

*HYDROLOGIC & HYDRAULIC STUDY
FOR FALL CREEK*

*MODERN LIVING RENTALS
902 DRYDEN ROAD
TOWN OF DRYDEN
TOMPKINS COUNTY, NEW YORK*

Project Owner:



Modern Living Rentals
P.O. Box 6707
Ithaca, New York 14851

Prepared for:



STREAM Collaborative
Architecture + Landscape Architecture DPC
123 S. Cayuga Street Suite 201
Ithaca, New York 14850

Prepared by:



Woidt Engineering & Consulting, PC
41 Chenango Street, Suite 200
Binghamton, New York 13901

November 18th, 2015



Charles F. Woidt Jr.

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Appendix A

- Revised 100-year (1% annual chance flood) Floodplain Map with Cross Section Locations
- HEC-RAS 100-year (1% annual chance flood) Summary Table - Existing Conditions
- HEC-RAS 100-year (1% annual chance flood) Water Surface Profile
- Town of Dryden Flood Insurance Rate Map (FIRM) for Fall Creek

1.0 Study Description and Location

This study consists of a hydrologic and hydraulic analysis to establish 100-year (1% annual chance flood) water surface elevations along a reach of Fall Creek in the Town of Dryden, Tompkins County, NY (see 100-year floodplain map - Appendix A). The study was requested by the developer of a proposed development (Modern Living Rentals) located at 902 Dryden Road. The study was completed by Woidt Engineering & Consulting, P.C. of Binghamton, NY.

2.0 Existing Studies & Hydraulic Models

Review of the FEMA Map Center for the Town of Dryden revealed that the study reach of Fall Creek was studied by approximate methods that provide approximate mapping limits for the 100-year (1% chance flood) floodplain. The approximate study however, does not include detailed hydraulic modeling, nor does it establish 100-year Base Flood Elevations (BFE's). The effective date of the approximate study mapping was May 15th, 1985. The existing approximate floodplain limits are shown on the Flood Insurance Rate Map (FIRM) in Appendix A.

3.0 Hydrologic Analysis

Review of the FEMA Map Center revealed that a Flood Insurance Study for the Town of Dryden does not exist. Therefore, there is no documentation of hydrologic methods for determining flow rates for the specific study reach of Fall Creek. As such, WEC reviewed the Town of Ithaca Flood Insurance Study (effective date December 1984) for hydrologic data along Fall Creek. The Town of Ithaca FIS did provide a 100-year (1% annual chance flood) discharge of 11,600 cfs along Fall Creek at the USGS gaging station #04234000 which is located approximately 1.6 miles downstream of the 902 Dryden Road site. Since the FIS discharge was developed over 30 years ago, WEC also utilized the USGS Stream Stats program to verify if the FIS discharge is still appropriate. The USGS Stream Stats program results virtually matched the FIS discharge value, thus WEC elected to utilize the Town of Ithaca FIS discharge for subsequent hydraulic analysis.

4.0 Hydraulic Analysis

The 100-year (1% chance flood) water surface profile through the project area reach was developed utilizing the U.S Army Corps of Engineers HEC-RAS computer program (version 4.1). The 100-year starting water surface elevation was determined by normal depth methods.

A total of five (5) channel and floodplain sections were obtained by detailed survey methods. The detailed survey methods were augmented with 1' contour interval survey through the proposed project site and 2' contour interval mapping available from Tompkins County LiDAR mapping. All survey information shown on the floodplain mapping is referenced to NGVD 29 vertical datum and an arbitrary horizontal datum that was utilized for the proposed project survey. Manning's roughness coefficients for Fall Creek channel and overbank areas were estimated by field observations and engineering

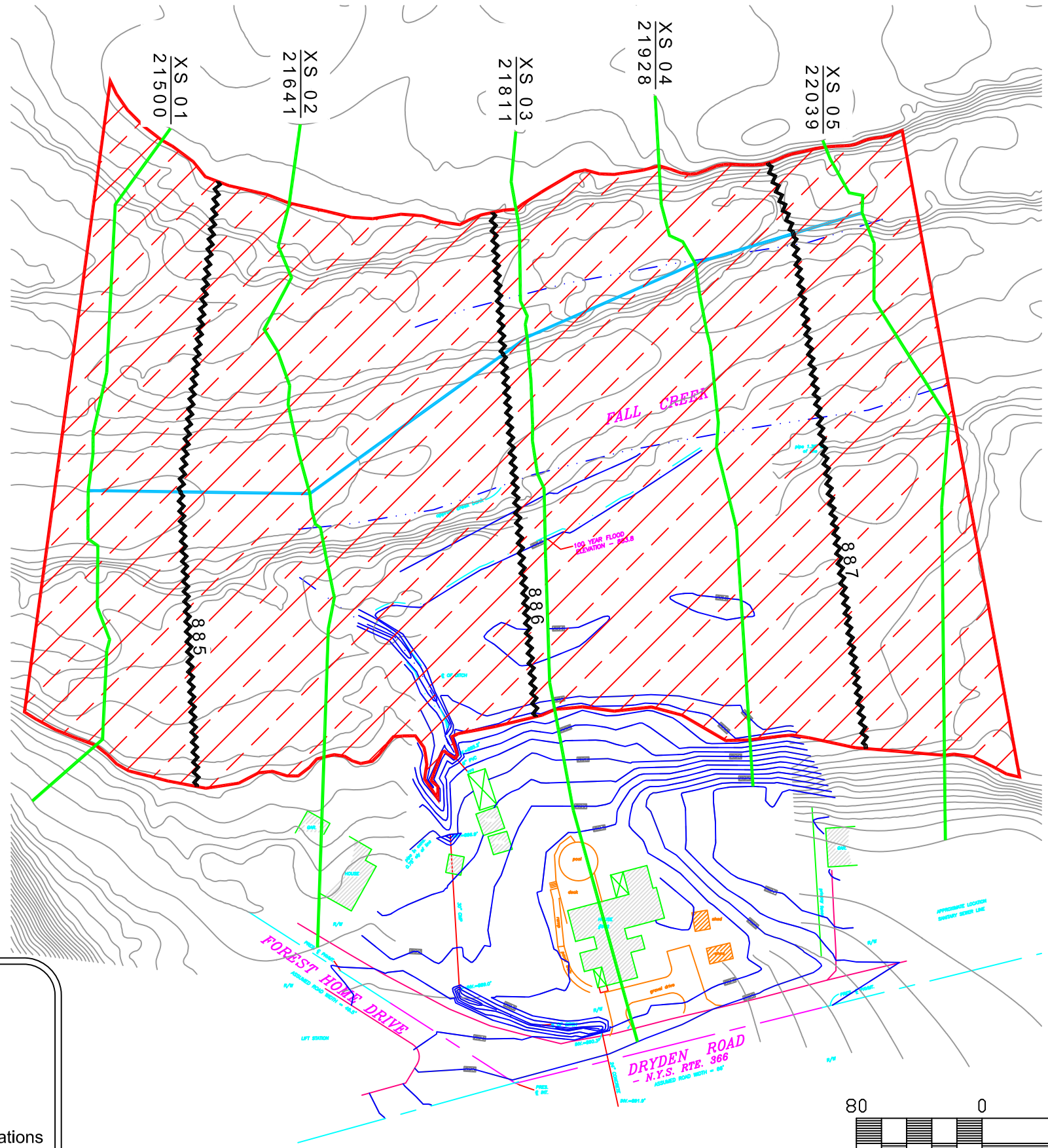
judgment. The HEC-RAS model run was computed assuming a subcritical flow regime. HEC-RAS summary tables, water surface profiles and the revised 100-year floodplain delineation are included in Appendix A.

Table 2 – Fall Creek 100-year Water Surface Elevations and Channel Velocities

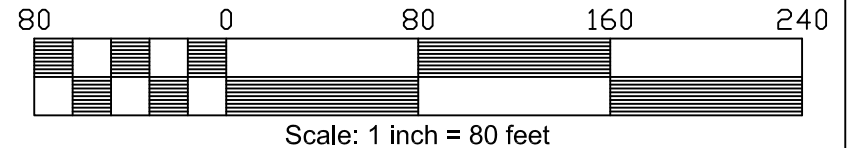
Cross Section		Surveyed site Conditions	
Name	ID	Water Surface (ft)	Channel Velocity (ft/sec)
Section 05	22039	887.21	8.96
Section 04	21928	886.70	8.73
Section 03	21811	886.08	9.30
Section 02	21641	885.35	8.83
Section 01	21500	884.75	8.86

5.0 Conclusions and Recommendations

The effective FEMA Flood Insurance Rate Map (FIRM) for the subject reach of Fall Creek was developed using approximate methods and only shows approximate flood limits on a large scale map (1" = 2000'). This study utilized detailed mapping and hydraulic methods to produce much more accurate floodplain mapping that also identifies the base flood elevations (100-year or 1% annual chance flood) along the project study reach. It is recommended that this detailed study information be utilized to guide floodplain management decisions for the proposed development.



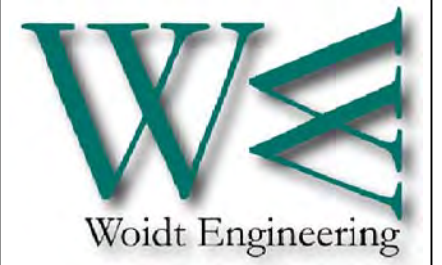
Legend	
	2-ft LiDAR Contours
	1-ft Survey Contours
	Cross Section Locations
	Fall Creek Centerline
	100-year Base Flood Elevations
	100-year Flooding Limits



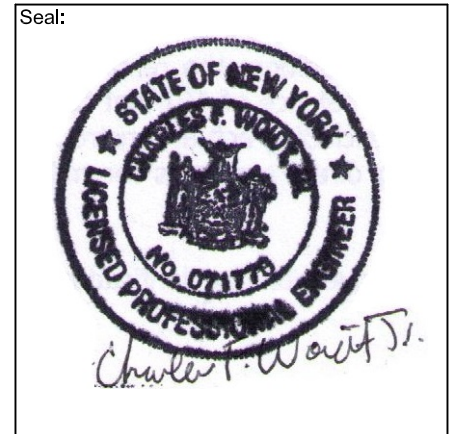
North
 Vertical Datum (NGVD 29)

No.	Revision	Date

Project Name
902 Dryden Road
Multi-Family
MODERN LIVING RENTALS



Woitd Engineering & Consulting, P.C.
 41 Chenango Street, Suite 200
 Binghamton, New York 13901
 Phone: (607) 722-1014
 Fax: (607) 722-1614
 Web: www.WoitdEngineering.com



Designed By: XXX	Project No.: NY E044.2015
Drawn By: NPD	Scale: 1 inch = 80 feet
Checked By: CFW	Date: 11/18/2015

Drawing Title
Existing 100-year
Floodplain

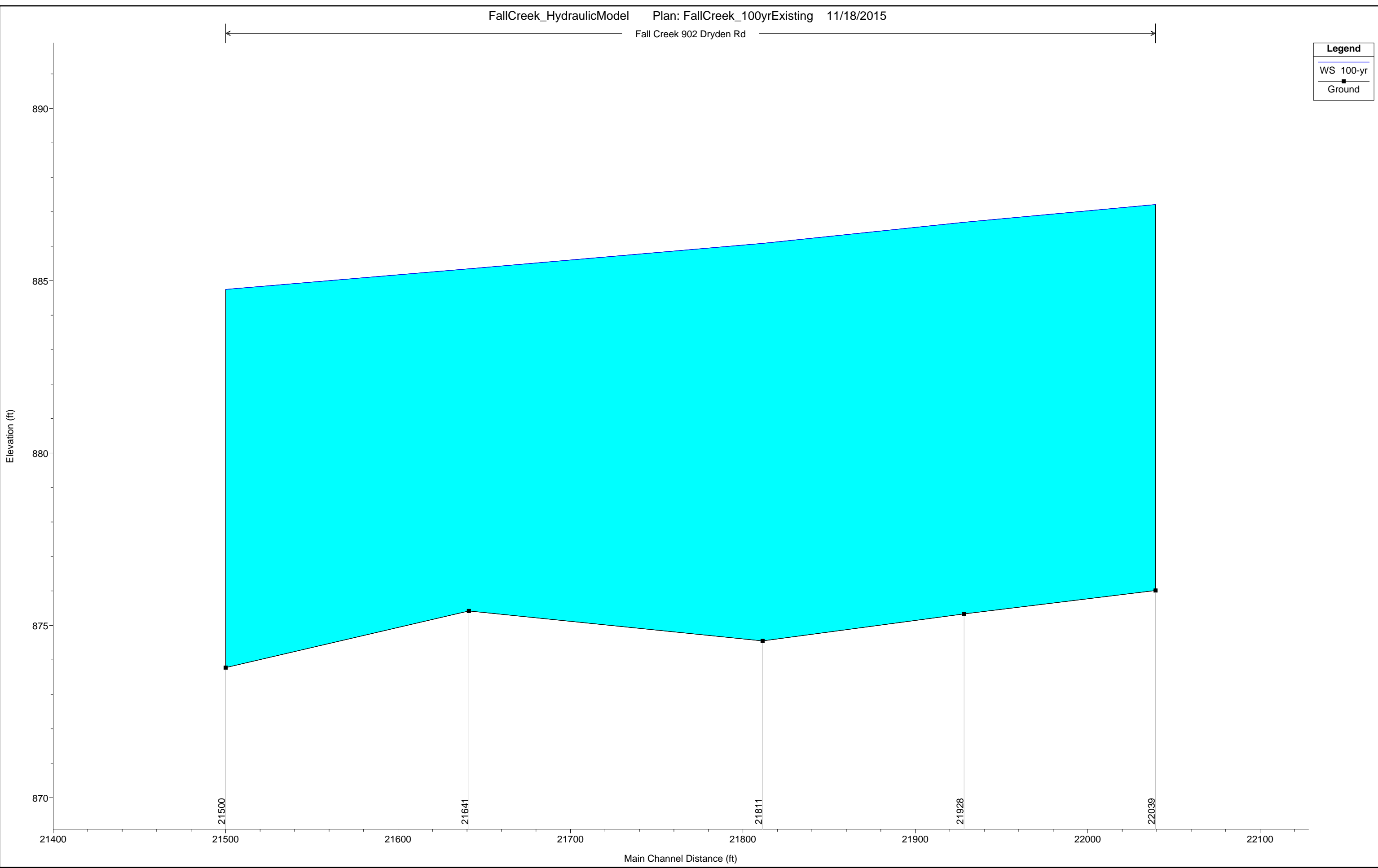
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HH-100

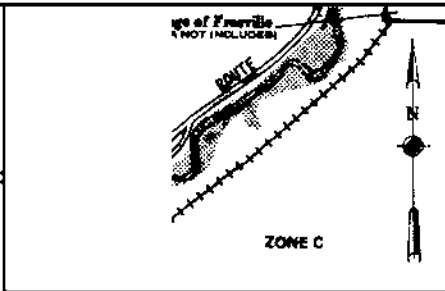
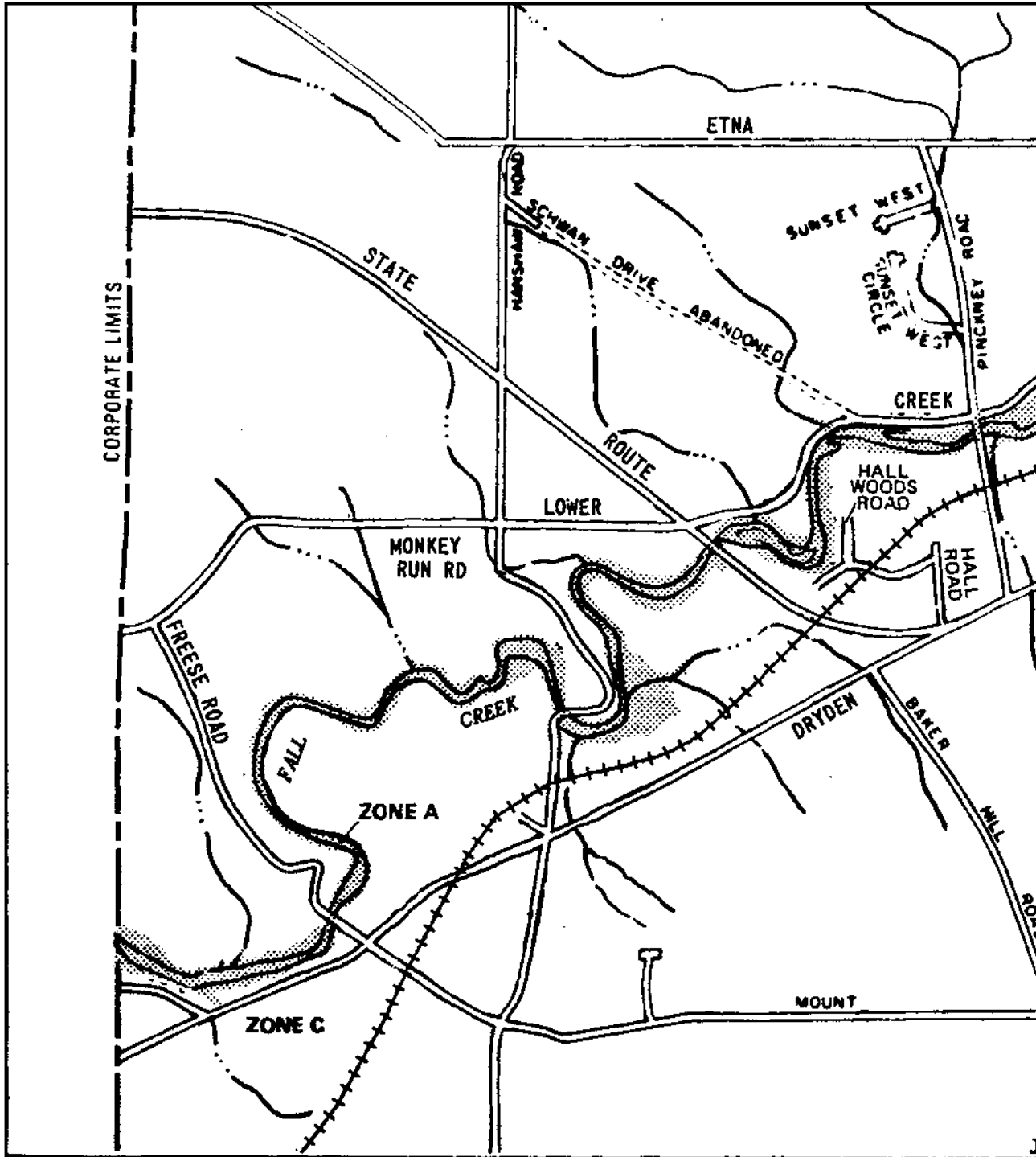
HEC-RAS Plan: 100yr Exist River: Fall Creek Reach: 902 Dryden Rd Profile: 100-yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
902 Dryden Rd	22039	100-yr	11600.00	876.01	887.21		888.33	0.005689	8.96	1675.27	413.56	0.60
902 Dryden Rd	21928	100-yr	11600.00	875.33	886.70		887.77	0.004214	8.73	1716.07	378.53	0.53
902 Dryden Rd	21811	100-yr	11600.00	874.55	886.08		887.26	0.004410	9.30	1705.93	338.54	0.55
902 Dryden Rd	21641	100-yr	11600.00	875.42	885.35		886.39	0.005404	8.83	1752.27	368.28	0.59
902 Dryden Rd	21500	100-yr	11600.00	873.78	884.75	882.53	885.72	0.004001	8.86	2044.17	402.84	0.52

Legend

- WS 100-yr
- Ground





federal emergency management agency
TOWN OF DRYDEN, NY
(TOMPKINS CO.)

EFFECTIVE DATE
May 15, 1985

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov