

APPENDIX D
SITE ALTERNATIVE ANALYSIS

Site Alternative Analysis

for the

***Village of Wellsburg
Chemung County, New York***

Volunteer Fire Department

April 2012

HUNT 2678-002



Prepared by:
Hunt Engineers, Architects & Land Surveyors, PC
Airport Corporate Park, 100 Hunt Center
Horseheads, NY 14845-1019
Phone (607) 358-1000, Fax (607) 358-1800

I. Site Relocation Alternatives

Part of the funding approval process to determine if a direct relocation is feasible is conducting an Environmental & Historic Preservation Review. According to FEMA, "Federal environmental and historic preservation laws are aimed at protecting our nation's water, air, coastal, wildlife, land, agricultural, historical and cultural resources, as well as minimizing potential adverse effects to children, low-income and minority populations." Failure to comply with these laws results in delays and denial of funding. Part of the review process includes an eight step review for floodplain/wetland management. This review process includes reviewing site alternatives and several characteristics of each site reviewed. For purposes of this project, the Village of Wellsburg has two sites in consideration.

The first site is located behind the Village hall and a baseball diamond on Terrace Street in a residential area. The site is located within the limits of a Village park and was zoned for commercial development in 1991/92. Placing the fire station here would eliminate the possibility of a tax generating business to build here. The site is located on a secondary road (20' wide) which would hinder ingress and egress of the large rescue vehicles. In addition, the site would need to be raised to meet the existing grade of Terrace Street which would require approximately 10 feet of fill in the proposed site.

The second site is located on Main Street, a primary road (40' wide) through the Village of Wellsburg. This parcel of land was given to the Village of Wellsburg from Chemung County for the purposes of relocating the fire station. The Village has already begun the analysis of this site before the flood of 2011. They hired HUNT to perform a hydraulic study of Bentley Creek to determine its impacts for a future build. The existing site falls within the 100 year flood plain which would require it to be raised over the flood elevation. From this study, a preliminary site and grading plan were created to provide an idea of how the site would be modified for relocation.

A comprehensive analysis on both sites can be found below:

A. Alternative #1: Terrace Street

i. Site Overview:

Proposed Site No. 1 (Project Site) for the new Wellsburg Fire Department is located on Terrace Street., Wellsburg, NY 14894. The parcel is a 4.50 acre lot reputedly owned by the Village of Wellsburg. The fire station would be located on 1.8 acres of the entire parcel. The other 2.7 acres is a baseball diamond. As shown on the Village of Wellsburg tax map (Appendix F-1, Figure 1) the Project Site (Parcel #226) fronts on Terrace Street, which forms the properties eastern border. The majority of the site is bordered by residential lots while the north side is bordered by a commercial type building.

ii. Zoning / Land Use

The Project Site is located within the Village of Wellsburg, and is subject to the Village Zoning Ordinance. Under the Village of Wellsburg Zoning Ordinance a building permit must be submitted to the Board of Appeals for review and approval. In addition to the permit, a site plan must be submitted to the Planning Board for review. The Project Site will be subjected to thirty (30) percent lot coverage,

including buildings and accessory structures, and a maximum building height of 20 feet. The site will also be subjected to the following setbacks; twenty five (25) feet along the front, twelve (12) feet on each side, and twelve (12) feet on the back. For off street parking, the facility will have a gravel driveway with no marked spaces.

iii. Site Access

Site access for the Project Site would be provided from Terrace Street. Terrace Street is a secondary road that has a pavement width of 20 feet. There currently is no existing driveway for the parcel so a new driveway will be required. The driveway must be designed to meet the Village of Wellsburg regulations. The speed limit on Terrace Street at the location of the site is 30 mph; therefore the driveway must have a clear line of sight for 250 feet in each direction. During the visual site inspection, it was estimated that at this location there has a sight distance over 250 feet. The driveway should be placed at the east side of the site.

iv. Soil Conditions

According to the NRCS soils mapping the majority of the soil at the Project Site is classified as Chenango Channery Silt Loam. Chenango soils are well-drained with moderately high to high permeability.

Although the soils at the Project Site are well suited for development including pavement, building foundations, and infiltration, the majority of the site will be raised with compacted lifts of stream gravel deposits from another location. Soil testing should be performed of undisturbed soils at the conceptual design of this development in order to determine the permeability rate of the soil.

v. Utilities

The proposed site will require a septic system and leech field which should be placed in undisturbed soils in order to properly infiltrate into the ground. Permits from the NYS Department of Environmental Conservation and the NYS Department of Health will need to be acquired for the installation of a septic system.

The site is serviced by the Village of Wellsburg Water System. There is a water main which runs along Terrace Street which would be sufficient for water demands of the fire station.

Electric service is provided by NYSEG. The existing electric lines run along Terrace Street, the adequacy of the power line is unknown and would have to be determined by electric company inspection.

vi. Environmental Concerns

a. *Flooding*

According to FEMA Flood Information Mapping, the Project Site is located in a designated flood hazard zone and will need to be raised over the 100 year floodplain (See Appendix F-1, Figure 2).

b. Wetlands

According to the National Wetlands Inventory (NWI) there are no protected wetlands on the site. The NYSDEC environmental mapping also shows no wetlands. See Appendix F-1, Figure 4 for the NWI Map and Figure 5 for the Environmental Map.

c. Archeological

The Project Site is not located in an archeologically sensitive area.

d. Endangered Species

As shown on the NYSDEC Environment map, the proposed site is not located in an area where there is concern for Rare Animals, such as endangered or threatened species.

vii. Stormwater Management

As shown on the NYSDEC Storm Water mapping (Appendix F-1, Figure 6), the site is located within a Municipal Separate Storm Sewer System (MS4); therefore, if one or more acres of the site are disturbed, a permit will be required for construction activities. The permit is part of the Stormwater Pollution Discharge Elimination System (SPDES) and needs to be obtained prior to construction commencement. If one or more acres of land are disturbed, a Stormwater Pollution Prevention Plan (SWPPP) shall be prepared in accordance with NYSDEC regulations. The SWPPP for this development will include water quality controls, green infrastructure elements, and flood control facilities in accordance with the DEC Stormwater Management Design Manual.

Developing the site will result in an increase of impervious area (from roof water) requiring a stormwater management system. The gravel driveway will not increase the impervious area.

viii. Visual Inspection

A site inspection was conducted by HUNT staff, where the site was viewed from the public right of ways. The 1.8 acre site is currently vacant and is surrounded by lawn coverage. The site has a gradual downward slope from Terrace Street towards the west, which becomes flatter along the western border.

B. Alternative #2: Main Street (Route 367)

i. Site Overview

Proposed Site No. 2 (Project Site) for the new Wellsburg Fire Department is located on Main St., Wellsburg, NY 14894. The parcel is a 3.50 acre lot reputedly owned by the Village of Wellsburg. As shown on the Village of Wellsburg tax map (Appendix F-2, Figure 1) the Project Site (Parcel #118 & #147) fronts on Main Street (AKA New York State Route 367), which forms the properties eastern

border. The majority of the site is bordered by residential lots/woods. The exceptions to this are to the north where the property borders Bentley Creek. The property is currently vacant. Parcel #147 was given to the Village of Wellsburg by Chemung County in 2007 for purposes of relocating the fire station. Parcel #118 was purchased by the Village in 2011.

ii. Zoning / Land Use

The Project Site is located within the Village of Wellsburg, and is subject to the Village Zoning Ordinance. Under the Village of Wellsburg Zoning Ordinance a building permit must be submitted to the Board of Appeals for review and approval. In addition to the permit, a site plan must be submitted to the Planning Board for review. The Project Site will be subjected to thirty (25) percent lot coverage, including buildings and accessory structures, and a maximum building height of 20 feet. The site will also be subjected to the following setbacks; twenty five (25) feet along the front, twelve (12) feet on each side, and twelve (12) feet on the back. For off street parking, the facility will have a gravel driveway with no marked spaces.

iii. Site Access

Site access for the Project Site would be provided from Main Street. There currently is no existing driveway for the parcel so a new driveway will be required. The driveway must be designed to meet the Village of Wellsburg regulations and will have to obtain a New York State Department of Transportation entrance permit. The speed limit on Main Street at the location of the site is 30 mph; therefore the driveway must have a clear line of sight for 250 feet in each direction. During the visual site inspection, it was estimated that at this location there has a sight distance over 250 feet. The driveway should be placed at the north end of the site.

iv. Soil Conditions

According to the NRCS soils mapping (Appendix F-2, Figure 3), the majority of the soil at the Project Site is classified as Chenango Channery Silt Loam. Chenango soils are well-drained with moderately high to high permeability.

Although the soils at the Project Site are well suited for development including pavement, building foundations, and infiltration, the majority of the site will be raised with compacted lifts of stream gravel deposits from another location. Soil

testing should be performed of undisturbed soils at the conceptual design of this development in order to determine the permeability rate of the soil.

v. Utilities

The proposed site will require a septic system and leech field which should be placed in undisturbed soils in order to properly infiltrate into the ground. Permits from the NYS Department of Environmental Conservation and the NYS Department of Health will need to be acquired for the installation of a septic system.

The site is serviced by the Village of Wellsburg Water System. There is a 8-inch water main which runs along Berwick Turnpike (west side of the site) which would be sufficient for water demands of the fire station.

There is an existing gas main that runs along Berwick Turnpike which would be sufficient for demands of the fire station.

Electric service is provided by NYSEG. The existing electric lines run along Main Street, the adequacy of the power line is unknown and would have to be determined by electric company inspection.

vi. Environmental Concerns

a. *Flooding*

According to FEMA Flood Information Mapping, the Project Site is located in a designated flood hazard zone and will need to be raised over the 100 year floodplain (See Appendix F-2, Figure 2).

b. *Wetlands*

According to the National Wetlands Inventory (NWI) there are no protected wetlands on the site. The NYSDEC environmental mapping also shows no wetlands. See Appendix F-2, Figure 4 for the NWI Map and Figure 5 for the Environmental Map.

c. *Archeological*

The Project Site is not located in an archeologically sensitive area.

d. *Endangered Species*

As shown on the NYSDEC Environment map, the proposed site is not located in an area where there is concern for Rare Animals, such as endangered or threatened species.

vii. Stormwater Management

As shown on the NYSDEC Storm Water mapping, the site is located within a Municipal Separate Storm Sewer System (MS4); therefore, if one or more acres of the site are disturbed, a permit will be required for construction activities. See Appendix F-2, Figure 6 for the MS4 map. The permit is part of the Stormwater Pollution Discharge Elimination System (SPDES) and needs to be obtained prior to construction commencement. If one or more acres of land are disturbed, a Stormwater Pollution Prevention Plan (SWPPP) shall be prepared in accordance with NYSDEC regulations. The SWPPP for this development will include water quality controls, green infrastructure elements, and flood control facilities in accordance with the DEC Stormwater Management Design Manual.

Developing the site will result in an increase of impervious area (from roof water) requiring a stormwater management system. The gravel driveway will not increase the impervious area.

viii. Visual Inspection

A site inspection was conducted by HUNT staff, where the site was viewed from the public right of ways. The site is currently vacant and is generally surrounded by lawn coverage, with several mature trees to the back of the site. The site has a gradual downward slope from Main Street towards the west, which becomes flatter along the western border.

After reviewing the two locations, the second site alternative on Main Street is more feasible. Though many of the environmental characteristics of the sites are similar, the second site would provide easier access to the Village through the primary road (Route 367) which is twice as wide as Terrace Street. The second site is larger and provides the Village the opportunity in the future to expand the facility. In addition, the Village can leave the Terrace Street site vacant to allow for future expansion of commercial development which would increase the tax base. The Village has spent approximately \$20,000 on acquiring and studying the Main Street location. From the analysis of the two sites, this report is based on relocating the fire station to the Main Street location.

**APPENDIX F-1
TERRACE STREET ALTERNATIVE FIGURES**



FIGURE 1: AERIAL AND TAX MAP
PROPOSED FIRE STATION – ALTERNATE LOCATION
PARCEL #226
VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK



FIGURE 2: FEMA FLOOD MAP
PROPOSED FIRE STATION – ALTERNATE LOCATION
 VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK

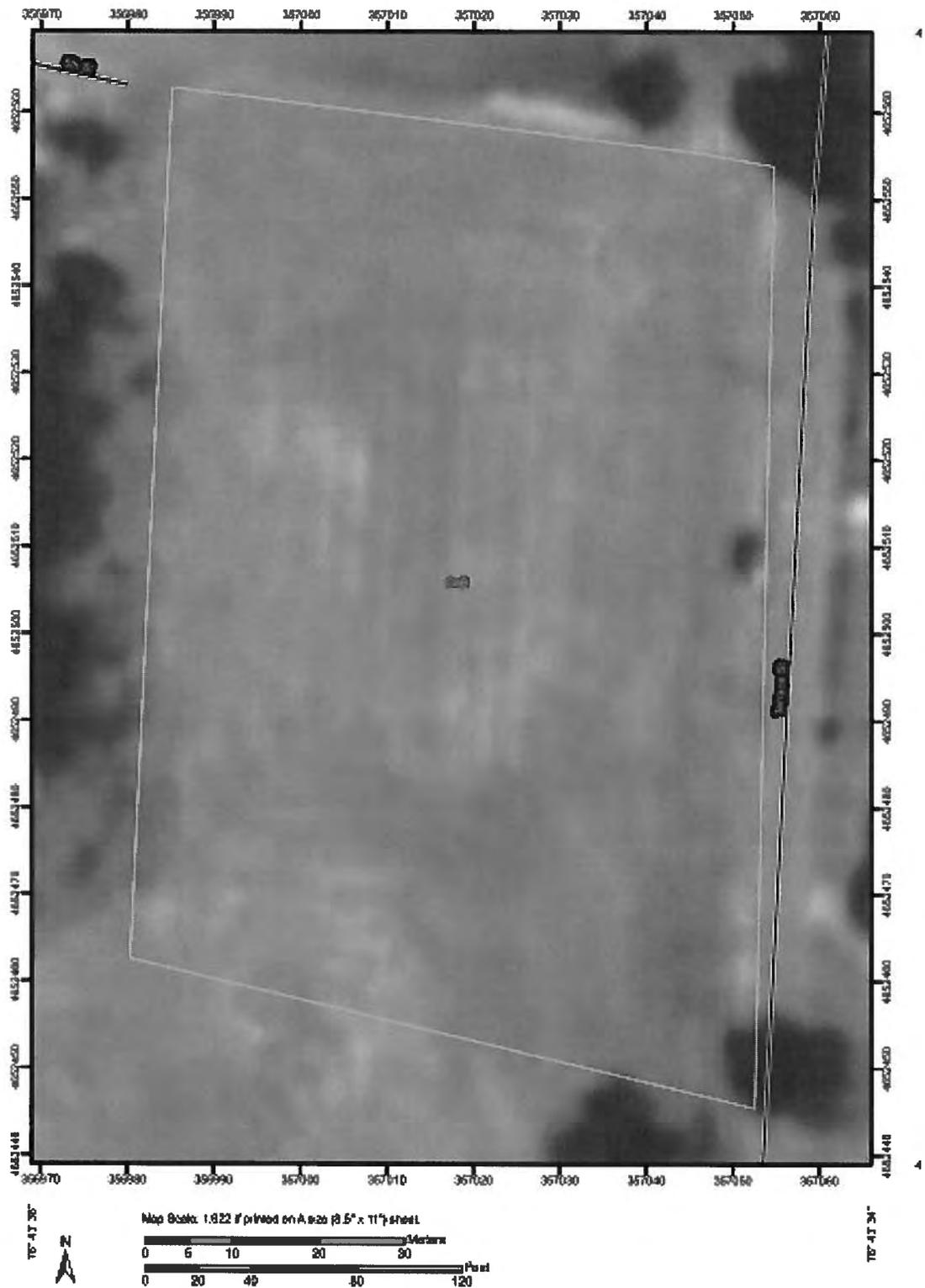


FIGURE 3: SOILS MAP
 VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK

Visible Layers

-  Classified Streams
-  Classified Ponds
-  State-Regulated
-  Freshwater Wetlands
-  Wetland Checkboxes
-  State-Regulated Freshwater Wetlands
-  Rare Plants and Rare Animals
-  Significant Natural Communities Buffered
-  Natural Communities Nearby
-  Significant Natural Communities
-  Interstates Highways
-  Adirondack Park Boundary
-  Counties

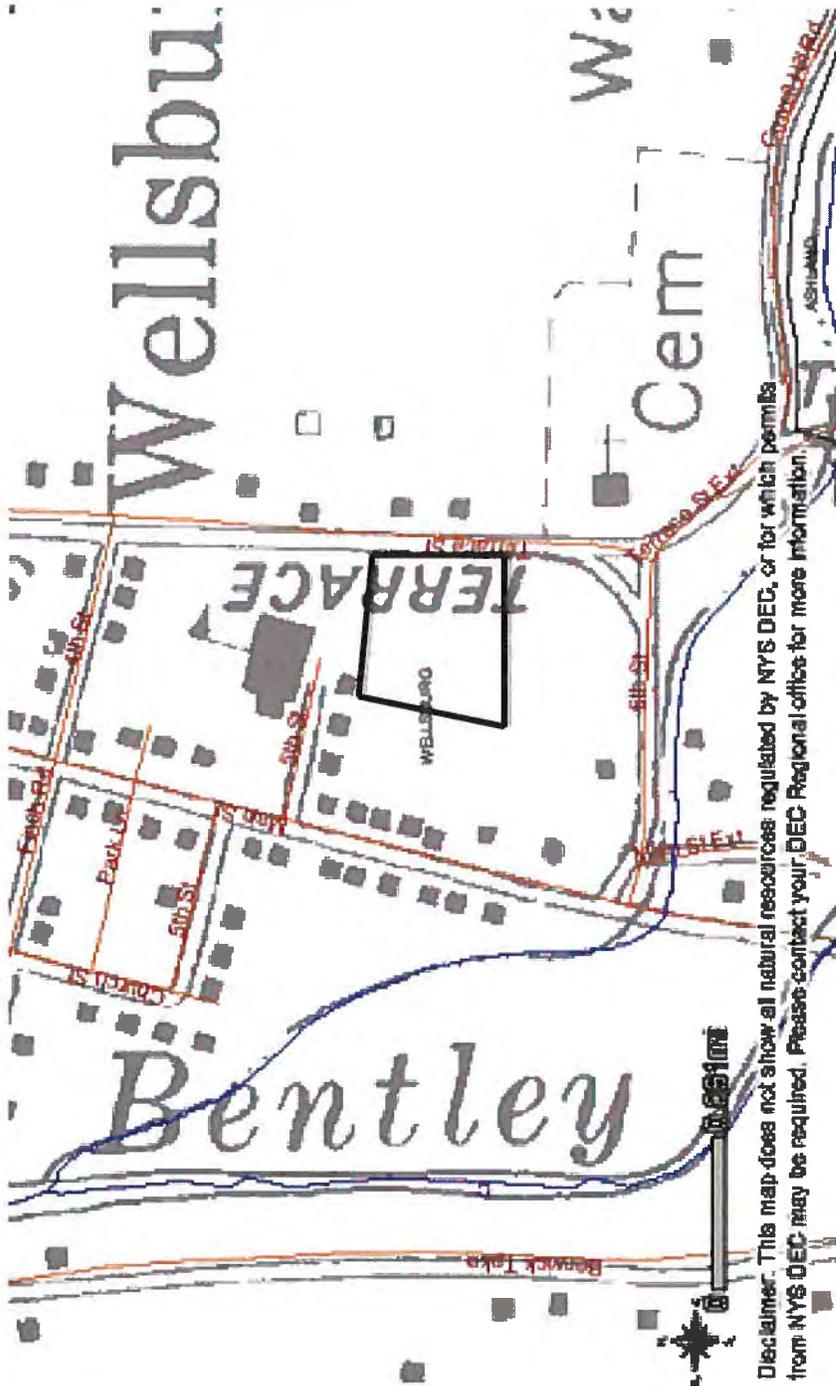


FIGURE 5: NYSDEC ENVIRONMENTAL MAP
PROPOSED FIRE STATION – ALTERNATE LOCATION
 VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK

Visible Layers

- Major Roads
- Regulated MS4s
- Automatic
- Designation 2003
- Designation 2006
- Designation 2010
- Quasi Maps
- Township

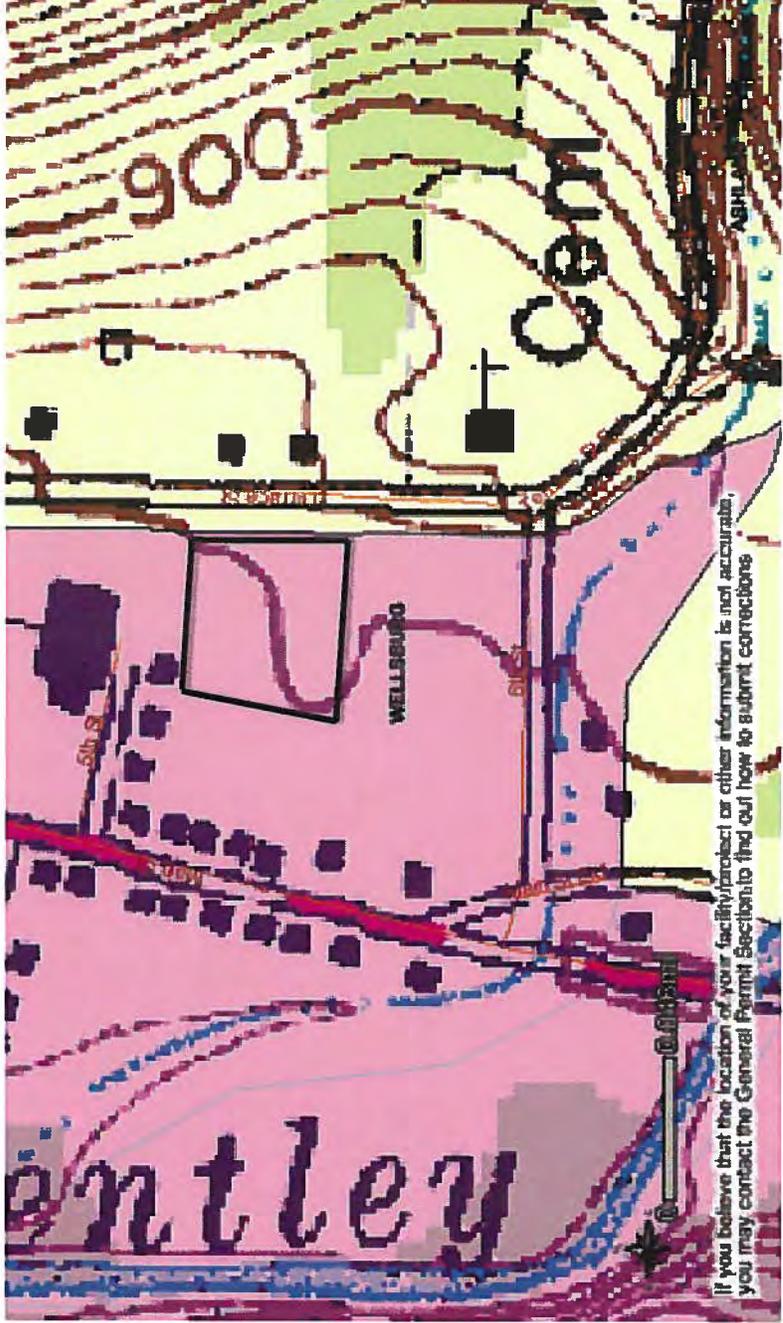


FIGURE 6: NYSDEC MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4) MAP
PROPOSED FIRE STATION – ALTERNATE LOCATION
VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK

**APPENDIX F-2
MAIN STREET ALTERNATIVE FIGURES**



FIGURE 1: AERIAL AND TAX MAP
PROPOSED FIRE STATION – NEW LOCATION
PARCEL #118 & #147
VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK

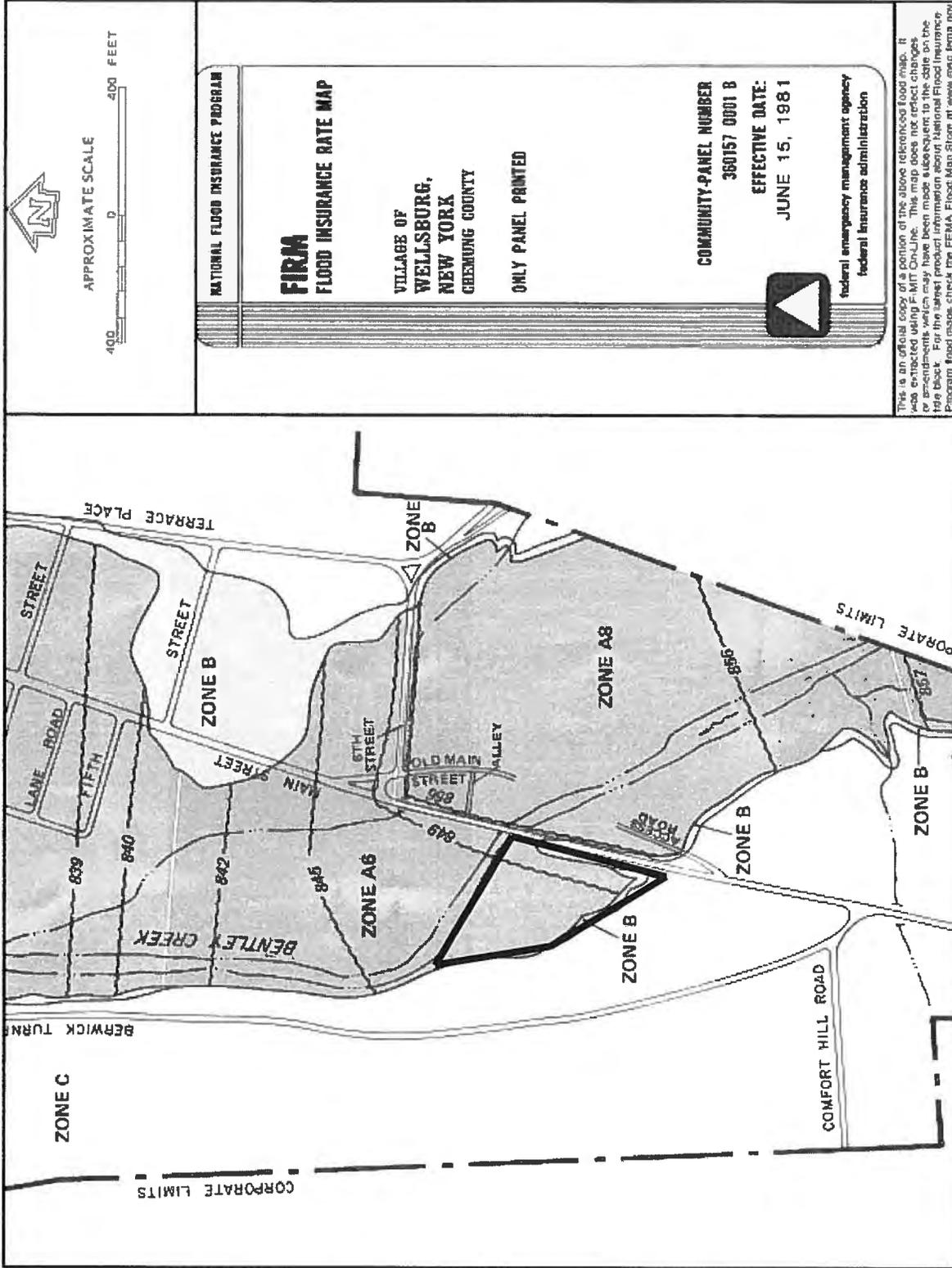
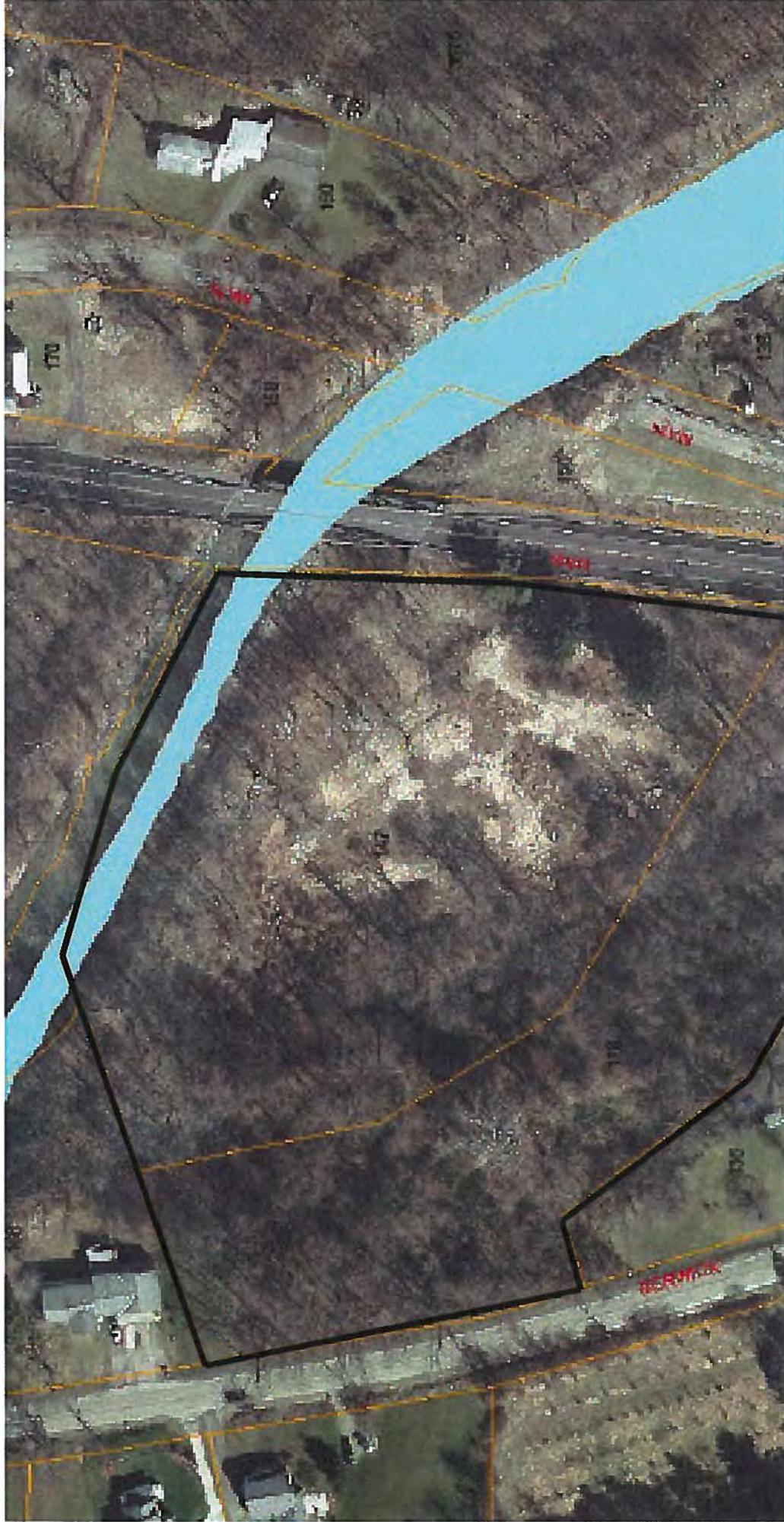


FIGURE 2: FEMA FLOOD MAP
PROPOSED FIRE STATION – NEW LOCATION
 VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK



FIGURE 3: SOILS MAP
 VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK



wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

FIGURE 4: NWI WETLANDS MAP
PROPOSED FIRE STATION – NEW LOCATION
VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK

CHEMUNG COUNTY
STORMWATER COALITION

PHONE -607-796-2216

FAX: 607-739-4392

FACSIMILE TRANSMITTAL SHEET

TO: (Room 323)
Don LEIFHEIT FROM: Jimmie Joe Carl

COMPANY: FEMA DATE: Jan. 4, 2012

FAX NUMBER: 1-607-770-6216 TOTAL NO. OF PAGES INCLUDING COVER: 12

RE: Village of Wellsburg

FOR YOUR USE FOR REVIEW PLEASE REPLY URGENT PLEASE RECYCLE

NOTES/COMMENTS:

Don:

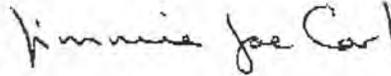
AS DISCUSSED. PLEASE CALL IF YOU HAVE ANY
QUESTIONS OR COMMENTS.

THANKS - Jimmie Joe Carl

January 3, 2012

To: Donald L. Leiffelt, Jr., CFM, FEMA-DR-4020 & 4031-NY-R2
Mark Watts, Chemung County Soil & Water Conservation District

From: Jimmie Joe Carl, P.E.
Chemung County Stormwater Coalition



RE: **VILLAGE OF WELLSBURG, CHEMUNG COUNTY, NEW YORK**
FLOOD ELEVATIONS – NATURAL RESOURCES CONSERVATION SERVICE STUDY

As discussed, the Natural Resources Conservation Service (NRCS) completed a hydrology and hydraulics study as part of their Draft Watershed Project Plan for Bentley Creek, dated August 2011. The NRCS H & H study involved a HEC-RAS analysis and a WinTR-20 analysis, to estimate flood elevations along Bentley Creek. The purpose of this memo is to outline the findings of the NRCS analysis and compare the associated results of the FEMA analysis.

I. NRCS-ESTIMATED FLOOD ELEVATIONS

Cross-Section #7 passes through the site of the Village's existing fire station and is part of the NRCS HEC-RAS analysis. Refer to the attached plan from the Draft Watershed Plan for Bentley Creek. The estimated flood elevations at Cross-section #7 for various flood return periods are provided in Table 1. These elevations were converted from NAVD 88 to NGVD 29.

Flood Return Period	Flood Elevation (feet – MSL)
10-Year	828.45
25-Year	829.95
50-Year	830.05
100-Year	830.45
500-Year	830.95

II. COMPARISON OF NRCS AND FEMA ESTIMATED FLOOD ELEVATIONS

Differences exist in the estimated flood elevations from the NRCS H & H analysis and those of the current FEMA mapping. The NRCS and FEMA flood elevations along Bentley Creek in the vicinity of the Village's existing fire station are summarized in Table 2.

Flood Return Period	NRCS Flood Elev.*	FEMA Flood Elev.**
10-Year	828.45	827.2
25-Year	829.95	-
50-Year	830.05	828.6
100-Year	830.45	829.5
500-Year	830.95	830.9

* - Cross-Section #7 of the NRCS H & H analysis, as provided by NRCS in their December 23, 2011 e-mail

** - Stream Sta. 18+20 of Bentley Creek from FEMA Flood Profile for Bentley Creek

As shown above, the flood elevations, estimated by NRCS, are higher than those of the current FEMA maps. It appears that the NRCS utilized more cross-sections along Bentley Creek near and through the Village in their HEC-RAS analysis, than FEMA utilized in their analysis.

Importantly, NRCS appears to have utilized cross-sections upstream and downstream of the existing Conrail railroad bridge and embankment to the north of Front Street (behind the fire station site). It appears that during flooding situations the existing railroad embankment effectively acts like a dam, increasing flood elevations in adjacent upstream areas (such as the fire station site). The NRCS estimated flood elevations, upstream and downstream of the existing railroad embankment, are summarized in Table 3. As shown, the HEC-RAS analysis, completed by NRCS, predicts a significant increase in the flood elevations across the railroad embankment, as a result of this embankment.

Table 3: NRCS Estimated Flood Elevations (NGVD 29) Upstream & Downstream of Conrail Bridge and Railroad Embankment			
Flood Return Period	Upstream*	Downstream**	Elev. Difference (ft)
10-Year	828.45	822.25	6.2
25-Year	829.95	823.55	6.4
50-Year	830.05	824.15	5.9
100-Year	830.45	825.15	5.3
500-Year	830.95	827.95	3.0

* - Cross-Section #6 of the NRCS H & H analysis, as provided by NRCS in their December 23, 2011 e-mail

** - Cross-Section #4 of the NRCS H & H analysis, as provided by NRCS in their December 23, 2011 e-mail

III. COMPARISON OF NRCS AND FEMA ESTIMATED PEAK DISCHARGES

A comparison of the peak discharge rates used in the NRCS analysis and the FEMA analysis is provided in Table 4. As shown, for the 50-year, 100-year, and 500-year flood events, the peak discharge rates used in the FEMA analysis are higher than those used in the NRCS analysis for the respective flood return period.

Table 4: Comparison of NRCS and FEMA Estimated Peak Discharges		
Flood Return Period	NRCS Peak Discharge (CFS)*	FEMA Peak Discharge (CFS)**
10-Year	8,221	8,000
25-Year	11,261	-
50-Year	12,630	15,500
100-Year	15,719	20,000
500-Year	21,130	34,000

* - As provided by NRCS in their December 23, 2011 e-mail

** - As per Table 1 of the Flood Insurance Study for the Village of Wellsburg, December 15, 1980

If you have any questions or comments, please do not hesitate to contact me. Furthermore, I would be happy to meet to discuss this item in greater detail.

Jimmie Joe Carl

From: Mark Watts [markwatts@stny.rr.com]
Sent: Friday, December 23, 2011 8:28 AM
To: jj >> Jimmie Joe Carl
Subject: Fwd: Re: Bentley H and H
Attachments: Bentley Creek HECRAS_WinTR20_Wellsburg.xlsx

----- Original Message -----

Subject: Re: Bentley H and H
Date: Fri, 23 Dec 2011 08:23:02 -0500 (EST)
From: Brewwater@aol.com
To: markwatts@stny.rr.com
CC: jeff.mahood@pa.usda.gov, hosea.latshaw@pa.usda.gov, david.steele@pa.usda.gov

Mark,

Attached is the information you requested for Bentley cross sections 1-28. Let me know if you need anything else.

Jeff

In a message dated 12/22/2011 12:46:26 P.M. Eastern Standard Time, markwatts@stny.rr.com writes:

Jeff

If we can get this for the Wellsburg portion that is all we need and this is fantastic. We have that as cross sections 1 thru 28.

thanks
 mark

Jeff On 12/22/2011 12:22 PM, Brewwater@aol.com wrote:

We have already modeled the 10-year 25-year and 50-year storms. I can provide the discharges and flood elevations by cross section. Do you need all cross sections for the watershed (will take more time) or just the Wellsburg portion of the watershed? I can prepare this in a spreadsheet and send it out later today. Will that work?

Jeff

In a message dated 12/22/2011 10:38:21 A.M. Eastern Standard Time, markwatts@stny.rr.com writes:

Jeff

In regards to the Village of Wellsburg, I am hoping to get your TR-20 input data for the Bentley Creek watershed (at Wellsburg). We have been asked by FEMA to estimate the 10-year, 25-year, and 50-year flood elevations along Bentley Creek within the Village of Wellsburg. As such, it is our hope to use your TR-20 model data (area, CN, and Tc values) to calculate the 10-year, 25-year, and 50-year peak storm flows.

Thanks - Jimmie Joe Carl (for Mark Watts)

BENTLEY CREEK -Existing and Projected Future Condition

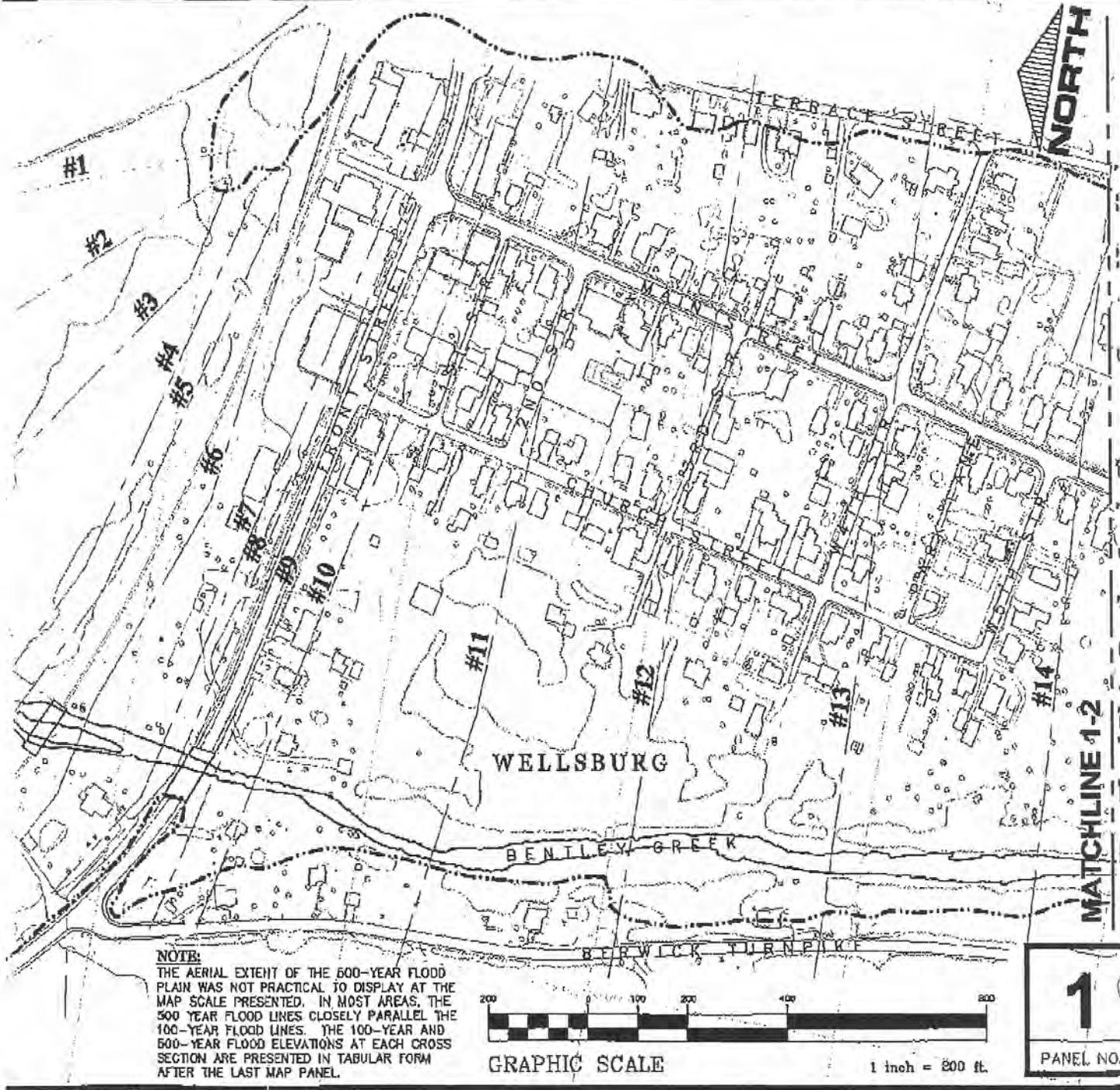
HEC-RAS & Win TR-20; NRCS, 2011

Flood Elevations						
Cross Section Number	Creek Station	10-Year Flood	25-Year Flood	50-Year Flood	100-Year Flood	500-Year Flood
(From Flood Plain Maps)	(Lineal Feet)	(Feet-MSL)	(Feet-MSL)	(Feet-MSL)	(Feet-MSL)	(Feet-MSL)
#1	80	820.3	822.5	823.3	824.3	827.3
#2	480	820.4	822.6	823.4	824.4	827.3
#3	880	820.9	822.7	823.5	824.5	827.4
#4	1180	821.7	823.0	823.6	824.6	827.4
#5	1260	823.5	824.9	826.9	828.7	829.2
#6	1390	827.9	829.4	829.5	829.9	830.4
#7	1530	827.9	829.4	829.5	829.9	830.4
#8	1565	827.9	829.4	829.5	829.9	830.4
#9	1680	828.0	829.4	829.6	829.9	830.5
#10	1730	828.0	829.4	829.6	830.0	830.5
#11	2110	828.4	829.7	829.8	830.3	830.9
#12	2500	832.0	832.6	832.9	833.4	834.1
#13	3000	835.7	836.8	837.1	837.7	838.3
#14	3300	839.3	840.1	840.5	841.1	842.0
#15	3700	840.2	841.1	841.5	842.1	843.1
#16	4300	843.1	843.9	844.1	844.7	845.5
#17	4675	846.3	846.9	847.2	847.3	848.1
#18	4725	847.2	847.4	847.6	847.9	848.5
#19	4800	847.8	848.9	849.3	850.4	851.5
#20	4850	848.2	849.4	849.8	850.7	851.8
#21	5150	849.8	850.7	851.0	851.8	852.8
#22	5550	853.0	853.7	854.0	854.6	855.4
#23	6095	856.7	857.9	858.4	859.3	860.5
#24	6340	858.9	860.1	860.6	861.4	862.6
#25	6740	861.4	862.3	862.6	863.1	865.1
#26	7015	863.5	864.9	865.5	866.9	867.8
#27	7410	865.8	866.5	866.8	867.7	868.5
#28	7815	868.5	869.5	869.8	870.4	871.2

Feet MSL -Feet above Mean Sea Level (NAVD-1988)

Peak Discharge (Cross-sections 1-28)				
10-Year Flood	25-Year Flood	50-Year Flood	100-Year Flood	500-Year Flood
cfs	cfs	cfs	cfs	cfs
8,221	11,261	12,630	15,719	21,130

The Bentley Creek watershed area of 56.35 square miles was subdivided into 29 subareas with a median drainage area equal to 1.5 square miles. The present condition NRCS Runoff Curve Number (RCN) was analyzed for each subarea and calibrated to more closely match results obtained from the U.S. Geological Survey- Pennsylvania regression equations. RCN's ranged from 60 to 74 with a median value of 72. Time of Concentration values ranged from 0.15 hours to 3.48 hours with a median value of 1.35 hours. It was estimated that little change for these values is anticipated in the future provided that proper stormwater management for newly developed land is enacted. Little new developed land is expected.



NOTE:
 THE AERIAL EXTENT OF THE 500-YEAR FLOOD PLAIN WAS NOT PRACTICAL TO DISPLAY AT THE MAP SCALE PRESENTED. IN MOST AREAS, THE 500 YEAR FLOOD LINES CLOSELY PARALLEL THE 100-YEAR FLOOD LINES. THE 100-YEAR AND 500-YEAR FLOOD ELEVATIONS AT EACH CROSS SECTION ARE PRESENTED IN TABULAR FORM AFTER THE LAST MAP PANEL.

THIS PLAN IS FROM NRCS'S DRAFT WATERSHED PROJECT PLAN (AUG. 2011) FOR BENTLEY CREEK. THIS SHOWS CROSS-SECTION LOCATIONS IN THE VICINITY OF THE FIRE STATION.