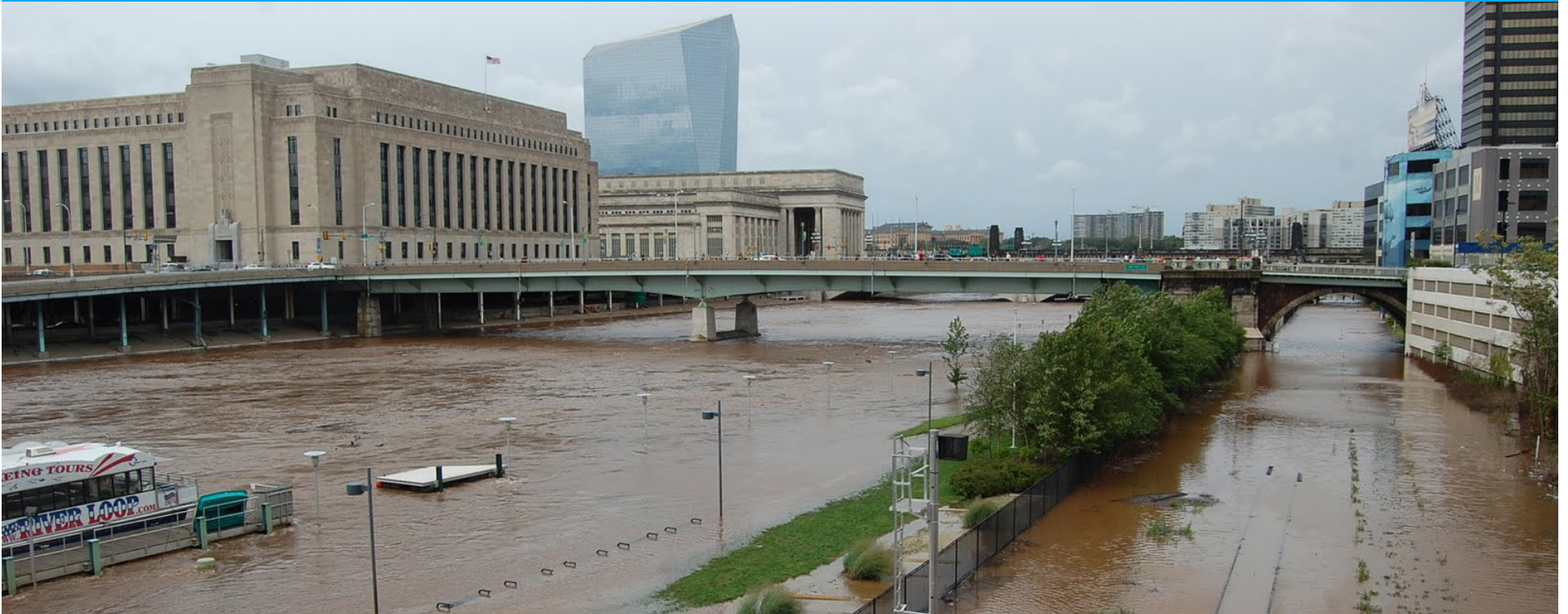


FRMTF

FLOOD RISK MANAGEMENT TASK FORCE
CITY OF PHILADELPHIA

JOSH LIPPERT, CFM
FLOODPLAIN MANAGER
JOSHUA.LIPPERT@PHILA.GOV



City of
Philadelphia



Philadelphia Climate Change Resilience Initiatives

The eighth in an ongoing "Climate Adaptation Forum" series held three times per year.

FLOODPLAIN MANAGEMENT

BACKGROUND

FLOOD RISK MANAGEMENT TASK FORCE

STRATEGIC PLAN

PROGRAM STRUCTURE

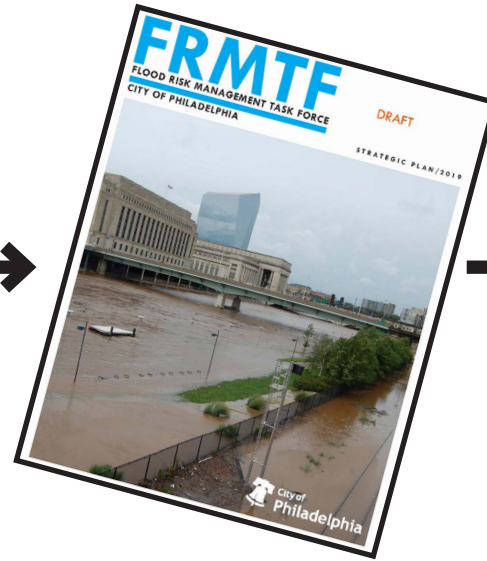
IMPLEMENTATION

QUESTIONS/COMMENTS

BACKGROUND

FRMTF Context

FRMTF
FLOOD RISK MANAGEMENT TASK FORCE
CITY OF PHILADELPHIA

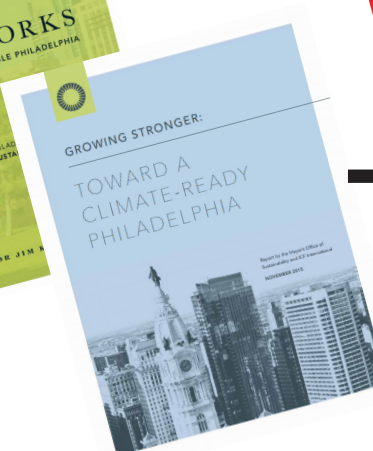


**FLOOD
MANAGEMENT
PROGRAM**
CITY OF PHILADELPHIA

FUTURE

THE CITY OF PHILADELPHIA
MAYOR'S OFFICE OF
SUSTAINABILITY

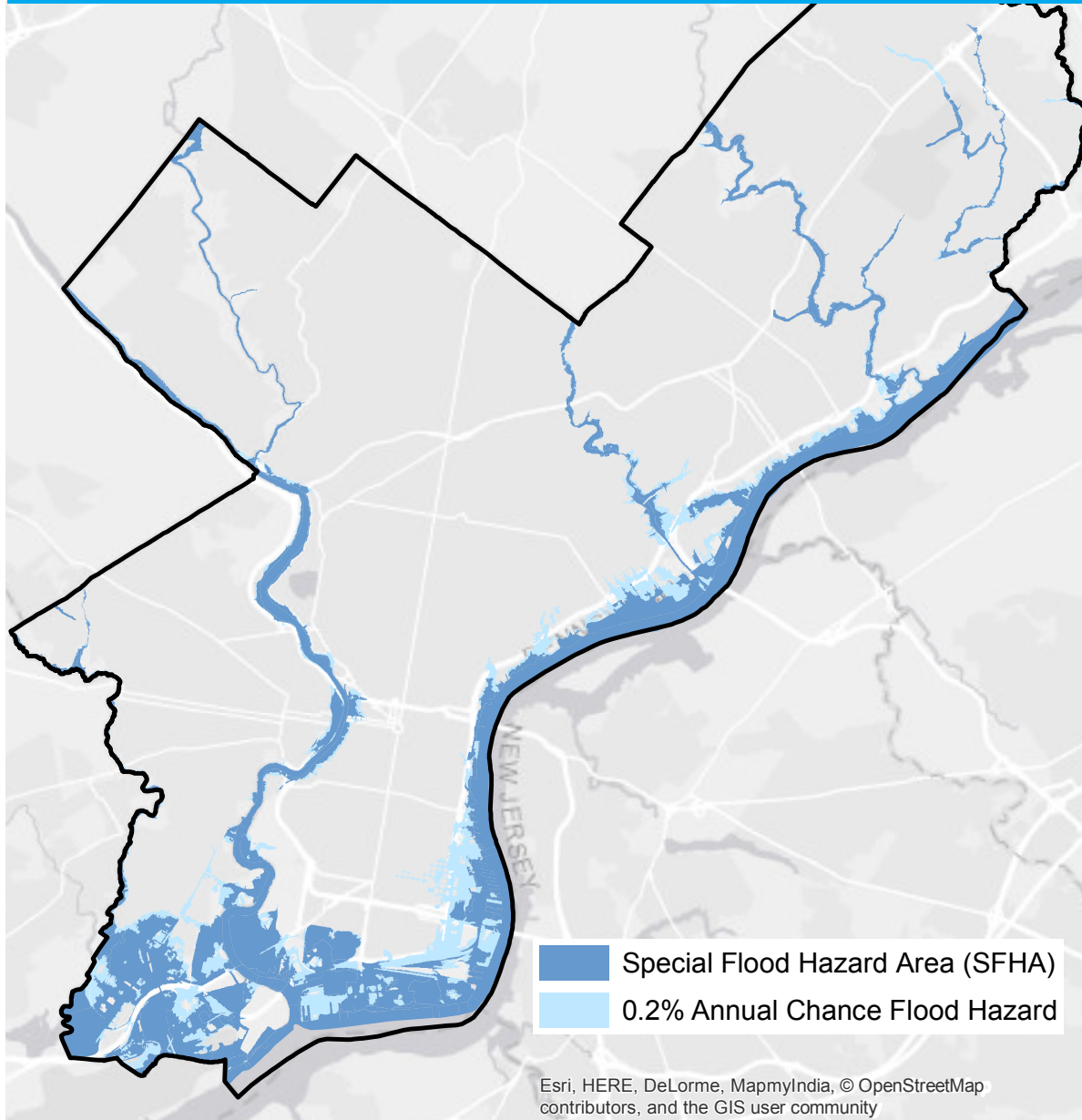
**CLIMATE ADAPTATION
WORKING GROUP (CAWG)**



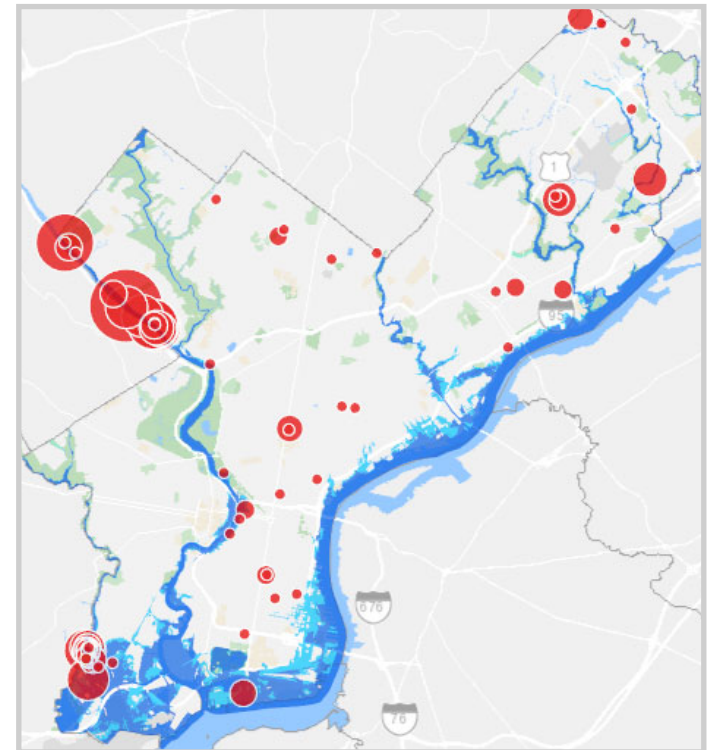
**CLIMATE
ADAPTATION
PLAN**

BACKGROUND

FEMA Maps



Repetitive Loss Properties



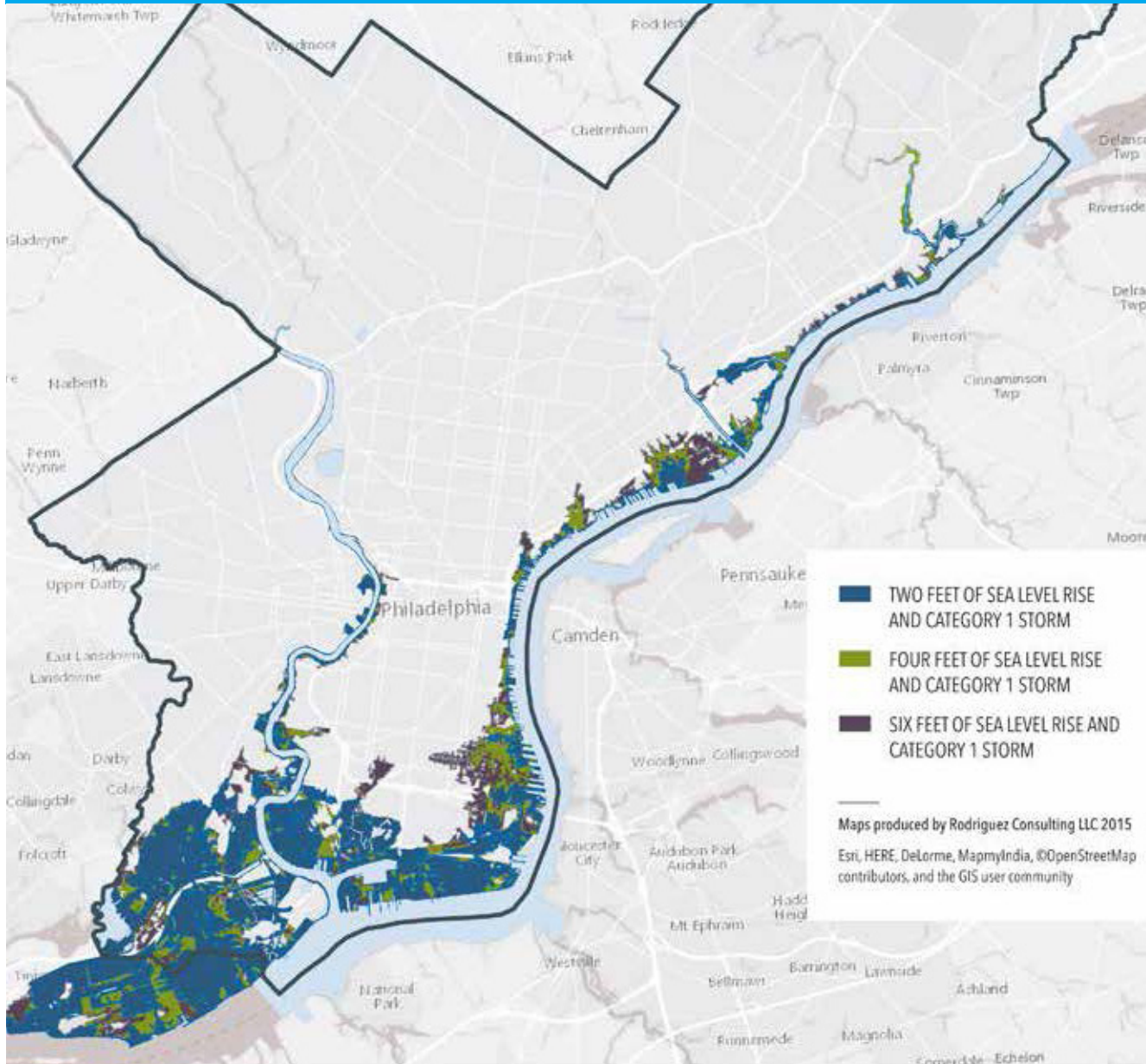
2,550 EXISTING STRUCTURES

3,127 EXISTING PARCELS

3,746 NFIP POLICIES

BACKGROUND

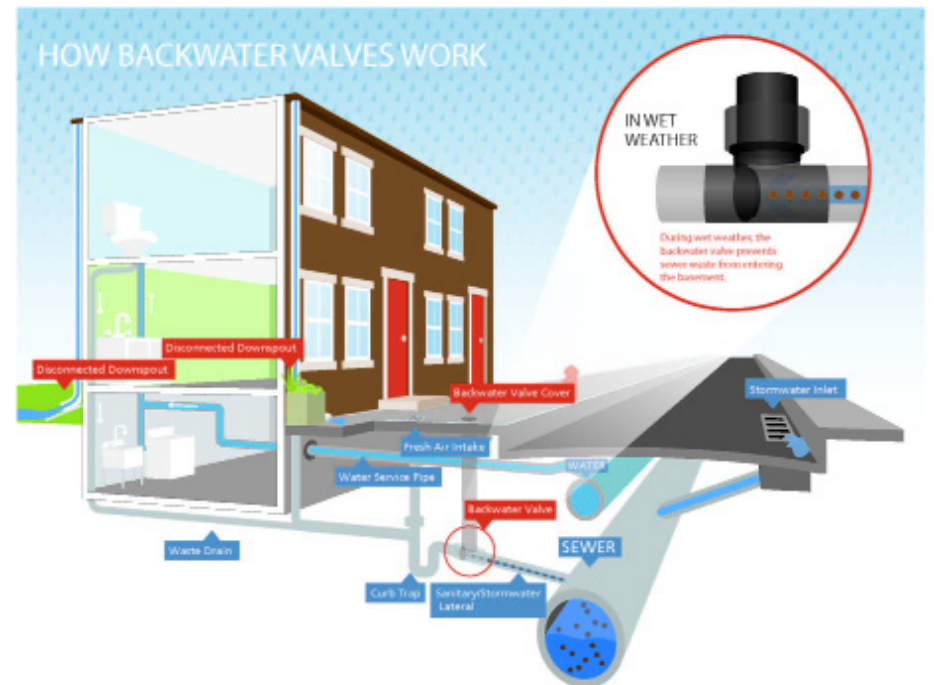
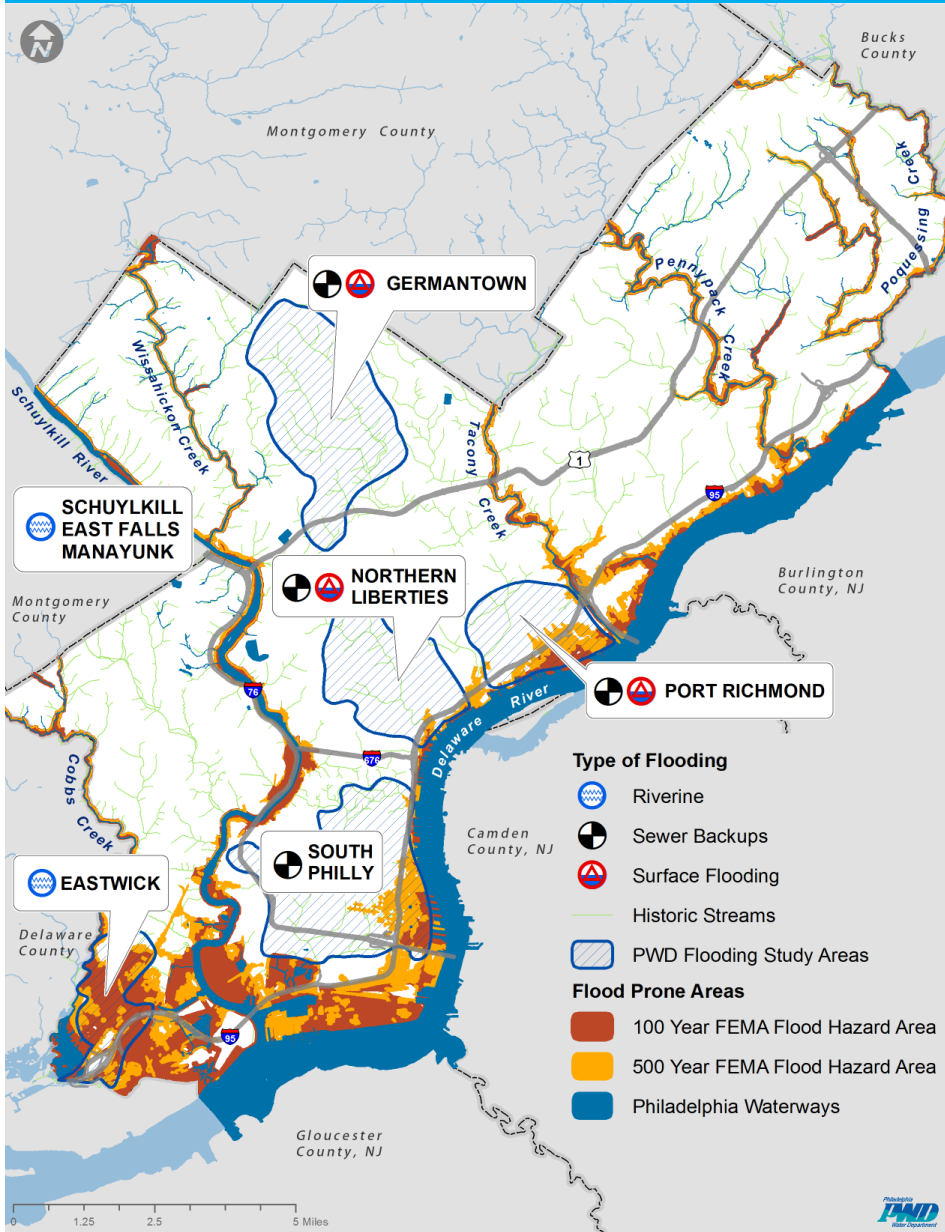
Sea Level Rise + Severe storm



- one severe hurricane could cause more than \$2 billion in damages citywide
- extreme storms with higher winds and flooding could cause between \$20 million and \$900 million in damages citywide
- additional \$2 to \$4 million in roadway maintenance costs
- regional transit system operational costs could rise \$2 million per year

BACKGROUND

Infrastructure Flooding



BACKGROUND

Major Floods

Delaware River 1930's & mid 1950



May 2016, Manayunk neighborhood

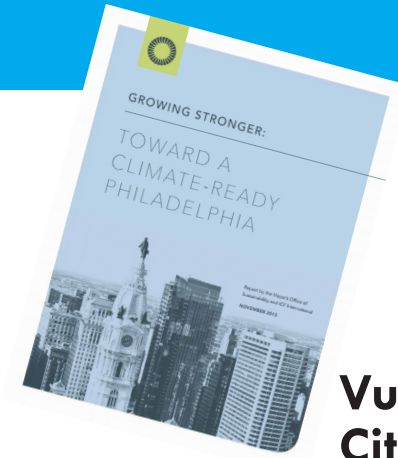


Hurricane Floyd 1999

BACKGROUND

Strengths

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FLOOD RISK MANAGEMENT TASK FORCE
CITY OF PHILADELPHIA



Vulnerable City Assets

Undeveloped Land Along "edges"



BACKGROUND

Weakness + Threats

Riverfront development

Mapping the Delaware River Waterfront's building boom

Big changes are coming to the waterfront

By **Melissa Romero** and **Anna Merriman** | Updated May 23, 2019, 2:38pm EDT

Airports Increasingly Vulnerable To Flooding

According to the US government's recent **climate change report** at least 12 of the country's 47 largest airports are vulnerable to storm surges and flooding. Those airports include:

- San Francisco International (SFO)
- Oakland International (OAK)
- Honolulu International (HNL)
- New Orleans Louis Armstrong International (MSY)
- Tampa International (TPA)
- Miami International (MIA)
- Ft. Lauderdale International (FLL)
- Ronald Reagan Washington National (DCA)
- Newark Liberty International (EWR)
- LaGuardia (LGA)
- Philadelphia International (PHL)**
- John F. Kennedy (JFK)



Houston Airport Flooding

BACKGROUND

Weakness + Threats

Proposed Projects

- Venice Island Papermill Site (floodway)
- Development at Navy Yard (including residential)
- Airport Expansion
- Delaware River Development
- Lower Schuylkill (Botanic Ave) PIDC Development
- PRA Redevelopment Plan – Lower Eastwick
- FDR Park
- Port of Philadelphia
- CAP Park
- Penns Landing Development
- Festival Pier Development
- PennDOT I-95/Delaware Ave Extension
- Federal Opportunity Zones - Upper Delaware Riverfront
- Keystone Opportunity Zones - Navy Yard, PES, & lower Schuylkill

BACKGROUND

Opportunities



Every \$1 Invested in Disaster Mitigation Saves \$6

Spending to reduce risk saves lives and creates jobs, key study finds

ARTICLE January 11, 2018 By: Laura Lightbody & Matthew Fuchs Topics: Infrastructure Projects: Flood-Prepared Communities Tags: Floods Read time: 1 min

Share

Flood mitigation investment returns positive benefits

A socio-economic analysis by the Economist Intelligence Unit

The benefits of flood mitigation go beyond dollars and cents. The Economist Intelligence Unit found that investment in making homes and infrastructure more flood-resilient returns positive economic, environmental, and social benefits for communities. We reveal the flood mitigation actions, challenges and benefits for 11 flood-affected communities across the US.

Photo by Justin Hernandez

- Flood mitigation takeaways** - Get a glance at key takeaways on flood mitigation to help...
- Community case studies** - Discover 11 communities exploring smart flood mitigation actions.
- The US takes action** - Explore flood mitigation actions by...

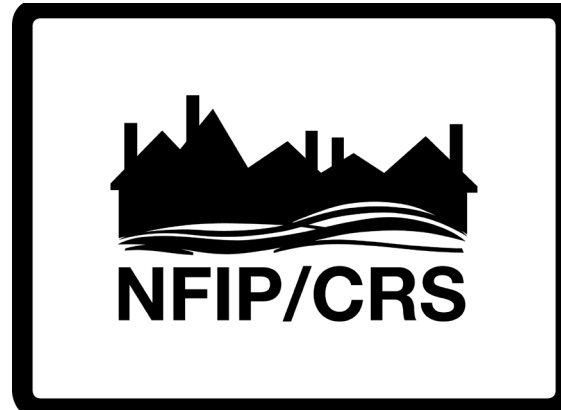


Natural Hazard Mitigation Provides the Nation \$6 in Benefit for Every \$1 Invested

National Benefit-Cost Ratio (BCR) Per Peril <small>*BCR numbers in this study have been rounded</small>	Beyond Code Requirements	Federally Funded	This Interim Study quantified a number of benefits from mitigation, including reductions in:
Overall Hazard Benefit-Cost Ratio	\$4:1	\$6:1	
Riverine Flood	\$5:1	\$7:1	<ul style="list-style-type: none"> • Future deaths, nonfatal injuries, and PTSD • Repair costs for damaged buildings and contents • Sheltering costs for displaced households • Loss of revenue and other business interruption costs to businesses whose properties are damaged • Loss of economic activity in the broader community • Loss of service to the community when fire stations, hospitals, or other public buildings are damaged • Insurance costs other than insurance claims • Costs for urban search and rescue
Hurricane Surge	\$7:1	Too few grants	
Wind	\$5:1	\$5:1	
Earthquake	\$4:1	\$3:1	
Wildland-Urban Interface Fire	\$4:1	\$3:1	

BACKGROUND

Opportunities



BENEFITS

- Reduction in flood insurance premiums for residents and businesses
- Enhanced public safety, reduction in damage to property and public infrastructure, avoidance of economic disruption and losses, reduction in human suffering, and protection of the environment
- Flood management program effectiveness evaluation
- Training and technical assistance
- Public information and participation
- Mitigation



FLOOD RISK MANAGEMENT TASK FORCE

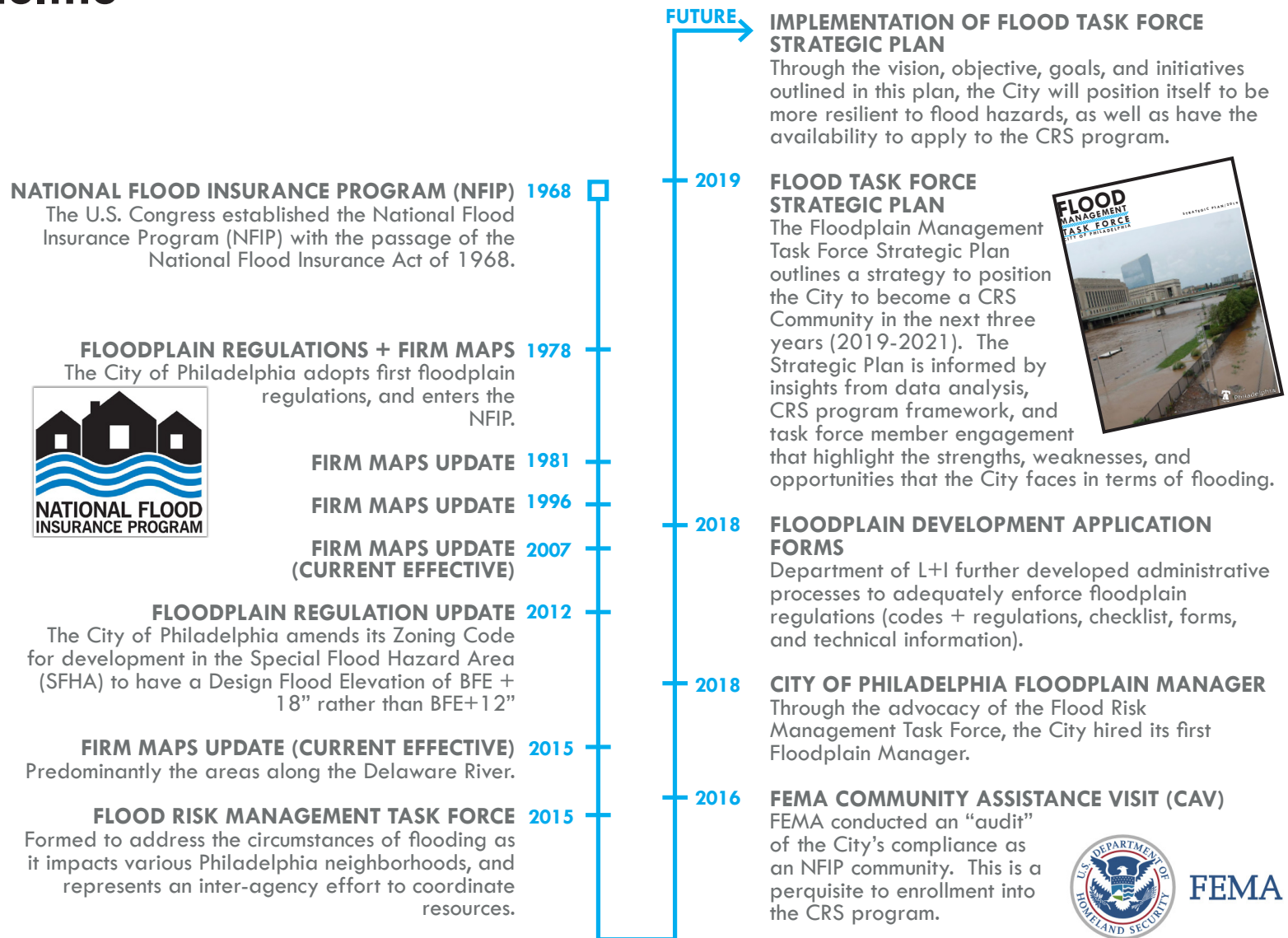
Background

The City of Philadelphia's Flood Risk Management Task Force (FRMTF) is a **coordinated approach to flood risk management across local government**. The formation of the FRMTF followed the American Society of Civil Engineer's (ASCE) Call for National Flood Risk Management Strategy (2014), which in the wake of Hurricane Katrina and other catastrophic storms, urged all levels of government in the United States to **develop and align sustainable flood risk management strategies**. Today the FRMTF is comprised of more than 15 City departments/agencies as well as state and federal partners with the goals of providing **public information, mapping & regulations, flood damage reduction, and flood preparedness**.

FLOOD RISK MANAGEMENT TASK FORCE

Background

History - timeline



FLOOD RISK MANAGEMENT TASK FORCE

Participants

PROGRAM ADVISORY BOARD

- Department of Licenses + Inspections (L+I)
- Department of Parks and Recreation (PPR)
- Office of Emergency Management (OEM)
- Office of Transportation, Infrastructure & Sustainability (OTIS)
 - Office of Sustainability (OOS)
 - Philadelphia Water Department (PWD)
- Philadelphia City Planning Commission (PCPC)

DECISION MAKERS

- Department of Commerce (DC)
- Department of Public Property (DPP)
- Law Department (LD)
- Mayor's Office - Grants (MO)
- Office of Public Health (OPH)
- Philadelphia Redevelopment Authority (PRA)
- Streets Department (PSD)
- Office of Risk Management (ORM)

ADVISORS

UTILITIES/TRANSPORTATION

- PECO
- PGW
- SEPTA
- Veolia

COORDINATORS

STATE/FEDERAL AGENCIES

- Department of Environmental Protection (DEP)
- National Weather Service (NWS)
- Federal Emergency Management Administration (FEMA)
- U.S. Army Corps of Engineers (USACE)
- PA Emergency Management Agency (PEMA)

TECHNICAL ASSISTANCE

- **PUBLIC ADVISORY COMMITTEE**
- **NON-PROFIT ORGANIZATIONS**
- **PRIVATE INDUSTRY**

COLLABORATION

STRATEGIC PLAN

Background

In 2018, members of the FRMTF initiated a strategic planning process to map out the direction and priorities for the FRMTF over the next few years. The Flood Management Program (FMP) is the proposed outcome of the strategic plan. Establishing this program will ingrain nationally recognized flood management into the City's core functions while creating an accessible program for City residents, businesses, developers, and partners around flood resiliency.

FRMTF
FLOOD RISK MANAGEMENT TASK FORCE
CITY OF PHILADELPHIA

DRAFT

STRATEGIC PLAN/2019



STRATEGIC PLAN

S.W.O.T Analysis

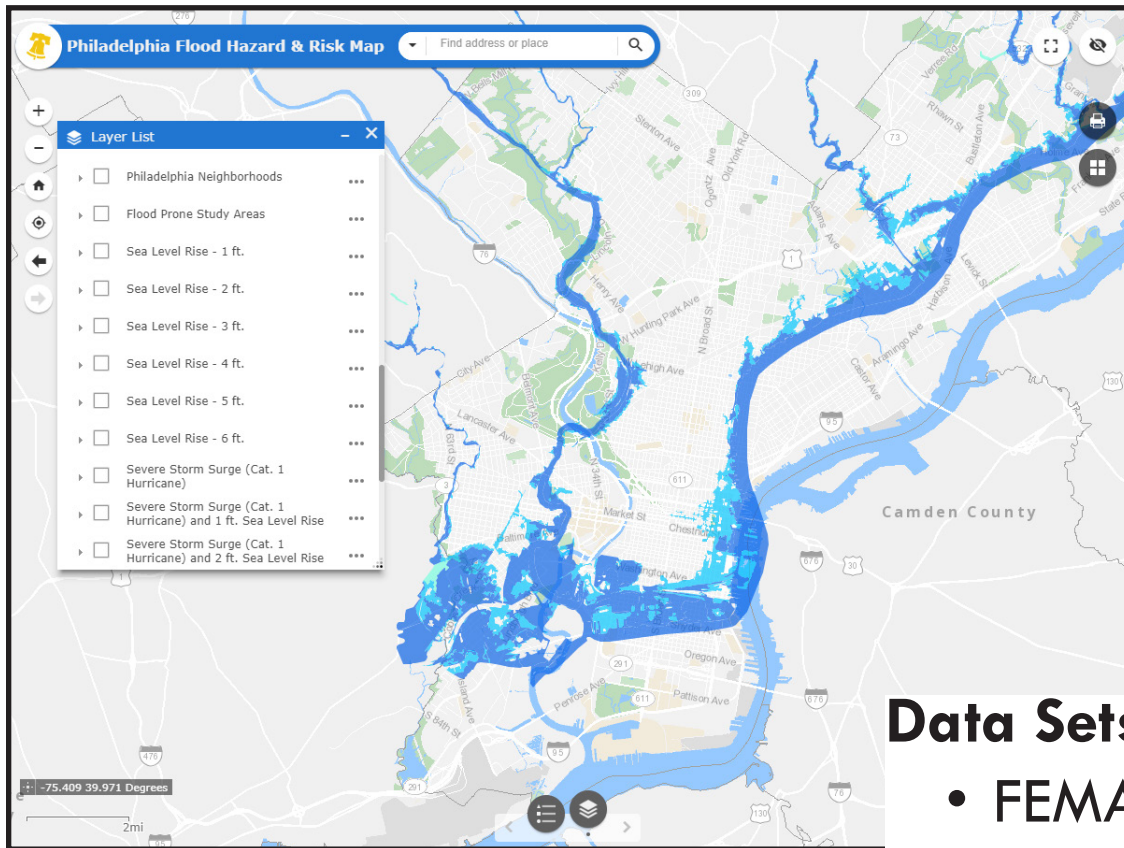
Key findings:

- Need “leadership” buy-in
- Repetitive loss properties
- Higher regulations
- Public outreach lacking
- CRS participation
- Need to map and regulation non-FEMA flood areas

Topic	S	W	O	T	S.W.O.T ANALYSIS
Collaboration	X				Assessment
Staffing			X		
Capacity		X			Build upon the Flood Risk Management Task Force relationships and networks
Governance	X	X	X		Without designated staff, the Task Force needs to rely on staff with other tasks/responsibilities
Decision making	X	X	X		Although the Task Force brings together a lot of capacity with a variety of departments, and should assign dedicated staff with the appropriate expertise or decision-making authority to consistently participate in the task force.
City Administration/ City Council		X	X		Existing executive order and MOU are written loosely to allow flexibility, but also restrict the impact of the Task Force's capacity
Expertise				X	Without formalized by-laws and/or charter the Task Force struggles with formalizing comments/recommendations regarding floodplain development
Existing Projects	X		X		Without leadership's "buy-in", the goals of the task force are not enforced by City vision
Codes/regulations	X	X	X		Utilize existing staff expertise to complete projects/programs
Public Outreach		X	X		Coordinate projects, align goals, and fill gaps
Education		X	X	X	Enhance codes/regulations to achieve aspirations of Task Force
Mitigation projects		X	X		Develop public outreach plan to clearly communicate flood information to a variety of audiences
Preparedness		X			Establish an education program for a variety of audiences, based on a public outreach plan
Messaging	X		X		Increased staffing/organizational capacity is needed to coordinate, implement and track flood management projects identified in City plans, such as the Hazard Mitigation Plan.
Mapping - inventory		X	X		Build upon the ReadyPhiladelphia and ReadyCommunity programs
Mapping - risk maps	X		X		Without coordinated messaging across departments, flood messaging can get convoluted and misunderstood
		X		X	Build upon the interactive mapping developed during strategic planning workshops
				X	Non-mapped known flood areas as well as maps based on older data can illustrate a lesser risk than what is known by the City

STRATEGIC PLAN

Data



DATA SETS:

- FEMA FIRM layers
- Sea level rise & severe storm
- Repetitive Loss Properties
- NFIP coverage
- City-owned properties
- Critical facilities
- High Risk facilities
- Historic Designation

Data Sets

- FEMA (repetitive loss)
- Sea Level Rise + Severe Storm
- City-owned buildings/infrastructure
- 311 Reports
- Police/Fire water emergencies

STRATEGIC PLAN

Components + Goals = Outcome

COMPONENTS + GOALS

PUBLIC INFORMATION

Create a variety of communication tools to promote education around flood hazards.

MAPPING + REGULATIONS

Develop higher standards and risk mapping for flood hazards.

FLOOD PREPAREDNESS

Prioritize the need to address a variety of flood concerns.

FLOOD DAMAGE REDUCTION

Enhance the City's resiliency to flooding through mitigation.

STRATEGIC PLAN

Initiatives

PUBLIC INFORMATION

Create a variety of communication tools to promote education around flood hazards.

EDUCATION

- Guides
- Courses
- Training

TECHNICAL ASSISTANCE

- Workshops
- One-on-one

OUTREACH

- Website
- Newsletter
- Social media
- Press releases
- Public meetings
- Conferences
- Public advisory/stakeholder committee

ADVOCACY

- Disclosure
- Notification

MAPPING + REGULATIONS

Develop higher standards as well as adaptable mapping.

DEVELOPMENT SERVICES

- Pre-application consultation
- Training
- Permits
- Inspections

CODES/REGULATIONS

- Zoning
- Building
- Plumbing
- Stormwater (PWD lead)

MAPPING - flood hazard areas

- FIRM maps
- Sea Level Rise/Inundation
- Community identified flood hazards (existing infrastructure related)

MAPPING - planning/analysis

- Public assets/infrastructure
- Repetitive Loss Properties
- Historic
- Insurance

FLOOD PREPAREDNESS

Prioritize the need to address a variety of flood concerns.

PLANNING

- OEM- Philadelphia Severe Weather Response Plan
- OEM- Emergency Operation Plan

DAMS/LEVEES

- Maintenance
- Inundation mapping

FLOOD WARNING

- Pre-storm event protocol

OEM - ReadyPhiladelphia

- ReadyPhiladelphia
- ReadyCommunity Program

NATIONAL WEATHER SERVICE (NWS)

FLOOD DAMAGE REDUCTION

Enhance the City's resiliency to flooding through mitigation.

PLANNING

- Repetitive Loss Properties
- Comprehensive Plans
 - Open space/parks
 - Land-use
- OEM- Hazard Mitigation Plan
- OEM- Recovery Planning
- OOS- Growing Stronger: Toward a Climate-Ready Philadelphia

Philadelphia Water Department

OFFICE OF WATERSHEDS

- Watershed Protection
- Watershed Monitoring & Modeling
- Climate Change Adaptation

PLANNING AND RESEARCH

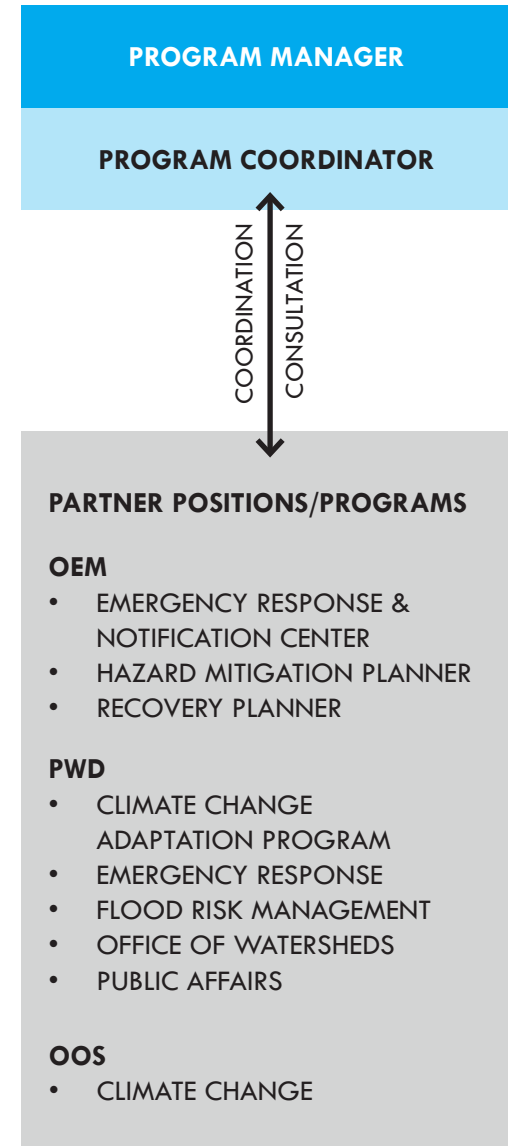
- Capital Projects
- Coordination with Streets Dept.
- Storm Flood Relief Planning

STRATEGIC PLAN

Components + Goals = Outcome

OUTCOME

The Flood Management Program (FMP) is the proposed outcome of the Flood Risk Management Task Force's (FRMTF) strategic plan. Establishing this program will ingrain flood management into the City's core functions, while creating an accessible program for City residents, businesses, developers, and partners around flood resiliency. Through creating the City's FMP, the City can choose to enroll into the CRS program by documenting its program initiatives, to reap the NFIP insurance benefits offered by CRS.



Program Structure Meetings

Keys to success:

- Collaboration + Relationship building
- Point of contact
- Frequency
- Organization
- Incremental wins

Work Groups:

- Public Information
- Flood Preparedness
- Flood Damage Reduction
- Mapping+Regulations

FRMTF
FLOOD RISK MANAGEMENT TASK FORCE
CITY OF PHILADELPHIA

AGENDA

9/25/2019 11:00 AM | Innovation Lab (1401 JFK - 16th Floor)

Please see SharePoint webpage for more details. For those that cannot make it in person (preferred) please call in:
Join the call: <https://www.uberconference.com/llicodes>
Optional dial in number: 215-720-1828 Pin: 41182 - must use Google Chrome as browser

AGENDA ITEMS	PRESENTER	TIME ALLOTTED
Type of meeting Facilitator Note taker	Q3 2019 Josh Lippert, Chair To be determined	
<input type="checkbox"/> Floodplain Manager Update - General <ul style="list-style-type: none"> • SharePoint + FRMTF@phila.gov • Venice Island LOMR • Development in SFHA <ul style="list-style-type: none"> ◦ New process/policies • CAV update • Conference Lunch n' Learn Report out 	Josh	1.5mins
<input type="checkbox"/> Adaptation Planning/CAWG integration with FRMTF	Josh / Saleem	5mins
<input type="checkbox"/> FRMTF Work Group Reports <ul style="list-style-type: none"> • Public Information • Mapping + Regulations • Flood Damage Reduction • Flood Preparedness 	Saleem	5mins
<input type="checkbox"/> Valley Green Inn: Climate Resiliency Workshop - Report + Next Steps	Josh + Group Members	5-10mins each
<input type="checkbox"/> PPFPM Conference Report	Josh + John G.	5mins
<input type="checkbox"/> NWS - Lower Schuylkill Tour Report	Sue Patterson	10mins
<input type="checkbox"/> Grants + Next Steps <ul style="list-style-type: none"> • CTP: Eastwick A Zone Re-mapping • USACE: Eastwick Repetitive Loss Planning • USACE: Critical Infrastructure Planning • PA DEP: Coastal Grant - Projects? • FEMA Grants - Projects? 	Josh + Jason Miller	5mins
<input type="checkbox"/> 3min Speed Round of Report out's - "Flash Flood Round"	All	1.5mins
<input type="checkbox"/> Announcements	All	As time allows

Program Structure Organization

SharePoint

- Easy Access to all FRMTF files

The screenshot displays the SharePoint interface for the Flood Risk Management Task Force (FRMTF) of the City of Philadelphia. The page title is "Flood Risk Management Task Force". The left navigation pane includes links for Home, Meetings, Contacts/Correspond..., Governance, Work Groups, Mapping + Data, Strategic Plan, Grants/Projects, Community Rating Sy..., Private Development, DCED/PA State Floodp..., FEMA, and C40 - Urban Flooding. The main content area features a news article titled "Flooding in the NEWS" with a sub-heading "+ Add". The article content includes "Disclosures for home-buyers in the floodplain - Houston" by Joshua Lippert on August 29, and "At Scotland's beach airport, the runway disappears at high tide | CNN Travel" by Joshua Lippert on August 26. A calendar on the right shows upcoming events: "PA Floodplain Managers Conference - HOLD" on Tuesday, September 10, 8:00 AM in Harrisburg PA, and "HOLD Valley Green Inn - Mitigation Charrette" on Tuesday, September 17, 8:00 AM. The top of the page shows the SharePoint logo, search bar, and various utility icons.

IMPLEMENTATION

Licenses + Inspections Website

Department of Licenses & Inspection

Topics Businesses Residents Visitors Government

Licenses Permits & Certificates Zoning Appeals Codes and Regulations Floodplain Management

Phila > L & I > Floodplain Management

Floodplain Management

Floodplain Development

The Flood Protection Forms below must be submitted with all Zoning and Building Permit applications in the Special Flood Hazard Area (SFHA) and/or floodplain.

- Flood Protection Acknowledgement Form – ZONING (FP-Z)**
 - For zoning applications, the acknowledgement of all applicable floodplain regulations in the City of Philadelphia's Zoning Code as well as building regulations (IRC 2015, IBC 2018, Administrative Codes, ASCE 24, Appendix G) associated with development site located in the Special Flood Hazard Area (SFHA).
- Flood Protection Form – EXISTING BUILDINGS (FP-EX)**
 - For building permit applications of an existing building(s) in the Special Flood Hazard Area (SFHA) being renovated/alterd and/or an addition being constructed. The form serves to determine whether the development will constitute a substantial improvement, as well as establish which floodplain regulations apply.
- Flood Protection Form – GENERAL (FP-G)**
 - For building permit applications to confirm all development meets the City of Philadelphia's Zoning Code as well as additional building regulations (IRC 2015, IBC 2018, Administrative Codes, ASCE 24, and Appendix G) associated with a development site located in the Special Flood Hazard Area (SFHA).
- Flood Protection Form – EZ PERMITS (FP-EZ) - Coming Soon**
 - For building permit applications to confirm all development meets the City of Philadelphia's Zoning Code as well as additional building regulations (IRC 2015, IBC 2018, Administrative Codes, ASCE 24, and Appendix G) associated with a development site located in the Special Flood Hazard Area (SFHA).
- Flood Protection – KEY TERMS**
 - Definitions for terms found in the above forms.

The Code Bulletin: Development in Special Flood Hazard Areas serves to address recommendations from FEMA as they relate to the enforcement of code provisions through the issuance of zoning and building permits by clarifying and improving upon the collection of compliance documentation regarding development in the floodplain.

www.phila.gov/li/Pages/FloodplainManagement.aspx

Department of Licenses & Inspection

Topics Businesses Residents Visitors Government

Business Construction Tenants & Landlords

Licenses Permits & Certificates Zoning Appeals Codes and Regulations Floodplain Management

Phila > L & I

Licenses and Inspections

Apply

Common Licenses and Permits

Find Licensed Contractors

Search eCLIPSE for Business Licenses

Contact an L&I Representative Regarding Permit or License Applications

Report License and Permit Violations to 311 & Submit Supplemental Info.

INTRODUCING eCLIPSE

Get Started Today Using Your Online Power Tools

NOW YOUR BUSINESS

Obtain New or Renew Business License Online - It's as easy as 1,2,3...

- Log on using your email address
- Link existing Activity Licenses
- Apply, Pay and Print online!

CLICK AWAY. Ready to Get Started

What's New

- Amended Permit Process
- Read the Latest Issue of the L&I e-Newsletter
- We Need Your Input!
- New EZ Sign Standards
- New Excavation Protection Requirements
- Updates to Rough-In Permits
- Requesting Building Plans
- Wall Bracing Plan Requirements

Newsletter

Permit Application Tracker

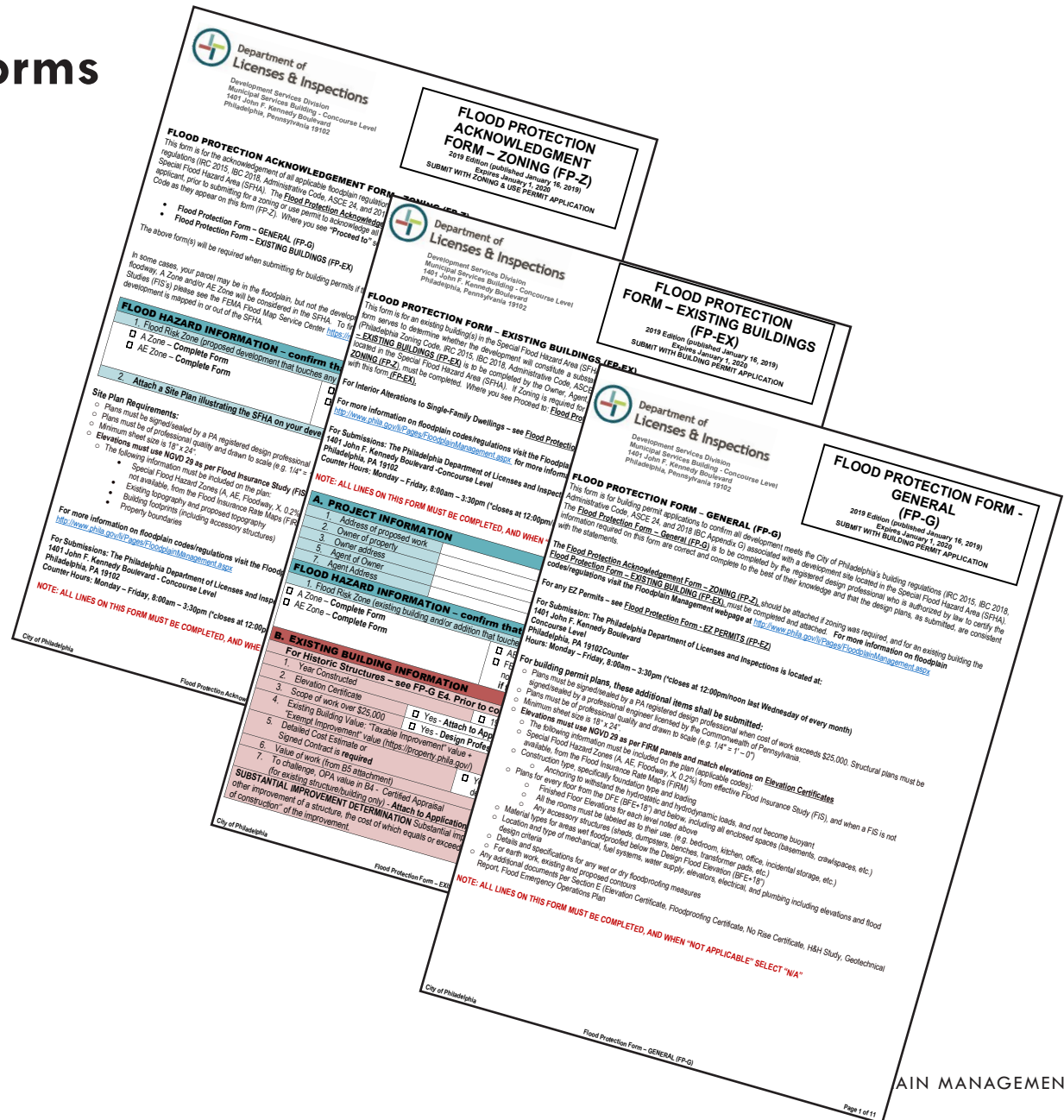
START RIGHT A GUIDE TO L+I SERVICES

IMPLEMENTATION

Technical Forms + Guides

Development Services - Forms

- Zoning
- Existing Buildings
- Building Permits



IMPLEMENTATION

Training

1 Hour Training - Development Services

- Background
- NFIP
- FEMA Maps
- Zoning/Building Codes
- Elevation Certificates
- LOMC's
- Resources

Audience

- Design Professionals
- City Staff
- Developers
- Real Estate Professionals



IMPLEMENTATION

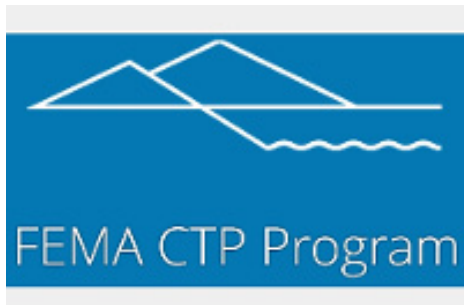
Grants/Partnerships

Grant Projects

- Historic Flood Story Map
- Eastwick A Zone Remapping
- Eastwick Repetitive Loss Planning
- Critical Infrastructure Mitigation Planning

Partnership Projects

- Valley Green Inn Flood Resilience Workshop
- Manayunk Historic Business District Mitigation + Preparedness Planning
- I-95/Delaware Ave Extension Resiliency Planning
- Coastal Effects of Climate Change in Southeastern PA



**US Army Corps
of Engineers®**



Pennsylvania
Historical & Museum
Commission

IMPLEMENTATION

Work Groups/L+I Work

Public Information

- Graphics
- 311 knowledge base scripts
- Flood Awareness Month (March)
- Renter notification

Flood Damage Reduction

- City Infrastructure Resiliency Guidelines
- Leadership flood risk memo

Flood Preparedness

- Flood forecasting

Mapping + Regulations

- Higher Standards - Codes/regulations
- Inundation mapping

L+I: Development Services

- Forms/Guides
- Training
- Auditing
- Policy/Interpretations/Process

THANK-YOU!

Questions and/or comments?

**JOSH LIPPERT, CFM
FLOODPLAIN MANAGER
JOSHUA.LIPPERT@PHILA.GOV**