

DRAINAGE ANALYSIS

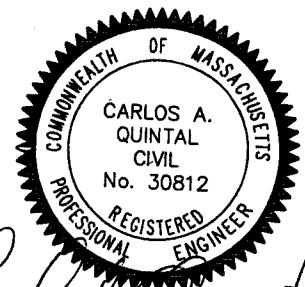
FOR
Site Plan – Senior Village
Panther Way and West Central Street

LOCATED IN
FRANKLIN, MASSACHUSETTS

PREPARED FOR
Camford Property Group, LLC
37 East Central Street
Franklin, MA 02038

PREPARED BY
UNITED CONSULTANTS, INC.
850 FRANKLIN STREET, SUITE 11D
WRENTHAM, MA. 02093

DATE: December 13, 2024



Carlos A. Quintal
12/19/24

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APPENDIX A

I. DESCRIPTION

This report is offered in support of the stormwater management system designed for the “Site Plan – Panther Way – Senior Village in Franklin, Massachusetts. This project included the construction of 49 residential units as well as a mixed use building including commercial uses and apartments. The site was partially developed with a building which included parking areas and utilities and a stormwater system. The stormwater analysis at the time of the original project permitting process includes rainfall values from TP-40. Due to the portion of the stormwater management system for that development original development being utilized for this phase of the project we have continued with the TP-40 rainfall values. The primary goals of the stormwater system are to collect the stormwater runoff generated from the proposed driveways, parking areas, and buildings. The stormwater will be directed to one of five infiltration ponds. Infiltration Pond 1 is an underground infiltration area located to the front of the existing building. Pond 2 is an open pond which was constructed as part of the original development project. This pond will now receive flow as well as overflow from the proposed development. Pond 3 and Pond 4 receive flow from the proposed project driveway drainage system and after treatment provide for storage and infiltration. Pond 5 receives flow from the lots located to the north of the main driveway. An overflow is included from Ponds 3 – 5 which directs the stormwater overflow to Pond 2. Both the pre-development and post-development conditions flowing offsite are summarized in Appendix B. This design will allow for the rate and volume of offsite stormwater to remain the same or be decreased.

II. Purpose

The purpose of this report is to examine the hydrological and hydraulic aspects of the proposed Panther Way – Senior Village” Site Plan. This report was developed for review by the Town of Franklin Planning Board and Conservation Commission to obtain the necessary permits to allow the project to proceed.

This report considers the overall hydrological impact of proposed additional development upon the local watersheds with specific emphasis directed toward the adjacent and immediate downstream areas. The hydrology and criteria are consistent with the Town of Franklin Planning Board, Franklin Conservation Commission and MASS DEP Storm Water Management Policies.

III. Pre-Development Conditions

The site consists of three parcels of land containing 800,948+/- square feet of land, when combined, and is located off of Panther Way and West Central Street in Franklin. A portion of the site is currently developed with an existing building and paved parking areas, lawn and landscaping. The upland soils for the site were taken from the soil survey of Norfolk and Suffolk counties. Refer to the site plan for the location and soil types. Soil testing was conducted on the site to determine soil types and permeability rates. See the soil logs and permeability test results located in Appendix F. Permeability test was completed on site and the infiltration rate used for the design are based on the Rawls rate for sand. Utilizing a Hydrocad computer model the pre-development and post development conditions were calculated. This included an analysis of the watershed utilizing a Hydrologic soil group A or B. A comparison of the pre-development vs. post development rate and volume of runoff can be found in Appendix B.

IV. Post Development Conditions

The proposed development will consist of the construction of a mixed-use building and residential housing units. The proposed buildings will be accessed by private driveways and parking areas. The driveways will be captured in deep sump hooded catch basing and will be piped to water quality units and then directed to the five underground infiltration pond. The proposed infiltration system will promote groundwater re-charge as required by the Town of Franklin Stormwater Regulations. Municipal utility

connections are also included in the project. The proposal is to service the buildings with town water and sewer. The project design includes the construction of one site driveway. TSS removal will be accomplished by a treatment train. The site will be treated by deep sump hooded catch basins, water quality units and five infiltration ponds. Utilizing the same computer model as the existing conditions we have modeled the changes in surfaces and ground cover and have calculated the post development conditions.

All calculations for the above have been included in this report. Pre-development calculations are in Appendix C. Post-development calculations are located in Appendix D.

V. Conclusion

Stormwater from the existing and proposed parking areas will be captured by the catch basins and water quality units for TSS removal which will then be directed to the five underground infiltration ponds. The existing and proposed roofs will be captured and directed to a underground infiltration pond. The comparison in Appendix B summarizes the rate and volumes of runoff leaving the site in both the pre-development and post-development conditions.

VI. Stormwater Management Standards

Refer to Checklist for Stormwater Report in Appendix H

Town of Franklin Stormwater Management Bylaw – Chapter 153 – Bylaw Amendment 21-867

Impervious Coverage Entire Site site =

1" x 6.651 Acres impervious = 34,143 cubic feet (Required)

Storage in Ponds 1 – Pond 5 below the outlet invert = 39,078 cubic feet (Provided)

This narrative is for the Panther Way Site Plan – Senior Housing Development located on Panther Way and West Central Street.

LID Measures

- No disturbance is proposed to any Wetland Resource Area.
- Existing Vegetation Removal within the buffer zone is minimal.
-

Standard 1: No New Untreated Discharges

No new untreated discharges are proposed.

A stormwater system has been provided or is proposed which will provide the required TSS removal which includes the installation of deep sump hooded catch basins, water quality units and five infiltration basins.

Standard 2: Peak Rate Attenuation

The drainage system has been designed to match or reduce the rate of storm-water runoff from the site when comparing the pre-development conditions to the post development conditions. See Appendix B of this report for a summary of the design storms.

Standard 3: Recharge

- Soil testing has been completed. See Appendix F or this report for permeability test results and sheet 4 for soil testing information. Additional soil testing can be found on the plan sheets.

- Drawdown within 72 hours
 Pond 1
 Storage Volume below outlet = 4,306 cubic feet
 $\text{Time} = (4,337) / (8.27''/\text{hr} \times 1' / 12'' \times 5,214 \text{ sf.}) = 1.21 \text{ hours} < 72 \text{ hours}$

 Pond 2
 Storage Volume below outlet = 4,306 cubic feet
 $\text{Time} = (12,353) / (8.27''/\text{hr} \times 1' / 12'' \times 9,874 \text{ sf.}) = 1.82 \text{ hours} < 72 \text{ hours}$

 Pond 3
 Storage Volume below outlet = 4,306 cubic feet
 $\text{Time} = (7,581) / (8.27''/\text{hr} \times 1' / 12'' \times 3,171 \text{ sf.}) = 3.47 \text{ hours} < 72 \text{ hours}$

 Pond 4
 Storage Volume below outlet = 4,306 cubic feet
 $\text{Time} = (7,281) / (8.27''/\text{hr} \times 1' / 12'' \times 3,038 \text{ sf.}) = 3.48 \text{ hours} < 72 \text{ hours}$

 Pond 5
 Storage Volume below outlet = 4,306 cubic feet
 $\text{Time} = (7,526) / (8.27''/\text{hr} \times 1' / 12'' \times 3,136 \text{ sf.}) = 3.48 \text{ hours} < 72 \text{ hours}$

See Stage Area-Storage tables this appendix

Standard 4: Water Quality

- The owner will be responsible for compliance with standard four requirements.
- Refer to the Operation and Maintenance Plan and the Storm-water Facilities Plan for the Inspection and Maintenance Schedule and the Operation and Maintenance Schedule.
- See Appendix E for the Manufactures TSS removal rate. The site is not located within a zone II. The Infiltration Ponds have been designed with an infiltration rate of 8.27 inches per hour. This led to the Water Quality unit being modeled with a 1" WQV.
- The proposed project will include a Water Quality Unit which will provide TSS removal. The summary of the Manufacturers' Predicted Net Annual results as well as the TSS Removal Worksheet are included.

Standard 5: Land uses with higher potential pollutant loads

None proposed for Lot 2.

Standard 6: Critical Areas

N/A

Standard 7: Re-developments and Other Projects

N/A

Standard 8: Construction Period Pollution Prevention and Erosion Sedimentation Control

- Refer to Site Plans for the Inspection and Maintenance Schedule and the Operation and Maintenance Schedule.
- The project will be covered by an NPDES Construction General Permit.

Standard 9: Operation and Maintenance Plan

- Refer to Site Plans for the Inspection and Maintenance Schedule and the Operation and Maintenance Schedule.
- The owner will be responsible for the storm-water management system, implementation of the operation and maintenance, the maintenance costs, and completion of the maintenance logs.

Standard 10: Prohibition of Illicit Discharges

- Owner to be responsible for compliance with avoiding illicit discharges.
- The site will be connected to the town sewer system.

Stage-Area-Storage for Pond 1P: POND 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.75	5,214	0	244.79	5,214	2,512
243.77	5,214	42	244.81	5,214	2,581
243.79	5,214	83	244.83	5,214	2,650
243.81	5,214	125	244.85	5,214	2,720
243.83	5,214	167	244.87	5,214	2,790
243.85	5,214	209	244.89	5,214	2,860
243.87	5,214	250	244.91	5,214	2,931
243.89	5,214	292	244.93	5,214	3,003
243.91	5,214	334	244.95	5,214	3,075
243.93	5,214	375	244.97	5,214	3,147
243.95	5,214	417	244.99	5,214	3,219
243.97	5,214	459	245.01	5,214	3,292
243.99	5,214	501	245.03	5,214	3,365
244.01	5,214	542	245.05	5,214	3,439
244.03	5,214	584	245.07	5,214	3,513
244.05	5,214	626	245.09	5,214	3,587
244.07	5,214	667	245.11	5,214	3,661
244.09	5,214	709	245.13	5,214	3,735
244.11	5,214	751	245.15	5,214	3,810
244.13	5,214	793	245.17	5,214	3,885
244.15	5,214	834	245.19	5,214	3,960
244.17	5,214	876	245.21	5,214	4,035
244.19	5,214	918	245.23	5,214	4,110
244.21	5,214	959	245.25	5,214	4,186
244.23	5,214	1,001	245.27	5,214	4,261
244.25	5,214	1,043	245.29	5,214	4,337
244.27	5,214	1,085	245.31	5,214	4,413
244.29	5,214	1,126	245.33	5,214	4,489
244.31	5,214	1,168	245.35	5,214	4,565
244.33	5,214	1,210	245.37	5,214	4,641
244.35	5,214	1,251	245.39	5,214	4,717
244.37	5,214	1,293	245.41	5,214	4,793
244.39	5,214	1,335	245.43	5,214	4,869
244.41	5,214	1,376	245.45	5,214	4,945
244.43	5,214	1,420	245.47	5,214	5,021
244.45	5,214	1,468	245.49	5,214	5,097
244.47	5,214	1,520	245.51	5,214	5,173
244.49	5,214	1,573	245.53	5,214	5,248
244.51	5,214	1,628	245.55	5,214	5,324
244.53	5,214	1,685	245.57	5,214	5,400
244.55	5,214	1,743	245.59	5,214	5,476
244.57	5,214	1,802	245.61	5,214	5,551
244.59	5,214	1,862	245.63	5,214	5,626
244.61	5,214	1,924	245.65	5,214	5,702
244.63	5,214	1,986	245.67	5,214	5,777
244.65	5,214	2,049	245.69	5,214	5,851
244.67	5,214	2,113	245.71	5,214	5,926
244.69	5,214	2,178	245.73	5,214	6,001
244.71	5,214	2,244	245.75	5,214	6,075
244.73	5,214	2,310	245.77	5,214	6,149
244.75	5,214	2,377	245.79	5,214	6,222
244.77	5,214	2,444	245.81	5,214	6,296

Lowest
outlet
245.30

Stage-Area-Storage for Pond 1P: POND 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
245.83	5,214	6,369	246.87	5,214	9,203
245.85	5,214	6,442	246.89	5,214	9,244
245.87	5,214	6,514	246.91	5,214	9,286
245.89	5,214	6,587	246.93	5,214	9,328
245.91	5,214	6,659	246.95	5,214	9,369
245.93	5,214	6,730	246.97	5,214	9,411
245.95	5,214	6,801	246.99	5,214	9,453
245.97	5,214	6,872	247.01	5,214	9,495
245.99	5,214	6,942	247.03	5,214	9,536
246.01	5,214	7,011	247.05	5,214	9,578
246.03	5,214	7,081	247.07	5,214	9,620
246.05	5,214	7,149	247.09	5,214	9,661
246.07	5,214	7,217	247.11	5,214	9,703
246.09	5,214	7,285	247.13	5,214	9,745
246.11	5,214	7,352	247.15	5,214	9,787
246.13	5,214	7,418	247.17	5,214	9,828
246.15	5,214	7,483	247.19	5,214	9,870
246.17	5,214	7,548	247.21	5,214	9,912
246.19	5,214	7,612	247.23	5,214	9,953
246.21	5,214	7,675	247.25	5,214	9,995
246.23	5,214	7,738	247.27	5,214	10,037
246.25	5,214	7,799	247.29	5,214	10,079
246.27	5,214	7,859	247.31	5,214	10,120
246.29	5,214	7,919	247.33	5,214	10,162
246.31	5,214	7,977	247.35	5,214	10,204
246.33	5,214	8,033	247.37	5,214	10,245
246.35	5,214	8,088	247.39	5,214	10,287
246.37	5,214	8,142	247.41	5,214	10,329
246.39	5,214	8,193	247.43	5,214	10,370
246.41	5,214	8,242	247.45	5,214	10,412
246.43	5,214	8,285	247.47	5,214	10,454
246.45	5,214	8,327	247.49	5,214	10,496
246.47	5,214	8,368	247.51	5,214	10,537
246.49	5,214	8,410	247.53	5,214	10,579
246.51	5,214	8,452	247.55	5,214	10,621
246.53	5,214	8,493	247.57	5,214	10,662
246.55	5,214	8,535	247.59	5,214	10,704
246.57	5,214	8,577	247.61	5,214	10,746
246.59	5,214	8,619	247.63	5,214	10,788
246.61	5,214	8,660	247.65	5,214	10,829
246.63	5,214	8,702	247.67	5,214	10,871
246.65	5,214	8,744	247.69	5,214	10,913
246.67	5,214	8,785	247.71	5,214	10,954
246.69	5,214	8,827	247.73	5,214	10,996
246.71	5,214	8,869	247.75	5,214	11,038
246.73	5,214	8,911	247.77	5,214	11,080
246.75	5,214	8,952	247.79	5,214	11,121
246.77	5,214	8,994	247.81	5,214	11,163
246.79	5,214	9,036	247.83	5,214	11,205
246.81	5,214	9,077	247.85	5,214	11,246
246.83	5,214	9,119	247.87	5,214	11,288
246.85	5,214	9,161	247.89	5,214	11,330

Stage-Area-Storage for Pond 1P: POND 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
247.91	5,214	11,372	248.95	5,214	13,541
247.93	5,214	11,413	248.97	5,214	13,582
247.95	5,214	11,455	248.99	5,214	13,624
247.97	5,214	11,497	249.01	5,214	13,666
247.99	5,214	11,538	249.03	5,214	13,707
248.01	5,214	11,580	249.05	5,214	13,749
248.03	5,214	11,622	249.07	5,214	13,791
248.05	5,214	11,664	249.09	5,214	13,833
248.07	5,214	11,705	249.11	5,214	13,874
248.09	5,214	11,747	249.13	5,214	13,916
248.11	5,214	11,789	249.15	5,214	13,958
248.13	5,214	11,830	249.17	5,214	13,999
248.15	5,214	11,872	249.19	5,214	14,041
248.17	5,214	11,914	249.21	5,214	14,083
248.19	5,214	11,956	249.23	5,214	14,125
248.21	5,214	11,997	249.25	5,214	14,166
248.23	5,214	12,039	249.27	5,214	14,208
248.25	5,214	12,081	249.29	5,214	14,250
248.27	5,214	12,122	249.31	5,214	14,291
248.29	5,214	12,164	249.33	5,214	14,333
248.31	5,214	12,206	249.35	5,214	14,375
248.33	5,214	12,248	249.37	5,214	14,417
248.35	5,214	12,289	249.39	5,214	14,458
248.37	5,214	12,331	249.41	5,214	14,500
248.39	5,214	12,373	249.43	5,214	14,542
248.41	5,214	12,414	249.45	5,214	14,583
248.43	5,214	12,456	249.47	5,214	14,625
248.45	5,214	12,498	249.49	5,214	14,667
248.47	5,214	12,540	249.51	5,214	14,709
248.49	5,214	12,581	249.53	5,214	14,750
248.51	5,214	12,623	249.55	5,214	14,792
248.53	5,214	12,665	249.57	5,214	14,834
248.55	5,214	12,706	249.59	5,214	14,875
248.57	5,214	12,748	249.61	5,214	14,917
248.59	5,214	12,790	249.63	5,214	14,959
248.61	5,214	12,832	249.65	5,214	15,001
248.63	5,214	12,873	249.67	5,214	15,042
248.65	5,214	12,915	249.69	5,214	15,084
248.67	5,214	12,957	249.71	5,214	15,126
248.69	5,214	12,998	249.73	5,214	15,167
248.71	5,214	13,040	249.75	5,214	15,209
248.73	5,214	13,082			
248.75	5,214	13,123			
248.77	5,214	13,165			
248.79	5,214	13,207			
248.81	5,214	13,249			
248.83	5,214	13,290			
248.85	5,214	13,332			
248.87	5,214	13,374			
248.89	5,214	13,415			
248.91	5,214	13,457			
248.93	5,214	13,499			

Stage-Area-Storage for Pond 2P: POND 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
249.00	9,874	0	249.52	10,480	5,292
249.01	9,886	99	249.53	10,492	5,397
249.02	9,897	198	249.54	10,504	5,502
249.03	9,909	297	249.55	10,515	5,607
249.04	9,921	396	249.56	10,527	5,712
249.05	9,932	495	249.57	10,539	5,818
249.06	9,944	595	249.58	10,550	5,923
249.07	9,956	694	249.59	10,562	6,029
249.08	9,967	794	249.60	10,574	6,134
249.09	9,979	893	249.61	10,585	6,240
249.10	9,991	993	249.62	10,597	6,346
249.11	10,002	1,093	249.63	10,609	6,452
249.12	10,014	1,193	249.64	10,620	6,558
249.13	10,026	1,293	249.65	10,632	6,664
249.14	10,037	1,394	249.66	10,644	6,771
249.15	10,049	1,494	249.67	10,655	6,877
249.16	10,061	1,595	249.68	10,667	6,984
249.17	10,072	1,695	249.69	10,679	7,091
249.18	10,084	1,796	249.70	10,690	7,197
249.19	10,096	1,897	249.71	10,702	7,304
249.20	10,107	1,998	249.72	10,714	7,412
249.21	10,119	2,099	249.73	10,725	7,519
249.22	10,131	2,200	249.74	10,737	7,626
249.23	10,142	2,302	249.75	10,749	7,733
249.24	10,154	2,403	249.76	10,760	7,841
249.25	10,166	2,505	249.77	10,772	7,949
249.26	10,177	2,607	249.78	10,783	8,056
249.27	10,189	2,708	249.79	10,795	8,164
249.28	10,200	2,810	249.80	10,807	8,272
249.29	10,212	2,912	249.81	10,818	8,380
249.30	10,224	3,015	249.82	10,830	8,489
249.31	10,235	3,117	249.83	10,842	8,597
249.32	10,247	3,219	249.84	10,853	8,706
249.33	10,259	3,322	249.85	10,865	8,814
249.34	10,270	3,425	249.86	10,877	8,923
249.35	10,282	3,527	249.87	10,888	9,032
249.36	10,294	3,630	249.88	10,900	9,141
249.37	10,305	3,733	249.89	10,912	9,250
249.38	10,317	3,836	249.90	10,923	9,359
249.39	10,329	3,940	249.91	10,935	9,468
249.40	10,340	4,043	249.92	10,947	9,578
249.41	10,352	4,146	249.93	10,958	9,687
249.42	10,364	4,250	249.94	10,970	9,797
249.43	10,375	4,354	249.95	10,982	9,906
249.44	10,387	4,457	249.96	10,993	10,016
249.45	10,399	4,561	249.97	11,005	10,126
249.46	10,410	4,665	249.98	11,017	10,236
249.47	10,422	4,770	249.99	11,028	10,347
249.48	10,434	4,874	250.00	11,040	10,457
249.49	10,445	4,978	250.01	11,053	10,567
249.50	10,457	5,083	250.02	11,067	10,678
249.51	10,469	5,187	250.03	11,080	10,789

Stage-Area-Storage for Pond 2P: POND 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
250.04	11,094	10,900	250.56	11,794	16,850
250.05	11,107	11,011	250.57	11,807	16,968
250.06	11,121	11,122	250.58	11,821	17,087
250.07	11,134	11,233	250.59	11,834	17,205
250.08	11,148	11,345	250.60	11,848	17,323
250.09	11,161	11,456	250.61	11,861	17,442
250.10	11,175	11,568	250.62	11,875	17,561
250.11	11,188	11,680	250.63	11,888	17,679
250.12	11,202	11,791	250.64	11,901	17,798
250.13	11,215	11,904	250.65	11,915	17,917
250.14	11,228	12,016	250.66	11,928	18,037
250.15	11,242	12,128	250.67	11,942	18,156
250.16	11,255	12,241	250.68	11,955	18,275
250.17	11,269	12,353	250.69	11,969	18,395
250.18	11,282	12,466	250.70	11,982	18,515
250.19	11,296	12,579	250.71	11,996	18,635
250.20	11,309	12,692	250.72	12,009	18,755
250.21	11,323	12,805	250.73	12,023	18,875
250.22	11,336	12,918	250.74	12,036	18,995
250.23	11,350	13,032	250.75	12,050	19,116
250.24	11,363	13,145	250.76	12,063	19,236
250.25	11,377	13,259	250.77	12,076	19,357
250.26	11,390	13,373	250.78	12,090	19,478
250.27	11,403	13,487	250.79	12,103	19,599
250.28	11,417	13,601	250.80	12,117	19,720
250.29	11,430	13,715	250.81	12,130	19,841
250.30	11,444	13,830	250.82	12,144	19,962
250.31	11,457	13,944	250.83	12,157	20,084
250.32	11,471	14,059	250.84	12,171	20,205
250.33	11,484	14,173	250.85	12,184	20,327
250.34	11,498	14,288	250.86	12,198	20,449
250.35	11,511	14,403	250.87	12,211	20,571
250.36	11,525	14,519	250.88	12,224	20,693
250.37	11,538	14,634	250.89	12,238	20,816
250.38	11,551	14,749	250.90	12,251	20,938
250.39	11,565	14,865	250.91	12,265	21,061
250.40	11,578	14,981	250.92	12,278	21,183
250.41	11,592	15,097	250.93	12,292	21,306
250.42	11,605	15,213	250.94	12,305	21,429
250.43	11,619	15,329	250.95	12,319	21,552
250.44	11,632	15,445	250.96	12,332	21,676
250.45	11,646	15,561	250.97	12,346	21,799
250.46	11,659	15,678	250.98	12,359	21,923
250.47	11,673	15,794	250.99	12,373	22,046
250.48	11,686	15,911	251.00	12,386	22,170
250.49	11,700	16,028	251.01	12,399	22,294
250.50	11,713	16,145	251.02	12,413	22,418
250.51	11,726	16,262	251.03	12,426	22,542
250.52	11,740	16,380	251.04	12,440	22,667
250.53	11,753	16,497	251.05	12,453	22,791
250.54	11,767	16,615	251.06	12,467	22,916
250.55	11,780	16,733	251.07	12,480	23,040

Lowest
Outlet
250.17

Stage-Area-Storage for Pond 2P: POND 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
251.08	12,494	23,165	251.60	13,194	29,844
251.09	12,507	23,290	251.61	13,207	29,976
251.10	12,521	23,415	251.62	13,221	30,108
251.11	12,534	23,541	251.63	13,234	30,240
251.12	12,548	23,666	251.64	13,247	30,373
251.13	12,561	23,792	251.65	13,261	30,505
251.14	12,574	23,917	251.66	13,274	30,638
251.15	12,588	24,043	251.67	13,288	30,771
251.16	12,601	24,169	251.68	13,301	30,904
251.17	12,615	24,295	251.69	13,315	31,037
251.18	12,628	24,421	251.70	13,328	31,170
251.19	12,642	24,548	251.71	13,342	31,303
251.20	12,655	24,674	251.72	13,355	31,437
251.21	12,669	24,801	251.73	13,369	31,570
251.22	12,682	24,927	251.74	13,382	31,704
251.23	12,696	25,054	251.75	13,396	31,838
251.24	12,709	25,181	251.76	13,409	31,972
251.25	12,723	25,309	251.77	13,422	32,106
251.26	12,736	25,436	251.78	13,436	32,241
251.27	12,749	25,563	251.79	13,449	32,375
251.28	12,763	25,691	251.80	13,463	32,510
251.29	12,776	25,819	251.81	13,476	32,644
251.30	12,790	25,946	251.82	13,490	32,779
251.31	12,803	26,074	251.83	13,503	32,914
251.32	12,817	26,202	251.84	13,517	33,049
251.33	12,830	26,331	251.85	13,530	33,184
251.34	12,844	26,459	251.86	13,544	33,320
251.35	12,857	26,588	251.87	13,557	33,455
251.36	12,871	26,716	251.88	13,570	33,591
251.37	12,884	26,845	251.89	13,584	33,727
251.38	12,897	26,974	251.90	13,597	33,863
251.39	12,911	27,103	251.91	13,611	33,999
251.40	12,924	27,232	251.92	13,624	34,135
251.41	12,938	27,361	251.93	13,638	34,271
251.42	12,951	27,491	251.94	13,651	34,408
251.43	12,965	27,620	251.95	13,665	34,544
251.44	12,978	27,750	251.96	13,678	34,681
251.45	12,992	27,880	251.97	13,692	34,818
251.46	13,005	28,010	251.98	13,705	34,955
251.47	13,019	28,140	251.99	13,719	35,092
251.48	13,032	28,270	252.00	13,732	35,229
251.49	13,046	28,401	252.01	13,746	35,366
251.50	13,059	28,531	252.02	13,760	35,504
251.51	13,072	28,662	252.03	13,774	35,642
251.52	13,086	28,793	252.04	13,788	35,779
251.53	13,099	28,924	252.05	13,802	35,917
251.54	13,113	29,055	252.06	13,816	36,055
251.55	13,126	29,186	252.07	13,830	36,194
251.56	13,140	29,317	252.08	13,844	36,332
251.57	13,153	29,449	252.09	13,858	36,471
251.58	13,167	29,580	252.10	13,872	36,609
251.59	13,180	29,712	252.11	13,886	36,748

Stage-Area-Storage for Pond 2P: POND 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
252.12	13,900	36,887	252.64	14,627	44,304
252.13	13,914	37,026	252.65	14,641	44,450
252.14	13,928	37,165	252.66	14,655	44,597
252.15	13,942	37,305	252.67	14,669	44,743
252.16	13,956	37,444	252.68	14,683	44,890
252.17	13,970	37,584	252.69	14,697	45,037
252.18	13,984	37,723	252.70	14,711	45,184
252.19	13,998	37,863	252.71	14,725	45,331
252.20	14,012	38,003	252.72	14,739	45,478
252.21	14,026	38,144	252.73	14,753	45,626
252.22	14,040	38,284	252.74	14,767	45,773
252.23	14,054	38,424	252.75	14,781	45,921
252.24	14,068	38,565	252.76	14,794	46,069
252.25	14,082	38,706	252.77	14,808	46,217
252.26	14,095	38,847	252.78	14,822	46,365
252.27	14,109	38,988	252.79	14,836	46,514
252.28	14,123	39,129	252.80	14,850	46,662
252.29	14,137	39,270	252.81	14,864	46,811
252.30	14,151	39,412	252.82	14,878	46,959
252.31	14,165	39,553	252.83	14,892	47,108
252.32	14,179	39,695	252.84	14,906	47,257
252.33	14,193	39,837	252.85	14,920	47,406
252.34	14,207	39,979	252.86	14,934	47,556
252.35	14,221	40,121	252.87	14,948	47,705
252.36	14,235	40,263	252.88	14,962	47,854
252.37	14,249	40,406	252.89	14,976	48,004
252.38	14,263	40,548	252.90	14,990	48,154
252.39	14,277	40,691	252.91	15,004	48,304
252.40	14,291	40,834	252.92	15,018	48,454
252.41	14,305	40,977	252.93	15,032	48,604
252.42	14,319	41,120	252.94	15,046	48,755
252.43	14,333	41,263	252.95	15,060	48,905
252.44	14,347	41,406	252.96	15,074	49,056
252.45	14,361	41,550	252.97	15,088	49,207
252.46	14,375	41,694	252.98	15,102	49,358
252.47	14,389	41,837	252.99	15,116	49,509
252.48	14,403	41,981	253.00	15,130	49,660
252.49	14,417	42,126			
252.50	14,431	42,270			
252.51	14,445	42,414			
252.52	14,459	42,559			
252.53	14,473	42,703			
252.54	14,487	42,848			
252.55	14,501	42,993			
252.56	14,515	43,138			
252.57	14,529	43,283			
252.58	14,543	43,429			
252.59	14,557	43,574			
252.60	14,571	43,720			
252.61	14,585	43,866			
252.62	14,599	44,012			
252.63	14,613	44,158			

Stage-Area-Storage for Pond 3P: POND 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
274.60	3,171	0	275.64	3,171	1,325
274.62	3,171	25	275.66	3,171	1,355
274.64	3,171	51	275.68	3,171	1,386
274.66	3,171	76	275.70	3,171	1,418
274.68	3,171	101	275.72	3,171	1,450
274.70	3,171	127	275.74	3,171	1,483
274.72	3,171	152	275.76	3,171	1,517
274.74	3,171	178	275.78	3,171	1,551
274.76	3,171	203	275.80	3,171	1,585
274.78	3,171	228	275.82	3,171	1,621
274.80	3,171	254	275.84	3,171	1,656
274.82	3,171	279	275.86	3,171	1,692
274.84	3,171	304	275.88	3,171	1,728
274.86	3,171	330	275.90	3,171	1,765
274.88	3,171	355	275.92	3,171	1,801
274.90	3,171	381	275.94	3,171	1,839
274.92	3,171	406	275.96	3,171	1,876
274.94	3,171	431	275.98	3,171	1,914
274.96	3,171	457	276.00	3,171	1,952
274.98	3,171	482	276.02	3,171	1,991
275.00	3,171	507	276.04	3,171	2,030
275.02	3,171	533	276.06	3,171	2,069
275.04	3,171	558	276.08	3,171	2,108
275.06	3,171	583	276.10	3,171	2,147
275.08	3,171	609	276.12	3,171	2,187
275.10	3,171	634	276.14	3,171	2,227
275.12	3,171	660	276.16	3,171	2,267
275.14	3,171	685	276.18	3,171	2,308
275.16	3,171	710	276.20	3,171	2,349
275.18	3,171	736	276.22	3,171	2,389
275.20	3,171	761	276.24	3,171	2,431
275.22	3,171	786	276.26	3,171	2,472
275.24	3,171	812	276.28	3,171	2,513
275.26	3,171	837	276.30	3,171	2,555
275.28	3,171	863	276.32	3,171	2,597
275.30	3,171	888	276.34	3,171	2,639
275.32	3,171	913	276.36	3,171	2,681
275.34	3,171	939	276.38	3,171	2,724
275.36	3,171	964	276.40	3,171	2,766
275.38	3,171	989	276.42	3,171	2,809
275.40	3,171	1,015	276.44	3,171	2,852
275.42	3,171	1,040	276.46	3,171	2,895
275.44	3,171	1,065	276.48	3,171	2,938
275.46	3,171	1,091	276.50	3,171	2,981
275.48	3,171	1,116	276.52	3,171	3,025
275.50	3,171	1,142	276.54	3,171	3,068
275.52	3,171	1,167	276.56	3,171	3,112
275.54	3,171	1,192	276.58	3,171	3,156
275.56	3,171	1,218	276.60	3,171	3,200
275.58	3,171	1,243	276.62	3,171	3,244
275.60	3,171	1,268	276.64	3,171	3,289
275.62	3,171	1,296	276.66	3,171	3,333

Stage-Area-Storage for Pond 3P: POND 3 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
276.68	3,171	3,377	277.72	3,171	5,783
276.70	3,171	3,422	277.74	3,171	5,830
276.72	3,171	3,467	277.76	3,171	5,877
276.74	3,171	3,512	277.78	3,171	5,924
276.76	3,171	3,556	277.80	3,171	5,971
276.78	3,171	3,601	277.82	3,171	6,018
276.80	3,171	3,647	277.84	3,171	6,065
276.82	3,171	3,692	277.86	3,171	6,111
276.84	3,171	3,737	277.88	3,171	6,158
276.86	3,171	3,782	277.90	3,171	6,205
276.88	3,171	3,828	277.92	3,171	6,252
276.90	3,171	3,874	277.94	3,171	6,298
276.92	3,171	3,919	277.96	3,171	6,345
276.94	3,171	3,965	277.98	3,171	6,392
276.96	3,171	4,011	278.00	3,171	6,438
276.98	3,171	4,057	278.02	3,171	6,485
277.00	3,171	4,102	278.04	3,171	6,531
277.02	3,171	4,148	278.06	3,171	6,577
277.04	3,171	4,195	278.08	3,171	6,624
277.06	3,171	4,241	278.10	3,171	6,670
277.08	3,171	4,287	278.12	3,171	6,716
277.10	3,171	4,333	278.14	3,171	6,763
277.12	3,171	4,379	278.16	3,171	6,809
277.14	3,171	4,426	278.18	3,171	6,855
277.16	3,171	4,472	278.20	3,171	6,901
277.18	3,171	4,519	278.22	3,171	6,947
277.20	3,171	4,565	278.24	3,171	6,993
277.22	3,171	4,612	278.26	3,171	7,038
277.24	3,171	4,658	278.28	3,171	7,084
277.26	3,171	4,705	278.30	3,171	7,130
277.28	3,171	4,752	278.32	3,171	7,175
277.30	3,171	4,798	278.34	3,171	7,221
277.32	3,171	4,845	278.36	3,171	7,266
277.34	3,171	4,892	278.38	3,171	7,312
277.36	3,171	4,939	278.40	3,171	7,357
277.38	3,171	4,985	278.42	3,171	7,402
277.40	3,171	5,032	278.44	3,171	7,447
277.42	3,171	5,079	278.46	3,171	7,492
277.44	3,171	5,126	278.48	3,171	7,537
277.46	3,171	5,173	278.50	3,171	7,581
277.48	3,171	5,220	278.52	3,171	7,626
277.50	3,171	5,267	278.54	3,171	7,670
277.52	3,171	5,314	278.56	3,171	7,715
277.54	3,171	5,361	278.58	3,171	7,759
277.56	3,171	5,408	278.60	3,171	7,803
277.58	3,171	5,455	278.62	3,171	7,847
277.60	3,171	5,502	278.64	3,171	7,891
277.62	3,171	5,549	278.66	3,171	7,935
277.64	3,171	5,596	278.68	3,171	7,978
277.66	3,171	5,643	278.70	3,171	8,022
277.68	3,171	5,689	278.72	3,171	8,065
277.70	3,171	5,736	278.74	3,171	8,108

lowest
outlet
278.50

Stage-Area-Storage for Pond 3P: POND 3 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
278.76	3,171	8,151	279.80	3,171	9,989
278.78	3,171	8,194	279.82	3,171	10,014
278.80	3,171	8,237	279.84	3,171	10,039
278.82	3,171	8,280	279.86	3,171	10,065
278.84	3,171	8,322	279.88	3,171	10,090
278.86	3,171	8,364	279.90	3,171	10,115
278.88	3,171	8,406	279.92	3,171	10,141
278.90	3,171	8,448	279.94	3,171	10,166
278.92	3,171	8,490	279.96	3,171	10,192
278.94	3,171	8,531	279.98	3,171	10,217
278.96	3,171	8,573	280.00	3,171	10,242
278.98	3,171	8,614	280.02	3,171	10,268
279.00	3,171	8,655	280.04	3,171	10,293
279.02	3,171	8,695	280.06	3,171	10,318
279.04	3,171	8,736	280.08	3,171	10,344
279.06	3,171	8,776	280.10	3,171	10,369
279.08	3,171	8,816	280.12	3,171	10,394
279.10	3,171	8,856	280.14	3,171	10,420
279.12	3,171	8,895	280.16	3,171	10,445
279.14	3,171	8,935	280.18	3,171	10,471
279.16	3,171	8,974	280.20	3,171	10,496
279.18	3,171	9,012	280.22	3,171	10,521
279.20	3,171	9,051	280.24	3,171	10,547
279.22	3,171	9,089	280.26	3,171	10,572
279.24	3,171	9,127	280.28	3,171	10,597
279.26	3,171	9,165	280.30	3,171	10,623
279.28	3,171	9,202	280.32	3,171	10,648
279.30	3,171	9,239	280.34	3,171	10,674
279.32	3,171	9,275	280.36	3,171	10,699
279.34	3,171	9,312	280.38	3,171	10,724
279.36	3,171	9,347	280.40	3,171	10,750
279.38	3,171	9,383	280.42	3,171	10,775
279.40	3,171	9,418	280.44	3,171	10,800
279.42	3,171	9,452	280.46	3,171	10,826
279.44	3,171	9,486	280.48	3,171	10,851
279.46	3,171	9,520	280.50	3,171	10,876
279.48	3,171	9,553	280.52	3,171	10,902
279.50	3,171	9,585	280.54	3,171	10,927
279.52	3,171	9,617	280.56	3,171	10,953
279.54	3,171	9,648	280.58	3,171	10,978
279.56	3,171	9,678	280.60	3,171	11,003
279.58	3,171	9,707			
279.60	3,171	9,735			
279.62	3,171	9,760			
279.64	3,171	9,786			
279.66	3,171	9,811			
279.68	3,171	9,836			
279.70	3,171	9,862			
279.72	3,171	9,887			
279.74	3,171	9,912			
279.76	3,171	9,938			
279.78	3,171	9,963			

Stage-Area-Storage for Pond 4P: POND 4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
264.10	3,039	0	265.14	3,039	1,270
264.12	3,039	24	265.16	3,039	1,299
264.14	3,039	49	265.18	3,039	1,328
264.16	3,039	73	265.20	3,039	1,359
264.18	3,039	97	265.22	3,039	1,390
264.20	3,039	122	265.24	3,039	1,422
264.22	3,039	146	265.26	3,039	1,454
264.24	3,039	170	265.28	3,039	1,487
264.26	3,039	194	265.30	3,039	1,520
264.28	3,039	219	265.32	3,039	1,553
264.30	3,039	243	265.34	3,039	1,587
264.32	3,039	267	265.36	3,039	1,622
264.34	3,039	292	265.38	3,039	1,657
264.36	3,039	316	265.40	3,039	1,692
264.38	3,039	340	265.42	3,039	1,727
264.40	3,039	365	265.44	3,039	1,763
264.42	3,039	389	265.46	3,039	1,799
264.44	3,039	413	265.48	3,039	1,835
264.46	3,039	438	265.50	3,039	1,872
264.48	3,039	462	265.52	3,039	1,909
264.50	3,039	486	265.54	3,039	1,946
264.52	3,039	511	265.56	3,039	1,984
264.54	3,039	535	265.58	3,039	2,021
264.56	3,039	559	265.60	3,039	2,059
264.58	3,039	583	265.62	3,039	2,098
264.60	3,039	608	265.64	3,039	2,136
264.62	3,039	632	265.66	3,039	2,175
264.64	3,039	656	265.68	3,039	2,214
264.66	3,039	681	265.70	3,039	2,253
264.68	3,039	705	265.72	3,039	2,292
264.70	3,039	729	265.74	3,039	2,331
264.72	3,039	754	265.76	3,039	2,371
264.74	3,039	778	265.78	3,039	2,411
264.76	3,039	802	265.80	3,039	2,451
264.78	3,039	827	265.82	3,039	2,491
264.80	3,039	851	265.84	3,039	2,532
264.82	3,039	875	265.86	3,039	2,572
264.84	3,039	899	265.88	3,039	2,613
264.86	3,039	924	265.90	3,039	2,654
264.88	3,039	948	265.92	3,039	2,695
264.90	3,039	972	265.94	3,039	2,736
264.92	3,039	997	265.96	3,039	2,777
264.94	3,039	1,021	265.98	3,039	2,819
264.96	3,039	1,045	266.00	3,039	2,861
264.98	3,039	1,070	266.02	3,039	2,902
265.00	3,039	1,094	266.04	3,039	2,944
265.02	3,039	1,118	266.06	3,039	2,986
265.04	3,039	1,143	266.08	3,039	3,028
265.06	3,039	1,167	266.10	3,039	3,071
265.08	3,039	1,191	266.12	3,039	3,113
265.10	3,039	1,216	266.14	3,039	3,156
265.12	3,039	1,242	266.16	3,039	3,198

Stage-Area-Storage for Pond 4P: POND 4 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
266.18	3,039	3,241	267.22	3,039	5,553
266.20	3,039	3,284	267.24	3,039	5,599
266.22	3,039	3,327	267.26	3,039	5,644
266.24	3,039	3,370	267.28	3,039	5,689
266.26	3,039	3,413	267.30	3,039	5,734
266.28	3,039	3,456	267.32	3,039	5,779
266.30	3,039	3,500	267.34	3,039	5,824
266.32	3,039	3,543	267.36	3,039	5,869
266.34	3,039	3,587	267.38	3,039	5,914
266.36	3,039	3,630	267.40	3,039	5,959
266.38	3,039	3,674	267.42	3,039	6,003
266.40	3,039	3,718	267.44	3,039	6,048
266.42	3,039	3,762	267.46	3,039	6,093
266.44	3,039	3,806	267.48	3,039	6,138
266.46	3,039	3,850	267.50	3,039	6,183
266.48	3,039	3,894	267.52	3,039	6,227
266.50	3,039	3,938	267.54	3,039	6,272
266.52	3,039	3,982	267.56	3,039	6,317
266.54	3,039	4,026	267.58	3,039	6,361
266.56	3,039	4,071	267.60	3,039	6,406
266.58	3,039	4,115	267.62	3,039	6,450
266.60	3,039	4,160	267.64	3,039	6,495
266.62	3,039	4,204	267.66	3,039	6,539
266.64	3,039	4,249	267.68	3,039	6,583
266.66	3,039	4,293	267.70	3,039	6,627
266.68	3,039	4,338	267.72	3,039	6,672
266.70	3,039	4,383	267.74	3,039	6,716
266.72	3,039	4,427	267.76	3,039	6,760
266.74	3,039	4,472	267.78	3,039	6,804
266.76	3,039	4,517	267.80	3,039	6,847
266.78	3,039	4,562	267.82	3,039	6,891
266.80	3,039	4,607	267.84	3,039	6,935
266.82	3,039	4,652	267.86	3,039	6,979
266.84	3,039	4,697	267.88	3,039	7,022
266.86	3,039	4,742	267.90	3,039	7,066
266.88	3,039	4,787	267.92	3,039	7,109
266.90	3,039	4,832	267.94	3,039	7,152
266.92	3,039	4,877	267.96	3,039	7,195
266.94	3,039	4,922	267.98	3,039	7,238
266.96	3,039	4,967	268.00	3,039	7,281
266.98	3,039	5,012	268.02	3,039	7,324
267.00	3,039	5,057	268.04	3,039	7,367
267.02	3,039	5,102	268.06	3,039	7,410
267.04	3,039	5,147	268.08	3,039	7,452
267.06	3,039	5,192	268.10	3,039	7,495
267.08	3,039	5,237	268.12	3,039	7,537
267.10	3,039	5,283	268.14	3,039	7,579
267.12	3,039	5,328	268.16	3,039	7,621
267.14	3,039	5,373	268.18	3,039	7,663
267.16	3,039	5,418	268.20	3,039	7,705
267.18	3,039	5,463	268.22	3,039	7,746
267.20	3,039	5,508	268.24	3,039	7,788

Lowest
Outlet
7,281

Stage-Area-Storage for Pond 4P: POND 4 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
268.26	3,039	7,829	269.30	3,039	9,593
268.28	3,039	7,870	269.32	3,039	9,617
268.30	3,039	7,911	269.34	3,039	9,642
268.32	3,039	7,952	269.36	3,039	9,666
268.34	3,039	7,993	269.38	3,039	9,690
268.36	3,039	8,034	269.40	3,039	9,714
268.38	3,039	8,074	269.42	3,039	9,739
268.40	3,039	8,114	269.44	3,039	9,763
268.42	3,039	8,154	269.46	3,039	9,787
268.44	3,039	8,194	269.48	3,039	9,812
268.46	3,039	8,234	269.50	3,039	9,836
268.48	3,039	8,273	269.52	3,039	9,860
268.50	3,039	8,313	269.54	3,039	9,885
268.52	3,039	8,352	269.56	3,039	9,909
268.54	3,039	8,391	269.58	3,039	9,933
268.56	3,039	8,429	269.60	3,039	9,958
268.58	3,039	8,468	269.62	3,039	9,982
268.60	3,039	8,506	269.64	3,039	10,006
268.62	3,039	8,544	269.66	3,039	10,030
268.64	3,039	8,582	269.68	3,039	10,055
268.66	3,039	8,619	269.70	3,039	10,079
268.68	3,039	8,656	269.72	3,039	10,103
268.70	3,039	8,693	269.74	3,039	10,128
268.72	3,039	8,730	269.76	3,039	10,152
268.74	3,039	8,766	269.78	3,039	10,176
268.76	3,039	8,802	269.80	3,039	10,201
268.78	3,039	8,838	269.82	3,039	10,225
268.80	3,039	8,874	269.84	3,039	10,249
268.82	3,039	8,909	269.86	3,039	10,274
268.84	3,039	8,944	269.88	3,039	10,298
268.86	3,039	8,978	269.90	3,039	10,322
268.88	3,039	9,012	269.92	3,039	10,346
268.90	3,039	9,046	269.94	3,039	10,371
268.92	3,039	9,079	269.96	3,039	10,395
268.94	3,039	9,111	269.98	3,039	10,419
268.96	3,039	9,144	270.00	3,039	10,444
268.98	3,039	9,175	270.02	3,039	10,468
269.00	3,039	9,206	270.04	3,039	10,492
269.02	3,039	9,237	270.06	3,039	10,517
269.04	3,039	9,267	270.08	3,039	10,541
269.06	3,039	9,296	270.10	3,039	10,565
269.08	3,039	9,324			
269.10	3,039	9,350			
269.12	3,039	9,374			
269.14	3,039	9,398			
269.16	3,039	9,423			
269.18	3,039	9,447			
269.20	3,039	9,471			
269.22	3,039	9,496			
269.24	3,039	9,520			
269.26	3,039	9,544			
269.28	3,039	9,569			

Stage-Area-Storage for Pond 5P: POND 5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
265.70	3,136	0	266.74	3,136	1,310
265.72	3,136	25	266.76	3,136	1,340
265.74	3,136	50	266.78	3,136	1,371
265.76	3,136	75	266.80	3,136	1,402
265.78	3,136	100	266.82	3,136	1,434
265.80	3,136	125	266.84	3,136	1,467
265.82	3,136	151	266.86	3,136	1,500
265.84	3,136	176	266.88	3,136	1,534
265.86	3,136	201	266.90	3,136	1,569
265.88	3,136	226	266.92	3,136	1,603
265.90	3,136	251	266.94	3,136	1,638
265.92	3,136	276	266.96	3,136	1,674
265.94	3,136	301	266.98	3,136	1,710
265.96	3,136	326	267.00	3,136	1,746
265.98	3,136	351	267.02	3,136	1,783
266.00	3,136	376	267.04	3,136	1,820
266.02	3,136	401	267.06	3,136	1,857
266.04	3,136	426	267.08	3,136	1,895
266.06	3,136	452	267.10	3,136	1,933
266.08	3,136	477	267.12	3,136	1,971
266.10	3,136	502	267.14	3,136	2,009
266.12	3,136	527	267.16	3,136	2,048
266.14	3,136	552	267.18	3,136	2,087
266.16	3,136	577	267.20	3,136	2,126
266.18	3,136	602	267.22	3,136	2,166
266.20	3,136	627	267.24	3,136	2,205
266.22	3,136	652	267.26	3,136	2,245
266.24	3,136	677	267.28	3,136	2,286
266.26	3,136	702	267.30	3,136	2,326
266.28	3,136	727	267.32	3,136	2,367
266.30	3,136	753	267.34	3,136	2,407
266.32	3,136	778	267.36	3,136	2,448
266.34	3,136	803	267.38	3,136	2,490
266.36	3,136	828	267.40	3,136	2,531
266.38	3,136	853	267.42	3,136	2,573
266.40	3,136	878	267.44	3,136	2,614
266.42	3,136	903	267.46	3,136	2,656
266.44	3,136	928	267.48	3,136	2,698
266.46	3,136	953	267.50	3,136	2,741
266.48	3,136	978	267.52	3,136	2,783
266.50	3,136	1,003	267.54	3,136	2,826
266.52	3,136	1,028	267.56	3,136	2,869
266.54	3,136	1,054	267.58	3,136	2,911
266.56	3,136	1,079	267.60	3,136	2,954
266.58	3,136	1,104	267.62	3,136	2,998
266.60	3,136	1,129	267.64	3,136	3,041
266.62	3,136	1,154	267.66	3,136	3,084
266.64	3,136	1,179	267.68	3,136	3,128
266.66	3,136	1,204	267.70	3,136	3,172
266.68	3,136	1,229	267.72	3,136	3,216
266.70	3,136	1,254	267.74	3,136	3,260
266.72	3,136	1,281	267.76	3,136	3,304

Stage-Area-Storage for Pond 5P: POND 5 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
267.78	3,136	3,348	268.82	3,136	5,739
267.80	3,136	3,392	268.84	3,136	5,786
267.82	3,136	3,437	268.86	3,136	5,832
267.84	3,136	3,481	268.88	3,136	5,879
267.86	3,136	3,526	268.90	3,136	5,926
267.88	3,136	3,571	268.92	3,136	5,972
267.90	3,136	3,615	268.94	3,136	6,019
267.92	3,136	3,660	268.96	3,136	6,065
267.94	3,136	3,705	268.98	3,136	6,112
267.96	3,136	3,750	269.00	3,136	6,158
267.98	3,136	3,796	269.02	3,136	6,205
268.00	3,136	3,841	269.04	3,136	6,251
268.02	3,136	3,886	269.06	3,136	6,297
268.04	3,136	3,932	269.08	3,136	6,344
268.06	3,136	3,977	269.10	3,136	6,390
268.08	3,136	4,023	269.12	3,136	6,436
268.10	3,136	4,068	269.14	3,136	6,482
268.12	3,136	4,114	269.16	3,136	6,529
268.14	3,136	4,160	269.18	3,136	6,575
268.16	3,136	4,206	269.20	3,136	6,621
268.18	3,136	4,252	269.22	3,136	6,667
268.20	3,136	4,298	269.24	3,136	6,713
268.22	3,136	4,344	269.26	3,136	6,758
268.24	3,136	4,390	269.28	3,136	6,804
268.26	3,136	4,436	269.30	3,136	6,850
268.28	3,136	4,482	269.32	3,136	6,896
268.30	3,136	4,528	269.34	3,136	6,941
268.32	3,136	4,575	269.36	3,136	6,987
268.34	3,136	4,621	269.38	3,136	7,032
268.36	3,136	4,667	269.40	3,136	7,077
268.38	3,136	4,714	269.42	3,136	7,123
268.40	3,136	4,760	269.44	3,136	7,168
268.42	3,136	4,807	269.46	3,136	7,213
268.44	3,136	4,853	269.48	3,136	7,258
268.46	3,136	4,900	269.50	3,136	7,303
268.48	3,136	4,946	269.52	3,136	7,348
268.50	3,136	4,993	269.54	3,136	7,393
268.52	3,136	5,039	269.56	3,136	7,437
268.54	3,136	5,086	269.58	3,136	7,482
268.56	3,136	5,133	269.60	3,136	7,526
268.58	3,136	5,179	269.62	3,136	7,570
268.60	3,136	5,226	269.64	3,136	7,615
268.62	3,136	5,272	269.66	3,136	7,659
268.64	3,136	5,319	269.68	3,136	7,703
268.66	3,136	5,366	269.70	3,136	7,747
268.68	3,136	5,412	269.72	3,136	7,790
268.70	3,136	5,459	269.74	3,136	7,834
268.72	3,136	5,506	269.76	3,136	7,877
268.74	3,136	5,553	269.78	3,136	7,921
268.76	3,136	5,599	269.80	3,136	7,964
268.78	3,136	5,646	269.82	3,136	8,007
268.80	3,136	5,693	269.84	3,136	8,050

lowest
outlet

Stage-Area-Storage for Pond 5P: POND 5 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
269.86	3,136	8,093	270.90	3,136	9,915
269.88	3,136	8,135	270.92	3,136	9,940
269.90	3,136	8,178	270.94	3,136	9,965
269.92	3,136	8,220	270.96	3,136	9,990
269.94	3,136	8,262	270.98	3,136	10,015
269.96	3,136	8,304	271.00	3,136	10,040
269.98	3,136	8,346	271.02	3,136	10,065
270.00	3,136	8,387	271.04	3,136	10,091
270.02	3,136	8,429	271.06	3,136	10,116
270.04	3,136	8,470	271.08	3,136	10,141
270.06	3,136	8,511	271.10	3,136	10,166
270.08	3,136	8,552	271.12	3,136	10,191
270.10	3,136	8,592	271.14	3,136	10,216
270.12	3,136	8,633	271.16	3,136	10,241
270.14	3,136	8,673	271.18	3,136	10,266
270.16	3,136	8,713	271.20	3,136	10,291
270.18	3,136	8,753	271.22	3,136	10,316
270.20	3,136	8,792	271.24	3,136	10,341
270.22	3,136	8,831	271.26	3,136	10,366
270.24	3,136	8,870	271.28	3,136	10,392
270.26	3,136	8,909	271.30	3,136	10,417
270.28	3,136	8,948	271.32	3,136	10,442
270.30	3,136	8,986	271.34	3,136	10,467
270.32	3,136	9,024	271.36	3,136	10,492
270.34	3,136	9,061	271.38	3,136	10,517
270.36	3,136	9,099	271.40	3,136	10,542
270.38	3,136	9,136	271.42	3,136	10,567
270.40	3,136	9,172	271.44	3,136	10,592
270.42	3,136	9,209	271.46	3,136	10,617
270.44	3,136	9,244	271.48	3,136	10,642
270.46	3,136	9,280	271.50	3,136	10,668
270.48	3,136	9,315	271.52	3,136	10,693
270.50	3,136	9,350	271.54	3,136	10,718
270.52	3,136	9,384	271.56	3,136	10,743
270.54	3,136	9,418	271.58	3,136	10,768
270.56	3,136	9,451	271.60	3,136	10,793
270.58	3,136	9,484	271.62	3,136	10,818
270.60	3,136	9,516	271.64	3,136	10,843
270.62	3,136	9,548	271.66	3,136	10,868
270.64	3,136	9,578	271.68	3,136	10,893
270.66	3,136	9,608	271.70	3,136	10,918
270.68	3,136	9,637			
270.70	3,136	9,664			
270.72	3,136	9,689			
270.74	3,136	9,714			
270.76	3,136	9,739			
270.78	3,136	9,764			
270.80	3,136	9,790			
270.82	3,136	9,815			
270.84	3,136	9,840			
270.86	3,136	9,865			
270.88	3,136	9,890			

APPENDIX B

Pre-Development vs. Post Development Rate and Volume of Runoff

This analysis was prepared to show the summary of the pre-development and post development rate and volume of runoff as required by the Town of Franklin Storm-water Requirements.

The pre-development watershed area 1 is located to the middle portion of the site with a discharge to Panther Way. Post-development Link 1L was provided to combine the outlet control structure from Pond 2 and the piped outlet from Pond 1 with the undeveloped area which discharge to Panther Way. A comparison of the rate and volume for pre-development area 1S and post-development Link 1L is provided below:

2-year storm event (CFS)

Pre		Post
1S	vs	1L
0.11		0.00

2 year storm event (A.F.)

Pre		Post
1S	vs	1L
0.067		0.002

10 year storm event (CFS)

Pre		Post
1S	vs	1L
1.58		0.50

10 year storm event (A.F.)

Pre		Post
1S	vs	1L
0.407		0.034

100 year storm event (CFS)

Pre		Post
1S	vs	1L
8.06		4.72

100 year storm event (A.F.)

Pre		Post
1S	vs	1L
1.269		0.315

The pre-development watershed area 2S is located to the north portion of the site with a discharge to the Highwood Condominiums. Post-development Sub-catchment 52S was included to show the reduced discharge to the Highwood Condominiums. A comparison of the rate and volume for pre-development area 2S and post-development 52S is provided below:

2-year storm event (CFS)

Pre		Post
2S	vs	52S
0.00		0.00

2 year storm event (A.F.)

Pre		Post
2S	vs	52S
0.000		0.000

10 year storm event (CFS)

Pre		Post
2S	vs	52S
0.00		0.00

10 year storm event (A.F.)

Pre		Post
2S	vs	52S
0.001		0.002

100 year storm event (CFS)

Pre		Post
2S	vs	52S
0.08		0.06

100 year storm event (A.F.)

Pre		Post
2S	vs	52S
0.036		0.009

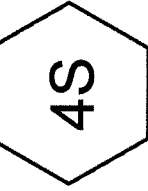
No changes or a reduction in both the rate of runoff and volume of runoff have been realized with the proposed storm-water systems with the exception of 52S which has a slight increase in the volume of runoff but has a reduction in the rate of runoff.

Pre-development areas 3S and 4S were included as the discharge from these areas was directed away from the development. Based on post-development conditions these areas are now included in the developments stormwater system and have been included in the post-development areas.

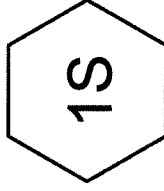
APPENDIX C



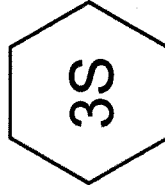
2S



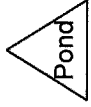
4S



1S



3S



Drainage Diagram for UC1378-PRE-NOV-2024

Prepared by {enter your company name here} 12/19/2024
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Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
6.814	30	Woods, Good, HSG A (1S,2S,3S)
7.070	55	Woods, Good, HSG B (1S,2S,4S)
0.740	76	Gravel roads, HSG A (1S)
14.623		

2 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 0.11 cfs @ 15.29 hrs, Volume= 0.067 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
32,213	76	Gravel roads, HSG A
231,397	30	Woods, Good, HSG A
278,160	55	Woods, Good, HSG B
541,770	46	Weighted Average
541,770		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0630	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.6	197	0.0660	1.28		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	68	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	107	0.0560	1.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	55	0.0730	1.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	63	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.0	200	0.0500	1.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	96	0.1670	2.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.0	180	0.0220	0.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.6	204	0.0680	1.30		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	68	0.0290	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.9	112	0.1700	2.06		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.1	140	0.0180	2.16		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
28.3	1,540	Total			

Subcatchment 2S: 2S

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
64,758	30	Woods, Good, HSG A
4,438	55	Woods, Good, HSG B
69,196	32	Weighted Average
69,196		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1180	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.3	38	0.1580	1.99		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.3	34	0.1180	1.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0650	1.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	92	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	47	0.0350	0.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	12	0.1670	2.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.9	304	Total			

Subcatchment 3S: 3S

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
661	30	Woods, Good, HSG A
661		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC

Subcatchment 4S: 4S

Runoff = 0.06 cfs @ 12.40 hrs, Volume= 0.013 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
25,359	55	Woods, Good, HSG B
25,359		Pervious Area

UC1378-PRE-NOV-2024

Prepared by United Consultants, Inc.

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Type III 24-hr 2YR Rainfall=3.25"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	25	0.0800	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
4.7	25	0.0550	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.2	11	0.0550	1.17		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	103	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.9	164	Total			

10 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 1.58 cfs @ 12.65 hrs, Volume= 0.407 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
32,213	76	Gravel roads, HSG A
231,397	30	Woods, Good, HSG A
278,160	55	Woods, Good, HSG B
541,770	46	Weighted Average
541,770		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0630	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.6	197	0.0660	1.28		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	68	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	107	0.0560	1.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	55	0.0730	1.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	63	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.0	200	0.0500	1.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	96	0.1670	2.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.0	180	0.0220	0.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.6	204	0.0680	1.30		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	68	0.0290	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.9	112	0.1700	2.06		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.1	140	0.0180	2.16		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
28.3	1,540	Total			

Subcatchment 2S: 2S

Runoff = 0.00 cfs @ 22.97 hrs, Volume= 0.001 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
64,758	30	Woods, Good, HSG A
4,438	55	Woods, Good, HSG B
69,196	32	Weighted Average
69,196		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1180	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.3	38	0.1580	1.99		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.3	34	0.1180	1.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0650	1.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	92	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	47	0.0350	0.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	12	0.1670	2.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.9	304	Total			

Subcatchment 3S: 3S

Runoff = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
661	30	Woods, Good, HSG A
661		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC

Subcatchment 4S: 4S

Runoff = 0.36 cfs @ 12.19 hrs, Volume= 0.040 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
25,359	55	Woods, Good, HSG B
25,359		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	25	0.0800	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
4.7	25	0.0550	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.2	11	0.0550	1.17		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	103	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.9	164	Total			

100 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 8.06 cfs @ 12.49 hrs, Volume= 1.269 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
32,213	76	Gravel roads, HSG A
231,397	30	Woods, Good, HSG A
278,160	55	Woods, Good, HSG B
541,770	46	Weighted Average
541,770		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0630	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.6	197	0.0660	1.28		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	68	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	107	0.0560	1.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	55	0.0730	1.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	63	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.0	200	0.0500	1.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	96	0.1670	2.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
4.0	180	0.0220	0.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.6	204	0.0680	1.30		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.3	68	0.0290	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.9	112	0.1700	2.06		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.1	140	0.0180	2.16		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
28.3	1,540	Total			

Subcatchment 2S: 2S

Runoff = 0.08 cfs @ 12.54 hrs, Volume= 0.036 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
64,758	30	Woods, Good, HSG A
4,438	55	Woods, Good, HSG B
69,196	32	Weighted Average
69,196		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1180	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.3	38	0.1580	1.99		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.3	34	0.1180	1.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	31	0.0650	1.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	92	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.8	47	0.0350	0.94		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	12	0.1670	2.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.9	304	Total			

Subcatchment 3S: 3S

Runoff = 0.00 cfs @ 14.63 hrs, Volume= 0.000 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
661	30	Woods, Good, HSG A
661		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC

Subcatchment 4S: 4S

Runoff = 1.06 cfs @ 12.17 hrs, Volume= 0.097 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
25,359	55	Woods, Good, HSG B
25,359		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	25	0.0800	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
4.7	25	0.0550	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.2	11	0.0550	1.17		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	103	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.9	164	Total			

APPENDIX D

Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
0.284	30	Woods, Good, HSG A (18S,52S)
3.168	39	>75% Grass cover, Good, HSG A (2S,5S,6S,7S,8S,9S,10S,11S,12S,13S,14S,15S,17S,18S)
0.713	55	Woods, Good, HSG B (12S,51S,52S)
3.476	61	>75% Grass cover, Good, HSG B (10S,12S,34S,35S,36S,37S,38S,39S,40S,41S,42S,43S,44S)
6.651	98	Paved parking & roofs (1S,2S,4S,5S,6S,7S,8S,9S,10S,11S,12S,13S,14S,18S,20S,21S,22S)
0.330	98	Pond (17S)
14.623		

2 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
9,594	98	Paved parking & roofs
9,594		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	62	0.0100	4.91	3.86	Circular Channel (pipe), CB1-DMH1 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry,
6.0	62	Total			

Subcatchment 2S: CB2

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.084 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
14,408	98	Paved parking & roofs
122	39	>75% Grass cover, Good, HSG A
14,530	98	Weighted Average
122		Pervious Area
14,408		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10	0.0100	4.91	3.86	Circular Channel (pipe), CB2-DMH2 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0					Direct Entry, MIN. TC
6.0	10	Total			

Subcatchment 4S: CB4

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
7,554	98	Paved parking & roofs
7,554		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	13	0.0100	4.91	3.86	Circular Channel (pipe), CB4-DMH4 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished Direct Entry, MIN.TC
6.0					
6.0	13	Total			

Subcatchment 5S: CB5

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
7,852	98	Paved parking & roofs
2,558	39	>75% Grass cover, Good, HSG A
10,410	84	Weighted Average
2,558		Pervious Area
7,852		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	41	0.0030	2.69	2.11	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished Direct Entry, MIN. TC
5.7					
6.0	41	Total			

Subcatchment 6S: CB6

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
4,648	98	Paved parking & roofs
1,389	39	>75% Grass cover, Good, HSG A
6,037	84	Weighted Average
1,389		Pervious Area
4,648		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.0050	3.47	2.73	Circular Channel (pipe), CB6-DMH5 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry,
6.0	38	Total			

Subcatchment 7S: CB7

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
1,784	98	Paved parking & roofs
584	39	>75% Grass cover, Good, HSG A
2,368	83	Weighted Average
584		Pervious Area
1,784		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	48	0.0200	6.95	5.46	Circular Channel (pipe), CB7-DMH5 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.9					Direct Entry, MIN. TC
6.0	48	Total			

Subcatchment 8S: CB8

Runoff = 0.10 cfs @ 12.11 hrs, Volume= 0.009 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
2,933	98	Paved parking & roofs
3,025	39	>75% Grass cover, Good, HSG A
5,958	68	Weighted Average
3,025		Pervious Area
2,933		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	100	0.0200	6.95	5.46	Circular Channel (pipe), CB8-DMH4 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry, MIN. TC
6.0	100	Total			

Subcatchment 9S: CB9

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 0.005 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
2,195	98	Paved parking & roofs
4,619	39	>75% Grass cover, Good, HSG A
6,814	58	Weighted Average
4,619		Pervious Area
2,195		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	25	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.8	19	0.3330	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.0	11	0.0454	4.33		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	114	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	22	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.5					Direct Entry, MIN. TC.
6.0	191	Total			

Subcatchment 10S: CB10

Runoff = 0.24 cfs @ 12.15 hrs, Volume= 0.033 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
11,674	98	Paved parking & roofs
23,855	39	>75% Grass cover, Good, HSG A
7,960	61	>75% Grass cover, Good, HSG B
43,489	59	Weighted Average

31,815		Pervious Area			
11,674		Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0370	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	14	0.0370	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	42	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	67	0.1500	2.71		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0300	8.51	6.69	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.4					Direct Entry, MIN TC
6.0	216	Total			

Subcatchment 11S: CB11

Runoff = 0.07 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
2,003	98	Paved parking & roofs
2,251	39	>75% Grass cover, Good, HSG A
4,254	67	Weighted Average
2,251		Pervious Area
2,003		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	22	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.8	12	0.1670	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.3	6	0.3330	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	17	0.0740	1.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	8	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	40	0.0300	8.51	6.69	Circular Channel (pipe), CB11-DMH7 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.9					Direct Entry, MIN. TC
6.0	105	Total			

Subcatchment 12S: CB12

Runoff = 0.66 cfs @ 12.17 hrs, Volume= 0.068 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
12,622	98	Paved parking & roofs
8,584	39	>75% Grass cover, Good, HSG A
25,982	61	>75% Grass cover, Good, HSG B
5,867	55	Woods, Good, HSG B
53,055	66	Weighted Average
40,433		Pervious Area
12,622		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	11	0.0150	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.0	20	0.3000	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.5	17	0.1180	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.3	24	0.0690	1.31		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	10	0.2000	3.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	33	0.5000	4.95		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0900	2.10		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	11	0.1820	2.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	102	0.0490	4.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	93	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	47	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
10.4	407	Total			

Subcatchment 13S: CB13

Runoff = 0.24 cfs @ 12.10 hrs, Volume= 0.018 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
5,493	98	Paved parking & roofs
4,008	39	>75% Grass cover, Good, HSG A
9,501	73	Weighted Average
4,008		Pervious Area
5,493		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	11	0.1820	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.2	29	0.3330	0.41		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.4	75	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	9	0.0200	6.95	5.46	Circular Channel (pipe), CB13-DMH10 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
3.7					Direct Entry, MIN. TC
6.0	124	Total			

Subcatchment 14S: CB14

Runoff = 0.46 cfs @ 12.11 hrs, Volume= 0.037 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
11,118	98	Paved parking & roofs
7,973	39	>75% Grass cover, Good, HSG A
19,091	73	Weighted Average
7,973		Pervious Area
11,118		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	37	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.7	92	0.0110	2.13		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	35	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	43	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	100	0.0100	4.91	3.86	Circular Channel (pipe), CB14-DMH10 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.2	307	Total			

Subcatchment 15S: RETAINING WALL DRAIN

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,920	39	>75% Grass cover, Good, HSG A
3,920		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	105	0.0200	6.95	5.46	Circular Channel (pipe), RETWALL-DMH1 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.7					Direct Entry, MIN. TC
6.0	105	Total			

Subcatchment 17S: 17S

Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.043 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
14,391	98	Pond
13,485	39	>75% Grass cover, Good, HSG A
27,876	69	Weighted Average
13,485		Pervious Area
14,391		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0740	0.25		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.0	89	0.0450	1.48		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	56	0.0357	1.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.9	64	0.0310	1.23		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1					Direct Entry, MIN TC
6.0	259	Total			

Subcatchment 18S: 18S

Runoff = 0.00 cfs @ 15.60 hrs, Volume= 0.002 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
4,411	98	Paved parking & roofs
22,080	39	>75% Grass cover, Good, HSG A
8,779	30	Woods, Good, HSG A
35,270	44	Weighted Average
30,859		Pervious Area
4,411		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.5	36	0.0560	1.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.2	37	0.2700	2.60		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	14	0.1430	1.89		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.2	19	0.0820	1.43		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.9	156	Total			

Subcatchment 20S: ROOF1

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
5,064	98	Paved parking & roofs
5,064		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	70	0.0100	4.91	3.86	Circular Channel (pipe), CLEANOUT-DMH6 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry, MIN. TC.
6.0	70	Total			

Subcatchment 21S: ROOF1

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
5,048	98	Paved parking & roofs
5,048		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	58	0.0400	9.83	7.72	Circular Channel (pipe), CLEANOUT-DMH8 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.9					Direct Entry, MIN. TC.
6.0	58	Total			

Subcatchment 22S: ROOF-REAR

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.058 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
10,112	98	Paved parking & roofs
10,112		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	160	0.0200	6.95	5.46	Circular Channel (pipe), CLEANOUT-DMH9 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.6					Direct Entry, MIN. TC.
6.0	160	Total			

Subcatchment 30S: CB30

Runoff = 0.02 cfs @ 12.38 hrs, Volume= 0.006 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,270	98	Paved parking & roofs
10,380	39	>75% Grass cover, Good, HSG A
13,650	53	Weighted Average
10,380		Pervious Area
3,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	38	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	38	Total			

Subcatchment 31S: CB31

Runoff = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
5,898	98	Paved parking & roofs
2,889	39	>75% Grass cover, Good, HSG A
8,787	79	Weighted Average
2,889		Pervious Area
5,898		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0075	4.26	3.34	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 32S: CB32

Runoff = 0.04 cfs @ 12.11 hrs, Volume= 0.003 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
1,040	98	Paved parking & roofs
951	39	>75% Grass cover, Good, HSG A
1,991	70	Weighted Average
951		Pervious Area
1,040		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	32	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	32	Total			

Subcatchment 33S: CB33

Runoff = 0.15 cfs @ 12.10 hrs, Volume= 0.011 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,413	98	Paved parking & roofs
2,504	39	>75% Grass cover, Good, HSG A
5,917	73	Weighted Average
2,504		Pervious Area
3,413		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	42	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	42	Total			

Subcatchment 34S: CB34

Runoff = 0.48 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
10,509	98	Paved parking & roofs
6,920	39	>75% Grass cover, Good, HSG A
1,505	61	>75% Grass cover, Good, HSG B
18,934	73	Weighted Average
8,425		Pervious Area
10,509		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0350	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	7	0.0350	1.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	63	0.0635	5.12		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6	209	0.0800	5.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6					Direct Entry, MIN TC
0.0	16	0.0200	6.95	5.46	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	345	Total			

Subcatchment 35S: CB35

Runoff = 0.30 cfs @ 12.10 hrs, Volume= 0.022 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
5,089	98	Paved parking & roofs
1,446	39	>75% Grass cover, Good, HSG A
1,147	61	>75% Grass cover, Good, HSG B
7,682	81	Weighted Average
2,593		Pervious Area
5,089		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	2	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	2	Total			

Subcatchment 36S: CB36

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.047 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
8,647	98	Paved parking & roofs
3,366	61	>75% Grass cover, Good, HSG B
12,013	88	Weighted Average

	3,366				Pervious Area
	8,647				Impervious Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	43	0.0470	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	17	0.0410	1.42		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	32	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0770	5.63		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	87	0.0400	4.06		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7					Direct Entry, MIN TC
0.0	19	0.0210	7.12	5.59	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	224	Total			

Subcatchment 37S: CB37

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
4,197	98	Paved parking & roofs
1,374	61	>75% Grass cover, Good, HSG B
5,571	89	Weighted Average
1,374		Pervious Area
4,197		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0500	10.99	8.63	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 38S: CB38

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
6,806	98	Paved parking & roofs
1,621	61	>75% Grass cover, Good, HSG B
8,427	91	Weighted Average
1,621		Pervious Area
6,806		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	19	0.0330	8.93	7.01	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	19	Total			

Subcatchment 39S: CB39

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.040 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
7,442	98	Paved parking & roofs
4,090	61	>75% Grass cover, Good, HSG B
11,532	85	Weighted Average
4,090		Pervious Area
7,442		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 40S: CB40

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
7,083	98	Paved parking & roofs
3,954	61	>75% Grass cover, Good, HSG B
11,037	85	Weighted Average
3,954		Pervious Area
7,083		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	19	0.0410	9.95	7.82	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	19	Total			

Subcatchment 41S: CB41

Runoff = 1.47 cfs @ 12.11 hrs, Volume= 0.113 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
21,462	98	Paved parking & roofs
21,670	61	>75% Grass cover, Good, HSG B
43,132	79	Weighted Average
21,670		Pervious Area
21,462		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	7	0.0450	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	5	0.0450	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.25"
2.0	21	0.0450	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
2.1	17	0.0260	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.9	59	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.8	56	0.0280	1.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	27	0.0190	2.80		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6	147	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	9	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.5	348	Total			

Subcatchment 42S: CB42

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
9,346	98	Paved parking & roofs
2,328	61	>75% Grass cover, Good, HSG B
11,674	91	Weighted Average
2,328		Pervious Area
9,346		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	14	0.0100	4.91	3.86	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	14	Total			

Subcatchment 43S: CB43

Runoff = 0.81 cfs @ 12.10 hrs, Volume= 0.059 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
10,778	98	Paved parking & roofs
8,653	61	>75% Grass cover, Good, HSG B
19,431	82	Weighted Average
8,653		Pervious Area
10,778		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.9	30	0.1050	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	8	0.0105	0.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0770	1.94		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	23	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	120	0.0770	5.63		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5					Direct Entry, MIN TC
0.1	29	0.0100	4.91	3.86	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.1	256	Total			

Subcatchment 44S: CB44

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,778	98	Paved parking & roofs
1,223	61	>75% Grass cover, Good, HSG B
5,001	89	Weighted Average
1,223		Pervious Area
3,778		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	32	0.0024	2.41	1.89	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	32	Total			

Subcatchment 45S: CB45

Runoff = 0.82 cfs @ 12.11 hrs, Volume= 0.063 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
11,310	98	Paved parking & roofs
12,472	61	>75% Grass cover, Good, HSG B
23,782	79	Weighted Average
12,472		Pervious Area
11,310		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0370	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	16	0.0370	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.0	63	0.0230	1.06		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	40	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	54	0.0270	3.34		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	77	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	38	0.0200	6.95	5.46	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.1	338	Total			

Subcatchment 46S: CB46

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.032 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
6,059	98	Paved parking & roofs
390	39	>75% Grass cover, Good, HSG A
6,449	94	Weighted Average
390		Pervious Area
6,059		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	9	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	9	Total			

Subcatchment 47S: CB44

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,523	98	Paved parking & roofs
908	39	>75% Grass cover, Good, HSG A
4,431	86	Weighted Average
908		Pervious Area
3,523		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.1	32	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.1	32	Total			

Subcatchment 48S: CB48

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
2,050	98	Paved parking & roofs
795	39	>75% Grass cover, Good, HSG A
2,845	82	Weighted Average
795		Pervious Area
2,050		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	7	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	7	Total			

Subcatchment 49S: CB49

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,174	98	Paved parking & roofs
2,960	39	>75% Grass cover, Good, HSG A
6,134	70	Weighted Average
2,960		Pervious Area
3,174		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	21	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	21	Total			

Subcatchment 50S: ROOF

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.085 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
14,656	98	Paved parking & roofs
14,656		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	88	0.0300	8.51	6.69	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	88	Total			

Subcatchment 51S: CB51

Runoff = 1.01 cfs @ 12.30 hrs, Volume= 0.129 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
21,687	98	Paved parking & roofs
9,396	39	>75% Grass cover, Good, HSG A
54,072	61	>75% Grass cover, Good, HSG B
22,931	55	Woods, Good, HSG B
108,086	65	Weighted Average
86,399		Pervious Area
21,687		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0480	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.6	48	0.0830	1.44		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2220	2.36		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	40	0.5000	4.95		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.6	133	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	11	0.1820	2.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0470	1.52		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	6	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0610	1.73		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	18	0.1110	2.33		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.1000	2.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	42	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.0	68	0.0290	1.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	144	0.0690	1.84		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	119	0.1690	2.88		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	20	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.1000	2.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	8.34	6.55	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
17.5	876	Total			

Subcatchment 52S: 52S

Runoff = 0.00 cfs @ 23.57 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.25"

Area (sf)	CN	Description
3,594	30	Woods, Good, HSG A
2,275	55	Woods, Good, HSG B
5,869	40	Weighted Average
5,869		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC

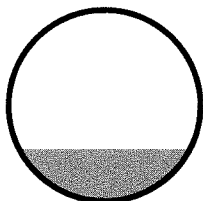
Reach 1R: DMH1-DMH2

Inflow Area = 0.310 ac, Inflow Depth = 2.14" for 2YR event
Inflow = 0.68 cfs @ 12.09 hrs, Volume= 0.055 af
Outflow = 0.67 cfs @ 12.09 hrs, Volume= 0.055 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.93 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.7 min

Peak Storage= 9 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.21 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 53.0' Slope= 0.0119 1/
Inlet Invert= 246.00', Outlet Invert= 245.37'

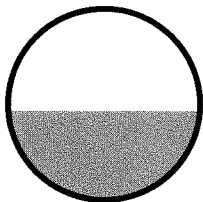
**Reach 2R: DMH2-POND1**

Inflow Area = 0.644 ac, Inflow Depth = 2.60" for 2YR event
Inflow = 1.70 cfs @ 12.09 hrs, Volume= 0.139 af
Outflow = 1.70 cfs @ 12.09 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.75 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.86 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 7.0' Slope= 0.0100 '/'
Inlet Invert= 245.37', Outlet Invert= 245.30'



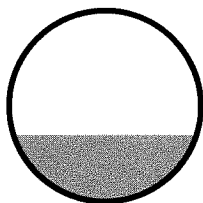
Reach 3R: DMH3-POND1

Inflow Area = 0.503 ac, Inflow Depth = 1.90" for 2YR event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 1.01 cfs @ 12.09 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.14 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.86 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 8.0' Slope= 0.0100 '/'
Inlet Invert= 245.38', Outlet Invert= 245.30'



Reach 4R: DMH4-DMH3

Inflow Area = 0.503 ac, Inflow Depth = 1.90" for 2YR event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 1.01 cfs @ 12.09 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

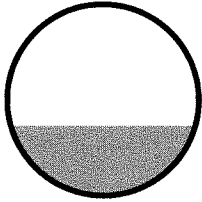
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.90 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, $n = 0.013$ Concrete pipe, bends & connections

Length= 2.0' Slope= 0.0100 '/'

Inlet Invert= 245.40', Outlet Invert= 245.38'



Reach 5R: DMH5-DMH4

Inflow Area = 0.193 ac, Inflow Depth = 1.70" for 2YR event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.38 cfs @ 12.10 hrs, Volume= 0.027 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.48 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 0.88 fps, Avg. Travel Time= 0.5 min

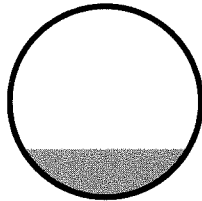
Peak Storage= 4 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.25'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.78 cfs

12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished

Length= 25.0' Slope= 0.0052 '/'

Inlet Invert= 245.63', Outlet Invert= 245.50'



Reach 6R: DMH6-HEADWALL

Inflow Area = 3.475 ac, Inflow Depth = 0.88" for 2YR event
Inflow = 2.55 cfs @ 12.14 hrs, Volume= 0.254 af
Outflow = 2.52 cfs @ 12.15 hrs, Volume= 0.254 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

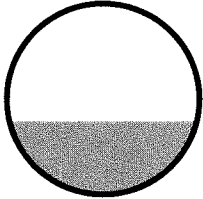
Max. Velocity= 4.10 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 1.39 fps, Avg. Travel Time= 1.6 min

Peak Storage= 84 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.58'

Bank-Full Depth= 1.50', Capacity at Bank-Full= 8.19 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 135.0' Slope= 0.0052 '/
Inlet Invert= 252.20', Outlet Invert= 251.50'

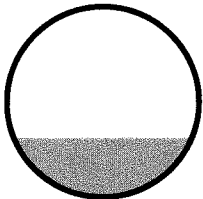
**Reach 7R: DMH7-DMH6**

Inflow Area = 3.318 ac, Inflow Depth = 0.90" for 2YR event
Inflow = 2.53 cfs @ 12.13 hrs, Volume= 0.249 af
Outflow = 2.52 cfs @ 12.14 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.69 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.5 min

Peak Storage= 28 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.93 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 86.0' Slope= 0.0291 '/
Inlet Invert= 254.95', Outlet Invert= 252.45'

**Reach 8R: DMH8-DMH7**

Inflow Area = 2.222 ac, Inflow Depth = 1.14" for 2YR event
Inflow = 2.27 cfs @ 12.12 hrs, Volume= 0.211 af
Outflow = 2.23 cfs @ 12.13 hrs, Volume= 0.211 af, Atten= 2%, Lag= 0.4 min

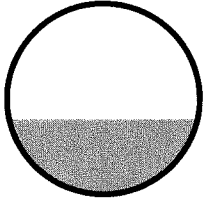
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.83 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.65 fps, Avg. Travel Time= 0.6 min

Peak Storage= 28 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.90 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 97.0' Slope= 0.0320 '/'

Inlet Invert= 258.30', Outlet Invert= 255.20'

**Reach 9R: DMH9-DMH8**

Inflow Area = 0.889 ac, Inflow Depth = 1.54" for 2YR event

Inflow = 1.38 cfs @ 12.10 hrs, Volume= 0.114 af

Outflow = 1.36 cfs @ 12.11 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.36 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 2.39 fps, Avg. Travel Time= 0.7 min

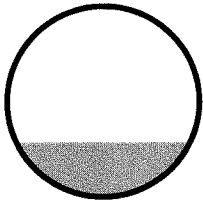
Peak Storage= 18 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.29'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.62 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 98.0' Slope= 0.0390 '/'

Inlet Invert= 262.22', Outlet Invert= 258.40'

**Reach 10R: DMH10-DMH9**

Inflow Area = 0.656 ac, Inflow Depth = 1.01" for 2YR event

Inflow = 0.70 cfs @ 12.11 hrs, Volume= 0.056 af

Outflow = 0.69 cfs @ 12.12 hrs, Volume= 0.056 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

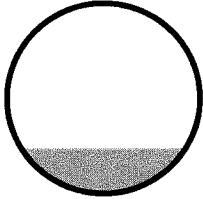
Max. Velocity= 4.85 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.93 fps, Avg. Travel Time= 1.1 min

Peak Storage= 18 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.24'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.61 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 127.0' Slope= 0.0211 '/'
Inlet Invert= 265.90', Outlet Invert= 263.22'



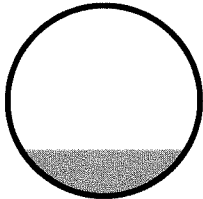
Reach 11R: DMH11-HEADWALL

Inflow Area = 0.116 ac, Inflow Depth = 3.02" for 2YR event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af, Atten= 5%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.40 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 3.7 min

Peak Storage= 26 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 174.0' Slope= 0.0050 '/'
Inlet Invert= 251.62', Outlet Invert= 250.75'



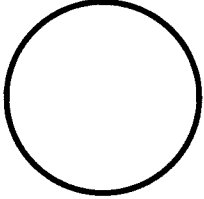
Reach 20R: DM20-EXIST.DMH

Inflow Area = 1.386 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.22 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 36.0' Slope= 0.0350 '/'
Inlet Invert= 241.77', Outlet Invert= 240.51'

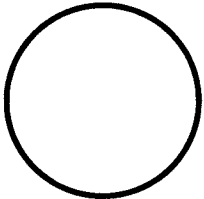
**Reach 21R: DMH21-DMH22**

Inflow Area = 3.480 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 10.60 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 179.0' Slope= 0.0230 '/'
Inlet Invert= 258.77', Outlet Invert= 254.66'

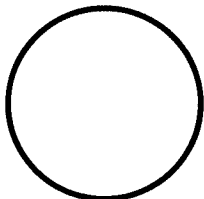
**Reach 22R: DMH22-HEADWALL**

Inflow Area = 3.480 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.09 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 110.0' Slope= 0.0251 '/
Inlet Invert= 254.70', Outlet Invert= 251.94'



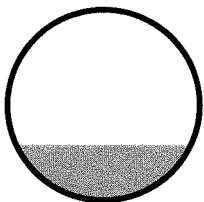
Reach 30R: DMH30-HW30

Inflow Area = 0.697 ac, Inflow Depth = 0.75" for 2YR event
Inflow = 0.50 cfs @ 12.10 hrs, Volume= 0.043 af
Outflow = 0.50 cfs @ 12.10 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.65 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 12.0' Slope= 0.0050 '/
Inlet Invert= 251.10', Outlet Invert= 251.04'



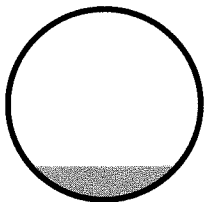
Reach 31R: DMH31-DMH30

Inflow Area = 0.495 ac, Inflow Depth = 0.49" for 2YR event
Inflow = 0.19 cfs @ 12.11 hrs, Volume= 0.020 af
Outflow = 0.19 cfs @ 12.11 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.00 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 10.0' Slope= 0.0050 '/'
Inlet Invert= 251.25', Outlet Invert= 251.20'



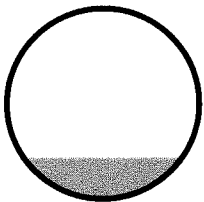
Reach 32R: DMH32-HW32

Inflow Area = 3.548 ac, Inflow Depth = 0.42" for 2YR event
Inflow = 1.64 cfs @ 12.10 hrs, Volume= 0.125 af
Outflow = 1.64 cfs @ 12.10 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.86 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 0.2 min

Peak Storage= 5 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.09 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 17.0' Slope= 0.0200 '/'
Inlet Invert= 252.34', Outlet Invert= 252.00'



Reach 33R: DMH33-DMH32

Inflow Area = 3.092 ac, Inflow Depth = 0.23" for 2YR event
Inflow = 0.77 cfs @ 12.11 hrs, Volume= 0.059 af
Outflow = 0.77 cfs @ 12.11 hrs, Volume= 0.059 af, Atten= 1%, Lag= 0.2 min

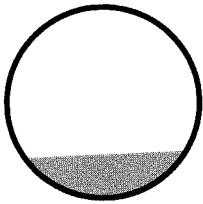
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.09 fps, Avg. Travel Time= 0.4 min

Peak Storage= 6 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.69 cfs

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12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished
 Length= 44.0' Slope= 0.0300 '/
 Inlet Invert= 254.16', Outlet Invert= 252.84'

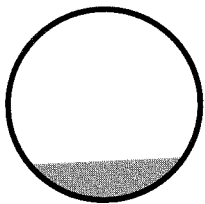
**Reach 34R: DMH34-DMH33**

Inflow Area = 3.092 ac, Inflow Depth = 0.23" for 2YR event
 Inflow = 0.78 cfs @ 12.10 hrs, Volume= 0.059 af
 Outflow = 0.77 cfs @ 12.11 hrs, Volume= 0.059 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.83 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 2.51 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.20'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.63 cfs

12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished
 Length= 120.0' Slope= 0.0500 '/
 Inlet Invert= 260.26', Outlet Invert= 254.26'

**Reach 35R: DMH35-DMH32**

Inflow Area = 0.308 ac, Inflow Depth = 1.35" for 2YR event
 Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af
 Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.89 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.73 fps, Avg. Travel Time= 0.5 min

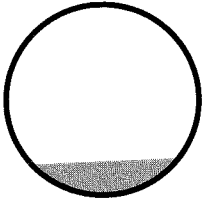
Peak Storage= 4 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.18'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.69 cfs

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12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished
Length= 47.0' Slope= 0.0300 '/
Inlet Invert= 254.25', Outlet Invert= 252.84'



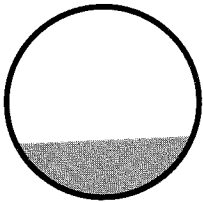
Reach 36R: DMH36-MANIFOLD

Inflow Area = 2.766 ac, Inflow Depth = 1.65" for 2YR event
Inflow = 4.92 cfs @ 12.11 hrs, Volume= 0.381 af
Outflow = 4.90 cfs @ 12.11 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.11 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.68 fps, Avg. Travel Time= 0.2 min

Peak Storage= 24 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 1.75', Capacity at Bank-Full= 25.23 cfs

21.0" Diameter Pipe, $n = 0.010$ PVC, smooth interior
Length= 40.0' Slope= 0.0150 '/
Inlet Invert= 279.10', Outlet Invert= 278.50'



Reach 37R: DMH37-DMH36

Inflow Area = 2.766 ac, Inflow Depth = 1.65" for 2YR event
Inflow = 4.96 cfs @ 12.11 hrs, Volume= 0.381 af
Outflow = 4.92 cfs @ 12.11 hrs, Volume= 0.381 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.15 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.02 fps, Avg. Travel Time= 0.5 min

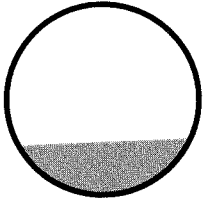
Peak Storage= 45 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.75', Capacity at Bank-Full= 29.73 cfs

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21.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 84.0' Slope= 0.0300 '/'
Inlet Invert= 281.72', Outlet Invert= 279.20'



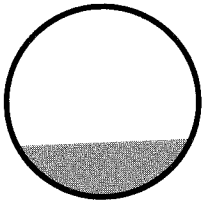
Reach 38R: DMH38-DHH37

Inflow Area = 2.363 ac, Inflow Depth = 1.58" for 2YR event
Inflow = 4.08 cfs @ 12.11 hrs, Volume= 0.311 af
Outflow = 4.03 cfs @ 12.11 hrs, Volume= 0.311 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.73 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.19 fps, Avg. Travel Time= 0.8 min

Peak Storage= 61 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 22.76 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 146.0' Slope= 0.0400 '/'
Inlet Invert= 288.71', Outlet Invert= 282.87'



Reach 39R: DMH39-DHH38

Inflow Area = 1.904 ac, Inflow Depth = 1.48" for 2YR event
Inflow = 3.06 cfs @ 12.11 hrs, Volume= 0.234 af
Outflow = 3.05 cfs @ 12.11 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.1 min

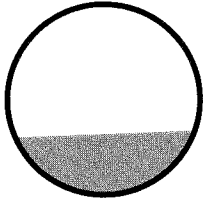
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.11 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.07 fps, Avg. Travel Time= 0.2 min

Peak Storage= 12 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 14.00 cfs

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15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 35.0' Slope= 0.0400 '/
Inlet Invert= 292.40', Outlet Invert= 291.00'



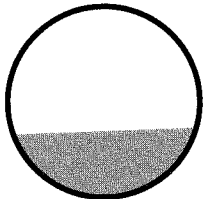
Reach 40R: DMH40-DHH39

Inflow Area = 1.244 ac, Inflow Depth = 1.46" for 2YR event
Inflow = 1.99 cfs @ 12.11 hrs, Volume= 0.151 af
Outflow = 1.96 cfs @ 12.11 hrs, Volume= 0.151 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.22 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.93 fps, Avg. Travel Time= 0.7 min

Peak Storage= 30 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.72 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 126.0' Slope= 0.0400 '/
Inlet Invert= 299.44', Outlet Invert= 294.40'



Reach 41R: DMH41-DMH34

Inflow Area = 2.481 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

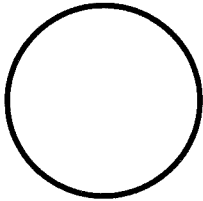
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.72 cfs

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12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished
Length= 34.0' Slope= 0.0400 '/
Inlet Invert= 264.62', Outlet Invert= 263.26'



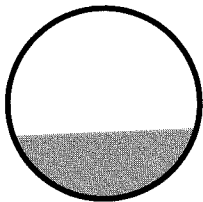
Reach 42R: DMH42-DMH43

Inflow Area = 0.714 ac, Inflow Depth = 1.85" for 2YR event
Inflow = 1.50 cfs @ 12.09 hrs, Volume= 0.110 af
Outflow = 1.49 cfs @ 12.10 hrs, Volume= 0.110 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.15 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.7 min

Peak Storage= 21 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.74 cfs

12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished
Length= 86.0' Slope= 0.0221 '/
Inlet Invert= 271.44', Outlet Invert= 269.54'



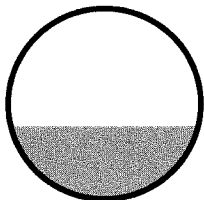
Reach 43R: DMH43-DMH44

Inflow Area = 0.714 ac, Inflow Depth = 1.85" for 2YR event
Inflow = 1.49 cfs @ 12.10 hrs, Volume= 0.110 af
Outflow = 1.47 cfs @ 12.10 hrs, Volume= 0.110 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.34 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.6 min

Peak Storage= 19 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.74 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 67.0' Slope= 0.0151 '/'
Inlet Invert= 269.44', Outlet Invert= 268.43'



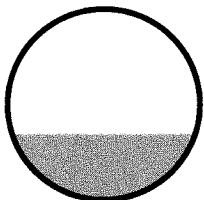
Reach 44R: DMH44-MANIFOLD

Inflow Area = 0.714 ac, Inflow Depth = 1.85" for 2YR event
Inflow = 1.47 cfs @ 12.10 hrs, Volume= 0.110 af
Outflow = 1.47 cfs @ 12.11 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.17 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.2 min

Peak Storage= 5 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.81 cfs

12.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 21.0' Slope= 0.0157 '/'
Inlet Invert= 268.33', Outlet Invert= 268.00'



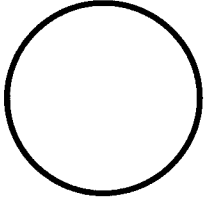
Reach 45R: DMH45-MANIFOLD

Inflow Area = 2.766 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 31.32 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 27.0' Slope= 0.0526 '/'
Inlet Invert= 269.42', Outlet Invert= 268.00'



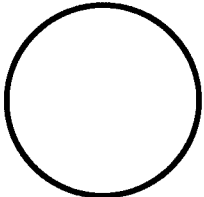
Reach 46R: DMH46-DMH45

Inflow Area = 2.766 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 27.31 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 56.0' Slope= 0.0400 '/'
Inlet Invert= 273.93', Outlet Invert= 271.69'



Reach 47R: MANIFOLD-DMH46

Inflow Area = 2.766 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

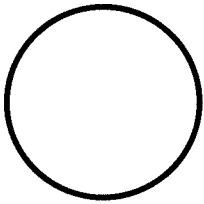
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.31 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior

Length= 38.0' Slope= 0.0200 1'

Inlet Invert= 278.50', Outlet Invert= 277.74'

**Pond 1P: POND 1**

Inflow Area = 1.386 ac, Inflow Depth = 2.19" for 2YR event
 Inflow = 3.18 cfs @ 12.09 hrs, Volume= 0.253 af
 Outflow = 1.00 cfs @ 12.05 hrs, Volume= 0.253 af, Atten= 69%, Lag= 0.0 min
 Discarded = 1.00 cfs @ 12.05 hrs, Volume= 0.253 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 244.76' @ 12.41 hrs Surf.Area= 0.120 ac Storage= 0.055 af

Plug-Flow detention time= 22.5 min calculated for 0.253 af (100% of inflow)

Center-of-Mass det. time= 22.5 min (801.0 - 778.5)

Volume	Invert	Avail.Storage	Storage Description
#1	243.75'	2.353 af	39.50'W x 132.00'L x 50.00'H Prismatic 5.985 af Overall - 0.103 af Embedded = 5.882 af x 40.0% Voids
#2	244.42'	0.103 af	24.0"D x 130.00'L Horizontal Cylinder x 11 Inside #1
		2.456 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	245.30'	12.0" Vert. Orifice/Grate X 3.00 C= 0.600

Discarded OutFlow Max=1.00 cfs @ 12.05 hrs HW=244.33' (Free Discharge)↳ **1=Exfiltration** (Exfiltration Controls 1.00 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=243.75' (Free Discharge)↳ **2=Orifice/Grate** (Controls 0.00 cfs)**Pond 2P: POND 2**

Inflow Area = 12.293 ac, Inflow Depth = 0.57" for 2YR event
 Inflow = 6.34 cfs @ 12.12 hrs, Volume= 0.580 af
 Outflow = 1.99 cfs @ 12.52 hrs, Volume= 0.580 af, Atten= 69%, Lag= 24.5 min
 Discarded = 1.99 cfs @ 12.52 hrs, Volume= 0.580 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 249.45' @ 12.52 hrs Surf.Area= 10,394 sf Storage= 4,522 cf

Plug-Flow detention time= 13.0 min calculated for 0.579 af (100% of inflow)

Center-of-Mass det. time= 13.0 min (843.9 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	249.00'	49,660 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.00	9,874	0	0
250.00	11,040	10,457	10,457
252.00	13,732	24,772	35,229
253.00	15,130	14,431	49,660

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.90'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	250.66'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	250.17'	4.0" Vert. Orifice/Grate X 5.00 C= 0.600

Discarded OutFlow Max=1.99 cfs @ 12.52 hrs HW=249.45' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 1.99 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=249.00' (Free Discharge)

└─2=Orifice/Grate (Controls 0.00 cfs)

└─3=Orifice/Grate (Controls 0.00 cfs)

Pond 3P: POND 3

Inflow Area = 2.766 ac, Inflow Depth = 1.65" for 2YR event
 Inflow = 4.90 cfs @ 12.11 hrs, Volume= 0.381 af
 Outflow = 0.61 cfs @ 11.85 hrs, Volume= 0.381 af, Atten= 88%, Lag= 0.0 min
 Discarded = 0.61 cfs @ 11.85 hrs, Volume= 0.381 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 277.84' @ 12.93 hrs Surf.Area= 0.073 ac Storage= 0.139 af

Plug-Flow detention time= 85.7 min calculated for 0.381 af (100% of inflow)

Center-of-Mass det. time= 85.7 min (917.2 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	274.60'	1.404 af	59.83'W x 53.00'L x 50.00'H Prismatic 3.640 af Overall - 0.130 af Embedded = 3.510 af x 40.0% Voids
#2	275.60'	0.130 af	48.0"D x 50.00'L Horizontal Cylinder x 9 Inside #1
		1.534 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	278.50'	12.0" Vert. Orifice/Grate X 6.00 C= 0.600

Discarded OutFlow Max=0.61 cfs @ 11.85 hrs HW=275.13' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.61 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=274.60' (Free Discharge)

↑2=Orifice/Grate (Controls 0.00 cfs)

Pond 4P: POND 4

Inflow Area = 3.480 ac, Inflow Depth = 0.38" for 2YR event
 Inflow = 1.47 cfs @ 12.11 hrs, Volume= 0.110 af
 Outflow = 0.58 cfs @ 12.10 hrs, Volume= 0.110 af, Atten= 60%, Lag= 0.0 min
 Discarded = 0.58 cfs @ 12.10 hrs, Volume= 0.110 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 264.91' @ 12.37 hrs Surf.Area= 0.070 ac Storage= 0.023 af

Plug-Flow detention time= 19.5 min calculated for 0.110 af (100% of inflow)
 Center-of-Mass det. time= 19.5 min (840.9 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	264.10'	1.345 af	46.75'W x 65.00'L x 50.00'H Prismatic 3.488 af Overall - 0.125 af Embedded = 3.363 af x 40.0% Voids
#2	265.10'	0.125 af	48.0"D x 62.00'L Horizontal Cylinder x 7 Inside #1
		1.470 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	268.00'	12.0" Vert. Orifice/Grate X 4.00 C= 0.600

Discarded OutFlow Max=0.58 cfs @ 12.10 hrs HW=264.62' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=264.10' (Free Discharge)

↑2=Orifice/Grate (Controls 0.00 cfs)

Pond 5P: POND 5

Inflow Area = 2.481 ac, Inflow Depth = 0.62" for 2YR event
 Inflow = 1.01 cfs @ 12.30 hrs, Volume= 0.129 af
 Outflow = 0.60 cfs @ 12.40 hrs, Volume= 0.129 af, Atten= 41%, Lag= 5.9 min
 Discarded = 0.60 cfs @ 12.40 hrs, Volume= 0.129 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 266.33' @ 12.63 hrs Surf.Area= 3,136 sf Storage= 785 cf

Plug-Flow detention time= 17.9 min calculated for 0.129 af (100% of inflow)
 Center-of-Mass det. time= 18.0 min (922.5 - 904.5)

Volume	Invert	Avail.Storage	Storage Description
#1	265.70'	60,450 cf	40.20'W x 78.00'L x 50.00'H Prismatic 156,780 cf Overall - 5,655 cf Embedded = 151,125 cf x 40.0% Voids
#2	266.70'	5,655 cf	48.0"D x 75.00'L Horizontal Cylinder x 6 Inside #1
		66,105 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	265.60'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	269.60'	12.0" Vert. Orifice/Grate X 3.00 C= 0.600

Discarded OutFlow Max=0.60 cfs @ 12.40 hrs HW=266.21' (Free Discharge)

↳ **1=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=265.70' (Free Discharge)

↳ **2=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: POND 2

Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 0.00' @ 0.00 hrs Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated)

Center-of-Mass det. time= (not calculated)

Volume	Invert	Avail.Storage	Storage Description
#1	308.00'	8,098 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.00	2,801	0	0
310.00	5,297	8,098	8,098

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.90'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	250.66'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	250.17'	4.0" Vert. Orifice/Grate X 5.00 C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

↳ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

↳ **2=Orifice/Grate** (Controls 0.00 cfs)

↳ **3=Orifice/Grate** (Controls 0.00 cfs)

Link 1L: COMBINE HYDROGRAPHS

Inflow Area = 14.488 ac, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 15.60 hrs, Volume= 0.002 af
Primary = 0.00 cfs @ 15.60 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

10 YR POST-DEVELOPMENT

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Subcatchment 1S: CB1

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
9,594	98	Paved parking & roofs
9,594		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	62	0.0100	4.91	3.86	Circular Channel (pipe), CB1-DMH1 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry,
6.0	62	Total			

Subcatchment 2S: CB2

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.124 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
14,408	98	Paved parking & roofs
122	39	>75% Grass cover, Good, HSG A
14,530	98	Weighted Average
122		Pervious Area
14,408		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10	0.0100	4.91	3.86	Circular Channel (pipe), CB2-DMH2 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0					Direct Entry, MIN. TC
6.0	10	Total			

Subcatchment 4S: CB4

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.065 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
7,554	98	Paved parking & roofs
7,554		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	13	0.0100	4.91	3.86	Circular Channel (pipe), CB4-DMH4 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0					Direct Entry, MIN.TC
6.0	13	Total			

Subcatchment 5S: CB5

Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.060 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
7,852	98	Paved parking & roofs
2,558	39	>75% Grass cover, Good, HSG A
10,410	84	Weighted Average
2,558		Pervious Area
7,852		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	41	0.0030	2.69	2.11	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.7					Direct Entry, MIN. TC
6.0	41	Total			

Subcatchment 6S: CB6

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
4,648	98	Paved parking & roofs
1,389	39	>75% Grass cover, Good, HSG A
6,037	84	Weighted Average
1,389		Pervious Area
4,648		Impervious Area

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Type III 24-hr 10YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.0050	3.47	2.73	Circular Channel (pipe), CB6-DMH5 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry,
6.0	38	Total			

Subcatchment 7S: CB7

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
1,784	98	Paved parking & roofs
584	39	>75% Grass cover, Good, HSG A
2,368	83	Weighted Average
584		Pervious Area
1,784		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	48	0.0200	6.95	5.46	Circular Channel (pipe), CB7-DMH5 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.9					Direct Entry, MIN. TC
6.0	48	Total			

Subcatchment 8S: CB8

Runoff = 0.25 cfs @ 12.10 hrs, Volume= 0.019 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
2,933	98	Paved parking & roofs
3,025	39	>75% Grass cover, Good, HSG A
5,958	68	Weighted Average
3,025		Pervious Area
2,933		Impervious Area

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Type III 24-hr 10YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	100	0.0200	6.95	5.46	Circular Channel (pipe), CB8-DMH4 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry, MIN. TC
6.0	100	Total			

Subcatchment 9S: CB9

Runoff = 0.15 cfs @ 12.11 hrs, Volume= 0.013 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
2,195	98	Paved parking & roofs
4,619	39	>75% Grass cover, Good, HSG A
6,814	58	Weighted Average
4,619		Pervious Area
2,195		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	25	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.8	19	0.3330	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.0	11	0.0454	4.33		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	114	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	22	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.5					Direct Entry, MIN. TC.
6.0	191	Total			

Subcatchment 10S: CB10

Runoff = 1.06 cfs @ 12.11 hrs, Volume= 0.089 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
11,674	98	Paved parking & roofs
23,855	39	>75% Grass cover, Good, HSG A
7,960	61	>75% Grass cover, Good, HSG B
43,489	59	Weighted Average

31,815		Pervious Area			
11,674		Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0370	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	14	0.0370	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	42	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	67	0.1500	2.71		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0300	8.51	6.69	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.4					Direct Entry, MIN TC
6.0	216	Total			

Subcatchment 11S: CB11

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.013 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
2,003	98	Paved parking & roofs
2,251	39	>75% Grass cover, Good, HSG A
4,254	67	Weighted Average
2,251		Pervious Area
2,003		Impervious Area

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Type III 24-hr 10YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	22	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.8	12	0.1670	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.3	6	0.3330	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	17	0.0740	1.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	8	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	40	0.0300	8.51	6.69	Circular Channel (pipe), CB11-DMH7 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.9					Direct Entry, MIN. TC
6.0	105	Total			

Subcatchment 12S: CB12

Runoff = 1.76 cfs @ 12.16 hrs, Volume= 0.155 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
12,622	98	Paved parking & roofs
8,584	39	>75% Grass cover, Good, HSG A
25,982	61	>75% Grass cover, Good, HSG B
5,867	55	Woods, Good, HSG B
53,055	66	Weighted Average
40,433		Pervious Area
12,622		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	11	0.0150	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.0	20	0.3000	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.5	17	0.1180	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.3	24	0.0690	1.31		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	10	0.2000	3.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	33	0.5000	4.95		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0900	2.10		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	11	0.1820	2.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	102	0.0490	4.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	93	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	47	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
10.4	407	Total			

Subcatchment 13S: CB13

Runoff = 0.51 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
5,493	98	Paved parking & roofs
4,008	39	>75% Grass cover, Good, HSG A
9,501	73	Weighted Average
4,008		Pervious Area
5,493		Impervious Area

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Type III 24-hr 10YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	11	0.1820	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.2	29	0.3330	0.41		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.4	75	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	9	0.0200	6.95	5.46	Circular Channel (pipe), CB13-DMH10 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
3.7					Direct Entry, MIN. TC
6.0	124	Total			

Subcatchment 14S: CB14

Runoff = 0.99 cfs @ 12.11 hrs, Volume= 0.075 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
11,118	98	Paved parking & roofs
7,973	39	>75% Grass cover, Good, HSG A
19,091	73	Weighted Average
7,973		Pervious Area
11,118		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	37	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.7	92	0.0110	2.13		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	35	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	43	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	100	0.0100	4.91	3.86	Circular Channel (pipe), CB14-DMH10 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.2	307	Total			

Subcatchment 15S: RETAINING WALL DRAIN

Runoff = 0.00 cfs @ 13.76 hrs, Volume= 0.001 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,920	39	>75% Grass cover, Good, HSG A
3,920		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	105	0.0200	6.95	5.46	Circular Channel (pipe), RETWALL-DMH1 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.7					Direct Entry, MIN. TC
6.0	105	Total			

Subcatchment 17S: 17S

Runoff = 1.25 cfs @ 12.10 hrs, Volume= 0.093 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
14,391	98	Pond
13,485	39	>75% Grass cover, Good, HSG A
27,876	69	Weighted Average
13,485		Pervious Area
14,391		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0740	0.25		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.0	89	0.0450	1.48		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	56	0.0357	1.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.9	64	0.0310	1.23		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1					Direct Entry, MIN TC
6.0	259	Total			

Subcatchment 18S: 18S

Runoff = 0.09 cfs @ 12.41 hrs, Volume= 0.021 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
4,411	98	Paved parking & roofs
22,080	39	>75% Grass cover, Good, HSG A
8,779	30	Woods, Good, HSG A
35,270	44	Weighted Average
30,859		Pervious Area
4,411		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.5	36	0.0560	1.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.2	37	0.2700	2.60		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	14	0.1430	1.89		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.2	19	0.0820	1.43		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.9	156	Total			

Subcatchment 20S: ROOF1

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
5,064	98	Paved parking & roofs
5,064		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	70	0.0100	4.91	3.86	Circular Channel (pipe), CLEANOUT-DMH6 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry, MIN. TC.
6.0	70	Total			

Subcatchment 21S: ROOF1

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
5,048	98	Paved parking & roofs
5,048		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	58	0.0400	9.83	7.72	Circular Channel (pipe), CLEANOUT-DMH8 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.9					Direct Entry, MIN. TC.
6.0	58	Total			

Subcatchment 22S: ROOF-REAR

Runoff = 1.04 cfs @ 12.09 hrs, Volume= 0.086 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
10,112	98	Paved parking & roofs
10,112		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	160	0.0200	6.95	5.46	Circular Channel (pipe), CLEANOUT-DMH9 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.6					Direct Entry, MIN. TC.
6.0	160	Total			

Subcatchment 30S: CB30

Runoff = 0.18 cfs @ 12.12 hrs, Volume= 0.019 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,270	98	Paved parking & roofs
10,380	39	>75% Grass cover, Good, HSG A
13,650	53	Weighted Average
10,380		Pervious Area
3,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	38	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	38	Total			

Subcatchment 31S: CB31

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
5,898	98	Paved parking & roofs
2,889	39	>75% Grass cover, Good, HSG A
8,787	79	Weighted Average
2,889		Pervious Area
5,898		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0075	4.26	3.34	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 32S: CB32

Runoff = 0.09 cfs @ 12.10 hrs, Volume= 0.007 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
1,040	98	Paved parking & roofs
951	39	>75% Grass cover, Good, HSG A
1,991	70	Weighted Average
951		Pervious Area
1,040		Impervious Area

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Type III 24-hr 10YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	32	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	32	Total			

Subcatchment 33S: CB33

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,413	98	Paved parking & roofs
2,504	39	>75% Grass cover, Good, HSG A
5,917	73	Weighted Average
2,504		Pervious Area
3,413		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	42	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	42	Total			

Subcatchment 34S: CB34

Runoff = 1.01 cfs @ 12.10 hrs, Volume= 0.074 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
10,509	98	Paved parking & roofs
6,920	39	>75% Grass cover, Good, HSG A
1,505	61	>75% Grass cover, Good, HSG B
18,934	73	Weighted Average
8,425		Pervious Area
10,509		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0350	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	7	0.0350	1.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	63	0.0635	5.12		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6	209	0.0800	5.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6					Direct Entry, MIN TC
0.0	16	0.0200	6.95	5.46	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	345	Total			

Subcatchment 35S: CB35

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.040 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
5,089	98	Paved parking & roofs
1,446	39	>75% Grass cover, Good, HSG A
1,147	61	>75% Grass cover, Good, HSG B
7,682	81	Weighted Average
2,593		Pervious Area
5,089		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	2	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	2	Total			

Subcatchment 36S: CB36

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.078 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
8,647	98	Paved parking & roofs
3,366	61	>75% Grass cover, Good, HSG B
12,013	88	Weighted Average

3,366 Pervious Area
8,647 Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	43	0.0470	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	17	0.0410	1.42		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	32	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0770	5.63		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	87	0.0400	4.06		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7					Direct Entry, MIN TC
0.0	19	0.0210	7.12	5.59	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	224	Total			

Subcatchment 37S: CB37

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
4,197	98	Paved parking & roofs
1,374	61	>75% Grass cover, Good, HSG B
5,571	89	Weighted Average
1,374		Pervious Area
4,197		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0500	10.99	8.63	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 38S: CB38

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.060 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
6,806	98	Paved parking & roofs
1,621	61	>75% Grass cover, Good, HSG B
8,427	91	Weighted Average
1,621		Pervious Area
6,806		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	19	0.0330	8.93	7.01	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	19	Total			

Subcatchment 39S: CB39

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
7,442	98	Paved parking & roofs
4,090	61	>75% Grass cover, Good, HSG B
11,532	85	Weighted Average
4,090		Pervious Area
7,442		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 40S: CB40

Runoff = 0.89 cfs @ 12.09 hrs, Volume= 0.065 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
7,083	98	Paved parking & roofs
3,954	61	>75% Grass cover, Good, HSG B
11,037	85	Weighted Average
3,954		Pervious Area
7,083		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	19	0.0410	9.95	7.82	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	19	Total			

Subcatchment 41S: CB41

Runoff = 2.77 cfs @ 12.11 hrs, Volume= 0.210 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
21,462	98	Paved parking & roofs
21,670	61	>75% Grass cover, Good, HSG B
43,132	79	Weighted Average
21,670		Pervious Area
21,462		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	7	0.0450	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	5	0.0450	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.25"
2.0	21	0.0450	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
2.1	17	0.0260	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.9	59	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.8	56	0.0280	1.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	27	0.0190	2.80		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6	147	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	9	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.5	348	Total			

Subcatchment 42S: CB42

Runoff = 1.09 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
9,346	98	Paved parking & roofs
2,328	61	>75% Grass cover, Good, HSG B
11,674	91	Weighted Average
2,328		Pervious Area
9,346		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	14	0.0100	4.91	3.86	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	14	Total			

Subcatchment 43S: CB43

Runoff = 1.44 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
10,778	98	Paved parking & roofs
8,653	61	>75% Grass cover, Good, HSG B
19,431	82	Weighted Average
8,653		Pervious Area
10,778		Impervious Area

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Type III 24-hr 10YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.9	30	0.1050	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	8	0.0105	0.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0770	1.94		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	23	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	120	0.0770	5.63		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5					Direct Entry, MIN TC
0.1	29	0.0100	4.91	3.86	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.1	256	Total			

Subcatchment 44S: CB44

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,778	98	Paved parking & roofs
1,223	61	>75% Grass cover, Good, HSG B
5,001	89	Weighted Average
1,223		Pervious Area
3,778		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	32	0.0024	2.41	1.89	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	32	Total			

Subcatchment 45S: CB45

Runoff = 1.55 cfs @ 12.11 hrs, Volume= 0.116 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
11,310	98	Paved parking & roofs
12,472	61	>75% Grass cover, Good, HSG B
23,782	79	Weighted Average
12,472		Pervious Area
11,310		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0370	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	16	0.0370	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.0	63	0.0230	1.06		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	40	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	54	0.0270	3.34		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	77	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	38	0.0200	6.95	5.46	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.1	338	Total			

Subcatchment 46S: CB46

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
6,059	98	Paved parking & roofs
390	39	>75% Grass cover, Good, HSG A
6,449	94	Weighted Average
390		Pervious Area
6,059		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	9	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	9	Total			

Subcatchment 47S: CB44

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.027 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,523	98	Paved parking & roofs
908	39	>75% Grass cover, Good, HSG A
4,431	86	Weighted Average
908		Pervious Area
3,523		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.1	32	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.1	32	Total			

Subcatchment 48S: CB48

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
2,050	98	Paved parking & roofs
795	39	>75% Grass cover, Good, HSG A
2,845	82	Weighted Average
795		Pervious Area
2,050		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	7	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	7	Total			

Subcatchment 49S: CB49

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.021 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,174	98	Paved parking & roofs
2,960	39	>75% Grass cover, Good, HSG A
6,134	70	Weighted Average
2,960		Pervious Area
3,174		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	21	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	21	Total			

Subcatchment 50S: ROOF

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.125 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
14,656	98	Paved parking & roofs
14,656		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	88	0.0300	8.51	6.69	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	88	Total			

Subcatchment 51S: CB51

Runoff = 2.80 cfs @ 12.26 hrs, Volume= 0.301 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
21,687	98	Paved parking & roofs
9,396	39	>75% Grass cover, Good, HSG A
54,072	61	>75% Grass cover, Good, HSG B
22,931	55	Woods, Good, HSG B
108,086	65	Weighted Average
86,399		Pervious Area
21,687		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0480	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.6	48	0.0830	1.44		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2220	2.36		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	40	0.5000	4.95		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.6	133	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	11	0.1820	2.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0470	1.52		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	6	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0610	1.73		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	18	0.1110	2.33		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.1000	2.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	42	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.0	68	0.0290	1.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	144	0.0690	1.84		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	119	0.1690	2.88		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	20	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.1000	2.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	8.34	6.55	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
17.5	876	Total			

Subcatchment 52S: 52S

Runoff = 0.00 cfs @ 12.50 hrs, Volume= 0.002 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Type III 24-hr 10YR Rainfall=4.70"

Area (sf)	CN	Description
3,594	30	Woods, Good, HSG A
2,275	55	Woods, Good, HSG B
5,869	40	Weighted Average
5,869		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC

Reach 1R: DMH1-DMH2

Inflow Area = 0.310 ac, Inflow Depth = 3.21" for 10YR event

Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.083 af

Outflow = 0.98 cfs @ 12.09 hrs, Volume= 0.083 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.37 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.47 fps, Avg. Travel Time= 0.6 min

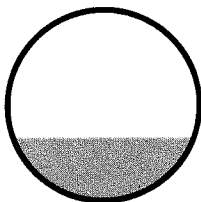
Peak Storage= 12 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.33'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.21 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 53.0' Slope= 0.0119 '/'

Inlet Invert= 246.00', Outlet Invert= 245.37'

**Reach 2R: DMH2-POND1**

Inflow Area = 0.644 ac, Inflow Depth = 3.86" for 10YR event

Inflow = 2.48 cfs @ 12.09 hrs, Volume= 0.207 af

Outflow = 2.48 cfs @ 12.09 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min

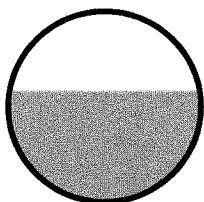
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.21 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.81 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.86 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 7.0' Slope= 0.0100 '/'
Inlet Invert= 245.37', Outlet Invert= 245.30'



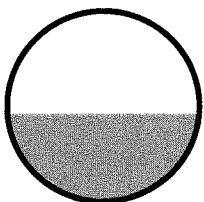
Reach 3R: DMH3-POND1

Inflow Area = 0.503 ac, Inflow Depth = 3.13" for 10YR event
Inflow = 1.68 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.68 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.86 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 8.0' Slope= 0.0100 '/'
Inlet Invert= 245.38', Outlet Invert= 245.30'



Reach 4R: DMH4-DMH3

Inflow Area = 0.503 ac, Inflow Depth = 3.13" for 10YR event
Inflow = 1.68 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.68 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

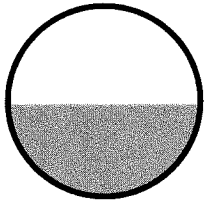
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.47 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, $n = 0.013$ Concrete pipe, bends & connections

Length= 2.0' Slope= 0.0100 '/'

Inlet Invert= 245.40', Outlet Invert= 245.38'



Reach 5R: DMH5-DMH4

Inflow Area = 0.193 ac, Inflow Depth = 2.97" for 10YR event

Inflow = 0.66 cfs @ 12.09 hrs, Volume= 0.048 af

Outflow = 0.65 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.90 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.00 fps, Avg. Travel Time= 0.4 min

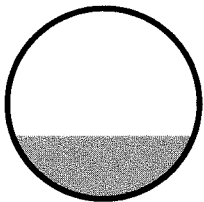
Peak Storage= 6 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.33'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.78 cfs

12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished

Length= 25.0' Slope= 0.0052 '/'

Inlet Invert= 245.63', Outlet Invert= 245.50'



Reach 6R: DMH6-HEADWALL

Inflow Area = 3.475 ac, Inflow Depth = 1.77" for 10YR event

Inflow = 5.85 cfs @ 12.12 hrs, Volume= 0.511 af

Outflow = 5.72 cfs @ 12.14 hrs, Volume= 0.511 af, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.02 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.65 fps, Avg. Travel Time= 1.4 min

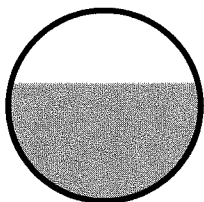
Peak Storage= 156 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.93'

Bank-Full Depth= 1.50', Capacity at Bank-Full= 8.19 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 135.0' Slope= 0.0052 '/'

Inlet Invert= 252.20', Outlet Invert= 251.50'



Reach 7R: DMH7-DMH6

Inflow Area = 3.318 ac, Inflow Depth = 1.80" for 10YR event

Inflow = 5.74 cfs @ 12.12 hrs, Volume= 0.498 af

Outflow = 5.70 cfs @ 12.12 hrs, Volume= 0.498 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.57 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 3.11 fps, Avg. Travel Time= 0.5 min

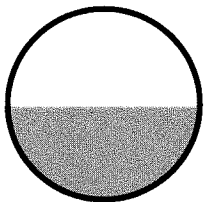
Peak Storage= 51 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.61'

Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.93 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 86.0' Slope= 0.0291 '/'

Inlet Invert= 254.95', Outlet Invert= 252.45'



Reach 8R: DMH8-DMH7

Inflow Area = 2.222 ac, Inflow Depth = 2.14" for 10YR event

Inflow = 4.57 cfs @ 12.12 hrs, Volume= 0.396 af

Outflow = 4.49 cfs @ 12.13 hrs, Volume= 0.396 af, Atten= 2%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

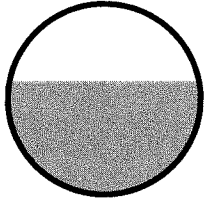
Max. Velocity= 9.34 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 3.11 fps, Avg. Travel Time= 0.5 min

Peak Storage= 47 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.59'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.90 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
 Length= 97.0' Slope= 0.0320 '/'
 Inlet Invert= 258.30', Outlet Invert= 255.20'



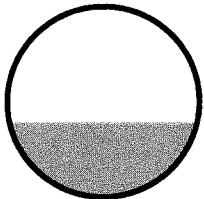
Reach 9R: DMH9-DMH8

Inflow Area = 0.889 ac, Inflow Depth = 2.68" for 10YR event
 Inflow = 2.48 cfs @ 12.10 hrs, Volume= 0.198 af
 Outflow = 2.46 cfs @ 12.11 hrs, Volume= 0.198 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Max. Velocity= 8.67 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.76 fps, Avg. Travel Time= 0.6 min

Peak Storage= 28 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.39'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.62 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
 Length= 98.0' Slope= 0.0390 '/'
 Inlet Invert= 262.22', Outlet Invert= 258.40'



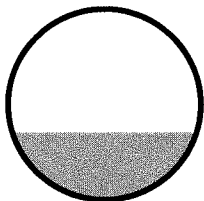
Reach 10R: DMH10-DMH9

Inflow Area = 0.656 ac, Inflow Depth = 2.05" for 10YR event
 Inflow = 1.49 cfs @ 12.10 hrs, Volume= 0.112 af
 Outflow = 1.46 cfs @ 12.11 hrs, Volume= 0.112 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.03 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 2.25 fps, Avg. Travel Time= 0.9 min

Peak Storage= 31 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.35'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.61 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 127.0' Slope= 0.0211 '/'
Inlet Invert= 265.90', Outlet Invert= 263.22'



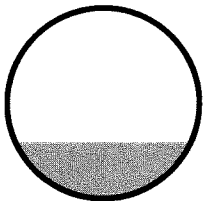
Reach 11R: DMH11-HEADWALL

Inflow Area = 0.116 ac, Inflow Depth = 4.46" for 10YR event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.50 cfs @ 12.12 hrs, Volume= 0.043 af, Atten= 5%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.67 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 3.3 min

Peak Storage= 34 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 174.0' Slope= 0.0050 '/'
Inlet Invert= 251.62', Outlet Invert= 250.75'



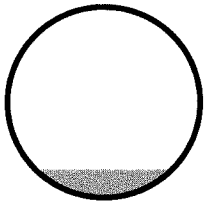
Reach 20R: DM20-EXIST.DMH

Inflow Area = 1.386 ac, Inflow Depth = 0.06" for 10YR event
Inflow = 0.34 cfs @ 12.46 hrs, Volume= 0.007 af
Outflow = 0.33 cfs @ 12.47 hrs, Volume= 0.007 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.72 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.47 hrs, Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.22 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 36.0' Slope= 0.0350 '/'
Inlet Invert= 241.77', Outlet Invert= 240.51'



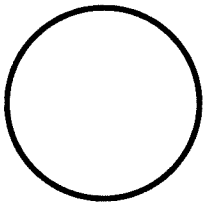
Reach 21R: DMH21-DMH22

Inflow Area = 3.480 ac, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 10.60 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 179.0' Slope= 0.0230 '/'
Inlet Invert= 258.77', Outlet Invert= 254.66'



Reach 22R: DMH22-HEADWALL

Inflow Area = 3.480 ac, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

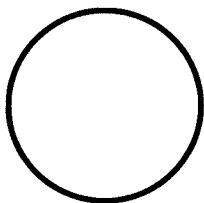
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.09 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 110.0' Slope= 0.0251 '/'

Inlet Invert= 254.70', Outlet Invert= 251.94'

**Reach 30R: DMH30-HW30**

Inflow Area = 0.697 ac, Inflow Depth = 1.58" for 10YR event

Inflow = 1.17 cfs @ 12.10 hrs, Volume= 0.092 af

Outflow = 1.16 cfs @ 12.10 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.34 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.25 fps, Avg. Travel Time= 0.2 min

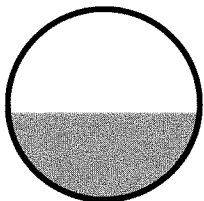
Peak Storage= 4 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.46'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 12.0' Slope= 0.0050 '/'

Inlet Invert= 251.10', Outlet Invert= 251.04'

**Reach 31R: DMH31-DMH30**

Inflow Area = 0.495 ac, Inflow Depth = 1.19" for 10YR event

Inflow = 0.58 cfs @ 12.11 hrs, Volume= 0.049 af

Outflow = 0.58 cfs @ 12.11 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

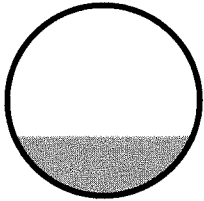
Max. Velocity= 2.76 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.08 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.31'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 10.0' Slope= 0.0050 '/'
Inlet Invert= 251.25', Outlet Invert= 251.20'



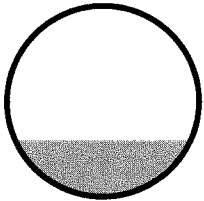
Reach 32R: DMH32-HW32

Inflow Area = 3.548 ac, Inflow Depth = 0.77" for 10YR event
Inflow = 3.03 cfs @ 12.10 hrs, Volume= 0.227 af
Outflow = 3.03 cfs @ 12.10 hrs, Volume= 0.227 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.99 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.09 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 17.0' Slope= 0.0200 '/'
Inlet Invert= 252.34', Outlet Invert= 252.00'



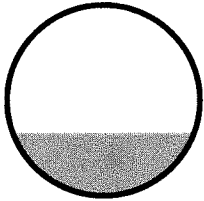
Reach 33R: DMH33-DMH32

Inflow Area = 3.092 ac, Inflow Depth = 0.44" for 10YR event
Inflow = 1.55 cfs @ 12.10 hrs, Volume= 0.114 af
Outflow = 1.54 cfs @ 12.10 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.42 fps, Avg. Travel Time= 0.3 min

Peak Storage= 10 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.69 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 44.0' Slope= 0.0300 '/
Inlet Invert= 254.16', Outlet Invert= 252.84'

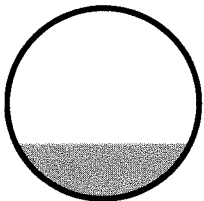
**Reach 34R: DMH34-DMH33**

Inflow Area = 3.092 ac, Inflow Depth = 0.44" for 10YR event
Inflow = 1.56 cfs @ 12.09 hrs, Volume= 0.114 af
Outflow = 1.55 cfs @ 12.10 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.35 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.89 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.63 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 120.0' Slope= 0.0500 '/
Inlet Invert= 260.26', Outlet Invert= 254.26'

**Reach 35R: DMH35-DMH32**

Inflow Area = 0.308 ac, Inflow Depth = 2.48" for 10YR event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.86 cfs @ 12.10 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.2 min

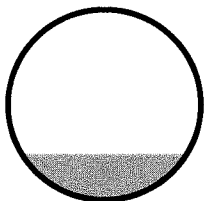
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.87 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 0.4 min

Peak Storage= 7 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.69 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 47.0' Slope= 0.0300 '/'

Inlet Invert= 254.25', Outlet Invert= 252.84'

**Reach 36R: DMH36-MANIFOLD**

Inflow Area = 2.766 ac, Inflow Depth = 2.89" for 10YR event

Inflow = 8.66 cfs @ 12.11 hrs, Volume= 0.667 af

Outflow = 8.63 cfs @ 12.11 hrs, Volume= 0.667 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.50 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 3.07 fps, Avg. Travel Time= 0.2 min

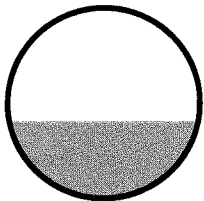
Peak Storage= 36 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.71'

Bank-Full Depth= 1.75', Capacity at Bank-Full= 25.23 cfs

21.0" Diameter Pipe, n= 0.010 PVC, smooth interior

Length= 40.0' Slope= 0.0150 '/'

Inlet Invert= 279.10', Outlet Invert= 278.50'

**Reach 37R: DMH37-DMH36**

Inflow Area = 2.766 ac, Inflow Depth = 2.89" for 10YR event

Inflow = 8.72 cfs @ 12.11 hrs, Volume= 0.667 af

Outflow = 8.66 cfs @ 12.11 hrs, Volume= 0.667 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

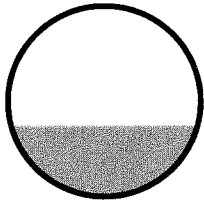
Max. Velocity= 10.73 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 3.45 fps, Avg. Travel Time= 0.4 min

Peak Storage= 68 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.65'

Bank-Full Depth= 1.75', Capacity at Bank-Full= 29.73 cfs

21.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 84.0' Slope= 0.0300 '/'
Inlet Invert= 281.72', Outlet Invert= 279.20'

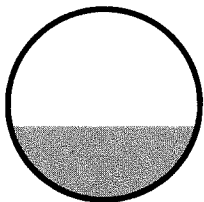
**Reach 38R: DMH38-DHH37**

Inflow Area = 2.363 ac, Inflow Depth = 2.80" for 10YR event
Inflow = 7.27 cfs @ 12.10 hrs, Volume= 0.552 af
Outflow = 7.20 cfs @ 12.11 hrs, Volume= 0.552 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.45 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.65 fps, Avg. Travel Time= 0.7 min

Peak Storage= 93 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 22.76 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 146.0' Slope= 0.0400 '/'
Inlet Invert= 288.71', Outlet Invert= 282.87'

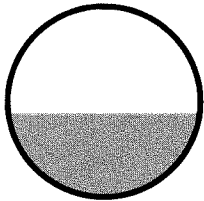
**Reach 39R: DMH39-DHH38**

Inflow Area = 1.904 ac, Inflow Depth = 2.67" for 10YR event
Inflow = 5.60 cfs @ 12.11 hrs, Volume= 0.424 af
Outflow = 5.58 cfs @ 12.11 hrs, Volume= 0.424 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.76 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.2 min

Peak Storage= 18 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 14.00 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 35.0' Slope= 0.0400 '/'
Inlet Invert= 292.40', Outlet Invert= 291.00'



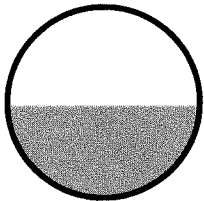
Reach 40R: DMH40-DHH39

Inflow Area = 1.244 ac, Inflow Depth = 2.66" for 10YR event
Inflow = 3.65 cfs @ 12.11 hrs, Volume= 0.275 af
Outflow = 3.61 cfs @ 12.11 hrs, Volume= 0.275 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.68 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.34 fps, Avg. Travel Time= 0.6 min

Peak Storage= 47 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.72 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 126.0' Slope= 0.0400 '/'
Inlet Invert= 299.44', Outlet Invert= 294.40'



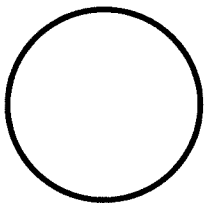
Reach 41R: DMH41-DMH34

Inflow Area = 2.481 ac, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.72 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 34.0' Slope= 0.0400 '/'
Inlet Invert= 264.62', Outlet Invert= 263.26'

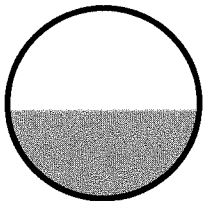
**Reach 42R: DMH42-DMH43**

Inflow Area = 0.714 ac, Inflow Depth = 3.14" for 10YR event
Inflow = 2.52 cfs @ 12.09 hrs, Volume= 0.187 af
Outflow = 2.51 cfs @ 12.10 hrs, Volume= 0.187 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.07 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 0.6 min

Peak Storage= 31 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.74 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 86.0' Slope= 0.0221 '/'
Inlet Invert= 271.44', Outlet Invert= 269.54'

**Reach 43R: DMH43-DMH44**

Inflow Area = 0.714 ac, Inflow Depth = 3.14" for 10YR event
Inflow = 2.51 cfs @ 12.10 hrs, Volume= 0.187 af
Outflow = 2.49 cfs @ 12.10 hrs, Volume= 0.187 af, Atten= 1%, Lag= 0.3 min

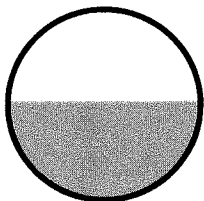
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.12 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 0.6 min

Peak Storage= 27 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.74 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 67.0' Slope= 0.0151 '/'

Inlet Invert= 269.44', Outlet Invert= 268.43'



Reach 44R: DMH44-MANIFOLD

Inflow Area = 0.714 ac, Inflow Depth = 3.14" for 10YR event

Inflow = 2.49 cfs @ 12.10 hrs, Volume= 0.187 af

Outflow = 2.48 cfs @ 12.10 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.11 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 2.33 fps, Avg. Travel Time= 0.2 min

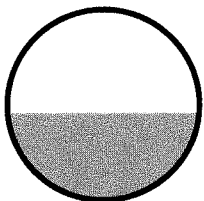
Peak Storage= 7 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.46'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.81 cfs

12.0" Diameter Pipe, n= 0.010 PVC, smooth interior

Length= 21.0' Slope= 0.0157 '/'

Inlet Invert= 268.33', Outlet Invert= 268.00'



Reach 45R: DMH45-MANIFOLD

Inflow Area = 2.766 ac, Inflow Depth = 0.55" for 10YR event

Inflow = 4.27 cfs @ 12.30 hrs, Volume= 0.127 af

Outflow = 4.31 cfs @ 12.30 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

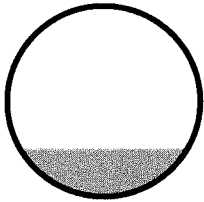
Max. Velocity= 12.44 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 5.96 fps, Avg. Travel Time= 0.1 min

Peak Storage= 9 cf @ 12.30 hrs, Average Depth at Peak Storage= 0.38'

Bank-Full Depth= 1.50', Capacity at Bank-Full= 31.32 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 27.0' Slope= 0.0526 '/'
Inlet Invert= 269.42', Outlet Invert= 268.00'



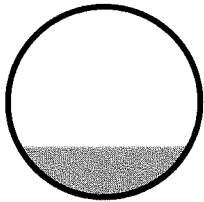
Reach 46R: DMH46-DMH45

Inflow Area = 2.766 ac, Inflow Depth = 0.55" for 10YR event
Inflow = 4.19 cfs @ 12.29 hrs, Volume= 0.127 af
Outflow = 4.27 cfs @ 12.30 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.26 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.51 fps, Avg. Travel Time= 0.2 min

Peak Storage= 21 cf @ 12.29 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 27.31 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 56.0' Slope= 0.0400 '/'
Inlet Invert= 273.93', Outlet Invert= 271.69'



Reach 47R: MANIFOLD-DMH46

Inflow Area = 2.766 ac, Inflow Depth = 0.55" for 10YR event
Inflow = 4.13 cfs @ 12.28 hrs, Volume= 0.127 af
Outflow = 4.19 cfs @ 12.29 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.9 min

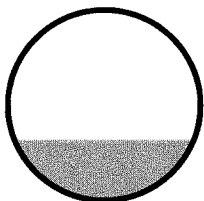
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.73 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.31 fps, Avg. Travel Time= 0.1 min

Peak Storage= 18 cf @ 12.29 hrs, Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.31 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior

Length= 38.0' Slope= 0.0200 '/'

Inlet Invert= 278.50', Outlet Invert= 277.74'

**Pond 1P: POND 1**

Inflow Area = 1.386 ac, Inflow Depth = 3.45" for 10YR event
 Inflow = 4.97 cfs @ 12.09 hrs, Volume= 0.398 af
 Outflow = 1.34 cfs @ 12.46 hrs, Volume= 0.398 af, Atten= 73%, Lag= 22.0 min
 Discarded = 1.00 cfs @ 11.90 hrs, Volume= 0.391 af
 Primary = 0.34 cfs @ 12.46 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 245.37' @ 12.46 hrs Surf.Area= 0.120 ac Storage= 0.106 af

Plug-Flow detention time= 33.4 min calculated for 0.398 af (100% of inflow)
 Center-of-Mass det. time= 33.4 min (806.0 - 772.6)

Volume	Invert	Avail.Storage	Storage Description
#1	243.75'	2.353 af	39.50'W x 132.00'L x 50.00'H Prismatic 5.985 af Overall - 0.103 af Embedded = 5.882 af x 40.0% Voids
#2	244.42'	0.103 af	24.0"D x 130.00'L Horizontal Cylinder x 11 Inside #1
		2.456 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	245.30'	12.0" Vert. Orifice/Grate X 3.00 C= 0.600

Discarded OutFlow Max=1.00 cfs @ 11.90 hrs HW=244.27' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 1.00 cfs)

Primary OutFlow Max=0.06 cfs @ 12.46 hrs HW=245.36' (Free Discharge)

↑ **2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 0.87 fps)

Pond 2P: POND 2

Inflow Area = 12.293 ac, Inflow Depth = 1.07" for 10YR event
 Inflow = 12.90 cfs @ 12.11 hrs, Volume= 1.092 af
 Outflow = 2.36 cfs @ 12.66 hrs, Volume= 1.092 af, Atten= 82%, Lag= 32.8 min
 Discarded = 2.19 cfs @ 12.66 hrs, Volume= 1.085 af
 Primary = 0.17 cfs @ 12.66 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 250.29' @ 12.66 hrs Surf.Area= 11,429 sf Storage= 13,706 cf

Plug-Flow detention time= 44.8 min calculated for 1.092 af (100% of inflow)

Center-of-Mass det. time= 44.8 min (867.7 - 822.9)

Volume	Invert	Avail.Storage	Storage Description
#1	249.00'	49,660 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.00	9,874	0	0
250.00	11,040	10,457	10,457
252.00	13,732	24,772	35,229
253.00	15,130	14,431	49,660

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.90'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	250.66'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	250.17'	4.0" Vert. Orifice/Grate X 5.00 C= 0.600

Discarded OutFlow Max=2.19 cfs @ 12.66 hrs HW=250.29' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 2.19 cfs)

Primary OutFlow Max=0.16 cfs @ 12.66 hrs HW=250.29' (Free Discharge)

└─2=Orifice/Grate (Controls 0.00 cfs)

└─3=Orifice/Grate (Orifice Controls 0.16 cfs @ 1.17 fps)

Pond 3P: POND 3

Inflow Area = 2.766 ac, Inflow Depth = 2.89" for 10YR event
 Inflow = 8.63 cfs @ 12.11 hrs, Volume= 0.667 af
 Outflow = 4.74 cfs @ 12.28 hrs, Volume= 0.667 af, Atten= 45%, Lag= 9.9 min
 Discarded = 0.61 cfs @ 11.60 hrs, Volume= 0.541 af
 Primary = 4.13 cfs @ 12.28 hrs, Volume= 0.127 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 278.86' @ 12.28 hrs Surf.Area= 0.073 ac Storage= 0.192 af

Plug-Flow detention time= 95.9 min calculated for 0.667 af (100% of inflow)

Center-of-Mass det. time= 95.8 min (911.9 - 816.1)

Volume	Invert	Avail.Storage	Storage Description
#1	274.60'	1.404 af	59.83'W x 53.00'L x 50.00'H Prismatic 3.640 af Overall - 0.130 af Embedded = 3.510 af x 40.0% Voids
#2	275.60'	0.130 af	48.0"D x 50.00'L Horizontal Cylinder x 9 Inside #1
		1.534 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	278.50'	12.0" Vert. Orifice/Grate X 6.00 C= 0.600

Discarded OutFlow Max=0.61 cfs @ 11.60 hrs HW=275.12' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.61 cfs)

Primary OutFlow Max=3.01 cfs @ 12.28 hrs HW=278.85' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 3.01 cfs @ 2.02 fps)

Pond 4P: POND 4

Inflow Area = 3.480 ac, Inflow Depth = 1.08" for 10YR event
 Inflow = 5.45 cfs @ 12.29 hrs, Volume= 0.314 af
 Outflow = 0.58 cfs @ 12.00 hrs, Volume= 0.314 af, Atten= 89%, Lag= 0.0 min
 Discarded = 0.58 cfs @ 12.00 hrs, Volume= 0.314 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 267.74' @ 13.02 hrs Surf.Area= 0.070 ac Storage= 0.154 af

Plug-Flow detention time= 97.4 min calculated for 0.313 af (100% of inflow)
 Center-of-Mass det. time= 97.3 min (882.6 - 785.3)

Volume	Invert	Avail.Storage	Storage Description
#1	264.10'	1.345 af	46.75'W x 65.00'L x 50.00'H Prismatic 3.488 af Overall - 0.125 af Embedded = 3.363 af x 40.0% Voids
#2	265.10'	0.125 af	48.0"D x 62.00'L Horizontal Cylinder x 7 Inside #1
		1.470 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	268.00'	12.0" Vert. Orifice/Grate X 4.00 C= 0.600

Discarded OutFlow Max=0.58 cfs @ 12.00 hrs HW=264.66' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=264.10' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 5P: POND 5

Inflow Area = 2.481 ac, Inflow Depth = 1.46" for 10YR event
 Inflow = 2.80 cfs @ 12.26 hrs, Volume= 0.301 af
 Outflow = 0.60 cfs @ 12.15 hrs, Volume= 0.301 af, Atten= 79%, Lag= 0.0 min
 Discarded = 0.60 cfs @ 12.15 hrs, Volume= 0.301 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 268.08' @ 13.03 hrs Surf.Area= 3,136 sf Storage= 4,017 cf

Plug-Flow detention time= 57.9 min calculated for 0.301 af (100% of inflow)
 Center-of-Mass det. time= 57.9 min (933.3 - 875.5)

Volume	Invert	Avail.Storage	Storage Description
#1	265.70'	60,450 cf	40.20'W x 78.00'L x 50.00'H Prismaoid 156,780 cf Overall - 5,655 cf Embedded = 151,125 cf x 40.0% Voids
#2	266.70'	5,655 cf	48.0"D x 75.00'L Horizontal Cylinder x 6 Inside #1
		66,105 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	265.60'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	269.60'	12.0" Vert. Orifice/Grate X 3.00 C= 0.600

Discarded OutFlow Max=0.60 cfs @ 12.15 hrs HW=266.35' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=265.70' (Free Discharge)

└─2=Orifice/Grate (Controls 0.00 cfs)

Pond 6P: POND 2

Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 0.00' @ 0.00 hrs Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated)

Center-of-Mass det. time= (not calculated)

Volume	Invert	Avail.Storage	Storage Description
#1	308.00'	8,098 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.00	2,801	0	0
310.00	5,297	8,098	8,098

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.90'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	250.66'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	250.17'	4.0" Vert. Orifice/Grate X 5.00 C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

└─1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

└─2=Orifice/Grate (Controls 0.00 cfs)

└─3=Orifice/Grate (Controls 0.00 cfs)

Link 1L: COMBINE HYDROGRAPHS

Inflow Area = 14.488 ac, Inflow Depth = 0.03" for 10YR event

Inflow = 0.50 cfs @ 12.50 hrs, Volume= 0.034 af

Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

100 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.120 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
9,594	98	Paved parking & roofs
9,594		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	62	0.0100	4.91	3.86	Circular Channel (pipe), CB1-DMH1 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry,
6.0	62	Total			

Subcatchment 2S: CB2

Runoff = 2.17 cfs @ 12.09 hrs, Volume= 0.182 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
14,408	98	Paved parking & roofs
122	39	>75% Grass cover, Good, HSG A
14,530	98	Weighted Average
122		Pervious Area
14,408		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	10	0.0100	4.91	3.86	Circular Channel (pipe), CB2-DMH2 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0					Direct Entry, MIN. TC
6.0	10	Total			

Subcatchment 4S: CB4

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.095 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
7,554	98	Paved parking & roofs
7,554		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	13	0.0100	4.91	3.86	Circular Channel (pipe), CB4-DMH4 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0					Direct Entry, MIN.TC
6.0	13	Total			

Subcatchment 5S: CB5

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 0.099 af, Depth= 4.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
7,852	98	Paved parking & roofs
2,558	39	>75% Grass cover, Good, HSG A
10,410	84	Weighted Average
2,558		Pervious Area
7,852		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	41	0.0030	2.69	2.11	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.7					Direct Entry, MIN. TC
6.0	41	Total			

Subcatchment 6S: CB6

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 4.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
4,648	98	Paved parking & roofs
1,389	39	>75% Grass cover, Good, HSG A
6,037	84	Weighted Average
1,389		Pervious Area
4,648		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.0050	3.47	2.73	Circular Channel (pipe), CB6-DMH5 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry,
6.0	38	Total			

Subcatchment 7S: CB7

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.022 af, Depth= 4.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
1,784	98	Paved parking & roofs
584	39	>75% Grass cover, Good, HSG A
2,368	83	Weighted Average
584		Pervious Area
1,784		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	48	0.0200	6.95	5.46	Circular Channel (pipe), CB7-DMH5 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.9					Direct Entry, MIN. TC
6.0	48	Total			

Subcatchment 8S: CB8

Runoff = 0.51 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
2,933	98	Paved parking & roofs
3,025	39	>75% Grass cover, Good, HSG A
5,958	68	Weighted Average
3,025		Pervious Area
2,933		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	100	0.0200	6.95	5.46	Circular Channel (pipe), CB8-DMH4 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry, MIN. TC
6.0	100	Total			

Subcatchment 9S: CB9

Runoff = 0.39 cfs @ 12.10 hrs, Volume= 0.030 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
2,195	98	Paved parking & roofs
4,619	39	>75% Grass cover, Good, HSG A
6,814	58	Weighted Average
4,619		Pervious Area
2,195		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	25	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.8	19	0.3330	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.0	11	0.0454	4.33		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	114	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	22	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.5					Direct Entry, MIN. TC.
6.0	191	Total			

Subcatchment 10S: CB10

Runoff = 2.62 cfs @ 12.10 hrs, Volume= 0.197 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
11,674	98	Paved parking & roofs
23,855	39	>75% Grass cover, Good, HSG A
7,960	61	>75% Grass cover, Good, HSG B
43,489	59	Weighted Average

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Type III 24-hr 100YR Rainfall=6.80"

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31,815		Pervious Area			
11,674		Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0370	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	14	0.0370	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	42	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	67	0.1500	2.71		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0300	8.51	6.69	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
					Direct Entry, MIN TC
0.4					
6.0	216	Total			

Subcatchment 11S: CB11

Runoff = 0.35 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
2,003	98	Paved parking & roofs
2,251	39	>75% Grass cover, Good, HSG A
4,254	67	Weighted Average
2,251		Pervious Area
2,003		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	22	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.8	12	0.1670	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.3	6	0.3330	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	17	0.0740	1.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	8	0.0600	4.97		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	40	0.0300	8.51	6.69	Circular Channel (pipe), CB11-DMH7 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.9					Direct Entry, MIN. TC
6.0	105	Total			

Subcatchment 12S: CB12

Runoff = 3.68 cfs @ 12.15 hrs, Volume= 0.309 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
12,622	98	Paved parking & roofs
8,584	39	>75% Grass cover, Good, HSG A
25,982	61	>75% Grass cover, Good, HSG B
5,867	55	Woods, Good, HSG B
53,055	66	Weighted Average
40,433		Pervious Area
12,622		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	11	0.0150	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.0	20	0.3000	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
2.5	17	0.1180	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.3	24	0.0690	1.31		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	10	0.2000	3.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	33	0.5000	4.95		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0900	2.10		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	11	0.1820	2.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	102	0.0490	4.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	93	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	47	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
10.4	407	Total			

Subcatchment 13S: CB13

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
5,493	98	Paved parking & roofs
4,008	39	>75% Grass cover, Good, HSG A
9,501	73	Weighted Average
4,008		Pervious Area
5,493		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	11	0.1820	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.2	29	0.3330	0.41		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.4	75	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	9	0.0200	6.95	5.46	Circular Channel (pipe), CB13-DMH10 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
3.7					Direct Entry, MIN. TC
6.0	124	Total			

Subcatchment 14S: CB14

Runoff = 1.83 cfs @ 12.11 hrs, Volume= 0.137 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
11,118	98	Paved parking & roofs
7,973	39	>75% Grass cover, Good, HSG A
19,091	73	Weighted Average
7,973		Pervious Area
11,118		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	37	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.7	92	0.0110	2.13		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	35	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	43	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	100	0.0100	4.91	3.86	Circular Channel (pipe), CB14-DMH10 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.2	307	Total			

Subcatchment 15S: RETAINING WALL DRAIN

Runoff = 0.03 cfs @ 12.15 hrs, Volume= 0.005 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,920	39	>75% Grass cover, Good, HSG A
3,920		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	105	0.0200	6.95	5.46	Circular Channel (pipe), RETWALL-DMH1 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.7					Direct Entry, MIN. TC
6.0	105	Total			

Subcatchment 17S: 17S

Runoff = 2.46 cfs @ 12.09 hrs, Volume= 0.179 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
14,391	98	Pond
13,485	39	>75% Grass cover, Good, HSG A
27,876	69	Weighted Average
13,485		Pervious Area
14,391		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0740	0.25		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.0	89	0.0450	1.48		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	56	0.0357	1.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.9	64	0.0310	1.23		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1					Direct Entry, MIN TC
6.0	259	Total			

Subcatchment 18S: 18S

Runoff = 0.63 cfs @ 12.17 hrs, Volume= 0.072 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
4,411	98	Paved parking & roofs
22,080	39	>75% Grass cover, Good, HSG A
8,779	30	Woods, Good, HSG A
35,270	44	Weighted Average
30,859		Pervious Area
4,411		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.5	36	0.0560	1.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.2	37	0.2700	2.60		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	14	0.1430	1.89		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.2	19	0.0820	1.43		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.9	156	Total			

Subcatchment 20S: ROOF1

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.064 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
5,064	98	Paved parking & roofs
5,064		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	70	0.0100	4.91	3.86	Circular Channel (pipe), CLEANOUT-DMH6 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.8					Direct Entry, MIN. TC.
6.0	70	Total			

Subcatchment 21S: ROOF1

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.063 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
5,048	98	Paved parking & roofs
5,048		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	58	0.0400	9.83	7.72	Circular Channel (pipe), CLEANOUT-DMH8 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.9					Direct Entry, MIN. TC.
6.0	58	Total			

Subcatchment 22S: ROOF-REAR

Runoff = 1.51 cfs @ 12.09 hrs, Volume= 0.127 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
10,112	98	Paved parking & roofs
10,112		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	160	0.0200	6.95	5.46	Circular Channel (pipe), CLEANOUT-DMH9 Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
5.6					Direct Entry, MIN. TC.
6.0	160	Total			

Subcatchment 30S: CB30

Runoff = 0.59 cfs @ 12.11 hrs, Volume= 0.047 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,270	98	Paved parking & roofs
10,380	39	>75% Grass cover, Good, HSG A
13,650	53	Weighted Average
10,380		Pervious Area
3,270		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	38	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	38	Total			

Subcatchment 31S: CB31

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
5,898	98	Paved parking & roofs
2,889	39	>75% Grass cover, Good, HSG A
8,787	79	Weighted Average
2,889		Pervious Area
5,898		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0075	4.26	3.34	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 32S: CB32

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 0.013 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
1,040	98	Paved parking & roofs
951	39	>75% Grass cover, Good, HSG A
1,991	70	Weighted Average
951		Pervious Area
1,040		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	32	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	32	Total			

Subcatchment 33S: CB33

Runoff = 0.58 cfs @ 12.10 hrs, Volume= 0.043 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,413	98	Paved parking & roofs
2,504	39	>75% Grass cover, Good, HSG A
5,917	73	Weighted Average
2,504		Pervious Area
3,413		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	42	0.0050	3.47	2.73	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	42	Total			

Subcatchment 34S: CB34

Runoff = 1.88 cfs @ 12.09 hrs, Volume= 0.136 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
10,509	98	Paved parking & roofs
6,920	39	>75% Grass cover, Good, HSG A
1,505	61	>75% Grass cover, Good, HSG B
18,934	73	Weighted Average
8,425		Pervious Area
10,509		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0350	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	7	0.0350	1.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	63	0.0635	5.12		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6	209	0.0800	5.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6					Direct Entry, MIN TC
0.0	16	0.0200	6.95	5.46	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	345	Total			

Subcatchment 35S: CB35

Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
5,089	98	Paved parking & roofs
1,446	39	>75% Grass cover, Good, HSG A
1,147	61	>75% Grass cover, Good, HSG B
7,682	81	Weighted Average
2,593		Pervious Area
5,089		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	2	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	2	Total			

Subcatchment 36S: CB36

Runoff = 1.63 cfs @ 12.09 hrs, Volume= 0.124 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
8,647	98	Paved parking & roofs
3,366	61	>75% Grass cover, Good, HSG B
12,013	88	Weighted Average

	3,366				Pervious Area
	8,647				Impervious Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	43	0.0470	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	17	0.0410	1.42		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	32	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0770	5.63		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	87	0.0400	4.06		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7					Direct Entry, MIN TC
0.0	19	0.0210	7.12	5.59	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	224	Total			

Subcatchment 37S: CB37

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description			
4,197	98	Paved parking & roofs			
1,374	61	>75% Grass cover, Good, HSG B			
5,571	89	Weighted Average			
1,374		Pervious Area			
4,197		Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0500	10.99	8.63	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 38S: CB38

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.093 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

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Type III 24-hr 100YR Rainfall=6.80"

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Area (sf)	CN	Description
6,806	98	Paved parking & roofs
1,621	61	>75% Grass cover, Good, HSG B
8,427	91	Weighted Average
1,621		Pervious Area
6,806		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	19	0.0330	8.93	7.01	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	19	Total			

Subcatchment 39S: CB39

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.112 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
7,442	98	Paved parking & roofs
4,090	61	>75% Grass cover, Good, HSG B
11,532	85	Weighted Average
4,090		Pervious Area
7,442		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	8	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	8	Total			

Subcatchment 40S: CB40

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.107 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
7,083	98	Paved parking & roofs
3,954	61	>75% Grass cover, Good, HSG B
11,037	85	Weighted Average
3,954		Pervious Area
7,083		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	19	0.0410	9.95	7.82	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	19	Total			

Subcatchment 41S: CB41

Runoff = 4.76 cfs @ 12.11 hrs, Volume= 0.363 af, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
21,462	98	Paved parking & roofs
21,670	61	>75% Grass cover, Good, HSG B
43,132	79	Weighted Average
21,670		Pervious Area
21,462		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	7	0.0450	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.1	5	0.0450	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.25"
2.0	21	0.0450	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
2.1	17	0.0260	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.9	59	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.8	56	0.0280	1.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	27	0.0190	2.80		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.6	147	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	9	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.5	348	Total			

Subcatchment 42S: CB42

Runoff = 1.65 cfs @ 12.09 hrs, Volume= 0.128 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
9,346	98	Paved parking & roofs
2,328	61	>75% Grass cover, Good, HSG B
11,674	91	Weighted Average
2,328		Pervious Area
9,346		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	14	0.0100	4.91	3.86	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	14	Total			

Subcatchment 43S: CB43

Runoff = 2.38 cfs @ 12.09 hrs, Volume= 0.176 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
10,778	98	Paved parking & roofs
8,653	61	>75% Grass cover, Good, HSG B
19,431	82	Weighted Average
8,653		Pervious Area
10,778		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
1.9	30	0.1050	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	8	0.0105	0.72		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0770	1.94		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	23	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	120	0.0770	5.63		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5					Direct Entry, MIN TC
0.1	29	0.0100	4.91	3.86	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.1	256	Total			

Subcatchment 44S: CB44

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,778	98	Paved parking & roofs
1,223	61	>75% Grass cover, Good, HSG B
5,001	89	Weighted Average
1,223		Pervious Area
3,778		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	32	0.0024	2.41	1.89	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	32	Total			

Subcatchment 45S: CB45

Runoff = 2.66 cfs @ 12.10 hrs, Volume= 0.200 af, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
11,310	98	Paved parking & roofs
12,472	61	>75% Grass cover, Good, HSG B
23,782	79	Weighted Average
12,472		Pervious Area
11,310		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0370	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 3.25"
0.2	16	0.0370	1.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.0	63	0.0230	1.06		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	40	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	54	0.0270	3.34		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	77	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	38	0.0200	6.95	5.46	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
7.1	338	Total			

Subcatchment 46S: CB46

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.075 af, Depth= 6.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
6,059	98	Paved parking & roofs
390	39	>75% Grass cover, Good, HSG A
6,449	94	Weighted Average
390		Pervious Area
6,059		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	9	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	9	Total			

Subcatchment 47S: CB44

Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.044 af, Depth= 5.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,523	98	Paved parking & roofs
908	39	>75% Grass cover, Good, HSG A
4,431	86	Weighted Average
908		Pervious Area
3,523		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.1	32	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.1	32	Total			

Subcatchment 48S: CB48

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
2,050	98	Paved parking & roofs
795	39	>75% Grass cover, Good, HSG A
2,845	82	Weighted Average
795		Pervious Area
2,050		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	7	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	7	Total			

Subcatchment 49S: CB49

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,174	98	Paved parking & roofs
2,960	39	>75% Grass cover, Good, HSG A
6,134	70	Weighted Average
2,960		Pervious Area
3,174		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.0	21	0.0400	9.83	7.72	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	21	Total			

Subcatchment 50S: ROOF

Runoff = 2.18 cfs @ 12.09 hrs, Volume= 0.184 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
14,656	98	Paved parking & roofs
14,656		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC
0.2	88	0.0300	8.51	6.69	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.2	88	Total			

Subcatchment 51S: CB51

Runoff = 5.99 cfs @ 12.25 hrs, Volume= 0.610 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

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Type III 24-hr 100YR Rainfall=6.80"

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Area (sf)	CN	Description
21,687	98	Paved parking & roofs
9,396	39	>75% Grass cover, Good, HSG A
54,072	61	>75% Grass cover, Good, HSG B
22,931	55	Woods, Good, HSG B
108,086	65	Weighted Average
86,399		Pervious Area
21,687		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0480	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.25"
0.6	48	0.0830	1.44		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	9	0.2220	2.36		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.1	40	0.5000	4.95		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.6	133	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	11	0.1820	2.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0470	1.52		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	6	0.3330	4.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0610	1.73		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	18	0.1110	2.33		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.1000	2.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	42	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.0	68	0.0290	1.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	144	0.0690	1.84		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.7	119	0.1690	2.88		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.1	20	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.1000	2.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	8.34	6.55	Circular Channel (pipe), Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior

17.5 876 Total

Subcatchment 52S: 52S

Runoff = 0.06 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=6.80"

Area (sf)	CN	Description
3,594	30	Woods, Good, HSG A
2,275	55	Woods, Good, HSG B
5,869	40	Weighted Average
5,869		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MIN TC

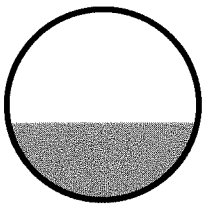
Reach 1R: DMH1-DMH2

Inflow Area = 0.310 ac, Inflow Depth = 4.86" for 100YR event
Inflow = 1.46 cfs @ 12.09 hrs, Volume= 0.126 af
Outflow = 1.45 cfs @ 12.09 hrs, Volume= 0.126 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.86 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.5 min

Peak Storage= 16 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.21 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 53.0' Slope= 0.0119 '/'
Inlet Invert= 246.00', Outlet Invert= 245.37'



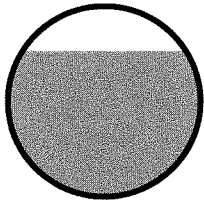
Reach 2R: DMH2-POND1

Inflow Area = 0.644 ac, Inflow Depth = 5.74" for 100YR event
Inflow = 3.62 cfs @ 12.09 hrs, Volume= 0.308 af
Outflow = 3.62 cfs @ 12.09 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.58 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.86 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 7.0' Slope= 0.0100 '/'
Inlet Invert= 245.37', Outlet Invert= 245.30'

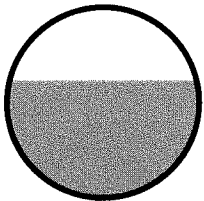
**Reach 3R: DMH3-POND1**

Inflow Area = 0.503 ac, Inflow Depth = 5.03" for 100YR event
Inflow = 2.70 cfs @ 12.09 hrs, Volume= 0.211 af
Outflow = 2.70 cfs @ 12.09 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.31 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.86 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 8.0' Slope= 0.0100 '/'
Inlet Invert= 245.38', Outlet Invert= 245.30'

**Reach 4R: DMH4-DMH3**

Inflow Area = 0.503 ac, Inflow Depth = 5.03" for 100YR event
Inflow = 2.70 cfs @ 12.09 hrs, Volume= 0.211 af
Outflow = 2.70 cfs @ 12.09 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

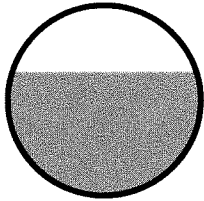
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.98 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections

Length= 2.0' Slope= 0.0100 '/'

Inlet Invert= 245.40', Outlet Invert= 245.38'



Reach 5R: DMH5-DMH4

Inflow Area = 0.193 ac, Inflow Depth = 4.92" for 100YR event

Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.079 af

Outflow = 1.06 cfs @ 12.09 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.31 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.12 fps, Avg. Travel Time= 0.4 min

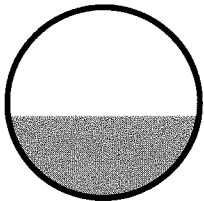
Peak Storage= 8 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.43'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.78 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 25.0' Slope= 0.0052 '/'

Inlet Invert= 245.63', Outlet Invert= 245.50'



Reach 6R: DMH6-HEADWALL

Inflow Area = 3.475 ac, Inflow Depth = 3.31" for 100YR event

Inflow = 10.27 cfs @ 12.11 hrs, Volume= 0.958 af

Outflow = 8.24 cfs @ 12.10 hrs, Volume= 0.958 af, Atten= 20%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.28 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.94 fps, Avg. Travel Time= 1.2 min

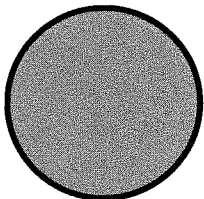
Peak Storage= 239 cf @ 12.10 hrs, Average Depth at Peak Storage= 1.50'

Bank-Full Depth= 1.50', Capacity at Bank-Full= 8.19 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 135.0' Slope= 0.0052 '/'

Inlet Invert= 252.20', Outlet Invert= 251.50'

**Reach 7R: DMH7-DMH6**

Inflow Area = 3.318 ac, Inflow Depth = 3.36" for 100YR event

Inflow = 9.87 cfs @ 12.11 hrs, Volume= 0.928 af

Outflow = 9.88 cfs @ 12.11 hrs, Volume= 0.928 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 10.87 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 3.66 fps, Avg. Travel Time= 0.4 min

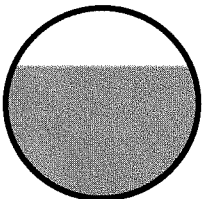
Peak Storage= 78 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.87'

Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.93 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 86.0' Slope= 0.0291 '/'

Inlet Invert= 254.95', Outlet Invert= 252.45'

**Reach 8R: DMH8-DMH7**

Inflow Area = 2.222 ac, Inflow Depth = 3.81" for 100YR event

Inflow = 8.35 cfs @ 12.12 hrs, Volume= 0.706 af

Outflow = 6.90 cfs @ 12.15 hrs, Volume= 0.706 af, Atten= 17%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

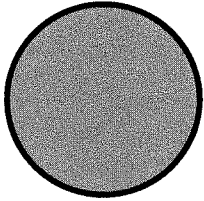
Max. Velocity= 9.98 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 3.62 fps, Avg. Travel Time= 0.4 min

Peak Storage= 76 cf @ 12.10 hrs, Average Depth at Peak Storage= 1.00'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.90 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 97.0' Slope= 0.0320 '/'
Inlet Invert= 258.30', Outlet Invert= 255.20'

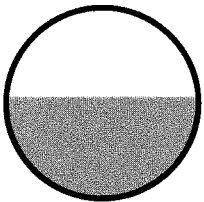
**Reach 9R: DMH9-DMH8**

Inflow Area = 0.889 ac, Inflow Depth = 4.49" for 100YR event
Inflow = 4.21 cfs @ 12.10 hrs, Volume= 0.333 af
Outflow = 4.18 cfs @ 12.11 hrs, Volume= 0.333 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.95 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.19 fps, Avg. Travel Time= 0.5 min

Peak Storage= 42 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.62 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 98.0' Slope= 0.0390 '/'
Inlet Invert= 262.22', Outlet Invert= 258.40'

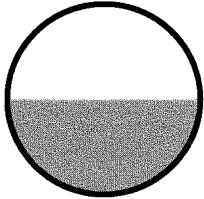
**Reach 10R: DMH10-DMH9**

Inflow Area = 0.656 ac, Inflow Depth = 3.76" for 100YR event
Inflow = 2.77 cfs @ 12.10 hrs, Volume= 0.206 af
Outflow = 2.73 cfs @ 12.11 hrs, Volume= 0.206 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.11 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.59 fps, Avg. Travel Time= 0.8 min

Peak Storage= 49 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.61 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 127.0' Slope= 0.0211 '/'
Inlet Invert= 265.90', Outlet Invert= 263.22'



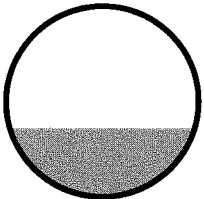
Reach 11R: DMH11-HEADWALL

Inflow Area = 0.116 ac, Inflow Depth = 6.56" for 100YR event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.73 cfs @ 12.11 hrs, Volume= 0.064 af, Atten= 4%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 2.9 min

Peak Storage= 44 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 174.0' Slope= 0.0050 '/'
Inlet Invert= 251.62', Outlet Invert= 250.75'



Reach 20R: DM20-EXIST.DMH

Inflow Area = 1.386 ac, Inflow Depth = 0.85" for 100YR event
Inflow = 2.62 cfs @ 12.27 hrs, Volume= 0.098 af
Outflow = 2.61 cfs @ 12.27 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.1 min

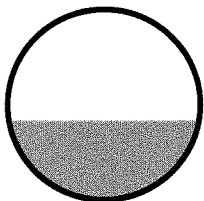
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.44 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.24 fps, Avg. Travel Time= 0.1 min

Peak Storage= 11 cf @ 12.27 hrs, Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.22 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 36.0' Slope= 0.0350 '/'

Inlet Invert= 241.77', Outlet Invert= 240.51'



Reach 21R: DMH21-DMH22

Inflow Area = 3.480 ac, Inflow Depth = 1.07" for 100YR event

Inflow = 10.71 cfs @ 12.27 hrs, Volume= 0.310 af

Outflow = 9.83 cfs @ 12.28 hrs, Volume= 0.310 af, Atten= 8%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.84 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 4.62 fps, Avg. Travel Time= 0.6 min

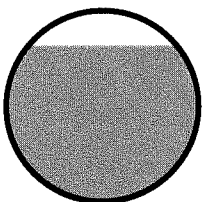
Peak Storage= 194 cf @ 12.27 hrs, Average Depth at Peak Storage= 1.02'

Bank-Full Depth= 1.25', Capacity at Bank-Full= 10.60 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 179.0' Slope= 0.0230 '/'

Inlet Invert= 258.77', Outlet Invert= 254.66'



Reach 22R: DMH22-HEADWALL

Inflow Area = 3.480 ac, Inflow Depth = 1.07" for 100YR event

Inflow = 9.83 cfs @ 12.28 hrs, Volume= 0.310 af

Outflow = 9.83 cfs @ 12.29 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

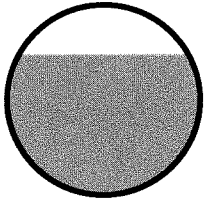
Max. Velocity= 10.20 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 4.72 fps, Avg. Travel Time= 0.4 min

Peak Storage= 107 cf @ 12.29 hrs, Average Depth at Peak Storage= 0.92'

Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.09 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 110.0' Slope= 0.0251 '/'
Inlet Invert= 254.70', Outlet Invert= 251.94'

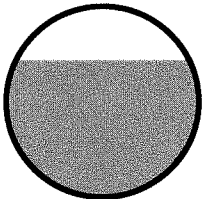
**Reach 30R: DMH30-HW30**

Inflow Area = 0.697 ac, Inflow Depth = 3.05" for 100YR event
Inflow = 2.36 cfs @ 12.10 hrs, Volume= 0.177 af
Outflow = 2.36 cfs @ 12.10 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 12.0' Slope= 0.0050 '/'
Inlet Invert= 251.10', Outlet Invert= 251.04'

**Reach 31R: DMH31-DMH30**

Inflow Area = 0.495 ac, Inflow Depth = 2.50" for 100YR event
Inflow = 1.35 cfs @ 12.10 hrs, Volume= 0.103 af
Outflow = 1.35 cfs @ 12.10 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.1 min

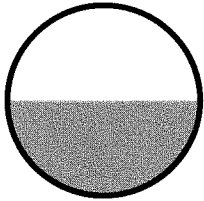
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.73 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 10.0' Slope= 0.0050 '/'

Inlet Invert= 251.25', Outlet Invert= 251.20'



Reach 32R: DMH32-HW32

Inflow Area = 3.548 ac, Inflow Depth = 1.64" for 100YR event

Inflow = 5.20 cfs @ 12.10 hrs, Volume= 0.486 af

Outflow = 5.19 cfs @ 12.10 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.12 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 2.58 fps, Avg. Travel Time= 0.1 min

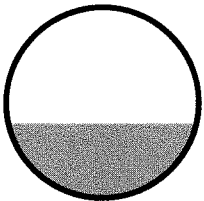
Peak Storage= 11 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.59'

Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.09 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished

Length= 17.0' Slope= 0.0200 '/'

Inlet Invert= 252.34', Outlet Invert= 252.00'



Reach 33R: DMH33-DMH32

Inflow Area = 3.092 ac, Inflow Depth = 1.17" for 100YR event

Inflow = 2.81 cfs @ 12.55 hrs, Volume= 0.301 af

Outflow = 2.80 cfs @ 12.55 hrs, Volume= 0.301 af, Atten= 1%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

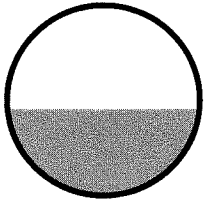
Max. Velocity= 8.15 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.89 fps, Avg. Travel Time= 0.3 min

Peak Storage= 15 cf @ 12.55 hrs, Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.69 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 44.0' Slope= 0.0300 '/'
Inlet Invert= 254.16', Outlet Invert= 252.84'

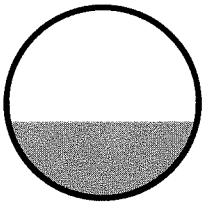
**Reach 34R: DMH34-DMH33**

Inflow Area = 3.092 ac, Inflow Depth = 1.17" for 100YR event
Inflow = 2.89 cfs @ 12.57 hrs, Volume= 0.301 af
Outflow = 2.81 cfs @ 12.55 hrs, Volume= 0.301 af, Atten= 3%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.88 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.47 fps, Avg. Travel Time= 0.6 min

Peak Storage= 35 cf @ 12.57 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.63 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 120.0' Slope= 0.0500 '/'
Inlet Invert= 260.26', Outlet Invert= 254.26'

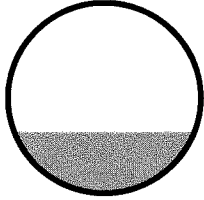
**Reach 35R: DMH35-DMH32**

Inflow Area = 0.308 ac, Inflow Depth = 4.29" for 100YR event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.110 af
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.85 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 0.4 min

Peak Storage= 10 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 6.69 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 47.0' Slope= 0.0300 '/'
Inlet Invert= 254.25', Outlet Invert= 252.84'



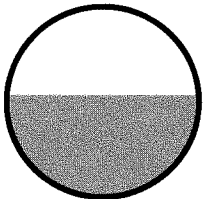
Reach 36R: DMH36-MANIFOLD

Inflow Area = 2.766 ac, Inflow Depth = 4.82" for 100YR event
Inflow = 14.27 cfs @ 12.11 hrs, Volume= 1.110 af
Outflow = 14.23 cfs @ 12.11 hrs, Volume= 1.110 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.80 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.2 min

Peak Storage= 53 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 1.75', Capacity at Bank-Full= 25.23 cfs

21.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 40.0' Slope= 0.0150 '/'
Inlet Invert= 279.10', Outlet Invert= 278.50'



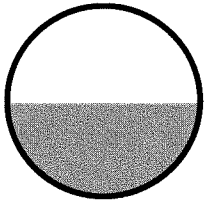
Reach 37R: DMH37-DMH36

Inflow Area = 2.766 ac, Inflow Depth = 4.82" for 100YR event
Inflow = 14.34 cfs @ 12.10 hrs, Volume= 1.110 af
Outflow = 14.27 cfs @ 12.11 hrs, Volume= 1.110 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.25 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 0.4 min

Peak Storage= 98 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 1.75', Capacity at Bank-Full= 29.73 cfs

21.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 84.0' Slope= 0.0300 '/
Inlet Invert= 281.72', Outlet Invert= 279.20'

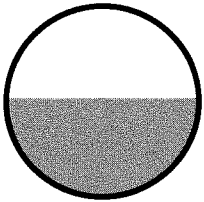
**Reach 38R: DMH38-DHH37**

Inflow Area = 2.363 ac, Inflow Depth = 4.71" for 100YR event
Inflow = 12.08 cfs @ 12.10 hrs, Volume= 0.927 af
Outflow = 11.98 cfs @ 12.11 hrs, Volume= 0.927 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.07 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.19 fps, Avg. Travel Time= 0.6 min

Peak Storage= 135 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 22.76 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 146.0' Slope= 0.0400 '/
Inlet Invert= 288.71', Outlet Invert= 282.87'

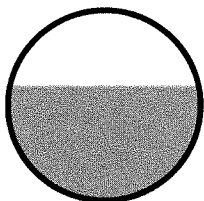
**Reach 39R: DMH39-DHH38**

Inflow Area = 1.904 ac, Inflow Depth = 4.56" for 100YR event
Inflow = 9.45 cfs @ 12.11 hrs, Volume= 0.723 af
Outflow = 9.43 cfs @ 12.11 hrs, Volume= 0.723 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.24 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.02 fps, Avg. Travel Time= 0.1 min

Peak Storage= 27 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 14.00 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 35.0' Slope= 0.0400 '/'
Inlet Invert= 292.40', Outlet Invert= 291.00'



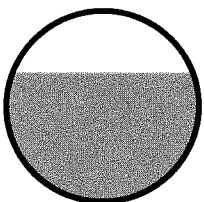
Reach 40R: DMH40-DHH39

Inflow Area = 1.244 ac, Inflow Depth = 4.54" for 100YR event
Inflow = 6.17 cfs @ 12.10 hrs, Volume= 0.470 af
Outflow = 6.12 cfs @ 12.11 hrs, Volume= 0.470 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.91 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.78 fps, Avg. Travel Time= 0.6 min

Peak Storage= 71 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.72 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 126.0' Slope= 0.0400 '/'
Inlet Invert= 299.44', Outlet Invert= 294.40'



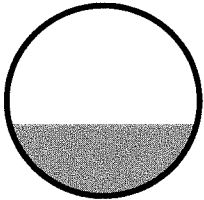
Reach 41R: DMH41-DMH34

Inflow Area = 2.481 ac, Inflow Depth = 0.47" for 100YR event
Inflow = 2.40 cfs @ 12.60 hrs, Volume= 0.096 af
Outflow = 2.36 cfs @ 12.60 hrs, Volume= 0.096 af, Atten= 1%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.64 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.60 fps, Avg. Travel Time= 0.1 min

Peak Storage= 9 cf @ 12.60 hrs, Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.72 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 34.0' Slope= 0.0400 '/'
Inlet Invert= 264.62', Outlet Invert= 263.26'

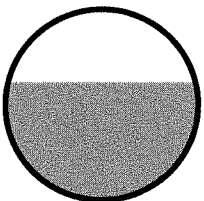
**Reach 42R: DMH42-DMH43**

Inflow Area = 0.714 ac, Inflow Depth = 5.11" for 100YR event
Inflow = 4.03 cfs @ 12.09 hrs, Volume= 0.304 af
Outflow = 4.01 cfs @ 12.09 hrs, Volume= 0.304 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.91 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.63 fps, Avg. Travel Time= 0.5 min

Peak Storage= 44 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.74 cfs

12.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 86.0' Slope= 0.0221 '/'
Inlet Invert= 271.44', Outlet Invert= 269.54'

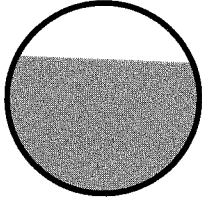
**Reach 43R: DMH43-DMH44**

Inflow Area = 0.714 ac, Inflow Depth = 5.11" for 100YR event
Inflow = 4.01 cfs @ 12.09 hrs, Volume= 0.304 af
Outflow = 3.98 cfs @ 12.10 hrs, Volume= 0.304 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.77 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 0.5 min

Peak Storage= 40 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.74 cfs

12.0" Diameter Pipe, $n = 0.012$ Concrete pipe, finished
Length= 67.0' Slope= 0.0151 '/
Inlet Invert= 269.44', Outlet Invert= 268.43'

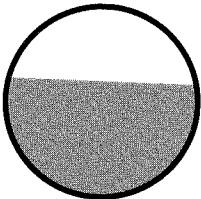
**Reach 44R: DMH44-MANIFOLD**

Inflow Area = 0.714 ac, Inflow Depth = 5.11" for 100YR event
Inflow = 3.98 cfs @ 12.10 hrs, Volume= 0.304 af
Outflow = 3.97 cfs @ 12.10 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.96 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.65 fps, Avg. Travel Time= 0.1 min

Peak Storage= 11 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.81 cfs

12.0" Diameter Pipe, $n = 0.010$ PVC, smooth interior
Length= 21.0' Slope= 0.0157 '/
Inlet Invert= 268.33', Outlet Invert= 268.00'

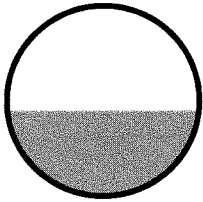
**Reach 45R: DMH45-MANIFOLD**

Inflow Area = 2.766 ac, Inflow Depth = 1.84" for 100YR event
Inflow = 12.98 cfs @ 12.15 hrs, Volume= 0.425 af
Outflow = 12.99 cfs @ 12.15 hrs, Volume= 0.425 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.90 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 6.87 fps, Avg. Travel Time= 0.1 min

Peak Storage= 21 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 31.32 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 27.0' Slope= 0.0526 '/'
Inlet Invert= 269.42', Outlet Invert= 268.00'

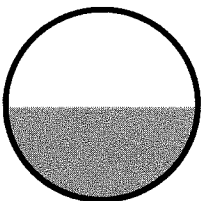
**Reach 46R: DMH46-DMH45**

Inflow Area = 2.766 ac, Inflow Depth = 1.84" for 100YR event
Inflow = 12.97 cfs @ 12.15 hrs, Volume= 0.425 af
Outflow = 12.98 cfs @ 12.15 hrs, Volume= 0.425 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.27 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.30 fps, Avg. Travel Time= 0.1 min

Peak Storage= 48 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 27.31 cfs

18.0" Diameter Pipe, n= 0.010 PVC, smooth interior
Length= 56.0' Slope= 0.0400 '/'
Inlet Invert= 273.93', Outlet Invert= 271.69'

**Reach 47R: MANIFOLD-DMH46**

Inflow Area = 2.766 ac, Inflow Depth = 1.84" for 100YR event
Inflow = 12.96 cfs @ 12.15 hrs, Volume= 0.425 af
Outflow = 12.97 cfs @ 12.15 hrs, Volume= 0.425 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.73 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.92 fps, Avg. Travel Time= 0.1 min

Peak Storage= 42 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.31 cfs

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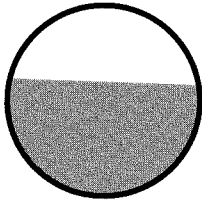
Type III 24-hr 100YR Rainfall=6.80"

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18.0" Diameter Pipe, n= 0.010 PVC, smooth interior

Length= 38.0' Slope= 0.0200 '/'

Inlet Invert= 278.50', Outlet Invert= 277.74'

**Pond 1P: POND 1**

Inflow Area = 1.386 ac, Inflow Depth = 5.35" for 100YR event
 Inflow = 7.64 cfs @ 12.09 hrs, Volume= 0.618 af
 Outflow = 3.62 cfs @ 12.27 hrs, Volume= 0.618 af, Atten= 53%, Lag= 10.6 min
 Discarded = 1.00 cfs @ 11.75 hrs, Volume= 0.520 af
 Primary = 2.62 cfs @ 12.27 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 245.78' @ 12.27 hrs Surf.Area= 0.120 ac Storage= 0.142 af

Plug-Flow detention time= 31.4 min calculated for 0.617 af (100% of inflow)
 Center-of-Mass det. time= 31.4 min (798.3 - 766.9)

Volume	Invert	Avail.Storage	Storage Description
#1	243.75'	2.353 af	39.50'W x 132.00'L x 50.00'H Prismatic
#2	244.42'	0.103 af	5.985 af Overall - 0.103 af Embedded = 5.882 af x 40.0% Voids
		2.456 af	24.0"D x 130.00'L Horizontal Cylinder x 11 Inside #1
			Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	245.30'	12.0" Vert. Orifice/Grate X 3.00 C= 0.600

Discarded OutFlow Max=1.00 cfs @ 11.75 hrs HW=244.26' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 1.00 cfs)

Primary OutFlow Max=2.56 cfs @ 12.27 hrs HW=245.77' (Free Discharge)
 ↑ **2=Orifice/Grate** (Orifice Controls 2.56 cfs @ 2.34 fps)

Pond 2P: POND 2

Inflow Area = 12.293 ac, Inflow Depth = 2.30" for 100YR event
 Inflow = 24.39 cfs @ 12.27 hrs, Volume= 2.357 af
 Outflow = 8.70 cfs @ 12.67 hrs, Volume= 2.357 af, Atten= 64%, Lag= 23.8 min
 Discarded = 2.62 cfs @ 12.67 hrs, Volume= 1.641 af
 Primary = 6.08 cfs @ 12.67 hrs, Volume= 0.716 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

UC1378-POST-NOV-2024

Type III 24-hr 100YR Rainfall=6.80"

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Peak Elev= 251.97' @ 12.67 hrs Surf.Area= 13,686 sf Storage= 34,757 cf

Plug-Flow detention time= 56.8 min calculated for 2.356 af (100% of inflow)

Center-of-Mass det. time= 56.7 min (860.5 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1	249.00'	49,660 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.00	9,874	0	0
250.00	11,040	10,457	10,457
252.00	13,732	24,772	35,229
253.00	15,130	14,431	49,660

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.90'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	250.66'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	250.17'	4.0" Vert. Orifice/Grate X 5.00 C= 0.600

Discarded OutFlow Max=2.62 cfs @ 12.67 hrs HW=251.96' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 2.62 cfs)

Primary OutFlow Max=6.07 cfs @ 12.67 hrs HW=251.96' (Free Discharge)

└─2=Orifice/Grate (Orifice Controls 3.39 cfs @ 4.32 fps)

└─3=Orifice/Grate (Orifice Controls 2.68 cfs @ 6.14 fps)

Pond 3P: POND 3

Inflow Area = 2.766 ac, Inflow Depth = 4.82" for 100YR event

Inflow = 14.23 cfs @ 12.11 hrs, Volume= 1.110 af

Outflow = 13.56 cfs @ 12.15 hrs, Volume= 1.110 af, Atten= 5%, Lag= 2.5 min

Discarded = 0.61 cfs @ 10.80 hrs, Volume= 0.685 af

Primary = 12.96 cfs @ 12.15 hrs, Volume= 0.425 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 279.36' @ 12.15 hrs Surf.Area= 0.073 ac Storage= 0.215 af

Plug-Flow detention time= 76.9 min calculated for 1.110 af (100% of inflow)

Center-of-Mass det. time= 76.8 min (878.9 - 802.1)

Volume	Invert	Avail.Storage	Storage Description
#1	274.60'	1.404 af	59.83'W x 53.00'L x 50.00'H Prismatic 3.640 af Overall - 0.130 af Embedded = 3.510 af x 40.0% Voids
#2	275.60'	0.130 af	48.0"D x 50.00'L Horizontal Cylinder x 9 Inside #1
		1.534 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	278.50'	12.0" Vert. Orifice/Grate X 6.00 C= 0.600

Discarded OutFlow Max=0.61 cfs @ 10.80 hrs HW=275.11' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.61 cfs)

Primary OutFlow Max=13.69 cfs @ 12.15 hrs HW=279.36' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 13.69 cfs @ 3.16 fps)

Pond 4P: POND 4

Inflow Area = 3.480 ac, Inflow Depth = 2.51" for 100YR event
 Inflow = 16.40 cfs @ 12.15 hrs, Volume= 0.729 af
 Outflow = 11.29 cfs @ 12.27 hrs, Volume= 0.729 af, Atten= 31%, Lag= 7.3 min
 Discarded = 0.58 cfs @ 11.85 hrs, Volume= 0.419 af
 Primary = 10.71 cfs @ 12.27 hrs, Volume= 0.310 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 269.02' @ 12.27 hrs Surf.Area= 0.070 ac Storage= 0.212 af

Plug-Flow detention time= 70.8 min calculated for 0.729 af (100% of inflow)
 Center-of-Mass det. time= 70.8 min (840.7 - 769.9)

Volume	Invert	Avail.Storage	Storage Description
#1	264.10'	1.345 af	46.75'W x 65.00'L x 50.00'H Prismatic 3.488 af Overall - 0.125 af Embedded = 3.363 af x 40.0% Voids
#2	265.10'	0.125 af	48.0"D x 62.00'L Horizontal Cylinder x 7 Inside #1
		1.470 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	268.00'	12.0" Vert. Orifice/Grate X 4.00 C= 0.600

Discarded OutFlow Max=0.58 cfs @ 11.85 hrs HW=264.68' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=10.41 cfs @ 12.27 hrs HW=268.97' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 10.41 cfs @ 3.35 fps)

Pond 5P: POND 5

Inflow Area = 2.481 ac, Inflow Depth = 2.95" for 100YR event
 Inflow = 5.99 cfs @ 12.25 hrs, Volume= 0.610 af
 Outflow = 3.00 cfs @ 12.60 hrs, Volume= 0.610 af, Atten= 50%, Lag= 20.7 min
 Discarded = 0.60 cfs @ 11.90 hrs, Volume= 0.513 af
 Primary = 2.40 cfs @ 12.60 hrs, Volume= 0.096 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.00' @ 12.60 hrs Surf.Area= 3,136 sf Storage= 8,390 cf

Plug-Flow detention time= 108.9 min calculated for 0.610 af (100% of inflow)
 Center-of-Mass det. time= 108.8 min (963.0 - 854.1)

Volume	Invert	Avail.Storage	Storage Description
#1	265.70'	60,450 cf	40.20'W x 78.00'L x 50.00'H Prismatic 156,780 cf Overall - 5,655 cf Embedded = 151,125 cf x 40.0% Voids
#2	266.70'	5,655 cf	48.0"D x 75.00'L Horizontal Cylinder x 6 Inside #1
		66,105 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	265.60'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	269.60'	12.0" Vert. Orifice/Grate X 3.00 C= 0.600

Discarded OutFlow Max=0.60 cfs @ 11.90 hrs HW=266.26' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=1.90 cfs @ 12.60 hrs HW=270.00' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 1.90 cfs @ 2.15 fps)

Pond 6P: POND 2

Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
 Peak Elev= 0.00' @ 0.00 hrs Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated)

Center-of-Mass det. time= (not calculated)

Volume	Invert	Avail.Storage	Storage Description
#1	308.00'	8,098 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.00	2,801	0	0
310.00	5,297	8,098	8,098

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.90'	8.270 in/hr Exfiltration over Surface area above invert Excluded Surface area = 0 sf
#2	Primary	250.66'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	250.17'	4.0" Vert. Orifice/Grate X 5.00 C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

↑**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

↑**3=Orifice/Grate** (Controls 0.00 cfs)

Link 1L: COMBINE HYDROGRAPHS

Inflow Area = 14.488 ac, Inflow Depth = 0.73" for 100YR event

Inflow = 7.85 cfs @ 12.47 hrs, Volume= 0.886 af

Primary = 7.85 cfs @ 12.47 hrs, Volume= 0.886 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

APPENDIX E

INSTRUCTIONS:

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Non-automated: Mar. 4, 2008

Location: Powder Mill - South Village

A	B	C	D	E
	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (B*C)	Remaining Load (C-D)
BMP ¹				
1.000 sq ft unpaved	25%	1.00	25%	75%
Corrected WQV	80%	75%	60%	20%
Partial Bioswale	80% w/ protection	100%	80%	20%

TSS Removal Calculation Worksheet

Separate Form Needs to be Completed for Each Outlet or BMP Train

80%

Total TSS Removal =

Project: Powder Mill
 Prepared By: 10/1/08
 Date: 12/15/09

*Equals remaining load from previous BMP (E) which enters the BMP

Project: Senior Village
Location: Franklin, MA
Prepared For: United Consultants / Rick



Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the t_c , read the unit peak discharge (q_u) from Figure 1 or Table in Figure 2. q_u is expressed in the following units: cfs/mi²/watershed inches (csm/in).

Compute Q Rate using the following equation:

$$Q = (q_u) (A) (WQV)$$

where:

Q = flow rate associated with first 1" of runoff

q_u = the unit peak discharge, in csm/in.

A = impervious surface drainage area (in square miles)

WQV = water quality volume in watershed inches (1" in this case)

Structure Name	Impv. (acres)	A (miles ²)	t_c (min)	t_c (hr)	WQV (in)	q_u (csm/in.)	Q (cfs)
DMH 42	0.46	0.0007188	5.0	0.083	1.00	795.00	
DMH 30	0.31	0.0004844	5.0	0.083	1.00	795.00	
DMH 36	1.49	0.0023281	5.0	0.083	1.00	795.00	
DMH 32	1.21	0.0018906	5.0	0.083	1.00	795.00	

The WQf sizing calculation selects the minimum size CDS/Cascade/StormCeptor model capable of operating at the computed WQf peak flowrate prior to bypassing. It assumes free discharge of the WQf through the unit and ignores the routing effect of any upstream storm drain piping. As with all hydrodynamic separators, there will be some impact to the Hydraulic Gradient of the corresponding drainage system, and evaluation of this impact should be considered in the design.

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

SENIOR VILLAGE FRANKLIN, MA

Area 0.46 ac
Weighted C 0.9
t_c 5 min
CDS Model 1515-3

Unit Site Designation DMH 42
Rainfall Station # 68

CDS Treatment Capacity **1.0 cfs**

<u>Rainfall Intensity¹</u> (in/hr)	<u>Percent Rainfall Volume¹</u>	<u>Cumulative Rainfall Volume</u>	<u>Total Flowrate (cfs)</u>	<u>Treated Flowrate (cfs)</u>	<u>Incremental Removal (%)</u>
0.02	9.3%	9.3%	0.01	0.01	9.3
0.04	9.5%	18.8%	0.02	0.02	9.5
0.06	8.7%	27.5%	0.02	0.02	8.7
0.08	10.1%	37.6%	0.03	0.03	10.1
0.10	7.2%	44.8%	0.04	0.04	7.1
0.12	6.0%	50.8%	0.05	0.05	6.0
0.14	6.3%	57.1%	0.06	0.06	6.2
0.16	5.6%	62.7%	0.07	0.07	5.5
0.18	4.7%	67.4%	0.07	0.07	4.6
0.20	3.6%	71.0%	0.08	0.08	3.5
0.25	8.2%	79.1%	0.10	0.10	7.9
0.50	14.9%	94.0%	0.21	0.21	13.7
0.75	3.2%	97.3%	0.31	0.31	2.8
1.00	1.2%	98.5%	0.41	0.41	1.0
1.50	0.7%	99.2%	0.62	0.62	0.5
2.00	0.8%	100.0%	0.83	0.83	0.5
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					96.8
Removal Efficiency Adjustment ² =					6.5%
Predicted % Annual Rainfall Treated =					93.5%
Predicted Net Annual Load Removal Efficiency =					90.3%

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

SENIOR VILLAGE FRANKLIN, MA

Area 0.31 ac
Weighted C 0.9
t_c 5 min
CDS Model 1515-3

Unit Site Designation DMH 30
Rainfall Station # 68

CDS Treatment Capacity **1.0 cfs**

<u>Rainfall Intensity¹</u> (in/hr)	<u>Percent Rainfall Volume¹</u>	<u>Cumulative Rainfall Volume</u>	<u>Total Flowrate (cfs)</u>	<u>Treated Flowrate (cfs)</u>	<u>Incremental Removal (%)</u>
0.02	9.3%	9.3%	0.01	0.01	9.3
0.04	9.5%	18.8%	0.01	0.01	9.5
0.06	8.7%	27.5%	0.02	0.02	8.7
0.08	10.1%	37.6%	0.02	0.02	10.1
0.10	7.2%	44.8%	0.03	0.03	7.2
0.12	6.0%	50.8%	0.03	0.03	6.0
0.14	6.3%	57.1%	0.04	0.04	6.3
0.16	5.6%	62.7%	0.04	0.04	5.6
0.18	4.7%	67.4%	0.05	0.05	4.6
0.20	3.6%	71.0%	0.06	0.06	3.6
0.25	8.2%	79.1%	0.07	0.07	8.0
0.50	14.9%	94.0%	0.14	0.14	14.1
0.75	3.2%	97.3%	0.21	0.21	2.9
1.00	1.2%	98.5%	0.28	0.28	1.1
1.50	0.7%	99.2%	0.42	0.42	0.6
2.00	0.8%	100.0%	0.56	0.56	0.6
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					98.1
Removal Efficiency Adjustment ² =					6.5%
Predicted % Annual Rainfall Treated =					93.5%
Predicted Net Annual Load Removal Efficiency =					91.7%

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

**Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method**



**Senior Village / Panther Way
Franklin, MA
DMH 36**

**CASCADE
separator™**

AREA	1.49	acres	CASCADE MODEL	CS-4
WEIGHTED C	0.95			
TC	5.00	minutes	RAINFALL STATION	68

Rainfall Intensity ¹ (in/hr)	Percent Rainfall Volume ¹	Hydraulic Loading Rate (gpm/ft2)	Removal Efficiency (%)	Incremental Removal (%)
0.02	9.3%	1.01	100.0	9.3
0.04	9.5%	2.02	100.0	9.5
0.06	8.7%	3.03	100.0	8.7
0.08	10.1%	4.04	100.0	10.1
0.10	7.2%	5.06	100.0	7.2
0.12	6.0%	6.07	100.0	6.0
0.14	6.3%	7.08	100.0	6.3
0.16	5.6%	8.09	100.0	5.6
0.18	4.7%	9.10	100.0	4.7
0.20	3.6%	10.11	100.0	3.6
0.25	8.2%	12.64	100.0	8.2
0.50	14.9%	25.28	88.1	13.1
0.75	3.2%	37.92	76.3	2.5
1.00	1.2%	50.56	64.4	0.8
1.50	0.7%	75.84	40.6	0.3
2.00	0.8%	76.08	30.4	0.2
				96.1
Removal Efficiency Adjustment ² =				6.5%
Predicted % Annual Rainfall Treated =				93.4%
Predicted Net Annual Load Removal Efficiency =				89.6%

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

**Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method**



**Senior Village / Panther Way
Franklin, MA
DMH 32**

**CASCADE
separator™**

AREA	1.21	acres	CASCADE MODEL	CS-4
WEIGHTED C	0.95			
TC	5.00	minutes	RAINFALL STATION	68

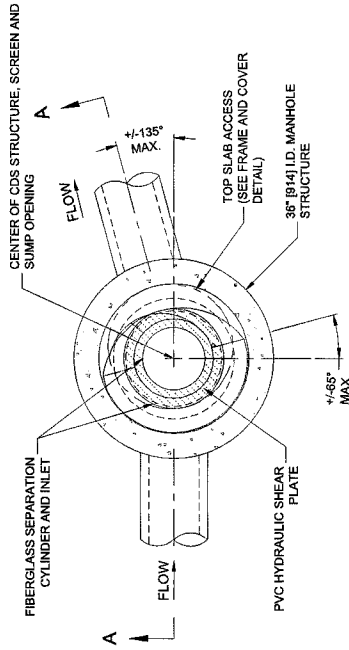
Rainfall Intensity ¹ (in/hr)	Percent Rainfall Volume ¹	Hydraulic Loading Rate (gpm/ft ²)	Removal Efficiency (%)	Incremental Removal (%)
0.02	9.3%	0.82	100.0	9.3
0.04	9.5%	1.64	100.0	9.5
0.06	8.7%	2.46	100.0	8.7
0.08	10.1%	3.28	100.0	10.1
0.10	7.2%	4.11	100.0	7.2
0.12	6.0%	4.93	100.0	6.0
0.14	6.3%	5.75	100.0	6.3
0.16	5.6%	6.57	100.0	5.6
0.18	4.7%	7.39	100.0	4.7
0.20	3.6%	8.21	100.0	3.6
0.25	8.2%	10.26	100.0	8.2
0.50	14.9%	20.53	92.6	13.8
0.75	3.2%	30.79	83.0	2.7
1.00	1.2%	41.06	73.3	0.9
1.50	0.7%	61.58	54.0	0.4
2.00	0.8%	76.08	37.4	0.3
				97.2
Removal Efficiency Adjustment ² =				6.5%
Predicted % Annual Rainfall Treated =				93.5%
Predicted Net Annual Load Removal Efficiency =				90.7%

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA

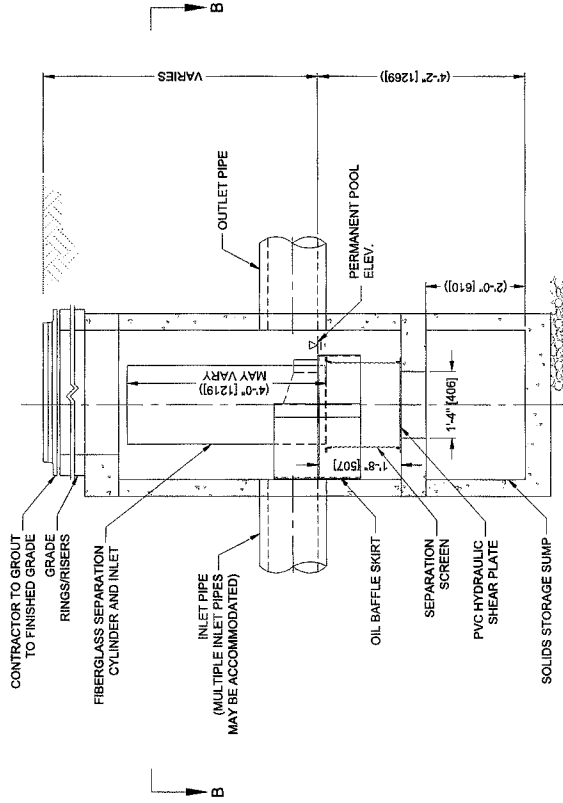
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

CDS1515-3-C DESIGN NOTES

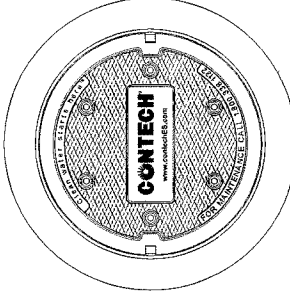
CDS1515-3-C RATED TREATMENT CAPACITY IS 1.0 CFS, OR PER LOCAL REGULATIONS.
THE STANDARD CDS1515-3-C CONFIGURATION IS SHOWN.



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC
DATA REQUIREMENTS

STRUCTURE ID		
WATER QUALITY FLOW RATE (CFS OR L/s)	*	
PEAK FLOW RATE (CFS OR L/s)	*	
RETURN PERIOD OF PEAK FLOW (YRS)	*	
SCREEN APERTURE (2400 OR 4700)	*	
PIPE DATA:		
I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*
INLET PIPE 2	*	*
OUTLET PIPE	*	*
RIM ELEVATION		*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*
NOTES/SPECIAL REQUIREMENTS:		
* PER ENGINEER OF RECORD		

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechllc.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0'-2' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M206 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, CONCRETE SHALL BE PLACED ON SHELVE AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- C. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLY STRUCTURE.
- D. CENTERLINES TO MATCH PIPE OPENING CENTERLINES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- E. SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH
ENGINEERED SOLUTIONS LLC

www.contechllc.com
8925 Centre Pointe Dr., Suite 400, West Chester, OH 45389
800-338-1122 513-645-7000 513-645-7983 FAX

CDS1515-3-C
ONLINE CDS
STANDARD DETAIL

GPS
THE PRESENTED INFORMATION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT A CONTRACT DOCUMENT.
NO WARRANTY IS MADE BY GPS FOR THE ACCURACY OF THE INFORMATION.

CASCADE SEPARATOR DESIGN NOTES

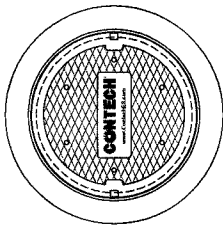
CS-4 RATED TREATMENT CAPACITY IS 2.0 CFS, OR PER LOCAL REGULATIONS.
THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS
MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION

- GRATED INLET ONLY (NO INLET PIPE)
- GRATED INLET WITH INLET PIPE OR PIPES
- CURB INLET ONLY (NO INLET PIPE)
- CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC
DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (g/s [L/s])	
PEAK FLOW RATE (g/s [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
RIM ELEVATION	
PIPE DATA:	
INLET PIPE 1	
INLET PIPE 2	
OUTLET PIPE	
NOTES / SPECIAL REQUIREMENTS:	



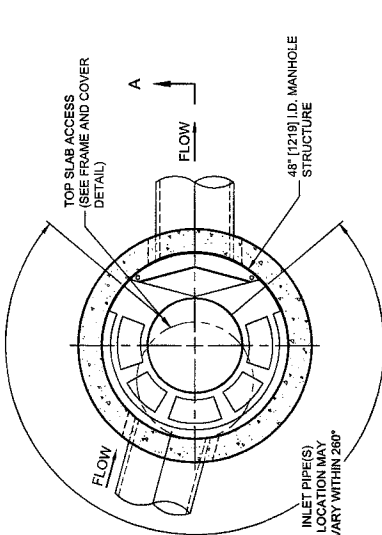
FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

GENERAL NOTES

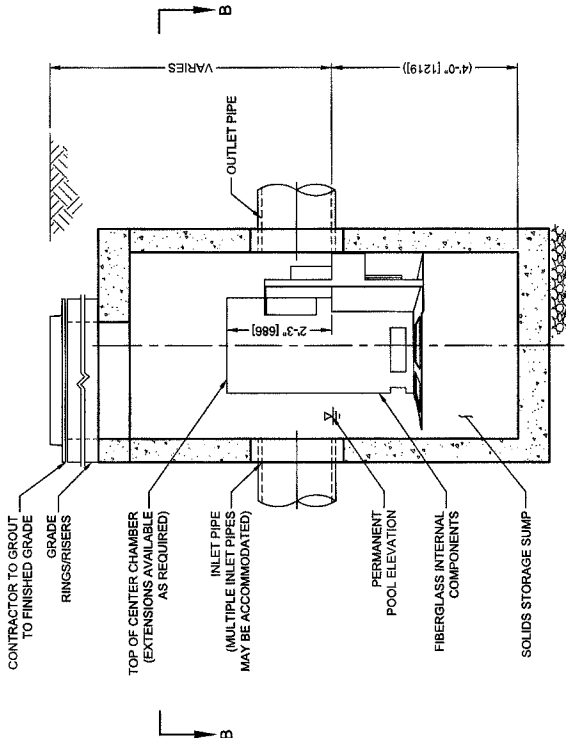
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR ALL STRUCTURES, PROVIDE DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT. PLEASE CONTACT YOUR CONTECH ENGINEER FOR ALL STRUCTURE SPECIFICATIONS. CONTECH ENGINEERING, CONTECH SOLUTIONS LLC REPRESENTATIVE: www.contechES.com
- CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' (610), AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M308 AND BE CAST WITH THE CONTECH LOGO.
- CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
- ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR.
- MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



PLAN VIEW B-B
NOT TO SCALE



ELEVATION A-A
NOT TO SCALE

CASCADE
separator™

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CS-4
CASCADE SEPARATOR
STANDARD DETAIL

RE: Panther Way - Franklin MA (CES 831648)

From Zoe Maldonado <Sabrina.Maldonado@ContechES.com>

Date Thu 12/12/2024 4:59 PM

To Rick <Rick@uci850.com>

Cc James Lyons <James.Lyons@ContechES.com>

Hi Rick,

After running my calculations, with larger inlet and outlet pipes, the unit can bypass the 14.34 cfs peak flow. I ran my calculations assuming 21" pipes.

Please let me know if that is possible, if not the unit will need to be moved offline.

Thank you,

(Sabrina) Zoe Maldonado
Stormwater Design Engineer

Contech Engineered Solutions LLC
9100 Centre Pointe Drive, Suite 400 | West Chester, OH 45069
Office: 513-512-5523 |
Sabrina.Maldonado@ContechES.com
www.ContechES.com

From: James Lyons <James.Lyons@ContechES.com>
Sent: Thursday, December 12, 2024 10:44 AM
To: Rick <Rick@uci850.com>
Cc: Zoe Maldonado <Sabrina.Maldonado@ContechES.com>
Subject: Panther Way - Franklin MA (CES 831648)

Rick – I have attached the sizing sheets for the Panther Way project. We are reviewing the peak flows; I do not believe they will be an issue except for DMH 36 with the highest peak flow of 14.34 cfs. Structure will have 5.4 feet rim to outlet invert, that should be fine, but double checking the hydraulic by-pass capacity.

- DMH 42 – CDS 1515-3 – Treatment capacity to 1.0 cfs
- DMH 30 – CDS 1515-3 - Treatment capacity to 1.0 cfs
- DMH 36 – CS-4 – Treatment capacity to 2.0 cfs
- DMH 32 – CS-4 - Treatment capacity to 2.0 cfs

APPENDIX F



Guelph Permeameter Calculations

Head
Result

Report: 20/06/2017 14:27

Head #1

Relevant Type: "T" for Combined and "C" for Two Head
Enter the Head Height (m) in each
Enter the Boundary Radius (m) in each

- Enter the soil and water properties category from one of the below (combined):
1. Combined, saturated, clay, clay or silty materials such as bentonite, etc.
 2. Soil which are both low permeability (less than 10⁻¹⁰ m/s) and water content, may also include some fine sands.
 3. Most saturated soils from clay through loam, also includes unsaturated medium and fine sands. These are not meant to be used for applications.
 4. Coarse and gravelly sands, but also include some highly fractured soils with large, angular grains, cracks, etc.

Ready State Rate of Water Level Change (m/s) in each:

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$

Head #2

Relevant Type: "T" for Combined and "C" for Two Head
Enter the Head Height (m) in each
Enter the Boundary Radius (m) in each

- Enter the soil and water properties category from one of the below (combined):
1. Combined, saturated, clay, clay or silty materials such as bentonite, etc.
 2. Soil which are both low permeability (less than 10⁻¹⁰ m/s) and water content, may also include some fine sands.
 3. Most saturated soils from clay through loam, also includes unsaturated medium and fine sands. These are not meant to be used for applications.
 4. Coarse and gravelly sands, but also include some highly fractured soils with large, angular grains, cracks, etc.

Ready State Rate of Water Level Change (m/s) in each:

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$

Average

Relevant Type: "T" for Combined and "C" for Two Head
Enter the Head Height (m) in each
Enter the Boundary Radius (m) in each

- Enter the soil and water properties category from one of the below (combined):
1. Combined, saturated, clay, clay or silty materials such as bentonite, etc.
 2. Soil which are both low permeability (less than 10⁻¹⁰ m/s) and water content, may also include some fine sands.
 3. Most saturated soils from clay through loam, also includes unsaturated medium and fine sands. These are not meant to be used for applications.
 4. Coarse and gravelly sands, but also include some highly fractured soils with large, angular grains, cracks, etc.

Ready State Rate of Water Level Change (m/s) in each:

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$

Two Head Method

Relevant Type: "T" for Combined and "C" for Two Head
Enter the Head Height (m) in each
Enter the Boundary Radius (m) in each

- Enter the soil and water properties category from one of the below (combined):
1. Combined, saturated, clay, clay or silty materials such as bentonite, etc.
 2. Soil which are both low permeability (less than 10⁻¹⁰ m/s) and water content, may also include some fine sands.
 3. Most saturated soils from clay through loam, also includes unsaturated medium and fine sands. These are not meant to be used for applications.
 4. Coarse and gravelly sands, but also include some highly fractured soils with large, angular grains, cracks, etc.

Ready State Rate of Water Level Change (m/s) in each:

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$
 $\Delta h = 0.0015$
 $\Delta h = 0.0015$

$\Delta h = 0.0015$

Calculation results are shown in the table below. The values in the table are calculated using the relevant type and the relevant boundary radius. The values in the table are calculated using the relevant type and the relevant boundary radius.

Relevant Type	Boundary Radius (m)	Ready State Rate of Water Level Change (m/s)
Combined	0.01	0.0015
Two Head	0.01	0.0015
Two Head	0.01	0.0015
Two Head	0.01	0.0015

Calculation results are shown in the table below. The values in the table are calculated using the relevant type and the relevant boundary radius. The values in the table are calculated using the relevant type and the relevant boundary radius.

Relevant Type	Boundary Radius (m)	Ready State Rate of Water Level Change (m/s)
Combined	0.01	0.0015
Two Head	0.01	0.0015
Two Head	0.01	0.0015
Two Head	0.01	0.0015

2

Guelph Permeameter Data Sheet

Investigator: CARLOS A. SOLORZANO Date: 3/14/19

Location: PAWTHREE LANE Test Id: 23

Depth of hole: 48" Radius: 3 cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ☒ Inner only: ☐

Reservoir constant used: 35.22

Water level in well = 5 cm				
Time <i>t</i> (min)	Δt (min)	Water level in reservoir <i>h</i> (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		20		
0:15	0.25	25	5	20.0
0:28	0.22	30		23.1
0:44	0.22	35		18.75
0:58	0.23	40		21.43
1:12	0.23	45		21.42
1:29	0.25	50		20.0
1:41	0.23	55		21.42
1:56	0.25	60		20.0
2:09	0.22	65		23.09
2:23	0.23	70		21.43
2:38	0.25	75		20.0

Steady rate for 3 consecutive readings (R_1): 21.13

Water level in well = 10 cm				
Time <i>t</i> (min)	Δt (min)	Water level in reservoir <i>h</i> (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0:13		30		
0:31	0.30	40	5	16.67
0:40	0.15	45	5	33.33
0:50	0.15	50	5	33.33
0:59	0.15	55	5	33.33
1:08	0.15	60	5	33.33
1:18	0.15	65	5	33.33
1:27	0.15	70	5	33.33
1:36	0.15	75	5	33.33

Steady rate for 3 consecutive readings (R_2): 33.33

Comments:

$k = 0.795$ $\alpha_{vis} = 47.7$ $\mu\text{m}/\text{cm}^2$

11. 11. 2011

Recessed Type for use in Ceilings and in Partition assemblies.
Exceeding Hand Rugged for its cost.
Enter the Sanitary Recessed for its cost.

1. *What is the main purpose of the text?*
2. *What is the author's attitude towards the subject?*
3. *What is the main idea of the text?*
4. *What is the author's main argument?*
5. *What is the author's conclusion?*

[illegible]

Head 82:

Product Type (code "1" for Combined and "2" for Inter Networks)
Enter sector listed below ("1" in code)
Enter the Service Number ("1" in code)
Enter the 2nd 6-digit extension category (enter one of the below numbers)

- [illegible]

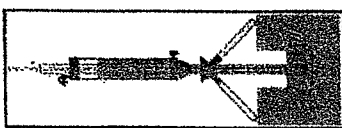
Shaded 8204 (Rate of Water Level Change) (7" in seconds)

0" = 50000	1" = 1.25E4	2" = 3E3	3" = 1.25E3	4" = 500	5" = 250	6" = 125	7" = 62.5	8" = 31.25	9" = 15.625	10" = 7.8125
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Answer:

$E_f =$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----



Two Head Method

• Enter the sheet number listed in the table below and record the value of α in the space provided.

Enter the Barcode Reader™ in text:

Ready State Rate of Water Level Change (mm)

$q_1 = 1338$
 $q_2 = 246$
 $z_1 = 0.82316$
 $c_1 = 1.37344$
 $c_2 = 4.50446$
 $c_3 = 0.40397$
 $q_1 = 0.81808$
 $c_1 = 0.74416$
 z_K

[illegible][illegible]

Consequently, we have shown that the $\mathcal{H}^1$ -norm of the difference between the exact and approximate solutions is bounded by the $\mathcal{H}^1$ -norm of the difference between the exact and approximate solutions of the linearized problem. This result is crucial for the proof of the convergence of the iterative scheme.

Two Head, Combined Head	$Q_1 = R_1 \times 2.16$ $Q_2 = R_2 \times 2.16$	$N_1 = \frac{C_1 \sqrt{H_1}}{2.73 \sqrt{H_1} + 0.01 C_1 \times 2.73 \left(\frac{H_1}{L_1} \right)}$ $C_1 = \frac{Q_1 \sqrt{H_1}}{1.488 \sqrt{H_1} + 0.015 Q_1 \sqrt{H_1} \times \frac{L_1}{H_1}}$
Two Head, Combined Head	$Q_1 = R_1 \times 35.22$ $Q_2 = R_2 \times 35.22$	$N_1 = \frac{C_1 \sqrt{H_1}}{2.73 \sqrt{H_1} + 0.01 C_1 \sqrt{H_1} \times \frac{L_1}{H_1}}$ $C_1 = \frac{Q_1 \sqrt{H_1}}{1.488 \sqrt{H_1} + 0.015 Q_1 \sqrt{H_1} \times \frac{L_1}{H_1}}$
Two Head, Combined Head	$Q_1 = R_1 \times 2.16$ $Q_2 = R_2 \times 2.16$	$N_1 = \frac{C_1 \sqrt{H_1}}{2.73 \sqrt{H_1} + 0.01 C_1 \sqrt{H_1} \times \frac{L_1}{H_1}}$ $C_1 = \frac{Q_1 \sqrt{H_1}}{1.488 \sqrt{H_1} + 0.015 Q_1 \sqrt{H_1} \times \frac{L_1}{H_1}}$

Guelph Permeameter Data Sheet

Investigator: GARCOSA, DW. LITA Date: 4/17/19

Location: ADAMS HWY - W. Km Test Id: PT-20

Depth of hole: 54" Radius: 3 cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ☒ Inner only: ☐

Reservoir constant used: 55.22

Water level in well = 5 cm				
Time t (min)	Δt (min)	Water level in reservoir h (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		19		
07	0.12	25	6	51.43
17	0.12	30	5	30.0
35	0.3	40	10	33.33
45	0.12	45	5	30.0
1:04	0.36	50	15	40.36
1:21	0.28	70	10	35.29
1:40	0.32	75	5	15.29
Steady rate for 3 consecutive readings (R_1):				38.55

Steady rate for 3 consecutive readings. (R₁): 52.55

Water level in well = 10 cm				
Time t (min)	Δt (min)	Water level in reservoir h (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		20		
108	0.13	30	10	75.0
112	0.02	35	5	75.0
112	0.08	40	5	60.0
123	0.1	45	5	50.0
128	0.08	50	5	60.0
133	0.08	55	5	60.0
138	0.08	60	5	60.0
145	0.12	65	5	47.86
150	0.08	70	5	60.0
154	0.06	75	5	75
Steady rate for 3 consecutive readings (R_2):				60.0

Steady rate for 3 consecutive readings (R_2):

Comments:

$$K_{FG} = 1.42 \text{ in/min} = 35.2 \text{ in/hr}$$

GP FIELD DATA SHEET

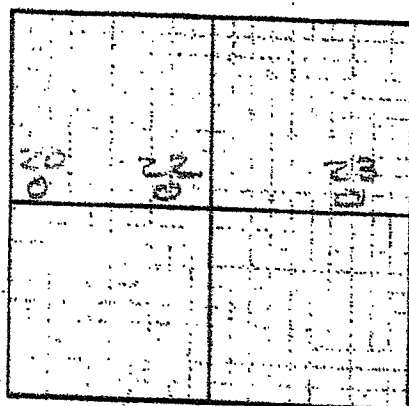
SECTION 1: SITE INFORMATION

Date 4/17/19 Investigator CARLOS A QUINTALSite Location PUTTER 10724Dominant Soil Type(s) SAND + GRAVEL

Site Map:

Soil Profile Description (horizon depth, texture, structure, color, etc.):

PT-20



Depth

Description

10"	A	A-7.5Y 3/2 Loamy Sand
18"	B	B-10YR 5/4 Loamy Sand
48"	C1	C1-7.5Y 4/3 SFG
	C2	C2-7.5Y 6/3
160"		Med. Sand

Presence of special soil conditions (mottling, water table depth, hardpan, induration, compacted layers, etc.):

Comments and Notes (topography, slope, vegetation, etc.):

SECTION **Guelph Permeameter Calculations**

Head H1

Permeable Type (enter "1" for Coarse and "2" for fine sand)
Enter the first water level height (cm) in centimeters
Enter the second water level height (cm) in centimeters

1. Coarse sand, fine sand, or silty sand, etc. (enter "1" for coarse and "2" for fine sand)
2. Soil which is highly permeable (e.g., coarse sand, etc.)
3. Most structures and soils (e.g., fine sand, etc.)
4. Coarse and gravelly sand, etc. (e.g., coarse sand, etc.)

Steady State Rate of Water Level Change (cm) in centimeters

$Q_1 = 0.0000$

$Q_2 = 0.0000$

$Q_3 = 0.0000$

$Q_4 = 0.0000$

$Q_5 = 0.0000$

Calculate the permeability coefficient (cm/sec) for the permeable type (enter "1" for coarse and "2" for fine sand) using the following formula: $k = \frac{Q}{A \cdot H} \cdot \frac{L}{2 \cdot (H_1 - H_2)}$ where Q is the discharge rate (cm³/sec), A is the cross-sectional area (cm²), H is the head (cm), and L is the length (cm).

Permeable Type	Steady State Rate of Water Level Change (cm) in centimeters
Coarse sand, fine sand, or silty sand, etc. (enter "1" for coarse and "2" for fine sand)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Soil which is highly permeable (e.g., coarse sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Most structures and soils (e.g., fine sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Coarse and gravelly sand, etc. (e.g., coarse sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$

Head H2

Permeable Type (enter "1" for Coarse and "2" for fine sand)
Enter the first water level height (cm) in centimeters
Enter the second water level height (cm) in centimeters

1. Coarse sand, fine sand, or silty sand, etc. (enter "1" for coarse and "2" for fine sand)
2. Soil which is highly permeable (e.g., coarse sand, etc.)
3. Most structures and soils (e.g., fine sand, etc.)
4. Coarse and gravelly sand, etc. (e.g., coarse sand, etc.)

Steady State Rate of Water Level Change (cm) in centimeters

$Q_1 = 0.0000$

$Q_2 = 0.0000$

$Q_3 = 0.0000$

$Q_4 = 0.0000$

$Q_5 = 0.0000$

Calculate the permeability coefficient (cm/sec) for the permeable type (enter "1" for coarse and "2" for fine sand) using the following formula: $k = \frac{Q}{A \cdot H} \cdot \frac{L}{2 \cdot (H_1 - H_2)}$ where Q is the discharge rate (cm³/sec), A is the cross-sectional area (cm²), H is the head (cm), and L is the length (cm).

Permeable Type	Steady State Rate of Water Level Change (cm) in centimeters
Coarse sand, fine sand, or silty sand, etc. (enter "1" for coarse and "2" for fine sand)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Soil which is highly permeable (e.g., coarse sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Most structures and soils (e.g., fine sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Coarse and gravelly sand, etc. (e.g., coarse sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$

Two Head Method

Permeable Type (enter "1" for Coarse and "2" for fine sand)
Enter the first water level height (cm) in centimeters
Enter the second water level height (cm) in centimeters

1. Coarse sand, fine sand, or silty sand, etc. (enter "1" for coarse and "2" for fine sand)
2. Soil which is highly permeable (e.g., coarse sand, etc.)
3. Most structures and soils (e.g., fine sand, etc.)
4. Coarse and gravelly sand, etc. (e.g., coarse sand, etc.)

Steady State Rate of Water Level Change (cm) in centimeters

$Q_1 = 0.0000$

$Q_2 = 0.0000$

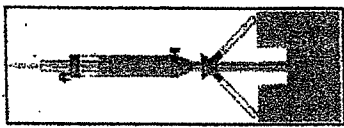
$Q_3 = 0.0000$

$Q_4 = 0.0000$

$Q_5 = 0.0000$

Calculate the permeability coefficient (cm/sec) for the permeable type (enter "1" for coarse and "2" for fine sand) using the following formula: $k = \frac{Q}{A \cdot H} \cdot \frac{L}{2 \cdot (H_1 - H_2)}$ where Q is the discharge rate (cm³/sec), A is the cross-sectional area (cm²), H is the head (cm), and L is the length (cm).

Permeable Type	Steady State Rate of Water Level Change (cm) in centimeters
Coarse sand, fine sand, or silty sand, etc. (enter "1" for coarse and "2" for fine sand)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Soil which is highly permeable (e.g., coarse sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Most structures and soils (e.g., fine sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$
Coarse and gravelly sand, etc. (e.g., coarse sand, etc.)	$Q_1 = 0.0000$ $Q_2 = 0.0000$ $Q_3 = 0.0000$ $Q_4 = 0.0000$ $Q_5 = 0.0000$



Guelph Permeameter Data Sheet

Investigator: NEWELL, J. L. Date: 4/12/19

Location: BUTLER CO. - WEAVER Test Id: PT - 2

Depth of hole: 45" Radius: 3 cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ☒ Inner only: ☐

Reservoir constant used: 35.22

Water level in well = 5 cm				
Time t (min)	Δt (min)	Water level in reservoir h (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		24		
1:14	0.23	30	6	25.71
1:30	0.22	35	5	18.75
1:46	0.22	40	5	18.75
1:05	0.32	45	5	15.78
1:25	0.33	50	5	15.0
1:45	0.30	55	5	16.67
2:02	0.32	60	5	15.29
2:24	0.32	65	5	15.64
2:44	0.33	70	5	15.0
3:08	0.40	75	5	12.5
Steady rate for 3 consecutive readings (R_1):				14.81

Steady rate for 3 consecutive readings (R_1): 14.81

Water level in well = 10 cm				
Time t (min)	Δt (min)	Water level in reservoir h (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		28		
1:10	0.17	35	6	36.0
1:25	0.25	40	5	20.0
1:40	0.25	45	5	20.0
1:54	0.23	50	5	21.42
1:12	0.3	55	5	16.67
1:28	0.22	60	5	18.75
1:45	0.28	65	5	12.64
2:01	0.24	70	5	18.75
2:19	0.3	75	5	16.67
Steady rate for 3 consecutive readings (R_2):				17.85

Steady rate for 3 consecutive readings (R_2): 17.75

Comments:

$$K_{eff} = 0.5 \text{ in./hr.} = 30 \text{ in./yr.}$$

GP FIELD DATA SHEET

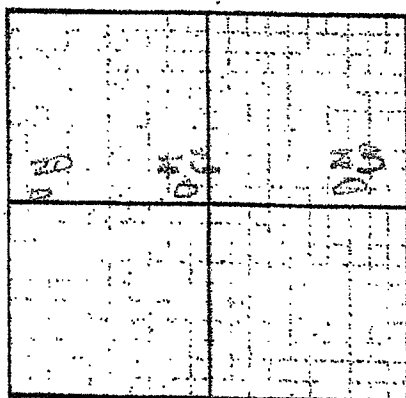
SECTION 1: SITE INFORMATION

Date 4/17/19 Investigator SALENT & CO. / J. H. TALSite Location PANTHER WAYDominant Soil Type(s) Sand / gravel

Site Map:

Soil Profile Description (horizon depth, texture, structure, color, etc.):

PT-22



Depth

Description

12"	FILL
36"	C1
96"	C2

10YR 4/3 -

10YR 5/3

Presence of special soil conditions (mottling, water table depth, hardpan, induration, compacted layers, etc.):

mottling @ 78" 7.5YR 5/6

Comments and Notes (topography, slope, vegetation, etc.):

One Head, Combined Research	$Q_1 = \bar{R}_1 \times 35.22$	$N_1 = \frac{2500}{2500 + 2500} \times 2500 = 1250$	$n_1 = \frac{61.25}{1250} \times 2500 = 122.5$	$d_1 = \frac{122.5}{2500} \times 2500 = 122.5$	$a_1 = 0.6125$
One Head, Inner Research	$Q_1 = \bar{R}_1 \times 2.16$		$N_1 = \frac{1250}{1250 + 1250} \times 2500 = 625$	$n_1 = \frac{61.25}{625} \times 2500 = 245$	$a_1 = 0.6125$
Two Head, Combined Research	$Q_1 = \bar{R}_1 \times 35.22$ $Q_2 = \bar{R}_2 \times 35.22$	$N_1 = \frac{2500}{2500 + 2500} \times 2500 = 1250$ $N_2 = \frac{2500}{2500 + 2500} \times 2500 = 1250$	$n_1 = \frac{61.25}{1250} \times 2500 = 122.5$ $n_2 = \frac{61.25}{1250} \times 2500 = 122.5$	$d_1 = \frac{122.5}{2500} \times 2500 = 122.5$ $d_2 = \frac{122.5}{2500} \times 2500 = 122.5$	$a_1 = 0.6125$ $a_2 = 0.6125$
Two Head, Inner Research	$Q_1 = \bar{R}_1 \times 2.16$ $Q_2 = \bar{R}_2 \times 2.16$		$N_1 = \frac{1250}{1250 + 1250} \times 2500 = 625$ $N_2 = \frac{1250}{1250 + 1250} \times 2500 = 625$	$n_1 = \frac{61.25}{625} \times 2500 = 245$ $n_2 = \frac{61.25}{625} \times 2500 = 245$	$a_1 = 0.6125$ $a_2 = 0.6125$

Guelph Permeameter Data Sheet

Investigator: CARLOS A. QUINTAL

Date: 4/17/19

Location: Power House, W. 10 Test Id: PT-23

Depth of hole: 36" Radius: 3 cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ☒ Inner only: ☐

Reservoir constant used: 35.72

Time t (min)	Δt (min)	Water level in reservoir h (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		20		
1:19	0.32	25	5	15.79
1:41	0.37	30	5	13.64
1:04	0.38	35	5	13.04
1:26	0.37	40	5	13.64
1:48	0.37	45	5	13.64
2:10	0.37	50	5	13.64
2:32	0.37	55	5	13.64
2:55	0.38	60	5	13.04
3:18	0.38	65	5	13.04
3:40	0.37	70	5	13.64
4:05	0.37	75	5	13.64
Steady rate for 3 consecutive readings (R_1):				13.34

Steady rate for 3 consecutive readings (R_1): 15.34

Water level in well = 10 cm				
Time t (min)	Δt (min)	Water level in reservoir r h (cm)	Δh (cm)	Rate of change $\Delta h / \Delta t$
0		20		
109	0.15	25	5	33.33
122	0.22	30	5	23.02
136	0.23	35	5	21.42
150	0.23	40	5	21.42
164	0.23	45	5	21.42
179	0.25	50	5	20.0
194	0.25	55	5	20.0
209	0.22	60	5	23.02
223	0.23	65	5	18.75
238	0.23	70	5	21.42
253	0.27	75	5	18.75
Steady rate for 3 consecutive readings (R_2):				20.09

Steady rate for 3 consecutive readings (R_2): 70.0%

Comments:

$$K_{SG} = 0.492 \text{ in/min} = 29.5\% \text{ in/q}_{\text{min}}$$

GP FIELD DATA SHEET

SECTION 1: SITE INFORMATION

Date 4/12/19 Investigator CARLOS A. QUINTALSite Location PARTIER WAYDominant Soil Type(s) SAND & GRAVEL

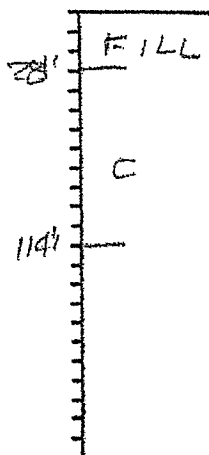
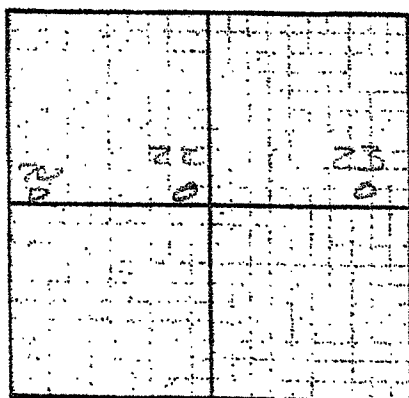
Site Map:

Soil Profile Description (horizon depth, texture, structure, color, etc.):

PT - 23

Depth

Description



FILL

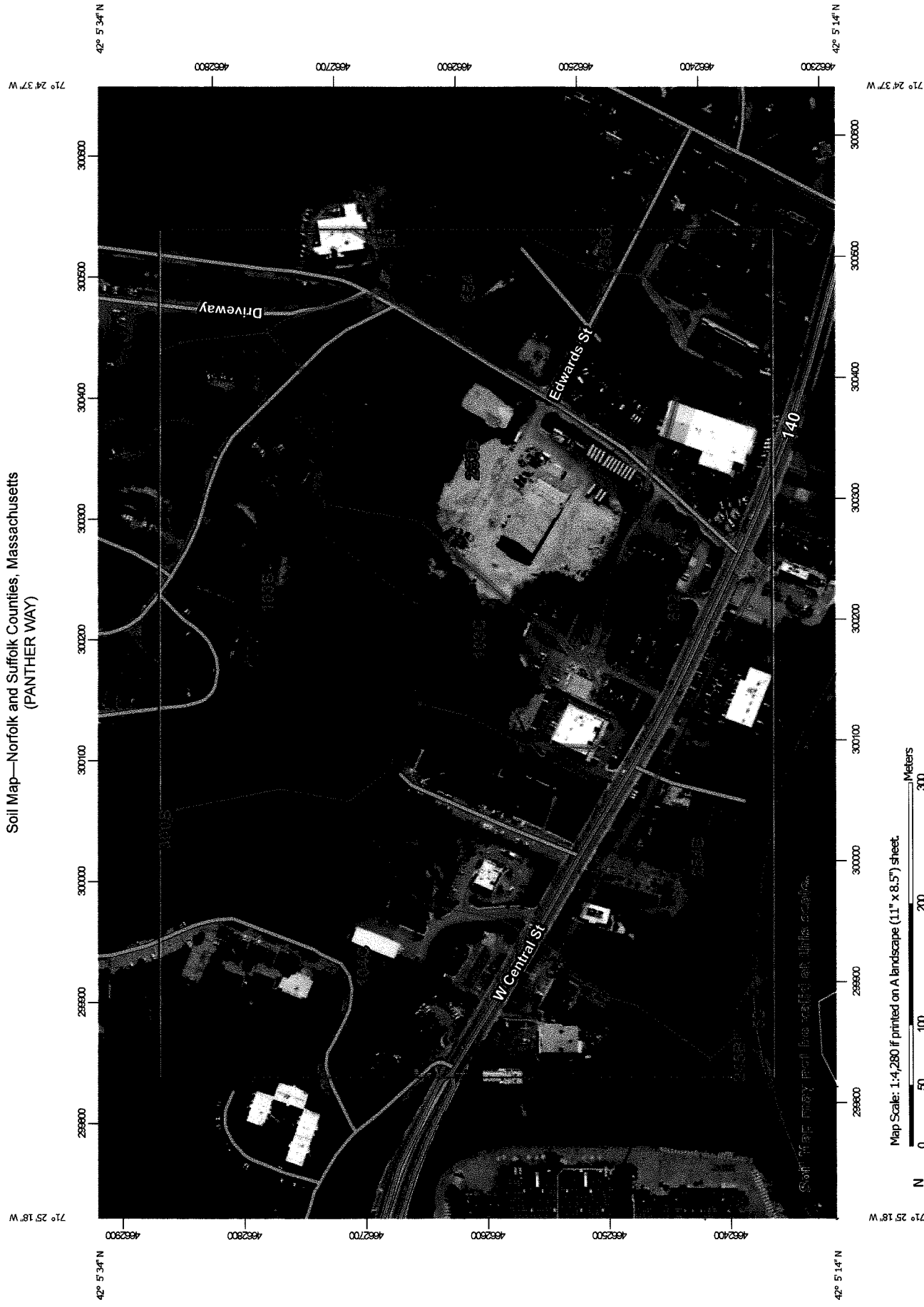
Sand & gravel

Presence of special soil conditions (mottling, water table depth, hardpan, induration, compacted layers, etc.):

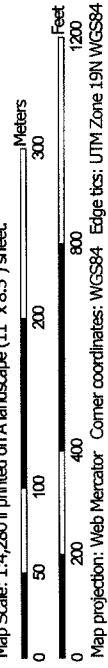
water @ 9.6"

Comments and Notes (topography, slope, vegetation, etc.):

Soil Map—Norfolk and Suffolk Counties, Massachusetts (PANTHER WAY)



Map Scale: 1:4,280 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



MAP LEGEND

Area of Interest (AOI)		Area of Interest (AOI)		Spoil Area
Soils		Soil Map Unit Polygons		Stony Spot
	Soil Map Unit Lines		Very Stony Spot	Wet Spot
	Soil Map Unit Points		Other	Special Line Features
Special Point Features		Water Features		Streams and Canals
	Blowout	Transportation		Rails
	Borrow Pit		Interstate Highways	US Routes
	Clay Spot		Major Roads	Local Roads
	Closed Depression		Aerial Photography	
	Gravel Pit			
	Gravelly Spot			
	Landfill			
	Lava Flow			
	Marsh or swamp			
	Mine or Quarry			
	Miscellaneous Water			
	Perennial Water			
	Rock Outcrop			
	Saline Spot			
	Sandy Spot			
	Severely Eroded Spot			
	Sinkhole			
	Slide or Slip			
	Sodic Spot			

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 20, Aug 27, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
51	Swansea muck, 0 to 1 percent slopes	0.1	0.1%
52	Freetown muck, 0 to 1 percent slopes	0.4	0.5%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	15.9	18.1%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	5.0	5.7%
104C	Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	16.8	19.2%
245B	Hinckley loamy sand, 3 to 8 percent slopes	0.3	0.3%
245C	Hinckley loamy sand, 8 to 15 percent slopes	0.7	0.8%
253D	Hinckley loamy sand, 15 to 35 percent slopes	11.5	13.1%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	9.3	10.5%
300B	Montauk fine sandy loam, 3 to 8 percent slopes	0.1	0.1%
602	Urban land, 0 to 15 percent slopes	17.7	20.2%
654	Udorthents, loamy	10.0	11.4%
Totals for Area of Interest		87.9	100.0%

APPENDIX G

CHECKLIST FOR DESIGNERS

Site Planning

Checklist for Designers

GOALS and NEEDS addressed:

1. Create a visually appealing community
2. Stabilize and increase property values
3. Encourage low impact development
4. Preserve the Town's historic and cultural heritage
5. Protect Franklin's natural environment, including habitat, water resources, and ecosystem services

FRANKLIN POLICY:

- Subdivision plans and site plans for all forms of development shall adhere to the principles of environmental and aesthetic compatibility and energy-efficient design.

BEST DEVELOPMENT PRACTICES The site plan should be designed to address the following to the maximum extent practicable	Incorporated into Project?
Unique natural features have been preserved <i>(the development program should either avoid altering or showcase significant natural features)</i>	☒
Native vegetation planted in disturbed areas as needed to enhance or restore habitat	☒
Historic and cultural resources have been preserved <i>(the development program should either avoid altering or showcase significant historic and cultural features)</i>	☒
Clearing, grading, and building placement consider viewsheds	☒
Cut and fill have been minimized	☒
Buildings blend into the natural topography	☒
Buildings are oriented to the sun and wind for maximum energy efficiency <i>Vegetated protection from northwest (winter) winds is provided</i> <i>Deciduous species planted or retained close to the East, South and West building edges</i>	☒
Conforms to §185-31 of the Town of Franklin Zoning Code and/or Chapter 300 of the Town of Franklin Subdivision Regulations	☒ ①

① See waivers requested on Plan sheet 1.

Stormwater Management

Checklist for Designers

GOALS and NEEDS addressed:

1. Protect local and regional wetlands and water bodies
2. Maximize groundwater recharge to retain a viable local groundwater supply
3. Minimize pollutants in stormwater runoff

FRANKLIN POLICIES:

- (A) All new development and redevelopment projects in Franklin shall meet the following stormwater management performance standards.
 - i. Post-development peak discharge rates and volumes from the site shall not exceed pre-development peak discharge rates and volumes from the site.
 - ii. The stormwater management system shall remove at least 80% of the average annual load of total suspended solids (TSS), at least 80% of the phosphorus loading, and at least 60% of nitrogen loading from the post-development stormwater created on site.
 - iii. All drainage facilities proposed shall utilize best management practices as outlined in the Massachusetts Stormwater Management Standards.
 - iv. All sites will have an Operation and Maintenance plan to insure future compliance.
- (B) Non-structural stormwater management systems should be used wherever site conditions allow.

BEST DEVELOPMENT PRACTICES

The site plan should be designed to address the following to the maximum extent practicable

Incorporated into Project?

Vegetated swales <i>(recommended to convey runoff from roadways & parking lots)</i>	☐
Vegetated filter strips <i>(recommended to filter and infiltrate runoff from roadways, parking lots, and driveways; use along roadsides and parking lots)</i>	☐
Constructed wetlands <i>(preferred method for stormwater retention & pollutant removal)</i>	☐
Bioretention cells <i>(rain gardens) (recommended on residential lots and parking lot islands)</i>	☐
Pervious paving surfaces <i>(recommended in overflow parking and low-traffic areas)</i>	☐
Sediment Forebays <i>(use in combination with other BDP)</i>	☐
Roof gardens <i>(encouraged on flat or gently sloped commercial and industrial rooftops)</i>	☐
Retention/Detention basins <i>(may be used in series with other practices to provide pre-treatment)</i>	☒
Recharge Systems <i>(suitable for all areas of development)</i>	☒
Drain pipe/catch basin systems <i>(as required to collect runoff when other systems are not practical)</i>	☒
If utilizing drain pipe and/or catch basin systems, have you documented that other systems are infeasible?	☒

Erosion and Sedimentation Control

Checklist for Designers

GOALS and NEEDS addressed:

1. Minimize clearing and regrading;
2. Prevent erosion and sedimentation.

FRANKLIN POLICIES:

- (A) Any proposed project on a previously undeveloped site shall accommodate the development program in a way that minimizes clearing and re-grading, especially in areas of steep slopes, erosion-prone soils, or sensitive vegetation. For redevelopment projects, the site plan shall concentrate development in previously-disturbed areas to the extent possible.
- (B) As a condition of approval, every proposed project shall submit and adhere to an erosion control plan that addresses soil stabilization, sediment retention, perimeter protection, construction scheduling, traffic area stabilization and dust control.
- (C) If the proposed project is in an area under conservation jurisdiction, the project will require permitting deemed appropriate by the Conservation Commission.

BEST DEVELOPMENT PRACTICES

The site plan should be designed to address the following to the maximum extent practicable.

Incorporated into Project?

Clearing and re-grading have been minimized	☒
Plan identifies sensitive areas to be protected and areas that are suitable for development	☒
Conservation Permits have been obtained (when applicable)	☒ <i>Applied For</i>
The erosion and sedimentation control plan addresses:	
• Soil stabilization (cover or stabilize erodible surfaces not in immediate use)	☒
• Sediment retention (runoff interceptors and sediment traps/ponds)	☒
• Perimeter protection (vegetated buffers, compost socks or straw wattles at limit of work)	☒
• Construction scheduling (minimize disturbed area at any given time)	☒
• Traffic area stabilization (crushed rock or similar at construction vehicle entrance and parking areas)	☒
• Dust control (plan for stabilizing dry, dust-prone surfaces when necessary)	☒
• Vegetation (preserve existing vegetation and/or identify areas to be revegetated including proposed planting species, quantity and planting specifications)	☒

Landscape Design

Checklist for Designers

GOALS and NEEDS addressed:

1. Stabilize water use at a sustainable level
2. Create landscapes that minimize habitat destruction and maximize habitat value
3. Encourage the development of landscapes that provide environmental quality and visual relief through the planting of native or naturalized species

FRANKLIN POLICIES:

- (A) Site plans and landscape plans for all proposed projects shall take appropriate steps, as outlined in the Guidebook, to minimize water use for irrigation and to allow for natural recharge of groundwater. Landscape plans shall follow the guidelines in the Guidebook for selecting species that are most appropriate to the site conditions.
- (B) Native and habitat-creating species shall be used in all landscape plans to the maximum extent possible while still meeting the site's landscaping needs. Invasive species may not be planted in Franklin under any condition. Refer to the Massachusetts Prohibited Plant list for more information.
- (C) Actively promote the Town of Franklin's Water Conservation Measures.

BEST DEVELOPMENT PRACTICES

The site plan must address all of the following principles.

Incorporated into Project?

Retain and Recharge water on site (install bio-retention cells, vegetated filter strips and minimize lawn areas where feasible)	☒
Preserve natural vegetation to the maximum extent practicable	☒
Irrigation system is water efficient (if an in-ground irrigation system is proposed, it is a water efficient system with timers and automatic sensors to prevent overwatering)	☐
Preserve soil permeability (minimize disturbing existing landscapes. Prepare new planting beds in accordance to the Planting Bed Guidelines on p. 13, and install 1-2" of shredded pine bark mulch on new planting areas)	☒
Minimize the use of turf grass (when applicable, reduce the size of the lawn area; instead, plant a bio-retention cell, use alternative, drought tolerant groundcover)	☒
Specify variety of native and naturalized species (species from the plant list have been incorporated into the landscape design, and no invasive species are used. Refer to the Plant Species Section and the Massachusetts Prohibited Plant List)	☒
Species are appropriate to the soil, site, and microclimate conditions (select appropriate species from the plant list in this guidebook)	☒

APPENDIX H



Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

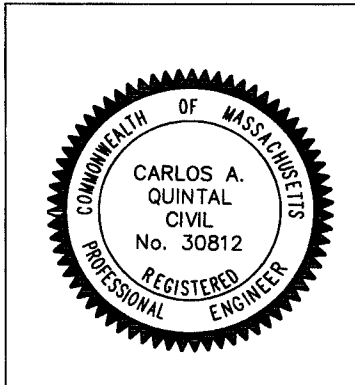
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Carlos A. Quintal 12/19/24
Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- ☒ New development
- ☐ Redevelopment
- ☐ Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
 - ☐ Credit 1
 - ☐ Credit 2
 - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- ☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- ☒ Soil Analysis provided.
- ☒ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - ☒ Static
 - ☐ Simple Dynamic
 - ☐ Dynamic Field¹
- ☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
 - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
 - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- ☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- ☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
 - Provisions for storing materials and waste products inside or under cover;
 - Vehicle washing controls;
 - Requirements for routine inspections and maintenance of stormwater BMPs;
 - Spill prevention and response plans;
 - Provisions for maintenance of lawns, gardens, and other landscaped areas;
 - Requirements for storage and use of fertilizers, herbicides, and pesticides;
 - Pet waste management provisions;
 - Provisions for operation and management of septic systems;
 - Provisions for solid waste management;
 - Snow disposal and plowing plans relative to Wetland Resource Areas;
 - Winter Road Salt and/or Sand Use and Storage restrictions;
 - Street sweeping schedules;
 - Provisions for prevention of illicit discharges to the stormwater management system;
 - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
 - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- ☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
 - ☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
 - ☐ is within the Zone II or Interim Wellhead Protection Area
 - ☐ is near or to other critical areas
 - ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - ☐ involves runoff from land uses with higher potential pollutant loads.
 - ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.
 - ☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- ☒ The BMP is sized (and calculations provided) based on:
 - ☒ The ½" or 1" Water Quality Volume or
 - ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- ☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- ☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- ☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- ☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior** to the discharge of stormwater to the post-construction stormwater BMPs.
- ☐ The NPDES Multi-Sector General Permit does **not** cover the land use.
- ☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- ☐ All exposure has been eliminated.
- ☐ All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- ☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- ☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- ☐ Critical areas and BMPs are identified in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- ☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - ☐ Limited Project
 - ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - ☐ Bike Path and/or Foot Path
 - ☐ Redevelopment Project
 - ☐ Redevelopment portion of mix of new and redevelopment.
- ☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- ☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- ☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- ☐ The project is **not** covered by a NPDES Construction General Permit.
- ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- ☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- ☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
 - ☒ Name of the stormwater management system owners;
 - ☒ Party responsible for operation and maintenance;
 - ☒ Schedule for implementation of routine and non-routine maintenance tasks;
 - ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
 - ☒ Description and delineation of public safety features;
 - ☒ Estimated operation and maintenance budget; and
 - ☒ Operation and Maintenance Log Form.
- ☐ The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- ☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- ☒ An Illicit Discharge Compliance Statement is attached;
- ☐ NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

APPENDIX I

Operation and Maintenance Plan

FOR
Site Plan – Senior Village
Panther Way and West Central Street

LOCATED IN
FRANKLIN, MASSACHUSETTS

PREPARED FOR
Camford Property Group, LLC
37 East Central Street
Franklin, MA 02038

PREPARED BY
UNITED CONSULTANTS, INC.
850 FRANKLIN STREET, SUITE 11D
WRENTHAM, MA. 02093

DATE: December 13, 2024

Operation and Maintenance Plan

Good House Keeping Measures

1. The parking area and driveways will receive the minimum amount of sand and salt. Snow for (Lot 2) will be stored on the sides of the driveways.
2. The site landscaping will consist of mulch with trees, shrubs, turf lawn and existing wooded areas. These areas will be assessed by the owner's landscape professional to determine the minimum amounts of fertilizers, herbicides and pesticides necessary and shall only apply the minimums necessary.
3. The site will be stabilized with landscaped areas with mulch and turf lawn. This will improve the existing site coverage.

Long Term Pollution Prevention Plan

The owner shall employ good housekeeping measures, which include removing trash and debris from the site, keeping trash in receptacles and complying with the long-term operation and maintenance plan.

The owner does not plan to store materials or waste products on the site.

The owner will not allow vehicles to be washed outside of the building.

The owner will have routine inspections and maintenance completed for the Storm-water BMP's. See the Operation and Maintenance Plan Stormwater Facilities Plan for details and schedule.

No hazardous materials for businesses are anticipated. If hazardous materials are proposed in the future they will be stored within the building.

The owner will employ a landscape professional to determine and apply the minimum amounts of fertilizers, herbicides and pesticides. No storage of landscape materials on site is proposed.

The site is serviced by Town water and sewer.

A dumpster is proposed to provide refuse storage and will be emptied and disposed of offsite.

The owner will designate an emergency contact person prior to commencing construction.

Snow will be placed in the snow storage areas provided on the site plan. If necessary, excess parking spaces could be used to store snow.

The owner will apply the minimum amount of sand and salt necessary. The parking area will be swept four per year with one sweeping immediately following the last winter sanding.

Sand piles will not be stored on site.

Operation and Maintenance Plan

An operation and maintenance schedule for the construction period and the post-development period has been provided on the Operation and Maintenance Plan Stormwater Facilities Plan.

During the construction period and after completion the Owner, Panther Way 2019, LLC shall be responsible for the operation and maintenance of the site and the drainage system.

Upon completion of the construction work the property owner shall be responsible for the maintenance of the drainage facilities.

The yearly estimated operation and maintenance budget is \$8,000.

The owner will provide documentation which will be submitted to the Franklin DPW confirming when maintenance has been satisfactorily completed.

The owner of the stormwater management system will notify the Director of changes in ownership or assignment of financial responsibility.

The owner, Panther Way 2019, LLC is the responsible party.

Name

Title

Yearly Inspection and Maintenance Log

Page 1

100 and 110 East Central Street
Franklin, Massachusetts

Parking Lot Sweeping and Curb Inspection – Four Times Per Year

Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____

Notes:

Water Quality Units - 4 Times per year

Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____

Cleaning Performed – 4 Times per year

Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____

Notes:

Catch Basins - 4 Times per year

Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____

Cleaning Performed – When Sediment Depth reaches 18"

Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____

Notes:

Open Infiltration Pond – 4 times per year

Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____
Date: _____	Performed By: _____

Underground Infiltration Pond – 4 times per year

Date: _____
Date: _____
Date: _____
Date: _____

Performed By: _____
Performed By: _____
Performed By: _____
Performed By: _____

Cleaning Performed:

Date: _____
Date: _____
Date: _____
Date: _____

Performed By: _____
Performed By: _____
Performed By: _____
Performed By: _____

Notes:

Landscape Area Inspection – 4 times per year

Date: _____
Date: _____
Date: _____
Date: _____

Performed By: _____
Performed By: _____
Performed By: _____
Performed By: _____

Work Performed Repairs completed:

Date: _____
Date: _____
Date: _____
Date: _____

Performed By: _____
Performed By: _____
Performed By: _____
Performed By: _____

Headwall and Riprap – 4 times per year

Date: _____
Date: _____
Date: _____
Date: _____

Performed By: _____
Performed By: _____
Performed By: _____
Performed By: _____

Work Performed Repairs completed:

Date: _____
Date: _____
Date: _____
Date: _____

Performed By: _____
Performed By: _____
Performed By: _____
Performed By: _____

APPENDIX J

In Compliance with DEP Storm-water Management Standard 10

Panther Way – Senior Village Site

No Illicit discharges to the storm-water management system, including wastewater discharges and discharges of storm-water contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease are proposed and shall not be allowed.

The site map located in Appendix J shall be part of this Illicit Discharge Compliance Statement.

The owner, Panther Way 2019, LLC is the responsible party.

Name	Title
------	-------

APPENDIX K