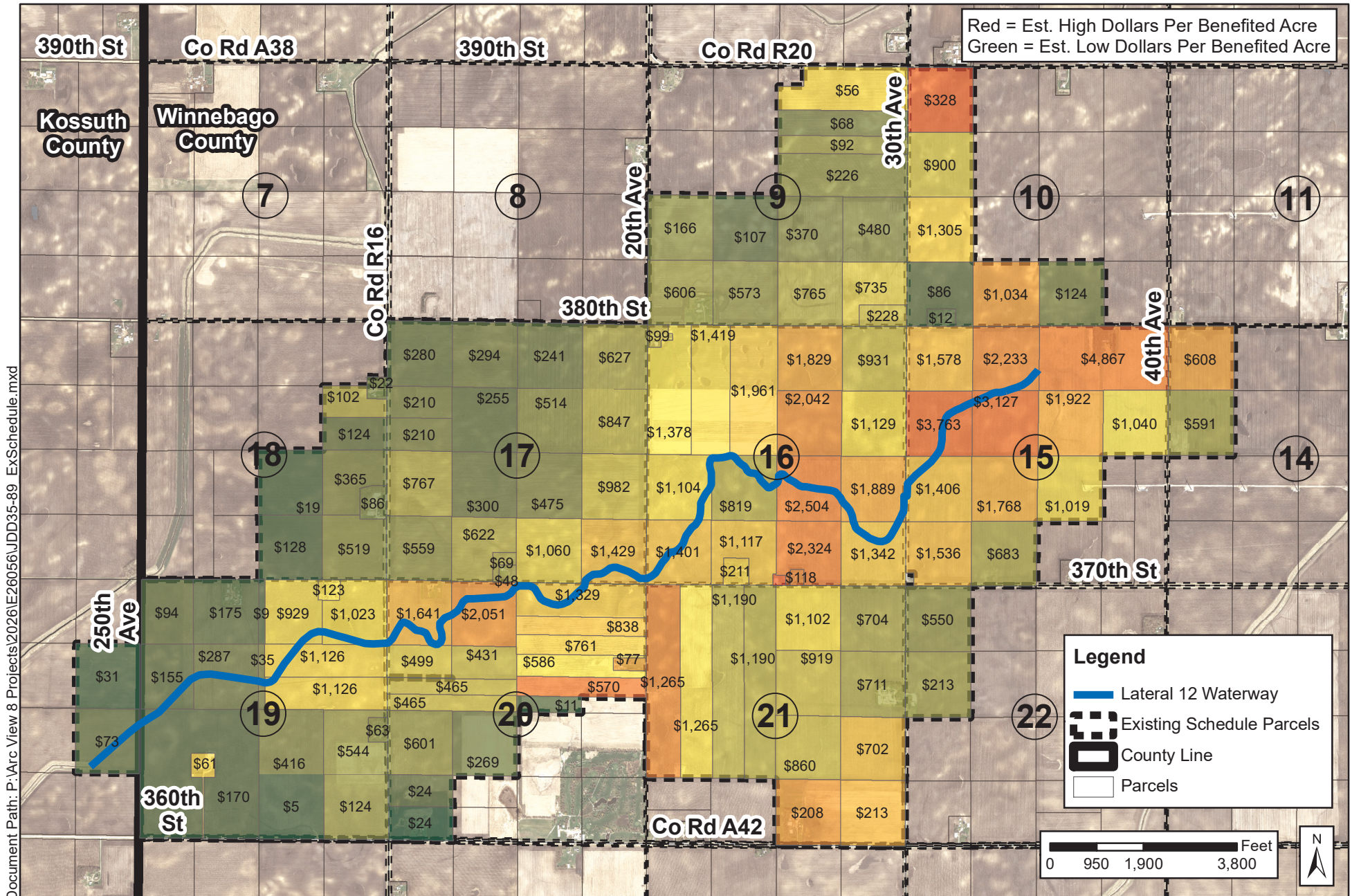
Winnebago and Kossuth County, Iowa

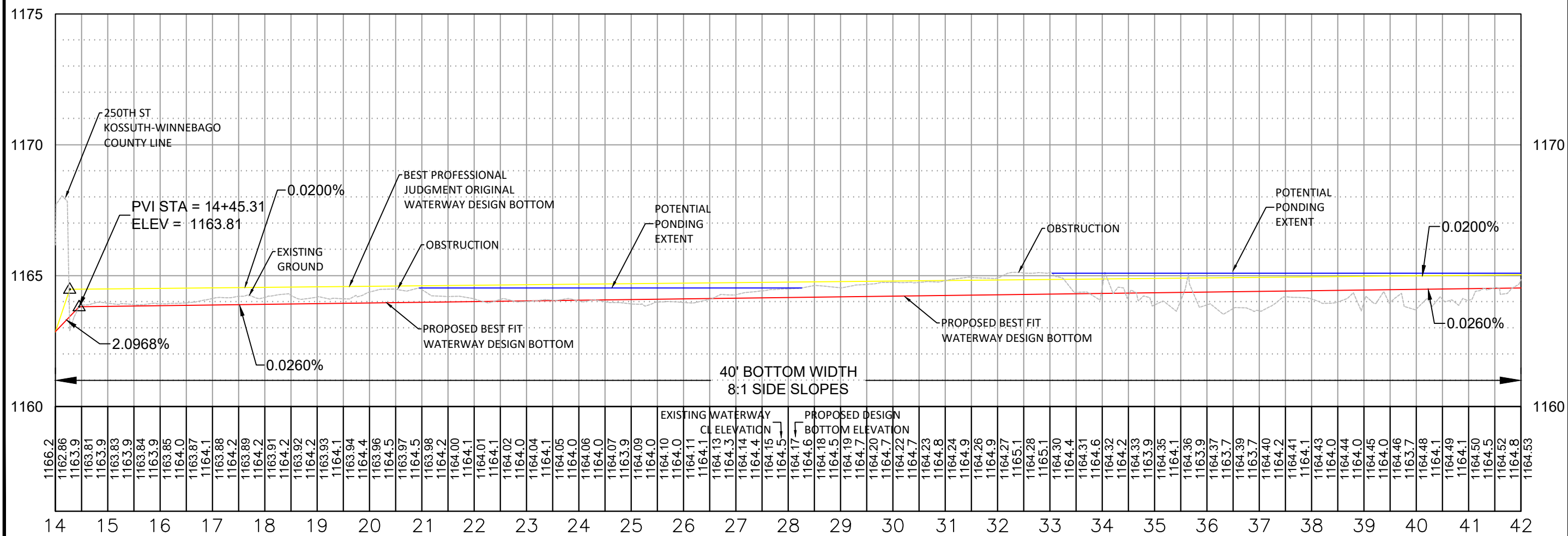
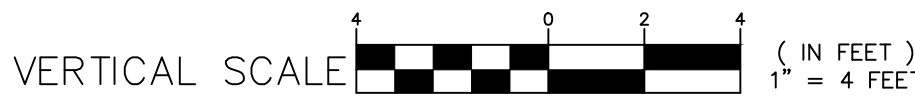
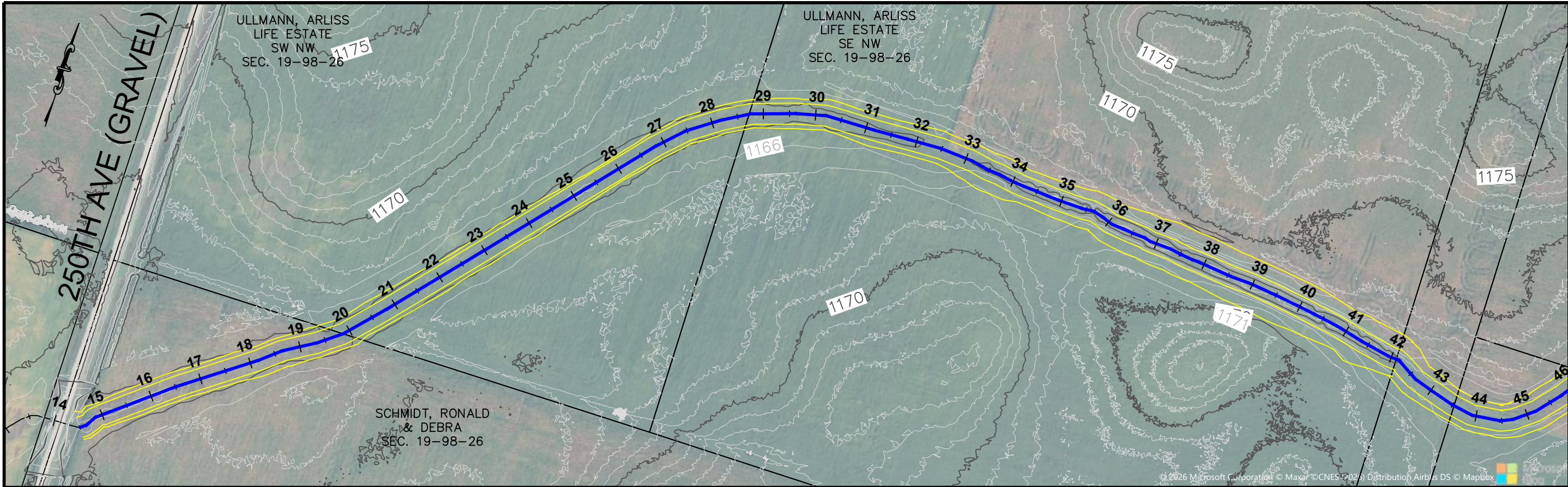


Joint Drainage District No. 35-89

Lateral 12 Est. Assessments Based on a \$100,000 Levy

Winnebago and Kossuth County, Iowa





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LAND SURVEYING
CONSULTING ENGINEERS

REVISIONS	BY	DATE

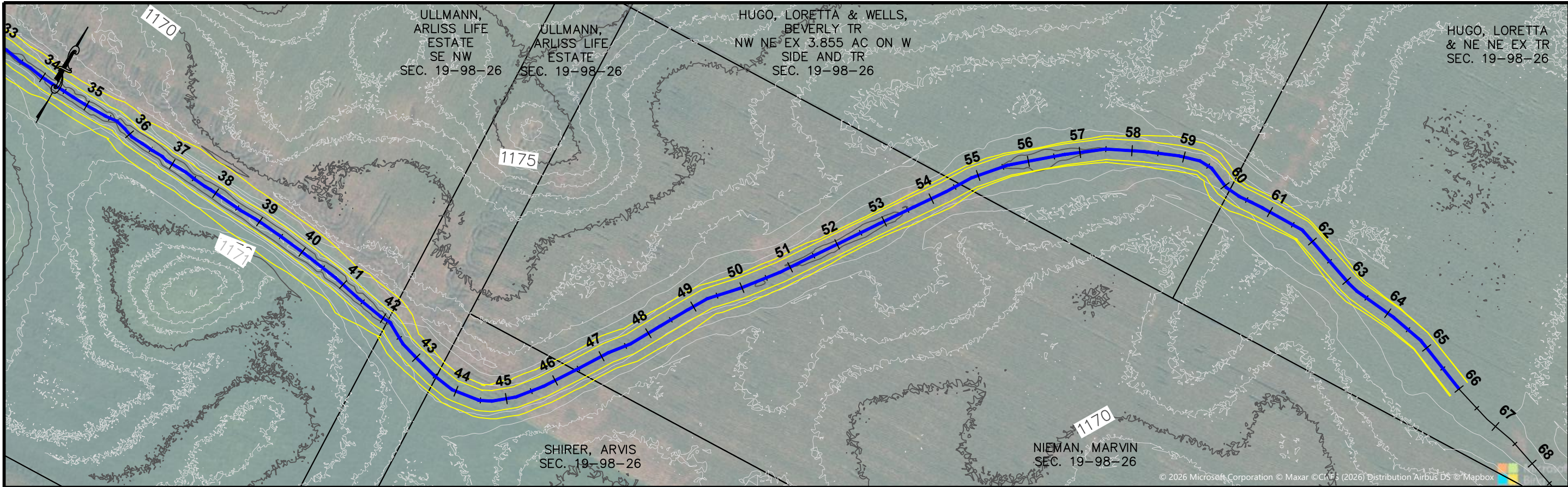
JOINT DRAINAGE DISTRICT No. 35-89
LATERAL 12 WATERWAY
WINNEBAGO & KOSSUTH COUNTY

**PLAN & PROFILE
LATERAL 12 WATERWAY**

Date	Designer	CK
7/26	CK	CK

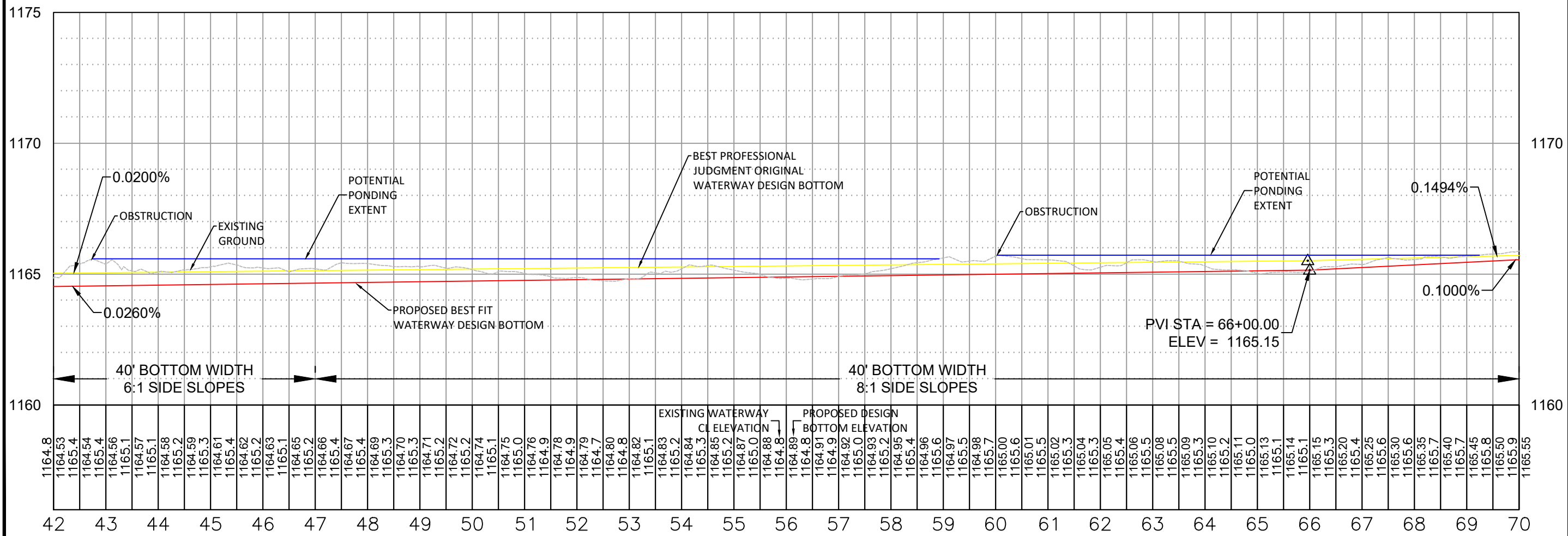
Project Number	Sheet
E26056	D.01

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JACOBSON - WESTERGARD & ASSOCIATES, INC.
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LAND SURVEYING
CONSULTING ENGINEERS

REVISIONS	BY	DATE



JOINT DRAINAGE DISTRICT No. 35-89
LATERAL 12 WATERWAY
WINNEBAGO & KOSSUTH COUNTY

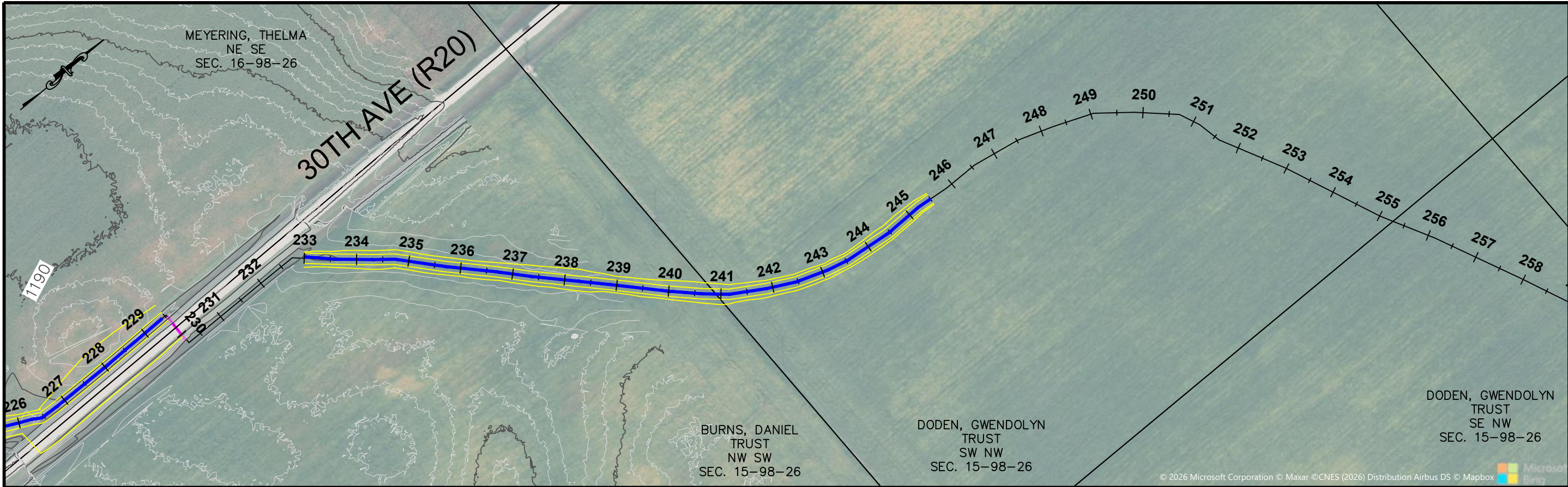
**PLAN & PROFILE
LATERAL 12 WATERWAY**

Date	7/26
Designer	CK
Draftsman	CK
Checker	CK

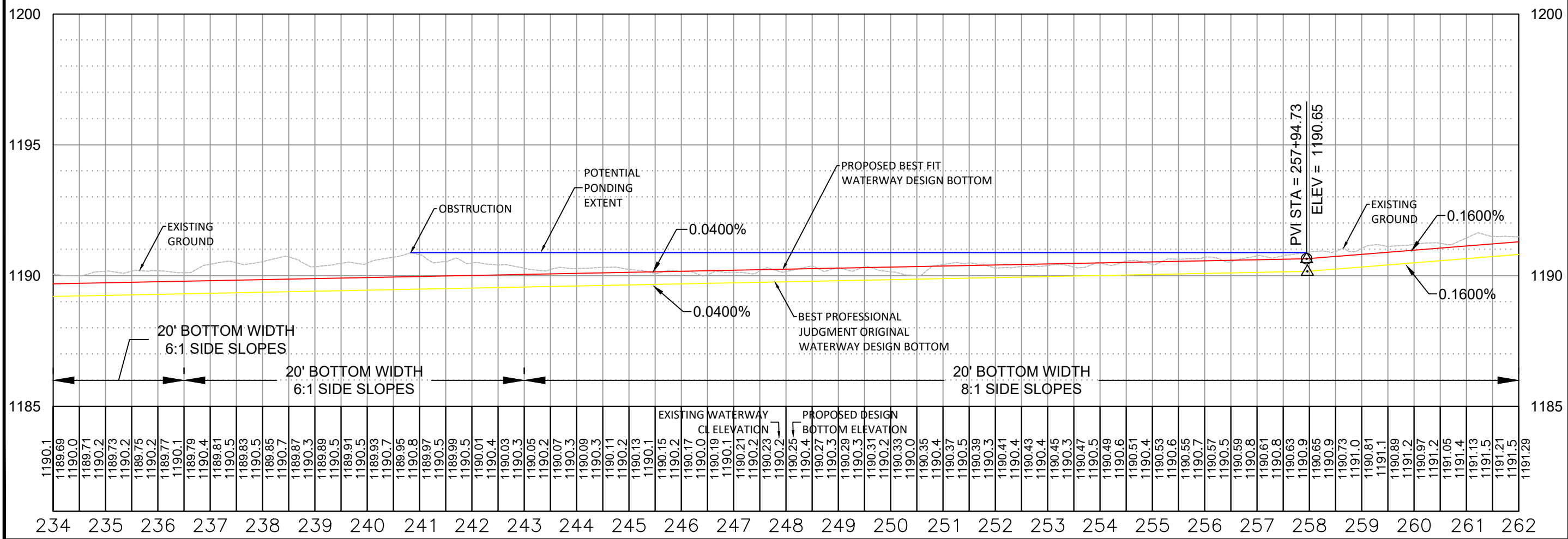
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E26056

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Jacobson-Westergard & Associates, Inc. logo and contact information.



Revisions table with columns for Date, By, and Revisions.

Project information: JOINT DRAINAGE DISTRICT No. 35-89, LATERAL 12 WATERWAY, WINNEBAGO & KOSSUTH COUNTY.

PLAN & PROFILE, LATERAL 12 WATERWAY.

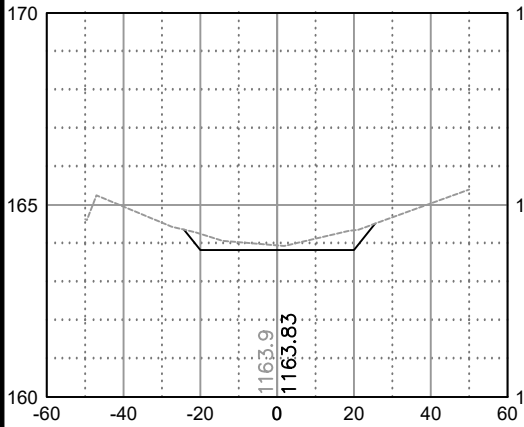
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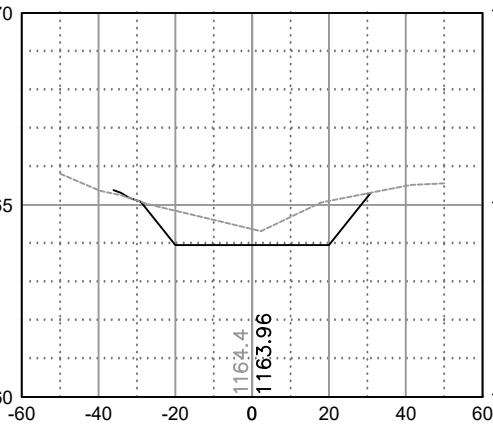
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SECTION 19

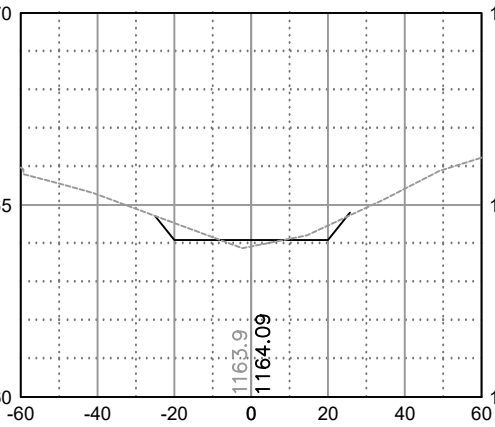
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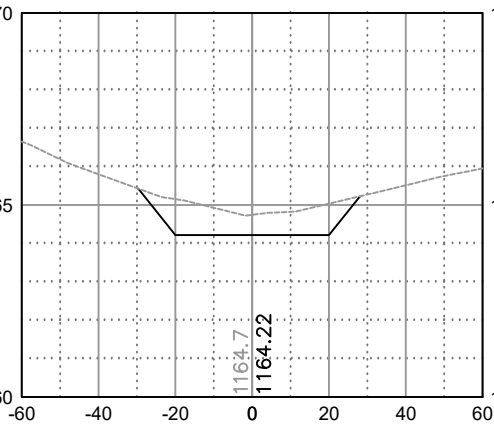
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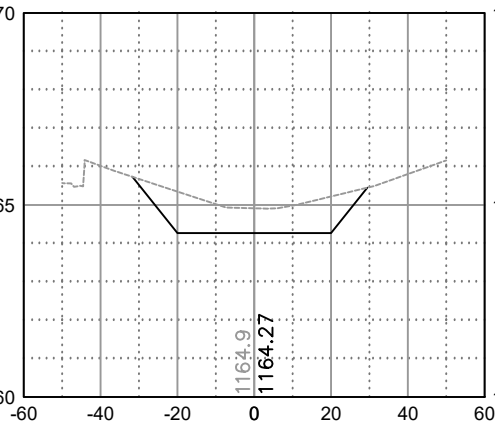
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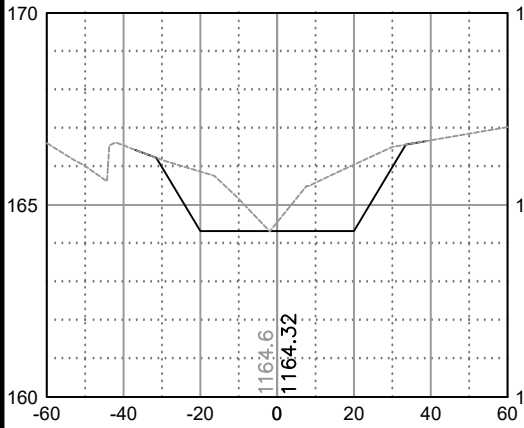


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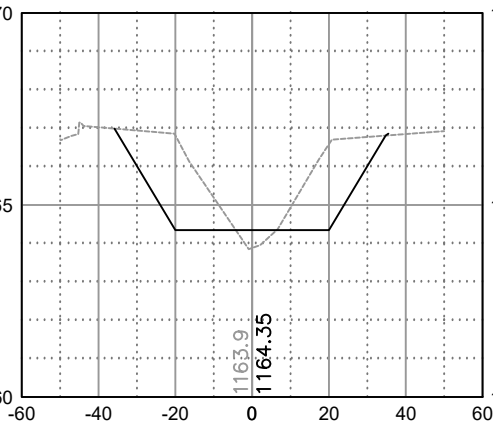


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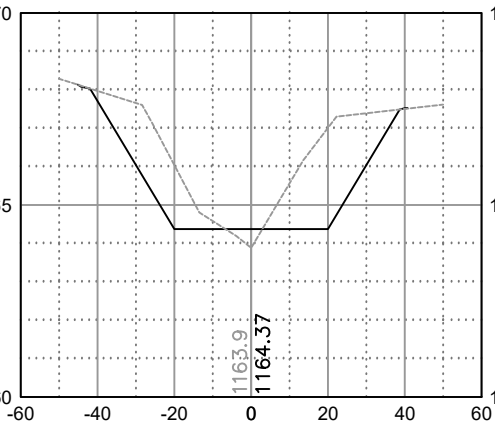
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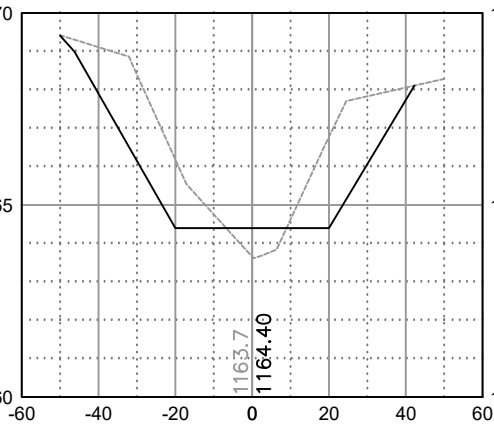
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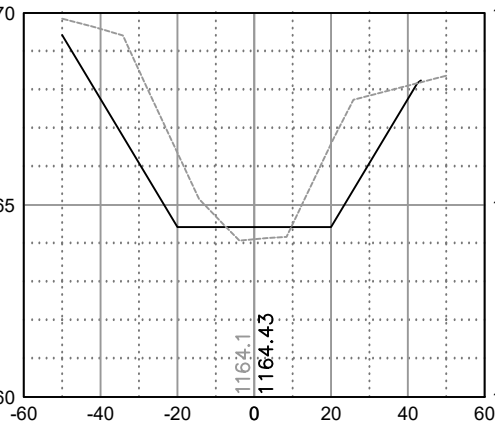
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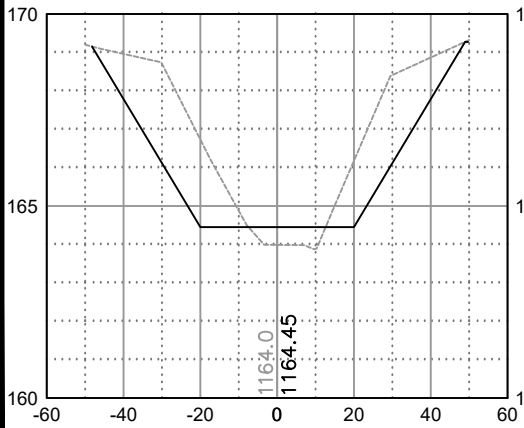


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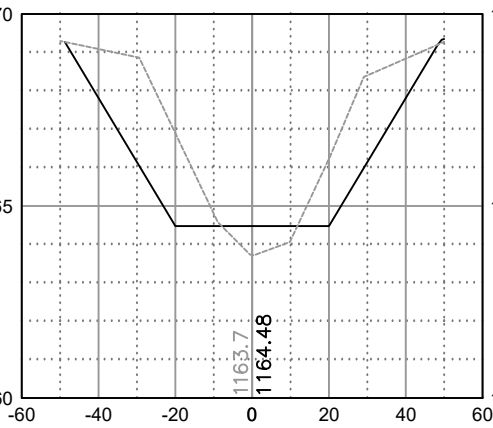


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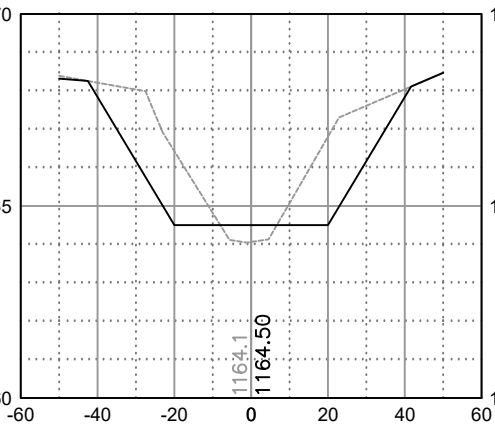
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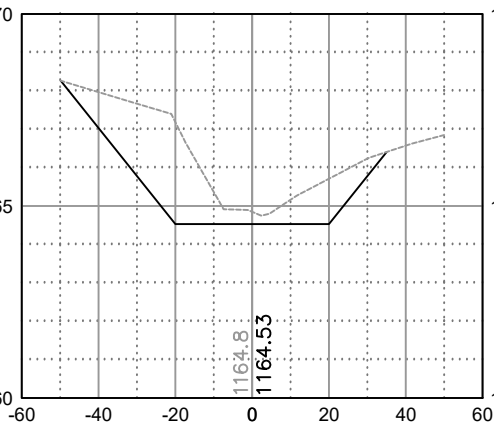
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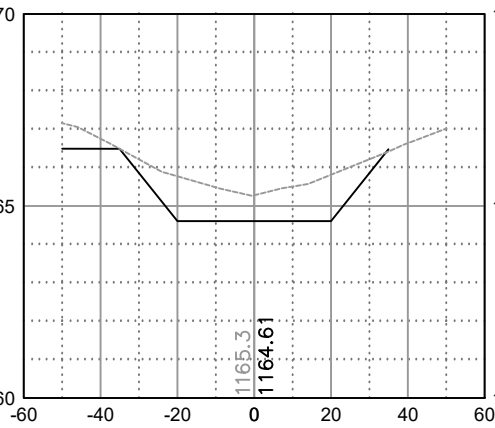
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JW

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LAND SURVEYING
CONSULTING ENGINEERS

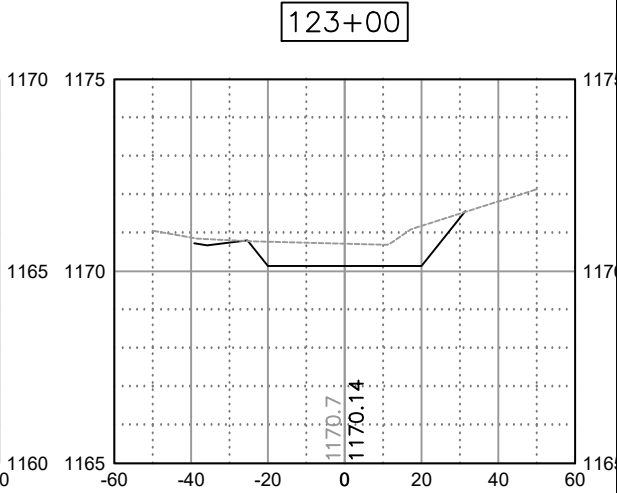
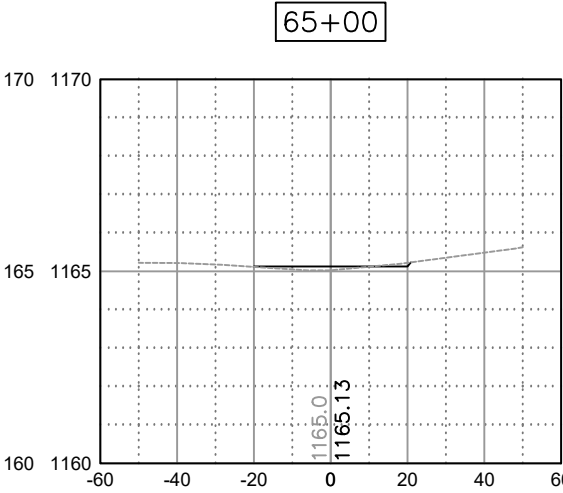
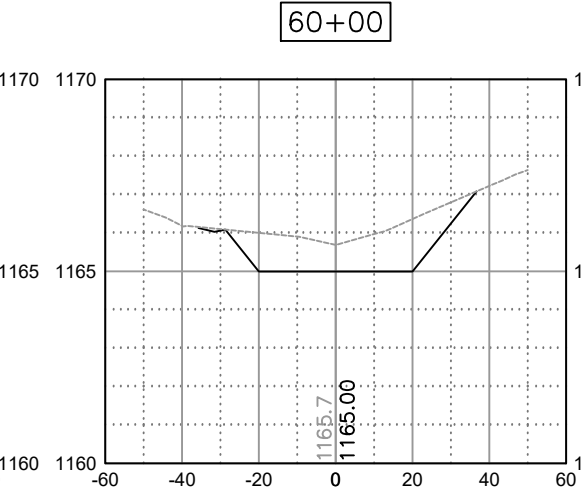
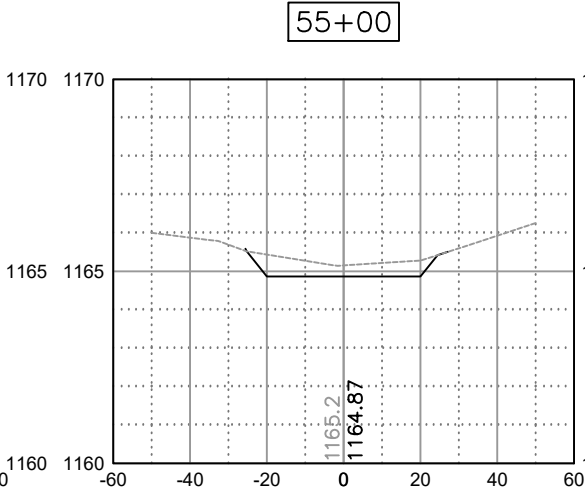
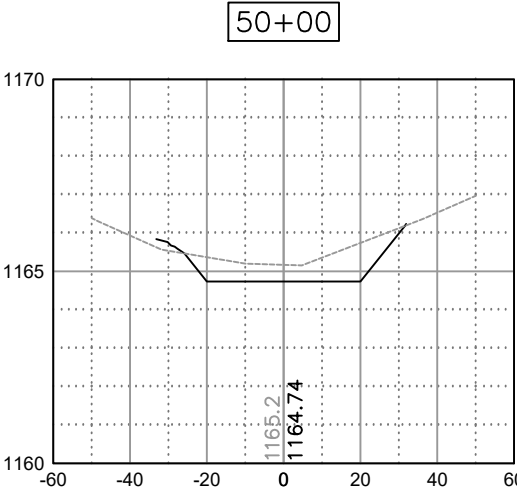
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DRAINAGE DISTRICT No. 69
MAIN & LATERAL D IMPROVEMENTS
PALO ALTO COUNTY, IOWA

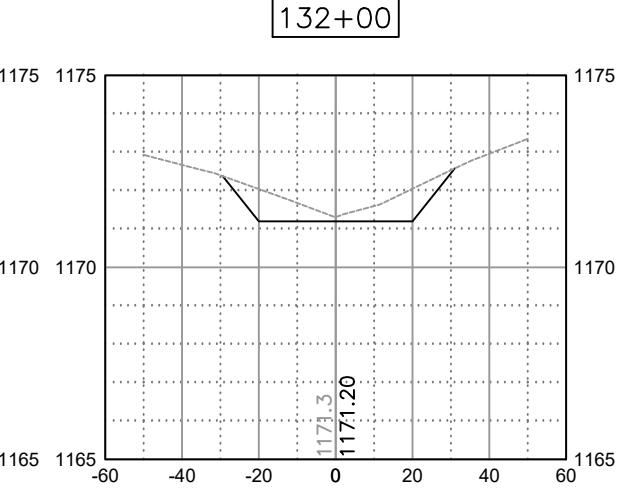
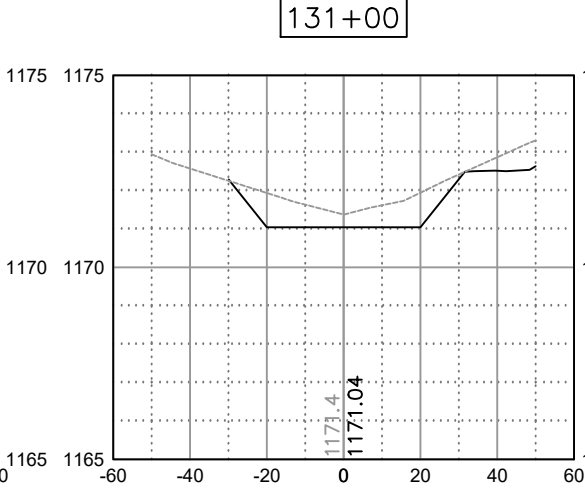
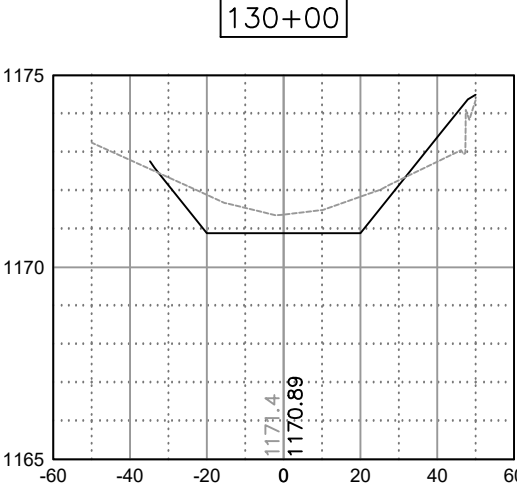
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Date	Designer	Draftsman	Checker
Project Number			
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X.01			

SECTION 19



SECTION 17



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LAND SURVEYING

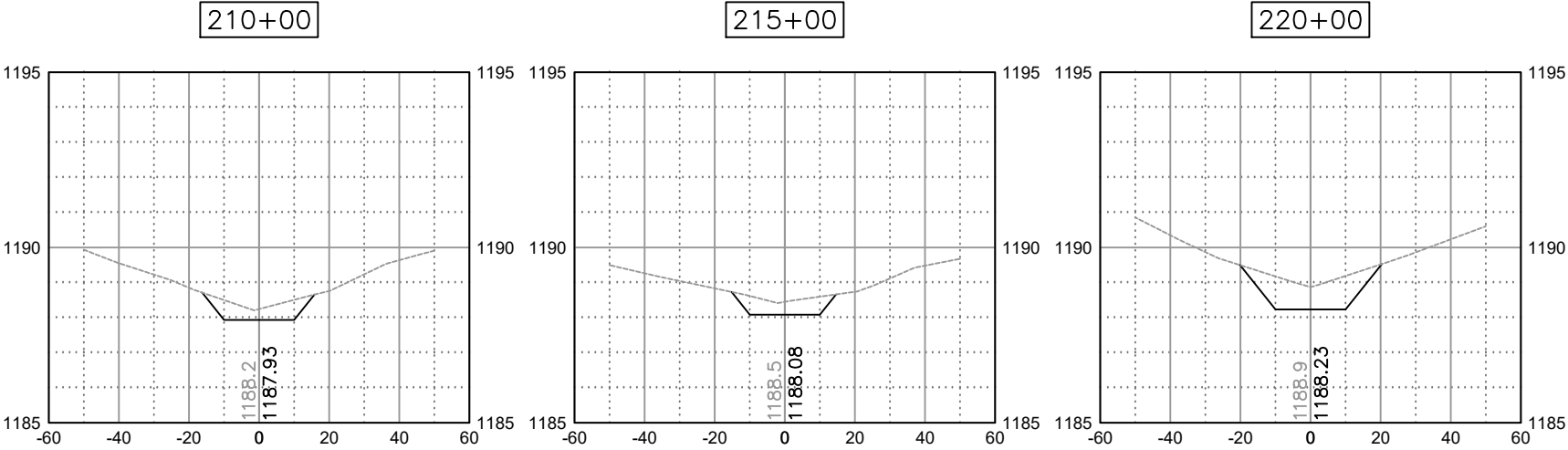
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DRAINAGE DISTRICT No. 69
MAIN & LATERAL D IMPROVEMENTS
PALO ALTO COUNTY, IOWA

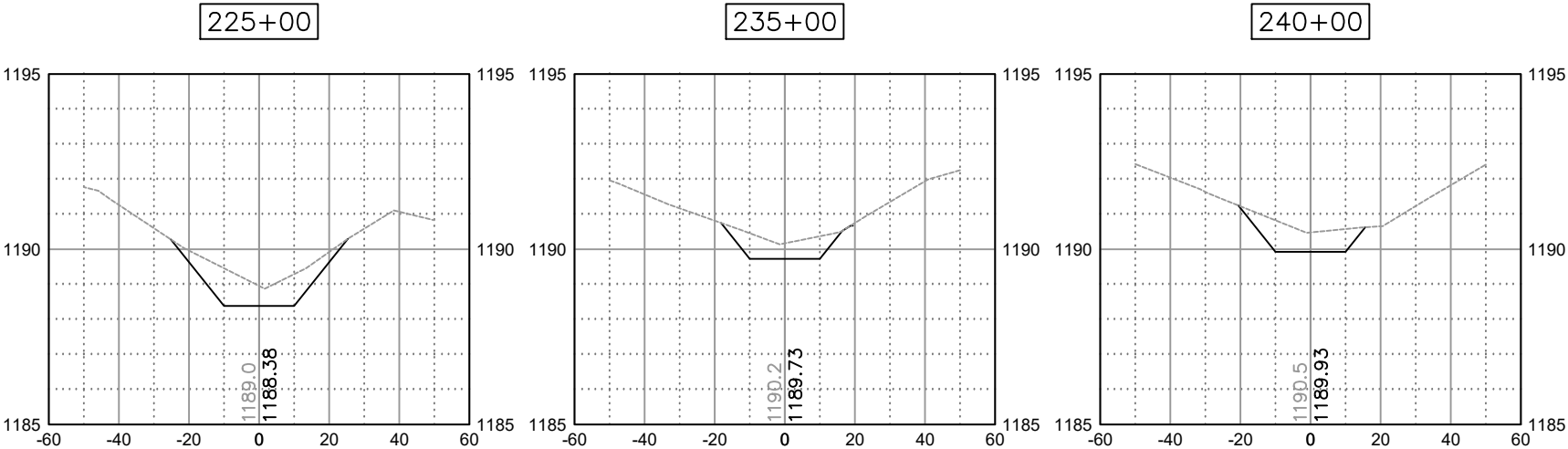
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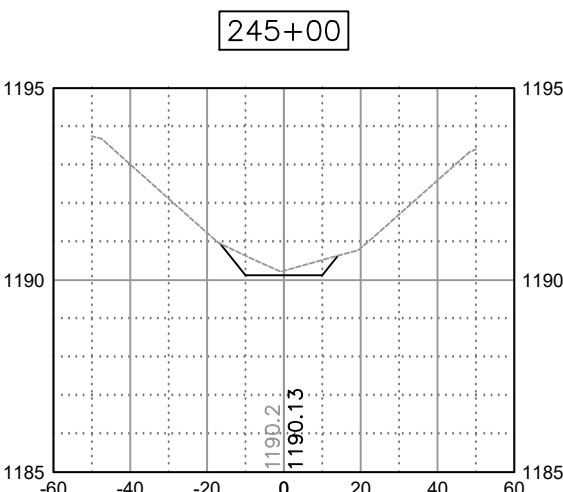
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SECTION 16



SECTION 15



REVISIONS	BY	DATE

DRAINAGE DISTRICT No. 69
MAIN & LATERAL D IMPROVEMENTS
PALO ALTO COUNTY, IOWA

CROSS SECTIONS

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Draftsman	CK
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