MEEKER COUNTY, MINNESOTA
BOARD OF COMMISSIONERS
Regular Session Agenda
April 16, 2019

8:30 Meeting Called to Order With Pledge of Allegiance

Public Comment Period*

- Amendments to the Agenda
- Approval of April 2, 2019 Minutes

Employee Years of Service Awards & Special Achievement Awards
- Joshua Case, Deputy, 10 Years
- Randy Celander, Communications Specialist, 10 Years
- Kristin Cote, Land Records Director, 20 Years
- Kim Dendinger-Nelson, Social Worker, 35 Years
- Phil Valiant, Heavy Equipment Operator, 40 Years

Kurt Waldbillig, MMH CEO
- Hospital Matters
- Approve Hospital Board Reappointments:
    - John Spreiter
    - Bill Ward

8:45 Joel Ramthun, Facilities Manger
- Approve Hire of Facilities Worker Dennis Cash, Level A12 Step 1, $16.05 per Hour, Effective May 1, 2019

8:50 Angie Maus, Crime Victim/Witness Coordinator
- Accept $1,000 Donation to Crime Victim Fund From Community Action Partnership/Meeker County Domestic Violence Program

8:55 Mikkell Johnson, Human Resource Coordinator
- Reclassification of Lead Equipment Operator

9:00 Mary Spreiter, Information Technology Director
- Request Approval for Network Upgrade Project

9:10 Brian Cruze, County Sheriff
- Approve Hire of Seasonal Water Patrol Deputies Nolan Warren, Dylan Watt, Jose Santana, Level A12 Step 1, $16.05 per Hour, Effective April 22, 2019
- Appoint Becky Howell to Central MN NG911 Committee as Alternate to Replace Dan Miller

- Appoint Stephanie Johnson to Emergency Managers Advisory Committee (EMAC) as Delegate to Replace Dan Miller
- Appoint Becky Howell to Emergency Managers Advisory Committee (EMAC) as Alternate to Replace Stephanie Johnson
- Appoint Jeffrey Ho to Southwest MN Emergency Medical Services Corporate Board as Alternate to replace Dan Miller
- Approve Emergency Operations Plan (EOP) Updates

9:25 Barb Loch, County Auditor
- Request $40,000 Loan From Revenue Fund for Ditch Fund
- Approve County and Hospital Accounts Payable

Recess as County Board and Convene as County Ditch Authority

9:30 Public Hearing: County Ditch 19

Adjourn as County Ditch Authority and Reconvene as County Board

9:45 Phil Schmalz, Public Works Director
- Consider Sale of Approximately 0.17 Acres of Meeker County Highway Shop Property in Dassel
- 2018/2019 Snow & Ice Summary
- **Resolution 2019-05**: Transportation Funding Support

10:00 Paul Bukovich, Social Services Director
- Approve Hire of Social Worker Kenzey Jehoich, Level C41 Step 1, $25.59 per Hour, Effective Date TBD
- Request Approval to Provide $5,000 Matching Funds to Grove City Care
- Report: Substance Abuse in Meeker County
- Approve Social Service Accounts Payable

Board of Commissioners Committee Update

Miscellaneous Correspondence
- Monthly Fund Cash Balances

***Board agendas and *"Meeker County Board Protocol and Public Participation Policies"* are available in the board room**

The Meeker County Board of Commissioners met on April 2, 2019, at the Meeker County Courthouse in the City of Litchfield, Minnesota. Call to order was at 8:30 a.m. by Chair Mike Housman.

Present: Commissioners – Beth Oberg, Joe Tacheny, Mike Housman, Steve Schmitt and Bryan Larson, County Attorney Brandi Schiefelbein, County Administrator Paul Virnig and Administrative Coordinator Cori Heacock.

Meeting opened with Pledge of Allegiance.

Board Chair Housman called for public comments and there were none.

Motion by Oberg, second by Tacheny to approve the April 2, 2019 agenda as amended to include the promotion of Appraiser Travis Scoblic.
Motion carried unanimously.

Motion by Oberg, second by Larson to approve County Board minutes for March 19, 2019 as printed.
Motion carried unanimously.

Motion by Oberg, second by Schmitt to approve the hire of Casual Part-time Interpreter Cullin Egge, $22 per hour, effective April 3, 2019.
Motion carried unanimously.

Motion by Tacheny, second by Schmitt to approve the purchase of a commercial zero-turn mower with 60" deck for the Parks Department from Haug Implement Co., for a cost of $10,000.
Motion carried unanimously.

Motion by Tacheny, second by Larson to approve the purchase of playground equipment for Shaw Memorial Park as listed under Option 1: Model #3D-2738, from St. Croix Recreation for a cost of $40,214.
Motion carried unanimously.

Motion by Schmitt, second by Larson to approve a Conditional Use Permit, as recommended by the Planning Commission, for Jeff Geislinger to move more than ten (10) cubic yards in the Shore Impact Zone, with stated conditions.
Motion carried unanimously.

Motion by Oberg, second by Tacheny to approve the renewal of an existing Interim Use Permit, originally approved on April 2, 2013, and as recommended by the Planning Commission, for Gilbert Anderson, to mine and process aggregate material in an A-1 Agricultural Preservation District with stated conditions.
Motion carried unanimously.

Motion by Larson, second by Schmitt to approve the renewal of an existing Interim Use Permit, original approved on April 13, 2013, and as recommended by the Planning Commission, for Duininck, Inc., to mine and process aggregate material, with stated conditions.
Motion carried unanimously.

Motion by Oberg, second by Tacheny to approve the renewal of an existing Interim Use Permit, originally approved on April 13, 2013, and as recommended by the Planning Commission, for Duininck, Inc., to operate a hot mix asphalt plant with the related stockpiling and bituminous

recycling, with stated conditions.
Motion carried unanimously.

Motion by Schmitt, second by Larson to approve the renewal of an existing Interim Use Permit, originally approved on April 2, 2013, and as recommended by the Planning Commission, for Duininck, Inc., to mine and process aggregate material in an A-1 Agricultural Preservation District, with stated conditions.
Motion carried unanimously.

Motion by Schmitt, second by Larson to approve the renewal of an existing Interim Use Permit, originally approved on March 7, 2017, and as recommended by the Planning Commission, for Duininck, Inc., to operate an asphalt plant with the related recycling and stockpiling of asphalt material in an A-1 Agricultural Preservation District, with stated conditions.
Motion carried unanimously.

Motion by Tacheny, second by Schmitt to approve advertising for a Part-time Aquatic Invasive Species Coordinator.
Motion carried unanimously.

Motion by Oberg, second by Schmitt to approve Social Services accounts payable as follows:

Human Services Fund	$113,707.14

Motion carried unanimously.

Motion by Larson, second by Schmitt to approve the hire of Temporary Water Patrol Officers Tate Marschall and Taylor Stockmann, Level A12 Step 1, $16.05 per hour, effective April 15, 2019, pending successful exams.
Motion carried unanimously.

Motion by Schmitt, second by Tacheny to approve the promotion of Detective Sara Miller to Patrol Sergeant, Level C42 Step 10, $34.95 per hour plus $225 on-call pay per month, effective April 15, 2019.
Motion carried unanimously.

Sheriff Cruze shared the Sheriff's Office 2018 Activity Report with the Board.

Matt Johnson of the Mid-Minnesota Development Commission presented information to the board regarding the formation of a Regional Transportation Coordination Council.

Motion by Oberg, second by Larson to approve County and hospital accounts payable as follows:

General Revenue Fund	$ 66,856.33
Road & Bridge Fund	29,044.33
County Parks Fund	607.18
Solid Waste Fund	2,428.95
County Nurse Fund	4,579.98
Family Services Bldg. Fund	2,365.04
Ditch Fund	135.00
Economic Development Fund	139.50
County Hospital Fund	520,388.43
Credit Cards:	
General Revenue Fund	2,744.44

Motion carried unanimously.

Motion by Larson, second by Schmitt to approve the promotion of Appraiser Travis Scoblic to Appraiser Specialist, Level B24 Step 9, $28.26 per hour, effective April 1, 2019, with his anniversary date being April 1.
Motion carried unanimously.

Motion by Tacheny, second by Schmitt to approve the 2019 appropriation to the Economic Development Authority in the amount of $25,000.
Motion carried unanimously.

Motion by Schmitt, second by Larson to appoint Brent Bengtson to the Economic Development Authority Board as the Eden Valley area representative, to complete an existing term, with said term expiring June 3, 2020.
Motion carried unanimously.

On motion by Oberg, second by Schmitt, Board Chair Housman adjourned the Board Meeting at 10:00 a.m. The next meeting of the County Board of Commissioners will be April 16, 2019 in the County Board of Meeting Room, Meeker County Courthouse.

Respectfully submitted: Cori Heacock, Executive Secretary.

_____ Attest: _____
Chair of County Board Clerk of County Board

MEEKER MEMORIAL HOSPITAL
BOARD OF DIRECTORS

February 20, 2019

MINUTES

PRESENT
John Spreiter, Kiza Olson, Richard Searl, MD, Beth Oberg, Bryan Olson, Allen Liestman, Will Dolan.

ABSENT
Bill Ward.

OTHERS PRESENT
Kurt Waldbillig, CEO; Steve Plaisance, CFO; Amy Stolt, Chief Nursing Officer; Marc Vaillancourt, Chief Development Officer; Ann Lien, Chief Quality Officer.

CALL TO ORDER
The meeting was called to order at 5:34 pm by Beth Oberg, Chairperson.

CONSENT AGENDA
Upon a motion made by John Spreiter and seconded by Will Dolan, the Board to approve the consent agenda as presented with the addition of EPIC.
Motion carried.

COUNTY COMMISSIONER REPORT
No report.

QUALITY IMPROVEMENT
Motion to Approve Annual Program Review for Critical Access Requirements of Participation with Policy Updates

ACTION: Upon a motion made by Allen Liestman and seconded by Will Dolan, the Meeker Memorial Hospital Board approved Annual Program Review for Critical Access Requirements of Participation with Policy Updates.
Motion carried.

FINANCIAL REPORT
Steve reported that the Finance Committee of the Board met this morning and finances for the year end 2018 were reviewed. An adjustment was made to the accrued salaries and benefits and an updated handout was presented. Days in accounts receivable look good.

FOUNDATION REPORT
Marc reported the Foundation Board went through a strategic planning process last fall, and focus is on growing the endowment to $1 million dollars or more. There are four big events coming up for 2019. The first event is a donor recognition event on May 2nd at the Litchfield Opera House. The second event is the Tour de Meeker at the Watercade on July 13th. The annual golf tournament is on August 9th, and something new this year is the Toast of Meeker held at Fiddler's Green.

EPIC

Kurt reported there was an Epic presentation yesterday. There are 12 health systems in Minnesota utilizing Epic systems electronic medical record. Providers can "break the glass" to see a patient's notes from other providers for continuing care, but there has to be reason for the provider to do this and this is closely monitored. Meeker Memorial Hospital is currently slotted for install in August of 2019 with a go live date of February of 2020. The hospital was presented with a high level budget licensing fee of $360,000 upfront in addition to $534,000 install. The hospital is looking at a budget of 1.2 million to include updating equipment required for EPIC. Troy, IT Manager is working on making a list of what equipment is needed. There is a one-time license purchase with a yearly cost of $160,000. There will be an Epic project lead, physician champion, super users 2/50 staff, as well as 7 trainers.

OLD BUSINESS

There was no old business.

NEW BUSINESS

Kurt reported that the Board resolution is related to what healthcare can look like in Meeker County. There will be a task force that will consist of John Spreiter, Kiza Olson, Will Dolan, Dr. David Ross, Dr. Cassandra Bulau, Dr. Richard Searl, and Dr. Deb Peterson as well as senior leadership.

Motion to Approve Board Resolution

ACTION: Upon a motion made by Allen Liestman and seconded by John Spreiter, the Meeker Memorial Hospital Board approved the Board Resolution. Motion carried.

ADJOURNMENT

The meeting was adjourned at 7:30 pm.

Respectfully submitted,

Stacie Voss
Executive Assistant

Allen Liestman
Board Secretary

MEEKER MEMORIAL HOSPITAL

FINANCIAL STATEMENT

January 31, 2019

MEEKER MEMORIAL HOSPITAL
BALANCE SHEET
January 31, 2019

	2019	2018
ASSETS		
CURRENT ASSETS		
CASH	11,457,160	7,655,489
PATIENT RECEIVABLE, NET	4,932,236	5,411,851
OTHER RECEIVABLES		
INVENTORIES	651,019	647,163
PREPAID EXPENSES	352,861	353,078
TOTAL CURRENT ASSETS	17,393,275	14,067,581
ASSETS LIMITED AS TO USE		
FUNDED DEPRECIATION, DESIGNATED BY BOARD FOR CAPITAL IMPROVEMENTS	23,914,830	23,940,927
BOND FUNDS	-	2,976
ACCRUED INTEREST	277,564	246,356
TOTAL ASSETS LIMITED AS TO USE	24,192,394	24,190,259
OTHER ASSETS		
INTEREST RATE SWAP	344,402	253,443
INVESTMENT IN JOINT VENTURE	682,486	689,884
PERA Net Change	2,878,872	4,624,518
PROPERTY, PLANT, & EQUIPMENT - NET	19,839,707	20,916,057
TOTAL ASSETS	65,331,137	64,741,742
LIABILITIES AND NET ASSETS		
CURRENT LIABILITES		
ACCOUNTS PAYABLE	992,690	894,726
ACCRUED SALARIES & BENEFITS	1,631,686	1,246,562
INTEREST PAYABLE	21,000	21,000
TAXES PAYABLE	98,472	98,428
THIRD PARTY PAYABLE(RECEIVABLE)	1,897,254	1,534,361
LONG TERM DEBT - CURRENT PORTION	879,384	715,000
OTHER PAYABLES	78,000	42,000
TOTAL CURRENT LIABILIITES	5,598,486	4,552,076
INTEREST RATE SWAP (DEFERRED INFLOW)	344,402	253,443
PERA PAYABLE	12,901,940	14,667,646
LONG TERM DEBT	14,517,050	15,480,810
TOTAL NET ASSETS	31,969,258	29,787,767
TOTAL LIABILITES AND NET ASSETS	65,331,137	64,741,742
Current Ratio	3.11	3.09
Operating Days Cash	115.66	75.06
Days Cash on Hand Total	357.07	309.81
Net Days in Accounts receivable	48	58

MEEKER MEMORIAL HOSPITAL

STATEMENT OF REVENUE AND EXPENSES

January 31, 2019

	Month to Date			
	Actual	Budget	Var. Frm Budget	Last Year
Inpatient Revenue	1,502,433	1,315,647	14.2%	1,559,335
Behavioral Health Revenue	221,508	292,600	-24.3%	240,417
Other Inpatient Revenue	175,954	27,815	532.6%	25,665
Outpatient Service Revenue	3,311,467	3,403,681	-2.7%	2,956,802
Clinic Revenue	175,010	169,799	3.1%	202,493
Total Patient Service Revenue	5,386,372	5,209,542	3.4%	4,984,713
Allow. & Ded. $	(2,256,741)	(2,187,665)	-3.2%	(2,140,630)
Net Patient Service Revenue	3,129,631	3,021,877	3.6%	2,844,083
Other Operating Revenue	24,004	40,917	-41.3%	28,892
Total Operating Revenue	3,153,636	3,062,794	3.0%	2,872,975
Total Operating Expenses	(2,881,319)	(2,969,612)	3.0%	(2,627,827)
Operating Net Income (Loss)	272,316	93,182	192.2%	245,148

Allow. & Ded. % of Total Revenue	-41.9%	-42.0%	-42.9%
Operating Profit Margin	8.6%	3.0%	8.5%
EBIDA ($)	496,355.13	320,169.00	481,249.53
EBIDA(%)	16%	10%	17%
Depreciation& Amortization	189,581	191,984	195,213
Interest	34,458	35,003	40,888

MEEKER MEMORIAL HOSPITAL

STATEMENT OF REVENUE AND EXPENSES

January 31, 2019

	Year to Date			
	Actual	Budget	Var. Frm Budget	Last Year
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Clinic Revenue	175,010	169,799	3.1%	202,493
Total Patient Service Revenue	5,386,372	5,209,542	3.4%	4,984,713
Allow. & Ded. $	(2,256,741)	(2,187,665)	-3.2%	(2,140,630)
Net Patient Service Revenue	3,129,631	3,021,877	3.6%	2,844,083
Other Operating Revenue	24,004	40,917	-41.3%	28,892
Total Operating Revenue	3,153,636	3,062,794	3.0%	2,872,975
Total Operating Expenses	(2,881,319)	(2,969,612)	3.0%	(2,627,827)
Operating Net Income (Loss)	272,316	93,182	192.2%	245,148
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Operating Profit Margin	8.6%	3.0%		8.5%
EBIDA ($)	496,355.13	320,169.00		481,249.53
EBIDA(%)	16%	10%		17%
Depreciation& Amortization	189,581	191,984		195,213
Interest	34,458	35,003		40,888

MEEKER MEMORIAL HOSPITAL

FINANCIAL STATEMENT

February 28, 2019

MEEKER MEMORIAL HOSPITAL
BALANCE SHEET
February 28, 2019

	2019	2018
ASSETS		
CURRENT ASSETS		
CASH	12,028,379	8,015,101
PATIENT RECEIVABLE, NET	4,945,074	5,358,132
OTHER RECEIVABLES		
INVENTORIES	649,904	603,698
PREPAID EXPENSES	334,546	311,284
TOTAL CURRENT ASSETS	17,957,904	14,288,214
ASSETS LIMITED AS TO USE		
FUNDED DEPRECIATION, DESIGNATED BY BOARD FOR CAPITAL IMPROVEMENTS	23,911,464	23,940,781
BOND FUNDS	-	-
ACCRUED INTEREST	297,756	253,377
TOTAL ASSETS LIMITED AS TO USE	24,209,220	24,194,157
OTHER ASSETS		
INTEREST RATE SWAP	344,402	253,442
INVESTMENT IN JOINT VENTURE	694,186	707,884
PERA Net Change	2,878,872	4,624,518
PROPERTY, PLANT, & EQUIPMENT - NET	19,665,688	20,766,744
TOTAL ASSETS	65,750,272	64,834,960
LIABILITIES AND NET ASSETS		
CURRENT LIABILITES		
ACCOUNTS PAYABLE	987,032	799,576
ACCRUED SALARIES & BENEFITS	1,764,061	1,842,331
INTEREST PAYABLE	21,000	21,000
TAXES PAYABLE	98,871	98,830
THIRD PARTY PAYABLE(RECEIVABLE)	2,085,955	1,034,361
LONG TERM DEBT - CURRENT PORTION	879,384	715,000
OTHER PAYABLES	84,000	48,000
TOTAL CURRENT LIABILIITES	5,920,303	4,559,097
INTEREST RATE SWAP (DEFERRED INFLOW)	344,402	253,442
PERA PAYABLE	12,901,940	14,667,646
LONG TERM DEBT	14,444,480	15,479,710
TOTAL NET ASSETS	32,139,147	29,875,066
TOTAL LIABILITES AND NET ASSETS	65,750,272	64,834,960
Current Ratio	3.03	3.13
Operating Days Cash	118.88	78.53
Days Cash on Hand Total	355.21	313.08
Net Days in Accounts receivable	49	56

MEEKER MEMORIAL HOSPITAL

STATEMENT OF REVENUE AND EXPENSES

February 28, 2019

	Month to Date			
	Actual	Budget	Var. Frm Budget	Last Year
Inpatient Revenue	1,203,547	1,169,390	2.9%	1,330,313
Behavioral Health Revenue	132,297	254,493	-48.0%	212,108
Other Inpatient Revenue	47,910	23,681	102.3%	39,010
Outpatient Service Revenue	3,128,031	3,071,708	1.8%	2,669,856
Clinic Revenue	150,644	141,106	6.8%	160,416
Total Patient Service Revenue	4,662,428	4,660,378	0.0%	4,411,704
Allow. & Ded. $	(1,856,343)	(1,956,424)	5.1%	(1,676,030)
Net Patient Service Revenue	2,806,085	2,703,954	3.8%	2,735,674
Other Operating Revenue	21,177	40,917	-48.2%	26,889
Total Operating Revenue	2,827,261	2,744,871	3.0%	2,762,563
Total Operating Expenses	(2,711,191)	(2,668,590)	-1.6%	(2,700,535)
Operating Net Income (Loss)	116,071	76,281	52.2%	62,028
Allow. & Ded. % of Total Revenue	-39.8%	-42.0%		-38.0%
Operating Profit Margin	4.1%	2.8%		2.2%
EBIDA ($)	338,054.81	303,268.00		299,113.91
EBIDA(%)	12%	11%		11%
Depreciation& Amortization	187,527	191,984		195,213
Interest	34,457	35,003		41,872

MEEKER MEMORIAL HOSPITAL

STATEMENT OF REVENUE AND EXPENSES

February 28, 2019

	Year to Date			
	Actual	Budget	Var. Frm Budget	Last Year
Inpatient Revenue	2,705,979.65	2,485,037.00	8.9%	2,889,648
Behavioral Health Revenue	353,804.60	547,093.00	-35.3%	452,525
Other Inpatient Revenue	223,863.89	51,596.00	333.9%	64,675
Outpatient Service Revenue	6,439,497.93	6,475,389.00	-0.6%	5,626,658
Clinic Revenue	325,654.36	310,905.00	4.7%	362,910
Total Patient Service Revenue	10,048,800.43	9,870,020.00	1.8%	9,396,416
Allow. & Ded. $	(4,113,084.24)	(4,144,089.00)	0.7%	(3,816,659)
Net Patient Service Revenue	5,935,716.19	5,725,931.00	3.7%	5,579,757
Other Operating Revenue	45,180.86	81,834.00	-44.8%	55,781
Total Operating Revenue	5,980,897.05	5,807,765.00	3.0%	5,635,538
Total Operating Expenses	(5,592,509.78)	(5,638,202.00)	0.8%	(5,328,361)
Operating Net Income (Loss)	388,387.27	169,563.00	129.1%	307,177

Allow. & Ded. % of Total Revenue	-40.9%	-42.0%	-40.6%
Operating Profit Margin	6.5%	2.9%	5.5%
EBIDA ($)	834,409.94	623,537.00	780,363.44
EBIDA(%)	14%	11%	14%
Depreciation& Amortization	377,107	383,968	390,426
Interest	68,915	70,006	82,761

MEEKER COUNTY ADMINISTRATOR

325 Sibley Avenue North
Litchfield, MN 55355-2155
Phone: (320) 693-5200 Fax: (320) 693-5287
e-mail address: paul.virnig@co.meeker.mn.us

PAUL J. VIRNIG
County Administrator

CORI L. HEACOCK
Administrative Coordinator

MIKKELL JOHNSON
Human Resources Coordinator

PATTY HERZBERG
PT Administrative Assistant

April 8, 2019

Re: Reclassification of Lead Equipment Operator

Meeker County Board of Commissioners
325 Sibley Ave N
Litchfield, MN 55355

Dear Meeker County Board of Commissioners,

The Compensation and Classification Steering Committee is requesting the reclassification of the Lead Equipment Operator from a DBM rating of B31 to a DBM rating of B32. Additionally, the Steering Committee is requesting that the title of this position be changed from Lead Equipment Operator to Assistant Public Works Superintendent. The reason for the reclassification and title change are outlined as follows:

- Added duties to include additional oversight and supervision. This position would now perform certain duties of the Public Works Superintendent during their absence. This would include response to calls outside of normal hours from the Sheriff's Office Dispatch and others regarding weather, emergencies, and/or other related concerns.

- This would also include conducting after-hours, weekend, and holiday road inspections and coordinating necessary maintenance call outs in the absence or in coordination with the Public Works Superintendent.

Please let me know if you have any questions.

Mikkell Johnson
Human Resources Coordinator
Meeker County
320-693-5203

MEEKER COUNTY INFORMATION TECHNOLOGY
325 Sibley Avenue North
Litchfield, MN 55355-2155

MARY SPREITER, County IT Director
mary.spreiter@co.meeker.mn.us
320-693-5376

April 10th, 2019

Meeker County Board of Commissioners

Subject: Network upgrade including storage

Dear County Board Members:

Meeker County IT Department is requesting permission to purchase an upgrade to the network technology, specifically the servers, memory and storage technology known as the virtual environment. Our current system was purchased in 2013 and has performed well. Marco network engineers assisted in designing a new system that is expected to meet the needs of the County for next 5-7 years. This upgrade will provide a much needed increase in capacity as we move toward paperless systems.

The IT Department capital outlay budget for Computer Services has a line item for a new/upgraded server system ($38,000.00 budgeted) and SAN storage ($55,000.00 budgeted) for 2019.

The following quote has been received for the server system using State Contract pricing.

Marco Cisco State of MN – 147097 $44,452.02

I recommend purchasing the server system for $44,452.02 from Marco.

The following quote has been received for a SAN storage system:

Marco Cisco State of MN – 147097 $54,984.93

I recommend purchasing the SAN for $54,984.93 from Marco.

Respectfully submitted,

Mary Spreiter

Mary Spreiter
IT Director

2018 EOP Update

Section of Plan	Highlight of Changes Made	Reviewer Comments
Basic Plan	• Section III: Direction and Control: Added information about operational periods; pre-emergency, emergency, post emergency. • Updated Attachment 3	
Annex A: Notification and Warning	• Section III: Warning/Notification Mediums: Added information about each medium. • Section IV: Responsibilities: changed format into a table so it is easily understandable and readable. • Added/Updated Attachments 1,2,3,4,5	
Annex B: Direction and Control	• Section III: Responsibilities: changed format into a table so it is easily understandable and readable. • Section IV: Emergency Operations Center: updated information to include Mobile EOC/alternative locations/modified facilities, and security. • Section V: Post Incident Review: Added section into plan. • Added/updated attachments 1,2,3,4	
Annex C: Emergency Public Information	• Section III: Warning/Notification Mediums: Added information about each medium. • Section IV: Responsibilities: changed format into a table so it is easily understandable and readable. • Added Attachments 1, 2,3,4	

Annex D: Search and Rescue	• Section III: Responsibilities: broken down primary/secondary responsibilities for inside/outside city limits • Updated Attachment 1,2,3,4	
Annex E: Health and Medical	• Section III: Primary Responsibilities: broken up responsibilities into core area; Hospital Care, Ambulance Services/EMS Capabilities, CSOP, Local LE, Meeker County Public Health/Social Services, emergency management, and added details to each area to give definition to roles. • Section IV: Coordination of Health and Medical Needs: broken up into sections and provided details of each. • Added Attachment 3,4,5,6,7	
Annex F: Evacuation/Traffic Control/Security	• Section III: Responsibilities: changed format into a table so it is easily understandable and readable. • Section IV: Response Coordination: broken down in to 8 core areas and provided details on each. • Added Attachment 8.9,10	
Annex G: Fire Protection	• Section III: Responsibilities: added a table so it is easily understandable and readable. • Added Attachments 3,5, 6	
Annex H: Damage Assessment	• Section III: Responsibilities: changed format into a table so it is easily understandable and readable. • Section IV: Coordination of Damage Assessments: restructured, and broken out	

	into more detailed sections • Added Attachments 1,2,3,4,5	
Annex I: Congregate Care	• Section III: Coordination of Congregate Care: broken down into 13 sections and added more detailed information on each. • Added Attachment 1,2	
Annex J: Debris Management	• Section III: Responsibilities: changed format into a table so it is easily understandable and readable. • Section IV: Coordination of Debris Management: Broken into 18 core areas and added details of each. • Added attachments 1-13	
Annex K: Utilities Restoration	• Section III: Responsibilities: added color table for agencies/companies for utility services. • Section IV: inserted color coded contact tables • Added Attachment 1	
Annex L: Haz Mat Protection & Rail	• Section IV: Rail: Moved rail from alternate annex and added rail information here. Added critical infrastructure within ½ mile of rail per MNWALK guidance. • Updated attachment 6 with some additional maps; 3.a, 10.a • Added attachment 7	
Annex M: Mass Fatalities and Mass Casualties	• Section III: Responsibilities: changed format into a table so it is easily understandable and readable.	

	• Section IV: Coordination of Mass Casualty/Mass Fatality Response broken down into section A-I with detailed sub areas. • Added Attachment 2, 3, 4	
Annex N: Communications	• Section III: Communication Operations and Coordination: updated existing information • Added Attachment 3	
Annex O: Animal Care and Sheltering	• Assumptions (H): Added data for Meeker County • Section V: Coordination of Animal Care and Sheltering: broken coordination down into subcategories and added detail of each to plan. • Added Attachment 1, 2, 3, 4, 7, 8, 9, 10	
Annex P: Donation Management	• Section III: Responsibilities, boke the out between volunteers and donations. Easier to find info. • Added attachment 1, 2, 3	
Annex Q: Radiological	• Was separate plan in the past, integrated it into the county EOP. • No changes made	
Annex R: Animal Disease Response	• Section III: Responsibilities: changed format into a table so it is easily understandable and readable. • Section V: Coordination of an Animal Disease Response. Added detail and subcategories into the A. Activation. • Added Attachment 1 • Updated Attachment 2	

Local Emergency Operations Plan Crosswalk
2015 MNWALK

Use this form to document each planning requirement's location in your jurisdiction's emergency operations plan. The requirements are consistent with the National Preparedness Goal, Presidential Policy Directive 8, Comprehensive Preparedness Guides 101 & 201, and Emergency Management Preparedness Grant.

Float your mouse over a field for directions. Click Partners buttons for suggested Whole Community partners. Red buttons give helpful information and link to examples.

Date: Apr 11, 2019 | Region: West Central | Jurisdiction: Meeker | Reviewer:

Implementation Key
2015
2016
2017
2018

Partners

GENERAL ITEMS

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
1 Signature page showing approval of emergency plan by chief elected official. Each annex/ESF shall include a signature page with each department head or agency responsible to carry out those functions.	Prevent	Planning	-Record of Revision and Approval -Local EOP Review Form -End of Each Annex: BP-12, A6, B7, C6, D3, E7, F6, G4, H6, I9, J13, K7, L9, M12, N3, O10, P5, Q21, R9	○ Yes ○ No	
2 Include table of contents and a record of revision(s), including dates. info link	Protect	Planning	-Table of Contents -Record of Revisions	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
3 Identify the agency/department responsible for coordinating plan development and maintenance. Include a plan distribution list.	Protect	Planning	-EOP Forward	○ Yes ○ No	
4 Cite the legal basis (state and federal laws, statutes, county and city ordinances, executive orders, regulations, proclamations, etc.) for planning and conducting all-hazard emergency operations. link	Prevent	Planning	-BP-8, Legal Basis and References	○ Yes ○ No	
5 List and prioritize risks your jurisdiction may face, such as natural disasters, technological accidents and intentional acts of terrorism, as listed in your validated Threat and Hazard Identification and Risk Assessment (THIRA).	Prevent	Planning	-BP-1, Reason for Plan	○ Yes ○ No	
6 Identify the agency(ies)/department(s) responsible for providing each of the following to people with access and functional needs during emergencies: a) Health and medical care b) Critical transportation c) Other related support (interpreters and communication devices, assistive technology, personal care assistance) info link	Respond	Planning	-Annex E -I6-7, Health and Medical Care	○ Yes ○ No	
7 Show (in a chart, matrix or table) emergency responsibilities assigned to each department, agency and organization with a primary and/or support role. info link	Respond	Planning	-BP-7, Emergency Responsibility Assignments -BP-14, Chart B, Attachment 2	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
8 Identify the agency/department responsible for developing and maintaining the continuity of operations plan. Include standard operating guidelines for: a) Record retention b) Key leadership succession c) Alternate locations for government services Provide a list of essential government functions *info* 2018	Respond	Planning	Meeker County COOP	○ Yes ○ No	

Partners

EMERGENCY SERVICES

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
9 List the trigger points that will activate your emergency operations center. Identify who is authorized to make that determination.	Respond	Planning	-BP-2, Direction and Control -BP-6, Activation	○ Yes ○ No	
10 Describe the process used to notify key government officials and emergency response organizations of emergency alerts and warnings.	Respond	Planning	-A3, Responsibilities -A16, Attachment 3a,3b,3c	○ Yes ○ No	
11 Identify fire service capabilities beyond the basic/minimum standards within your jurisdiction. info	Prevent	Planning	-G1-2, Responsibilities -G13, Hazardous Materials Incident Response Capabilities, Attachment 6	○ Yes ○ No	
12 Identify emergency medical service capabilities within your jurisdiction. info	Respond	Planning	-E2, Primary Responsibilities, Ambulance Service/ EMS Capabilities	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
13 Identify the agency/department responsible for tracking injured victims. Include procedures for tracking. *info*	Respond	Planning	-E3, Primary Responsibilities, Meeker County Public Health/Social Services -E4, Coordination of Health and Medical Needs, Documentation/ Tracking of Injured Victims -I7, Documentation	○ Yes ○ No	
14 Identify the agency/department responsible for coordinating search and rescue activities. Include standard operating guidelines for search and rescue operations. 2018	Respond	Mass Search and Rescue Operations	-D2, Responsibilities -D4, Attachment 1	○ Yes ○ No	

Partners **COMMUNICATIONS**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
15 Identify the primary, secondary, and tertiary communications methods in your jurisdiction: a) Communications between Incident Command and emergency operations center b) Interoperable communication within the jurisdiction c) Interoperable communication with outside agencies responding to your jurisdiction *info* *link*	Protect	Public Information and Warning	-Annex N	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
16 Describe warning methods used to disseminate emergency alerts and warnings to the Whole Community, including the general population and people with access and functional needs. *info* *link*	Respond	Public Information and Warning	-A2-3, Warning/ Notification Mediums -A3-4, responsibilities -C1-4, Warning/ Notification Mediums -C4-5, Responsibilities	○ Yes ○ No	
17 Identify the agency/department authorized to activate mass notification systems, including IPAWS (Integrated Public Alert & Warning System). Include standard operating guidelines for: a) Activation b) Training c) Testing d) Coordination with regional and state entities 2017	Respond	Public Information and Warning	-A20-22, Attachment 4 -A23-33, Attachment 5	○ Yes ○ No	

Partners **PUBLIC INFORMATION**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
18 Identify a Joint Information Center (JIC), the Public Information Officer (PIO), potential media briefing locations, areas to stage the media and the individual who will ensure communications are accessible (website, signage, Braille, multiple languages). *info*	Respond	Public Information and Warning	-C4-5, Responsibilities -C5, Press Briefing/ JIC Locations	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
19 Identify who is responsible for release of public information. Include standard operating guidelines for: a) Coordinating public information b) Controlling rumors c) Tracking information needs Include a list of available media resources (with names, addresses, telephone numbers and email addresses) that will disseminate information to the public. *info* 2017	Respond	Public Information and Warning	-C1-4, Warning/ Notification Mediums -C4-5, Responsibilities	○ Yes ○ No	

Partners **INCIDENT MANAGEMENT**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
20 Identify organizations and personnel by title expected to report to your emergency operations center upon full activation. Include standard operating guidelines for: a) Procedures for maintaining ICS positions (24-hour staffing) b) EOC staff training c) Primary and alternate EOC roles/functions chart *info* *link* 2015	Respond	Planning	-B4-5, Staffing/ Personnel -B10, Attachment 2	○ Yes ○ No	
21 Identify the primary and alternate emergency operations center locations.	Respond	Operational Coordination	B2-4, Emergency Operations Center	○ Yes ○ No	
22 Provide a master chart listing agencies and/or organizations with which your jurisdiction has mutual aid agreements, memoranda of understanding and letters of agreement. The chart should include the date of origin, title and purpose. *link*	Respond	Operational Coordination	-BP-8, Legal Basis and References	○ Yes ○ No	

Partners

HEALTH CARE

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
23 Identify the agency/department that inspects or arranges for inspection of contaminated foods. How does your county handle contaminated foods? info	Respond	Screening, Search and Detection	E3, Primary Responsibilities, Meeker County Public Health/Social Services	○ Yes ○ No	
24 Identify the emergency management role in the following health care planning areas: a) Medical surge b) Service continuation c) Resource coordination - medical and nonmedical supplies d) Incident information sharing info	Prevent	Planning	Annex E	○ Yes ○ No	
25 Identify organizations and/or individuals responsible for arranging and coordinating behavioral health services for: a) emergency workers b) disaster survivors Describe coordination with voluntary agency partners.	Respond	Mass Care Services	-I5-6, Behavioral Health	○ Yes ○ No	
26 Identify medical facilities with decontamination capability for the following types: a) Radiological b) Biological c) Chemical	Respond	Planning	-E2, Primary Responsibilities, Hospital Care -E3, Primary Responsibilities, Meeker County Public Health/Social Services -E5, Coordination of Health and Medical Needs, Decontamination	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
27 List facilities that can be converted to emergency treatment centers for mass casualties and disease outbreak.	Respond	Planning	-E5, Coordination of Health and Medical Needs, Secondary Emergency Treatment Centers/ Resource Management	○ Yes ○ No	
28 Identify the agency/department responsible for coordinating mass fatality response. Include standard operating guidelines for: a) Mortuary services b) Temporary morgue operations c) Notifying next of kin d) Victim identification e) Counseling f) Reunification of families with remains 2016	Respond	Planning	Annex M	○ Yes ○ No	

Partners

CRITICAL INFRASTRUCTURE

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
29 Describe the agencies and procedures used to prioritize and coordinate the repair/restoration of vital services. Include procedures for: a) Prioritizing restoration in accordance with long term vulnerability reduction and recovery planning b) Safety inspections before re-entry List agencies to be included in consultations and/or inspections, e.g., local historical preservation office. info	Recover	Infrastructure Systems	-K3, Coordination of Operations/Service Restoration	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
30 Include a map showing the location of pipelines carrying hazardous materials. List pipeline emergency information, including 24-hour emergency telephone numbers.	Protect	Planning	-L3, Response to Hazardous Materials Incidents, g -L14, Attachment 3 -L17, Attachment 6	○ Yes ○ No	
31 Identify railroads that transport more than 25 tanker railcars carrying oil or hazardous substance cargo. Include: a) A map showing the rail line location b) 24-hour emergency telephone numbers Identify critical infrastructure within half a mile of a rail. Identify how communications and incident command relationships will be established between responders and vessel/facility owners.	Protect	Planning	-L3, Response to Hazardous Materials Incidents, f -L6, Rail	○ Yes ○ No	

Partners **MASS CARE**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
32 List Red Cross assessed shelters and other potential mass care temporary shelters. Identify those that meet ADA accessibility standards. *info* *link* *link*	Respond	Planning	-F45, Attachment 7 -I4, American Red Cross Registered Shelters in Meeker County	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
33 Identify the local government agency/department responsible for coordinating mass care activities. Include standard operating guidelines for: a) Registration (includes people-tracking, and information and referral) b) Emergency housing c) Feeding d) Waste management e) Behavioral health f) Security g) Access and functional needs h) Health/medical care at mass care facilities *info* *link* 2015	**Respond**	Operational Coordination	-I2, Coordination of Congregate Care	○ Yes ○ No	
34 Identify the process for obtaining shelter supplies. Include procedures for the logistics of obtaining shelter supplies. *info* *link*	**Respond**	Operational Coordination	-I3, Emergency Housing/Sheltering	○ Yes ○ No	
35 List mutual aid agreements or memoranda of understanding with other jurisdictions for receiving assistance with *sheltering*. This may be a subset of the master list in item #22. *info*	**Respond**	Operational Coordination	-I8, Congregate Care MOU's & Agreements	○ Yes ○ No	
36 Identify the agency/department responsible for coordination of household pet sheltering. Include standard operating guidelines for: a) Identifying pet shelter locations b) Pet equipment list and identifying equipment resources c) Staff identification and training for pet shelter operations *info* *info* 2015	**Respond**	Operational Coordination	-Annex O -I4, Animal Emergency Housing/Sheltering	○ Yes ○ No	

Partners **AGRICULTURE**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
37 Identify the local agency/department that will liaison with the Board of Animal Health and the Dept. of Agriculture for an animal disease outbreak. Include standard operating guidelines for assisting with: a) Resource identification 1. Site security and traffic control 2. Cleaning and disinfection b) Carcass disposal (landfill, burial or compost), including site location c) Identifying locations of susceptible animals info link 2018	Respond	Planning	-Annex R	○ Yes ○ No	

Partners **SECURITY AND PROTECTION**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
38 Identify the agency(ies)/department(s) responsible for traffic control. List additional organizations that can augment depleted resources List mutual aid agreements, memoranda of understanding and letters of agreement. This may be a subset of the master list in item #22.	Respond	Planning	-F2-3, Response Coordination, Traffic Control -F4,Response Coordination, Scene Security/Access Control	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
39 Identify the agency(ies)/department(s) responsible for providing security and protection for disaster affected areas, including, but not limited to: a) Perimeter control b) Shelters c) Family assistance center d) Mass prophylaxis sites	Respond	Planning	-B4, Security -F4,Response Coordination, Scene Security/Access Control -M8-10, D. Assistance Center/ Family Assistance Center -M10, Security -M13, Attachment 1 -I6, Security	○ Yes ○ No	
40 Identify procedures to receive, disseminate and store sensitive information.	Respond	Planning	-BP-8, Information and Intelligence -BP-9, Records Retention	○ Yes ○ No	

Partners

EVACUATION

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
41 Identify the agency(ies)/department(s) responsible for coordinating an evacuation. Include standard operating guidelines for: a) Evacuation of populations with access and functional needs; Identify supplies and locations b) Evacuation of institutionalized populations c) Evacuation of pets info link 2015	Respond	Planning	-F4, Response Coordination, Access and Functional Needs Populations - Annex O	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
42 Identify the following evacuation items: a) Evacuation routes in each community b) Cities that have evacuation plans c) Public and private transportation resources *info* *link* 2015	Respond	Planning	-F9-, Reception Centers, Traffic Control Points, Attachment 3/419	○ Yes ○ No	

Partners

RESOURCE MANAGEMENT

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
43 Identify contacts in your Resource Manual that are responsible for health care services: a) Hospitals, clinics, labs b) Public health (environmental health, emergency preparedness) c) Emergency medical services (EMS) d) Long-term care facilities (nursing homes, assisted living)	Respond	Planning	-Resource Manual	○ Yes ○ No	
44 Identify all public and private lifeline sector entities providing services to your jurisdiction. List 24-hour emergency phone numbers for: a) Energy b) Water c) Communications d) Transportation services e) Emergency services Identify providers for the primary and alternate EOC locations. *info*	Respond	Planning	-A18, Attachment 3c -Annex K	○ Yes ○ No	
45 Provide contact information in your resource manual for: a) Local agribusinesses b) County USDA Farm Service Agency c) County USDA National Resources Conservation Service d) Soil and Water Conservation District	Respond	Planning	-Resource Manual	○ Yes ○ No	

Partners

DEBRIS MANAGEMENT

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
46 Identify the agency(ies)/department(s) responsible for coordinating debris management operations. Include standard operating guidelines for: a) Agencies used for debris removal b) Possible locations/facilities for temporary storage c) Possible locations/facilities for final disposition of debris d) Sorting debris e) Collecting debris f) Clearing priority routes g) Disposing of debris from private property h) Disposing of debris containing hazardous material i) Disposing of carcasses j) Managing contractors k) Assessing potential health issues related to debris removal link 2016	Respond	Planning	-Annex J	○ Yes ○ No	
47 Define the role of the local solid waste officer for: a) vector control b) landfill operations Identify solid waste plan location. info	Respond	Planning	-J10, Assessing Potential Health Issues Related to Debris Removal J10, Solid Waste Officer	○ Yes ○ No	

Partners **RECOVERY**

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
48 Describe the process for gathering event and assessment information within 12 hours for Incident Summary form submission. Continue the process for a complete damage assessment. Include standard operating guidelines for: a) Procedure for providing annual training to cities, townships, schools, non profits, hospitals, electric co-ops. Training includes local damage assessment form use. b) Process for gathering and compiling data to complete county damage and impact assessment form for final submittal. c) Identifying staff who will gather information on damages for individuals and businesses. d) Identifying items needed for a preliminary damage assessment (maps showing location of damage, calculation worksheets by category) 2016	Recover	Planning	Annex H	○ Yes ○ No	
49 Identify the agency/department responsible for volunteer management. Include standard operating guidelines for: a) Coordination of unaffiliated volunteers b) Volunteer registration, assignment and supervision c) Identification of partner agencies in managing volunteers *info* *link* 2017	Respond	Operational Coordination	-Annex P	○ Yes ○ No	
50 Identify the agency/department responsible for unsolicited donations management. Include standard operating guidelines for: a) Potential donations center facilities b) Procedures for collecting, sorting and distributing donations c) Donations coordination with partner agencies d) Public information concerning donations e) Managing unsolicited cash donations *info* *link* 2017	Respond	Operational Coordination	-Annex P	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
51 Identify the agency/department responsible to plan for long term housing needs after a disaster. link	Recover	Planning	-I3, Emergency Housing/Sheltering	○ Yes ○ No	
52 Identify the agency/department responsible for determining the habitability of private structures. Explain the rating system to be used for each type of disaster. info	Recover	Planning	-H4, Coordination of Damage Assessments, Determining the Habitability of Private Structures -J10, Assessing Potential Health Issues Related to Debris Removal	○ Yes ○ No	
53 List the agency/department responsible for coordinating the functions of a family assistance center. Include standard operating guidelines for: a) Reunification of families b) Information collection and dissemination c) Staffing d) Equipment e) Training info link 2016	Recover	Public and Private Services and Resources	-M8-10, D. Assistance Center/ Family Assistance Center -M13, Attachment 1	○ Yes ○ No	
Partners link **SARA, TITLE III REQUIRED --- SECTION 302 AND 304**					

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
54 Identify a community emergency coordinator (emergency management director) who shall make determinations necessary to implement the plan.	**Prevent**	Planning	-BP-6/7, Delegation of Authority -B2-4, Emergency Operations Center	○ Yes ○ No	
55 Reference training programs, including schedules for training of local emergency response and medical personnel.	**Prevent**	Planning	-BP-9/10,Training and Exercises -L3, Response to Hazardous Materials Incidents,h, Emergency Responders -L5, j, Hazardous Materials Response Capabilities	○ Yes ○ No	
56 Include methods and schedules for exercising the emergency plan.	**Protect**	Planning	-BP-9/10,Training and Exercises -BP-16, Attachment 4	○ Yes ○ No	
57 Describe procedures providing reliable, effective, and timely notification by the *facility* emergency coordinators to persons designated in the emergency plan, and to the public, that a release has occurred.	Prevent Protect Mitigate Respond Recover	Select Core Capabilities	-L4, i. Response to a Release of Hazardous Materials, 2	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
58 Describe procedures providing reliable, effective, and timely notification by the *community* emergency coordinator to persons designated in the emergency plan, and to the public, that a release has occurred.	Respond	Environmental Response/Health and Safety	-A8-9, Attachment 1d/1d.1 -A19, Attachment 3d -C1-4, Warning/ Notification Mediums -L4, i. Response to a Release of Hazardous Materials, 2	○ Yes ○ No	
59 Identify the organization(s) and/or individual(s), primary and backup, (by title) responsible for determining the need to shelter-in-place, evacuate, and/or return, and for issuing recommendations.	Respond	Mass Care Services	-C4-5, Responsibilities -F2-3, Response Coordination, Evacuation/ Shelter-in-Place -F4,Response Coordination, Re-Entry Orders and Clearance	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
60 Incorporate evacuation plans (procedures), including those for a precautionary evacuation and alternate traffic routes.	Protect	Planning	-F2-3, Response Coordination, Evacuation/ Shelter-in-Place -F4, Response Coordination, Access and Functional Needs Populations -F4,Response Coordination, Re-Entry Orders and Clearance -F5, Evacuation Routes for Section 302/312 Facilities -F20-43, Attachment 5 -L6, m	○ Yes ○ No	
61 Identify facility emergency coordinators who shall make determinations necessary to implement their plan.	Prevent	Planning	-L10-12, Attachment 1	○ Yes ○ No	
62 Identify facilities that are within the emergency planning district.	Prevent	Planning	-L12, Attachment 1	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
63 Identify routes likely to be used for the transportation of substances on the list of extremely hazardous substances.	Prevent	Planning	-L13, Attachment 2	○ Yes ○ No	
64 Identify additional facilities *contributing* additional risk due to their proximity to facilities, such as natural gas facilities.	Prevent	Intelligence and Information Sharing	-L2, Response to Hazardous Materials Incidents,d	○ Yes ○ No	
65 Identify additional facilities *subject to* additional risk due to their proximity to facilities, such as hospitals.	Prevent	Intelligence and Information Sharing	-L3, Response to Hazardous Materials Incidents, e	○ Yes ○ No	
66 Describe methods and procedures to be followed by facility owners and operators to respond to any release of such substances.	Respond	Operational Communications	-L4, i. Response to a Release of Hazardous Materials, 2	○ Yes ○ No	
67 Describe methods and procedures to be followed by local emergency and medical personnel to respond to any release of such substances.	Respond	Planning	-L5, j, Hazardous Materials Response Capabilities	○ Yes ○ No	
68 Describe methods for determining the occurrence of a release.	Respond	Situational Assessment	-L3, Response to Hazardous Materials Incidents,h, facilities/ transporation -L13, Attachment 2	○ Yes ○ No	

Planning Requirements	Mission Areas	Core Capabilities	Location in Plan	Meets Criteria	Reviewer Comments
69 Describe methods for determining the area or populations likely to be affected by such a release.	Prevent Protect Mitigate Respond Recover	Select Core Capabilities	-L3-4, i. Response to a Release of Hazardous Materials	○ Yes ○ No	
70 Describe emergency equipment, facilities, and medical facilities in the community, and identify the individuals responsible for such equipment and facilities.	**Respond**	Public and Private Services and Resources	-L5-6, k -Resource Manual	○ Yes ○ No	
71 Describe emergency equipment and facilities at each facility in the community and identify the persons responsible for such equipment and facilities.	**Respond**	Public and Private Services and Resources	-L5-6, l -L13, Attachment 2 -Resource Manual	○ Yes ○ No	

Local Emergency Operations Plan
Review Form

Submit completed form and MNWALK copy to the appropriate HSEM Regional Program Coordinator (RPC)

Use this form to document the findings of a local emergency operations plan (EOP) review

The local emergency management director submits to the appropriate review group chair: the upgraded or updated EOP, a cross-referenced MNWALK, and this form. The group conducts its review and records comments on the MNWALK. The group chair completes the review sheet, attaches the MNWALK and submits them to the HSEM RPC. The HSEM RPC forwards a signed copy to the local emergency management director and follows up on any comments made by the review group.

For more information about the review process, visit the HSEM Website or contact your RPC.

Meeker County	Stephanie Johnson, Assistant (Deputy Director)
Jurisdiction	Emergency Management Director

☐ We have reviewed the Emergency Operations Plan for this jurisdiction and found that it ***adequately addresses*** the reviewed planning requirements, as noted in the attached MNWALK.

☐ We have reviewed the Emergency Operations Plan for this jurisdiction and found that it ***will adequately address*** the reviewed planning requirements after the items noted in the attached MNWALK are completed.

☐ We have reviewed the Emergency Operations Plan for this jurisdiction and found that it ***does not adequately address*** the reviewed planning requirements. Further revision is needed to address the comments made in the attached MNWALK.

Meeker County Board of Commissioners	
Review Group	Review Date

Review group chair's signature	Date

For HSEM Use Only

☐ This plan ***adequately addresses*** all state and federal planning requirements and is approved.

☐ This *plan* ***does not adequately address*** all state and federal planning requirements and is not approved. Further revision is needed to address the comments made in the attached MNWALK.

HSEM Regional Program Coordinator	Date

STATE OF MINNESOTA
Before the
Meeker County Commissioners
SITTING AS THE DRAINAGE AUTHORITY FOR
County Ditch 19

In the Matter of: **the Petition for Transfer of Property from County Ditch 19**	**PUBLIC HEARING NOTICE**

PLEASE TAKE NOTICE, the Meeker County Board of Commissioners, sitting as the drainage authority for County Ditch 19, pursuant to Minn. Stat. § 103E.812, subd. 4, shall hold a public hearing on the petition of the City of Litchfield to transfer the portion of County Ditch 19 from West Fifth Street to CSAH 1 to the City of Litchfield for future management.

The hearing shall be held at 9:30 a.m. on April 16, 2019, at the Meeker County Courthouse, Level 4, County Commissioner meeting room, 325 N. Sibley Avenue, Litchfield MN 55355. All interested parties may appear and be heard. Pursuant to 103E.812, subd. 5, a benefited landowner has the right to appear and make written objection which results in a technical panel making a report to the Drainage Authority.

Questions can be directed to the County Auditor's Office, 325 N. Sibley Avenue, Litchfield MN 55355 or telephone at 320-693-5212.

s/s: Barbara Loch, County Auditor
Dated: February 26, 2019

BEFORE THE MEEKER COUNTY BOARD OF COMMISSIONERS

ACTING AS DRAINAGE AUTHORITY FOR MEEKER COUNTY DITCH #19

AGENDA

PUBLIC HEARING: APRIL 16, 2019 AT 9:30 A.M.

I. Open Public Hearing – Board Chairperson
II. Review City of Litchfield Petition for Drainage System Transfer
III. Purpose of Hearing - Kurt Deter, Rinke Noonan Law Firm
IV. Notice Requirements – Barb Loch, County Auditor
V. Hydraulics Report – Bolton & Menk
VI. Public Comment and Questions
VII. Possible Action by Drainage Authority:
    a. Approve request
    b. Direct staff to prepare Findings of Fact and Order of transfer
    c. Table to subsequent meeting
VIII. Close Public Hearing

STATE OF MINNESOTA

MEEKER COUNTY BOARD OF COMMISSIONERS
DRAINAGE AUTHORITY FOR MEEKER COUNTY DITCH 19

Regarding the Petition of the City of Litchfield to Transfer a Portion of Meeker County Ditch 19 to the City (Statutes Section 103E.812)	**Petition for Drainage System Transfer**

For its petition to transfer a portion of Meeker County Ditch (CD) 19 to the City of Litchfield, the City, upon action of its Council authorizing the same, states and alleges the following:

1. The Meeker County Board of Commissioners serves as the Drainage Authority for 19 pursuant to statutes chapter 103E.
2. The lower portion of CD 19 passes into and adjacent to the City from CSAH 1 to West Fifth Street.
3. The City is a "Water Management Authority" as that phrase is used in statutes section 103E.812 and possesses lawful authority to manage storm, surface, and flood waters within its jurisdictional boundary.
4. Statutes section 103E.812 authorizes the Drainage Authority, upon petition of the City and facts demonstrated in drainage proceedings, to transfer the portion of CD 19 lying within and adjacent to the boundary of the City to the City for future management.
5. Transfer of that portion of CD 19 traversing the City is necessary for the orderly management of storm, surface, or flood waters, including management for water quality purposes.
6. If transferred, the City may apply alternatives to managing CD 19 including but not limited to: altering the alignment, replacing open ditch with a municipal stormwater system consisting of buried conduit, and installing and applying various water quality and other

stormwater management practices.

7. Attached hereto is an engineering report detailing the proposed improvements of the City of Litchfield and Minnesota Department of Transportation (MnDOT) storm sewer system downstream of CSAH 1. Consolidating storm sewer outfalls into one location, along with bringing the system up to modern standards, is planned for this project. Included in the engineering report are discussions of the inplace depth, grade, and hydraulic capacity of CD 19 within and adjacent to the City Limits. No modifications to County Ditch 19 are planned that would impact the depth, grade, or hydraulic capacity of the portion of CD 19 that lies within and adjacent to the City.

8. Based on the foregoing, the City petitions the Drainage Authority, pursuant to statutes section 103E.812, to transfer that portion of CD 19 from West Fifth Street to CSAH 1.

9. The City acknowledges its obligation, should the transfer occur, to secure and provide an outlet for agricultural drainage, upstream of the City, of at least equal hydraulic efficiency as the rights to an outlet that exist on the date of transfer. Furthermore, the City acknowledges that it shall be liable to compensate any owner of property assessed for benefits on the transferred drainage system for the loss or impairment of any drainage rights occurring after transfer of the drainage system.

Respectfully Submitted,

City of Litchfield

By Keith Johnson

Keith Johnson, Mayor

Attest: Joyce Spreiter

Joyce Spreiter, Assistant City Administrator

The above petition was approved for execution and filing by the City Council of Litchfield upon motion by Mayor Johnson, seconded by Council Member Kotelnicki, by a vote of 7 yes and 0 no, as reflected in the minutes of the regular meeting of the Council on February 4, 2019.

DEPARTMENT OF TRANSPORTATION

SP 4704-89
Litchfield: T.H. 12
Minnesota Department of Transportation

Figure 2
Proposed Storm Sewer
January 2019

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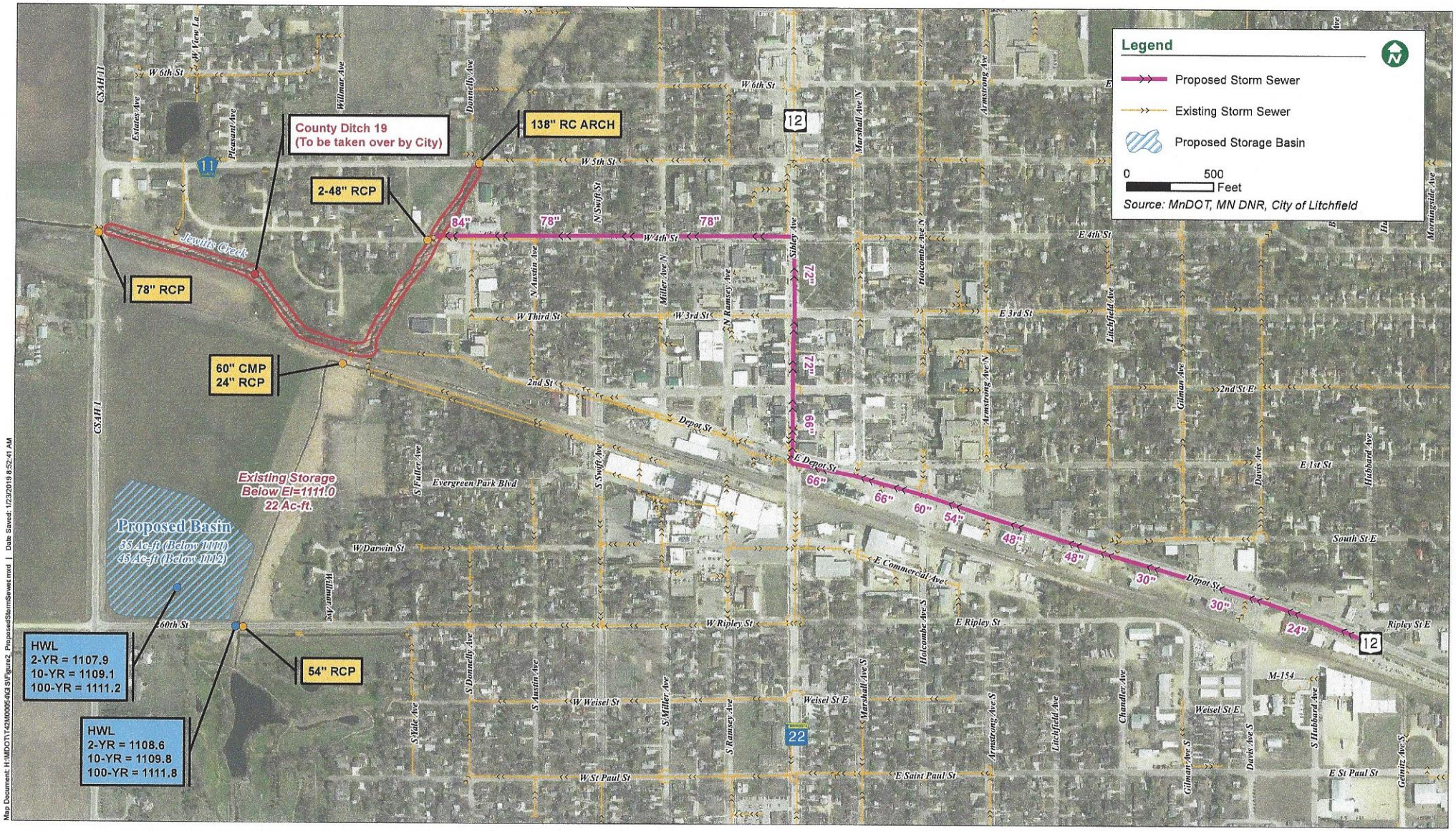

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DEPARTMENT OF TRANSPORTATION

Hydraulics Report

SP 4704-89 (TH 12)

Litchfield, MN

Minnesota Department of Transportation

January 18, 2019

Submitted by:
Bolton & Menk, Inc.
1960 Premier Drive
Mankato, MN 56001
P: 507-625-4171
F: 507-625-4177
BMI No. T42.M00054

Certification

Hydraulics Report

for

SP 4704-89 (TH 12)

Minnesota Department of Transportation
Litchfield, MN
T42.M00054

January 18, 2019

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: Anthony C. Rotchadl

Anthony C. Rotchadl, P.E.
License No. 54867

Date: 01-18-2019

Table of Contents

Tables

Appendix

I. Preliminary Design & Existing Conditions

S.P. 4704-89 is an urban reconstruction of TH 12 and TH 22 within the City of Litchfield. During project scoping, the storm sewer was identified as being sub-standard in the project area. Periods of excessive flooding have been witnessed along the project corridor, and this flooding causes safety concerns for the traveling public that utilize TH 12. In addition to the project area, TH 12 east of the project was also identified as a future project that would require storm sewer upsizing. This area included TH 12 up to the Hubbard Avenue intersection. The current and "future build" projects included a drainage area of approximately 197 acres.

Bolton & Menk, Inc. (BMI) completed the preliminary design for the roadway and storm sewer system. As part of the preliminary design, a preferred storm sewer outfall route was identified. After evaluating various alternatives, the preferred storm sewer routing alternative was identified as TH 12 to 4th Street, and ultimately to Jewitts Creek. TH 12/4th Street was chosen to minimize the number of utility conflicts and lower the chance of encountering contaminated soils during storm sewer trench excavation.

Recognizing that an increase in size of the storm sewer outfall for the project area will increase peak discharge rates to the downstream receiving water, a mitigation pond was sized during preliminary design to mitigate the impacts of the peak flow rates associated with the project outfall pipe. The project corridor is comprised of downtown Litchfield, residential areas along 4th Street, and commercial areas along TH 12. Given the nature of the project corridor, an off-site mitigation pond was identified as the most feasible way to mitigate the larger peak rates associated with the project.

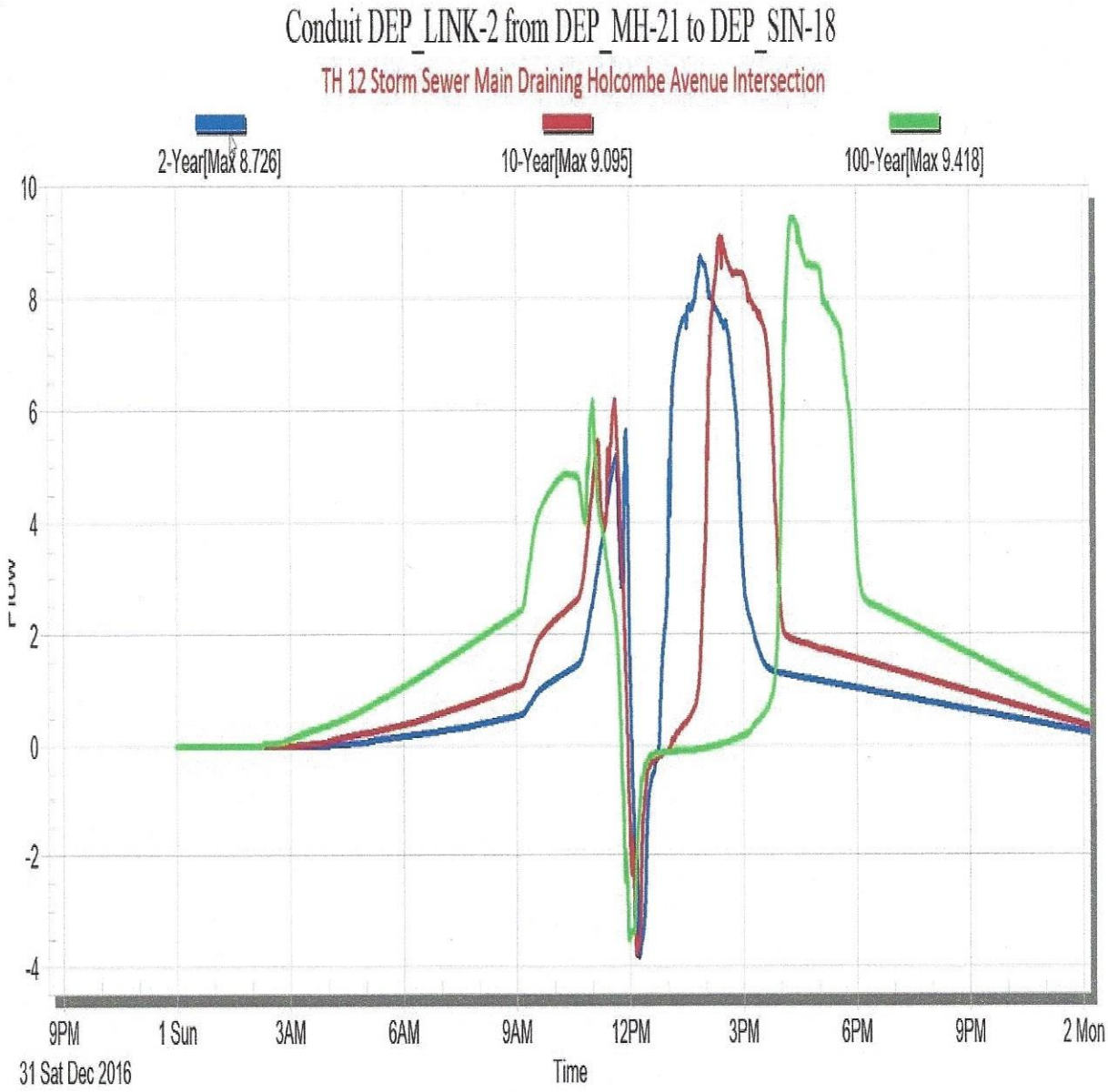
After evaluating the drainage patterns within the City of Litchfield, approximately 500 acres drains through a storm sewer system and outlets into a drainage ditch/wetland just east of the intersection of CSAH 1 and Ripley Street. This outfall is upstream of the project area, and is an ideal location to attenuate flows out of the Ripley Street system such that the flow increases from the TH 12 system are mitigated. By reducing flows from the Ripley Street system, the increase in flows associated with the project area will not have a significant impact on Jewitts Creek.

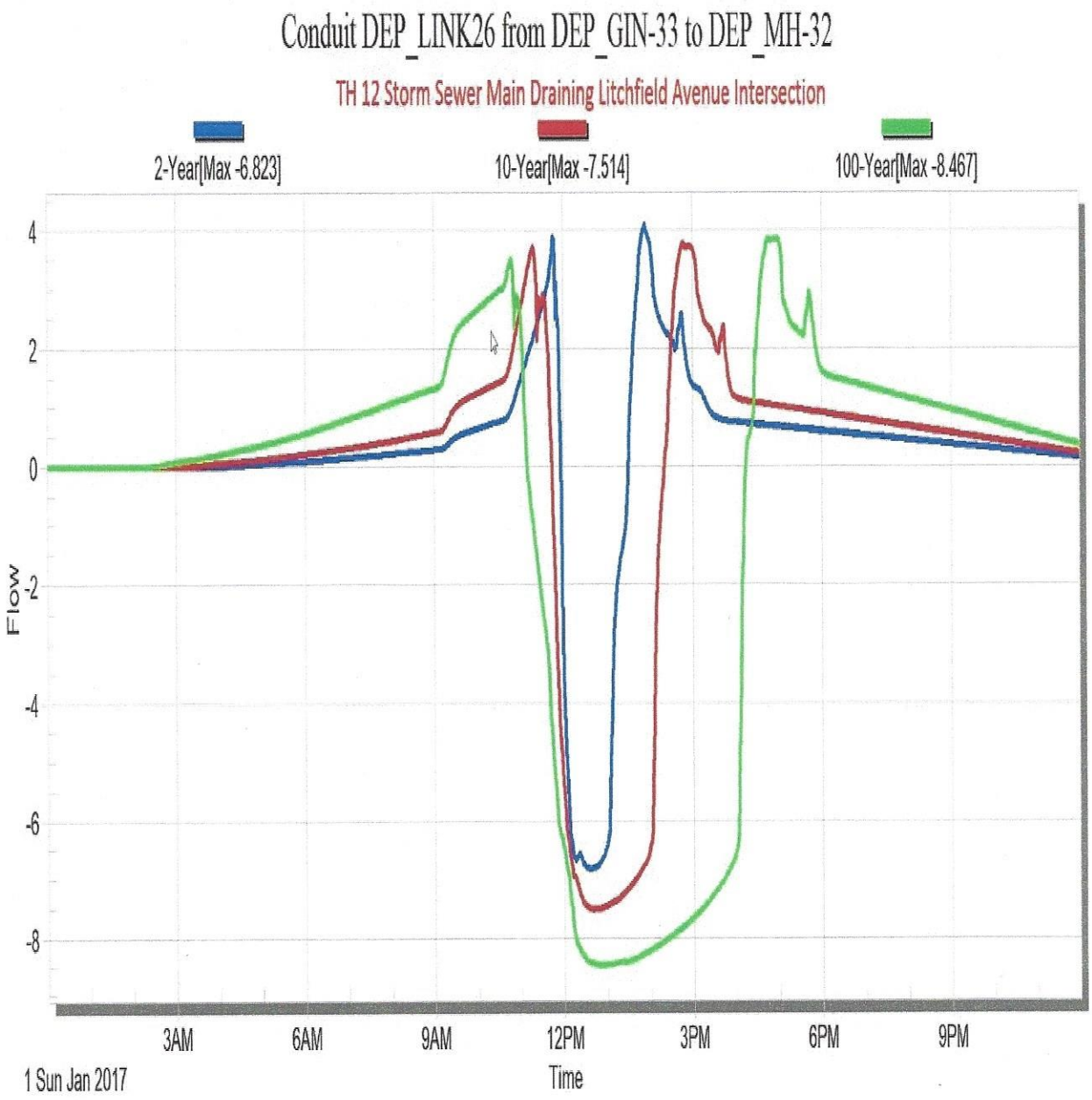
The storm sewer design was completed using GEOPAK Drainage, utilizing Rational method design criteria. In order to accurately analyze the impacts of the storm sewer system and mitigation pond, the GEOPAK drainage storm sewer design was implemented into an XPSWMM model that utilized SCS methodologies to study the impacts of the proposed storm sewer/mitigation system on Jewitts Creek.

Included in the remainder of this report is a detailed explanation of the storm sewer sizing, mitigation pond design, and downstream impacts of the project.

II. Storm Sewer Design

As discussed previously, the storm sewer sizing is substandard throughout the entire corridor. The XPSWMM existing conditions model validated the substandard nature of the storm sewer. The major areas of known flooding concerns are two intersections; TH 12/Holcombe Avenue and TH 12/Litchfield Avenue. Peak flow hydrographs are shown below for the existing storm sewer system at these intersections.





The hydrographs above show two items that are worthy of discussion. First, note the similarities in the peak flow rates for the 2-yr, 10-yr, and 100-yr event. This signifies that the existing pipe is at maximum capacity for all the events. Stated another way, the existing pipe size is not adequate to convey the 2-yr event (2.8"), which is well below current standards. Secondly, the negative flows witnessed at these locations signify the undersized nature of the storm sewer system downstream of these flood prone intersections. Since these intersections are the low elevations on the TH 12 system, the undersized mainline pipe surcharges and causes back up for all events, manifesting itself in roadway flooding at these relative low point intersections.

After coordination with MnDOT staff, a Rational Method storm sewer was desired for the project and future build area (197 acres). The Rational Method design was completed using the GEOPAK Drainage modeling software. The design accounted for all off-site flows entering the TH 12

system, and included the "future build" project scenario. Regionalized Atlas 14 IDF data was utilized for the IDF curves, notably the "Central" IDF curve.

Design events were chosen based on MnDOT Tech. Memo 16-05-B-02. For the majority of the project area, a 10-yr design event was chosen. While 1' of runoff ponding could not occur along TH 12, off-site areas directly adjacent to TH 12 could produce ponding depths in excess of 1' that may impact the TH 12 roadway. For this reason, a 50-yr mainline pipe was desired for the TH 12 system. The notable areas of excess ponding are at the intersections of TH 12/Holcombe Avenue and TH 12/Litchfield Avenue.

GEOPAK output reports have been provided in the appendix. They include:

- 50-yr Mainline Pipe Design for the mainline pipe (current and future build). A 10-yr mainline pipe design was provided in the future build east of the TH 12/Litchfield Avenue intersection.
- 50-yr Design for all "major sag" catch basin (CB) pipe leads.
- 50-yr CB Spacing Report for all catch basins at "major sag" locations.
- 10-yr CB Spacing Report for all catch basins on the TH 12 corridor.
- 3-yr CB Spacing Report for the Holcombe Avenue Storm Sewer (per State Aid design parameters).
- 10-yr Design for all catch basin (CB) pipe leads on the TH 12 project and storm sewer on Holcombe Avenue.
- Drainage Area Maps, including time of concentration, land use, and total area (acres).

Incorporating all of the factors listed above, the mainline pipe sizes varied, from an 84" at the outlet into Jewitts Creek to a 48" out of the intersection of TH 12/Litchfield Avenue. A 102" arch pipe was utilized for a small stretch along 4th Street to avoid a utility conflict with the 18" forcemain that conveys the majority of the City of Litchfield's wastewater to the treatment plant. Figure 2 shows the storm sewer system and corresponding sizes.

It should also be noted that certain catch basin's do not meet the spread requirements laid out in the Tech. Memo and State Aid design parameters. These catch basin locations are noted in the CB spacing report and are located at project termination points on TH 12 and Holcombe Avenue. In order to meet CB spread requirements at these locations, the scope of the project would need to be expanded so that surface runoff that is conveyed outside of the project limits be captured prior to entering the project. Scope expansion is not desired, but the storm sewer system has been sized appropriately such that additional CBs can be added as part of a future project so that spread requirements are met at the time of "full build".

Coordination with the City of Litchfield has also taken place to provide appropriate storm sewer access locations for maintenance purposes. This includes placing access manholes (sizes of which have been vetted by the City and manhole suppliers) at strategic locations to allow for access that meets the City of Litchfield's storm sewer maintenance needs.

Offsite flows from the City of Litchfield also contribute to the design and performance of the proposed mainline pipe system. Peak rates and locations from the contributing city system are listed in the pipe computation spreadsheets.

In addition to the Offsite Flows, the portion of the project along TH 22 was also analyzed for any impacts of the upgraded storm sewer system for downstream or offsite locations. The existing flow

rates downstream were quantified by calculating full flow discharge rates for contributing pipes that drain to the downstream connection point on TH 22. These pipes are listed below:

- 12" Pipe @ 1.75% from the TH 22 Corridor: 5.1 cfs
- 12" Pipe @ 1.06% from East of TH 22 Corridor: 4.0 cfs
- 18" Pipe @ 0.27% from West of TH 22 Corridor: 5.9 cfs
- TOTAL existing flow to downstream connection point: 15.0 cfs

For the proposed condition, the inflows from the offsite (east and west) pipes remained constant. The GEOPAK drainage model was utilized to show the proposed flow to the downstream connection point for a 10-yr event. Per the GEOPAK Pipe Computations, MH 19 is the downstream connection point. Summing all of the flows to MH 19 yields a peak flow rate of 16.7 cfs, 1.7 cfs greater than the existing condition.

The pipe immediately downstream of the TH 22 connection point is a 15" RC pipe. Extrapolating a pipe grade from the upstream surveyed pipe yields a full flow capacity of 9.3 cfs for the inplace downstream pipe. Because the downstream pipe ultimately controls how much runoff can leave the project site, both the existing and proposed conditions are subject to sub-standard performance as a result of the downstream connection pipe. An increase of 1.7 cfs to this connection point will not create significant additional downstream impacts. Slight additional surcharging of the storm sewer system may be witnessed, but surface grades in the area do not show significant flooding impacts (structures, major sags) that could occur as a result of this additional flow.

GEOPAK Drainage files (and corresponding Microstation files) have also been provided to MnDOT and uploaded to Projectwise.

After completing the storm sewer design in GEOPAK drainage, a volumetric approach to the hydraulics and hydrology was needed to accurately quantify the impacts of the proposed mitigation basin. The following section describes the mitigation pond design.

III. Mitigation Pond Design

As discussed previously, a mitigation pond is needed to ensure that impacts to Jewitts Creek from the project are minimized. Because of the large areas associated with this analysis, SCS modeling methodologies were utilized to account for the volume associated with these large areas, the non-coincident peak flow rates inherent in analyzing large areas, and the substantial contribution that off-site (Jewitts Creek) flows have on the downstream receiving water.

The Ripley Street storm sewer system services 500 acres and drains to a drainage ditch just east of the intersection of CSAH 1 and Ripley Street (see Figure 1). West of the drainage ditch, a parcel of land was identified as a viable location to construct a mitigation pond for the project. BMI completed a wetland delineation to identify the extents of the wetlands associated with the drainage ditch in an effort to minimize permitting requirements associated with additional wetland impacts for the project.

Because the wetland delineation did find wetlands adjacent to the drainage ditch, low flows need to be maintained to the ditch to ensure that the wetland is not starved of hydrology and inadvertently impacted. Currently, a 54" storm sewer pipe outlets to the drainage ditch and wetland. In order to maintain low flows to the wetland, a structure and 24" outlet pipe is specified directly on the existing 54" outlet. To ensure that large event flows were routed to the proposed mitigation pond, a 73" arch pipe is specified that will allow large event flows to enter the mitigation pond and utilize the approximately 35 ac-ft of specified storage in the mitigation pond. An arch pipe was chosen for two reasons. First, the open area associated with this pipe will not act as a constriction for large event flows entering the pond. A smaller pipe size would cause runoff to back up the Ripley Street

system which could cause adverse impacts upstream of the outlet. Secondly, an equivalent circular pipe would not have adequate cover and would create constructability and maintenance concerns.

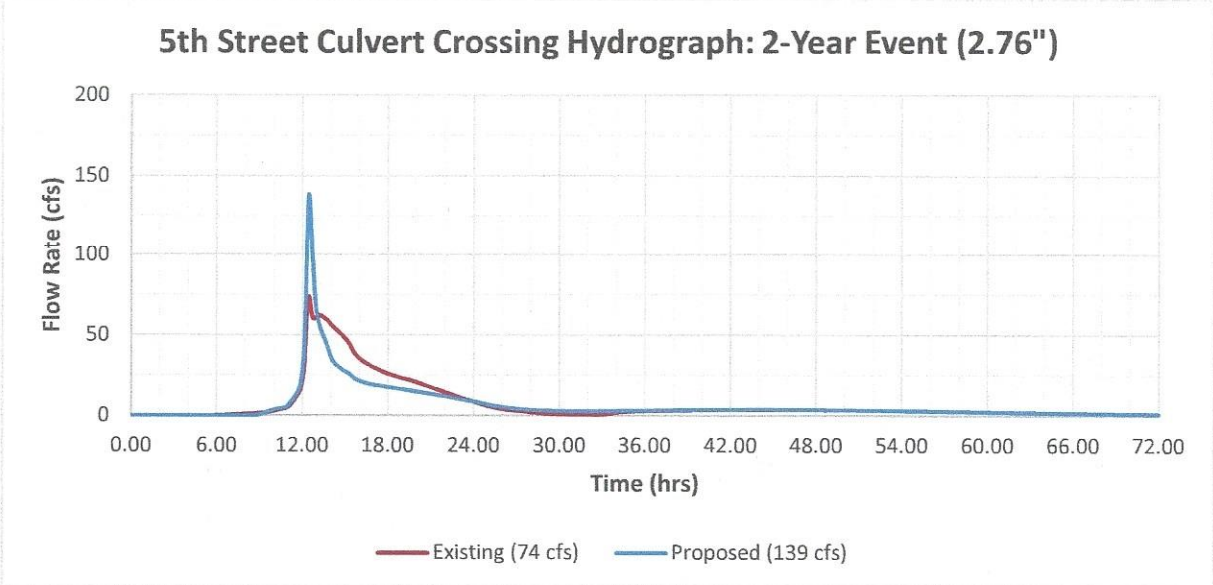
The top of the berm that impounds runoff in the pond is set approximately 1.8' above the 100-yr high water level of the pond (1113 top of berm, 1111.2 100-yr HWL). This freeboard allows for a factor of safety and will minimize the probability of erosion and maintenance issues during and after large events. An earthen overflow (stabilized with Turf Reinforcement Mat) is specified to give further protection to the berm that encompasses the pond.

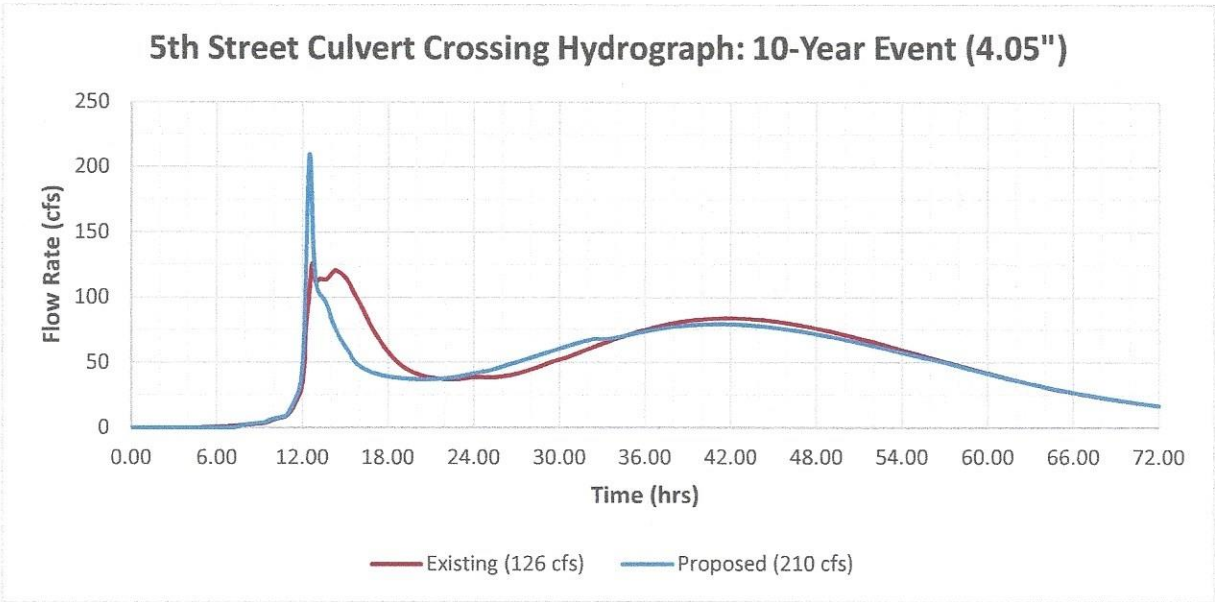
The storm sewer system and pond design, described above, were implemented into an XPSWMM model. The XPSWMM (XP) model was built for the existing and proposed (full build) condition, and included:

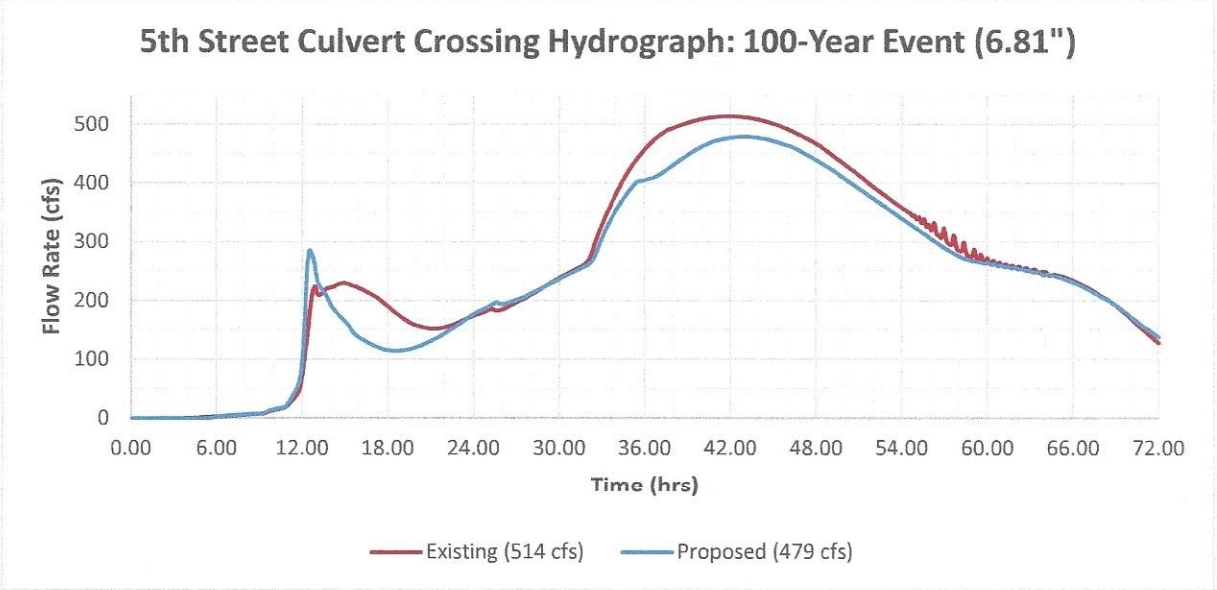
- 15,035 acres contributing from Jewitts Creek upstream of the City of Litchfield (calibrated to StreamStats flow data)
- 500 acres from the Ripley Avenue Storm Sewer System
- 197 acres from the project area (current and future build)
- 556 acres at the CSAH 42 crossing downstream of the project
- 343 acres at the TH 24 crossing downstream of the project

Culvert crossings that service Jewitts Creek were also modeled in XP so that impacts could be quantified for various events along the creek.

The culvert crossing directly downstream of the project outfall location is located at 5th Street. The hydrographs below show the peak flow rates through the 5th Street Crossing for the 2-yr, 10-yr, and 100-yr event.







The increase in 100-yr peak flow rates associated with the project site are mitigated as a result of the storage provided in the mitigation pond. It should be noted that while the 100-yr rates in the creek are decreased as a result of the project improvements, the 2-yr and 10-yr peak rates increased. Because low flows need to be maintained to the wetland downstream of the mitigation pond, this effectively limits the impact of the mitigation pond for the smaller events. The downstream impacts of the increased rates for the 2-yr and 10-yr have been studied and are described below.

IV. Downstream Impacts

As mentioned above, the 2-yr and 10-yr peak flow rates increased as a result of the project. The 5th Street crossing is the Jewitts Creek culvert crossing that is directly downstream of the project outfall. The change in peak rates associated with each event is tabulated below:

Peak Flow Rates Downstream of 5th St Crossing			
Event	**Existing Condition Flow (cfs)**	**Proposed Condition Flow (cfs)**	**Difference (cfs)**
2-yr	74	139	65
10-yr	126	210	84
100-yr	514	480	-34

An increase in the 2-yr and 10-yr peak rates could create adverse impacts downstream. Any impacts to the downstream system will be manifested in relation to increased culvert stage. Culvert stage (headwater elevation) is directly related to any increased peak flow rate, and changes in headwater elevations need to be understood so that any downstream impacts are appropriately accounted for. In order to fully understand the implications of these increased flow rates and headwater elevations, the XP model was expanded to include hydraulic and hydrologic analysis to the Jewitts Creek crossing of TH 24, which is five roadway crossings downstream of the project discharge point on 4th Street. The crossing at TH 24 was chosen because it represents the last point along Jewitts Creek where urban runoff from the City of Litchfield enters into the creek. As listed previously, the creek at the TH 24 crossing has an additional 899 acres of drainage area that is largely urban. Runoff from urban drainage areas produces more runoff due to the more impervious nature of urban watersheds. As more drainage area is added to the Jewitts Creek system, the impacts of the increased 2-yr and 10-yr events become less pronounced and are eventually buffered out and overwhelmed by the additional area that Jewitts Creek is conveying. The table below shows the 2-yr and 10-yr headwater elevations for the Jewitts Creek crossings, up to the CSAH 42 crossing.

Upstream of 4th St Stage - 2-48" CMP			
Scenario	**2-Year**	**10-Year**	**100-Year**
Existing	1105.75	1107.17	1112.10
Proposed	1106.05	1106.79	1112.03
Upstream of 5th St. Stage - 88" x 138" Arch			
Scenario	**2-Year**	**10-Year**	**100-Year**
Existing	1105.15	1105.99	1109.91
Proposed	1106.01	1106.75	1109.24
Upstream of 9th St. Stage - 77" x 122" Arch			
Scenario	**2-Year**	**10-Year**	**100-Year**
Existing	1103.53	1104.65	1108.80
Proposed	1104.37	1105.02	1108.14
Upstream of TH 12 Box 8x8 Box - Stage			
Scenario	**2-Year**	**10-Year**	**100-Year**
Existing	1101.99	1103.34	1107.04
Proposed	1102.97	1103.77	1106.62

Upstream of CSAH 42 85" X 131" CMP ARCH- Stage			
Scenario	**2-Year**	**10-Year**	**100-Year**
Existing	1098.25	1099.86	1103.11
Proposed	1098.56	1099.74	1103.03
Upstream of TH 24 6x6 Box- Stage			
Scenario	**2-Year**	**10-Year**	**100-Year**
Existing	1095.55	1098.08	1102.08
Proposed	1095.84	1098.09	1102.06

As the stage elevations above show, the 10-yr stages decreased at the 4th Street crossing just upstream of the 84" outfall location. This signifies that the mitigation pond is attenuating some flow from the 10-yr event. Directly downstream of the 84" outfall (5th Street crossing), the 2-yr and 10-yr stages increased approximately 0.8'. This shows that the mitigation pond does not attenuate enough of the 2-yr and 10-yr flows to match the increase associated with the 84" outfall pipe. As the analysis continues downstream, the impacts of the 84" outfall pipe are less and less pronounced as additional drainage area contributes to the stage elevations at the various crossings. At the CSAH 42 crossing, there are no significant impacts to the increased rates associated with the project.

Further investigation was done in regards to the stage increases upstream of 5th and 9th Street for the 2-yr and 10-yr events. While detailed survey of the channel is not available in these locations, LiDAR contours on the MnTOPO web application show an approximate representation of the elevations associated with Jewitts creek.

At 5th Street, the proposed 2-yr and 10-yr headwater elevations are 1106.01 and 1106.75, respectively. The screen shot from MnTOPO below shows that no structures or landscaping exist below the 1114 contour. Mowed grass is generally located above elevation 1108. Hence, no adverse impacts are anticipated at this crossing as a result of the 2-yr and 10-yr stage increases.

At the 9th Street crossing, the proposed 2-yr and 10-yr headwater elevations are 1104.37 and 1105.02, respectively. The screen shot from MnTOPO below shows that no structures or landscaping exist below elevation 1110. Undeveloped woods and scrub brush exist below elevation 1106. Given the land use and proposed stage elevations, no adverse impacts are anticipated at this crossing as a result of the 2-yr and 10-yr stage increases.

At the TH 12 box culvert crossing, the stage increases for the 2-yr and 10-yr event are kept within the inplace channel (based on MnTOPO elevations). No adverse impacts are anticipated as a result of these stage increases.

Figure 3 shows the location and stage elevations for the existing and proposed condition at the key crossings mentioned above.

Flow velocities within the channel, notably 2-yr velocities, are another item that were analyzed. Increased flows, with an unchanged channel flow area, will increase velocities within the creek. The table below shows the existing and proposed velocities, based on the surveyed channel flow area, a roughness coefficient "n" of 0.030, and a channel slope of 0.1%.

Velocity Downstream of 5th Street Crossing					
Event	**Exist Flow Rate (CFS)**	**Exist Velocity (fps)**	**Proposed Flow Rate (CFS)**	**Proposed Velocity (fps)**	**Change in Velocity (fps)**
2-yr	75	2.1	139	2.6	0.5
10-yr	126	2.5	210	3.0	0.5
100-yr	514	4.0	480	3.9	-0.1

As is shown in the table above, the velocity increases are 0.5 feet per second (fps) for the 2-yr and 10-yr event and decrease 0.1 fps for the 100-yr event. MnDNR design guidance for fish passage is to design for a 2-yr velocity of 2-3 fps. Based on the analysis and design guidance from MnDNR, the velocity impacts to the Jewitts Creek system are not significant and do not warrant downstream modifications to mitigate excessive velocities.

As part of the downstream impacts, research by Meeker County staff noted that the proposed outfall location (4th Street) corresponds to a location where Jewitts Creek is, by County Resolution in 1904, a part of County Ditch (CD) 19. The downstream termination point of CD 19 is legally defined as just downstream of the 5th Street culvert crossing within the City of Litchfield. In lieu of the City of Litchfield petitioning to outlet into CD 19, Meeker County staff suggested that the City petition to take over the portion of CD 19 within the City of Litchfield per MN Statute 103E.812. This take over process would absolve the County Ditch Authority's jurisdiction over the portion of the County Ditch that is currently within the City of Litchfield (CSAH 1 upstream, 5th Street Downstream). By taking over this portion of CD 19, the City of Litchfield will be responsible for ongoing maintenance of Jewitts Creek in this area and will be required to maintain the inplace hydraulic capacity of Jewitts Creek at all times after takeover of this portion of CD 19. The MnDNR will also expand their jurisdiction to include the portion of CD 19 that is taken over by the City of Litchfield. Collaboration between the City Council, County Board, and MnDNR is ongoing and is expected to be complete in March of 2019.

V. Summary

Based on the analysis completed during the preliminary and final design phases of S.P. 4704-89, the proposed storm sewer upgrades meet current MnDOT standards. The downstream impacts associated with the proposed storm sewer upgrades have been analyzed extensively, and the analysis shows that no significant downstream impacts are created as a result of the project improvements.

Appendix A: Figures 1, 2, and 3

DEPARTMENT OF TRANSPORTATION

SP 4704-89
Litchfield: T.H. 12
Minnesota Department of Transportation

Figure 1
Drainage Area Map
November 2018

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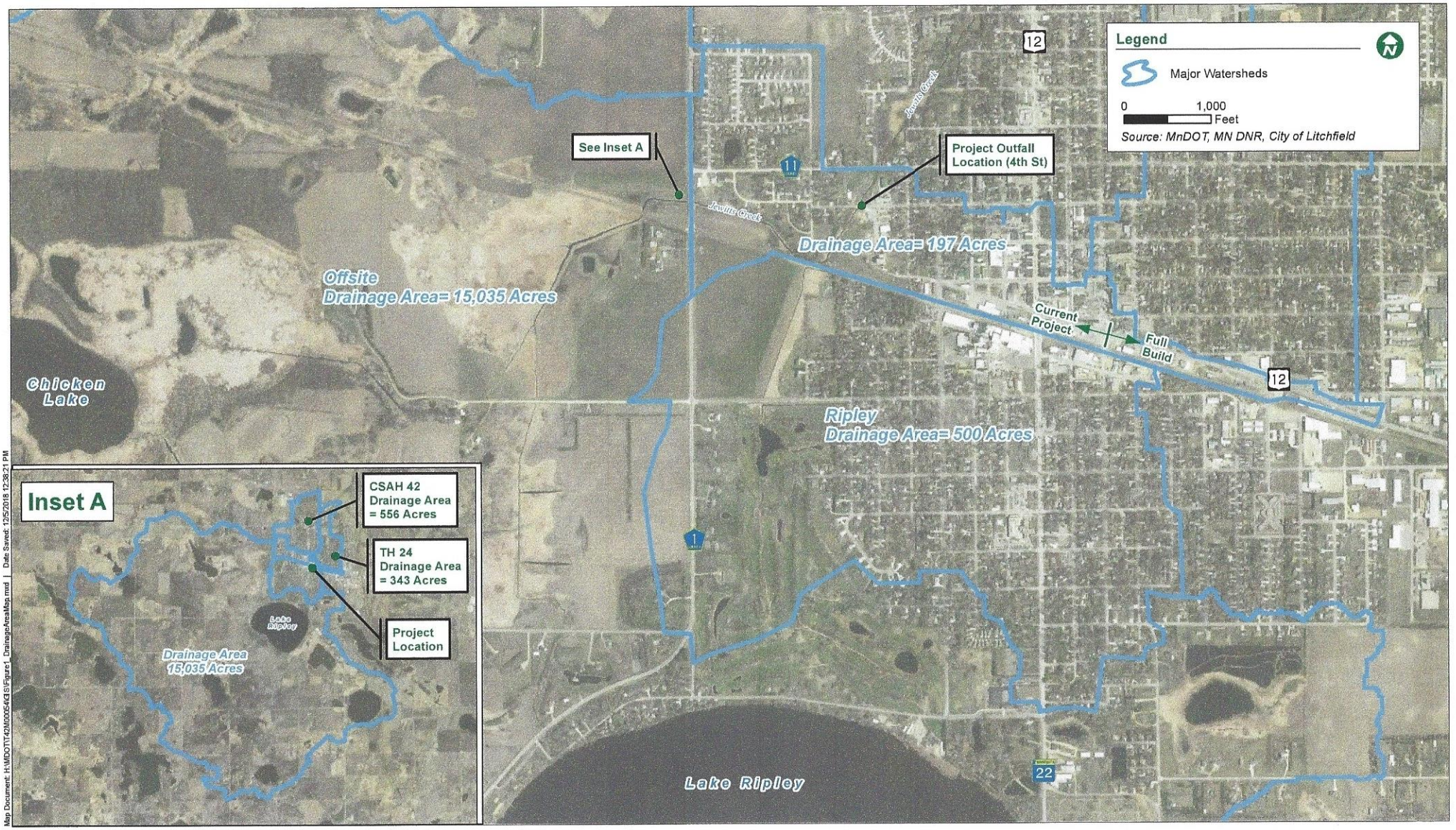

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DEPARTMENT OF TRANSPORTATION

SP 4704-89
Litchfield: T.H. 12
Minnesota Department of Transportation

Figure 2
Proposed Storm Sewer
November 2018

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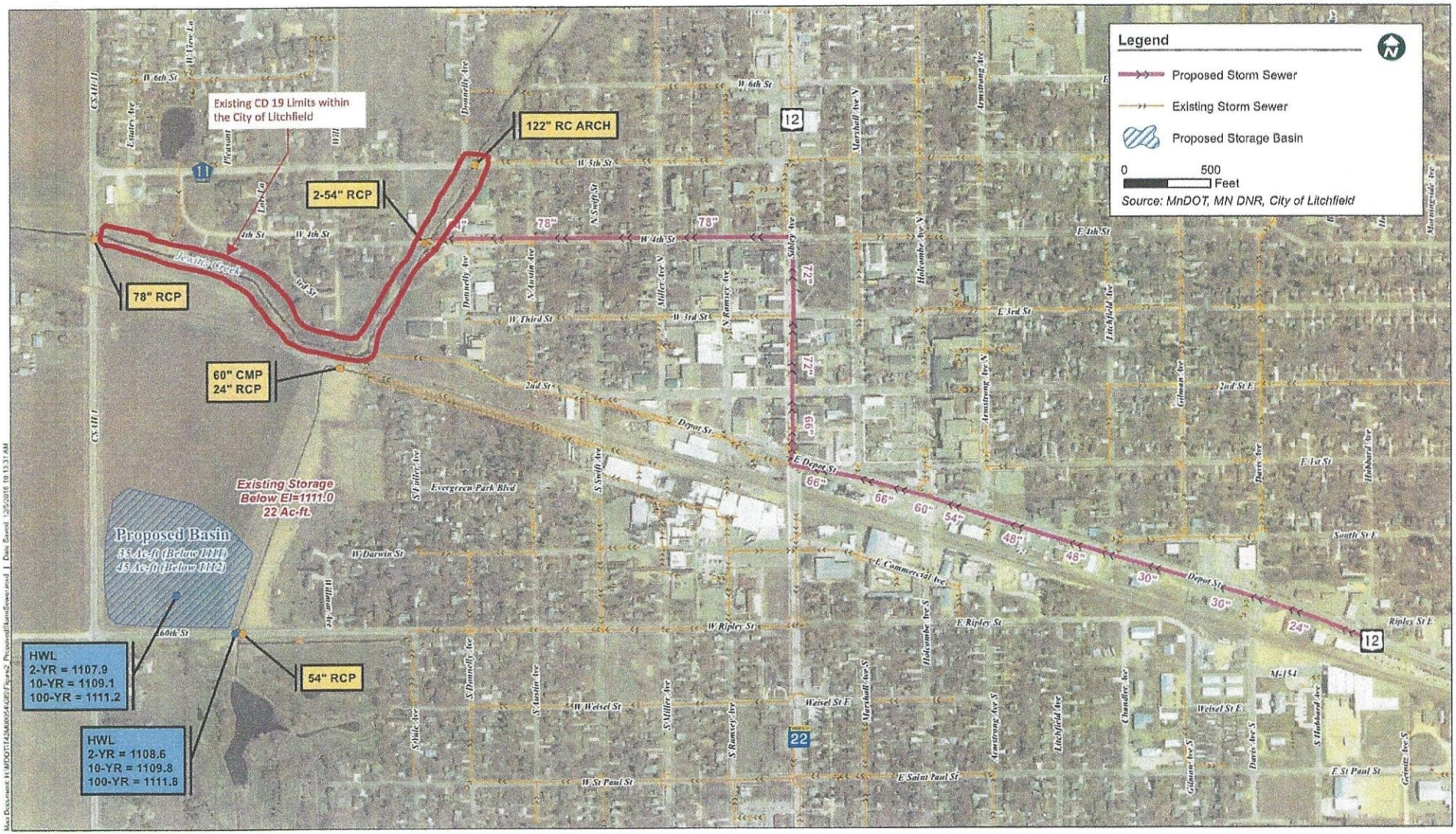

DEPARTMENT OF TRANSPORTATION

SP 4704-89
Litchfield: T.H. 12
Minnesota Department of Transportation

Figure 3
Downstream Culvert Stage Inventory
January 2019

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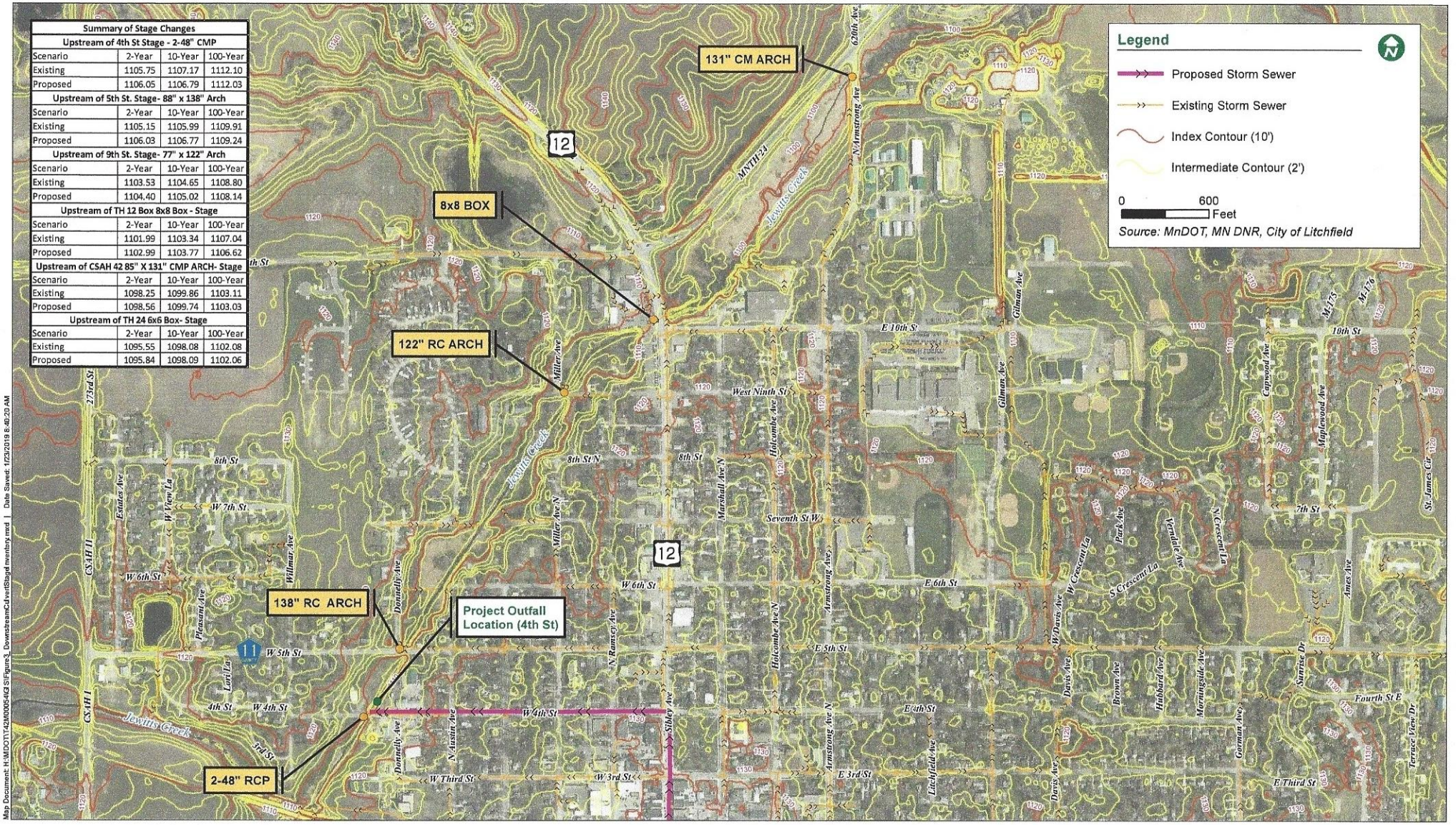
Summary of Stage Changes			
Upstream of 4th St Stage - 2-48" CMP			
Scenario	2-Year	10-Year	100-Year
Existing	1105.75	1107.17	1112.10
Proposed	1106.05	1106.79	1112.03
Upstream of 5th St. Stage- 88" x 138" Arch			
Scenario	2-Year	10-Year	100-Year
Existing	1105.15	1105.99	1109.91
Proposed	1106.03	1106.77	1109.24
Upstream of 9th St. Stage- 77" x 122" Arch			
Scenario	2-Year	10-Year	100-Year
Existing	1103.53	1104.65	1108.80
Proposed	1104.40	1105.02	1108.14
Upstream of TH 12 Box 8x8 Box - Stage			
Scenario	2-Year	10-Year	100-Year
Existing	1101.99	1103.34	1107.04
Proposed	1102.99	1103.77	1106.62
Upstream of CSAH 42 85" X 131" CMP ARCH- Stage			
Scenario	2-Year	10-Year	100-Year
Existing	1098.25	1099.86	1103.11
Proposed	1098.56	1099.74	1103.03
Upstream of TH 24 6x6 Box- Stage			
Scenario	2-Year	10-Year	100-Year
Existing	1095.55	1098.08	1102.08
Proposed	1095.84	1098.09	1102.06



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Appendix B: Geopak Output Files and CB Drainage Area Map

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	12
Location	Holcombe

Design Frequency	3
Low Point	3
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB79

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB79	HOLCOMBE 203+90.000	20.5 LT	1.95	0.80	1.56	18	3.2	5.0	0.0	5.0	0.45	2.50	B - 17	15.5	0.44 0.37	12.8	2.7	
CB84	HOLCOMBE 203+75.751	20.5 LT	0.04	0.95	0.03	7	5.1	0.2	2.7	2.8	0.45	2.50	B - 17	15.5	0.44 0.31	10.3	1.3	
CB78	HOLCOMBE 203+62.879	20.5 LT	0.29	0.85	0.24	7	5.1	1.2	1.4	2.7	Sag	2.50	B - 17	15.5 Approach	0.44 0.58 Spread	*** 21.2	0.0	Depth exceeds allowed Offsite Water Controls ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB76	HOLCOMBE 203+09.404	37.167 LT	0.37	0.85	0.32	7	5.1	1.6	0.0	1.6	0.30	2.50	B - 17	15.5	0.44 0.28	9.0	0.6	
CB77	HOLCOMBE 203+29.833	20.424 LT	0.05	0.85	0.04	7	5.1	0.2	0.6	0.8	0.54	2.50	B - 17	15.5	0.44 0.20	5.8	0.2	
CB78	HOLCOMBE 203+62.879	20.5 LT	0.29	0.85	0.24	7	5.1	1.2	1.4	2.7	Sag	2.50	B - 17	15.5 Approach	0.44 0.58 Spread	*** 21.2	0.0	Depth exceeds allowed Offsite Water Controls ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB81	HOLCOMBE 203+90.000	20.5 RT	1.22	0.75	0.92	12	4.0	3.7	0.0	3.7	0.45	1.00	B - 17	15.5	0.23 0.28	20.0	2.3	Spread exceeds allowed Offsite Water Controls
CB85	HOLCOMBE 203+75.451	20.5 RT	0.03	0.85	0.03	7	5.1	0.1	2.3	2.4	0.45	1.00	B - 17	15.5	0.23 0.25	17.0	1.3	Spread exceeds allowed Offsite Water Controls
CB80	HOLCOMBE 203+62.879	20.5 RT	0.13	0.75	0.10	7	5.1	0.5	2.1	2.6	Sag	1.00	B - 17	15.5 Approach	0.23 0.28 Spread	*** 20.7	0.0	Depth exceeds allowed Offsite Water Controls ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB74	HOLCOMBE 203+09.404	42.701 RT	0.48	0.85	0.40	7	5.1	2.1	0.0	2.1	0.30	2.50	B - 17	15.5	0.44 0.30	9.9	0.8	
CB80	HOLCOMBE 203+62.879	20.5 RT	0.13	0.75	0.10	7	5.1	0.5	2.1	2.6	Sag	1.00	B - 17	15.5 Approach	0.23 0.28 Spread	*** 20.7	0.0	Depth exceeds allowed Offsite Water Controls ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB72	HOLCOMBE 202+15.740	20.5 RT	0.27	0.95	0.25	7	5.1	1.3	0.4	1.7	Sag	2.50	B - 17	15.5 Approach	0.44 0.21 Spread	*** 6.3	0.0	***End of Run***

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	12
Location	Holcombe

Design Frequency	3
Low Point	3
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB75

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X.Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB75	HOLCOMBE 202+69.404	37.187 LT	0.22	0.85	0.18	7	5.1	0.9	0.0	0.9	0.19	2.50	B - 17	15.5	0.44 0.25	7.8	0.2	
CB71	HOLCOMBE 202+15.740	20.5 LT	0.11	0.95	0.11	7	5.1	0.5	0.2	0.8	Sag	2.50	B - 17	15.5 Approach Spread	0.44 0.16	*** 4.4	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB73	HOLCOMBE 202+70.404	42.8 RT	0.67	0.50	0.33	9	4.6	1.5	0.0	1.5	Sag	2.50	B - 17	15.5 Approach Spread	0.44 0.20	*** 5.9	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	TH 12
Location	Litchfield

Design Frequency	10-yr
Low Point	10-yr
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB01

4TH STREET - NO SPREAD REQUIREMENTS

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB01	4TH 102+18.028	11 LT	0.62	0.75	0.46	7	6.9	3.2	0.0	3.2	1.35	2.50	B - 9	8.0	0.24 0.26	9.0	1.5	Spread exceeds allowed NO SPREAD REQUIREMENTS
CB06	4TH 109+30.016	30.167 RT	0.09	0.50	0.05	7	6.9	0.3	0.0	0.3	0.70	2.00	B - 9	8.0	0.36 0.14	2.5	0.0	NO SPREAD REQUIREMENTS #REF!
CB02	4TH 105+60.082	24.599 RT	0.06	0.50	0.03	7	6.9	0.2	0.0	0.2	0.04	2.50	B - 9	8.0	0.36 0.20	3.9	0.0	NO SPREAD REQUIREMENTS
CB04	4TH 105+95.671	21.827 LT	0.80	0.50	0.40	7	6.9	3.3	0.0	3.3	Sag	2.00	B - 17	8.0 Approach Spread	0.36 0.32	*** 7.4	0.0	Low Point NO SPREAD REQUIREMENTS
CB09	4TH 109+87.000	18.5 LT	0.65	0.50	0.32	7	6.9	2.2	0.0	2.2	0.75	2.80	B - 9	8.0	0.36 0.28	5.9	0.6	NO SPREAD REQUIREMENTS
CB08	4TH 109+87.000	17.5 RT	0.40	0.50	0.20	7	6.9	1.4	0.0	1.4	0.75	2.50	B - 9	8.0	0.36 0.23	4.8	0.3	NO SPREAD REQUIREMENTS
CB07	4TH 109+63.746	32.252 RT	0.10	0.50	0.05	7	6.9	0.4	0.3	0.6	Sag	2.00	B - 17	8.0 Approach Spread	0.36 0.11	*** 3.0	0.0	Low Point NO SPREAD REQUIREMENTS
CB06	4TH 109+30.016	30.167 RT	0.09	0.50	0.05	7	6.9	0.3	0.0	0.3	0.70	2.00	B - 9	8.0	0.36 0.14	2.5	0.0	NO SPREAD REQUIREMENTS
CB05	4TH 106+19.780	15 RT	0.42	0.95	0.40	7	6.9	1.0	0.0	1.0	0.50	1.00	B - 9	8.0	0.36 0.23	4.6	0.2	NO SPREAD REQUIREMENTS
CB03	4TH 105+92.286	24.67 RT	0.09	0.50	0.04	7	6.9	0.3	0.2	0.5	0.32	2.00	B - 9	8.0	0.36 0.19	3.6	0.0	NO SPREAD REQUIREMENTS
CB11	4TH 117+07.611	22.376 RT	0.10	0.50	0.05	7	6.9	0.4	0.0	0.4	Sag	2.00	B - 17	8.0 Approach Spread	0.36 0.07	*** 2.9	0.0	Low Point NO SPREAD REQUIREMENTS
CB10	4TH 116+69.389	22.617 RT	0.04	0.50	0.02	7	6.9	0.1	0.0	0.1	Sag	2.00	B - 17	8.0 Approach Spread	0.36 0.04	*** 1.8	0.0	Low Point NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	TH 12
Location	Litchfield

Design Frequency	10-yr
Low Point	10-yr
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB19

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X.Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB19	TH12_NORTH 1+45.609 R 2	26.5 LT	0.38	0.85	0.32	7	6.9	2.2	0.0	2.2	0.44	3.50	B - 9	8.0	0.33 0.31	7.5	0.7	
CB18	TH12_NORTH 0+77.500 R 2	26.5 LT	0.08	0.85	0.07	7	6.9	0.5	0.7	1.2	0.56	2.25	B - 9	8.0	0.26 0.23	7.1	0.4	
CB17	TH12_NORTH 0+54.477 R 2	43.563 LT	0.16	0.95	0.15	7	6.9	1.0	0.4	1.4	Sag	2.01	B - 17	8.0 Approach	0.24 0.18 Spread	*** 7.7	0.0	NO SPREAD REQUIREMENTS Low Point
CB16	TH12_NORTH 0+16.477 R 2	45.011 LT	0.15	0.90	0.13	7	6.9	0.9	0.0	0.9	Sag	2.55	B - 17	8.0 Approach	0.27 0.14 Spread	*** 5.9	0.0	NO SPREAD REQUIREMENTS Low Point
CB23	TH12_NORTH 2+70.912 R 2	26.5 RT	0.16	0.95	0.16	7	6.9	1.1	0.0	1.1	0.39	2.80	B - 9	8.0	0.29 0.24	6.4	0.3	
CB89	TH12_NORTH 2+46.169 R 2	26.5 RT	0.22	0.95	0.21	7	6.9	1.4	0.3	1.7	0.39	2.80	B - 9	8.0	0.29 0.28	7.9	0.5	
CB21	TH12_NORTH 2+25.000 R 2	26.5 RT	0.05	0.95	0.05	7	6.9	0.3	0.5	0.9	0.39	2.80	B - 17	8.0	0.29 0.23	5.9	0.2	Low Point
CB20	TH12_NORTH 1+68.980 R 2	26.5 RT	0.08	0.95	0.07	7	6.9	0.5	0.2	0.7	0.40	2.00	B - 9	8.0	0.24 0.20	6.2	0.1	
CB15	TH12_NORTH 0+80.034 R 2	26.5 RT	0.14	0.95	0.13	7	6.9	0.9	0.1	1.0	0.56	2.00	B - 9	8.0	0.24 0.22	7.0	0.3	
CB14	4TH 120+18.500	18.7 RT	0.45	0.78	0.35	7	6.9	2.4	0.3	2.7	Sag	1.81	B - 17	8.0 Approach	0.36 0.28 Spread	*** 12.2	0.0	NO SPREAD REQUIREMENTS Low Point
CB13	4TH 120+20.000	19.2 LT	0.32	0.50	0.16	7	6.9	1.1	0.0	1.1	Sag	1.94	B - 17	8.0 Approach	0.24 0.16 Spread	*** 7.5	0.0	NO SPREAD REQUIREMENTS Low Point
CB12	TH12_NORTH 661+65.000	26.615 RT	0.09	0.50	0.04	7	6.9	0.3	0.0	0.3	Sag	3.58	B - 17	8.0 Approach	0.34 0.07 Spread	*** 3.0	0.0	Low Point
CB25	TH12_NORTH 4+97.344 R 2	54.492 LT	0.06	0.95	0.06	7	6.9	0.4	0.0	0.4	Sag	2.00	B - 17	8.0 Approach	0.24 0.08 Spread	*** 3.2	0.0	NO SPREAD REQUIREMENTS Low Point
CB26	TH12_NORTH 5+32.891 R 2	26.5 LT	0.02	0.95	0.02	7	6.9	0.1	0.0	0.1	Sag	5.00	B - 17	8.0 Approach	0.36 0.04 Spread	*** 1.9	0.0	Low Point
CB24	TH12_NORTH 4+54.238 R 2	45.035 LT	0.02	0.95	0.02	7	6.9	0.1	0.0	0.1	Sag	2.00	B - 17	8.0 Approach	0.24 0.04 Spread	*** 1.5	0.0	Low Point NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	TH 12
Location	Litchfield

Design Frequency	10-yr
Low Point	10-yr
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet: CB27

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB27	TH12_NORTH 5+60.000 R 2	26.5 RT	0.04	0.95	0.03	7	6.9	0.2	0.0	0.2	0.16	5.00	B - 17	8.0	0.42 0.17	3.0	0.0	Low Point
CB29	TH12_NORTH 6+50.519 R 2	26.5 RT	0.11	0.95	0.10	7	6.9	0.7	0.3	1.0	Sag	2.00	B - 17	8.0 Approach Spread	0.24 0.15	*** 7.4	0.0	Low Point
CB32	TH12_NORTH 7+89.000 R 2	26.5 RT	0.12	0.95	0.11	7	6.9	0.8	0.0	0.8	0.44	3.00	B - 17	8.0	0.30 0.22	5.2	0.1	Low Point
CB83	TH12_NORTH 6+58.278 R 2	26.5 RT	0.15	0.95	0.14	7	6.9	1.0	0.1	1.1	0.44	2.00	B - 9	8.0	0.24 0.24	7.7	0.3	
CB29	TH12_NORTH 6+50.519 R 2	26.5 RT	0.11	0.95	0.10	7	6.9	0.7	0.3	1.0	Sag	2.00	B - 17	8.0 Approach Spread	0.24 0.15	*** 7.4	0.0	Low Point
CB31	TH12_NORTH 6+99.139 R 2	47.294 LT	0.06	0.95	0.05	7	6.9	0.4	0.0	0.4	0.48	4.00	B - 9	8.0	0.36 0.17	3.1	0.0	NO SPREAD REQUIREMENTS
CB30	TH12_NORTH 6+96.634 R 2	26.5 LT	0.16	0.95	0.15	7	6.9	1.0	0.0	1.1	0.45	2.60	B - 9	8.0	0.28 0.24	6.5	0.3	
CB28	TH12_NORTH 6+50.519 R 2	26.5 LT	0.18	0.95	0.17	7	6.9	1.1	0.3	1.4	Sag	2.60	B - 17	8.0 Approach Spread	0.28 0.19	*** 8.0	0.0	Low Point
CB33	TH12_NORTH 8+95.926 R 2	47.271 LT	0.31	0.95	0.29	7	6.9	2.0	0.0	2.0	Sag	2.60	B - 17	8.0 Approach Spread	0.36 0.23	*** 8.3	0.0	Low Point NO SPREAD REQUIREMENTS
CB34	TH12_NORTH 9+39.091 R 2	46.952 LT	0.21	0.95	0.20	7	6.9	1.4	0.0	1.4	Sag	2.80	B - 17	8.0 Approach Spread	0.36 0.18	*** 6.9	0.0	Low Point NO SPREAD REQUIREMENTS
CB35	TH12_NORTH 10+44.000 R 2	26.5 LT	0.10	0.95	0.09	7	6.9	0.6	0.0	0.6	0.43	4.50	B - 17	8.0	0.39 0.21	3.9	0.1	Low Point
CB37	TH12_NORTH 11+37.384 R 2	26.5 LT	0.10	0.95	0.09	7	6.9	0.6	0.1	0.7	0.73	5.00	B - 9	8.0	0.42 0.20	3.5	0.1	
CB39	TH12_NORTH 12+48.170 R 2	28.64 LT	0.17	0.95	0.16	7	6.9	1.1	0.1	1.2	Sag	2.50	B - 17	8.0 Approach Spread	0.27 0.16	*** 6.7	0.0	Low Point
CB36	TH12_NORTH 10+88.000 R 2	26.5 RT	0.20	0.95	0.19	7	6.9	1.3	0.0	1.3	0.58	3.50	B - 17	8.0	0.33 0.25	5.6	0.3	Low Point
CB38	TH12_NORTH 12+23.464 R 2	27.201 RT	0.22	0.95	0.21	7	6.9	1.4	0.3	1.7	0.73	5.00	B - 9	8.0	0.42 0.27	5.1	0.4	
CB41	TH22 68+17.201	26.5 LT	0.21	0.95	0.20	7	6.9	1.4	0.0	1.4	Sag	5.00	B - 17	8.0 Approach Spread	0.42 0.18	*** 4.8	0.0	Low Point ***End of Run***

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	TH 12
Location	Litchfield

Design Frequency	10-yr
Low Point	10-yr
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB42

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB42	TH12_EAST 13+41.537	23.5 RT	0.03	0.95	0.02	7	6.9	0.2	0.0	0.2	0.44	2.50	B - 9	8.0	0.27 0.13	2.2	0.0	
CB44	TH12_EAST 13+55.450	68.718 RT	0.59	0.95	0.56	8	6.5	3.6	0.0	3.6	Sag	4.00	B - 17	8.0 Approach Spread	0.36 0.35	*** 7.7	0.0	Low Point
CB43	TH12_EAST 13+24.034	61.02 RT	0.03	0.95	0.03	7	6.9	0.2	0.0	0.2	0.44	2.50	B - 9	8.0	0.27 0.14	2.8	0.0	
CB44	TH12_EAST 13+55.450	68.718 RT	0.59	0.95	0.56	8	6.5	3.6	0.0	3.6	Sag	4.00	B - 17	8.0 Approach Spread	0.36 0.35	*** 7.7	0.0	Low Point
CB86	TH12_EAST 14+67.377	24.5 LT	0.19	0.95	0.18	7	6.9	1.2	0.0	1.2	0.50	3.00	B - 9	8.0	0.30 0.25	6.2	0.3	
CB52	TH12_EAST 15+20.879	24.5 LT	0.20	0.95	0.19	7	6.9	1.3	0.3	1.6	0.50	3.00	B - 9	8.0	0.30 0.27	7.0	0.5	
CB53	TH12_EAST 15+50.816	24.5 LT	0.03	0.95	0.02	7	6.9	0.2	0.5	0.6	0.50	3.00	B - 9	8.0	0.30 0.20	4.6	0.1	
CB54	TH12_EAST 16+10.292	41.062 LT	0.21	0.95	0.20	7	6.9	1.4	0.4	1.8	Sag	2.00	B - 17	8.0 Approach Spread	0.24 0.22	*** 7.4	0.0	Low Point
CB55	TH12_EAST 16+18.216	50.975 LT	0.17	0.95	0.16	7	6.9	1.1	0.0	1.1	0.50	2.00	B - 9	8.0	0.24 0.23	7.5	0.3	
CB62	TH12_EAST 18+40.050	23.495 LT	0.16	0.95	0.16	7	6.9	1.1	0.0	1.1	0.14	4.77	B - 9	8.0	0.36 0.31	6.0	0.2	
CB63	TH12_EAST 18+96.578	23.5 LT	0.22	0.95	0.21	7	6.9	1.4	0.3	1.7	Sag	6.00	B - 17	12.0 Approach Spread	0.51 0.21	*** 5.0	0.0	Low Point SEE 50-yr COMPS
CB64	TH12_EAST 19+61.105	23.5 LT	0.12	0.95	0.11	7	6.9	0.8	0.0	0.8	0.16	4.01	B - 9	8.0	0.33 0.25	5.2	0.1	
CB63	TH12_EAST 18+96.578	23.5 LT	0.22	0.95	0.21	7	6.9	1.4	0.3	1.7	Sag	6.00	B - 17	12.0 Approach Spread	0.51 0.21	*** 5.0	0.0	Low Point SEE 50-yr COMPS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	TH 12
Location	Litchfield

Design Frequency	10-yr
Low Point	10-yr
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB87

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB87	TH12_EAST 15+23.230	23.5 RT	0.26	0.95	0.25	7	6.9	1.7	0.0	1.7	0.50	3.00	B - 9	8.0	0.29 0.28	7.4	0.5	
CB56	TH12_EAST 15+80.543	23.5 RT	0.06	0.95	0.06	7	6.9	0.4	0.5	0.9	0.50	3.00	B - 9	8.0	0.29 0.23	5.5	0.2	
CB57	TH12_EAST 16+38.475	23.5 RT	0.22	0.95	0.21	7	6.9	1.5	0.2	1.7	0.50	3.00	B - 9	8.0	0.29 0.27	7.3	0.5	
CB58	TH12_EAST 16+90.000	23.5 RT	0.13	0.95	0.12	7	6.9	0.8	0.5	1.4	0.50	2.00	B - 9	8.0	0.25 0.24	7.8	0.4	
CB88	TH12_EAST 17+33.612	23.5 RT	0.13	0.95	0.12	7	6.9	0.8	0.4	1.3	0.50	2.00	B - 9	8.0	0.25 0.24	7.6	0.4	
CB59	TH12_EAST 17+75.000	23.5 RT	0.10	0.95	0.10	7	6.9	0.7	0.4	1.1	0.29	3.65	B - 9	8.0	0.32 0.26	5.9	0.2	
CB60	TH12_EAST 18+48.900	23.5 RT	0.14	0.95	0.13	7	6.9	0.9	0.2	1.1	0.12	5.05	B - 9	8.0	0.37 0.33	6.1	0.2	
CB61	TH12_EAST 18+96.578	23.5 RT	0.23	0.95	0.22	7	6.9	1.5	1.0	2.5	Sag	6.00	B - 17	8.0	0.48 0.27 Approach Spread	*** 5.3	0.0	Low Point See 50-yr Comps
CB66	HOLCOMBE 200+74.920	16.317 LT	0.32	0.95	0.31	7	6.9	2.1	0.0	2.1	1.00	2.00	B - 9	8.0	0.24 0.25	8.5	0.9	Spread exceeds allowed NO SPREAD REQUIREMENTS
CB67	HOLCOMBE 201+03.630	24.404 LT	0.14	0.95	0.13	7	6.9	0.9	0.9	1.7	1.00	1.02	B - 17	8.0	0.24 0.22	11.8	0.8	Spread exceeds allowed Low Point
CB61	TH12_EAST 18+96.578	23.5 RT	0.23	0.95	0.22	7	6.9	1.5	1.0	2.5	Sag	6.00	B - 17	8.0	0.48 0.27 Approach Spread	*** 5.3	0.0	See 50-yr Comps Low Point
CB82	HOLCOMBE 200+69.743	21.408 RT	0.23	0.95	0.22	7	6.9	1.5	0.0	1.5	1.00	2.50	B - 9	8.0	0.24 0.22	6.8	0.5	NO SPREAD REQUIREMENTS
CB68	TH12_EAST 21+26.340	23.5 RT	0.46	0.95	0.43	7	6.9	3.0	0.5	3.5	Sag	2.00	B - 17	8.0	0.25 0.34 Approach Spread	*** 11.5	0.0	Depth exceeds allowed Low Point, Offsite Water Controllin ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	4704-89
T.H.	TH 12
Location	Litchfield

Design Frequency	10-yr
Low Point	10-yr
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB69

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB69	TH12_EAST 21+24.349	23.5 LT	0.52	0.95	0.50	7	6.9	3.4	0.0	3.4	0.54	2.00	B - 17	8.0	0.25 0.32	10.9	1.6	Spread exceeds allowed Offsite Water Controlling Low Point
CB70	TH12_EAST 20+94.500	23.5 LT	0.03	0.95	0.03	7	6.9	0.2	1.6	1.8	0.48	2.00	B - 9	8.0	0.25 0.27	8.8	0.7	Spread exceeds allowed Offsite Water Controlling #REF!
CB72	HOLCOMBE 202+15.740	20.5 RT	0.27	0.95	0.25	7	6.9	1.7	0.7	2.4	Sag	2.50	B - 17	15.5 Approach Spread	0.44 0.27	*** 8.5	0.0	3 yr Spread Requirements
CB45	TH22 65+60.259	51.736 RT	0.79	0.65	0.51	10	5.8	3.0	0.0	3.0	0.76	4.00	B - 9	8.0	0.36 0.32	7.0	1.1	NO SPREAD REQUIREMENTS
CB46	TH22 65+63.694	22.667 RT	0.09	0.95	0.09	7	6.9	0.6	0.0	0.6	0.76	2.50	B - 9	8.0	0.27 0.18	4.4	0.1	
CB47	TH22 64+59.849	22.667 RT	0.21	0.95	0.20	7	6.9	1.3	0.1	1.4	Sag	3.00	B - 17	8.0 Approach Spread	0.30 0.19	*** 4.9	0.0	Low Point
CB48	TH22 64+50.000	21 LT	0.25	0.95	0.24	7	6.9	1.6	0.0	1.6	0.70	3.00	B - 9	8.0	0.30 0.26	6.6	0.5	
CB49	TH22 63+55.487	21 LT	0.15	0.95	0.14	7	6.9	1.0	0.5	1.5	Sag	3.00	B - 17	8.0 Approach Spread	0.30 0.19	*** 6.4	0.0	Low Point
CB50	TH22 63+26.048	21 LT	0.01	0.95	0.01	7	6.9	0.1	0.0	0.1	0.59	1.66	B - 9	8.0	0.22 0.09	1.6	0.0	
CB51	TH22 63+26.839	21.056 RT	0.19	0.70	0.13	7	6.9	0.9	0.0	0.9	Sag	1.67	B - 17	8.0 Approach Spread	0.22 0.14	*** 7.2	0.0	Low Point ***End of Run***
	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet: CB01

4th Street - No Spread Requirements

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X.Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB01	4TH 102+18.028	11 LT	0.62	0.75	0.46	7	9.5	4.4	0.0	4.4	1.35	2.00	B - 9	8.0	0.24 0.29	10.3	2.3	Spread exceeds allowed
CB04	4TH 105+95.671	21.827 LT	0.95	0.50	0.47	7	9.5	4.5	0.0	4.5	Sag	4.00	B - 17	8.0 Approach	0.36 0.41	*** 9.3	0.0	Depth exceeds allowed ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB02	4TH 105+60.082	24.599 RT	0.06	0.50	0.03	7	9.5	0.3	0.0	0.3	0.04	4.00	B - 9	8.0	0.36 0.22	4.5	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB06	4TH 109+30.016	30.167 RT	0.09	0.50	0.05	7	9.5	0.4	0.0	0.4	0.70	4.00	B - 9	8.0	0.36 0.16	2.9	0.0	
CB05	4TH 106+19.780	15 RT	0.30	0.50	0.15	7	9.5	1.4	0.0	1.4	0.50	4.00	B - 9	8.0	0.36 0.25	5.3	0.3	
CB03	4TH 105+92.286	24.67 RT	0.09	0.50	0.04	7	9.5	0.4	0.3	0.7	0.32	4.00	B - 9	8.0	0.36 0.22	4.4	0.1	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB09	4TH 109+87.000	18.5 LT	0.65	0.50	0.32	7	9.5	3.1	0.0	3.1	0.75	4.00	B - 9	8.0	0.36 0.31	6.7	1.1	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB08	4TH 109+87.000	17.5 RT	0.40	0.50	0.20	7	9.5	1.9	0.0	1.9	0.75	4.00	B - 9	8.0	0.36 0.26	5.5	0.5	
CB07	4TH 109+63.746	32.252 RT	0.10	0.50	0.05	7	9.5	0.5	0.5	1.0	Sag	4.00	B - 17	8.0 Approach	0.36 0.15	*** 3.6	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB10	4TH 116+69.389	22.617 RT	0.04	0.50	0.02	7	9.5	0.2	0.0	0.2	Sag	4.00	B - 17	8.0 Approach	0.36 0.05	*** 2.0	0.0	
CB11	4TH 117+07.611	22.376 RT	0.10	0.50	0.05	7	9.5	0.5	0.0	0.5	Sag	4.00	B - 17	8.0 Approach	0.36 0.09	*** 3.3	0.0	***End of Run***

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet: CB13

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB13	4TH 120+20.000	19.2 LT	0.32	0.50	0.16	7	9.5	1.5	0.0	1.5	Sag	1.94	B - 17	8.0 Approach	0.24 0.19 Spread	*** 8.7	0.0	NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB12	TH12_NORTH 661+65.000	26.615 RT	0.09	0.50	0.04	7	9.5	0.4	0.0	0.4	Sag	3.58	B - 17	8.0 Approach	0.34 0.08 Spread	*** 3.5	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB23	TH12_NORTH 2+70.912 R 2	26.5 RT	0.16	0.95	0.16	7	9.5	1.5	0.0	1.5	0.39	2.80	B - 9	8.0	0.29 0.27	7.4	0.4	
CB89	TH12_NORTH 2+46.169 R 2	26.5 RT	0.22	0.95	0.21	7	9.5	2.0	0.4	2.4	0.39	2.80	B - 9	8.0	0.29 0.32	9.1	0.9	Spread exceeds allowed
CB21	TH12_NORTH 2+25.000 R 2	26.5 RT	0.05	0.95	0.05	7	9.5	0.5	0.9	1.4	0.39	2.80	B - 17	8.0	0.29 0.27	7.2	0.4	
CB20	TH12_NORTH 1+68.980 R 2	26.5 RT	0.08	0.95	0.07	7	9.5	0.7	0.4	1.1	0.40	2.00	B - 9	8.0	0.24 0.24	7.7	0.3	
CB15	TH12_NORTH 0+80.034 R 2	26.5 RT	0.14	0.95	0.13	7	9.5	1.2	0.3	1.5	0.56	2.00	B - 9	8.0	0.24 0.25	8.4	0.5	Spread exceeds allowed
CB14	4TH 120+18.500	18.7 RT	0.45	0.78	0.35	7	9.5	3.3	0.5	3.8	Sag	1.81	B - 17	8.0 Approach	0.36 0.36 Spread	*** 16.5	0.0	NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB16	TH12_NORTH 0+16.477 R 2	45.011 LT	0.15	0.90	0.13	7	9.5	1.3	0.0	1.3	Sag	2.55	B - 17	8.0 Approach	0.27 0.17 Spread	*** 6.9	0.0	NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB19	TH12_NORTH 1+45.609 R 2	26.5 LT	0.38	0.85	0.32	7	9.5	3.0	0.0	3.0	0.44	3.50	B - 9	8.0	0.33 0.35	8.5	1.2	Spread exceeds allowed
CB18	TH12_NORTH 0+77.500 R 2	26.5 LT	0.08	0.85	0.07	7	9.5	0.7	1.2	1.8	0.56	2.25	B - 9	8.0	0.26 0.27	8.5	0.7	Spread exceeds allowed
CB17	TH12_NORTH 0+54.477 R 2	43.563 LT	0.16	0.95	0.15	7	9.5	1.4	0.7	2.1	Sag	2.01	B - 17	8.0 Approach	0.24 0.24 Spread	*** 9.3	0.0	***End of Run***

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB24

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB24	TH12_NORTH 4+54.238 R 2	45.035 LT	0.02	0.95	0.02	7	9.5	0.2	0.0	0.2	Sag	2.00	B - 17	8.0 Approach	0.24 0.04 Spread	*** 1.7	0.0	NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB25	TH12_NORTH 4+97.344 R 2	54.492 LT	0.06	0.95	0.06	7	9.5	0.6	0.0	0.6	Sag	2.00	B - 17	8.0 Approach	0.24 0.10 Spread	*** 4.0	0.0	NO SPREAD REQUIREMENTS ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB26	TH12_NORTH 5+32.891 R 2	26.5 LT	0.02	0.95	0.02	7	9.5	0.2	0.0	0.2	Sag	5.00	B - 17	8.0 Approach	0.36 0.05 Spread	*** 2.2	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB27	TH12_NORTH 5+60.000 R 2	26.5 RT	0.04	0.95	0.03	7	9.5	0.3	0.0	0.3	0.16	5.00	B - 17	8.0	0.42 0.19	3.4	0.0	
CB29	TH12_NORTH 6+50.519 R 2	26.5 RT	0.11	0.95	0.10	7	9.5	1.0	0.6	1.6	Sag	2.00	B - 17	8.0 Approach	0.24 0.20 Spread	*** 8.9	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB32	TH12_NORTH 7+89.000 R 2	26.5 RT	0.12	0.95	0.11	7	9.5	1.0	0.0	1.0	0.44	3.00	B - 17	8.0	0.30 0.24	6.0	0.2	
CB83	TH12_NORTH 6+58.278 R 2	26.5 RT	0.15	0.95	0.14	7	9.5	1.4	0.2	1.6	0.44	2.00	B - 9	8.0	0.24 0.26	9.1	0.6	Spread exceeds allowed
CB29	TH12_NORTH 6+50.519 R 2	26.5 RT	0.11	0.95	0.10	7	9.5	1.0	0.6	1.6	Sag	2.00	B - 17	8.0 Approach	0.24 0.20 Spread	*** 8.9	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB31	TH12_NORTH 6+99.139 R 2	47.294 LT	0.06	0.95	0.05	7	9.5	0.5	0.0	0.5	0.48	4.00	B - 9	8.0	0.36 0.19	3.6	0.0	
CB30	TH12_NORTH 6+96.634 R 2	26.5 LT	0.16	0.95	0.15	7	9.5	1.4	0.0	1.5	0.45	2.60	B - 9	8.0	0.28 0.26	7.5	0.5	
CB28	TH12_NORTH 6+50.519 R 2	26.5 LT	0.18	0.95	0.17	7	9.5	1.6	0.5	2.0	Sag	2.60	B - 17	8.0 Approach	0.28 0.24 Spread	*** 9.3	0.0	***End of Run***

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB33

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X.Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB33	TH12_NORTH 8+95.926 R 2	47.271 LT	0.31	0.95	0.29	7	9.5	2.7	0.0	2.7	Sag	2.60	B - 17	8.0 Approach	0.36 0.29 Spread	*** 9.4	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB34	TH12_NORTH 9+39.091 R 2	46.952 LT	0.21	0.95	0.20	7	9.5	1.9	0.0	1.9	Sag	2.80	B - 17	8.0 Approach	0.36 0.23 Spread	*** 7.9	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB35	TH12_NORTH 10+44.000 R 2	26.5 LT	0.10	0.95	0.09	7	9.5	0.9	0.0	0.9	0.43	4.50	B - 17	8.0	0.39 0.23	4.5	0.1	
CB37	TH12_NORTH 11+37.384 R 2	26.5 LT	0.10	0.95	0.09	7	9.5	0.9	0.1	1.0	0.73	5.00	B - 9	8.0	0.42 0.23	4.1	0.1	
CB39	TH12_NORTH 12+48.170 R 2	28.64 LT	0.17	0.95	0.16	7	9.5	1.5	0.1	1.6	Sag	2.50	B - 17	8.0 Approach	0.27 0.21 Spread	*** 7.8	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB36	TH12_NORTH 10+88.000 R 2	26.5 RT	0.20	0.95	0.19	7	9.5	1.8	0.0	1.8	0.58	3.50	B - 17	8.0	0.33 0.28	6.4	0.5	
CB38	TH12_NORTH 12+23.464 R 2	27.201 RT	0.22	0.95	0.21	7	9.5	2.0	0.5	2.5	0.73	5.00	B - 9	8.0	0.42 0.31	5.8	0.7	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB41	TH22 68+17.201	26.5 LT	0.21	0.95	0.20	7	9.5	1.9	0.0	1.9	Sag	5.00	B - 17	8.0 Approach	0.42 0.22 Spread	*** 5.4	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB42	TH12_EAST 13+41.537	23.5 RT	0.03	0.95	0.02	7	9.5	0.2	0.0	0.2	0.44	2.50	B - 9	8.0	0.27 0.14	2.8	0.0	
CB44	TH12_EAST 13+55.450	68.718 RT	0.59	0.95	0.56	8	8.9	5.0	0.0	5.0	Sag	4.00	B - 17	8.0 Approach	0.36 0.51 Spread	*** 11.7	0.0	Depth exceeds allowed ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB43

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB43	TH12_EAST 13+24.034	61.02 RT	0.03	0.95	0.03	7	9.5	0.3	0.0	0.3	0.44	2.50	B - 9	8.0	0.27 0.16	3.5	0.0	
CB44	TH12_EAST 13+55.450	68.718 RT	0.59	0.95	0.56	8	8.9	5.0	0.0	5.0	Sag	4.00	B - 17	8.0 Approach	0.36 0.51 Spread	*** 11.7	0.0	Depth exceeds allowed ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB45	TH22 65+60.259	51.736 RT	0.79	0.65	0.51	10	8.1	4.1	0.0	4.1	0.76	4.00	B - 9	8.0	0.36 0.36	8.0	1.7	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB46	TH22 65+63.694	22.667 RT	0.09	0.95	0.09	7	9.5	0.8	0.0	0.8	0.76	2.50	B - 9	8.0	0.27 0.20	5.2	0.2	
CB47	TH22 64+59.849	22.667 RT	0.21	0.95	0.20	7	9.5	1.8	0.2	2.0	Sag	3.00	B - 17	8.0 Approach	0.30 0.24 Spread	*** 5.8	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB48	TH22 64+50.000	21 LT	0.25	0.95	0.24	7	9.5	2.3	0.0	2.3	0.70	3.00	B - 9	8.0	0.30 0.29	7.5	0.8	
CB49	TH22 63+55.487	21 LT	0.15	0.95	0.14	7	9.5	1.3	0.8	2.1	Sag	3.00	B - 17	8.0 Approach	0.30 0.25 Spread	*** 7.5	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB50	TH22 63+26.048	21 LT	0.01	0.95	0.01	7	9.5	0.1	0.0	0.1	0.59	1.66	B - 9	8.0	0.22 0.11	1.8	0.0	
CB49	TH22 63+55.487	21 LT	0.15	0.95	0.14	7	9.5	1.3	0.8	2.1	Sag	3.00	B - 17	8.0 Approach	0.30 0.25 Spread	*** 7.5	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB51	TH22 63+26.839	21.056 RT	0.19	0.70	0.13	7	9.5	1.3	0.0	1.3	Sag	1.67	B - 17	8.0 Approach	0.22 0.17 Spread	*** 8.4	0.0	***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB86

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X.Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB86	TH12_EAST 14+67.377	24.5 LT	0.19	0.95	0.18	7	9.5	1.7	0.0	1.7	0.50	3.00	B - 9	8.0	0.30 0.28	7.2	0.5	
CB52	TH12_EAST 15+20.879	24.5 LT	0.20	0.95	0.19	7	9.5	1.8	0.5	2.3	0.50	3.00	B - 9	8.0	0.30 0.30	8.3	0.8	Spread exceeds allowed
CB53	TH12_EAST 15+50.816	24.5 LT	0.03	0.95	0.02	7	9.5	0.2	0.8	1.1	0.50	3.00	B - 9	8.0	0.30 0.24	5.9	0.2	
CB54	TH12_EAST 16+10.292	41.062 LT	0.21	0.95	0.20	7	9.5	1.9	0.8	2.7	Sag	2.00	B - 17	8.0 Approach	0.24 0.28 Spread	*** 10.2	0.0	Depth exceeds allowed ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB55	TH12_EAST 16+18.216	50.975 LT	0.17	0.95	0.16	7	9.5	1.5	0.0	1.5	0.50	2.00	B - 9	8.0	0.24 0.25	8.6	0.5	Spread exceeds allowed
CB54	TH12_EAST 16+10.292	41.062 LT	0.21	0.95	0.20	7	9.5	1.9	0.8	2.7	Sag	2.00	B - 17	8.0 Approach	0.24 0.28 Spread	*** 10.2	0.0	Depth exceeds allowed ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB87	TH12_EAST 15+23.230	23.5 RT	0.26	0.95	0.25	7	9.5	2.3	0.0	2.3	0.50	3.00	B - 9	8.0	0.29 0.31	8.6	0.9	Spread exceeds allowed
CB56	TH12_EAST 15+80.543	23.5 RT	0.06	0.95	0.06	7	9.5	0.6	0.9	1.4	0.50	3.00	B - 9	8.0	0.29 0.26	6.8	0.4	
CB57	TH12_EAST 16+38.475	23.5 RT	0.22	0.95	0.21	7	9.5	2.0	0.4	2.4	0.50	3.00	B - 9	8.0	0.29 0.31	8.7	0.9	Spread exceeds allowed
CB58	TH12_EAST 16+90.000	23.5 RT	0.13	0.95	0.12	7	9.5	1.2	0.9	2.1	0.50	2.00	B - 9	8.0	0.25 0.28	9.2	0.8	Spread exceeds allowed
CB88	TH12_EAST 17+33.612	23.5 RT	0.13	0.95	0.12	7	9.5	1.2	0.8	2.0	0.50	2.00	B - 9	8.0	0.25 0.28	9.0	0.8	Spread exceeds allowed
CB59	TH12_EAST 17+75.000	23.5 RT	0.10	0.95	0.10	7	9.5	0.9	0.8	1.7	0.29	3.65	B - 9	8.0	0.32 0.31	7.6	0.5	
CB60	TH12_EAST 18+48.900	23.5 RT	0.14	0.95	0.13	7	9.5	1.2	0.5	1.7	0.12	5.05	B - 9	8.0	0.37 0.38	8.3	0.4	Spread exceeds allowed
CB61	TH12_EAST 18+96.578	23.5 RT	0.23	0.95	0.22	7	9.5	2.1	1.8	3.9	Sag	6.00	B - 17	12.0 Approach	0.51 0.36 Spread	*** 6.7	0.0	***End of Run***

Geopak Drainage Catch Basin Spacing Report

S.P.	470489
T.H.	12
Location	Litchfield

Design Frequency	50
Low Point	50
n	0.015

Computed By:	ACR
Checked By:	ACR
Date:	########

Starting Inlet:	CB66

C.B.	Station	Offset	Area (acres)	Runoff Coeff.	C x A	Time of Conc. (min)	Intensity (in/hr)	Q (cfs)	Intercept Flow By (cfs)	Total Q (cfs)	Channel Slope %	X-Sect. Slope %	Casting Curb Type	Allowed Spread (ft)	d Allow d Comp (ft)	Comp Spread (ft)	Flow By Amount (cfs)	Comments
CB66	HOLCOMBE 200+74.920	16.317 LT	0.32	0.95	0.31	7	9.5	2.9	0.0	2.9	1.00	2.00	B - 9	8.0	0.24 0.28	9.8	1.3	Spread exceeds allowed NO SPREAD REQUIREMENTS
CB67	HOLCOMBE 201+03.630	24.404 LT	0.14	0.95	0.13	7	9.5	1.2	1.3	2.6	1.00	1.02	B - 17	8.0	0.24 0.24	14.1	1.4	Spread exceeds allowed NO SPREAD REQUIREMENTS
CB61	TH12_EAST 18+96.578	23.5 RT	0.23	0.95	0.22	7	9.5	2.1	1.8	3.9	Sag	6.00	B - 17	12.0 Approach	0.51 0.36 Spread	*** 6.7	0.0	50-YR SPREAD DESIGN REQ'D ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB62	TH12_EAST 18+40.050	23.495 LT	0.16	0.95	0.16	7	9.5	1.5	0.0	1.5	0.14	4.77	B - 9	8.0	0.36 0.35	7.4	0.3	
CB63	TH12_EAST 18+96.578	23.5 LT	0.22	0.95	0.21	7	9.5	2.0	0.5	2.5	Sag	6.00	B - 17	12.0 Approach	0.51 0.27 Spread	*** 5.7	0.0	50-YR SPREAD DESIGN REQ'D ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB64	TH12_EAST 19+61.105	23.5 LT	0.12	0.95	0.11	7	9.5	1.0	0.0	1.0	0.16	4.01	B - 9	8.0	0.33 0.28	6.0	0.2	
CB63	TH12_EAST 18+96.578	23.5 LT	0.22	0.95	0.21	7	9.5	2.0	0.5	2.5	Sag	6.00	B - 17	12.0 Approach	0.51 0.27 Spread	*** 5.7	0.0	50-YR SPREAD DESIGN REQ'D ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB82	HOLCOMBE 200+69.743	21.408 RT	0.23	0.95	0.22	7	9.5	2.1	0.0	2.1	1.00	2.50	B - 9	8.0	0.24 0.25	7.8	0.8	Depth exceeds allowed NO SPREAD REQUIREMENTS
CB68	TH12_EAST 21+26.340	23.5 RT	0.46	0.95	0.43	7	9.5	4.1	0.8	4.9	Sag	2.00	B - 17	8.0 Approach	0.25 0.49 Spread	*** 17.6	0.0	Depth exceeds allowed Offsite Water Controlling ***End of Run***
0	0 0	0 LT	0.00	0.00		0	0.0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.00 0.00	0.0	0.0	
CB69	TH12_EAST 21+24.349	23.5 LT	0.52	0.95	0.50	7	9.5	4.7	0.0	4.7	0.54	2.00	B - 17	8.0	0.25 0.36	12.3	2.5	Spread exceeds allowed Offsite Water Controlling
CB70	TH12_EAST 20+94.500	23.5 LT	0.03	0.95	0.03	7	9.5	0.3	2.5	2.8	0.48	2.00	B - 9	8.0	0.25 0.31	10.3	1.2	Spread exceeds allowed Offsite Water Controlling
CB72	HOLCOMBE 202+15.740	20.5 RT	0.27	0.95	0.25	7	9.5	2.4	1.2	3.6	Sag	2.50	B - 17	15.5 Approach	0.44 0.35 Spread	*** 11.8	0.0	3-yr Spread Requirement ***End of Run***

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	10	YRS
LOW PT FREQUENCY:	10	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE		LOCATION			CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MATL	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
NUMBER	TYPE	STREET OR STATION																						
		ON	4TH																					
MH01		FROM	100+34.500	7.7 LT	39.70	0.84	33.27	30.5	3.2	217.4	8.28	318.9	21.8	0.18	84 in	Concrete			1103.04	1103.00	0.04	1112.37	1103.00	50-yr Pipe
FE01		TO	100+23.542	22.4 LT							10.02													
		ON	4TH																					
MH02	102-4020	FROM	102+18.079	4.8 LT	39.70	0.84	33.27	30.5	3.2	217.4	7.87	301.8	182.6	0.16	84 in	Concrete			1103.34	1103.04	0.30	1114.92	1112.37	50-yr Pipe MH 02 Offsite Area 11.7 cfs inflow
MH01	120-4020	TO	100+34.500	7.7 LT							8.00													
		ON	4TH																					
MH03	102-4020	FROM	105+83.350	8.1 LT	39.09	0.84	32.79	29.7	3.3	207.4	7.64	245.6	365.1	0.16	78 in	Concrete			1103.93	1103.34	0.59	1120.83	1114.92	
MH02	102-4020	TO	102+18.079	4.8 LT							6.25													
		ON	4TH																					
CB01	48-4020	FROM	102+18.028	11.0 LT	0.62	0.75	0.46	7.0	6.9	1.7	14.29	19.2	9.3	21.31	12 in	Concrete			1111.10	1109.11	1.99	1114.71	1114.92	
MH02	102-4020	TO	102+18.079	4.8 LT							11.20													
		ON	4TH																					
CB02	H	FROM	105+60.082	24.6 RT	0.06	0.50	0.03	7.0	6.9	0.2	2.56	4.2	22.3	1.00	12 in	Concrete			1116.14	1115.92	0.22	1120.33	1120.09	
MH04	72-4020	TO	105+82.390	23.0 RT							0.25													
		ON	4TH																					
CB05	G	FROM	106+19.780	15.0 RT	0.30	0.50	0.15	7.0	6.9	0.8	3.94	4.2	29.1	1.00	12 in	Concrete			1116.30	1116.01	0.29	1120.21	1120.01	
CB03	G	TO	105+92.286	24.7 RT							1.07													
		ON	4TH																					
CB03	G	FROM	105+92.286	24.7 RT	0.38	0.50	0.19	7.1	6.8	1.3	4.40	4.2	9.9	1.00	12 in	Concrete			1115.97	1115.87	0.10	1120.01	1120.09	
MH04	72-4020	TO	105+82.390	23.0 RT							1.61													
		ON	4TH																					
MH04	72-4020	FROM	105+82.390	23.0 RT	0.44	0.50	0.22	7.2	6.8	56.6	8.21	55.1	30.7	0.50	36 in	Concrete			1112.02	1111.87	0.15	1120.09	1120.83	MH 04 OFFSITE AREA 55.1 CFS INFLOW
MH03	102-4020	TO	105+83.350	8.1 LT							9.19													
		ON	4TH																					
CB04	N	FROM	105+95.671	21.8 LT	0.95	0.50	0.47	7.0	6.9	3.3	5.50	4.1	19.0	1.00	12 in	Concrete			1116.75	1116.56	0.19	1120.81	1120.83	
MH03	102-4020	TO	105+83.350	8.1 LT							5.45													
		ON	No Chains																					
Arch01		FROM	109+41.400	0.0 RT	37.70	0.85	32.12	28.8	3.3	151.9	7.29	241.8	355.9	0.16	78 in	Concrete			1104.49	1103.93	0.56	1104.50	1120.83	50-yr Pipe
MH03	102-4020	TO	105+83.350	8.1 LT							4.58													
		ON	No Chains																					
Arch02		FROM	109+73.390	0.0 RT	37.70	0.85	32.12	28.8	3.3	151.9	6.74	239.6	32.0	0.16	52x102 Arch	Concrete			1104.54	1104.49	0.05	1104.53	1104.50	50-yr Pipe
Arch01		TO	109+41.400	0.0 RT							4.14													
		ON	4TH																					
MH05	102-4020	FROM	110+00.394	0.7 RT	37.70	0.85	32.12	28.8	3.3	151.9	7.08	240.3	24.3	0.16	78 in	Concrete			1104.58	1104.54	0.04	1122.86	1104.53	50-yr Pipe
Arch02		TO	109+73.390	0.0 RT							4.58													
		ON	4TH																					
MH06	48-4020	FROM	109+58.257	27.1 LT	0.89	0.50	0.45	12.0	5.3	9.8	7.15	12.1	30.2	0.97	18 in	Concrete			1116.87	1116.58	0.29	1121.89	1122.45	MH 06 OFFSITE AREA 7.4 CFS INFLOW
CB09	48-4020	TO	109+87.000	18.5 LT							7.04													
		ON	4TH																					
CB09	48-4020	FROM	109+87.000	18.5 LT	1.54	0.50	0.77	12.1	5.3	10.8	7.35	12.3	21.3	1.01	18 in	Concrete			1116.33	1116.11	0.22	1122.45	1122.86	
MH05	102-4020	TO	110+00.394	0.7 RT							7.26													
		ON	4TH																					
CB06	G	FROM	109+30.016	30.2 RT	0.09	0.50	0.05	7.0	6.9	0.3	2.93	4.2	33.1	1.00	12 in	Concrete			1117.50	1117.17	0.33	1122.09	1122.10	
CB07	48-4020	TO	109+63.746	32.3 RT							2.93													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	10	YRS
LOW PT FREQUENCY:	10	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	4TH																					
CB07	48-4020	FROM	109+63.746 32.3 RT	0.20	0.50	0.10	7.2	6.8	0.9	4.01	4.1	27.5	0.97	12 in	Concrete			1117.17	1116.90	0.27	1122.10	1122.46	
CB08	48-4020	TO	109+87.000 17.5 RT							3.98													
		ON	4TH																					
CB08	48-4020	FROM	109+87.000 17.5 RT	0.59	0.50	0.30	7.3	6.7	2.0	4.94	4.2	22.1	1.00	12 in	Concrete			1116.90	1116.68	0.22	1122.46	1122.86	
MH05	102-4020	TO	110+00.394 0.7 RT							4.86													
		ON	4TH																				50-yr Pipe
MH07	J	FROM	113+39.044 0.0 RT	35.57	0.87	31.05	27.0	3.4	145.2	9.49	353.1	341.3	0.33	78 in	Concrete			1105.72	1104.58	1.14	1126.50	1122.86	
MH05	102-4020	TO	110+00.394 0.7 RT							4.38													
		ON	4TH																				50-yr Pipe
MH08	J	FROM	117+00.006 0.0 LT	35.57	0.87	31.05	27.0	3.4	145.2	9.69	361.0	361.0	0.35	78 in	Concrete			1106.98	1105.72	1.26	1129.53	1126.50	
MH07	J	TO	113+39.044 0.0 RT							4.40													
		ON	4TH																				
CB10	N	FROM	116+69.389 22.6 RT	0.04	0.50	0.02	7.0	6.9	0.1	2.26	4.1	37.8	0.99	12 in	Concrete			1124.57	1124.20	0.37	1128.63	1129.26	
CB11	48-4020	TO	117+07.611 22.4 RT							0.37													
		ON	4TH																				
CB11	48-4020	FROM	117+07.611 22.4 RT	0.14	0.50	0.07	7.3	6.7	0.5	5.40	8.2	22.9	3.92	12 in	Concrete			1124.20	1123.30	0.90	1129.26	1129.53	
MH08	J	TO	117+00.006 0.0 LT							5.31													
		ON	4TH																				50-yr Pipe
MH09	120-4020	FROM	120+20.976 1.6 RT	35.43	0.87	30.97	27.0	3.4	145.0	9.67	360.7	318.5	0.35	78 in	Concrete			1108.09	1106.98	1.11	1128.27	1129.53	
MH08	J	TO	117+00.006 0.0 LT							5.06													
		ON	TH12_NORTH																				
CB12	48-4020	FROM	661+65.000 26.6 RT	0.09	0.50	0.04	7.0	6.9	0.3	2.94	4.2	26.0	1.00	12 in	Concrete			1122.97	1122.71	0.26	1127.66	1127.76	
CB13	48-4020	TO	120+20.000 19.2 LT							0.61													
		ON	4TH																				
CB13	48-4020	FROM	120+20.000 19.2 LT	0.41	0.50	0.20	7.1	6.8	1.4	7.30	8.1	18.8	3.79	12 in	Concrete			1122.71	1122.00	0.71	1127.76	1128.27	
MH09	120-4020	TO	120+20.976 1.6 RT							6.69													
		ON	TH12_NORTH																				
CB23	H	FROM	2+70.912 R 2 26.5 RT	0.16	0.95	0.16	7.0	6.9	0.8	3.92	4.2	24.7	1.02	12 in	Concrete			1124.85	1124.60	0.25	1128.97	1128.88	
CB89	G	TO	2+46.169 R 2 26.5 RT							3.88													
		ON	TH12_NORTH																				
CB89	G	FROM	2+46.169 R 2 26.5 RT	0.39	0.95	0.37	7.1	6.8	2.0	4.90	4.1	20.4	0.98	12 in	Concrete			1124.60	1124.40	0.20	1128.88	1128.80	
CB21	48-4020	TO	2+25.000 R 2 26.5 RT							4.79													
		ON	TH12_NORTH																				
CB21	48-4020	FROM	2+25.000 R 2 26.5 RT	0.44	0.95	0.41	7.2	6.8	2.6	5.29	4.2	56.8	1.00	12 in	Concrete			1124.40	1123.83	0.57	1128.80	1128.70	
CB20	G	TO	1+68.980 R 2 26.5 RT							5.28													
		ON	TH12_NORTH																				
CB20	G	FROM	1+68.980 R 2 26.5 RT	0.51	0.95	0.48	7.4	6.7	3.1	5.47	4.2	88.4	1.00	12 in	Concrete			1123.80	1122.91	0.88	1128.70	1128.31	
CB15	48-4020	TO	0+80.034 R 2 26.5 RT							5.47													
		ON	TH12_NORTH																				
CB15	48-4020	FROM	0+80.034 R 2 26.5 RT	0.65	0.95	0.61	7.6	6.6	3.8	5.82	7.5	33.8	1.01	15 in	Concrete			1122.66	1122.32	0.34	1128.31	1127.77	
CB14	48-4020	TO	120+18.500 18.7 RT							3.08													
		ON	4TH																				
CB14	48-4020	FROM	120+18.500 18.7 RT	1.09	0.88	0.96	7.7	6.6	6.3	6.41	7.4	19.4	0.98	15 in	Concrete			1122.07	1121.88	0.19	1127.77	1128.27	
MH09	120-4020	TO	120+20.976 1.6 RT							6.32													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

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INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_NORTH																				
MH10	120-4020	FROM	0+59.309 R 2 12.9 LT	33.93	0.88	29.79	26.9	3.5	141.2	9.62	358.4	66.8	0.34	78 in	Concrete			1108.32	1108.09	0.23	1128.24	1128.27	50-yr Pipe
MH09	120-4020	TO	120+20.976 1.6 RT							5.96													
		ON	TH12_NORTH																				
CB16	N	FROM	0+16.477 R 2 45.0 LT	0.15	0.90	0.13	7.0	6.9	0.9	3.15	2.9	37.5	0.50	12 in	Concrete			1123.85	1123.66	0.19	1127.68	1127.72	
CB17	48-4020	TO	0+54.477 R 2 43.6 LT							1.19													
		ON	TH12_NORTH																				
CB17	48-4020	FROM	0+54.477 R 2 43.6 LT	0.31	0.93	0.28	7.2	6.8	2.3	5.13	4.2	30.2	1.00	12 in	Concrete			1123.66	1123.36	0.30	1127.72	1127.96	
CB18	48-4020	TO	0+77.500 R 2 26.5 LT							2.89													
		ON	TH12_NORTH																				
CB19	48-4020	FROM	1+45.609 R 2 26.5 LT	0.38	0.85	0.32	7.0	6.9	1.5	4.59	4.2	68.5	1.00	12 in	Concrete			1123.59	1122.90	0.69	1127.96	1127.96	
CB18	48-4020	TO	0+77.500 R 2 26.5 LT							1.88													
		ON	TH12_NORTH																				
CB18	48-4020	FROM	0+77.500 R 2 26.5 LT	1.99	0.46	0.92	10.0	5.8	5.4	6.33	7.6	18.9	1.02	15 in	Concrete			1122.40	1122.21	0.19	1127.96	1128.24	CB 18 OFFSITE AREA
MH10	120-4020	TO	0+59.309 R 2 12.9 LT							6.14													1.4 CFS INFLOW
		ON	TH12_NORTH																				
MH11	J	FROM	4+96.439 R 2 11.1 LT	31.94	0.90	28.88	26.1	3.5	139.6	9.73	292.1	433.8	0.35	72 in	Concrete			1109.84	1108.32	1.52	1130.52	1128.24	50-yr Pipe
MH10	120-4020	TO	0+59.309 R 2 12.9 LT							4.94													MH 11 OFFSITE AREA
																							4.0 CFS INFLOW
		ON	TH12_NORTH																				
CB24	N	FROM	4+54.238 R 2 45.0 LT	0.02	0.95	0.02	7.0	6.9	0.1	2.18	4.2	44.1	1.00	12 in	Concrete			1125.16	1124.72	0.44	1129.46	1129.89	
CB25	48-4020	TO	4+97.344 R 2 54.5 LT							2.18													
		ON	TH12_NORTH																				
CB25	48-4020	FROM	4+97.344 R 2 54.5 LT	0.08	0.95	0.08	7.3	6.7	0.5	3.41	4.1	44.2	0.99	12 in	Concrete			1124.72	1124.28	0.44	1129.89	1130.52	
MH11	J	TO	4+96.439 R 2 11.1 LT							3.41													
		ON	TH12_NORTH																				
CB26	N	FROM	5+32.891 R 2 26.5 LT	0.02	0.95	0.02	7.0	6.9	0.1	2.31	4.2	39.6	1.01	12 in	Concrete			1125.96	1125.56	0.40	1129.96	1130.52	
MH11	J	TO	4+96.439 R 2 11.1 LT							2.41													
		ON	TH12_NORTH																				
MH14	J	FROM	6+50.519 R 2 12.0 LT	31.13	0.90	28.11	25.9	3.5	137.4	9.58	289.5	154.1	0.34	72 in	Concrete			1110.37	1109.84	0.53	1130.49	1130.52	50-yr Pipe
MH11	J	TO	4+96.439 R 2 11.1 LT							4.86													
		ON	TH12_NORTH																				
CB31	48-4020	FROM	6+99.139 R 2 47.3 LT	0.06	0.95	0.05	7.0	6.9	10.9	7.36	12.2	20.9	1.00	18 in	Concrete			1126.20	1125.99	0.21	1130.84	1130.16	CB 31 OFFSITE AREA
CB30	48-4020	TO	6+96.634 R 2 26.5 LT							6.14													10.5 CFS INFLOW
		ON	TH12_NORTH																				
CB30	48-4020	FROM	6+96.634 R 2 26.5 LT	0.22	0.95	0.20	7.0	6.8	11.6	7.32	12.2	46.1	1.00	18 in	Concrete			1125.99	1125.53	0.46	1130.16	1130.05	
CB28	48-4020	TO	6+50.519 R 2 26.5 LT							6.59													
		ON	TH12_NORTH																				
CB28	48-4020	FROM	6+50.519 R 2 26.5 LT	0.39	0.95	0.37	7.2	6.8	13.0	16.87	33.6	15.3	7.52	18 in	Concrete			1125.40	1124.25	1.15	1130.05	1130.49	
MH14	J	TO	6+50.519 R 2 12.0 LT							11.93													
		ON	TH12_NORTH																				
CB27	H	FROM	5+60.000 R 2 26.5 RT	0.04	0.95	0.03	7.0	6.9	0.2	2.66	4.2	90.5	1.01	12 in	Concrete			1126.33	1125.42	0.91	1130.33	1130.05	
CB29	48-4020	TO	6+50.519 R 2 26.5 RT							0.28													
		ON	TH12_NORTH																				
CB32	N	FROM	7+89.000 R 2 26.5 RT	0.12	0.95	0.11	7.0	6.9	0.6	3.61	4.2	129.9	1.00	12 in	Concrete			1127.06	1125.76	1.30	1130.61	1130.30	
CB83	48-4020	TO	6+58.278 R 2 26.5 RT							3.61													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION	CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON TH12_NORTH																				
CB83	48-4020	FROM 6+58.278 R 2 26.5 RT	0.27	0.95	0.25	7.6	6.6	1.4	4.56	4.3	8.6	1.05	12 in	Concrete			1125.76	1125.67	0.09	1130.30	1130.05	
CB29	48-4020	TO 6+50.519 R 2 26.5 RT							1.76													
		ON TH12_NORTH																				
CB29	48-4020	FROM 6+50.519 R 2 26.5 RT	0.41	0.95	0.39	7.6	6.6	2.6	7.93	7.2	39.3	2.98	12 in	Concrete			1125.42	1124.25	1.17	1130.05	1130.49	
MH14	J	TO 6+50.519 R 2 12.0 LT							7.64													
		ON TH12_NORTH																				50-yr Pipe
MH15	J	FROM 8+94.795 R 2 12.0 LT	30.33	0.90	27.35	25.4	3.6	125.1	9.41	289.4	244.3	0.34	72 in	Concrete			1111.21	1110.37	0.84	1131.54	1130.49	
MH14	J	TO 6+50.519 R 2 12.0 LT							4.48													
		ON TH12_NORTH																				
CB34	N	FROM 9+39.091 R 2 47.0 LT	0.21	0.95	0.20	7.0	6.9	1.4	4.52	4.2	43.2	1.00	12 in	Concrete			1126.70	1126.27	0.43	1130.49	1130.69	
CB33	48-4020	TO 8+95.926 R 2 47.3 LT							1.77													
		ON TH12_NORTH																				
CB33	48-4020	FROM 8+95.926 R 2 47.3 LT	0.52	0.95	0.49	7.2	6.8	3.3	8.16	6.8	36.1	2.68	12 in	Concrete			1126.27	1125.30	0.97	1130.69	1131.54	
MH15	J	TO 8+94.795 R 2 12.0 LT							7.76													
		ON TH12_NORTH																				50-yr Pipe
MH16	J	FROM 10+79.221 R 2 10.9 LT	29.81	0.90	26.86	25.1	3.6	109.8	9.10	230.5	184.4	0.35	66 in	Concrete			1111.85	1111.21	0.64	1130.83	1131.54	
MH15	J	TO 8+94.795 R 2 12.0 LT							4.62													
		ON TH12_NORTH																				
CB35	48-4020	FROM 10+44.000 R 2 26.5 LT	0.10	0.95	0.09	7.0	6.9	0.6	3.51	4.2	38.9	1.00	12 in	Concrete			1124.85	1124.46	0.39	1130.44	1130.83	
MH16	J	TO 10+79.221 R 2 10.9 LT							3.51													
		ON TH12_NORTH																				
CB37	G	FROM 11+37.384 R 2 26.5 LT	0.10	0.95	0.09	7.0	6.9	4.5	7.50	9.9	60.2	1.74	15 in	Concrete			1125.60	1124.55	1.05	1129.78	1130.83	CB 37 OFFSITE AREA 3.9 CFS INFLOW
MH16	J	TO 10+79.221 R 2 10.9 LT							7.35													
		ON TH12_NORTH																				
CB36	N	FROM 10+88.000 R 2 26.5 RT	0.20	0.95	0.19	7.0	6.9	1.0	5.21	5.8	38.4	1.95	12 in	Concrete			1125.30	1124.55	0.75	1130.48	1130.83	
MH16	J	TO 10+79.221 R 2 10.9 LT							5.16													
		ON TH12_NORTH																				50-yr Pipe
MH17	120-4020	FROM 0+00.000 R 3 9.5 LT	29.42	0.90	26.47	24.7	3.6	105.8	8.93	230.7	215.8	0.35	66 in	Concrete			1112.60	1111.85	0.75	1129.46	1130.83	
MH16	J	TO 10+79.221 R 2 10.9 LT							4.52													
		ON TH12_NORTH																				
CB39	N	FROM 12+48.170 R 2 28.6 LT	0.17	0.95	0.16	7.0	6.9	1.2	4.29	4.2	50.8	1.00	12 in	Concrete			1125.13	1124.62	0.51	1129.09	1129.46	
MH17	120-4020	TO 0+00.000 R 3 9.5 LT							4.28													
		ON TH12_NORTH																				
CB38	H	FROM 12+23.464 R 2 27.2 RT	0.22	0.95	0.21	7.0	6.9	1.3	4.49	4.2	65.6	1.01	12 in	Concrete			1125.29	1124.63	0.66	1129.39	1128.51	
MH32	48-4020	TO 12+53.373 10.5 RT							4.48													
		ON TH22																				
CB41	N	FROM 68+17.201 26.5 LT	0.21	0.95	0.20	7.0	6.9	1.4	4.51	4.2	67.5	1.01	12 in	Concrete			1124.42	1123.74	0.68	1128.42	1128.51	
MH32	48-4020	TO 12+53.373 10.5 RT							1.72													
		ON TH12_EAST																				
MH32	48-4020	FROM 12+53.373 10.5 RT	0.43	0.95	0.40	7.3	6.8	2.7	5.31	4.2	39.5	1.01	12 in	Concrete			1123.74	1123.34	0.40	1128.51	1129.46	
MH17	120-4020	TO 0+00.000 R 3 9.5 LT							5.30													
		ON TH12_EAST																				
CB44	N	FROM 13+55.450 68.7 RT	0.59	0.95	0.56	8.0	6.5	3.6	5.61	4.2	31.9	1.00	12 in	Concrete			1124.21	1123.89	0.32	1127.69	1128.75	
CB43	48-4020	TO 13+24.034 61.0 RT							4.59													

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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_EAST																				
CB43	48-4020	FROM	13+24.034 61.0 RT	0.62	0.95	0.59	8.1	6.4	3.8	5.81	7.5	42.0	1.00	15 in	Concrete			1123.64	1123.22	0.42	1128.75	1128.83	
CB42	48-4020	TO	13+41.537 23.5 RT							5.74													
		ON	TH12_EAST																				
CB42	48-4020	FROM	13+41.537 23.5 RT	0.65	0.95	0.61	8.2	6.4	3.9	5.85	7.5	54.4	1.00	15 in	Concrete			1123.22	1122.68	0.54	1128.83	1129.46	
MH17	120-4020	TO	0+00.000 R 3 9.5 LT							5.82													
		ON	TH22																				
CB45	48-4020	FROM	65+60.259 51.7 RT	0.79	0.65	0.51	10.0	5.8	2.0	4.94	4.2	29.3	1.00	12 in	Concrete			1125.33	1125.04	0.29	1129.58	1129.08	
CB46	48-4020	TO	65+63.694 22.7 RT							2.48													
		ON	TH22																				
CB46	48-4020	FROM	65+63.694 22.7 RT	0.88	0.68	0.60	10.1	5.8	2.4	5.16	4.2	104.1	1.00	12 in	Concrete			1125.04	1124.00	1.04	1129.08	1128.43	
CB47	48-4020	TO	64+59.849 22.7 RT							5.15													
		ON	TH22																				
CB47	48-4020	FROM	64+59.849 22.7 RT	1.09	0.73	0.80	10.4	5.7	3.5	5.71	7.5	26.7	1.00	15 in	Concrete			1124.00	1123.73	0.27	1128.43	1129.02	
MH18	48-4020	TO	64+46.446 0.0 RT							5.55													
		ON	TH22																				
CB48	H	FROM	64+50.000 21.0 LT	0.25	0.95	0.24	7.0	6.9	1.2	4.30	4.2	21.2	1.00	12 in	Concrete			1124.20	1123.99	0.21	1128.38	1129.02	
MH18	48-4020	TO	64+46.446 0.0 RT							1.77													
		ON	TH22																				
MH18	48-4020	FROM	64+46.446 0.0 RT	1.34	0.77	1.04	10.5	5.7	4.4	6.01	7.5	118.7	1.00	15 in	Concrete			1123.39	1122.20	1.19	1129.02	1128.37	
MH19	48-4020	TO	63+29.576 6.9 RT							6.01													
		ON	TH22																				
MH21	48-4020	FROM	63+46.682 36.4 LT	0.00	0.00		0.0	0.0	5.9	4.54	7.7	19.6	0.39	18 in	Concrete			1122.50	1122.42	0.08	1128.70	1128.00	MH 21 OFFSITE AREA
CB49	84-4020	TO	63+55.487 21.0 LT							3.34													5.9 CFS INFLOW
		ON	TH22																				
CB49	84-4020	FROM	63+55.487 21.0 LT	0.15	0.95	0.14	7.0	6.9	7.4	4.89	16.6	31.2	0.40	24 in	Concrete			1122.42	1122.30	0.12	1128.00	1128.10	
CB50	48-4020	TO	63+26.048 21.0 LT							2.99													
		ON	TH22																				
CB50	48-4020	FROM	63+26.048 21.0 LT	0.16	0.95	0.15	7.1	6.8	7.4	4.75	15.9	27.5	0.36	24 in	Concrete			1122.30	1122.20	0.10	1128.10	1128.37	
MH19	48-4020	TO	63+29.576 6.9 RT							4.93													
		ON	TH22																				
MH20	48-4020	FROM	63+46.852 42.0 RT	0.00	0.00		0.0	0.0	4.0	3.84	4.4	29.8	0.35	15 in	Concrete			1122.36	1122.26	0.10	1129.30	1128.28	MH 20 OFFSITE AREA
CB51	48-4020	TO	63+26.839 21.1 RT							3.54													4.0 CFS INFLOW
		ON	TH22																				
CB51	48-4020	FROM	63+26.839 21.1 RT	0.19	0.70	0.13	7.0	6.9	4.9	4.30	7.6	14.9	0.38	18 in	Concrete			1122.26	1122.20	0.06	1128.28	1128.37	
MH19	48-4020	TO	63+29.576 6.9 RT							4.74													
		ON	TH12_EAST																				50-yr Pipe
MH22	J	FROM	16+55.711 0.1 RT	28.18	0.90	25.30	24.0	3.7	102.9	9.03	231.1	364.3	0.35	66 in	Concrete			1113.87	1112.60	1.27	1128.67	1129.46	
MH17	120-4020	TO	0+00.000 R 3 9.5 LT							4.61													
		ON	TH12_EAST																				
CB86	H	FROM	14+67.377 24.5 LT	0.19	0.95	0.18	7.0	6.9	0.9	3.07	2.9	52.7	0.47	12 in	Concrete			1124.86	1124.61	0.25	1128.86	1128.62	
CB52	48-4020	TO	15+20.879 24.5 LT							1.17													
		ON	TH12_EAST																				
CB52	48-4020	FROM	15+20.879 24.5 LT	0.39	0.95	0.37	7.3	6.7	2.0	4.96	4.2	30.0	1.00	12 in	Concrete			1124.61	1124.31	0.30	1128.62	1128.47	
CB53	48-4020	TO	15+50.816 24.5 LT							2.54													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	10	YRS
LOW PT FREQUENCY:	10	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION	STREET OR STATION	CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_EAST																				
CB53	48-4020	FROM	15+50.816 24.5 LT	0.41	0.95	0.39	7.4	6.7	2.5	5.23	4.2	61.9	1.00	12 in	Concrete			1124.31	1123.69	0.62	1128.47	1128.12	
CB54	48-4020	TO	16+10.292 41.1 LT							3.21													
		ON	TH12_EAST																				
CB55	H	FROM	16+18.216 51.0 LT	0.17	0.95	0.16	7.0	6.9	0.8	3.86	4.2	13.0	1.00	12 in	Concrete			1123.94	1123.81	0.13	1128.20	1128.12	
CB54	48-4020	TO	16+10.292 41.1 LT							0.99													
		ON	TH12_EAST																				
CB54	48-4020	FROM	16+10.292 41.1 LT	0.79	0.95	0.75	7.6	6.6	5.0	6.18	7.5	48.2	1.00	15 in	Concrete			1123.69	1123.21	0.48	1128.12	1128.39	
MH23	48-4020	TO	16+56.952 31.0 LT							4.05													
		ON	TH12_EAST																				
MH23	48-4020	FROM	16+56.952 31.0 LT	0.79	0.95	0.75	7.7	6.6	7.7	11.31	23.5	31.9	3.69	18 in	Concrete			1123.08	1121.90	1.18	1128.39	1128.67	MH 23 OFFSITE FLOW 2.8 CFS INFLOW
MH22	J	TO	16+55.711 0.1 RT							9.81													
		ON	TH12_EAST																				
CB87	H	FROM	15+23.230 23.5 RT	0.26	0.95	0.25	7.0	6.9	1.2	3.35	3.0	57.3	0.51	12 in	Concrete			1125.14	1124.85	0.29	1128.63	1128.35	
CB56	G	TO	15+80.543 23.5 RT							3.35													
		ON	TH12_EAST																				
CB56	G	FROM	15+80.543 23.5 RT	0.32	0.95	0.31	7.3	6.7	1.9	4.88	4.2	57.9	1.00	12 in	Concrete			1124.85	1124.27	0.58	1128.35	1128.06	
CB57	48-4020	TO	16+38.475 23.5 RT							4.86													
		ON	TH12_EAST																				
CB57	48-4020	FROM	16+38.475 23.5 RT	0.55	0.95	0.52	7.5	6.7	2.9	4.14	3.1	53.1	0.55	12 in	Concrete			1124.27	1123.98	0.29	1128.06	1127.82	
CB58	G	TO	16+90.000 23.5 RT							3.94													
		ON	TH12_EAST																				
CB58	G	FROM	16+90.000 23.5 RT	0.68	0.95	0.64	7.7	6.6	3.8	5.63	4.2	43.5	1.01	12 in	Concrete			1123.98	1123.54	0.44	1127.82	1127.61	
CB88	G	TO	17+33.612 23.5 RT							5.62													
		ON	TH12_EAST																				
CB88	G	FROM	17+33.612 23.5 RT	0.81	0.95	0.77	7.8	6.5	4.6	6.06	7.5	40.3	0.99	15 in	Concrete			1123.54	1123.14	0.40	1127.61	1127.44	
CB59	48-4020	TO	17+75.000 23.5 RT							5.99													
		ON	TH12_EAST																				
CB59	48-4020	FROM	17+75.000 23.5 RT	0.91	0.95	0.86	7.9	6.5	5.4	6.29	7.5	73.6	1.00	15 in	Concrete			1122.38	1121.64	0.74	1127.44	1127.23	
CB60	48-4020	TO	18+48.900 23.5 RT							6.27													
		ON	TH12_EAST																				
CB60	48-4020	FROM	18+48.900 23.5 RT	1.05	0.95	0.99	8.1	6.4	13.3	4.81	14.4	48.5	0.30	24 in	Concrete			1120.61	1120.47	0.15	1127.23	1127.16	CB 60 OFFSITE AREA 7.1 CFS INFLOW
CB61	48-4020	TO	18+96.578 23.5 RT							4.23													
		ON	TH12_EAST																				50-yr Pipe
CB61	48-4020	FROM	18+96.578 23.5 RT	1.28	0.95	1.21	8.3	6.4	15.6	5.22	19.8	22.9	0.30	27 in	Concrete			1120.47	1120.40	0.07	1127.16	1127.95	
MH24	102-4020	TO	18+93.711 1.4 RT							6.12													
		ON	TH12_EAST																				
CB62	H	FROM	18+40.050 23.5 LT	0.16	0.95	0.16	7.0	6.9	0.9	3.99	4.2	56.5	1.00	12 in	Concrete			1123.28	1122.71	0.57	1127.25	1127.16	
CB63	48-4020	TO	18+96.578 23.5 LT							1.13													
		ON	TH12_EAST																				
CB64	H	FROM	19+61.105 23.5 LT	0.12	0.95	0.11	7.0	6.9	0.6	3.65	4.2	64.5	1.00	12 in	Concrete			1123.29	1122.65	0.65	1127.49	1127.16	
CB63	48-4020	TO	18+96.578 23.5 LT							0.82													
		ON	TH12_EAST																				50-yr Pipe
CB63	48-4020	FROM	18+96.578 23.5 LT	0.50	0.95	0.47	7.3	6.7	3.2	5.58	7.5	25.7	1.00	15 in	Concrete			1122.65	1122.39	0.26	1127.16	1127.95	
MH24	102-4020	TO	18+93.711 1.4 RT							5.42													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

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T.H. :	12

DESIGN FREQUENCY:	10	YRS
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INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
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SHEET NO.	

DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION	STREET OR STATION	CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
MH24	102-4020	ON	TH12_EAST	27.39	0.90	24.57	23.6	3.7	98.3	8.80	231.0	241.1	0.35	66 in	Concrete			1114.71	1113.87	0.84	1127.95	1128.67	50-yr Pipe
MH22	J	TO	16+55.711 0.1 RT							5.00													
CB66	G	ON	HOLCOMBE	0.32	0.95	0.31	7.0	6.9	1.2	4.38	4.2	29.4	1.00	12 in	Concrete			1123.49	1123.20	0.29	1127.81	1127.44	
CB67	48-4020	FROM	200+74.920 16.3 LT							1.58													
		TO	201+03.630 24.4 LT																				
CB67	48-4020	ON	HOLCOMBE	0.46	0.95	0.44	7.1	6.8	2.1	5.04	4.1	43.7	0.99	12 in	Concrete			1123.20	1122.77	0.43	1127.44	1128.31	
MH25	120-4020	FROM	201+03.630 24.4 LT							5.01													
		TO	20+62.960 0.5 RT																				
CB82	H	ON	HOLCOMBE	0.23	0.95	0.22	7.0	6.9	1.0	4.16	4.2	43.8	1.01	12 in	Concrete			1123.98	1123.54	0.44	1127.98	1127.98	
CB68	60-4020	FROM	200+69.743 21.4 RT							4.14													
		TO	21+26.340 23.5 RT																				
CB68	60-4020	ON	TH12_EAST	0.69	0.95	0.65	7.2	6.8	4.4	6.06	12.2	22.5	1.00	18 in	Concrete			1119.90	1119.68	0.23	1127.98	1128.60	
MH26	96-4020	FROM	21+26.340 23.5 RT							5.74													
		TO	21+23.450 0.3 LT																				
CB69	48-4020	ON	TH12_EAST	0.52	0.95	0.50	7.0	6.9	1.8	4.83	4.2	24.1	1.00	12 in	Concrete			1123.48	1123.24	0.24	1127.60	1128.60	
MH26	96-4020	FROM	21+24.349 23.5 LT							4.75													
		TO	21+23.450 0.3 LT																				
CB70	H	ON	TH12_EAST	0.03	0.95	0.03	7.0	6.9	1.2	4.29	4.2	36.4	1.00	12 in	Concrete			1123.78	1123.41	0.36	1127.79	1128.31	
MH25	120-4020	FROM	20+94.500 23.5 LT							4.28													
		TO	20+62.960 0.5 RT																				
CB75	N	ON	HOLCOMBE	0.22	0.85	0.18	7.0	6.9	0.9	4.00	4.2	39.4	1.00	12 in	Concrete			1123.26	1122.87	0.40	1127.39	1127.26	
CB76	48-4020	FROM	202+69.404 37.2 LT							1.14													
		TO	203+09.404 37.2 LT																				
CB76	48-4020	ON	HOLCOMBE	0.59	0.85	0.50	7.2	6.8	2.2	5.07	4.1	27.2	0.99	12 in	Concrete			1122.86	1122.59	0.27	1127.26	1127.15	
CB77	G	FROM	203+09.404 37.2 LT							2.79													
		TO	203+29.833 20.4 LT																				
CB77	G	ON	HOLCOMBE	0.63	0.85	0.54	7.3	6.8	3.0	5.42	4.1	33.1	1.00	12 in	Concrete			1122.59	1122.26	0.33	1127.15	1126.95	
CB78	48-4020	FROM	203+29.833 20.4 LT							3.77													
		TO	203+62.879 20.5 LT																				
CB79	H	ON	HOLCOMBE	1.95	0.80	1.56	18.0	4.3	2.8	8.11	7.1	14.2	2.95	12 in	Concrete			1123.01	1122.59	0.42	1127.01	1126.96	
CB84	G	FROM	203+90.000 20.5 LT							3.63													
		TO	203+75.751 20.5 LT																				
CB84	G	ON	HOLCOMBE	1.98	0.80	1.59	18.0	4.3	4.8	8.69	6.6	12.9	2.56	12 in	Concrete			1122.59	1122.26	0.33	1126.96	1126.95	
CB78	48-4020	FROM	203+75.751 20.5 LT							6.10													
		TO	203+62.879 20.5 LT																				
CB78	48-4020	ON	HOLCOMBE	2.90	0.82	2.37	18.1	4.3	9.8	7.30	12.4	31.3	1.02	18 in	Concrete			1122.26	1121.94	0.32	1126.95	1127.44	
MH28	48-4020	FROM	203+62.879 20.5 LT							5.56													
		TO	203+62.090 10.0 RT																				
CB81	H	ON	HOLCOMBE	1.22	0.75	0.92	12.0	5.3	1.7	4.79	4.2	14.5	1.03	12 in	Concrete			1123.31	1123.16	0.15	1127.31	1127.26	
CB85	G	FROM	203+90.000 20.5 RT							2.12													
		TO	203+75.451 20.5 RT																				
CB85	G	ON	HOLCOMBE	1.26	0.75	0.95	12.1	5.3	3.0	5.47	4.2	12.6	1.03	12 in	Concrete			1123.16	1123.03	0.13	1127.26	1127.25	
CB80	48-4020	FROM	203+75.451 20.5 RT							3.76													
		TO	203+62.879 20.5 RT																				

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
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DESIGN FREQUENCY:	10	YRS
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INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	HOLCOMBE																				
CB80	48-4020	FROM	203+62.879 20.5 RT	1.39	0.75	1.04	12.1	5.3	6.7	6.52	7.5	11.3	1.00	15 in	Concrete			1122.69	1122.58	0.11	1127.25	1127.44	
MH28	48-4020	TO	203+62.090 10.0 RT							5.48													
		ON	HOLCOMBE																				
MH28	48-4020	FROM	203+62.090 10.0 RT	4.29	0.80	3.42	18.1	4.3	15.5	8.27	36.1	147.1	1.00	27 in	Concrete			1121.94	1120.47	1.47	1127.44	1127.28	
MH27	60-4020	TO	202+14.450 10.0 RT							8.21													
		ON	HOLCOMBE																				
CB74	G	FROM	203+09.404 42.7 RT	0.48	0.85	0.40	7.0	6.9	1.6	4.67	4.2	38.3	1.00	12 in	Concrete			1123.07	1122.69	0.38	1127.47	1127.00	
CB73	48-4020	TO	202+70.404 42.8 RT							2.01													
		ON	HOLCOMBE																				
CB73	48-4020	FROM	202+70.404 42.8 RT	1.14	0.65	0.74	9.0	6.1	3.3	5.51	4.1	59.5	0.99	12 in	Concrete			1122.69	1122.10	0.59	1127.00	1126.95	
CB72	48-4020	TO	202+15.740 20.5 RT							4.24													
		ON	HOLCOMBE																				
CB72	48-4020	FROM	202+15.740 20.5 RT	1.41	0.70	0.99	9.2	6.1	5.5	6.33	7.5	11.3	1.00	15 in	Concrete			1122.10	1121.98	0.11	1126.95	1127.28	
MH27	60-4020	TO	202+14.450 10.0 RT							6.05													
		ON	HOLCOMBE																				
CB71	N	FROM	202+15.740 20.5 LT	0.11	0.95	0.11	7.0	6.9	1.1	4.22	4.2	30.5	1.00	12 in	Concrete			1122.87	1122.57	0.31	1126.95	1127.28	
MH27	60-4020	TO	202+14.450 10.0 RT							4.19													
		ON	HOLCOMBE																				
MH27	60-4020	FROM	202+14.450 10.0 RT	5.81	0.78	4.51	18.4	4.2	19.8	8.78	36.1	85.1	1.00	27 in	Concrete			1120.47	1119.62	0.85	1127.28	1128.31	
MH25	120-4020	TO	20+62.960 0.5 RT							8.57													
		ON	TH12_EAST																				
CB70	H	FROM	20+94.500 23.5 LT	0.03	0.95	0.03	7.0	6.9	1.2	4.29	4.2	36.4	1.00	12 in	Concrete			1123.78	1123.41	0.36	1127.79	1128.31	
MH25	120-4020	TO	20+62.960 0.5 RT							4.28													
		ON	TH12_EAST																				
MH25	120-4020	FROM	20+62.960 0.5 RT	25.61	0.89	22.87	23.2	3.7	84.8	8.61	232.6	169.8	0.35	66 in	Concrete			1115.31	1114.71	0.60	1128.31	1127.95	50-yr Pipe
MH24	102-4020	TO	18+93.711 1.4 RT							4.93													
		ON	HOLCOMBE																				
CB82	H	FROM	200+69.743 21.4 RT	0.23	0.95	0.22	7.0	6.9	1.0	4.16	4.2	43.8	1.01	12 in	Concrete			1123.98	1123.54	0.44	1127.98	1127.98	
CB68	60-4020	TO	21+26.340 23.5 RT							4.14													
		ON	TH12_EAST																				
CB68	60-4020	FROM	21+26.340 23.5 RT	0.69	0.95	0.65	7.2	6.8	4.4	6.06	12.2	22.5	1.00	18 in	Concrete			1119.90	1119.68	0.23	1127.98	1128.60	
MH26	96-4020	TO	21+23.450 0.3 LT							5.74													
		ON	TH12_EAST																				
CB69	48-4020	FROM	21+24.349 23.5 LT	0.52	0.95	0.50	7.0	6.9	1.8	4.83	4.2	24.1	1.00	12 in	Concrete			1123.48	1123.24	0.24	1127.60	1128.60	
MH26	96-4020	TO	21+23.450 0.3 LT							4.75													
		ON	TH12_EAST																				
MH26	96-4020	FROM	21+23.450 0.3 LT	19.31	0.93	17.90	23.1	3.8	65.5	8.05	180.1	59.6	0.35	60 in	Concrete			1115.52	1115.31	0.21	1128.60	1128.31	50-yr Pipe
MH25	120-4020	TO	20+62.960 0.5 RT							3.99													
		ON	TH12_EAST																				
Future04	96-4020	FROM	24+50.432 0.5 LT	18.10	0.93	16.74	22.4	3.8	63.9	7.91	135.3	327.0	0.35	54 in	Concrete			1116.66	1115.52	1.14	1130.96	1128.60	50-yr Pipe
MH26	96-4020	TO	21+23.450 0.3 LT							4.16													
		ON	TH12_EAST																				
Future03	96-4020	FROM	30+00.007 9.5 LT	12.02	0.91	10.96	20.7	4.0	43.7	7.25	99.0	743.8	0.35	48 in	Concrete			1119.26	1116.66	2.60	1127.46	1130.96	50-yr Pipe
Future04	96-4020	TO	24+50.432 0.5 LT							7.25													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	10	YRS
LOW PT FREQUENCY:	10	YRS

INVERT ELEV'S ARE TO:

x	CENTER OF STRUCTURE
	EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION	CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
Future03 Future04	96-4020 96-4020	ON TH12_EAST FROM 30+00.007 9.5 LT TO 24+50.432 0.5 LT	12.02	0.91	10.96	20.7	4.0	43.7	7.25 7.25	99.0	743.8	0.35	48 in	Concrete			1119.26	1116.66	2.60	1127.46	1130.96	50-yr Pipe
Future02 Future03	96-4020 96-4020	ON TH12_EAST FROM 30+00.007 10.1 LT TO 30+00.007 9.5 LT	6.37	0.88	5.60	18.3	4.3	23.9	6.07 5.44	28.3	888.3	0.35	30 in	Concrete			1122.37	1119.26	3.11	1127.96	1127.46	
Future01 Future02	96-4020 96-4020	ON TH12_EAST FROM 30+00.007 32.4 RT TO 30+00.007 10.1 LT	2.65	0.85	2.25	16.0	4.6	10.3	5.01 3.29	15.6	681.2	0.35	24 in	Concrete			1124.75	1122.37	2.38	1129.46	1127.96	
0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
0 0		ON n/a FROM n/a 0.0 RT TO n/a 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
LOW PT FREQUENCY:	50	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION	STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	4TH																					
MH01		FROM	100+34.500	7.7 LT	39.70	0.84	33.27	29.6	4.6	260.9	8.63	318.9	21.8	0.18	84 in	Concrete			1103.04	1103.00	0.04	1112.37	1103.00	50-yr Pipe
FE01		TO	100+23.542	22.4 LT							10.71													
		ON	4TH																					
MH02	102-4020	FROM	102+18.079	4.8 LT	39.70	0.84	33.27	29.6	4.6	260.9	8.29	301.8	182.6	0.16	84 in	Concrete			1103.34	1103.04	0.30	1114.92	1112.37	50-yr Pipe MH 02 Offsite Area 11.7 cfs inflow
MH01	120-4020	TO	100+34.500	7.7 LT							8.58													
		ON	4TH																					
MH03	102-4020	FROM	105+83.350	8.1 LT	39.09	0.84	32.79	28.8	4.6	251.5	7.78	245.6	365.1	0.16	78 in	Concrete			1103.93	1103.34	0.59	1120.83	1114.92	
MH02	102-4020	TO	102+18.079	4.8 LT							7.58													
		ON	4TH																					
CB01	48-4020	FROM	102+18.028	11.0 LT	0.62	0.75	0.46	7.0	9.5	2.1	15.20	19.2	9.3	21.31	12 in	Concrete			1111.10	1109.11	1.99	1114.71	1114.92	
MH02	102-4020	TO	102+18.079	4.8 LT							11.50													
		ON	4TH																					
CB02	H	FROM	105+60.082	24.6 RT	0.06	0.50	0.03	7.0	9.5	0.3	2.80	4.2	22.3	1.00	12 in	Concrete			1116.14	1115.92	0.22	1120.33	1120.09	
MH04	72-4020	TO	105+82.390	23.0 RT							0.33													
		ON	4TH																					
CB05	G	FROM	106+19.780	15.0 RT	0.30	0.50	0.15	7.0	9.5	1.1	4.23	4.2	29.1	1.00	12 in	Concrete			1116.30	1116.01	0.29	1120.21	1120.01	
CB03	G	TO	105+92.286	24.7 RT							1.40													
		ON	4TH																					
CB03	G	FROM	105+92.286	24.7 RT	0.38	0.50	0.19	7.1	9.4	1.7	4.77	4.2	9.9	1.00	12 in	Concrete			1115.97	1115.87	0.10	1120.01	1120.09	
MH04	72-4020	TO	105+82.390	23.0 RT							2.18													
		ON	4TH																					
MH04	72-4020	FROM	105+82.390	23.0 RT	0.44	0.50	0.22	7.2	9.4	57.1	8.28	55.1	30.7	0.50	36 in	Concrete			1112.02	1111.87	0.15	1120.09	1120.83	MH 04 OFFSITE AREA 55.1 CFS INFLOW
MH03	102-4020	TO	105+83.350	8.1 LT							9.24													
		ON	4TH																					
CB04	N	FROM	105+95.671	21.8 LT	0.95	0.50	0.47	7.0	9.5	4.5	5.86	4.1	19.0	1.00	12 in	Concrete			1116.75	1116.56	0.19	1120.81	1120.83	
MH03	102-4020	TO	105+83.350	8.1 LT							6.09													
		ON	No Chains																					
Arch01		FROM	109+41.400	0.0 RT	37.70	0.85	32.12	27.9	4.7	195.8	7.51	241.8	355.9	0.16	78 in	Concrete			1104.49	1103.93	0.56	1104.50	1120.83	50-yr Pipe
MH03	102-4020	TO	105+83.350	8.1 LT							5.90													
		ON	No Chains																					
Arch02		FROM	109+73.390	0.0 RT	37.70	0.85	32.12	27.9	4.7	195.8	7.30	239.6	32.0	0.16	52x102 Arcl	Concrete			1104.54	1104.49	0.05	1104.53	1104.50	50-yr Pipe
Arch01		TO	109+41.400	0.0 RT							5.34													
		ON	4TH																					
MH05	102-4020	FROM	110+00.394	0.7 RT	37.70	0.85	32.12	27.9	4.7	195.8	7.51	240.3	24.3	0.16	78 in	Concrete			1104.58	1104.54	0.04	1122.86	1104.53	50-yr Pipe
Arch02		TO	109+73.390	0.0 RT							5.90													
		ON	4TH																					
MH06	48-4020	FROM	109+58.257	27.1 LT	0.89	0.50	0.45	12.0	7.3	10.7	7.24	12.1	30.2	0.97	18 in	Concrete			1116.87	1116.58	0.29	1121.89	1122.45	MH 06 OFFSITE AREA 7.4 CFS INFLOW
CB09	48-4020	TO	109+87.000	18.5 LT							7.17													
		ON	4TH																					
CB09	48-4020	FROM	109+87.000	18.5 LT	1.54	0.50	0.77	12.1	7.3	12.0	7.36	12.3	21.3	1.01	18 in	Concrete			1116.33	1116.11	0.22	1122.45	1122.86	
MH05	102-4020	TO	110+00.394	0.7 RT							7.35													
		ON	4TH																					
CB06	G	FROM	109+30.016	30.2 RT	0.09	0.50	0.05	7.0	9.5	0.4	3.21	4.2	33.1	1.00	12 in	Concrete			1117.50	1117.17	0.33	1122.09	1122.10	
CB07	48-4020	TO	109+63.746	32.3 RT							3.21													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
LOW PT FREQUENCY:	50	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE

COMP. BY:	ACR
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SHEET NO.	

DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION	STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	4TH																					
CB07	48-4020	FROM	109+63.746	32.3 RT	0.20	0.50	0.10	7.2	9.4	1.4	4.44	4.1	27.5	0.97	12 in	Concrete			1117.17	1116.90	0.27	1122.10	1122.46	
CB08	48-4020	TO	109+87.000	17.5 RT							4.42													
		ON	4TH																					
CB08	48-4020	FROM	109+87.000	17.5 RT	0.59	0.50	0.30	7.3	9.3	2.7	5.34	4.2	22.1	1.00	12 in	Concrete			1116.90	1116.68	0.22	1122.46	1122.86	
MH05	102-4020	TO	110+00.394	0.7 RT							5.25													
		ON	4TH																					
MH07	J	FROM	113+39.044	0.0 RT	35.57	0.87	31.05	26.3	4.9	189.2	10.29	353.1	341.3	0.33	78 in	Concrete			1105.72	1104.58	1.14	1126.50	1122.86	50-yr Pipe
MH05	102-4020	TO	110+00.394	0.7 RT							5.70													
		ON	4TH																					
MH08	J	FROM	117+00.006	0.0 LT	35.57	0.87	31.05	26.3	4.9	189.2	10.46	361.0	361.0	0.35	78 in	Concrete			1106.98	1105.72	1.26	1129.53	1126.50	50-yr Pipe
MH07	J	TO	113+39.044	0.0 RT							5.70													
		ON	4TH																					
CB10	N	FROM	116+69.389	22.6 RT	0.04	0.50	0.02	7.0	9.5	0.2	2.49	4.1	37.8	0.99	12 in	Concrete			1124.57	1124.20	0.37	1128.63	1129.26	
CB11	48-4020	TO	117+07.611	22.4 RT							0.42													
		ON	4TH																					
CB11	48-4020	FROM	117+07.611	22.4 RT	0.14	0.50	0.07	7.3	9.3	0.7	5.93	8.2	22.9	3.92	12 in	Concrete			1124.20	1123.30	0.90	1129.26	1129.53	
MH08	J	TO	117+00.006	0.0 LT							5.78													
		ON	4TH																					
MH09	120-4020	FROM	120+20.976	1.6 RT	35.43	0.87	30.97	26.3	4.9	188.9	10.45	360.7	318.5	0.35	78 in	Concrete			1108.09	1106.98	1.11	1128.27	1129.53	50-yr Pipe
MH08	J	TO	117+00.006	0.0 LT							5.69													
		ON	TH12_NORTH																					
CB12	48-4020	FROM	661+65.000	26.6 RT	0.09	0.50	0.04	7.0	9.5	0.4	3.22	4.2	26.0	1.00	12 in	Concrete			1122.97	1122.71	0.26	1127.66	1127.76	
CB13	48-4020	TO	120+20.000	19.2 LT							0.69													
		ON	4TH																					
CB13	48-4020	FROM	120+20.000	19.2 LT	0.41	0.50	0.20	7.1	9.4	1.9	7.99	8.1	18.8	3.79	12 in	Concrete			1122.71	1122.00	0.71	1127.76	1128.27	
MH09	120-4020	TO	120+20.976	1.6 RT							7.14													
		ON	TH12_NORTH																					
CB23	H	FROM	2+70.912 R 2	26.5 RT	0.16	0.95	0.16	7.0	9.5	1.0	4.18	4.2	24.7	1.02	12 in	Concrete			1124.85	1124.60	0.25	1128.97	1128.88	
CB89	G	TO	2+46.169 R 2	26.5 RT							1.32													
		ON	TH12_NORTH																					
CB89	G	FROM	2+46.169 R 2	26.5 RT	0.39	0.95	0.37	7.1	9.4	2.5	5.18	4.1	20.4	0.98	12 in	Concrete			1124.60	1124.40	0.20	1128.88	1128.80	
CB21	48-4020	TO	2+25.000 R 2	26.5 RT							3.21													
		ON	TH12_NORTH																					
CB21	48-4020	FROM	2+25.000 R 2	26.5 RT	0.44	0.95	0.41	7.2	9.4	3.5	5.59	4.2	56.8	1.00	12 in	Concrete			1124.40	1123.83	0.57	1128.80	1128.70	
CB20	G	TO	1+68.980 R 2	26.5 RT							4.44													
		ON	TH12_NORTH																					
CB20	G	FROM	1+68.980 R 2	26.5 RT	0.51	0.95	0.48	7.3	9.3	4.2	5.48	4.2	88.4	1.00	12 in	Concrete			1123.80	1122.91	0.88	1128.70	1128.31	
CB15	48-4020	TO	0+80.034 R 2	26.5 RT							5.34													
		ON	TH12_NORTH																					
CB15	48-4020	FROM	0+80.034 R 2	26.5 RT	0.65	0.95	0.61	7.6	9.1	5.1	6.21	7.5	33.8	1.01	15 in	Concrete			1122.66	1122.32	0.34	1128.31	1127.77	
CB14	48-4020	TO	120+18.500	18.7 RT							4.13													
		ON	4TH																					
CB14	48-4020	FROM	120+18.500	18.7 RT	1.09	0.88	0.96	7.7	9.1	8.7	7.29	7.4	19.4	0.98	15 in	Concrete			1122.07	1121.88	0.19	1127.77	1128.27	
MH09	120-4020	TO	120+20.976	1.6 RT							7.40													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
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INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

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DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION	CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
MH10	120-4020	ON TH12_NORTH	33.93	0.88	29.79	26.1	4.9	183.5	10.33	358.4	66.8	0.34	78 in	Concrete			1108.32	1108.09	0.23	1128.24	1128.27	50-yr Pipe
MH09	120-4020	FROM 0+59.309 R 2 12.9 LT							5.53													
		TO 120+20.976 1.6 RT																				
CB16	N	ON TH12_NORTH	0.15	0.90	0.13	7.0	9.5	1.3	3.40	2.9	37.5	0.50	12 in	Concrete			1123.85	1123.66	0.19	1127.68	1127.72	
CB17	48-4020	FROM 0+16.477 R 2 45.0 LT							1.60													
		TO 0+54.477 R 2 43.6 LT																				
CB17	48-4020	ON TH12_NORTH	0.31	0.93	0.28	7.2	9.4	3.3	5.52	4.2	30.2	1.00	12 in	Concrete			1123.66	1123.36	0.30	1127.72	1127.96	
CB18	48-4020	FROM 0+54.477 R 2 43.6 LT							4.23													
		TO 0+77.500 R 2 26.5 LT																				
CB19	48-4020	ON TH12_NORTH	0.38	0.85	0.32	7.0	9.5	1.9	4.88	4.2	68.5	1.00	12 in	Concrete			1123.59	1122.90	0.69	1127.96	1127.96	
CB18	48-4020	FROM 1+45.609 R 2 26.5 LT							2.39													
		TO 0+77.500 R 2 26.5 LT																				
CB18	48-4020	ON TH12_NORTH	1.99	0.46	0.92	10.0	8.1	7.4	6.51	7.6	18.9	1.02	15 in	Concrete			1122.40	1122.21	0.19	1127.96	1128.24	CB 18 OFFSITE AREA
MH10	120-4020	FROM 0+77.500 R 2 26.5 LT							6.55													2.0 CFS INFLOW
		TO 0+59.309 R 2 12.9 LT																				
MH11	J	ON TH12_NORTH	31.94	0.90	28.88	25.4	5.0	181.1	10.20	292.1	433.8	0.35	72 in	Concrete			1109.84	1108.32	1.52	1130.52	1128.24	50-yr Pipe
MH10	120-4020	FROM 4+96.439 R 2 11.1 LT							6.41													MH 11 OFFSITE AREA
		TO 0+59.309 R 2 12.9 LT																				5.4 CFS INFLOW
CB24	N	ON TH12_NORTH	0.02	0.95	0.02	7.0	9.5	0.2	2.41	4.2	44.1	1.00	12 in	Concrete			1125.16	1124.72	0.44	1129.46	1129.89	
CB25	48-4020	FROM 4+54.238 R 2 45.0 LT							0.35													
		TO 4+97.344 R 2 54.5 LT																				
CB25	48-4020	ON TH12_NORTH	0.08	0.95	0.08	7.3	9.3	0.7	3.75	4.1	44.2	0.99	12 in	Concrete			1124.72	1124.28	0.44	1129.89	1130.52	
MH11	J	FROM 4+97.344 R 2 54.5 LT							3.74													
		TO 4+96.439 R 2 11.1 LT																				
CB26	N	ON TH12_NORTH	0.02	0.95	0.02	7.0	9.5	0.2	2.54	4.2	39.6	1.01	12 in	Concrete			1125.96	1125.56	0.40	1129.96	1130.52	
MH11	J	FROM 5+32.891 R 2 26.5 LT							3.32													
		TO 4+96.439 R 2 11.1 LT																				
MH14	J	ON TH12_NORTH	31.13	0.90	28.11	25.2	5.0	178.0	10.17	289.5	154.1	0.34	72 in	Concrete			1110.37	1109.84	0.53	1130.49	1130.52	50-yr Pipe
MH11	J	FROM 6+50.519 R 2 12.0 LT							6.30													
		TO 4+96.439 R 2 11.1 LT																				
CB31	48-4020	ON TH12_NORTH	0.06	0.95	0.05	7.0	9.5	11.0	7.30	12.2	20.9	1.00	18 in	Concrete			1126.20	1125.99	0.21	1130.84	1130.16	CB 31 OFFSITE AREA
CB30	48-4020	FROM 6+99.139 R 2 47.3 LT							6.20													10.5 CFS INFLOW
		TO 6+96.634 R 2 26.5 LT																				
CB30	48-4020	ON TH12_NORTH	0.22	0.95	0.20	7.0	9.4	12.0	7.28	12.2	46.1	1.00	18 in	Concrete			1125.99	1125.53	0.46	1130.16	1130.05	
CB28	48-4020	FROM 6+96.634 R 2 26.5 LT							6.78													
		TO 6+50.519 R 2 26.5 LT																				
CB28	48-4020	ON TH12_NORTH	0.39	0.95	0.37	7.2	9.4	14.0	17.18	33.6	15.3	7.52	18 in	Concrete			1125.40	1124.25	1.15	1130.05	1130.49	
MH14	J	FROM 6+50.519 R 2 26.5 LT							12.17													
		TO 6+50.519 R 2 12.0 LT																				
CB27	H	ON TH12_NORTH	0.04	0.95	0.03	7.0	9.5	0.3	2.91	4.2	90.5	1.01	12 in	Concrete			1126.33	1125.42	0.91	1130.33	1130.05	
CB29	48-4020	FROM 5+60.000 R 2 26.5 RT							0.38													
		TO 6+50.519 R 2 26.5 RT																				
CB32	N	ON TH12_NORTH	0.12	0.95	0.11	7.0	9.5	0.8	3.89	4.2	129.9	1.00	12 in	Concrete			1127.06	1125.76	1.30	1130.61	1130.30	
CB83	48-4020	FROM 7+89.000 R 2 26.5 RT							3.89													
		TO 6+58.278 R 2 26.5 RT																				

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
LOW PT FREQUENCY:	50	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION	STREET OR STATION	CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_NORTH																				
CB83	48-4020	FROM	6+58.278 R 2 26.5 RT	0.27	0.95	0.25	7.6	9.1	1.8	4.89	4.3	8.6	1.05	12 in	Concrete			1125.76	1125.67	0.09	1130.30	1130.05	
CB29	48-4020	TO	6+50.519 R 2 26.5 RT							2.23													
		ON	TH12_NORTH																				
CB29	48-4020	FROM	6+50.519 R 2 26.5 RT	0.41	0.95	0.39	7.6	9.1	3.6	8.61	7.2	39.3	2.98	12 in	Concrete			1125.42	1124.25	1.17	1130.05	1130.49	
MH14	J	TO	6+50.519 R 2 12.0 LT							8.20													
		ON	TH12_NORTH																				50-yr Pipe
MH15	J	FROM	8+94.795 R 2 12.0 LT	30.33	0.90	27.35	24.8	5.0	164.9	10.02	289.4	244.3	0.34	72 in	Concrete			1111.21	1110.37	0.84	1131.54	1130.49	
MH14	J	TO	6+50.519 R 2 12.0 LT							5.83													
		ON	TH12_NORTH																				
CB34	N	FROM	9+39.091 R 2 47.0 LT	0.21	0.95	0.20	7.0	9.5	1.9	4.90	4.2	43.2	1.00	12 in	Concrete			1126.70	1126.27	0.43	1130.49	1130.69	
CB33	48-4020	TO	8+95.926 R 2 47.3 LT							2.44													
		ON	TH12_NORTH																				
CB33	48-4020	FROM	8+95.926 R 2 47.3 LT	0.52	0.95	0.49	7.1	9.4	4.6	8.78	6.8	36.1	2.68	12 in	Concrete			1126.27	1125.30	0.97	1130.69	1131.54	
MH15	J	TO	8+94.795 R 2 12.0 LT							8.34													
		ON	TH12_NORTH																				50-yr Pipe
MH16	J	FROM	10+79.221 R 2 10.9 LT	29.81	0.90	26.86	24.5	5.1	149.0	9.70	230.5	184.4	0.35	66 in	Concrete			1111.85	1111.21	0.64	1130.83	1131.54	
MH15	J	TO	8+94.795 R 2 12.0 LT							6.27													
		ON	TH12_NORTH																				
CB35	48-4020	FROM	10+44.000 R 2 26.5 LT	0.10	0.95	0.09	7.0	9.5	0.7	3.80	4.2	38.9	1.00	12 in	Concrete			1124.85	1124.46	0.39	1130.44	1130.83	
MH16	J	TO	10+79.221 R 2 10.9 LT							3.78													
		ON	TH12_NORTH																				
CB37	G	FROM	11+37.384 R 2 26.5 LT	0.10	0.95	0.09	7.0	9.5	4.8	7.59	9.9	60.2	1.74	15 in	Concrete			1125.60	1124.55	1.05	1129.78	1130.83	CB 37 OFFSITE AREA 3.9 CFS INFLOW
MH16	J	TO	10+79.221 R 2 10.9 LT							7.43													
		ON	TH12_NORTH																				
CB36	N	FROM	10+88.000 R 2 26.5 RT	0.20	0.95	0.19	7.0	9.5	1.3	5.60	5.8	38.4	1.95	12 in	Concrete			1125.30	1124.55	0.75	1130.48	1130.83	
MH16	J	TO	10+79.221 R 2 10.9 LT							5.52													
		ON	TH12_NORTH																				50-yr Pipe
MH17	120-4020	FROM	0+00.000 R 3 9.5 LT	29.42	0.90	26.47	24.1	5.1	144.9	9.71	230.7	215.8	0.35	66 in	Concrete			1112.60	1111.85	0.75	1129.46	1130.83	
MH16	J	TO	10+79.221 R 2 10.9 LT							6.10													
		ON	TH12_NORTH																				
CB39	N	FROM	12+48.170 R 2 28.6 LT	0.17	0.95	0.16	7.0	9.5	1.6	4.72	4.2	50.8	1.00	12 in	Concrete			1125.13	1124.62	0.51	1129.09	1129.46	
MH17	120-4020	TO	0+00.000 R 3 9.5 LT							4.71													
		ON	TH12_NORTH																				
CB38	H	FROM	12+23.464 R 2 27.2 RT	0.22	0.95	0.21	7.0	9.5	1.8	4.84	4.2	65.6	1.01	12 in	Concrete			1125.29	1124.63	0.66	1129.39	1128.51	
MH32	48-4020	TO	12+53.373 10.5 RT							4.82													
		ON	TH22																				
CB41	N	FROM	68+17.201 26.5 LT	0.21	0.95	0.20	7.0	9.5	1.9	4.88	4.2	67.5	1.01	12 in	Concrete			1124.42	1123.74	0.68	1128.42	1128.51	
MH32	48-4020	TO	12+53.373 10.5 RT							2.38													
		ON	TH12_EAST																				
MH32	48-4020	FROM	12+53.373 10.5 RT	0.43	0.95	0.40	7.2	9.3	3.6	5.60	4.2	39.5	1.01	12 in	Concrete			1123.74	1123.34	0.40	1128.51	1129.46	
MH17	120-4020	TO	0+00.000 R 3 9.5 LT							5.60													
		ON	TH12_EAST																				
CB44	N	FROM	13+55.450 68.7 RT	0.59	0.95	0.56	8.0	8.9	5.0	6.51	4.2	31.9	1.00	12 in	Concrete			1124.21	1123.89	0.32	1127.69	1128.75	
CB43	48-4020	TO	13+24.034 61.0 RT							6.34													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
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INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE; EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_EAST																				
CB43	48-4020	FROM	13+24.034 61.0 RT	0.62	0.95	0.59	8.1	8.9	5.2	6.24	7.5	42.0	1.00	15 in	Concrete			1123.64	1123.22	0.42	1128.75	1128.83	
CB42	48-4020	TO	13+41.537 23.5 RT							4.26													
		ON	TH12_EAST																				
CB42	48-4020	FROM	13+41.537 23.5 RT	0.65	0.95	0.61	8.2	8.8	5.4	6.28	7.5	54.4	1.00	15 in	Concrete			1123.22	1122.68	0.54	1128.83	1129.46	
MH17	120-4020	TO	0+00.000 R 3 9.5 LT							6.26													
		ON	TH22																				
CB45	48-4020	FROM	65+60.259 51.7 RT	0.79	0.65	0.51	10.0	8.1	2.5	5.23	4.2	29.3	1.00	12 in	Concrete			1125.33	1125.04	0.29	1129.58	1129.08	
CB46	48-4020	TO	65+63.694 22.7 RT							3.14													
		ON	TH22																				
CB46	48-4020	FROM	65+63.694 22.7 RT	0.88	0.68	0.60	10.1	8.0	3.0	5.43	4.2	104.1	1.00	12 in	Concrete			1125.04	1124.00	1.04	1129.08	1128.43	
CB47	48-4020	TO	64+59.849 22.7 RT							5.42													
		ON	TH22																				
CB47	48-4020	FROM	64+59.849 22.7 RT	1.09	0.73	0.80	10.4	7.9	4.6	6.08	7.5	26.7	1.00	15 in	Concrete			1124.00	1123.73	0.27	1128.43	1129.02	
MH18	48-4020	TO	64+46.446 0.0 RT							3.76													
		ON	TH22																				
CB48	H	FROM	64+50.000 21.0 LT	0.25	0.95	0.24	7.0	9.5	1.5	4.58	4.2	21.2	1.00	12 in	Concrete			1124.20	1123.99	0.21	1128.38	1129.02	
MH18	48-4020	TO	64+46.446 0.0 RT							1.86													
		ON	TH22																				
MH18	48-4020	FROM	64+46.446 0.0 RT	1.34	0.77	1.04	10.5	7.9	5.7	6.36	7.5	118.7	1.00	15 in	Concrete			1123.39	1122.20	1.19	1129.02	1128.37	
MH19	48-4020	TO	63+29.576 6.9 RT							6.34													
		ON	TH22																				
MH21	48-4020	FROM	63+46.682 36.4 LT	0.00	0.00		0.0	0.0	5.9	4.54	7.7	19.6	0.39	18 in	Concrete			1122.50	1122.42	0.08	1128.70	1128.00	MH 21 OFFSITE AREA 5.9 CFS INFLOW
CB49	84-4020	TO	63+55.487 21.0 LT							3.34													
		ON	TH22																				
CB49	84-4020	FROM	63+55.487 21.0 LT	0.15	0.95	0.14	7.0	9.5	8.0	4.95	16.6	31.2	0.40	24 in	Concrete			1122.42	1122.30	0.12	1128.00	1128.10	
CB50	48-4020	TO	63+26.048 21.0 LT							3.10													
		ON	TH22																				
CB50	48-4020	FROM	63+26.048 21.0 LT	0.16	0.95	0.15	7.1	9.4	8.2	4.85	15.9	27.5	0.36	24 in	Concrete			1122.30	1122.20	0.10	1128.10	1128.37	
MH19	48-4020	TO	63+29.576 6.9 RT							5.08													
		ON	TH22																				
MH20	48-4020	FROM	63+46.852 42.0 RT	0.00	0.00		0.0	0.0	4.0	3.84	4.4	29.8	0.35	15 in	Concrete			1122.36	1122.26	0.10	1129.30	1128.28	MH 20 OFFSITE AREA 4.0 CFS INFLOW
CB51	48-4020	TO	63+26.839 21.1 RT							3.41													
		ON	TH22																				
CB51	48-4020	FROM	63+26.839 21.1 RT	0.19	0.70	0.13	7.0	9.5	5.3	4.36	7.6	14.9	0.38	18 in	Concrete			1122.26	1122.20	0.06	1128.28	1128.37	
MH19	48-4020	TO	63+29.576 6.9 RT							4.86													
		ON	TH12_EAST																				50-yr Pipe
MH22	J	FROM	16+55.711 0.1 RT	28.18	0.90	25.30	23.5	5.2	140.8	9.72	231.1	364.3	0.35	66 in	Concrete			1113.87	1112.60	1.27	1128.67	1129.46	
MH17	120-4020	TO	0+00.000 R 3 9.5 LT							5.93													
		ON	TH12_EAST																				
CB86	H	FROM	14+67.377 24.5 LT	0.19	0.95	0.18	7.0	9.5	1.2	3.27	2.9	52.7	0.47	12 in	Concrete			1124.86	1124.61	0.25	1128.86	1128.62	
CB52	48-4020	TO	15+20.879 24.5 LT							1.49													
		ON	TH12_EAST																				
CB52	48-4020	FROM	15+20.879 24.5 LT	0.39	0.95	0.37	7.3	9.3	2.6	5.24	4.2	30.0	1.00	12 in	Concrete			1124.61	1124.31	0.30	1128.62	1128.47	
CB53	48-4020	TO	15+50.816 24.5 LT							3.27													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
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INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
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SHEET NO.	

DATE:	12/18/18
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STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_EAST																				
CB53	48-4020	FROM	15+50.816 24.5 LT	0.41	0.95	0.39	7.4	9.3	3.4	5.54	4.2	61.9	1.00	12 in	Concrete			1124.31	1123.69	0.62	1128.47	1128.12	
CB54	48-4020	TO	16+10.292 41.1 LT							4.29													
		ON	TH12_EAST																				
CB55	H	FROM	16+18.216 51.0 LT	0.17	0.95	0.16	7.0	9.5	1.0	4.11	4.2	13.0	1.00	12 in	Concrete			1123.94	1123.81	0.13	1128.20	1128.12	
CB54	48-4020	TO	16+10.292 41.1 LT							1.26													
		ON	TH12_EAST																				
CB54	48-4020	FROM	16+10.292 41.1 LT	0.79	0.95	0.75	7.6	9.1	6.9	6.48	7.5	48.2	1.00	15 in	Concrete			1123.69	1123.21	0.48	1128.12	1128.39	
MH23	48-4020	TO	16+56.952 31.0 LT							5.60													
		ON	TH12_EAST																				
MH23	48-4020	FROM	16+56.952 31.0 LT	0.79	0.95	0.75	7.7	9.1	9.6	11.97	23.5	31.9	3.69	18 in	Concrete			1123.08	1121.90	1.18	1128.39	1128.67	MH 23 OFFSITE FLOW 2.8 CFS INFLOW
MH22	J	TO	16+55.711 0.1 RT							10.27													
		ON	TH12_EAST																				
CB87	H	FROM	15+23.230 23.5 RT	0.26	0.95	0.25	7.0	9.5	1.5	3.54	3.0	57.3	0.51	12 in	Concrete			1125.14	1124.85	0.29	1128.63	1128.35	
CB56	G	TO	15+80.543 23.5 RT							1.86													
		ON	TH12_EAST																				
CB56	G	FROM	15+80.543 23.5 RT	0.32	0.95	0.31	7.3	9.3	2.4	5.19	4.2	57.9	1.00	12 in	Concrete			1124.85	1124.27	0.58	1128.35	1128.06	
CB57	48-4020	TO	16+38.475 23.5 RT							3.12													
		ON	TH12_EAST																				
CB57	48-4020	FROM	16+38.475 23.5 RT	0.55	0.95	0.52	7.5	9.2	3.9	5.04	3.1	53.1	0.55	12 in	Concrete			1124.27	1123.98	0.29	1128.06	1127.82	
CB58	G	TO	16+90.000 23.5 RT							4.91													
		ON	TH12_EAST																				
CB58	G	FROM	16+90.000 23.5 RT	0.68	0.95	0.64	7.6	9.1	5.0	6.57	4.2	43.5	1.01	12 in	Concrete			1123.98	1123.54	0.44	1127.82	1127.61	
CB88	G	TO	17+33.612 23.5 RT							6.40													
		ON	TH12_EAST																				
CB88	G	FROM	17+33.612 23.5 RT	0.81	0.95	0.77	7.7	9.0	6.2	6.39	7.5	40.3	0.99	15 in	Concrete			1123.54	1123.14	0.40	1127.61	1127.44	
CB59	48-4020	TO	17+75.000 23.5 RT							6.38													
		ON	TH12_EAST																				
CB59	48-4020	FROM	17+75.000 23.5 RT	0.91	0.95	0.86	7.8	9.0	7.3	6.48	7.5	73.6	1.00	15 in	Concrete			1122.38	1121.64	0.74	1127.44	1127.23	
CB60	48-4020	TO	18+48.900 23.5 RT							5.92													
		ON	TH12_EAST																				
CB60	48-4020	FROM	18+48.900 23.5 RT	1.05	0.95	0.99	8.0	8.9	15.5	5.07	14.4	48.5	0.30	24 in	Concrete			1120.61	1120.47	0.15	1127.23	1127.16	CB 60 OFFSITE AREA 7.1 CFS INFLOW
CB61	48-4020	TO	18+96.578 23.5 RT							4.94													
		ON	TH12_EAST																				50-yr Pipe
CB61	48-4020	FROM	18+96.578 23.5 RT	1.28	0.95	1.21	8.2	8.8	19.2	5.18	19.8	22.9	0.30	27 in	Concrete			1120.47	1120.40	0.07	1127.16	1127.95	
MH24	102-4020	TO	18+93.711 1.4 RT							4.87													
		ON	TH12_EAST																				
CB62	H	FROM	18+40.050 23.5 LT	0.16	0.95	0.16	7.0	9.5	1.1	4.28	4.2	56.5	1.00	12 in	Concrete			1123.28	1122.71	0.57	1127.25	1127.16	
CB63	48-4020	TO	18+96.578 23.5 LT							1.46													
		ON	TH12_EAST																				
CB64	H	FROM	19+61.105 23.5 LT	0.12	0.95	0.11	7.0	9.5	0.8	3.92	4.2	64.5	1.00	12 in	Concrete			1123.29	1122.65	0.65	1127.49	1127.16	
CB63	48-4020	TO	18+96.578 23.5 LT							1.08													
		ON	TH12_EAST																				50-yr Pipe
CB63	48-4020	FROM	18+96.578 23.5 LT	0.50	0.95	0.47	7.3	9.3	4.4	6.02	7.5	25.7	1.00	15 in	Concrete			1122.65	1122.39	0.26	1127.16	1127.95	
MH24	102-4020	TO	18+93.711 1.4 RT							5.87													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
LOW PT FREQUENCY:	50	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	TH12_EAST																				
MH24	102-4020	FROM	18+93.711 1.4 RT	27.39	0.90	24.57	23.1	5.2	135.3	9.63	231.0	241.1	0.35	66 in	Concrete			1114.71	1113.87	0.84	1127.95	1128.67	50-yr Pipe
MH22	J	TO	16+55.711 0.1 RT							5.70													
		ON	HOLCOMBE																				
CB66	G	FROM	200+74.920 16.3 LT	0.32	0.95	0.31	7.0	9.5	1.5	4.64	4.2	29.4	1.00	12 in	Concrete			1123.49	1123.20	0.29	1127.81	1127.44	
CB67	48-4020	TO	201+03.630 24.4 LT							1.97													
		ON	HOLCOMBE																				
CB67	48-4020	FROM	201+03.630 24.4 LT	0.46	0.95	0.44	7.1	9.4	2.7	5.29	4.1	43.7	0.99	12 in	Concrete			1123.20	1122.77	0.43	1127.44	1128.31	
MH25	120-4020	TO	20+62.960 0.5 RT							5.28													
		ON	HOLCOMBE																				
CB82	H	FROM	200+69.743 21.4 RT	0.23	0.95	0.22	7.0	9.5	1.3	4.44	4.2	43.8	1.01	12 in	Concrete			1123.98	1123.54	0.44	1127.98	1127.98	
CB68	60-4020	TO	21+26.340 23.5 RT							4.41													
		ON	TH12_EAST																				
CB68	60-4020	FROM	21+26.340 23.5 RT	0.69	0.95	0.65	7.2	9.4	6.1	6.58	12.2	22.5	1.00	18 in	Concrete			1119.90	1119.68	0.23	1127.98	1128.60	
MH26	96-4020	TO	21+23.450 0.3 LT							3.46													
		ON	TH12_EAST																				
CB69	48-4020	FROM	21+24.349 23.5 LT	0.52	0.95	0.50	7.0	9.5	2.2	5.09	4.2	24.1	1.00	12 in	Concrete			1123.48	1123.24	0.24	1127.60	1128.60	
MH26	96-4020	TO	21+23.450 0.3 LT							5.01													
		ON	TH12_EAST																				
CB70	H	FROM	20+94.500 23.5 LT	0.03	0.95	0.03	7.0	9.5	1.6	4.66	4.2	36.4	1.00	12 in	Concrete			1123.78	1123.41	0.36	1127.79	1128.31	
MH25	120-4020	TO	20+62.960 0.5 RT							4.62													
		ON	HOLCOMBE																				
CB75	N	FROM	202+69.404 37.2 LT	0.22	0.85	0.18	7.0	9.5	1.1	4.28	4.2	39.4	1.00	12 in	Concrete			1123.26	1122.87	0.40	1127.39	1127.26	
CB76	48-4020	TO	203+09.404 37.2 LT							1.46													
		ON	HOLCOMBE																				
CB76	48-4020	FROM	203+09.404 37.2 LT	0.59	0.85	0.50	7.2	9.4	2.8	5.31	4.1	27.2	0.99	12 in	Concrete			1122.86	1122.59	0.27	1127.26	1127.15	
CB77	G	TO	203+29.833 20.4 LT							3.53													
		ON	HOLCOMBE																				
CB77	G	FROM	203+29.833 20.4 LT	0.63	0.85	0.54	7.2	9.3	3.8	5.60	4.1	33.1	1.00	12 in	Concrete			1122.59	1122.26	0.33	1127.15	1126.95	
CB78	48-4020	TO	203+62.879 20.5 LT							4.88													
		ON	HOLCOMBE																				
CB79	H	FROM	203+90.000 20.5 LT	1.95	0.80	1.56	18.0	5.9	3.5	8.58	7.1	14.2	2.95	12 in	Concrete			1123.01	1122.59	0.42	1127.01	1126.96	
CB84	G	TO	203+75.751 20.5 LT							4.50													
		ON	HOLCOMBE																				
CB84	G	FROM	203+75.751 20.5 LT	1.98	0.80	1.59	18.0	5.9	6.1	8.97	6.6	12.9	2.56	12 in	Concrete			1122.59	1122.26	0.33	1126.96	1126.95	
CB78	48-4020	TO	203+62.879 20.5 LT							7.72													
		ON	HOLCOMBE																				
CB78	48-4020	FROM	203+62.879 20.5 LT	2.90	0.82	2.37	18.1	5.9	13.5	7.83	12.4	31.3	1.02	18 in	Concrete			1122.26	1121.94	0.32	1126.95	1127.44	
MH28	48-4020	TO	203+62.090 10.0 RT							7.63													
		ON	HOLCOMBE																				
CB81	H	FROM	203+90.000 20.5 RT	1.22	0.75	0.92	12.0	7.3	2.0	5.01	4.2	14.5	1.03	12 in	Concrete			1123.31	1123.16	0.15	1127.31	1127.26	
CB85	G	TO	203+75.451 20.5 RT							2.57													
		ON	HOLCOMBE																				
CB85	G	FROM	203+75.451 20.5 RT	1.26	0.75	0.95	12.0	7.3	3.6	5.64	4.2	12.6	1.03	12 in	Concrete			1123.16	1123.03	0.13	1127.26	1127.25	
CB80	48-4020	TO	203+62.879 20.5 RT							4.62													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
LOW PT FREQUENCY:	50	YRS

INVERT ELEV'S ARE TO: x CENTER OF STRUCTURE / EDGE OF STRUCTURE

COMP. BY:	ACR
CHECKED BY:	ACR
SHEET NO.	

DATE:	12/18/18
DATE:	12/18/18

STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
		ON	HOLCOMBE																				
CB80	48-4020	FROM	203+62.879 20.5 RT	1.39	0.75	1.04	12.1	7.3	9.5	7.92	7.5	11.3	1.00	15 in	Concrete			1122.69	1122.58	0.11	1127.25	1127.44	
MH28	48-4020	TO	203+62.090 10.0 RT							7.72													
		ON	HOLCOMBE																				
MH28	48-4020	FROM	203+62.090 10.0 RT	4.29	0.80	3.42	18.1	5.9	21.5	8.93	36.1	147.1	1.00	27 in	Concrete			1121.94	1120.47	1.47	1127.44	1127.28	
MH27	60-4020	TO	202+14.450 10.0 RT							5.41													
		ON	HOLCOMBE																				
CB74	G	FROM	203+09.404 42.7 RT	0.48	0.85	0.40	7.0	9.5	2.0	4.94	4.2	38.3	1.00	12 in	Concrete			1123.07	1122.69	0.38	1127.47	1127.00	
CB73	48-4020	TO	202+70.404 42.8 RT							2.52													
		ON	HOLCOMBE																				
CB73	48-4020	FROM	202+70.404 42.8 RT	1.14	0.65	0.74	9.0	8.4	4.4	5.75	4.1	59.5	0.99	12 in	Concrete			1122.69	1122.10	0.59	1127.00	1126.95	
CB72	48-4020	TO	202+15.740 20.5 RT							5.60													
		ON	HOLCOMBE																				
CB72	48-4020	FROM	202+15.740 20.5 RT	1.41	0.70	0.99	9.2	8.4	7.7	6.42	7.5	11.3	1.00	15 in	Concrete			1122.10	1121.98	0.11	1126.95	1127.28	
MH27	60-4020	TO	202+14.450 10.0 RT							6.26													
		ON	HOLCOMBE																				
CB71	N	FROM	202+15.740 20.5 LT	0.11	0.95	0.11	7.0	9.5	1.6	4.67	4.2	30.5	1.00	12 in	Concrete			1122.87	1122.57	0.31	1126.95	1127.28	
MH27	60-4020	TO	202+14.450 10.0 RT							2.02													
		ON	HOLCOMBE																				
MH27	60-4020	FROM	202+14.450 10.0 RT	5.81	0.78	4.51	18.4	5.9	27.8	9.44	36.1	85.1	1.00	27 in	Concrete			1120.47	1119.62	0.85	1127.28	1128.31	
MH25	120-4020	TO	20+62.960 0.5 RT							6.98													
		ON	TH12_EAST																				
CB70	H	FROM	20+94.500 23.5 LT	0.03	0.95	0.03	7.0	9.5	1.6	4.66	4.2	36.4	1.00	12 in	Concrete			1123.78	1123.41	0.36	1127.79	1128.31	
MH25	120-4020	TO	20+62.960 0.5 RT							4.62													
		ON	TH12_EAST																				
MH25	120-4020	FROM	20+62.960 0.5 RT	25.61	0.89	22.87	22.7	5.3	118.9	9.34	232.6	169.8	0.35	66 in	Concrete			1115.31	1114.71	0.60	1128.31	1127.95	50-yr Pipe
MH24	102-4020	TO	18+93.711 1.4 RT							5.00													
		ON	HOLCOMBE																				
CB82	H	FROM	200+69.743 21.4 RT	0.23	0.95	0.22	7.0	9.5	1.3	4.44	4.2	43.8	1.01	12 in	Concrete			1123.98	1123.54	0.44	1127.98	1127.98	
CB68	60-4020	TO	21+26.340 23.5 RT							4.41													
		ON	TH12_EAST																				
CB68	60-4020	FROM	21+26.340 23.5 RT	0.69	0.95	0.65	7.2	9.4	6.1	6.58	12.2	22.5	1.00	18 in	Concrete			1119.90	1119.68	0.23	1127.98	1128.60	
MH26	96-4020	TO	21+23.450 0.3 LT							3.46													
		ON	TH12_EAST																				
CB69	48-4020	FROM	21+24.349 23.5 LT	0.52	0.95	0.50	7.0	9.5	2.2	5.09	4.2	24.1	1.00	12 in	Concrete			1123.48	1123.24	0.24	1127.60	1128.60	
MH26	96-4020	TO	21+23.450 0.3 LT							5.01													
		ON	TH12_EAST																				
MH26	96-4020	FROM	21+23.450 0.3 LT	19.31	0.93	17.90	22.6	5.3	91.9	8.73	180.1	59.6	0.35	60 in	Concrete			1115.52	1115.31	0.21	1128.60	1128.31	50-yr Pipe
MH25	120-4020	TO	20+62.960 0.5 RT							4.68													
		ON	TH12_EAST																				
Future04	96-4020	FROM	24+50.432 0.5 LT	18.10	0.93	16.74	22.0	5.4	89.6	8.59	135.3	327.0	0.35	54 in	Concrete			1116.66	1115.52	1.14	1130.96	1128.60	50-yr Pipe
MH26	96-4020	TO	21+23.450 0.3 LT							5.63													
		ON	TH12_EAST																				
Future03	96-4020	FROM	30+00.007 9.5 LT	12.02	0.91	10.96	20.3	5.6	61.2	7.75	99.0	743.8	0.35	48 in	Concrete			1119.26	1116.66	2.60	1127.46	1130.96	50-yr Pipe
Future04	96-4020	TO	24+50.432 0.5 LT							4.87													

GEOPAK DRAINAGE STORM DRAIN COMPUTATION SHEET

S.P. NUMBER:	470489
T.H. :	12

DESIGN FREQUENCY:	50	YRS
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INVERT ELEV'S ARE TO:		
	x	CENTER OF STRUCTURE
		EDGE OF STRUCTURE

COMP. BY:	ACR
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SHEET NO.	

DATE:	12/18/18
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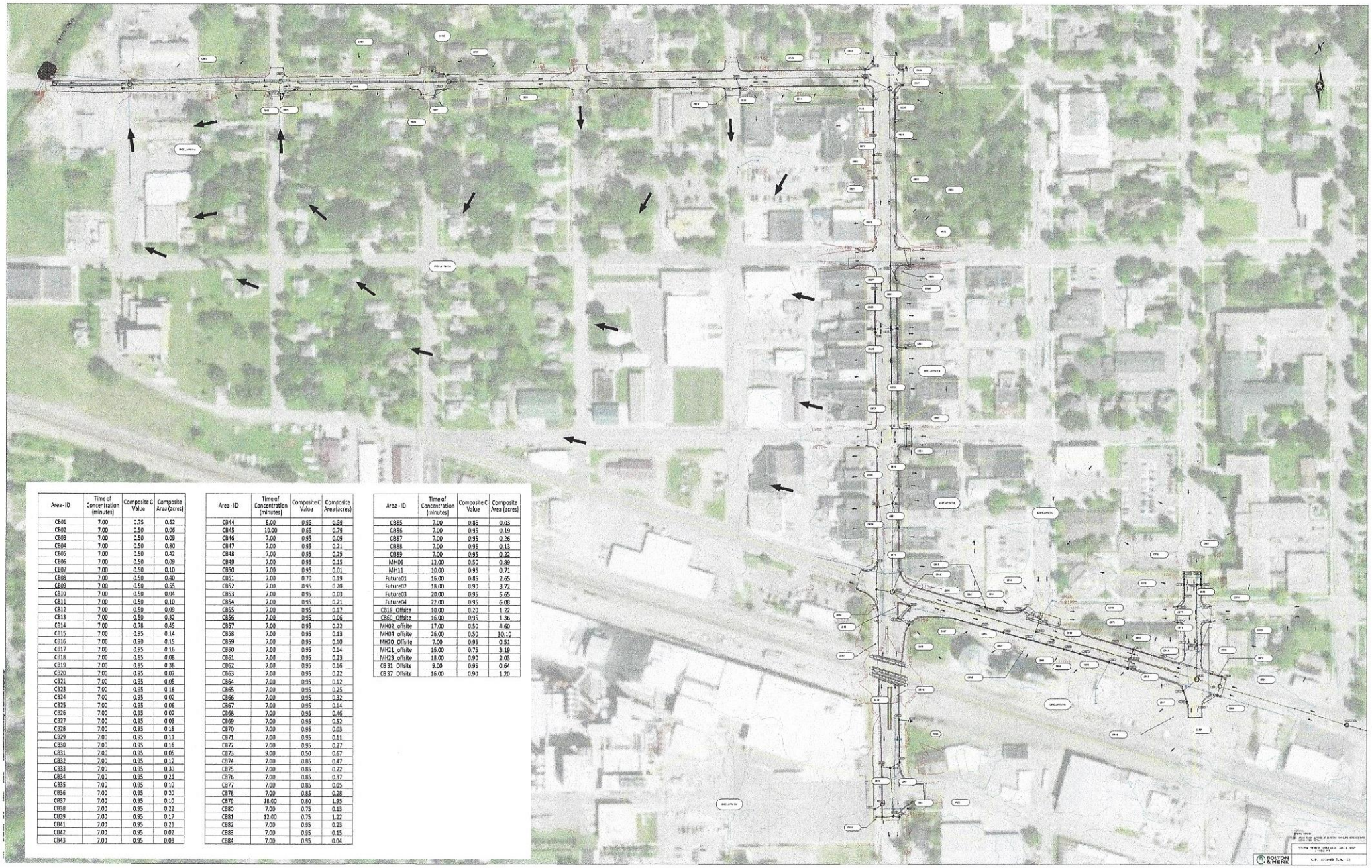
STRUCTURE NUMBER	STRUCTURE TYPE	LOCATION	STREET OR STATION		CUM AREA (acre)	CUM C	SUM C X A	Tc (min)	RAINFALL INTEN-SITY (in/hr)	TOTAL Q (cfs)	FLOW VEL. V normal / V out (ft/s)	FULL PIPE CAP. (cfs)	PIPE DETAILS: APPROX PIPE LENGTH (ft)	SLOPE (%)	PIPE SIZE	PIPE MAT'L	PIPE CLASS OR GAGE	DO NOT USE P.E. ALT.	PIPE INVERT ELEVATION UPPER END	PIPE INVERT ELEVATION LOWER END	FALL (ft)	APPROX. TOP OF CASTING ELEV. UPPER END	APPROX. TOP OF CASTING ELEV. LOWER END	REMARKS
 Future03 Future04	 96-4020 96-4020	ON FROM TO	TH12_EAST 30+00.007 24+50.432	 9.5 LT 0.5 LT	12.02	0.91	10.96	20.3	5.6	61.2	7.75 4.87	99.0	743.8	0.35	48 in	Concrete			1119.26	1116.66	2.60	1127.46	1130.96	50-yr Pipe
 Future02 Future03	 96-4020 96-4020	ON FROM TO	TH12_EAST 30+00.007 30+00.007	 10.1 LT 9.5 LT	6.37	0.88	5.60	18.2	5.9	33.1	6.93 6.75	28.3	888.3	0.35	30 in	Concrete			1122.37	1119.26	3.11	1127.96	1127.46	
 Future01 Future02	 96-4020 96-4020	ON FROM TO	TH12_EAST 30+00.007 30+00.007	 32.4 RT 10.1 LT	2.65	0.85	2.25	16.0	6.3	14.2	5.24 4.53	15.6	681.2	0.35	24 in	Concrete			1124.75	1122.37	2.38	1129.46	1127.96	
  0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a
 0 0		ON FROM TO	n/a n/a n/a	 0.0 RT 0.0 RT	n/a	n/a		n/a	n/a	n/a	0.00 0.00	0.0	0.0	0.00	12 in	Concrete			-1.00	-1.00	0.00	n/a	n/a	From: n/a



Area - ID	Time of Concentration (minutes)	Composite C Value	Composite Area (acres)
CB01	7.00	0.75	0.62
CB02	7.00	0.50	0.06
CB03	7.00	0.50	0.09
CB04	7.00	0.50	0.80
CB05	7.00	0.50	0.42
CB06	7.00	0.50	0.09
CB07	7.00	0.50	0.10
CB08	7.00	0.50	0.40
CB09	7.00	0.50	0.65
CB10	7.00	0.50	0.04
CB11	7.00	0.50	0.10
CB12	7.00	0.50	0.09
CB13	7.00	0.50	0.32
CB14	7.00	0.78	0.45
CB15	7.00	0.95	0.14
CB16	7.00	0.90	0.15
CB17	7.00	0.95	0.16
CB18	7.00	0.85	0.08
CB19	7.00	0.85	0.38
CB20	7.00	0.95	0.07
CB21	7.00	0.95	0.05
CB23	7.00	0.95	0.16
CB24	7.00	0.95	0.02
CB25	7.00	0.95	0.06
CB26	7.00	0.95	0.02
CB27	7.00	0.95	0.03
CB28	7.00	0.95	0.18
CB29	7.00	0.95	0.11
CB30	7.00	0.95	0.16
CB31	7.00	0.95	0.05
CB32	7.00	0.95	0.12
CB33	7.00	0.95	0.30
CB34	7.00	0.95	0.21
CB35	7.00	0.95	0.10
CB36	7.00	0.95	0.20
CB37	7.00	0.95	0.10
CB38	7.00	0.95	0.22
CB39	7.00	0.95	0.17
CB41	7.00	0.95	0.21
CB42	7.00	0.95	0.02
CB43	7.00	0.95	0.03

Area - ID	Time of Concentration (minutes)	Composite C Value	Composite Area (acres)
CB44	8.00	0.95	0.59
CB45	10.00	0.65	0.79
CB46	7.00	0.95	0.09
CB47	7.00	0.95	0.21
CB48	7.00	0.95	0.25
CB49	7.00	0.95	0.15
CB50	7.00	0.95	0.01
CB51	7.00	0.70	0.19
CB52	7.00	0.95	0.20
CB53	7.00	0.95	0.03
CB54	7.00	0.95	0.21
CB55	7.00	0.95	0.17
CB56	7.00	0.95	0.06
CB57	7.00	0.95	0.22
CB58	7.00	0.95	0.13
CB59	7.00	0.95	0.10
CB60	7.00	0.95	0.14
CB61	7.00	0.95	0.23
CB62	7.00	0.95	0.16
CB63	7.00	0.95	0.22
CB64	7.00	0.95	0.12
CB65	7.00	0.95	0.25
CB66	7.00	0.95	0.32
CB67	7.00	0.95	0.14
CB68	7.00	0.95	0.46
CB69	7.00	0.95	0.52
CB70	7.00	0.95	0.03
CB71	7.00	0.95	0.11
CB72	7.00	0.95	0.27
CB73	9.00	0.50	0.67
CB74	7.00	0.85	0.47
CB75	7.00	0.85	0.22
CB76	7.00	0.85	0.37
CB77	7.00	0.85	0.05
CB78	7.00	0.85	0.28
CB79	16.00	0.80	1.95
CB80	7.00	0.75	0.13
CB81	12.00	0.75	1.22
CB82	7.00	0.95	0.23
CB83	7.00	0.95	0.15
CB84	7.00	0.95	0.04

Area - ID	Time of Concentration (minutes)	Composite C Value	Composite Area (acres)
CB85	7.00	0.85	0.03
CB86	7.00	0.95	0.19
CB87	7.00	0.95	0.26
CB88	7.00	0.95	0.13
CB89	7.00	0.95	0.22
MH06	12.00	0.50	0.89
MH11	10.00	0.95	0.71
Future01	16.00	0.85	2.65
Future02	18.00	0.90	3.72
Future03	20.00	0.95	5.65
Future04	22.00	0.95	6.08
CB18_Offsite	10.00	0.20	1.22
CB60_Offsite	16.00	0.95	1.36
MH02_offsite	17.00	0.50	4.60
MH04_offsite	26.00	0.50	30.10
MH20_Offsite	7.00	0.95	0.51
MH21_offsite	16.00	0.75	3.19
MH23_offsite	18.00	0.90	2.03
CB 31_Offsite	9.00	0.95	0.64
CB 37_Offsite	16.00	0.90	1.20

STORM SEWER DRAINAGE AREA MAP

BOLTON & MENK

OFFSITE DRAINAGE AREA INCLUDED IN PIPE SIZING (FULL BUILD SCENARIO)

BOLTON & MENK

S.P. 4704-89 T.H. 12

MEEKER COUNTY PUBLIC WORKS

422 S. Johnson Drive
Litchfield Minnesota 55355-2155
Ph. (320) 693-5360
Fax (320) 693-5369

Phil Schmalz
County Engineer

Mark A. Spies
Assistant Engineer

April 16, 2019

Meeker County Board of Commissioners

Subject: Dassel Highway Shop Parcel Split and Sale

The Meeker County Highway Department has been approached by Eldon Bekkala on behalf of Atlantic Property LLC & Outshaped LLC in regards to the sale of a portion of the Dassel Highway Shop Property. Mr. Bekkala is attempting to purchase the vacant building and parcel located directly north of the Dassel Highway Shop Building. Currently, there is no good access to the large garage door on the south side of the building.

I am requesting authorization to work with Mr. Bekkala to sell approximately 0.17 Acres of the Dassel Highway Shop property to allow their company direct access to Public Street.

Respectfully Submitted,

Phil Schmalz
County Engineer/Public Works Director
Meeker County Highway Department

Dassel Highway Shop

2018-2019 Snow Plowing Summary

As of April 9, 2019:

Winter of 2 parts: November-January moderate snow but heavy ice. February heavy snow, winds and cold.

Nov.-Jan.,

15 events - 4 were sanding only, for ice, 8 were P/T included for gravels and 2 weekends. Ice was very heavy at end of December into January, temps too cold for chemicals. We used 60+ tons of granite chips on worst gravel roads. Jan. 30-31 record cold, -31degrees and 50+ mph winds, drifting snow an issue but had to limit equipment exposure because of hydraulic lines rupturing.

February

Started out icy then snow and wind all month. Worked 24 days in February, P/T worked 15 days. Very intense month of continuous back to back snow, cold and winds. Snow very heavy in south and west sides, banks 10' high. Dozers hired by county and TWPS to push back snow.

March

Last snow on March 10, heavy snow with drifting. Starting March 12, several inches of rain and rapid melting of snow causing flooding and culvert damage.

Salt/Sand used.....4050 tons .....$102,870 (5yrAv.$83,363)

Dozer Hired.....$10,500

Fuel used....Dec. $9,500, Jan. $20,100, Feb. $45,600

Part-Timers used about 25 Days Total.....15 days in Feb.

Full-Time 80-100 Hrs Overtime Season Total....60-70 hrs in Feb-Mar.

RESOLUTION OF THE MEEKER COUNTY BOARD OF COMMISSIONERS SUPPORTING TRANSPORTATION FUNDING RESOLUTION 2019-05

WHEREAS Minnesota Counties maintain 30,742 miles of County State Aid Highway (CSAH) roads and 14,141 miles of county roads, totaling over 30% of the state's roadways; and

WHEREAS the total annual need is $1.084 billion over the next 25 years just to maintain the current CSAH and county road system, not including expansion; and

WHEREAS the annual funding gap for counties has resulted in deferring basic maintenance, delaying expansion projects with resulting safety concerns, mounting congestion, and missed economic growth for businesses and commuters; and

WHEREAS a comprehensive and sustainable transportation solution should include robust funding for roads, bridges, and transit, and address the varying needs in different parts of the state; and

WHEREAS increased funding for Minnesota's Highway User Tax Distribution Fund would provide additional, stable funds for MnDOT, all 87 counties, all cities with a population of 5,000 or more, and townships across the state;

NOW THEREFORE BE IT RESOLVED that the **MEEKER** County Board of Commissioners encourages the Minnesota Legislature to pass and the Governor to sign a bill that brings adequate funding to Minnesota's statewide transportation system.

WHEREUPON, the above resolution was passed and adopted by the Meeker County Board of Commissioners on this 16th day of April, 2019.

By: _____
Mike Housman, Meeker County Board Chair

Attest: _____
Paul J. Virnig, County Board Clerk

STATE OF MINNESOTA

MEEKER COUNTY
I, Paul J. Virnig, do hereby certify that I am the custodian of the minutes of all proceedings had and held by the Board of Commissioners of said Meeker County, that I have compared the above resolution with the original passed and adopted by the Board of Commissioners of said Meeker County at a regular meeting thereof held on the 16th day of April, 2019, at 8:30 AM, that the above constitutes a true and correct copy thereof, that the same has not been amended or rescinded and is in full force and effect. IN WITNESS WHEREOF, I have hereunto placed my hand and signature this 16th day of April, 2019, and have hereunto affixed the seal of the County.

_____
County Board Clerk

SEAL

MEEKER COUNTY 2019 MONTHLY FUND CASH BALANCES

FUND	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	AVERAGE MONTH
REVENUE	$8,128,625	$7,451,312	$6,687,264										$7,422,400
FAMILY SERVICES CTR.	$655,429	$637,359	$597,520										$630,103
PUBLIC HEALTH	$656,993	$603,000	$621,361										$627,118
PARKS	$271,886	$271,764	$279,608										$274,419
ROAD & BRIDGE	$2,976,416	$3,511,717	$2,880,554										$3,122,896
SOCIAL SERVICES	$5,861,523	$5,843,791	$5,603,775										$5,769,696
TRANSFER STATION	$718,847	$717,653	$714,851										$717,117
TOTAL FUNDS	$19,269,719	$19,036,596	$17,384,933	$0	$0	$0	$0	$0	$0	$0	$0	$0	$18,563,749

MEEKER COUNTY 2018 MONTHLY FUND CASH BALANCES

FUND	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	AVERAGE MONTH
REVENUE	$7,860,121	$7,414,560	$6,701,392	$6,027,395	$4,793,676	$8,723,273	$7,925,413	$7,567,690	$7,038,882	$8,731,074	$9,131,594	$9,121,483	$7,586,379
FAMILY SERVICES CTR.	$422,994	$522,588	$497,515	$473,850	$450,203	$500,290	$605,334	$595,974	$569,910	$583,638	$579,566	$559,838	$530,142
PUBLIC HEALTH	$373,688	$263,218	$258,107	$147,271	$778,492	$696,906	$563,956	$601,164	$581,826	$522,840	$519,680	$433,328	$478,373
PARKS	$180,012	$161,506	$154,442	$140,660	$349,281	$338,122	$301,037	$282,839	$240,387	$223,872	$204,378	$190,343	$230,573
ROAD & BRIDGE	$4,234,772	$3,485,679	$3,177,827	$2,927,919	$4,262,158	$4,841,099	$5,099,242	$4,318,733	$4,870,057	$4,974,050	$3,613,133	$3,356,267	$4,096,745
SOCIAL SERVICES	$6,185,468	$5,398,535	$5,090,764	$4,639,868	$4,672,319	$6,134,645	$6,319,245	$6,030,250	$5,732,279	$6,091,022	$6,589,910	$6,400,692	$5,773,750
TRANSFER STATION	$911,740	$875,724	$871,379	$865,759	$904,531	$851,308	$847,716	$862,337	$882,047	$684,074	$682,667	$725,378	$830,388
TOTAL FUNDS	$20,168,795	$18,121,810	$16,751,426	$15,222,722	$16,210,660	$22,085,643	$21,661,943	$20,258,987	$19,915,388	$21,810,570	$21,320,928	$20,787,329	$19,526,350

MEEKER COUNTY 2017 MONTHLY FUND CASH BALANCES

FUND	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	AVERAGE MONTH
REVENUE	$7,238,145	$6,024,130	$5,277,700	$4,697,794	$4,135,848	$7,850,815	$7,351,944	$6,727,754	$6,280,014	$7,690,019	$8,543,621	$8,657,319	$6,706,259
FAMILY SERVICES CTR.	$367,468	$460,464	$423,602	$402,071	$379,582	$421,838	$403,627	$401,617	$377,042	$383,572	$377,079	$472,600	$405,880
PUBLIC HEALTH	$503,304	$761,629	$744,388	$651,038	$543,904	$514,501	$723,703	$723,245	$683,977	$580,393	$515,649	$484,865	$619,216
PARKS	$186,956	$281,333	$253,956	$239,753	$228,983	$198,674	$281,980	$281,674	$266,626	$226,590	$205,795	$192,022	$237,029
ROAD & BRIDGE	$4,240,267	$4,798,748	$4,596,085	$4,300,221	$4,088,334	$5,213,532	$5,138,686	$3,312,116	$3,300,679	$3,725,313	$3,541,729	$3,347,820	$4,133,628
SOCIAL SERVICES	$5,122,808	$5,030,007	$4,774,868	$4,541,485	$4,449,131	$5,918,776	$5,875,331	$6,005,941	$5,710,242	$6,168,861	$6,670,422	$6,557,154	$5,568,752
TRANSFER STATION	$728,303	$737,338	$749,087	$750,853	$775,449	$795,720	$823,629	$840,950	$865,832	$868,025	$905,034	$912,868	$812,757
TOTAL FUNDS	$18,387,251	$18,093,649	$16,819,686	$15,583,215	$14,601,231	$20,913,856	$20,598,900	$18,293,297	$17,484,412	$19,642,773	$20,759,329	$20,624,648	$18,483,521

MEEKER COUNTY 2016 MONTHLY FUND CASH BALANCES

FUND	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	AVERAGE MONTH
REVENUE	$6,565,602	$6,013,528	$4,906,347	$4,379,609	$3,914,291	$7,421,073	$7,003,905	$6,435,478	$5,961,514	$7,473,885	$7,803,794	$7,981,603	$6,321,719
FAMILY SERVICES CTR.	$295,675	$278,129	$253,128	$342,063	$322,712	$353,481	$447,716	$442,154	$414,432	$420,133	$409,887	$387,273	$363,899
PUBLIC HEALTH	$840,573	$834,055	$805,200	$719,707	$622,662	$581,059	$545,517	$512,937	$496,840	$417,708	$574,665	$617,850	$630,731
PARKS	$269,830	$259,938	$222,206	$222,961	$192,654	$167,634	$176,256	$166,931	$157,686	$138,112	$213,781	$204,008	$199,333
ROAD & BRIDGE	$2,426,380	$2,998,046	$2,817,764	$2,538,180	$3,680,367	$5,526,067	$5,701,558	$5,544,458	$5,025,305	$4,823,101	$4,825,832	$4,537,968	$4,203,752
SOCIAL SERVICES	$4,485,300	$4,305,695	$4,088,255	$3,716,258	$3,571,011	$5,102,638	$5,257,020	$5,334,480	$5,025,933	$5,514,641	$6,126,842	$5,621,288	$4,845,780
TRANSFER STATION	$682,753	$678,616	$666,597	$666,207	$704,757	$716,795	$731,025	$730,229	$741,469	$712,530	$757,977	$751,029	$711,665
TOTAL FUNDS	$15,566,113	$15,368,007	$13,759,497	$12,584,985	$13,008,454	$19,868,747	$19,862,997	$19,166,667	$17,823,179	$19,500,110	$20,712,778	$20,101,019	$17,276,879