

Morris County – Flood Risk Review (FRR) Meeting

December 20, 2024



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Introductions

- **Morris County and Communities**
- **The New Jersey Department of Environmental Protection (NJDEP)**
- **U.S. Army Corps of Engineers**
- **U.S. Geological Survey**
- **FEMA Region 2**
- **Mapping Partners – AECOM, Dewberry, Michael Baker Intl. and ARC**
- **Region 2 Service Center (RSC)**



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The Value of Updated Flood Maps for Local Communities



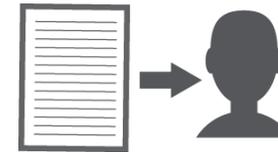
Identifying and Assessing Flood Risk



Establishing Flood Insurance Rates



Determining Local Land Use



Informing Engineers and Developers



Equipping Emergency Managers

Risks change

•All floods are different. Nature and communities change over time.

Floods happen

•Any community can flood. Knowing how and where flooding is likely helps to assess impacts.

Mitigation helps

•Proactive communities plan and take action to reduce flood impacts.



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Scope of Study Summary at Community level

Partial County Wide

SRP Communities

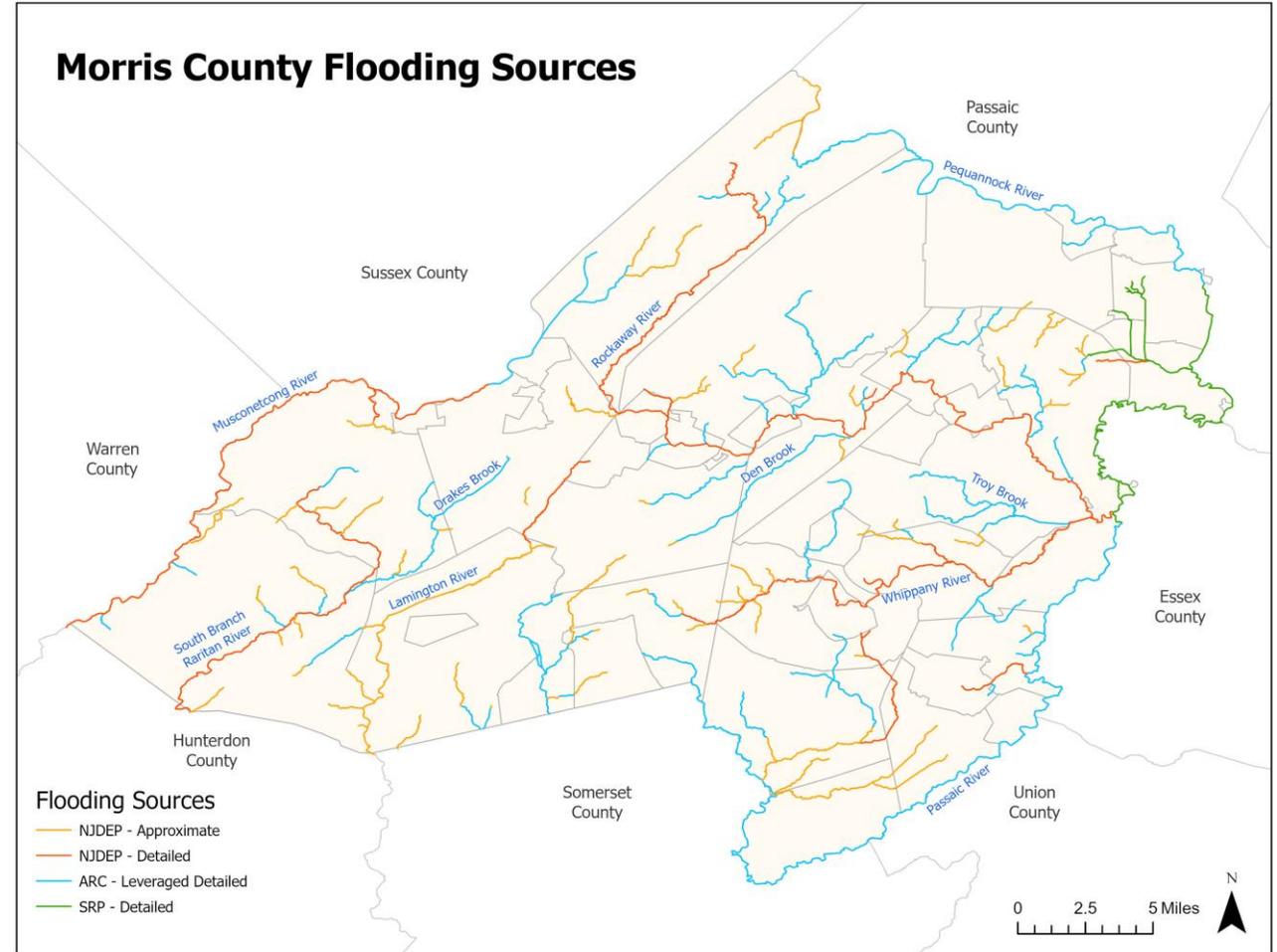
- Borough of Butler
- Borough of Chatham
- Borough of Chester
- Borough of Florham Park
- Borough of Kinnelon
- Borough of Lincoln Park
- Borough of Madison
- Borough of Mendham
- Borough of Morris Plains
- Borough of Mount Arlington
- Borough of Mountain Lakes
- Borough of Netcong
- Borough of Riverdale
- Borough of Rockaway
- Borough of Victory Gardens
- Borough of Wharton
- Town of Boonton
- Town of Dover
- Town of Morristown
- Township of Boonton
- Township of Chatham
- Township of Chester
- Township of Denville
- Township of East Hanover
- Township of Hanover
- Township of Harding
- Township of Jefferson
- Township of Long Hill
- Township of Mendham
- Township of Mine Hill
- Township of Montville
- Township of Morris
- Township of Mount Olive
- Township of Parsippany-Troy Hills
- Township of Pequannock
- Township of Randolph
- Township of Rockaway
- Township of Roxbury
- Township of Washington
- Borough of Butler
- Borough of Kinnelon
- Borough of Lincoln Park
- Borough of Riverdale
- Township of East Hanover
- Township of Montville
- Township of Parsippany-Troy Hills
- Township of Pequannock



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Ongoing Morris County Studies

- **Partial Countywide (PCW) Project** will merge the following two studies:
 - **Leveraged Studies** by ARC: Includes detailed and approximate studies between 2008-2017
 - **Physical Map Revision (PMR) Project** by NJDEP: New detailed and approximate studies 2019-2024
- **Scientific Resolution Panel (SRP) Project** by ARC: Addresses 2020 SRP recommendations
- **In total:**
 - 325.5 miles of detailed riverine (Zone AE) study
 - 7.3 miles of Zone AH (SRP study)
 - 114.8 miles of approximate (Zone A) study



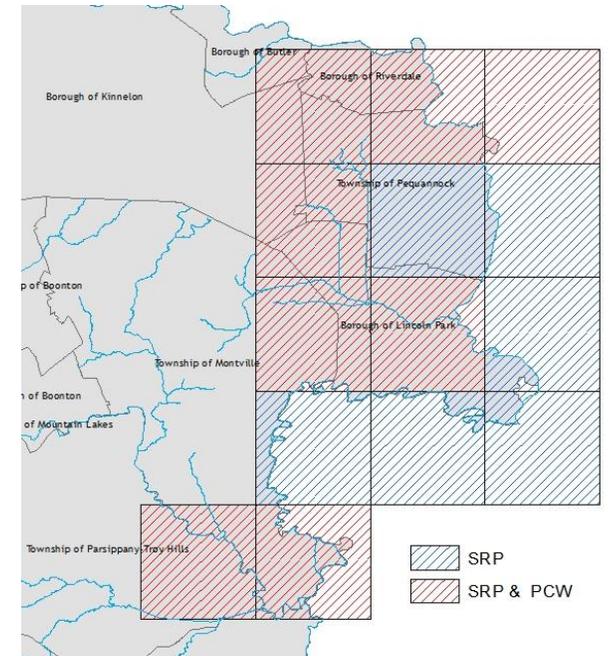
Scientific Resolution Panel (SRP) Project

SRP Status & Next Steps

- Evaluated the June 2020 recommendations provided to FEMA by the SRP, as an independent party, to resolve the 2018 appeals
- Revised Preliminary Date: September 28, 2023; CCO Meeting: December 8, 2023
- Appeal Period: May 10, 2024 – August 8, 2024. No appeals received
- LFD scheduled for February 19, 2025
- Effective: August 19, 2025

PCW Impacts to SRP

- All 14 SRP Panels will become effective in August 2025
- The 8 edge Panels overlapping with the PCW project will be re-issued as Preliminary in Spring 2025 and will go Effective in mid-2027
 - Flood hazard data and BFE within the SRP areas will not be changing



Leveraged Studies - Timeline

* Graphic Below Not to Scale

First time countywide
Preliminary
April 2010

Revised Preliminary
March 2015

Revised Preliminary
August 2017

SRP
Determination
June 2020

Revised Prelim
Spring 2025

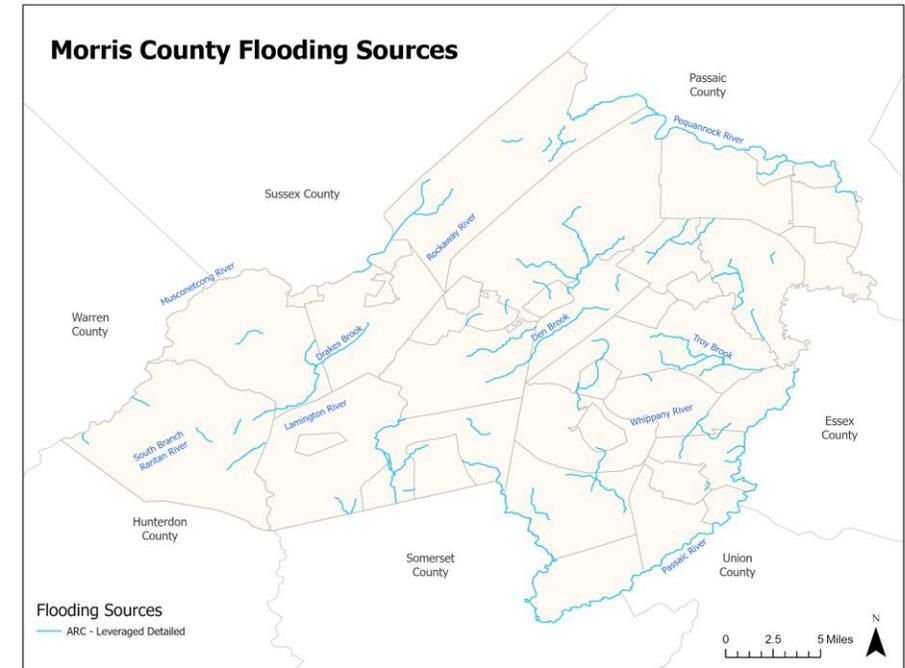
Revised Preliminary
June 2011

Revised countywide
Preliminary
February 2016

Appeal Period
Feb-May 2018

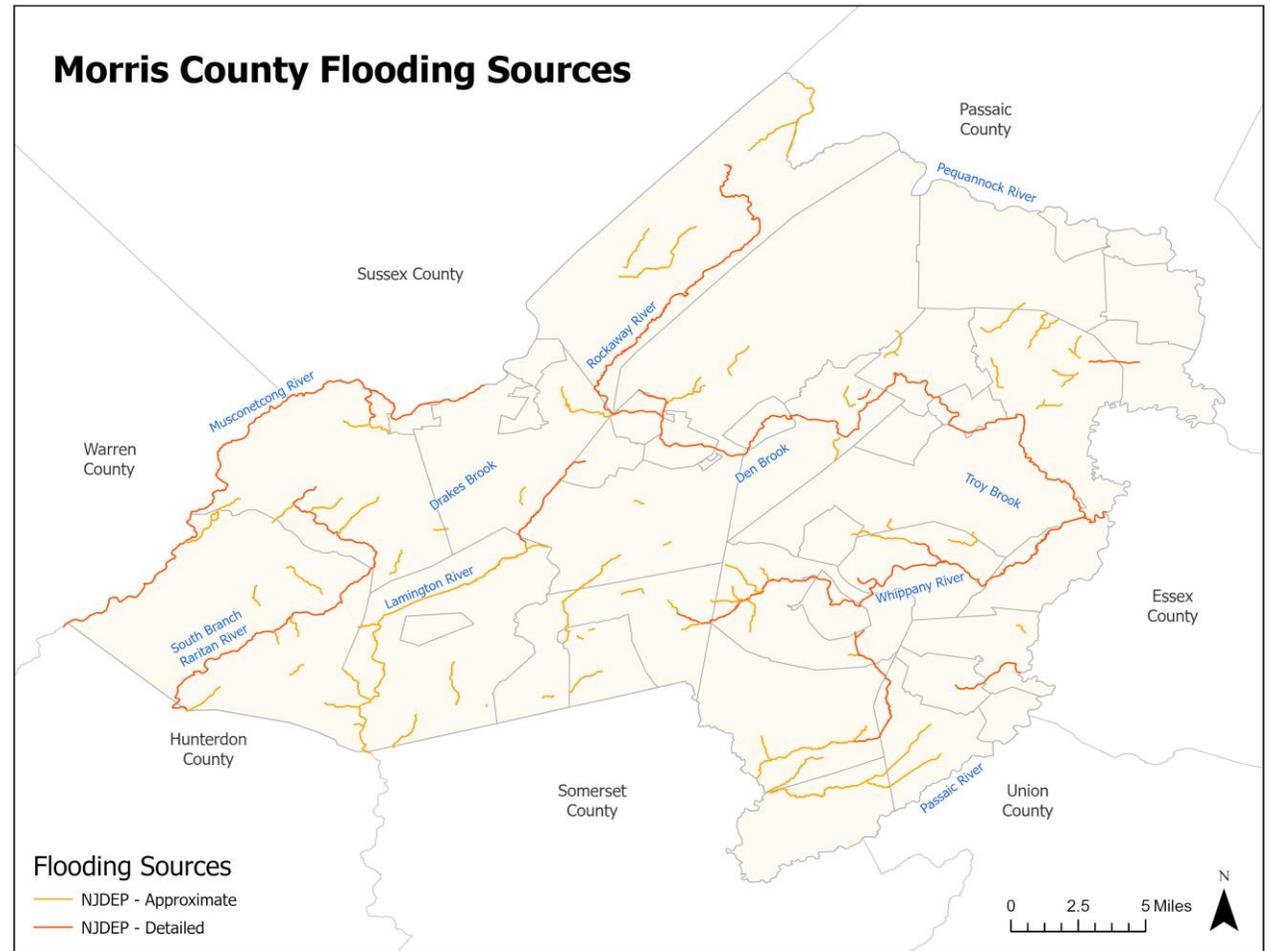
Issues Identified
prior to LFD
Oct 2022

Date	Milestone	Case number	PTS	# of Panels Issued	Notes
4/30/2010	Preliminary	06-02-B027S	NTHMC	121	First time countywide preliminary issuance; included new detailed study, new approximate study and redelineation.
6/10/2011	Revised Preliminary	15-02-1629S	RAMPP	33	Flood hazard adjustments along the Musconetcong River and political boundary corrections along the boundary with Sussex Co. affecting 6 communities. Revised analysis to resolve BFE discrepancies at community boundaries. The original preliminary products were included on rampp-team.com, so this MIP Case number was created retroactively in FY15 to capture the 2011 revised prelim release on the MSC.
3/11/2015	Revised Preliminary	10-02-0956S	RAMPP	21	Revised detailed analysis and mapping for 58 miles; new base map & new topography and New Jersey Flood Hazard Area Design Flood information watershed studies.
7/24/2015	STARR II prelim ITR	N/A	STARR II	N/A	Community requests and comments and an internal Regional review identified a need for a quality review of the floodplain mapping and profiles for Morris County.
2/26/2016	Revised Preliminary	16-02-0099S	RAMPP	167	Re-issuance of all countywide panels using revised analysis and mapping for based on STARR II ITR comments.
8/22/2017	Revised Preliminary	17-02-0803S	RAMPP	17	Appeal relating to Passaic River submitted for Essex & Passaic appeal periods. Also included a revised analysis for East Ditch.
2/15/2018 - 5/16/2018	Appeal period	17-02-0803S	RAMPP	N/A	Appeals received from the Borough of Lincoln Park, Township of Montville and Township of Pequannock for Passaic River near the confluence of Pompton River and East and West Ditches.



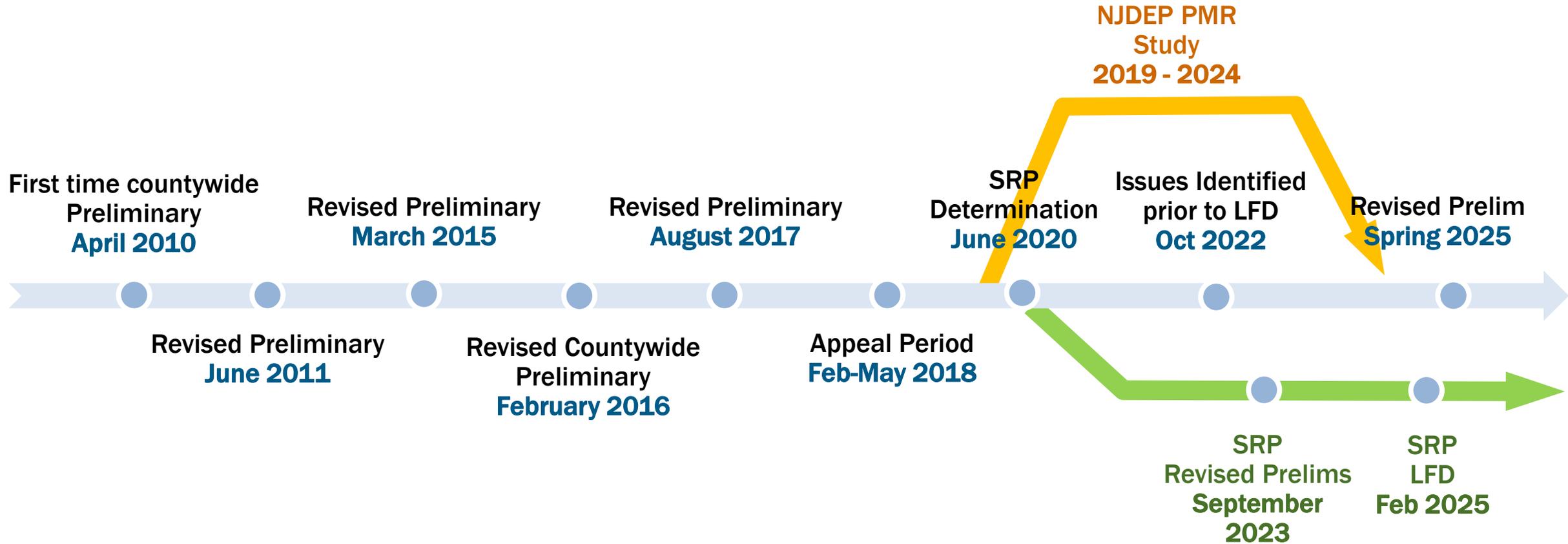
NJDEP PMR Project

- Funded by FEMA through CTP agreement mainly to restudy no model backed Zone As and perform new detailed (Zone AE) studies
- SID 620 – Engineering Model Notification to communities: November 26, 2019
- Field survey: Completed – Summer 2019 through Spring 2020
- Incorporated into the PCW study: Completed – December 2024



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All Morris County Studies - Timeline



* Graphic Above Not to Scale

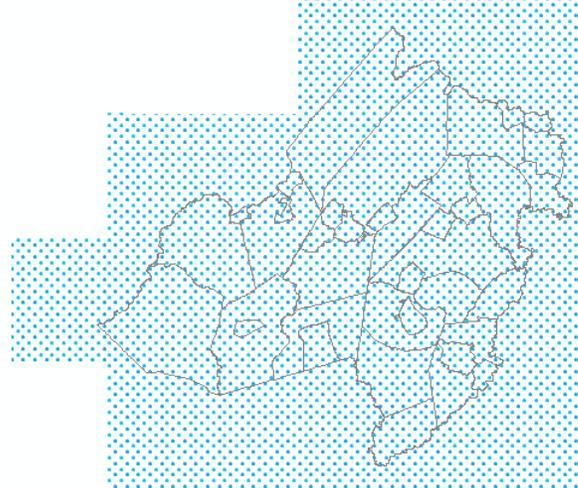


Data Sources – LiDAR/ Topography

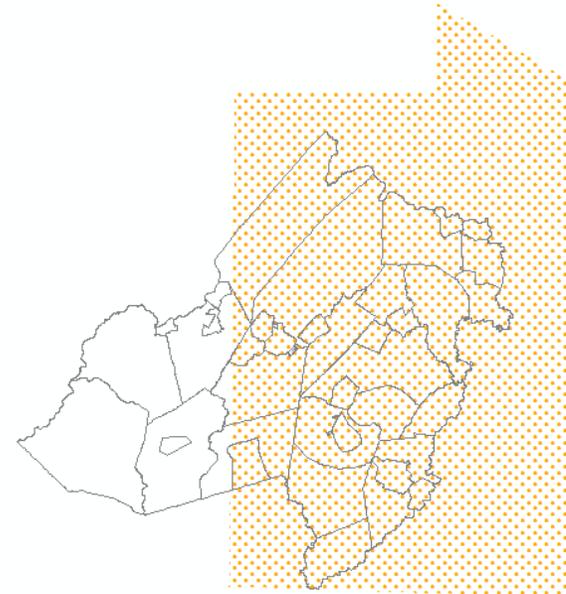
Topographic Data

- Leveraged Studies:
 - USGS, 2002
 - LiDAR, 2007
 - USGS, 2015
- SRP:
 - USGS, 2015
- PMR:
 - NJOIT, 2018

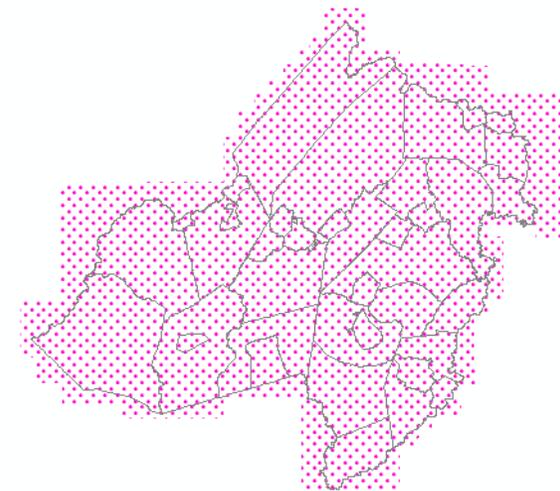
USGS Coverage



LiDAR Coverage



NJOIT Coverage



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NJDEP PMR Survey Information

Survey

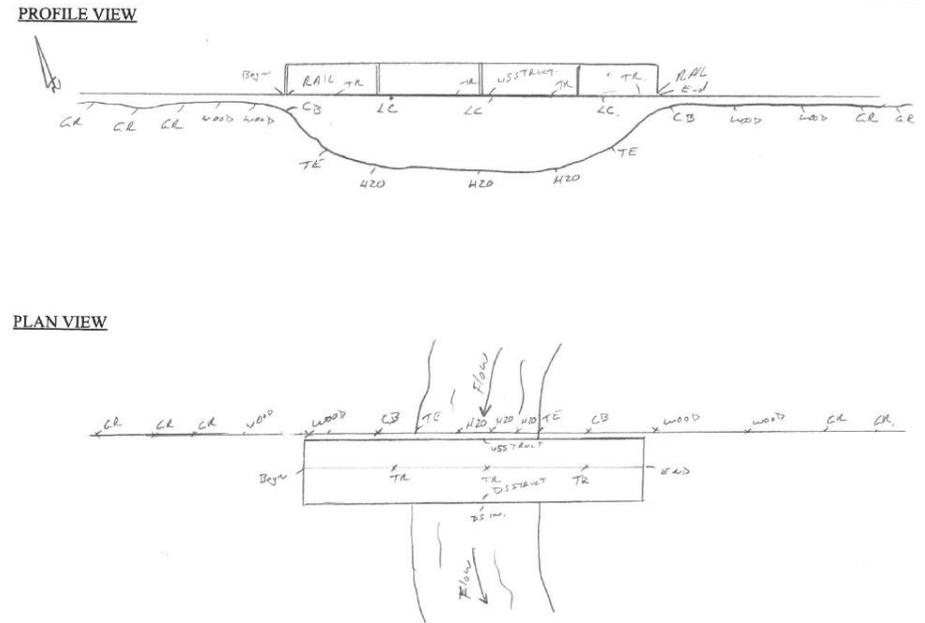
All structures along detailed studies were field surveyed



Rockaway River at Berkshire Valley Golf Course, Jefferson Township

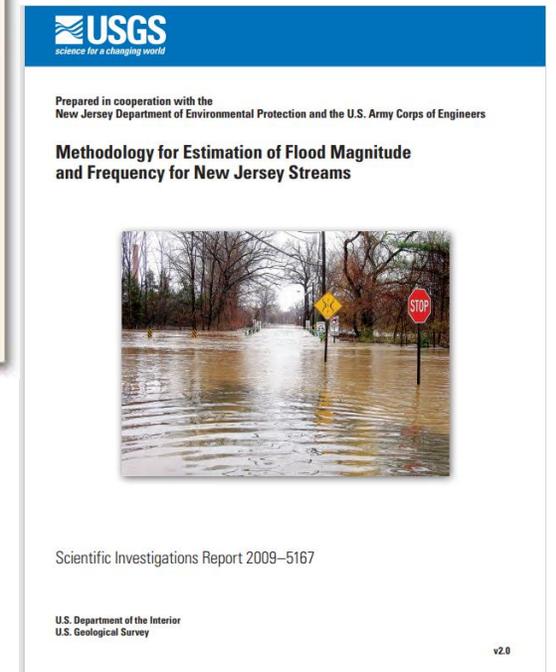
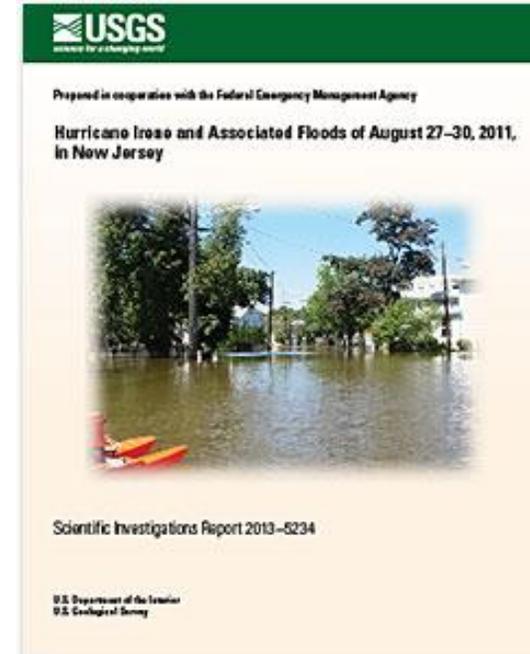
Field Reconnaissance

Visited study reaches and measured critical structures along approximate study reaches and observed site conditions



NJDEP PMR Hydrology Analysis – Detailed Study Recap

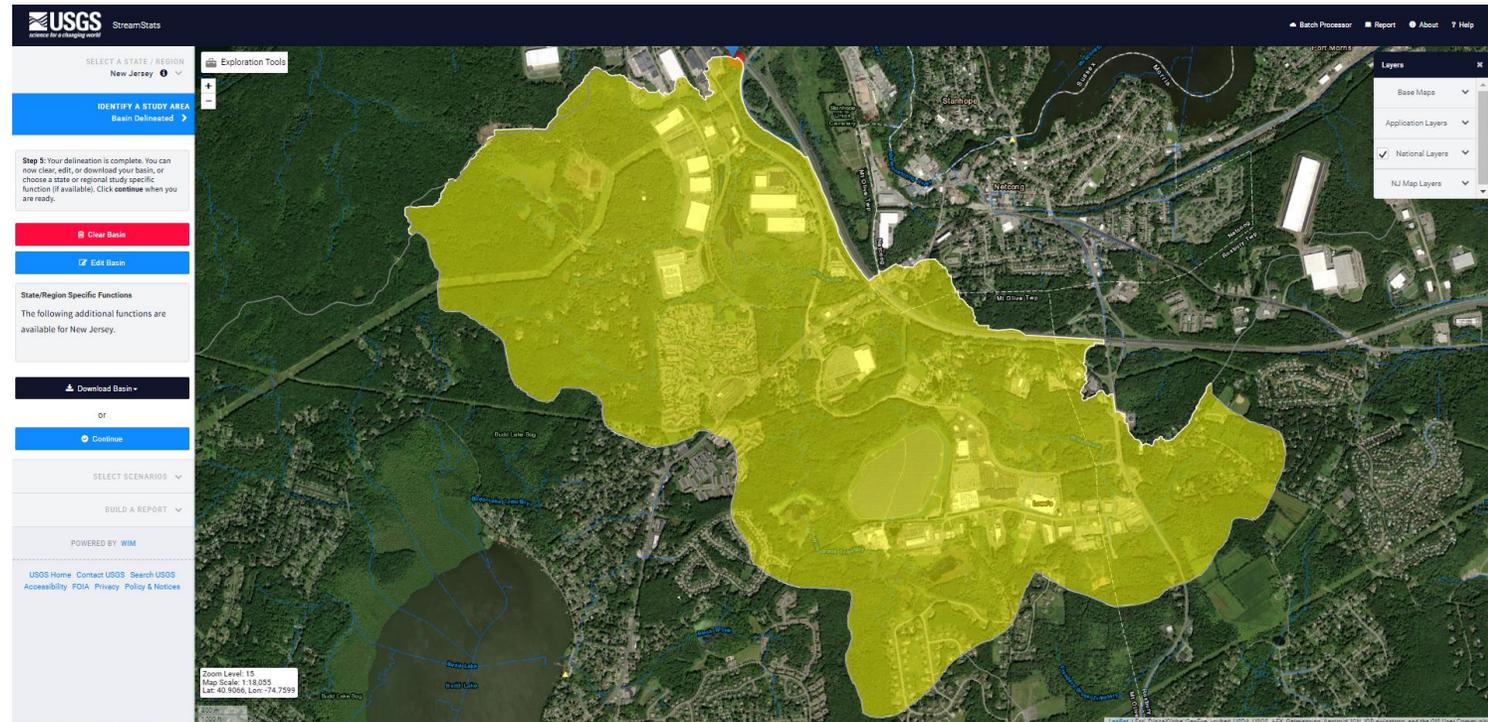
- Detailed Studies
 - Flood frequency analyses for gaged data using Bulletin 17C
 - USGS Peak FQ Program
 - Rockaway River, South Branch Raritan River, Whippany River
 - Rainfall-Runoff Modeling
 - USACE's HEC-HMS Program
 - Loantaka Brook and Downstream Reach of Rockaway River
 - State of New Jersey USGS Regional Regression Equations
 - USGS StreamStats web-based application
 - Lamington River, Spring Garden Brook, Tributary 1 to Whippany River and Wills Brook
 - Power Equation
 - Developed by NJDEP and NJDEP's Contractor
 - Gage estimates could not be weighted with regression estimates due to unregulated stream reach
 - Musconetcong River



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NJDEP PMR Hydrology Analysis – Approximate Study Recap

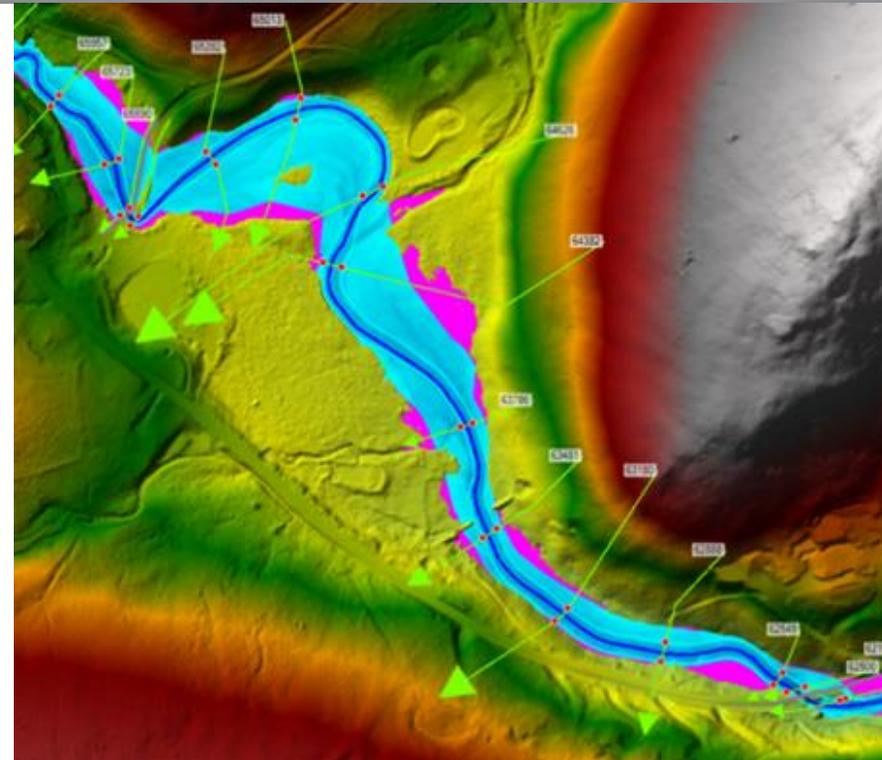
- Approximate Studies
 - State of New Jersey Regression Equations
 - USGS StreamStats web-based application
- Volumetric Analysis
 - Lakes or ponds
 - Compare inflow to available storage
- Discharges developed for 10%, 4%, 2%, 1%, 1%-plus, 1%-minus, and 0.2%-annual chance events as well as the New Jersey Flood Hazard Area Design Flood (125% of FEMA's 1%-annual chance discharge)



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NJDEP PMR Hydraulics Analysis - Recap

- USACE HEC-RAS software
- Detailed (Zone AE) reaches – all structures considered
- Approximate (Zone A) reaches – only critical structures considered
- Mannings “n” from land use
- Floodways



Land Use Description	Manning's n
AGRICULTURAL WETLANDS (MODIFIED)	0.1
BRIDGE OVER WATER	0.013
CEMETERY	0.04
CEMETERY ON WETLAND	0.04
COMMERCIAL SERVICES	0.1
CONFINED FEEDING OPERATIONS	0.05
CONIFEROUS BRUSH SHRUBLAND	0.1



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Floodplain Mapping Considerations

Results vary by location – please review your community mapping in detail

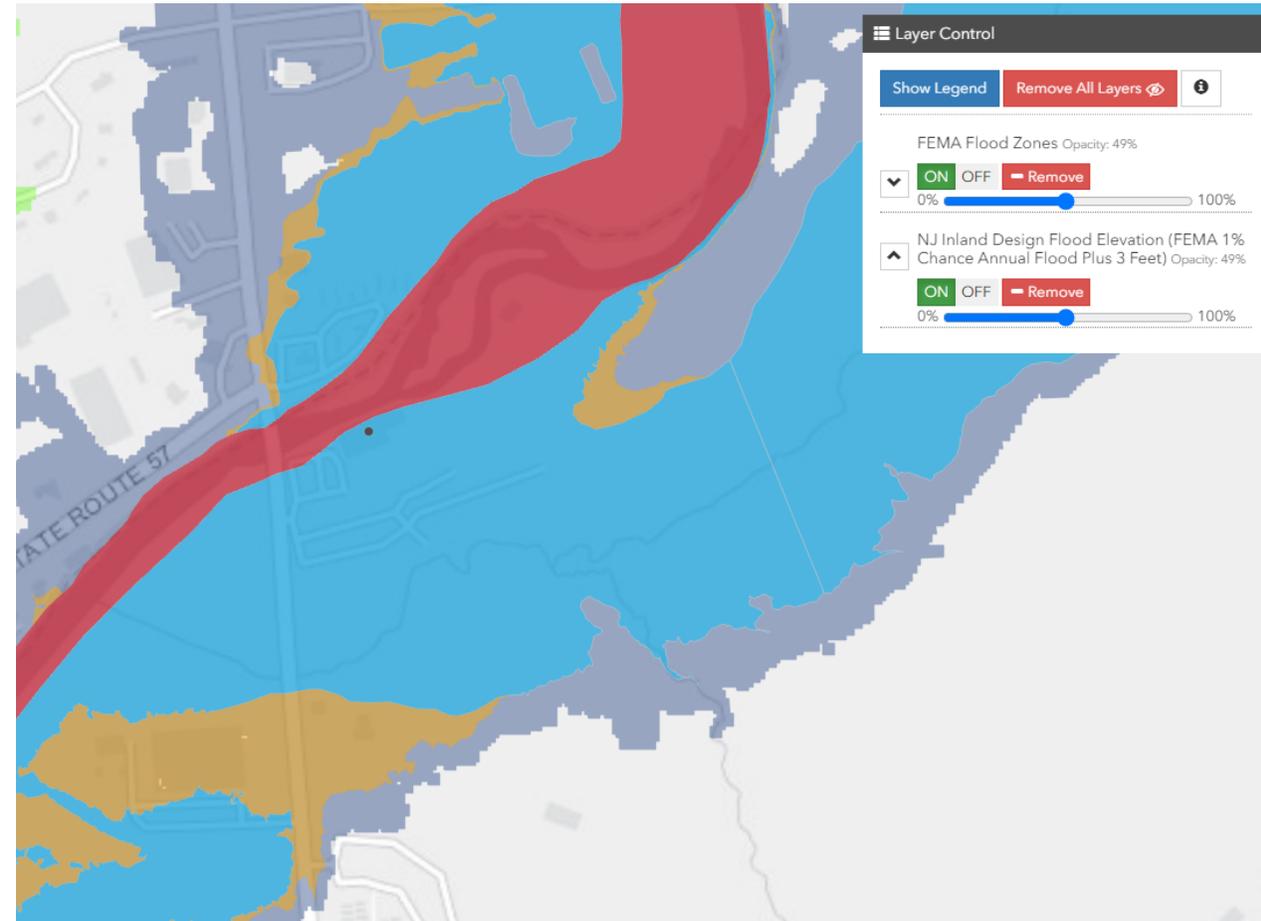
- **New countywide digital data (PCW and SRP)**
 - Previous maps produced in 1980s - 2002.
 - Reasons for changes in floodplains and Base Flood Elevations

Improved Methods/Data	Local Changes	Climate
New Topography – This study uses LiDAR data as opposed to previous maps which used topographic maps.	Land Use Changes – As development in the county changes over time, changes in land use can increase the amount of water running into streams	Period of Record - Engineers have a better long-term understanding of the frequency of heavy rainfall and corresponding floods
Updated Hydraulics Analysis – the study uses the most up to date HEC-RAS modeling techniques to accurately determine flood elevations.	Update Channel and Structure Survey – Over time, structures may be added or removed and the channel geometry may change. These changes are captured through survey techniques.	



New Jersey Flood Hazard Area Design Flood (NJFHADF) Elevation

- The New Jersey Flood Hazard Area Design Flood Elevation is:
 - 3 feet above the BFE plus applicable freeboard; OR
 - 2 feet above the NJFHADF Line Elevation found in the department delineations and FEMA flood mapping
- The New Jersey Flood Hazard Area Design Flood extends past the boundaries of the Special Flood Hazard Areas identified by FEMA
- Rutgers University developed a site that allows users to identify the boundaries of the New Jersey Flood Hazard Area Design Flood
 - <https://www.njfloodmapper.org>



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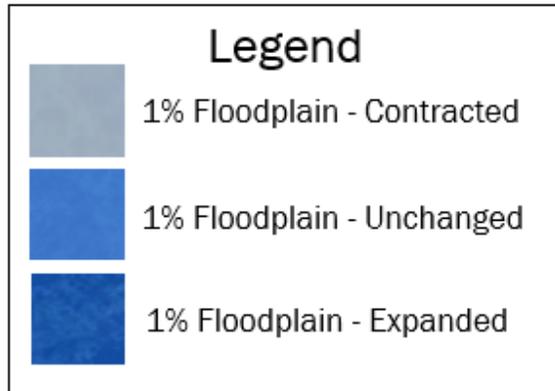
Flood Risk Study – Draft Results



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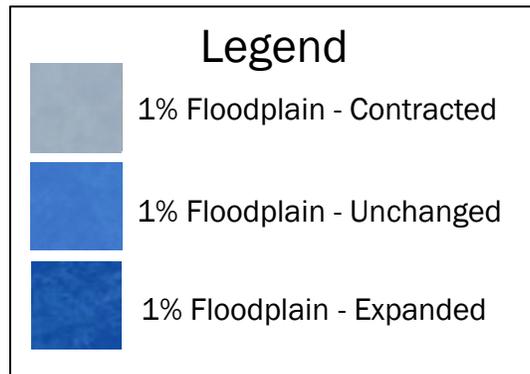
Floodplain Mapping Comparisons

Township of Boonton



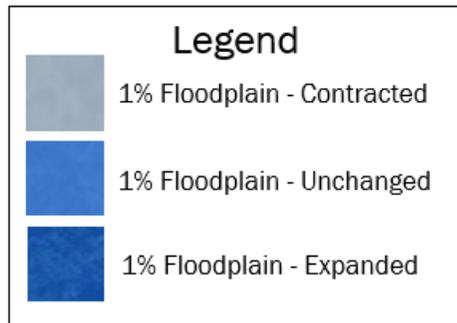
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Floodplain Mapping Comparisons Borough of Butler



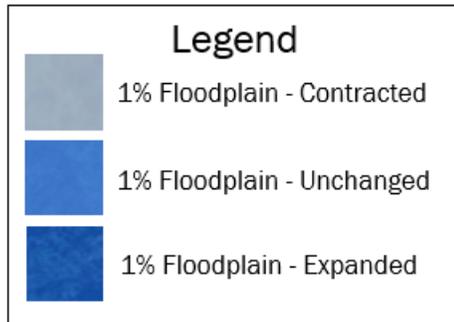
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Floodplain Mapping Comparisons Borough of Butler



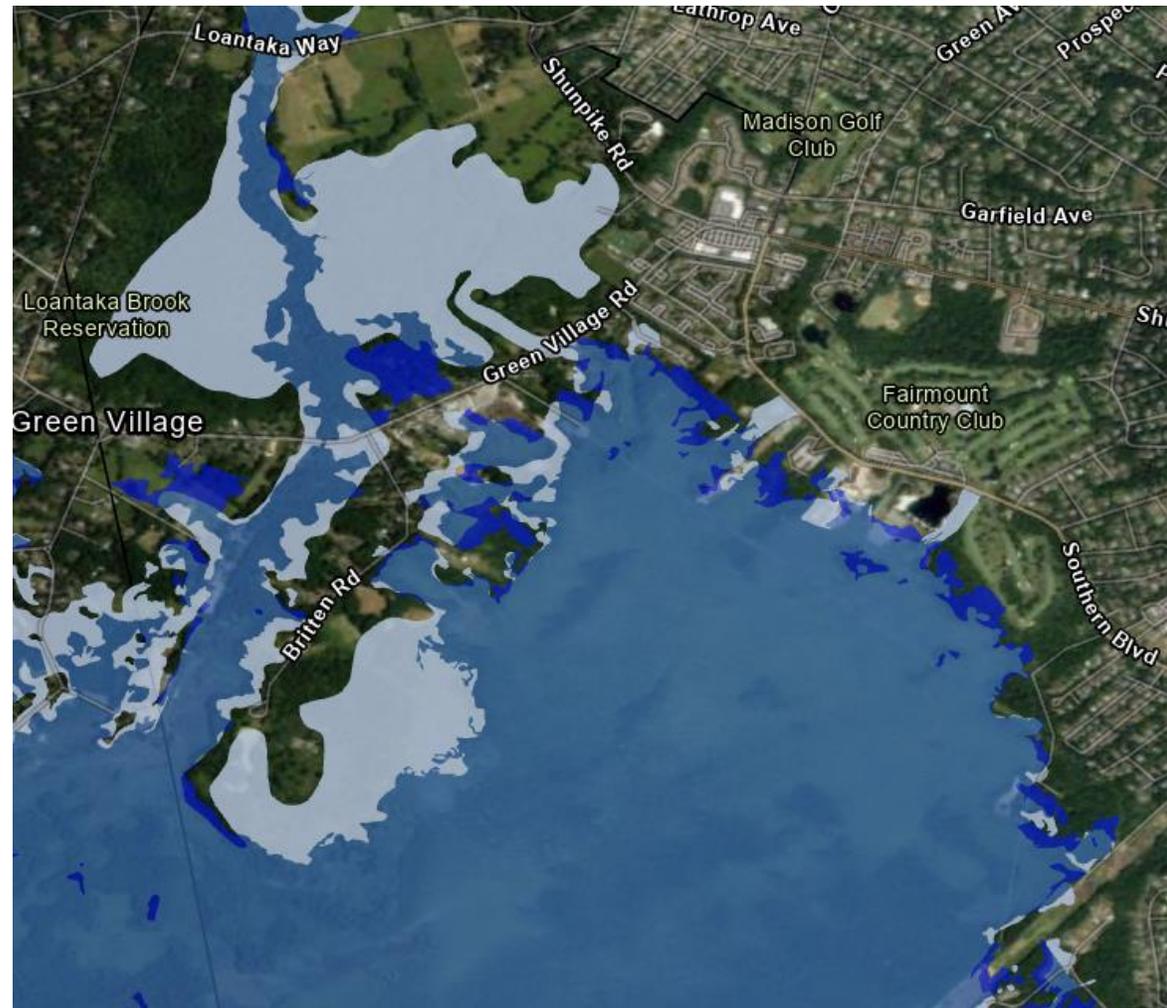
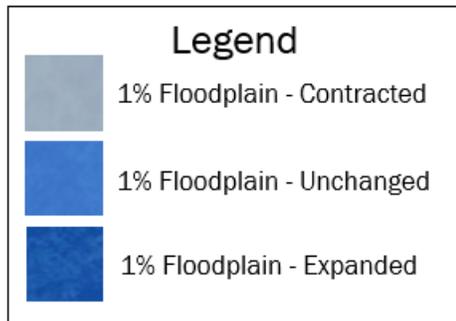
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Floodplain Mapping Comparisons Borough of Chatham



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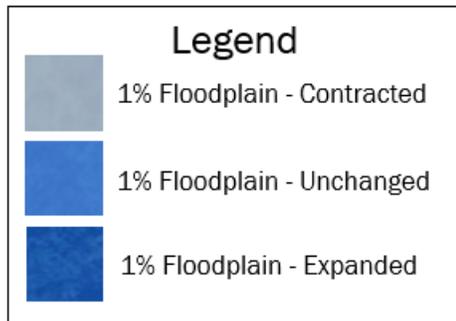
Floodplain Mapping Comparisons Township of Chatham



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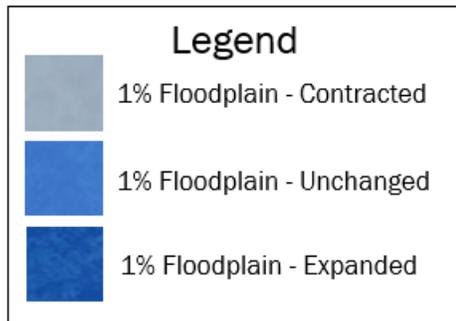
Floodplain Mapping Comparisons

Township of Chester



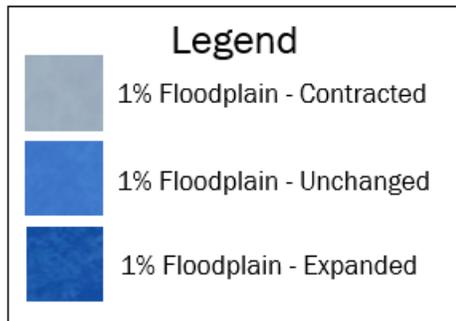
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Floodplain Mapping Comparisons Township of Denville



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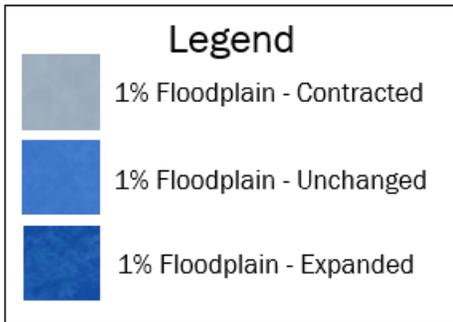
Floodplain Mapping Comparisons Township of Denville



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Floodplain Mapping Comparisons

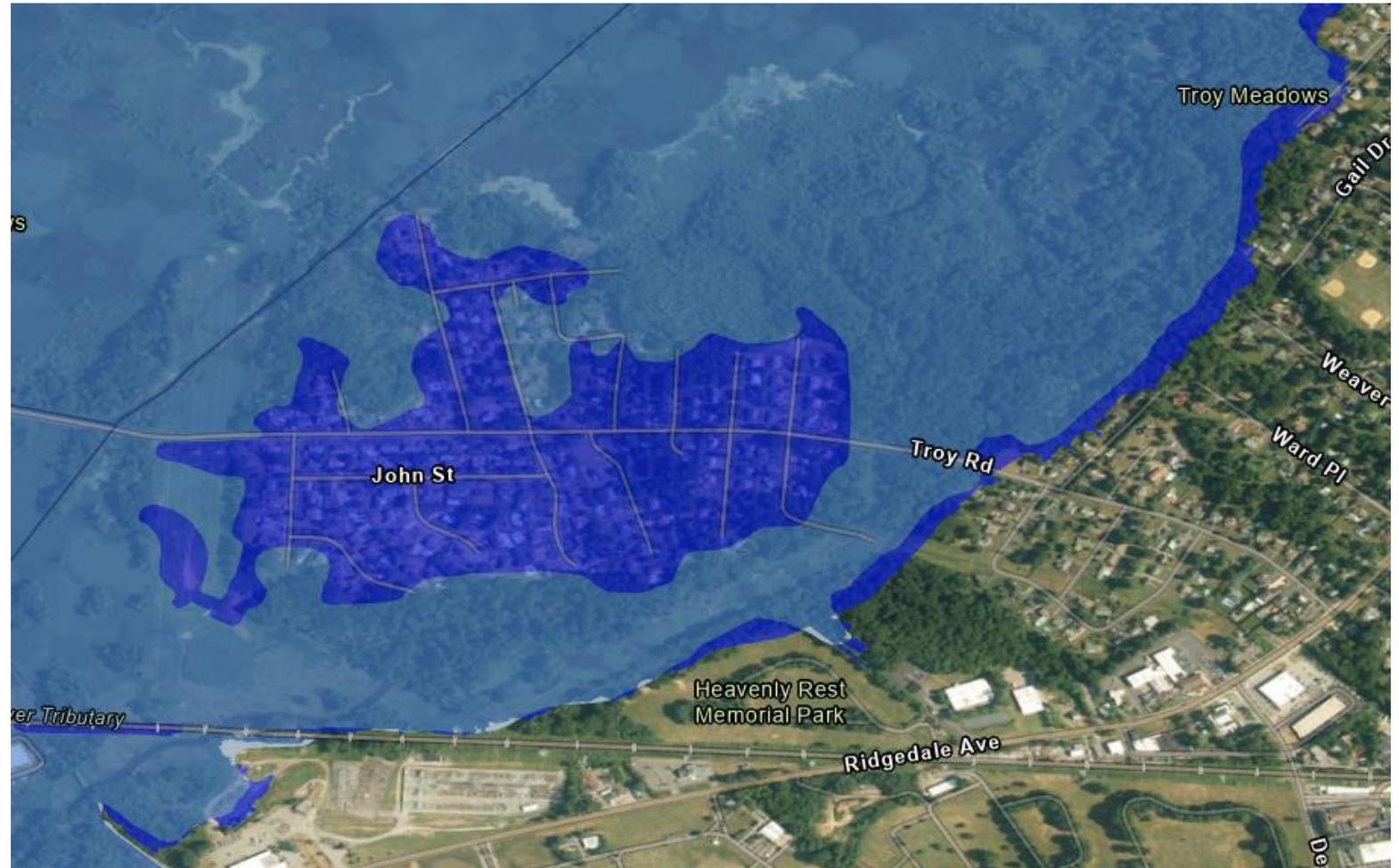
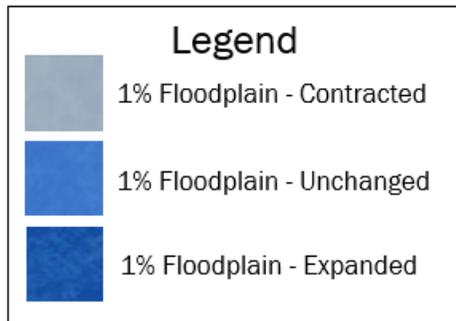
Town of Dover



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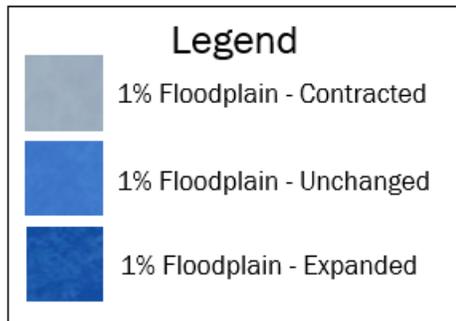
Floodplain Mapping Comparisons

Township of East Hanover



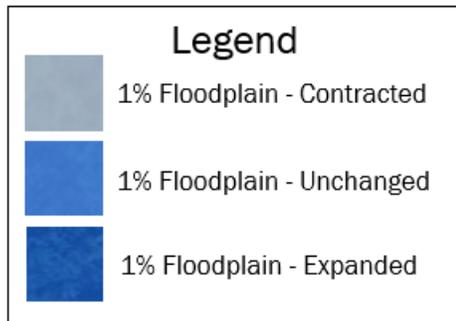
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Floodplain Mapping Comparisons Borough of Florham Park



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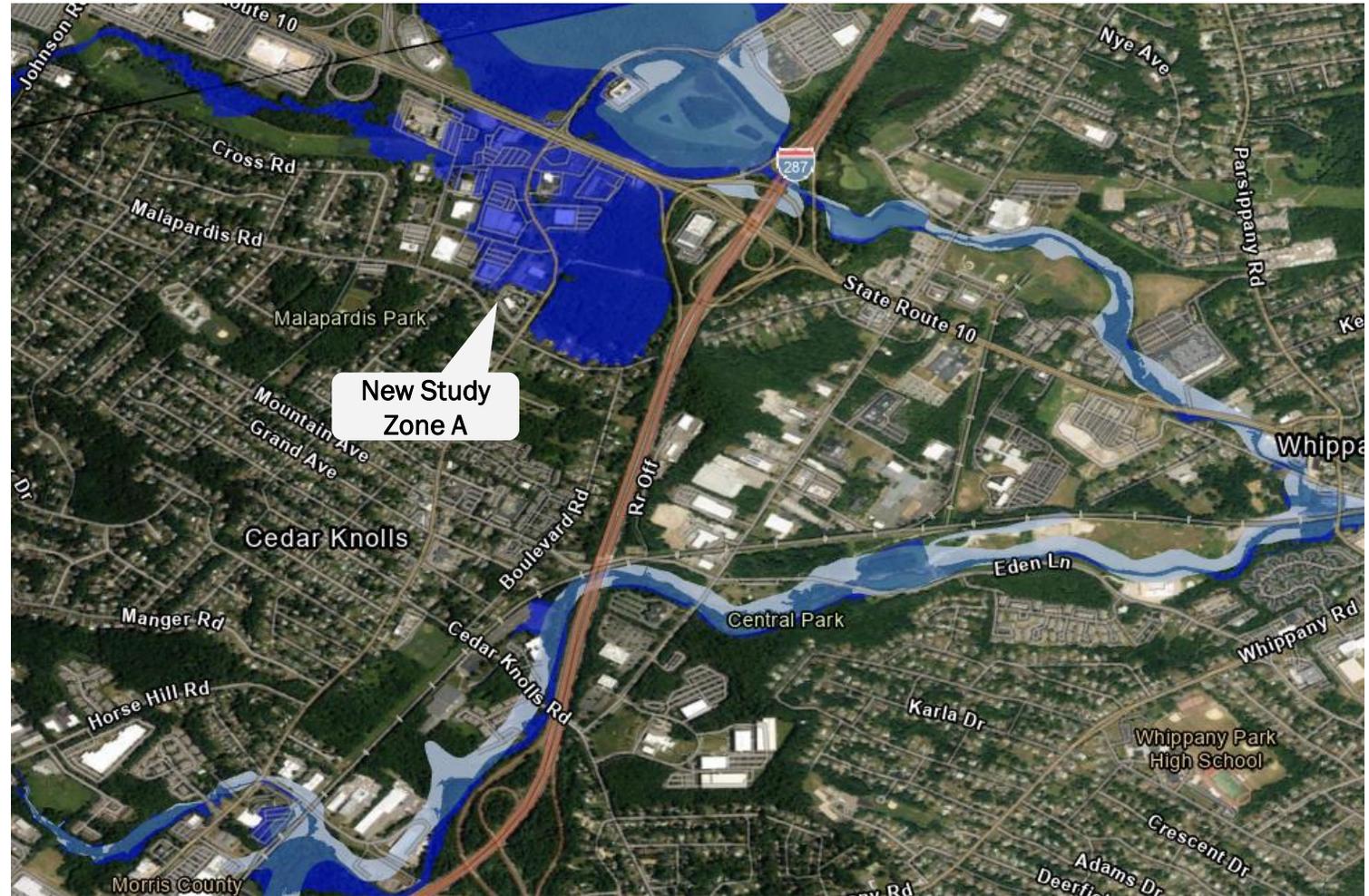
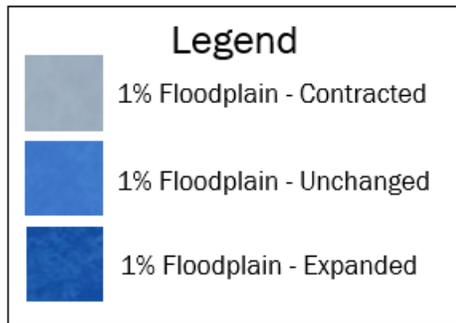
Floodplain Mapping Comparisons Borough of Florham Park



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Floodplain Mapping Comparisons

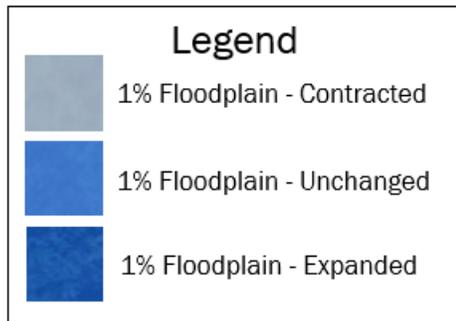
Township of Hanover



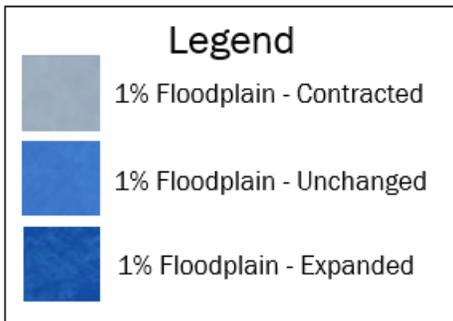
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Floodplain Mapping Comparisons

Township of Harding



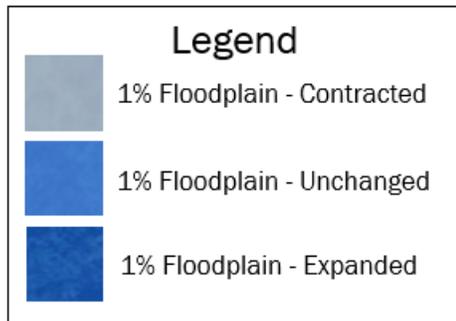
Floodplain Mapping Comparisons Township of Jefferson



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Floodplain Mapping Comparisons

Borough of Lincoln Park



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Floodplain Mapping Comparisons

Township of Long Hill

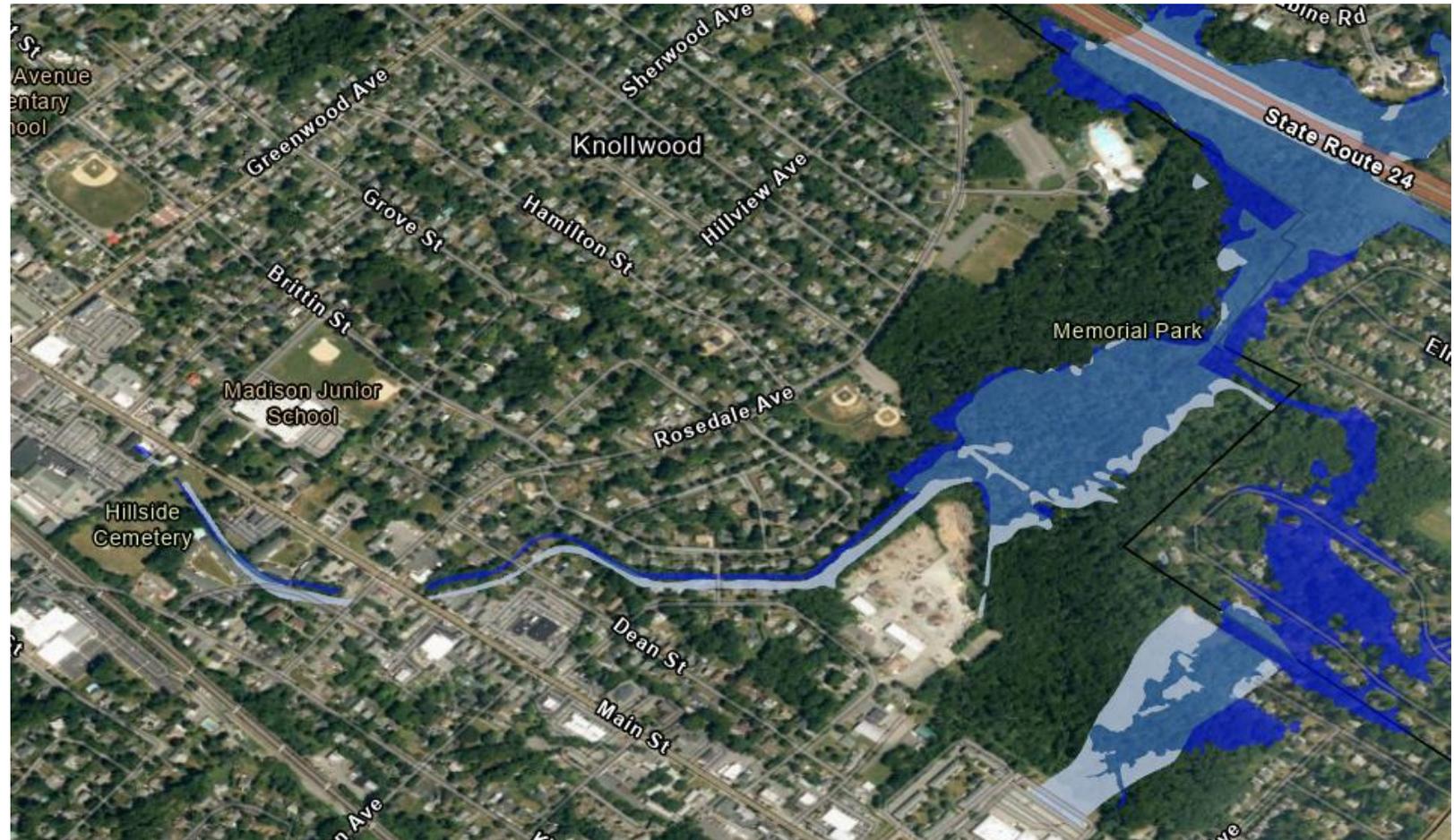
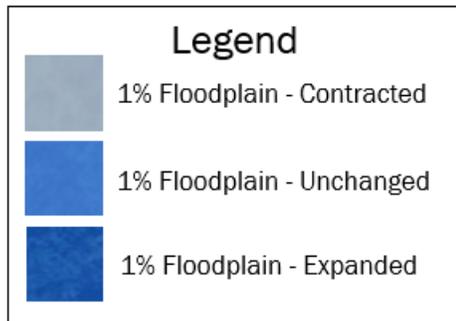
Legend

- 1% Floodplain - Contracted
- 1% Floodplain - Unchanged
- 1% Floodplain - Expanded



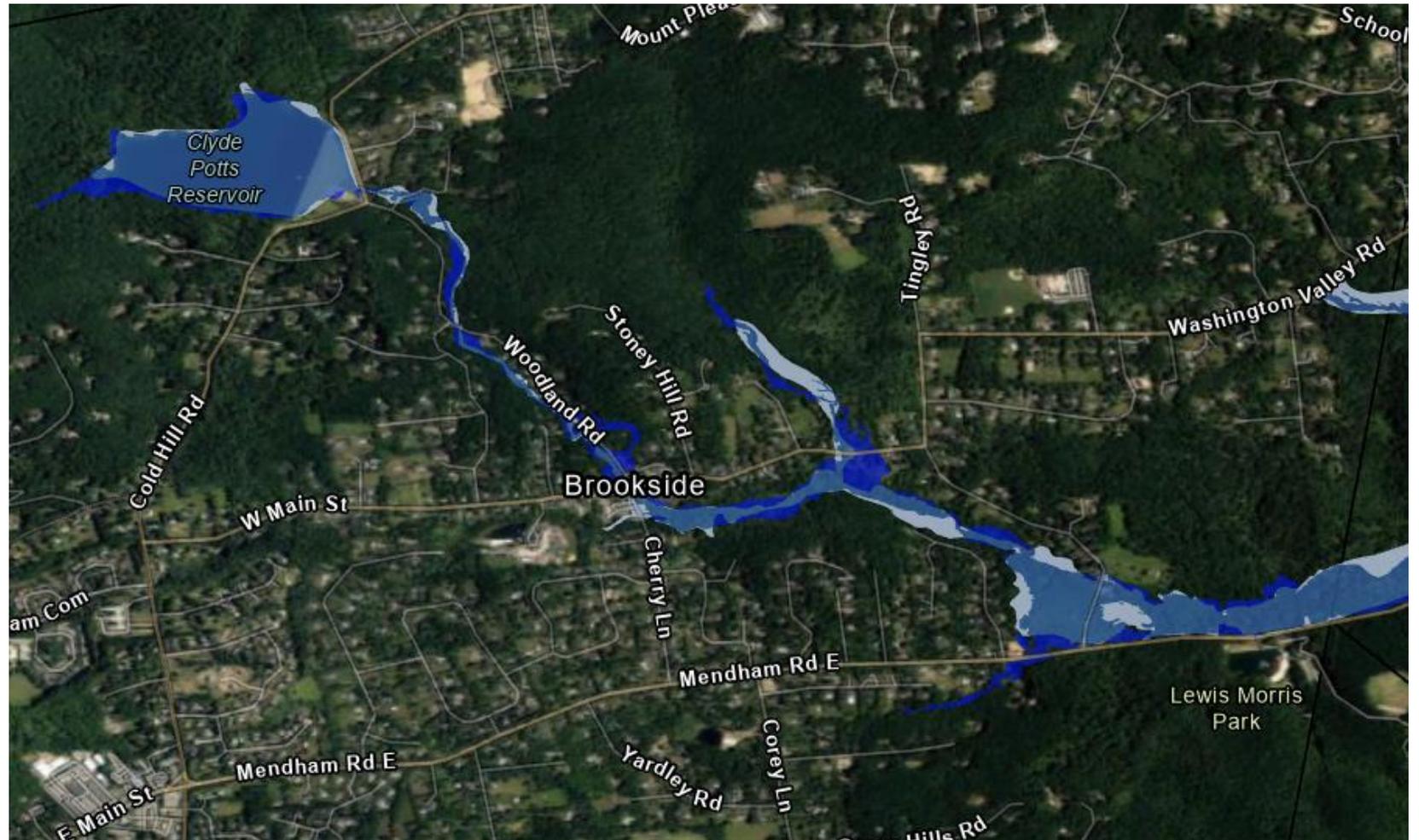
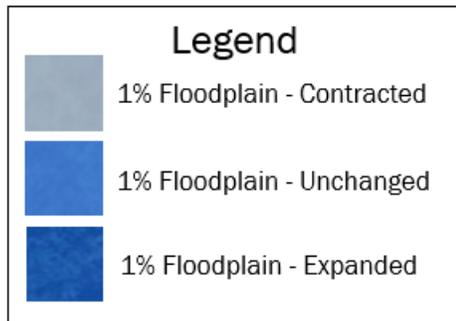
Floodplain Mapping Comparisons

Borough of Madison



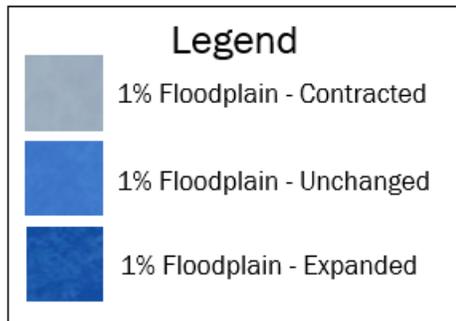
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Floodplain Mapping Comparisons Township of Mendham



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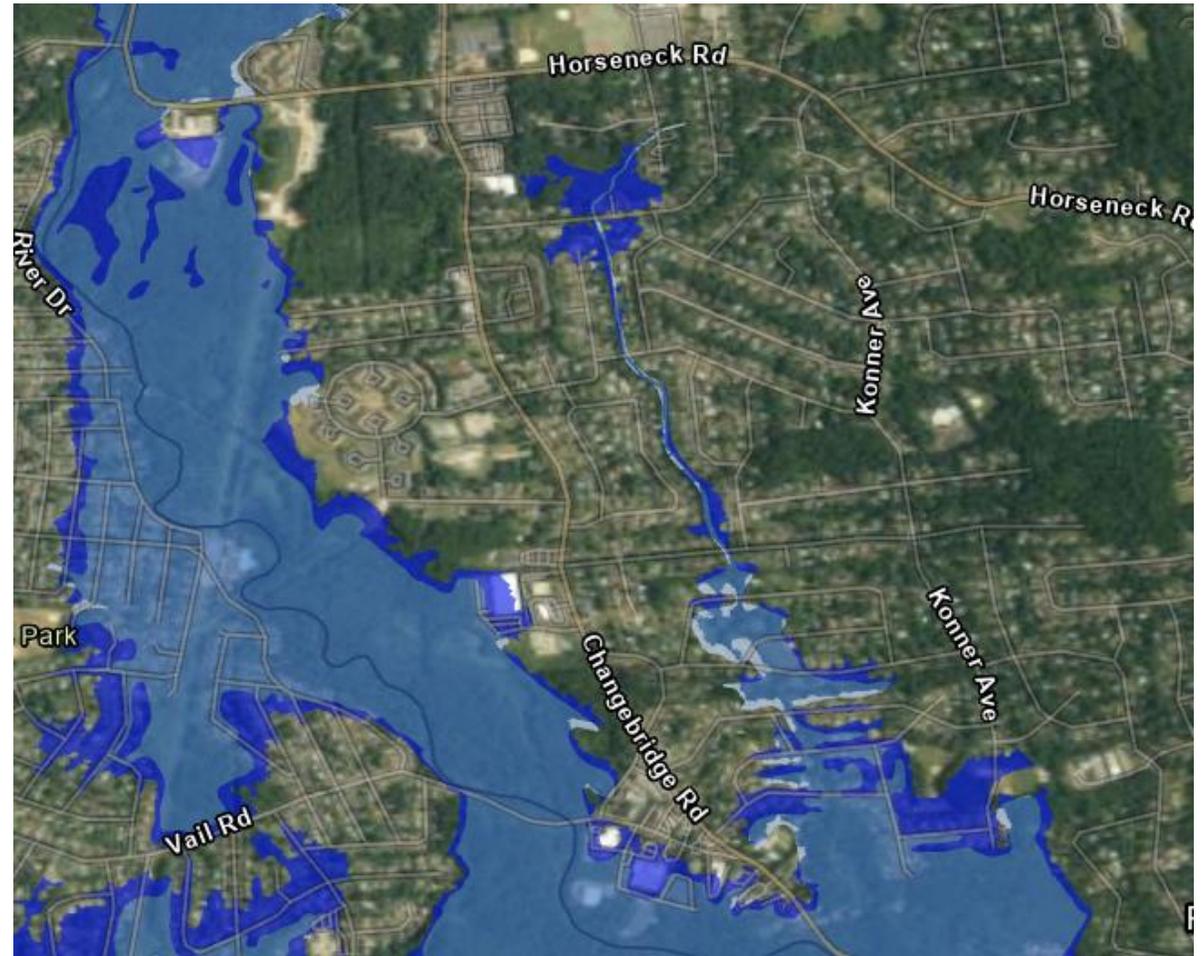
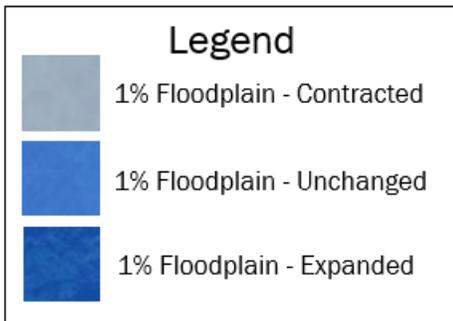
Floodplain Mapping Comparisons Township of Mine Hill



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Floodplain Mapping Comparisons

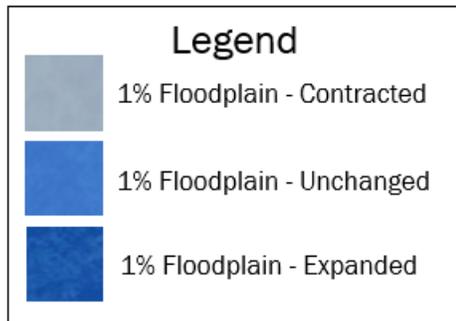
Township of Montville



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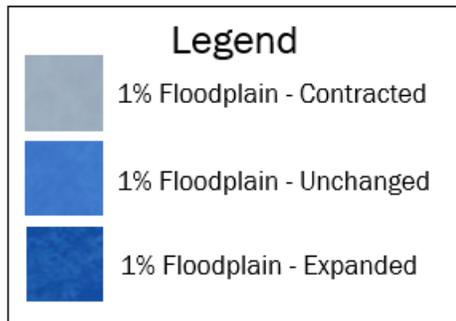
Floodplain Mapping Comparisons

Borough of Morris Plains



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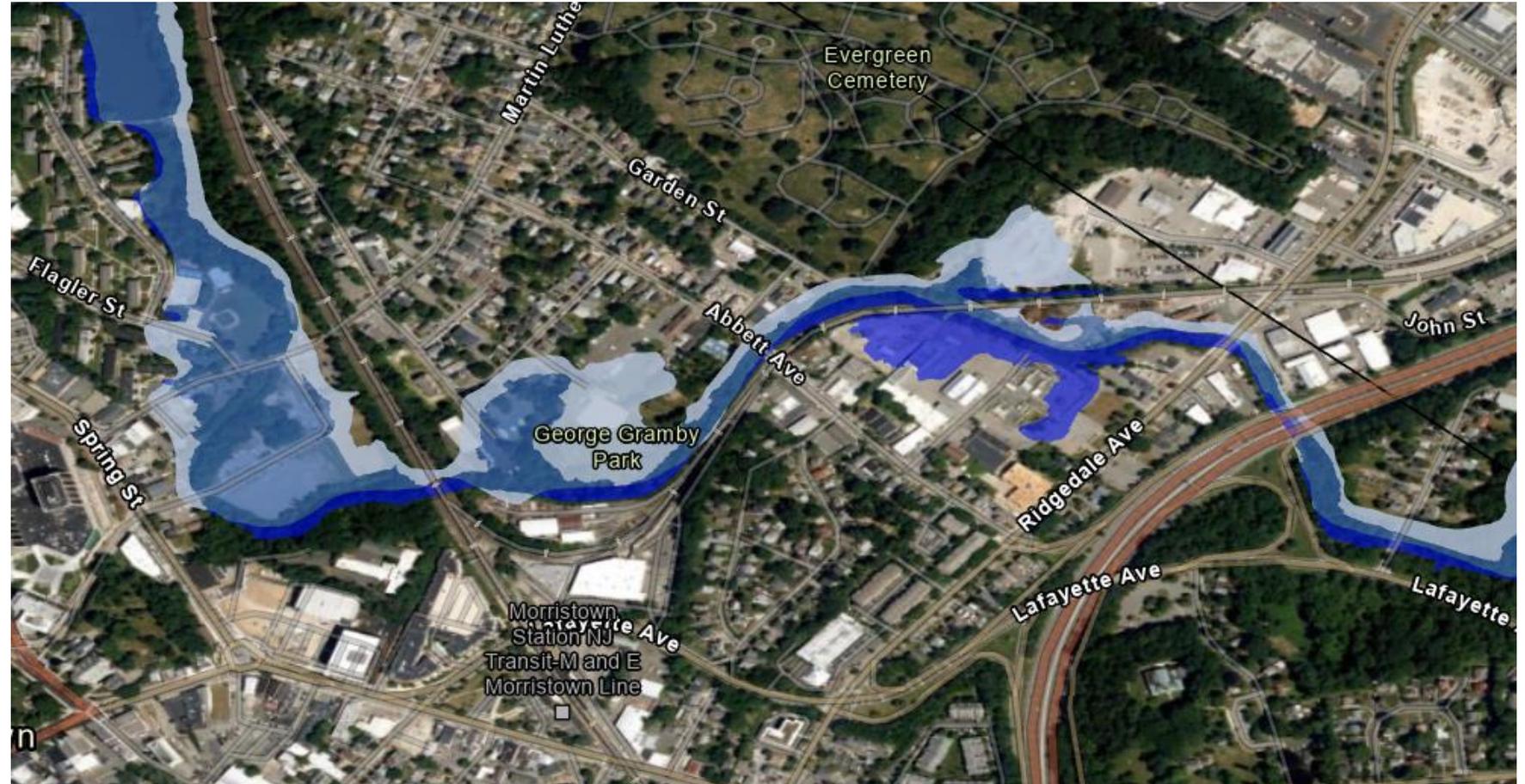
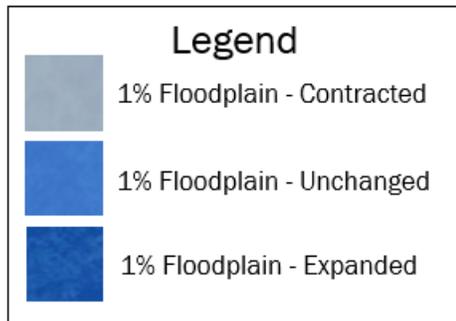
Floodplain Mapping Comparisons Township of Morris



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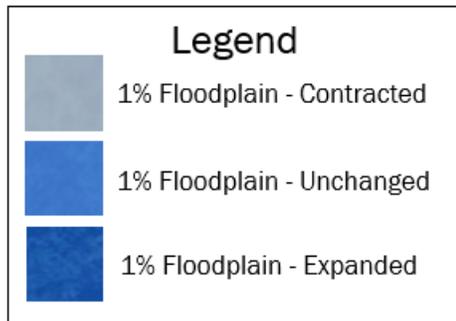
Floodplain Mapping Comparisons

Town of Morristown



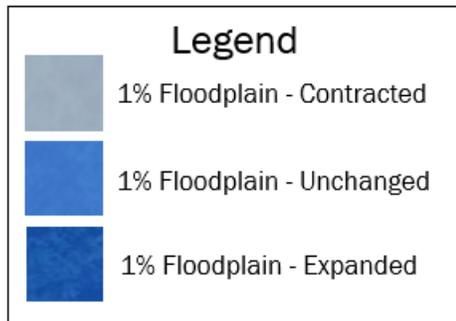
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Floodplain Mapping Comparisons Township of Mount Olive



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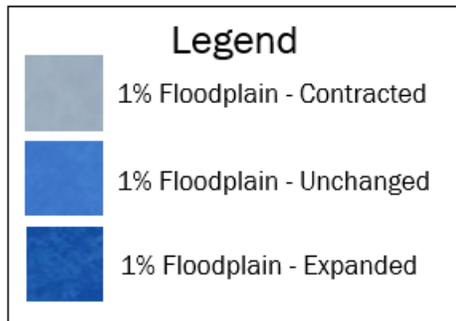
Floodplain Mapping Comparisons Township of Parsippany-Troy Hills



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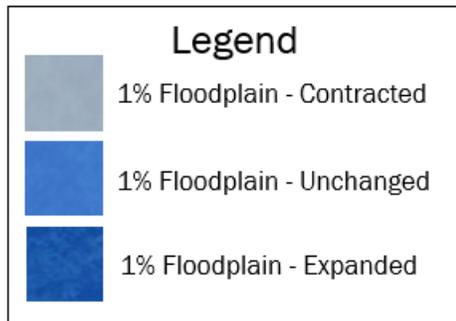
Floodplain Mapping Comparisons

Township of Parsippany-Troy Hills



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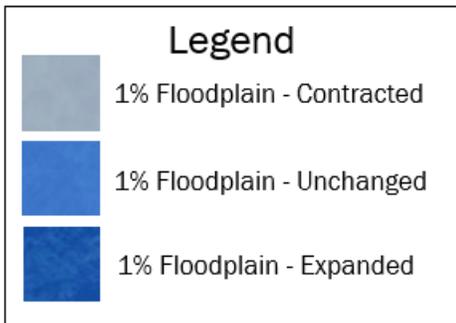
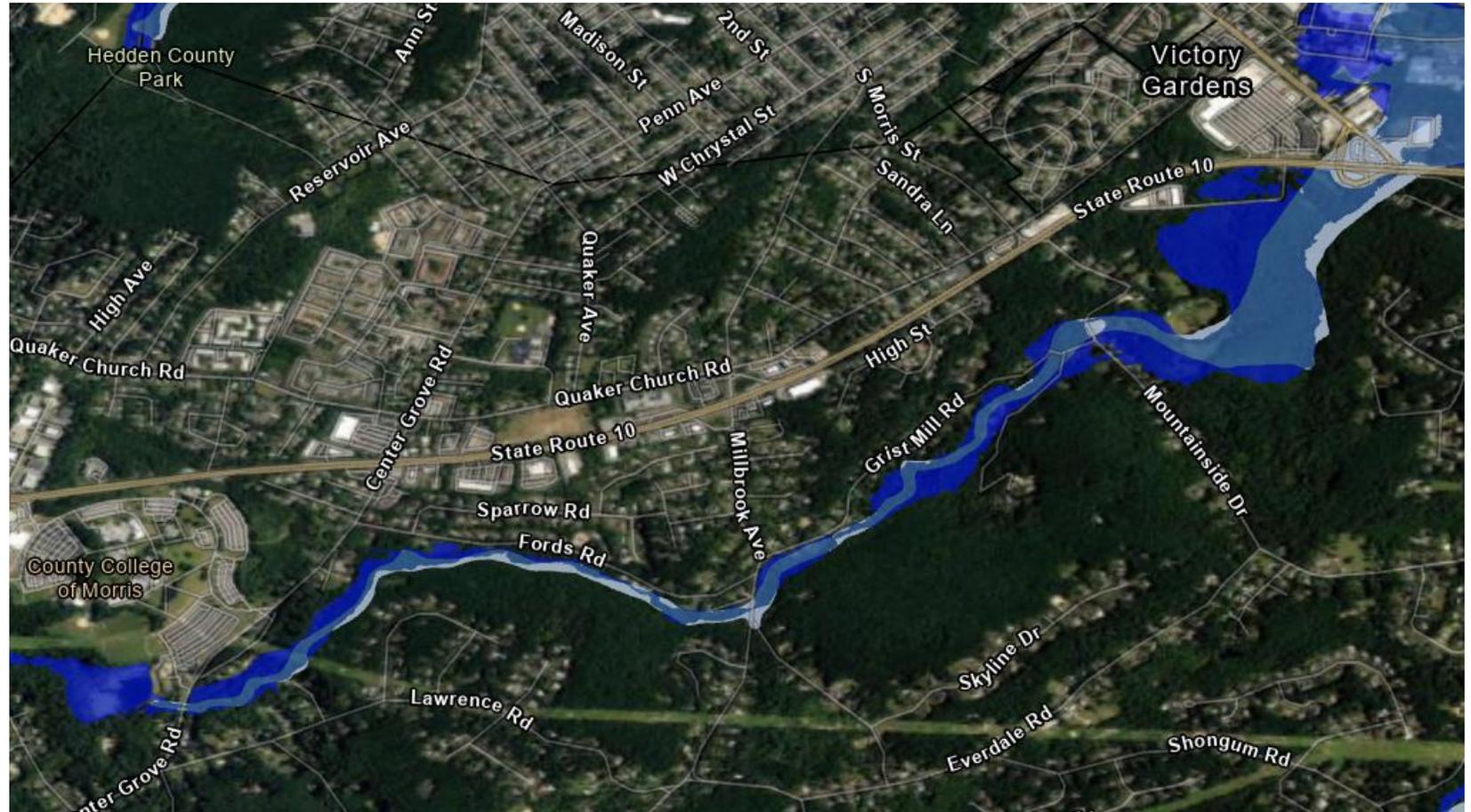
Floodplain Mapping Comparisons Township of Pequannock



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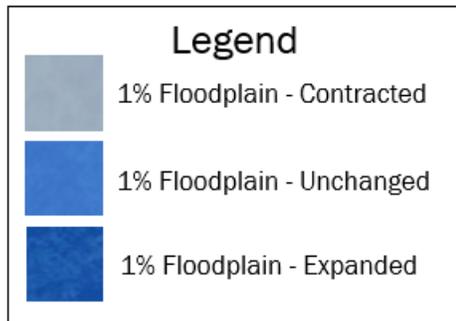
Floodplain Mapping Comparisons

Township of Randolph

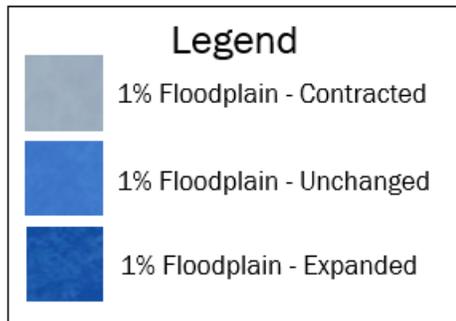


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Floodplain Mapping Comparisons Borough of Riverdale



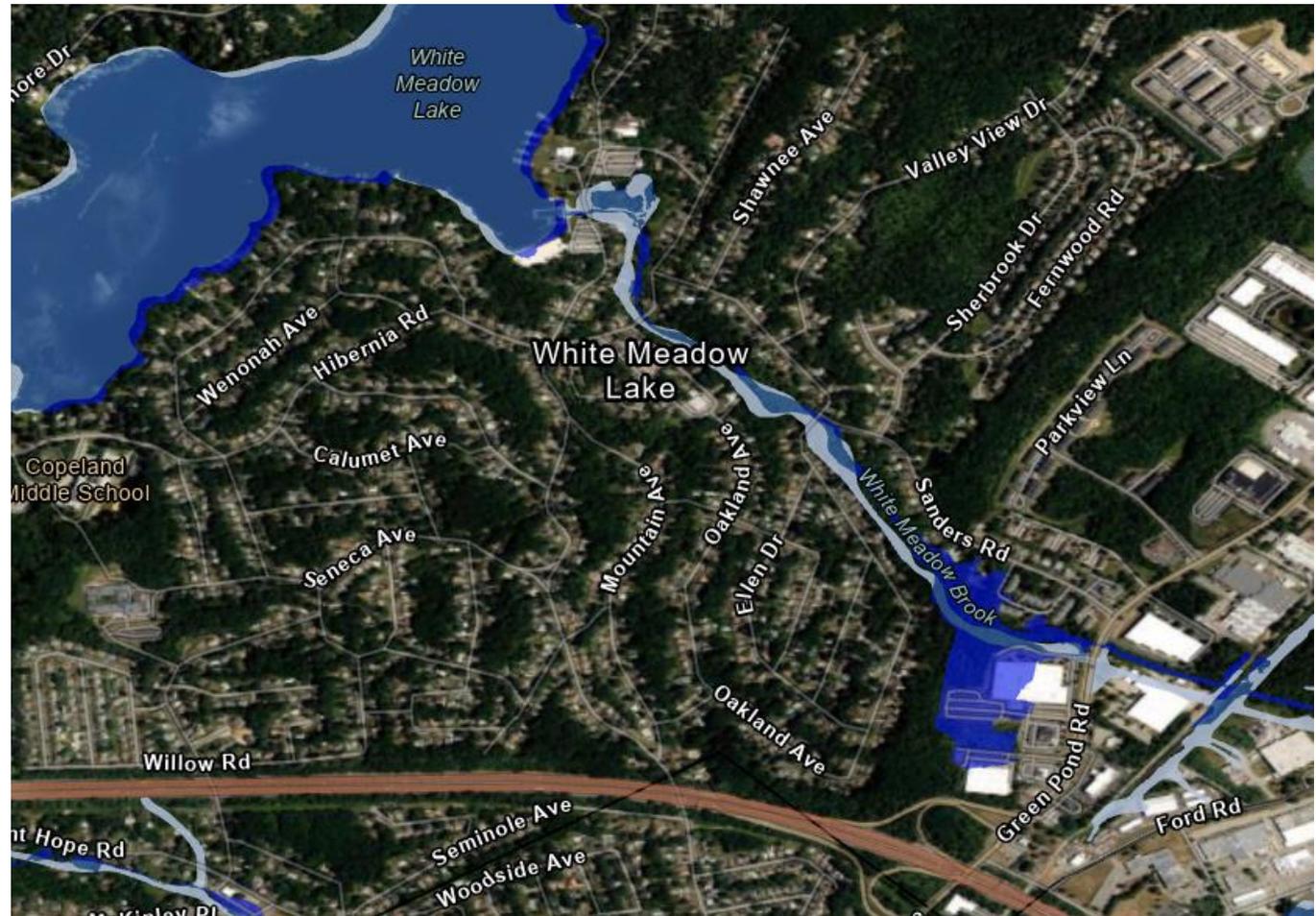
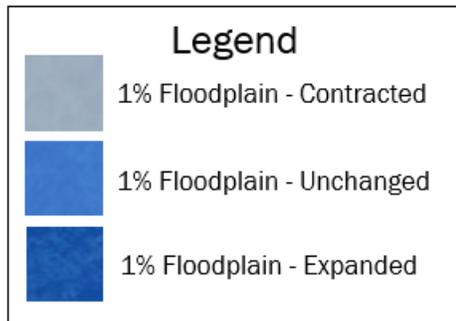
Floodplain Mapping Comparisons Borough of Rockaway



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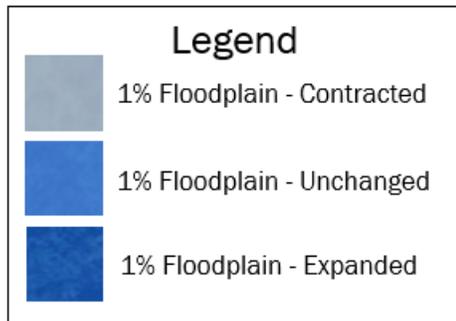
Floodplain Mapping Comparisons

Township of Rockaway



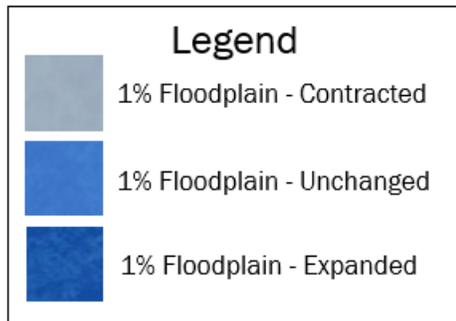
FEMA

Floodplain Mapping Comparisons Township of Roxbury



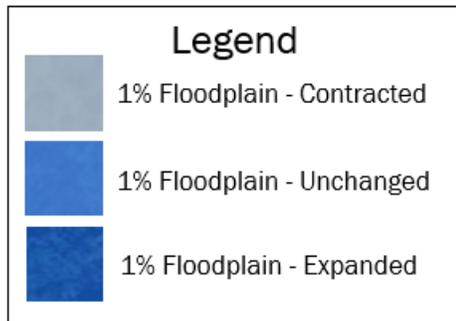
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Floodplain Mapping Comparisons Township of Washington



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Floodplain Mapping Comparisons Borough of Wharton



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Flood Map Estimated Changes – Compared to Effective

Disclaimers:

- These are very rough estimate number of structures affected and **subject to change**.
- Corelogic automated system was used for effective Special Flood Hazard Area (SFHA) determination – **accuracy/reliability of the data is not guaranteed**.
- Source of structures: [USA Structures | FEMA Geospatial Resource Center \(arcgis.com\)](#)
- Structures in this dataset/analysis may include buildings like garages, sheds, boathouses, etc.

Community	Total Structures in Effective SFHA (Corelogic)	Total Structures in Draft SFHA	Estimated Structures Newly Identified in SFHA	Estimated Structures No Longer Identified in SFHA	Net Count
Borough of Butler	113	56	5	62	-57
Borough of Chatham	37	49	21	9	12
Borough of Chester	0	0	0	0	0
Borough of Florham Park	93	90	29	32	-3
Borough of Kinnelon	0	0	0	0	0
Borough of Lincoln Park	1140	838	11	313	-302
Borough of Madison	21	10	4	15	-11
Borough of Mendham	4	6	4	2	2
Borough of Morris Plains	28	27	13	14	-1
Borough of Mount Arlington	97	54	8	51	-43
Borough of Mountain Lakes	0	0	0	0	0
Borough of Netcong	5	3	1	3	-2
Borough of Riverdale	110	111	23	22	1



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Flood Map Estimated Changes – Compared to Effective

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- Structures in this dataset/analysis may include buildings like garages, sheds, boathouses, etc.

Community	Total Structures in Effective SFHA (Corelogic)	Total Structures in Draft SFHA	Estimated Structures Newly Identified in SFHA	Estimated Structures No Longer Identified in SFHA	Net Count
Borough of Rockaway	100	138	40	2	38
Borough of Victory Gardens	0	0	0	0	0
Borough of Wharton	9	18	10	1	9
Town of Boonton	7	9	4	2	2
Town of Dover	369	377	49	41	8
Town of Morristown	46	27	4	23	-19
Township of Boonton	49	57	24	16	8
Township of Chatham	88	17	4	75	-71
Township of Chester	14	13	3	4	-1
Township of Denville	392	446	99	45	54
Township of East Hanover	357	433	188	112	76
Township of Hanover	164	82	27	109	-82
Township of Harding	76	44	8	40	-32



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Flood Map Estimated Changes – Compared to Effective

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- Source of structures: [USA Structures | FEMA Geospatial Resource Center \(arcgis.com\)](#)
- Structures in this dataset/analysis may include buildings like garages, sheds, boathouses, etc.

Community	Total Structures in Effective SFHA (Corelogic)	Total Structures in Draft SFHA	Estimated Structures Newly Identified in SFHA	Estimated Structures No Longer Identified in SFHA	Net Count
Township of Jefferson	390	244	67	213	-146
Township of Long Hill	292	273	26	45	-19
Township of Mendham	30	37	12	5	7
Township of Mine Hill	2	82	82	2	80
Township of Montville	308	290	109	127	-18
Township of Morris	114	52	24	86	-62
Township of Mount Olive	159	157	58	60	-2
Township of Parsippany-Troy Hills	426	655	279	50	229
Township of Pequannock	1219	882	22	359	-337
Township of Randolph	72	63	29	38	-9
Township of Rockaway	154	120	61	95	-34
Township of Roxbury	159	159	91	91	0
Township of Washington	107	99	33	41	-8
Total	3432	3113	893	1212	-319



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Flood Map Estimated Changes – Compared to 2016 Prelims*

Disclaimers:

- These are very rough estimate number of structures affected and **subject to change**.
- *This slide compares the latest draft data against the 2016 Preliminaries. ONLY communities with significant number of structures impacted are listed.
- Source of structures: [USA Structures | FEMA Geospatial Resource Center \(arcgis.com\)](#)
- Structures in this dataset/analysis may include buildings like garages, sheds, boathouses, etc.

Community	Total Structures in Preliminary (2016) SFHA*	Total Structures in Draft SFHA	Estimated Structures Newly Identified in SFHA	Estimated Structures No Longer Identified in SFHA	Net Count
Borough of Rockaway	70	138	68	0	68
Township of East Hanover	295	433	154	16	138
Township of Hanover	124	82	23	65	-42
Township of Long Hill	301	273	0	28	-28
Township of Mine Hill	1	82	81	0	81
Township of Parsippany-Troy Hills	433	655	224	2	222
Township of Roxbury	83	159	77	1	76
Township of Washington	134	99	8	43	-35



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Next Steps



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Projected Timeline Towards Map Adoption

“Letter of Final Determination”

To communities and publishes the final FHDs in the Federal Register

Communities have 6 months to adopt the study before the data becomes “effective”. Failure to adopt results in suspension from NFIP

Flood Risk Review Meeting
December 20, 2024

Preliminary product issuance
Spring 2025*

Appeal Period
Early 2026*

FEMA issues LFD
Early 2027**



CCO/Open House Meetings
Mid-2025*

End of 90-Day Appeal Period
Early/Mid 2026*

Effective Date
Mid 2027**

*Current timeline could be impacted by Flood Risk Review or Preliminary Map Comments
** Based on schedule if no appeal during 90-day appeal period
Graphic Above Not to Scale



DRAFT Results

FEMA Region 2 Draft Flood Hazard Viewer

– **DEMO** –

Comments Due in
30 Days –
by January 21,
2025



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BREAKOUTS



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Thank you!



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