KANE COUNTY DIVISION OF TRANSPORTATION

VILLAGE OF BIG ROCK
DAUBERMAN / US 30 WATERSHED STUDY

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Prepared for:

Kane County Division of Transportation
41W011 Burlington Road
Campton Hills, IL 60175
Ph: 630.584.1170

CONSULTING ENGINEERS
BLA, Inc.
333 Pierce Road, Suite 200 ▪ Itasca, IL 60143
630 438 6400 ▪ FAX 630 438 6444 ▪ www.bollingerlach.com

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APPENDIX

EXECUTIVE SUMMARY

The existing watershed of Village of Big Rock, Dauberman Road, and US Route 30 was studied on behalf of Kane County Division of Transportation. The study was authorized in order to determine the source and possible solutions to existing drainage problems along the US Route 30 corridor from Davis Road to Welch Creek. The study resulted in ten viable options that could potentially improve existing drainage concerns. These options included installing storm sewer trunk lines, constructing detention ponds, and utilizing an open drainage system to convey the water. These options are summarized in the table listed below.

Further analysis into these ten options yielded three options that BLA is recommending for implementation. The major factors that contributed to the recommendations were cost, feasibility, and ability to avoid gas main relocation. The recommended options of 1A, 2C, and 3A can be implemented independently of each other. Option 1A will resolve the existing drainage issues located at the intersection of US Route 30 and Davis Road and will help reduce the flow through existing 20 inch drain tile. Option 2C will reduce the flow through the existing 20 inch drain tile by providing a defined storm sewer relief system that outlets directly into Welch Creek. Option 3A eliminates undesired surface connections and will reduce the flow through the existing 20 inch drain tile.

Option #	Option Name	Cost	Recommend
1A	Proposed Detention Pond US 30 / Davis Area	$847,035*	Yes
1B	Proposed Storm Sewer US 30 / Davis to Big Rock Creek	N/A	No
1C	Proposed Storm Sewer US 30 / Davis to West Limits of 121 Ac Commercial Corridor	$659,415	No
2A	Proposed Storm Sewer from West Limit of 121 Ac Commercial Corridor to Welch Creek (Avoids Gas Pipelines & Includes Implementation of Option 1C)	$4,117,643	No
2B	Proposed Storm Sewer from West Limit of 121 Ac Commercial Corridor to Welch Creek (Gas Pipeline Relocation Required & Includes Implementation of Option 1C)	$3,457,386	No
2C	Proposed Storm Sewer from West Limit of 121 Ac Commercial Corridor to Welch Creek (Avoids Gas Pipelines)	$1,926,593*	Yes
2D	Proposed Detention Pond (Near US 30 Outfall)	$1,554,604*	No
2E	Drainage Ditch to Welch Creek	N/A	No
2F	Combination Ditch and Storm Sewer to Welch Creek	N/A	No
3A	Remove Existing Field / Tile Connection Sewer	N/A	Yes
Ultimate Recommendation			
1A, 2C, & 3A	Proposed Detention Pond US 30 / Davis Area, Proposed Storm Sewer from West Limit of 121 Ac Commercial Corridor to Welch Creek (Avoid Gas Pipelines), & Remove Existing Field / Tile Connection Sewer	$3,056,156*	Yes

* Cost does not include land acquisition

INTRODUCTION

In 2016, the Kane County Division of Transportation (KDOT) began a Phase I Engineering Study to extend Dauberman Road south from the existing terminus at US Route 30 to Granart Road with a grade separation over the Burlington Northern Santa Fe (BNSF) Railroad Tracks. This Phase I Study, consistent with KDOT, Illinois Department of Transportation (IDOT), and Federal Highway Administration (FHWA) standards, included a Location Drainage Study (LDS) which was prepared by BLA, Inc (BLA).

During the preparation of the LDS, the Big Rock Water Drainage District No. 1 (BRDD), the Village of Big Rock (VBR), and Big Rock Township (BRT) along with Kane County Division of Water Resources (KDWR) and nearby property owners expressed concerns about drainage of the watershed, specifically that the construction of the project as proposed would significantly impact water drainage flowing from northwest of US Route 30, under US Route 30 and BNSF railroad, and southeast to Welch Creek. *For consistency throughout the report, these concerned parties and property owners shall be collectively referred to as the **Local Agencies** rather than listing each entity individually.*

The Local Agencies noted that the existing drainage ditches and/or culverts near and along US Route 30 are already insufficient for overland flow conveyance and feel that the proposed Dauberman Road Extension project offers the opportunity to address current drainage problems as well as allowing existing and future commercial development near US Route 30 to be in compliance with State and County requirements for storm water drainage.

On February 21, 2017, engineers from BLA met members of the Local Agencies at the proposed Dauberman Road Extension project site and visited a number of areas within the watershed which are contributors to the existing drainage problems in the area of the proposed Dauberman Road Extension project. These areas were denoted in the LDS as *Identified Drainage Problems*, and along with the proposed drainage design for the project, submitted to IDOT for concurrence.

Following the Public Hearing held on February 15, 2018, an email was sent to Anthony J. Quigley, P.E., the IDOT Region 1 Engineer by Mr. David Hall of the BRDD on February 21, 2018. This email expressed concerns about the increased water load generated by the Dauberman Road Extension project into the existing drainage system as well as the connection of an IDOT storm sewer into a Drainage District field tile. As a result of this email and subsequent discussions, engineers from IDOT, KDOT, and BLA met with the Local Agencies at IDOT Region 1 on June 7, 2018 to discuss the project and the issues raised in the February 21, 2018 email. Recognizing the concerns of the Local Agencies, KDOT agreed to fund a watershed study which not only focused on the specific issues raised, but to study the existing watershed as a whole and identify potential solutions to some of the issues identified within the watershed.

This first portion of this report summarizes the available history on the drainage issues, existing documentation and exhibits, existing studies and assessments of probable root causes of ongoing flooding issues. Existing HEC-HMS storm water modeling was prepared to model the watershed and the results are presented in this report as well. This modeling was done to establish high water levels in the surface drainage system and to establish flow rates so sizing of drainage systems within the study limits was done correctly. In addition this report will discuss the existing and proposed

replacement of the drainage structures at the downstream end of the watershed that drain under Dauberman Road. While these storm sewers were analyzed in the LDS reports we felt it was important to summarize these as we understand the BRDD and others expressed concern that the design was insufficient. This report will also conceptually look at the sizing of a storm sewer trunk line within the US-30 corridor as this option has been discussed by the Local Agencies thus far. The second portion will identify potential solutions and probable costs and will be issued under separate cover upon completion and input from multiple parties including (but not limited to) the aforementioned Local Agencies, KDOT, and IDOT.

BACKGROUND AND SCOPE

It is understood that the Local Agencies have concerns about drainage of the watershed and ongoing nuisance drainage issues along the US 30 corridor. Through meetings and correspondence we understand that these entities have concerns regarding direct connections that have been made to the existing 18" and 20" drain tiles running through the watershed and feel that the new US 30 @ Dauberman Road project will only compound these issues. (See ***Appendix A*** for existing drain tile system drawing).

One of the first steps in the investigation is to get as much of an understanding of the existing conditions in the watershed as possible. Accurate documentation of drain tile conditions and surface water conveyance / connections to the drain tile is very important as a base condition to use in proposed concepts for watershed improvements.

Initial efforts for this study were focused on gathering as much available information as possible from local agencies such as watershed studies, drain tile surveys, hydrologic and hydraulic reports (if available), and any other relevant information. Some of the documents that were obtained were as follows:

- GIS topographic files
- Historic aerial photography
- Drain Tile Surveys
- Village of Big Rock Comprehensive Plan – Adopted April 2014
- Stormwater Planning Report – Applied Technologies, October 2013
- Past US 30 Roadway Plans from IDOT
- 1996 Aerial Flood Video
- Big Rock and Welch Creek Flood Study
- Other supporting documentation

This data was followed up with engineering site surveys and supplemental topographic surveys to better identify key areas along overflow routes and connections to the existing drain tile system.

For existing conditions this study will look at five key aspects as it relates to the drainage systems in place in the Big Rock watershed.

1. Existing drain tiles and their capacity to function as originally intended
2. Surface drainage system (overland and culverts)

3. Noted connections of the surface drainage system to the drain tiles and their potential impacts.
4. Existing and proposed drainage structures under Dauberman Road.
5. Consideration of future 121 acre commercial corridor established in Comprehensive Plan.

EXISTING CONDITIONS

Existing Drain Tile System

The existing drain tile system, denoted as Big Rock Drainage District No. 1, and shown on the exhibit in ***Appendix A***, consists of an existing 20" concrete drain tile and an 18" clay drain tile. Both drain tiles flow west to east with the upstream ends located near the depression west of Davis Rd north of US 30 and the downstream ends discharging directly to Welch Creek just south of the BNSF Railroad. A 10" clay drain tile also exists that runs from just east of the existing gas station at US 30 and Davis Rd, northeasterly and connects to the existing 20" concrete drain tile near the running track for the Hinckley-Big Rock Middle School. *For this study, the focus is on the drainage areas north of US 30 as this is the area in the watershed where existing nuisance drainage problems have been identified.*

The 18" and 20" drain tiles run parallel from their upstream end west of Davis Rd to a point approximately 0.6 miles east of Davis Rd, at which point the 20" concrete drain tile continues southeasterly under US 30 and the Railroad then turns easterly south of the Railroad and drains to Welch Creek. The 18" drain tile primarily stays north of US 30 until a point approximately 600' east of Dauberman Rd where it turns southeasterly under US 30 and under the Railroad then runs parallel with the 20" drain tile.

The drain tile survey (***Appendix A***) which was revised in May of 2013 shows that the condition of the existing drain tiles are in generally good condition. The only exception noted was several failed segments on the 20" concrete drain tile near Welch Creek. It is our understanding at the time of this report there are current plans to fix the 20" drain tile and combine with the 18" drain tile into one 36" drain tile to outlet directly into Welch Creek.

Based on the assumption that the drain tile system is in adequate condition, the capacity of the drain tile system was investigated. For determination of the hydraulic adequacy of the drain tiles the *Illinois Drainage Manual by the University of Illinois Department of Agricultural and Biological Engineering* was used. A link in the manual provides access to a program used for drain tile analysis.

Kane County Division of Water Resources (Jodie Wollnik, P.E., C.F.M.) provided data the department used in determination of the sizing required for the repair, and combining of, the existing tiles near the outfall at Welch Creek. Per their data for this drain tile system the following was used for program inputs for each respective pipe size: (Data received in email dated 8-29-18)

Slope: 0.05%
Drainage Coefficient: ¼" per 24 hour
Drainage Area: 1,600 acres (Note: Analysis of surveys shows that actual tributary area is approximately 1,393 acres)

20" Drain Tile - Based on the above inputs the total area the 20" can drain is +/- 296 acres

18" Drain Tile – Based on the above inputs the total area the 18" can drain is +/- 224 acres

The total acreage that can be drained by these two drain tiles (per U of I Drainage Manual Software) would be 520 acres. Based on this the existing drain tile system appears undersized.

Manual Calculation:

18" Area (A) = 3.14159 * ([18/12]/2)^2 = 1.77 ft^2
18" Wetted Perimeter (W_p) = 3.14159 * 2*([18/12]/2) = 4.71 ft
Hydraulic Radius = A/W_p = 1.77 / 4.71 = 0.375

Velocity = 1.486/n * $R^{2/3}$ * $S^{1/2}$

V=1.486/(0.012) * $0.375^{2/3}$ * $0.0005^{1/2}$ [Manning's Formula]
V=1.44 ft/s

Q = A * V
Q = 1.77 ft^2 * 1.44 ft/s
Q = 2.55 ft^3/s

2.55 ft^3/s * (86,400 seconds/day) * (1 acre / 43,560 ft^2) * 12 inches / ft = 60.69 acre-in per 24 hours

60.69 acre-in / 0.25 inches per 24 hours = **242.76 acres**

20" Area (A) = 3.14159 * ([20/12]/2)^2 = 2.18 ft^2
20" Wetted Perimeter (W_p) = 3.14159 * 2*([20/12]/2) = 5.24 ft
Hydraulic Radius = A/W_p = 2.18 / 5.24 = 0.417

Velocity = 1.486/n * $R^{2/3}$ * $S^{1/2}$

V=1.486/(0.012) * $0.417^{2/3}$ * $0.0005^{1/2}$ [Manning's Formula]
V=1.55 ft/s

Q = A * V
Q = 2.18 ft^2 * 1.55 ft/s
Q = 3.39 ft^3/s

3.39 ft3/s * (86,400 seconds/day) * (1 acre / 43,560 ft^2) * 12 inches / ft = 80.63 acre-in per 24 hours

80.63 acre-in / 0.25 inches per 24 hours = **322.52 acres**
Total Acreage, Drainable: 242.76 + 322.52 = **565.28 acres**

The difference between the two acreages (520 from software, 565.28 from manual calculation) comes largely from the selection of the Manning's "n" for roughness coefficients. The 0.012 used in the manual calculation is for an HDPE pipe rather than clay, concrete, or plastic which has slightly different values. Regardless, the existing tile system is thought to be undersized.

Recommended Sizing

To check to determine what a single tile would be which would be of adequate capacity, a 36" single HDPE pipe was used:

36" Area (A) = 3.14159 * ([36/12]/2)^2 = 7.07 ft^2
36" Wetted Perimeter (W_p) = 3.14159 * 2*([36/12]/2) = 9.43 ft
Hydraulic Radius = A/W_p = 7.07 / 9.43 = 0.75

Velocity = $1.486/n * R^{2/3} * S^{1/2}$

$V=1.486/(0.012) * 0.75^{2/3} * 0.0005^{1/2}$ [Manning's Formula]
V=2.29 ft/s

Q = A * V
Q = 7.07 ft^2 * 2.29 ft/s
Q = 16.16 ft^3/s

16.16 ft^3/s * (86,400 seconds/day) * (1 acre / 43,560 ft^2) * 12 inches / ft = 384.62 acre-in per 24 hours

384.62 acre-in / 0.25 inches per 24 hours = **1538.46 acres**

As the 1538.46 acres exceeds the tributary area of 1393 acres, a 36" pipe would be the appropriately sized drain tile to convey the field tile drainage. This confirms the calculations provided by KDWR in the email dated 8/29/18.

*See **Appendix B** for software program output diagrams.*

Some key points to note regarding sizing is that typically direct connections to surface water sources are not intended and the sizing methodology used does not take the introduction of surface waters into consideration. As will be discussed later in the report, there are several known surface connections to the drain tile system that overburden it and cause localized drainage problems in addition to extended periods of standing water in the fields.

Surface Drainage System

A part of determining the extent of the localized drainage issues and how the existing drain tile system may play a part in it, looking at the existing surface drainage system is important. As part of the LDS prepared for the Dauberman Road Extension project, the existing watershed was modeled to determine stormwater high water levels for the 10, 50- and 100-year storm events. While the LDS focused on a larger area due to the project, as part of this study the model was limited to areas tributary to US 30 corridor west of Dauberman Road and areas north. This was done due to the fact that the identified drainage issues appear to be along US 30 and areas to the north. Identifying these high water levels allows us to determine if surface flood waters are entering surface connections to the drain tile system, which areas are inundated during these events and how long it takes for a particular storm event to drain down to existing drainage ways and channels.

*See exhibit in **Appendix C** which denotes the individual watersheds used in the model and the respective high water levels / surface coverage for each storm event*

Following is a summary of the peak events for the 10, 50 and 100 year storms for each of the three depressional areas as depicted on exhibit in ***Appendix C***.

Watershed 8A – Area North of US 30, West of Dauberman Rd and East of Davis Rd

Storm Event (year)	Discharge Offsite (cfs)	Maximum HWL (feet)
10	68.3	700.52
50	98.5	701.54
100	109.0	702.03

Watershed 8E – Area North of US 30 and West of Davis Rd

Storm Event (year)	Discharge Offsite (cfs)	Maximum HWL (feet)
10	0	707.62
50	0	708.92
100	4.3	709.61

Watershed 8D – Area Southwest of Dauberman Rd and Wheeler Rd

Storm Event (year)	Discharge Offsite (cfs)	Maximum HWL (feet)
10	11.46	706.49
50	32.11	706.65
100	49.44	706.79

*Refer to **Appendix D** for detailed data related to each sub-watershed in the model.*
Additional detailed data is available in the LDS prepared for the Dauberman Road project No. 15-00277-01-BR

For the modeling that was completed it should be noted that the existing drain tile system piping is not included as part of the outflow structures. The reasoning is that it is assumed that this system is inundated with water and drain tile systems are not typically made part of watershed models. As a result, the backwater storage and elevations shown on the exhibit are a result of the existing downstream structures (culverts and weirs) creating a "restrictor" for the outflows.

Although these areas are unmapped floodplains and not regulated as such, given the size of the watershed to these areas and drainage routes it is impractical to significantly reduce the acres and high water levels of the stored water for the larger storm events. Even though some surface connections to the drain tile exist, which will be discussed below, the drain tile system is not intended or capable of providing significant relief to these areas of ponding.

Surface Connections to Drain Tile System

As identified in the scope of the watershed study a primary concern of the Local Agencies was the existence of surface connections (direct connections) to the drain tile system by improvements in the watershed. Through research of available reports, field surveys, topographic surveys and record drawings we were able to confirm several surface connections to the drain tile system. Some of these connections are not only connections of the improved urban areas / roadways in the watershed but the agricultural fields have a surface connection as well and is a contributor to direct loading of the drain tile system. As mentioned previously, surface connections should not be made to the drain tile system as they use much of the capacity available.

Some of the immediate concerns pointed out by the Local Agencies were the flooding issues near the gas station at Davis Rd and US 30 and also their concern that the surface connection of IDOTs US 30 improvements in the 80's to the drain tile system was overloading their drain tile. This information plus other data collected from the October 2013 Village of Big Rock Stormwater Planning Report (by Applied Technologies) and resources mentioned above we were able to document known surface connections and look at their potential impacts to the drain tile system.

*See exhibit in **Appendix E** which shows the following surface connections noted in the system and the 10 year flow rates generated by these areas.*

1. Davis Rd / US 30 Intersection

   This intersection / Shell gas station experiences periodic flooding. This storm sewer in this area is known to be connected directly to an existing 10" drain tile which heads northeast and connects to the existing 20" drain tile under the Hinckley Big Rock Middle School track. As shown on the exhibit there is an approximate 14.8-acre tributary area to this surface connection which has roughly 25.4 cfs flow at the 10-year event. Flooding is likely occurring not only due to its connection to an overburdened 20" drain tile downstream but also a 10" pipe at nominal slopes is only capable of conveying roughly 1.0 cfs.

See ***Appendix H*** for US-30 plans which show the routing of the storm sewer system at the intersection and how connections are made to the drain tile system.

The Rational Method was used to determine the flowrate for this watershed and the supporting calculations can be found in ***Appendix F.***

2. <u>US 30 Connection</u>

Based on noted existing conditions verified in field and the IDOT Plans (Contract No. 36979 – 1984) the storm sewer system for the project drains directly to the swale at the location where the 20" concrete drain tile crosses US 30 from north to south (directly north of the property located at 47 US-30). At this point the water drains to a surface inlet that is on the 20" drain tile.

As shown on the exhibit there is an approximate 23-acre tributary area to this surface connection which has roughly 41.7 cfs flow at the 10-year event. The drainage area spans nearly ¾ of a mile from near the intersection of Davis Rd and US-30 at the west end easterly to Vacationland Trailer Sales. While much of the drainage area is within the US-30 right of way a large portion south of US-30 near the center of the watershed extends southerly near the railroad.

See ***Appendix H*** for US-30 plans which show the routing of the storm sewer system at this location.

The Rational Method was used to determine the flowrate for this sub-watershed and the supporting calculations can be found in ***Appendix F***.

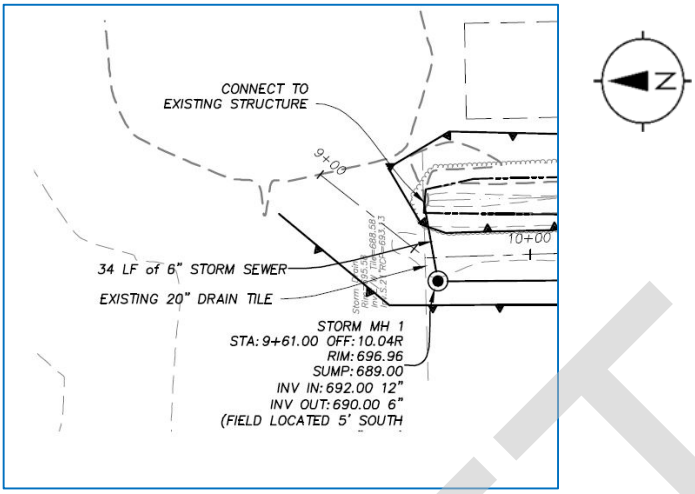
3. Watershed North of US-30 (Watershed 8A Via 18" Culvert)

Based on field survey data an 18" CMP culvert exists near the 20" drain tile surface inlet noted above just north of the property at 47 US-30 (See picture in item 2 above). This culvert drains surface waters directly from the flow line through Watershed 8A as can be seen by the darkened flood route area on the aerial photographs. This is another area with a direct surface flow connection to the 20" drain tile which begins contributing water to the drain tile at all storm events. At the 10-year storm event, this connection contributes roughly 6.4 cfs to the drain tile via direct surface connection. This pipe culvert only appears to control flow for storm events at or below the 10-year storm. For storm events larger than this, drainage flows would overtop an existing berm over the culvert and flow to the 20" drain tile inlet.

HY8 Culvert Analysis software was used to determine the flow rate in the 18" culvert at the 10 year HWL of 700.52 established in the hydrologic model. The invert of the upstream end of the culvert in the field is 698.03 and matches the low elevation in the field at that point. Supporting calculations can be found in ***Appendix F***.

4. Tenerelli Subdivision

The Tenerelli Subdivision is located off Granart Road south of the railroad just west of Welch Creek. Plans were prepared by Applied Technologies in March of 2013, titled Village of Big Rock Tenerelli Subdivision Flood Route Improvement. These plans were for drainage improvements within the subdivision and improving the flood route that is ultimately tributary to the 20" drain tile south of the railroad. The 12" storm sewer installed as part of this project was routed north of the subdivision and made a direct connection to the drain tile. As shown below (clip from the plans) a 6" restrictor pipe was used in an effort to reduce the flow rate tributary to the tile. At the 10-year storm event this connection contributes approximately 1.9 cfs to the drain tile.



Based on the use of the restrictor the orifice equation was used to determine the flow rate. Supporting calculations can be found in ***Appendix F.***

Big Rock Creek Tributary Storm Sewers

It is noted in the October 2013 Stormwater Planning report that several other drainage concerns exist within the corporate boundaries of the Village of Big Rock. These include the Rhodes Avenue Storm Sewer, Welton Storm Sewer, and Timberview Storm Sewer. As none of these independent sewer systems are tributary to the Welch Creek watershed or the 18"/20" drain tile systems, these areas were not investigated as part of this watershed study.

Existing and Proposed Drainage Structures Under Dauberman Road

In the early stages of the project one of the concerns of the BRDD was the existing drainage system under Dauberman Road north of US-30 and their opinion that it was undersized. As part of the LDS for the project, this drainage system was studied in addition to all other storm sewers, ditches and any other conveyances of storm water within the project watershed as was required for permit.

The existing structures under Dauberman Road consists of a multiple opening culvert crossing. The main culverts are an existing double 42"W x 29" H CMP arch culverts, each approximately 510 feet in length. The second culvert is a 24" RCP/PVC culvert approximately 41 feet in length. The third culvert is a 42"W x 29"H CMP arch culvert approximately 42 feet in length. These culverts restrict the amount of flow that can pass under Dauberman Road, which causes drainage to back up and detain in farmland areas west of Dauberman Road. The amount of storage west of Dauberman Road is significant and prevents Dauberman Road from overtopping for all storm events up to the 100-yr storm event. There are no records of Dauberman Road overtopping in this location.

The following is a summary table of the existing peak discharge flows from these culverts at each event. Backup data and HEC-HMS modeling results can be found under the ***Surface Drainage*** section on page 4 above and also in ***Appendix D***.

Summary of Results - Existing Conditions

Description	10-Yr Storm		50-Yr Storm		100-Yr Storm	
	Peak Discharge (cfs)	Critical Duration (hr)	Peak Discharge (cfs)	Critical Duration (hr)	Peak Discharge (cfs)	Critical Duration (hr)
Peak flow	**69.90**	**240**	**98.45**	**24**	**109.04**	**24**

In the proposed condition (post Dauberman Road Improvement Project) a 4' x 3' box culvert for low flows and a 5' x 2' box culvert for high flows is proposed which will maintain / not exceed existing release rates (noted in table above) downstream of the project site. These culverts will replace the structures noted above. These structures were modeled with the HEC-HMS program to confirm that post construction flows do not exceed the existing as is required by local agency codes and good engineering practice.

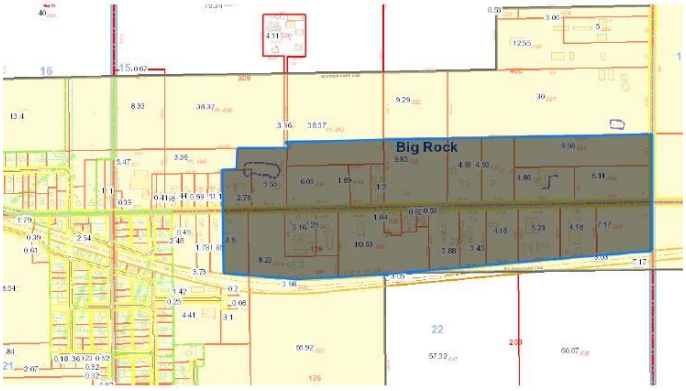
The following is a summary table of the proposed peak discharge flows from these culverts at each event. Backup data and HEC-HMS modeling results can be found in table below and also in ***Appendix I***.

Summary of Results - Proposed Conditions

Description	10-Yr Storm		50-Yr Storm		100-Yr Storm	
	Peak Discharge (cfs)	Critical Duration (hr)	Peak Discharge (cfs)	Critical Duration (hr)	Peak Discharge (cfs)	Critical Duration (hr)
Peak flow	**67.57**	**24**	**94.04**	**24**	**108.89**	**24**

121 Acre Commercial Corridor Consideration

A memo dated August 29, 2018 was drafted (See ***Appendix G***) by the Kane County Division of Environmental & Water Resources regarding the Dauberman Road project and considerations regarding US-30 storm sewer improvements related to it. The memo states that the planned 121 acre commercial corridor along US-30 (shown in grey) that spans from the eastern edge of town, easterly to Dauberman Road should be considered as part of drainage options looked at for separating urban drainage from the drain tile system. Water Resources stated flow from this 121 acre area should be calculated at 0.10 cfs per acre, or 12.1 cfs total, which is equivalent to the 100 year flow rate after development is complete and all properties have provided their required onsite detention. The memo states that a new proposed trunk line sewer along US-30 would be adding flow at the bridge.



It is our opinion that the area depicted as contributing additional flows by adding the storm sewer would not be adding any additional flows. This is due to the fact that the drainage area in question

is already tributary to the bridge and is included in the flood study / modeling for Welch Creek. While there would be changes in time of concentration related to peak flow times at the outfall to Welch Creek there would not be any additional flow. As part of the evaluations to develop concepts for separating the urban drainage from the drain tile system it will be important to keep in mind where new outfalls may be considered. If a new storm sewer trunk line along US-30 is ultimately chosen we understand there was concern that this would be moving the outfall from south of the BNSF bridge (existing drain tile outfall) to the north side and this would result in additional flows. The memo does state that the increase was considered negligible but as stated above we do not believe this will create any additional flows that are already not part of the model. In addition, the existing Welch Creek Flood Study HEC-RAS model was checked to determine where the flow inputs were located along the model and for this stretch the flowrate used in the model is the same both upstream and downstream of the BNSF bridge so moving the outfall location to north of the bridge would not have any impacts to the model or high water levels.

PROPOSED CONCEPTS
US 30 AND DAVIS ROAD OPTIONS

OPTION 1A: PROPOSED DETENTION POND US 30 / DAVIS AREA

APPROXIMATE CONSTRUCTION COST: $847,035

LAND ACQUISITION REQUIRED: YES (NOT INCLUDED IN COST ESTIMATE)

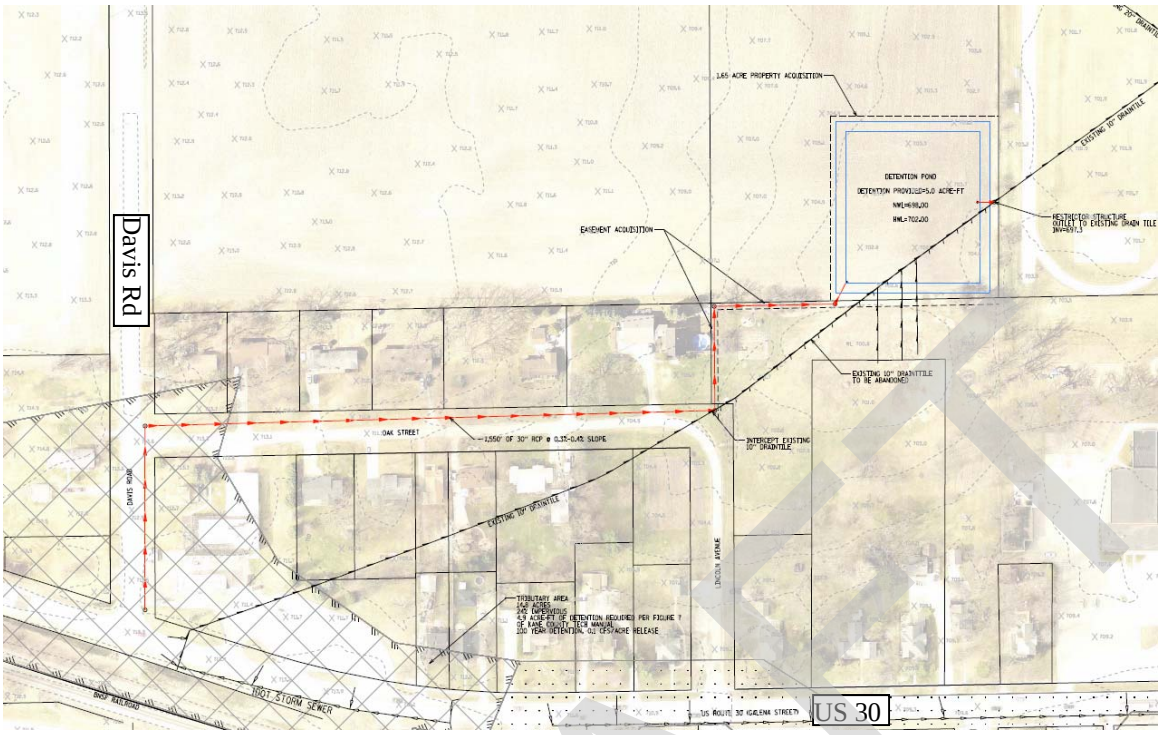
RECOMMEND: YES

This option includes the construction of a local detention pond and associated storm sewer improvements to reduce the amount of flow to the existing 10" drain tile outlet. The existing drainage area tributary to the depressional areas has no other outlet and is located entirely within the Village of Big Rock. This option with associated connections could be constructed by the Village of Big Rock at a suitable time, depending on funding.

In choosing a location for a detention pond, the lower area of the watershed is optimal so that upstream areas are able to flow to the pond. As such, a detention pond near the existing depressional area was considered, but was not pursued further due the existing development and absence of open space. For this drainage area the primary route for the overland flow at larger events is towards the northeast just west of the Hinckley Big Rock Middle School outdoor track. The proposed location for the pond would be on land privately owned and is used for farming purposes. Land acquisition would be required to construct the proposed detention pond. It should also be noted that this location works well because the existing 10" drain tile bisects this area. The existing 10" drain tile would be removed within the limits of the pond and can be used as an outfall for the restrictor structure from the pond.

Conceptual sizing of the pond was done using Figure 7 from the Kane County Technical Guidance Manual. A copy of the nomograph is included in ***Appendix K***. It should be noted that this methodology is approximate, as the nomograph is used for ponds with less than 5 acres of tributary area. For final permitting and design, an accepted hydrologic modeling software would be required.

The conceptual location of the proposed pond is shown on exhibit in ***Appendix L*** but shown below for reference:



Due to the location of proposed pond, a proposed storm sewer system is required to convey rainfall from the existing depressional areas to the pond. The storm sewer is proposed to begin at the intersection of US30 / Davis Rd depression, flow north along Davis Rd then east along Oak Street to the east end of the roadway then northeast to the proposed pond location. This storm sewer routing minimizes the amount of land acquisition by locating the storm sewer within roadway right-of-way as much as possible. The storm sewer system was designed for the 10-year storm event flow rate. This results in a proposed 30" storm sewer size at a slope of approximately 0.3 to 0.4%. Storm events above the 10-year would utilize the existing overland flow route described in the paragraph above.

The cost for the regional detention pond and 30" trunk line was determined to be approximately $847,035 but it should be noted that this cost does not include the land and easement acquisitions. The cost estimate can be found in ***Appendix M***. This is conceptual as there are several unknowns due to lacking topographic surveys at sections in the corridor and assumptions made regarding existing utilities throughout the corridor.

OPTION 1B: PROPOSED STORM SEWER WEST (TO BIG ROCK CREEK)

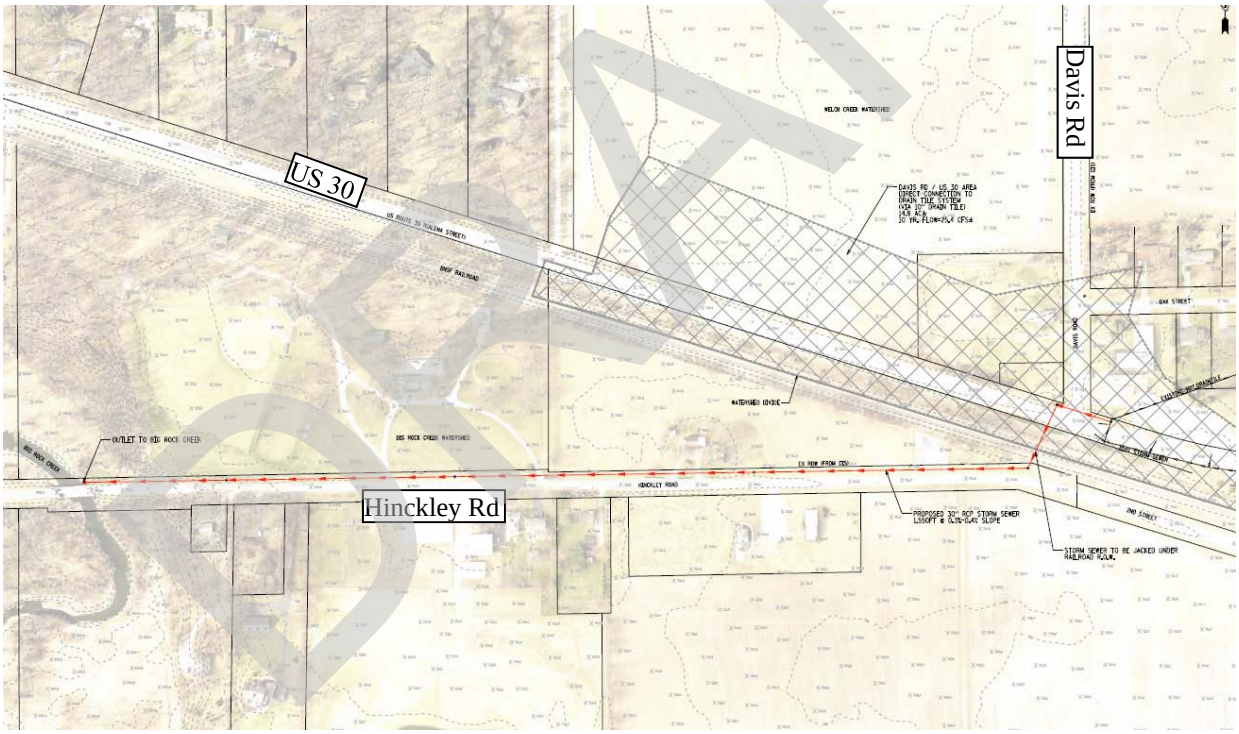
APPROXIMATE CONSTRUCTION COST: N/A

LAND ACQUISITION REQUIRED: NO

RECOMMEND: NO

This option includes the construction of a new storm sewer system to drain the existing depressional areas. The storm sewer is proposed to begin at the intersection of the US 30 / Davis Road depression, flow south under the BNSF railroad and then west along Hinckley Road to Big Rock Creek. A similar option was noted in the Stormwater Planning Report for the Village of Big Rock dated 10/2013, with the proposed storm sewer being routed west along US 30 and south through Plowman Park to Big Rock Creek.

The conceptual location of the proposed pond is shown on exhibit in Appendix N but shown below for reference:



The existing area flowing to the depressional areas is part of the Welch Creek watershed. Routing the proposed storm sewer west to Bick Rock Creek would divert the drainage area to the Big Rock Creek watershed. This option was not pursued further in this report as diversions of flow to another watershed are typically not allowed as stated in the Kane County Stormwater Management Ordinance.

OPTION 1C: PROPOSED STORM SEWER US 30 / DAVIS TO WEST LIMITS OF 121 AC COMMERCIAL CORRIDOR

APPROXIMATE CONSTRUCTION COST: $659,415

LAND ACQUISITION REQUIRED: NO

RECOMMEND: NO (SEE 1A)

This option includes the construction of a new storm sewer system to drain the existing depressional area. The storm sewer is proposed to begin at the intersection of the US 30 / Davis Road depression, flow east along US 30 to the western limits of the 121 Ac commercial corridor, which is roughly 1.3 miles west of Welch Creek. This is where another proposed storm sewer described in Option 2A below is proposed to begin and flow east to Welch Creek. Hence, Option 2A, 2B, or 2C is required to be implemented prior to the construction of this option. (See Appendix O for a conceptual exhibit of this option)

This storm sewer routing eliminates land acquisition by locating the storm sewer within roadway right-of-way. The storm sewer system was designed for the 10-year storm event flow rate of 25.4 cfs. This results in a proposed 36" storm sewer size at a slope ranging between 0.1 to 0.2%. Based on the best available data at this stage the storm sewer profile was set and this information was input into Storm CAD to analyze the hydraulic grade line impacts for the 1% annual chance storm event. This is to ensure that rims will not surcharge for larger storm events.

The conceptual cost of Option 1C was determined to be approximately $659,415. This is conceptual as there are several unknowns due to lacking topographic surveys at sections in the corridor and assumptions made regarding existing utilities throughout the corridor.

The storm sewer profile with the 1% annual chance hydraulic grade line data can be found in ***Appendix P***. For Storm CAD data see output for Option 2A in ***Appendix S.*** The engineer's conceptual opinion of probable cost is included in ***Appendix Q***.

Additionally, we feel rather than construct a pipe flowing west to east which would increase the size of the downstream pipe flowing towards Welch Creek, a smaller system described in Option 1A achieves better results and lower costs described in Options 2(C).

PROPOSED CONCEPTS
US 30 DRAIN TILE CONNECTION AREA AND COMMERCIAL CORRIDOR

The concepts below involve several options that may address drainage problems at the existing IDOT storm sewer connection to drain tile and options to accommodate drainage for a future 121 acre commercial corridor. In ***Appendix E*** and ***F,*** the existing surface flow rates of areas tributary to the US-30 ROW are shown and are used for the concept sizing. Also, ***Appendix G*** has the memo regarding the future development corridor considerations for flow rates. These flow rates, with some assumptions at the concept level, were used to determine the two concepts that follow. It should be noted that there is overlap of the approximate west half of the future 121 acre corridor and the east half of the US-30 (watershed 9) drainage area. For this reason at this stage it will be assumed that ½ of the 41.7 cfs US-30 flowrate will be used in sizing of the trunk line since the other half will be covered in the future development of that area at the 0.1 cfs/acre rate. For this concept exercise we will consider the standard sizing practice of using the 10 year storm event and the Rational Method. Hydraulic grade line analysis for the 100-yr storm and tail water from Welch Creek has been considered in this analysis to check for surcharging structures.

OPTION 2A: PROPOSED STORM SEWER FROM WEST LIMITS 121 AC. COMMERCIAL CORRIDOR TO WELCH CREEK (AVOIDS GAS PIPELINES AND INCLUDES IMPLEMENTATION OF OPTION 1C)

APPROXIMATE CONSTRUCTION COST: $4,117,643 (Includes cost of 1C Storm Sewer)

LAND ACQUISITION REQUIRED: NO

RECOMMEND: NO

This option includes the construction of a new storm sewer system beginning at the western limits of the 121 acre commercial corridor, which is roughly 1.3 miles west of Welch Creek, and flow east to Welch Creek. The upstream end of this sewer would connect to the storm sewer described in Option 1C above to remedy drainage issues at the US 30 / Davis Road intersection. Other options requiring large land acquisitions among other issues, discussed below, were looked at as well but not fully developed due to not being as practical. Option 2A avoids relocation of the existing gas mains in the corridor and does not require any land acquisition based on preliminary investigations.

For this concept we chose to look at breaking up the flow input points at 3 locations:

1st Inflow: US-30 and Davis Rd - 25.4 cfs (Option 1C) +
West end of 121 ac corridor - 41.7 cfs / 2 = 20.9 cfs = 46.3 cfs

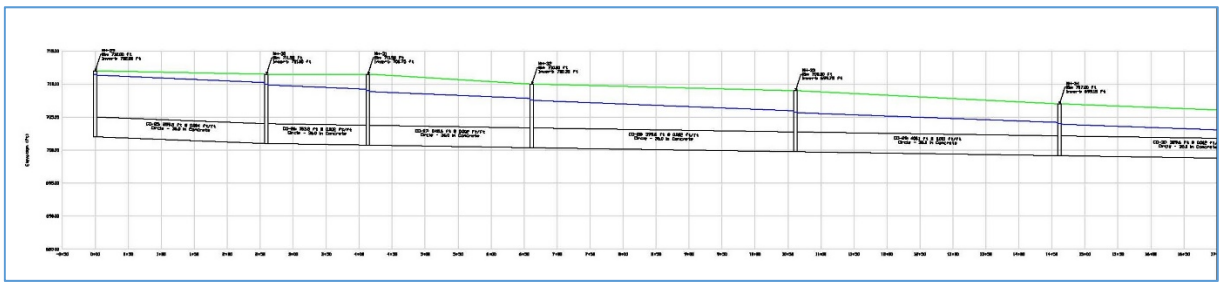
2nd Inflow: West end of Dauberman Improvement (Approximate midpoint of 121 ac corridor). Use ½ of 12.1 cfs – 12.1 cfs / 2 = 6 cfs

Downstream Inflow: Near intersection of US-30 and Dauberman Rd (end of commercial corridor). Use remaining ½ of flow from the commercial corridor = 6 cfs

Supplemental topographic surveys were completed within the corridor to detail key areas and get critical utility information that would help in determining the constructability of this storm sewer trunk line. Based on the additional detail provided by the survey an actual alignment option within the US 30 corridor could be established and then confirmation / adjustment of the initial concept that was done. Part of this more detailed exercise was to determine any hydraulic grade line impacts to the trunk line based on the Welch Creek tail water conditions. Following are some key points / assumptions:

- Installation of trunk line occurs prior to or concurrently with the Dauberman Road project.
- No investigation into existing easements or other ownership restrictions were done that could potentially impact the conceptual routing.
- It is assumed that any existing dry utilities in the ROW, other than the ANR and Enbridge gas mains, will be relocated as required by each respective utility company at their cost.
- It was assumed 1.5 foot clearance between gas mains and storm sewer would be acceptable at crossings. Based on conversation with ANR Pipeline on 12/11/18 there may be more restrictive requirements that will increase clearance requirements and place other restrictions but ANR will not supply us with this design guidance information without seeing full engineering plans. (See ***Appendix J*** for Telephone Call Record)
- Trunk line placement on north side of roadway just outside of pavement. North side has less conflicts but south side is possible as well.
- Downstream invert set at or above the Welch Creek streambed.
- The same data for drainage areas and design storms from the existing conditions analysis section was used.

Based on all the best available data at this stage the trunk line profile was set and this information was input into Storm CAD to analyze the hydraulic grade line impacts for the 1% annual chance storm event. With the new topographic data we were able to achieve a slightly steeper slope which helped reduce the pipe size from the initial concept. The resulting pipe sizes for this option are now anticipated to range from 36" on the upstream end, 48" in the middle section and 72" diameter on the downstream end. See ***Appendix R*** for storm sewer exhibit.



Sample of Storm CAD profile with hydraulic grade line. Full profile located in Appendix S

The conceptual cost of Option 2A was determined to be approximately $4,117,643 which includes the cost of the storm sewer from US 30 / Davis Area identified in Option 1C. This is conceptual as there are several unknowns due to lacking topographic surveys at sections in the corridor and assumptions made regarding existing utilities throughout the corridor.

The storm sewer profile with the 1% annual chance hydraulic grade line and Storm CAD data can be found in ***Appendix S***. For The engineer's conceptual opinion of probable cost is included in ***Appendix T.***

OPTION 2B: PROPOSED STORM SEWER FROM WEST LIMITS 121 AC. COMMERCIAL CORRIDOR TO WELCH CREEK (GAS PIPELINE RELOCATION REQUIRED AND INCLUDES IMPLEMENTATION OF OPTION 1C)

APPROXIMATE CONSTRUCTION COST: $3,457,386 (Includes cost of 1C Storm Sewer)

LAND ACQUISITION REQUIRED: NO

RECOMMEND: NO

This option also includes the construction of a new storm sewer system beginning at the western limits of the 121 acre commercial corridor, which is roughly 1.3 miles west of Welch Creek, and flow east to Welch Creek. This option is the same as Option 2A, with the exception of ignoring the gas mains and running the storm sewer at a slope to closely match the existing roadway profile. This concept allows for smaller storm sewer diameters due to steeper slopes.

For this concept, we chose to look at breaking up the flow input points at 3 locations:

1st Inflow: US-30 and Davis Rd - 25.4 cfs (Option 1C) +
West end of 121 ac corridor - 41.7 cfs / 2 = 20.9 cfs = 46.3 cfs

2nd Inflow: West end of Dauberman Improvement (Approximate midpoint of 121 ac corridor). Use ½ of 12.1 cfs – 12.1 cfs / 2 = 6 cfs

Downstream Inflow: Near intersection of US-30 and Dauberman Rd (end of commercial corridor). Use remaining ½ of flow from the commercial corridor = 6 cfs

In addition to investigating this option in more detail due to additional topo the hydraulic grade line at the 1% annual chance storm event was analyzed.

As noted in Option 2A, supplemental topographic surveys were completed within the corridor to detail key areas and get critical utility information that would help in determining the constructability of this storm sewer trunk line. Based on the additional detail provided by the survey an actual alignment option within the US 30 corridor could be established and then confirmation / adjustment of the initial concept that was done. Part of this more detailed exercise

was to determine any hydraulic grade line impacts to the trunk line based on the Welch Creek tail water conditions. Following are some key points / assumptions:

- Installation of trunk line occurs prior to or concurrently with the Dauberman Road project.
- No investigation into existing easements or other ownership restrictions were done that could potentially impact the conceptual routing.
- It is assumed that any existing dry utilities in the ROW will be relocated as required by each respective utility company at their cost.
- Relocation of ANR and Enbridge gas mains would be required. At this stage it was assumed that each gas main is located in an easement and any cost for the relocation of the mains would be borne by the project. It should also be noted that in the conversation with ANR Pipeline they stated that in almost all situations where they exist in an easement they do not allow any other utility to locate above their mains. In this Option 2B this would be required to have them lower their mains under the storm sewer so this Option may not be feasible due to this. Confirmation was requested on the existing easement and to get their design standards but they will not release said data unless final design plans are submitted for their review. See the telephone conversation in ***Appendix J***.
- Trunk line placement on north side of roadway just outside of pavement. North side has less conflicts but south side is possible as well.
- Downstream invert set at or above the Welch Creek streambed.
- The same data for drainage areas and design storms from the existing conditions analysis section was used.

Based on all the best available data at this stage the trunk line profile was set and this information was input into Storm CAD to analyze the hydraulic grade line impacts for the 1% annual chance storm event. With the new topographic data, and assuming the gas mains could be relocated, we were able to achieve a slightly steeper slope which helped reduce the pipe size from the initial concept but the resulting hydraulic grade line analysis resulted in a larger pipe for the last downstream section. The resulting pipe sizes for this option are now anticipated to range from 36" on the upstream end, 42" and 48" in the middle sections and 60" diameter on the downstream end. An exhibit for the storm sewer can be found in ***Appendix U***.

The conceptual cost of Option 2B was determined to be approximately $3,457,386 which includes the cost of the storm sewer from US 30 / Davis Area identified in Option 1C. This is conceptual as there are several unknowns due to lacking topographic surveys at sections in the corridor and assumptions made regarding existing utilities throughout the corridor. This cost also doesn't include costs to relocate the gas mains which would be substantial. Assuming the nominal savings in pipe size from Option 2A and the costs of relocating the gas mains likely exceeding the $500,000 range this option would not be preferable over Option 2A.

The storm sewer profile with the 1% annual chance hydraulic grade line and Storm CAD data can be found in ***Appendix V***. For The engineer's conceptual opinion of probable cost is included in ***Appendix W***.

OPTION 2C: PROPOSED STORM SEWER FROM WEST LIMITS 121 AC. COMMERCIAL CORRIDOR TO WELCH CREEK (AVOIDS GAS PIPELINES)

APPROXIMATE CONSTRUCTION COST: $1,926,593

LAND ACQUISITION REQUIRED: Yes

RECOMMEND: YES

This option also includes the construction of a new storm sewer system beginning at the western limits of the 121 acre commercial corridor, which is roughly 1.3 miles west of Welch Creek, and flow east to Welch Creek. This option assumed the storm sewer in Option 1C will not be constructed and reduces the amount of flow the proposed storm sewer in this option needs to carry. It is recommended that Option 1A to be implemented prior to option 2C, however, option 2C can be constructed without Option 1A. This option also avoids relocation of the existing gas pipelines in the corridor.

For this concept we chose to look at breaking up the flow input points at 3 locations:

Upstream Inflow: Start of trunk line at west limits of 121 acre corridor - 20.9 cfs

2nd Inflow: West end of Dauberman Improvement (Approximate midpoint of 121 ac corridor). Use ½ of 12.1 cfs – 12.1 cfs / 2 = 6 cfs

Downstream Inflow: Near intersection of US-30 and Dauberman Rd (end of commercial corridor). Use remaining ½ of flow from the commercial corridor = 6 cfs

The same key points / assumptions from Option 2A above are applicable to Option 2C with the addition of the following:

- The trunk line proposed will not solve the drainage problem near the intersection of US30 and Davis Rd. Instead, the drainage problem would be solved with a local detention pond, as detailed in Option 1A.
- The storm sewer will be constructed outside IDOT Right-of-Way except for roughly 1,000 lf of sewer that will need to be constructed within current and proposed IDOT Right-of-Way due to the Dauberman Road Extension improvements
- The storm sewer from Welch Creek to Dauberman Road will be located outside the anticipated future max IDOT ROW that will accommodate the widening of US 30 from Dugan Road to Dauberman Road. The typical section for the anticipated widening typical section of US 30 east of Dauberman Road can be found in ***Appendix X.***

Based on the hydraulic grade line analysis the resulting pipe sizes for this option are now anticipated to range from 36” on the upstream end, 48’ in the middle section and 48” diameter on the downstream end. An exhibit for the storm sewer can be found in ***Appendix X***.

The storm sewer profile with the 1% and the 2% annual chance hydraulic grade line and Storm CAD data can be found in ***Appendix Y***.

The conceptual cost of Option 2C was determined to be approximately $1,926,593, but it should be noted that this cost does not include the land and easement acquisitions. This is conceptual as there are several unknowns due to lacking topographic surveys at sections in the corridor and assumptions made regarding existing utilities throughout the corridor. The engineer's conceptual opinion of probable cost is included in ***Appendix Z***.

OPTION 2D: PROPOSED DETENTION POND (NEAR US 30 OUTFALL)

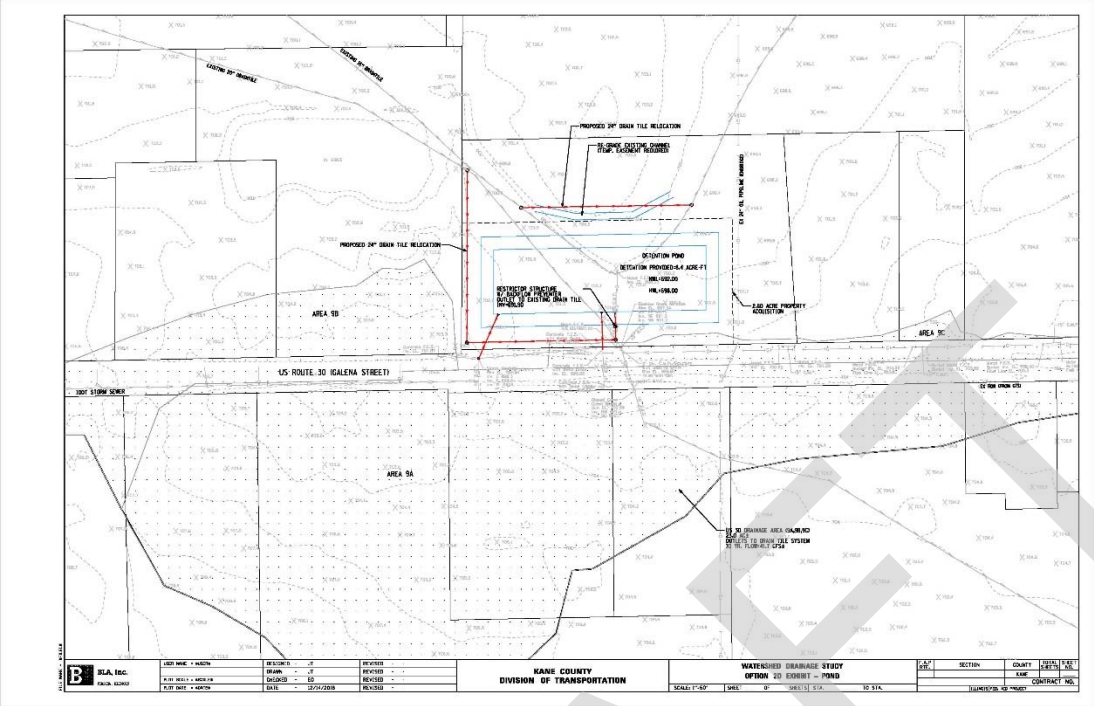
APPROXIMATE CONSTRUCTION COST: $1,554,604

LAND ACQUISITION REQUIRED: YES

RECOMMEND: NO

This option includes the construction of a detention pond at the location of the IDOT storm sewer connection to reduce the amount of flow to the existing 20" drain tile outlet. Please note that this option requires the use of the existing drain tile as an outlet and a proposed storm sewer system to Welch Creek will not be completed (Options 2A,2B and 2C). While this option does not remove the connection to the existing 20" drain tile outlet, proposed drainage flows will be reduced.

In choosing a location for a detention pond, the lower area of the watershed is optimal so that upstream areas are able to flow to the pond. As such, a detention pond just north of the existing outlet point was chosen. The proposed location for the pond would be on land privately owned and is used for farming purposes. Land acquisition would be required to construct the proposed detention pond. Due to the required pond size and location, the existing 16" and 20" drain tiles will need to be relocated around the proposed pond footprint. Also, the existing drainage ditch to the north will need to be re-established. An exhibit of the proposed pond and improvements can be found in ***Appendix BB*** but is shown here for reference.



Conceptual sizing of the pond was done using Figure 7 from the Kane County Technical Guidance Manual. A copy of the nomograph is included in ***Appendix AA***. It should be noted that this methodology is approximate, as the nomograph is used for ponds with less than 5 acres of tributary area. For final permitting and design, an accepted hydrologic modeling software would be required.

The cost for the detention pond and associated storm improvements was determined to be approximately $1,554,604, but it should be noted that this cost does not include the land and easement acquisitions. This is conceptual as there are several unknowns due to lacking topographic surveys at sections in the corridor and assumptions made regarding existing utilities throughout the corridor. The engineer's conceptual opinion of probable cost is included in ***Appendix CC***.

OPTION 2E: DRAINAGE DITCH TO WELCH CREEK

APPROXIMATE CONSTRUCTION COST: N/A

LAND ACQUISITION REQUIRED: YES

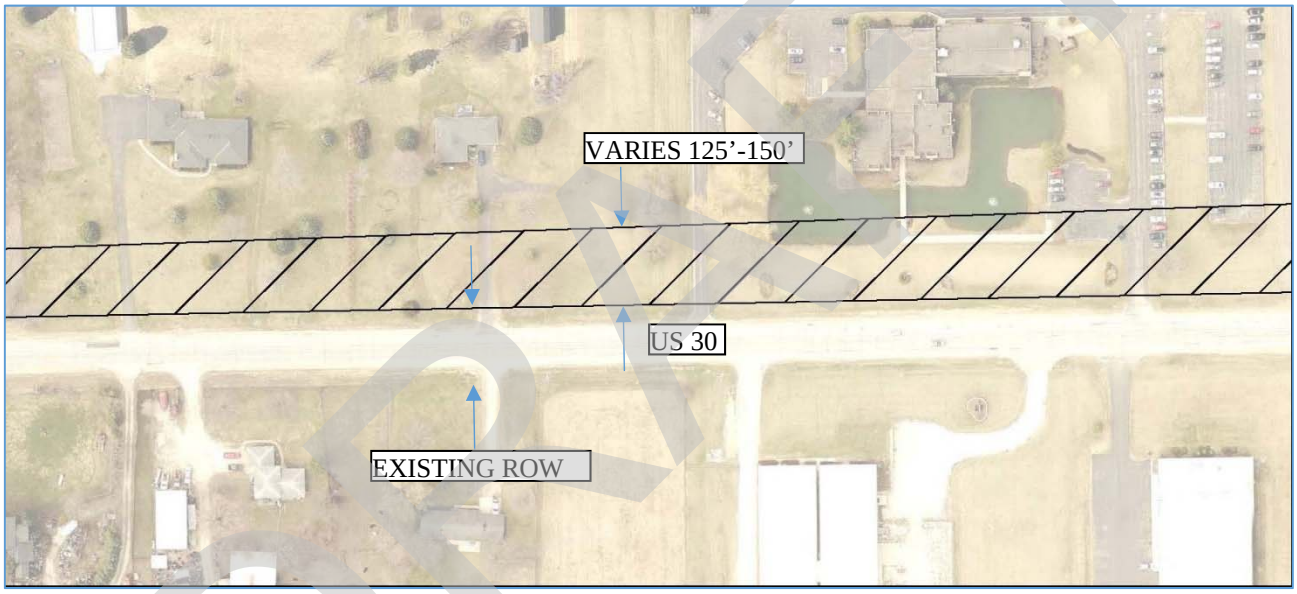
RECOMMEND: NO

One of the options discussed at the KDOT/IDOT/Big Rock Drainage Coordination meeting on October 2, 2018 was the creation of a drainage ditch from the outfall of the IDOT drainage system to Welch Creek. This option was discussed in an effort to potentially save costs from placing storm sewer piping in the ground. After investigation of this concept there were several issues / concerns:

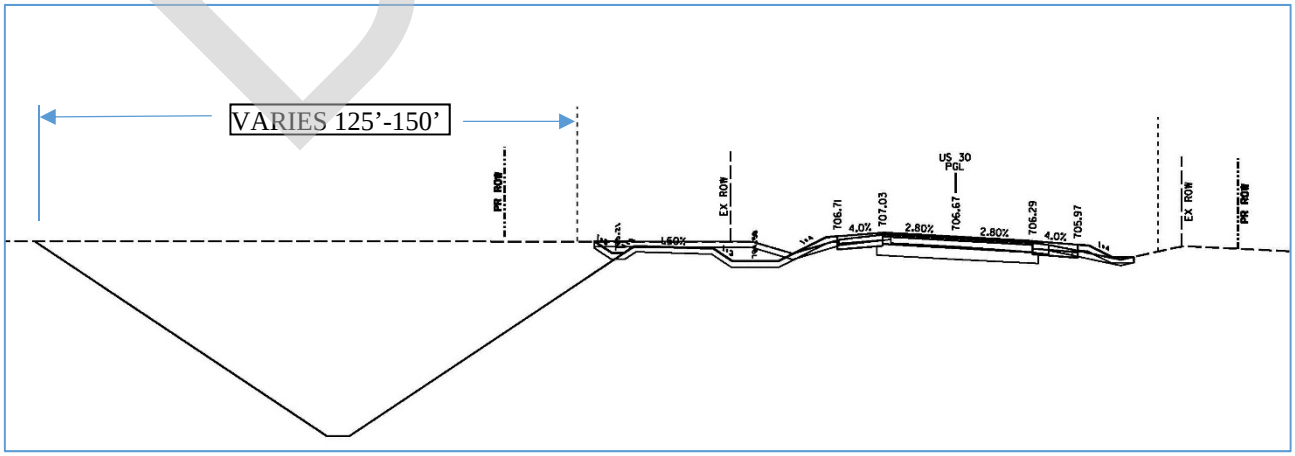
- For this option avoidance of the gas mains was chosen

- Ditch would have a 0.007-0.1% slope which is well below minimum allowed by IDOT.
- Ditch would require approximately 125'-150' of ROW acquisition
- At deepest point ditch would be 17+ feet deep.
- Large box culverts would be required for each driveway
- The tie backs needed for the ditch would encroach into the detention pond of Executive Affiliates
- Extensive coordination with IDNR would be required due to this option essentially adding a branch to Welch Creek allowing backwater from the creek to extend back to the upstream end of the ditch in a 1% annual chance storm event

Based on the geometric constraints and the large ROW acquisition costs this concept was not expanded further.



Representative section of required ROW Acquisition along US30



Ditch cross section at deepest point along US30 profile

OPTION 2F: COMBINATION DRAINAGE DITCH AND STORM SEWER TO WELCH CREEK

APPROXIMATE CONSTRUCTION COST: N/A

LAND ACQUISITION REQUIRED: NO

RECOMMEND: NO

The other option discussed at the KDOT/IDOT/Big Rock Drainage Coordination meeting on October 2, 2018 was the creation of a combination drainage ditch and storm sewer from the outfall of the IDOT drainage system to Welch Creek. This option was discussed in an effort to potentially reduce the footprint of the drainage ditch required by placing a parallel pipe to the drainage swale. After investigation it was discovered that essentially all the same constraints as Option 2D were still an issue and the size of the ditch was not reduced due to conflicts. For this reason, this option was not considered feasible and was not developed further.

OPTION 3A: REMOVE EXISTING FIELD / TILE CONNECTION SEWER

APPROXIMATE CONSTRUCTION COST: NEGLIGIBLE

LAND ACQUISITION REQUIRED: NO

RECOMMEND: YES

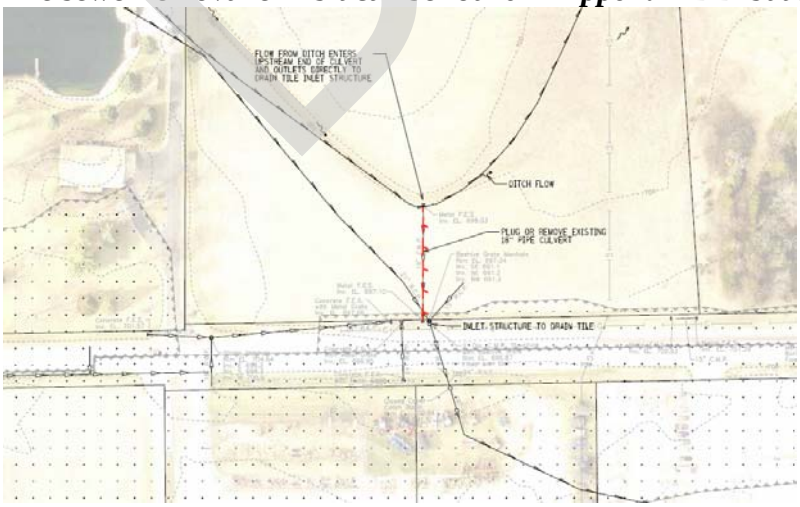
Option 3A – Remove Existing Field / Tile Connection Sewer

This option includes the removal or plugging of the existing 18" CMP pipe culvert just north of the existing 20" drain tile surface inlet noted above just north of the property at 47 US-30 (See picture on sheet 8 above). This culvert currently drains surface waters directly from the ditch for Watershed 8A, as can be seen by the darkened flood route area on the aerial photographs, and outlets its directly to the drain tile inlet. The removal of the pipe culvert would reduce the amount of surface flow to the 20" drain tile inlet by roughly 6.4 cfs for the 10-yr storm event. For larger storm events, drainage flows would overtop the existing berm over the 18" pipe culvert and flow to the drain tile inlet. Hence, this option would only provide a benefit by reducing the amount of flow entering the 20" drain tile inlet for smaller, more frequent storm events at or below the 10-yr storm.

In order to remove all surface flows to this inlet for larger storm events such as the 50 and 100-yr storms, the existing 20" inlet structure must be raised to a minimum elevation of 702.03. However, due to the existing IDOT storm sewer and ditches draining to this inlet, the inlet structure cannot be raised until proposed storm sewer improvements detailed in Options 2A thru 2E above can be completed.

This option only resolves one of the surface connections issues that was identified earlier in the discussion of the existing conditions. The Route 30 at Davis Road surface connection and the Route 30 surface connection are resolved with previously discussed options. The Tenerelli Subdivision surface connection is properly restricted and meets Kane County SMO and does not need to be altered.

The sewer removal exhibit can be found in ***Appendix DD*** but shown below for reference:



APPENDIX A

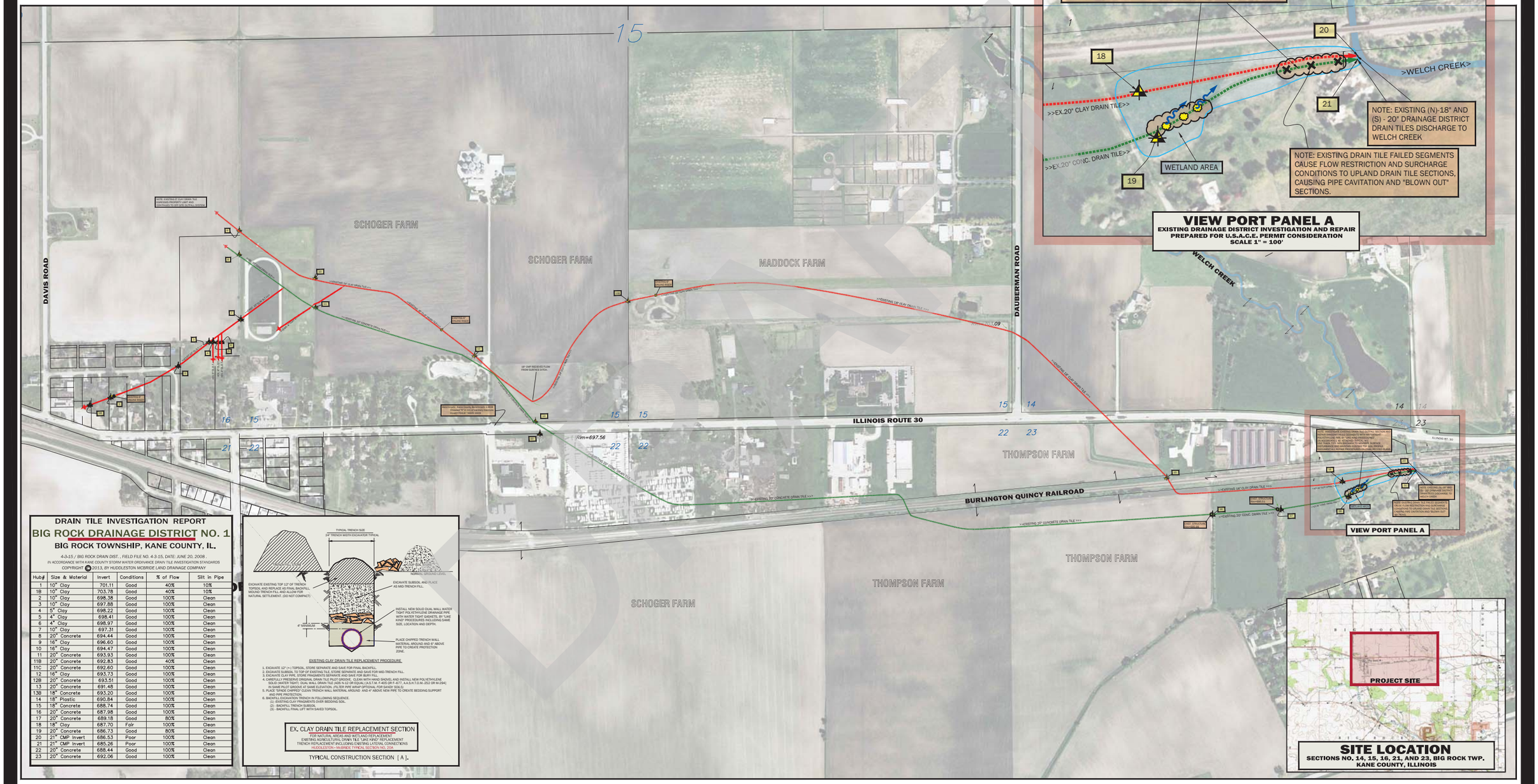
EXISTING DRAIN TILE SYSTEM DRAWINGS

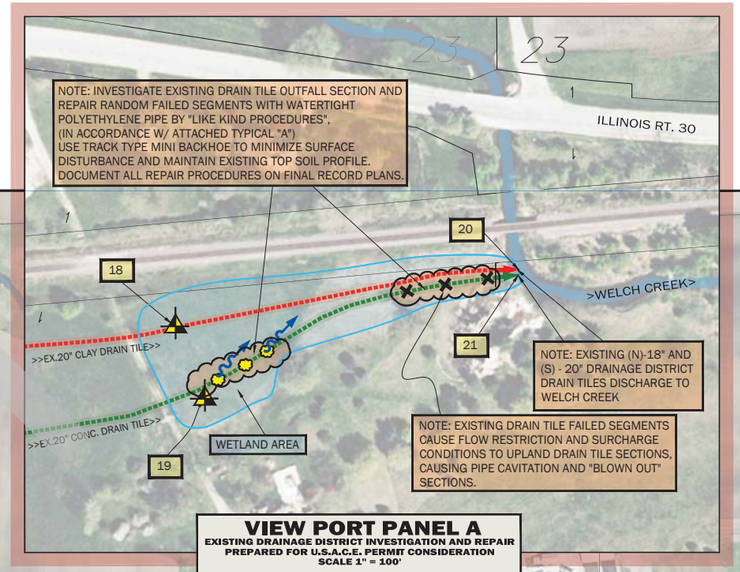
EXISTING AGRICULTURAL DRAIN TILE INVESTIGATION PLAN

BIG ROCK DRAINAGE DISTRICT NO. 1

KANE CO. DEPARTMENT OF WATER RESOURCES

SECTIONS NO. 14, 15, 16, 21, AND 23, BIG ROCK TWP., KANE CO., IL.





VIEW PORT PANEL A
EXISTING DRAINAGE DISTRICT INVESTIGATION AND REPAIR
PREPARED FOR U.S.A.C.E. PERMIT CONSIDERATION
SCALE 1" = 100'

VIEW PORT PANEL A

DRAIN TILE INVESTIGATION REPORT

BIG ROCK DRAINAGE DISTRICT NO. 1

BIG ROCK TOWNSHIP, KANE COUNTY, IL.

4-3-15 / BIG ROCK DRAIN DIST., FIELD FILE NO. 4-3-15, DATE: JUNE 20, 2008 .
IN ACCORDANCE WITH KANE COUNTY STORM WATER ORDINANCE DRAIN TILE INVESTIGATION STANDARDS

Hub#	Size & Material	Invert	Conditions	% of Flow	Silt in Pipe
1	10" Clay	701.11	Good	40%	10%
1B	10" Clay	703.78	Good	40%	10%
2	10" Clay	698.38	Good	100%	Clean
3	10" Clay	697.88	Good	100%	Clean
4	5" Clay	698.22	Good	100%	Clean
5	4" Clay	698.41	Good	100%	Clean
6	4" Clay	698.97	Good	100%	Clean
7	10" Clay	697.31	Good	100%	Clean
8	20" Concrete	694.44	Good	100%	Clean
9	16" Clay	696.60	Good	100%	Clean
10	16" Clay	694.47	Good	100%	Clean
11	20" Concrete	693.93	Good	100%	Clean
11B	20" Concrete	692.83	Good	40%	Clean
11C	20" Concrete	692.60	Good	100%	Clean
12	16" Clay	693.73	Good	100%	Clean
12B	20" Concrete	693.51	Good	100%	Clean
13	20" Concrete	691.48	Good	100%	Clean
13B	18" Concrete	693.20	Good	100%	Clean
14	18" Plastic	690.84	Good	100%	Clean
15	18" Concrete	688.74	Good	100%	Clean
16	20" Concrete	687.98	Good	100%	Clean
17	20" Concrete	689.18	Good	80%	Clean
18	18" Clay	687.70	Fair	100%	Clean
19	20" Concrete	686.73	Good	80%	Clean
20	21" CMP Invert	686.53	Poor	100%	Clean
21	21" CMP Invert	685.26	Poor	100%	Clean
22	20" Concrete	688.44	Good	100%	Clean
23	20" Concrete	692.06	Good	100%	Clean

EXISTING CLAY DRAIN TILE REPLACEMENT PROCEDURE

1. EXCAVATE 12" (+-) TOPSOIL, STORE SEPARATE AND SAVE FOR FINAL BACKFILL.
2. EXCAVATE SUBSOIL TO TOP OF EXISTING TILE, STORE SEPARATE AND SAVE FOR MID-TRENCH FILL.
3. EXCAVATE CLAY PIPE, STORE FRAGMENTS SEPARATE AND SAVE FOR BURY FILL.
4. CAREFULLY PRESERVE ORIGINAL DRAIN TILE PILOT GROOVE, CLEAN WITH HAND SHOVEL AND INSTALL NEW POLYETHYLENE SOLID (WATER TIGHT) DUAL WALL DRAIN TILE (ADS N-12 OR EQUAL) (A.S.T.M. F-405 OR F-477, A.A.S.H.T.O.M.-252 OR M-294) IN SAME PILOT GROOVE AT SAME ELEVATION. (FILTER PIPE WRAP OPTIONAL FOR SANDY SOILS)
5. PLACE "SPADE CHIPPED" CLEAN TRENCH WALL MATERIAL AROUND AND 4" ABOVE NEW PIPE TO CREATE BEDDING SUPPORT ZONE. (NO STONE BEDDING)
6. BACKFILL EXCAVATION TRENCH IN FOLLOWING SEQUENCE.
   (1) - EXISTING CLAY FRAGMENTS OVER BEDDING SOIL.
   (2) - BACKFILL TRENCH SUBSOIL
   (3) - BACKFILL FINAL LIFT WITH SAVED TOPSOIL.

EX. CLAY DRAIN TILE REPLACEMENT SECTION
FOR NATURAL AREAS AND WETLAND REPLACEMENT
EXISTING AGRICULTURAL DRAIN TILE "LIKE KIND" REPLACEMENT
TRENCH REPLACEMENT INCLUDING EXISTING LATERAL CONNECTIONS
HUDDLESTON - McBRIDE TYPICAL SECTION NO. 20A

TYPICAL CONSTRUCTION SECTION [A].

SITE LOCATION
SECTIONS NO. 14, 15, 16, 21, AND 23, BIG ROCK TWP.
KANE COUNTY, ILLINOIS

KANE CO. DEPT. OF WATER RESOURCES
PAUL SCHUCH , PROJECT MANAGER
719 BATAVIA AVENUE, GENEVA, IL., 60134

APPROVED BY AND DATE: TOM HUDDLESTON JUNE 20, 2008	PROJECT DATE: JUNE 20, 2008
ACKNOWLEDGMENTS: HUDDLESTON DRAINAGE MAPPING SYSTEM	FIELD FILE NO.: 4-3-15
DRAWN BY AND DATE: TOM HUDDLESTON JUNE 20, 2008	DRAWING NO. 4-3-15

REVISIONS

DATE:	BY:	DESCRIPTION:
5/16/2013	TLH	DRAFT MAINLINE REPAIR AT WELCH CREEK

WEATHER CONDITIONS: SUNNY/ WARM - 80o	DRAWING SCALE: 1" TO 300'	SHEET NO. ONE OF ONE	NORTH

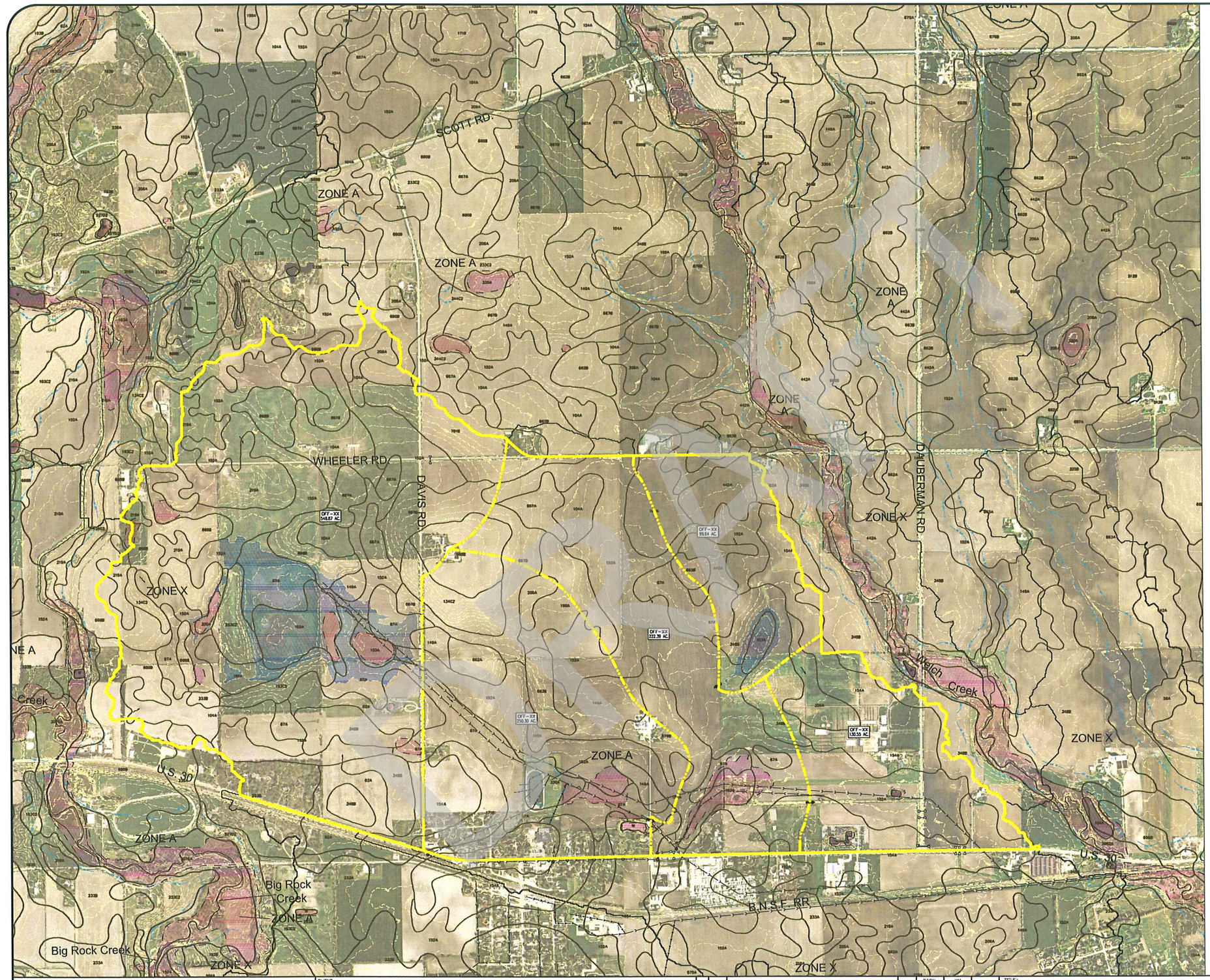
ILLINOIS FARM BUREAU MEMBER

J.U.L.I.E. a-12356256 48 HOURS 48 HOUR PRIOR NOTICE

BIG ROCK DRAINAGE

HUDDLESTON McBRIDE
PROFESSIONAL LAND DRAINAGE SERVICES
9504 FOWLER RD., ROCHELLE, ILLINOIS PHONE 815-562-6007

G:\AUTOCAD DRAWINGS\ACTIVE CADD\4-3-15@BIG ROCK\4-3-15BASE33.dwg, PLAN SHEET, 5/17/2013 6:59:52 AM, Tom, DWG To PDF.pc3, ARCH full bleed D (36.00 x 24.00 Inches), 1:200



N
W E
S

0' 400' 800' 1200'

Map Unit	Soil Name	Hydrologic Soil Group	Hydric
xxxx	ELPASO	B	Y
xxxx	DIANBROOK	B	Y
xxxx	LISBON	B	Y
xxxx	ELBURN	B	Y
xxxx	FLANAGAN	B	Y
xxxx	CLARE	B	Y
xxxx	BARONY	B	Y

LEGEND

- MAJOR DRAINAGE DIVIDE
- MINOR DRAINAGE DIVIDE
- WETLANDS
- DEPRESSIONAL STORAGE
- EXISTING BASIN/DEPRESSION AREA
- SOILS BOUNDARY
- TIME OF CONCENTRATION FLOWPATH
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- FEMA FLOODWAY FROM FIRM
- FEMA FLOODPLAIN FROM FIRM
- FLOODPLAIN BASED ON ELEVATION
- OFF-XX 0.00 AC — EXISTING DRAINAGE AREAS
- OVERLAND FLOW PATH

CHRISTOPHER B. BURKE ENGINEERING WEST, LTD.
116 West Main Street, Suite 201
St. Charles, Illinois 60174
Voice (630) 443-7755

CLIENT :

KANE COUNTY DIVISION OF WATER RESOURCES
719 BATAVIA AVE
GENEVA, IL 60134

NO.	DATE	NATURE OF REVISION

DSGN.	KM
DWN.	DJV
CHKD.	IAD
SCALE :	1" = 400'
FILE NAME:	03-949L-VTM.DWG

TITLE :

BIG ROCK DRAINAGE INVESTIGATION

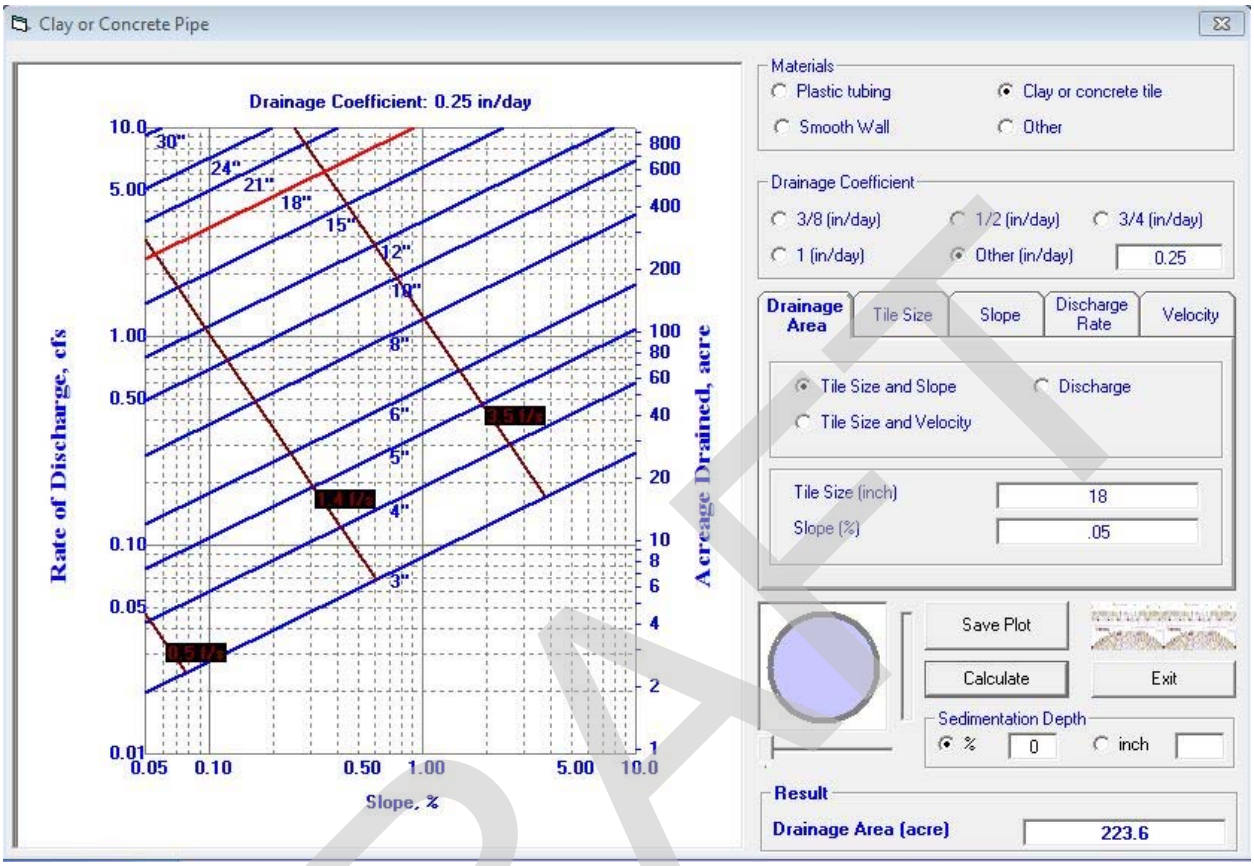
VICINITY TOPOGRAPHIC MAP

PROJECT NO.	03-949L
DATE :	12/28/2006
SHEET	1 OF 1
DRAWING NO.	VTM

APPENDIX B

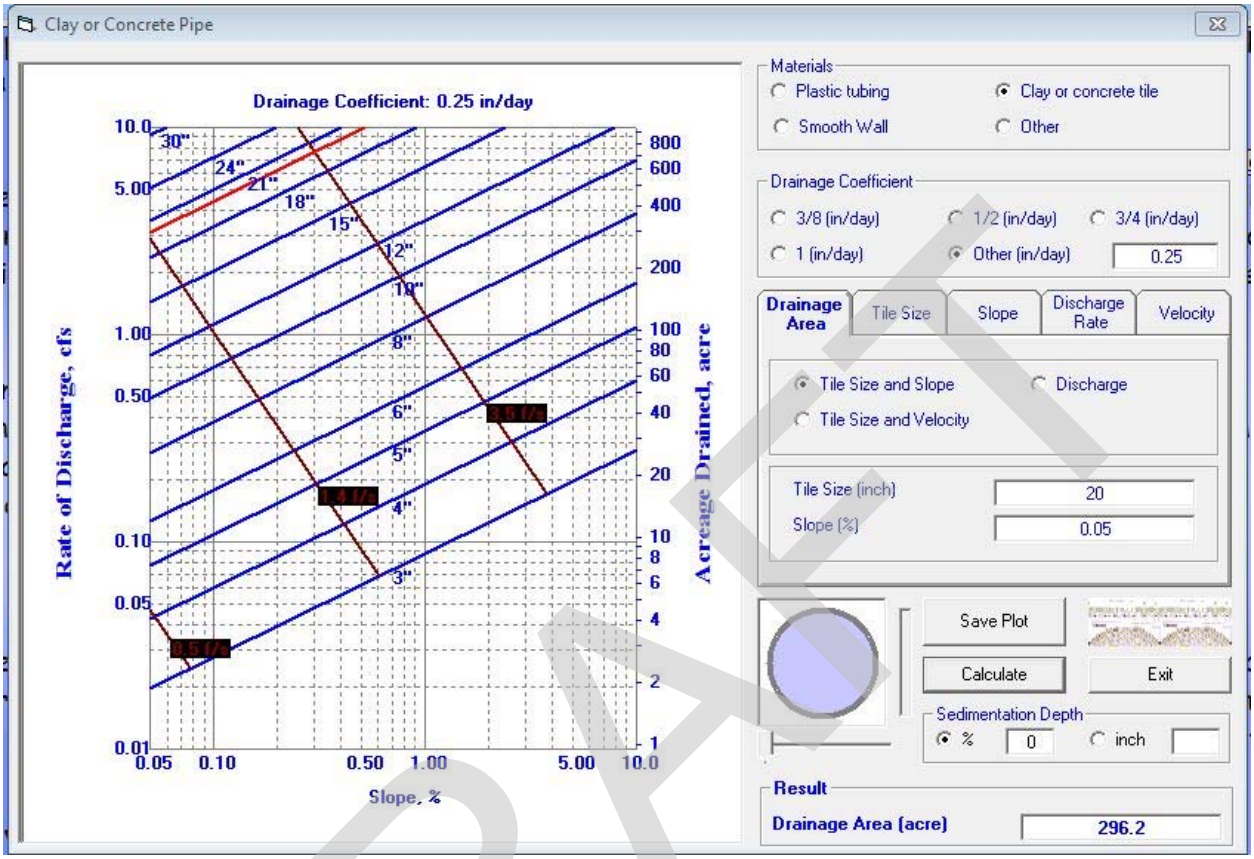
DRAIN TILE CAPACITY CALCULATIONS

Existing 18” Clay Drain Tile Service Area (at ¼” per 24hr drainage coefficient)



Source: University of Illinois Department of Agricultural and Biological Engineering Illinois Drainage Guide (Online)

Existing 20” Clay Drain Tile Service Area (at ¼” per 24hr drainage coefficient)



Source: University of Illinois Department of Agricultural and Biological Engineering Illinois Drainage Guide (Online)

APPENDIX C

10, 50 & 100 YEAR WATERSHED BOUNDARIES AND HIGH WATER LEVEL EXHIBIT

SURFACE DRAINAGE
AREAS TRIBUTARY TO
OUTLET 8 (DAUBERMAN RD)
1199.94 ACRES

DAVIS RD

DAUBERMAN RD

8E

100 YR HWL=709.61
50 YR HWL=708.92
10 YR HWL=707.62

OUTLET 8E - DRAIN TILE

16" CLAY DRAIN TILE

20" RCP DRAIN TILE

8D

100 YR HWL=706.79
50 YR HWL=706.65
10 YR HWL=706.49

OUTLET 8D - WEIR

100 YR HWL=702.03
50 YR HWL=701.54
10 YR HWL=700.52

OUTLET 8-STRUCTURES UNDER DAUBERMAN
- 24" PVC CULVERT
- 24" CONCRETE CULVERT
- (2) 29"X42" CORRUGATED METAL CULVERTS

WELCH CREEK

10" CLAY DRAIN TILE

US 30 STORM SEWER

US 30

18" CLAY DRAIN TILE

20" RCP DRAIN TILE

8C 8B 8A 7C 7D 7B 7D 1:1 9B 9C 7A 9A 6C 6B 6A 5B 5A 4A 4B 4C 4F

FILE NAME = $FILE$

BLA, Inc.
ITASCA, ILLINOIS

USER NAME = $USER$	DESIGNED - MK	REVISED -
	DRAWN - MK	REVISED -
PLOT SCALE = $SCALE$	CHECKED - KEK	REVISED -
PLOT DATE = $DATE$	DATE - 08/11/2018	REVISED -

KANE COUNTY
DIVISION OF TRANSPORTATION

SURFACE DRAINAGE AREAS WITH STORM HIGH WATER LEVELS TRIBUTARY TO OUTLET 8 (DAUBERMAN RD)

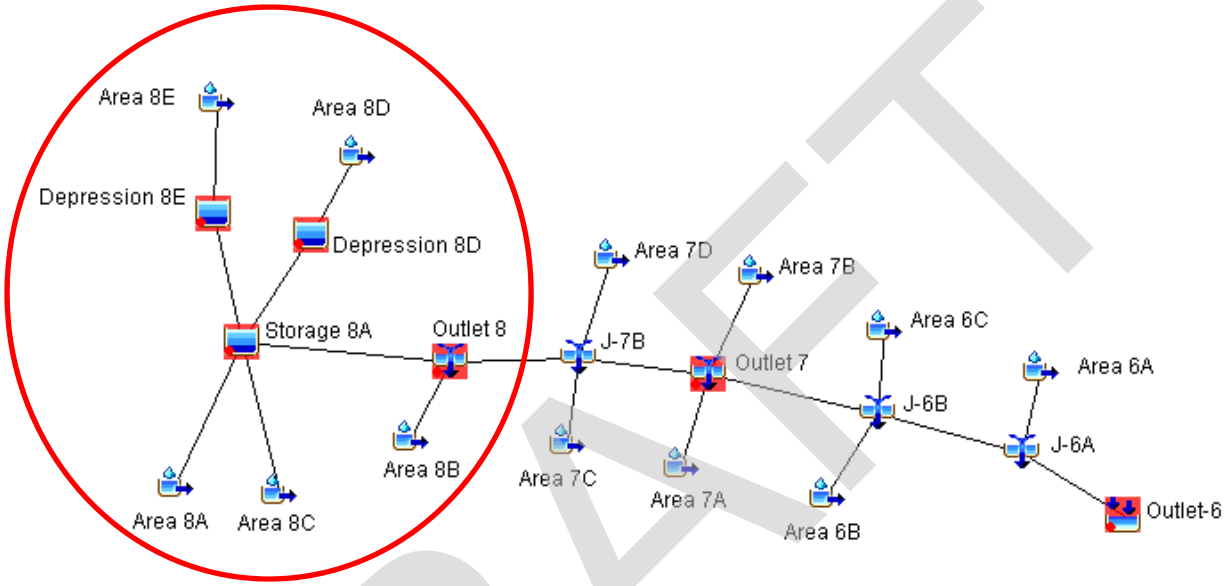
SCALE: 1" = 500' | SHEET OF SHEETS | STA. TO STA.

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		
		CONTRACT NO.		
	ILLINOIS FED. AID PROJECT			

APPENDIX D

HEC-HMS STORMWATER MODEL INPUT AND OUTPUT DATA

OUTLET 8 HEC-HMS MODEL SCHEMATIC- EXISTING



WinTR-55 Current Data Description

--- Identification Data ---

User: MK
Project: Dauberman road extension
SubTitle: Existing Time of Concentration Calcs
State: Illinois
County: Kane
Filename: W:\070-006 TranSystems KDOT Dauberman Road Phase I\Engineering\Drainage\HYDROLOGIC\TR55_Existing

Date: 10/31/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
8A		Outlet8	607.78	78	4.876
8B		Outlet8	1.43	82	.385
8C		Outlet8	1.47	78	.48
8D		Outlet8	98.81	79	1.767
8E		Outlet8	490.45	79	2.851

Total area: 1199.94 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.04	3.8	4.47	5.51	6.46	7.58	2.51

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

EXISTING ELEVATION-DISCHARGE TABLE						
POND:	STORAGE AREA 8A					
PROJECT:	DAUBERMAN RD. EXTENSION					
DATE:	9/11/2018					
OUTLET DESCRIPTION:	MAIN: 42"x29" CMP ARCH CULVERT 1&2 + 24" RCP & 42"x29" CMP ARCH CULVERTS / EMERGENCY: EAST SPILLWAY OVER DAUBERMAN RD					
REFERENCE:	CULVERT: FROM HY-8 / SPILLWAY: FROM HY-8					
Elevation	**Culvert 1 Discharge (cfs)**	**Culvert 2 Discharge (cfs)**	**Culvert 3 Discharge (cfs)**	**Culvert 4 Discharge (cfs)**	**Spillway Discharge (cfs)**	**Total Discharge (cfs)**
697.10	0.00	0.00	0.00	0.00	0.00	0.00
698.14	2.99	3.010	0.00	0.00	0.00	6.00
698.60	6.00	6.00	0.00	0.00	0.00	12.00
699.00	9.02	8.98	0.00	0.00	0.00	18.00
699.39	12.16	11.92	0.00	0.00	0.00	24.08
699.92	15.09	14.91	8.51	4.81	0.00	43.32
700.54	18.00	17.92	19.18	11.09	0.00	66.20
701.02	20.10	19.90	25.86	15.24	0.00	81.10
702.07	24.16	23.75	36.69	21.88	0.00	106.48
702.10	24.11	23.86	36.92	22.02	0.00	106.92
702.23	24.51	24.34	37.93	22.64	4.06	113.48
702.27	24.68	24.42	38.24	22.83	9.79	119.96
702.50	25.46	25.19	23.35	13.73	78.92	166.65
702.8	26.40	26.09	11.40	6.63	282.730	353.25

EXISTING ELEVATION-DISCHARGE TABLE			
POND:	STORAGE AREA 8D		
PROJECT:	DAUBERMAN RD. EXTENSION		
DATE:	9/11/2018		
OUTLET DESCRIPTION:	MAIN: INFILTRATION / EMERGENCY: SOUTH SPILLWAY		
REFERENCE:	UNDERDRAIN: NONE / SPILLWAY: $Q=3.0(L)(H)^{3/2}$; L=55'		
Elevation	**Underdrain Discharge (cfs)**	**Spillway Discharge (cfs)**	**Total Discharge (cfs)**
701.50	0.00	0.00	0.00
702.00	0.00	0.00	0.00
704.00	0.00	0.00	0.00
706.00	0.00	0.00	0.00
706.40	0.00	0.00	0.00
707.00	0.00	76.69	76.69

EXISTING ELEVATION-DISCHARGE TABLE	
POND:	STORAGE AREA 8E
PROJECT:	DAUBERMAN RD. EXTENSION
DATE:	9/11/2018
OUTLET DESCRIPTION:	MAIN: 20" UNDERDRAIN & CULVERT UNDER DAVIS RD/ EMERGENCY: SPILLWAY OVER DAVIS RD
REFERENCE:	UNDERDRAIN: ASSUME NO UNDERDRAIN / CULVERT: ASSUME 12" CULVERT @ 709.00 / SPILLWAY: $Q=3.0(L)(H)^{3/2}$; L=100' @ 709.90

Elevation	Underdrain Discharge (cfs)	Culvert Discharge (cfs)	Spillway Discharge (cfs)	Total Discharge (cfs)
701.60	0.00	0.00	0.00	0.00
702.00	0.00	0.00	0.00	0.00
704.00	0.00	0.00	0.00	0.00
706.00	0.00	0.00	0.00	0.00
708.00	0.00	0.00	0.00	0.00
709.00	0.00	0.00	0.00	0.00
709.50	0.00	1.79	0.00	1.79
710.00	0.00	3.57	9.49	13.06

EXISTING STAGE-STORAGE TABLE					
POND:	STORAGE AREA 8A				
PROJECT:	DAUBERMAN RD. EXTENSION				
DATE:	9/11/2018				
	Area		Average	Incremental	Cummulative
Elevation			Area	Storage	Storage
(ft)	(ft^2)	(ac)	(ac)	(ac-ft)	(ac-ft)
697.00	13291.40	0.305			0.000
			1.846	1.85	
698.00	147512.34	3.386			1.846
			16.461	32.92	
700.00	1286546.54	29.535			34.77
			62.308	124.62	
702.00	4141742.20	95.081			159.38
			103.938	51.97	
702.50	4913339.66	112.795			211.35
			120.800	60.40	
703.00	5610713.31	128.804			271.75

EXISTING STAGE-STORAGE TABLE					
POND:	STORAGE AREA 8D				
PROJECT:	DAUBERMAN RD. EXTENSION				
DATE:	9/11/2018				
	Area		Average	Incremental	Cummulative
Elevation			Area	Storage	Storage
(ft)	(ft^2)	(ac)	(ac)	(ac-ft)	(ac-ft)
701.30	0	0.000			0.000
			0.513	0.36	
702.00	44,715	1.027			0.359
			2.415	4.83	
704.00	165,682	3.804			5.19
			5.602	11.20	
706.00	322,401	7.401			16.39
			7.899	3.16	
706.40	365,768	8.397			19.55
			8.917	5.35	
707.00	411,097	9.437			24.90

EXISTING STAGE-STORAGE TABLE					
POND:	STORAGE AREA 8E				
PROJECT:	DAUBERMAN RD. EXTENSION				
DATE:	9/11/2018				
	Area		Average	Incremental	Cummulative
Elevation			Area	Storage	Storage
(ft)	(ft^2)	(ac)	(ac)	(ac-ft)	(ac-ft)
701.60	0	0.000			0.000
			0.772	0.31	
702.00	67,224	1.543			0.309
			13.511	27.02	
704.00	1,109,886	25.479			27.33
			35.073	70.15	
706.00	1,945,649	44.666			97.48
			57.102	114.20	
708.00	3,029,035	69.537			211.68
			79.976	79.98	
709.00	3,938,506	90.416			291.66
			98.693	98.69	
710.00	4,659,594	106.970			390.35

EXISTING HEC-HMS MODELING RESULTS

10YR STORM

10YR 1HR				10YR 2HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	34.45	01Jan2000, 02:21	Area 1C	0.2595	50.3	01Jan2000, 02:51
Area 1D	0.0155	5.9	01Jan2000, 00:45	Area 1D	0.0155	6.49	01Jan2000, 00:57
Depression 1D	0.0155	0	01Jan2000, 00:24	Depression 1D	0.0155	0.28	01Jan2000, 02:51
Area 1B	0.0031	1.56	01Jan2000, 00:36	Area 1B	0.0031	1.61	01Jan2000, 00:48
Depression 1BC	0.2781	3.61	01Jan2000, 05:30	Depression 1BC	0.2781	5.88	01Jan2000, 06:00
Diversion 1BC	0.2781	3.61	01Jan2000, 05:30	Diversion 1BC	0.2781	5.88	01Jan2000, 06:00
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0025	1.41	01Jan2000, 00:27	Area 1A	0.0025	1.38	01Jan2000, 00:36
J-1	0.2806	3.61	01Jan2000, 05:30	J-1	0.2806	5.88	01Jan2000, 06:00
Outlet 1	0.2806	3.61	01Jan2000, 05:30	Outlet 1	0.2806	5.88	01Jan2000, 06:00
Area 2	0.0019	1.18	01Jan2000, 00:33	Area 2	0.0019	1.16	01Jan2000, 00:42
Outlet 2	0.0019	1.18	01Jan2000, 00:33	Outlet 2	0.0019	1.16	01Jan2000, 00:42
Area 3B	0.0108	3.93	01Jan2000, 00:45	Area 3B	0.0108	4.34	01Jan2000, 00:57
Diversion 3B	0.0108	3.93	01Jan2000, 00:45	Diversion 3B	0.0108	4.22	01Jan2000, 00:57
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0.11	01Jan2000, 00:57
Area 3A	0.0026	1.3	01Jan2000, 00:33	Area 3A	0.0026	1.32	01Jan2000, 00:45
J-3	0.0134	5.08	01Jan2000, 00:42	J-3	0.0134	5.44	01Jan2000, 00:54
Outlet 3	0.0134	5.08	01Jan2000, 00:42	Outlet 3	0.0134	5.44	01Jan2000, 00:54
Area 4F	0.1204	18.25	01Jan2000, 02:15	Area 4F	0.1204	25.91	01Jan2000, 02:42
Area 4E	0.0198	7.12	01Jan2000, 00:51	Area 4E	0.0198	7.95	01Jan2000, 01:03
Area 4H	0.0132	5.66	01Jan2000, 00:42	Area 4H	0.0132	6.06	01Jan2000, 00:54
Area 4G	0.012	4.9	01Jan2000, 00:45	Area 4G	0.012	5.34	01Jan2000, 00:57
Area 4D	0.0054	2.71	01Jan2000, 00:33	Area 4D	0.0054	2.75	01Jan2000, 00:45
Depression 4D-H	0.1708	3.04	01Jan2000, 04:39	Depression 4D-H	0.1708	16.66	01Jan2000, 03:45
Area 4B	0.008	3.5	01Jan2000, 00:42	Area 4B	0.008	3.72	01Jan2000, 00:51
Area 4C	0.0026	1.22	01Jan2000, 00:36	Area 4C	0.0026	1.27	01Jan2000, 00:48
Depression 4C	0.0026	0	01Jan2000, 00:42	Depression 4C	0.0026	0	01Jan2000, 00:48
Depression 4B	0.1814	3.03	01Jan2000, 04:48	Depression 4B	0.1814	16.44	01Jan2000, 03:54
Area 4A	0.0028	1.39	01Jan2000, 00:33	Area 4A	0.0028	1.42	01Jan2000, 00:45
Junction 4	0.1842	3.03	01Jan2000, 04:48	Junction 4	0.1842	16.44	01Jan2000, 03:54
Outlet 4	0.1842	3.03	01Jan2000, 04:48	Outlet 4	0.1842	16.44	01Jan2000, 03:54
Area 5A	0.0587	18.66	01Jan2000, 01:09	Area 5A	0.0587	21.28	01Jan2000, 01:18
Area 5B	0.0052	2.52	01Jan2000, 00:36	Area 5B	0.0052	2.59	01Jan2000, 00:45
Depression 5B	0.0052	0	01Jan2000, 01:03	Depression 5B	0.0052	0	01Jan2000, 01:03
J-5	0.0639	18.66	01Jan2000, 01:09	J-5	0.0639	21.28	01Jan2000, 01:18
Outlet 5	0.0639	18.66	01Jan2000, 01:09	Outlet 5	0.0639	21.28	01Jan2000, 01:18
Area 6C	0.0463	11.94	01Jan2000, 01:15	Area 6C	0.0463	14.03	01Jan2000, 01:27
Area 6B	0.0043	1.14	01Jan2000, 00:45	Area 6B	0.0043	1.33	01Jan2000, 01:00
J-6B	1.9897	33.22	01Jan2000, 01:03	J-6B	1.9897	38.98	01Jan2000, 06:48
Area 6A	0.0047	1.24	01Jan2000, 00:45	Area 6A	0.0047	1.45	01Jan2000, 01:00
J-6A	1.9944	34.31	01Jan2000, 01:03	J-6A	1.9944	39.68	01Jan2000, 01:09
Outlet-6	1.9944	34.31	01Jan2000, 01:03	Outlet-6	1.9944	39.68	01Jan2000, 01:09
Area 7C	0.0363	12.45	01Jan2000, 01:03	Area 7C	0.0363	14.07	01Jan2000, 01:12
Area 7D	0.0147	6.87	01Jan2000, 00:36	Area 7D	0.0147	7.16	01Jan2000, 00:48
J-7B	1.926	25.11	01Jan2000, 06:15	J-7B	1.926	38.98	01Jan2000, 06:48
Area 7A	0.0118	5.03	01Jan2000, 00:36	Area 7A	0.0118	5.25	01Jan2000, 00:45
Area 7B	0.0013	1.11	01Jan2000, 00:24	Area 7B	0.0013	1.01	01Jan2000, 00:33
Outlet 7	1.9391	25.11	01Jan2000, 06:15	Outlet 7	1.9391	38.98	01Jan2000, 06:48
Area 8A	0.9497	83.58	01Jan2000, 03:24	Area 8A	0.9497	129.82	01Jan2000, 03:51
Storage 8A	1.875	25.11	01Jan2000, 06:15	Storage 8A	1.875	38.98	01Jan2000, 06:48
Area 8B	0.0022	1.38	01Jan2000, 00:33	Area 8B	0.0022	1.36	01Jan2000, 00:42
Area 8C	0.0023	0.99	01Jan2000, 00:39	Area 8C	0.0023	1.04	01Jan2000, 00:48
Area 8D	0.1544	36.14	01Jan2000, 01:33	Area 8D	0.1544	44.72	01Jan2000, 01:51
Depression 8D	0.1544	0	01Jan2000, 00:54	Depression 8D	0.1544	0	01Jan2000, 01:00
Area 8E	0.7664	119.87	01Jan2000, 02:09	Area 8E	0.7664	168.94	01Jan2000, 02:39
Depression 8E	0.7664	0	01Jan2000, 00:45	Depression 8E	0.7664	0	01Jan2000, 00:51
Outlet 8	1.875	25.11	01Jan2000, 06:15	Outlet 8	1.875	38.98	01Jan2000, 06:48
Area 9A	0.0227	17.02	01Jan2000, 00:30	Area 9A	0.0227	16.24	01Jan2000, 00:39
Area 9B	0.0108	5.35	01Jan2000, 00:42	Area 9B	0.0108	5.6	01Jan2000, 00:54
Area 9C	0.002	1.19	01Jan2000, 00:39	Area 9C	0.002	1.21	01Jan2000, 00:48
Outlet 9	0.0355	22.31	01Jan2000, 00:33	Outlet 9	0.0355	22.19	01Jan2000, 00:42
Area 10	0.0007	0.55	01Jan2000, 00:21	Area 10	0.0007	0.49	01Jan2000, 00:33
Outlet 10	0.0007	0.55	01Jan2000, 00:21	Outlet 10	0.0007	0.49	01Jan2000, 00:33
Area 11	0.0002	0.09	01Jan2000, 00:21	Area 11	0.0002	0.09	01Jan2000, 00:33
Outlet 11	0.0002	0.09	01Jan2000, 00:21	Outlet 11	0.0002	0.09	01Jan2000, 00:33
Area 12	0.0063	2.49	01Jan2000, 00:42	Area 12	0.0063	2.7	01Jan2000, 00:54
Outlet 12	0.0063	2.49	01Jan2000, 00:42	Outlet 12	0.0063	2.7	01Jan2000, 00:54

EXISTING HEC-HMS MODELING RESULTS
10YR STORM

10YR 3HR				10YR 6HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	50.82	01Jan2000, 03:12	Area 1C	0.2595	48.88	01Jan2000, 03:42
Area 1D	0.0155	5.7	01Jan2000, 01:09	Area 1D	0.0155	4.45	01Jan2000, 01:48
Depression 1D	0.0155	0.66	01Jan2000, 03:36	Depression 1D	0.0155	1.08	01Jan2000, 06:18
Area 1B	0.0031	1.38	01Jan2000, 01:00	Area 1B	0.0031	1	01Jan2000, 01:45
Depression 1BC	0.2781	6.87	01Jan2000, 06:36	Depression 1BC	0.2781	8.34	01Jan2000, 08:48
Diversion 1BC	0.2781	6.87	01Jan2000, 06:36	Diversion 1BC	0.2781	8.34	01Jan2000, 08:48
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0025	1.13	01Jan2000, 00:54	Area 1A	0.0025	0.8	01Jan2000, 01:06
J-1	0.2806	6.87	01Jan2000, 06:36	J-1	0.2806	8.34	01Jan2000, 08:48
Outlet 1	0.2806	6.87	01Jan2000, 06:36	Outlet 1	0.2806	8.34	01Jan2000, 08:48
Area 2	0.0019	0.97	01Jan2000, 00:57	Area 2	0.0019	0.7	01Jan2000, 01:09
Outlet 2	0.0019	0.97	01Jan2000, 00:57	Outlet 2	0.0019	0.7	01Jan2000, 01:09
Area 3B	0.0108	3.8	01Jan2000, 01:06	Area 3B	0.0108	2.97	01Jan2000, 01:48
Diversion 3B	0.0108	3.8	01Jan2000, 01:06	Diversion 3B	0.0108	2.97	01Jan2000, 01:48
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	1.12	01Jan2000, 00:57	Area 3A	0.0026	0.8	01Jan2000, 01:42
J-3	0.0134	4.86	01Jan2000, 01:03	J-3	0.0134	3.77	01Jan2000, 01:45
Outlet 3	0.0134	4.86	01Jan2000, 01:03	Outlet 3	0.0134	3.77	01Jan2000, 01:45
Area 4F	0.1204	25.79	01Jan2000, 03:00	Area 4F	0.1204	24.56	01Jan2000, 03:30
Area 4E	0.0198	7.03	01Jan2000, 01:12	Area 4E	0.0198	5.6	01Jan2000, 01:51
Area 4H	0.0132	5.28	01Jan2000, 01:03	Area 4H	0.0132	4.01	01Jan2000, 01:48
Area 4G	0.012	4.68	01Jan2000, 01:09	Area 4G	0.012	3.61	01Jan2000, 01:48
Area 4D	0.0054	2.34	01Jan2000, 00:57	Area 4D	0.0054	1.67	01Jan2000, 01:42
Depression 4D-H	0.1708	21.64	01Jan2000, 03:54	Depression 4D-H	0.1708	25.08	01Jan2000, 04:45
Area 4B	0.008	3.24	01Jan2000, 01:03	Area 4B	0.008	2.44	01Jan2000, 01:45
Area 4C	0.0026	1.09	01Jan2000, 01:00	Area 4C	0.0026	0.8	01Jan2000, 01:45
Depression 4C	0.0026	0	01Jan2000, 00:54	Depression 4C	0.0026	0.21	01Jan2000, 05:30
Depression 4B	0.1814	21.49	01Jan2000, 04:03	Depression 4B	0.1814	25.9	01Jan2000, 04:57
Area 4A	0.0028	1.21	01Jan2000, 00:57	Area 4A	0.0028	0.87	01Jan2000, 01:42
Junction 4	0.1842	21.49	01Jan2000, 04:03	Junction 4	0.1842	26.19	01Jan2000, 04:54
Outlet 4	0.1842	21.49	01Jan2000, 04:03	Outlet 4	0.1842	26.19	01Jan2000, 04:54
Area 5A	0.0587	19.58	01Jan2000, 01:33	Area 5A	0.0587	16.3	01Jan2000, 02:03
Area 5B	0.0052	2.21	01Jan2000, 00:57	Area 5B	0.0052	1.6	01Jan2000, 01:45
Depression 5B	0.0052	0	01Jan2000, 01:15	Depression 5B	0.0052	0	01Jan2000, 01:42
J-5	0.0639	19.58	01Jan2000, 01:33	J-5	0.0639	16.3	01Jan2000, 02:03
Outlet 5	0.0639	19.58	01Jan2000, 01:33	Outlet 5	0.0639	16.3	01Jan2000, 02:03
Area 6C	0.0463	13.18	01Jan2000, 01:39	Area 6C	0.0463	11.22	01Jan2000, 02:12
Area 6B	0.0043	1.17	01Jan2000, 01:09	Area 6B	0.0043	0.96	01Jan2000, 01:48
J-6B	1.9897	45.19	01Jan2000, 07:21	J-6B	1.9897	57.12	01Jan2000, 09:06
Area 6A	0.0047	1.28	01Jan2000, 01:09	Area 6A	0.0047	1.05	01Jan2000, 01:51
J-6A	1.9944	45.19	01Jan2000, 07:21	J-6A	1.9944	57.12	01Jan2000, 09:06
Outlet-6	1.9944	45.19	01Jan2000, 07:21	Outlet-6	1.9944	57.12	01Jan2000, 09:06
Area 7C	0.0363	12.71	01Jan2000, 01:24	Area 7C	0.0363	10.39	01Jan2000, 01:57
Area 7D	0.0147	6.17	01Jan2000, 01:00	Area 7D	0.0147	4.52	01Jan2000, 01:45
J-7B	1.926	45.19	01Jan2000, 07:21	J-7B	1.926	57.1	01Jan2000, 09:09
Area 7A	0.0118	4.52	01Jan2000, 00:57	Area 7A	0.0118	3.34	01Jan2000, 01:45
Area 7B	0.0013	0.79	01Jan2000, 00:36	Area 7B	0.0013	0.56	01Jan2000, 01:03
Outlet 7	1.9391	45.19	01Jan2000, 07:21	Outlet 7	1.9391	57.1	01Jan2000, 09:09
Area 8A	0.9497	140.94	01Jan2000, 04:21	Area 8A	0.9497	144.37	01Jan2000, 05:03
Storage 8A	1.875	45.19	01Jan2000, 07:21	Storage 8A	1.875	57.1	01Jan2000, 09:09
Area 8B	0.0022	1.13	01Jan2000, 00:54	Area 8B	0.0022	0.81	01Jan2000, 01:09
Area 8C	0.0023	0.9	01Jan2000, 01:00	Area 8C	0.0023	0.67	01Jan2000, 01:45
Area 8D	0.1544	42.86	01Jan2000, 02:00	Area 8D	0.1544	37.83	01Jan2000, 02:33
Depression 8D	0.1544	0	01Jan2000, 01:06	Depression 8D	0.1544	0	01Jan2000, 01:21
Area 8E	0.7664	167.27	01Jan2000, 02:54	Area 8E	0.7664	158.65	01Jan2000, 03:24
Depression 8E	0.7664	0	01Jan2000, 00:57	Depression 8E	0.7664	0	01Jan2000, 01:12
Outlet 8	1.875	45.19	01Jan2000, 07:21	Outlet 8	1.875	57.1	01Jan2000, 09:09
Area 9A	0.0227	13.11	01Jan2000, 00:54	Area 9A	0.0227	9.54	01Jan2000, 01:06
Area 9B	0.0108	4.87	01Jan2000, 01:03	Area 9B	0.0108	3.59	01Jan2000, 01:45
Area 9C	0.002	1.03	01Jan2000, 01:00	Area 9C	0.002	0.75	01Jan2000, 01:15
Outlet 9	0.0355	18.72	01Jan2000, 00:54	Outlet 9	0.0355	13.57	01Jan2000, 01:09
Area 10	0.0007	0.38	01Jan2000, 00:33	Area 10	0.0007	0.27	01Jan2000, 01:03
Outlet 10	0.0007	0.38	01Jan2000, 00:33	Outlet 10	0.0007	0.27	01Jan2000, 01:03
Area 11	0.0002	0.08	01Jan2000, 00:51	Area 11	0.0002	0.05	01Jan2000, 01:39
Outlet 11	0.0002	0.08	01Jan2000, 00:51	Outlet 11	0.0002	0.05	01Jan2000, 01:39
Area 12	0.0063	2.37	01Jan2000, 01:06	Area 12	0.0063	1.82	01Jan2000, 01:48
Outlet 12	0.0063	2.37	01Jan2000, 01:06	Outlet 12	0.0063	1.82	01Jan2000, 01:48

EXISTING HEC-HMS MODELING RESULTS
10YR STORM

10YR 12HR				10YR 18HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	51.38	01Jan2000, 07:21	Area 1C	0.2595	50.18	01Jan2000, 13:27
Area 1D	0.0155	4.09	01Jan2000, 05:36	Area 1D	0.0155	3.81	01Jan2000, 11:42
Depression 1D	0.0155	1.39	01Jan2000, 09:18	Depression 1D	0.0155	1.59	01Jan2000, 14:06
Area 1B	0.0031	0.89	01Jan2000, 05:12	Area 1B	0.0031	0.82	01Jan2000, 11:36
Depression 1BC	0.2781	9.15	01Jan2000, 14:06	Depression 1BC	0.2781	9.48	01Jan2000, 20:12
Diversion 1BC	0.2781	9.15	01Jan2000, 14:06	Diversion 1BC	0.2781	9.48	01Jan2000, 20:12
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0025	0.71	01Jan2000, 05:03	Area 1A	0.0025	0.66	01Jan2000, 11:30
J-1	0.2806	9.15	01Jan2000, 14:06	J-1	0.2806	9.48	01Jan2000, 20:12
Outlet 1	0.2806	9.15	01Jan2000, 14:06	Outlet 1	0.2806	9.48	01Jan2000, 20:12
Area 2	0.0019	0.6	01Jan2000, 05:09	Area 2	0.0019	0.54	01Jan2000, 11:33
Outlet 2	0.0019	0.6	01Jan2000, 05:09	Outlet 2	0.0019	0.54	01Jan2000, 11:33
Area 3B	0.0108	2.75	01Jan2000, 05:36	Area 3B	0.0108	2.58	01Jan2000, 11:39
Diversion 3B	0.0108	2.75	01Jan2000, 05:36	Diversion 3B	0.0108	2.58	01Jan2000, 11:39
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.73	01Jan2000, 05:09	Area 3A	0.0026	0.67	01Jan2000, 11:33
J-3	0.0134	3.46	01Jan2000, 05:36	J-3	0.0134	3.25	01Jan2000, 11:39
Outlet 3	0.0134	3.46	01Jan2000, 05:36	Outlet 3	0.0134	3.25	01Jan2000, 11:39
Area 4F	0.1204	25.43	01Jan2000, 07:12	Area 4F	0.1204	24.51	01Jan2000, 13:18
Area 4E	0.0198	5.19	01Jan2000, 05:39	Area 4E	0.0198	4.82	01Jan2000, 11:45
Area 4H	0.0132	3.63	01Jan2000, 05:33	Area 4H	0.0132	3.37	01Jan2000, 11:39
Area 4G	0.012	3.29	01Jan2000, 05:33	Area 4G	0.012	3.04	01Jan2000, 11:42
Area 4D	0.0054	1.51	01Jan2000, 05:09	Area 4D	0.0054	1.4	01Jan2000, 11:33
Depression 4D-H	0.1708	29.86	01Jan2000, 08:00	Depression 4D-H	0.1708	31.19	01Jan2000, 13:36
Area 4B	0.008	2.2	01Jan2000, 05:33	Area 4B	0.008	2.05	01Jan2000, 11:39
Area 4C	0.0026	0.72	01Jan2000, 05:12	Area 4C	0.0026	0.67	01Jan2000, 11:36
Depression 4C	0.0026	0.3	01Jan2000, 08:12	Depression 4C	0.0026	0.37	01Jan2000, 13:24
Depression 4B	0.1814	31.01	01Jan2000, 08:06	Depression 4B	0.1814	32.58	01Jan2000, 13:42
Area 4A	0.0028	0.78	01Jan2000, 05:09	Area 4A	0.0028	0.73	01Jan2000, 11:33
Junction 4	0.1842	31.34	01Jan2000, 08:06	Junction 4	0.1842	32.94	01Jan2000, 13:39
Outlet 4	0.1842	31.34	01Jan2000, 08:06	Outlet 4	0.1842	32.94	01Jan2000, 13:39
Area 5A	0.0587	15.44	01Jan2000, 05:51	Area 5A	0.0587	14.18	01Jan2000, 11:57
Area 5B	0.0052	1.45	01Jan2000, 05:12	Area 5B	0.0052	1.34	01Jan2000, 11:36
Depression 5B	0.0052	0	01Jan2000, 05:00	Depression 5B	0.0052	0	01Jan2000, 10:15
J-5	0.0639	15.44	01Jan2000, 05:51	J-5	0.0639	14.18	01Jan2000, 11:57
Outlet 5	0.0639	15.44	01Jan2000, 05:51	Outlet 5	0.0639	14.18	01Jan2000, 11:57
Area 6C	0.0463	11.04	01Jan2000, 05:57	Area 6C	0.0463	10.34	01Jan2000, 12:06
Area 6B	0.0043	0.93	01Jan2000, 05:39	Area 6B	0.0043	0.89	01Jan2000, 11:39
J-6B	1.9897	69.01	01Jan2000, 12:09	J-6B	1.9897	72.83	01Jan2000, 18:06
Area 6A	0.0047	1.01	01Jan2000, 05:39	Area 6A	0.0047	0.98	01Jan2000, 11:39
J-6A	1.9944	69.26	01Jan2000, 12:09	J-6A	1.9944	73.12	01Jan2000, 18:06
Outlet-6	1.9944	69.26	01Jan2000, 12:09	Outlet-6	1.9944	73.12	01Jan2000, 18:06
Area 7C	0.0363	9.71	01Jan2000, 05:45	Area 7C	0.0363	8.91	01Jan2000, 11:51
Area 7D	0.0147	4.07	01Jan2000, 05:12	Area 7D	0.0147	3.79	01Jan2000, 11:36
J-7B	1.926	65.79	01Jan2000, 12:12	J-7B	1.926	68.94	01Jan2000, 18:09
Area 7A	0.0118	3.03	01Jan2000, 05:33	Area 7A	0.0118	2.87	01Jan2000, 11:33
Area 7B	0.0013	0.45	01Jan2000, 05:03	Area 7B	0.0013	0.39	01Jan2000, 11:30
Outlet 7	1.9391	66.45	01Jan2000, 12:09	Outlet 7	1.9391	69.77	01Jan2000, 18:06
Area 8A	0.9497	158.4	01Jan2000, 08:42	Area 8A	0.9497	157.99	01Jan2000, 14:36
Storage 8A	1.875	64.52	01Jan2000, 13:45	Storage 8A	1.875	66.72	01Jan2000, 19:39
Area 8B	0.0022	0.69	01Jan2000, 05:09	Area 8B	0.0022	0.62	01Jan2000, 11:33
Area 8C	0.0023	0.61	01Jan2000, 05:33	Area 8C	0.0023	0.57	01Jan2000, 11:36
Area 8D	0.1544	37.6	01Jan2000, 06:18	Area 8D	0.1544	35.08	01Jan2000, 12:27
Depression 8D	0.1544	0	01Jan2000, 04:09	Depression 8D	0.1544	0	01Jan2000, 07:09
Area 8E	0.7664	163.79	01Jan2000, 07:06	Area 8E	0.7664	157.5	01Jan2000, 13:12
Depression 8E	0.7664	0	01Jan2000, 03:45	Depression 8E	0.7664	0	01Jan2000, 06:15
Outlet 8	1.875	64.52	01Jan2000, 13:45	Outlet 8	1.875	66.72	01Jan2000, 19:39
Area 9A	0.0227	7.72	01Jan2000, 05:06	Area 9A	0.0227	6.8	01Jan2000, 11:33
Area 9B	0.0108	3.2	01Jan2000, 05:18	Area 9B	0.0108	2.92	01Jan2000, 11:39
Area 9C	0.002	0.64	01Jan2000, 05:12	Area 9C	0.002	0.58	01Jan2000, 11:36
Outlet 9	0.0355	11.49	01Jan2000, 05:09	Outlet 9	0.0355	10.28	01Jan2000, 11:33
Area 10	0.0007	0.23	01Jan2000, 05:00	Area 10	0.0007	0.2	01Jan2000, 11:30
Outlet 10	0.0007	0.23	01Jan2000, 05:00	Outlet 10	0.0007	0.2	01Jan2000, 11:30
Area 11	0.0002	0.05	01Jan2000, 05:30	Area 11	0.0002	0.05	01Jan2000, 11:30
Outlet 11	0.0002	0.05	01Jan2000, 05:30	Outlet 11	0.0002	0.05	01Jan2000, 11:30
Area 12	0.0063	1.67	01Jan2000, 05:36	Area 12	0.0063	1.56	01Jan2000, 11:39
Outlet 12	0.0063	1.67	01Jan2000, 05:36	Outlet 12	0.0063	1.56	01Jan2000, 11:39

EXISTING HEC-HMS MODELING RESULTS
10YR STORM

10YR 24HR				10YR 48HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	45.8	01Jan2000, 17:12	Area 1C	0.2595	30.76	02Jan2000, 19:33
Area 1D	0.0155	3.14	01Jan2000, 15:12	Area 1D	0.0155	1.92	02Jan2000, 17:06
Depression 1D	0.0155	1.72	01Jan2000, 18:10	Depression 1D	0.0155	1.62	02Jan2000, 19:30
Area 1B	0.0031	0.67	01Jan2000, 15:07	Area 1B	0.0031	0.4	02Jan2000, 17:03
Depression 1BC	0.2781	9.86	02Jan2000, 01:49	Depression 1BC	0.2781	10.92	03Jan2000, 02:21
Diversion 1BC	0.2781	9.86	02Jan2000, 01:49	Diversion 1BC	0.2781	10.06	03Jan2000, 02:21
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0.87	03Jan2000, 02:21
Area 1A	0.0025	0.53	01Jan2000, 15:02	Area 1A	0.0025	0.32	02Jan2000, 17:00
J-1	0.2806	9.92	02Jan2000, 00:02	J-1	0.2806	10.06	03Jan2000, 02:21
Outlet 1	0.2806	9.92	02Jan2000, 00:02	Outlet 1	0.2806	10.06	03Jan2000, 02:21
Area 2	0.0019	0.44	01Jan2000, 15:05	Area 2	0.0019	0.26	02Jan2000, 17:03
Outlet 2	0.0019	0.44	01Jan2000, 15:05	Outlet 2	0.0019	0.26	02Jan2000, 17:03
Area 3B	0.0108	2.13	01Jan2000, 15:11	Area 3B	0.0108	1.31	02Jan2000, 17:06
Diversion 3B	0.0108	2.13	01Jan2000, 15:11	Diversion 3B	0.0108	1.31	02Jan2000, 17:06
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.55	01Jan2000, 15:05	Area 3A	0.0026	0.33	02Jan2000, 17:03
J-3	0.0134	2.67	01Jan2000, 15:09	J-3	0.0134	1.64	02Jan2000, 17:06
Outlet 3	0.0134	2.67	01Jan2000, 15:09	Outlet 3	0.0134	1.64	02Jan2000, 17:06
Area 4F	0.1204	22.18	01Jan2000, 17:03	Area 4F	0.1204	14.65	02Jan2000, 19:24
Area 4E	0.0198	3.99	01Jan2000, 15:15	Area 4E	0.0198	2.45	02Jan2000, 17:09
Area 4H	0.0132	2.76	01Jan2000, 15:10	Area 4H	0.0132	1.67	02Jan2000, 17:06
Area 4G	0.012	2.5	01Jan2000, 15:12	Area 4G	0.012	1.52	02Jan2000, 17:06
Area 4D	0.0054	1.14	01Jan2000, 15:05	Area 4D	0.0054	0.69	02Jan2000, 17:03
Depression 4D-H	0.1708	29.68	01Jan2000, 17:14	Depression 4D-H	0.1708	20.62	02Jan2000, 19:15
Area 4B	0.008	1.68	01Jan2000, 15:09	Area 4B	0.008	1.01	02Jan2000, 17:06
Area 4C	0.0026	0.55	01Jan2000, 15:07	Area 4C	0.0026	0.33	02Jan2000, 17:03
Depression 4C	0.0026	0.4	01Jan2000, 17:06	Depression 4C	0.0026	0.32	02Jan2000, 17:18
Depression 4B	0.1814	31.24	01Jan2000, 17:17	Depression 4B	0.1814	21.88	02Jan2000, 19:15
Area 4A	0.0028	0.59	01Jan2000, 15:05	Area 4A	0.0028	0.36	02Jan2000, 17:03
Junction 4	0.1842	31.63	01Jan2000, 17:14	Junction 4	0.1842	22.2	02Jan2000, 19:12
Outlet 4	0.1842	31.63	01Jan2000, 17:14	Outlet 4	0.1842	22.2	02Jan2000, 19:12
Area 5A	0.0587	11.91	01Jan2000, 15:34	Area 5A	0.0587	7.38	02Jan2000, 17:18
Area 5B	0.0052	1.1	01Jan2000, 15:06	Area 5B	0.0052	0.66	02Jan2000, 17:03
Depression 5B	0.0052	0	01Jan2000, 12:59	Depression 5B	0.0052	0	02Jan2000, 07:21
J-5	0.0639	11.91	01Jan2000, 15:34	J-5	0.0639	7.38	02Jan2000, 17:18
Outlet 5	0.0639	11.91	01Jan2000, 15:34	Outlet 5	0.0639	7.38	02Jan2000, 17:18
Area 6C	0.0463	8.82	01Jan2000, 16:07	Area 6C	0.0463	5.53	02Jan2000, 17:24
Area 6B	0.0043	0.74	01Jan2000, 15:11	Area 6B	0.0043	0.47	02Jan2000, 19:03
J-6B	1.9897	74.64	02Jan2000, 00:02	J-6B	1.9897	74.05	03Jan2000, 00:03
Area 6A	0.0047	0.81	01Jan2000, 15:12	Area 6A	0.0047	0.52	02Jan2000, 19:03
J-6A	1.9944	74.89	02Jan2000, 00:02	J-6A	1.9944	74.42	03Jan2000, 00:03
Outlet-6	1.9944	74.89	02Jan2000, 00:02	Outlet-6	1.9944	74.42	03Jan2000, 00:03
Area 7C	0.0363	7.43	01Jan2000, 15:24	Area 7C	0.0363	4.57	02Jan2000, 17:15
Area 7D	0.0147	3.1	01Jan2000, 15:07	Area 7D	0.0147	1.86	02Jan2000, 17:03
J-7B	1.926	71.21	02Jan2000, 00:00	J-7B	1.926	68.76	03Jan2000, 00:09
Area 7A	0.0118	2.35	01Jan2000, 15:05	Area 7A	0.0118	1.43	02Jan2000, 17:03
Area 7B	0.0013	0.32	01Jan2000, 15:01	Area 7B	0.0013	0.18	02Jan2000, 17:00
Outlet 7	1.9391	71.99	02Jan2000, 00:00	Outlet 7	1.9391	69.79	03Jan2000, 00:03
Area 8A	0.9497	149.72	01Jan2000, 18:22	Area 8A	0.9497	106.97	02Jan2000, 20:30
Storage 8A	1.875	68.35	01Jan2000, 23:30	Storage 8A	1.875	67.7	03Jan2000, 02:24
Area 8B	0.0022	0.51	01Jan2000, 15:04	Area 8B	0.0022	0.3	02Jan2000, 17:03
Area 8C	0.0023	0.47	01Jan2000, 15:07	Area 8C	0.0023	0.29	02Jan2000, 17:03
Area 8D	0.1544	30.57	01Jan2000, 16:19	Area 8D	0.1544	19.11	02Jan2000, 17:48
Depression 8D	0.1544	2.09	02Jan2000, 01:44	Depression 8D	0.1544	11.46	03Jan2000, 00:42
Area 8E	0.7664	142.14	01Jan2000, 16:59	Area 8E	0.7664	93.45	02Jan2000, 19:21
Depression 8E	0.7664	0	01Jan2000, 07:28	Depression 8E	0.7664	0	01Jan2000, 14:18
Outlet 8	1.875	68.35	01Jan2000, 23:30	Outlet 8	1.875	67.7	03Jan2000, 02:24
Area 9A	0.0227	5.49	01Jan2000, 15:03	Area 9A	0.0227	3.18	02Jan2000, 17:00
Area 9B	0.0108	2.39	01Jan2000, 15:09	Area 9B	0.0108	1.43	02Jan2000, 17:06
Area 9C	0.002	0.47	01Jan2000, 15:07	Area 9C	0.002	0.27	02Jan2000, 17:03
Outlet 9	0.0355	8.34	01Jan2000, 15:04	Outlet 9	0.0355	4.89	02Jan2000, 17:03
Area 10	0.0007	0.16	01Jan2000, 15:01	Area 10	0.0007	0.09	02Jan2000, 17:00
Outlet 10	0.0007	0.16	01Jan2000, 15:01	Outlet 10	0.0007	0.09	02Jan2000, 17:00
Area 11	0.0002	0.04	01Jan2000, 15:01	Area 11	0.0002	0.02	02Jan2000, 17:00
Outlet 11	0.0002	0.04	01Jan2000, 15:01	Outlet 11	0.0002	0.02	02Jan2000, 17:00
Area 12	0.0063	1.28	01Jan2000, 15:10	Area 12	0.0063	0.78	02Jan2000, 17:06
Outlet 12	0.0063	1.28	01Jan2000, 15:10	Outlet 12	0.0063	0.78	02Jan2000, 17:06

EXISTING HEC-HMS MODELING RESULTS
10YR STORM

10YR 72HR				10YR 120HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	23.15	03Jan2000, 15:24	Area 1C	0.2595	16.23	05Jan2000, 06:54
Area 1D	0.0155	1.43	03Jan2000, 12:09	Area 1D	0.0155	0.99	05Jan2000, 06:03
Depression 1D	0.0155	1.3	03Jan2000, 16:21	Depression 1D	0.0155	0.94	05Jan2000, 12:09
Area 1B	0.0031	0.3	03Jan2000, 12:03	Area 1B	0.0031	0.2	05Jan2000, 06:00
Depression 1BC	0.2781	9.97	04Jan2000, 02:00	Depression 1BC	0.2781	9.36	06Jan2000, 01:27
Diversion 1BC	0.2781	9.97	04Jan2000, 02:00	Diversion 1BC	0.2781	9.36	06Jan2000, 01:27
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0025	0.24	03Jan2000, 12:00	Area 1A	0.0025	0.16	05Jan2000, 06:00
J-1	0.2806	9.97	04Jan2000, 02:00	J-1	0.2806	9.43	06Jan2000, 00:00
Outlet 1	0.2806	9.97	04Jan2000, 02:00	Outlet 1	0.2806	9.43	06Jan2000, 00:00
Area 2	0.0019	0.19	03Jan2000, 12:03	Area 2	0.0019	0.13	05Jan2000, 06:00
Outlet 2	0.0019	0.19	03Jan2000, 12:03	Outlet 2	0.0019	0.13	05Jan2000, 06:00
Area 3B	0.0108	0.97	03Jan2000, 12:06	Area 3B	0.0108	0.68	05Jan2000, 06:03
Diversion 3B	0.0108	0.97	03Jan2000, 12:06	Diversion 3B	0.0108	0.68	05Jan2000, 06:03
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.25	03Jan2000, 12:03	Area 3A	0.0026	0.17	05Jan2000, 06:00
J-3	0.0134	1.22	03Jan2000, 12:06	J-3	0.0134	0.84	05Jan2000, 06:03
Outlet 3	0.0134	1.22	03Jan2000, 12:06	Outlet 3	0.0134	0.84	05Jan2000, 06:03
Area 4F	0.1204	11	03Jan2000, 15:09	Area 4F	0.1204	7.69	05Jan2000, 06:45
Area 4E	0.0198	1.82	03Jan2000, 12:09	Area 4E	0.0198	1.26	05Jan2000, 06:03
Area 4H	0.0132	1.24	03Jan2000, 12:06	Area 4H	0.0132	0.86	05Jan2000, 06:03
Area 4G	0.012	1.13	03Jan2000, 12:09	Area 4G	0.012	0.78	05Jan2000, 06:03
Area 4D	0.0054	0.51	03Jan2000, 12:03	Area 4D	0.0054	0.35	05Jan2000, 06:00
Depression 4D-H	0.1708	15.47	03Jan2000, 15:51	Depression 4D-H	0.1708	10.84	05Jan2000, 06:21
Area 4B	0.008	0.75	03Jan2000, 12:06	Area 4B	0.008	0.52	05Jan2000, 06:03
Area 4C	0.0026	0.24	03Jan2000, 12:03	Area 4C	0.0026	0.17	05Jan2000, 06:00
Depression 4C	0.0026	0.24	03Jan2000, 12:15	Depression 4C	0.0026	0.17	05Jan2000, 06:06
Depression 4B	0.1814	16.43	03Jan2000, 16:03	Depression 4B	0.1814	11.51	05Jan2000, 06:24
Area 4A	0.0028	0.26	03Jan2000, 12:03	Area 4A	0.0028	0.18	05Jan2000, 06:00
Junction 4	0.1842	16.68	03Jan2000, 16:00	Junction 4	0.1842	11.68	05Jan2000, 06:21
Outlet 4	0.1842	16.68	03Jan2000, 16:00	Outlet 4	0.1842	11.68	05Jan2000, 06:21
Area 5A	0.0587	5.47	03Jan2000, 12:24	Area 5A	0.0587	3.8	05Jan2000, 06:06
Area 5B	0.0052	0.49	03Jan2000, 12:03	Area 5B	0.0052	0.34	05Jan2000, 06:00
Depression 5B	0.0052	0	02Jan2000, 20:27	Depression 5B	0.0052	0	03Jan2000, 19:45
J-5	0.0639	5.47	03Jan2000, 12:24	J-5	0.0639	3.8	05Jan2000, 06:06
Outlet 5	0.0639	5.47	03Jan2000, 12:24	Outlet 5	0.0639	3.8	05Jan2000, 06:06
Area 6C	0.0463	4.13	03Jan2000, 14:15	Area 6C	0.0463	2.88	05Jan2000, 06:09
Area 6B	0.0043	0.35	03Jan2000, 14:06	Area 6B	0.0043	0.25	05Jan2000, 06:03
J-6B	1.9897	68.87	04Jan2000, 00:03	J-6B	1.9897	56.06	05Jan2000, 16:36
Area 6A	0.0047	0.39	03Jan2000, 14:06	Area 6A	0.0047	0.27	05Jan2000, 06:03
J-6A	1.9944	69.15	04Jan2000, 00:03	J-6A	1.9944	56.24	05Jan2000, 16:36
Outlet-6	1.9944	69.15	04Jan2000, 00:03	Outlet-6	1.9944	56.24	05Jan2000, 16:36
Area 7C	0.0363	3.4	03Jan2000, 12:18	Area 7C	0.0363	2.35	05Jan2000, 06:06
Area 7D	0.0147	1.38	03Jan2000, 12:03	Area 7D	0.0147	0.96	05Jan2000, 06:00
J-7B	1.926	64.96	04Jan2000, 00:03	J-7B	1.926	53.44	05Jan2000, 16:33
Area 7A	0.0118	1.06	03Jan2000, 12:03	Area 7A	0.0118	0.74	05Jan2000, 06:00
Area 7B	0.0013	0.14	03Jan2000, 12:00	Area 7B	0.0013	0.09	05Jan2000, 06:00
Outlet 7	1.9391	65.77	04Jan2000, 00:03	Outlet 7	1.9391	53.98	05Jan2000, 16:33
Area 8A	0.9497	82.57	03Jan2000, 16:57	Area 8A	0.9497	58.11	05Jan2000, 08:12
Storage 8A	1.875	62.36	04Jan2000, 01:33	Storage 8A	1.875	51.28	05Jan2000, 16:33
Area 8B	0.0022	0.22	03Jan2000, 12:03	Area 8B	0.0022	0.15	05Jan2000, 06:00
Area 8C	0.0023	0.21	03Jan2000, 12:06	Area 8C	0.0023	0.15	05Jan2000, 06:00
Area 8D	0.1544	14.3	03Jan2000, 14:24	Area 8D	0.1544	9.95	05Jan2000, 06:18
Depression 8D	0.1544	9.83	03Jan2000, 23:36	Depression 8D	0.1544	9.05	05Jan2000, 12:45
Area 8E	0.7664	70.11	03Jan2000, 15:03	Area 8E	0.7664	49	05Jan2000, 06:42
Depression 8E	0.7664	0	01Jan2000, 19:27	Depression 8E	0.7664	0	02Jan2000, 04:54
Outlet 8	1.875	62.36	04Jan2000, 01:33	Outlet 8	1.875	51.28	05Jan2000, 16:33
Area 9A	0.0227	2.36	03Jan2000, 12:00	Area 9A	0.0227	1.6	05Jan2000, 06:00
Area 9B	0.0108	1.06	03Jan2000, 12:06	Area 9B	0.0108	0.73	05Jan2000, 06:03
Area 9C	0.002	0.2	03Jan2000, 12:03	Area 9C	0.002	0.14	05Jan2000, 06:00
Outlet 9	0.0355	3.63	03Jan2000, 12:03	Outlet 9	0.0355	2.46	05Jan2000, 06:00
Area 10	0.0007	0.07	03Jan2000, 12:00	Area 10	0.0007	0.05	05Jan2000, 06:00
Outlet 10	0.0007	0.07	03Jan2000, 12:00	Outlet 10	0.0007	0.05	05Jan2000, 06:00
Area 11	0.0002	0.02	03Jan2000, 14:00	Area 11	0.0002	0.01	05Jan2000, 06:00
Outlet 11	0.0002	0.02	03Jan2000, 14:00	Outlet 11	0.0002	0.01	05Jan2000, 06:00
Area 12	0.0063	0.58	03Jan2000, 12:06	Area 12	0.0063	0.4	05Jan2000, 06:03
Outlet 12	0.0063	0.58	03Jan2000, 12:06	Outlet 12	0.0063	0.4	05Jan2000, 06:03

EXISTING HEC-HMS MODELING RESULTS
10YR STORM

10YR 240HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	18.6	09Jan2000, 12:18
Area 1D	0.0155	1.12	09Jan2000, 12:00
Depression 1D	0.0155	1.1	09Jan2000, 12:15
Area 1B	0.0031	0.23	09Jan2000, 12:00
Depression 1BC	0.2781	17.63	10Jan2000, 01:21
Diversion 1BC	0.2781	10.48	10Jan2000, 01:21
Diverted Flow 1BC	0	7.15	10Jan2000, 01:21
Area 1A	0.0025	0.18	09Jan2000, 12:00
J-1	0.2806	10.64	10Jan2000, 00:00
Outlet 1	0.2806	10.64	10Jan2000, 00:00
Area 2	0.0019	0.14	09Jan2000, 12:00
Outlet 2	0.0019	0.14	09Jan2000, 12:00
Area 3B	0.0108	0.77	09Jan2000, 12:00
Diversion 3B	0.0108	0.77	09Jan2000, 12:00
Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.19	09Jan2000, 12:00
J-3	0.0134	0.96	09Jan2000, 12:00
Outlet 3	0.0134	0.96	09Jan2000, 12:00
Area 4F	0.1204	8.7	09Jan2000, 12:15
Area 4E	0.0198	1.42	09Jan2000, 12:00
Area 4H	0.0132	0.96	09Jan2000, 12:00
Area 4G	0.012	0.87	09Jan2000, 12:00
Area 4D	0.0054	0.39	09Jan2000, 12:00
Depression 4D-H	0.1708	12.33	09Jan2000, 12:09
Area 4B	0.008	0.58	09Jan2000, 12:00
Area 4C	0.0026	0.19	09Jan2000, 12:00
Depression 4C	0.0026	0.19	09Jan2000, 12:03
Depression 4B	0.1814	13.09	09Jan2000, 12:09
Area 4A	0.0028	0.2	09Jan2000, 12:00
Junction 4	0.1842	13.3	09Jan2000, 12:06
Outlet 4	0.1842	13.3	09Jan2000, 12:06
Area 5A	0.0587	4.25	09Jan2000, 12:03
Area 5B	0.0052	0.38	09Jan2000, 12:00
Depression 5B	0.0052	0.38	09Jan2000, 12:00
J-5	0.0639	4.63	09Jan2000, 12:03
Outlet 5	0.0639	4.63	09Jan2000, 12:03
Area 6C	0.0463	3.3	09Jan2000, 12:03
Area 6B	0.0043	0.3	09Jan2000, 12:00
J-6B	1.9897	77.18	10Jan2000, 00:03
Area 6A	0.0047	0.32	09Jan2000, 12:00
J-6A	1.9944	77.48	10Jan2000, 00:03
Outlet-6	1.9944	77.48	10Jan2000, 00:03
Area 7C	0.0363	2.63	09Jan2000, 12:00
Area 7D	0.0147	1.07	09Jan2000, 12:00
J-7B	1.926	72.92	10Jan2000, 00:06
Area 7A	0.0118	0.84	09Jan2000, 12:00
Area 7B	0.0013	0.1	09Jan2000, 12:00
Outlet 7	1.9391	73.79	10Jan2000, 00:03
Area 8A	0.9497	67.86	09Jan2000, 12:42
Storage 8A	1.875	69.9	10Jan2000, 02:00
Area 8B	0.0022	0.16	09Jan2000, 12:00
Area 8C	0.0023	0.17	09Jan2000, 12:00
Area 8D	0.1544	11.17	09Jan2000, 12:06
Depression 8D	0.1544	11.16	09Jan2000, 12:21
Area 8E	0.7664	55.38	09Jan2000, 12:15
Depression 8E	0.7664	4.31	11Jan2000, 03:30
Outlet 8	1.875	69.9	10Jan2000, 02:00
Area 9A	0.0227	1.7	09Jan2000, 12:00
Area 9B	0.0108	0.79	09Jan2000, 12:00
Area 9C	0.002	0.15	09Jan2000, 12:00
Outlet 9	0.0355	2.64	09Jan2000, 12:00
Area 10	0.0007	0.05	09Jan2000, 12:00
Outlet 10	0.0007	0.05	09Jan2000, 12:00
Area 11	0.0002	0.01	09Jan2000, 12:00
Outlet 11	0.0002	0.01	09Jan2000, 12:00
Area 12	0.0063	0.45	09Jan2000, 12:00
Outlet 12	0.0063	0.45	09Jan2000, 12:00

EXISTING HEC-HMS MODELING RESULTS
50YR STORM

50YR 1HR				50YR 2HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	73.5	01Jan2000, 02:18	Area 1C	0.2595	99.36	01Jan2000, 02:45
Area 1D	0.0155	12.9	01Jan2000, 00:42	Area 1D	0.0155	13.34	01Jan2000, 00:54
Depression 1D	0.0155	1.06	01Jan2000, 01:48	Depression 1D	0.0155	2.46	01Jan2000, 02:27
Area 1B	0.0031	3.28	01Jan2000, 00:36	Area 1B	0.0031	3.21	01Jan2000, 00:45
Depression 1BC	0.2781	7.84	01Jan2000, 05:30	Depression 1BC	0.2781	9.39	01Jan2000, 06:15
Diversion 1BC	0.2781	7.84	01Jan2000, 05:30	Diversion 1BC	0.2781	9.39	01Jan2000, 06:15
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0025	3.07	01Jan2000, 00:24	Area 1A	0.0025	2.81	01Jan2000, 00:36
J-1	0.2806	7.84	01Jan2000, 05:30	J-1	0.2806	9.39	01Jan2000, 06:15
Outlet 1	0.2806	7.84	01Jan2000, 05:30	Outlet 1	0.2806	9.39	01Jan2000, 06:15
Area 2	0.0019	2.39	01Jan2000, 00:30	Area 2	0.0019	2.25	01Jan2000, 00:39
Outlet 2	0.0019	2.39	01Jan2000, 00:30	Outlet 2	0.0019	2.25	01Jan2000, 00:39
Area 3B	0.0108	8.83	01Jan2000, 00:42	Area 3B	0.0108	9.09	01Jan2000, 00:51
Diversion 3B	0.0108	6.09	01Jan2000, 00:42	Diversion 3B	0.0108	6.15	01Jan2000, 00:51
Diverted Flow 3B	0	2.73	01Jan2000, 00:42	Diverted Flow 3B	0	2.95	01Jan2000, 00:51
Area 3A	0.0026	2.79	01Jan2000, 00:30	Area 3A	0.0026	2.69	01Jan2000, 00:42
J-3	0.0134	8.7	01Jan2000, 00:36	J-3	0.0134	8.72	01Jan2000, 00:45
Outlet 3	0.0134	8.7	01Jan2000, 00:36	Outlet 3	0.0134	8.72	01Jan2000, 00:45
Area 4F	0.1204	38.13	01Jan2000, 02:12	Area 4F	0.1204	50.36	01Jan2000, 02:36
Area 4E	0.0198	15.44	01Jan2000, 00:48	Area 4E	0.0198	16.28	01Jan2000, 00:57
Area 4H	0.0132	12.15	01Jan2000, 00:39	Area 4H	0.0132	12.27	01Jan2000, 00:51
Area 4G	0.012	10.5	01Jan2000, 00:42	Area 4G	0.012	10.78	01Jan2000, 00:54
Area 4D	0.0054	5.83	01Jan2000, 00:30	Area 4D	0.0054	5.6	01Jan2000, 00:42
Depression 4D-H	0.1708	30.09	01Jan2000, 02:54	Depression 4D-H	0.1708	49.92	01Jan2000, 02:54
Area 4B	0.008	7.55	01Jan2000, 00:39	Area 4B	0.008	7.57	01Jan2000, 00:48
Area 4C	0.0026	2.63	01Jan2000, 00:36	Area 4C	0.0026	2.58	01Jan2000, 00:45
Depression 4C	0.0026	0	01Jan2000, 00:30	Depression 4C	0.0026	0.82	01Jan2000, 02:00
Depression 4B	0.1814	29.72	01Jan2000, 03:03	Depression 4B	0.1814	49.92	01Jan2000, 03:03
Area 4A	0.0028	3	01Jan2000, 00:33	Area 4A	0.0028	2.9	01Jan2000, 00:42
Junction 4	0.1842	29.72	01Jan2000, 03:03	Junction 4	0.1842	49.92	01Jan2000, 03:03
Outlet 4	0.1842	29.72	01Jan2000, 03:03	Outlet 4	0.1842	49.92	01Jan2000, 03:03
Area 5A	0.0587	38.89	01Jan2000, 01:06	Area 5A	0.0587	42.61	01Jan2000, 01:15
Area 5B	0.0052	5.43	01Jan2000, 00:33	Area 5B	0.0052	5.27	01Jan2000, 00:42
Depression 5B	0.0052	0	01Jan2000, 00:36	Depression 5B	0.0052	0	01Jan2000, 00:42
J-5	0.0639	38.89	01Jan2000, 01:06	J-5	0.0639	42.61	01Jan2000, 01:15
Outlet 5	0.0639	38.89	01Jan2000, 01:06	Outlet 5	0.0639	42.61	01Jan2000, 01:15
Area 6C	0.0463	25.88	01Jan2000, 01:12	Area 6C	0.0463	29	01Jan2000, 01:21
Area 6B	0.0043	2.84	01Jan2000, 00:42	Area 6B	0.0043	3	01Jan2000, 00:54
J-6B	1.9897	69.95	01Jan2000, 01:00	J-6B	1.9897	78.16	01Jan2000, 01:06
Area 6A	0.0047	3.09	01Jan2000, 00:42	Area 6A	0.0047	3.27	01Jan2000, 00:54
J-6A	1.9944	72.4	01Jan2000, 01:00	J-6A	1.9944	81.14	01Jan2000, 01:06
Outlet-6	1.9944	72.4	01Jan2000, 01:00	Outlet-6	1.9944	81.14	01Jan2000, 01:06
Area 7C	0.0363	26.1	01Jan2000, 00:57	Area 7C	0.0363	28.2	01Jan2000, 01:06
Area 7D	0.0147	14.81	01Jan2000, 00:36	Area 7D	0.0147	14.57	01Jan2000, 00:45
J-7B	1.926	51.82	01Jan2000, 06:15	J-7B	1.926	70.34	01Jan2000, 06:54
Area 7A	0.0118	11.37	01Jan2000, 00:33	Area 7A	0.0118	11.11	01Jan2000, 00:42
Area 7B	0.0013	2.22	01Jan2000, 00:21	Area 7B	0.0013	1.88	01Jan2000, 00:30
Outlet 7	1.9391	51.82	01Jan2000, 06:15	Outlet 7	1.9391	70.34	01Jan2000, 06:54
Area 8A	0.9497	178.54	01Jan2000, 03:21	Area 8A	0.9497	256.91	01Jan2000, 03:45
Storage 8A	1.875	51.82	01Jan2000, 06:15	Storage 8A	1.875	70.34	01Jan2000, 06:54
Area 8B	0.0022	2.82	01Jan2000, 00:30	Area 8B	0.0022	2.64	01Jan2000, 00:39
Area 8C	0.0023	2.18	01Jan2000, 00:36	Area 8C	0.0023	2.16	01Jan2000, 00:45
Area 8D	0.1544	75.25	01Jan2000, 01:30	Area 8D	0.1544	88.16	01Jan2000, 01:45
Depression 8D	0.1544	0	01Jan2000, 00:42	Depression 8D	0.1544	0	01Jan2000, 00:48
Area 8E	0.7664	250.48	01Jan2000, 02:09	Area 8E	0.7664	328.52	01Jan2000, 02:33
Depression 8E	0.7664	0	01Jan2000, 00:36	Depression 8E	0.7664	0	01Jan2000, 00:39
Outlet 8	1.875	51.82	01Jan2000, 06:15	Outlet 8	1.875	70.34	01Jan2000, 06:54
Area 9A	0.0227	33.39	01Jan2000, 00:27	Area 9A	0.0227	30.45	01Jan2000, 00:36
Area 9B	0.0108	11.03	01Jan2000, 00:39	Area 9B	0.0108	11	01Jan2000, 00:48
Area 9C	0.002	2.37	01Jan2000, 00:36	Area 9C	0.002	2.3	01Jan2000, 00:45
Outlet 9	0.0355	44.18	01Jan2000, 00:30	Outlet 9	0.0355	42.19	01Jan2000, 00:39
Area 10	0.0007	1.13	01Jan2000, 00:18	Area 10	0.0007	0.94	01Jan2000, 00:30
Outlet 10	0.0007	1.13	01Jan2000, 00:18	Outlet 10	0.0007	0.94	01Jan2000, 00:30
Area 11	0.0002	0.22	01Jan2000, 00:21	Area 11	0.0002	0.2	01Jan2000, 00:30
Outlet 11	0.0002	0.22	01Jan2000, 00:21	Outlet 11	0.0002	0.2	01Jan2000, 00:30
Area 12	0.0063	5.45	01Jan2000, 00:39	Area 12	0.0063	5.58	01Jan2000, 00:51
Outlet 12	0.0063	5.45	01Jan2000, 00:39	Outlet 12	0.0063	5.58	01Jan2000, 00:51

EXISTING HEC-HMS MODELING RESULTS
50YR STORM

50YR 3HR				50YR 6HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	98.9	01Jan2000, 03:03	Area 1C	0.2595	93.62	01Jan2000, 03:30
Area 1D	0.0155	11.58	01Jan2000, 01:03	Area 1D	0.0155	8.52	01Jan2000, 01:21
Depression 1D	0.0155	2.7	01Jan2000, 03:18	Depression 1D	0.0155	2.75	01Jan2000, 03:51
Area 1B	0.0031	2.68	01Jan2000, 00:54	Area 1B	0.0031	1.96	01Jan2000, 01:09
Depression 1BC	0.2781	10.07	01Jan2000, 06:54	Depression 1BC	0.2781	20	01Jan2000, 08:21
Diversion 1BC	0.2781	10	01Jan2000, 06:54	Diversion 1BC	0.2781	10.63	01Jan2000, 08:21
Diverted Flow 1BC	0	0.07	01Jan2000, 06:54	Diverted Flow 1BC	0	9.37	01Jan2000, 08:21
Area 1A	0.0025	2.2	01Jan2000, 00:36	Area 1A	0.0025	1.6	01Jan2000, 01:03
J-1	0.2806	10	01Jan2000, 06:54	J-1	0.2806	10.63	01Jan2000, 08:21
Outlet 1	0.2806	10	01Jan2000, 06:54	Outlet 1	0.2806	10.63	01Jan2000, 08:21
Area 2	0.0019	1.83	01Jan2000, 00:48	Area 2	0.0019	1.34	01Jan2000, 01:06
Outlet 2	0.0019	1.83	01Jan2000, 00:48	Outlet 2	0.0019	1.34	01Jan2000, 01:06
Area 3B	0.0108	7.85	01Jan2000, 01:03	Area 3B	0.0108	5.74	01Jan2000, 01:18
Diversion 3B	0.0108	5.81	01Jan2000, 01:03	Diversion 3B	0.0108	5.08	01Jan2000, 01:18
Diverted Flow 3B	0	2.03	01Jan2000, 01:03	Diverted Flow 3B	0	0.66	01Jan2000, 01:18
Area 3A	0.0026	2.21	01Jan2000, 00:54	Area 3A	0.0026	1.61	01Jan2000, 01:06
J-3	0.0134	7.97	01Jan2000, 00:57	J-3	0.0134	6.64	01Jan2000, 01:12
Outlet 3	0.0134	7.97	01Jan2000, 00:57	Outlet 3	0.0134	6.64	01Jan2000, 01:12
Area 4F	0.1204	49.62	01Jan2000, 02:51	Area 4F	0.1204	46.45	01Jan2000, 03:18
Area 4E	0.0198	14.25	01Jan2000, 01:06	Area 4E	0.0198	10.65	01Jan2000, 01:30
Area 4H	0.0132	10.55	01Jan2000, 01:00	Area 4H	0.0132	7.73	01Jan2000, 01:15
Area 4G	0.012	9.35	01Jan2000, 01:03	Area 4G	0.012	6.9	01Jan2000, 01:18
Area 4D	0.0054	4.59	01Jan2000, 00:54	Area 4D	0.0054	3.34	01Jan2000, 01:06
Depression 4D-H	0.1708	56.55	01Jan2000, 03:15	Depression 4D-H	0.1708	54.76	01Jan2000, 03:42
Area 4B	0.008	6.46	01Jan2000, 01:00	Area 4B	0.008	4.73	01Jan2000, 01:12
Area 4C	0.0026	2.16	01Jan2000, 00:57	Area 4C	0.0026	1.58	01Jan2000, 01:09
Depression 4C	0.0026	0.76	01Jan2000, 02:12	Depression 4C	0.0026	0.82	01Jan2000, 02:51
Depression 4B	0.1814	57.88	01Jan2000, 03:21	Depression 4B	0.1814	56.55	01Jan2000, 03:48
Area 4A	0.0028	2.38	01Jan2000, 00:54	Area 4A	0.0028	1.73	01Jan2000, 01:06
Junction 4	0.1842	58.12	01Jan2000, 03:18	Junction 4	0.1842	57.01	01Jan2000, 03:48
Outlet 4	0.1842	58.12	01Jan2000, 03:18	Outlet 4	0.1842	57.01	01Jan2000, 03:48
Area 5A	0.0587	38.62	01Jan2000, 01:24	Area 5A	0.0587	31.14	01Jan2000, 01:54
Area 5B	0.0052	4.37	01Jan2000, 00:54	Area 5B	0.0052	3.18	01Jan2000, 01:09
Depression 5B	0.0052	0	01Jan2000, 00:51	Depression 5B	0.0052	0	01Jan2000, 01:06
J-5	0.0639	38.62	01Jan2000, 01:24	J-5	0.0639	31.14	01Jan2000, 01:54
Outlet 5	0.0639	38.62	01Jan2000, 01:24	Outlet 5	0.0639	31.14	01Jan2000, 01:54
Area 6C	0.0463	26.76	01Jan2000, 01:33	Area 6C	0.0463	22.15	01Jan2000, 02:03
Area 6B	0.0043	2.61	01Jan2000, 01:03	Area 6B	0.0043	1.95	01Jan2000, 01:45
J-6B	1.9897	75.27	01Jan2000, 07:30	J-6B	1.9897	87.82	01Jan2000, 06:09
Area 6A	0.0047	2.85	01Jan2000, 01:03	Area 6A	0.0047	2.13	01Jan2000, 01:45
J-6A	1.9944	75.27	01Jan2000, 07:30	J-6A	1.9944	88.4	01Jan2000, 06:09
Outlet-6	1.9944	75.27	01Jan2000, 07:30	Outlet-6	1.9944	88.4	01Jan2000, 06:09
Area 7C	0.0363	25.19	01Jan2000, 01:18	Area 7C	0.0363	19.75	01Jan2000, 01:48
Area 7D	0.0147	12.2	01Jan2000, 00:57	Area 7D	0.0147	8.9	01Jan2000, 01:09
J-7B	1.926	75.27	01Jan2000, 07:30	J-7B	1.926	83.89	01Jan2000, 09:30
Area 7A	0.0118	9.2	01Jan2000, 00:54	Area 7A	0.0118	6.64	01Jan2000, 01:09
Area 7B	0.0013	1.53	01Jan2000, 00:33	Area 7B	0.0013	1.08	01Jan2000, 00:45
Outlet 7	1.9391	75.27	01Jan2000, 07:30	Outlet 7	1.9391	83.89	01Jan2000, 09:30
Area 8A	0.9497	272.71	01Jan2000, 04:12	Area 8A	0.9497	273.65	01Jan2000, 04:48
Storage 8A	1.875	75.27	01Jan2000, 07:30	Storage 8A	1.875	83.89	01Jan2000, 09:30
Area 8B	0.0022	2.13	01Jan2000, 00:45	Area 8B	0.0022	1.55	01Jan2000, 01:06
Area 8C	0.0023	1.82	01Jan2000, 00:57	Area 8C	0.0023	1.32	01Jan2000, 01:09
Area 8D	0.1544	83.87	01Jan2000, 01:54	Area 8D	0.1544	72.39	01Jan2000, 02:24
Depression 8D	0.1544	0	01Jan2000, 00:54	Depression 8D	0.1544	15.17	01Jan2000, 06:57
Area 8E	0.7664	322.24	01Jan2000, 02:45	Area 8E	0.7664	300.23	01Jan2000, 03:15
Depression 8E	0.7664	0	01Jan2000, 00:45	Depression 8E	0.7664	0	01Jan2000, 00:57
Outlet 8	1.875	75.27	01Jan2000, 07:30	Outlet 8	1.875	83.89	01Jan2000, 09:30
Area 9A	0.0227	24.59	01Jan2000, 00:39	Area 9A	0.0227	17.6	01Jan2000, 00:54
Area 9B	0.0108	9.39	01Jan2000, 01:00	Area 9B	0.0108	6.93	01Jan2000, 01:12
Area 9C	0.002	1.93	01Jan2000, 00:54	Area 9C	0.002	1.42	01Jan2000, 01:09
Outlet 9	0.0355	34.64	01Jan2000, 00:51	Outlet 9	0.0355	25.61	01Jan2000, 01:06
Area 10	0.0007	0.76	01Jan2000, 00:33	Area 10	0.0007	0.54	01Jan2000, 00:42
Outlet 10	0.0007	0.76	01Jan2000, 00:33	Outlet 10	0.0007	0.54	01Jan2000, 00:42
Area 11	0.0002	0.15	01Jan2000, 00:33	Area 11	0.0002	0.11	01Jan2000, 01:00
Outlet 11	0.0002	0.15	01Jan2000, 00:33	Outlet 11	0.0002	0.11	01Jan2000, 01:00
Area 12	0.0063	4.8	01Jan2000, 01:00	Area 12	0.0063	3.51	01Jan2000, 01:15
Outlet 12	0.0063	4.8	01Jan2000, 01:00	Outlet 12	0.0063	3.51	01Jan2000, 01:15

EXISTING HEC-HMS MODELING RESULTS
50YR STORM

50YR 12HR				50YR 18HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	92.93	01Jan2000, 07:12	Area 1C	0.2595	86.56	01Jan2000, 13:18
Area 1D	0.0155	7.3	01Jan2000, 05:18	Area 1D	0.0155	6.51	01Jan2000, 11:39
Depression 1D	0.0155	3.31	01Jan2000, 07:51	Depression 1D	0.0155	3.65	01Jan2000, 13:24
Area 1B	0.0031	1.57	01Jan2000, 05:09	Area 1B	0.0031	1.37	01Jan2000, 11:36
Depression 1BC	0.2781	27.42	01Jan2000, 12:51	Depression 1BC	0.2781	29.78	01Jan2000, 18:33
Diversion 1BC	0.2781	11.1	01Jan2000, 12:51	Diversion 1BC	0.2781	11.25	01Jan2000, 18:33
Diverted Flow 1BC	0	16.33	01Jan2000, 12:51	Diverted Flow 1BC	0	18.53	01Jan2000, 18:33
Area 1A	0.0025	1.26	01Jan2000, 05:03	Area 1A	0.0025	1.1	01Jan2000, 11:30
J-1	0.2806	11.34	01Jan2000, 12:00	J-1	0.2806	11.53	01Jan2000, 18:00
Outlet 1	0.2806	11.34	01Jan2000, 12:00	Outlet 1	0.2806	11.53	01Jan2000, 18:00
Area 2	0.0019	1.02	01Jan2000, 05:06	Area 2	0.0019	0.88	01Jan2000, 11:33
Outlet 2	0.0019	1.02	01Jan2000, 05:06	Outlet 2	0.0019	0.88	01Jan2000, 11:33
Area 3B	0.0108	4.96	01Jan2000, 05:18	Area 3B	0.0108	4.46	01Jan2000, 11:39
Diversion 3B	0.0108	4.64	01Jan2000, 05:18	Diversion 3B	0.0108	4.31	01Jan2000, 11:39
Diverted Flow 3B	0	0.32	01Jan2000, 05:18	Diverted Flow 3B	0	0.15	01Jan2000, 11:39
Area 3A	0.0026	1.29	01Jan2000, 05:06	Area 3A	0.0026	1.14	01Jan2000, 11:33
J-3	0.0134	5.91	01Jan2000, 05:12	J-3	0.0134	5.44	01Jan2000, 11:36
Outlet 3	0.0134	5.91	01Jan2000, 05:12	Outlet 3	0.0134	5.44	01Jan2000, 11:36
Area 4F	0.1204	45.42	01Jan2000, 07:00	Area 4F	0.1204	41.8	01Jan2000, 13:09
Area 4E	0.0198	9.25	01Jan2000, 05:27	Area 4E	0.0198	8.25	01Jan2000, 11:42
Area 4H	0.0132	6.43	01Jan2000, 05:15	Area 4H	0.0132	5.69	01Jan2000, 11:39
Area 4G	0.012	5.81	01Jan2000, 05:18	Area 4G	0.012	5.14	01Jan2000, 11:39
Area 4D	0.0054	2.68	01Jan2000, 05:06	Area 4D	0.0054	2.36	01Jan2000, 11:33
Depression 4D-H	0.1708	58.45	01Jan2000, 07:12	Depression 4D-H	0.1708	55.02	01Jan2000, 13:06
Area 4B	0.008	3.91	01Jan2000, 05:12	Area 4B	0.008	3.46	01Jan2000, 11:36
Area 4C	0.0026	1.28	01Jan2000, 05:09	Area 4C	0.0026	1.13	01Jan2000, 11:36
Depression 4C	0.0026	0.97	01Jan2000, 06:12	Depression 4C	0.0026	1.03	01Jan2000, 11:54
Depression 4B	0.1814	61.02	01Jan2000, 07:18	Depression 4B	0.1814	57.8	01Jan2000, 13:09
Area 4A	0.0028	1.39	01Jan2000, 05:06	Area 4A	0.0028	1.22	01Jan2000, 11:33
Junction 4	0.1842	61.7	01Jan2000, 07:18	Junction 4	0.1842	58.48	01Jan2000, 13:09
Outlet 4	0.1842	61.7	01Jan2000, 07:18	Outlet 4	0.1842	58.48	01Jan2000, 13:09
Area 5A	0.0587	27.32	01Jan2000, 05:45	Area 5A	0.0587	24.09	01Jan2000, 11:54
Area 5B	0.0052	2.57	01Jan2000, 05:09	Area 5B	0.0052	2.27	01Jan2000, 11:33
Depression 5B	0.0052	0	01Jan2000, 04:12	Depression 5B	0.0052	0	01Jan2000, 08:21
J-5	0.0639	27.32	01Jan2000, 05:45	J-5	0.0639	24.09	01Jan2000, 11:54
Outlet 5	0.0639	27.32	01Jan2000, 05:45	Outlet 5	0.0639	24.09	01Jan2000, 11:54
Area 6C	0.0463	20.08	01Jan2000, 05:51	Area 6C	0.0463	17.96	01Jan2000, 12:03
Area 6B	0.0043	1.75	01Jan2000, 05:33	Area 6B	0.0043	1.62	01Jan2000, 11:39
J-6B	1.9897	99.84	01Jan2000, 12:09	J-6B	1.9897	104.93	01Jan2000, 18:06
Area 6A	0.0047	1.91	01Jan2000, 05:33	Area 6A	0.0047	1.77	01Jan2000, 11:39
J-6A	1.9944	100.26	01Jan2000, 12:09	J-6A	1.9944	105.41	01Jan2000, 18:06
Outlet-6	1.9944	100.26	01Jan2000, 12:09	Outlet-6	1.9944	105.41	01Jan2000, 18:06
Area 7C	0.0363	17.14	01Jan2000, 05:39	Area 7C	0.0363	15.12	01Jan2000, 11:48
Area 7D	0.0147	7.24	01Jan2000, 05:09	Area 7D	0.0147	6.39	01Jan2000, 11:36
J-7B	1.926	94.62	01Jan2000, 12:12	J-7B	1.926	98.68	01Jan2000, 18:09
Area 7A	0.0118	5.54	01Jan2000, 05:09	Area 7A	0.0118	4.96	01Jan2000, 11:33
Area 7B	0.0013	0.74	01Jan2000, 05:00	Area 7B	0.0013	0.63	01Jan2000, 11:30
Outlet 7	1.9391	95.71	01Jan2000, 12:06	Outlet 7	1.9391	100.01	01Jan2000, 18:06
Area 8A	0.9497	285.99	01Jan2000, 08:27	Area 8A	0.9497	273.94	01Jan2000, 14:27
Storage 8A	1.875	93.31	01Jan2000, 14:21	Storage 8A	1.875	96.14	01Jan2000, 20:18
Area 8B	0.0022	1.18	01Jan2000, 05:06	Area 8B	0.0022	1.02	01Jan2000, 11:33
Area 8C	0.0023	1.1	01Jan2000, 05:12	Area 8C	0.0023	0.98	01Jan2000, 11:36
Area 8D	0.1544	66.88	01Jan2000, 06:12	Area 8D	0.1544	59.62	01Jan2000, 12:24
Depression 8D	0.1544	23.67	01Jan2000, 09:57	Depression 8D	0.1544	28.16	01Jan2000, 14:57
Area 8E	0.7664	292.46	01Jan2000, 06:57	Area 8E	0.7664	268.49	01Jan2000, 13:06
Depression 8E	0.7664	0	01Jan2000, 03:00	Depression 8E	0.7664	0	01Jan2000, 04:48
Outlet 8	1.875	93.31	01Jan2000, 14:21	Outlet 8	1.875	96.14	01Jan2000, 20:18
Area 9A	0.0227	12.84	01Jan2000, 05:06	Area 9A	0.0227	10.88	01Jan2000, 11:33
Area 9B	0.0108	5.55	01Jan2000, 05:15	Area 9B	0.0108	4.84	01Jan2000, 11:36
Area 9C	0.002	1.09	01Jan2000, 05:12	Area 9C	0.002	0.93	01Jan2000, 11:36
Outlet 9	0.0355	19.4	01Jan2000, 05:06	Outlet 9	0.0355	16.63	01Jan2000, 11:33
Area 10	0.0007	0.38	01Jan2000, 05:00	Area 10	0.0007	0.33	01Jan2000, 11:30
Outlet 10	0.0007	0.38	01Jan2000, 05:00	Outlet 10	0.0007	0.33	01Jan2000, 11:30
Area 11	0.0002	0.09	01Jan2000, 05:00	Area 11	0.0002	0.08	01Jan2000, 11:30
Outlet 11	0.0002	0.09	01Jan2000, 05:00	Outlet 11	0.0002	0.08	01Jan2000, 11:30
Area 12	0.0063	2.98	01Jan2000, 05:15	Area 12	0.0063	2.66	01Jan2000, 11:39
Outlet 12	0.0063	2.98	01Jan2000, 05:15	Outlet 12	0.0063	2.66	01Jan2000, 11:39

EXISTING HEC-HMS MODELING RESULTS
50YR STORM

50YR 24HR				50YR 48HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	77.36	01Jan2000, 17:05	Area 1C	0.2595	48.8	02Jan2000, 19:24
Area 1D	0.0155	5.31	01Jan2000, 15:10	Area 1D	0.0155	3.05	02Jan2000, 17:06
Depression 1D	0.0155	3.6	01Jan2000, 17:19	Depression 1D	0.0155	2.67	02Jan2000, 19:24
Area 1B	0.0031	1.11	01Jan2000, 15:05	Area 1B	0.0031	0.63	02Jan2000, 16:09
Depression 1BC	0.2781	35.16	01Jan2000, 21:21	Depression 1BC	0.2781	34.37	03Jan2000, 00:57
Diversion 1BC	0.2781	13.39	01Jan2000, 21:21	Diversion 1BC	0.2781	13.08	03Jan2000, 00:57
Diverted Flow 1BC	0	21.77	01Jan2000, 21:21	Diverted Flow 1BC	0	21.3	03Jan2000, 00:57
Area 1A	0.0025	0.89	01Jan2000, 15:02	Area 1A	0.0025	0.5	02Jan2000, 16:03
J-1	0.2806	13.6	01Jan2000, 21:21	J-1	0.2806	13.08	03Jan2000, 00:57
Outlet 1	0.2806	13.6	01Jan2000, 21:21	Outlet 1	0.2806	13.08	03Jan2000, 00:57
Area 2	0.0019	0.71	01Jan2000, 15:03	Area 2	0.0019	0.4	02Jan2000, 16:06
Outlet 2	0.0019	0.71	01Jan2000, 15:03	Outlet 2	0.0019	0.4	02Jan2000, 16:06
Area 3B	0.0108	3.63	01Jan2000, 15:09	Area 3B	0.0108	2.1	02Jan2000, 17:06
Diversion 3B	0.0108	3.63	01Jan2000, 15:09	Diversion 3B	0.0108	2.1	02Jan2000, 17:06
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.92	01Jan2000, 15:04	Area 3A	0.0026	0.52	02Jan2000, 16:06
J-3	0.0134	4.55	01Jan2000, 15:07	J-3	0.0134	2.62	02Jan2000, 17:03
Outlet 3	0.0134	4.55	01Jan2000, 15:07	Outlet 3	0.0134	2.62	02Jan2000, 17:03
Area 4F	0.1204	37.07	01Jan2000, 16:56	Area 4F	0.1204	23.06	02Jan2000, 19:15
Area 4E	0.0198	6.75	01Jan2000, 15:13	Area 4E	0.0198	3.9	02Jan2000, 17:06
Area 4H	0.0132	4.62	01Jan2000, 15:08	Area 4H	0.0132	2.64	02Jan2000, 17:03
Area 4G	0.012	4.19	01Jan2000, 15:10	Area 4G	0.012	2.4	02Jan2000, 17:06
Area 4D	0.0054	1.91	01Jan2000, 15:04	Area 4D	0.0054	1.08	02Jan2000, 16:06
Depression 4D-H	0.1708	49.91	01Jan2000, 16:57	Depression 4D-H	0.1708	32.51	02Jan2000, 19:12
Area 4B	0.008	2.8	01Jan2000, 15:07	Area 4B	0.008	1.6	02Jan2000, 17:03
Area 4C	0.0026	0.91	01Jan2000, 15:05	Area 4C	0.0026	0.52	02Jan2000, 17:03
Depression 4C	0.0026	0.88	01Jan2000, 15:22	Depression 4C	0.0026	0.52	02Jan2000, 17:09
Depression 4B	0.1814	52.64	01Jan2000, 16:57	Depression 4B	0.1814	34.49	02Jan2000, 19:15
Area 4A	0.0028	0.99	01Jan2000, 15:04	Area 4A	0.0028	0.56	02Jan2000, 16:06
Junction 4	0.1842	53.34	01Jan2000, 16:58	Junction 4	0.1842	35	02Jan2000, 19:09
Outlet 4	0.1842	53.34	01Jan2000, 16:58	Outlet 4	0.1842	35	02Jan2000, 19:09
Area 5A	0.0587	19.94	01Jan2000, 15:28	Area 5A	0.0587	11.68	02Jan2000, 17:15
Area 5B	0.0052	1.83	01Jan2000, 15:05	Area 5B	0.0052	1.04	02Jan2000, 17:03
Depression 5B	0.0052	0.48	02Jan2000, 00:04	Depression 5B	0.0052	0.71	02Jan2000, 23:09
J-5	0.0639	19.94	01Jan2000, 15:28	J-5	0.0639	11.68	02Jan2000, 17:15
Outlet 5	0.0639	19.94	01Jan2000, 15:28	Outlet 5	0.0639	11.68	02Jan2000, 17:15
Area 6C	0.0463	15	01Jan2000, 15:38	Area 6C	0.0463	8.91	02Jan2000, 17:21
Area 6B	0.0043	1.33	01Jan2000, 15:09	Area 6B	0.0043	0.78	02Jan2000, 17:06
J-6B	1.9897	108.23	02Jan2000, 00:04	J-6B	1.9897	105.46	03Jan2000, 00:03
Area 6A	0.0047	1.45	01Jan2000, 15:09	Area 6A	0.0047	0.85	02Jan2000, 17:06
J-6A	1.9944	108.64	02Jan2000, 00:04	J-6A	1.9944	106.04	03Jan2000, 00:03
Outlet-6	1.9944	108.64	02Jan2000, 00:04	Outlet-6	1.9944	106.04	03Jan2000, 00:03
Area 7C	0.0363	12.45	01Jan2000, 15:21	Area 7C	0.0363	7.24	02Jan2000, 17:09
Area 7D	0.0147	5.17	01Jan2000, 15:05	Area 7D	0.0147	2.94	02Jan2000, 17:03
J-7B	1.926	102.79	02Jan2000, 00:05	J-7B	1.926	97.22	03Jan2000, 00:06
Area 7A	0.0118	4.01	01Jan2000, 15:04	Area 7A	0.0118	2.3	02Jan2000, 17:03
Area 7B	0.0013	0.5	01Jan2000, 15:01	Area 7B	0.0013	0.28	02Jan2000, 16:00
Outlet 7	1.9391	103.99	02Jan2000, 00:03	Outlet 7	1.9391	98.87	03Jan2000, 00:03
Area 8A	0.9497	253.87	01Jan2000, 18:13	Area 8A	0.9497	170.26	02Jan2000, 20:21
Storage 8A	1.875	98.45	02Jan2000, 01:07	Storage 8A	1.875	94.37	03Jan2000, 02:42
Area 8B	0.0022	0.82	01Jan2000, 15:03	Area 8B	0.0022	0.46	02Jan2000, 16:06
Area 8C	0.0023	0.79	01Jan2000, 15:06	Area 8C	0.0023	0.45	02Jan2000, 17:03
Area 8D	0.1544	50.88	01Jan2000, 16:11	Area 8D	0.1544	30.27	02Jan2000, 17:39
Depression 8D	0.1544	32.11	01Jan2000, 18:30	Depression 8D	0.1544	28.78	02Jan2000, 19:42
Area 8E	0.7664	237.49	01Jan2000, 16:52	Area 8E	0.7664	147.04	02Jan2000, 19:12
Depression 8E	0.7664	0	01Jan2000, 05:38	Depression 8E	0.7664	0	01Jan2000, 10:51
Outlet 8	1.875	98.45	02Jan2000, 01:07	Outlet 8	1.875	94.37	03Jan2000, 02:42
Area 9A	0.0227	8.72	01Jan2000, 15:02	Area 9A	0.0227	4.88	02Jan2000, 16:03
Area 9B	0.0108	3.92	01Jan2000, 15:08	Area 9B	0.0108	2.22	02Jan2000, 16:12
Area 9C	0.002	0.75	01Jan2000, 15:06	Area 9C	0.002	0.42	02Jan2000, 16:09
Outlet 9	0.0355	13.39	01Jan2000, 15:03	Outlet 9	0.0355	7.51	02Jan2000, 16:06
Area 10	0.0007	0.26	01Jan2000, 15:00	Area 10	0.0007	0.15	02Jan2000, 16:00
Outlet 10	0.0007	0.26	01Jan2000, 15:00	Outlet 10	0.0007	0.15	02Jan2000, 16:00
Area 11	0.0002	0.07	01Jan2000, 15:00	Area 11	0.0002	0.04	02Jan2000, 17:00
Outlet 11	0.0002	0.07	01Jan2000, 15:00	Outlet 11	0.0002	0.04	02Jan2000, 17:00
Area 12	0.0063	2.16	01Jan2000, 15:09	Area 12	0.0063	1.24	02Jan2000, 17:03
Outlet 12	0.0063	2.16	01Jan2000, 15:09	Outlet 12	0.0063	1.24	02Jan2000, 17:03

EXISTING HEC-HMS MODELING RESULTS
50YR STORM

50YR 72HR				50YR 120HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	36.79	03Jan2000, 15:09	Area 1C	0.2595	25.14	05Jan2000, 06:45
Area 1D	0.0155	2.28	03Jan2000, 12:06	Area 1D	0.0155	1.52	05Jan2000, 06:03
Depression 1D	0.0155	2.08	03Jan2000, 16:18	Depression 1D	0.0155	1.44	05Jan2000, 12:06
Area 1B	0.0031	0.47	03Jan2000, 12:03	Area 1B	0.0031	0.31	05Jan2000, 06:00
Depression 1BC	0.2781	26.54	04Jan2000, 00:24	Depression 1BC	0.2781	19.6	05Jan2000, 15:03
Diversion 1BC	0.2781	11.04	04Jan2000, 00:24	Diversion 1BC	0.2781	10.61	05Jan2000, 15:03
Diverted Flow 1BC	0	15.5	04Jan2000, 00:24	Diverted Flow 1BC	0	8.99	05Jan2000, 15:03
Area 1A	0.0025	0.37	03Jan2000, 12:00	Area 1A	0.0025	0.25	05Jan2000, 06:00
J-1	0.2806	11.28	04Jan2000, 00:00	J-1	0.2806	10.76	05Jan2000, 15:03
Outlet 1	0.2806	11.28	04Jan2000, 00:00	Outlet 1	0.2806	10.76	05Jan2000, 15:03
Area 2	0.0019	0.3	03Jan2000, 12:00	Area 2	0.0019	0.2	05Jan2000, 06:00
Outlet 2	0.0019	0.3	03Jan2000, 12:00	Outlet 2	0.0019	0.2	05Jan2000, 06:00
Area 3B	0.0108	1.57	03Jan2000, 12:06	Area 3B	0.0108	1.05	05Jan2000, 06:00
Diversion 3B	0.0108	1.57	03Jan2000, 12:06	Diversion 3B	0.0108	1.05	05Jan2000, 06:00
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.39	03Jan2000, 12:03	Area 3A	0.0026	0.26	05Jan2000, 06:00
J-3	0.0134	1.96	03Jan2000, 12:03	J-3	0.0134	1.31	05Jan2000, 06:00
Outlet 3	0.0134	1.96	03Jan2000, 12:03	Outlet 3	0.0134	1.31	05Jan2000, 06:00
Area 4F	0.1204	17.35	03Jan2000, 14:57	Area 4F	0.1204	11.83	05Jan2000, 06:39
Area 4E	0.0198	2.92	03Jan2000, 12:09	Area 4E	0.0198	1.95	05Jan2000, 06:03
Area 4H	0.0132	1.97	03Jan2000, 12:03	Area 4H	0.0132	1.31	05Jan2000, 06:00
Area 4G	0.012	1.79	03Jan2000, 12:06	Area 4G	0.012	1.19	05Jan2000, 06:00
Area 4D	0.0054	0.81	03Jan2000, 12:03	Area 4D	0.0054	0.54	05Jan2000, 06:00
Depression 4D-H	0.1708	24.39	03Jan2000, 14:45	Depression 4D-H	0.1708	16.71	05Jan2000, 06:18
Area 4B	0.008	1.2	03Jan2000, 12:03	Area 4B	0.008	0.8	05Jan2000, 06:00
Area 4C	0.0026	0.39	03Jan2000, 12:03	Area 4C	0.0026	0.26	05Jan2000, 06:00
Depression 4C	0.0026	0.39	03Jan2000, 12:12	Depression 4C	0.0026	0.26	05Jan2000, 06:06
Depression 4B	0.1814	25.88	03Jan2000, 14:45	Depression 4B	0.1814	17.74	05Jan2000, 06:21
Area 4A	0.0028	0.42	03Jan2000, 12:03	Area 4A	0.0028	0.28	05Jan2000, 06:00
Junction 4	0.1842	26.27	03Jan2000, 14:45	Junction 4	0.1842	18	05Jan2000, 06:18
Outlet 4	0.1842	26.27	03Jan2000, 14:45	Outlet 4	0.1842	18	05Jan2000, 06:18
Area 5A	0.0587	8.71	03Jan2000, 12:21	Area 5A	0.0587	5.83	05Jan2000, 06:06
Area 5B	0.0052	0.78	03Jan2000, 12:03	Area 5B	0.0052	0.52	05Jan2000, 06:00
Depression 5B	0.0052	0.58	03Jan2000, 18:12	Depression 5B	0.0052	0.49	05Jan2000, 12:00
J-5	0.0639	8.71	03Jan2000, 12:21	J-5	0.0639	6.02	05Jan2000, 12:00
Outlet 5	0.0639	8.71	03Jan2000, 12:21	Outlet 5	0.0639	6.02	05Jan2000, 12:00
Area 6C	0.0463	6.65	03Jan2000, 12:27	Area 6C	0.0463	4.48	05Jan2000, 06:06
Area 6B	0.0043	0.58	03Jan2000, 12:06	Area 6B	0.0043	0.4	05Jan2000, 06:03
J-6B	1.9897	98.76	04Jan2000, 00:00	J-6B	1.9897	84.21	05Jan2000, 12:06
Area 6A	0.0047	0.64	03Jan2000, 12:06	Area 6A	0.0047	0.43	05Jan2000, 06:03
J-6A	1.9944	99.19	04Jan2000, 00:00	J-6A	1.9944	84.62	05Jan2000, 12:06
Outlet-6	1.9944	99.19	04Jan2000, 00:00	Outlet-6	1.9944	84.62	05Jan2000, 12:06
Area 7C	0.0363	5.4	03Jan2000, 12:15	Area 7C	0.0363	3.61	05Jan2000, 06:03
Area 7D	0.0147	2.2	03Jan2000, 12:03	Area 7D	0.0147	1.46	05Jan2000, 06:00
J-7B	1.926	92.72	04Jan2000, 00:03	J-7B	1.926	79.56	05Jan2000, 16:54
Area 7A	0.0118	1.72	03Jan2000, 12:03	Area 7A	0.0118	1.15	05Jan2000, 06:00
Area 7B	0.0013	0.21	03Jan2000, 12:00	Area 7B	0.0013	0.14	05Jan2000, 06:00
Outlet 7	1.9391	93.96	04Jan2000, 00:03	Outlet 7	1.9391	80.38	05Jan2000, 16:54
Area 8A	0.9497	131.05	03Jan2000, 16:42	Area 8A	0.9497	90.06	05Jan2000, 07:57
Storage 8A	1.875	88.76	04Jan2000, 01:54	Storage 8A	1.875	76.32	05Jan2000, 16:51
Area 8B	0.0022	0.34	03Jan2000, 12:00	Area 8B	0.0022	0.23	05Jan2000, 06:00
Area 8C	0.0023	0.34	03Jan2000, 12:03	Area 8C	0.0023	0.23	05Jan2000, 06:00
Area 8D	0.1544	22.53	03Jan2000, 13:00	Area 8D	0.1544	15.29	05Jan2000, 06:12
Depression 8D	0.1544	22.2	03Jan2000, 15:03	Depression 8D	0.1544	15.21	05Jan2000, 06:36
Area 8E	0.7664	110.63	03Jan2000, 14:51	Area 8E	0.7664	75.38	05Jan2000, 06:36
Depression 8E	0.7664	0	01Jan2000, 14:12	Depression 8E	0.7664	0	01Jan2000, 20:24
Outlet 8	1.875	88.76	04Jan2000, 01:54	Outlet 8	1.875	76.32	05Jan2000, 16:51
Area 9A	0.0227	3.62	03Jan2000, 12:00	Area 9A	0.0227	2.38	05Jan2000, 06:00
Area 9B	0.0108	1.66	03Jan2000, 12:03	Area 9B	0.0108	1.1	05Jan2000, 06:00
Area 9C	0.002	0.31	03Jan2000, 12:03	Area 9C	0.002	0.21	05Jan2000, 06:00
Outlet 9	0.0355	5.59	03Jan2000, 12:00	Outlet 9	0.0355	3.68	05Jan2000, 06:00
Area 10	0.0007	0.11	03Jan2000, 12:00	Area 10	0.0007	0.07	05Jan2000, 06:00
Outlet 10	0.0007	0.11	03Jan2000, 12:00	Outlet 10	0.0007	0.07	05Jan2000, 06:00
Area 11	0.0002	0.03	03Jan2000, 12:00	Area 11	0.0002	0.02	05Jan2000, 06:00
Outlet 11	0.0002	0.03	03Jan2000, 12:00	Outlet 11	0.0002	0.02	05Jan2000, 06:00
Area 12	0.0063	0.93	03Jan2000, 12:06	Area 12	0.0063	0.62	05Jan2000, 06:00
Outlet 12	0.0063	0.93	03Jan2000, 12:06	Outlet 12	0.0063	0.62	05Jan2000, 06:00

EXISTING HEC-HMS MODELING RESULTS
50YR STORM

50YR 240HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	15.26	09Jan2000, 12:21
Area 1D	0.0155	0.92	09Jan2000, 12:00
Depression 1D	0.0155	0.9	09Jan2000, 12:15
Area 1B	0.0031	0.19	09Jan2000, 12:00
Depression 1BC	0.2781	12.01	10Jan2000, 02:45
Diversion 1BC	0.2781	10.13	10Jan2000, 02:45
Diverted Flow 1BC	0	1.89	10Jan2000, 02:45
Area 1A	0.0025	0.15	09Jan2000, 12:00
J-1	0.2806	10.22	10Jan2000, 02:48
Outlet 1	0.2806	10.22	10Jan2000, 02:48
Area 2	0.0019	0.12	09Jan2000, 12:00
Outlet 2	0.0019	0.12	09Jan2000, 12:00
Area 3B	0.0108	0.63	09Jan2000, 12:00
Diversion 3B	0.0108	0.63	09Jan2000, 12:00
Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.16	09Jan2000, 12:00
J-3	0.0134	0.79	09Jan2000, 12:00
Outlet 3	0.0134	0.79	09Jan2000, 12:00
Area 4F	0.1204	7.15	09Jan2000, 12:18
Area 4E	0.0198	1.17	09Jan2000, 12:00
Area 4H	0.0132	0.79	09Jan2000, 12:00
Area 4G	0.012	0.72	09Jan2000, 12:00
Area 4D	0.0054	0.32	09Jan2000, 12:00
Depression 4D-H	0.1708	10.13	09Jan2000, 12:09
Area 4B	0.008	0.48	09Jan2000, 12:00
Area 4C	0.0026	0.16	09Jan2000, 12:00
Depression 4C	0.0026	0.15	09Jan2000, 12:03
Depression 4B	0.1814	10.76	09Jan2000, 12:09
Area 4A	0.0028	0.17	09Jan2000, 12:00
Junction 4	0.1842	10.93	09Jan2000, 12:06
Outlet 4	0.1842	10.93	09Jan2000, 12:06
Area 5A	0.0587	3.5	09Jan2000, 12:03
Area 5B	0.0052	0.31	09Jan2000, 12:00
Depression 5B	0.0052	0.31	09Jan2000, 12:03
J-5	0.0639	3.81	09Jan2000, 12:03
Outlet 5	0.0639	3.81	09Jan2000, 12:03
Area 6C	0.0463	2.71	09Jan2000, 12:03
Area 6B	0.0043	0.24	09Jan2000, 12:00
J-6B	1.9897	65.28	10Jan2000, 00:03
Area 6A	0.0047	0.26	09Jan2000, 12:00
J-6A	1.9944	65.53	10Jan2000, 00:03
Outlet-6	1.9944	65.53	10Jan2000, 00:03
Area 7C	0.0363	2.16	09Jan2000, 12:03
Area 7D	0.0147	0.88	09Jan2000, 12:00
J-7B	1.926	61.76	10Jan2000, 00:03
Area 7A	0.0118	0.69	09Jan2000, 12:00
Area 7B	0.0013	0.08	09Jan2000, 12:00
Outlet 7	1.9391	62.49	10Jan2000, 00:03
Area 8A	0.9497	55.64	09Jan2000, 12:48
Storage 8A	1.875	59.1	10Jan2000, 01:39
Area 8B	0.0022	0.13	09Jan2000, 12:00
Area 8C	0.0023	0.14	09Jan2000, 12:00
Area 8D	0.1544	9.19	09Jan2000, 12:06
Depression 8D	0.1544	9.18	09Jan2000, 12:24
Area 8E	0.7664	45.53	09Jan2000, 12:15
Depression 8E	0.7664	0	02Jan2000, 09:51
Outlet 8	1.875	59.1	10Jan2000, 01:39
Area 9A	0.0227	1.41	09Jan2000, 12:00
Area 9B	0.0108	0.66	09Jan2000, 12:00
Area 9C	0.002	0.12	09Jan2000, 12:00
Outlet 9	0.0355	2.19	09Jan2000, 12:00
Area 10	0.0007	0.04	09Jan2000, 12:00
Outlet 10	0.0007	0.04	09Jan2000, 12:00
Area 11	0.0002	0.01	09Jan2000, 12:00
Outlet 11	0.0002	0.01	09Jan2000, 12:00
Area 12	0.0063	0.37	09Jan2000, 12:00
Outlet 12	0.0063	0.37	09Jan2000, 12:00

EXISTING HEC-HMS MODELING RESULTS

100YR STORM

100YR 1HR				100YR 2HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	97.99	01Jan2000, 02:18	Area 1C	0.2595	129.08	01Jan2000, 02:45
Area 1D	0.0155	17.4	01Jan2000, 00:42	Area 1D	0.0155	17.59	01Jan2000, 00:51
Depression 1D	0.0155	2.13	01Jan2000, 01:39	Depression 1D	0.0155	3.7	01Jan2000, 02:24
Area 1B	0.0031	4.38	01Jan2000, 00:33	Area 1B	0.0031	4.19	01Jan2000, 00:42
Depression 1BC	0.2781	8.9	01Jan2000, 05:42	Depression 1BC	0.2781	15.93	01Jan2000, 05:57
Diversion 1BC	0.2781	8.9	01Jan2000, 05:42	Diversion 1BC	0.2781	10.37	01Jan2000, 05:57
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	5.55	01Jan2000, 05:57
Area 1A	0.0025	4.14	01Jan2000, 00:24	Area 1A	0.0025	3.69	01Jan2000, 00:33
J-1	0.2806	8.9	01Jan2000, 05:42	J-1	0.2806	10.37	01Jan2000, 05:57
Outlet 1	0.2806	8.9	01Jan2000, 05:42	Outlet 1	0.2806	10.37	01Jan2000, 05:57
Area 2	0.0019	3.14	01Jan2000, 00:30	Area 2	0.0019	2.91	01Jan2000, 00:39
Outlet 2	0.0019	3.14	01Jan2000, 00:30	Outlet 2	0.0019	2.91	01Jan2000, 00:39
Area 3B	0.0108	11.98	01Jan2000, 00:39	Area 3B	0.0108	12.06	01Jan2000, 00:51
Diversion 3B	0.0108	6.73	01Jan2000, 00:39	Diversion 3B	0.0108	6.75	01Jan2000, 00:51
Diverted Flow 3B	0	5.25	01Jan2000, 00:39	Diverted Flow 3B	0	5.31	01Jan2000, 00:51
Area 3A	0.0026	3.76	01Jan2000, 00:30	Area 3A	0.0026	3.54	01Jan2000, 00:39
J-3	0.0134	10.22	01Jan2000, 00:33	J-3	0.0134	10.13	01Jan2000, 00:45
Outlet 3	0.0134	10.22	01Jan2000, 00:33	Outlet 3	0.0134	10.13	01Jan2000, 00:45
Area 4F	0.1204	50.47	01Jan2000, 02:12	Area 4F	0.1204	65.11	01Jan2000, 02:36
Area 4E	0.0198	20.74	01Jan2000, 00:45	Area 4E	0.0198	21.45	01Jan2000, 00:57
Area 4H	0.0132	16.28	01Jan2000, 00:39	Area 4H	0.0132	16.13	01Jan2000, 00:48
Area 4G	0.012	14.05	01Jan2000, 00:42	Area 4G	0.012	14.15	01Jan2000, 00:51
Area 4D	0.0054	7.85	01Jan2000, 00:30	Area 4D	0.0054	7.38	01Jan2000, 00:39
Depression 4D-H	0.1708	44.63	01Jan2000, 02:42	Depression 4D-H	0.1708	71.52	01Jan2000, 02:33
Area 4B	0.008	10.07	01Jan2000, 00:39	Area 4B	0.008	9.93	01Jan2000, 00:48
Area 4C	0.0026	3.53	01Jan2000, 00:33	Area 4C	0.0026	3.4	01Jan2000, 00:42
Depression 4C	0.0026	0.81	01Jan2000, 01:21	Depression 4C	0.0026	1.31	01Jan2000, 01:39
Depression 4B	0.1814	44.26	01Jan2000, 02:51	Depression 4B	0.1814	71.88	01Jan2000, 02:42
Area 4A	0.0028	4.04	01Jan2000, 00:30	Area 4A	0.0028	3.81	01Jan2000, 00:39
Junction 4	0.1842	44.26	01Jan2000, 02:51	Junction 4	0.1842	71.92	01Jan2000, 02:42
Outlet 4	0.1842	44.26	01Jan2000, 02:51	Outlet 4	0.1842	71.92	01Jan2000, 02:42
Area 5A	0.0587	51.48	01Jan2000, 01:03	Area 5A	0.0587	55.66	01Jan2000, 01:12
Area 5B	0.0052	7.27	01Jan2000, 00:33	Area 5B	0.0052	6.93	01Jan2000, 00:42
Depression 5B	0.0052	0	01Jan2000, 00:33	Depression 5B	0.0052	0	01Jan2000, 00:36
J-5	0.0639	51.48	01Jan2000, 01:03	J-5	0.0639	55.66	01Jan2000, 01:12
Outlet 5	0.0639	51.48	01Jan2000, 01:03	Outlet 5	0.0639	55.66	01Jan2000, 01:12
Area 6C	0.0463	34.69	01Jan2000, 01:12	Area 6C	0.0463	38.29	01Jan2000, 01:21
Area 6B	0.0043	3.96	01Jan2000, 00:39	Area 6B	0.0043	4.09	01Jan2000, 00:51
J-6B	1.9897	92.93	01Jan2000, 00:57	J-6B	1.9897	102.69	01Jan2000, 01:06
Area 6A	0.0047	4.31	01Jan2000, 00:39	Area 6A	0.0047	4.45	01Jan2000, 00:51
J-6A	1.9944	96.37	01Jan2000, 00:57	J-6A	1.9944	106.63	01Jan2000, 01:06
Outlet-6	1.9944	96.37	01Jan2000, 00:57	Outlet-6	1.9944	106.63	01Jan2000, 01:06
Area 7C	0.0363	34.7	01Jan2000, 00:57	Area 7C	0.0363	36.91	01Jan2000, 01:06
Area 7D	0.0147	19.86	01Jan2000, 00:33	Area 7D	0.0147	19.13	01Jan2000, 00:42
J-7B	1.926	64.88	01Jan2000, 06:21	J-7B	1.926	80.25	01Jan2000, 07:09
Area 7A	0.0118	15.44	01Jan2000, 00:30	Area 7A	0.0118	14.74	01Jan2000, 00:42
Area 7B	0.0013	2.89	01Jan2000, 00:21	Area 7B	0.0013	2.39	01Jan2000, 00:30
Outlet 7	1.9391	64.88	01Jan2000, 06:21	Outlet 7	1.9391	80.25	01Jan2000, 07:09
Area 8A	0.9497	238.03	01Jan2000, 03:21	Area 8A	0.9497	333.86	01Jan2000, 03:45
Storage 8A	1.875	64.88	01Jan2000, 06:21	Storage 8A	1.875	80.25	01Jan2000, 07:09
Area 8B	0.0022	3.7	01Jan2000, 00:30	Area 8B	0.0022	3.4	01Jan2000, 00:39
Area 8C	0.0023	2.93	01Jan2000, 00:36	Area 8C	0.0023	2.85	01Jan2000, 00:45
Area 8D	0.1544	99.57	01Jan2000, 01:30	Area 8D	0.1544	114.52	01Jan2000, 01:45
Depression 8D	0.1544	0	01Jan2000, 00:39	Depression 8D	0.1544	2.2	01Jan2000, 05:09
Area 8E	0.7664	331.56	01Jan2000, 02:06	Area 8E	0.7664	424.61	01Jan2000, 02:33
Depression 8E	0.7664	0	01Jan2000, 00:33	Depression 8E	0.7664	0	01Jan2000, 00:36
Outlet 8	1.875	64.88	01Jan2000, 06:21	Outlet 8	1.875	80.25	01Jan2000, 07:09
Area 9A	0.0227	43.41	01Jan2000, 00:27	Area 9A	0.0227	38.91	01Jan2000, 00:36
Area 9B	0.0108	14.57	01Jan2000, 00:39	Area 9B	0.0108	14.28	01Jan2000, 00:48
Area 9C	0.002	3.08	01Jan2000, 00:36	Area 9C	0.002	2.95	01Jan2000, 00:45
Outlet 9	0.0355	57.6	01Jan2000, 00:30	Outlet 9	0.0355	54.25	01Jan2000, 00:39
Area 10	0.0007	1.51	01Jan2000, 00:18	Area 10	0.0007	1.21	01Jan2000, 00:27
Outlet 10	0.0007	1.51	01Jan2000, 00:18	Outlet 10	0.0007	1.21	01Jan2000, 00:27
Area 11	0.0002	0.31	01Jan2000, 00:18	Area 11	0.0002	0.27	01Jan2000, 00:30
Outlet 11	0.0002	0.31	01Jan2000, 00:18	Outlet 11	0.0002	0.27	01Jan2000, 00:30
Area 12	0.0063	7.37	01Jan2000, 00:39	Area 12	0.0063	7.36	01Jan2000, 00:48
Outlet 12	0.0063	7.37	01Jan2000, 00:39	Outlet 12	0.0063	7.36	01Jan2000, 00:48

EXISTING HEC-HMS MODELING RESULTS
100YR STORM

100YR 3HR				100YR 6HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	128.18	01Jan2000, 03:00	Area 1C	0.2595	120.61	01Jan2000, 03:27
Area 1D	0.0155	15.19	01Jan2000, 01:00	Area 1D	0.0155	11.24	01Jan2000, 01:15
Depression 1D	0.0155	3.86	01Jan2000, 03:09	Depression 1D	0.0155	3.91	01Jan2000, 03:36
Area 1B	0.0031	3.48	01Jan2000, 00:54	Area 1B	0.0031	2.56	01Jan2000, 01:06
Depression 1BC	0.2781	21.76	01Jan2000, 06:15	Depression 1BC	0.2781	37.4	01Jan2000, 07:45
Diversion 1BC	0.2781	10.74	01Jan2000, 06:15	Diversion 1BC	0.2781	14.29	01Jan2000, 07:45
Diverted Flow 1BC	0	11.02	01Jan2000, 06:15	Diverted Flow 1BC	0	23.11	01Jan2000, 07:45
Area 1A	0.0025	2.95	01Jan2000, 00:36	Area 1A	0.0025	2.08	01Jan2000, 00:48
J-1	0.2806	10.74	01Jan2000, 06:15	J-1	0.2806	14.29	01Jan2000, 07:45
Outlet 1	0.2806	10.74	01Jan2000, 06:15	Outlet 1	0.2806	14.29	01Jan2000, 07:45
Area 2	0.0019	2.37	01Jan2000, 00:42	Area 2	0.0019	1.72	01Jan2000, 01:00
Outlet 2	0.0019	2.37	01Jan2000, 00:42	Outlet 2	0.0019	1.72	01Jan2000, 01:00
Area 3B	0.0108	10.38	01Jan2000, 01:00	Area 3B	0.0108	7.62	01Jan2000, 01:15
Diversion 3B	0.0108	6.41	01Jan2000, 01:00	Diversion 3B	0.0108	5.74	01Jan2000, 01:15
Diverted Flow 3B	0	3.97	01Jan2000, 01:00	Diverted Flow 3B	0	1.89	01Jan2000, 01:15
Area 3A	0.0026	2.87	01Jan2000, 00:48	Area 3A	0.0026	2.1	01Jan2000, 01:06
J-3	0.0134	9.22	01Jan2000, 00:54	J-3	0.0134	7.79	01Jan2000, 01:09
Outlet 3	0.0134	9.22	01Jan2000, 00:54	Outlet 3	0.0134	7.79	01Jan2000, 01:09
Area 4F	0.1204	64.05	01Jan2000, 02:48	Area 4F	0.1204	59.61	01Jan2000, 03:15
Area 4E	0.0198	18.75	01Jan2000, 01:06	Area 4E	0.0198	14	01Jan2000, 01:21
Area 4H	0.0132	13.76	01Jan2000, 00:57	Area 4H	0.0132	10.16	01Jan2000, 01:12
Area 4G	0.012	12.21	01Jan2000, 01:00	Area 4G	0.012	9.06	01Jan2000, 01:15
Area 4D	0.0054	5.97	01Jan2000, 00:48	Area 4D	0.0054	4.37	01Jan2000, 01:06
Depression 4D-H	0.1708	77.55	01Jan2000, 02:57	Depression 4D-H	0.1708	75.26	01Jan2000, 03:21
Area 4B	0.008	8.44	01Jan2000, 00:57	Area 4B	0.008	6.21	01Jan2000, 01:12
Area 4C	0.0026	2.82	01Jan2000, 00:54	Area 4C	0.0026	2.07	01Jan2000, 01:06
Depression 4C	0.0026	1.34	01Jan2000, 01:48	Depression 4C	0.0026	1.23	01Jan2000, 02:27
Depression 4B	0.1814	79.86	01Jan2000, 03:06	Depression 4B	0.1814	77.93	01Jan2000, 03:27
Area 4A	0.0028	3.09	01Jan2000, 00:48	Area 4A	0.0028	2.26	01Jan2000, 01:06
Junction 4	0.1842	80.57	01Jan2000, 03:06	Junction 4	0.1842	78.61	01Jan2000, 03:27
Outlet 4	0.1842	80.57	01Jan2000, 03:06	Outlet 4	0.1842	78.61	01Jan2000, 03:27
Area 5A	0.0587	50.33	01Jan2000, 01:24	Area 5A	0.0587	40.1	01Jan2000, 01:51
Area 5B	0.0052	5.69	01Jan2000, 00:51	Area 5B	0.0052	4.17	01Jan2000, 01:06
Depression 5B	0.0052	0	01Jan2000, 00:45	Depression 5B	0.0052	0	01Jan2000, 01:00
J-5	0.0639	50.33	01Jan2000, 01:24	J-5	0.0639	40.1	01Jan2000, 01:51
Outlet 5	0.0639	50.33	01Jan2000, 01:24	Outlet 5	0.0639	40.1	01Jan2000, 01:51
Area 6C	0.0463	35.2	01Jan2000, 01:30	Area 6C	0.0463	28.81	01Jan2000, 02:00
Area 6B	0.0043	3.53	01Jan2000, 01:00	Area 6B	0.0043	2.57	01Jan2000, 01:18
J-6B	1.9897	94.76	01Jan2000, 01:18	J-6B	1.9897	101.1	01Jan2000, 06:09
Area 6A	0.0047	3.85	01Jan2000, 01:00	Area 6A	0.0047	2.8	01Jan2000, 01:18
J-6A	1.9944	98.2	01Jan2000, 01:18	J-6A	1.9944	101.82	01Jan2000, 06:09
Outlet-6	1.9944	98.2	01Jan2000, 01:18	Outlet-6	1.9944	101.82	01Jan2000, 06:09
Area 7C	0.0363	32.91	01Jan2000, 01:15	Area 7C	0.0363	25.45	01Jan2000, 01:42
Area 7D	0.0147	15.92	01Jan2000, 00:54	Area 7D	0.0147	11.66	01Jan2000, 01:09
J-7B	1.926	86.22	01Jan2000, 07:42	J-7B	1.926	98.03	01Jan2000, 09:36
Area 7A	0.0118	12.07	01Jan2000, 00:51	Area 7A	0.0118	8.81	01Jan2000, 01:06
Area 7B	0.0013	1.97	01Jan2000, 00:33	Area 7B	0.0013	1.39	01Jan2000, 00:45
Outlet 7	1.9391	86.22	01Jan2000, 07:42	Outlet 7	1.9391	98.03	01Jan2000, 09:36
Area 8A	0.9497	352.43	01Jan2000, 04:09	Area 8A	0.9497	351.26	01Jan2000, 04:45
Storage 8A	1.875	86.22	01Jan2000, 07:42	Storage 8A	1.875	98.03	01Jan2000, 09:36
Area 8B	0.0022	2.77	01Jan2000, 00:42	Area 8B	0.0022	2	01Jan2000, 00:57
Area 8C	0.0023	2.39	01Jan2000, 00:54	Area 8C	0.0023	1.75	01Jan2000, 01:09
Area 8D	0.1544	108.92	01Jan2000, 01:54	Area 8D	0.1544	93.32	01Jan2000, 02:18
Depression 8D	0.1544	17.69	01Jan2000, 04:30	Depression 8D	0.1544	31.42	01Jan2000, 05:48
Area 8E	0.7664	416.18	01Jan2000, 02:45	Area 8E	0.7664	385.33	01Jan2000, 03:09
Depression 8E	0.7664	0	01Jan2000, 00:42	Depression 8E	0.7664	0	01Jan2000, 00:51
Outlet 8	1.875	86.22	01Jan2000, 07:42	Outlet 8	1.875	98.03	01Jan2000, 09:36
Area 9A	0.0227	31.76	01Jan2000, 00:39	Area 9A	0.0227	22.77	01Jan2000, 00:51
Area 9B	0.0108	12.14	01Jan2000, 00:57	Area 9B	0.0108	8.99	01Jan2000, 01:09
Area 9C	0.002	2.47	01Jan2000, 00:51	Area 9C	0.002	1.83	01Jan2000, 01:06
Outlet 9	0.0355	44.39	01Jan2000, 00:45	Outlet 9	0.0355	32.74	01Jan2000, 01:03
Area 10	0.0007	0.99	01Jan2000, 00:30	Area 10	0.0007	0.7	01Jan2000, 00:42
Outlet 10	0.0007	0.99	01Jan2000, 00:30	Outlet 10	0.0007	0.7	01Jan2000, 00:42
Area 11	0.0002	0.21	01Jan2000, 00:33	Area 11	0.0002	0.15	01Jan2000, 01:00
Outlet 11	0.0002	0.21	01Jan2000, 00:33	Outlet 11	0.0002	0.15	01Jan2000, 01:00
Area 12	0.0063	6.31	01Jan2000, 01:00	Area 12	0.0063	4.64	01Jan2000, 01:12
Outlet 12	0.0063	6.31	01Jan2000, 01:00	Outlet 12	0.0063	4.64	01Jan2000, 01:12

EXISTING HEC-HMS MODELING RESULTS
100YR STORM

100YR 12HR				100YR 18HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	117.43	01Jan2000, 07:06	Area 1C	0.2595	107.19	01Jan2000, 13:18
Area 1D	0.0155	9.19	01Jan2000, 05:18	Area 1D	0.0155	8.03	01Jan2000, 11:39
Depression 1D	0.0155	4.47	01Jan2000, 07:33	Depression 1D	0.0155	4.79	01Jan2000, 13:12
Area 1B	0.0031	1.96	01Jan2000, 05:09	Area 1B	0.0031	1.68	01Jan2000, 11:33
Depression 1BC	0.2781	54.82	01Jan2000, 10:54	Depression 1BC	0.2781	60.31	01Jan2000, 16:09
Diversion 1BC	0.2781	21.28	01Jan2000, 10:54	Diversion 1BC	0.2781	23.48	01Jan2000, 16:09
Diverted Flow 1BC	0	33.55	01Jan2000, 10:54	Diverted Flow 1BC	0	36.83	01Jan2000, 16:09
Area 1A	0.0025	1.58	01Jan2000, 05:03	Area 1A	0.0025	1.35	01Jan2000, 11:30
J-1	0.2806	21.53	01Jan2000, 10:54	J-1	0.2806	23.79	01Jan2000, 16:09
Outlet 1	0.2806	21.53	01Jan2000, 10:54	Outlet 1	0.2806	23.79	01Jan2000, 16:09
Area 2	0.0019	1.26	01Jan2000, 05:06	Area 2	0.0019	1.07	01Jan2000, 11:33
Outlet 2	0.0019	1.26	01Jan2000, 05:06	Outlet 2	0.0019	1.07	01Jan2000, 11:33
Area 3B	0.0108	6.28	01Jan2000, 05:15	Area 3B	0.0108	5.52	01Jan2000, 11:39
Diversion 3B	0.0108	5.27	01Jan2000, 05:15	Diversion 3B	0.0108	5.01	01Jan2000, 11:39
Diverted Flow 3B	0	1.01	01Jan2000, 05:15	Diverted Flow 3B	0	0.51	01Jan2000, 11:39
Area 3A	0.0026	1.62	01Jan2000, 05:06	Area 3A	0.0026	1.4	01Jan2000, 11:33
J-3	0.0134	6.87	01Jan2000, 05:09	J-3	0.0134	6.4	01Jan2000, 11:36
Outlet 3	0.0134	6.87	01Jan2000, 05:09	Outlet 3	0.0134	6.4	01Jan2000, 11:36
Area 4F	0.1204	57.13	01Jan2000, 06:57	Area 4F	0.1204	51.56	01Jan2000, 13:09
Area 4E	0.0198	11.64	01Jan2000, 05:21	Area 4E	0.0198	10.18	01Jan2000, 11:42
Area 4H	0.0132	8.06	01Jan2000, 05:12	Area 4H	0.0132	6.99	01Jan2000, 11:36
Area 4G	0.012	7.28	01Jan2000, 05:15	Area 4G	0.012	6.32	01Jan2000, 11:39
Area 4D	0.0054	3.36	01Jan2000, 05:06	Area 4D	0.0054	2.9	01Jan2000, 11:33
Depression 4D-H	0.1708	75.05	01Jan2000, 06:51	Depression 4D-H	0.1708	69.32	01Jan2000, 12:51
Area 4B	0.008	4.9	01Jan2000, 05:12	Area 4B	0.008	4.25	01Jan2000, 11:36
Area 4C	0.0026	1.61	01Jan2000, 05:09	Area 4C	0.0026	1.39	01Jan2000, 11:33
Depression 4C	0.0026	1.37	01Jan2000, 05:51	Depression 4C	0.0026	1.32	01Jan2000, 11:48
Depression 4B	0.1814	78.72	01Jan2000, 06:57	Depression 4B	0.1814	73.08	01Jan2000, 12:54
Area 4A	0.0028	1.74	01Jan2000, 05:06	Area 4A	0.0028	1.5	01Jan2000, 11:33
Junction 4	0.1842	79.63	01Jan2000, 06:57	Junction 4	0.1842	73.97	01Jan2000, 12:54
Outlet 4	0.1842	79.63	01Jan2000, 06:57	Outlet 4	0.1842	73.97	01Jan2000, 12:54
Area 5A	0.0587	34.22	01Jan2000, 05:42	Area 5A	0.0587	29.66	01Jan2000, 11:54
Area 5B	0.0052	3.22	01Jan2000, 05:09	Area 5B	0.0052	2.79	01Jan2000, 11:33
Depression 5B	0.0052	0.6	01Jan2000, 12:09	Depression 5B	0.0052	0.7	01Jan2000, 15:48
J-5	0.0639	34.22	01Jan2000, 05:42	J-5	0.0639	29.66	01Jan2000, 11:54
Outlet 5	0.0639	34.22	01Jan2000, 05:42	Outlet 5	0.0639	29.66	01Jan2000, 11:54
Area 6C	0.0463	25.39	01Jan2000, 05:48	Area 6C	0.0463	22.28	01Jan2000, 12:00
Area 6B	0.0043	2.26	01Jan2000, 05:15	Area 6B	0.0043	2.04	01Jan2000, 11:39
J-6B	1.9897	115.06	01Jan2000, 12:06	J-6B	1.9897	119.16	01Jan2000, 18:06
Area 6A	0.0047	2.46	01Jan2000, 05:15	Area 6A	0.0047	2.23	01Jan2000, 11:39
J-6A	1.9944	115.58	01Jan2000, 12:06	J-6A	1.9944	119.74	01Jan2000, 18:06
Outlet-6	1.9944	115.58	01Jan2000, 12:06	Outlet-6	1.9944	119.74	01Jan2000, 18:06
Area 7C	0.0363	21.46	01Jan2000, 05:36	Area 7C	0.0363	18.61	01Jan2000, 11:48
Area 7D	0.0147	9.08	01Jan2000, 05:09	Area 7D	0.0147	7.85	01Jan2000, 11:33
J-7B	1.926	108.62	01Jan2000, 12:09	J-7B	1.926	111.54	01Jan2000, 18:06
Area 7A	0.0118	7.01	01Jan2000, 05:06	Area 7A	0.0118	6.13	01Jan2000, 11:33
Area 7B	0.0013	0.91	01Jan2000, 05:00	Area 7B	0.0013	0.76	01Jan2000, 11:30
Outlet 7	1.9391	110.06	01Jan2000, 12:06	Outlet 7	1.9391	113.22	01Jan2000, 18:03
Area 8A	0.9497	361.38	01Jan2000, 08:24	Area 8A	0.9497	339.89	01Jan2000, 14:24
Storage 8A	1.875	105.55	01Jan2000, 14:30	Storage 8A	1.875	107.27	01Jan2000, 20:30
Area 8B	0.0022	1.46	01Jan2000, 05:06	Area 8B	0.0022	1.24	01Jan2000, 11:33
Area 8C	0.0023	1.39	01Jan2000, 05:09	Area 8C	0.0023	1.21	01Jan2000, 11:36
Area 8D	0.1544	83.96	01Jan2000, 06:09	Area 8D	0.1544	73.45	01Jan2000, 12:21
Depression 8D	0.1544	41.32	01Jan2000, 08:45	Depression 8D	0.1544	48.22	01Jan2000, 14:06
Area 8E	0.7664	367.85	01Jan2000, 06:54	Area 8E	0.7664	331.11	01Jan2000, 13:03
Depression 8E	0.7664	0	01Jan2000, 02:45	Depression 8E	0.7664	0	01Jan2000, 04:18
Outlet 8	1.875	105.55	01Jan2000, 14:30	Outlet 8	1.875	107.27	01Jan2000, 20:30
Area 9A	0.0227	15.74	01Jan2000, 05:03	Area 9A	0.0227	13.13	01Jan2000, 11:30
Area 9B	0.0108	6.9	01Jan2000, 05:12	Area 9B	0.0108	5.9	01Jan2000, 11:36
Area 9C	0.002	1.34	01Jan2000, 05:09	Area 9C	0.002	1.13	01Jan2000, 11:36
Outlet 9	0.0355	23.9	01Jan2000, 05:06	Outlet 9	0.0355	20.14	01Jan2000, 11:33
Area 10	0.0007	0.47	01Jan2000, 05:00	Area 10	0.0007	0.4	01Jan2000, 11:30
Outlet 10	0.0007	0.47	01Jan2000, 05:00	Outlet 10	0.0007	0.4	01Jan2000, 11:30
Area 11	0.0002	0.12	01Jan2000, 05:00	Area 11	0.0002	0.1	01Jan2000, 11:30
Outlet 11	0.0002	0.12	01Jan2000, 05:00	Outlet 11	0.0002	0.1	01Jan2000, 11:30
Area 12	0.0063	3.76	01Jan2000, 05:15	Area 12	0.0063	3.28	01Jan2000, 11:36
Outlet 12	0.0063	3.76	01Jan2000, 05:15	Outlet 12	0.0063	3.28	01Jan2000, 11:36

EXISTING HEC-HMS MODELING RESULTS
100YR STORM

100YR 24HR				100YR 48HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	95.39	01Jan2000, 17:03	Area 1C	0.2595	60.55	02Jan2000, 19:18
Area 1D	0.0155	6.54	01Jan2000, 15:09	Area 1D	0.0155	3.79	02Jan2000, 17:03
Depression 1D	0.0155	4.6	01Jan2000, 17:12	Depression 1D	0.0155	3.33	02Jan2000, 19:24
Area 1B	0.0031	1.36	01Jan2000, 15:05	Area 1B	0.0031	0.78	02Jan2000, 16:09
Depression 1BC	0.2781	66.15	01Jan2000, 19:38	Depression 1BC	0.2781	53.88	02Jan2000, 21:33
Diversion 1BC	0.2781	26.95	01Jan2000, 19:38	Diversion 1BC	0.2781	20.9	02Jan2000, 21:33
Diverted Flow 1BC	0	39.19	01Jan2000, 19:38	Diverted Flow 1BC	0	32.98	02Jan2000, 21:33
Area 1A	0.0025	1.09	01Jan2000, 15:01	Area 1A	0.0025	0.62	02Jan2000, 16:03
J-1	0.2806	27.25	01Jan2000, 19:38	J-1	0.2806	21.3	02Jan2000, 21:33
Outlet 1	0.2806	27.25	01Jan2000, 19:38	Outlet 1	0.2806	21.3	02Jan2000, 21:33
Area 2	0.0019	0.86	01Jan2000, 15:03	Area 2	0.0019	0.49	02Jan2000, 16:06
Outlet 2	0.0019	0.86	01Jan2000, 15:03	Outlet 2	0.0019	0.49	02Jan2000, 16:06
Area 3B	0.0108	4.49	01Jan2000, 15:08	Area 3B	0.0108	2.61	02Jan2000, 17:03
Diversion 3B	0.0108	4.33	01Jan2000, 15:08	Diversion 3B	0.0108	2.61	02Jan2000, 17:03
Diverted Flow 3B	0	0.16	01Jan2000, 15:08	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	1.13	01Jan2000, 15:03	Area 3A	0.0026	0.65	02Jan2000, 16:06
J-3	0.0134	5.45	01Jan2000, 15:06	J-3	0.0134	3.26	02Jan2000, 17:03
Outlet 3	0.0134	5.45	01Jan2000, 15:06	Outlet 3	0.0134	3.26	02Jan2000, 17:03
Area 4F	0.1204	45.55	01Jan2000, 16:54	Area 4F	0.1204	28.52	02Jan2000, 19:12
Area 4E	0.0198	8.32	01Jan2000, 15:12	Area 4E	0.0198	4.84	02Jan2000, 17:06
Area 4H	0.0132	5.68	01Jan2000, 15:07	Area 4H	0.0132	3.27	02Jan2000, 16:12
Area 4G	0.012	5.14	01Jan2000, 15:09	Area 4G	0.012	2.97	02Jan2000, 16:15
Area 4D	0.0054	2.34	01Jan2000, 15:03	Area 4D	0.0054	1.34	02Jan2000, 16:06
Depression 4D-H	0.1708	62.39	01Jan2000, 16:27	Depression 4D-H	0.1708	40.23	02Jan2000, 19:12
Area 4B	0.008	3.44	01Jan2000, 15:07	Area 4B	0.008	1.98	02Jan2000, 16:12
Area 4C	0.0026	1.12	01Jan2000, 15:05	Area 4C	0.0026	0.65	02Jan2000, 16:09
Depression 4C	0.0026	1.09	01Jan2000, 15:18	Depression 4C	0.0026	0.64	02Jan2000, 17:09
Depression 4B	0.1814	65.93	01Jan2000, 16:32	Depression 4B	0.1814	42.67	02Jan2000, 19:12
Area 4A	0.0028	1.21	01Jan2000, 15:03	Area 4A	0.0028	0.7	02Jan2000, 16:06
Junction 4	0.1842	66.81	01Jan2000, 16:31	Junction 4	0.1842	43.3	02Jan2000, 19:09
Outlet 4	0.1842	66.81	01Jan2000, 16:31	Outlet 4	0.1842	43.3	02Jan2000, 19:09
Area 5A	0.0587	24.52	01Jan2000, 15:26	Area 5A	0.0587	14.47	02Jan2000, 17:12
Area 5B	0.0052	2.25	01Jan2000, 15:04	Area 5B	0.0052	1.29	02Jan2000, 16:06
Depression 5B	0.0052	0.96	01Jan2000, 18:18	Depression 5B	0.0052	1.23	02Jan2000, 19:06
J-5	0.0639	24.52	01Jan2000, 15:26	J-5	0.0639	15.22	02Jan2000, 19:03
Outlet 5	0.0639	24.52	01Jan2000, 15:26	Outlet 5	0.0639	15.22	02Jan2000, 19:03
Area 6C	0.0463	18.56	01Jan2000, 15:35	Area 6C	0.0463	11.11	02Jan2000, 17:18
Area 6B	0.0043	1.67	01Jan2000, 15:09	Area 6B	0.0043	0.99	02Jan2000, 17:06
J-6B	1.9897	120.74	02Jan2000, 00:04	J-6B	1.9897	122.05	03Jan2000, 00:03
Area 6A	0.0047	1.82	01Jan2000, 15:09	Area 6A	0.0047	1.08	02Jan2000, 17:06
J-6A	1.9944	121.24	02Jan2000, 00:04	J-6A	1.9944	122.77	03Jan2000, 00:00
Outlet-6	1.9944	121.24	02Jan2000, 00:04	Outlet-6	1.9944	122.77	03Jan2000, 00:00
Area 7C	0.0363	15.3	01Jan2000, 15:20	Area 7C	0.0363	8.96	02Jan2000, 17:09
Area 7D	0.0147	6.35	01Jan2000, 15:05	Area 7D	0.0147	3.65	02Jan2000, 16:09
J-7B	1.926	114.18	02Jan2000, 00:04	J-7B	1.926	111.89	03Jan2000, 00:03
Area 7A	0.0118	4.95	01Jan2000, 15:04	Area 7A	0.0118	2.86	02Jan2000, 16:06
Area 7B	0.0013	0.6	01Jan2000, 15:01	Area 7B	0.0013	0.34	02Jan2000, 16:00
Outlet 7	1.9391	115.62	02Jan2000, 00:03	Outlet 7	1.9391	113.96	03Jan2000, 00:03
Area 8A	0.9497	313.53	01Jan2000, 18:09	Area 8A	0.9497	211.47	02Jan2000, 20:18
Storage 8A	1.875	109.04	02Jan2000, 01:33	Storage 8A	1.875	106.58	03Jan2000, 02:54
Area 8B	0.0022	0.99	01Jan2000, 15:03	Area 8B	0.0022	0.57	02Jan2000, 16:03
Area 8C	0.0023	0.98	01Jan2000, 15:05	Area 8C	0.0023	0.56	02Jan2000, 16:09
Area 8D	0.1544	62.44	01Jan2000, 16:08	Area 8D	0.1544	37.53	02Jan2000, 17:36
Depression 8D	0.1544	49.44	01Jan2000, 17:40	Depression 8D	0.1544	36.67	02Jan2000, 19:18
Area 8E	0.7664	291.75	01Jan2000, 16:50	Area 8E	0.7664	181.86	02Jan2000, 19:09
Depression 8E	0.7664	0	01Jan2000, 04:59	Depression 8E	0.7664	0	01Jan2000, 09:06
Outlet 8	1.875	109.04	02Jan2000, 01:33	Outlet 8	1.875	106.58	03Jan2000, 02:54
Area 9A	0.0227	10.53	01Jan2000, 15:02	Area 9A	0.0227	5.97	02Jan2000, 16:03
Area 9B	0.0108	4.78	01Jan2000, 15:07	Area 9B	0.0108	2.74	02Jan2000, 16:12
Area 9C	0.002	0.91	01Jan2000, 15:05	Area 9C	0.002	0.52	02Jan2000, 16:09
Outlet 9	0.0355	16.22	01Jan2000, 15:03	Outlet 9	0.0355	9.22	02Jan2000, 16:06
Area 10	0.0007	0.32	01Jan2000, 15:00	Area 10	0.0007	0.18	02Jan2000, 16:00
Outlet 10	0.0007	0.32	01Jan2000, 15:00	Outlet 10	0.0007	0.18	02Jan2000, 16:00
Area 11	0.0002	0.08	01Jan2000, 15:00	Area 11	0.0002	0.05	02Jan2000, 17:00
Outlet 11	0.0002	0.08	01Jan2000, 15:00	Outlet 11	0.0002	0.05	02Jan2000, 17:00
Area 12	0.0063	2.67	01Jan2000, 15:08	Area 12	0.0063	1.54	02Jan2000, 16:12
Outlet 12	0.0063	2.67	01Jan2000, 15:08	Outlet 12	0.0063	1.54	02Jan2000, 16:12

EXISTING HEC-HMS MODELING RESULTS
100YR STORM

100YR 72HR				100YR 120HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	45.18	03Jan2000, 15:03	Area 1C	0.2595	32.42	05Jan2000, 06:42
Area 1D	0.0155	2.81	03Jan2000, 12:06	Area 1D	0.0155	1.96	05Jan2000, 06:00
Depression 1D	0.0155	2.55	03Jan2000, 16:15	Depression 1D	0.0155	1.85	05Jan2000, 06:39
Area 1B	0.0031	0.58	03Jan2000, 12:03	Area 1B	0.0031	0.4	05Jan2000, 06:00
Depression 1BC	0.2781	41.36	03Jan2000, 18:45	Depression 1BC	0.2781	28.81	05Jan2000, 13:54
Diversion 1BC	0.2781	15.88	03Jan2000, 18:45	Diversion 1BC	0.2781	11.19	05Jan2000, 13:54
Diverted Flow 1BC	0	25.48	03Jan2000, 18:45	Diverted Flow 1BC	0	17.62	05Jan2000, 13:54
Area 1A	0.0025	0.46	03Jan2000, 12:00	Area 1A	0.0025	0.32	05Jan2000, 06:00
J-1	0.2806	16.17	03Jan2000, 18:45	J-1	0.2806	11.43	05Jan2000, 12:00
Outlet 1	0.2806	16.17	03Jan2000, 18:45	Outlet 1	0.2806	11.43	05Jan2000, 12:00
Area 2	0.0019	0.36	03Jan2000, 12:00	Area 2	0.0019	0.25	05Jan2000, 06:00
Outlet 2	0.0019	0.36	03Jan2000, 12:00	Outlet 2	0.0019	0.25	05Jan2000, 06:00
Area 3B	0.0108	1.94	03Jan2000, 12:03	Area 3B	0.0108	1.35	05Jan2000, 06:00
Diversion 3B	0.0108	1.94	03Jan2000, 12:03	Diversion 3B	0.0108	1.35	05Jan2000, 06:00
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.48	03Jan2000, 12:00	Area 3A	0.0026	0.33	05Jan2000, 06:00
J-3	0.0134	2.41	03Jan2000, 12:03	J-3	0.0134	1.69	05Jan2000, 06:00
Outlet 3	0.0134	2.41	03Jan2000, 12:03	Outlet 3	0.0134	1.69	05Jan2000, 06:00
Area 4F	0.1204	21.25	03Jan2000, 14:51	Area 4F	0.1204	15.21	05Jan2000, 06:36
Area 4E	0.0198	3.59	03Jan2000, 12:06	Area 4E	0.0198	2.5	05Jan2000, 06:03
Area 4H	0.0132	2.42	03Jan2000, 12:03	Area 4H	0.0132	1.68	05Jan2000, 06:00
Area 4G	0.012	2.2	03Jan2000, 12:06	Area 4G	0.012	1.53	05Jan2000, 06:00
Area 4D	0.0054	0.99	03Jan2000, 12:00	Area 4D	0.0054	0.69	05Jan2000, 06:00
Depression 4D-H	0.1708	29.89	03Jan2000, 14:36	Depression 4D-H	0.1708	21.49	05Jan2000, 06:18
Area 4B	0.008	1.47	03Jan2000, 12:03	Area 4B	0.008	1.02	05Jan2000, 06:00
Area 4C	0.0026	0.48	03Jan2000, 12:03	Area 4C	0.0026	0.33	05Jan2000, 06:00
Depression 4C	0.0026	0.47	03Jan2000, 12:12	Depression 4C	0.0026	0.33	05Jan2000, 06:06
Depression 4B	0.1814	31.71	03Jan2000, 14:39	Depression 4B	0.1814	22.82	05Jan2000, 06:18
Area 4A	0.0028	0.51	03Jan2000, 12:00	Area 4A	0.0028	0.36	05Jan2000, 06:00
Junction 4	0.1842	32.19	03Jan2000, 14:39	Junction 4	0.1842	23.16	05Jan2000, 06:15
Outlet 4	0.1842	32.19	03Jan2000, 14:39	Outlet 4	0.1842	23.16	05Jan2000, 06:15
Area 5A	0.0587	10.69	03Jan2000, 12:18	Area 5A	0.0587	7.48	05Jan2000, 06:03
Area 5B	0.0052	0.96	03Jan2000, 12:03	Area 5B	0.0052	0.66	05Jan2000, 06:00
Depression 5B	0.0052	0.92	03Jan2000, 14:12	Depression 5B	0.0052	0.66	05Jan2000, 06:03
J-5	0.0639	11.41	03Jan2000, 14:09	J-5	0.0639	8.14	05Jan2000, 06:03
Outlet 5	0.0639	11.41	03Jan2000, 14:09	Outlet 5	0.0639	8.14	05Jan2000, 06:03
Area 6C	0.0463	8.21	03Jan2000, 12:24	Area 6C	0.0463	5.79	05Jan2000, 06:06
Area 6B	0.0043	0.73	03Jan2000, 12:06	Area 6B	0.0043	0.52	05Jan2000, 06:00
J-6B	1.9897	114.8	04Jan2000, 00:00	J-6B	1.9897	99.66	05Jan2000, 20:57
Area 6A	0.0047	0.8	03Jan2000, 12:06	Area 6A	0.0047	0.57	05Jan2000, 06:00
J-6A	1.9944	115.33	04Jan2000, 00:00	J-6A	1.9944	100.03	05Jan2000, 21:00
Outlet-6	1.9944	115.33	04Jan2000, 00:00	Outlet-6	1.9944	100.03	05Jan2000, 21:00
Area 7C	0.0363	6.63	03Jan2000, 12:12	Area 7C	0.0363	4.63	05Jan2000, 06:03
Area 7D	0.0147	2.7	03Jan2000, 12:03	Area 7D	0.0147	1.88	05Jan2000, 06:00
J-7B	1.926	107.46	04Jan2000, 00:03	J-7B	1.926	94.56	05Jan2000, 20:27
Area 7A	0.0118	2.12	03Jan2000, 12:03	Area 7A	0.0118	1.48	05Jan2000, 06:00
Area 7B	0.0013	0.25	03Jan2000, 12:00	Area 7B	0.0013	0.17	05Jan2000, 06:00
Outlet 7	1.9391	108.97	04Jan2000, 00:00	Outlet 7	1.9391	95.61	05Jan2000, 20:30
Area 8A	0.9497	160.81	03Jan2000, 16:36	Area 8A	0.9497	116.18	05Jan2000, 07:51
Storage 8A	1.875	102.29	04Jan2000, 02:03	Storage 8A	1.875	90.42	05Jan2000, 20:09
Area 8B	0.0022	0.42	03Jan2000, 12:00	Area 8B	0.0022	0.29	05Jan2000, 06:00
Area 8C	0.0023	0.42	03Jan2000, 12:03	Area 8C	0.0023	0.29	05Jan2000, 06:00
Area 8D	0.1544	27.66	03Jan2000, 12:57	Area 8D	0.1544	19.63	05Jan2000, 06:09
Depression 8D	0.1544	27.37	03Jan2000, 14:48	Depression 8D	0.1544	19.55	05Jan2000, 06:33
Area 8E	0.7664	135.47	03Jan2000, 14:48	Area 8E	0.7664	96.9	05Jan2000, 06:33
Depression 8E	0.7664	0	01Jan2000, 12:06	Depression 8E	0.7664	0.59	06Jan2000, 06:06
Outlet 8	1.875	102.29	04Jan2000, 02:03	Outlet 8	1.875	90.42	05Jan2000, 20:09
Area 9A	0.0227	4.38	03Jan2000, 12:00	Area 9A	0.0227	3.01	05Jan2000, 06:00
Area 9B	0.0108	2.03	03Jan2000, 12:03	Area 9B	0.0108	1.4	05Jan2000, 06:00
Area 9C	0.002	0.38	03Jan2000, 12:03	Area 9C	0.002	0.26	05Jan2000, 06:00
Outlet 9	0.0355	6.79	03Jan2000, 12:00	Outlet 9	0.0355	4.67	05Jan2000, 06:00
Area 10	0.0007	0.13	03Jan2000, 12:00	Area 10	0.0007	0.09	05Jan2000, 06:00
Outlet 10	0.0007	0.13	03Jan2000, 12:00	Outlet 10	0.0007	0.09	05Jan2000, 06:00
Area 11	0.0002	0.04	03Jan2000, 12:00	Area 11	0.0002	0.02	05Jan2000, 06:00
Outlet 11	0.0002	0.04	03Jan2000, 12:00	Outlet 11	0.0002	0.02	05Jan2000, 06:00
Area 12	0.0063	1.14	03Jan2000, 12:03	Area 12	0.0063	0.8	05Jan2000, 06:00
Outlet 12	0.0063	1.14	03Jan2000, 12:03	Outlet 12	0.0063	0.8	05Jan2000, 06:00

EXISTING HEC-HMS MODELING RESULTS
100YR STORM

100YR 240HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.2595	18.6	09Jan2000, 12:18
Area 1D	0.0155	1.12	09Jan2000, 12:00
Depression 1D	0.0155	1.1	09Jan2000, 12:15
Area 1B	0.0031	0.23	09Jan2000, 12:00
Depression 1BC	0.2781	17.63	10Jan2000, 01:21
Diversion 1BC	0.2781	10.48	10Jan2000, 01:21
Diverted Flow 1BC	0	7.15	10Jan2000, 01:21
Area 1A	0.0025	0.18	09Jan2000, 12:00
J-1	0.2806	10.64	10Jan2000, 00:00
Outlet 1	0.2806	10.64	10Jan2000, 00:00
Area 2	0.0019	0.14	09Jan2000, 12:00
Outlet 2	0.0019	0.14	09Jan2000, 12:00
Area 3B	0.0108	0.77	09Jan2000, 12:00
Diversion 3B	0.0108	0.77	09Jan2000, 12:00
Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0026	0.19	09Jan2000, 12:00
J-3	0.0134	0.96	09Jan2000, 12:00
Outlet 3	0.0134	0.96	09Jan2000, 12:00
Area 4F	0.1204	8.7	09Jan2000, 12:15
Area 4E	0.0198	1.42	09Jan2000, 12:00
Area 4H	0.0132	0.96	09Jan2000, 12:00
Area 4G	0.012	0.87	09Jan2000, 12:00
Area 4D	0.0054	0.39	09Jan2000, 12:00
Depression 4D-H	0.1708	12.33	09Jan2000, 12:09
Area 4B	0.008	0.58	09Jan2000, 12:00
Area 4C	0.0026	0.19	09Jan2000, 12:00
Depression 4C	0.0026	0.19	09Jan2000, 12:03
Depression 4B	0.1814	13.09	09Jan2000, 12:09
Area 4A	0.0028	0.2	09Jan2000, 12:00
Junction 4	0.1842	13.3	09Jan2000, 12:06
Outlet 4	0.1842	13.3	09Jan2000, 12:06
Area 5A	0.0587	4.25	09Jan2000, 12:03
Area 5B	0.0052	0.38	09Jan2000, 12:00
Depression 5B	0.0052	0.38	09Jan2000, 12:00
J-5	0.0639	4.63	09Jan2000, 12:03
Outlet 5	0.0639	4.63	09Jan2000, 12:03
Area 6C	0.0463	3.3	09Jan2000, 12:03
Area 6B	0.0043	0.3	09Jan2000, 12:00
J-6B	1.9897	77.18	10Jan2000, 00:03
Area 6A	0.0047	0.32	09Jan2000, 12:00
J-6A	1.9944	77.48	10Jan2000, 00:03
Outlet-6	1.9944	77.48	10Jan2000, 00:03
Area 7C	0.0363	2.63	09Jan2000, 12:00
Area 7D	0.0147	1.07	09Jan2000, 12:00
J-7B	1.926	72.92	10Jan2000, 00:06
Area 7A	0.0118	0.84	09Jan2000, 12:00
Area 7B	0.0013	0.1	09Jan2000, 12:00
Outlet 7	1.9391	73.79	10Jan2000, 00:03
Area 8A	0.9497	67.86	09Jan2000, 12:42
Storage 8A	1.875	69.9	10Jan2000, 02:00
Area 8B	0.0022	0.16	09Jan2000, 12:00
Area 8C	0.0023	0.17	09Jan2000, 12:00
Area 8D	0.1544	11.17	09Jan2000, 12:06
Depression 8D	0.1544	11.16	09Jan2000, 12:21
Area 8E	0.7664	55.38	09Jan2000, 12:15
Depression 8E	0.7664	4.31	11Jan2000, 03:30
Outlet 8	1.875	69.9	10Jan2000, 02:00
Area 9A	0.0227	1.7	09Jan2000, 12:00
Area 9B	0.0108	0.79	09Jan2000, 12:00
Area 9C	0.002	0.15	09Jan2000, 12:00
Outlet 9	0.0355	2.64	09Jan2000, 12:00
Area 10	0.0007	0.05	09Jan2000, 12:00
Outlet 10	0.0007	0.05	09Jan2000, 12:00
Area 11	0.0002	0.01	09Jan2000, 12:00
Outlet 11	0.0002	0.01	09Jan2000, 12:00
Area 12	0.0063	0.45	09Jan2000, 12:00
Outlet 12	0.0063	0.45	09Jan2000, 12:00

APPENDIX E

IDENTIFIED PROBLEM AREAS / SURFACE CONNECTIONS EXHIBIT


AREA TRIBUTARY TO
DRAIN TILE SYSTEM
(18" AND 20")
1,362 AC + 31 AC (TENERELLI)=1,393 AC±
DAVIS RD
DAUBERMAN RD
8E
8D
16" CLAY DRAIN TILE
20" RCP DRAIN TILE
US 30 DIRECT CONNECTION TO
DRAIN TILE SYSTEM
23 AC±
10 YR. FLOW=41.7 CFS±
SURFACE WATERS (WATERSHED 8A)
DIRECT CONNECTION TO
DRAIN TILE SYSTEM AT
18" FLARED END SECTION
INLET SUBMERGED AT 10 YR
AND LARGER STORM EVENTS
10 YR. FLOW=6.4 CFS±
DAVIS RD / US 30 AREA
DIRECT CONNECTION TO
DRAIN TILE SYSTEM
(VIA 10" DRAIN TILE)
14.8 AC±
10 YR. FLOW=25.4 CFS±
10" CLAY DRAIN TILE
WELCH CREEK
8C
8B
8A
7C
7D
7B
1C
9B
9C
9A
US 30
US 30 STORM SEWER
7A
6C
6B
6A
18" CLAY DRAIN TILE
20" RCP DRAIN TILE
5A
5B
4A
4B
4C
4D
4E
4F
4G
4H
1D
1" = 500'
TENERELLI SUBDIVISION
DIRECT CONNECTION TO
DRAIN TILE SYSTEM
31 AC±
10 YR. FLOW=1.9 CFS±
DRAFT

FILE NAME = $FILEL$

BLA, Inc. ITASCA, ILLINOIS	USER NAME = $USER$	DESIGNED - MK	REVISED -
		DRAWN - MK	REVISED -
	PLOT SCALE = $SCALE$	CHECKED - KEK	REVISED -
	PLOT DATE = $DATE$	DATE - 08/11/2018	REVISED -

KANE COUNTY
DIVISION OF TRANSPORTATION

DRAIN TILE DRAINAGE AREAS WITH NOTED SURFACE FLOW CONNECTIONS

SCALE: | SHEET ___ OF SHEETS | STA. ________ TO STA. ________

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		___

CONTRACT NO.

ILLINOIS FED. AID PROJECT

APPENDIX F

SURFACE CONNECTIONS – WATERSHED FLOW RATE CALCULATIONS

US-30 / Davis Intersection Watershed – 10 Year Flow Calculation

Rational Method Used

Runoff Coefficient
Total Drainage Area =14.8 AC
Impervious Area =3.6 AC
Pervious Area =11.2 AC

$$\frac{[3.6(0.9)+11.2(0.35)]}{14.8} = 0.48$$

Time of Concentration
See attached Win-TR55 time of concentration data sheet
26.8 Min

10-yr Intensity-Bulletin 70
3.57

Total Flow
Q=CIA
Q=(0.48)(3.57)(14.8) = **25.4 CFS**

Kane County, Illinois

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
US30/DAVIS							
SHEET	100	0.0120	0.170				0.227
SHALLOW	248	0.0087	0.050				0.046
CHANNEL	1125	0.0016	0.035	16.00	14.70	1.806	0.173
					Time of Concentration		.446

US-30 Watershed – 10 Year Flow Calculation

Rational Method Used

Runoff Coefficient
Total Drainage Area =23.0 AC
Impervious Area =8.3 AC
Pervious Area =14.7 AC

$$\frac{[8.3(0.9)+14.7(0.35)]}{23.0} = 0.55$$

Time of Concentration
See attached Win-TR55 time of concentration data sheet
31.1 Min

10-yr Intensity-Bulletin 70
3.30

Total Flow
Q=CIA
Q=(0.55)(3.30)(23.0) = **41.7 CFS**

Kane County, Illinois

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
US 30							
SHEET	62	0.0065	0.240				0.261
SHALLOW	30	0.0050	0.025				0.006
CHANNEL	2674	0.0031	0.013	1.77	5.60	2.959	0.251
					Time of Concentration		.518

Watershed 8A, 18" Field Connection – 10 Year Flow Calculation

Surface Flow HEC-HMS model 10 year high water level data used with HY-8 culvert software.

The 18" CMP is a culvert which connects the low area of the filed to the agricultural field with the swale at the drain tile surface connection location. Based on the culvert condition HY-8 was used to model the capacity at the existing 10 year high water level taken from the HEC-HMS model.

See attached HY-8 Analysis Results Summary Table.

Total Flow
Based on the 10 year HWL of 700.52 the total culvert flow is **6.40 cfs**.

HY-8 Analysis Results

Culvert Summary Table - Culvert 1

Culvert Crossing: Watershed 8 - 18" CMP

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
1.00	1.00	698.62	0.53	0.59	2-M2c	0.46	0.37	0.37	0.31	2.96	1.12
1.90	1.90	698.86	0.75	0.83	2-M2c	0.66	0.52	0.52	0.43	3.53	1.34
2.80	2.80	699.06	0.93	1.03	2-M2c	0.83	0.63	0.63	0.52	3.94	1.50
3.70	3.70	699.26	1.09	1.23	2-M2c	1.00	0.73	0.73	0.60	4.30	1.61
4.00	4.00	699.33	1.14	1.30	2-M2c	1.06	0.77	0.77	0.63	4.41	1.65
5.50	5.50	699.79	1.40	1.76	7-M2c	1.50	0.90	0.90	0.73	4.96	1.80
6.40	6.40	700.43	1.58	2.40	7-M2c	1.50	0.97	0.97	0.79	5.28	1.87
7.30	7.13	701.02	1.74	2.99	7-M2c	1.50	1.03	1.03	0.84	5.51	1.93
8.20	7.20	701.07	1.75	3.04	7-M2c	1.50	1.04	1.04	0.88	5.53	1.99
9.10	7.25	701.11	1.77	3.08	7-M2c	1.50	1.04	1.04	0.93	5.55	2.05
10.00	7.29	701.14	1.78	3.11	7-M2c	1.50	1.04	1.04	0.97	5.56	2.10

Tenerelli Subdivision Watershed – 10 Year Flow Calculation

Orifice Equation Used

Per the Applied Technologies Engineering Plans for the 2013 Drainage Improvements a 6" restrictor pipe was installed in the 12" outfall pipe connection to the existing drain tile system manhole. For this reason orifice flow was used to determine the flow rate tributary to the drain tile system and full depth was assumed at a high water level of 696.00. Invert of orifice = 692.00

$$Q = CA\sqrt{2gH}$$

Total Flow

$Q = (0.61)(0.196)\sqrt{64.4}(696 - (692.0 + \frac{0.5}{2})$ = ***1.9 cfs***

APPENDIX G

KANE COUNTY 121 AC COMMERCIAL CORRIDOR MEMO

COUNTY OF KANE

KANE COUNTY DIVISION OF ENVIRONMENTAL & WATER RESOURCES

Kenneth N. Anderson, Jr
Director

Jodie L. Wollnik, P.E., CFM
Assistant Director

County Government Center
719 Batavia Avenue
Geneva, IL 60134
Phone: (630) 232-3497
Fax: (630) 208-3837
e-mail: WollnikJodie@co.kane.il.us
website: http://www.co.kane.il.us

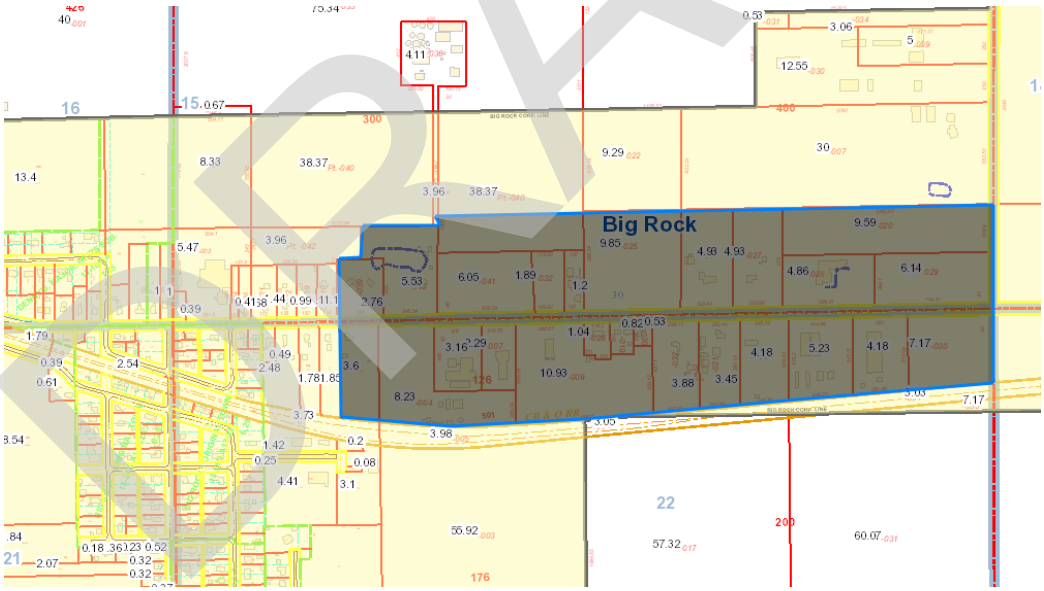
To: BIG ROCK NORTH SIDE FILE - Revised

From: Jodie Wollnik, Water Resources

Date August 29, 2018

RE: Village of Big Rock Rt 30 Storm Sewer project

The design through the Dauberman Overpass Corridor should consider the 121 acres along Rt 30 shown in grey below to separate the urban drainage from the farm drainage system. We would recommend that the storm sewer provide a capacity of 0.10 cfs/acre for the land tributary allowing for the creation of detention storage for the properties tributary under the Kane County Stormwater Management Ordinance to encourage more storage in the system. We feel that this allowable flow is consistent with Illinois Drainage Law and recognizes that there are downstream drainage issues on Welch Creek as well for which we do not want exacerbate.



The 100 year flow at the Welch Creek Bridge at Rt 30 is 2,638 cfs. The proposed new storm sewer would add 0.45% to the total flow at the bridge. BNSF replaced the bridge in 2014 and lowered the headwater and tailwater at the bridge at Rt 30 (HEC-RAS model is available). We believe the modeling would show that the addition of the new 12.1 cfs would not impact the headwater even if both peaks occur at the same time.
It is our desire to proceed in this manner to be consistent with Illinois Drainage Law and our Stormwater Ordinance.

APPENDIX H

US-30 IMPROVEMENT PLANS (TRUNCATED) FROM 1984

FOR INDEX OF SHEETS, SEE SHEET NO. 2

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED FEDERAL AID HIGHWAY

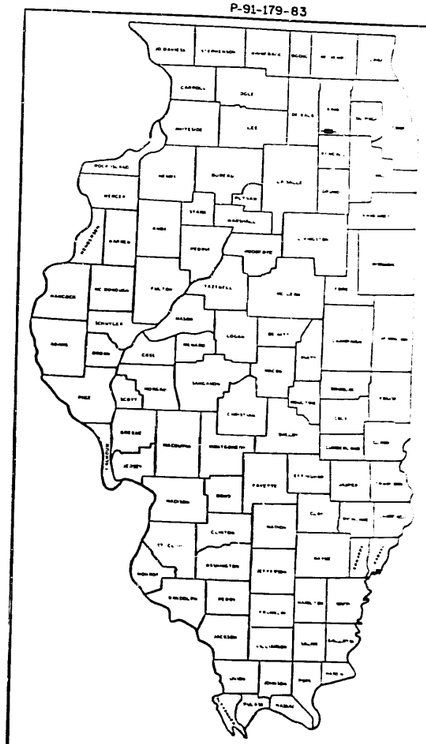
SCALES		
	PLAN	1" = 40'
	PROFILE HORIZ.	1" = 40'
	PROFILE VERT.	1" = 5'
	CROSS SECTIONS	H. 1" = 10' V. 1" = 5"

FAP-573 (US RTE 30)
SECTION (30&31) WRS-1(80)
KANE COUNTY
PROJECT NO. IX-573(16)
C-91-294-83

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
573	*	KANE	36	
F.H.W.A. REG.	ILLINOIS	PROJECT		

*(30&31) WRS-1(80)

P-91-179-83

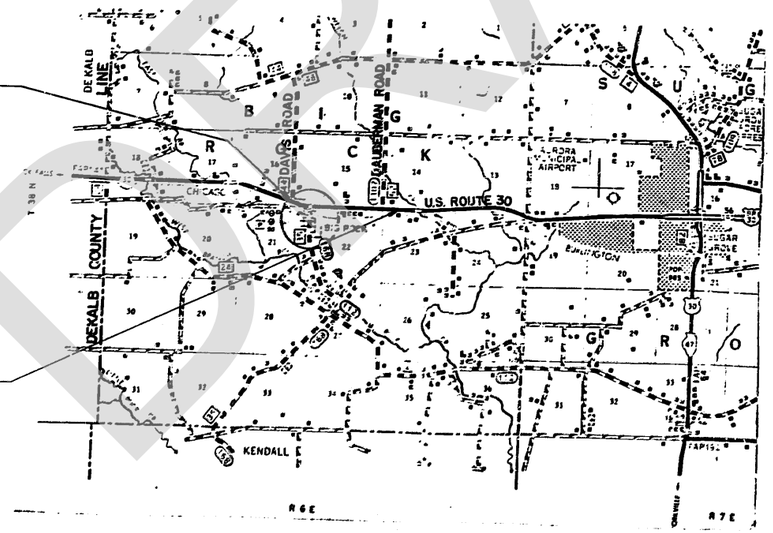


LOCATION OF SECTION INDICATED THUS: —

N

IMPROVEMENT BEGINS STATION 236+00

IMPROVEMENT ENDS STATION 307+00



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED March 9 19 84
DISTRICT ENGINEER

EXAMINED 3-22 19 84

PASSED 3-22 19 84
ENGINEER OF PLANS AND CONTRACTS

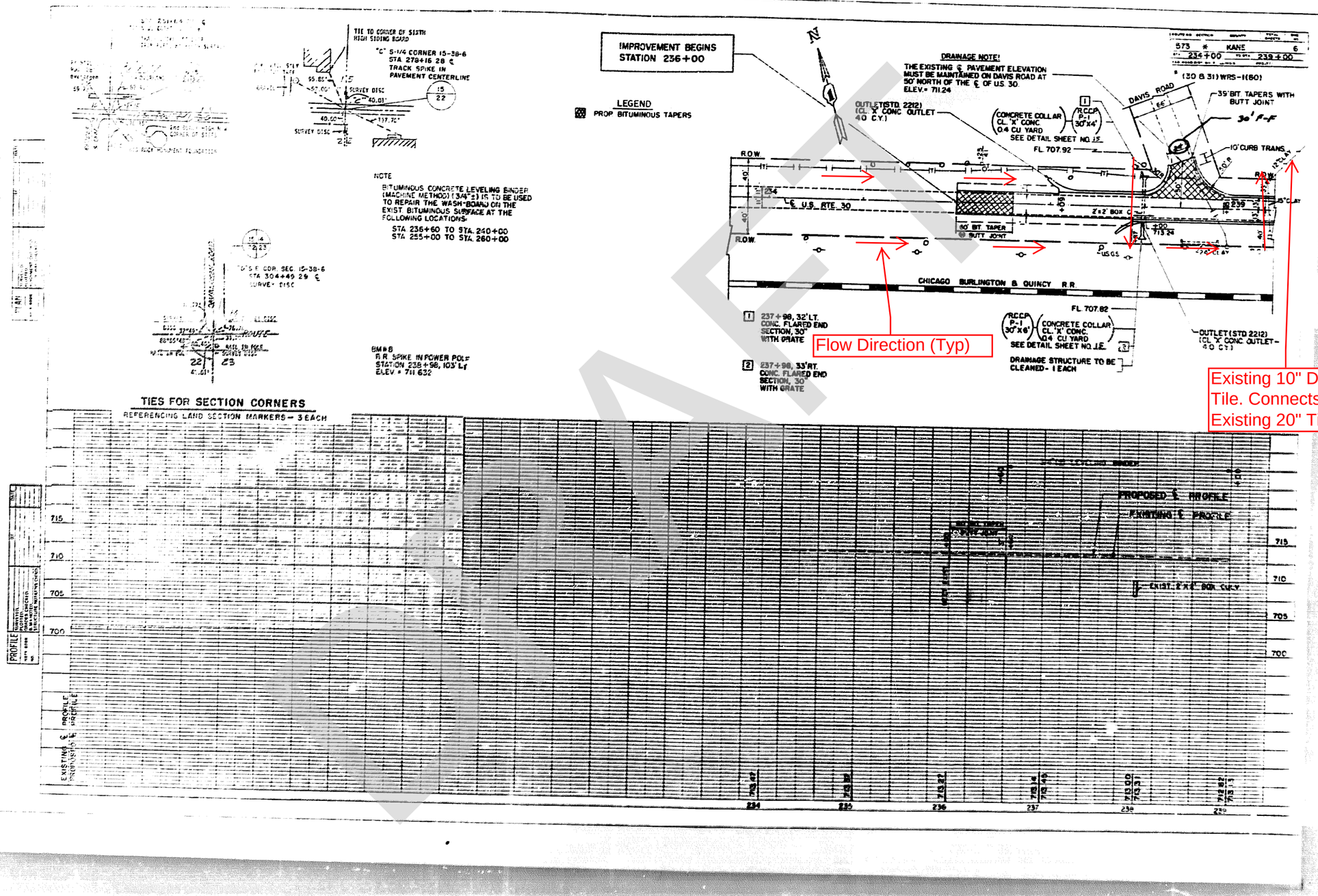
APPROVED 3-22 19 84
ENGINEER OF BRIDGES
DIRECTOR BUREAU OF HIGHWAYS

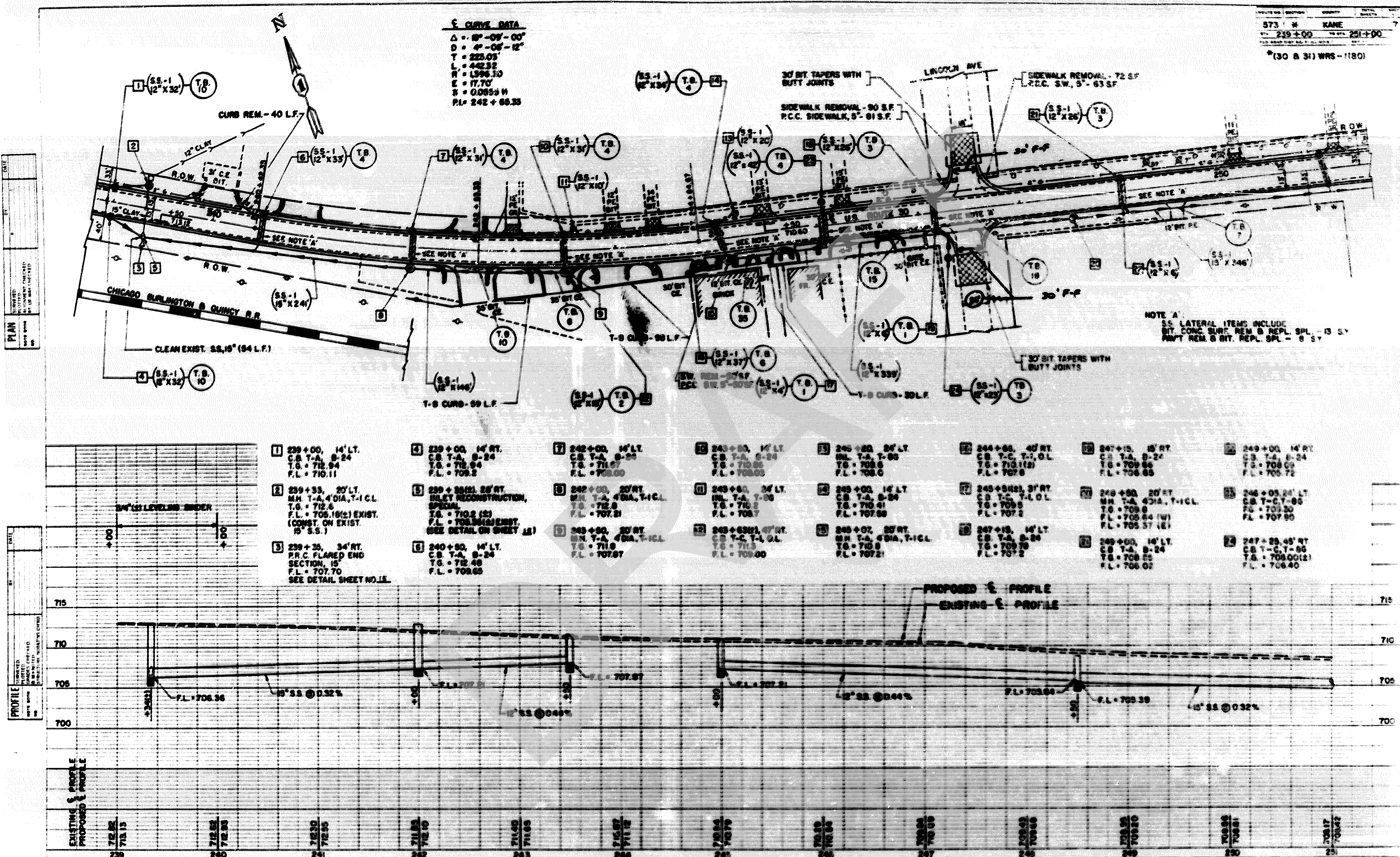
CONTRACT NO. 36979

NET LENGTH OF PROJECT = 7,100.00 LINEAL FEET OR 1.345 MILES

T. MORIMOTO

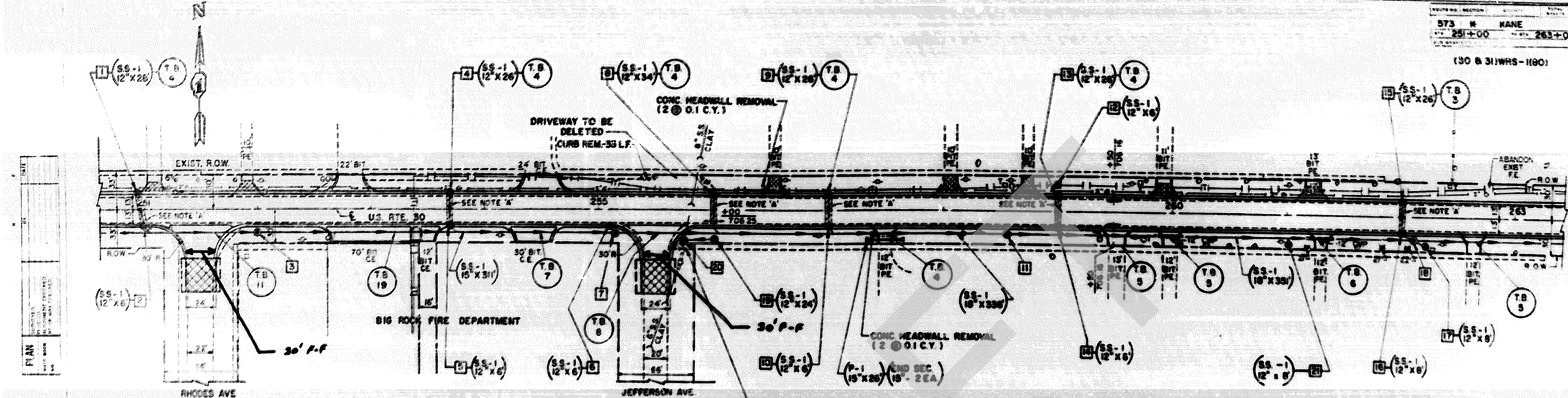
KANE COUNTY SECTION(30&31) WRS-1(80) F.A. ROUTE 573


IMPROVEMENT BEGINS STATION 236+00
LEGEND
PROP. BITUMINOUS TAPERS
NOTE
BITUMINOUS CONCRETE LEVELING BINDER (MACHINE METHOD) (3/4"±) IS TO BE USED TO REPAIR THE WASH-BOARD ON THE EXIST. BITUMINOUS SURFACE AT THE FOLLOWING LOCATIONS-
STA 236+60 TO STA. 240+00
STA 255+00 TO STA. 260+00
TIES FOR SECTION CORNERS
REFERENCING LAND SECTION MARKERS - 3 EACH
DRAINAGE NOTE!
THE EXISTING ℄ PAVEMENT ELEVATION MUST BE MAINTAINED ON DAVIS ROAD AT 50' NORTH OF THE ℄ OF U.S. 30.
ELEV.= 711.24
573 * KANE 6
234+00 239+00
(30 & 31) WRS-1(60)
DAVIS ROAD
39' BIT. TAPERS WITH BUTT JOINT
30' F-F
10' CURB TRANS.
OUTLET (STD 2212) (CL 'X' CONC. OUTLET - 4.0 C.Y.)
CONCRETE COLLAR CL 'X' CONC. (0.4 CU YARD) SEE DETAIL SHEET NO. 15
RCCP P-1 30"X4'
FL. 707.92
R.O.W.
℄ U.S. RTE. 30
60' BIT. TAPER
BUTT JOINT
2'x2' BOX C
CHICAGO BURLINGTON & QUINCY R.R.
237+98, 32' LT. CONC. FLARED END SECTION, 30" WITH GRATE
237+98, 33' RT. CONC. FLARED END SECTION, 30" WITH GRATE
Flow Direction (Typ)
RCCP P-1 30"X6'
CONCRETE COLLAR CL 'X' CONC. (0.4 CU YARD) SEE DETAIL SHEET NO. 15
DRAINAGE STRUCTURE TO BE CLEANED - 1 EACH
FL. 707.82
OUTLET (STD 2212) (CL 'X' CONC. OUTLET - 4.0 C.Y.)
Existing 10" Drain Tile. Connects to Existing 20" Tile
BM#8
R.R. SPIKE IN POWER POLE
STATION 238+98, 103' Lt.
ELEV. = 711.632
PROPOSED ℄ PROFILE
EXISTING ℄ PROFILE
EXIST. 2'x2' BOX CULV.
715
710
705
700
234
235
236
237
238
239



573 | * | KANE | 7
239+00 | 251+00
*(30 & 31) WRS-1(80)
℄ CURVE DATA
Δ = 18°-09'-00"
D = 4°-05'-12"
T = 223.03'
L = 442.32
R = 1,398.30
E = 17.70'
S = 0.0533 ft
P.I. = 242 + 65.33
CURB REM. - 40 L.F.
CHICAGO BURLINGTON & QUINCY R.R.
CLEAN EXIST. SS.,15" (94 L.F.)
T-S CURB - 59 L.F.
T-S CURB - 30 L.F.
LINCOLN AVE
30' BIT. TAPERS WITH BUTT JOINTS
SIDEWALK REMOVAL - 72 S.F.
P.C.C. S.W., 5" - 63 S.F.
SIDEWALK REMOVAL - 90 S.F.
P.C.C. SIDEWALK, 5" - 81 S.F.
U.S. ROUTE 30
SEE NOTE 'A'
R.O.W.
30' F-F
NOTE 'A'
S.S. LATERAL ITEMS INCLUDE
BIT. CONC. SURF. REM. & REPL. SPL. - 13 S.Y.
PAV'T REM. & BIT. REPL. SPL. - 8 S.Y.
1 239+00, 14' LT. C.B. T-A, B-24 T.G. = 712.94 F.L. = 710.11
2 239+33, 20' LT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 712.6 F.L. = 705.19(±) EXIST. (CONST. ON EXIST. 15" S.S.)
3 239+35, 34' RT. P.R.C. FLARED END SECTION, 15" F.L. = 707.70 SEE DETAIL SHEET NO. 15
4 239+00, 14' RT. C.B. T-A, B-24 T.G. = 712.94 F.L. = 709.2
5 239+38(±), 28' RT. INLET RECONSTRUCTION, SPECIAL T.G. = 710.2 (±) F.L. = 708.38(±) EXIST. (SEE DETAIL ON SHEET 15)
6 240+90, 14' LT. C.B. T-A, B-24 T.G. = 712.48 F.L. = 709.65
7 242+00, 14' LT. C.B. T-A, B-24 T.G. = 711.67 F.L. = 709.00
8 242+00, 20' RT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 712.8 F.L. = 707.21
9 243+50, 20' RT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 711.8 F.L. = 707.87
10 243+50, 14' LT. C.B. T-A, B-24 T.G. = 710.86 F.L. = 709.03
11 243+60, 34' LT. INL. T-A, T-8G T.G. = 710.2 F.L. = 708.7
12 243+63(±), 47' RT. C.B. T-C, T-1, O.L. T.G. = 711.5 F.L. = 709.00
13 245+20, 24' LT. INL. T-A, T-8G T.G. = 709.6 F.L. = 708.0
14 245+00, 14' LT. C.B. T-A, B-24 T.G. = 710.41 F.L. = 707.90
15 245+07, 20' RT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 710.8 F.L. = 707.21
16 244+88, 40' RT. C.B. T-C, T-1, O.L. T.G. = 710.1(±) F.L. = 707.8
17 245+31(±), 31' RT. C.B. T-C, T-1, O.L. T.G. = 709.8 F.L. = 707.2
18 247+15, 14' LT. C.B. T-A, B-24 T.G. = 709.70 F.L. = 707.2
19 247+15, 15' RT. C.B. T-A, B-24 T.G. = 709.66 F.L. = 706.65
20 248+50, 20' RT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 709.8 F.L. = 705.64 (W) F.L. = 705.37 (E)
21 249+00, 14' LT. C.B. T-A, B-24 T.G. = 708.55 F.L. = 706.07
22 249+00, 14' RT. C.B. T-A, B-24 T.G. = 708.09 F.L. = 705.72
23 246+05, 24' LT. C.B. T-C, T-8G T.G. = 709.30 F.L. = 707.90
24 247+25, 45' RT. C.B. T-C, T-8G T.G. = 709.00(±) F.L. = 706.40
3/4" (±) LEVELING BINDER
PROPOSED ℄ PROFILE
EXISTING ℄ PROFILE
F.L. = 706.36
15" S.S. @ 0.32%
12" S.S. @ 0.40%
F.L. = 707.21
F.L. = 707.87
12" S.S. @ 0.44%
F.L. = 705.64
F.L. = 705.39
15" S.S. @ 0.32%
715
710
705
700
EXISTING ℄ PROFILE
PROPOSED ℄ PROFILE
239
240
241
242
243
244
245
246
247
248
249
250
251
PLAN
PROFILE

573 * KANE 8
251+00 263+00
(30 & 31)WRS-1(80)



NOTES:

A. S.S. LATERAL ITEMS INCLUDES
BIT. CONC. SURF. REM. & REPL. – 13 S.Y.
PAV'T REM & BIT. REPL. SPL. – 8 S.Y.

B. EXIST. CMP CULV. TO REMAIN (ENDS TO BE CRUSHED-INCIDENTAL)
STA. 256+50 LT. & 261+20

B.M. 9 – ⊔ CUT IN CONC. AT EAST DOOR OF BIG ROCK FIRE DEPT. STA. 253 + 32, 60' RT.
ELEV. = 707.166

1 — 250 + 95, 14' LT.
C.B. T-A, B-24
T.G = 708.14
F.L = 705.31

2 — 251 + 00, 14' RT
C.B. T-A, B-24
T.G = 708.25
F.L = 705.21

3 — 252 + 00, 20' RT
M.H. T-A, 4' DIA., T-1 C.L.
T.G = 707.60
F.L = 704.27

4 — 253 + 70, 14' LT.
C.B. T-A, B-24
T.G = 707.06
F.L = 704.23

5 — 253 + 70, 14' RT.
C.B. T-A, B-24
T.G. = 707.02
F.L. = 703.97

6 — 255 + 10, 14' RT.
C.B. T-A, B-24
T.G = 706.49
F.L. = 703.66

7 — 255 + 15, 20' RT.
M.H. T-A, 4' DIA., T-1 C.L.
T.G = 706.6
F.L. = 703.26 (W)
F.L = 703.01 (E)

8 — 256 + 00, 14' LT.
C.B. T-A, B-24
T.G = 706.40
F.L. = 703.57

9 — 257 + 00, 14' LT.
C.B. T-A, B-24
T.G = 706.10
F.L = 703.27

10 — 257 + 00, 14' RT.
C.B. T-A, B-24
T.G = 705.95
F.L = 702.97

11 — 258 + 55, 20' RT.
M.H. T-A, 4' DIA., T-1 C.L.
T.G = 706.2
F.L = 702.13

12 — 259 + 00, 22' LT.
INL. A, T-85
T.G = 705.5
F.L = 704.0

13 — 259 + 00, 14' LT.
C.B. T-A, B-24
T.G = 706.10
F.L. = 703.27

14 — 259 + 00, 14' RT.
C.B. T-A, B-24
T.G = 706.01
F.L. = 702.97

15 — 262 + 00, 14' LT.
C.B. T-A, B-24
T.G = 705.47
F.L = 702.64

16 — 262 + 00, 14' RT.
C.B. T-A, B-24
T.G = 705.40
F.L = 702.34

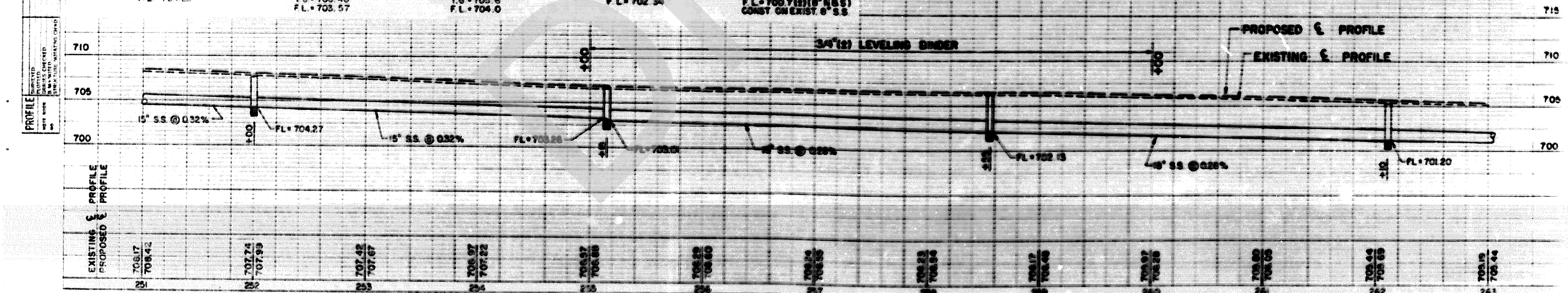
17 — 262 + 20, 25' RT.
C.B. T-C, T-85
T.G = 704.4
F.L = 702.9

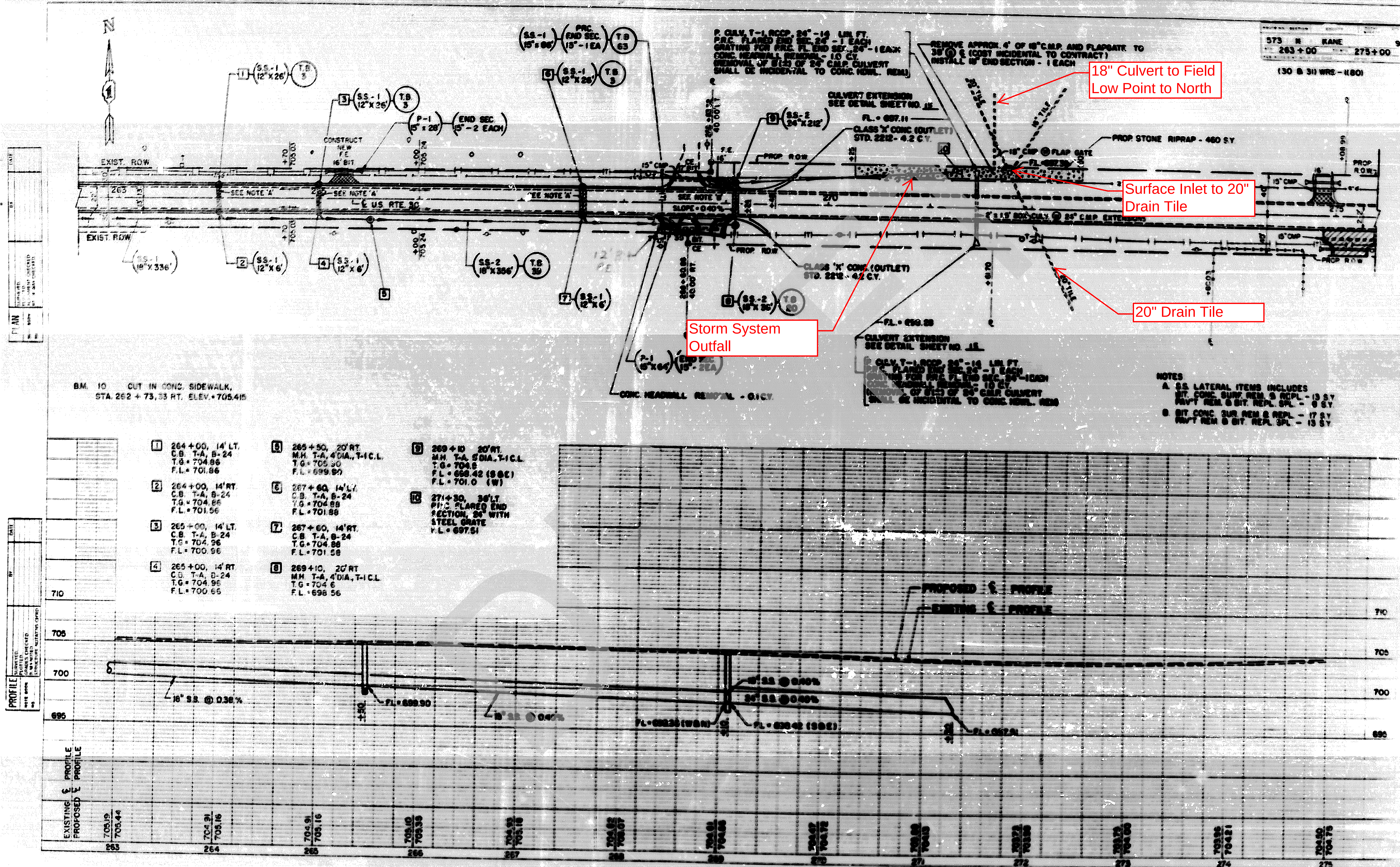
18 — 262 + 10, 20' RT.
M.H. T-A, 4' DIA., T-1 C.L.
T.G = 705.2
F.L = 701.20

19 — 256 + 00, 25' RT.
C.B. T-C, T-85
T.G = 703.0
F.L = 702.0

20 — 255 + 75(±), 20' RT.
M.H. T-A, 4' DIA., T-1 C.L.
T.G = 706.1
F.L = 700.7(±)(8" N.S.S.)
CONST. ON EXIST. 8" S.S.

21 — 261 + 00, 25' RT.
C.B. T-C, T-85
T.G. = 705.0
F.L. = 703.5




18" Culvert to Field Low Point to North
Surface Inlet to 20" Drain Tile
20" Drain Tile
Storm System Outfall
EXIST. ROW
EXIST. ROW
US RTE. 30
PROP. ROW
PROP. STONE RIPRAP - 460 S.Y.
CULVERT EXTENSION SEE DETAIL SHEET NO. 15
CLASS 'X' CONC. (OUTLET) STD. 2212 - 4.2 C.Y.
CONC. HEADWALL REMOVAL - 0.1 C.Y.
BM. 10 CUT IN CONC. SIDEWALK, STA. 262 + 73.33 RT. ELEV. = 705.415
1 264+00, 14' LT. C.B. T-A, B-24 T.G. = 704.86 F.L. = 701.86
2 264+00, 14' RT. C.B. T-A, B-24 T.G. = 704.86 F.L. = 701.56
3 265+00, 14' LT. C.B. T-A, B-24 T.G. = 704.96 F.L. = 700.96
4 265+00, 14' RT. C.B. T-A, B-24 T.G. = 704.96 F.L. = 700.66
5 265+50, 20' RT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 705.30 F.L. = 699.90
6 267+60, 14' LT. C.B. T-A, B-24 T.G. = 704.88 F.L. = 701.88
7 267+60, 14' RT. C.B. T-A, B-24 T.G. = 704.88 F.L. = 701.58
8 269+10, 20' RT. M.H. T-A, 4' DIA., T-1 C.L. T.G. = 704.6 F.L. = 698.56
9 269+10 20' RT. M.H. T-A, 5' DIA., T-1 C.L. T.G. = 704.6 F.L. = 698.42 (S&E) F.L. = 701.0 (W)
10 271+30, 36' LT. P.R.C. FLARED END SECTION, 24" WITH STEEL GRATE F.L. = 697.51
NOTES
PROPOSED ℄ PROFILE
EXISTING ℄ PROFILE
18" S.S. @ 0.38%
F.L. = 699.90
EXISTING ℄ PROFILE
PROPOSED ℄ PROFILE
710
705
700
695
263
264
265
266
267
268
269
270
271
272
273
274
275

573	—	KANE	10
STA. 275+00		TO STA. 287+00	

(30 & 31) WRS-1(80)

N

(P-1 15"X28') (END SEC. 15"- 2EA.)

(P-1 15"X26') (END SEC. 15"- 2EA.)

Delete & Add "new" turnout to Drive

(P-1 15"X30') (END SEC 15"- 2EA.)

DELETE DRIVE

(P-1 15"X28') (END SEC 15"- 2EA.)

℄ US RTE 30

14' GR PE

21' GR PE

15" CMP

18" CMP CONC CE 35'

15" CMP CONC CE 35'

Delete & Add "new" turnout to Drive

DRIVEWAY REM. - 111 S.Y.
CURB REM. - 32 L.F.
P.C.C. DRIVEWAY 7" - 120S.Y.
CONC. CURB - 44L.F.

DRIVEWAY REM. - 111 S.Y.
CURB REM. - 32 L.F.
P.C.C. DRIVEWAY 7" - 120S.Y.
CONC. CURB - 44L.F.

(P-1 15"X28') (END SEC 15"- 2EA.)

(P-1 15"X26') (END SEC 15"- 2EA.)

(P-1 15"X26') (END SEC 15"- 2EA.)

NEW DRIVE (P.E.) (BIT. OVER AGGREGATE)

(P-1 15"X32') (END SEC 15"- 2EA.)

(P-1 15"X28') (END SEC 15"- 2EA.)

(P-1 15"X28') (END SEC 15"- 2EA.)

(P-1 15"X30') (END SEC 15"- 2EA.)

PROP ROW
EXIST ROW

BURIED

25' BIT & GR PE

25' GR PE

15" CMP

PROP ROW
EXIST ROW

PLAN

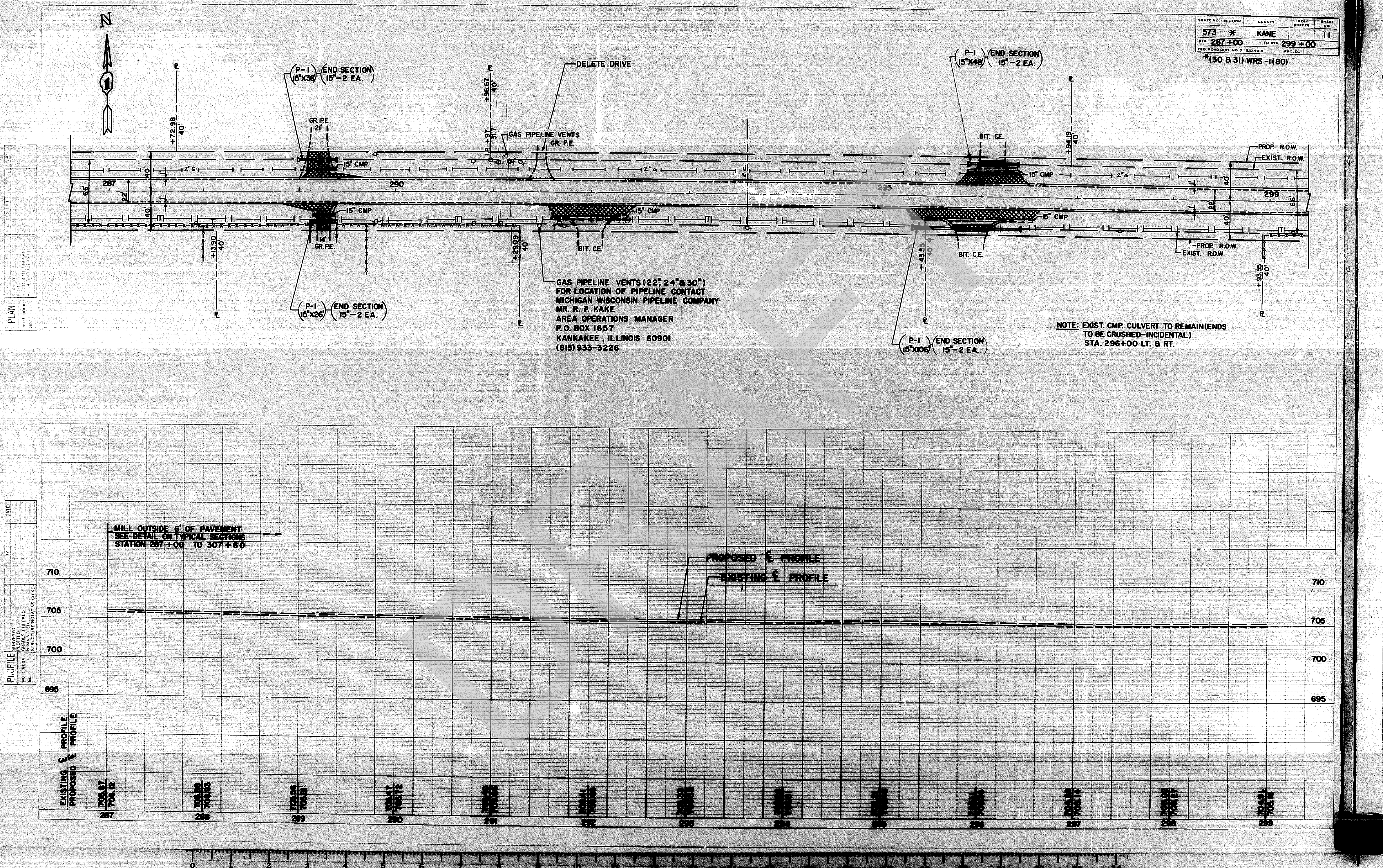
PROFILE

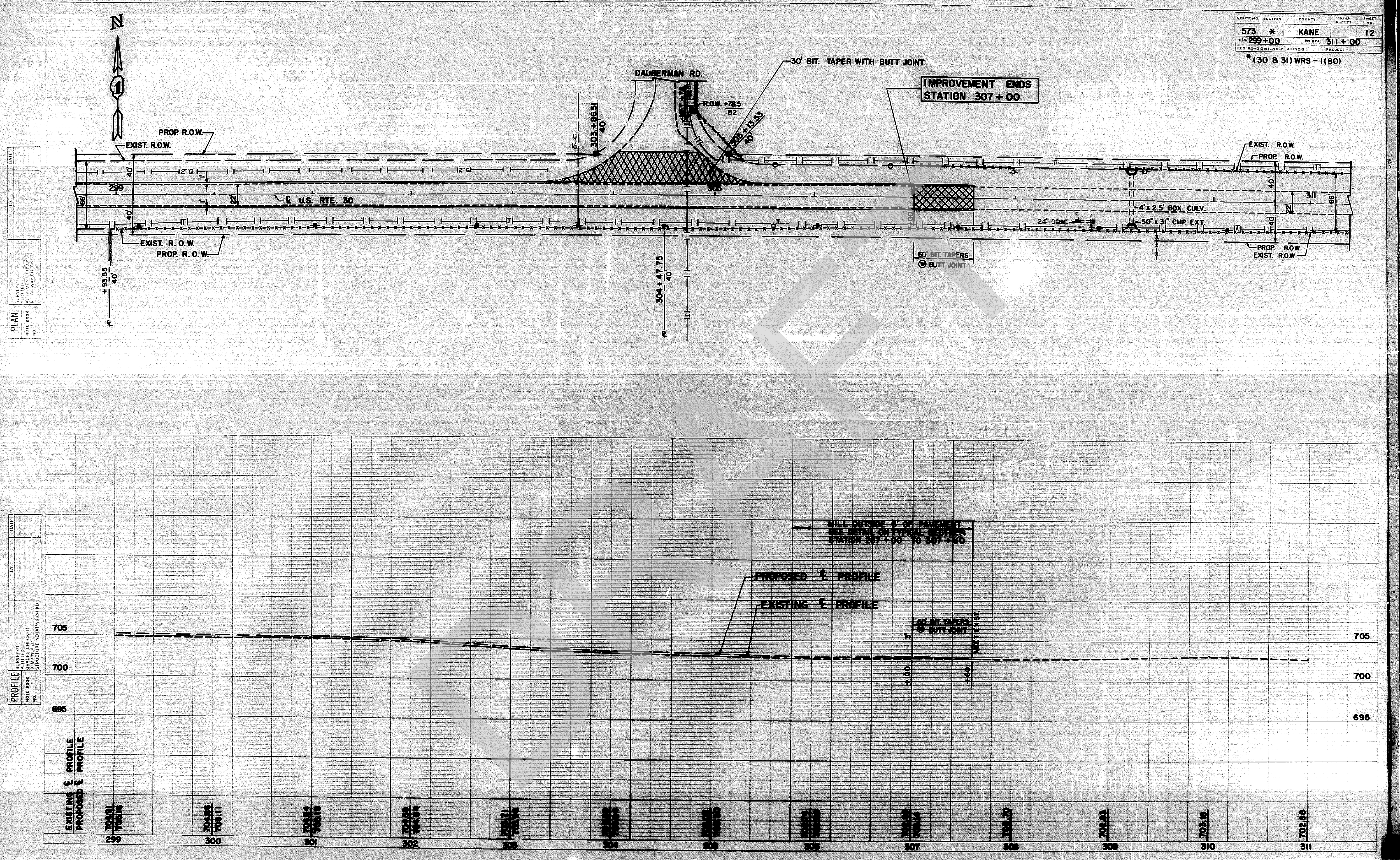
PROPOSED ℄ PROFILE
EXISTING ℄ PROFILE

710
705
700
695

EXIST. ℄ PROFILE 704.50 704.75 705.00 705.25 705.62 705.94 706.24 706.49 707.12 707.42 707.82 708.07 708.28 708.48 708.82 709.07 709.32 709.48 709.73 709.88 709.92 710.08 710.21 710.46 710.87 711.12
PROP ℄ PROFILE

275 276 277 278 279 280 281 282 283 284 285 286 287

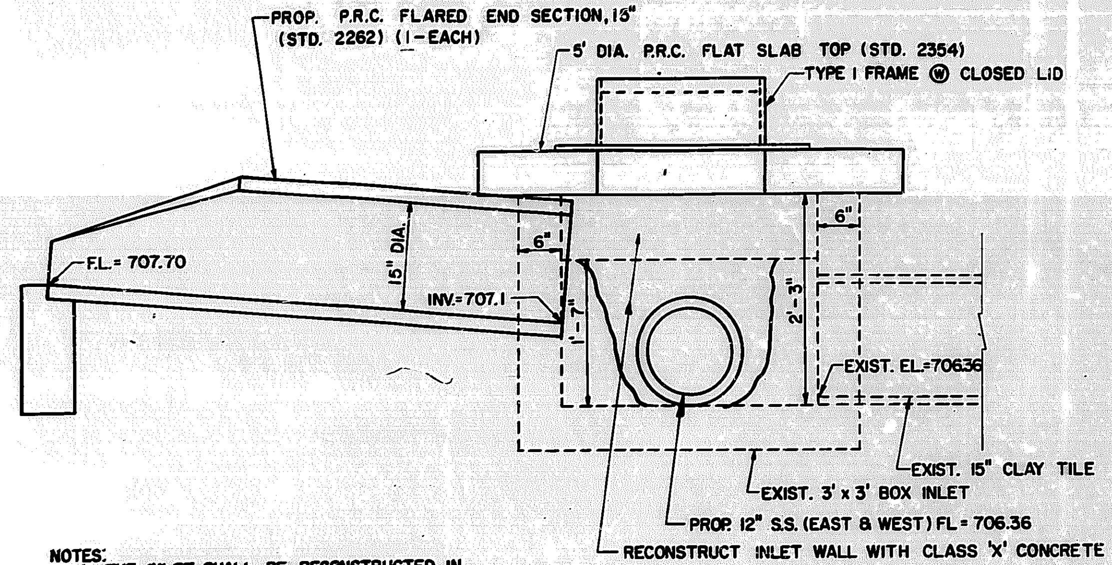

ROUTE NO. 573
SECTION *
COUNTY KANE
TOTAL SHEETS
SHEET NO. 11
STA. 287+00 TO STA. 299+00
FED. ROAD DIST. NO. 7 ILLINOIS PROJECT
*(30 & 31) WRS-1(80)
N
1
PLAN
PROFILE
(P-1)(15"X36')(END SECTION)(15"-2 EA.)
DELETE DRIVE
(P-1)(15"X48')(END SECTION)(15"-2 EA.)
GR. P.E.
GAS PIPELINE VENTS
GR. F.E.
BIT. C.E.
15" CMP
2"G
PROP. R.O.W.
EXIST. R.O.W.
287
290
295
299
(P-1)(15"X26')(END SECTION)(15"-2 EA.)
GAS PIPELINE VENTS (22", 24" & 30")
FOR LOCATION OF PIPELINE CONTACT
MICHIGAN WISCONSIN PIPELINE COMPANY
MR. R. P. KAKE
AREA OPERATIONS MANAGER
P.O. BOX 1657
KANKAKEE, ILLINOIS 60901
(815) 933-3226
(P-1)(15"X106')(END SECTION)(15"-2 EA.)
NOTE: EXIST. CMP. CULVERT TO REMAIN (ENDS
TO BE CRUSHED-INCIDENTAL)
STA. 296+00 LT. & RT.
MILL OUTSIDE 6' OF PAVEMENT
SEE DETAIL ON TYPICAL SECTIONS
STATION 287+00 TO 307+60
PROPOSED ℄ PROFILE
EXISTING ℄ PROFILE
710
705
700
695
EXISTING ℄ PROFILE
PROPOSED ℄ PROFILE
287
288
289
290
291
292
293
294
295
296
297
298
299



573
*
KANE
12
STA. 299+00
TO STA. 311+00
FED. ROAD DIST. NO. 7 ILLINOIS
*(30 & 31) WRS - 1(80)
N
DAUBERMAN RD.
30' BIT. TAPER WITH BUTT JOINT
IMPROVEMENT ENDS
STATION 307+00
PROP. R.O.W.
EXIST. R.O.W.
℄ U.S. RTE. 30
303+86.51
40'
305+13.53
40'
R.O.W. +78.5
82
304+47.75
40'
+93.55
40'
4'x 2.5' BOX CULV.
50" x 31" CMP. EXT.
60' BIT. TAPERS
W BUTT JOINT
PLAN
MILL OUTSIDE 6' OF PAVEMENT
SEE DETAIL ON TYPICAL SECTIONS
PROPOSED ℄ PROFILE
EXISTING ℄ PROFILE
MEET EXIST.
705
700
695
EXISTING ℄ PROFILE
PROPOSED ℄ PROFILE
704.91
705.16
704.86
705.11
702.88
299
300
301
302
303
304
305
306
307
308
309
310
311
PROFILE

F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
573	*	KANE	36	15
STA.		TO STA.		
FED. ROAD DIST. NO. 7	ILLINOIS		FED. AID PROJECT	

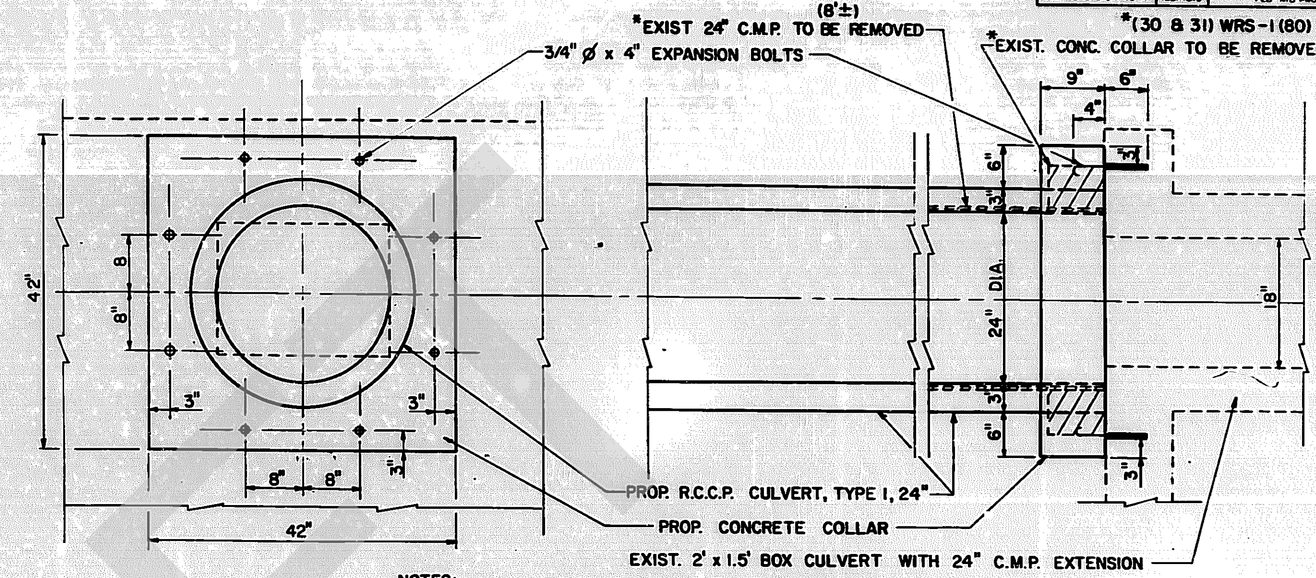
*(30 & 31) WRS-1 (80)



NOTES:
1. THE INLET SHALL BE RECONSTRUCTED IN ACCORDANCE WITH APPICABLE PORTIONS OF ARTICAL 612 OF THE STANDARD SPECIFICATIONS.
2. THIS ITEM SHALL INCLUDE ALL WORK AND MATERIALS NECESSARY TO RECONSTRUCT THE INLET AS SHOWN
3. THE P.R.C. FLARED END SECTION, 15" SHALL BE PAID FOR SEPARATELY.
4. CLASS 'X' CONCRETE SHALL BE USED.
5. ALL WORK AND MATERIALS NECESSARY TO CONSTRUCT THE INLET AS SHOWN SHALL BE PAID FOR PER UNIT COST EACH FOR INLETS TO BE RECONSTRUCTED.

DETAIL INLET RECONSTRUCTION (SPECIAL)

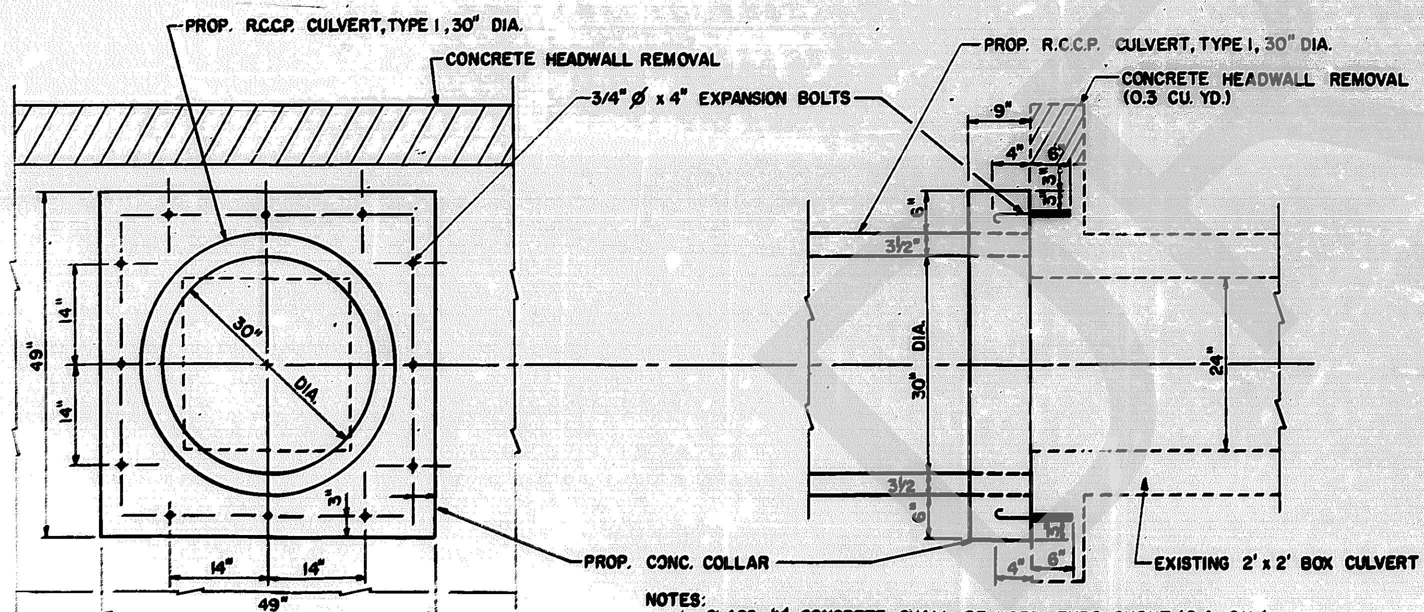
STATION 239 + 35, RT.



NOTES:
1. *THE REMOVAL OF THE EXISTING 24" C.M.P. AND EXIST. CONC. COLLAR SHALL BE CONSIDERED AS INCIDENTAL TO CONCRETE HEADWALL REMOVAL.
2. CLASS 'X' CONCRETE SHALL BE USED THROUGHOUT. (0.3 C.Y.)
3. EXPANSION SHIELDS AND 3/4" Ø HOOKED BOLTS. (EXPANSION BOLTS - 8 EACH)

CONCRETE COLLAR FOR 2' x 1.5' BOX CULVERT

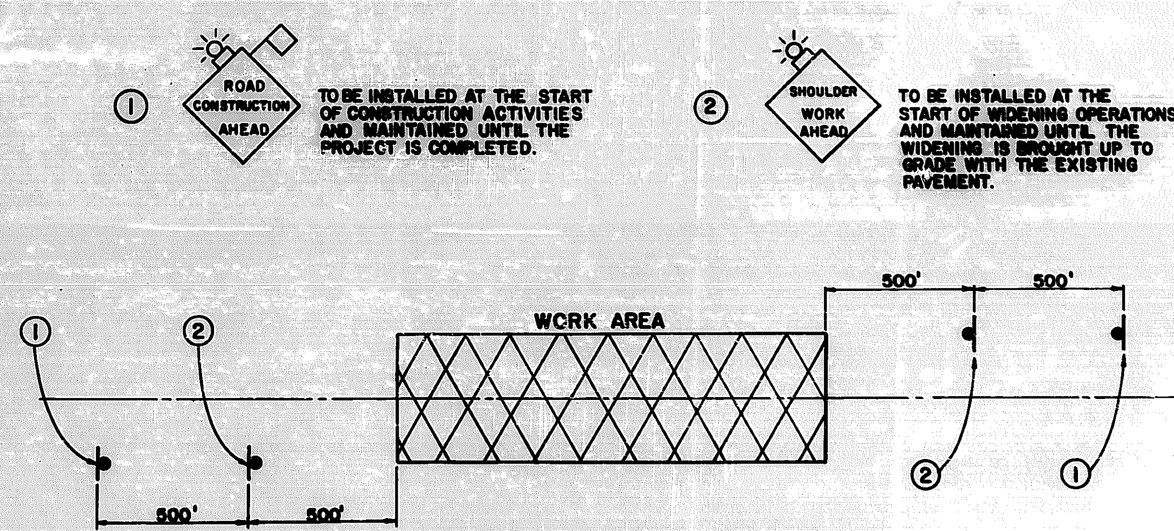
STATION 272 + 44 LT. AND STATION 272 + 45 RT.



NOTES:
1. CLASS 'X' CONCRETE SHALL BE USED THROUGHOUT (0.4 C.Y.)
2. EXPANSION BOLTS SHALL CONSIST OF SELF-DRILLING EXPANSION SHIELDS AND 3/4" Ø HOOKED BOLTS (EXPANSION BOLTS - 12 EACH)

CONCRETE COLLAR FOR 2' x 2' BOX CULVERT

STATION 238 + 98 LT. & RT.



TRAFFIC CONTROL DETAIL

ILLINOIS DEPARTMENT OF TRANSPORTATION

SPECIAL DETAILS

REVISIONS	
NAME	DATE
[illegible]	2-[illegible]

SCALE: VERT. HORIZ.

DATE

DRAWN BY

CHECKED BY

Rev 4-17-84

APPENDIX I

HEC-HMS STORMWATER MODEL INPUT AND OUTPUT DATA FROM LDS-PROPOSED CONDITIONS

WinTR-55 Current Data Description

--- Identification Data ---

User: MK
Project: Dauberman road extension
SubTitle: Proposed Time of Concentration Calcs
State: Illinois
County: Kane
Filename: W:\070-006 TranSystems KDOT Dauberman Road Phase I\Engineering\Drainage\HYDROLOGIC\TR55_Proposed

Date: 11/29/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
8A		Outlet8	605.36	78	4.876
8C		Outlet8	0.44	93	.278
8D		Outlet8	98.81	79	1.767
8E		Outlet8	490.45	79	2.851

Total area: 1195.06 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.04	3.8	4.47	5.51	6.46	7.58	2.51

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

PROPOSED ELEVATION-DISCHARGE TABLE	
POND:	STORAGE AREA 8A
PROJECT:	DAUBERMAN RD. EXTENSION
DATE:	9/13/2018
OUTLET DESCRIPTION:	MAIN: 4'x3' BOX CULVERT, 5'x2' BOX CULVERT / EMERGENCY: EAST SPILLWAY OVER DAUBERMAN RD
REFERENCE:	CULVERT / WEIR DISCHARGES ARE OBTAINED FROM HEC-RAS
Elevation	**Culvert / Weir Discharge (cfs)**
697.29	1
697.430	2
697.710	5.00
698.050	10.00
698.550	20.00
698.980	30.00
699.380	40.00
699.750	50.00
700.110	60.00
700.530	70.00
701.010	80.00
701.390	90.00
701.720	100.00
702.040	110.00
702.340	120.00
702.630	140.00
702.930	200.00
704.320	250.00

PROPOSED STAGE-STORAGE TABLE					
POND:	STORAGE AREA 8A				
PROJECT:	DAUBERMAN RD. EXTENSION				
DATE:	9/13/2018				
	Area		Average	Incremental	Cummulative
Elevation			Area	Storage	Storage
(ft)	(ft^2)	(ac)	(ac)	(ac-ft)	(ac-ft)
696.73	9808.64	0.225			0.000
			0.225	0.06	
697.00	9808.64	0.225			0.061
			1.771	1.77	
698.00	144516.02	3.318			1.83
			16.283	32.57	
700.00	1274043.13	29.248			34.40
			61.775	123.55	
702.00	4107774.08	94.302			157.95
			102.963	51.48	
702.50	4862363.98	111.625			209.43
			119.520	59.76	
703.00	5550195.46	127.415			269.19
			0.000	0.00	
0.00	0.00	0.000			269.19

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

10YR 1HR				10YR 2HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	34.38	01Jan2000, 02:21	Area 1C	0.259	50.21	01Jan2000, 02:51
Area 1D	0.0109	5.22	01Jan2000, 00:39	Area 1D	0.0109	5.46	01Jan2000, 00:51
Area 1E	0.0057	3.93	01Jan2000, 00:36	Area 1E	0.0057	3.9	01Jan2000, 00:48
Pond 1	0.0166	0.15	01Jan2000, 01:57	Pond 1	0.0166	0.19	01Jan2000, 02:51
Diversion-O2	0.0166	0	01Jan2000, 00:00	Diversion-O2	0.0166	0	01Jan2000, 00:00
Area 1B	0.003	2.11	01Jan2000, 00:30	Area 1B	0.003	2.03	01Jan2000, 00:39
Depression 1BC	0.2786	3.61	01Jan2000, 05:30	Depression 1BC	0.2786	5.84	01Jan2000, 06:00
Diversion 1BC	0.2786	3.61	01Jan2000, 05:30	Diversion 1BC	0.2786	5.84	01Jan2000, 06:00
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	1.7	01Jan2000, 00:27	Area 1A	0.0026	1.63	01Jan2000, 00:36
J-1	0.2812	3.61	01Jan2000, 05:30	J-1	0.2812	5.84	01Jan2000, 06:00
Outlet 01	0.2812	3.61	01Jan2000, 05:30	Outlet 01	0.2812	5.84	01Jan2000, 06:00
Area 2	0.0014	0.34	01Jan2000, 00:36	Area 2	0.0014	0.38	01Jan2000, 00:48
Outlet 02	0.0014	0.39	01Jan2000, 00:36	Outlet 02	0.0014	0.47	01Jan2000, 01:00
Area 3B	0.0101	3.68	01Jan2000, 00:45	Area 3B	0.0101	4.05	01Jan2000, 00:57
Diversion 3B	0.0101	3.68	01Jan2000, 00:45	Diversion 3B	0.0101	4.04	01Jan2000, 00:57
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0.02	01Jan2000, 00:57
Area 3A	0.0013	0.79	01Jan2000, 00:33	Area 3A	0.0013	0.79	01Jan2000, 00:45
Ditch 3A	0.0013	0.57	01Jan2000, 00:51	Ditch 3A	0.0013	0.64	01Jan2000, 01:03
Area 3C	0.0013	0.81	01Jan2000, 00:33	Area 3C	0.0013	0.8	01Jan2000, 00:42
J-3	0.0127	4.86	01Jan2000, 00:42	J-3	0.0127	5.35	01Jan2000, 00:54
Outlet 03	0.0127	4.86	01Jan2000, 00:42	Outlet 03	0.0127	5.35	01Jan2000, 00:54
Area 4K	0.1202	17.05	01Jan2000, 02:15	Area 4K	0.1202	24.53	01Jan2000, 02:42
Area 4P	0.0123	4.88	01Jan2000, 00:42	Area 4P	0.0123	5.29	01Jan2000, 00:54
Area 4O	0.0117	4.43	01Jan2000, 00:45	Area 4O	0.0117	4.88	01Jan2000, 00:57
Area 4N	0.0022	2.3	01Jan2000, 00:24	Area 4N	0.0022	2.06	01Jan2000, 00:33
Ditch 4N	0.0022	0.05	01Jan2000, 01:27	Ditch 4N	0.0022	0.06	01Jan2000, 02:24
Area 4M	0.0012	0.89	01Jan2000, 00:30	Area 4M	0.0012	0.85	01Jan2000, 00:39
Ditch 4M	0.0012	0.02	01Jan2000, 01:36	Ditch 4M	0.0012	0.03	01Jan2000, 02:27
Area 4I	0.0012	1.33	01Jan2000, 00:21	Area 4I	0.0012	1.12	01Jan2000, 00:30
Ditch 4I	0.0012	0.02	01Jan2000, 01:21	Ditch 4I	0.0012	0.03	01Jan2000, 02:18
Area 4J	0.001	0.97	01Jan2000, 00:21	Area 4J	0.001	0.84	01Jan2000, 00:30
Ditch 4J	0.001	0.02	01Jan2000, 01:18	Ditch 4J	0.001	0.03	01Jan2000, 02:15
J-4A	0.1498	17.29	01Jan2000, 02:12	J-4A	0.1498	26.23	01Jan2000, 02:18
Area 4H	0.0169	5.62	01Jan2000, 00:51	Area 4H	0.0169	6.35	01Jan2000, 01:03
Area 4L	0.0053	2.96	01Jan2000, 00:42	Area 4L	0.0053	3.06	01Jan2000, 00:54
Pond 4L	0.0053	0.06	01Jan2000, 02:06	Pond 4L	0.0053	0.09	01Jan2000, 02:54
Depression 4H-P	0.172	0.81	01Jan2000, 06:15	Depression 4H-P	0.172	13.08	01Jan2000, 04:00
Area 4G	0.0023	0.87	01Jan2000, 00:33	Area 4G	0.0023	0.91	01Jan2000, 00:45
Area 4D	0.0014	1.24	01Jan2000, 00:30	Area 4D	0.0014	1.16	01Jan2000, 00:39
Ditch 4D	0.0014	0.03	01Jan2000, 01:36	Ditch 4D	0.0014	0.04	01Jan2000, 02:30
Area 4E	0.001	0.91	01Jan2000, 00:21	Area 4E	0.001	0.79	01Jan2000, 00:30
Ditch 4E	0.001	0.02	01Jan2000, 01:18	Ditch 4E	0.001	0.03	01Jan2000, 02:15
J-4B	0.0047	0.89	01Jan2000, 00:33	J-4B	0.0047	0.95	01Jan2000, 00:45
Area 4C	0.0026	1.22	01Jan2000, 00:36	Area 4C	0.0026	1.27	01Jan2000, 00:48
Depression 4C	0.0026	0	01Jan2000, 00:42	Depression 4C	0.0026	0	01Jan2000, 00:48
Area 4B	0.0029	0.89	01Jan2000, 00:39	Area 4B	0.0029	1	01Jan2000, 00:54
Depression 4BG	0.1822	0.57	01Jan2000, 07:42	Depression 4BG	0.1822	13.09	01Jan2000, 04:06
Area 4A	0.0025	0.78	01Jan2000, 00:45	Area 4A	0.0025	0.88	01Jan2000, 00:57
Area 4F	0.0069	2.95	01Jan2000, 00:36	Area 4F	0.0069	3.08	01Jan2000, 00:45
J-4C	0.1916	3.64	01Jan2000, 00:36	J-4C	0.1916	13.09	01Jan2000, 04:06
Outlet 04	0.1916	3.64	01Jan2000, 00:36	Outlet 04	0.1916	13.09	01Jan2000, 04:06
Area 5D	0.0351	11.63	01Jan2000, 01:00	Area 5D	0.0351	13.2	01Jan2000, 01:09
Area 5A	0.0124	3.43	01Jan2000, 01:03	Area 5A	0.0124	3.97	01Jan2000, 01:15
Area 5C	0.0048	7.79	01Jan2000, 00:18	Area 5C	0.0048	6.32	01Jan2000, 00:18
Pond 5	0.0048	0.13	01Jan2000, 01:15	Pond 5	0.0048	0.15	01Jan2000, 02:12
Area 5B	0.0052	2.52	01Jan2000, 00:36	Area 5B	0.0052	2.59	01Jan2000, 00:45
Depression 5B	0.0052	0	01Jan2000, 01:03	Depression 5B	0.0052	0	01Jan2000, 01:03
J-5	0.0575	15.16	01Jan2000, 01:00	J-5	0.0575	17.26	01Jan2000, 01:09
Outlet 05	0.0575	15.16	01Jan2000, 01:00	Outlet 05	0.0575	17.26	01Jan2000, 01:09
Area 6F	0.025	7.1	01Jan2000, 01:06	Area 6F	0.025	8.2	01Jan2000, 01:18
Area 6E	0.0017	1.44	01Jan2000, 00:18	Area 6E	0.0017	1.24	01Jan2000, 00:30
Pond 6E	0.0017	0.02	01Jan2000, 01:12	Pond 6E	0.0017	0.03	01Jan2000, 02:12
J-6C	0.0267	7.12	01Jan2000, 01:06	J-6C	0.0267	8.23	01Jan2000, 01:18
Area 6D	0.0019	1.73	01Jan2000, 00:18	Area 6D	0.0019	1.46	01Jan2000, 00:30
Pond 6D	0.0019	0.02	01Jan2000, 01:12	Pond 6D	0.0019	0.03	01Jan2000, 02:12
Area 6C	0.0162	5.12	01Jan2000, 00:42	Area 6C	0.0162	5.77	01Jan2000, 00:57
Area 6B	0.0041	1.09	01Jan2000, 00:45	Area 6B	0.0041	1.26	01Jan2000, 01:00

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

J-6B	1.9895	35.47	01Jan2000, 00:45	J-6B	1.9895	47.16	01Jan2000, 06:27
Area 6A	0.0046	1.11	01Jan2000, 00:48	Area 6A	0.0046	1.32	01Jan2000, 01:00
J-6A	1.9941	36.57	01Jan2000, 00:45	J-6A	1.9941	47.16	01Jan2000, 06:27
Outlet 06	1.9941	36.57	01Jan2000, 00:45	Outlet 06	1.9941	47.16	01Jan2000, 06:27
Area 7H	0.0198	7.4	01Jan2000, 00:48	Area 7H	0.0198	8.18	01Jan2000, 01:00
Area 7J	0.0128	5.55	01Jan2000, 00:39	Area 7J	0.0128	5.84	01Jan2000, 00:48
Area 7G	0.0089	8.47	01Jan2000, 00:24	Area 7G	0.0089	7.6	01Jan2000, 00:33
Pond 7G	0.0089	0.09	01Jan2000, 01:30	Pond 7G	0.0089	0.13	01Jan2000, 02:24
Area 7F	0.0059	8.28	01Jan2000, 00:15	Area 7F	0.0059	6.42	01Jan2000, 00:15
Pond 7F	0.0059	0.09	01Jan2000, 01:12	Pond 7F	0.0059	0.13	01Jan2000, 02:09
Area 7I	0.0044	4.03	01Jan2000, 00:27	Area 7I	0.0044	3.74	01Jan2000, 00:36
Area 7E	0.0015	0.43	01Jan2000, 00:27	Area 7E	0.0015	0.46	01Jan2000, 00:33
J-7B	1.9207	33.99	01Jan2000, 05:42	J-7B	1.9207	47.1	01Jan2000, 06:27
Area 7A	0.0125	5.42	01Jan2000, 00:33	Area 7A	0.0125	5.62	01Jan2000, 00:45
Area 7B	0.0034	2.64	01Jan2000, 00:24	Area 7B	0.0034	2.44	01Jan2000, 00:36
Ditch 7A	0.0159	6.57	01Jan2000, 00:42	Ditch 7A	0.0159	7.09	01Jan2000, 00:54
Area 7D	0.0022	2.17	01Jan2000, 00:21	Area 7D	0.0022	1.91	01Jan2000, 00:33
Area 7C	0.0018	1.55	01Jan2000, 00:21	Area 7C	0.0018	1.4	01Jan2000, 00:33
Ditch 7C	0.004	2.26	01Jan2000, 00:39	Ditch 7C	0.004	2.36	01Jan2000, 00:51
Outlet 07	1.9406	33.99	01Jan2000, 05:42	Outlet 07	1.9406	47.1	01Jan2000, 06:27
Area 8A	0.9459	83.25	01Jan2000, 03:24	Area 8A	0.9459	129.3	01Jan2000, 03:51
Area 8E	0.7664	119.87	01Jan2000, 02:09	Area 8E	0.7664	168.94	01Jan2000, 02:39
Depression 8E	0.7664	0	01Jan2000, 00:45	Depression 8E	0.7664	0	01Jan2000, 00:51
Area 8D	0.1544	36.14	01Jan2000, 01:33	Area 8D	0.1544	44.72	01Jan2000, 01:51
Depression 8D	0.1544	0	01Jan2000, 00:54	Depression 8D	0.1544	0	01Jan2000, 01:00
Area 8C	0.0007	0.86	01Jan2000, 00:30	Area 8C	0.0007	0.79	01Jan2000, 00:39
Storage 8A	1.8674	33.82	01Jan2000, 05:42	Storage 8A	1.8674	46.86	01Jan2000, 06:27
Outlet 08	1.8674	33.82	01Jan2000, 05:42	Outlet 08	1.8674	46.86	01Jan2000, 06:27
Area 9A	0.0227	17.02	01Jan2000, 00:30	Area 9A	0.0227	16.24	01Jan2000, 00:39
Area 9B	0.0108	5.35	01Jan2000, 00:42	Area 9B	0.0108	5.6	01Jan2000, 00:54
Area 9C	0.002	1.19	01Jan2000, 00:39	Area 9C	0.002	1.21	01Jan2000, 00:48
Outlet 09	0.0355	22.31	01Jan2000, 00:33	Outlet 09	0.0355	22.19	01Jan2000, 00:42
Area 10	0.0007	0.55	01Jan2000, 00:21	Area 10	0.0007	0.49	01Jan2000, 00:33
Outlet 10	0.0007	0.55	01Jan2000, 00:21	Outlet 10	0.0007	0.49	01Jan2000, 00:33
Area 11	0.0002	0.09	01Jan2000, 00:21	Area 11	0.0002	0.09	01Jan2000, 00:33
Outlet 11	0.0002	0.09	01Jan2000, 00:21	Outlet 11	0.0002	0.09	01Jan2000, 00:33
Area 12	0.0063	2.69	01Jan2000, 00:42	Area 12	0.0063	2.89	01Jan2000, 00:54
Outlet 12	0.0063	2.69	01Jan2000, 00:42	Outlet 12	0.0063	2.89	01Jan2000, 00:54

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

10YR 3HR				10YR 6HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	50.72	01Jan2000, 03:12	Area 1C	0.259	48.79	01Jan2000, 03:42
Area 1D	0.0109	4.72	01Jan2000, 01:03	Area 1D	0.0109	3.48	01Jan2000, 01:45
Area 1E	0.0057	3.3	01Jan2000, 00:57	Area 1E	0.0057	2.42	01Jan2000, 01:12
Pond 1	0.0166	0.2	01Jan2000, 03:45	Pond 1	0.0166	0.23	01Jan2000, 06:39
Diversion-O2	0.0166	0	01Jan2000, 00:00	Diversion-O2	0.0166	0.02	01Jan2000, 06:39
Area 1B	0.003	1.65	01Jan2000, 00:54	Area 1B	0.003	1.19	01Jan2000, 01:06
Depression 1BC	0.2786	6.79	01Jan2000, 06:33	Depression 1BC	0.2786	8.27	01Jan2000, 08:42
Diversion 1BC	0.2786	6.79	01Jan2000, 06:33	Diversion 1BC	0.2786	8.27	01Jan2000, 08:42
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	1.31	01Jan2000, 00:51	Area 1A	0.0026	0.94	01Jan2000, 01:03
J-1	0.2812	6.79	01Jan2000, 06:33	J-1	0.2812	8.27	01Jan2000, 08:42
Outlet 01	0.2812	6.79	01Jan2000, 06:33	Outlet 01	0.2812	8.27	01Jan2000, 08:42
Area 2	0.0014	0.34	01Jan2000, 00:57	Area 2	0.0014	0.28	01Jan2000, 01:45
Outlet 02	0.0014	0.43	01Jan2000, 01:15	Outlet 02	0.0014	0.41	01Jan2000, 01:45
Area 3B	0.0101	3.56	01Jan2000, 01:06	Area 3B	0.0101	2.78	01Jan2000, 01:48
Diversion 3B	0.0101	3.56	01Jan2000, 01:06	Diversion 3B	0.0101	2.78	01Jan2000, 01:48
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.66	01Jan2000, 00:57	Area 3A	0.0013	0.48	01Jan2000, 01:09
Ditch 3A	0.0013	0.57	01Jan2000, 01:12	Ditch 3A	0.0013	0.45	01Jan2000, 01:48
Area 3C	0.0013	0.67	01Jan2000, 00:54	Area 3C	0.0013	0.48	01Jan2000, 01:09
J-3	0.0127	4.72	01Jan2000, 01:06	J-3	0.0127	3.67	01Jan2000, 01:48
Outlet 03	0.0127	4.72	01Jan2000, 01:06	Outlet 03	0.0127	3.67	01Jan2000, 01:48
Area 4K	0.1202	24.47	01Jan2000, 03:00	Area 4K	0.1202	23.36	01Jan2000, 03:30
Area 4P	0.0123	4.63	01Jan2000, 01:06	Area 4P	0.0123	3.56	01Jan2000, 01:48
Area 4O	0.0117	4.29	01Jan2000, 01:09	Area 4O	0.0117	3.35	01Jan2000, 01:48
Area 4N	0.0022	1.66	01Jan2000, 00:36	Area 4N	0.0022	1.18	01Jan2000, 00:48
Ditch 4N	0.0022	0.07	01Jan2000, 03:21	Ditch 4N	0.0022	0.07	01Jan2000, 06:18
Area 4M	0.0012	0.69	01Jan2000, 00:54	Area 4M	0.0012	0.5	01Jan2000, 01:06
Ditch 4M	0.0012	0.03	01Jan2000, 03:27	Ditch 4M	0.0012	0.03	01Jan2000, 06:21
Area 4I	0.0012	0.9	01Jan2000, 00:33	Area 4I	0.0012	0.63	01Jan2000, 00:45
Ditch 4I	0.0012	0.03	01Jan2000, 03:15	Ditch 4I	0.0012	0.03	01Jan2000, 06:12
Area 4J	0.001	0.67	01Jan2000, 00:33	Area 4J	0.001	0.46	01Jan2000, 00:45
Ditch 4J	0.001	0.03	01Jan2000, 03:12	Ditch 4J	0.001	0.03	01Jan2000, 06:12
J-4A	0.1498	27.92	01Jan2000, 02:48	J-4A	0.1498	26.97	01Jan2000, 03:18
Area 4H	0.0169	5.64	01Jan2000, 01:15	Area 4H	0.0169	4.54	01Jan2000, 01:51
Area 4L	0.0053	2.65	01Jan2000, 01:03	Area 4L	0.0053	1.94	01Jan2000, 01:18
Pond 4L	0.0053	0.1	01Jan2000, 03:48	Pond 4L	0.0053	0.12	01Jan2000, 06:39
Depression 4H-P	0.172	17.73	01Jan2000, 04:15	Depression 4H-P	0.172	21.81	01Jan2000, 05:03
Area 4G	0.0023	0.79	01Jan2000, 00:57	Area 4G	0.0023	0.59	01Jan2000, 01:45
Area 4D	0.0014	0.94	01Jan2000, 00:48	Area 4D	0.0014	0.69	01Jan2000, 01:06
Ditch 4D	0.0014	0.04	01Jan2000, 03:27	Ditch 4D	0.0014	0.04	01Jan2000, 06:24
Area 4E	0.001	0.63	01Jan2000, 00:33	Area 4E	0.001	0.44	01Jan2000, 01:00
Ditch 4E	0.001	0.03	01Jan2000, 03:12	Ditch 4E	0.001	0.03	01Jan2000, 06:09
J-4B	0.0047	0.83	01Jan2000, 00:57	J-4B	0.0047	0.64	01Jan2000, 01:45
Area 4C	0.0026	1.09	01Jan2000, 01:00	Area 4C	0.0026	0.8	01Jan2000, 01:45
Depression 4C	0.0026	0	01Jan2000, 00:54	Depression 4C	0.0026	0.21	01Jan2000, 05:30
Area 4B	0.0029	0.88	01Jan2000, 01:03	Area 4B	0.0029	0.7	01Jan2000, 01:48
Depression 4BG	0.1822	17.72	01Jan2000, 04:21	Depression 4BG	0.1822	22.46	01Jan2000, 05:12
Area 4A	0.0025	0.78	01Jan2000, 01:09	Area 4A	0.0025	0.62	01Jan2000, 01:48
Area 4F	0.0069	2.65	01Jan2000, 00:57	Area 4F	0.0069	1.95	01Jan2000, 01:45
J-4C	0.1916	17.72	01Jan2000, 04:21	J-4C	0.1916	23.32	01Jan2000, 05:09
Outlet 04	0.1916	17.72	01Jan2000, 04:21	Outlet 04	0.1916	23.32	01Jan2000, 05:09
Area 5D	0.0351	11.86	01Jan2000, 01:21	Area 5D	0.0351	9.67	01Jan2000, 01:57
Area 5A	0.0124	3.63	01Jan2000, 01:27	Area 5A	0.0124	3.03	01Jan2000, 02:00
Area 5C	0.0048	5.13	01Jan2000, 00:24	Area 5C	0.0048	3.53	01Jan2000, 00:42
Pond 5	0.0048	0.16	01Jan2000, 03:12	Pond 5	0.0048	0.17	01Jan2000, 06:09
Area 5B	0.0052	2.21	01Jan2000, 00:57	Area 5B	0.0052	1.6	01Jan2000, 01:45
Depression 5B	0.0052	0	01Jan2000, 01:15	Depression 5B	0.0052	0	01Jan2000, 01:42
J-5	0.0575	15.59	01Jan2000, 01:24	J-5	0.0575	12.83	01Jan2000, 01:57
Outlet 05	0.0575	15.59	01Jan2000, 01:24	Outlet 05	0.0575	12.83	01Jan2000, 01:57
Area 6F	0.025	7.55	01Jan2000, 01:30	Area 6F	0.025	6.31	01Jan2000, 02:03
Area 6E	0.0017	0.96	01Jan2000, 00:30	Area 6E	0.0017	0.68	01Jan2000, 01:00
Pond 6E	0.0017	0.03	01Jan2000, 03:09	Pond 6E	0.0017	0.03	01Jan2000, 06:09
J-6C	0.0267	7.57	01Jan2000, 01:30	J-6C	0.0267	6.34	01Jan2000, 02:03
Area 6D	0.0019	1.15	01Jan2000, 00:30	Area 6D	0.0019	0.81	01Jan2000, 01:00
Pond 6D	0.0019	0.03	01Jan2000, 03:09	Pond 6D	0.0019	0.03	01Jan2000, 06:09
Area 6C	0.0162	5.07	01Jan2000, 01:06	Area 6C	0.0162	4.05	01Jan2000, 01:48
Area 6B	0.0041	1.12	01Jan2000, 01:09	Area 6B	0.0041	0.92	01Jan2000, 01:48

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

J-6B	1.9895	51.9	01Jan2000, 07:06	J-6B	1.9895	59.99	01Jan2000, 09:00
Area 6A	0.0046	1.17	01Jan2000, 01:12	Area 6A	0.0046	0.97	01Jan2000, 01:51
J-6A	1.9941	51.9	01Jan2000, 07:06	J-6A	1.9941	59.99	01Jan2000, 09:00
Outlet 06	1.9941	51.9	01Jan2000, 07:06	Outlet 06	1.9941	59.99	01Jan2000, 09:00
Area 7H	0.0198	7.2	01Jan2000, 01:09	Area 7H	0.0198	5.66	01Jan2000, 01:48
Area 7J	0.0128	5.06	01Jan2000, 01:00	Area 7J	0.0128	3.76	01Jan2000, 01:45
Area 7G	0.0089	6.03	01Jan2000, 00:36	Area 7G	0.0089	4.25	01Jan2000, 01:03
Pond 7G	0.0089	0.15	01Jan2000, 03:21	Pond 7G	0.0089	0.18	01Jan2000, 06:18
Area 7F	0.0059	5.24	01Jan2000, 00:24	Area 7F	0.0059	3.68	01Jan2000, 00:39
Pond 7F	0.0059	0.15	01Jan2000, 03:09	Pond 7F	0.0059	0.17	01Jan2000, 06:06
Area 7I	0.0044	3.01	01Jan2000, 00:42	Area 7I	0.0044	2.18	01Jan2000, 01:03
Area 7E	0.0015	0.41	01Jan2000, 00:51	Area 7E	0.0015	0.32	01Jan2000, 01:39
J-7B	1.9207	51.84	01Jan2000, 07:06	J-7B	1.9207	59.92	01Jan2000, 09:00
Area 7A	0.0125	4.83	01Jan2000, 00:57	Area 7A	0.0125	3.54	01Jan2000, 01:45
Area 7B	0.0034	1.91	01Jan2000, 00:51	Area 7B	0.0034	1.39	01Jan2000, 01:03
Ditch 7A	0.0159	6.21	01Jan2000, 01:03	Ditch 7A	0.0159	4.69	01Jan2000, 01:45
Area 7D	0.0022	1.52	01Jan2000, 00:33	Area 7D	0.0022	1.07	01Jan2000, 00:45
Area 7C	0.0018	1.09	01Jan2000, 00:36	Area 7C	0.0018	0.78	01Jan2000, 01:03
Ditch 7C	0.004	2.09	01Jan2000, 01:00	Ditch 7C	0.004	1.57	01Jan2000, 01:42
Outlet 07	1.9406	51.84	01Jan2000, 07:06	Outlet 07	1.9406	59.92	01Jan2000, 09:00
Area 8A	0.9459	140.38	01Jan2000, 04:21	Area 8A	0.9459	143.79	01Jan2000, 05:03
Area 8E	0.7664	167.27	01Jan2000, 02:54	Area 8E	0.7664	158.65	01Jan2000, 03:24
Depression 8E	0.7664	0	01Jan2000, 00:57	Depression 8E	0.7664	0	01Jan2000, 01:12
Area 8D	0.1544	42.86	01Jan2000, 02:00	Area 8D	0.1544	37.83	01Jan2000, 02:33
Depression 8D	0.1544	0	01Jan2000, 01:06	Depression 8D	0.1544	0	01Jan2000, 01:21
Area 8C	0.0007	0.65	01Jan2000, 00:42	Area 8C	0.0007	0.48	01Jan2000, 00:54
Storage 8A	1.8674	51.56	01Jan2000, 07:06	Storage 8A	1.8674	59.59	01Jan2000, 09:03
Outlet 08	1.8674	51.56	01Jan2000, 07:06	Outlet 08	1.8674	59.59	01Jan2000, 09:03
Area 9A	0.0227	13.11	01Jan2000, 00:54	Area 9A	0.0227	9.54	01Jan2000, 01:06
Area 9B	0.0108	4.87	01Jan2000, 01:03	Area 9B	0.0108	3.59	01Jan2000, 01:45
Area 9C	0.002	1.03	01Jan2000, 01:00	Area 9C	0.002	0.75	01Jan2000, 01:15
Outlet 09	0.0355	18.72	01Jan2000, 00:54	Outlet 09	0.0355	13.57	01Jan2000, 01:09
Area 10	0.0007	0.38	01Jan2000, 00:33	Area 10	0.0007	0.27	01Jan2000, 01:03
Outlet 10	0.0007	0.38	01Jan2000, 00:33	Outlet 10	0.0007	0.27	01Jan2000, 01:03
Area 11	0.0002	0.08	01Jan2000, 00:51	Area 11	0.0002	0.05	01Jan2000, 01:39
Outlet 11	0.0002	0.08	01Jan2000, 00:51	Outlet 11	0.0002	0.05	01Jan2000, 01:39
Area 12	0.0063	2.52	01Jan2000, 01:06	Area 12	0.0063	1.91	01Jan2000, 01:48
Outlet 12	0.0063	2.52	01Jan2000, 01:06	Outlet 12	0.0063	1.91	01Jan2000, 01:48

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

10YR 12HR				10YR 18HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	51.28	01Jan2000, 07:21	Area 1C	0.259	50.08	01Jan2000, 13:27
Area 1D	0.0109	3.12	01Jan2000, 05:15	Area 1D	0.0109	2.88	01Jan2000, 11:36
Area 1E	0.0057	1.97	01Jan2000, 05:12	Area 1E	0.0057	1.73	01Jan2000, 11:36
Pond 1	0.0166	0.26	01Jan2000, 12:33	Pond 1	0.0166	0.27	01Jan2000, 18:33
Diversion-O2	0.0166	0.04	01Jan2000, 12:33	Diversion-O2	0.0166	0.06	01Jan2000, 18:33
Area 1B	0.003	0.99	01Jan2000, 05:06	Area 1B	0.003	0.88	01Jan2000, 11:33
Depression 1BC	0.2786	9.03	01Jan2000, 14:03	Depression 1BC	0.2786	9.33	01Jan2000, 20:06
Diversion 1BC	0.2786	9.03	01Jan2000, 14:03	Diversion 1BC	0.2786	9.33	01Jan2000, 20:06
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	0.8	01Jan2000, 05:03	Area 1A	0.0026	0.72	01Jan2000, 11:30
J-1	0.2812	9.03	01Jan2000, 14:03	J-1	0.2812	9.33	01Jan2000, 18:03
Outlet 01	0.2812	9.03	01Jan2000, 14:03	Outlet 01	0.2812	9.33	01Jan2000, 18:03
Area 2	0.0014	0.27	01Jan2000, 05:33	Area 2	0.0014	0.27	01Jan2000, 11:33
Outlet 02	0.0014	0.43	01Jan2000, 05:36	Outlet 02	0.0014	0.45	01Jan2000, 11:36
Area 3B	0.0101	2.57	01Jan2000, 05:36	Area 3B	0.0101	2.41	01Jan2000, 11:39
Diversion 3B	0.0101	2.57	01Jan2000, 05:36	Diversion 3B	0.0101	2.41	01Jan2000, 11:39
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.41	01Jan2000, 05:09	Area 3A	0.0013	0.37	01Jan2000, 11:33
Ditch 3A	0.0013	0.4	01Jan2000, 05:33	Ditch 3A	0.0013	0.36	01Jan2000, 11:42
Area 3C	0.0013	0.41	01Jan2000, 05:09	Area 3C	0.0013	0.37	01Jan2000, 11:33
J-3	0.0127	3.36	01Jan2000, 05:36	J-3	0.0127	3.14	01Jan2000, 11:39
Outlet 03	0.0127	3.36	01Jan2000, 05:36	Outlet 03	0.0127	3.14	01Jan2000, 11:39
Area 4K	0.1202	24.4	01Jan2000, 07:12	Area 4K	0.1202	23.72	01Jan2000, 13:18
Area 4P	0.0123	3.25	01Jan2000, 05:36	Area 4P	0.0123	3.04	01Jan2000, 11:39
Area 4O	0.0117	3.08	01Jan2000, 05:36	Area 4O	0.0117	2.87	01Jan2000, 11:42
Area 4N	0.0022	0.86	01Jan2000, 05:03	Area 4N	0.0022	0.73	01Jan2000, 11:30
Ditch 4N	0.0022	0.08	01Jan2000, 12:15	Ditch 4N	0.0022	0.08	01Jan2000, 18:15
Area 4M	0.0012	0.41	01Jan2000, 05:06	Area 4M	0.0012	0.36	01Jan2000, 11:33
Ditch 4M	0.0012	0.04	01Jan2000, 12:18	Ditch 4M	0.0012	0.04	01Jan2000, 18:18
Area 4I	0.0012	0.46	01Jan2000, 05:00	Area 4I	0.0012	0.39	01Jan2000, 11:30
Ditch 4I	0.0012	0.04	01Jan2000, 12:09	Ditch 4I	0.0012	0.04	01Jan2000, 18:09
Area 4J	0.001	0.36	01Jan2000, 05:00	Area 4J	0.001	0.31	01Jan2000, 11:30
Ditch 4J	0.001	0.03	01Jan2000, 12:09	Ditch 4J	0.001	0.04	01Jan2000, 18:09
J-4A	0.1498	28.38	01Jan2000, 07:06	J-4A	0.1498	27.57	01Jan2000, 13:00
Area 4H	0.0169	4.26	01Jan2000, 05:39	Area 4H	0.0169	3.98	01Jan2000, 11:45
Area 4L	0.0053	1.69	01Jan2000, 05:18	Area 4L	0.0053	1.51	01Jan2000, 11:39
Pond 4L	0.0053	0.13	01Jan2000, 12:33	Pond 4L	0.0053	0.14	01Jan2000, 18:33
Depression 4H-P	0.172	26.29	01Jan2000, 08:18	Depression 4H-P	0.172	28.13	01Jan2000, 13:51
Area 4G	0.0023	0.55	01Jan2000, 05:33	Area 4G	0.0023	0.53	01Jan2000, 11:33
Area 4D	0.0014	0.52	01Jan2000, 05:06	Area 4D	0.0014	0.45	01Jan2000, 11:33
Ditch 4D	0.0014	0.05	01Jan2000, 12:18	Ditch 4D	0.0014	0.05	01Jan2000, 18:18
Area 4E	0.001	0.35	01Jan2000, 05:00	Area 4E	0.001	0.3	01Jan2000, 11:30
Ditch 4E	0.001	0.03	01Jan2000, 12:09	Ditch 4E	0.001	0.04	01Jan2000, 18:09
J-4B	0.0047	0.61	01Jan2000, 05:33	J-4B	0.0047	0.59	01Jan2000, 11:33
Area 4C	0.0026	0.72	01Jan2000, 05:12	Area 4C	0.0026	0.67	01Jan2000, 11:36
Depression 4C	0.0026	0.3	01Jan2000, 08:12	Depression 4C	0.0026	0.37	01Jan2000, 13:24
Area 4B	0.0029	0.66	01Jan2000, 05:36	Area 4B	0.0029	0.63	01Jan2000, 11:36
Depression 4BG	0.1822	27.1	01Jan2000, 08:21	Depression 4BG	0.1822	29.03	01Jan2000, 13:54
Area 4A	0.0025	0.59	01Jan2000, 05:36	Area 4A	0.0025	0.56	01Jan2000, 11:39
Area 4F	0.0069	1.77	01Jan2000, 05:33	Area 4F	0.0069	1.68	01Jan2000, 11:33
J-4C	0.1916	28.03	01Jan2000, 08:21	J-4C	0.1916	30.01	01Jan2000, 13:48
Outlet 04	0.1916	28.03	01Jan2000, 08:21	Outlet 04	0.1916	30.01	01Jan2000, 13:48
Area 5D	0.0351	9.09	01Jan2000, 05:42	Area 5D	0.0351	8.41	01Jan2000, 11:48
Area 5A	0.0124	2.93	01Jan2000, 05:48	Area 5A	0.0124	2.76	01Jan2000, 11:54
Area 5C	0.0048	2.1	01Jan2000, 05:00	Area 5C	0.0048	1.71	01Jan2000, 11:30
Pond 5	0.0048	0.18	01Jan2000, 12:06	Pond 5	0.0048	0.18	01Jan2000, 18:06
Area 5B	0.0052	1.45	01Jan2000, 05:12	Area 5B	0.0052	1.34	01Jan2000, 11:36
Depression 5B	0.0052	0	01Jan2000, 05:00	Depression 5B	0.0052	0	01Jan2000, 10:15
J-5	0.0575	12.16	01Jan2000, 05:45	J-5	0.0575	11.32	01Jan2000, 11:51
Outlet 05	0.0575	12.16	01Jan2000, 05:45	Outlet 05	0.0575	11.32	01Jan2000, 11:51
Area 6F	0.025	6.1	01Jan2000, 05:51	Area 6F	0.025	5.69	01Jan2000, 11:57
Area 6E	0.0017	0.55	01Jan2000, 05:00	Area 6E	0.0017	0.49	01Jan2000, 11:30
Pond 6E	0.0017	0.04	01Jan2000, 12:06	Pond 6E	0.0017	0.04	01Jan2000, 18:06
J-6C	0.0267	6.13	01Jan2000, 05:51	J-6C	0.0267	5.72	01Jan2000, 11:57
Area 6D	0.0019	0.64	01Jan2000, 05:00	Area 6D	0.0019	0.56	01Jan2000, 11:30
Pond 6D	0.0019	0.04	01Jan2000, 12:06	Pond 6D	0.0019	0.04	01Jan2000, 18:06
Area 6C	0.0162	3.8	01Jan2000, 05:36	Area 6C	0.0162	3.63	01Jan2000, 11:39
Area 6B	0.0041	0.88	01Jan2000, 05:39	Area 6B	0.0041	0.85	01Jan2000, 11:39

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

J-6B	1.9895	70.35	01Jan2000, 12:06	J-6B	1.9895	73.07	01Jan2000, 18:03
Area 6A	0.0046	0.95	01Jan2000, 05:39	Area 6A	0.0046	0.92	01Jan2000, 11:39
J-6A	1.9941	70.59	01Jan2000, 12:06	J-6A	1.9941	73.35	01Jan2000, 18:03
Outlet 06	1.9941	70.59	01Jan2000, 12:06	Outlet 06	1.9941	73.35	01Jan2000, 18:03
Area 7H	0.0198	5.21	01Jan2000, 05:36	Area 7H	0.0198	4.85	01Jan2000, 11:42
Area 7J	0.0128	3.4	01Jan2000, 05:33	Area 7J	0.0128	3.2	01Jan2000, 11:36
Area 7G	0.0089	3.27	01Jan2000, 05:03	Area 7G	0.0089	2.82	01Jan2000, 11:30
Pond 7G	0.0089	0.22	01Jan2000, 12:15	Pond 7G	0.0089	0.23	01Jan2000, 18:15
Area 7F	0.0059	2.4	01Jan2000, 05:00	Area 7F	0.0059	2	01Jan2000, 11:30
Pond 7F	0.0059	0.18	01Jan2000, 12:06	Pond 7F	0.0059	0.19	01Jan2000, 18:06
Area 7I	0.0044	1.65	01Jan2000, 05:06	Area 7I	0.0044	1.41	01Jan2000, 11:33
Area 7E	0.0015	0.3	01Jan2000, 05:30	Area 7E	0.0015	0.29	01Jan2000, 11:30
J-7B	1.9207	66.63	01Jan2000, 12:06	J-7B	1.9207	68.72	01Jan2000, 18:03
Area 7A	0.0125	3.22	01Jan2000, 05:33	Area 7A	0.0125	3.05	01Jan2000, 11:33
Area 7B	0.0034	1.13	01Jan2000, 05:03	Area 7B	0.0034	1	01Jan2000, 11:30
Ditch 7A	0.0159	4.27	01Jan2000, 05:36	Ditch 7A	0.0159	3.98	01Jan2000, 11:39
Area 7D	0.0022	0.81	01Jan2000, 05:03	Area 7D	0.0022	0.7	01Jan2000, 11:30
Area 7C	0.0018	0.62	01Jan2000, 05:03	Area 7C	0.0018	0.54	01Jan2000, 11:30
Ditch 7C	0.004	1.34	01Jan2000, 05:33	Ditch 7C	0.004	1.19	01Jan2000, 11:36
Outlet 07	1.9406	67.87	01Jan2000, 12:06	Outlet 07	1.9406	70.13	01Jan2000, 18:03
Area 8A	0.9459	157.76	01Jan2000, 08:42	Area 8A	0.9459	157.35	01Jan2000, 14:36
Area 8E	0.7664	163.79	01Jan2000, 07:06	Area 8E	0.7664	157.5	01Jan2000, 13:12
Depression 8E	0.7664	0	01Jan2000, 03:45	Depression 8E	0.7664	0	01Jan2000, 06:15
Area 8D	0.1544	37.6	01Jan2000, 06:18	Area 8D	0.1544	35.08	01Jan2000, 12:27
Depression 8D	0.1544	0	01Jan2000, 04:09	Depression 8D	0.1544	0	01Jan2000, 07:09
Area 8C	0.0007	0.31	01Jan2000, 05:06	Area 8C	0.0007	0.25	01Jan2000, 11:33
Storage 8A	1.8674	65.18	01Jan2000, 13:42	Storage 8A	1.8674	66.6	01Jan2000, 19:39
Outlet 08	1.8674	65.18	01Jan2000, 13:42	Outlet 08	1.8674	66.6	01Jan2000, 19:39
Area 9A	0.0227	7.72	01Jan2000, 05:06	Area 9A	0.0227	6.8	01Jan2000, 11:33
Area 9B	0.0108	3.2	01Jan2000, 05:18	Area 9B	0.0108	2.92	01Jan2000, 11:39
Area 9C	0.002	0.64	01Jan2000, 05:12	Area 9C	0.002	0.58	01Jan2000, 11:36
Outlet 09	0.0355	11.49	01Jan2000, 05:09	Outlet 09	0.0355	10.28	01Jan2000, 11:33
Area 10	0.0007	0.23	01Jan2000, 05:00	Area 10	0.0007	0.2	01Jan2000, 11:30
Outlet 10	0.0007	0.23	01Jan2000, 05:00	Outlet 10	0.0007	0.2	01Jan2000, 11:30
Area 11	0.0002	0.05	01Jan2000, 05:30	Area 11	0.0002	0.05	01Jan2000, 11:30
Outlet 11	0.0002	0.05	01Jan2000, 05:30	Outlet 11	0.0002	0.05	01Jan2000, 11:30
Area 12	0.0063	1.73	01Jan2000, 05:33	Area 12	0.0063	1.61	01Jan2000, 11:39
Outlet 12	0.0063	1.73	01Jan2000, 05:33	Outlet 12	0.0063	1.61	01Jan2000, 11:39

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

10YR 24HR				10YR 48HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	45.71	01Jan2000, 17:12	Area 1C	0.259	30.7	02Jan2000, 19:33
Area 1D	0.0109	2.36	01Jan2000, 15:08	Area 1D	0.0109	1.41	02Jan2000, 17:06
Area 1E	0.0057	1.4	01Jan2000, 15:07	Area 1E	0.0057	0.81	02Jan2000, 17:03
Pond 1	0.0166	0.29	02Jan2000, 00:30	Pond 1	0.0166	0.52	03Jan2000, 00:27
Diversion-O2	0.0166	0.07	02Jan2000, 00:30	Diversion-O2	0.0166	0.29	03Jan2000, 00:27
Area 1B	0.003	0.71	01Jan2000, 15:03	Area 1B	0.003	0.41	02Jan2000, 17:00
Depression 1BC	0.2786	9.68	02Jan2000, 01:45	Depression 1BC	0.2786	9.89	03Jan2000, 02:24
Diversion 1BC	0.2786	9.68	02Jan2000, 01:45	Diversion 1BC	0.2786	9.89	03Jan2000, 02:24
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	0.59	01Jan2000, 15:02	Area 1A	0.0026	0.35	02Jan2000, 17:00
J-1	0.2812	9.76	02Jan2000, 00:01	J-1	0.2812	9.89	03Jan2000, 02:24
Outlet 01	0.2812	9.76	02Jan2000, 00:01	Outlet 01	0.2812	9.89	03Jan2000, 02:24
Area 2	0.0014	0.22	01Jan2000, 16:02	Area 2	0.0014	0.14	02Jan2000, 19:00
Outlet 02	0.0014	0.43	01Jan2000, 16:02	Outlet 02	0.0014	0.36	02Jan2000, 19:00
Area 3B	0.0101	1.99	01Jan2000, 15:11	Area 3B	0.0101	1.22	02Jan2000, 17:06
Diversion 3B	0.0101	1.99	01Jan2000, 15:11	Diversion 3B	0.0101	1.22	02Jan2000, 17:06
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.3	01Jan2000, 15:05	Area 3A	0.0013	0.18	02Jan2000, 17:03
Ditch 3A	0.0013	0.3	01Jan2000, 15:12	Ditch 3A	0.0013	0.17	02Jan2000, 17:18
Area 3C	0.0013	0.3	01Jan2000, 15:04	Area 3C	0.0013	0.18	02Jan2000, 17:03
J-3	0.0127	2.58	01Jan2000, 15:10	J-3	0.0127	1.57	02Jan2000, 17:06
Outlet 03	0.0127	2.58	01Jan2000, 15:10	Outlet 03	0.0127	1.57	02Jan2000, 17:06
Area 4K	0.1202	21.53	01Jan2000, 17:04	Area 4K	0.1202	14.32	02Jan2000, 19:27
Area 4P	0.0123	2.5	01Jan2000, 15:10	Area 4P	0.0123	1.52	02Jan2000, 17:06
Area 4O	0.0117	2.37	01Jan2000, 15:12	Area 4O	0.0117	1.45	02Jan2000, 17:06
Area 4N	0.0022	0.58	01Jan2000, 15:02	Area 4N	0.0022	0.33	02Jan2000, 16:03
Ditch 4N	0.0022	0.08	02Jan2000, 00:12	Ditch 4N	0.0022	0.08	03Jan2000, 00:15
Area 4M	0.0012	0.29	01Jan2000, 15:03	Area 4M	0.0012	0.17	02Jan2000, 17:00
Ditch 4M	0.0012	0.04	02Jan2000, 00:15	Ditch 4M	0.0012	0.04	03Jan2000, 00:18
Area 4I	0.0012	0.31	01Jan2000, 15:01	Area 4I	0.0012	0.18	02Jan2000, 16:00
Ditch 4I	0.0012	0.04	02Jan2000, 00:08	Ditch 4I	0.0012	0.04	03Jan2000, 00:09
Area 4J	0.001	0.25	01Jan2000, 15:01	Area 4J	0.001	0.14	02Jan2000, 16:00
Ditch 4J	0.001	0.04	02Jan2000, 00:07	Ditch 4J	0.001	0.04	03Jan2000, 00:09
J-4A	0.1498	25.4	01Jan2000, 17:02	J-4A	0.1498	17.38	02Jan2000, 19:06
Area 4H	0.0169	3.3	01Jan2000, 15:16	Area 4H	0.0169	2.04	02Jan2000, 17:09
Area 4L	0.0053	1.24	01Jan2000, 15:10	Area 4L	0.0053	0.73	02Jan2000, 17:06
Pond 4L	0.0053	0.14	02Jan2000, 00:28	Pond 4L	0.0053	0.15	03Jan2000, 00:33
Depression 4H-P	0.172	27.17	01Jan2000, 17:24	Depression 4H-P	0.172	19.25	02Jan2000, 19:21
Area 4G	0.0023	0.43	01Jan2000, 15:05	Area 4G	0.0023	0.27	02Jan2000, 17:03
Area 4D	0.0014	0.36	01Jan2000, 15:03	Area 4D	0.0014	0.21	02Jan2000, 16:06
Ditch 4D	0.0014	0.05	02Jan2000, 00:17	Ditch 4D	0.0014	0.05	03Jan2000, 00:21
Area 4E	0.001	0.24	01Jan2000, 15:01	Area 4E	0.001	0.14	02Jan2000, 17:00
Ditch 4E	0.001	0.04	02Jan2000, 00:07	Ditch 4E	0.001	0.04	03Jan2000, 00:09
J-4B	0.0047	0.5	01Jan2000, 15:05	J-4B	0.0047	0.34	02Jan2000, 19:00
Area 4C	0.0026	0.55	01Jan2000, 15:07	Area 4C	0.0026	0.33	02Jan2000, 17:03
Depression 4C	0.0026	0.4	01Jan2000, 17:06	Depression 4C	0.0026	0.32	02Jan2000, 17:18
Area 4B	0.0029	0.52	01Jan2000, 15:08	Area 4B	0.0029	0.33	02Jan2000, 19:00
Depression 4BG	0.1822	28.2	01Jan2000, 17:26	Depression 4BG	0.1822	20.16	02Jan2000, 19:18
Area 4A	0.0025	0.46	01Jan2000, 15:11	Area 4A	0.0025	0.29	02Jan2000, 17:06
Area 4F	0.0069	1.38	01Jan2000, 15:05	Area 4F	0.0069	0.84	02Jan2000, 17:03
J-4C	0.1916	29.35	01Jan2000, 17:17	J-4C	0.1916	21.21	02Jan2000, 19:09
Outlet 04	0.1916	29.35	01Jan2000, 17:17	Outlet 04	0.1916	21.21	02Jan2000, 19:09
Area 5D	0.0351	7.01	01Jan2000, 15:22	Area 5D	0.0351	4.33	02Jan2000, 17:12
Area 5A	0.0124	2.31	01Jan2000, 15:27	Area 5A	0.0124	1.45	02Jan2000, 17:15
Area 5C	0.0048	1.36	01Jan2000, 15:00	Area 5C	0.0048	0.76	02Jan2000, 16:00
Pond 5	0.0048	0.19	02Jan2000, 00:06	Pond 5	0.0048	0.18	03Jan2000, 00:09
Area 5B	0.0052	1.1	01Jan2000, 15:06	Area 5B	0.0052	0.66	02Jan2000, 17:03
Depression 5B	0.0052	0	01Jan2000, 12:59	Depression 5B	0.0052	0	02Jan2000, 07:21
J-5	0.0575	9.47	01Jan2000, 15:23	J-5	0.0575	5.94	02Jan2000, 17:15
Outlet 05	0.0575	9.47	01Jan2000, 15:23	Outlet 05	0.0575	5.94	02Jan2000, 17:15
Area 6F	0.025	4.79	01Jan2000, 15:33	Area 6F	0.025	3	02Jan2000, 17:18
Area 6E	0.0017	0.4	01Jan2000, 15:00	Area 6E	0.0017	0.23	02Jan2000, 17:00
Pond 6E	0.0017	0.04	02Jan2000, 00:05	Pond 6E	0.0017	0.04	03Jan2000, 00:06
J-6C	0.0267	4.82	01Jan2000, 15:33	J-6C	0.0267	3.03	02Jan2000, 17:18
Area 6D	0.0019	0.45	01Jan2000, 15:00	Area 6D	0.0019	0.26	02Jan2000, 17:00
Pond 6D	0.0019	0.04	02Jan2000, 00:05	Pond 6D	0.0019	0.04	03Jan2000, 00:06
Area 6C	0.0162	3	01Jan2000, 15:10	Area 6C	0.0162	1.87	02Jan2000, 17:06
Area 6B	0.0041	0.71	01Jan2000, 15:11	Area 6B	0.0041	0.45	02Jan2000, 19:03

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

J-6B	1.9895	73.99	02Jan2000, 00:01	J-6B	1.9895	72.34	03Jan2000, 00:03
Area 6A	0.0046	0.77	01Jan2000, 16:05	Area 6A	0.0046	0.49	02Jan2000, 19:03
J-6A	1.9941	74.23	02Jan2000, 00:01	J-6A	1.9941	72.69	03Jan2000, 00:03
Outlet 06	1.9941	74.23	02Jan2000, 00:01	Outlet 06	1.9941	72.69	03Jan2000, 00:03
Area 7H	0.0198	4	01Jan2000, 15:13	Area 7H	0.0198	2.45	02Jan2000, 17:09
Area 7J	0.0128	2.62	01Jan2000, 15:07	Area 7J	0.0128	1.59	02Jan2000, 17:03
Area 7G	0.0089	2.26	01Jan2000, 15:01	Area 7G	0.0089	1.3	02Jan2000, 16:03
Pond 7G	0.0089	0.25	02Jan2000, 00:12	Pond 7G	0.0089	0.25	03Jan2000, 00:15
Area 7F	0.0059	1.6	01Jan2000, 15:00	Area 7F	0.0059	0.9	02Jan2000, 16:00
Pond 7F	0.0059	0.2	02Jan2000, 00:04	Pond 7F	0.0059	0.2	03Jan2000, 00:06
Area 7I	0.0044	1.14	01Jan2000, 15:03	Area 7I	0.0044	0.65	02Jan2000, 16:03
Area 7E	0.0015	0.24	01Jan2000, 16:00	Area 7E	0.0015	0.15	02Jan2000, 19:00
J-7B	1.9207	70.25	01Jan2000, 23:53	J-7B	1.9207	66.76	03Jan2000, 00:03
Area 7A	0.0125	2.49	01Jan2000, 15:05	Area 7A	0.0125	1.52	02Jan2000, 17:03
Area 7B	0.0034	0.81	01Jan2000, 15:02	Area 7B	0.0034	0.47	02Jan2000, 17:00
Ditch 7A	0.0159	3.27	01Jan2000, 15:09	Ditch 7A	0.0159	1.98	02Jan2000, 17:06
Area 7D	0.0022	0.56	01Jan2000, 15:01	Area 7D	0.0022	0.32	02Jan2000, 16:00
Area 7C	0.0018	0.44	01Jan2000, 15:01	Area 7C	0.0018	0.25	02Jan2000, 17:00
Ditch 7C	0.004	0.97	01Jan2000, 15:07	Ditch 7C	0.004	0.57	02Jan2000, 17:03
Outlet 07	1.9406	71.44	01Jan2000, 23:57	Outlet 07	1.9406	68.5	03Jan2000, 00:03
Area 8A	0.9459	149.12	01Jan2000, 18:22	Area 8A	0.9459	106.55	02Jan2000, 20:30
Area 8E	0.7664	142.14	01Jan2000, 16:59	Area 8E	0.7664	93.45	02Jan2000, 19:21
Depression 8E	0.7664	0	01Jan2000, 07:28	Depression 8E	0.7664	0	01Jan2000, 14:18
Area 8D	0.1544	30.57	01Jan2000, 16:19	Area 8D	0.1544	19.11	02Jan2000, 17:48
Depression 8D	0.1544	2.09	02Jan2000, 01:44	Depression 8D	0.1544	11.46	03Jan2000, 00:42
Area 8C	0.0007	0.2	01Jan2000, 15:03	Area 8C	0.0007	0.11	02Jan2000, 16:06
Storage 8A	1.8674	67.57	01Jan2000, 23:32	Storage 8A	1.8674	65.81	03Jan2000, 02:30
Outlet 08	1.8674	67.57	01Jan2000, 23:32	Outlet 08	1.8674	65.81	03Jan2000, 02:30
Area 9A	0.0227	5.49	01Jan2000, 15:03	Area 9A	0.0227	3.18	02Jan2000, 17:00
Area 9B	0.0108	2.39	01Jan2000, 15:09	Area 9B	0.0108	1.43	02Jan2000, 17:06
Area 9C	0.002	0.47	01Jan2000, 15:07	Area 9C	0.002	0.27	02Jan2000, 17:03
Outlet 09	0.0355	8.34	01Jan2000, 15:04	Outlet 09	0.0355	4.89	02Jan2000, 17:03
Area 10	0.0007	0.16	01Jan2000, 15:01	Area 10	0.0007	0.09	02Jan2000, 17:00
Outlet 10	0.0007	0.16	01Jan2000, 15:01	Outlet 10	0.0007	0.09	02Jan2000, 17:00
Area 11	0.0002	0.04	01Jan2000, 15:01	Area 11	0.0002	0.02	02Jan2000, 17:00
Outlet 11	0.0002	0.04	01Jan2000, 15:01	Outlet 11	0.0002	0.02	02Jan2000, 17:00
Area 12	0.0063	1.32	01Jan2000, 15:10	Area 12	0.0063	0.8	02Jan2000, 17:06
Outlet 12	0.0063	1.32	01Jan2000, 15:10	Outlet 12	0.0063	0.8	02Jan2000, 17:06

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

10YR 72HR				10YR 120HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	23.1	03Jan2000, 15:24	Area 1C	0.259	16.2	05Jan2000, 06:54
Area 1D	0.0109	1.05	03Jan2000, 12:06	Area 1D	0.0109	0.72	05Jan2000, 06:00
Area 1E	0.0057	0.6	03Jan2000, 12:03	Area 1E	0.0057	0.41	05Jan2000, 06:00
Pond 1	0.0166	0.76	04Jan2000, 00:18	Pond 1	0.0166	0.64	06Jan2000, 00:12
Diversion-O2	0.0166	0.53	04Jan2000, 00:18	Diversion-O2	0.0166	0.41	06Jan2000, 00:12
Area 1B	0.003	0.31	03Jan2000, 12:00	Area 1B	0.003	0.21	05Jan2000, 06:00
Depression 1BC	0.2786	9.73	04Jan2000, 02:00	Depression 1BC	0.2786	9.11	06Jan2000, 01:24
Diversion 1BC	0.2786	9.73	04Jan2000, 02:00	Diversion 1BC	0.2786	9.11	06Jan2000, 01:24
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	0.26	03Jan2000, 12:00	Area 1A	0.0026	0.18	05Jan2000, 06:00
J-1	0.2812	9.75	04Jan2000, 00:03	J-1	0.2812	9.19	06Jan2000, 00:00
Outlet 01	0.2812	9.75	04Jan2000, 00:03	Outlet 01	0.2812	9.19	06Jan2000, 00:00
Area 2	0.0014	0.11	03Jan2000, 14:03	Area 2	0.0014	0.08	05Jan2000, 06:00
Outlet 02	0.0014	0.32	03Jan2000, 16:00	Outlet 02	0.0014	0.29	05Jan2000, 12:00
Area 3B	0.0101	0.91	03Jan2000, 12:06	Area 3B	0.0101	0.63	05Jan2000, 06:03
Diversion 3B	0.0101	0.91	03Jan2000, 12:06	Diversion 3B	0.0101	0.63	05Jan2000, 06:03
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.13	03Jan2000, 12:03	Area 3A	0.0013	0.09	05Jan2000, 06:00
Ditch 3A	0.0013	0.13	03Jan2000, 14:09	Ditch 3A	0.0013	0.09	05Jan2000, 06:06
Area 3C	0.0013	0.13	03Jan2000, 12:03	Area 3C	0.0013	0.09	05Jan2000, 06:00
J-3	0.0127	1.16	03Jan2000, 12:06	J-3	0.0127	0.81	05Jan2000, 06:03
Outlet 03	0.0127	1.16	03Jan2000, 12:06	Outlet 03	0.0127	0.81	05Jan2000, 06:03
Area 4K	0.1202	10.76	03Jan2000, 15:12	Area 4K	0.1202	7.53	05Jan2000, 06:48
Area 4P	0.0123	1.13	03Jan2000, 12:06	Area 4P	0.0123	0.78	05Jan2000, 06:03
Area 4O	0.0117	1.08	03Jan2000, 12:09	Area 4O	0.0117	0.75	05Jan2000, 06:03
Area 4N	0.0022	0.24	03Jan2000, 12:00	Area 4N	0.0022	0.16	05Jan2000, 06:00
Ditch 4N	0.0022	0.08	04Jan2000, 00:12	Ditch 4N	0.0022	0.07	06Jan2000, 00:09
Area 4M	0.0012	0.12	03Jan2000, 12:00	Area 4M	0.0012	0.08	05Jan2000, 06:00
Ditch 4M	0.0012	0.04	04Jan2000, 00:15	Ditch 4M	0.0012	0.04	06Jan2000, 00:12
Area 4I	0.0012	0.13	03Jan2000, 12:00	Area 4I	0.0012	0.09	05Jan2000, 06:00
Ditch 4I	0.0012	0.04	04Jan2000, 00:09	Ditch 4I	0.0012	0.04	06Jan2000, 00:06
Area 4J	0.001	0.11	03Jan2000, 12:00	Area 4J	0.001	0.07	05Jan2000, 06:00
Ditch 4J	0.001	0.04	04Jan2000, 00:06	Ditch 4J	0.001	0.03	06Jan2000, 00:06
J-4A	0.1498	13.04	03Jan2000, 15:18	J-4A	0.1498	9.18	05Jan2000, 06:12
Area 4H	0.0169	1.52	03Jan2000, 12:12	Area 4H	0.0169	1.06	05Jan2000, 06:03
Area 4L	0.0053	0.54	03Jan2000, 12:06	Area 4L	0.0053	0.37	05Jan2000, 06:00
Pond 4L	0.0053	0.15	04Jan2000, 00:30	Pond 4L	0.0053	0.14	06Jan2000, 00:24
Depression 4H-P	0.172	14.54	03Jan2000, 16:12	Depression 4H-P	0.172	10.22	05Jan2000, 07:03
Area 4G	0.0023	0.2	03Jan2000, 14:00	Area 4G	0.0023	0.14	05Jan2000, 06:00
Area 4D	0.0014	0.15	03Jan2000, 12:00	Area 4D	0.0014	0.1	05Jan2000, 06:00
Ditch 4D	0.0014	0.05	04Jan2000, 00:18	Ditch 4D	0.0014	0.04	06Jan2000, 00:12
Area 4E	0.001	0.1	03Jan2000, 12:00	Area 4E	0.001	0.07	05Jan2000, 06:00
Ditch 4E	0.001	0.04	04Jan2000, 00:06	Ditch 4E	0.001	0.03	06Jan2000, 00:06
J-4B	0.0047	0.27	03Jan2000, 14:03	J-4B	0.0047	0.21	05Jan2000, 12:00
Area 4C	0.0026	0.24	03Jan2000, 12:03	Area 4C	0.0026	0.17	05Jan2000, 06:00
Depression 4C	0.0026	0.24	03Jan2000, 12:15	Depression 4C	0.0026	0.17	05Jan2000, 06:06
Area 4B	0.0029	0.24	03Jan2000, 14:03	Area 4B	0.0029	0.17	05Jan2000, 06:03
Depression 4BG	0.1822	15.27	03Jan2000, 16:09	Depression 4BG	0.1822	10.74	05Jan2000, 07:06
Area 4A	0.0025	0.21	03Jan2000, 14:06	Area 4A	0.0025	0.15	05Jan2000, 06:03
Area 4F	0.0069	0.62	03Jan2000, 12:03	Area 4F	0.0069	0.43	05Jan2000, 06:00
J-4C	0.1916	16.07	03Jan2000, 16:03	J-4C	0.1916	11.28	05Jan2000, 07:09
Outlet 04	0.1916	16.07	03Jan2000, 16:03	Outlet 04	0.1916	11.28	05Jan2000, 07:09
Area 5D	0.0351	3.22	03Jan2000, 12:15	Area 5D	0.0351	2.23	05Jan2000, 06:06
Area 5A	0.0124	1.08	03Jan2000, 14:12	Area 5A	0.0124	0.76	05Jan2000, 06:06
Area 5C	0.0048	0.56	03Jan2000, 12:00	Area 5C	0.0048	0.37	05Jan2000, 06:00
Pond 5	0.0048	0.18	04Jan2000, 00:06	Pond 5	0.0048	0.17	06Jan2000, 00:06
Area 5B	0.0052	0.49	03Jan2000, 12:03	Area 5B	0.0052	0.34	05Jan2000, 06:00
Depression 5B	0.0052	0	02Jan2000, 20:27	Depression 5B	0.0052	0	03Jan2000, 19:45
J-5	0.0575	4.45	03Jan2000, 14:09	J-5	0.0575	3.13	05Jan2000, 06:06
Outlet 05	0.0575	4.45	03Jan2000, 14:09	Outlet 05	0.0575	3.13	05Jan2000, 06:06
Area 6F	0.025	2.23	03Jan2000, 14:12	Area 6F	0.025	1.56	05Jan2000, 06:06
Area 6E	0.0017	0.17	03Jan2000, 12:00	Area 6E	0.0017	0.12	05Jan2000, 06:00
Pond 6E	0.0017	0.04	04Jan2000, 00:06	Pond 6E	0.0017	0.04	06Jan2000, 00:03
J-6C	0.0267	2.27	03Jan2000, 14:12	J-6C	0.0267	1.59	05Jan2000, 06:09
Area 6D	0.0019	0.19	03Jan2000, 12:00	Area 6D	0.0019	0.13	05Jan2000, 06:00
Pond 6D	0.0019	0.04	04Jan2000, 00:06	Pond 6D	0.0019	0.04	06Jan2000, 00:06
Area 6C	0.0162	1.39	03Jan2000, 14:06	Area 6C	0.0162	0.97	05Jan2000, 06:03
Area 6B	0.0041	0.34	03Jan2000, 14:06	Area 6B	0.0041	0.24	05Jan2000, 06:03

PROPOSED HEC-HMS MODELING RESULTS

10YR STORM

J-6B	1.9895	67.71	04Jan2000, 00:00	J-6B	1.9895	55.7	05Jan2000, 16:39
Area 6A	0.0046	0.37	03Jan2000, 14:06	Area 6A	0.0046	0.26	05Jan2000, 06:03
J-6A	1.9941	67.98	04Jan2000, 00:00	J-6A	1.9941	55.87	05Jan2000, 16:39
Outlet 06	1.9941	67.98	04Jan2000, 00:00	Outlet 06	1.9941	55.87	05Jan2000, 16:39
Area 7H	0.0198	1.82	03Jan2000, 12:09	Area 7H	0.0198	1.26	05Jan2000, 06:03
Area 7J	0.0128	1.18	03Jan2000, 12:03	Area 7J	0.0128	0.82	05Jan2000, 06:00
Area 7G	0.0089	0.96	03Jan2000, 12:00	Area 7G	0.0089	0.64	05Jan2000, 06:00
Pond 7G	0.0089	0.25	04Jan2000, 00:12	Pond 7G	0.0089	0.25	06Jan2000, 00:09
Area 7F	0.0059	0.67	03Jan2000, 12:00	Area 7F	0.0059	0.44	05Jan2000, 06:00
Pond 7F	0.0059	0.2	04Jan2000, 00:06	Pond 7F	0.0059	0.19	06Jan2000, 00:03
Area 7I	0.0044	0.48	03Jan2000, 12:00	Area 7I	0.0044	0.32	05Jan2000, 06:00
Area 7E	0.0015	0.11	03Jan2000, 14:00	Area 7E	0.0015	0.08	05Jan2000, 06:00
J-7B	1.9207	63.6	04Jan2000, 00:00	J-7B	1.9207	52.93	05Jan2000, 16:36
Area 7A	0.0125	1.13	03Jan2000, 12:03	Area 7A	0.0125	0.78	05Jan2000, 06:00
Area 7B	0.0034	0.35	03Jan2000, 12:00	Area 7B	0.0034	0.24	05Jan2000, 06:00
Ditch 7A	0.0159	1.47	03Jan2000, 12:06	Ditch 7A	0.0159	1.02	05Jan2000, 06:03
Area 7D	0.0022	0.24	03Jan2000, 12:00	Area 7D	0.0022	0.16	05Jan2000, 06:00
Area 7C	0.0018	0.19	03Jan2000, 12:00	Area 7C	0.0018	0.13	05Jan2000, 06:00
Ditch 7C	0.004	0.42	03Jan2000, 12:03	Ditch 7C	0.004	0.29	05Jan2000, 06:00
Outlet 07	1.9406	64.87	04Jan2000, 00:00	Outlet 07	1.9406	53.78	05Jan2000, 16:36
Area 8A	0.9459	82.24	03Jan2000, 16:57	Area 8A	0.9459	57.88	05Jan2000, 08:12
Area 8E	0.7664	70.11	03Jan2000, 15:03	Area 8E	0.7664	49	05Jan2000, 06:42
Depression 8E	0.7664	0	01Jan2000, 19:27	Depression 8E	0.7664	0	02Jan2000, 04:54
Area 8D	0.1544	14.3	03Jan2000, 14:24	Area 8D	0.1544	9.95	05Jan2000, 06:18
Depression 8D	0.1544	9.83	03Jan2000, 23:36	Depression 8D	0.1544	9.05	05Jan2000, 12:45
Area 8C	0.0007	0.08	03Jan2000, 12:00	Area 8C	0.0007	0.05	05Jan2000, 06:00
Storage 8A	1.8674	61.27	04Jan2000, 01:39	Storage 8A	1.8674	50.89	05Jan2000, 16:33
Outlet 08	1.8674	61.27	04Jan2000, 01:39	Outlet 08	1.8674	50.89	05Jan2000, 16:33
Area 9A	0.0227	2.36	03Jan2000, 12:00	Area 9A	0.0227	1.6	05Jan2000, 06:00
Area 9B	0.0108	1.06	03Jan2000, 12:06	Area 9B	0.0108	0.73	05Jan2000, 06:03
Area 9C	0.002	0.2	03Jan2000, 12:03	Area 9C	0.002	0.14	05Jan2000, 06:00
Outlet 09	0.0355	3.63	03Jan2000, 12:03	Outlet 09	0.0355	2.46	05Jan2000, 06:00
Area 10	0.0007	0.07	03Jan2000, 12:00	Area 10	0.0007	0.05	05Jan2000, 06:00
Outlet 10	0.0007	0.07	03Jan2000, 12:00	Outlet 10	0.0007	0.05	05Jan2000, 06:00
Area 11	0.0002	0.02	03Jan2000, 14:00	Area 11	0.0002	0.01	05Jan2000, 06:00
Outlet 11	0.0002	0.02	03Jan2000, 14:00	Outlet 11	0.0002	0.01	05Jan2000, 06:00
Area 12	0.0063	0.59	03Jan2000, 12:06	Area 12	0.0063	0.41	05Jan2000, 06:03
Outlet 12	0.0063	0.59	03Jan2000, 12:06	Outlet 12	0.0063	0.41	05Jan2000, 06:03

PROPOSED HEC-HMS MODELING RESULTS
10YR STORM

10YR 240HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	10.48	09Jan2000, 12:27
Area 1D	0.0109	0.46	09Jan2000, 12:00
Area 1E	0.0057	0.25	09Jan2000, 12:00
Pond 1	0.0166	0.42	11Jan2000, 00:09
Diversion-O2	0.0166	0.19	11Jan2000, 00:09
Area 1B	0.003	0.13	09Jan2000, 12:00
Depression 1BC	0.2786	8.13	10Jan2000, 02:36
Diversion 1BC	0.2786	8.13	10Jan2000, 02:36
Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	0.11	09Jan2000, 12:00
J-1	0.2812	8.2	10Jan2000, 02:36
Outlet 01	0.2812	8.2	10Jan2000, 02:36
Area 2	0.0014	0.05	09Jan2000, 12:00
Outlet 02	0.0014	0.26	10Jan2000, 00:00
Area 3B	0.0101	0.41	09Jan2000, 12:00
Diversion 3B	0.0101	0.41	09Jan2000, 12:00
Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.06	09Jan2000, 12:00
Ditch 3A	0.0013	0.06	09Jan2000, 12:06
Area 3C	0.0013	0.06	09Jan2000, 12:00
J-3	0.0127	0.52	09Jan2000, 12:00
Outlet 03	0.0127	0.52	09Jan2000, 12:00
Area 4K	0.1202	4.87	09Jan2000, 12:24
Area 4P	0.0123	0.5	09Jan2000, 12:00
Area 4O	0.0117	0.48	09Jan2000, 12:00
Area 4N	0.0022	0.1	09Jan2000, 12:00
Ditch 4N	0.0022	0.07	10Jan2000, 00:27
Area 4M	0.0012	0.05	09Jan2000, 12:00
Ditch 4M	0.0012	0.03	11Jan2000, 00:03
Area 4I	0.0012	0.05	09Jan2000, 12:00
Ditch 4I	0.0012	0.03	11Jan2000, 00:00
Area 4J	0.001	0.04	09Jan2000, 12:00
Ditch 4J	0.001	0.03	10Jan2000, 00:12
J-4A	0.1498	5.99	09Jan2000, 12:06
Area 4H	0.0169	0.68	09Jan2000, 12:00
Area 4L	0.0053	0.23	09Jan2000, 12:00
Pond 4L	0.0053	0.13	11Jan2000, 00:12
Depression 4H-P	0.172	6.76	09Jan2000, 12:18
Area 4G	0.0023	0.09	09Jan2000, 12:00
Area 4D	0.0014	0.06	09Jan2000, 12:00
Ditch 4D	0.0014	0.04	11Jan2000, 00:06
Area 4E	0.001	0.04	09Jan2000, 12:00
Ditch 4E	0.001	0.03	10Jan2000, 00:12
J-4B	0.0047	0.15	10Jan2000, 00:00
Area 4C	0.0026	0.11	09Jan2000, 12:00
Depression 4C	0.0026	0.11	09Jan2000, 12:03
Area 4B	0.0029	0.11	09Jan2000, 12:00
Depression 4BG	0.1822	7.12	09Jan2000, 12:12
Area 4A	0.0025	0.1	09Jan2000, 12:00
Area 4F	0.0069	0.28	09Jan2000, 12:00
J-4C	0.1916	7.49	09Jan2000, 12:06
Outlet 04	0.1916	7.49	09Jan2000, 12:06
Area 5D	0.0351	1.43	09Jan2000, 12:03
Area 5A	0.0124	0.49	09Jan2000, 12:03
Area 5C	0.0048	0.23	09Jan2000, 12:00
Pond 5	0.0048	0.14	10Jan2000, 00:21
Area 5B	0.0052	0.21	09Jan2000, 12:00
Depression 5B	0.0052	0.14	11Jan2000, 00:00
J-5	0.0575	2.05	09Jan2000, 12:03
Outlet 05	0.0575	2.05	09Jan2000, 12:03
Area 6F	0.025	1	09Jan2000, 12:03
Area 6E	0.0017	0.07	09Jan2000, 12:00
Pond 6E	0.0017	0.04	11Jan2000, 00:03
J-6C	0.0267	1.04	09Jan2000, 12:03
Area 6D	0.0019	0.08	09Jan2000, 12:00
Pond 6D	0.0019	0.04	11Jan2000, 00:03
Area 6C	0.0162	0.63	09Jan2000, 12:00
Area 6B	0.0041	0.15	09Jan2000, 12:00

PROPOSED HEC-HMS MODELING RESULTS
10YR STORM

J-6B	1.9895	44.94	10Jan2000, 00:03
Area 6A	0.0046	0.17	09Jan2000, 12:00
J-6A	1.9941	45.11	10Jan2000, 00:00
Outlet 06	1.9941	45.11	10Jan2000, 00:00
Area 7H	0.0198	0.81	09Jan2000, 12:00
Area 7J	0.0128	0.52	09Jan2000, 12:00
Area 7G	0.0089	0.4	09Jan2000, 12:00
Pond 7G	0.0089	0.23	11Jan2000, 00:06
Area 7F	0.0059	0.27	09Jan2000, 12:00
Pond 7F	0.0059	0.17	11Jan2000, 00:00
Area 7I	0.0044	0.2	09Jan2000, 12:00
Area 7E	0.0015	0.05	09Jan2000, 12:00
J-7B	1.9207	42.36	10Jan2000, 00:03
Area 7A	0.0125	0.5	09Jan2000, 12:00
Area 7B	0.0034	0.15	09Jan2000, 12:00
Ditch 7A	0.0159	0.65	09Jan2000, 12:00
Area 7D	0.0022	0.1	09Jan2000, 12:00
Area 7C	0.0018	0.08	09Jan2000, 12:00
Ditch 7C	0.004	0.18	09Jan2000, 12:00
Outlet 07	1.9406	43.15	10Jan2000, 00:03
Area 8A	0.9459	38.09	09Jan2000, 13:00
Area 8E	0.7664	31.49	09Jan2000, 12:21
Depression 8E	0.7664	0	02Jan2000, 22:45
Area 8D	0.1544	6.36	09Jan2000, 12:09
Depression 8D	0.1544	6.34	09Jan2000, 12:30
Area 8C	0.0007	0.03	09Jan2000, 12:00
Storage 8A	1.8674	40.72	10Jan2000, 01:45
Outlet 08	1.8674	40.72	10Jan2000, 01:45
Area 9A	0.0227	1	09Jan2000, 12:00
Area 9B	0.0108	0.46	09Jan2000, 12:00
Area 9C	0.002	0.09	09Jan2000, 12:00
Outlet 09	0.0355	1.54	09Jan2000, 12:00
Area 10	0.0007	0.03	09Jan2000, 12:00
Outlet 10	0.0007	0.03	09Jan2000, 12:00
Area 11	0.0002	0.01	09Jan2000, 12:00
Outlet 11	0.0002	0.01	09Jan2000, 12:00
Area 12	0.0063	0.26	09Jan2000, 12:00
Outlet 12	0.0063	0.26	09Jan2000, 12:00

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

50YR 1HR				50YR 2HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	73.36	01Jan2000, 02:18	Area 1C	0.259	99.17	01Jan2000, 02:45
Area 1D	0.0109	10.97	01Jan2000, 00:36	Area 1D	0.0109	10.9	01Jan2000, 00:48
Area 1E	0.0057	7.52	01Jan2000, 00:36	Area 1E	0.0057	7.18	01Jan2000, 00:45
Pond 1	0.0166	0.21	01Jan2000, 02:00	Pond 1	0.0166	0.26	01Jan2000, 02:51
Diversion-O2	0.0166	0	01Jan2000, 02:00	Diversion-O2	0.0166	0.05	01Jan2000, 02:51
Area 1B	0.003	4.23	01Jan2000, 00:27	Area 1B	0.003	3.87	01Jan2000, 00:36
Depression 1BC	0.2786	7.71	01Jan2000, 05:27	Depression 1BC	0.2786	9.28	01Jan2000, 06:12
Diversion 1BC	0.2786	7.71	01Jan2000, 05:27	Diversion 1BC	0.2786	9.28	01Jan2000, 06:12
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	0	01Jan2000, 00:00
Area 1A	0.0026	3.55	01Jan2000, 00:24	Area 1A	0.0026	3.2	01Jan2000, 00:33
J-1	0.2812	7.71	01Jan2000, 05:27	J-1	0.2812	9.28	01Jan2000, 06:12
Outlet 01	0.2812	7.71	01Jan2000, 05:27	Outlet 01	0.2812	9.28	01Jan2000, 06:12
Area 2	0.0014	0.93	01Jan2000, 00:33	Area 2	0.0014	0.95	01Jan2000, 00:42
Outlet 02	0.0014	1.02	01Jan2000, 00:33	Outlet 02	0.0014	1.07	01Jan2000, 00:45
Area 3B	0.0101	8.25	01Jan2000, 00:42	Area 3B	0.0101	8.5	01Jan2000, 00:51
Diversion 3B	0.0101	5.96	01Jan2000, 00:42	Diversion 3B	0.0101	6.03	01Jan2000, 00:51
Diverted Flow 3B	0	2.3	01Jan2000, 00:42	Diverted Flow 3B	0	2.48	01Jan2000, 00:51
Area 3A	0.0013	1.6	01Jan2000, 00:33	Area 3A	0.0013	1.52	01Jan2000, 00:42
Ditch 3A	0.0013	1.24	01Jan2000, 00:45	Ditch 3A	0.0013	1.29	01Jan2000, 00:54
Area 3C	0.0013	1.65	01Jan2000, 00:30	Area 3C	0.0013	1.55	01Jan2000, 00:39
J-3	0.0127	8.56	01Jan2000, 00:39	J-3	0.0127	8.68	01Jan2000, 00:48
Outlet 03	0.0127	8.56	01Jan2000, 00:39	Outlet 03	0.0127	8.68	01Jan2000, 00:48
Area 4K	0.1202	36.38	01Jan2000, 02:12	Area 4K	0.1202	48.46	01Jan2000, 02:36
Area 4P	0.0123	10.7	01Jan2000, 00:39	Area 4P	0.0123	10.92	01Jan2000, 00:51
Area 4O	0.0117	9.68	01Jan2000, 00:42	Area 4O	0.0117	10.04	01Jan2000, 00:54
Area 4N	0.0022	4.21	01Jan2000, 00:24	Area 4N	0.0022	3.62	01Jan2000, 00:30
Ditch 4N	0.0022	0.07	01Jan2000, 01:30	Ditch 4N	0.0022	0.08	01Jan2000, 02:24
Area 4M	0.0012	1.74	01Jan2000, 00:27	Area 4M	0.0012	1.6	01Jan2000, 00:36
Ditch 4M	0.0012	0.03	01Jan2000, 01:36	Ditch 4M	0.0012	0.04	01Jan2000, 02:30
Area 4I	0.0012	2.48	01Jan2000, 00:18	Area 4I	0.0012	2	01Jan2000, 00:27
Ditch 4I	0.0012	0.03	01Jan2000, 01:21	Ditch 4I	0.0012	0.04	01Jan2000, 02:18
Area 4J	0.001	1.89	01Jan2000, 00:18	Area 4J	0.001	1.53	01Jan2000, 00:27
Ditch 4J	0.001	0.03	01Jan2000, 01:18	Ditch 4J	0.001	0.04	01Jan2000, 02:15
J-4A	0.1498	36.82	01Jan2000, 02:09	J-4A	0.1498	52.22	01Jan2000, 02:18
Area 4H	0.0169	12.46	01Jan2000, 00:48	Area 4H	0.0169	13.22	01Jan2000, 01:00
Area 4L	0.0053	5.87	01Jan2000, 00:39	Area 4L	0.0053	5.81	01Jan2000, 00:48
Pond 4L	0.0053	0.11	01Jan2000, 02:03	Pond 4L	0.0053	0.13	01Jan2000, 02:54
Depression 4H-P	0.172	25.45	01Jan2000, 03:03	Depression 4H-P	0.172	44.23	01Jan2000, 03:06
Area 4G	0.0023	2.06	01Jan2000, 00:30	Area 4G	0.0023	2.01	01Jan2000, 00:42
Area 4D	0.0014	2.28	01Jan2000, 00:30	Area 4D	0.0014	2.08	01Jan2000, 00:36
Ditch 4D	0.0014	0.04	01Jan2000, 01:39	Ditch 4D	0.0014	0.05	01Jan2000, 02:33
Area 4E	0.001	1.79	01Jan2000, 00:18	Area 4E	0.001	1.47	01Jan2000, 00:27
Ditch 4E	0.001	0.03	01Jan2000, 01:18	Ditch 4E	0.001	0.04	01Jan2000, 02:15
J-4B	0.0047	2.1	01Jan2000, 00:30	J-4B	0.0047	2.07	01Jan2000, 00:42
Area 4C	0.0026	2.63	01Jan2000, 00:36	Area 4C	0.0026	2.58	01Jan2000, 00:45
Depression 4C	0.0026	0	01Jan2000, 00:30	Depression 4C	0.0026	0.82	01Jan2000, 02:00
Area 4B	0.0029	2.17	01Jan2000, 00:36	Area 4B	0.0029	2.23	01Jan2000, 00:48
Depression 4BG	0.1822	25.35	01Jan2000, 03:09	Depression 4BG	0.1822	44.31	01Jan2000, 03:12
Area 4A	0.0025	1.85	01Jan2000, 00:42	Area 4A	0.0025	1.93	01Jan2000, 00:51
Area 4F	0.0069	6.67	01Jan2000, 00:33	Area 4F	0.0069	6.51	01Jan2000, 00:42
J-4C	0.1916	25.35	01Jan2000, 03:09	J-4C	0.1916	44.32	01Jan2000, 03:12
Outlet 04	0.1916	25.35	01Jan2000, 03:09	Outlet 04	0.1916	44.32	01Jan2000, 03:12
Area 5D	0.0351	25	01Jan2000, 00:54	Area 5D	0.0351	26.92	01Jan2000, 01:06
Area 5A	0.0124	7.63	01Jan2000, 01:00	Area 5A	0.0124	8.4	01Jan2000, 01:09
Area 5C	0.0048	13.36	01Jan2000, 00:15	Area 5C	0.0048	11.05	01Jan2000, 00:18
Pond 5	0.0048	0.17	01Jan2000, 01:15	Pond 5	0.0048	0.19	01Jan2000, 02:15
Area 5B	0.0052	5.43	01Jan2000, 00:33	Area 5B	0.0052	5.27	01Jan2000, 00:42
Depression 5B	0.0052	0	01Jan2000, 00:36	Depression 5B	0.0052	0	01Jan2000, 00:42
J-5	0.0575	32.66	01Jan2000, 00:57	J-5	0.0575	35.44	01Jan2000, 01:06
Outlet 05	0.0575	32.66	01Jan2000, 00:57	Outlet 05	0.0575	35.44	01Jan2000, 01:06
Area 6F	0.025	15.43	01Jan2000, 01:03	Area 6F	0.025	17	01Jan2000, 01:12
Area 6E	0.0017	2.94	01Jan2000, 00:15	Area 6E	0.0017	2.33	01Jan2000, 00:27
Pond 6E	0.0017	0.03	01Jan2000, 01:12	Pond 6E	0.0017	0.04	01Jan2000, 02:12
J-6C	0.0267	15.47	01Jan2000, 01:03	J-6C	0.0267	17.04	01Jan2000, 01:12
Area 6D	0.0019	3.48	01Jan2000, 00:15	Area 6D	0.0019	2.71	01Jan2000, 00:27
Pond 6D	0.0019	0.03	01Jan2000, 01:12	Pond 6D	0.0019	0.04	01Jan2000, 02:12
Area 6C	0.0162	12.09	01Jan2000, 00:39	Area 6C	0.0162	12.57	01Jan2000, 00:51
Area 6B	0.0041	2.7	01Jan2000, 00:42	Area 6B	0.0041	2.86	01Jan2000, 00:54

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

J-6B	1.9895	75.66	01Jan2000, 00:42	J-6B	1.9895	80.63	01Jan2000, 00:54
Area 6A	0.0046	2.84	01Jan2000, 00:42	Area 6A	0.0046	3.04	01Jan2000, 00:54
J-6A	1.9941	78.5	01Jan2000, 00:42	J-6A	1.9941	83.66	01Jan2000, 00:54
Outlet 06	1.9941	78.5	01Jan2000, 00:42	Outlet 06	1.9941	83.66	01Jan2000, 00:54
Area 7H	0.0198	16.15	01Jan2000, 00:45	Area 7H	0.0198	16.8	01Jan2000, 00:54
Area 7J	0.0128	12.24	01Jan2000, 00:36	Area 7J	0.0128	12.12	01Jan2000, 00:45
Area 7G	0.0089	16.04	01Jan2000, 00:21	Area 7G	0.0089	13.74	01Jan2000, 00:30
Pond 7G	0.0089	0.17	01Jan2000, 01:27	Pond 7G	0.0089	0.23	01Jan2000, 02:24
Area 7F	0.0059	14.86	01Jan2000, 00:15	Area 7F	0.0059	12.41	01Jan2000, 00:15
Pond 7F	0.0059	0.16	01Jan2000, 01:12	Pond 7F	0.0059	0.19	01Jan2000, 02:12
Area 7I	0.0044	7.52	01Jan2000, 00:27	Area 7I	0.0044	6.71	01Jan2000, 00:36
Area 7E	0.0015	1.23	01Jan2000, 00:18	Area 7E	0.0015	1.16	01Jan2000, 00:30
J-7B	1.9207	56.9	01Jan2000, 06:06	J-7B	1.9207	70.65	01Jan2000, 06:54
Area 7A	0.0125	12.22	01Jan2000, 00:30	Area 7A	0.0125	11.89	01Jan2000, 00:42
Area 7B	0.0034	5.29	01Jan2000, 00:24	Area 7B	0.0034	4.63	01Jan2000, 00:33
Ditch 7A	0.0159	13.42	01Jan2000, 00:39	Ditch 7A	0.0159	13.8	01Jan2000, 00:51
Area 7D	0.0022	4.15	01Jan2000, 00:21	Area 7D	0.0022	3.45	01Jan2000, 00:30
Area 7C	0.0018	3.09	01Jan2000, 00:21	Area 7C	0.0018	2.6	01Jan2000, 00:30
Ditch 7C	0.004	3.2	01Jan2000, 00:42	Ditch 7C	0.004	3.27	01Jan2000, 01:00
Outlet 07	1.9406	56.9	01Jan2000, 06:06	Outlet 07	1.9406	70.65	01Jan2000, 06:54
Area 8A	0.9459	177.83	01Jan2000, 03:21	Area 8A	0.9459	255.88	01Jan2000, 03:45
Area 8E	0.7664	250.48	01Jan2000, 02:09	Area 8E	0.7664	328.52	01Jan2000, 02:33
Depression 8E	0.7664	0	01Jan2000, 00:36	Depression 8E	0.7664	0	01Jan2000, 00:39
Area 8D	0.1544	75.25	01Jan2000, 01:30	Area 8D	0.1544	88.16	01Jan2000, 01:45
Depression 8D	0.1544	0	01Jan2000, 00:42	Depression 8D	0.1544	0	01Jan2000, 00:48
Area 8C	0.0007	1.43	01Jan2000, 00:30	Area 8C	0.0007	1.29	01Jan2000, 00:36
Storage 8A	1.8674	56.6	01Jan2000, 06:06	Storage 8A	1.8674	70.26	01Jan2000, 06:54
Outlet 08	1.8674	56.6	01Jan2000, 06:06	Outlet 08	1.8674	70.26	01Jan2000, 06:54
Area 9A	0.0227	33.39	01Jan2000, 00:27	Area 9A	0.0227	30.45	01Jan2000, 00:36
Area 9B	0.0108	11.03	01Jan2000, 00:39	Area 9B	0.0108	11	01Jan2000, 00:48
Area 9C	0.002	2.37	01Jan2000, 00:36	Area 9C	0.002	2.3	01Jan2000, 00:45
Outlet 09	0.0355	44.18	01Jan2000, 00:30	Outlet 09	0.0355	42.19	01Jan2000, 00:39
Area 10	0.0007	1.13	01Jan2000, 00:18	Area 10	0.0007	0.94	01Jan2000, 00:30
Outlet 10	0.0007	1.13	01Jan2000, 00:18	Outlet 10	0.0007	0.94	01Jan2000, 00:30
Area 11	0.0002	0.22	01Jan2000, 00:21	Area 11	0.0002	0.2	01Jan2000, 00:30
Outlet 11	0.0002	0.22	01Jan2000, 00:21	Outlet 11	0.0002	0.2	01Jan2000, 00:30
Area 12	0.0063	5.77	01Jan2000, 00:39	Area 12	0.0063	5.84	01Jan2000, 00:51
Outlet 12	0.0063	5.77	01Jan2000, 00:39	Outlet 12	0.0063	5.84	01Jan2000, 00:51

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

50YR 3HR				50YR 6HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	98.71	01Jan2000, 03:03	Area 1C	0.259	93.44	01Jan2000, 03:30
Area 1D	0.0109	9.25	01Jan2000, 00:57	Area 1D	0.0109	6.78	01Jan2000, 01:12
Area 1E	0.0057	6	01Jan2000, 00:51	Area 1E	0.0057	4.44	01Jan2000, 01:06
Pond 1	0.0166	0.28	01Jan2000, 03:48	Pond 1	0.0166	1.51	01Jan2000, 06:21
Diversion-O2	0.0166	0.07	01Jan2000, 03:48	Diversion-O2	0.0166	1.26	01Jan2000, 06:21
Area 1B	0.003	3.11	01Jan2000, 00:39	Area 1B	0.003	2.23	01Jan2000, 01:03
Depression 1BC	0.2786	9.86	01Jan2000, 06:51	Depression 1BC	0.2786	18.75	01Jan2000, 08:21
Diversion 1BC	0.2786	9.86	01Jan2000, 06:51	Diversion 1BC	0.2786	10.55	01Jan2000, 08:21
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	8.2	01Jan2000, 08:21
Area 1A	0.0026	2.54	01Jan2000, 00:36	Area 1A	0.0026	1.8	01Jan2000, 01:03
J-1	0.2812	9.86	01Jan2000, 06:51	J-1	0.2812	10.55	01Jan2000, 08:21
Outlet 01	0.2812	9.86	01Jan2000, 06:51	Outlet 01	0.2812	10.55	01Jan2000, 08:21
Area 2	0.0014	0.81	01Jan2000, 00:54	Area 2	0.0014	0.58	01Jan2000, 01:42
Outlet 02	0.0014	0.95	01Jan2000, 00:57	Outlet 02	0.0014	0.77	01Jan2000, 01:45
Area 3B	0.0101	7.34	01Jan2000, 01:03	Area 3B	0.0101	5.37	01Jan2000, 01:18
Diversion 3B	0.0101	5.64	01Jan2000, 01:03	Diversion 3B	0.0101	4.91	01Jan2000, 01:18
Diverted Flow 3B	0	1.7	01Jan2000, 01:03	Diverted Flow 3B	0	0.46	01Jan2000, 01:18
Area 3A	0.0013	1.24	01Jan2000, 00:51	Area 3A	0.0013	0.91	01Jan2000, 01:06
Ditch 3A	0.0013	1.13	01Jan2000, 01:03	Ditch 3A	0.0013	0.84	01Jan2000, 01:18
Area 3C	0.0013	1.25	01Jan2000, 00:48	Area 3C	0.0013	0.92	01Jan2000, 01:06
J-3	0.0127	7.95	01Jan2000, 01:00	J-3	0.0127	6.61	01Jan2000, 01:15
Outlet 03	0.0127	7.95	01Jan2000, 01:00	Outlet 03	0.0127	6.61	01Jan2000, 01:15
Area 4K	0.1202	47.77	01Jan2000, 02:51	Area 4K	0.1202	44.79	01Jan2000, 03:21
Area 4P	0.0123	9.39	01Jan2000, 01:00	Area 4P	0.0123	6.87	01Jan2000, 01:15
Area 4O	0.0117	8.71	01Jan2000, 01:03	Area 4O	0.0117	6.42	01Jan2000, 01:21
Area 4N	0.0022	2.99	01Jan2000, 00:33	Area 4N	0.0022	2.12	01Jan2000, 00:48
Ditch 4N	0.0022	0.08	01Jan2000, 03:24	Ditch 4N	0.0022	0.09	01Jan2000, 06:18
Area 4M	0.0012	1.29	01Jan2000, 00:39	Area 4M	0.0012	0.93	01Jan2000, 00:54
Ditch 4M	0.0012	0.04	01Jan2000, 03:27	Ditch 4M	0.0012	0.04	01Jan2000, 06:24
Area 4I	0.0012	1.65	01Jan2000, 00:30	Area 4I	0.0012	1.16	01Jan2000, 00:42
Ditch 4I	0.0012	0.04	01Jan2000, 03:15	Ditch 4I	0.0012	0.05	01Jan2000, 06:12
Area 4J	0.001	1.25	01Jan2000, 00:30	Area 4J	0.001	0.89	01Jan2000, 00:42
Ditch 4J	0.001	0.04	01Jan2000, 03:15	Ditch 4J	0.001	0.04	01Jan2000, 05:00
J-4A	0.1498	54.11	01Jan2000, 02:45	J-4A	0.1498	51.59	01Jan2000, 03:12
Area 4H	0.0169	11.61	01Jan2000, 01:09	Area 4H	0.0169	8.74	01Jan2000, 01:45
Area 4L	0.0053	4.96	01Jan2000, 01:00	Area 4L	0.0053	3.69	01Jan2000, 01:12
Pond 4L	0.0053	0.14	01Jan2000, 03:48	Pond 4L	0.0053	0.17	01Jan2000, 06:39
Depression 4H-P	0.172	50.39	01Jan2000, 03:24	Depression 4H-P	0.172	49.34	01Jan2000, 03:57
Area 4G	0.0023	1.67	01Jan2000, 00:54	Area 4G	0.0023	1.19	01Jan2000, 01:06
Area 4D	0.0014	1.7	01Jan2000, 00:39	Area 4D	0.0014	1.23	01Jan2000, 00:54
Ditch 4D	0.0014	0.05	01Jan2000, 03:30	Ditch 4D	0.0014	0.05	01Jan2000, 03:57
Area 4E	0.001	1.19	01Jan2000, 00:30	Area 4E	0.001	0.85	01Jan2000, 00:42
Ditch 4E	0.001	0.04	01Jan2000, 03:15	Ditch 4E	0.001	0.04	01Jan2000, 06:12
J-4B	0.0047	1.73	01Jan2000, 00:54	J-4B	0.0047	1.25	01Jan2000, 01:06
Area 4C	0.0026	2.16	01Jan2000, 00:57	Area 4C	0.0026	1.58	01Jan2000, 01:09
Depression 4C	0.0026	0.76	01Jan2000, 02:12	Depression 4C	0.0026	0.82	01Jan2000, 02:51
Area 4B	0.0029	1.91	01Jan2000, 01:00	Area 4B	0.0029	1.38	01Jan2000, 01:45
Depression 4BG	0.1822	51.14	01Jan2000, 03:27	Depression 4BG	0.1822	50.68	01Jan2000, 04:03
Area 4A	0.0025	1.67	01Jan2000, 01:03	Area 4A	0.0025	1.22	01Jan2000, 01:45
Area 4F	0.0069	5.38	01Jan2000, 00:54	Area 4F	0.0069	3.89	01Jan2000, 01:09
J-4C	0.1916	51.79	01Jan2000, 03:21	J-4C	0.1916	52.28	01Jan2000, 04:03
Outlet 04	0.1916	51.79	01Jan2000, 03:21	Outlet 04	0.1916	52.28	01Jan2000, 04:03
Area 5D	0.0351	23.93	01Jan2000, 01:15	Area 5D	0.0351	18.57	01Jan2000, 01:45
Area 5A	0.0124	7.53	01Jan2000, 01:21	Area 5A	0.0124	6.01	01Jan2000, 01:51
Area 5C	0.0048	8.74	01Jan2000, 00:24	Area 5C	0.0048	5.78	01Jan2000, 00:39
Pond 5	0.0048	0.2	01Jan2000, 03:12	Pond 5	0.0048	0.22	01Jan2000, 06:09
Area 5B	0.0052	4.37	01Jan2000, 00:54	Area 5B	0.0052	3.18	01Jan2000, 01:09
Depression 5B	0.0052	0	01Jan2000, 00:51	Depression 5B	0.0052	0	01Jan2000, 01:06
J-5	0.0575	31.58	01Jan2000, 01:15	J-5	0.0575	24.73	01Jan2000, 01:48
Outlet 05	0.0575	31.58	01Jan2000, 01:15	Outlet 05	0.0575	24.73	01Jan2000, 01:48
Area 6F	0.025	15.38	01Jan2000, 01:24	Area 6F	0.025	12.4	01Jan2000, 01:54
Area 6E	0.0017	1.91	01Jan2000, 00:30	Area 6E	0.0017	1.33	01Jan2000, 00:42
Pond 6E	0.0017	0.04	01Jan2000, 03:09	Pond 6E	0.0017	0.04	01Jan2000, 06:09
J-6C	0.0267	15.41	01Jan2000, 01:24	J-6C	0.0267	12.43	01Jan2000, 01:54
Area 6D	0.0019	2.23	01Jan2000, 00:30	Area 6D	0.0019	1.57	01Jan2000, 00:39
Pond 6D	0.0019	0.04	01Jan2000, 03:12	Pond 6D	0.0019	0.05	01Jan2000, 06:09
Area 6C	0.0162	10.86	01Jan2000, 01:03	Area 6C	0.0162	7.92	01Jan2000, 01:45
Area 6B	0.0041	2.49	01Jan2000, 01:03	Area 6B	0.0041	1.86	01Jan2000, 01:45

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

J-6B	1.9895	74.17	01Jan2000, 07:33	J-6B	1.9895	85.6	01Jan2000, 06:09
Area 6A	0.0046	2.65	01Jan2000, 01:03	Area 6A	0.0046	2.01	01Jan2000, 01:48
J-6A	1.9941	74.7	01Jan2000, 01:06	J-6A	1.9941	86.16	01Jan2000, 06:09
Outlet 06	1.9941	74.7	01Jan2000, 01:06	Outlet 06	1.9941	86.16	01Jan2000, 06:09
Area 7H	0.0198	14.61	01Jan2000, 01:03	Area 7H	0.0198	10.8	01Jan2000, 01:21
Area 7J	0.0128	10.19	01Jan2000, 00:57	Area 7J	0.0128	7.4	01Jan2000, 01:09
Area 7G	0.0089	11.27	01Jan2000, 00:33	Area 7G	0.0089	7.97	01Jan2000, 00:45
Pond 7G	0.0089	0.25	01Jan2000, 03:21	Pond 7G	0.0089	0.27	01Jan2000, 06:18
Area 7F	0.0059	9.58	01Jan2000, 00:21	Area 7F	0.0059	6.44	01Jan2000, 00:39
Pond 7F	0.0059	0.2	01Jan2000, 03:09	Pond 7F	0.0059	0.22	01Jan2000, 06:09
Area 7I	0.0044	5.49	01Jan2000, 00:39	Area 7I	0.0044	3.94	01Jan2000, 00:51
Area 7E	0.0015	0.93	01Jan2000, 00:51	Area 7E	0.0015	0.66	01Jan2000, 01:00
J-7B	1.9207	74.09	01Jan2000, 07:33	J-7B	1.9207	81.87	01Jan2000, 09:33
Area 7A	0.0125	9.8	01Jan2000, 00:54	Area 7A	0.0125	7.08	01Jan2000, 01:06
Area 7B	0.0034	3.73	01Jan2000, 00:33	Area 7B	0.0034	2.63	01Jan2000, 00:45
Ditch 7A	0.0159	12.1	01Jan2000, 01:03	Ditch 7A	0.0159	9.13	01Jan2000, 01:12
Area 7D	0.0022	2.83	01Jan2000, 00:33	Area 7D	0.0022	2	01Jan2000, 00:45
Area 7C	0.0018	2.12	01Jan2000, 00:33	Area 7C	0.0018	1.49	01Jan2000, 00:45
Ditch 7C	0.004	3.08	01Jan2000, 01:06	Ditch 7C	0.004	2.64	01Jan2000, 01:18
Outlet 07	1.9406	74.09	01Jan2000, 07:33	Outlet 07	1.9406	81.87	01Jan2000, 09:33
Area 8A	0.9459	271.62	01Jan2000, 04:12	Area 8A	0.9459	272.56	01Jan2000, 04:48
Area 8E	0.7664	322.24	01Jan2000, 02:45	Area 8E	0.7664	300.23	01Jan2000, 03:15
Depression 8E	0.7664	0	01Jan2000, 00:45	Depression 8E	0.7664	0	01Jan2000, 00:57
Area 8D	0.1544	83.87	01Jan2000, 01:54	Area 8D	0.1544	72.39	01Jan2000, 02:24
Depression 8D	0.1544	0	01Jan2000, 00:54	Depression 8D	0.1544	15.17	01Jan2000, 06:57
Area 8C	0.0007	1.07	01Jan2000, 00:39	Area 8C	0.0007	0.78	01Jan2000, 00:51
Storage 8A	1.8674	73.66	01Jan2000, 07:33	Storage 8A	1.8674	81.4	01Jan2000, 09:33
Outlet 08	1.8674	73.66	01Jan2000, 07:33	Outlet 08	1.8674	81.4	01Jan2000, 09:33
Area 9A	0.0227	24.59	01Jan2000, 00:39	Area 9A	0.0227	17.6	01Jan2000, 00:54
Area 9B	0.0108	9.39	01Jan2000, 01:00	Area 9B	0.0108	6.93	01Jan2000, 01:12
Area 9C	0.002	1.93	01Jan2000, 00:54	Area 9C	0.002	1.42	01Jan2000, 01:09
Outlet 09	0.0355	34.64	01Jan2000, 00:51	Outlet 09	0.0355	25.61	01Jan2000, 01:06
Area 10	0.0007	0.76	01Jan2000, 00:33	Area 10	0.0007	0.54	01Jan2000, 00:42
Outlet 10	0.0007	0.76	01Jan2000, 00:33	Outlet 10	0.0007	0.54	01Jan2000, 00:42
Area 11	0.0002	0.15	01Jan2000, 00:33	Area 11	0.0002	0.11	01Jan2000, 01:00
Outlet 11	0.0002	0.15	01Jan2000, 00:33	Outlet 11	0.0002	0.11	01Jan2000, 01:00
Area 12	0.0063	5.02	01Jan2000, 01:00	Area 12	0.0063	3.68	01Jan2000, 01:15
Outlet 12	0.0063	5.02	01Jan2000, 01:00	Outlet 12	0.0063	3.68	01Jan2000, 01:15

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

50YR 12HR				50YR 18HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	92.75	01Jan2000, 07:12	Area 1C	0.259	86.39	01Jan2000, 13:18
Area 1D	0.0109	5.48	01Jan2000, 05:12	Area 1D	0.0109	4.81	01Jan2000, 11:36
Area 1E	0.0057	3.25	01Jan2000, 05:09	Area 1E	0.0057	2.74	01Jan2000, 11:36
Pond 1	0.0166	2.14	01Jan2000, 09:27	Pond 1	0.0166	2.4	01Jan2000, 14:39
Diversion-O2	0.0166	1.89	01Jan2000, 09:27	Diversion-O2	0.0166	2.15	01Jan2000, 14:39
Area 1B	0.003	1.66	01Jan2000, 05:06	Area 1B	0.003	1.42	01Jan2000, 11:33
Depression 1BC	0.2786	26.39	01Jan2000, 12:54	Depression 1BC	0.2786	28.77	01Jan2000, 18:36
Diversion 1BC	0.2786	11.03	01Jan2000, 12:54	Diversion 1BC	0.2786	11.18	01Jan2000, 18:36
Diverted Flow 1BC	0	15.35	01Jan2000, 12:54	Diverted Flow 1BC	0	17.59	01Jan2000, 18:36
Area 1A	0.0026	1.38	01Jan2000, 05:03	Area 1A	0.0026	1.19	01Jan2000, 11:30
J-1	0.2812	11.29	01Jan2000, 12:00	J-1	0.2812	11.48	01Jan2000, 18:00
Outlet 01	0.2812	11.29	01Jan2000, 12:00	Outlet 01	0.2812	11.48	01Jan2000, 18:00
Area 2	0.0014	0.53	01Jan2000, 05:06	Area 2	0.0014	0.5	01Jan2000, 11:33
Outlet 02	0.0014	0.74	01Jan2000, 05:33	Outlet 02	0.0014	0.71	01Jan2000, 11:33
Area 3B	0.0101	4.64	01Jan2000, 05:18	Area 3B	0.0101	4.17	01Jan2000, 11:39
Diversion 3B	0.0101	4.43	01Jan2000, 05:18	Diversion 3B	0.0101	4.11	01Jan2000, 11:39
Diverted Flow 3B	0	0.21	01Jan2000, 05:18	Diverted Flow 3B	0	0.06	01Jan2000, 11:39
Area 3A	0.0013	0.7	01Jan2000, 05:06	Area 3A	0.0013	0.6	01Jan2000, 11:33
Ditch 3A	0.0013	0.68	01Jan2000, 05:18	Ditch 3A	0.0013	0.59	01Jan2000, 11:39
Area 3C	0.0013	0.7	01Jan2000, 05:06	Area 3C	0.0013	0.6	01Jan2000, 11:33
J-3	0.0127	5.79	01Jan2000, 05:15	J-3	0.0127	5.3	01Jan2000, 11:36
Outlet 03	0.0127	5.79	01Jan2000, 05:15	Outlet 03	0.0127	5.3	01Jan2000, 11:36
Area 4K	0.1202	44.13	01Jan2000, 07:00	Area 4K	0.1202	40.89	01Jan2000, 13:12
Area 4P	0.0123	5.82	01Jan2000, 05:15	Area 4P	0.0123	5.19	01Jan2000, 11:39
Area 4O	0.0117	5.5	01Jan2000, 05:18	Area 4O	0.0117	4.91	01Jan2000, 11:39
Area 4N	0.0022	1.36	01Jan2000, 05:03	Area 4N	0.0022	1.12	01Jan2000, 11:30
Ditch 4N	0.0022	0.1	01Jan2000, 12:15	Ditch 4N	0.0022	0.1	01Jan2000, 18:15
Area 4M	0.0012	0.68	01Jan2000, 05:06	Area 4M	0.0012	0.57	01Jan2000, 11:33
Ditch 4M	0.0012	0.05	01Jan2000, 12:18	Ditch 4M	0.0012	0.05	01Jan2000, 18:18
Area 4I	0.0012	0.73	01Jan2000, 05:00	Area 4I	0.0012	0.61	01Jan2000, 11:30
Ditch 4I	0.0012	0.05	01Jan2000, 12:09	Ditch 4I	0.0012	0.05	01Jan2000, 18:09
Area 4J	0.001	0.59	01Jan2000, 05:00	Area 4J	0.001	0.49	01Jan2000, 11:30
Ditch 4J	0.001	0.04	01Jan2000, 07:21	Ditch 4J	0.001	0.04	01Jan2000, 12:36
J-4A	0.1498	51.01	01Jan2000, 06:51	J-4A	0.1498	47.59	01Jan2000, 12:51
Area 4H	0.0169	7.67	01Jan2000, 05:30	Area 4H	0.0169	6.89	01Jan2000, 11:42
Area 4L	0.0053	2.86	01Jan2000, 05:15	Area 4L	0.0053	2.45	01Jan2000, 11:39
Pond 4L	0.0053	0.18	01Jan2000, 12:33	Pond 4L	0.0053	0.19	01Jan2000, 18:33
Depression 4H-P	0.172	53.4	01Jan2000, 07:27	Depression 4H-P	0.172	51.4	01Jan2000, 13:15
Area 4G	0.0023	1.02	01Jan2000, 05:06	Area 4G	0.0023	0.93	01Jan2000, 11:33
Area 4D	0.0014	0.84	01Jan2000, 05:06	Area 4D	0.0014	0.7	01Jan2000, 11:33
Ditch 4D	0.0014	0.05	01Jan2000, 06:48	Ditch 4D	0.0014	0.05	01Jan2000, 18:24
Area 4E	0.001	0.57	01Jan2000, 05:00	Area 4E	0.001	0.48	01Jan2000, 11:30
Ditch 4E	0.001	0.04	01Jan2000, 12:09	Ditch 4E	0.001	0.04	01Jan2000, 18:09
J-4B	0.0047	1.09	01Jan2000, 05:06	J-4B	0.0047	1.01	01Jan2000, 11:33
Area 4C	0.0026	1.28	01Jan2000, 05:09	Area 4C	0.0026	1.13	01Jan2000, 11:36
Depression 4C	0.0026	0.97	01Jan2000, 06:12	Depression 4C	0.0026	1.03	01Jan2000, 11:54
Area 4B	0.0029	1.23	01Jan2000, 05:12	Area 4B	0.0029	1.13	01Jan2000, 11:36
Depression 4BG	0.1822	55.24	01Jan2000, 07:30	Depression 4BG	0.1822	53.33	01Jan2000, 13:18
Area 4A	0.0025	1.08	01Jan2000, 05:18	Area 4A	0.0025	0.99	01Jan2000, 11:39
Area 4F	0.0069	3.24	01Jan2000, 05:06	Area 4F	0.0069	2.9	01Jan2000, 11:33
J-4C	0.1916	57.33	01Jan2000, 07:30	J-4C	0.1916	55.48	01Jan2000, 13:12
Outlet 04	0.1916	57.33	01Jan2000, 07:30	Outlet 04	0.1916	55.48	01Jan2000, 13:12
Area 5D	0.0351	16.23	01Jan2000, 05:36	Area 5D	0.0351	14.42	01Jan2000, 11:48
Area 5A	0.0124	5.38	01Jan2000, 05:42	Area 5A	0.0124	4.84	01Jan2000, 11:51
Area 5C	0.0048	3.18	01Jan2000, 05:00	Area 5C	0.0048	2.56	01Jan2000, 11:30
Pond 5	0.0048	0.23	01Jan2000, 12:09	Pond 5	0.0048	0.23	01Jan2000, 18:09
Area 5B	0.0052	2.57	01Jan2000, 05:09	Area 5B	0.0052	2.27	01Jan2000, 11:33
Depression 5B	0.0052	0	01Jan2000, 04:12	Depression 5B	0.0052	0	01Jan2000, 08:21
J-5	0.0575	21.78	01Jan2000, 05:36	J-5	0.0575	19.45	01Jan2000, 11:48
Outlet 05	0.0575	21.78	01Jan2000, 05:36	Outlet 05	0.0575	19.45	01Jan2000, 11:48
Area 6F	0.025	11.07	01Jan2000, 05:45	Area 6F	0.025	9.89	01Jan2000, 11:54
Area 6E	0.0017	0.94	01Jan2000, 05:00	Area 6E	0.0017	0.8	01Jan2000, 11:30
Pond 6E	0.0017	0.05	01Jan2000, 12:06	Pond 6E	0.0017	0.05	01Jan2000, 17:15
J-6C	0.0267	11.11	01Jan2000, 05:45	J-6C	0.0267	9.93	01Jan2000, 11:54
Area 6D	0.0019	1.07	01Jan2000, 05:00	Area 6D	0.0019	0.91	01Jan2000, 11:30
Pond 6D	0.0019	0.05	01Jan2000, 12:06	Pond 6D	0.0019	0.05	01Jan2000, 18:06
Area 6C	0.0162	7.02	01Jan2000, 05:15	Area 6C	0.0162	6.41	01Jan2000, 11:39
Area 6B	0.0041	1.67	01Jan2000, 05:33	Area 6B	0.0041	1.55	01Jan2000, 11:39

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

J-6B	1.9895	96.73	01Jan2000, 12:06	J-6B	1.9895	100.85	01Jan2000, 18:03
Area 6A	0.0046	1.81	01Jan2000, 05:33	Area 6A	0.0046	1.69	01Jan2000, 11:39
J-6A	1.9941	97.14	01Jan2000, 12:06	J-6A	1.9941	101.32	01Jan2000, 18:03
Outlet 06	1.9941	97.14	01Jan2000, 12:06	Outlet 06	1.9941	101.32	01Jan2000, 18:03
Area 7H	0.0198	9.3	01Jan2000, 05:21	Area 7H	0.0198	8.3	01Jan2000, 11:39
Area 7J	0.0128	6.13	01Jan2000, 05:09	Area 7J	0.0128	5.46	01Jan2000, 11:36
Area 7G	0.0089	5.3	01Jan2000, 05:03	Area 7G	0.0089	4.42	01Jan2000, 11:30
Pond 7G	0.0089	0.29	01Jan2000, 12:15	Pond 7G	0.0089	0.3	01Jan2000, 18:15
Area 7F	0.0059	3.75	01Jan2000, 05:00	Area 7F	0.0059	3.06	01Jan2000, 11:30
Pond 7F	0.0059	0.24	01Jan2000, 12:06	Pond 7F	0.0059	0.25	01Jan2000, 18:06
Area 7I	0.0044	2.65	01Jan2000, 05:03	Area 7I	0.0044	2.2	01Jan2000, 11:30
Area 7E	0.0015	0.58	01Jan2000, 05:00	Area 7E	0.0015	0.55	01Jan2000, 11:30
J-7B	1.9207	90.77	01Jan2000, 12:06	J-7B	1.9207	93.9	01Jan2000, 18:03
Area 7A	0.0125	5.88	01Jan2000, 05:06	Area 7A	0.0125	5.26	01Jan2000, 11:33
Area 7B	0.0034	1.9	01Jan2000, 05:03	Area 7B	0.0034	1.61	01Jan2000, 11:30
Ditch 7A	0.0159	7.61	01Jan2000, 05:12	Ditch 7A	0.0159	6.77	01Jan2000, 11:36
Area 7D	0.0022	1.31	01Jan2000, 05:00	Area 7D	0.0022	1.09	01Jan2000, 11:30
Area 7C	0.0018	1.03	01Jan2000, 05:00	Area 7C	0.0018	0.87	01Jan2000, 11:30
Ditch 7C	0.004	2.22	01Jan2000, 05:12	Ditch 7C	0.004	1.9	01Jan2000, 11:36
Outlet 07	1.9406	92.72	01Jan2000, 12:06	Outlet 07	1.9406	96.13	01Jan2000, 18:03
Area 8A	0.9459	284.84	01Jan2000, 08:27	Area 8A	0.9459	272.85	01Jan2000, 14:27
Area 8E	0.7664	292.46	01Jan2000, 06:57	Area 8E	0.7664	268.49	01Jan2000, 13:06
Depression 8E	0.7664	0	01Jan2000, 03:00	Depression 8E	0.7664	0	01Jan2000, 04:48
Area 8D	0.1544	66.88	01Jan2000, 06:12	Area 8D	0.1544	59.62	01Jan2000, 12:24
Depression 8D	0.1544	23.67	01Jan2000, 09:57	Depression 8D	0.1544	28.16	01Jan2000, 14:57
Area 8C	0.0007	0.46	01Jan2000, 05:06	Area 8C	0.0007	0.37	01Jan2000, 11:33
Storage 8A	1.8674	89.89	01Jan2000, 14:24	Storage 8A	1.8674	92.08	01Jan2000, 20:24
Outlet 08	1.8674	89.89	01Jan2000, 14:24	Outlet 08	1.8674	92.08	01Jan2000, 20:24
Area 9A	0.0227	12.84	01Jan2000, 05:06	Area 9A	0.0227	10.88	01Jan2000, 11:33
Area 9B	0.0108	5.55	01Jan2000, 05:15	Area 9B	0.0108	4.84	01Jan2000, 11:36
Area 9C	0.002	1.09	01Jan2000, 05:12	Area 9C	0.002	0.93	01Jan2000, 11:36
Outlet 09	0.0355	19.4	01Jan2000, 05:06	Outlet 09	0.0355	16.63	01Jan2000, 11:33
Area 10	0.0007	0.38	01Jan2000, 05:00	Area 10	0.0007	0.33	01Jan2000, 11:30
Outlet 10	0.0007	0.38	01Jan2000, 05:00	Outlet 10	0.0007	0.33	01Jan2000, 11:30
Area 11	0.0002	0.09	01Jan2000, 05:00	Area 11	0.0002	0.08	01Jan2000, 11:30
Outlet 11	0.0002	0.09	01Jan2000, 05:00	Outlet 11	0.0002	0.08	01Jan2000, 11:30
Area 12	0.0063	3.07	01Jan2000, 05:15	Area 12	0.0063	2.71	01Jan2000, 11:39
Outlet 12	0.0063	3.07	01Jan2000, 05:15	Outlet 12	0.0063	2.71	01Jan2000, 11:39

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

50YR 24HR				50YR 48HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	77.21	01Jan2000, 17:05	Area 1C	0.259	48.71	02Jan2000, 19:24
Area 1D	0.0109	3.9	01Jan2000, 15:07	Area 1D	0.0109	2.21	02Jan2000, 17:03
Area 1E	0.0057	2.21	01Jan2000, 15:05	Area 1E	0.0057	1.24	02Jan2000, 16:09
Pond 1	0.0166	2.77	01Jan2000, 18:18	Pond 1	0.0166	2.57	02Jan2000, 19:42
Diversion-O2	0.0166	2.52	01Jan2000, 18:18	Diversion-O2	0.0166	2.32	02Jan2000, 19:42
Area 1B	0.003	1.14	01Jan2000, 15:02	Area 1B	0.003	0.64	02Jan2000, 16:03
Depression 1BC	0.2786	32.34	01Jan2000, 21:42	Depression 1BC	0.2786	32.28	03Jan2000, 01:09
Diversion 1BC	0.2786	12.26	01Jan2000, 21:42	Diversion 1BC	0.2786	12.24	03Jan2000, 01:09
Diverted Flow 1BC	0	20.08	01Jan2000, 21:42	Diverted Flow 1BC	0	20.05	03Jan2000, 01:09
Area 1A	0.0026	0.95	01Jan2000, 15:02	Area 1A	0.0026	0.54	02Jan2000, 16:03
J-1	0.2812	12.48	01Jan2000, 21:42	J-1	0.2812	12.24	03Jan2000, 01:09
Outlet 01	0.2812	12.48	01Jan2000, 21:42	Outlet 01	0.2812	12.24	03Jan2000, 01:09
Area 2	0.0014	0.41	01Jan2000, 15:04	Area 2	0.0014	0.24	02Jan2000, 17:03
Outlet 02	0.0014	0.63	01Jan2000, 16:03	Outlet 02	0.0014	0.49	02Jan2000, 19:00
Area 3B	0.0101	3.4	01Jan2000, 15:09	Area 3B	0.0101	1.96	02Jan2000, 17:06
Diversion 3B	0.0101	3.4	01Jan2000, 15:09	Diversion 3B	0.0101	1.96	02Jan2000, 17:06
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.48	01Jan2000, 15:04	Area 3A	0.0013	0.27	02Jan2000, 16:06
Ditch 3A	0.0013	0.48	01Jan2000, 15:10	Ditch 3A	0.0013	0.27	02Jan2000, 16:18
Area 3C	0.0013	0.48	01Jan2000, 15:03	Area 3C	0.0013	0.27	02Jan2000, 16:06
J-3	0.0127	4.36	01Jan2000, 15:08	J-3	0.0127	2.5	02Jan2000, 17:03
Outlet 03	0.0127	4.36	01Jan2000, 15:08	Outlet 03	0.0127	2.5	02Jan2000, 17:03
Area 4K	0.1202	36.34	01Jan2000, 16:57	Area 4K	0.1202	22.71	02Jan2000, 19:15
Area 4P	0.0123	4.22	01Jan2000, 15:08	Area 4P	0.0123	2.42	02Jan2000, 17:03
Area 4O	0.0117	4	01Jan2000, 15:10	Area 4O	0.0117	2.3	02Jan2000, 17:06
Area 4N	0.0022	0.89	01Jan2000, 15:01	Area 4N	0.0022	0.49	02Jan2000, 16:00
Ditch 4N	0.0022	0.1	02Jan2000, 00:13	Ditch 4N	0.0022	0.1	03Jan2000, 00:15
Area 4M	0.0012	0.46	01Jan2000, 15:02	Area 4M	0.0012	0.26	02Jan2000, 16:03
Ditch 4M	0.0012	0.05	01Jan2000, 23:56	Ditch 4M	0.0012	0.05	03Jan2000, 00:21
Area 4I	0.0012	0.48	01Jan2000, 15:00	Area 4I	0.0012	0.27	02Jan2000, 16:00
Ditch 4I	0.0012	0.05	02Jan2000, 00:08	Ditch 4I	0.0012	0.05	03Jan2000, 00:12
Area 4J	0.001	0.39	01Jan2000, 15:00	Area 4J	0.001	0.22	02Jan2000, 16:00
Ditch 4J	0.001	0.04	01Jan2000, 16:05	Ditch 4J	0.001	0.04	02Jan2000, 18:03
J-4A	0.1498	42.61	01Jan2000, 16:52	J-4A	0.1498	27.5	02Jan2000, 19:03
Area 4H	0.0169	5.64	01Jan2000, 15:13	Area 4H	0.0169	3.28	02Jan2000, 17:06
Area 4L	0.0053	1.99	01Jan2000, 15:08	Area 4L	0.0053	1.12	02Jan2000, 16:15
Pond 4L	0.0053	0.19	02Jan2000, 00:30	Pond 4L	0.0053	0.2	03Jan2000, 00:36
Depression 4H-P	0.172	46.55	01Jan2000, 17:11	Depression 4H-P	0.172	30.54	02Jan2000, 19:18
Area 4G	0.0023	0.75	01Jan2000, 15:04	Area 4G	0.0023	0.43	02Jan2000, 17:03
Area 4D	0.0014	0.56	01Jan2000, 15:02	Area 4D	0.0014	0.31	02Jan2000, 16:03
Ditch 4D	0.0014	0.05	02Jan2000, 00:20	Ditch 4D	0.0014	0.05	03Jan2000, 00:24
Area 4E	0.001	0.39	01Jan2000, 15:00	Area 4E	0.001	0.22	02Jan2000, 16:00
Ditch 4E	0.001	0.05	02Jan2000, 00:07	Ditch 4E	0.001	0.05	03Jan2000, 00:09
J-4B	0.0047	0.83	01Jan2000, 15:04	J-4B	0.0047	0.52	02Jan2000, 17:03
Area 4C	0.0026	0.91	01Jan2000, 15:05	Area 4C	0.0026	0.52	02Jan2000, 17:03
Depression 4C	0.0026	0.88	01Jan2000, 15:22	Depression 4C	0.0026	0.52	02Jan2000, 17:09
Area 4B	0.0029	0.92	01Jan2000, 15:07	Area 4B	0.0029	0.54	02Jan2000, 17:03
Depression 4BG	0.1822	48.48	01Jan2000, 17:11	Depression 4BG	0.1822	31.99	02Jan2000, 19:15
Area 4A	0.0025	0.81	01Jan2000, 15:09	Area 4A	0.0025	0.47	02Jan2000, 17:06
Area 4F	0.0069	2.34	01Jan2000, 15:04	Area 4F	0.0069	1.34	02Jan2000, 17:03
J-4C	0.1916	50.71	01Jan2000, 17:07	J-4C	0.1916	33.69	02Jan2000, 19:06
Outlet 04	0.1916	50.71	01Jan2000, 17:07	Outlet 04	0.1916	33.69	02Jan2000, 19:06
Area 5D	0.0351	11.86	01Jan2000, 15:18	Area 5D	0.0351	6.9	02Jan2000, 17:09
Area 5A	0.0124	4	01Jan2000, 15:22	Area 5A	0.0124	2.36	02Jan2000, 17:12
Area 5C	0.0048	2.03	01Jan2000, 15:00	Area 5C	0.0048	1.11	02Jan2000, 16:00
Pond 5	0.0048	0.23	02Jan2000, 00:07	Pond 5	0.0048	0.23	03Jan2000, 00:09
Area 5B	0.0052	1.83	01Jan2000, 15:05	Area 5B	0.0052	1.04	02Jan2000, 17:03
Depression 5B	0.0052	0.48	02Jan2000, 00:04	Depression 5B	0.0052	0.71	02Jan2000, 23:09
J-5	0.0575	16.05	01Jan2000, 15:19	J-5	0.0575	9.45	02Jan2000, 17:09
Outlet 05	0.0575	16.05	01Jan2000, 15:19	Outlet 05	0.0575	9.45	02Jan2000, 17:09
Area 6F	0.025	8.19	01Jan2000, 15:26	Area 6F	0.025	4.83	02Jan2000, 17:15
Area 6E	0.0017	0.64	01Jan2000, 15:00	Area 6E	0.0017	0.36	02Jan2000, 16:00
Pond 6E	0.0017	0.05	01Jan2000, 19:29	Pond 6E	0.0017	0.05	02Jan2000, 21:06
J-6C	0.0267	8.23	01Jan2000, 15:26	J-6C	0.0267	4.87	02Jan2000, 17:15
Area 6D	0.0019	0.72	01Jan2000, 15:00	Area 6D	0.0019	0.4	02Jan2000, 16:00
Pond 6D	0.0019	0.05	02Jan2000, 00:06	Pond 6D	0.0019	0.05	03Jan2000, 00:06
Area 6C	0.0162	5.23	01Jan2000, 15:09	Area 6C	0.0162	3.05	02Jan2000, 17:06
Area 6B	0.0041	1.26	01Jan2000, 15:09	Area 6B	0.0041	0.74	02Jan2000, 17:06

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

J-6B	1.9895	103.67	02Jan2000, 00:02	J-6B	1.9895	99.68	03Jan2000, 00:03
Area 6A	0.0046	1.38	01Jan2000, 15:10	Area 6A	0.0046	0.82	02Jan2000, 17:06
J-6A	1.9941	104.07	02Jan2000, 00:02	J-6A	1.9941	100.24	03Jan2000, 00:00
Outlet 06	1.9941	104.07	02Jan2000, 00:02	Outlet 06	1.9941	100.24	03Jan2000, 00:00
Area 7H	0.0198	6.77	01Jan2000, 15:11	Area 7H	0.0198	3.9	02Jan2000, 17:06
Area 7J	0.0128	4.42	01Jan2000, 15:06	Area 7J	0.0128	2.53	02Jan2000, 17:03
Area 7G	0.0089	3.52	01Jan2000, 15:01	Area 7G	0.0089	1.96	02Jan2000, 16:00
Pond 7G	0.0089	0.31	02Jan2000, 00:13	Pond 7G	0.0089	0.31	03Jan2000, 00:15
Area 7F	0.0059	2.43	01Jan2000, 15:00	Area 7F	0.0059	1.34	02Jan2000, 16:00
Pond 7F	0.0059	0.26	02Jan2000, 00:05	Pond 7F	0.0059	0.26	03Jan2000, 00:06
Area 7I	0.0044	1.76	01Jan2000, 15:02	Area 7I	0.0044	0.98	02Jan2000, 16:03
Area 7E	0.0015	0.44	01Jan2000, 15:00	Area 7E	0.0015	0.26	02Jan2000, 17:00
J-7B	1.9207	97.75	02Jan2000, 00:01	J-7B	1.9207	91.11	03Jan2000, 00:03
Area 7A	0.0125	4.25	01Jan2000, 15:04	Area 7A	0.0125	2.43	02Jan2000, 17:03
Area 7B	0.0034	1.29	01Jan2000, 15:01	Area 7B	0.0034	0.72	02Jan2000, 16:00
Ditch 7A	0.0159	5.5	01Jan2000, 15:07	Ditch 7A	0.0159	3.14	02Jan2000, 17:06
Area 7D	0.0022	0.87	01Jan2000, 15:01	Area 7D	0.0022	0.48	02Jan2000, 16:00
Area 7C	0.0018	0.69	01Jan2000, 15:01	Area 7C	0.0018	0.39	02Jan2000, 16:00
Ditch 7C	0.004	1.54	01Jan2000, 15:06	Ditch 7C	0.004	0.86	02Jan2000, 17:03
Outlet 07	1.9406	99.61	02Jan2000, 00:01	Outlet 07	1.9406	93.75	03Jan2000, 00:03
Area 8A	0.9459	252.86	01Jan2000, 18:13	Area 8A	0.9459	169.57	02Jan2000, 20:21
Area 8E	0.7664	237.49	01Jan2000, 16:52	Area 8E	0.7664	147.04	02Jan2000, 19:12
Depression 8E	0.7664	0	01Jan2000, 05:38	Depression 8E	0.7664	0	01Jan2000, 10:51
Area 8D	0.1544	50.88	01Jan2000, 16:11	Area 8D	0.1544	30.27	02Jan2000, 17:39
Depression 8D	0.1544	32.11	01Jan2000, 18:30	Depression 8D	0.1544	28.78	02Jan2000, 19:42
Area 8C	0.0007	0.3	01Jan2000, 15:02	Area 8C	0.0007	0.16	02Jan2000, 16:06
Storage 8A	1.8674	94.04	02Jan2000, 01:21	Storage 8A	1.8674	89.44	03Jan2000, 02:48
Outlet 08	1.8674	94.04	02Jan2000, 01:21	Outlet 08	1.8674	89.44	03Jan2000, 02:48
Area 9A	0.0227	8.72	01Jan2000, 15:02	Area 9A	0.0227	4.88	02Jan2000, 16:03
Area 9B	0.0108	3.92	01Jan2000, 15:08	Area 9B	0.0108	2.22	02Jan2000, 16:12
Area 9C	0.002	0.75	01Jan2000, 15:06	Area 9C	0.002	0.42	02Jan2000, 16:09
Outlet 09	0.0355	13.39	01Jan2000, 15:03	Outlet 09	0.0355	7.51	02Jan2000, 16:06
Area 10	0.0007	0.26	01Jan2000, 15:00	Area 10	0.0007	0.15	02Jan2000, 16:00
Outlet 10	0.0007	0.26	01Jan2000, 15:00	Outlet 10	0.0007	0.15	02Jan2000, 16:00
Area 11	0.0002	0.07	01Jan2000, 15:00	Area 11	0.0002	0.04	02Jan2000, 17:00
Outlet 11	0.0002	0.07	01Jan2000, 15:00	Outlet 11	0.0002	0.04	02Jan2000, 17:00
Area 12	0.0063	2.21	01Jan2000, 15:08	Area 12	0.0063	1.26	02Jan2000, 17:03
Outlet 12	0.0063	2.21	01Jan2000, 15:08	Outlet 12	0.0063	1.26	02Jan2000, 17:03

PROPOSED HEC-HMS MODELING RESULTS
50YR STORM

50YR 72HR				50YR 120HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	36.72	03Jan2000, 15:09	Area 1C	0.259	25.09	05Jan2000, 06:45
Area 1D	0.0109	1.65	03Jan2000, 12:03	Area 1D	0.0109	1.1	05Jan2000, 06:00
Area 1E	0.0057	0.92	03Jan2000, 12:03	Area 1E	0.0057	0.6	05Jan2000, 06:00
Pond 1	0.0166	2.17	03Jan2000, 16:24	Pond 1	0.0166	1.57	05Jan2000, 12:09
Diversion-O2	0.0166	1.92	03Jan2000, 16:24	Diversion-O2	0.0166	1.33	05Jan2000, 12:09
Area 1B	0.003	0.47	03Jan2000, 12:00	Area 1B	0.003	0.31	05Jan2000, 06:00
Depression 1BC	0.2786	25.94	04Jan2000, 00:33	Depression 1BC	0.2786	18.7	05Jan2000, 15:30
Diversion 1BC	0.2786	11.01	04Jan2000, 00:33	Diversion 1BC	0.2786	10.55	05Jan2000, 15:30
Diverted Flow 1BC	0	14.94	04Jan2000, 00:33	Diverted Flow 1BC	0	8.15	05Jan2000, 15:30
Area 1A	0.0026	0.4	03Jan2000, 12:00	Area 1A	0.0026	0.26	05Jan2000, 06:00
J-1	0.2812	11.26	04Jan2000, 00:00	J-1	0.2812	10.72	05Jan2000, 15:30
Outlet 01	0.2812	11.26	04Jan2000, 00:00	Outlet 01	0.2812	10.72	05Jan2000, 15:30
Area 2	0.0014	0.18	03Jan2000, 12:03	Area 2	0.0014	0.12	05Jan2000, 06:00
Outlet 02	0.0014	0.43	03Jan2000, 16:00	Outlet 02	0.0014	0.36	05Jan2000, 12:00
Area 3B	0.0101	1.47	03Jan2000, 12:06	Area 3B	0.0101	0.98	05Jan2000, 06:00
Diversion 3B	0.0101	1.47	03Jan2000, 12:06	Diversion 3B	0.0101	0.98	05Jan2000, 06:00
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.2	03Jan2000, 12:03	Area 3A	0.0013	0.13	05Jan2000, 06:00
Ditch 3A	0.0013	0.2	03Jan2000, 12:12	Ditch 3A	0.0013	0.13	05Jan2000, 06:06
Area 3C	0.0013	0.2	03Jan2000, 12:00	Area 3C	0.0013	0.13	05Jan2000, 06:00
J-3	0.0127	1.87	03Jan2000, 12:06	J-3	0.0127	1.25	05Jan2000, 06:00
Outlet 03	0.0127	1.87	03Jan2000, 12:06	Outlet 03	0.0127	1.25	05Jan2000, 06:00
Area 4K	0.1202	17.1	03Jan2000, 14:57	Area 4K	0.1202	11.67	05Jan2000, 06:39
Area 4P	0.0123	1.81	03Jan2000, 12:06	Area 4P	0.0123	1.21	05Jan2000, 06:00
Area 4O	0.0117	1.72	03Jan2000, 12:06	Area 4O	0.0117	1.15	05Jan2000, 06:03
Area 4N	0.0022	0.36	03Jan2000, 12:00	Area 4N	0.0022	0.24	05Jan2000, 06:00
Ditch 4N	0.0022	0.1	04Jan2000, 00:15	Ditch 4N	0.0022	0.09	06Jan2000, 00:12
Area 4M	0.0012	0.19	03Jan2000, 12:00	Area 4M	0.0012	0.13	05Jan2000, 06:00
Ditch 4M	0.0012	0.05	04Jan2000, 00:18	Ditch 4M	0.0012	0.05	06Jan2000, 00:15
Area 4I	0.0012	0.2	03Jan2000, 12:00	Area 4I	0.0012	0.13	05Jan2000, 06:00
Ditch 4I	0.0012	0.05	04Jan2000, 00:09	Ditch 4I	0.0012	0.05	06Jan2000, 00:06
Area 4J	0.001	0.16	03Jan2000, 12:00	Area 4J	0.001	0.11	05Jan2000, 06:00
Ditch 4J	0.001	0.04	03Jan2000, 15:12	Ditch 4J	0.001	0.04	05Jan2000, 12:48
J-4A	0.1498	20.66	03Jan2000, 14:15	J-4A	0.1498	14.18	05Jan2000, 06:09
Area 4H	0.0169	2.45	03Jan2000, 12:09	Area 4H	0.0169	1.64	05Jan2000, 06:03
Area 4L	0.0053	0.83	03Jan2000, 12:03	Area 4L	0.0053	0.55	05Jan2000, 06:00
Pond 4L	0.0053	0.2	04Jan2000, 00:30	Pond 4L	0.0053	0.19	06Jan2000, 00:24
Depression 4H-P	0.172	23.08	03Jan2000, 15:24	Depression 4H-P	0.172	15.88	05Jan2000, 06:27
Area 4G	0.0023	0.32	03Jan2000, 12:03	Area 4G	0.0023	0.22	05Jan2000, 06:00
Area 4D	0.0014	0.23	03Jan2000, 12:00	Area 4D	0.0014	0.15	05Jan2000, 06:00
Ditch 4D	0.0014	0.05	04Jan2000, 00:21	Ditch 4D	0.0014	0.05	05Jan2000, 10:21
Area 4E	0.001	0.16	03Jan2000, 12:00	Area 4E	0.001	0.1	05Jan2000, 06:00
Ditch 4E	0.001	0.05	04Jan2000, 00:09	Ditch 4E	0.001	0.04	06Jan2000, 00:06
J-4B	0.0047	0.41	03Jan2000, 14:03	J-4B	0.0047	0.3	05Jan2000, 06:00
Area 4C	0.0026	0.39	03Jan2000, 12:03	Area 4C	0.0026	0.26	05Jan2000, 06:00
Depression 4C	0.0026	0.39	03Jan2000, 12:12	Depression 4C	0.0026	0.26	05Jan2000, 06:06
Area 4B	0.0029	0.4	03Jan2000, 12:03	Area 4B	0.0029	0.27	05Jan2000, 06:00
Depression 4BG	0.1822	24.22	03Jan2000, 15:30	Depression 4BG	0.1822	16.68	05Jan2000, 06:27
Area 4A	0.0025	0.35	03Jan2000, 12:06	Area 4A	0.0025	0.24	05Jan2000, 06:00
Area 4F	0.0069	1	03Jan2000, 12:03	Area 4F	0.0069	0.67	05Jan2000, 06:00
J-4C	0.1916	25.5	03Jan2000, 15:36	J-4C	0.1916	17.55	05Jan2000, 06:12
Outlet 04	0.1916	25.5	03Jan2000, 15:36	Outlet 04	0.1916	17.55	05Jan2000, 06:12
Area 5D	0.0351	5.16	03Jan2000, 12:12	Area 5D	0.0351	3.45	05Jan2000, 06:03
Area 5A	0.0124	1.76	03Jan2000, 12:15	Area 5A	0.0124	1.19	05Jan2000, 06:06
Area 5C	0.0048	0.82	03Jan2000, 12:00	Area 5C	0.0048	0.53	05Jan2000, 06:00
Pond 5	0.0048	0.23	04Jan2000, 00:06	Pond 5	0.0048	0.21	06Jan2000, 00:06
Area 5B	0.0052	0.78	03Jan2000, 12:03	Area 5B	0.0052	0.52	05Jan2000, 06:00
Depression 5B	0.0052	0.58	03Jan2000, 18:12	Depression 5B	0.0052	0.49	05Jan2000, 12:00
J-5	0.0575	7.1	03Jan2000, 12:12	J-5	0.0575	5.09	05Jan2000, 12:00
Outlet 05	0.0575	7.1	03Jan2000, 12:12	Outlet 05	0.0575	5.09	05Jan2000, 12:00
Area 6F	0.025	3.61	03Jan2000, 12:18	Area 6F	0.025	2.42	05Jan2000, 06:06
Area 6E	0.0017	0.27	03Jan2000, 12:00	Area 6E	0.0017	0.17	05Jan2000, 06:00
Pond 6E	0.0017	0.05	03Jan2000, 18:48	Pond 6E	0.0017	0.05	05Jan2000, 18:06
J-6C	0.0267	3.65	03Jan2000, 12:18	J-6C	0.0267	2.46	05Jan2000, 06:06
Area 6D	0.0019	0.3	03Jan2000, 12:00	Area 6D	0.0019	0.2	05Jan2000, 06:00
Pond 6D	0.0019	0.06	04Jan2000, 00:06	Pond 6D	0.0019	0.05	06Jan2000, 00:06
Area 6C	0.0162	2.28	03Jan2000, 12:06	Area 6C	0.0162	1.53	05Jan2000, 06:00
Area 6B	0.0041	0.56	03Jan2000, 12:06	Area 6B	0.0041	0.38	05Jan2000, 06:03

PROPOSED HEC-HMS MODELING RESULTS

50YR STORM

J-6B	1.9895	93.96	04Jan2000, 00:00	J-6B	1.9895	80.15	05Jan2000, 12:06
Area 6A	0.0046	0.61	03Jan2000, 12:06	Area 6A	0.0046	0.42	05Jan2000, 06:03
J-6A	1.9941	94.37	04Jan2000, 00:00	J-6A	1.9941	80.55	05Jan2000, 12:06
Outlet 06	1.9941	94.37	04Jan2000, 00:00	Outlet 06	1.9941	80.55	05Jan2000, 12:06
Area 7H	0.0198	2.92	03Jan2000, 12:06	Area 7H	0.0198	1.95	05Jan2000, 06:03
Area 7J	0.0128	1.89	03Jan2000, 12:03	Area 7J	0.0128	1.26	05Jan2000, 06:00
Area 7G	0.0089	1.45	03Jan2000, 12:00	Area 7G	0.0089	0.95	05Jan2000, 06:00
Pond 7G	0.0089	0.32	04Jan2000, 00:12	Pond 7G	0.0089	0.31	06Jan2000, 00:12
Area 7F	0.0059	0.99	03Jan2000, 12:00	Area 7F	0.0059	0.64	05Jan2000, 06:00
Pond 7F	0.0059	0.25	04Jan2000, 00:06	Pond 7F	0.0059	0.24	06Jan2000, 00:03
Area 7I	0.0044	0.72	03Jan2000, 12:00	Area 7I	0.0044	0.47	05Jan2000, 06:00
Area 7E	0.0015	0.19	03Jan2000, 12:00	Area 7E	0.0015	0.13	05Jan2000, 06:00
J-7B	1.9207	87.65	04Jan2000, 00:00	J-7B	1.9207	75.9	05Jan2000, 18:03
Area 7A	0.0125	1.82	03Jan2000, 12:03	Area 7A	0.0125	1.22	05Jan2000, 06:00
Area 7B	0.0034	0.54	03Jan2000, 12:00	Area 7B	0.0034	0.35	05Jan2000, 06:00
Ditch 7A	0.0159	2.35	03Jan2000, 12:06	Ditch 7A	0.0159	1.57	05Jan2000, 06:03
Area 7D	0.0022	0.36	03Jan2000, 12:00	Area 7D	0.0022	0.23	05Jan2000, 06:00
Area 7C	0.0018	0.29	03Jan2000, 12:00	Area 7C	0.0018	0.19	05Jan2000, 06:00
Ditch 7C	0.004	0.64	03Jan2000, 12:03	Ditch 7C	0.004	0.42	05Jan2000, 06:00
Outlet 07	1.9406	89.58	04Jan2000, 00:00	Outlet 07	1.9406	77.18	05Jan2000, 18:06
Area 8A	0.9459	130.52	03Jan2000, 16:42	Area 8A	0.9459	89.7	05Jan2000, 07:57
Area 8E	0.7664	110.63	03Jan2000, 14:51	Area 8E	0.7664	75.38	05Jan2000, 06:36
Depression 8E	0.7664	0	01Jan2000, 14:12	Depression 8E	0.7664	0	01Jan2000, 20:24
Area 8D	0.1544	22.53	03Jan2000, 13:00	Area 8D	0.1544	15.29	05Jan2000, 06:12
Depression 8D	0.1544	22.2	03Jan2000, 15:03	Depression 8D	0.1544	15.21	05Jan2000, 06:36
Area 8C	0.0007	0.12	03Jan2000, 12:00	Area 8C	0.0007	0.08	05Jan2000, 06:00
Storage 8A	1.8674	84.5	04Jan2000, 02:03	Storage 8A	1.8674	72.93	05Jan2000, 17:54
Outlet 08	1.8674	84.5	04Jan2000, 02:03	Outlet 08	1.8674	72.93	05Jan2000, 17:54
Area 9A	0.0227	3.62	03Jan2000, 12:00	Area 9A	0.0227	2.38	05Jan2000, 06:00
Area 9B	0.0108	1.66	03Jan2000, 12:03	Area 9B	0.0108	1.1	05Jan2000, 06:00
Area 9C	0.002	0.31	03Jan2000, 12:03	Area 9C	0.002	0.21	05Jan2000, 06:00
Outlet 09	0.0355	5.59	03Jan2000, 12:00	Outlet 09	0.0355	3.68	05Jan2000, 06:00
Area 10	0.0007	0.11	03Jan2000, 12:00	Area 10	0.0007	0.07	05Jan2000, 06:00
Outlet 10	0.0007	0.11	03Jan2000, 12:00	Outlet 10	0.0007	0.07	05Jan2000, 06:00
Area 11	0.0002	0.03	03Jan2000, 12:00	Area 11	0.0002	0.02	05Jan2000, 06:00
Outlet 11	0.0002	0.03	03Jan2000, 12:00	Outlet 11	0.0002	0.02	05Jan2000, 06:00
Area 12	0.0063	0.94	03Jan2000, 12:03	Area 12	0.0063	0.63	05Jan2000, 06:00
Outlet 12	0.0063	0.94	03Jan2000, 12:03	Outlet 12	0.0063	0.63	05Jan2000, 06:00

PROPOSED HEC-HMS MODELING RESULTS
50YR STORM

50YR 240HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	15.23	09Jan2000, 12:21
Area 1D	0.0109	0.66	09Jan2000, 12:00
Area 1E	0.0057	0.36	09Jan2000, 12:00
Pond 1	0.0166	0.95	10Jan2000, 00:03
Diversion-O2	0.0166	0.71	10Jan2000, 00:03
Area 1B	0.003	0.18	09Jan2000, 12:00
Depression 1BC	0.2786	10.67	10Jan2000, 04:12
Diversion 1BC	0.2786	10.04	10Jan2000, 04:12
Diverted Flow 1BC	0	0.62	10Jan2000, 04:12
Area 1A	0.0026	0.16	09Jan2000, 12:00
J-1	0.2812	10.14	10Jan2000, 04:15
Outlet 01	0.2812	10.14	10Jan2000, 04:15
Area 2	0.0014	0.08	09Jan2000, 12:00
Outlet 02	0.0014	0.31	09Jan2000, 12:00
Area 3B	0.0101	0.59	09Jan2000, 12:00
Diversion 3B	0.0101	0.59	09Jan2000, 12:00
Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.08	09Jan2000, 12:00
Ditch 3A	0.0013	0.08	09Jan2000, 12:03
Area 3C	0.0013	0.08	09Jan2000, 12:00
J-3	0.0127	0.75	09Jan2000, 12:00
Outlet 03	0.0127	0.75	09Jan2000, 12:00
Area 4K	0.1202	7.07	09Jan2000, 12:18
Area 4P	0.0123	0.73	09Jan2000, 12:00
Area 4O	0.0117	0.69	09Jan2000, 12:00
Area 4N	0.0022	0.14	09Jan2000, 12:00
Ditch 4N	0.0022	0.08	11Jan2000, 00:06
Area 4M	0.0012	0.07	09Jan2000, 12:00
Ditch 4M	0.0012	0.04	11Jan2000, 00:09
Area 4I	0.0012	0.08	09Jan2000, 12:00
Ditch 4I	0.0012	0.04	11Jan2000, 00:03
Area 4J	0.001	0.06	09Jan2000, 12:00
Ditch 4J	0.001	0.04	11Jan2000, 00:03
J-4A	0.1498	8.66	09Jan2000, 12:03
Area 4H	0.0169	0.99	09Jan2000, 12:00
Area 4L	0.0053	0.33	09Jan2000, 12:00
Pond 4L	0.0053	0.17	11Jan2000, 00:15
Depression 4H-P	0.172	9.77	09Jan2000, 12:15
Area 4G	0.0023	0.13	09Jan2000, 12:00
Area 4D	0.0014	0.09	09Jan2000, 12:00
Ditch 4D	0.0014	0.05	11Jan2000, 00:09
Area 4E	0.001	0.06	09Jan2000, 12:00
Ditch 4E	0.001	0.04	11Jan2000, 00:03
J-4B	0.0047	0.21	10Jan2000, 00:00
Area 4C	0.0026	0.16	09Jan2000, 12:00
Depression 4C	0.0026	0.15	09Jan2000, 12:03
Area 4B	0.0029	0.16	09Jan2000, 12:00
Depression 4BG	0.1822	10.29	09Jan2000, 12:09
Area 4A	0.0025	0.14	09Jan2000, 12:00
Area 4F	0.0069	0.4	09Jan2000, 12:00
J-4C	0.1916	10.83	09Jan2000, 12:03
Outlet 04	0.1916	10.83	09Jan2000, 12:03
Area 5D	0.0351	2.07	09Jan2000, 12:00
Area 5A	0.0124	0.72	09Jan2000, 12:03
Area 5C	0.0048	0.31	09Jan2000, 12:00
Pond 5	0.0048	0.17	11Jan2000, 00:03
Area 5B	0.0052	0.31	09Jan2000, 12:00
Depression 5B	0.0052	0.31	09Jan2000, 12:03
J-5	0.0575	3.26	09Jan2000, 12:03
Outlet 05	0.0575	3.26	09Jan2000, 12:03
Area 6F	0.025	1.46	09Jan2000, 12:03
Area 6E	0.0017	0.1	09Jan2000, 12:00
Pond 6E	0.0017	0.05	11Jan2000, 00:03
J-6C	0.0267	1.5	09Jan2000, 12:03
Area 6D	0.0019	0.12	09Jan2000, 12:00
Pond 6D	0.0019	0.05	11Jan2000, 00:03
Area 6C	0.0162	0.93	09Jan2000, 12:00
Area 6B	0.0041	0.23	09Jan2000, 12:00

PROPOSED HEC-HMS MODELING RESULTS
50YR STORM

J-6B	1.9895	63.8	10Jan2000, 00:00
Area 6A	0.0046	0.25	09Jan2000, 12:00
J-6A	1.9941	64.04	10Jan2000, 00:00
Outlet 06	1.9941	64.04	10Jan2000, 00:00
Area 7H	0.0198	1.17	09Jan2000, 12:00
Area 7J	0.0128	0.76	09Jan2000, 12:00
Area 7G	0.0089	0.56	09Jan2000, 12:00
Pond 7G	0.0089	0.28	11Jan2000, 00:06
Area 7F	0.0059	0.38	09Jan2000, 12:00
Pond 7F	0.0059	0.21	11Jan2000, 00:00
Area 7I	0.0044	0.28	09Jan2000, 12:00
Area 7E	0.0015	0.08	09Jan2000, 12:00
J-7B	1.9207	60.11	10Jan2000, 00:03
Area 7A	0.0125	0.73	09Jan2000, 12:00
Area 7B	0.0034	0.21	09Jan2000, 12:00
Ditch 7A	0.0159	0.94	09Jan2000, 12:00
Area 7D	0.0022	0.14	09Jan2000, 12:00
Area 7C	0.0018	0.11	09Jan2000, 12:00
Ditch 7C	0.004	0.25	09Jan2000, 12:00
Outlet 07	1.9406	61.23	10Jan2000, 00:03
Area 8A	0.9459	55.42	09Jan2000, 12:48
Area 8E	0.7664	45.53	09Jan2000, 12:15
Depression 8E	0.7664	0	02Jan2000, 09:51
Area 8D	0.1544	9.19	09Jan2000, 12:06
Depression 8D	0.1544	9.18	09Jan2000, 12:24
Area 8C	0.0007	0.05	09Jan2000, 12:00
Storage 8A	1.8674	57.86	10Jan2000, 01:51
Outlet 08	1.8674	57.86	10Jan2000, 01:51
Area 9A	0.0227	1.41	09Jan2000, 12:00
Area 9B	0.0108	0.66	09Jan2000, 12:00
Area 9C	0.002	0.12	09Jan2000, 12:00
Outlet 09	0.0355	2.19	09Jan2000, 12:00
Area 10	0.0007	0.04	09Jan2000, 12:00
Outlet 10	0.0007	0.04	09Jan2000, 12:00
Area 11	0.0002	0.01	09Jan2000, 12:00
Outlet 11	0.0002	0.01	09Jan2000, 12:00
Area 12	0.0063	0.38	09Jan2000, 12:00
Outlet 12	0.0063	0.38	09Jan2000, 12:00

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

100YR 1HR				100YR 2HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	97.8	01Jan2000, 02:18	Area 1C	0.259	128.83	01Jan2000, 02:45
Area 1D	0.0109	14.64	01Jan2000, 00:36	Area 1D	0.0109	14.25	01Jan2000, 00:45
Area 1E	0.0057	9.66	01Jan2000, 00:33	Area 1E	0.0057	9.15	01Jan2000, 00:42
Pond 1	0.0166	0.25	01Jan2000, 02:00	Pond 1	0.0166	0.85	01Jan2000, 02:39
Diversion-O2	0.0166	0.03	01Jan2000, 02:00	Diversion-O2	0.0166	0.61	01Jan2000, 02:39
Area 1B	0.003	5.53	01Jan2000, 00:27	Area 1B	0.003	4.97	01Jan2000, 00:36
Depression 1BC	0.2786	8.81	01Jan2000, 05:39	Depression 1BC	0.2786	14.63	01Jan2000, 05:57
Diversion 1BC	0.2786	8.81	01Jan2000, 05:39	Diversion 1BC	0.2786	10.29	01Jan2000, 05:57
Diverted Flow 1BC	0	0	01Jan2000, 00:00	Diverted Flow 1BC	0	4.34	01Jan2000, 05:57
Area 1A	0.0026	4.72	01Jan2000, 00:24	Area 1A	0.0026	4.16	01Jan2000, 00:33
J-1	0.2812	8.81	01Jan2000, 05:39	J-1	0.2812	10.29	01Jan2000, 05:57
Outlet 01	0.2812	8.81	01Jan2000, 05:39	Outlet 01	0.2812	10.29	01Jan2000, 05:57
Area 2	0.0014	1.35	01Jan2000, 00:30	Area 2	0.0014	1.32	01Jan2000, 00:39
Outlet 02	0.0014	1.44	01Jan2000, 00:33	Outlet 02	0.0014	1.46	01Jan2000, 00:42
Area 3B	0.0101	11.21	01Jan2000, 00:39	Area 3B	0.0101	11.28	01Jan2000, 00:51
Diversion 3B	0.0101	6.58	01Jan2000, 00:39	Diversion 3B	0.0101	6.59	01Jan2000, 00:51
Diverted Flow 3B	0	4.63	01Jan2000, 00:39	Diverted Flow 3B	0	4.69	01Jan2000, 00:51
Area 3A	0.0013	2.11	01Jan2000, 00:30	Area 3A	0.0013	1.97	01Jan2000, 00:39
Ditch 3A	0.0013	1.64	01Jan2000, 00:42	Ditch 3A	0.0013	1.66	01Jan2000, 00:54
Area 3C	0.0013	2.17	01Jan2000, 00:30	Area 3C	0.0013	2	01Jan2000, 00:39
J-3	0.0127	10.02	01Jan2000, 00:39	J-3	0.0127	10.04	01Jan2000, 00:48
Outlet 03	0.0127	10.02	01Jan2000, 00:39	Outlet 03	0.0127	10.04	01Jan2000, 00:48
Area 4K	0.1202	48.48	01Jan2000, 02:12	Area 4K	0.1202	62.98	01Jan2000, 02:36
Area 4P	0.0123	14.46	01Jan2000, 00:39	Area 4P	0.0123	14.41	01Jan2000, 00:48
Area 4O	0.0117	13.06	01Jan2000, 00:42	Area 4O	0.0117	13.23	01Jan2000, 00:51
Area 4N	0.0022	5.33	01Jan2000, 00:24	Area 4N	0.0022	4.55	01Jan2000, 00:30
Ditch 4N	0.0022	0.08	01Jan2000, 01:30	Ditch 4N	0.0022	0.09	01Jan2000, 02:24
Area 4M	0.0012	2.27	01Jan2000, 00:27	Area 4M	0.0012	2.04	01Jan2000, 00:36
Ditch 4M	0.0012	0.04	01Jan2000, 01:36	Ditch 4M	0.0012	0.04	01Jan2000, 02:30
Area 4I	0.0012	3.18	01Jan2000, 00:18	Area 4I	0.0012	2.56	01Jan2000, 00:21
Ditch 4I	0.0012	0.04	01Jan2000, 01:21	Ditch 4I	0.0012	0.05	01Jan2000, 02:18
Area 4J	0.001	2.46	01Jan2000, 00:18	Area 4J	0.001	1.95	01Jan2000, 00:21
Ditch 4J	0.001	0.04	01Jan2000, 01:18	Ditch 4J	0.001	0.04	01Jan2000, 02:06
J-4A	0.1498	49.05	01Jan2000, 02:09	J-4A	0.1498	67.96	01Jan2000, 02:18
Area 4H	0.0169	16.82	01Jan2000, 00:48	Area 4H	0.0169	17.54	01Jan2000, 00:57
Area 4L	0.0053	7.65	01Jan2000, 00:39	Area 4L	0.0053	7.47	01Jan2000, 00:48
Pond 4L	0.0053	0.13	01Jan2000, 02:06	Pond 4L	0.0053	0.16	01Jan2000, 02:54
Depression 4H-P	0.172	39.65	01Jan2000, 02:51	Depression 4H-P	0.172	63.05	01Jan2000, 02:51
Area 4G	0.0023	2.85	01Jan2000, 00:30	Area 4G	0.0023	2.72	01Jan2000, 00:39
Area 4D	0.0014	2.92	01Jan2000, 00:27	Area 4D	0.0014	2.62	01Jan2000, 00:36
Ditch 4D	0.0014	0.05	01Jan2000, 01:39	Ditch 4D	0.0014	0.05	01Jan2000, 01:48
Area 4E	0.001	2.35	01Jan2000, 00:18	Area 4E	0.001	1.87	01Jan2000, 00:27
Ditch 4E	0.001	0.03	01Jan2000, 01:18	Ditch 4E	0.001	0.04	01Jan2000, 02:15
J-4B	0.0047	2.9	01Jan2000, 00:30	J-4B	0.0047	2.78	01Jan2000, 00:39
Area 4C	0.0026	3.53	01Jan2000, 00:33	Area 4C	0.0026	3.4	01Jan2000, 00:42
Depression 4C	0.0026	0.81	01Jan2000, 01:21	Depression 4C	0.0026	1.31	01Jan2000, 01:39
Area 4B	0.0029	3.02	01Jan2000, 00:36	Area 4B	0.0029	3.01	01Jan2000, 00:45
Depression 4BG	0.1822	39.58	01Jan2000, 02:57	Depression 4BG	0.1822	63.31	01Jan2000, 02:57
Area 4A	0.0025	2.55	01Jan2000, 00:39	Area 4A	0.0025	2.59	01Jan2000, 00:51
Area 4F	0.0069	9.07	01Jan2000, 00:30	Area 4F	0.0069	8.65	01Jan2000, 00:39
J-4C	0.1916	39.58	01Jan2000, 02:57	J-4C	0.1916	63.36	01Jan2000, 02:57
Outlet 04	0.1916	39.58	01Jan2000, 02:57	Outlet 04	0.1916	63.36	01Jan2000, 02:57
Area 5D	0.0351	33.48	01Jan2000, 00:54	Area 5D	0.0351	35.46	01Jan2000, 01:03
Area 5A	0.0124	10.34	01Jan2000, 00:57	Area 5A	0.0124	11.16	01Jan2000, 01:06
Area 5C	0.0048	16.59	01Jan2000, 00:15	Area 5C	0.0048	13.73	01Jan2000, 00:18
Pond 5	0.0048	0.18	01Jan2000, 01:15	Pond 5	0.0048	0.21	01Jan2000, 02:15
Area 5B	0.0052	7.27	01Jan2000, 00:33	Area 5B	0.0052	6.93	01Jan2000, 00:42
Depression 5B	0.0052	0	01Jan2000, 00:33	Depression 5B	0.0052	0	01Jan2000, 00:36
J-5	0.0575	43.88	01Jan2000, 00:54	J-5	0.0575	46.7	01Jan2000, 01:03
Outlet 05	0.0575	43.88	01Jan2000, 00:54	Outlet 05	0.0575	46.7	01Jan2000, 01:03
Area 6F	0.025	20.73	01Jan2000, 01:03	Area 6F	0.025	22.47	01Jan2000, 01:12
Area 6E	0.0017	3.91	01Jan2000, 00:15	Area 6E	0.0017	2.99	01Jan2000, 00:15
Pond 6E	0.0017	0.04	01Jan2000, 01:12	Pond 6E	0.0017	0.04	01Jan2000, 02:12
J-6C	0.0267	20.77	01Jan2000, 01:03	J-6C	0.0267	22.51	01Jan2000, 01:12
Area 6D	0.0019	4.59	01Jan2000, 00:15	Area 6D	0.0019	3.57	01Jan2000, 00:15
Pond 6D	0.0019	0.04	01Jan2000, 01:12	Pond 6D	0.0019	0.04	01Jan2000, 02:12
Area 6C	0.0162	16.7	01Jan2000, 00:39	Area 6C	0.0162	16.88	01Jan2000, 00:48
Area 6B	0.0041	3.78	01Jan2000, 00:39	Area 6B	0.0041	3.9	01Jan2000, 00:51

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

J-6B	1.9895	100.74	01Jan2000, 00:39	J-6B	1.9895	105.42	01Jan2000, 00:54
Area 6A	0.0046	4	01Jan2000, 00:42	Area 6A	0.0046	4.16	01Jan2000, 00:51
J-6A	1.9941	104.73	01Jan2000, 00:39	J-6A	1.9941	109.56	01Jan2000, 00:54
Outlet 06	1.9941	104.73	01Jan2000, 00:39	Outlet 06	1.9941	109.56	01Jan2000, 00:54
Area 7H	0.0198	21.71	01Jan2000, 00:42	Area 7H	0.0198	22.15	01Jan2000, 00:54
Area 7J	0.0128	16.5	01Jan2000, 00:33	Area 7J	0.0128	15.98	01Jan2000, 00:42
Area 7G	0.0089	20.72	01Jan2000, 00:21	Area 7G	0.0089	17.39	01Jan2000, 00:30
Pond 7G	0.0089	0.21	01Jan2000, 01:27	Pond 7G	0.0089	0.26	01Jan2000, 02:24
Area 7F	0.0059	18.64	01Jan2000, 00:15	Area 7F	0.0059	15.93	01Jan2000, 00:15
Pond 7F	0.0059	0.18	01Jan2000, 01:12	Pond 7F	0.0059	0.22	01Jan2000, 02:12
Area 7I	0.0044	9.56	01Jan2000, 00:27	Area 7I	0.0044	8.44	01Jan2000, 00:33
Area 7E	0.0015	1.82	01Jan2000, 00:18	Area 7E	0.0015	1.62	01Jan2000, 00:30
J-7B	1.9207	66.55	01Jan2000, 06:18	J-7B	1.9207	78.69	01Jan2000, 07:09
Area 7A	0.0125	16.68	01Jan2000, 00:30	Area 7A	0.0125	15.83	01Jan2000, 00:39
Area 7B	0.0034	6.97	01Jan2000, 00:21	Area 7B	0.0034	5.95	01Jan2000, 00:30
Ditch 7A	0.0159	16.57	01Jan2000, 00:42	Ditch 7A	0.0159	16.81	01Jan2000, 00:54
Area 7D	0.0022	5.32	01Jan2000, 00:21	Area 7D	0.0022	4.38	01Jan2000, 00:27
Area 7C	0.0018	4.02	01Jan2000, 00:21	Area 7C	0.0018	3.32	01Jan2000, 00:27
Ditch 7C	0.004	5.12	01Jan2000, 00:39	Ditch 7C	0.004	5.63	01Jan2000, 00:45
Outlet 07	1.9406	67.23	01Jan2000, 00:39	Outlet 07	1.9406	78.69	01Jan2000, 07:09
Area 8A	0.9459	237.07	01Jan2000, 03:21	Area 8A	0.9459	332.52	01Jan2000, 03:45
Area 8E	0.7664	331.56	01Jan2000, 02:06	Area 8E	0.7664	424.61	01Jan2000, 02:33
Depression 8E	0.7664	0	01Jan2000, 00:33	Depression 8E	0.7664	0	01Jan2000, 00:36
Area 8D	0.1544	99.57	01Jan2000, 01:30	Area 8D	0.1544	114.52	01Jan2000, 01:45
Depression 8D	0.1544	0	01Jan2000, 00:39	Depression 8D	0.1544	2.2	01Jan2000, 05:09
Area 8C	0.0007	1.75	01Jan2000, 00:30	Area 8C	0.0007	1.57	01Jan2000, 00:36
Storage 8A	1.8674	66.18	01Jan2000, 06:21	Storage 8A	1.8674	78.24	01Jan2000, 07:09
Outlet 08	1.8674	66.18	01Jan2000, 06:21	Outlet 08	1.8674	78.24	01Jan2000, 07:09
Area 9A	0.0227	43.41	01Jan2000, 00:27	Area 9A	0.0227	38.91	01Jan2000, 00:36
Area 9B	0.0108	14.57	01Jan2000, 00:39	Area 9B	0.0108	14.28	01Jan2000, 00:48
Area 9C	0.002	3.08	01Jan2000, 00:36	Area 9C	0.002	2.95	01Jan2000, 00:45
Outlet 09	0.0355	57.6	01Jan2000, 00:30	Outlet 09	0.0355	54.25	01Jan2000, 00:39
Area 10	0.0007	1.51	01Jan2000, 00:18	Area 10	0.0007	1.21	01Jan2000, 00:27
Outlet 10	0.0007	1.51	01Jan2000, 00:18	Outlet 10	0.0007	1.21	01Jan2000, 00:27
Area 11	0.0002	0.31	01Jan2000, 00:18	Area 11	0.0002	0.27	01Jan2000, 00:30
Outlet 11	0.0002	0.31	01Jan2000, 00:18	Outlet 11	0.0002	0.27	01Jan2000, 00:30
Area 12	0.0063	7.74	01Jan2000, 00:39	Area 12	0.0063	7.68	01Jan2000, 00:48
Outlet 12	0.0063	7.74	01Jan2000, 00:39	Outlet 12	0.0063	7.68	01Jan2000, 00:48

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

100YR 3HR				100YR 6HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	127.93	01Jan2000, 03:00	Area 1C	0.259	120.38	01Jan2000, 03:27
Area 1D	0.0109	12	01Jan2000, 00:57	Area 1D	0.0109	8.85	01Jan2000, 01:09
Area 1E	0.0057	7.62	01Jan2000, 00:48	Area 1E	0.0057	5.64	01Jan2000, 01:03
Pond 1	0.0166	1.97	01Jan2000, 03:27	Pond 1	0.0166	2.84	01Jan2000, 05:27
Diversion-O2	0.0166	1.72	01Jan2000, 03:27	Diversion-O2	0.0166	2.58	01Jan2000, 05:27
Area 1B	0.003	4.04	01Jan2000, 00:39	Area 1B	0.003	2.89	01Jan2000, 00:51
Depression 1BC	0.2786	20.54	01Jan2000, 06:15	Depression 1BC	0.2786	34.1	01Jan2000, 07:51
Diversion 1BC	0.2786	10.66	01Jan2000, 06:15	Diversion 1BC	0.2786	12.97	01Jan2000, 07:51
Diverted Flow 1BC	0	9.87	01Jan2000, 06:15	Diverted Flow 1BC	0	21.13	01Jan2000, 07:51
Area 1A	0.0026	3.35	01Jan2000, 00:36	Area 1A	0.0026	2.37	01Jan2000, 00:48
J-1	0.2812	10.66	01Jan2000, 06:15	J-1	0.2812	12.97	01Jan2000, 07:51
Outlet 01	0.2812	10.66	01Jan2000, 06:15	Outlet 01	0.2812	12.97	01Jan2000, 07:51
Area 2	0.0014	1.11	01Jan2000, 00:54	Area 2	0.0014	0.78	01Jan2000, 01:06
Outlet 02	0.0014	1.27	01Jan2000, 00:57	Outlet 02	0.0014	0.98	01Jan2000, 01:42
Area 3B	0.0101	9.71	01Jan2000, 01:00	Area 3B	0.0101	7.13	01Jan2000, 01:15
Diversion 3B	0.0101	6.27	01Jan2000, 01:00	Diversion 3B	0.0101	5.57	01Jan2000, 01:15
Diverted Flow 3B	0	3.44	01Jan2000, 01:00	Diverted Flow 3B	0	1.56	01Jan2000, 01:15
Area 3A	0.0013	1.61	01Jan2000, 00:45	Area 3A	0.0013	1.17	01Jan2000, 01:03
Ditch 3A	0.0013	1.47	01Jan2000, 01:03	Ditch 3A	0.0013	1.1	01Jan2000, 01:15
Area 3C	0.0013	1.63	01Jan2000, 00:42	Area 3C	0.0013	1.18	01Jan2000, 01:00
J-3	0.0127	9.25	01Jan2000, 00:57	J-3	0.0127	7.78	01Jan2000, 01:12
Outlet 03	0.0127	9.25	01Jan2000, 00:57	Outlet 03	0.0127	7.78	01Jan2000, 01:12
Area 4K	0.1202	61.98	01Jan2000, 02:48	Area 4K	0.1202	57.74	01Jan2000, 03:15
Area 4P	0.0123	12.34	01Jan2000, 01:00	Area 4P	0.0123	9.08	01Jan2000, 01:12
Area 4O	0.0117	11.44	01Jan2000, 01:03	Area 4O	0.0117	8.47	01Jan2000, 01:15
Area 4N	0.0022	3.78	01Jan2000, 00:33	Area 4N	0.0022	2.68	01Jan2000, 00:45
Ditch 4N	0.0022	0.09	01Jan2000, 03:24	Ditch 4N	0.0022	0.1	01Jan2000, 06:18
Area 4M	0.0012	1.67	01Jan2000, 00:39	Area 4M	0.0012	1.2	01Jan2000, 00:51
Ditch 4M	0.0012	0.04	01Jan2000, 03:30	Ditch 4M	0.0012	0.05	01Jan2000, 06:24
Area 4I	0.0012	2.1	01Jan2000, 00:27	Area 4I	0.0012	1.47	01Jan2000, 00:42
Ditch 4I	0.0012	0.05	01Jan2000, 03:15	Ditch 4I	0.0012	0.05	01Jan2000, 06:12
Area 4J	0.001	1.61	01Jan2000, 00:27	Area 4J	0.001	1.14	01Jan2000, 00:42
Ditch 4J	0.001	0.04	01Jan2000, 02:21	Ditch 4J	0.001	0.04	01Jan2000, 02:51
J-4A	0.1498	69.95	01Jan2000, 02:42	J-4A	0.1498	66.36	01Jan2000, 03:09
Area 4H	0.0169	15.35	01Jan2000, 01:06	Area 4H	0.0169	11.46	01Jan2000, 01:24
Area 4L	0.0053	6.35	01Jan2000, 00:57	Area 4L	0.0053	4.73	01Jan2000, 01:09
Pond 4L	0.0053	0.17	01Jan2000, 03:48	Pond 4L	0.0053	0.19	01Jan2000, 06:42
Depression 4H-P	0.172	69.05	01Jan2000, 03:12	Depression 4H-P	0.172	66.85	01Jan2000, 03:36
Area 4G	0.0023	2.21	01Jan2000, 00:54	Area 4G	0.0023	1.6	01Jan2000, 01:06
Area 4D	0.0014	2.16	01Jan2000, 00:39	Area 4D	0.0014	1.56	01Jan2000, 00:51
Ditch 4D	0.0014	0.05	01Jan2000, 02:00	Ditch 4D	0.0014	0.05	01Jan2000, 06:27
Area 4E	0.001	1.54	01Jan2000, 00:30	Area 4E	0.001	1.09	01Jan2000, 00:42
Ditch 4E	0.001	0.04	01Jan2000, 03:15	Ditch 4E	0.001	0.04	01Jan2000, 06:12
J-4B	0.0047	2.27	01Jan2000, 00:54	J-4B	0.0047	1.66	01Jan2000, 01:06
Area 4C	0.0026	2.82	01Jan2000, 00:54	Area 4C	0.0026	2.07	01Jan2000, 01:06
Depression 4C	0.0026	1.34	01Jan2000, 01:48	Depression 4C	0.0026	1.23	01Jan2000, 02:27
Area 4B	0.0029	2.56	01Jan2000, 00:57	Area 4B	0.0029	1.86	01Jan2000, 01:12
Depression 4BG	0.1822	70.67	01Jan2000, 03:15	Depression 4BG	0.1822	68.64	01Jan2000, 03:42
Area 4A	0.0025	2.23	01Jan2000, 01:00	Area 4A	0.0025	1.63	01Jan2000, 01:15
Area 4F	0.0069	7.06	01Jan2000, 00:51	Area 4F	0.0069	5.16	01Jan2000, 01:06
J-4C	0.1916	72.53	01Jan2000, 03:12	J-4C	0.1916	70.56	01Jan2000, 03:39
Outlet 04	0.1916	72.53	01Jan2000, 03:12	Outlet 04	0.1916	70.56	01Jan2000, 03:39
Area 5D	0.0351	31.44	01Jan2000, 01:12	Area 5D	0.0351	24.02	01Jan2000, 01:39
Area 5A	0.0124	9.99	01Jan2000, 01:18	Area 5A	0.0124	7.84	01Jan2000, 01:48
Area 5C	0.0048	10.78	01Jan2000, 00:24	Area 5C	0.0048	7.06	01Jan2000, 00:39
Pond 5	0.0048	0.22	01Jan2000, 03:12	Pond 5	0.0048	0.23	01Jan2000, 06:12
Area 5B	0.0052	5.69	01Jan2000, 00:51	Area 5B	0.0052	4.17	01Jan2000, 01:06
Depression 5B	0.0052	0	01Jan2000, 00:45	Depression 5B	0.0052	0	01Jan2000, 01:00
J-5	0.0575	41.52	01Jan2000, 01:12	J-5	0.0575	31.99	01Jan2000, 01:42
Outlet 05	0.0575	41.52	01Jan2000, 01:12	Outlet 05	0.0575	31.99	01Jan2000, 01:42
Area 6F	0.025	20.28	01Jan2000, 01:21	Area 6F	0.025	16.11	01Jan2000, 01:51
Area 6E	0.0017	2.48	01Jan2000, 00:24	Area 6E	0.0017	1.75	01Jan2000, 00:39
Pond 6E	0.0017	0.05	01Jan2000, 03:12	Pond 6E	0.0017	0.05	01Jan2000, 05:57
J-6C	0.0267	20.31	01Jan2000, 01:21	J-6C	0.0267	16.15	01Jan2000, 01:51
Area 6D	0.0019	2.91	01Jan2000, 00:24	Area 6D	0.0019	2.04	01Jan2000, 00:39
Pond 6D	0.0019	0.05	01Jan2000, 03:12	Pond 6D	0.0019	0.05	01Jan2000, 06:09
Area 6C	0.0162	14.53	01Jan2000, 01:00	Area 6C	0.0162	10.59	01Jan2000, 01:15
Area 6B	0.0041	3.37	01Jan2000, 01:00	Area 6B	0.0041	2.45	01Jan2000, 01:18

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

J-6B	1.9895	94.29	01Jan2000, 01:06	J-6B	1.9895	97.66	01Jan2000, 06:09
Area 6A	0.0046	3.61	01Jan2000, 01:03	Area 6A	0.0046	2.64	01Jan2000, 01:45
J-6A	1.9941	97.87	01Jan2000, 01:06	J-6A	1.9941	98.35	01Jan2000, 06:09
Outlet 06	1.9941	97.87	01Jan2000, 01:06	Outlet 06	1.9941	98.35	01Jan2000, 06:09
Area 7H	0.0198	19.22	01Jan2000, 01:03	Area 7H	0.0198	14.25	01Jan2000, 01:18
Area 7J	0.0128	13.31	01Jan2000, 00:54	Area 7J	0.0128	9.77	01Jan2000, 01:09
Area 7G	0.0089	14.39	01Jan2000, 00:33	Area 7G	0.0089	10.17	01Jan2000, 00:45
Pond 7G	0.0089	0.27	01Jan2000, 03:21	Pond 7G	0.0089	0.3	01Jan2000, 06:18
Area 7F	0.0059	12.13	01Jan2000, 00:21	Area 7F	0.0059	7.99	01Jan2000, 00:39
Pond 7F	0.0059	0.23	01Jan2000, 03:09	Pond 7F	0.0059	0.25	01Jan2000, 06:09
Area 7I	0.0044	6.99	01Jan2000, 00:36	Area 7I	0.0044	5	01Jan2000, 00:48
Area 7E	0.0015	1.25	01Jan2000, 00:48	Area 7E	0.0015	0.91	01Jan2000, 01:00
J-7B	1.9207	84.08	01Jan2000, 07:45	J-7B	1.9207	94.72	01Jan2000, 09:42
Area 7A	0.0125	12.84	01Jan2000, 00:51	Area 7A	0.0125	9.38	01Jan2000, 01:06
Area 7B	0.0034	4.87	01Jan2000, 00:33	Area 7B	0.0034	3.43	01Jan2000, 00:45
Ditch 7A	0.0159	15.51	01Jan2000, 01:00	Ditch 7A	0.0159	11.73	01Jan2000, 01:15
Area 7D	0.0022	3.62	01Jan2000, 00:30	Area 7D	0.0022	2.54	01Jan2000, 00:42
Area 7C	0.0018	2.73	01Jan2000, 00:30	Area 7C	0.0018	1.92	01Jan2000, 00:45
Ditch 7C	0.004	3.48	01Jan2000, 01:12	Ditch 7C	0.004	3.08	01Jan2000, 01:45
Outlet 07	1.9406	84.08	01Jan2000, 07:45	Outlet 07	1.9406	94.72	01Jan2000, 09:42
Area 8A	0.9459	351.02	01Jan2000, 04:09	Area 8A	0.9459	349.85	01Jan2000, 04:45
Area 8E	0.7664	416.18	01Jan2000, 02:45	Area 8E	0.7664	385.33	01Jan2000, 03:09
Depression 8E	0.7664	0	01Jan2000, 00:42	Depression 8E	0.7664	0	01Jan2000, 00:51
Area 8D	0.1544	108.92	01Jan2000, 01:54	Area 8D	0.1544	93.32	01Jan2000, 02:18
Depression 8D	0.1544	17.69	01Jan2000, 04:30	Depression 8D	0.1544	31.42	01Jan2000, 05:48
Area 8C	0.0007	1.32	01Jan2000, 00:39	Area 8C	0.0007	0.96	01Jan2000, 00:51
Storage 8A	1.8674	83.6	01Jan2000, 07:45	Storage 8A	1.8674	94.18	01Jan2000, 09:42
Outlet 08	1.8674	83.6	01Jan2000, 07:45	Outlet 08	1.8674	94.18	01Jan2000, 09:42
Area 9A	0.0227	31.76	01Jan2000, 00:39	Area 9A	0.0227	22.77	01Jan2000, 00:51
Area 9B	0.0108	12.14	01Jan2000, 00:57	Area 9B	0.0108	8.99	01Jan2000, 01:09
Area 9C	0.002	2.47	01Jan2000, 00:51	Area 9C	0.002	1.83	01Jan2000, 01:06
Outlet 09	0.0355	44.39	01Jan2000, 00:45	Outlet 09	0.0355	32.74	01Jan2000, 01:03
Area 10	0.0007	0.99	01Jan2000, 00:30	Area 10	0.0007	0.7	01Jan2000, 00:42
Outlet 10	0.0007	0.99	01Jan2000, 00:30	Outlet 10	0.0007	0.7	01Jan2000, 00:42
Area 11	0.0002	0.21	01Jan2000, 00:33	Area 11	0.0002	0.15	01Jan2000, 01:00
Outlet 11	0.0002	0.21	01Jan2000, 00:33	Outlet 11	0.0002	0.15	01Jan2000, 01:00
Area 12	0.0063	6.55	01Jan2000, 01:00	Area 12	0.0063	4.84	01Jan2000, 01:12
Outlet 12	0.0063	6.55	01Jan2000, 01:00	Outlet 12	0.0063	4.84	01Jan2000, 01:12

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

100YR 12HR				100YR 18HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	117.2	01Jan2000, 07:06	Area 1C	0.259	106.98	01Jan2000, 13:18
Area 1D	0.0109	6.84	01Jan2000, 05:12	Area 1D	0.0109	5.89	01Jan2000, 11:36
Area 1E	0.0057	3.97	01Jan2000, 05:09	Area 1E	0.0057	3.3	01Jan2000, 11:36
Pond 1	0.0166	3.69	01Jan2000, 08:18	Pond 1	0.0166	4.38	01Jan2000, 13:42
Diversion-O2	0.0166	3.42	01Jan2000, 08:18	Diversion-O2	0.0166	4.11	01Jan2000, 13:42
Area 1B	0.003	2.04	01Jan2000, 05:03	Area 1B	0.003	1.71	01Jan2000, 11:30
Depression 1BC	0.2786	52.77	01Jan2000, 11:00	Depression 1BC	0.2786	58.25	01Jan2000, 16:15
Diversion 1BC	0.2786	20.45	01Jan2000, 11:00	Diversion 1BC	0.2786	22.65	01Jan2000, 16:15
Diverted Flow 1BC	0	32.32	01Jan2000, 11:00	Diverted Flow 1BC	0	35.6	01Jan2000, 16:15
Area 1A	0.0026	1.71	01Jan2000, 05:03	Area 1A	0.0026	1.45	01Jan2000, 11:30
J-1	0.2812	20.72	01Jan2000, 11:00	J-1	0.2812	22.97	01Jan2000, 16:12
Outlet 01	0.2812	20.72	01Jan2000, 11:00	Outlet 01	0.2812	22.97	01Jan2000, 16:12
Area 2	0.0014	0.69	01Jan2000, 05:06	Area 2	0.0014	0.64	01Jan2000, 11:33
Outlet 02	0.0014	0.9	01Jan2000, 05:06	Outlet 02	0.0014	0.86	01Jan2000, 11:36
Area 3B	0.0101	5.87	01Jan2000, 05:15	Area 3B	0.0101	5.16	01Jan2000, 11:39
Diversion 3B	0.0101	5.13	01Jan2000, 05:15	Diversion 3B	0.0101	4.78	01Jan2000, 11:39
Diverted Flow 3B	0	0.74	01Jan2000, 05:15	Diverted Flow 3B	0	0.39	01Jan2000, 11:39
Area 3A	0.0013	0.86	01Jan2000, 05:06	Area 3A	0.0013	0.73	01Jan2000, 11:33
Ditch 3A	0.0013	0.84	01Jan2000, 05:15	Ditch 3A	0.0013	0.72	01Jan2000, 11:39
Area 3C	0.0013	0.86	01Jan2000, 05:06	Area 3C	0.0013	0.73	01Jan2000, 11:33
J-3	0.0127	6.82	01Jan2000, 05:12	J-3	0.0127	6.22	01Jan2000, 11:36
Outlet 03	0.0127	6.82	01Jan2000, 05:12	Outlet 03	0.0127	6.22	01Jan2000, 11:36
Area 4K	0.1202	55.75	01Jan2000, 06:57	Area 4K	0.1202	50.62	01Jan2000, 13:09
Area 4P	0.0123	7.34	01Jan2000, 05:15	Area 4P	0.0123	6.41	01Jan2000, 11:36
Area 4O	0.0117	6.93	01Jan2000, 05:18	Area 4O	0.0117	6.06	01Jan2000, 11:39
Area 4N	0.0022	1.64	01Jan2000, 05:03	Area 4N	0.0022	1.34	01Jan2000, 11:30
Ditch 4N	0.0022	0.11	01Jan2000, 12:15	Ditch 4N	0.0022	0.11	01Jan2000, 18:15
Area 4M	0.0012	0.83	01Jan2000, 05:03	Area 4M	0.0012	0.69	01Jan2000, 11:33
Ditch 4M	0.0012	0.05	01Jan2000, 09:00	Ditch 4M	0.0012	0.05	01Jan2000, 13:57
Area 4I	0.0012	0.89	01Jan2000, 05:00	Area 4I	0.0012	0.72	01Jan2000, 11:30
Ditch 4I	0.0012	0.06	01Jan2000, 12:09	Ditch 4I	0.0012	0.06	01Jan2000, 18:12
Area 4J	0.001	0.72	01Jan2000, 05:00	Area 4J	0.001	0.59	01Jan2000, 11:30
Ditch 4J	0.001	0.04	01Jan2000, 06:00	Ditch 4J	0.001	0.04	01Jan2000, 18:09
J-4A	0.1498	64.35	01Jan2000, 06:48	J-4A	0.1498	58.94	01Jan2000, 12:48
Area 4H	0.0169	9.69	01Jan2000, 05:24	Area 4H	0.0169	8.54	01Jan2000, 11:42
Area 4L	0.0053	3.52	01Jan2000, 05:12	Area 4L	0.0053	2.97	01Jan2000, 11:36
Pond 4L	0.0053	0.2	01Jan2000, 12:33	Pond 4L	0.0053	0.21	01Jan2000, 18:36
Depression 4H-P	0.172	68.71	01Jan2000, 07:12	Depression 4H-P	0.172	64.07	01Jan2000, 13:06
Area 4G	0.0023	1.31	01Jan2000, 05:06	Area 4G	0.0023	1.16	01Jan2000, 11:33
Area 4D	0.0014	1.02	01Jan2000, 05:06	Area 4D	0.0014	0.84	01Jan2000, 11:33
Ditch 4D	0.0014	0.06	01Jan2000, 12:24	Ditch 4D	0.0014	0.06	01Jan2000, 18:24
Area 4E	0.001	0.7	01Jan2000, 05:00	Area 4E	0.001	0.58	01Jan2000, 11:30
Ditch 4E	0.001	0.05	01Jan2000, 12:09	Ditch 4E	0.001	0.05	01Jan2000, 18:09
J-4B	0.0047	1.38	01Jan2000, 05:06	J-4B	0.0047	1.25	01Jan2000, 11:33
Area 4C	0.0026	1.61	01Jan2000, 05:09	Area 4C	0.0026	1.39	01Jan2000, 11:33
Depression 4C	0.0026	1.37	01Jan2000, 05:51	Depression 4C	0.0026	1.32	01Jan2000, 11:48
Area 4B	0.0029	1.58	01Jan2000, 05:12	Area 4B	0.0029	1.41	01Jan2000, 11:36
Depression 4BG	0.1822	71.16	01Jan2000, 07:15	Depression 4BG	0.1822	66.54	01Jan2000, 13:09
Area 4A	0.0025	1.38	01Jan2000, 05:15	Area 4A	0.0025	1.23	01Jan2000, 11:39
Area 4F	0.0069	4.1	01Jan2000, 05:06	Area 4F	0.0069	3.58	01Jan2000, 11:33
J-4C	0.1916	73.94	01Jan2000, 07:12	J-4C	0.1916	69.28	01Jan2000, 13:06
Outlet 04	0.1916	73.94	01Jan2000, 07:12	Outlet 04	0.1916	69.28	01Jan2000, 13:06
Area 5D	0.0351	20.41	01Jan2000, 05:33	Area 5D	0.0351	17.81	01Jan2000, 11:45
Area 5A	0.0124	6.83	01Jan2000, 05:39	Area 5A	0.0124	6.02	01Jan2000, 11:48
Area 5C	0.0048	3.78	01Jan2000, 05:00	Area 5C	0.0048	3.02	01Jan2000, 11:30
Pond 5	0.0048	0.24	01Jan2000, 12:09	Pond 5	0.0048	0.24	01Jan2000, 18:09
Area 5B	0.0052	3.22	01Jan2000, 05:09	Area 5B	0.0052	2.79	01Jan2000, 11:33
Depression 5B	0.0052	0.6	01Jan2000, 12:09	Depression 5B	0.0052	0.7	01Jan2000, 15:48
J-5	0.0575	27.42	01Jan2000, 05:33	J-5	0.0575	24.04	01Jan2000, 11:48
Outlet 05	0.0575	27.42	01Jan2000, 05:33	Outlet 05	0.0575	24.04	01Jan2000, 11:48
Area 6F	0.025	13.99	01Jan2000, 05:42	Area 6F	0.025	12.26	01Jan2000, 11:51
Area 6E	0.0017	1.16	01Jan2000, 05:00	Area 6E	0.0017	0.97	01Jan2000, 11:30
Pond 6E	0.0017	0.05	01Jan2000, 07:51	Pond 6E	0.0017	0.05	01Jan2000, 12:57
J-6C	0.0267	14.03	01Jan2000, 05:42	J-6C	0.0267	12.31	01Jan2000, 11:51
Area 6D	0.0019	1.32	01Jan2000, 05:00	Area 6D	0.0019	1.1	01Jan2000, 11:30
Pond 6D	0.0019	0.06	01Jan2000, 12:06	Pond 6D	0.0019	0.06	01Jan2000, 18:06
Area 6C	0.0162	8.98	01Jan2000, 05:15	Area 6C	0.0162	8	01Jan2000, 11:36
Area 6B	0.0041	2.15	01Jan2000, 05:15	Area 6B	0.0041	1.94	01Jan2000, 11:39

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

J-6B	1.9895	112.42	01Jan2000, 12:06	J-6B	1.9895	116.88	01Jan2000, 18:03
Area 6A	0.0046	2.34	01Jan2000, 05:18	Area 6A	0.0046	2.14	01Jan2000, 11:39
J-6A	1.9941	112.92	01Jan2000, 12:06	J-6A	1.9941	117.46	01Jan2000, 18:03
Outlet 06	1.9941	112.92	01Jan2000, 12:06	Outlet 06	1.9941	117.46	01Jan2000, 18:03
Area 7H	0.0198	11.71	01Jan2000, 05:18	Area 7H	0.0198	10.24	01Jan2000, 11:39
Area 7J	0.0128	7.73	01Jan2000, 05:09	Area 7J	0.0128	6.72	01Jan2000, 11:33
Area 7G	0.0089	6.43	01Jan2000, 05:00	Area 7G	0.0089	5.3	01Jan2000, 11:30
Pond 7G	0.0089	0.32	01Jan2000, 12:15	Pond 7G	0.0089	0.33	01Jan2000, 18:15
Area 7F	0.0059	4.5	01Jan2000, 05:00	Area 7F	0.0059	3.63	01Jan2000, 11:30
Pond 7F	0.0059	0.27	01Jan2000, 12:06	Pond 7F	0.0059	0.27	01Jan2000, 18:06
Area 7I	0.0044	3.21	01Jan2000, 05:03	Area 7I	0.0044	2.64	01Jan2000, 11:30
Area 7E	0.0015	0.76	01Jan2000, 05:00	Area 7E	0.0015	0.69	01Jan2000, 11:30
J-7B	1.9207	105.21	01Jan2000, 12:06	J-7B	1.9207	108.51	01Jan2000, 18:03
Area 7A	0.0125	7.44	01Jan2000, 05:06	Area 7A	0.0125	6.5	01Jan2000, 11:33
Area 7B	0.0034	2.33	01Jan2000, 05:03	Area 7B	0.0034	1.95	01Jan2000, 11:30
Ditch 7A	0.0159	9.58	01Jan2000, 05:12	Ditch 7A	0.0159	8.34	01Jan2000, 11:36
Area 7D	0.0022	1.59	01Jan2000, 05:00	Area 7D	0.0022	1.31	01Jan2000, 11:30
Area 7C	0.0018	1.26	01Jan2000, 05:00	Area 7C	0.0018	1.05	01Jan2000, 11:30
Ditch 7C	0.004	2.59	01Jan2000, 05:33	Ditch 7C	0.004	2.29	01Jan2000, 11:36
Outlet 07	1.9406	107.56	01Jan2000, 12:06	Outlet 07	1.9406	111.18	01Jan2000, 18:03
Area 8A	0.9459	359.94	01Jan2000, 08:24	Area 8A	0.9459	338.53	01Jan2000, 14:24
Area 8E	0.7664	367.85	01Jan2000, 06:54	Area 8E	0.7664	331.11	01Jan2000, 13:03
Depression 8E	0.7664	0	01Jan2000, 02:45	Depression 8E	0.7664	0	01Jan2000, 04:18
Area 8D	0.1544	83.96	01Jan2000, 06:09	Area 8D	0.1544	73.45	01Jan2000, 12:21
Depression 8D	0.1544	41.32	01Jan2000, 08:45	Depression 8D	0.1544	48.22	01Jan2000, 14:06
Area 8C	0.0007	0.55	01Jan2000, 05:06	Area 8C	0.0007	0.44	01Jan2000, 11:33
Storage 8A	1.8674	104.24	01Jan2000, 14:33	Storage 8A	1.8674	106.45	01Jan2000, 20:30
Outlet 08	1.8674	104.24	01Jan2000, 14:33	Outlet 08	1.8674	106.45	01Jan2000, 20:30
Area 9A	0.0227	15.74	01Jan2000, 05:03	Area 9A	0.0227	13.13	01Jan2000, 11:30
Area 9B	0.0108	6.9	01Jan2000, 05:12	Area 9B	0.0108	5.9	01Jan2000, 11:36
Area 9C	0.002	1.34	01Jan2000, 05:09	Area 9C	0.002	1.13	01Jan2000, 11:36
Outlet 09	0.0355	23.9	01Jan2000, 05:06	Outlet 09	0.0355	20.14	01Jan2000, 11:33
Area 10	0.0007	0.47	01Jan2000, 05:00	Area 10	0.0007	0.4	01Jan2000, 11:30
Outlet 10	0.0007	0.47	01Jan2000, 05:00	Outlet 10	0.0007	0.4	01Jan2000, 11:30
Area 11	0.0002	0.12	01Jan2000, 05:00	Area 11	0.0002	0.1	01Jan2000, 11:30
Outlet 11	0.0002	0.12	01Jan2000, 05:00	Outlet 11	0.0002	0.1	01Jan2000, 11:30
Area 12	0.0063	3.85	01Jan2000, 05:12	Area 12	0.0063	3.34	01Jan2000, 11:36
Outlet 12	0.0063	3.85	01Jan2000, 05:12	Outlet 12	0.0063	3.34	01Jan2000, 11:36

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

100YR 24HR				100YR 48HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	95.21	01Jan2000, 17:03	Area 1C	0.259	60.43	02Jan2000, 19:18
Area 1D	0.0109	4.77	01Jan2000, 15:06	Area 1D	0.0109	2.74	02Jan2000, 16:09
Area 1E	0.0057	2.66	01Jan2000, 15:05	Area 1E	0.0057	1.51	02Jan2000, 16:09
Pond 1	0.0166	4.64	01Jan2000, 17:19	Pond 1	0.0166	3.83	02Jan2000, 19:15
Diversion-O2	0.0166	4.37	01Jan2000, 17:19	Diversion-O2	0.0166	3.56	02Jan2000, 19:15
Area 1B	0.003	1.38	01Jan2000, 15:02	Area 1B	0.003	0.78	02Jan2000, 16:03
Depression 1BC	0.2786	63.61	01Jan2000, 19:44	Depression 1BC	0.2786	52.72	02Jan2000, 21:42
Diversion 1BC	0.2786	25.37	01Jan2000, 19:44	Diversion 1BC	0.2786	20.43	02Jan2000, 21:42
Diverted Flow 1BC	0	38.24	01Jan2000, 19:44	Diverted Flow 1BC	0	32.29	02Jan2000, 21:42
Area 1A	0.0026	1.16	01Jan2000, 15:01	Area 1A	0.0026	0.66	02Jan2000, 16:03
J-1	0.2812	25.69	01Jan2000, 19:44	J-1	0.2812	20.86	02Jan2000, 21:42
Outlet 01	0.2812	25.69	01Jan2000, 19:44	Outlet 01	0.2812	20.86	02Jan2000, 21:42
Area 2	0.0014	0.52	01Jan2000, 15:03	Area 2	0.0014	0.31	02Jan2000, 17:03
Outlet 02	0.0014	0.76	01Jan2000, 16:01	Outlet 02	0.0014	0.57	02Jan2000, 17:03
Area 3B	0.0101	4.2	01Jan2000, 15:08	Area 3B	0.0101	2.44	02Jan2000, 17:03
Diversion 3B	0.0101	4.14	01Jan2000, 15:08	Diversion 3B	0.0101	2.44	02Jan2000, 17:03
Diverted Flow 3B	0	0.07	01Jan2000, 15:08	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.59	01Jan2000, 15:03	Area 3A	0.0013	0.33	02Jan2000, 16:06
Ditch 3A	0.0013	0.58	01Jan2000, 15:09	Ditch 3A	0.0013	0.33	02Jan2000, 16:15
Area 3C	0.0013	0.59	01Jan2000, 15:03	Area 3C	0.0013	0.33	02Jan2000, 16:06
J-3	0.0127	5.3	01Jan2000, 15:07	J-3	0.0127	3.11	02Jan2000, 16:12
Outlet 03	0.0127	5.3	01Jan2000, 15:07	Outlet 03	0.0127	3.11	02Jan2000, 16:12
Area 4K	0.1202	44.8	01Jan2000, 16:54	Area 4K	0.1202	28.17	02Jan2000, 19:12
Area 4P	0.0123	5.21	01Jan2000, 15:08	Area 4P	0.0123	3.01	02Jan2000, 16:12
Area 4O	0.0117	4.94	01Jan2000, 15:10	Area 4O	0.0117	2.86	02Jan2000, 17:03
Area 4N	0.0022	1.07	01Jan2000, 15:01	Area 4N	0.0022	0.6	02Jan2000, 16:00
Ditch 4N	0.0022	0.11	02Jan2000, 00:14	Ditch 4N	0.0022	0.11	03Jan2000, 00:18
Area 4M	0.0012	0.56	01Jan2000, 15:02	Area 4M	0.0012	0.32	02Jan2000, 16:03
Ditch 4M	0.0012	0.05	01Jan2000, 17:14	Ditch 4M	0.0012	0.05	02Jan2000, 19:09
Area 4I	0.0012	0.58	01Jan2000, 15:00	Area 4I	0.0012	0.32	02Jan2000, 16:00
Ditch 4I	0.0012	0.06	02Jan2000, 00:09	Ditch 4I	0.0012	0.06	03Jan2000, 00:12
Area 4J	0.001	0.47	01Jan2000, 15:00	Area 4J	0.001	0.27	02Jan2000, 16:00
Ditch 4J	0.001	0.04	02Jan2000, 00:09	Ditch 4J	0.001	0.04	03Jan2000, 00:12
J-4A	0.1498	52.57	01Jan2000, 16:19	J-4A	0.1498	34.07	02Jan2000, 19:03
Area 4H	0.0169	6.98	01Jan2000, 15:12	Area 4H	0.0169	4.08	02Jan2000, 17:06
Area 4L	0.0053	2.41	01Jan2000, 15:07	Area 4L	0.0053	1.37	02Jan2000, 16:12
Pond 4L	0.0053	0.22	02Jan2000, 00:31	Pond 4L	0.0053	0.22	03Jan2000, 00:36
Depression 4H-P	0.172	57.81	01Jan2000, 16:54	Depression 4H-P	0.172	37.86	02Jan2000, 19:15
Area 4G	0.0023	0.93	01Jan2000, 15:03	Area 4G	0.0023	0.54	02Jan2000, 17:00
Area 4D	0.0014	0.67	01Jan2000, 15:02	Area 4D	0.0014	0.38	02Jan2000, 16:03
Ditch 4D	0.0014	0.06	02Jan2000, 00:20	Ditch 4D	0.0014	0.06	03Jan2000, 00:24
Area 4E	0.001	0.47	01Jan2000, 15:00	Area 4E	0.001	0.26	02Jan2000, 16:00
Ditch 4E	0.001	0.05	01Jan2000, 21:14	Ditch 4E	0.001	0.05	02Jan2000, 22:45
J-4B	0.0047	1.02	01Jan2000, 15:03	J-4B	0.0047	0.64	02Jan2000, 17:03
Area 4C	0.0026	1.12	01Jan2000, 15:05	Area 4C	0.0026	0.65	02Jan2000, 16:09
Depression 4C	0.0026	1.09	01Jan2000, 15:18	Depression 4C	0.0026	0.64	02Jan2000, 17:09
Area 4B	0.0029	1.15	01Jan2000, 15:06	Area 4B	0.0029	0.67	02Jan2000, 17:03
Depression 4BG	0.1822	60.27	01Jan2000, 16:56	Depression 4BG	0.1822	39.67	02Jan2000, 19:12
Area 4A	0.0025	1.01	01Jan2000, 15:08	Area 4A	0.0025	0.59	02Jan2000, 17:03
Area 4F	0.0069	2.9	01Jan2000, 15:04	Area 4F	0.0069	1.67	02Jan2000, 16:06
J-4C	0.1916	63.06	01Jan2000, 16:55	J-4C	0.1916	41.79	02Jan2000, 19:06
Outlet 04	0.1916	63.06	01Jan2000, 16:55	Outlet 04	0.1916	41.79	02Jan2000, 19:06
Area 5D	0.0351	14.63	01Jan2000, 15:17	Area 5D	0.0351	8.57	02Jan2000, 17:06
Area 5A	0.0124	4.97	01Jan2000, 15:21	Area 5A	0.0124	2.95	02Jan2000, 17:09
Area 5C	0.0048	2.4	01Jan2000, 15:00	Area 5C	0.0048	1.34	02Jan2000, 16:00
Pond 5	0.0048	0.25	02Jan2000, 00:07	Pond 5	0.0048	0.25	03Jan2000, 00:09
Area 5B	0.0052	2.25	01Jan2000, 15:04	Area 5B	0.0052	1.29	02Jan2000, 16:06
Depression 5B	0.0052	0.96	01Jan2000, 18:18	Depression 5B	0.0052	1.23	02Jan2000, 19:06
J-5	0.0575	19.81	01Jan2000, 15:18	J-5	0.0575	12.62	02Jan2000, 19:03
Outlet 05	0.0575	19.81	01Jan2000, 15:18	Outlet 05	0.0575	12.62	02Jan2000, 19:03
Area 6F	0.025	10.14	01Jan2000, 15:24	Area 6F	0.025	6.02	02Jan2000, 17:12
Area 6E	0.0017	0.77	01Jan2000, 15:00	Area 6E	0.0017	0.44	02Jan2000, 16:00
Pond 6E	0.0017	0.05	02Jan2000, 00:06	Pond 6E	0.0017	0.05	03Jan2000, 00:09
J-6C	0.0267	10.19	01Jan2000, 15:24	J-6C	0.0267	6.07	02Jan2000, 17:12
Area 6D	0.0019	0.88	01Jan2000, 15:00	Area 6D	0.0019	0.5	02Jan2000, 16:00
Pond 6D	0.0019	0.06	02Jan2000, 00:06	Pond 6D	0.0019	0.06	03Jan2000, 00:09
Area 6C	0.0162	6.52	01Jan2000, 15:08	Area 6C	0.0162	3.82	02Jan2000, 17:03
Area 6B	0.0041	1.59	01Jan2000, 15:09	Area 6B	0.0041	0.94	02Jan2000, 17:06

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

J-6B	1.9895	120.27	02Jan2000, 00:02	J-6B	1.9895	117.08	03Jan2000, 00:03
Area 6A	0.0046	1.75	01Jan2000, 15:09	Area 6A	0.0046	1.04	02Jan2000, 17:06
J-6A	1.9941	120.76	02Jan2000, 00:02	J-6A	1.9941	117.78	03Jan2000, 00:03
Outlet 06	1.9941	120.76	02Jan2000, 00:02	Outlet 06	1.9941	117.78	03Jan2000, 00:03
Area 7H	0.0198	8.35	01Jan2000, 15:10	Area 7H	0.0198	4.84	02Jan2000, 17:03
Area 7J	0.0128	5.44	01Jan2000, 15:05	Area 7J	0.0128	3.14	02Jan2000, 16:09
Area 7G	0.0089	4.23	01Jan2000, 15:01	Area 7G	0.0089	2.38	02Jan2000, 16:00
Pond 7G	0.0089	0.35	02Jan2000, 00:13	Pond 7G	0.0089	0.35	03Jan2000, 00:15
Area 7F	0.0059	2.89	01Jan2000, 15:00	Area 7F	0.0059	1.62	02Jan2000, 16:00
Pond 7F	0.0059	0.28	02Jan2000, 00:05	Pond 7F	0.0059	0.28	03Jan2000, 00:06
Area 7I	0.0044	2.11	01Jan2000, 15:02	Area 7I	0.0044	1.19	02Jan2000, 16:03
Area 7E	0.0015	0.56	01Jan2000, 15:00	Area 7E	0.0015	0.33	02Jan2000, 17:00
J-7B	1.9207	113.14	02Jan2000, 00:01	J-7B	1.9207	106.58	03Jan2000, 00:03
Area 7A	0.0125	5.25	01Jan2000, 15:03	Area 7A	0.0125	3.03	02Jan2000, 16:06
Area 7B	0.0034	1.56	01Jan2000, 15:01	Area 7B	0.0034	0.89	02Jan2000, 16:00
Ditch 7A	0.0159	6.77	01Jan2000, 15:07	Ditch 7A	0.0159	3.91	02Jan2000, 16:12
Area 7D	0.0022	1.05	01Jan2000, 15:00	Area 7D	0.0022	0.59	02Jan2000, 16:00
Area 7C	0.0018	0.84	01Jan2000, 15:01	Area 7C	0.0018	0.47	02Jan2000, 16:00
Ditch 7C	0.004	1.85	01Jan2000, 15:06	Ditch 7C	0.004	1.05	02Jan2000, 16:12
Outlet 07	1.9406	115.38	02Jan2000, 00:01	Outlet 07	1.9406	109.8	03Jan2000, 00:03
Area 8A	0.9459	312.28	01Jan2000, 18:09	Area 8A	0.9459	210.63	02Jan2000, 20:18
Area 8E	0.7664	291.75	01Jan2000, 16:50	Area 8E	0.7664	181.86	02Jan2000, 19:09
Depression 8E	0.7664	0	01Jan2000, 04:59	Depression 8E	0.7664	0	01Jan2000, 09:06
Area 8D	0.1544	62.44	01Jan2000, 16:08	Area 8D	0.1544	37.53	02Jan2000, 17:36
Depression 8D	0.1544	49.44	01Jan2000, 17:40	Depression 8D	0.1544	36.67	02Jan2000, 19:18
Area 8C	0.0007	0.35	01Jan2000, 15:02	Area 8C	0.0007	0.2	02Jan2000, 16:06
Storage 8A	1.8674	108.89	02Jan2000, 01:32	Storage 8A	1.8674	104.57	03Jan2000, 02:54
Outlet 08	1.8674	108.89	02Jan2000, 01:32	Outlet 08	1.8674	104.57	03Jan2000, 02:54
Area 9A	0.0227	10.53	01Jan2000, 15:02	Area 9A	0.0227	5.97	02Jan2000, 16:03
Area 9B	0.0108	4.78	01Jan2000, 15:07	Area 9B	0.0108	2.74	02Jan2000, 16:12
Area 9C	0.002	0.91	01Jan2000, 15:05	Area 9C	0.002	0.52	02Jan2000, 16:09
Outlet 09	0.0355	16.22	01Jan2000, 15:03	Outlet 09	0.0355	9.22	02Jan2000, 16:06
Area 10	0.0007	0.32	01Jan2000, 15:00	Area 10	0.0007	0.18	02Jan2000, 16:00
Outlet 10	0.0007	0.32	01Jan2000, 15:00	Outlet 10	0.0007	0.18	02Jan2000, 16:00
Area 11	0.0002	0.08	01Jan2000, 15:00	Area 11	0.0002	0.05	02Jan2000, 17:00
Outlet 11	0.0002	0.08	01Jan2000, 15:00	Outlet 11	0.0002	0.05	02Jan2000, 17:00
Area 12	0.0063	2.71	01Jan2000, 15:08	Area 12	0.0063	1.56	02Jan2000, 16:12
Outlet 12	0.0063	2.71	01Jan2000, 15:08	Outlet 12	0.0063	1.56	02Jan2000, 16:12

PROPOSED HEC-HMS MODELING RESULTS
100YR STORM

100YR 72HR				100YR 120HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**	**Element**	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	45.09	03Jan2000, 15:03	Area 1C	0.259	32.36	05Jan2000, 06:42
Area 1D	0.0109	2.02	03Jan2000, 12:03	Area 1D	0.0109	1.4	05Jan2000, 06:00
Area 1E	0.0057	1.11	03Jan2000, 12:03	Area 1E	0.0057	0.76	05Jan2000, 06:00
Pond 1	0.0166	2.86	03Jan2000, 16:09	Pond 1	0.0166	2.09	05Jan2000, 06:21
Diversion-O2	0.0166	2.6	03Jan2000, 16:09	Diversion-O2	0.0166	1.84	05Jan2000, 06:21
Area 1B	0.003	0.57	03Jan2000, 12:00	Area 1B	0.003	0.39	05Jan2000, 06:00
Depression 1BC	0.2786	40.34	03Jan2000, 19:00	Depression 1BC	0.2786	28.3	05Jan2000, 14:00
Diversion 1BC	0.2786	15.47	03Jan2000, 19:00	Diversion 1BC	0.2786	11.15	05Jan2000, 14:00
Diverted Flow 1BC	0	24.87	03Jan2000, 19:00	Diverted Flow 1BC	0	17.15	05Jan2000, 14:00
Area 1A	0.0026	0.49	03Jan2000, 12:00	Area 1A	0.0026	0.34	05Jan2000, 06:00
J-1	0.2812	15.77	03Jan2000, 19:00	J-1	0.2812	11.4	05Jan2000, 12:00
Outlet 01	0.2812	15.77	03Jan2000, 19:00	Outlet 01	0.2812	11.4	05Jan2000, 12:00
Area 2	0.0014	0.23	03Jan2000, 12:03	Area 2	0.0014	0.16	05Jan2000, 06:00
Outlet 02	0.0014	0.48	03Jan2000, 14:00	Outlet 02	0.0014	0.41	05Jan2000, 06:00
Area 3B	0.0101	1.81	03Jan2000, 12:03	Area 3B	0.0101	1.27	05Jan2000, 06:00
Diversion 3B	0.0101	1.81	03Jan2000, 12:03	Diversion 3B	0.0101	1.27	05Jan2000, 06:00
Diverted Flow 3B	0	0	01Jan2000, 00:00	Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.25	03Jan2000, 12:00	Area 3A	0.0013	0.17	05Jan2000, 06:00
Ditch 3A	0.0013	0.25	03Jan2000, 12:06	Ditch 3A	0.0013	0.17	05Jan2000, 06:06
Area 3C	0.0013	0.25	03Jan2000, 12:00	Area 3C	0.0013	0.17	05Jan2000, 06:00
J-3	0.0127	2.3	03Jan2000, 12:03	J-3	0.0127	1.61	05Jan2000, 06:00
Outlet 03	0.0127	2.3	03Jan2000, 12:03	Outlet 03	0.0127	1.61	05Jan2000, 06:00
Area 4K	0.1202	21	03Jan2000, 14:54	Area 4K	0.1202	15.05	05Jan2000, 06:36
Area 4P	0.0123	2.23	03Jan2000, 12:03	Area 4P	0.0123	1.56	05Jan2000, 06:00
Area 4O	0.0117	2.12	03Jan2000, 12:06	Area 4O	0.0117	1.48	05Jan2000, 06:00
Area 4N	0.0022	0.44	03Jan2000, 12:00	Area 4N	0.0022	0.3	05Jan2000, 06:00
Ditch 4N	0.0022	0.11	04Jan2000, 00:15	Ditch 4N	0.0022	0.11	06Jan2000, 00:12
Area 4M	0.0012	0.23	03Jan2000, 12:00	Area 4M	0.0012	0.16	05Jan2000, 06:00
Ditch 4M	0.0012	0.05	03Jan2000, 16:57	Ditch 4M	0.0012	0.05	05Jan2000, 12:57
Area 4I	0.0012	0.24	03Jan2000, 12:00	Area 4I	0.0012	0.16	05Jan2000, 06:00
Ditch 4I	0.0012	0.06	04Jan2000, 00:09	Ditch 4I	0.0012	0.06	06Jan2000, 00:06
Area 4J	0.001	0.19	03Jan2000, 12:00	Area 4J	0.001	0.13	05Jan2000, 06:00
Ditch 4J	0.001	0.04	04Jan2000, 00:09	Ditch 4J	0.001	0.04	06Jan2000, 00:09
J-4A	0.1498	25.36	03Jan2000, 14:15	J-4A	0.1498	18.27	05Jan2000, 06:09
Area 4H	0.0169	3.03	03Jan2000, 12:06	Area 4H	0.0169	2.12	05Jan2000, 06:03
Area 4L	0.0053	1.01	03Jan2000, 12:03	Area 4L	0.0053	0.7	05Jan2000, 06:00
Pond 4L	0.0053	0.22	04Jan2000, 00:33	Pond 4L	0.0053	0.22	06Jan2000, 00:27
Depression 4H-P	0.172	28.28	03Jan2000, 15:09	Depression 4H-P	0.172	20.46	05Jan2000, 06:24
Area 4G	0.0023	0.4	03Jan2000, 12:00	Area 4G	0.0023	0.28	05Jan2000, 06:00
Area 4D	0.0014	0.28	03Jan2000, 12:00	Area 4D	0.0014	0.19	05Jan2000, 06:00
Ditch 4D	0.0014	0.06	04Jan2000, 00:21	Ditch 4D	0.0014	0.06	06Jan2000, 00:18
Area 4E	0.001	0.19	03Jan2000, 12:00	Area 4E	0.001	0.13	05Jan2000, 06:00
Ditch 4E	0.001	0.05	03Jan2000, 23:12	Ditch 4E	0.001	0.05	06Jan2000, 00:06
J-4B	0.0047	0.49	03Jan2000, 12:03	J-4B	0.0047	0.37	05Jan2000, 06:00
Area 4C	0.0026	0.48	03Jan2000, 12:03	Area 4C	0.0026	0.33	05Jan2000, 06:00
Depression 4C	0.0026	0.47	03Jan2000, 12:12	Depression 4C	0.0026	0.33	05Jan2000, 06:06
Area 4B	0.0029	0.5	03Jan2000, 12:03	Area 4B	0.0029	0.35	05Jan2000, 06:00
Depression 4BG	0.1822	29.67	03Jan2000, 15:15	Depression 4BG	0.1822	21.49	05Jan2000, 06:21
Area 4A	0.0025	0.44	03Jan2000, 12:06	Area 4A	0.0025	0.31	05Jan2000, 06:00
Area 4F	0.0069	1.24	03Jan2000, 12:03	Area 4F	0.0069	0.87	05Jan2000, 06:00
J-4C	0.1916	31.23	03Jan2000, 15:18	J-4C	0.1916	22.63	05Jan2000, 06:09
Outlet 04	0.1916	31.23	03Jan2000, 15:18	Outlet 04	0.1916	22.63	05Jan2000, 06:09
Area 5D	0.0351	6.35	03Jan2000, 12:12	Area 5D	0.0351	4.44	05Jan2000, 06:03
Area 5A	0.0124	2.19	03Jan2000, 12:15	Area 5A	0.0124	1.54	05Jan2000, 06:03
Area 5C	0.0048	0.98	03Jan2000, 12:00	Area 5C	0.0048	0.66	05Jan2000, 06:00
Pond 5	0.0048	0.24	04Jan2000, 00:09	Pond 5	0.0048	0.24	06Jan2000, 00:06
Area 5B	0.0052	0.96	03Jan2000, 12:03	Area 5B	0.0052	0.66	05Jan2000, 06:00
Depression 5B	0.0052	0.92	03Jan2000, 14:12	Depression 5B	0.0052	0.66	05Jan2000, 06:03
J-5	0.0575	9.5	03Jan2000, 14:09	J-5	0.0575	6.84	05Jan2000, 06:03
Outlet 05	0.0575	9.5	03Jan2000, 14:09	Outlet 05	0.0575	6.84	05Jan2000, 06:03
Area 6F	0.025	4.45	03Jan2000, 12:18	Area 6F	0.025	3.13	05Jan2000, 06:03
Area 6E	0.0017	0.32	03Jan2000, 12:00	Area 6E	0.0017	0.22	05Jan2000, 06:00
Pond 6E	0.0017	0.05	04Jan2000, 00:06	Pond 6E	0.0017	0.05	06Jan2000, 00:06
J-6C	0.0267	4.5	03Jan2000, 12:18	J-6C	0.0267	3.18	05Jan2000, 06:03
Area 6D	0.0019	0.36	03Jan2000, 12:00	Area 6D	0.0019	0.25	05Jan2000, 06:00
Pond 6D	0.0019	0.06	04Jan2000, 00:06	Pond 6D	0.0019	0.06	06Jan2000, 00:06
Area 6C	0.0162	2.83	03Jan2000, 12:03	Area 6C	0.0162	1.99	05Jan2000, 06:00
Area 6B	0.0041	0.7	03Jan2000, 12:06	Area 6B	0.0041	0.49	05Jan2000, 06:00

PROPOSED HEC-HMS MODELING RESULTS

100YR STORM

J-6B	1.9895	109.34	04Jan2000, 00:00	J-6B	1.9895	95.89	06Jan2000, 00:00
Area 6A	0.0046	0.77	03Jan2000, 12:06	Area 6A	0.0046	0.55	05Jan2000, 06:00
J-6A	1.9941	109.85	04Jan2000, 00:00	J-6A	1.9941	96.24	06Jan2000, 00:00
Outlet 06	1.9941	109.85	04Jan2000, 00:00	Outlet 06	1.9941	96.24	06Jan2000, 00:00
Area 7H	0.0198	3.59	03Jan2000, 12:06	Area 7H	0.0198	2.5	05Jan2000, 06:00
Area 7J	0.0128	2.33	03Jan2000, 12:03	Area 7J	0.0128	1.62	05Jan2000, 06:00
Area 7G	0.0089	1.75	03Jan2000, 12:00	Area 7G	0.0089	1.19	05Jan2000, 06:00
Pond 7G	0.0089	0.35	04Jan2000, 00:15	Pond 7G	0.0089	0.35	06Jan2000, 00:12
Area 7F	0.0059	1.18	03Jan2000, 12:00	Area 7F	0.0059	0.8	05Jan2000, 06:00
Pond 7F	0.0059	0.28	04Jan2000, 00:06	Pond 7F	0.0059	0.27	06Jan2000, 00:03
Area 7I	0.0044	0.87	03Jan2000, 12:00	Area 7I	0.0044	0.59	05Jan2000, 06:00
Area 7E	0.0015	0.24	03Jan2000, 12:00	Area 7E	0.0015	0.17	05Jan2000, 06:00
J-7B	1.9207	101.69	04Jan2000, 00:00	J-7B	1.9207	90.52	06Jan2000, 00:00
Area 7A	0.0125	2.25	03Jan2000, 12:00	Area 7A	0.0125	1.57	05Jan2000, 06:00
Area 7B	0.0034	0.65	03Jan2000, 12:00	Area 7B	0.0034	0.45	05Jan2000, 06:00
Ditch 7A	0.0159	2.89	03Jan2000, 12:03	Ditch 7A	0.0159	2.01	05Jan2000, 06:03
Area 7D	0.0022	0.43	03Jan2000, 12:00	Area 7D	0.0022	0.29	05Jan2000, 06:00
Area 7C	0.0018	0.35	03Jan2000, 12:00	Area 7C	0.0018	0.24	05Jan2000, 06:00
Ditch 7C	0.004	0.78	03Jan2000, 12:03	Ditch 7C	0.004	0.53	05Jan2000, 06:00
Outlet 07	1.9406	104.03	04Jan2000, 00:00	Outlet 07	1.9406	92.14	06Jan2000, 00:00
Area 8A	0.9459	160.16	03Jan2000, 16:36	Area 8A	0.9459	115.71	05Jan2000, 07:51
Area 8E	0.7664	135.47	03Jan2000, 14:48	Area 8E	0.7664	96.9	05Jan2000, 06:33
Depression 8E	0.7664	0	01Jan2000, 12:06	Depression 8E	0.7664	0.59	06Jan2000, 06:06
Area 8D	0.1544	27.66	03Jan2000, 12:57	Area 8D	0.1544	19.63	05Jan2000, 06:09
Depression 8D	0.1544	27.37	03Jan2000, 14:48	Depression 8D	0.1544	19.55	05Jan2000, 06:33
Area 8C	0.0007	0.14	03Jan2000, 12:00	Area 8C	0.0007	0.1	05Jan2000, 06:00
Storage 8A	1.8674	98.22	04Jan2000, 02:12	Storage 8A	1.8674	86.82	06Jan2000, 00:57
Outlet 08	1.8674	98.22	04Jan2000, 02:12	Outlet 08	1.8674	86.82	06Jan2000, 00:57
Area 9A	0.0227	4.38	03Jan2000, 12:00	Area 9A	0.0227	3.01	05Jan2000, 06:00
Area 9B	0.0108	2.03	03Jan2000, 12:03	Area 9B	0.0108	1.4	05Jan2000, 06:00
Area 9C	0.002	0.38	03Jan2000, 12:03	Area 9C	0.002	0.26	05Jan2000, 06:00
Outlet 09	0.0355	6.79	03Jan2000, 12:00	Outlet 09	0.0355	4.67	05Jan2000, 06:00
Area 10	0.0007	0.13	03Jan2000, 12:00	Area 10	0.0007	0.09	05Jan2000, 06:00
Outlet 10	0.0007	0.13	03Jan2000, 12:00	Outlet 10	0.0007	0.09	05Jan2000, 06:00
Area 11	0.0002	0.04	03Jan2000, 12:00	Area 11	0.0002	0.02	05Jan2000, 06:00
Outlet 11	0.0002	0.04	03Jan2000, 12:00	Outlet 11	0.0002	0.02	05Jan2000, 06:00
Area 12	0.0063	1.16	03Jan2000, 12:03	Area 12	0.0063	0.8	05Jan2000, 06:00
Outlet 12	0.0063	1.16	03Jan2000, 12:03	Outlet 12	0.0063	0.8	05Jan2000, 06:00

PROPOSED HEC-HMS MODELING RESULTS
100YR STORM

100YR 240HR			
Element	**Area (sq mi)**	**Discharge (cfs)**	**Time of Peak**
Area 1C	0.259	18.57	09Jan2000, 12:18
Area 1D	0.0109	0.8	09Jan2000, 12:00
Area 1E	0.0057	0.43	09Jan2000, 12:00
Pond 1	0.0166	1.22	09Jan2000, 12:09
Diversion-O2	0.0166	0.98	09Jan2000, 12:09
Area 1B	0.003	0.22	09Jan2000, 12:00
Depression 1BC	0.2786	17.21	10Jan2000, 01:27
Diversion 1BC	0.2786	10.45	10Jan2000, 01:27
Diverted Flow 1BC	0	6.76	10Jan2000, 01:27
Area 1A	0.0026	0.19	09Jan2000, 12:00
J-1	0.2812	10.62	10Jan2000, 00:00
Outlet 01	0.2812	10.62	10Jan2000, 00:00
Area 2	0.0014	0.09	09Jan2000, 12:00
Outlet 02	0.0014	0.33	09Jan2000, 12:00
Area 3B	0.0101	0.72	09Jan2000, 12:00
Diversion 3B	0.0101	0.72	09Jan2000, 12:00
Diverted Flow 3B	0	0	01Jan2000, 00:00
Area 3A	0.0013	0.1	09Jan2000, 12:00
Ditch 3A	0.0013	0.1	09Jan2000, 12:03
Area 3C	0.0013	0.1	09Jan2000, 12:00
J-3	0.0127	0.91	09Jan2000, 12:00
Outlet 03	0.0127	0.91	09Jan2000, 12:00
Area 4K	0.1202	8.62	09Jan2000, 12:15
Area 4P	0.0123	0.89	09Jan2000, 12:00
Area 4O	0.0117	0.84	09Jan2000, 12:00
Area 4N	0.0022	0.17	09Jan2000, 12:00
Ditch 4N	0.0022	0.09	11Jan2000, 00:06
Area 4M	0.0012	0.09	09Jan2000, 12:00
Ditch 4M	0.0012	0.05	11Jan2000, 00:09
Area 4I	0.0012	0.09	09Jan2000, 12:00
Ditch 4I	0.0012	0.05	11Jan2000, 00:03
Area 4J	0.001	0.08	09Jan2000, 12:00
Ditch 4J	0.001	0.04	09Jan2000, 23:45
J-4A	0.1498	10.54	09Jan2000, 12:03
Area 4H	0.0169	1.21	09Jan2000, 12:00
Area 4L	0.0053	0.39	09Jan2000, 12:00
Pond 4L	0.0053	0.19	11Jan2000, 00:18
Depression 4H-P	0.172	11.89	09Jan2000, 12:15
Area 4G	0.0023	0.16	09Jan2000, 12:00
Area 4D	0.0014	0.11	09Jan2000, 12:00
Ditch 4D	0.0014	0.05	09Jan2000, 18:54
Area 4E	0.001	0.07	09Jan2000, 12:00
Ditch 4E	0.001	0.04	11Jan2000, 00:03
J-4B	0.0047	0.24	09Jan2000, 12:00
Area 4C	0.0026	0.19	09Jan2000, 12:00
Depression 4C	0.0026	0.19	09Jan2000, 12:03
Area 4B	0.0029	0.2	09Jan2000, 12:00
Depression 4BG	0.1822	12.52	09Jan2000, 12:09
Area 4A	0.0025	0.18	09Jan2000, 12:00
Area 4F	0.0069	0.49	09Jan2000, 12:00
J-4C	0.1916	13.18	09Jan2000, 12:03
Outlet 04	0.1916	13.18	09Jan2000, 12:03
Area 5D	0.0351	2.52	09Jan2000, 12:00
Area 5A	0.0124	0.88	09Jan2000, 12:03
Area 5C	0.0048	0.37	09Jan2000, 12:00
Pond 5	0.0048	0.2	11Jan2000, 00:03
Area 5B	0.0052	0.38	09Jan2000, 12:00
Depression 5B	0.0052	0.38	09Jan2000, 12:00
J-5	0.0575	3.95	09Jan2000, 12:00
Outlet 05	0.0575	3.95	09Jan2000, 12:00
Area 6F	0.025	1.78	09Jan2000, 12:03
Area 6E	0.0017	0.13	09Jan2000, 12:00
Pond 6E	0.0017	0.05	09Jan2000, 22:21
J-6C	0.0267	1.83	09Jan2000, 12:03
Area 6D	0.0019	0.14	09Jan2000, 12:00
Pond 6D	0.0019	0.06	11Jan2000, 00:03
Area 6C	0.0162	1.14	09Jan2000, 12:00
Area 6B	0.0041	0.28	09Jan2000, 12:00

PROPOSED HEC-HMS MODELING RESULTS
100YR STORM

J-6B	1.9895	74.55	10Jan2000, 00:00
Area 6A	0.0046	0.31	09Jan2000, 12:00
J-6A	1.9941	74.85	10Jan2000, 00:00
Outlet 06	1.9941	74.85	10Jan2000, 00:00
Area 7H	0.0198	1.42	09Jan2000, 12:00
Area 7J	0.0128	0.92	09Jan2000, 12:00
Area 7G	0.0089	0.67	09Jan2000, 12:00
Pond 7G	0.0089	0.31	11Jan2000, 00:06
Area 7F	0.0059	0.45	09Jan2000, 12:00
Pond 7F	0.0059	0.24	11Jan2000, 00:00
Area 7I	0.0044	0.33	09Jan2000, 12:00
Area 7E	0.0015	0.1	09Jan2000, 12:00
J-7B	1.9207	70.07	10Jan2000, 00:03
Area 7A	0.0125	0.89	09Jan2000, 12:00
Area 7B	0.0034	0.25	09Jan2000, 12:00
Ditch 7A	0.0159	1.15	09Jan2000, 12:00
Area 7D	0.0022	0.17	09Jan2000, 12:00
Area 7C	0.0018	0.13	09Jan2000, 12:00
Ditch 7C	0.004	0.3	09Jan2000, 12:00
Outlet 07	1.9406	71.43	10Jan2000, 00:03
Area 8A	0.9459	67.59	09Jan2000, 12:42
Area 8E	0.7664	55.38	09Jan2000, 12:15
Depression 8E	0.7664	4.31	11Jan2000, 03:30
Area 8D	0.1544	11.17	09Jan2000, 12:06
Depression 8D	0.1544	11.16	09Jan2000, 12:21
Area 8C	0.0007	0.05	09Jan2000, 12:00
Storage 8A	1.8674	67.51	10Jan2000, 02:18
Outlet 08	1.8674	67.51	10Jan2000, 02:18
Area 9A	0.0227	1.7	09Jan2000, 12:00
Area 9B	0.0108	0.79	09Jan2000, 12:00
Area 9C	0.002	0.15	09Jan2000, 12:00
Outlet 09	0.0355	2.64	09Jan2000, 12:00
Area 10	0.0007	0.05	09Jan2000, 12:00
Outlet 10	0.0007	0.05	09Jan2000, 12:00
Area 11	0.0002	0.01	09Jan2000, 12:00
Outlet 11	0.0002	0.01	09Jan2000, 12:00
Area 12	0.0063	0.46	09Jan2000, 12:00
Outlet 12	0.0063	0.46	09Jan2000, 12:00

APPENDIX J

TELEPHONE CALL RECORD ANR PIPELINE

Bollinger, Lach & Associates, Inc.

Telephone Call Record

Office Location:
- ☒ ITASCA
- ☐ ALGONQUIN
- ☐ CHICAGO
- ☐ INDIANAPOLIS
- ☐ SOUTH BEND
- ☐ LAKE GENEVA

Project No. 070-012
Project Name: Dauberman Road
Time: 8:30 ☒ A.M. ☐ P.M.
Date: 12/11/18
Day: Tuesday
Contact: Robert Southers
Phone No.: 319-498-2252
Representing: ANR Pipeline

Discussion:

Spoke with Robert about requesting ballpark costs for the possible lowering of their existing gas mains in the US30 ROW. It was explained that we are investigating concepts to fix regional drainage issues and that it may be necessary to lower the gas mains to make the storm sewer trunk line work. I explained that this would allow the trunk line to be reduced in size and may be the desired option due to significant cost savings in the sewer size. I also mentioned that when more detailed topographic surveys are available and further work is done it may not be possible to avoid conflict with the gas mains. Robert explained that it would be very difficult to provide costs based on a number of factors such as, but not limited to, surveys, permits, environmental studies, etc that they would need to do in addition to the pipe lowering. He also mentioned that it is very rare that they approve the placement of another utility above theirs (as would be in this case). He also stated that they typically have a vertical spacing requirement of 4-6 feet but that can be reduced to 2-3 feet if specific pipe materials and practices are used. I requested that he send us their requirements. He stated he would work on that after he received the potholing information and after he moves this request down the line at ANR. He stated that this information gets forwarded to "US Crossings" who does more of the engineering work related to this.

Action:

BLA to forward potholing information and await feedback from ANR regarding the requirements / ability to lower their mains.

By: Erik Olson

APPENDIX K

OPTION 1A DETENTION NOMOGRAPH

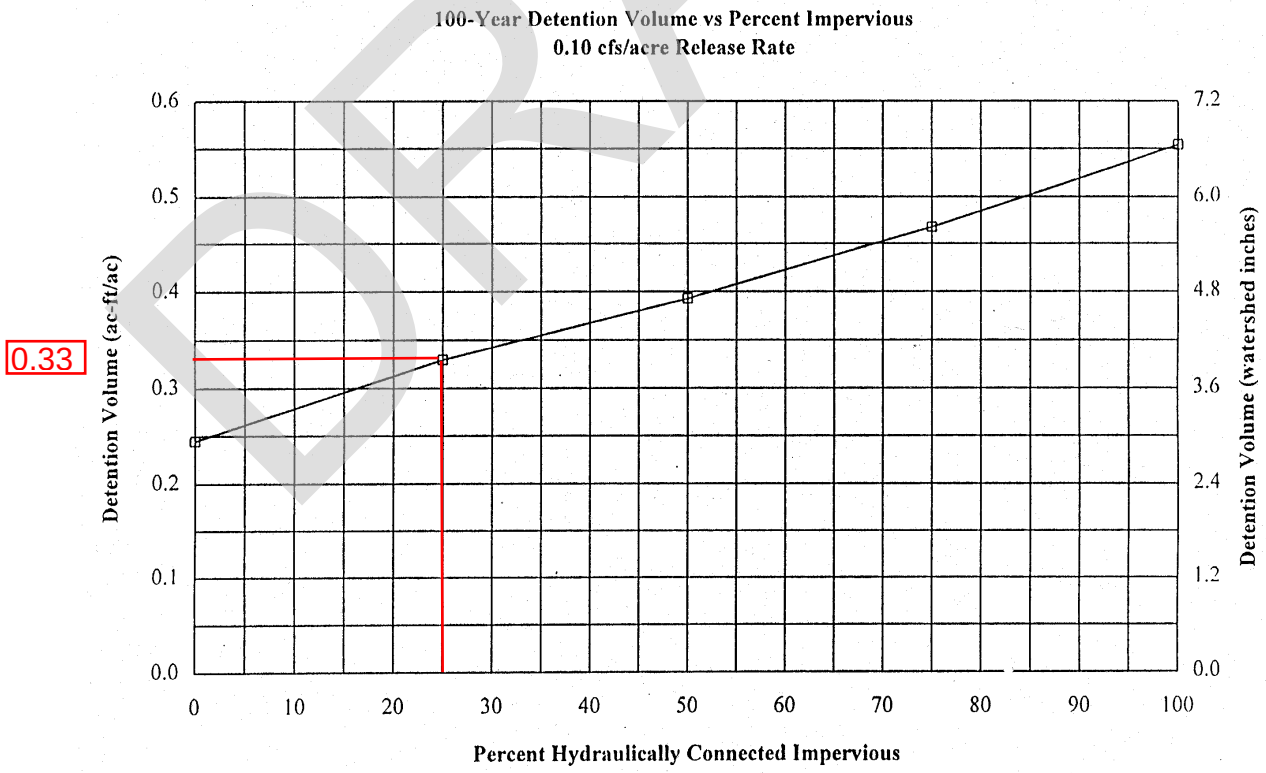
OPTION 1A - REGIONAL POND NEAR US30 / DAVIS

All runoff volumes shall be calculated using the 24-hour duration with a 1% probability of occurrence in any one year. An antecedent moisture condition (AMC) of 2 shall be used for all runoff calculations. An AMC=2 represents average soil moisture conditions.

A simple method for approximating the required storage volume for a development can be determined using the unit area detention method. The Northeastern Illinois Planning commission in their publication, Investigation of Hydrologic Methods for Site Design in Northeastern Illinois (Dreher and Price, 1991), have developed a chart by which unit area detention volumes can be determined from the impervious percentage of the developed site. Figure 7 shows a graph which can be used to approximate the storage. The actual required storage must be determined from an event hydrograph routing method.

Small detention basins serving less than 5 acres of tributary area, where the entire tributary area is within the development, may be sized using the results of a NIPC study that related the percent of impervious area to unit area detention volume.

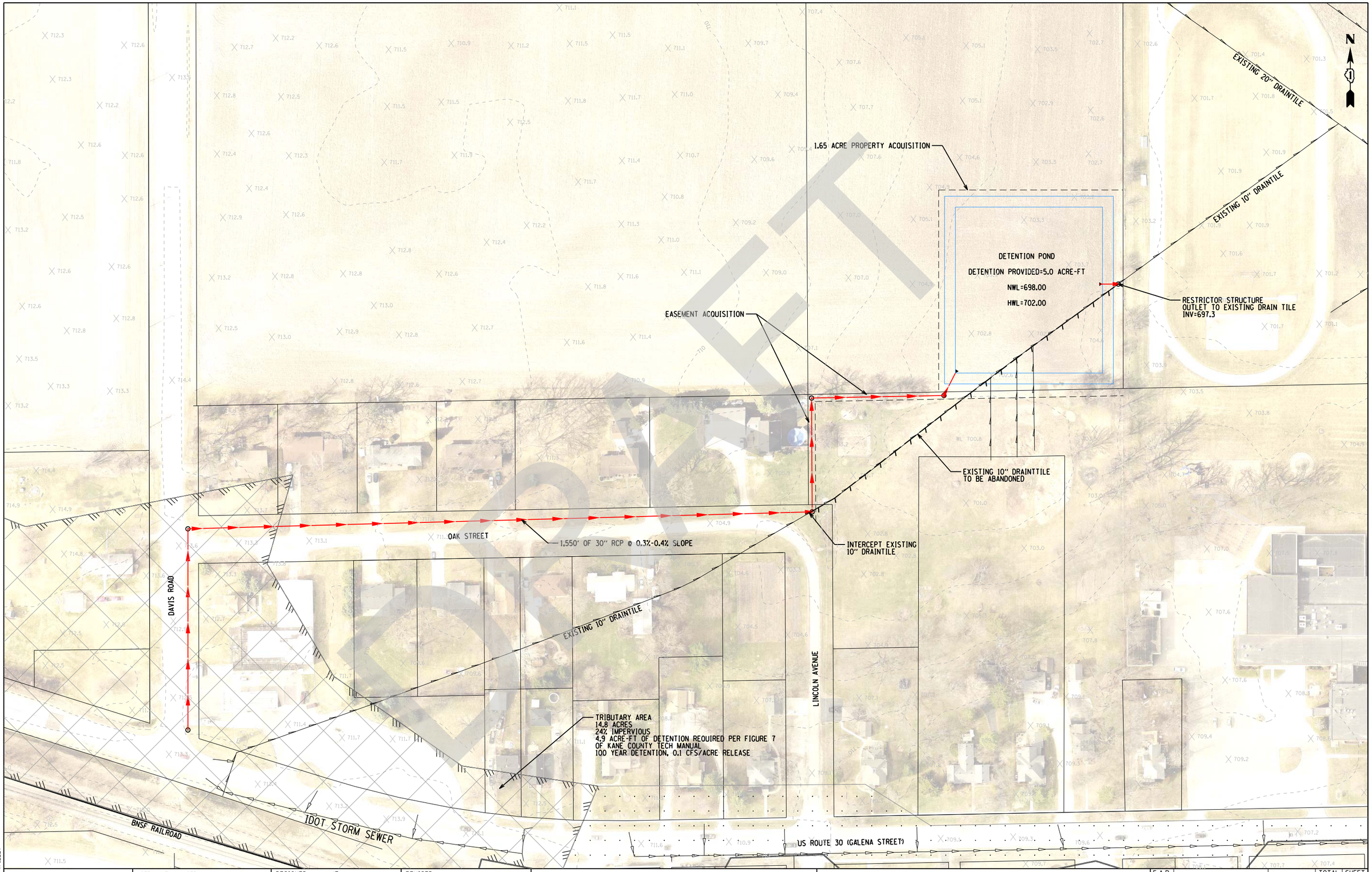
FIGURE 7
100-Year Detention Volume vs. Percent Impervious



0.33

APPENDIX L

OPTION 1A POND EXHIBIT



FILE NAME = $FILE$

BLA, Inc.
ITASCA, ILLINOIS

USER NAME = $USER$	DESIGNED - JT	REVISED - -
	DRAWN - JT	REVISED - -
PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 1A EXHIBIT – DETENTION POND

SCALE: 1"=60' | SHEET ___ OF ___ SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		
			CONTRACT NO.	
		ILLINOIS	FED. AID PROJECT	

APPENDIX M

OPTION 1A COST ESTIMATE

Illinois Department of Transportation

Project
Route
Section
County

Estimate of Cost

Location of Improvement: Option 1A-Pond and 30" storm trunk line option from US 30/Davis intersection to west of school track.
Note: Estimate does not include costs for land acquisition, easement acquisition or other minor storm sewer work to connect existing gas station or other properties to the new trunk line. Cost also assumes hauloff of all earth ex.

For a total distance of
Net improvement of
Type
Width
Thickness
Shoulders
Average Haul
Maximum Grade %

Code Number	Item	Unit of Measure	Quantity	Unit Price	Total Cost	EEO% Breakdown
20101200	TREE ROOT PRUNING	EACH	2	$125.00	$250.00	0.03%
20200100	EARTH EXCAVATION	CU YD	11,280	$40.00	$451,200.00	53.27%
20800150	TRENCH BACKFILL	CU YD	228	$25.00	$5,700.00	0.67%
25200110	SODDING, SALT TOLERANT	SQ YD	856	$8.00	$6,848.00	0.81%
28000510	INLET FILTERS	EACH	4	$200.00	$800.00	0.09%
28001100	TEMPORARY EROSION CONTROL BLANKET	SQ YD	7,750	$3.00	$23,250.00	2.74%
28100107	STONE RIPRAP, CLASS A4	SQ YD	56	$75.00	$4,200.00	0.50%
28200200	FILTER FABRIC	SQ YD	56	$5.00	$280.00	0.03%
35101600	AGGREGATE BASE COURSE, TYPE B 4"	SQ YD	106	$8.00	$848.00	0.10%
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	106	$12.00	$1,272.00	0.15%
44201696	CLASS D PATCHES, TYPE IV, 4 INCH	SQ YD	33	$125.00	$4,125.00	0.49%
54213657	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 12"	EACH	1	$1,200.00	$1,200.00	0.14%
54213675	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 30"	EACH	1	$2,500.00	$2,500.00	0.30%
550A0340	STORM SEWERS, CLASS A, TYPE 2 12"	FOOT	26	$60.00	$1,560.00	0.18%
550A0430	STORM SEWERS, CLASS A, TYPE 2 30"	FOOT	632	$90.00	$56,880.00	6.72%
55100400	STORM SEWER REMOVAL 10"	FOOT	280	$10.00	$2,800.00	0.33%
60221100	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	$3,500.00	$3,500.00	0.41%
60223800	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	5	$4,000.00	$20,000.00	2.36%
67100100	MOBILIZATION	L SUM	1	$35,000.00	$35,000.00	4.13%
X0325034	MANHOLES, TYPE A, 6'-DIAMETER, WITH 2 TYPE 1 FRAME, OPEN LI	EACH	1	$8,000.00	$8,000.00	0.94%
X0426200	DEWATERING	L SUM	1	$15,000.00	$15,000.00	1.77%
X2111100	TOPSOIL EXCAVATION AND PLACEMENT, SPECIAL	CU YD	1,331	$20.00	$26,620.00	3.14%
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	$15,000.00	$15,000.00	1.77%
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	$5,000.00	$5,000.00	0.59%
Z0004522	HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 6"	SQ YD	106	$55.00	$5,830.00	0.69%
	SEDGE GHETTO SEED MIX	AC	1.08	$5,000.00	$5,400.00	0.64%
	MESIC TO WET SEED MIX	AC	0.56	$5,000.00	$2,800.00	0.33%
			Contingency (20%)		$141,172.60	
			Total Cost		$847,035.60	

Made by EO Date
Examined ,
Checked by DB Date
Regional Engineer

APPENDIX N

OPTION 1B BIG ROCK CREEK STORM SEWER EXHIBIT

N

WELCH CREEK WATERSHED

DAVIS RD / US 30 AREA
DIRECT CONNECTION TO
DRAIN TILE SYSTEM
(VIA 10" DRAIN TILE)
14.8 AC±
10 YR. FLOW=25.4 CFS±

EX ROW (FROM GIS)

OAK STREET

DAVIS ROAD

US ROUTE 30 (GALENA STREET)

BNSF RAILROAD

WATERSHED DIVIDE

EXISTING 10" DRAIN TILE

100' STORM SEWER

OUTLET TO BIG ROCK CREEK

BIG ROCK CREEK

BIG ROCK CREEK WATERSHED

EX ROW (FROM GIS)

HINCKLEY ROAD

PROPOSED 30" RCP STORM SEWER
1,550FT @ 0.3%-0.4% SLOPE

2ND STREET

STORM SEWER TO BE JACKED UNDER
RAILROAD R.O.W.

FILE NAME = $FILE$

BLA, Inc.
ITASCA, ILLINOIS

USER NAME = $USER$	DESIGNED - JT	REVISED - -
	DRAWN - JT	REVISED - -
PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

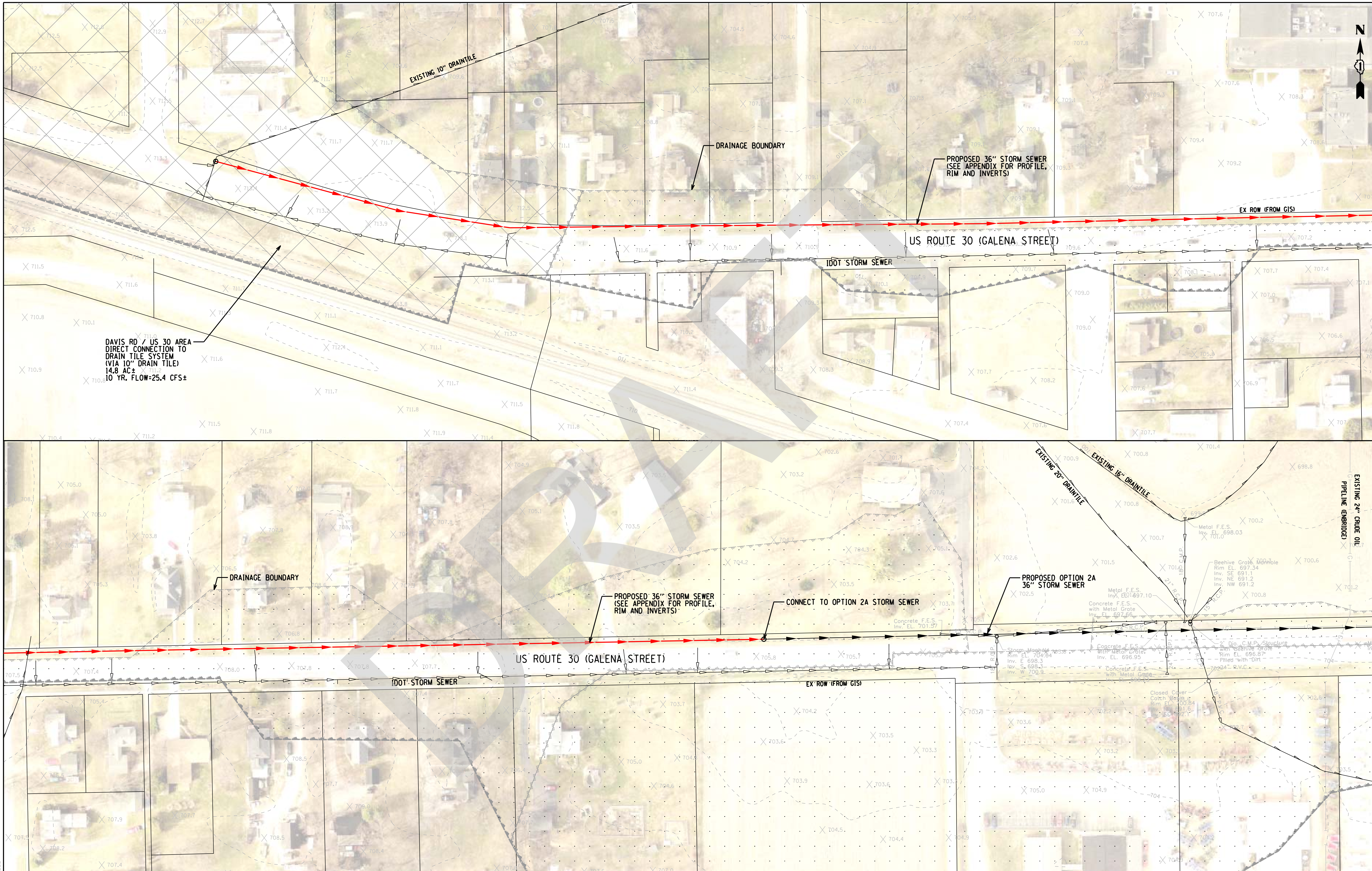
WATERSHED DRAINAGE STUDY
OPTION 1B EXHIBIT – STORM SEWER

SCALE: 1"=60' | SHEET ___ OF SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		___
			CONTRACT NO.	
		ILLINOIS	FED. AID PROJECT	

APPENDIX O

OPTION 1C STORM SEWER EXHIBIT


EXISTING 10" DRAINTILE
DRAINAGE BOUNDARY
PROPOSED 36" STORM SEWER (SEE APPENDIX FOR PROFILE, RIM AND INVERTS)
EX ROW (FROM GIS)
US ROUTE 30 (GALENA STREET)
IDOT STORM SEWER
DAVIS RD / US 30 AREA DIRECT CONNECTION TO DRAIN TILE SYSTEM (VIA 10" DRAIN TILE) 14.8 AC± 10 YR. FLOW=25.4 CFS±
DRAFT
N
EXISTING 20" DRAINTILE
EXISTING 16" DRAINTILE
EXISTING 24" CRUDE OIL PIPELINE (ENBRIDGE)
CONNECT TO OPTION 2A STORM SEWER
PROPOSED OPTION 2A 36" STORM SEWER
Metal F.E.S. Inv. EL. 698.03
Beehive Grate Manhole Rim EL. 697.34 Inv. SE 691.1 Inv. NE 691.2 Inv. NW 691.2
Concrete F.E.S. Inv. EL. 701.37

BLA, Inc. ITASCA, ILLINOIS	USER NAME = $USER$	DESIGNED - JT	REVISED -
		DRAWN - JT	REVISED -
	PLOT SCALE = $SCALE$	CHECKED - EO	REVISED -
	PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 1C EXHIBIT - SEWER

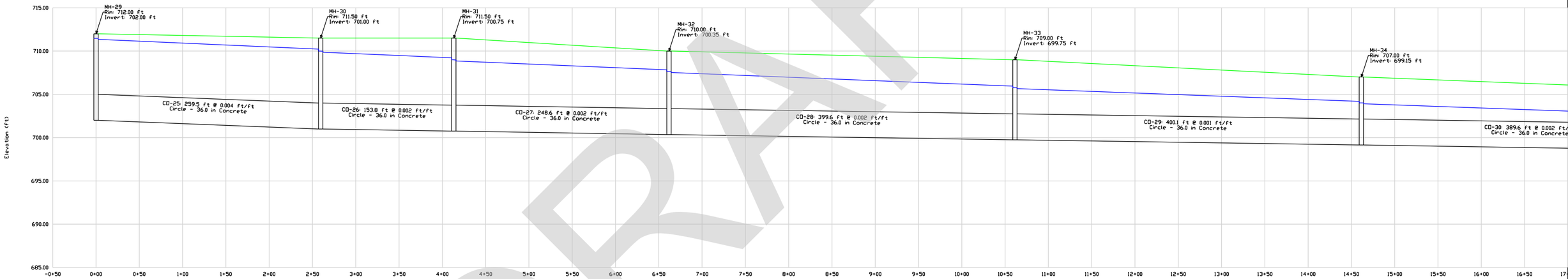
SCALE: 1"=60' | SHEET OF SHEETS | STA. TO STA.

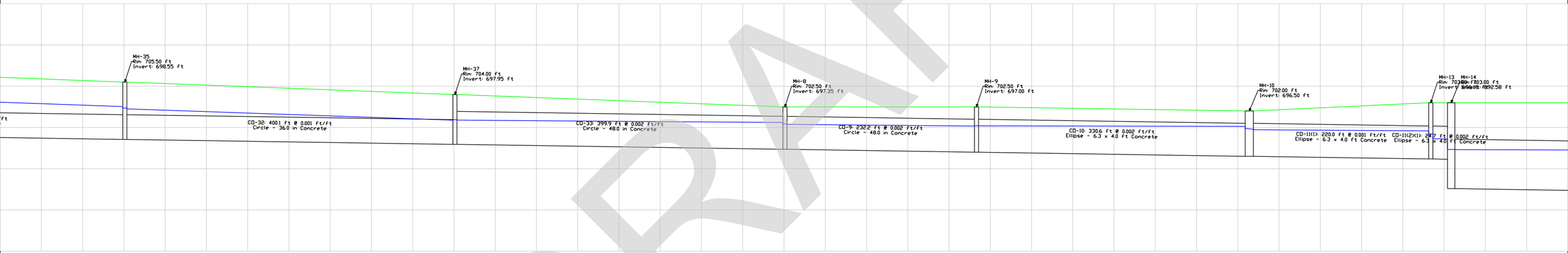
F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		
		CONTRACT NO.		
	ILLINOIS FED. AID PROJECT			

FILE NAME = $FILEL$

APPENDIX P

OPTION 1C STORM SEWER PROFILE


MH-29
Rim: 712.00 ft
Invert: 702.00 ft
MH-30
Rim: 711.50 ft
Invert: 701.00 ft
MH-31
Rim: 711.50 ft
Invert: 700.75 ft
MH-32
Rim: 710.00 ft
Invert: 700.35 ft
MH-33
Rim: 709.00 ft
Invert: 699.75 ft
MH-34
Rim: 707.00 ft
Invert: 699.15 ft
CO-25: 259.5 ft @ 0.004 ft/ft
Circle - 36.0 in Concrete
CO-26: 153.8 ft @ 0.002 ft/ft
Circle - 36.0 in Concrete
CO-27: 248.6 ft @ 0.002 ft/ft
Circle - 36.0 in Concrete
CO-28: 399.6 ft @ 0.002 ft/ft
Circle - 36.0 in Concrete
CO-29: 400.1 ft @ 0.001 ft/ft
Circle - 36.0 in Concrete
CO-30: 389.6 ft @ 0.002 ft/
Circle - 36.0 in Concrete
Elevation (ft)
715.00
710.00
705.00
700.00
695.00
690.00
685.00
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
5+50
6+00
6+50
7+00
7+50
8+00
8+50
9+00
9+50
10+00
10+50
11+00
11+50
12+00
12+50
13+00
13+50
14+00
14+50
15+00
15+50
16+00
16+50


MH-35
Rim: 705.50 ft
Invert: 698.55 ft
MH-37
Rim: 704.00 ft
Invert: 697.95 ft
MH-8
Rim: 702.50 ft
Invert: 697.35 ft
MH-9
Rim: 702.50 ft
Invert: 697.00 ft
MH-10
Rim: 702.00 ft
Invert: 696.50 ft
MH-13
MH-14
CD-32: 400.1 ft @ 0.001 ft/ft
Circle - 36.0 in Concrete
CD-33: 399.9 ft @ 0.002 ft/ft
Circle - 48.0 in Concrete
CD-9: 232.2 ft @ 0.002 ft/ft
Circle - 48.0 in Concrete
CD-10: 330.6 ft @ 0.002 ft/ft
Ellipse - 6.3 x 4.0 ft Concrete
CD-11(1): 220.0 ft @ 0.001 ft/ft
Ellipse - 6.3 x 4.0 ft Concrete
CD-11(2X1):
Ellipse - 6.3 x 4.0 ft Concrete
17+50
18+00
18+50
19+00
19+50
20+00
20+50
21+00
21+50
22+00
22+50
23+00
23+50
24+00
24+50
25+00
25+50
26+00
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27+50
28+00
28+50
29+00
29+50
30+00
30+50
31+00
31+50
32+00
32+50
33+00
33+50
34+00
34+50
35+00
35+50

APPENDIX Q

OPTION 1C COST ESTIMATE

Illinois Department of Transportation

Project
Route
Section
County

Estimate of Cost

Location of Improvement: Option 1C - Proposed storm trunk line from US 30 / Davis to Welch Creek.
This option avoids existing ANR and Enbridge transmission gas mains.

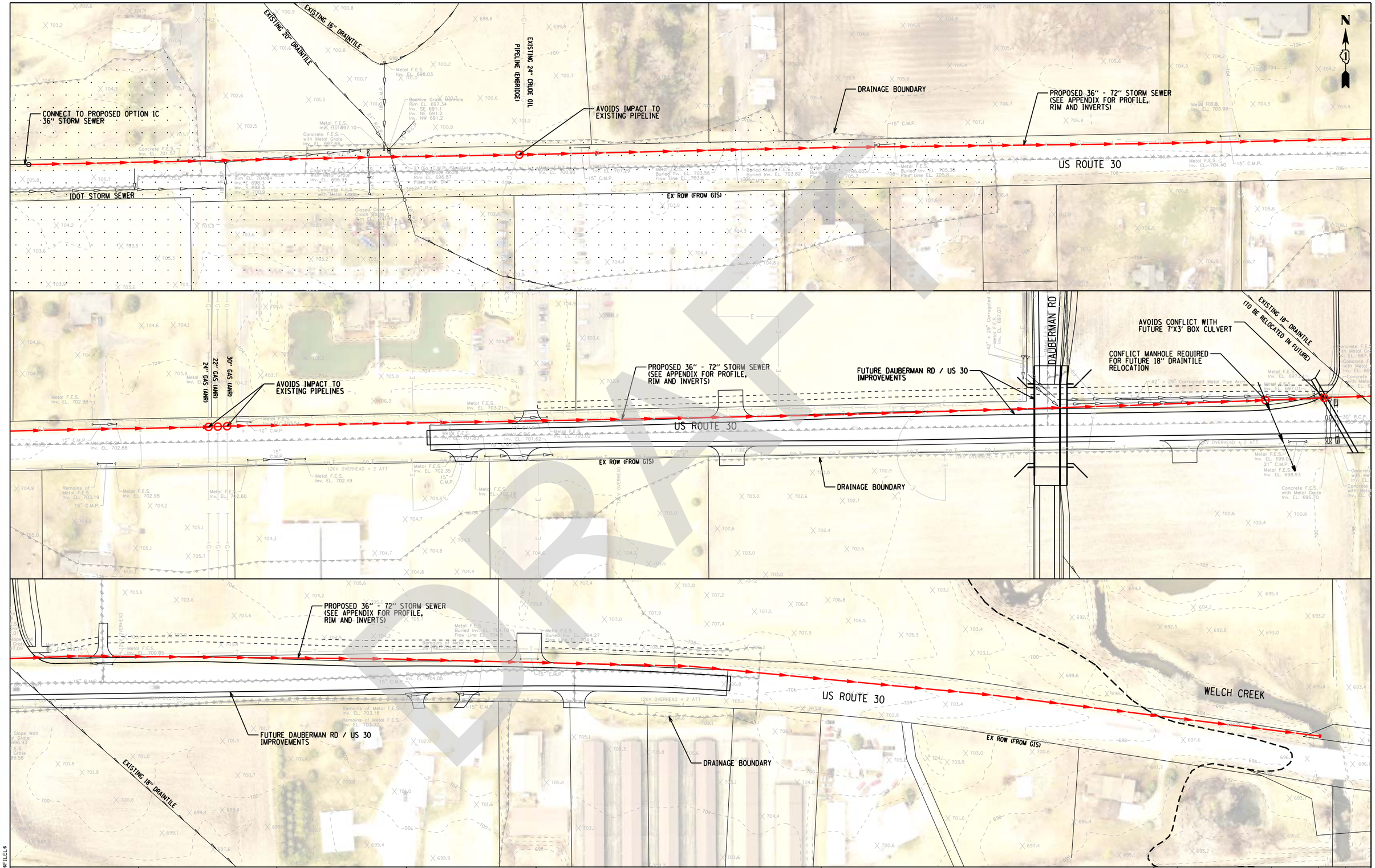
For a total distance of _____ Net improvement of _____
Type _____ Width _____ Thickness _____
Shoulders _____ Average Haul _____ Maximum Grade % _____

Code Number	Item	Unit of Measure	Quantity	Unit Price	Total Cost	EEO% Breakdown
20101200	TREE ROOT PRUNING	EACH	5	$125.00	$625.00	0.09%
20800150	TRENCH BACKFILL	CU YD	4,099	$30.00	$122,970.00	18.65%
25200110	SODDING, SALT TOLERANT	SQ YD	1,200	$8.00	$9,600.00	1.46%
28000510	INLET FILTERS	EACH	19	$200.00	$3,800.00	0.58%
28001100	TEMPORARY EROSION CONTROL BLANKET	SQ YD	2,311	$3.00	$6,933.00	1.05%
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	593	$12.00	$7,110.67	1.08%
44000500	COMBINATION CURB AND GUTTER REMOVAL	FOOT	400	$5.00	$2,000.00	0.30%
44200944	CLASS B PATCHES, TYPE IV, 8 INCH	SQ YD	82	$125.00	$10,263.89	1.56%
550A0450	STORM SEWERS, CLASS A, TYPE 2 36"	FOOT	2,264	$80.00	$181,120.00	27.47%
550A0480	STORM SEWERS, CLASS A, TYPE 2 48"	FOOT	400	$125.00	$50,000.00	7.58%
60221100	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	7	$3,500.00	$24,500.00	3.72%
60224446	MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	$8,000.00	$8,000.00	1.21%
60603800	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12	FOOT	400	$25.00	$10,000.00	1.52%
67100100	MOBILIZATION	L SUM	1	$30,000.00	$30,000.00	4.55%
X0426200	DEWATERING	L SUM	1	$25,000.00	$25,000.00	3.79%
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	$20,000.00	$20,000.00	3.03%
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	$5,000.00	$5,000.00	0.76%
Z0004522	HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 6"	SQ YD	593	$55.00	$32,590.56	4.94%
			Contingency (20%)		$109,902.62	
			Total Cost		$659,415.73	

Made by JT Date _____ Examined _____ , _____
Checked by DB Date _____ _____ Regional Engineer

APPENDIX R

OPTION 2A STORM SEWER EXHIBIT



FILE NAME = $FILE$

BLA, Inc.
ITASCA, ILLINOIS

USER NAME = $USER$	DESIGNED - JT	REVISED - -
	DRAWN - JT	REVISED - -
PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

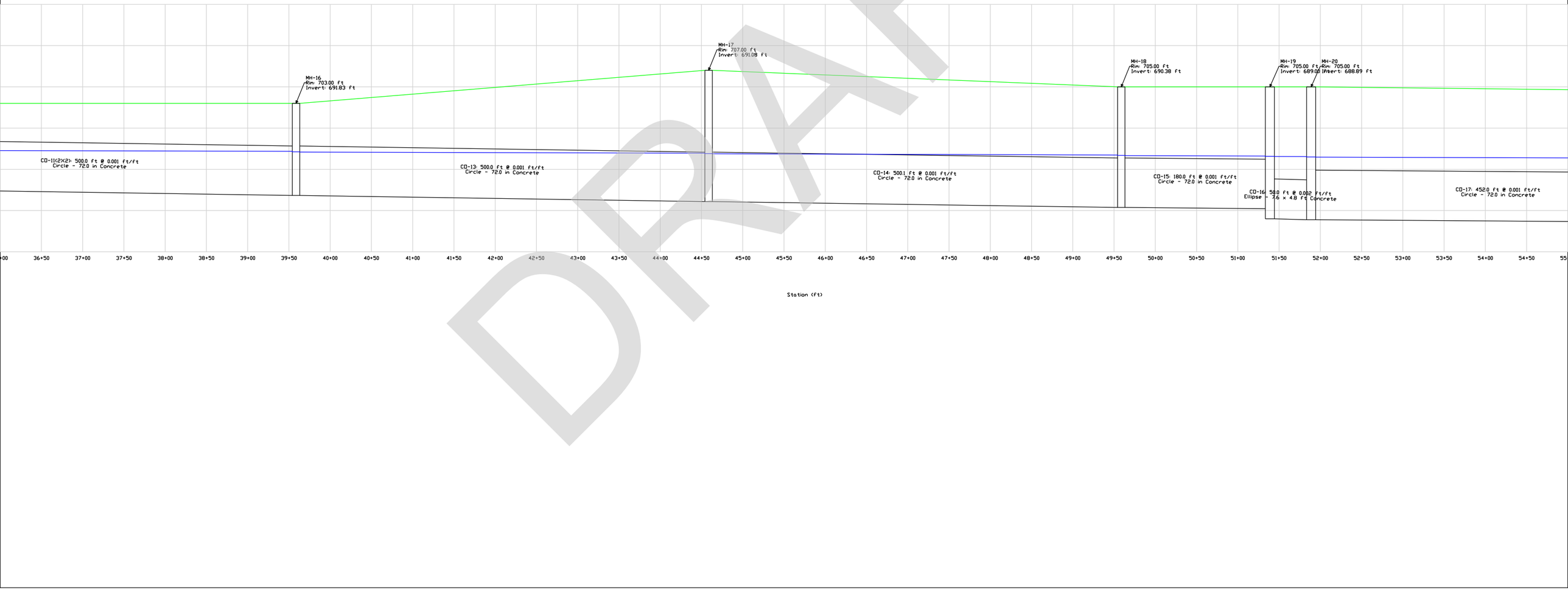
WATERSHED DRAINAGE STUDY
OPTION 2A EXHIBIT – SEWER (AVOID PIPELINES)

SCALE: 1"=70' | SHEET ___ OF SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		___
		CONTRACT NO.		
	ILLINOIS FED. AID PROJECT			

APPENDIX S

OPTION 2A STORM SEWER PROFILE AND STORM CAD DATA


MH-16
Rim: 703.00 ft
Invert: 691.83 ft
MH-17
Rim: 707.00 ft
Invert: 691.08 ft
MH-18
Rim: 705.00 ft
Invert: 690.38 ft
MH-19
Rim: 705.00 ft
Invert: 689.00 ft
MH-20
Rim: 705.00 ft
Invert: 688.89 ft
CD-11(2X2): 500.0 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CD-13: 500.0 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CD-14: 500.1 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CD-15: 180.0 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CD-16: 50.0 ft @ 0.002 ft/ft
Ellipse - 7.6 x 4.8 ft Concrete
CD-17: 452.0 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
36+50
37+00
37+50
38+00
38+50
39+00
39+50
40+00
40+50
41+00
41+50
42+00
42+50
43+00
43+50
44+00
44+50
45+00
45+50
46+00
46+50
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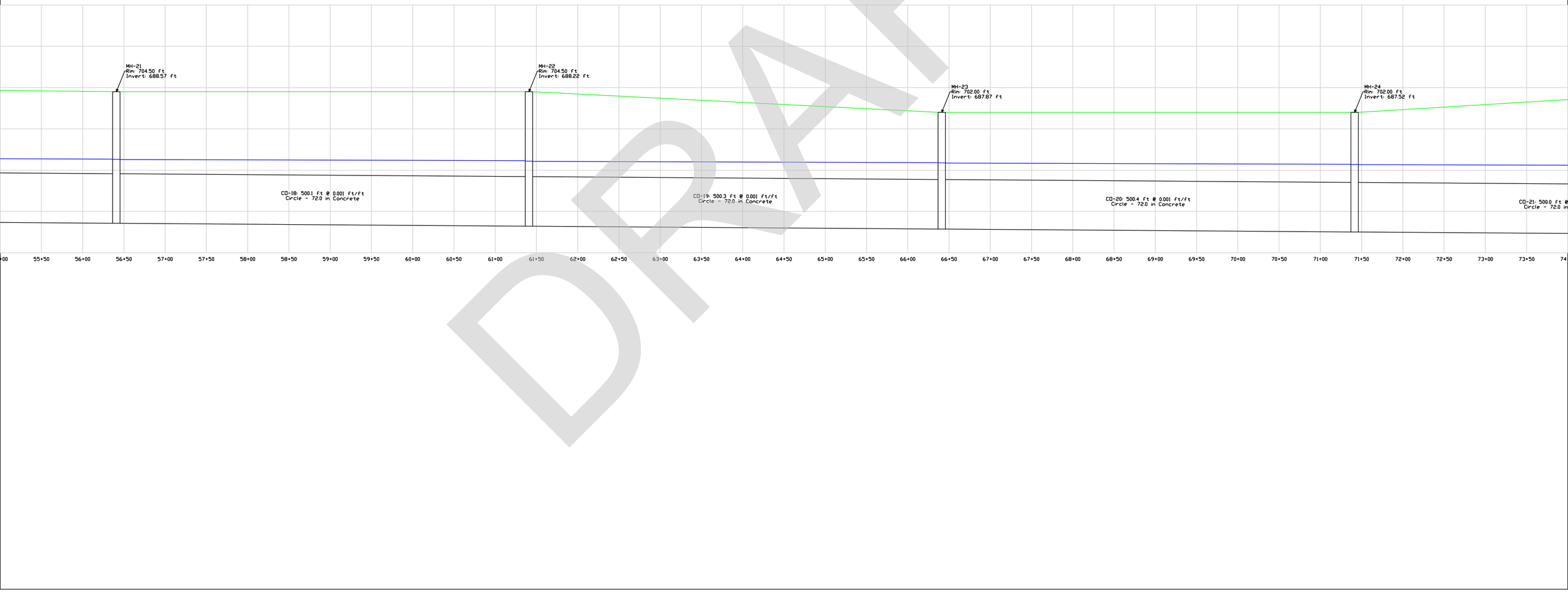
48+00
48+50
49+00
49+50
50+00
50+50
51+00
51+50
52+00
52+50
53+00
53+50
54+00
54+50
Station (ft)


MH-21
Rim: 704.50 ft
Invert: 688.57 ft
MH-22
Rim: 704.50 ft
Invert: 688.22 ft
MH-23
Rim: 702.00 ft
Invert: 687.87 ft
MH-24
Rim: 702.00 ft
Invert: 687.52 ft
CO-18: 500.1 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CO-19: 500.3 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CO-20: 500.4 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CO-21: 500.0 ft @
Circle - 72.0 in
55+50
56+00
56+50
57+00
57+50
58+00
58+50
59+00
59+50
60+00
60+50
61+00
61+50
62+00
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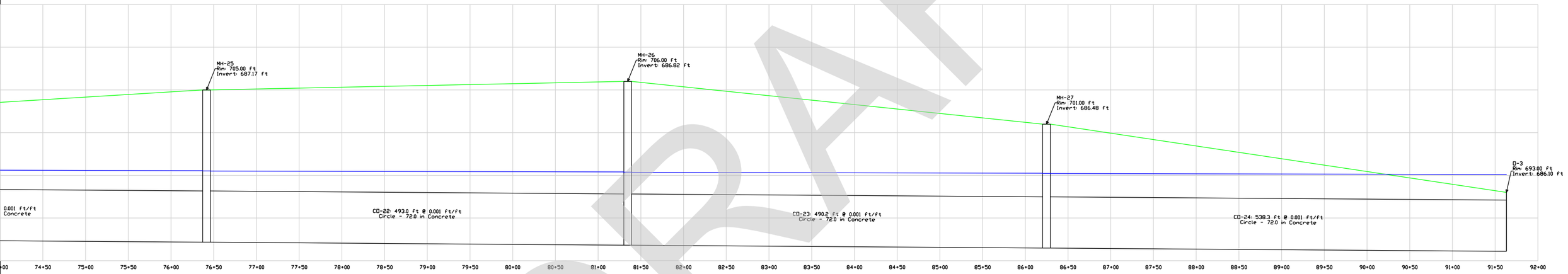
72+50
73+00
73+50


MH-25
Rim: 705.00 ft
Invert: 687.17 ft
MH-26
Rim: 706.00 ft
Invert: 686.82 ft
MH-27
Rim: 701.00 ft
Invert: 686.48 ft
D-3
Rim: 693.00 ft
Invert: 686.10 ft
0.001 ft/ft
Concrete
CO-22: 493.0 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CO-23: 490.2 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
CO-24: 538.3 ft @ 0.001 ft/ft
Circle - 72.0 in Concrete
74+00
74+50
75+00
75+50
76+00
76+50
77+00
77+50
78+00
78+50
79+00
79+50
80+00
80+50
81+00
81+50
82+00
82+50
83+00
83+50
84+00
84+50
85+00
85+50
86+00
86+50
87+00
87+50
88+00
88+50
89+00
89+50
90+00
90+50
91+00
91+50
92+00

Calculation Detailed Summary

Element Details

ID	29	Notes	
Label	Base Calculation Options		

Hydraulic Summary

Flow Profile Method	Backwater Analysis	Average Velocity Method	Actual Uniform Flow Velocity
Number of Flow Profile Steps	5	Minimum Structure Headloss	0.00 ft
Hydraulic Grade Convergence Test	0.00 ft	Minimum Time of Concentration	0.083 hours

Inlets

Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

HEC-22 Energy Losses (Second Edition)

Elevations Considered Equal Within	0.50 ft	Depressed Unsubmerged Factor	1.000
Consider Non-Piped Plunging Flow?	True	Half Bench Submerged Factor	0.950
Flat Submerged Factor	1.000	Half Bench Unsubmerged Factor	0.150
Flat Unsubmerged Factor	1.000	Full Bench Submerged Factor	0.750
Depressed Submerged Factor	1.000	Full Bench Unsubmerged Factor	0.070

Headloss (AASHTO)

Expansion, Ke	0.350	Shaping Adjustment, Cs	0.500
Contraction, Kc	0.250	Non-Piped Flow Adjustment, Cn	1.300

Bend Angle vs. Bend Loss Curve

Bend Angle (degrees)	Bend Loss Coefficient, Kb
0.00	0.000
15.00	0.190
30.00	0.350
45.00	0.470
60.00	0.560
75.00	0.640
90.00	0.700

Gravity Hydraulics

Calculation Detailed Summary

Gravity Hydraulics

Governing Upstream Pipe Selection Method	Pipe with Maximum QV

Catchment Summary

Label	Area (User Defined) (acres)	Time of Concentration (hours)	Runoff Coefficient (Rational)	Catchment CA (acres)	Catchment Intensity (in/h)	Catchment Rational Flow (cfs)
CM-2	11.600	0.518	0.550	6.380	5.525	35.53
CM-3	30.250	0.500	0.033	0.983	5.600	5.55
CM-4	60.500	0.500	0.033	1.966	5.600	11.10
CM-5	30.250	0.500	0.033	0.998	5.600	5.63
CM-6	14.800	0.447	0.480	7.104	6.155	44.07

Conduit Summary

Label	Section Type	Branch ID	Subnetwork Outfall	Flow (cfs)	Velocity (ft/s)
CO-9	Circle	1	O-3	43.15	4.90
CO-10	Ellipse	1	O-3	42.72	4.80
CO-11(1)	Ellipse	1	O-3	75.21	5.59
CO-11(2)(1)	Ellipse	1	O-3	74.56	5.81
CO-11(2)(2)	Circle	1	O-3	74.49	5.66
CO-12	Circle	2	O-3	35.53	5.03
CO-13	Circle	1	O-3	77.99	5.73
CO-14	Circle	1	O-3	76.45	5.55
CO-15	Circle	1	O-3	74.85	2.65
CO-16	Ellipse	1	O-3	73.65	2.56
CO-17	Circle	1	O-3	73.31	2.59
CO-18	Circle	1	O-3	70.23	2.48
CO-19	Circle	1	O-3	75.15	2.66
CO-20	Circle	1	O-3	71.40	2.53
CO-21	Circle	1	O-3	67.45	2.39
CO-22	Circle	1	O-3	63.28	2.24
CO-23	Circle	1	O-3	61.37	2.17
CO-24	Circle	1	O-3	59.91	2.12
CO-25	Circle	1	O-3	44.07	6.23
CO-26	Circle	1	O-3	43.21	6.11
CO-27	Circle	1	O-3	42.69	6.04
CO-28	Circle	1	O-3	41.84	5.92
CO-29	Circle	1	O-3	40.44	5.72
CO-30	Circle	1	O-3	39.67	5.61
CO-32	Circle	1	O-3	39.10	5.53

Calculation Detailed Summary

Conduit Summary

Label	Section Type	Branch ID	Subnetwork Outfall	Flow (cfs)	Velocity (ft/s)
CO-33	Circle	1	O-3	38.52	4.78

Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Depth (In) (ft)	Depth (Out) (ft)
700.38	700.17	3.03	3.17
700.19	700.13	3.19	3.63
699.73	699.58	3.23	3.40
698.64	698.60	2.46	2.46
697.30	697.18	4.72	5.35
699.98	699.94	3.23	3.44
697.09	696.96	5.26	5.88
696.89	696.73	5.81	6.35
696.67	696.61	6.29	6.38
696.55	696.54	7.55	7.65
696.47	696.34	7.58	7.77
696.29	696.15	7.72	7.93
696.07	695.91	7.85	8.04
695.86	695.72	7.99	8.20
695.67	695.54	8.15	8.37
695.50	695.39	8.33	8.57
695.35	695.25	8.53	8.77
695.21	695.10	8.73	9.00
711.36	710.23	9.36	9.23
709.87	709.22	8.87	8.47
708.85	707.84	8.10	7.49
707.52	705.95	7.17	6.20
705.67	704.19	5.92	5.04
703.91	702.53	4.76	3.98
702.26	700.89	3.71	2.94
700.89	700.61	2.94	3.26

Node Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)	Elevation (Ground) (ft)
MH-8	Manhole	O-3	44.15	43.15	702.50
MH-9	Manhole	O-3	43.15	42.72	702.50
MH-10	Manhole	O-3	78.25	75.21	702.00
MH-13	Manhole	O-3	75.21	74.56	703.00
MH-14	Manhole	O-3	74.56	74.49	703.00
MH-16	Manhole	O-3	80.04	77.99	703.00
MH-17	Manhole	O-3	77.99	76.45	707.00
MH-18	Manhole	O-3	76.45	74.85	705.00
MH-19	Manhole	O-3	74.85	73.65	705.00
MH-20	Manhole	O-3	73.65	73.31	705.00
MH-21	Manhole	O-3	73.31	70.23	704.50
MH-22	Manhole	O-3	81.33	75.15	704.50

Calculation Detailed Summary

Node Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
MH-23	Manhole	O-3	75.15	71.40	702.00	697.35	700.72	700.71
MH-24	Manhole	O-3	71.40	67.45	702.00	697.00	700.31	700.31
MH-25	Manhole	O-3	67.45	63.28	705.00	696.50	700.18	700.08
MH-26	Manhole	O-3	63.28	61.37	706.00	696.18	699.73	699.73
MH-27	Manhole	O-3	61.37	59.91	701.00	692.58	697.49	697.49
MH-29	Manhole	O-3	44.07	44.07	712.00	691.83	697.26	697.25
MH-30	Manhole	O-3	44.07	43.21	711.50	691.08	697.03	697.03
MH-31	Manhole	O-3	43.21	42.69	711.50	690.38	696.80	696.80
MH-32	Manhole	O-3	42.69	41.84	710.00	689.00	696.68	696.68
MH-33	Manhole	O-3	41.84	40.44	709.00	688.89	696.60	696.60
MH-34	Manhole	O-3	40.44	39.67	707.00	688.57	696.40	696.40
MH-35	Manhole	O-3	39.67	39.10	705.50	688.22	696.21	696.20
MH-37	Manhole	O-3	39.10	38.52	704.00	687.87	695.98	695.98
O-3	Outfall	(N/A)	(N/A)	58.28	693.00	687.52	695.78	695.78
H-1	Headwall	O-3	35.53	35.53	670.00	687.17	695.60	695.60
						686.82	695.44	695.44
						686.48	695.29	695.29
						702.00	712.08	712.08
						701.00	710.59	710.56
						700.75	709.57	709.53
						700.35	708.18	708.18
						699.75	706.28	706.28
						699.15	704.50	704.50
						698.55	702.83	702.83
						697.95	701.17	701.17
						686.10	(N/A)	(N/A)
						(N/A)	670.00	670.00

Calculation Detailed Summary

Inlet Summary

Label	Inlet Type	Catalog Inlet Type	Catalog Inlet	Flow (Captured) (cfs)	Flow (Total Bypassed) (cfs)
Bypass Target	Capture Efficiency (Calculated) (%)	Depth (Gutter) (in)	Spread / Top Width (ft)		

Pond Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)	Hydraulic Grade (ft)
Volume (gal)					

APPENDIX T

OPTION 2A COST ESTIMATE

Illinois Department of Transportation

Project
Route
Section
County

Estimate of Cost

Location of Improvement: Option 2A- Storm sewer from West limits 121 Ac commercial corridor to Welch Creek
This option avoids existing ANR and Enbridge transmission gas mains.

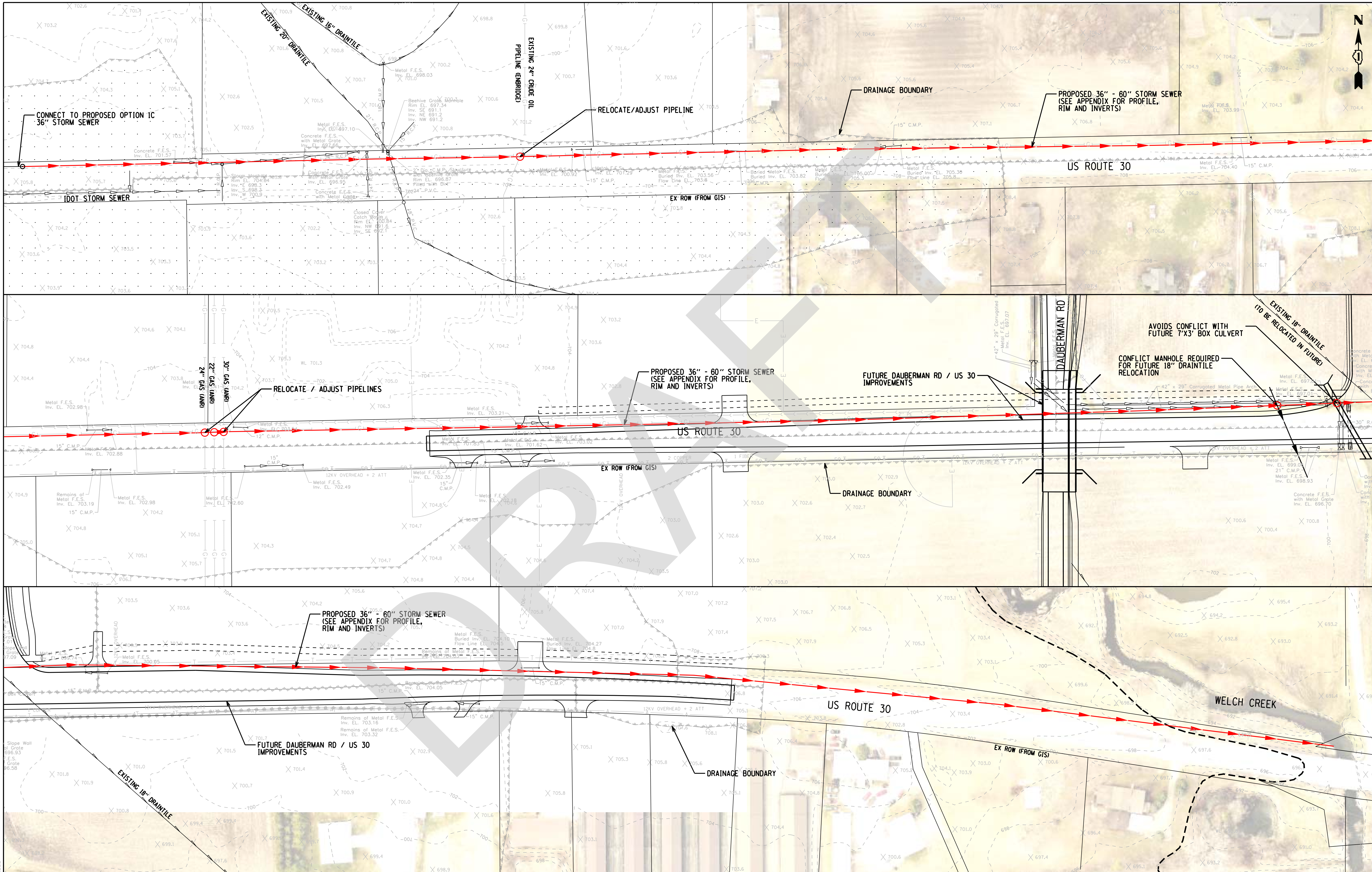
For a total distance of Net improvement of
Type Width Thickness
Shoulders Average Haul Maximum Grade %

Code Number	Item	Unit of Measure	Quantity	Unit Price	Total Cost	EEO% Breakdown
20101200	TREE ROOT PRUNING	EACH	5	$125.00	$625.00	0.02%
20800150	TRENCH BACKFILL	CU YD	18,404	$25.00	$460,094.55	11.17%
25200110	SODDING, SALT TOLERANT	SQ YD	2,800	$8.00	$22,400.00	0.54%
28000510	INLET FILTERS	EACH	6	$200.00	$1,200.00	0.03%
28001100	TEMPORARY EROSION CONTROL BLANKET	SQ YD	5,689	$3.00	$17,067.00	0.41%
28100107	STONE RIPRAP, CLASS A4	SQ YD	25	$75.00	$1,875.00	0.05%
28200200	FILTER FABRIC	SQ YD	25	$5.00	$125.00	0.00%
35101600	AGGREGATE BASE COURSE, TYPE B 4"	SQ YD	5,225	$8.00	$41,801.78	1.02%
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	275	$12.00	$3,298.67	0.08%
48203021	HOT-MIX ASPHALT SHOULDERS, 6"	SQ YD	4,950	$35.00	$173,261.67	4.21%
54261372	CONCRETE END SECTION, STANDARD 542001, 72", 1:3	EACH	1	$20,000.00	$20,000.00	0.49%
550A0480	STORM SEWERS, CLASS A, TYPE 2 48"	FOOT	632	$125.00	$79,000.00	1.92%
550A0520	STORM SEWERS, CLASS A, TYPE 2 72"	FOOT	5,655	$300.00	$1,696,500.00	41.20%
550A4730	STORM SEWERS, CLASS A, TYPE 1 EQUIVALENT ROUND-SIZE 60"	FOOT	575	$250.00	$143,750.00	3.49%
550A4750	STORM SEWERS, CLASS A, TYPE 1 EQUIVALENT ROUND-SIZE 72"	FOOT	50	$350.00	$17,500.00	0.43%
60224446	MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	$8,000.00	$8,000.00	0.19%
60224469	MANHOLES, TYPE A, 9'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	13	$15,000.00	$195,000.00	4.74%
X6022110	MANHOLES, TYPE A, 10'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	$25,000.00	$25,000.00	0.61%
	MANHOLES, TYPE A, 11'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	2	$30,000.00	$60,000.00	1.46%
	CONFLICT MANHOLE	EACH	1	$40,000.00	$40,000.00	0.97%
67100100	MOBILIZATION	L SUM	1	$185,000.00	$185,000.00	4.49%
X0426200	DEWATERING	L SUM	1	$50,000.00	$50,000.00	1.21%
X4810200	AGGREGATE SHOULDER REMOVAL	CU YD	825	$30.00	$24,751.67	0.60%
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	$125,000.00	$125,000.00	3.04%
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	$25,000.00	$25,000.00	0.61%
Z0004522	HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 6"	SQ YD	275	$55.00	$15,118.89	0.37%
			Contingency (20%)		$686,273.84	
			Total Cost		$4,117,643.06	

Made by JT Date Examined ,
Checked by DB Date Regional Engineer

APPENDIX U

OPTION 2B STORM SEWER EXHIBIT

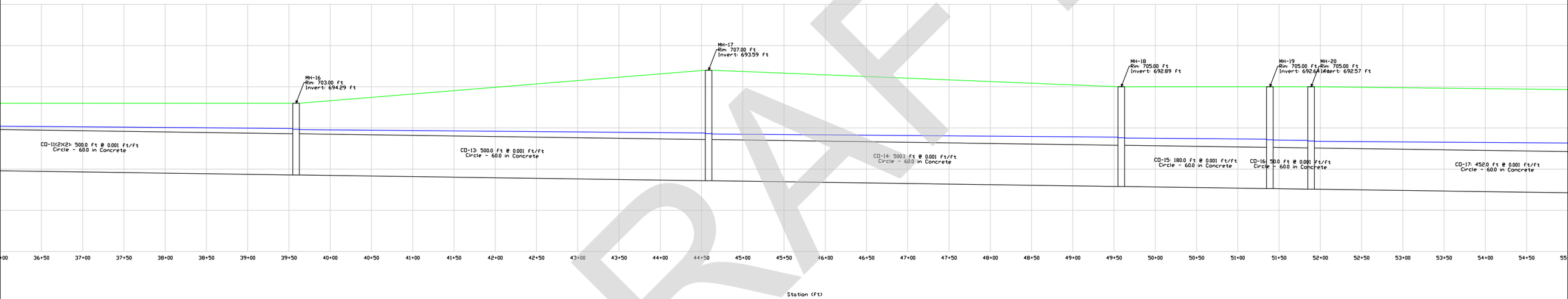


FILE NAME = $FILE$

BLA, Inc. ITASCA, ILLINOIS	USER NAME = $USER$	DESIGNED - JT	REVISED -	KANE COUNTY DIVISION OF TRANSPORTATION	WATERSHED DRAINAGE STUDY OPTION 2B EXHIBIT – SEWER (RELOCATE PIPELINES)	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - JT	REVISED -					KANE		
	PLOT SCALE = $SCALE$	CHECKED - EO	REVISED -					CONTRACT NO.		
	PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED -		SCALE: 1"=70' SHEET ___ OF ___ SHEETS STA. ___ TO STA. ___	ILLINOIS FED. AID PROJECT				

APPENDIX V

OPTION 2B STORM SEWER PROFILE AND STORM CAD DATA


MH-16
Rim: 703.00 ft
Invert: 694.29 ft
MH-17
Rim: 707.00 ft
Invert: 693.59 ft
MH-18
Rim: 705.00 ft
Invert: 692.89 ft
MH-19
Rim: 705.00 ft
Invert: 692.64 ft
MH-20
Rim: 705.00 ft
Invert: 692.57 ft
CO-11(2X2): 500.0 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-13: 500.0 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-14: 500.1 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-15: 180.0 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-16: 50.0 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-17: 452.0 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
+00
36+50
37+00
37+50
38+00
38+50
39+00
39+50
40+00
40+50
41+00
41+50
42+00
42+50
43+00
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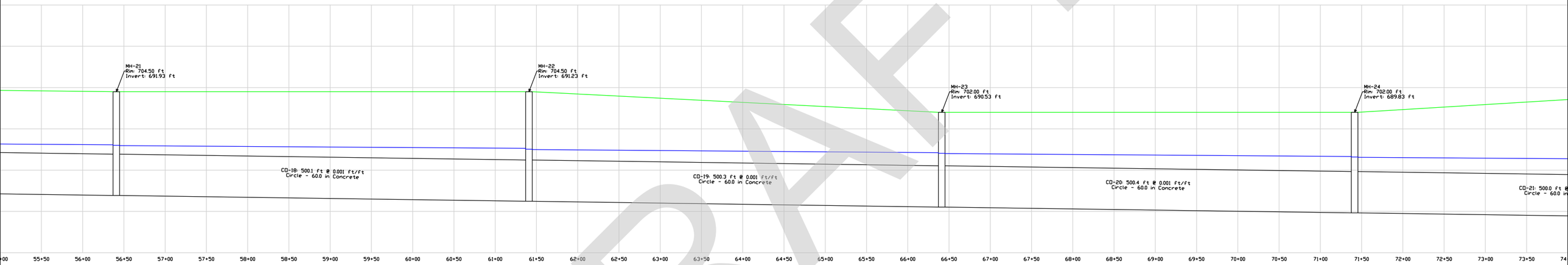
53+00
53+50
54+00
54+50
55
Station (ft)


MH-21
Rim: 704.50 ft
Invert: 691.93 ft
MH-22
Rim: 704.50 ft
Invert: 691.23 ft
MH-23
Rim: 702.00 ft
Invert: 690.53 ft
MH-24
Rim: 702.00 ft
Invert: 689.83 ft
CO-18: 500.1 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-19: 500.3 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-20: 500.4 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-21: 500.0 ft @
Circle - 60.0 in
00
55+50
56+00
56+50
57+00
57+50
58+00
58+50
59+00
59+50
60+00
60+50
61+00
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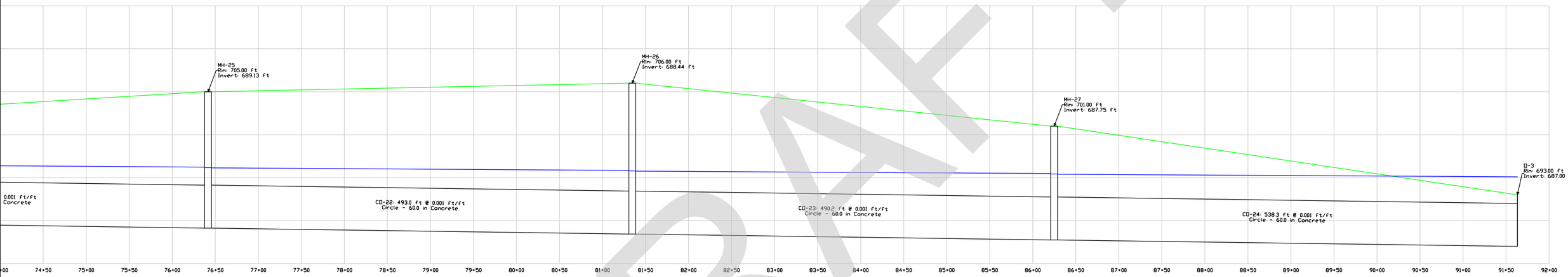
71+50
72+00
72+50
73+00
73+50
74


MH-25
Rim: 705.00 ft
Invert: 689.13 ft
MH-26
Rim: 706.00 ft
Invert: 688.44 ft
MH-27
Rim: 701.00 ft
Invert: 687.75 ft
O-3
Rim: 693.00 ft
Invert: 687.00 ft
0.001 ft/ft
Concrete
CO-22: 493.0 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-23: 490.2 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
CO-24: 538.3 ft @ 0.001 ft/ft
Circle - 60.0 in Concrete
74+50
75+00
75+50
76+00
76+50
77+00
77+50
78+00
78+50
79+00
79+50
80+00
80+50
81+00
81+50
82+00
82+50
83+00
83+50
84+00
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85+00
85+50
86+00
86+50
87+00
87+50
88+00
88+50
89+00
89+50
90+00
90+50
91+00
91+50
92+00

Calculation Detailed Summary

Element Details

ID	29	Notes	
Label	Base Calculation Options		

Hydraulic Summary

Flow Profile Method	Backwater Analysis	Average Velocity Method	Actual Uniform Flow Velocity
Number of Flow Profile Steps	5	Minimum Structure Headloss	0.00 ft
Hydraulic Grade Convergence Test	0.00 ft	Minimum Time of Concentration	0.083 hours

Inlets

Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

HEC-22 Energy Losses (Second Edition)

Elevations Considered Equal Within	0.50 ft	Depressed Unsubmerged Factor	1.000
Consider Non-Piped Plunging Flow?	True	Half Bench Submerged Factor	0.950
Flat Submerged Factor	1.000	Half Bench Unsubmerged Factor	0.150
Flat Unsubmerged Factor	1.000	Full Bench Submerged Factor	0.750
Depressed Submerged Factor	1.000	Full Bench Unsubmerged Factor	0.070

Headloss (AASHTO)

Expansion, Ke	0.350	Shaping Adjustment, Cs	0.500
Contraction, Kc	0.250	Non-Piped Flow Adjustment, Cn	1.300

Bend Angle vs. Bend Loss Curve

Bend Angle (degrees)	Bend Loss Coefficient, Kb
0.00	0.000
15.00	0.190
30.00	0.350
45.00	0.470
60.00	0.560
75.00	0.640
90.00	0.700

Gravity Hydraulics

Calculation Detailed Summary

Gravity Hydraulics	
Governing Upstream Pipe Selection Method	Pipe with Maximum QV

Catchment Summary

Label	Area (User Defined) (acres)	Time of Concentration (hours)	Runoff Coefficient (Rational)	Catchment CA (acres)	Catchment Intensity (in/h)	Catchment Rational Flow (cfs)
CM-2	11.600	0.518	0.550	6.380	5.525	35.53
CM-3	30.250	0.500	0.033	0.983	5.600	5.55
CM-4	60.500	0.500	0.033	1.966	5.600	11.10
CM-5	30.250	0.500	0.033	0.998	5.600	5.63
CM-6	14.800	0.447	0.480	7.104	6.155	44.07

Conduit Summary

Label	Section Type	Branch ID	Subnetwork Outfall	Flow (cfs)
CO-9	Circle	1	O-3	42.47
CO-10	Circle	1	O-3	41.84
CO-11(1)	Circle	1	O-3	73.14
CO-11(2)(1)	Circle	1	O-3	72.16
CO-11(2)(2)	Circle	1	O-3	72.05
CO-12	Circle	2	O-3	35.53
CO-13	Circle	1	O-3	74.53
CO-14	Circle	1	O-3	72.21
CO-15	Circle	1	O-3	69.80
CO-16	Circle	1	O-3	68.91
CO-17	Circle	1	O-3	68.66
CO-18	Circle	1	O-3	66.37
CO-19	Circle	1	O-3	71.87
CO-20	Circle	1	O-3	69.15
CO-21	Circle	1	O-3	66.32
CO-22	Circle	1	O-3	63.37
CO-23	Circle	1	O-3	61.83
CO-24	Circle	1	O-3	60.83
CO-25	Circle	1	O-3	44.07
CO-26	Circle	1	O-3	43.21
CO-27	Circle	1	O-3	42.69
CO-28	Circle	1	O-3	41.84
CO-29	Circle	1	O-3	40.44
CO-30	Circle	1	O-3	39.67
CO-32	Circle	1	O-3	39.10
CO-33	Circle	1	O-3	38.31

Calculation Detailed Summary

Conduit Summary

Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Depth (In) (ft)	Depth (Out) (ft)
3.38	701.57	701.37	4.82	5.12
3.33	701.27	700.99	5.02	5.24
3.72	700.76	700.58	5.01	5.33
3.68	700.46	700.44	5.21	5.44
3.67	700.32	699.94	5.32	5.65
5.03	700.89	700.85	4.14	5.10
3.80	699.79	699.38	5.50	5.79
3.68	699.26	698.88	5.67	5.99
3.56	698.77	698.64	5.88	6.00
3.51	698.53	698.49	5.89	5.92
3.50	698.38	698.07	5.81	6.14
3.38	697.97	697.64	6.04	6.41
3.66	697.49	697.11	6.26	6.58
3.52	697.00	696.65	6.47	6.82
3.38	696.55	696.23	6.72	7.10
3.23	696.14	695.85	7.01	7.41
3.15	695.76	695.48	7.32	7.73
3.10	695.39	695.10	7.64	8.10
6.23	711.44	710.31	9.44	9.31
6.11	709.95	709.31	8.95	8.56
6.04	708.94	707.92	8.19	7.57
5.92	707.61	706.03	7.26	6.28
5.72	705.75	704.28	6.00	5.13
5.61	704.00	702.62	4.85	4.07
4.06	702.60	702.00	4.05	4.50
3.05	701.98	701.70	4.48	4.95

Node Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)
MH-8	Manhole	O-3	43.94	42.47
MH-9	Manhole	O-3	42.47	41.84
MH-10	Manhole	O-3	77.37	73.14
MH-13	Manhole	O-3	73.14	72.16
MH-14	Manhole	O-3	72.16	72.05
MH-16	Manhole	O-3	77.60	74.53
MH-17	Manhole	O-3	74.53	72.21
MH-18	Manhole	O-3	72.21	69.80
MH-19	Manhole	O-3	69.80	68.91
MH-20	Manhole	O-3	68.91	68.66
MH-21	Manhole	O-3	68.66	66.37
MH-22	Manhole	O-3	77.47	71.87
MH-23	Manhole	O-3	71.87	69.15
MH-24	Manhole	O-3	69.15	66.32
MH-25	Manhole	O-3	66.32	63.37
MH-26	Manhole	O-3	63.37	61.83

Calculation Detailed Summary

Node Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
MH-27	Manhole	O-3	61.83	60.83	702.50	696.75	701.78	701.78
MH-29	Manhole	O-3	44.07	44.07	702.50	696.25	701.47	701.47
MH-30	Manhole	O-3	44.07	43.21	702.00	695.75	701.09	701.02
MH-31	Manhole	O-3	43.21	42.69	703.00	695.25	700.71	700.71
MH-32	Manhole	O-3	42.69	41.84	703.00	695.00	700.57	700.57
MH-33	Manhole	O-3	41.84	40.44	703.00	694.29	700.06	700.06
MH-34	Manhole	O-3	40.44	39.67	707.00	693.59	699.52	699.52
MH-35	Manhole	O-3	39.67	39.10	705.00	692.89	699.01	699.01
MH-37	Manhole	O-3	39.10	38.31	705.00	692.64	698.76	698.76
O-3	Outfall	(N/A)	(N/A)	59.71	705.00	692.57	698.61	698.61
H-1	Headwall	O-3	35.53	35.53	704.50	691.93	698.18	698.18
					704.50	691.23	697.75	697.74
					702.00	690.53	697.24	697.24
					702.00	689.83	696.77	696.77
					705.00	689.13	696.33	696.33
					706.00	688.44	695.95	695.94
					701.00	687.75	695.57	695.57
					712.00	702.00	712.17	712.17
					711.50	701.00	710.67	710.65
					711.50	700.75	709.65	709.62
					710.00	700.35	708.26	708.26
					709.00	699.75	706.36	706.36
					707.00	699.15	704.58	704.58
					705.50	698.55	702.91	702.91
					704.00	697.50	702.15	702.15
					693.00	687.00	(N/A)	(N/A)
					670.00	(N/A)	670.00	670.00

Inlet Summary

Label	Inlet Type	Catalog Inlet Type	Catalog Inlet	Flow (Captured) (cfs)

Calculation Detailed Summary

Inlet Summary

Flow (Total Bypassed) (cfs)	Bypass Target	Capture Efficiency (Calculated) (%)	Depth (Gutter) (in)	Spread / Top Width (ft)

Pond Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)

Hydraulic Grade (ft)	Volume (gal)

APPENDIX W

OPTION 2B COST ESTIMATE

Illinois Department of Transportation

Project
Route
Section
County

Estimate of Cost

Location of Improvement: Option 2B-Storm sewer from West limits of 121 AC commercial corridor to Welch Creek.
This option requires the relocation of the existing ANR and Enbridge transmission gas mains.
Cost savings is derived from the abillity to have steeper pipe slopes resulting in smaller storm pipe

For a total distance of
Net improvement of
Type
Width
Thickness
Shoulders
Average Haul
Maximum Grade %

Code Number	Item	Unit of Measure	Quantity	Unit Price	Total Cost	EEO% Breakdown
20101200	TREE ROOT PRUNING	EACH	5	$125.00	$625.00	0.02%
20800150	TRENCH BACKFILL	CU YD	15,460	$25.00	$386,505.56	11.18%
25200110	SODDING, SALT TOLERANT	SQ YD	2,800	$8.00	$22,400.00	0.65%
28000510	INLET FILTERS	EACH	6	$200.00	$1,200.00	0.03%
28001100	TEMPORARY EROSION CONTROL BLANKET	SQ YD	5,689	$3.00	$17,067.00	0.49%
28100107	STONE RIPRAP, CLASS A4	SQ YD	25	$75.00	$1,875.00	0.05%
28200200	FILTER FABRIC	SQ YD	25	$5.00	$125.00	0.00%
35101600	AGGREGATE BASE COURSE, TYPE B 4"	SQ YD	5,225	$8.00	$41,801.78	1.21%
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	275	$12.00	$3,298.67	0.10%
48203021	HOT-MIX ASPHALT SHOULDERS, 6"	SQ YD	4,950	$35.00	$173,261.67	5.01%
54261360	CONCRETE END SECTION, STANDARD 542001, 60", 1:3	EACH	1	$17,500.00	$17,500.00	0.51%
550A0470	STORM SEWERS, CLASS A, TYPE 2 42"	FOOT	400	$100.00	$40,000.00	1.16%
550A0480	STORM SEWERS, CLASS A, TYPE 2 48"	FOOT	963	$125.00	$120,375.00	3.48%
550A0500	STORM SEWERS, CLASS A, TYPE 2 60"	FOOT	5,949	$250.00	$1,487,250.00	43.02%
60223800	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	3	$6,000.00	$18,000.00	0.52%
60224459	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	14	$12,500.00	$175,000.00	5.06%
67100100	MOBILIZATION	L SUM	1	$160,000.00	$160,000.00	4.63%
X0426200	DEWATERING	L SUM	1	$50,000.00	$50,000.00	1.45%
X4810200	AGGREGATE SHOULDER REMOVAL	CU YD	825	$30.00	$24,751.67	0.72%
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	$105,000.00	$105,000.00	3.04%
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	$20,000.00	$20,000.00	0.58%
Z0004522	HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 6"	SQ YD	275	$55.00	$15,118.89	0.44%
	*DOES NOT INCLUDE COST OF RELOCATING GAS MAINS					
			Contingency (20%)		$576,231.04	
			Total Cost		$3,457,386.27	

Made by JT Date
Examined ,
Checked by DB Date
Regional Engineer

APPENDIX X

OPTION 2C STORM SEWER EXHIBIT

EXISTING 16" DRAINTILE

EXISTING 20" DRAINTILE

PIPELINE (ENBRIDGE)

EXISTING 24" CRUDE OIL

DRAINAGE BOUNDARY

PROPOSED 36" - 48" STORM SEWER (SEE APPENDIX FOR PROFILE, RIM AND INVERTS)

AVOIDS IMPACT TO EXISTING PIPELINE

0+00

5+00

10+00

15+00

20'

12'

25'

EX ROW (FROM GIS)

IDOT STORM SEWER

US ROUTE 30

Beehive Grate Manhole
Rim EL. 697.34
Inv. SE 691.1
Inv. NE 691.2
Inv. NW 691.2

Storm Manhole
Rim EL. 704.84
Inv. E 698.3
Inv. S 698.3
Inv. W 700.9

Closed Cover Catch Basin
Rim EL. 701.84
Inv. N 691.6
Inv. SE 692.1

2' Dia. C.M.P. Structure
With Beehive Grate
Rim EL. 696.87
Filled with Dirt

24" P.V.C.

Concrete F.E.S. with Metal Grate
Inv. EL. 696.95

Concrete F.E.S. with Metal Grate
Inv. EL. 697.10

Concrete F.E.S.
Inv. EL. 701.57

Metal F.E.S.
Inv. EL. 698.03

Metal F.E.S.
Inv. EL. 700.92

Metal F.E.S.
Inv. EL. 701.29

Metal F.E.S.
Buried Inv. EL. 703.56
Flow Line EL. 703.8

Buried Metal F.E.S.
Buried Inv. EL. 703.82

Metal F.E.S.
Buried Inv. EL. 705.00
Flow Line EL. 705.3

Metal F.E.S.
Buried Inv. EL. 705.30
Flow Line EL. 705.8

15" C.M.P.

18" C.M.P.

24" R.C.P.

ANTICIPATED PR. ROW FOR DAUBERMAN ROAD EXTENSION PROJECT

PROPOSED 36" - 48" STORM SEWER (SEE APPENDIX FOR PROFILE, RIM AND INVERTS)

20+00

25+00

30+00

30" GAS (ANR)

22" GAS (ANR)

24" GAS (ANR)

AVOIDS IMPACT TO EXISTING PIPELINES

FUTURE DAUBERMAN RD / US 30 IMPROVEMENTS

15'

EX ROW (FROM GIS)

US ROUTE 30

DRAINAGE BOUNDARY

Metal F.E.S.
Inv. EL. 703.99

Metal F.E.S.
Inv. EL. 704.40

Metal F.E.S.
Inv. EL. 702.98

Metal F.E.S.
Inv. EL. 703.54

Metal F.E.S.
Inv. EL. 701.62

Metal F.E.S.
Inv. EL. 703.62

Metal F.E.S.
Inv. EL. 702.88

Metal F.E.S.
Inv. EL. 702.49

Metal F.E.S.
Inv. EL. 702.60

Metal F.E.S.
Inv. EL. 702.35

Metal F.E.S.
Inv. EL. 702.78

Remains of Metal F.E.S.
Inv. EL. 703.19

12" C.M.P.

15" C.M.P.

12KV OVERHEAD + 2 A

FILE NAME = $FILE$

BLA, Inc. ITASCA, ILLINOIS	USER NAME = $USER$	DESIGNED - JT	REVISED - -
		DRAWN - JT	REVISED - -
	PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
	PLOT DATE = $DATE$	DATE - 6/07/2019	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 2C EXHIBIT – SEWER (AVOIDS PIPELINES)

SCALE: 1"=50' | SHEET 1 OF 3 SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE	3	1
		CONTRACT NO.		
	ILLINOIS FED. AID PROJECT			

PROPOSED 36" - 48" STORM SEWER
(SEE APPENDIX FOR PROFILE,
RIM AND INVERTS)

12'

35+00

FUTURE DAUBERMAN RD / US 30
IMPROVEMENTS

EX ROW (FROM GIS)

ELECTRIC TO BE RELOCATED

DAUBERMAN RD

42" x 29" Corrugated Metal Pipe Arch
Metal F.E.S.
Inv. EL. 697.07

AVOIDS CONFLICT WITH
FUTURE 7'X3' BOX CULVERT

EXISTING 18" DRAINTILE
(TO BE RELOCATED IN FUTURE)

CONFLICT MANHOLE REQUIRED
FOR FUTURE 18" DRAINTILE
RELOCATION

TELEPHONE TO BE RELOCATED

40+00

US ROUTE 30

ANTICIPATED MAX ROW
FOR FUTURE WIDENING
OF US RTE 30

165'

35'

45+00

EX ROW (FROM GIS)

EX ROW (FROM GIS)

DRAINAGE BOUNDARY

ANTICIPATED PR. ROW
FOR DAUBERMAN ROAD
EXTENSION PROJECT

Concrete Slope Wall
with Metal Grate
Inv. EL. 696.93

Concrete F.E.S.
with Metal Grate
Inv. EL. 696.58

Concrete F.E.S.
with Metal Grate
Inv. EL. 696.70

Metal F.E.S.
Inv. EL. 699.05
21" C.M.P.
Metal F.E.S.

EXISTING 18" DRAINTILE

PROPOSED 36" - 48" STORM SEWER
(SEE APPENDIX FOR PROFILE,
RIM AND INVERTS)

35'

50+00

55+00

50'

ANTICIPATED PR. ROW
FOR DAUBERMAN ROAD
EXTENSION PROJECT

Metal F.E.S.
Buried Inv. EL. 704.10
Flow Line EL. 704.5

Metal F.E.S.
Buried Inv. EL. 704.27
Flow Line EL. 704.8

Remains of Metal F.E.S.
Inv. EL. 704.32

FLOODPLAIN BOUNDARY

ANTICIPATED MAX ROW
FOR FUTURE WIDENING
OF US RTE 30

60+00

165'

WELCH CREEK

EX ROW (FROM GIS)

US ROUTE 30

EX ROW (FROM GIS)

EX ROW (FROM GIS)

Remains of Metal F.E.S.
Inv. EL. 703.16

Remains of Metal F.E.S.
Inv. EL. 703.32

DRAINAGE BOUNDARY

65+00

FILE NAME = $FILE1$

BLA, Inc.
ITASCA, ILLINOIS

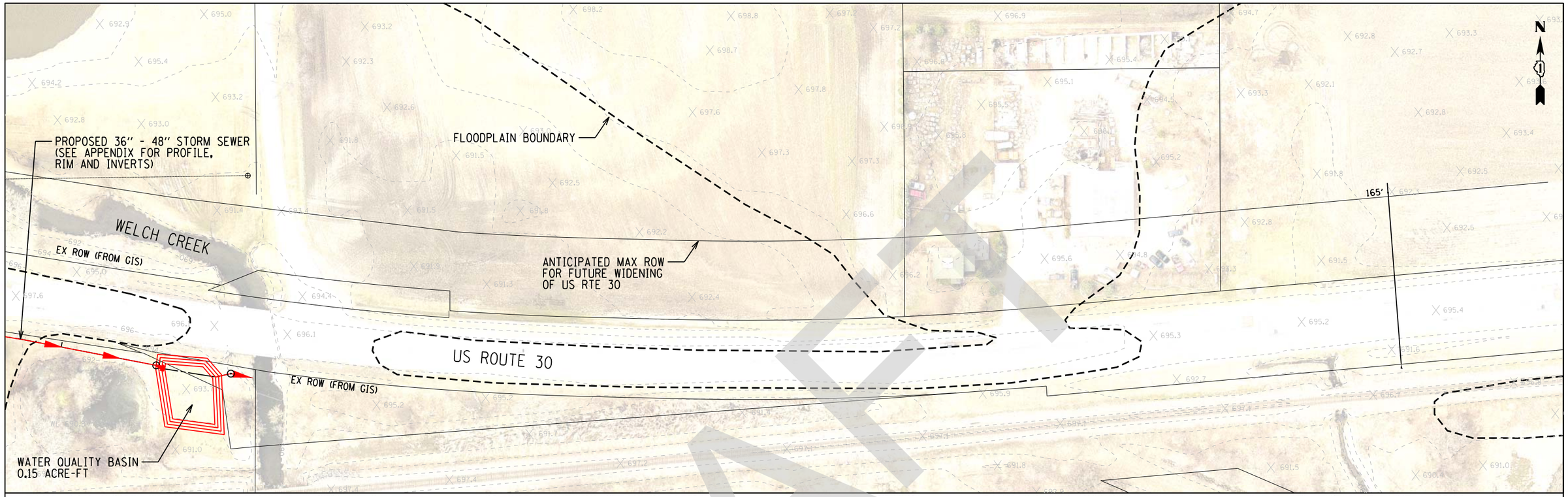
USER NAME = $USER$	DESIGNED - JT	REVISED - -
	DRAWN - JT	REVISED - -
PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
PLOT DATE = $DATE$	DATE - 6/07/2019	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 2C EXHIBIT – SEWER (AVOIDS PIPELINES)

SCALE: 1"=50' | SHEET 2 OF 3 SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE	3	2
		CONTRACT NO.		
	ILLINOIS FED. AID PROJECT			



FILE NAME = $FILE$

BLA, Inc.
ITASCA, ILLINOIS

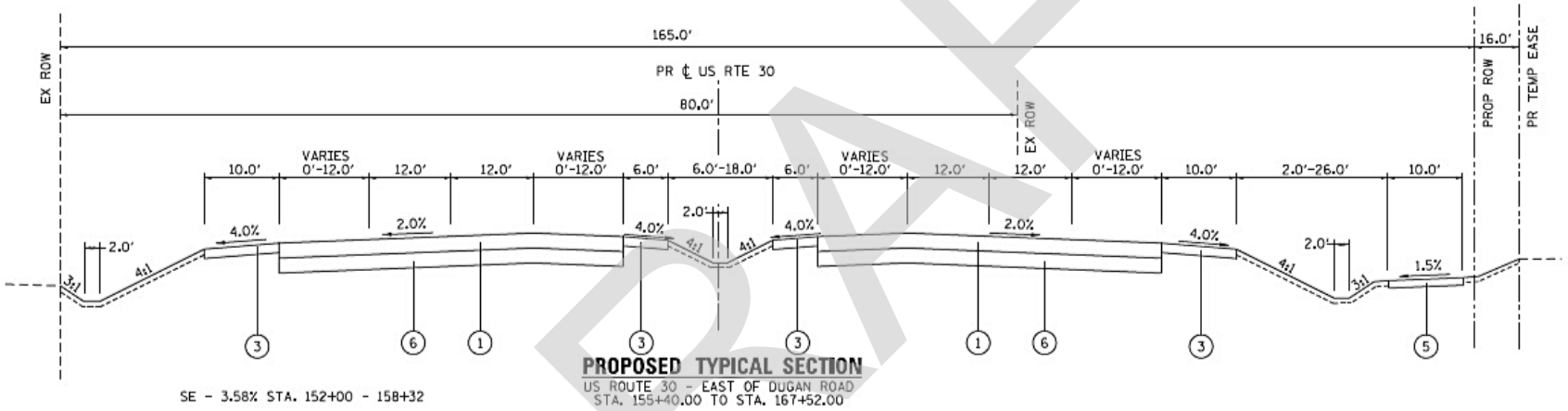
USER NAME = $USER$	DESIGNED - JT	REVISED - -
	DRAWN - JT	REVISED - -
PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
PLOT DATE = $DATE$	DATE - 6/07/2019	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 2C EXHIBIT – SEWER (AVOIDS PIPELINES)

SCALE: 1"=50' | SHEET 3 OF 3 SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE	3	3
		CONTRACT NO.		
	ILLINOIS	FED. AID PROJECT		



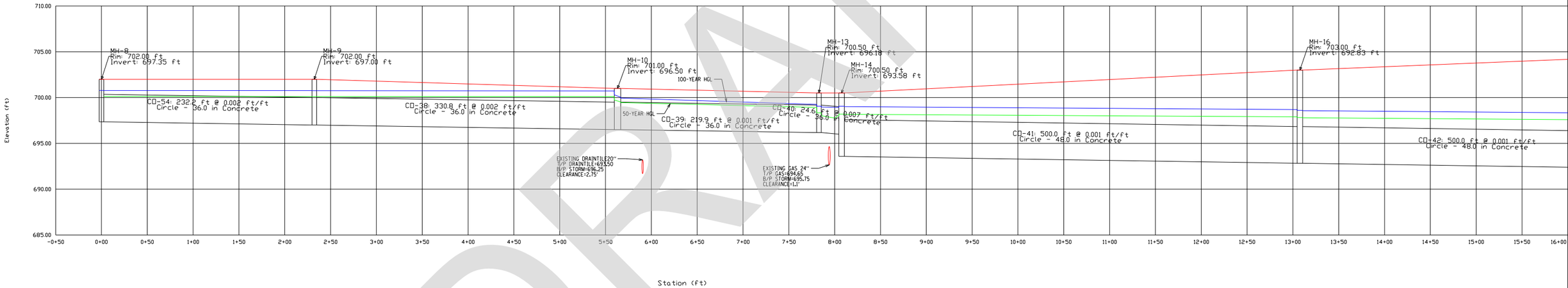
PROPOSED TYPICAL SECTION

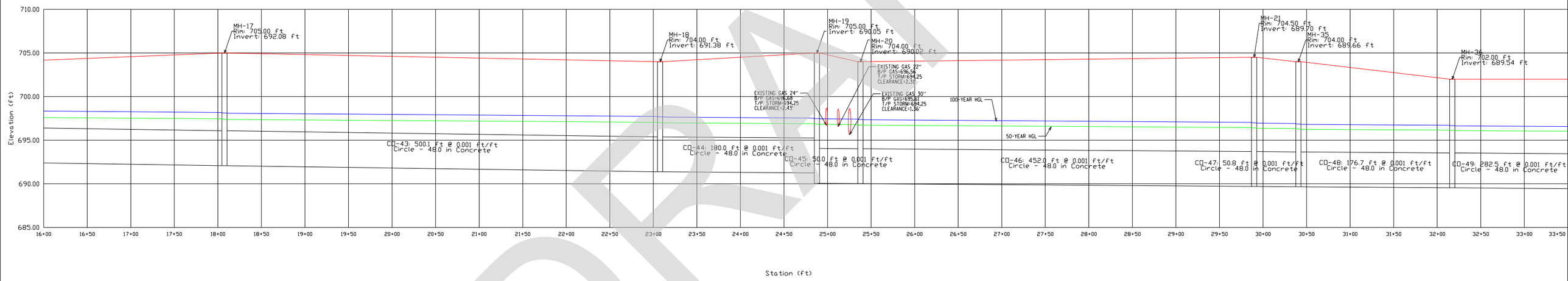
US ROUTE 30 - EAST OF DUGAN ROAD
STA. 155+40.00 TO STA. 167+52.00

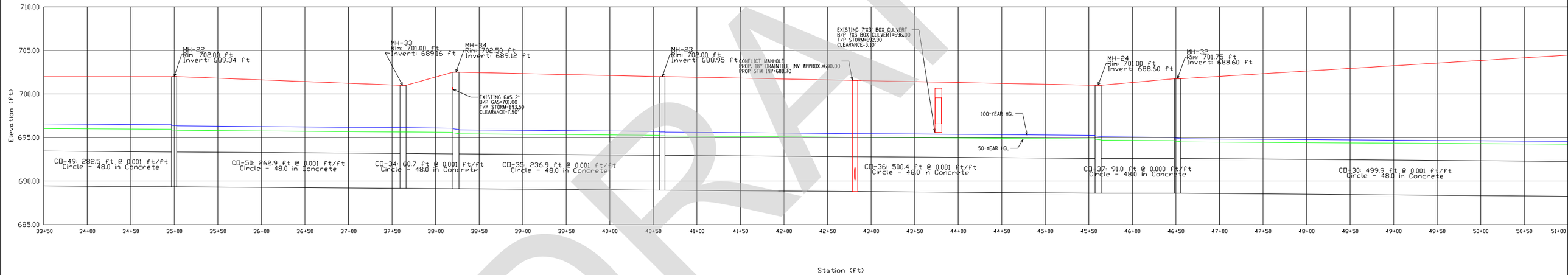
SE - 3.58% STA. 152+00 - 158+32

APPENDIX Y

OPTION 2C STORM SEWER PROFILE AND STORM CAD DATA


MH-8
Rim: 702.00 ft
Invert: 697.35 ft
MH-9
Rim: 702.00 ft
Invert: 697.00 ft
MH-10
Rim: 701.00 ft
Invert: 696.50 ft
MH-13
Rim: 700.50 ft
Invert: 696.18 ft
MH-14
Rim: 700.50 ft
Invert: 693.58 ft
MH-16
Rim: 703.00 ft
Invert: 692.83 ft
100-YEAR HGL
50-YEAR HGL
CO-54: 232.2 ft @ 0.002 ft/ft
Circle - 36.0 in Concrete
CO-38: 330.8 ft @ 0.002 ft/ft
Circle - 36.0 in Concrete
CO-39: 219.9 ft @ 0.001 ft/ft
Circle - 36.0 in Concrete
CO-40: 24.6 ft @ 0.007 ft/ft
Circle - 36.0 in Concrete
CO-41: 500.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-42: 500.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
EXISTING DRAINTILE20"
T/P DRAINTILE=693.50
B/P STORM=690.25'
CLEARANCE=2.75'
EXISTING GAS 24"
T/P GAS=694.65
B/P STORM=695.75
CLEARANCE=1.1'
Elevation (ft)
710.00
705.00
700.00
695.00
690.00
685.00
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
5+50
6+00
6+50
7+00
7+50
8+00
8+50
9+00
9+50
10+00
10+50
11+00
11+50
12+00
12+50
13+00
13+50
14+00
14+50
15+00
15+50
16+00
Station (ft)


MH-17
Rim: 705.00 ft
Invert: 692.08 ft
MH-18
Rim: 704.00 ft
Invert: 691.38 ft
MH-19
Rim: 705.00 ft
Invert: 690.05 ft
MH-20
Rim: 704.00 ft
Invert: 690.02 ft
MH-21
Rim: 704.50 ft
Invert: 689.70 ft
MH-35
Rim: 704.00 ft
Invert: 689.66 ft
MH-36
Rim: 702.00 ft
Invert: 689.54 ft
EXISTING GAS 22"
B/P GAS=696.56
T/P STORM=694.25
CLEARANCE=2.31'
EXISTING GAS 24"
B/P GAS=696.68
T/P STORM=694.25
CLEARANCE=2.43'
EXISTING GAS 30"
B/P GAS=695.81
T/P STORM=694.25
CLEARANCE=1.56'
100-YEAR HGL
50-YEAR HGL
CO-43: 500.1 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-44: 180.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-45: 50.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-46: 452.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-47: 50.8 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-48: 176.7 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-49: 282.5 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
Elevation (ft)
710.00
705.00
700.00
695.00
690.00
685.00
16+00
16+50
17+00
17+50
18+00
18+50
19+00
19+50
20+00
20+50
21+00
21+50
22+00
22+50
23+00
23+50
24+00
24+50
25+00
25+50
26+00
26+50
27+00
27+50
28+00
28+50
29+00
29+50
30+00
30+50
31+00
31+50
32+00
32+50
33+00
33+50
Station (ft)


MH-22
Rim: 702.00 ft
Invert: 689.34 ft
MH-33
Rim: 701.00 ft
Invert: 689.16 ft
MH-34
Rim: 702.50 ft
Invert: 689.12 ft
EXISTING GAS 2"
B/P GAS=701.00
T/P STORM=693.50
CLEARANCE=7.50'
MH-23
Rim: 702.00 ft
Invert: 688.95 ft
CONFLICT MANHOLE
PROP. 18" CRAINTILE INV APPROX.=680.00
PROP STM INV=688.70
EXISTING 7'X3' BOX CULVERT
B/P 7X3 BOX CULVERT=696.00
T/P STORM=692.90
CLEARANCE=3.10'
MH-24
Rim: 701.00 ft
Invert: 688.60 ft
MH-32
Rim: 701.75 ft
Invert: 688.60 ft
100-YEAR HGL
50-YEAR HGL
CO-49: 282.5 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-50: 262.9 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-34: 60.7 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-35: 236.9 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-36: 500.4 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
CO-37: 91.0 ft @ 0.000 ft/ft
Circle - 48.0 in Concrete
CO-30: 499.9 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
710.00
705.00
700.00
695.00
690.00
685.00
Elevation (ft)
33+50
34+00
34+50
35+00
35+50
36+00
36+50
37+00
37+50
38+00
38+50
39+00
39+50
40+00
40+50
41+00
41+50
42+00
42+50
43+00
43+50
44+00
44+50
45+00
45+50
46+00
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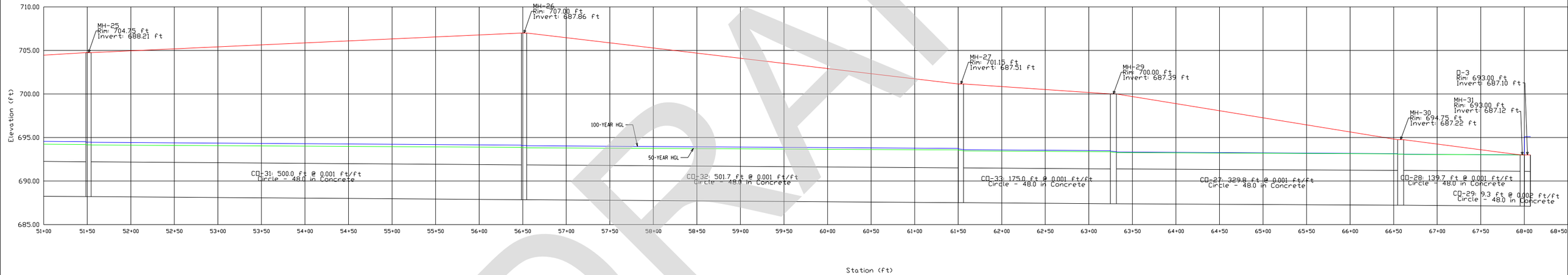
48+50
49+00
49+50
50+00
50+50
51+00
Station (ft)


MH-25
Rim: 704.75 ft
Invert: 688.21 ft
MH-26
Rim: 707.00 ft
Invert: 687.86 ft
MH-27
Rim: 701.15 ft
Invert: 687.51 ft
MH-29
Rim: 700.00 ft
Invert: 687.39 ft
□-3
Rim: 693.00 ft
Invert: 687.10 ft
MH-31
Rim: 693.00 ft
Invert: 687.12 ft
MH-30
Rim: 694.75 ft
Invert: 687.22 ft
100-YEAR HGL
50-YEAR HGL
C□-31: 500.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
C□-32: 501.7 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
C□-33: 175.0 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
C□-27: 329.8 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
C□-28: 139.7 ft @ 0.001 ft/ft
Circle - 48.0 in Concrete
C□-29: 9.3 ft @ 0.002 ft/ft
Circle - 48.0 in Concrete
Elevation (ft)
710.00
705.00
700.00
695.00
690.00
685.00
51+00
51+50
52+00
52+50
53+00
53+50
54+00
54+50
55+00
55+50
56+00
56+50
57+00
57+50
58+00
58+50
59+00
59+50
60+00
60+50
61+00
61+50
62+00
62+50
63+00
63+50
64+00
64+50
65+00
65+50
66+00
66+50
67+00
67+50
68+00
68+50
Station (ft)

Calculation Detailed Summary

Element Details

ID	29	Notes	
Label	Base Calculation Options		

Hydraulic Summary

Flow Profile Method	Backwater Analysis	Average Velocity Method	Actual Uniform Flow Velocity
Number of Flow Profile Steps	5	Minimum Structure Headloss	0.00 ft
Hydraulic Grade Convergence Test	0.00 ft	Minimum Time of Concentration	0.083 hours

Inlets

Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

HEC-22 Energy Losses (Second Edition)

Elevations Considered Equal Within	0.50 ft	Depressed Unsubmerged Factor	1.000
Consider Non-Piped Plunging Flow?	True	Half Bench Submerged Factor	0.950
Flat Submerged Factor	1.000	Half Bench Unsubmerged Factor	0.150
Flat Unsubmerged Factor	1.000	Full Bench Submerged Factor	0.750
Depressed Submerged Factor	1.000	Full Bench Unsubmerged Factor	0.070

Headloss (AASHTO)

Expansion, Ke	0.350	Shaping Adjustment, Cs	0.500
Contraction, Kc	0.250	Non-Piped Flow Adjustment, Cn	1.300

Bend Angle vs. Bend Loss Curve

Bend Angle (degrees)	Bend Loss Coefficient, Kb
0.00	0.000
15.00	0.190
30.00	0.350
45.00	0.470
60.00	0.560
75.00	0.640
90.00	0.700

Gravity Hydraulics

Calculation Detailed Summary

Gravity Hydraulics	
Governing Upstream Pipe Selection Method	Pipe with Maximum QV

Catchment Summary

Label	Area (User Defined) (acres)	Time of Concentration (hours)	Runoff Coefficient (Rational)	Catchment CA (acres)	Catchment Intensity (in/h)	Catchment Rational Flow (cfs)
CM-2	11.600	0.518	0.550	6.380	5.525	35.53
CM-3	30.250	0.500	0.033	0.983	5.600	5.55
CM-4	60.500	0.500	0.033	1.966	5.600	11.10
CM-5	30.250	0.500	0.033	0.998	5.600	5.63

Conduit Summary

Label	Section Type	Branch ID	Subnetwork Outfall	Flow (cfs)
CO-27	Circle	1	O-3	33.46
CO-28	Circle	1	O-3	32.99
CO-29	Circle	1	O-3	32.79
CO-30	Circle	1	O-3	35.76
CO-31	Circle	1	O-3	35.09
CO-32	Circle	1	O-3	34.41
CO-33	Circle	1	O-3	33.71
CO-34	Circle	1	O-3	36.93
CO-35	Circle	1	O-3	36.85
CO-36	Circle	1	O-3	36.54
CO-37	Circle	1	O-3	35.88
CO-38	Circle	1	O-3	5.30
CO-39	Circle	1	O-3	35.48
CO-40	Circle	1	O-3	35.11
CO-41	Circle	1	O-3	35.08
CO-42	Circle	1	O-3	38.05
CO-43	Circle	1	O-3	36.47
CO-44	Circle	1	O-3	34.82
CO-45	Circle	1	O-3	34.20
CO-46	Circle	1	O-3	34.03
CO-47	Circle	1	O-3	32.43
CO-48	Circle	1	O-3	32.24
CO-49	Circle	1	O-3	31.59
CO-50	Circle	1	O-3	37.69
CO-53	Circle	2	O-3	35.53
CO-54	Circle	1	O-3	5.63

Calculation Detailed Summary

Conduit Summary

Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Depth (In) (ft)	Depth (Out) (ft)
2.66	693.34	693.15	5.95	5.93
2.63	693.08	693.00	5.86	5.88
2.61	695.11	695.10	7.99	8.00
2.85	694.85	694.52	6.25	6.31
2.79	694.45	694.13	6.24	6.27
2.74	694.05	693.74	6.19	6.23
2.68	693.59	693.49	6.08	6.10
2.94	696.12	696.08	6.96	6.96
2.93	695.88	695.70	6.76	6.75
2.91	695.61	695.24	6.66	6.64
2.86	695.08	695.02	6.48	6.42
0.75	700.75	700.73	3.75	4.23
5.02	699.95	699.25	3.45	3.07
8.48	698.97	698.92	2.79	2.92
2.79	699.02	698.68	5.44	5.85
3.03	698.57	698.18	5.74	6.10
2.90	698.09	697.73	6.01	6.35
2.77	697.65	697.53	6.27	6.28
2.72	697.45	697.42	7.40	7.40
2.71	697.34	697.05	7.32	7.35
2.58	696.95	696.92	7.25	7.26
2.57	696.82	696.71	7.16	7.17
2.51	696.64	696.48	7.10	7.14
3.00	696.34	696.12	7.00	6.96
5.03	700.54	700.50	3.79	4.00
0.80	700.77	700.76	3.42	3.76

Node Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)
MH-8	Manhole	O-3	5.63	5.63
MH-9	Manhole	O-3	5.63	5.30
MH-10	Manhole	O-3	40.84	35.48
MH-13	Manhole	O-3	35.48	35.11
MH-14	Manhole	O-3	35.11	35.08
MH-16	Manhole	O-3	40.63	38.05
MH-17	Manhole	O-3	38.05	36.47
MH-18	Manhole	O-3	36.47	34.82
MH-19	Manhole	O-3	34.82	34.20
MH-20	Manhole	O-3	34.20	34.03
MH-21	Manhole	O-3	34.03	32.43
MH-22	Manhole	O-3	42.69	37.69
MH-23	Manhole	O-3	36.85	36.54
MH-24	Manhole	O-3	36.54	35.88
MH-25	Manhole	O-3	35.76	35.09
MH-26	Manhole	O-3	35.09	34.41

Calculation Detailed Summary

Node Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
MH-27	Manhole	O-3	34.41	33.71	702.00	697.35	700.79	700.78
MH-29	Manhole	O-3	33.71	33.46	702.00	697.00	700.76	700.76
MH-30	Manhole	O-3	33.46	32.99	701.00	696.50	700.73	700.47
MH-31	Manhole	O-3	32.99	32.79	700.50	696.18	699.51	699.51
MH-32	Manhole	O-3	35.88	35.76	700.50	693.58	699.18	699.18
MH-33	Manhole	O-3	37.69	36.93	703.00	692.83	698.77	698.76
MH-34	Manhole	O-3	36.93	36.85	705.00	692.08	698.27	698.27
MH-35	Manhole	O-3	32.43	32.24	704.00	691.38	697.82	697.82
MH-36	Manhole	O-3	32.24	31.59	705.00	690.05	697.61	697.61
O-3	Outfall	(N/A)	(N/A)	32.77	704.00	690.02	697.50	697.50
H-2	Headwall	O-3	35.53	35.53	704.50	689.70	697.13	697.09
					702.00	689.34	696.55	696.54
					702.00	688.95	695.79	695.79
					701.00	688.60	695.33	695.24
					704.75	688.21	694.60	694.60
					707.00	687.86	694.20	694.20
					701.15	687.51	693.82	693.74
					700.00	687.39	693.56	693.48
					694.75	687.22	693.22	693.22
					693.00	687.12	693.11	693.11
					701.75	688.60	695.10	695.01
					701.00	689.16	696.28	696.28
					702.50	689.12	696.17	696.07
					704.00	689.66	696.99	696.96
					702.00	689.54	696.78	696.78
					693.00	687.10	(N/A)	(N/A)
					670.00	(N/A)	670.00	670.00

Inlet Summary

Label	Inlet Type	Catalog Inlet Type	Catalog Inlet	Flow (Captured) (cfs)

Calculation Detailed Summary

Inlet Summary

Flow (Total Bypassed) (cfs)	Bypass Target	Capture Efficiency (Calculated) (%)	Depth (Gutter) (in)	Spread / Top Width (ft)

Pond Summary

Label	Element Type	Subnetwork Outfall	Flow (Total In) (cfs)	Flow (Total Out) (cfs)

Hydraulic Grade (ft)	Volume (gal)

APPENDIX Z

OPTION 2C COST ESTIMATE

Illinois Department of Transportation

Project
Route
Section
County

Estimate of Cost

Location of Improvement: Option 2C-Storm sewer from West limits of 121 Ac commercial corridor to Welch Creek. This option assumes implementation of the detention pond in Option 1A.
This option avoids existing ANR and Enbridge transmission gas mains.

For a total distance of — Net improvement of

Type — Width — Thickness

Shoulders — Average Haul — Maximum Grade %

Code Number	Item	Unit of Measure	Quantity	Unit Price	Total Cost	EEO% Breakdown
20101200	TREE ROOT PRUNING	EACH	10	$125.00	$1,250.00	0.06%
20200100	EARTH EXCAVATION	CU YD	1,000	$40.00	$40,000.00	2.08%
20800150	TRENCH BACKFILL	CU YD	6,025	$25.00	$150,619.44	7.82%
25200110	SODDING, SALT TOLERANT	SQ YD	7,500	$8.00	$60,000.00	3.11%
28000510	INLET FILTERS	EACH	6	$200.00	$1,200.00	0.06%
28001100	TEMPORARY EROSION CONTROL BLANKET	SQ YD	10,000	$3.00	$30,000.00	1.56%
28100107	STONE RIPRAP, CLASS A4	SQ YD	25	$75.00	$1,875.00	0.10%
28200200	FILTER FABRIC	SQ YD	25	$5.00	$125.00	0.01%
35101600	AGGREGATE BASE COURSE, TYPE B 4"	SQ YD	2,053	$8.00	$16,421.33	0.85%
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	275	$12.00	$3,298.67	0.17%
48203021	HOT-MIX ASPHALT SHOULDERS, 6"	SQ YD	1,778	$35.00	$62,222.22	3.23%
54261336	CONCRETE END SECTION, STANDARD 542001, 36", 1:3	EACH	1	$4,500.00	$4,500.00	0.23%
54261348	CONCRETE END SECTION, STANDARD 542001, 48", 1:3	EACH	1	$10,000.00	$10,000.00	0.52%
550A0450	STORM SEWERS, CLASS A, TYPE 2 36"	FOOT	820	$80.00	$65,600.00	3.40%
550A0480	STORM SEWERS, CLASS A, TYPE 2 48"	FOOT	5,895	$125.00	$736,875.00	38.25%
60221100	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	3	$3,500.00	$10,500.00	0.55%
60223800	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	14	$6,000.00	$84,000.00	4.36%
60224446	MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	$8,000.00	$8,000.00	0.42%
60224459	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	4	$10,000.00	$40,000.00	2.08%
	CONFLICT MANHOLE	EACH	1	$20,000.00	$20,000.00	1.04%
67100100	MOBILIZATION	L SUM	1	$100,000.00	$100,000.00	5.19%
X0426200	DEWATERING	L SUM	1	$50,000.00	$50,000.00	2.60%
X4810200	AGGREGATE SHOULDER REMOVAL	CU YD	296	$30.00	$8,888.89	0.46%
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	$70,000.00	$70,000.00	3.63%
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	$15,000.00	$15,000.00	0.78%
Z0004522	HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 6"	SQ YD	275	$55.00	$15,118.89	0.78%
			Contingency (20%)		$321,098.89	
			Total Cost		$1,926,593.33	

Made by JT Date — Examined ,

Checked by DB Date — Regional Engineer

APPENDIX AA

OPTION 2D DETENTION NOMOGRAPH

OPTION 2D - REGIONAL POND NEAR US30 / DAVIS

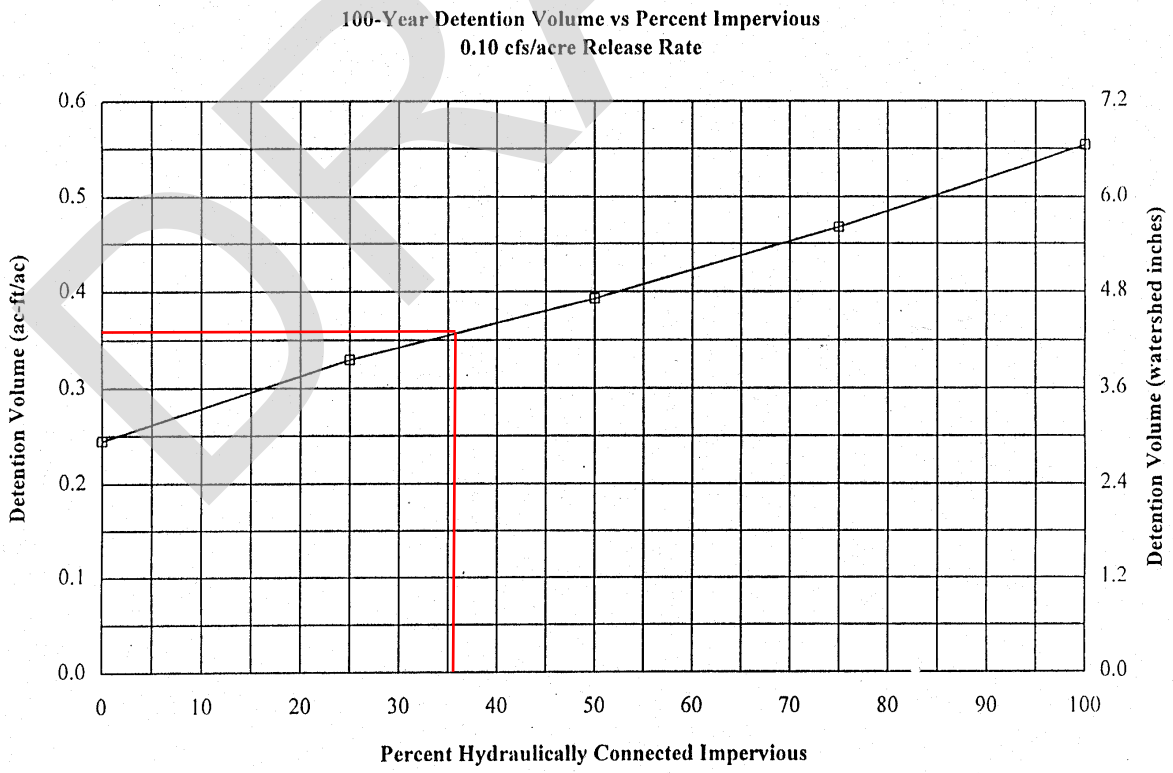
All runoff volumes shall be calculated using the 24-hour duration with a 1% probability of occurrence in any one year. An antecedent moisture condition (AMC) of 2 shall be used for all runoff calculations. An AMC=2 represents average soil moisture conditions.

A simple method for approximating the required storage volume for a development can be determined using the unit area detention method. The Northeastern Illinois Planning commission in their publication, Investigation of Hydrologic Methods for Site Design in Northeastern Illinois (Dreher and Price, 1991), have developed a chart by which unit area detention volumes can be determined from the impervious percentage of the developed site. Figure 7 shows a graph which can be used to approximate the storage. The actual required storage must be determined from an event hydrograph routing method.

Small detention basins serving less than 5 acres of tributary area, where the entire tributary area is within the development, may be sized using the results of a NIPC study that related the percent of impervious area to unit area detention volume.

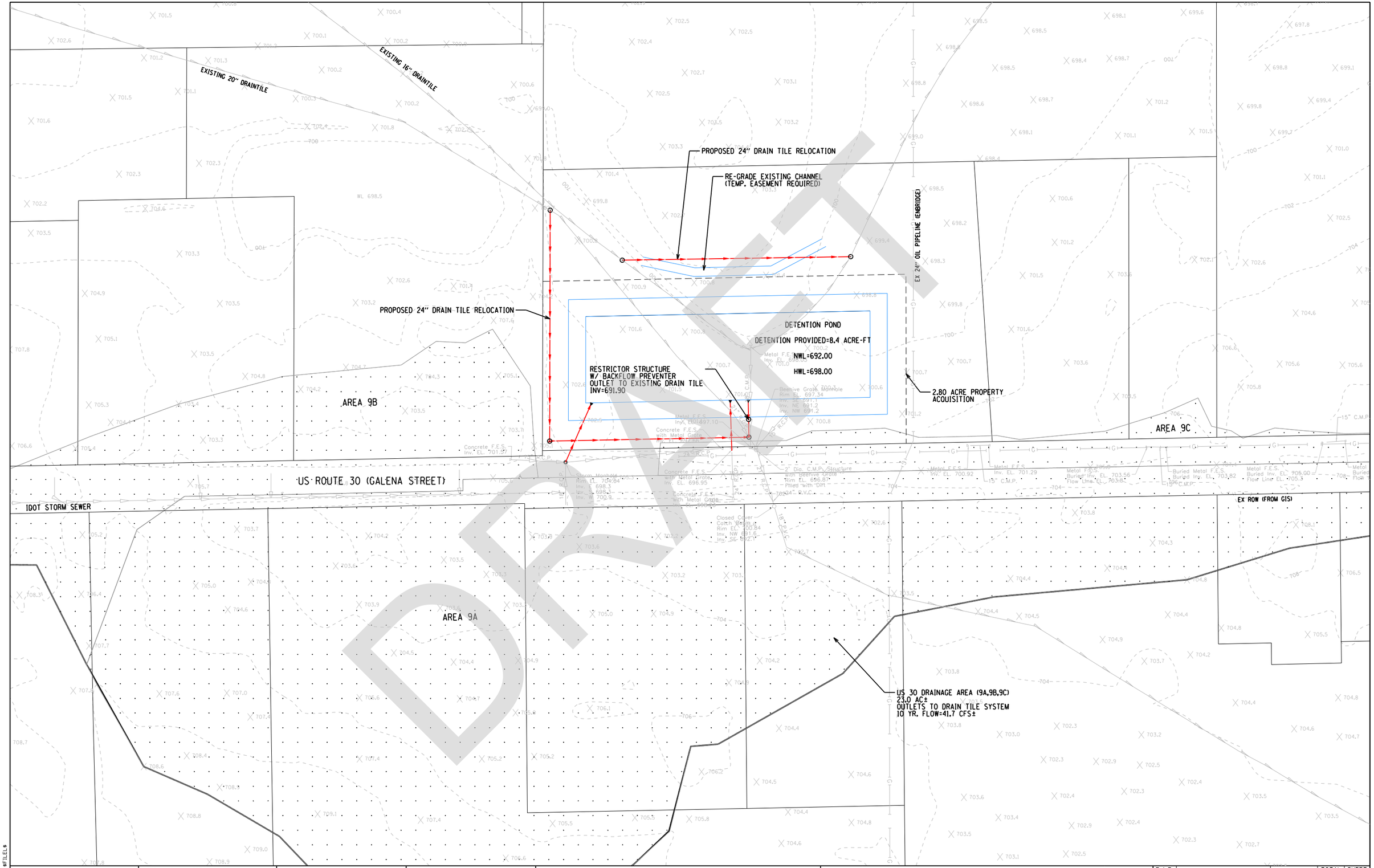
FIGURE 7
100-Year Detention Volume vs. Percent Impervious

0.36



APPENDIX BB

OPTION 2D POND EXHIBIT



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BLA, Inc.
ITASCA, ILLINOIS

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	DRAWN - JT	REVISED - -
PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 2D EXHIBIT – POND

SCALE: 1"=60' | SHEET ___ OF ___ SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		___
		CONTRACT NO.		
		ILLINOIS	FED. AID PROJECT	

APPENDIX CC

OPTION 2D COST ESTIMATE

Illinois Department of Transportation

Project
Route
Section
County

Estimate of Cost

Location of Improvement: Option 2D - Detention pond near US 30 outfall. Uses existing drain tile as outlet sewer

Note: Estimate does not include costs for land acquisition, easement acquisition or other minor storm sewer work to connect existing gas station or other properties to the new trunk line. Cost also assumes hauloff of all earth ex.

For a total distance of | Net improvement of

Type | Width | Thickness

Shoulders | Average Haul | Maximum Grade %

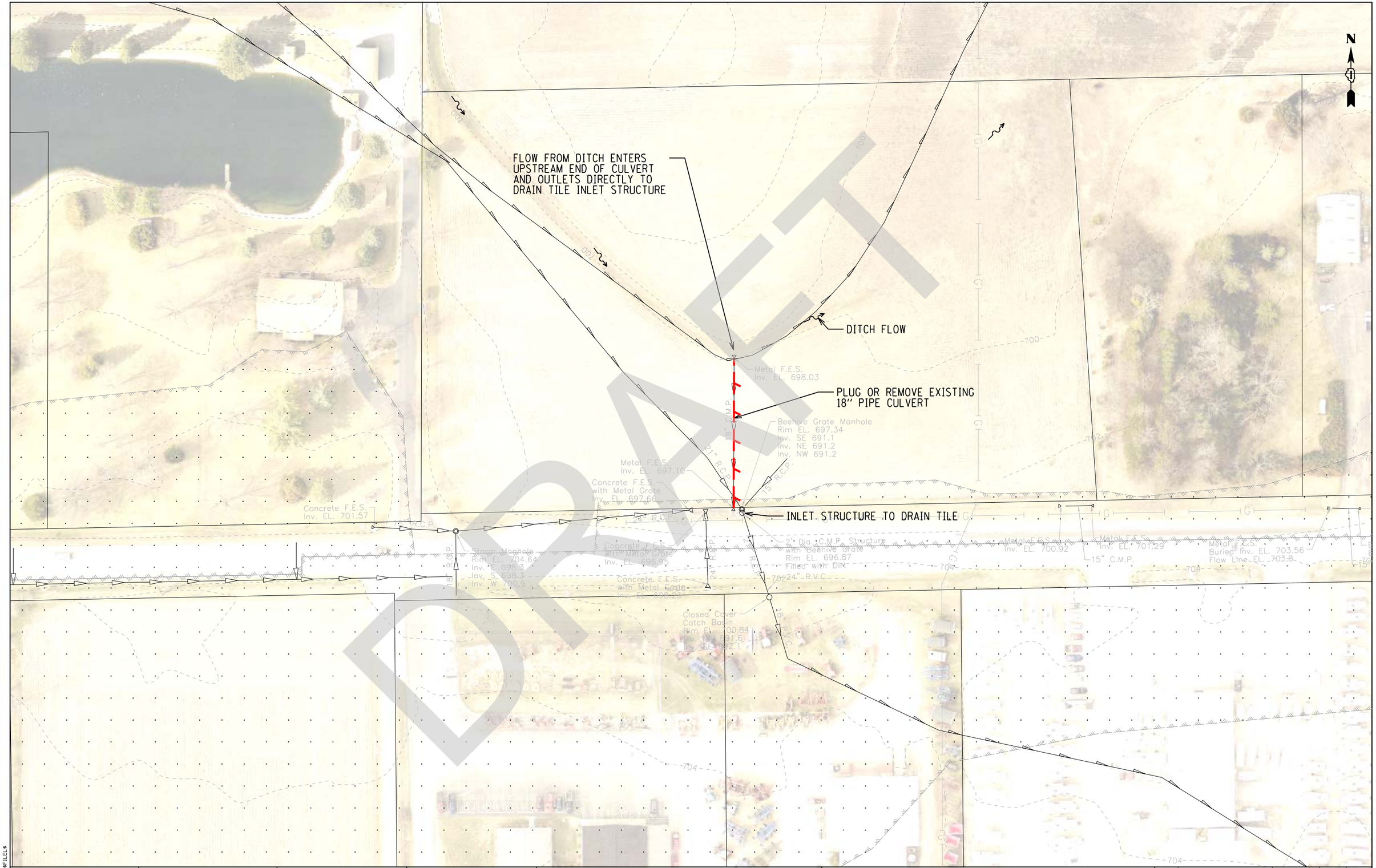
Code Number	Item	Unit of Measure	Quantity	Unit Price	Total Cost	EEO% Breakdown
20200100	EARTH EXCAVATION	CU YD	21,396	$40.00	$855,840.00	55.05%
20800150	TRENCH BACKFILL	CU YD	20	$25.00	$500.00	0.03%
25000210	SEEDING, CLASS 2A	ACRE	1	$2,000.00	$1,220.00	0.08%
28000510	INLET FILTERS	EACH	2	$200.00	$400.00	0.03%
28001100	TEMPORARY EROSION CONTROL BLANKET	SQ YD	17,088	$3.00	$51,264.00	3.30%
28100107	STONE RIPRAP, CLASS A4	SQ YD	50	$75.00	$3,750.00	0.24%
28200200	FILTER FABRIC	SQ YD	50	$5.00	$250.00	0.02%
54213669	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 24"	EACH	3	$1,200.00	$3,600.00	0.23%
550A0410	STORM SEWERS, CLASS A, TYPE 2 24"	FOOT	1,130	$70.00	$79,100.00	5.09%
550A0430	STORM SEWERS, CLASS A, TYPE 2 30"	FOOT	632	$90.00	$56,880.00	3.66%
55100800	STORM SEWER REMOVAL 16"	FOOT	415	$10.00	$4,150.00	0.27%
55100900	STORM SEWER REMOVAL 18"	FOOT	120	$11.00	$1,320.00	0.08%
55101100	STORM SEWER REMOVAL 21"	FOOT	430	$12.00	$5,160.00	0.33%
55101200	STORM SEWER REMOVAL 24"	FOOT	220	$15.00	$3,300.00	0.21%
60221100	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	5	$3,500.00	$17,500.00	1.13%
67100100	MOBILIZATION	L SUM	1	$35,000.00	$35,000.00	2.25%
X0325034	MANHOLES, TYPE A, 6'-DIAMETER, WITH 2 TYPE 1 FRAME, OPEN LI	EACH	1	$8,000.00	$8,000.00	0.51%
X0426200	DEWATERING	L SUM	1	$15,000.00	$15,000.00	0.96%
X2111100	TOPSOIL EXCAVATION AND PLACEMENT, SPECIAL	CU YD	5,696	$20.00	$113,920.00	7.33%
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	$15,000.00	$15,000.00	0.96%
Z0013798	CONSTRUCTION LAYOUT	L SUM	1	$5,000.00	$5,000.00	0.32%
	SEDGE GHETTO SEED MIX	AC	0.97	$5,000.00	$4,850.00	0.31%
	MESIC TO WET SEED MIX	AC	2.9	$5,000.00	$14,500.00	0.93%
			Contingency (20%)		$259,100.80	
			Total Cost		$1,554,604.80	

Made by EO Date | Examined ,

Checked by DB Date | Regional Engineer

APPENDIX DD

OPTION 3A SEWER REMOVAL EXHIBIT



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BLA, Inc. ITASCA, ILLINOIS	USER NAME = $USER$	DESIGNED - JT	REVISED - -
		DRAWN - JT	REVISED - -
	PLOT SCALE = $SCALE$	CHECKED - EO	REVISED - -
	PLOT DATE = $DATE$	DATE - 12/14/2018	REVISED - -

KANE COUNTY
DIVISION OF TRANSPORTATION

WATERSHED DRAINAGE STUDY
OPTION 3A EXHIBIT

SCALE: 1"=40' | SHEET ___ OF SHEETS | STA. _____ | TO STA. _____

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		KANE		___
		CONTRACT NO.		
	ILLINOIS	FED. AID PROJECT		

CONSULTING ENGINEERS

BLA, Inc.

Office Locations

Corporate Office
333 Pierce Road
Suite 200
Itasca, IL 60143
630-438-6400
Fax 630-438-6444

Indianapolis Office
8720 Castle Creek Parkway
Suite 329
Indianapolis, IN 46250
317-842-4500
Fax 317-842-4506