

February 3, 2015

Osceola County Board of Supervisors  
300 7<sup>th</sup> St.  
Sibley, IA 51249



Re: Drainage District No. 9, Osceola County  
Landowners' Petition for Drainage Improvement

**SCOPE OF STUDY:**

On July 22, 2014, the Osceola County Board of Supervisors acting as Trustees for Drainage District No. 9 (DD9) received a petition from landowners in the northern part of the District (see appendix A for the landowners' petition). The petition requested an investigation of the capacity of the District Tile facility for possible improvement. In late October the Board of Supervisors hired I+S Group, Inc (ISG) to conduct a preliminary investigation and report our findings. This letter report summarizes those findings and provides recommendations.

**DISTRICT HISTORY:**

A petition for establishment of DD9 was filed on April 6, 1908, with an Engineer's Report filed July 13, 1908. Final construction of the drainage district facility was approved January 3, 1911. There have been various repairs and additional assessments since 1933. On June 1, 1991, a petition for improvement of the outlet tile system was filed with the Board approving the investigation. No record of an engineer's report on this investigation being filed was found. (See Appendix B for History Outline)

**DESCRIPTION OF FACILITY:**

During the investigation, ISG compiled data using district plats, aerial photography, soils and topographical maps to determine the watershed of DD9 is approximately 1,470 acres and is part of Sections 3, 4, and 10 of East Holman Township and 33 and 34 of Wilson Township. DD9 consists of a Main Tile, one (1) Lateral and seven (7) Branches. The Main Tile runs from its outlet in SE1/4 of SE1/4 of Section 3, East Holman Township in a northeasterly direction 10,492 LF terminating in the NW1/4 of NE1/4 of Section 33, Wilson Township. The tile system of DD9 outlets through a concrete headwall to the surface channel and tile main of Drainage District No. 43 (DD43). The facilities of DD43 then traverse easterly approximately 1.25 miles discharging to the Main Open Ditch of Drainage District No. 11 (DD11). The lower portion of DD9 watershed does have surface relief with the concrete headwall acting as a drop structure. During low flow events, the tile main of DD9 will discharge to the tile system of DD43 by means of a surface intake at the base of the outlet headwall structure. Higher discharge events will overflow to the surface channel of DD43. Refer to Preliminary Plan Sheet A.02, for a plat of DD9.

**TILE CAPACITY EVALUATION:**

Standards for good agricultural drainage recommend that tile systems serving areas without surface drainage be sized to drain 1/2 inch of runoff per acre per 24 hour period. For lands with surface drainage, the tile system is recommended to be size based on a 3/8 inch drainage coefficient. The lands in the upper portion of this watershed, above Branch No. 1, do not have adequate surface drainage. Therefore, the recommended design capacity of this tile system is calculated using a 1/2 inch drainage coefficient for the upper 65% of the watershed and a 3/8 inch drainage coefficient for the lower 35% percent. The existing capacity of the tile main is computed based on size of the tile and assuming the tile is in good condition. This capacity is then compared to the recommended design capacity with the results reported as a percentage of design capacity. Table 1 below summarizes these results along with size and capacity of the recommended tile.

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Table 1 - Drainage District 9 - Tile Capacities

Station	Size (in)	Recom. Size (in)	Slope (ft/ft)	DA Acres 1/2" Acres 3/8"	Recom. Q (cfs) Acres 1/2" Acres 3/8"	Total Recom. Q (cfs)	Original Q (cfs)	Original Q/Recom. Q (%)	Proposed Q (cfs)	Proposed Q/Recom. Q (%)
Main @ Outlet										
0+00	20	-	0.002	950	14.96	25.88	7.49	28.9%	-	-
				520	10.92					
Main @ Top of Open Ditch										
29+22	20	30	0.002	950	14.96	20.05	7.49	37.4%	26.13	130.3%
				242	5.08					
Main Above Branch 1										
61+50	18	30	0.001	711	14.93	14.93	4.00	26.8%	19.12	128.1%
Main above Branch 2										
98+00	15	24	0.0015	489	10.26	10.26	3.01	29.3%	12.18	118.7%
Main Above Branch 3										
99+00	15	24	0.002	335	7.04	7.04	3.48	49.4%	12.18	173.1%
Main Above Branch 5										
116+50	10	15	.002	230	4.83	4.83	1.18	24.4%	6.07	125.7%
Main Above Branch 6										
132+00	8	10	.0015	61	1.28	1.28	0.56	44.0%	1.44	112.8%

We have prepared a profile of the existing ground surface over the tile main alignment using LiDar elevation data. Then we plotted the existing main profile based on slope and depth of cover data found in the District Records. None of this data has been field verified but provided adequate data for analysis the capacity of the main. Please refer to the Profile Sheets D.01 to D.07.

The Main Tile at its outlet provides 28.9% of the capacity recommended. The Main just above Branch No. 1 provides just 26.8% of the needed capacity. The capacities continue to improve slightly in the upper segments, with the lower segment of the main being the most restrictive, the entire tile main is severely under capacity for the lands served above Branch 1 where there is no surface drainage relief.

The petition filed is for drainage relief due to this lack of capacity of the tile outlet system. From our preliminary study we have found the existing main to be undersized for current cropping practices and the acres served. The District would benefit from an improvement project that would increase the size of the tile; however, if the size of tile is increased on the same gradeline as the current tile main there will be inadequate soil cover over the top of the tile from Station 0+00 to 29+22. Currently, the tile system of DD9 outlets to the ground surface in the SE1/4 of SE1/4 of Section 3, East Holman Township. Then the discharge is passed by means of the surface channel and tile main of DD43. To increase the depth of the lower segment of tile main of DD9 would require tying into the tile main of DD43. As an alternative, we evaluated extending the surface channel of DD43 upstream to pick up grade and cover for a larger tile main for DD9.

Drainage District No. 9 has the full right to improve its facilities and increase the discharge to the lands downstream in Drainage District No. 43 and No. 11. However, DD43 has the right to improve their facilities and common outlet the landowners of DD9 for their fair share of these costs to improve their facilities. DD9 cannot directly connect to the tile main of DD43 without agreement with DD43. If the capacity of DD43 tile main is currently lacking, a joint project between the Districts would be best with the improvement costs distributed based on benefit received.

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### **REPAIR/IMPROVEMENT COST DISCUSSION:**

Based on our preliminary study, an improvement to DD9 Tile Main would be feasible if the open ditch of DD43 was extended upstream 2,922 linear feet allowing for the surface discharge of the improved tile main. The cost of both a full repair and improvement is considered in this report and discussed below:

1. Option 1 proposes repairing the tile main only to its original designed capacity. We have included this option so the cost difference between a repair and improvement can be seen. We have assumed for this option that all of the tile of the Main will need to be replaced with the same tile as shown in the original plan. The estimated construction cost subtotal would be \$454,870 with the total project cost to the District being \$662,260.
2. Option 2 proposes an improvement by removing the Main Tile from Station 0+00 to 29+22 and replacing it with a properly sized open ditch, providing at least 3/8 inch drainage coefficient from Station 0+00 to 61+19 and 1/2 inch drainage coefficient from Station 61+19 to 154+92. The Main tile would be increased from 18 to 30 inches through Station 29+22 to 80+00. After Station 80+00 the tile would be increased from 15 to 30 inches through Station 80+00 to 98+88, from 15 to 24 inches through Station 98+88 to 109+00, from 12 to 24 inches through Station 109+00 to 115+00, from 10 to 24 inches through Station 115+00 to 116+50, from 10 to 15 inches through Station 116+50 to 129+00, from 8 to 15 inches through Station 129+00 to 131+05 and from 8 to 10 inches through Station 131+05 to 154+49. The estimated construction cost subtotal would be \$585,976 with the total project cost, without wetland mitigation, to the District being \$894,186.

Please refer to Appendix C for details of the Engineer's Estimates of Probable Costs.

### **ANNEXATION/RECLASSIFICATION DISCUSSION:**

As part of our field investigation we have mapped the watershed boundary of the entire District using LIDAR (Light Detection and Ranging) data and aerial photography to determine the lands that drain by surface or subsurface into the District. From this review, (Please refer to Sheet A.02 and A.03 of the drawings) it became apparent that there are approximately 447 acres of land draining to facilities of DD9 that are not included in the original assessment boundary of the overall District. Even if this improvement project does not proceed, we would recommend the Trustees of the District consider annexation of these lands.

When this District was originally established all of the facilities of the District were paid for under one assessment schedule. The District has not been reclassified since its original assessment schedule was adopted in 1909. Therefore, when work is done on any branch of the district facilities, all landowners in the District pay for this work even if they receive no benefit.

Section 468.131 of the Iowa Code states, "When an assessment for improvements as provided in Section 468.126, exceeds twenty-five percent of the original assessment and the original or subsequent assessment or report of the benefit commission as confirmed did not designate separately the amount each tract should pay for the main ditch and tile lateral drains then the board shall order a reclassification in accordance with the principles and rules set forth in Section 468.41."

Therefore, even if the improvement project does not proceed but annexation does, we would recommend reclassification of the district to designate separately the amount each tract should pay for the upkeep, maintenance and improvement of the Branch tile systems and to redistribute the benefits to all lands in the District with the incorporation of the annexed lands.

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### **WETLANDS DISCUSSION:**

The USDA Farm Program has long included wetland conservation compliance "swampbuster" provisions administrated by the Natural Resources Conservation Service (NRCS). These rules and policies require that the lost functions, values and area of each converted (better drained) farmed wetland be replaced (mitigated). Under Part 12 of Title 7 of the Federal Regulations, "activities of a Water Resource District, Drainage District, or similar entity will be attributed to all persons within the jurisdiction of the District or other entity who are assessed for the activities of the district or entity. Accordingly, where a person's wetland is converted due to the actions of the District or entity, the person shall be considered to have caused or permitted the drainage." However, Drainage Districts in Iowa have the right to maintain the existing drainage capacity of their facilities for there is no additional impact to any wetlands in the watershed by repairs.

The US Army Corps of Engineers (USACE), in conjunction with the US Environmental Protection Agency (USEPA), also have jurisdiction to wetlands under the Federal Clean Water Act Section 404. However, for the wetlands to be jurisdictional they have to be connected to waters of the United States and not isolated wetlands. For wetlands to be considered connected, they would need to be adjacent and surface connected to the proposed open ditch.

Therefore, if an improvement option is approved that increases the capacity of the tile system, impacts to wetlands will need to be considered both under the Farm Bill and Clean Water Act. To determine if wetlands will be impacted, the NRCS requires that all lands in the watershed must have a wetland determination completed prior to any construction by the District. The landowners or their tenants are the only individuals that can request this determination. If a landowner does not request a certified wetland determination and the District proceeds with an improvement project, the landowner may be found to be in violation of the farm program rules and not eligible for program benefits. Additionally, the USDA could file claim for refund of farm program payments. Therefore, if any of the proposed improvement options are approved, we will encourage all landowners within the watershed boundary to request a certified wetland determination from the NRCS. Please note the NRCS will only provide determinations on agricultural lands producing a commodity crop. For other lands, a consultant will need to be hired to make the wetland determination. If a landowner refuses to sign up for a determination, we will recommend the Board approves hiring a consultant to make the wetland determination assessment for review by the NRCS to determine the final potential impact to wetlands.

The US Fish & Wildlife Service has prepared a wetland inventory based on wetness signatures seen on aerial mapping of lands of the United States. Along the alignment of the tile main this inventory shows approximately 9.4 acres of potential wetlands. If after a formal wetland determination, these areas were classified farmed wetland, the additional impact by improved drainage would either have to be avoided or mitigated. The purpose of the proposed improvement is to provide improved drainage and therefore the cost of mitigation needs to be considered and who pays for this cost.

For this study we have only assume an improvement to the tile main and none of the tile branches. Therefore, we only considered impact to the potential wetlands along the alignment of the tile main. There are many other potential wetlands, but we assumed a tile main project would avoid any impact to these areas.

It appears that 8.1 acres of these potential wetlands traversed by the tile main are currently not farmed and are in a Conservation Reserve Program. If the current 8.1 acres of CRP remains unfarmed, impact to this area could be avoided by use of sealed tile through the wetland. However, if all 9.4 acres are mitigated the cost in addition to project construction costs, are estimated at \$20,000 per acre or

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\$188,000. If impact to the 8.1 acres of CRP is avoided, the cost of mitigation for 1.3 acres would be an estimated \$26,000.

The individual landowners of the parcels determined to have wetlands and farmed wetlands received the greatest direct drainage benefit from drainage improvement projects. However, the other landowners in the district also receive benefits from the improvement project, and sharing in the mitigation costs to facilitate the completion of the project maybe wise. These issues need to be explored for any improvement project that involves wetlands.

### **RECOMMENDATIONS:**

It is apparent from our investigation that the current tile facility is undersized and does not provide the drainage recommended for current day agricultural crop production. The estimated cost of a tile improvement project (without mitigation cost) averaged over the watershed acres of 1470 acres is approximately \$608/acre. The true estimated opportunity cost (difference between the improvement project and repair project) averaged over the same acres is \$158/acre. When this tile system begins to fail, it only makes sense to improve the capacity of the system to meet the needs of modern day agriculture. However, landowners do need to consider impacts to farmed wetlands and the cost of mitigation when considering drainage capacity improvements. Also, we encourage the landowners consider the incorporation of detention basins to reduce the necessary size and cost of the tile improvement and also the use of treatment wetlands to reduce nutrient impact to waters downstream.

Therefore, we recommend that an informal public meeting be held with the landowners of this district to consider a possible tile main improvement project and the costs, including possible wetland mitigation, for this project. We also, recommend the lands identified for annexation be invited to this meeting.

Sincerely,

Ivan D. Droessler, P.E.  
Civil Engineering Group  
I+S GROUP

enc: Petition of Landowners within the District  
Estimates of Probable Costs  
Preliminary Plan Set

c: Charles Bechtold, P.E., Osceola County Engineer

**APPENDIX A:**

**LANDOWNERS' PETITION**

**DRAINAGE DISTRICT NO. 9**

DRAINAGE PETITION

D.P.# 9

TO THE BOARD OF SUPERVISORS OF \_\_\_\_\_ COUNTY, IOWA:

The undersigned ask that a drainage study and improvement

commencing at Sec. 33 Wilson

and running thence SE

and terminating at Sec. 33 East Holman

be \_\_\_\_\_  
Your petitioners further state that the lands situated in \_\_\_\_\_

are subject to overflow (or are too wet for cultivation or subject to erosion or flood danger), and the public benefit, utility, health, convenience and welfare will be promoted by the above mentioned project.

NAMES  
Anita Decker) executor Tera Stevano estate

Melanie LLC by Peter Young POA

Mark Atkinson

**APPENDIX B:**

**HISTORY OUTLINE**

**DRAINAGE DISTRICT NO. 9**



**DRAINAGE DISTRICT NO. 9, OSCEOLA COUNTY, IOWA  
HISTORY FROM DRAINAGE RECORDS**

Aug. 6, 1908	Petition for establishment of Drainage District No. 9
April 27, 1908	Appoint engineer Walter Barber to do preliminary survey & report
June 3, 1908	Additional survey and designation of DD9
July 3, 1908	Sheriff served Notice to landowners
July 9, 1908	Published Notice of public hearing
July 1908	Board received written objections
July 13, 1908	Establishment of DD9 postponed until further survey investigation
July 1908	After further investigation, Engineer still recommends the establishment DD9
July 27, 1908	Board overruled objections, motion to establish DD9 with hearing set Aug 27
Aug. 27, 1908	Recommended to public to proceed with establishment of DD9
Sept. 12, 1908	Board Approved Establishment of DD9
Sept. 18, 1908	Published Notice of classification/assessments
Sept. 25, 1908	Sheriff delivered written notices to five landowners
Oct. 17, 1908	Several objection of assessments filed
Nov. 11, 1908	Amendment of assessments using Barber's calculations/recommendations
Nov.12, 1908	Approved new assessments, heard more objections, then adopted by motion
Nov.12, 1908	Published Notice of Appeal and opportunity to appear in court on Jan 4, 1909
Jan. 2, 1909	Court ordered new appraisal and used different Engineer (Guy R. Campbell) and two other new appraisers.
April 22, 1909	Board ask Court for additional time to come up with a fair assessment value
April 30, 1909	Board dismissed and appointed two new appraisers to assist Engineer
May 5, 1909	Board approved new appraised assessment
May 14, 1909	Published Notice of Assessment
May 17, 1909	Sheriff served 16 written notices
June 1, 1909	View written objections
June 8, 1909	Board approved new assessments
July 8, 1909	Published Notice for bids

July 12, 1909 Open bids, approved contract to NW Eng. Co. of Sibley (\$13,500) and Elliott Drainage of Onawa (\$11,995 )

Aug. 30, 1909 Advertise to sell bonds

Sept. 19, 1909 Approved sell of bonds

Sept. 12, 1910 Submitted completion of ditch

Jan. 3, 1911 Approved completion of ditch

1933 thru 1962 Numerous improvements and assessments

May 7, 1985 Petition for flood repairs

May 31, 1991 Request for repairs on DD9 & DD43

June 1, 1991 20 landowners petition for additional improvement and assessment, 2 objected, board proceeded with investigation.

July 22, 2014 Petition requesting an investigation of capacity for a possible improvement received by the Board. Directed I+S Group, Inc. to conduct a preliminary investigation and report findings.

**APPENDIX C:**

**ENGINEER'S ESTIMATE OF PROBABLE COSTS**

- OPTION 1 - REPLACEMENT**
- OPTION 2 - TILE IMPROVEMENT**

TILE REPLACEMENT  
DRAINAGE DISTRICT 9 OSCEOLA COUNTY  
PRELIMINARY ENGINEER'S ESTIMATE OF PROBABLE COSTS



PROJECT NUMBER: 17276

**REPLACEMENT**

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1.	Mobilization	1	JOB	21,500.00	\$21,500.00
2.	Non-reinforced Concrete Pipe, 8" Dia.	2,100	LF	18.00	\$37,800.00
3.	1500D Reinforced Concrete Pipe, 10" Dia.	1,300	LF	21.00	\$27,300.00
4.	1500D Reinforced Concrete Pipe, 12" Dia.	1,000	LF	24.00	\$24,000.00
5.	1500D Reinforced Concrete Pipe, 15" Dia.	2,900	LF	25.00	\$72,500.00
6.	1500D Reinforced Concrete Pipe, 18" Dia.	6,100	LF	26.00	\$158,600.00
7.	1500D Reinforced Concrete Pipe, 20" Dia.	1,900	LF	28.00	\$53,200.00
8.	Alignment Turns				
a.	8" Dia. R.C.P. Elbow Section, Fabrication Only	2	EA	275.00	\$550.00
c.	12" Dia. R.C.P. Elbow Section, Fabrication Only	1	EA	275.00	\$275.00
d.	15" Dia. R.C.P. Elbow Section, Fabrication Only	1	EA	290.00	\$290.00
e.	18" Dia. R.C.P. Elbow Section, Fabrication Only	7	EA	325.00	\$2,275.00
f.	20" Dia. R.C.P. Elbow Section, Fabrication Only	4	EA	350.00	\$1,400.00
9.	Junction Structures	5	EA	5,000.00	\$25,000.00
10.	Misc. Drain Tile Repairs & Connections	39	EA	300.00	\$11,700.00
11.	Topsail Strip, Stockpile, Respread	5,500	CY	2.25	\$12,375.00
12.	Tile Trench Stabilization and Cradling Rock	220	TN	25.00	\$5,500.00
13.	Spot Tile Exploration	3	HR	165.00	\$495.00
14.	Fence Removal & Disposal	2.00	STA	55.00	\$110.00

**CONSTRUCTION COST SUBTOTAL**

**\$454,870.00**

Engineering Services:

Survey	\$5,000.00
Engineer Administration & Design Services	\$35,000.00
Research/Study/Engineering Report	\$17,000.00
Final Plans & Specs	\$13,000.00
Construction Admin/Staking/Observation	\$10,500.00

Legal & Auditor Services, Publication, Misc.	\$1,500.00
Damages (35.1 AC @ \$700/AC)	\$24,570.00
Contingencies	\$43,000.00

**REPLACEMENT PROJECT COST SUBTOTAL**

**\$604,440.00**

Other Potential District Costs:

Annexation (447 AC)	\$5,000.00
Reclassification (1,470 AC @ \$6.00/AC)	\$8,820.00
Project Warrant Interest	\$44,000.00

**TOTAL ESTIMATED PROJECT COST**

**\$662,260.00**

Average Cost per Assessed Acre (1,470 acres)	\$450.52
Average Cost per Watershed Acre for 10 years	\$45.05

**NON-DISTRICT COSTS**

Secondary Roads: Bored Cut & Open Cut				
Furnish & Install 15" 3000D RCP, Highway 9	100	LF	375.00	\$37,500.00
Furnish & Install 15" 3000D RCP, Redwood Ave	66	LF	40.00	\$2,640.00

**TOTAL ESTIMATED NON-DISTRICT COSTS**

**\$40,140.00**

TILE IMPROVEMENT  
DRAINAGE DISTRICT 9 OSCEOLA COUNTY  
PRELIMINARY ENGINEER'S ESTIMATE OF PROBABLE COSTS



PROJECT NUMBER: 17276

**OPEN DITCH IMPROVEMENT**

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1.	Mobilization	1	JOB	30,000.00	\$30,000.00
2.	Open Ditch Excavation	10,600	CY	2.80	\$29,680.00
3.	Spoil Bank Leveling (Two Sides)	29.22	STA	70.00	\$2,045.40
4.	Furnish & Install Corrugated Metal Surface Pipe				
a.	15" Dia.	280	LF	24.00	\$6,720.00
b.	18" Dia.	80	LF	26.00	\$2,080.00
c.	24" Dia.	40	LF	31.00	\$1,240.00
d.	36" Dia.	40	LF	40.00	\$1,600.00
5.	Furnish & Install Corrugated Metal Tile Ext. Pipe				
a.	15" Dia.	80	LF	25.00	\$2,000.00
b.	18" Dia.	80	LF	26.00	\$2,080.00
6.	1500D Reinforced Concrete Pipe, 10" Dia.	2,344	LF	21.00	\$49,224.00
7.	1500D Reinforced Concrete Pipe, 15" Dia.	1,455	LF	25.00	\$36,375.00
8.	1500D Reinforced Concrete Pipe, 24" Dia.	1,764	LF	28.00	\$49,392.00
9.	1500D Reinforced Concrete Pipe, 30" Dia.	6,966	LF	39.00	\$271,674.00
10.	Alignment Turns				
a.	10" Dia. R.C.P. Elbow Section, Fabrication Only	2	EA	325.00	\$650.00
b.	24" Dia. R.C.P. Elbow Section, Fabrication Only	3	EA	350.00	\$1,050.00
c.	30" Dia. R.C.P. Elbow Section, Fabrication Only	7	EA	430.00	\$3,010.00
11.	Junction Structures	5	EA	5,000.00	\$25,000.00
12.	Drop Structure	1	EA	14,000.00	\$14,000.00
13.	Bulkhead Removal	1	EA	5,000.00	\$5,000.00
14.	Misc. Drain Tile Repairs & Connections				
a.	10" Dia.	19	EA	275.00	\$5,225.00
b.	12" Dia.	10	EA	350.00	\$3,500.00
c.	15" Dia.	3	EA	350.00	\$1,050.00
15.	Old Main Connections	31	EA	550.00	\$17,050.00
16.	Topsoil Strip, Stockpile, Respread	7,759	CY	2.25	\$17,457.75
17.	Tile Trench Stabilization and Cradling Rock	167	TN	25.00	\$4,175.00
18.	Spot Tile Exploration	3	HR	165.00	\$495.00
19.	Furnish & Install Riprap	50	TN	45.00	\$2,250.00
20.	Fence Removal & Disposal	2	STA	55.00	\$110.00
21.	Open Ditch Fertilizing & Seeding	29.22	STA	65.00	\$1,899.30

**CONSTRUCTION COST SUBTOTAL**

**\$586,032.45**

Engineering Services:

Survey	\$5,000.00
Engineer Administration & Design Services	\$49,000.00
Research/Study/Engineering Report	\$25,000.00
Final Plans & Specs	\$19,000.00
Construction Admin/Staking/Observation	\$13,000.00

Legal & Auditor Services, Publication, Misc.

Damages (35.1 AC @ \$700/AC)	\$24,570.00
Contingencies	\$64,000.00

**IMPROVEMENT PROJECT COST SUBTOTAL**

**\$787,102.45**

Other Potential District Costs:

Right-of-Way	
Engineering	\$4,000.00
Taken ROW (2.0 AC @ \$11,000/AC)	\$22,000.00
Easement ROW (4.7 AC @ \$600/AC)	\$2,820.00
Annexation (447 AC)	\$5,000.00
Reclassification (1,470 AC @ \$6.00/AC)	\$8,820.00
Project Warrant Interest	\$64,500.00

**TOTAL ESTIMATED PROJECT COST**

**\$894,242.45**

Average Cost per Assessed Acre (1,470 acres)

\$608.33

Average Cost per Watershed Acre for 10 years

\$60.83

**WETLAND MITIGATION (9.4 AC @ \$20,000/AC)**

\$188,000.00

**NON-DISTRICT COSTS**

Secondary Roads: Bored Cut & Open Cut

Furnish & Install 24" 3000D RCP, Highway 9	100	LF	525.00	\$52,500.00
Furnish & Install 24" 3000D RCP, Redwood Ave	66	LF	50.00	\$3,300.00

**TOTAL ESTIMATED NON-DISTRICT COSTS**

**\$55,800.00**