



Division of Design and Construction



Environmental Planning

# *Civil Engineers' Workshop*



Division of Design and Construction



Environmental Planning

# *Civil Engineers' Workshop*





# Division of Design and Construction



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# ***Better Environmental Coordination Equals Better Projects***

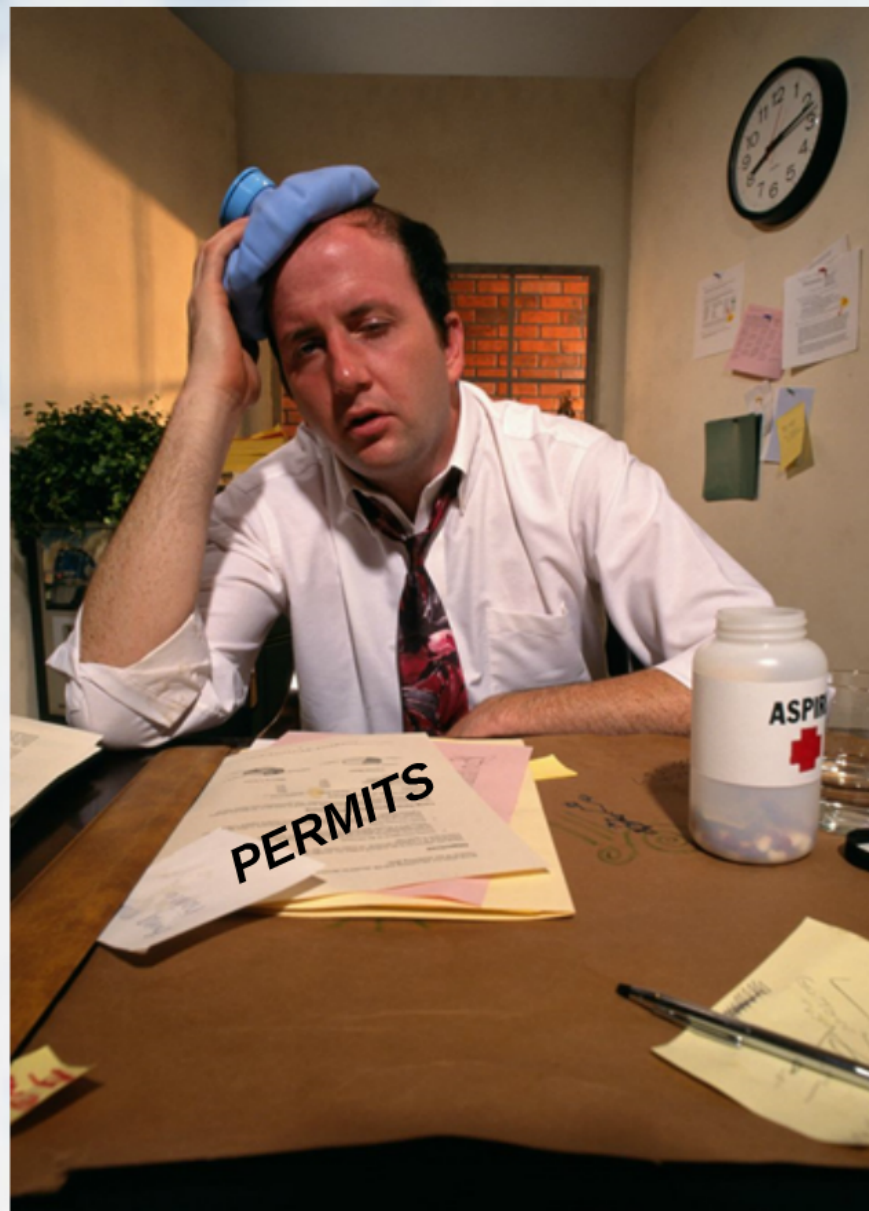
## **Agenda**

- ***DCS Environmental Policies and Procedures for DCS Projects***
- ***Local School Building Projects***
- ***New General Permit for Stormwater for Construction***
- ***New FEMA Coastal Flood Maps and 500-Year Elevations***
- ***Extreme Precipitation Discussion & Adaptation Measures***
- ***Open Discussion - ideas for better coordination***

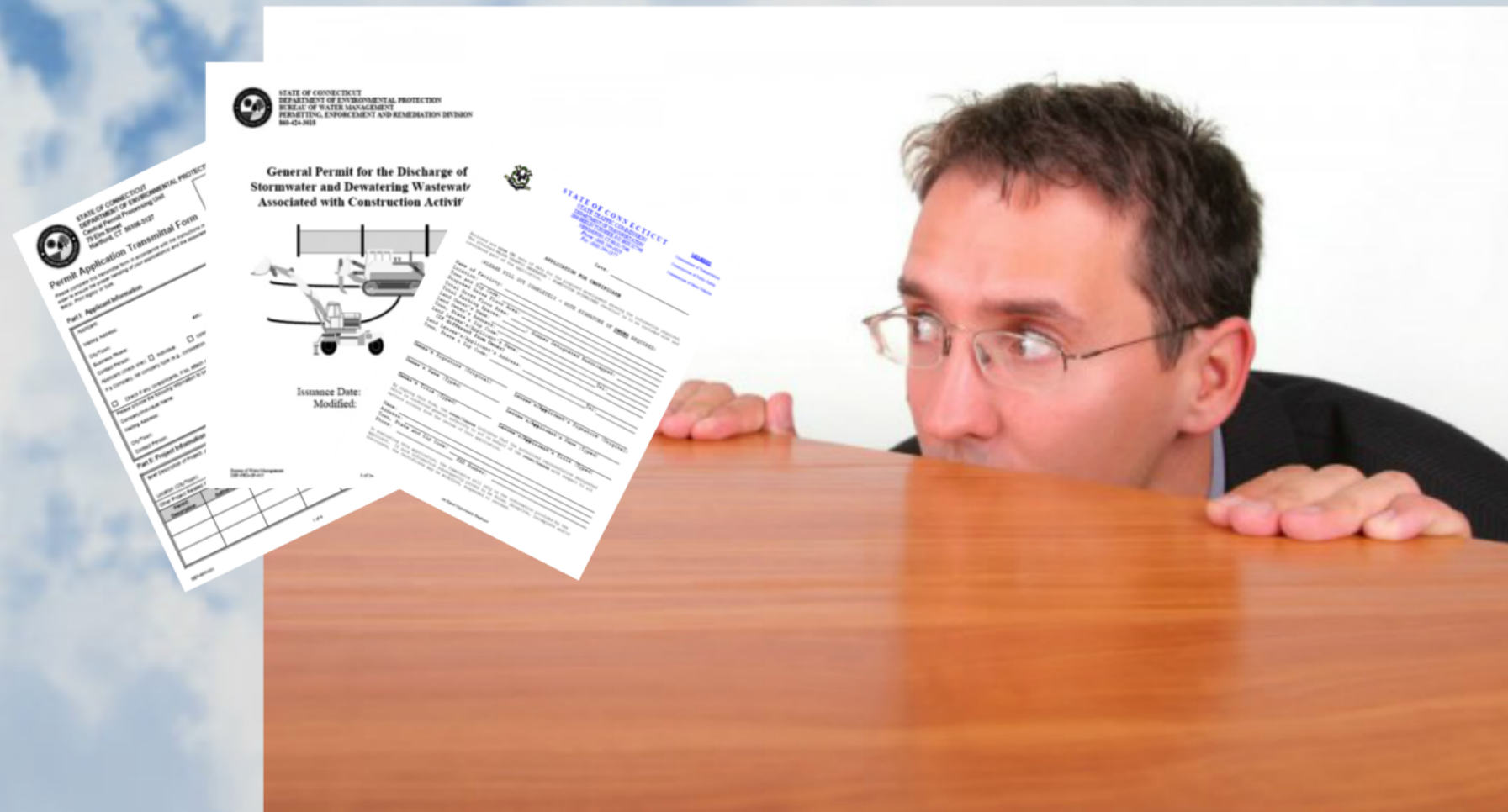


## *DCS Environmental Policies and Procedures*

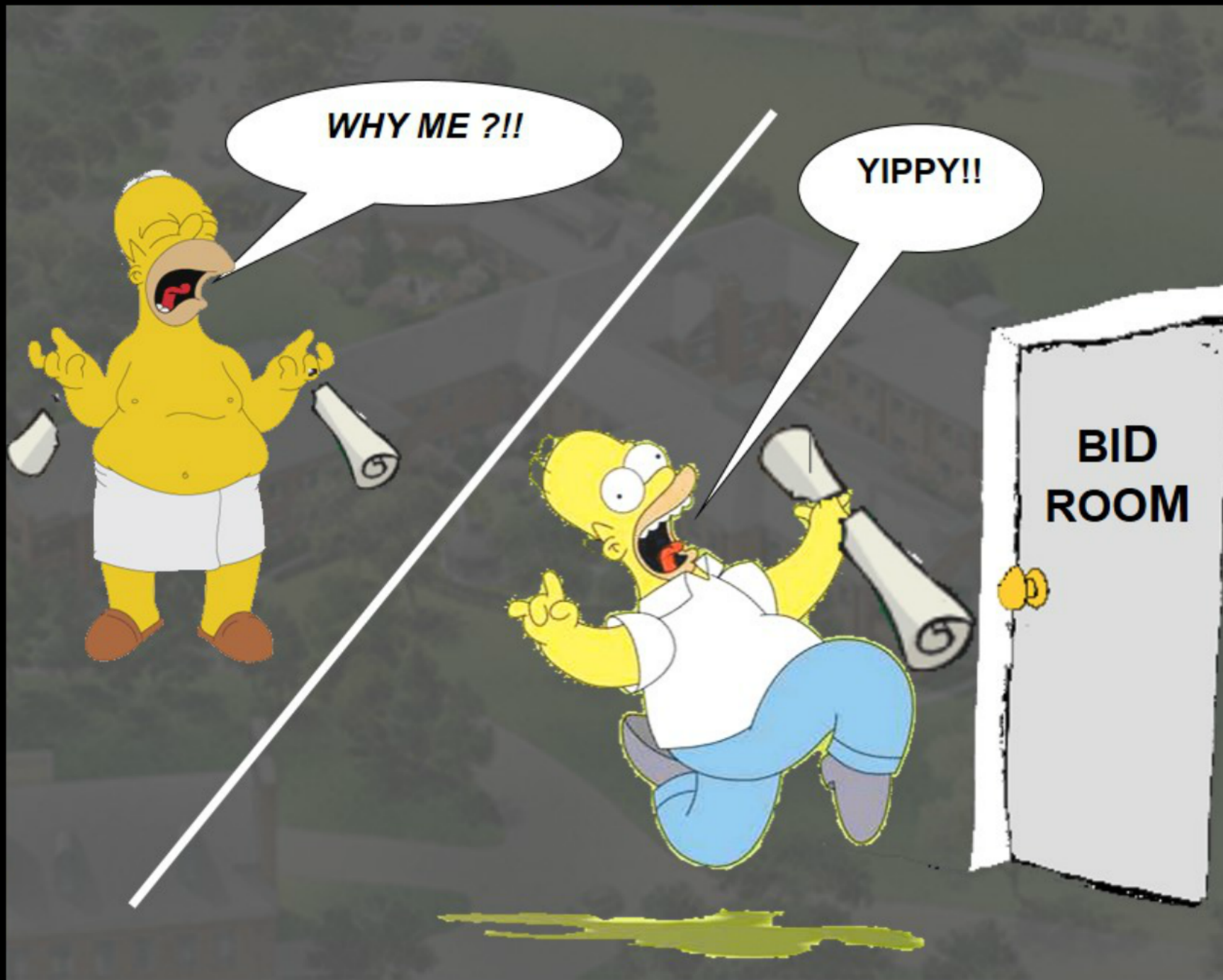
*One of our main goals is to take the  
**HEADACHE** out of the Environmental Process!!*



# AND...the **FEAR** out of **Permits**!!







- Two Additional Key Points**
1. Soil Contamination: coordinate with geotech work for soil testing and identify areas for testing.
  2. Section 2.3.6 Boundary and Topographic Survey Requirements: submit completed surveys to DCS Environmental Planning for GIS integration.

# CONSULTANTS PROCEDURE MANUAL



## Consultants Procedure Manual Highlights

- All environmental discharge standards
- All environmental standards for individual and building quality
- All environmental standards for quality
- Other Best Management Practices that meet LIDEP, State, or equivalent, standards and check for consistency with
- All applicable and appropriate design standards and standards from the DCEP and Connecticut Statewide Agency - DCEP Design and Standards
- All applicable and appropriate standards and design for the construction management framework for the construction design phase

## DESIGN, CONSTRUCTION AND OPERATIONS PHASES AND METHODS

- Review the DCEP Design and Standards Framework for consistency with the DCEP Design and Standards Framework
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Prepared by

## STATE OF CONNECTICUT DEPARTMENT OF PUBLIC WORKS

Approved by: Raeanne V. Curtis Date: 10/14/2008  
Raeanne V. Curtis, Commissioner

040M - 03-OCT08-PMT

COV

111 Total pages




## Consultant Procedure Manual Highlights

### ***2.3.2 Stormwater Discharge Standards***

- 2002 Connecticut Guidelines for Soil Erosion and Sediment Control
- 2004 Connecticut Stormwater Quality Manual
- Other Best Management Practices that meet LEED® Silver, or equivalent, standards and criteria for sustainable site design.
- A/E coordinate and accommodate drainage analysis and requirement needs between the DEEP and the Office of State Traffic Authority – DOT Drainage and Hydraulics.
- A/E prepares and submits the methods and design for the stormwater management facilities with the schematic design phase.

### ***2.3.5 Permits, Certifications and Approvals Checklist and Policies***

 Prezi  
• Makes it clear DCS's policy is that a project cannot go to bid until the necessary permits are obtained.

- A/E coordinate and accommodate drainage analysis and requirement needs between the DEEP and the Office of State Traffic Authority – DOT Drainage and Hydraulics.
- A/E prepares and submits the methods and design for the stormwater management facilities with the schematic design phase.

### ***2.3.5 Permits, Certifications and Approvals Checklist and Policies***

- Makes it clear DCS's policy is that a project cannot go to bid until the necessary permits are obtained.
- Requires the Checklist to be submitted with consultant's proposal and revised and resubmitted with each design submittal.
- All DEEP Inland Water Resources Division and OSTA correspondences and applications to be coordinated with the DCS Supervising Environmental Analyst.
- Prior to construction permits need to be obtained during design development.
- The consultant shall not submit the project for review or "approval" to any municipal land use commission or board, unless the DCS PM approves such review; however, such review is only a courtesy, since state actions are exempt from local approvals, **EXCEPT** for demolition permits.



board, unless the DCS PM approves such review; however, such review is only a courtesy, since state actions are exempt from local approvals, **EXCEPT** for demolition permits.

## Permits, Certifications and Approvals Checklist Highlights

- On DCS main web site – always download the latest version ([www.ct.gov/dcs](http://www.ct.gov/dcs))



# New Checklist Updated August 2013

State of Connecticut



Division of  
Construction Services

3030

## Checklist for Permits, Certifications, and Approvals

Page 1 of 11

<b>DCS Project Manager:</b> _____	
<b>DCS Project No.:</b> _____	<b>Date:</b> _____
<b>Project Title</b> _____	
<b>Facility/Address::</b> _____	
<b>Anticipated Bid Date</b> _____	

**INSTRUCTIONS**

**Checklist:** This Checklist shall be submitted with the A/E Consultant's ("Consultant") proposal and revised and resubmitted with each Preconstruction Phase Submittal to the DCS Project Manager for all DCS Projects. Copies of the Checklist are to be sent to DCS Environmental Planning and DCS Code Services. The Consultant shall submit drafts of all applications as part of the Design Development Phase Submission.

See Permit Evaluation and Letter Instructions (3030.1) at the end of the Checklist for additional information, including additional Checklist Instructions.

The Consultant must select the appropriate answer from the dropdown menus for each permit, certification, and approval.

<b>Project Delivery Method:</b>	<input type="checkbox"/> Design-Bid-Build	<input type="checkbox"/> Design-Build	<input type="checkbox"/> CMR
<b>Submitted With:</b>	<input type="checkbox"/> Proposal Phase <i>(Preliminary Applicable Review)</i> <input type="checkbox"/> SD Phase <input type="checkbox"/> DD Phase <i>(Include Completed Drafts Of All Applicable Permit Applications)</i> <input type="checkbox"/> CD Phase <input type="checkbox"/> Bid Phase <input type="checkbox"/> Environmental Phase		
<b>Project Type:</b> <i>(Check All Applicable to this Project)</i>	<input type="checkbox"/> New <input type="checkbox"/> Major Renovation	<input type="checkbox"/> Addition <input type="checkbox"/> Minor Renovation	
<b>Other Information:</b>			
Existing Gross Square Footage (GSF): _____		No. of Existing Parking Spaces: _____	
Proposed New (GSF): _____		No. of Proposed New Parking Spaces: _____	
Proposed GSF To Be Demolished: _____		No. of Existing Parking Spaces To Be Demolished: _____	

AGENCIES / PERMIT	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status



## Permanent Utility Services

The Consultant is required to research, as applicable, potential connection fees associated with each permanent utility service provider.

Date Of Agreement	Permanent Utility	Connection Needed?	Potential Connection Fees	Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
	Cable TV					
	Closed Circuit TV <i>(Agency System)</i>					
	Electric <i>(NU, UL etc.)</i>					
	Fire Alarm <i>(Connected to Fire Dept.)</i>					
	Gas <i>(CNG, YES etc.)</i>					
	Security Systems					
	Septic <i>(DPH/DEEP)</i>					
	Sewer <i>(Town, MDC, agency-owned systems, etc.)</i>					
	Telephone					
	Water Supply <i>(Utility)</i>					
	Other:					
OTHER PERMITS						

### **ADDITIONAL CHECKLIST INSTRUCTIONS:**

For DCS Design-Bid-Build Projects and CMR Projects, the Consultant (or in the case of a Design-Build Project, the design-build firm) shall ensure all the required permits, certificates, and/or approvals are obtained for the project. The Consultant shall review all prior environmental documents for the project to assist in determining required permits and/or mitigation measures.

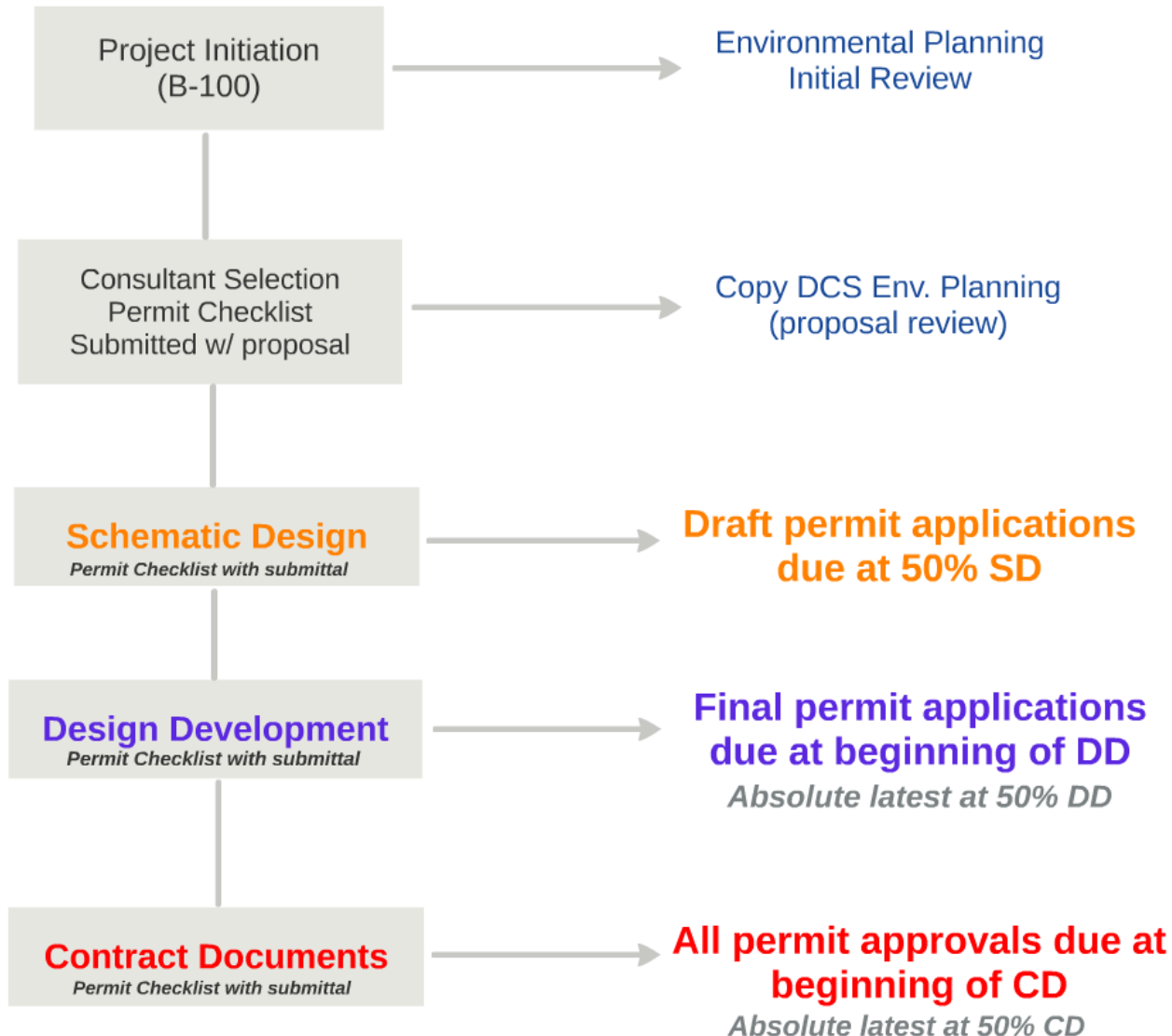
➔ **Permit Letter:** The Consultant shall submit a "Permit Letter" to DCS Environmental Planning documenting that all applicable permits (not code related) have been reviewed, and that the project has been designed in accordance with applicable permits (e.g., DEEP General Permits for Food Preparation Establishment Wastewater and/or Minor Boiler Blowdown Wastewater). See the Permit Evaluation and Letter Instructions (3030.1) at the end of the Checklist for additional information.

➔ **Permit Closeout Binder:** Once all environmental permits have been evaluated, submitted, registered, and/or approved, the Consultant shall submit a Permit Closeout Binder to DCS Environmental Planning, including, but not limited to, the Permit Letter, applicable calculations, operational requirements as per applicable permits, and all associated permits.

# Project Permitting Process Flow Chart

## PROJECT PHASES

## ACTION







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### Two Additional Key Points

1. Soil Contamination: coordinate with geotech work for soil testing and identify areas for testing.
2. Section 2.3.6 Boundary and Topographic Survey Requirements: submit completed surveys to DCS Environmental Planning for GIS integration.

# CONSULTANTS PROCEDURE MANUAL

# ***Local School Building Projects***

- ***Office of School Facilities (OSF) (formerly BSF)***

- ***Flood Management Certifications***



- ***Contaminated Soil***



- ***Site Selection / Site Approval***



- ***Consultant Selection for OSF Projects***



# OSF Supplements to the Guidelines

It shall be the responsibility of the design professionals to thoroughly investigate the requirements of the Connecticut General Statutes regarding Flood Management Certification (FMC). If after their investigation(s) it is determined that certification is **not required**, the design professionals shall submit a *Flood Management Certification Notice letter* to the DCS/BSF at the first plan completion test meeting (PCT).

If after their investigation(s) it is determined that FMC is required, the design professionals shall submit a Flood Management Certification Notice letter to the BSF at the first plan completion test meeting (PCT), indicating that certification is required. The design professionals shall obtain (on-line) the necessary application forms (and instructions to complete them) from DEEP/IWRD.

## Department of Construction Services (DCS) Bureau of School Facilities (BSF)

### FLOOD MANAGEMENT CERTIFICATION PROCESS

Any school construction project which adds impervious area to the site (including building area, pavement, sidewalks, etc.), or removes vegetated areas (wooded areas) to create open fields, or changes the grade slopes, may be required to submit an executed application to the State Department of Energy and Environmental Protection Inland Water Resources Division (DEEP/IWRD) for certification (at DEEP website).

It shall be the responsibility of the design professionals to thoroughly investigate the requirements of the Connecticut General Statutes regarding Flood Management Certification (FMC). If after their investigation(s) it is determined that certification is not required, the design professionals shall submit a Flood Management Certification Notice letter to the DCS/BSF at the first plan completion test meeting (PCT).

If after their investigation(s) it is determined that FMC is required, the design professionals shall submit a Flood Management Certification Notice letter to the BSF at the first plan completion test meeting (PCT), indicating that certification is required. The design professionals shall obtain (on-line) the necessary application forms (and instructions to complete them) from DEEP/IWRD.

The application shall be prepared with the **Department of Construction Services** as the **applicant**.



# Any project activity\* within a FEMA designated floodplain



Horizontal / Mapped

**TABLE 11 - TRANSECT DATA – continued**

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level <sup>1</sup>	Zone	Base Flood Elevation (Feet NAVD88) <sup>2</sup>
	10- percent- annual- chance	2- percent- annual- chance	1- percent- annual- chance	0.2- percent- annual- chance	1- percent- annual- chance		
LONG ISLAND SOUND – CONTINUED							
Entire shoreline within Madison							
Transect 51	6.1	8.0	9.1	13.1	11.2	VE	13-17
						AE	11-13
Transect 52	6.0	7.9	9.1	13.3	11.8	VE	14-18
						AE	12-14
Transect 53	6.0	7.9	9.1	13.5	12.0	VE	14-18
						AE	12-14
Transect 54	5.9	7.9	9.1	13.7	11.7	VE	19.0
						AE	*
Transect 55	5.9	7.9	9.1	13.8	11.1	VE	13-17
						AE	12-13

<sup>1</sup> Data not available.

Vertical (based on elevation)

# activity

## *\* Activity vs. Critical Activity*

Sec. 25-68b(4)

“Critical activity” means any activity, including, but not limited to, the treatment, storage and disposal of hazardous waste and the siting of hospitals, housing for the elderly, **schools** or residences, in the **.2 per cent floodplain** (500-YR) in which the commissioner determines that a slight chance of flooding is too great;



## ***OSF Supplements to the Guidelines (cont.)***















# Site Selection / Site Approval - EDO53 Form

Prior to submitting an EDO53 Form or seeking DAS Site Approval\*, the district's representative or the district's municipal planning department will need to assess whether the project would directly or indirectly impact environmental resources. In order for the district to complete the EDO53 Form, the following environmental mapping websites and the noted resources must be consulted and the findings documented on the EDO53 Form:

## FEMA Issued Flood Maps



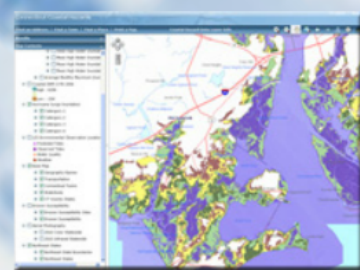
- 100-YR Floodplain
- 500-YR Floodplain
- Floodway Zones
- Coastal Hazard Zones

## Connecticut Environmental Conditions Online (UConn-CLEAR)



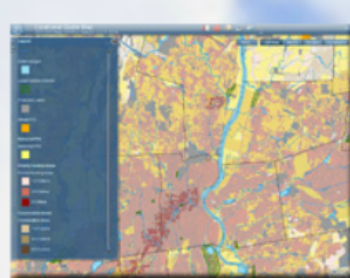
- Inland Wetlands Soils
- Natural Diversity Data Base Areas
- Critical Habitats

## Connecticut Coastal Hazards Viewer (UConn-CLEAR)



- Hurricane Surge Inundation
- Erosion Susceptibility Sites
- MHW Inundation
- MHW Inundation + 6 in
- MHW Inundation + 12 in
- MHW Inundation + 18 in
- MHW Inundation + 24 in
- MHW Inundation + 36 in
- MHW Inundation + 60 in
- MHW Inundation + 79 in

## State Plan of Conservation and Development Locational Guide Map (OPM)



- Protected Lands
- Local Historic Districts
- Undesignated Lands
- Priority Funding Areas
- Conservation Areas



STATE OF CONNECTICUT  
DIVISION OF CONSTRUCTION SERVICES  
Technical Services - Environmental Planning  
300 Capital Avenue, Room 402  
Hartford, Connecticut 06106

## ED053 SITE ANALYSIS FOR SCHOOL BUILDING PROJECTS (C.A.S. Rev. 10/06/13, 07/07/15)

### INSTRUCTIONS

The district is highly encouraged to coordinate and possibly arrange for a planning meeting prior to submitting a State grant-in-aid application for a School Building Project when site selection is involved, environmental resources may be impacted, and/or if the project may need State/Federal environmental permits or approvals. Should the project require construction within new areas of an existing school property or on a new site(s), then the district must obtain Site Approval from DAS. In cases where the district will seek an acquisition grant for a School Building Project, the district must fill out and complete the ED053 Form.

Prior to submitting an ED053 Form or seeking DAS Site Approval\*, the district's representative or the district's municipal planning department will need to assess whether the project would directly or indirectly impact environmental resources. In order for the district to complete the ED053 Form, the following environmental mapping websites and the noted resources must be reviewed and the findings documented on this ED053 Form.

- FEMA: <http://www.fema.gov>
- Environmental Conditions Online: <http://ctecap01.uconn.edu/advancedviewer>
- Coastal Hazards Viewer: <http://ctecap01.uconn.edu/coastalhazards>
- State Plan of Conservation and Development Locational Guide Map: <http://www.dcr.ct.gov/opm/gsm/index.html>

Additional information listed at the end of this form must also be submitted along with the completed ED053 form.

\* Site approval is required even if there is no acquisition grant involved and construction/disturbance is planned within other areas of the existing (school) property. The exception to this is if the project is a renovation or minor addition involving no acquisition.

### PROJECT INFORMATION

DISTRICT NAME: <input type="text"/>	FACILITY NAME AND ADDRESS: <input type="text"/>	STATE OF PROJECT NUMBER: <input type="text"/>
CONTACT PERSON & TELEPHONE NUMBER: <input type="text"/>	PROJECT DESCRIPTION (new construction, extension, or replacement, site acquisition grant etc.): <input type="text"/>	
IS THIS A REVISED SITE ANALYSIS? <input type="checkbox"/> YES <input type="checkbox"/> NO	HAS THE SUBJECT SITE ALREADY BEEN APPROVED BY THE STATE UNDER A SEPARATE SCHOOL BUILDING PROJECT? <input type="checkbox"/> YES <input type="checkbox"/> NO	
ARE MULTIPLE SITES BEING CONSIDERED? <input type="checkbox"/> YES <input type="checkbox"/> NO	IF YES, DATE OF APPROVAL: <input type="text"/>	
IF YES, PROVIDE THE NUMBER OF SITES: <input type="text"/>	HAS ANY STATE BONDING BEEN APPROVED? <input type="checkbox"/> YES <input type="checkbox"/> NO	
EXISTING STUDENT ENROLLMENT: <input type="text"/>	EXISTING PARKING SPACES: <input type="text"/>	
PROJECTED STUDENT ENROLLMENT: <input type="text"/>	PROPOSED NEW PARKING SPACES: <input type="text"/>	
EXISTING GROSS SQUARE FOOTAGE: <input type="text"/>	TOTAL PARCEL/SITE SIZE (AC.): <input type="text"/>	
PROPOSED DEMOLITION: <input type="text"/>	PROPOSED AREA FOR PROJECT (AC.): <input type="text"/>	
PROPOSED NEW GROSS SQUARE FOOTAGE: <input type="text"/>	DEVELOPABLE AREA (AC.): <input type="text"/>	

### SITE INFORMATION (check all that apply)

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) ISSUED FLOOD MAPS (<http://www.fema.gov>)

100-YR Floodplain:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
500-YR Floodplain:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Floodway:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Coastal Hazard Zones:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact

### CONNECTICUT ENVIRONMENTAL CONDITIONS ONLINE (UConn-CLEAR) (<http://ctecap01.uconn.edu/advancedviewer>)

Inland Wetland Soils:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Natural Diversity Data Base Area:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Critical Habitats:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact

### CONNECTICUT COASTAL HAZARDS VIEWER (UConn-CLEAR) (<http://ctecap01.uconn.edu/coastalhazards>)

Hurricane Surge Inundation:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	List the Highest Zone: <input type="text"/>
Erosion Susceptibility Sites:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Mean High Water (MHW) Inundation:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 6 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 12 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 18 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 24 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 36 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 60 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	
Merix Inundation + 79 in:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact	

### STATE PLAN OF CONSERVATION AND DEVELOPMENT LOCATIONAL GUIDE MAP (OPM) (<http://www.dcr.ct.gov/opm/gsm/index.html>)

Protected Lands:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Local Historic Districts:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Undesignated Lands:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Priority Funding Areas:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact
Conservation Areas:	<input type="checkbox"/> Direct Impact	<input type="checkbox"/> Indirect Impact	<input type="checkbox"/> No Impact

<input type="checkbox"/> MUNICIPAL OWNED PROPERTY	<input type="checkbox"/> DEVELOPED	<input type="checkbox"/> OTHER RESOURCES: <input type="text"/>
<input type="checkbox"/> PRIVATE PROPERTY	<input type="checkbox"/> VACANT	<input type="checkbox"/> OTHER RESOURCES: <input type="text"/>
<input type="checkbox"/> NEW SITE	<input type="checkbox"/> COASTAL BOUNDARY	<input type="checkbox"/> OTHER RESOURCES: <input type="text"/>

EXISTING LAND USE:  SURROUNDING LAND USES:

CURRENT LOCAL ZONING CLASSIFICATION:  IS A ZONE CHANGE REQUIRED FOR THE PROJECT? ☐ YES ☐ NO

IS THE PROXIMITY TO OTHER EXISTING SCHOOL FACILITIES ADEQUATE? ☐ YES ☐ NO ☐ UNDETERMINED

IS THE SIZE AND SHAPE ADEQUATE TO SUPPORT THE PROPOSED SCHOOL FACILITIES? ☐ YES ☐ NO ☐ UNDETERMINED

IS THE ACCESSIBILITY TO THE SITE ADEQUATE? ☐ YES ☐ NO ☐ UNDETERMINED

HAS THE PROJECT CONSIDERED DEMOGRAPHIC AND POPULATION TRENDS? ☐ YES ☐ NO ☐ UNDETERMINED

UTILITY SERVICES	AVAILABLE?	ADEQUATE?	COMMENTS
Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Sanitary Sewers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Electricity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Fire Services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>



# ***Consultant Selection for OSF Projects***

## **Questions and Discussion:**

1. How are District's selecting and awarding design contracts?
2. Low Bid Based or Qualifications Based Section (QBS)?
3. Grading and Drainage Design Responsibility?
4. What are some of the issues your firm has encountered?
5. Base Services?

# *Consultant Selection for OSF Projects*

## **Ideas Going Forward?**

- Prior to submitting a bid for consultant services, determine if there is a potential for any project activity\* within a FEMA designated floodplain. The civil engineer for the Design Team must determine floodplain impact based upon horizontal (mapped) and vertical (FIS elevation tables).
- If there are potential impacts and the District is selecting consultants through a low-bid process, then they should carve out significant regulatory tasks from the scope and fee (e.g. FMC, NDDDB, FEMA, etc.). In these cases **contact DCS Environmental Planning**, hopefully before the RFP is issued.
- In addition, if the District has NOT identified in the RFP a floodplain impact, but there would be, then **contact DCS Environmental Planning**.



## New General Permit for Stormwater for Construction

### Major Highlights

State  
Capital  
Projects

- **Locally Exempt** construction projects disturbing over 1 acre must submit a registration form and **Stormwater Pollution Control Plan (SWPCP)** to the DEEP.

OSF  
Projects

- **Locally Approvable** construction projects with a total disturbed area of **one to five acres** are not required to register with DEEP provided the development plan has been approved by a municipal land use agency and adheres to local erosion and sediment control land use regulations and the CT Guidelines for Soil Erosion and Sediment Control.
- Fee Increases (**No State Project waiver**, except that DEEP waives the fee for it's own bond-funded projects...)
- Sites 1 to <20 acres must be submitted to DEEP **sixty (60) days** prior to initiation of the construction activity.
- Sites greater than 20 acres or discharging to **tidal wetlands** and within **500 feet of tidal wetlands** or discharging to an **"impaired water"** resource must be submitted to DEEP ninety (90) days prior to initiation of the construction activity.

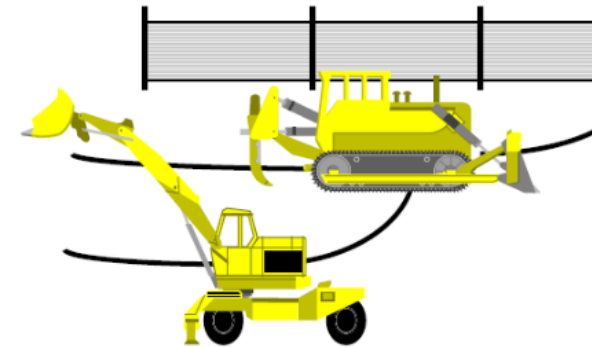


79 Elm Street • Hartford, CT 06106-5127

[www.ct.gov/deep](http://www.ct.gov/deep)

Affirmative Action/Equal Opportunity

### General Permit for the Discharge of Stormwater and Dewatering Wastewaters Construction Activities



Issuance Date: August 21, 2013

Effective Date: October 1, 2013

# Stormwater Pollution Control Plan

- Site Plan
- Site Description
- Construction Sequencing
- Control Measures
- Runoff Reduction and Low Impact Development (LID) Information
- Inspections
- Monitoring
- Contractors
- Impaired Waters

*the Plan shall include a description of the provisions for controlling the construction and post-construction stormwater discharges to these waters pursuant to subsection 5(b)(3) below.*





# Inspections

## Plan Implementation Inspections

Within the first 30 days following commencement of the construction activity on the site, the permittee shall contact: (1) the appropriate District; or (2) a qualified soil erosion and sediment control professional or a **qualified professional engineer to inspect the site**. The site shall be inspected at least once and no more than three times during the first 90 days to confirm compliance with the general permit and proper initial implementation of all controls measures designated in the Plan for the site for the initial phase of construction.



**DCS State Capital Projects - the Project's CE is being tasked the Implementation Inspections.**

The Permittee (GC or CMR) will be responsible for all subsequent (routine) inspections

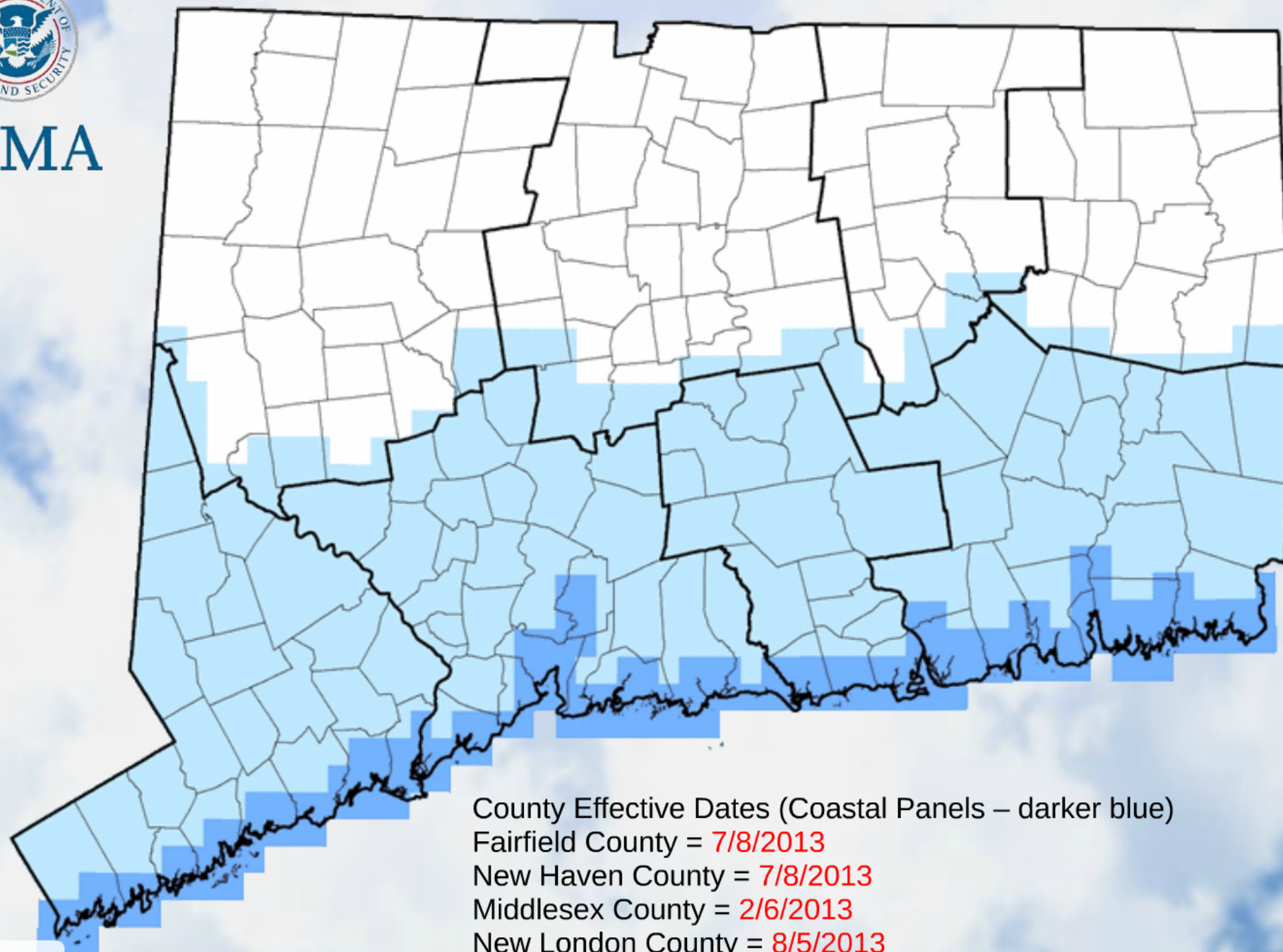
## DCS Division 1 Specs:

The Contractor shall serve as the **Developer, Permittee, Registrant, and Applicant.**

# New FEMA Coastal Flood Maps and 500-Year Elevations



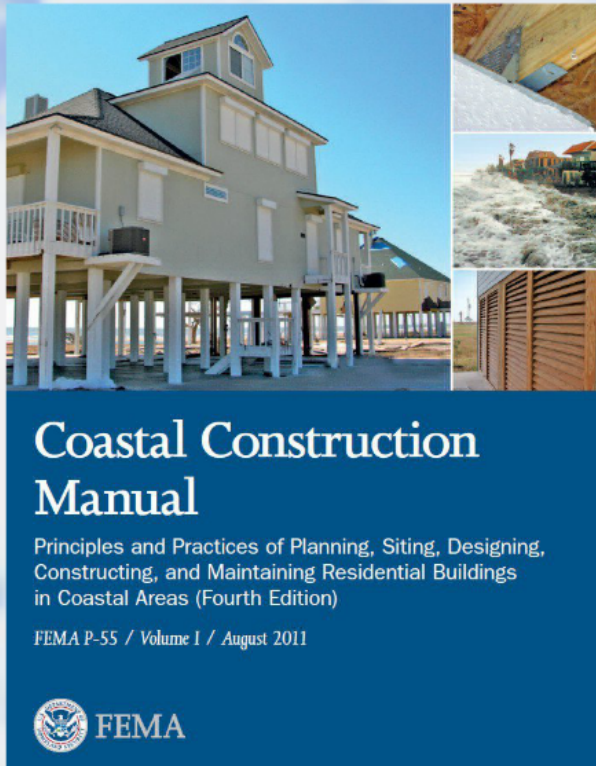
FEMA



County Effective Dates (Coastal Panels – darker blue)  
Fairfield County = 7/8/2013  
New Haven County = 7/8/2013  
Middlesex County = 2/6/2013  
New London County = 8/5/2013



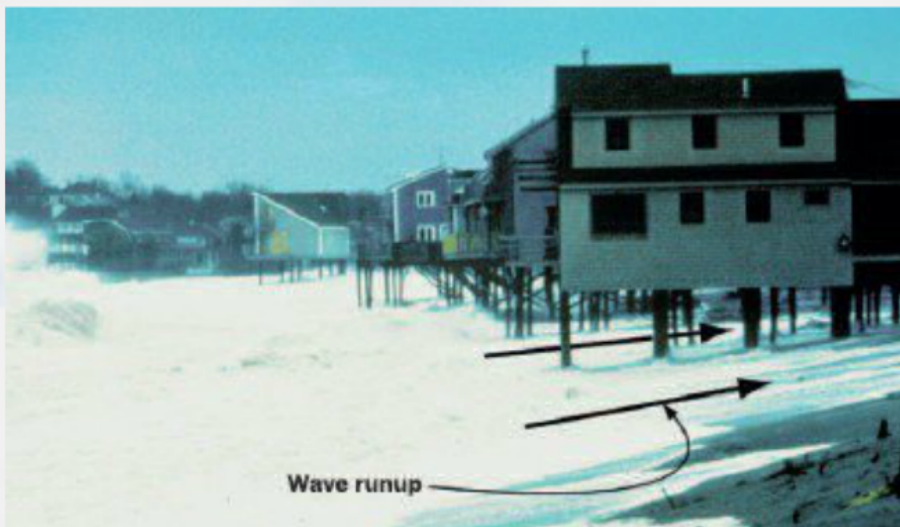
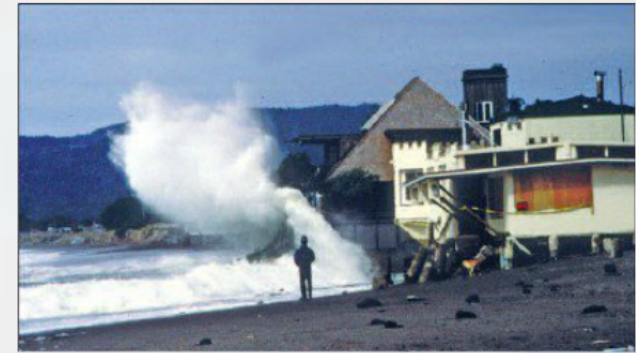
# New FEMA Coastal Flood Maps and 500-Year Elevations



## Waves

Waves can affect coastal buildings in a number of ways, including breaking waves, wave runup, wave reflection and deflection, and wave uplift.

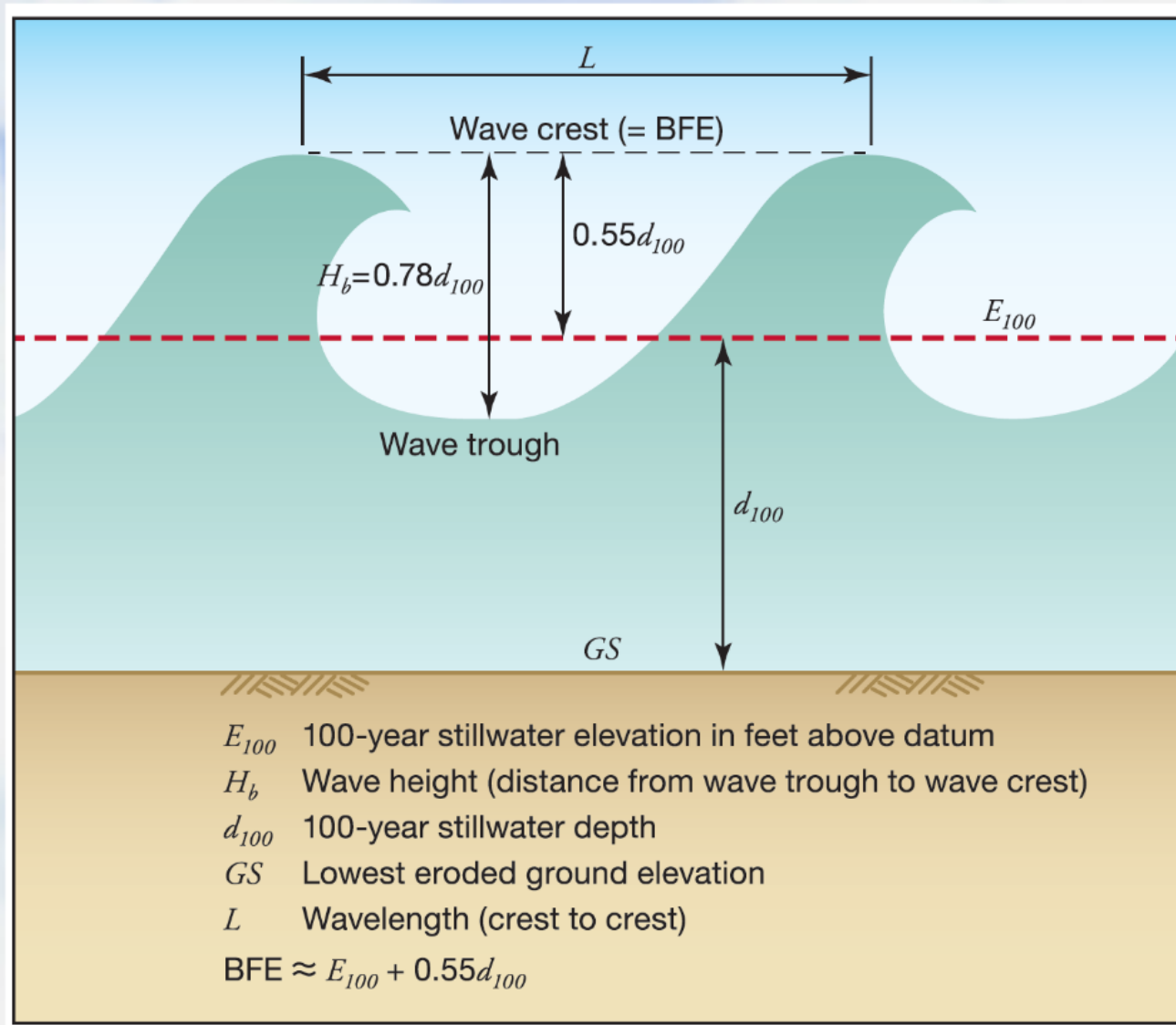
The most severe damage is caused by breaking waves (see Figure). The force created by waves breaking against a vertical surface is often 10 or more times higher than the force created by high winds during a storm event.



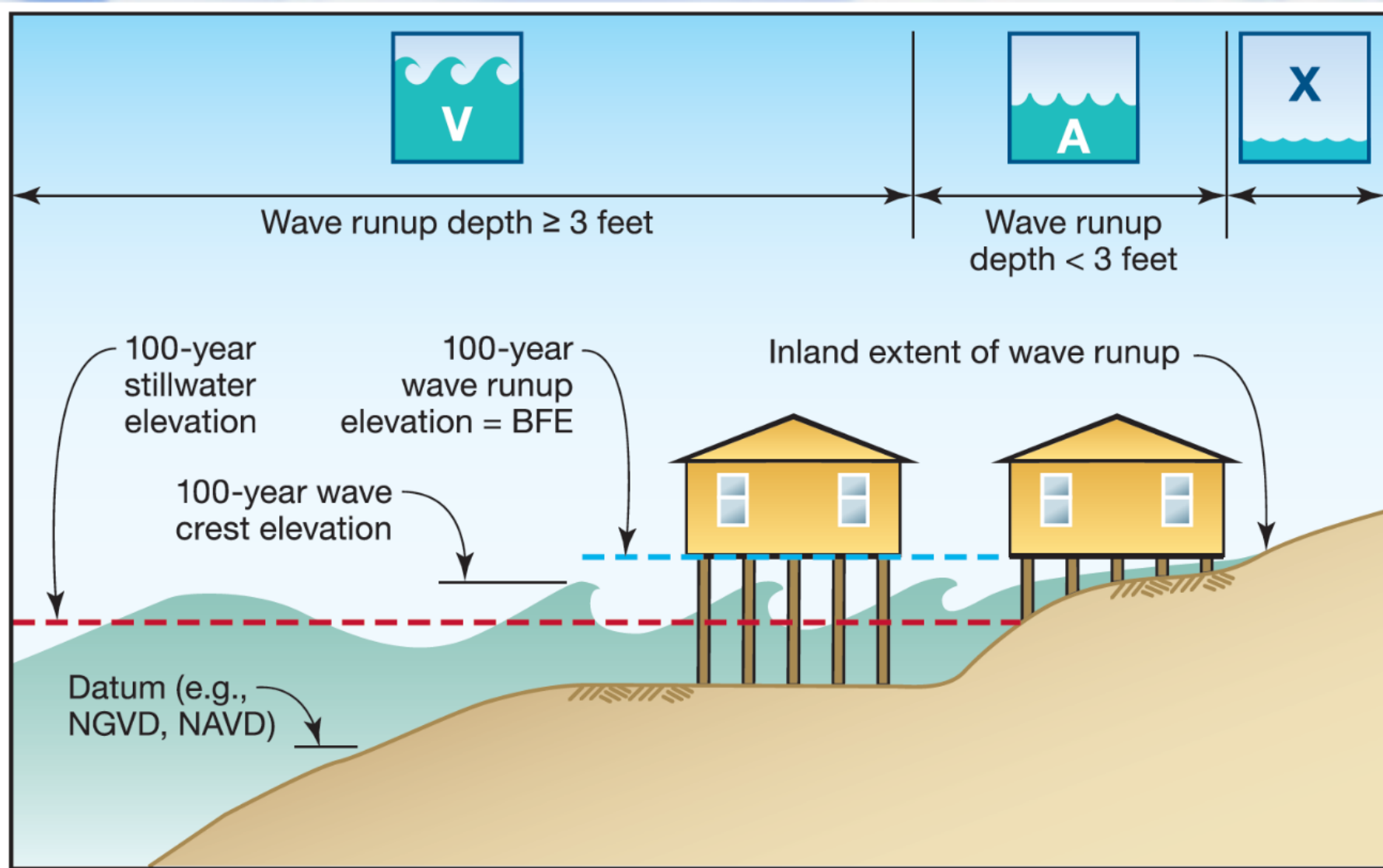
**Wave runup** occurs as waves break and run up beaches, sloping surfaces, and vertical surfaces. Wave runup (see Figure 3-24) can drive large volumes of water against or around coastal buildings, inducing fluid impact forces (albeit smaller than breaking wave forces), current drag forces, and localized erosion and scour (see Figure).



# Wave Heights and Wave Crest Elevations



*BFE determination for coastal flood hazard areas where wave crest elevations exceed wave runup elevations (Zones A and V)*



**WAVE RUNUP** is the rush of water up a slope or structure.

**WAVE RUNUP DEPTH** at any point is equal to the maximum wave runup elevation minus the lowest eroded ground elevation at that point.

**WAVE RUNUP ELEVATION** is the elevation reached by wave runup, referenced to NGVD or other datum.

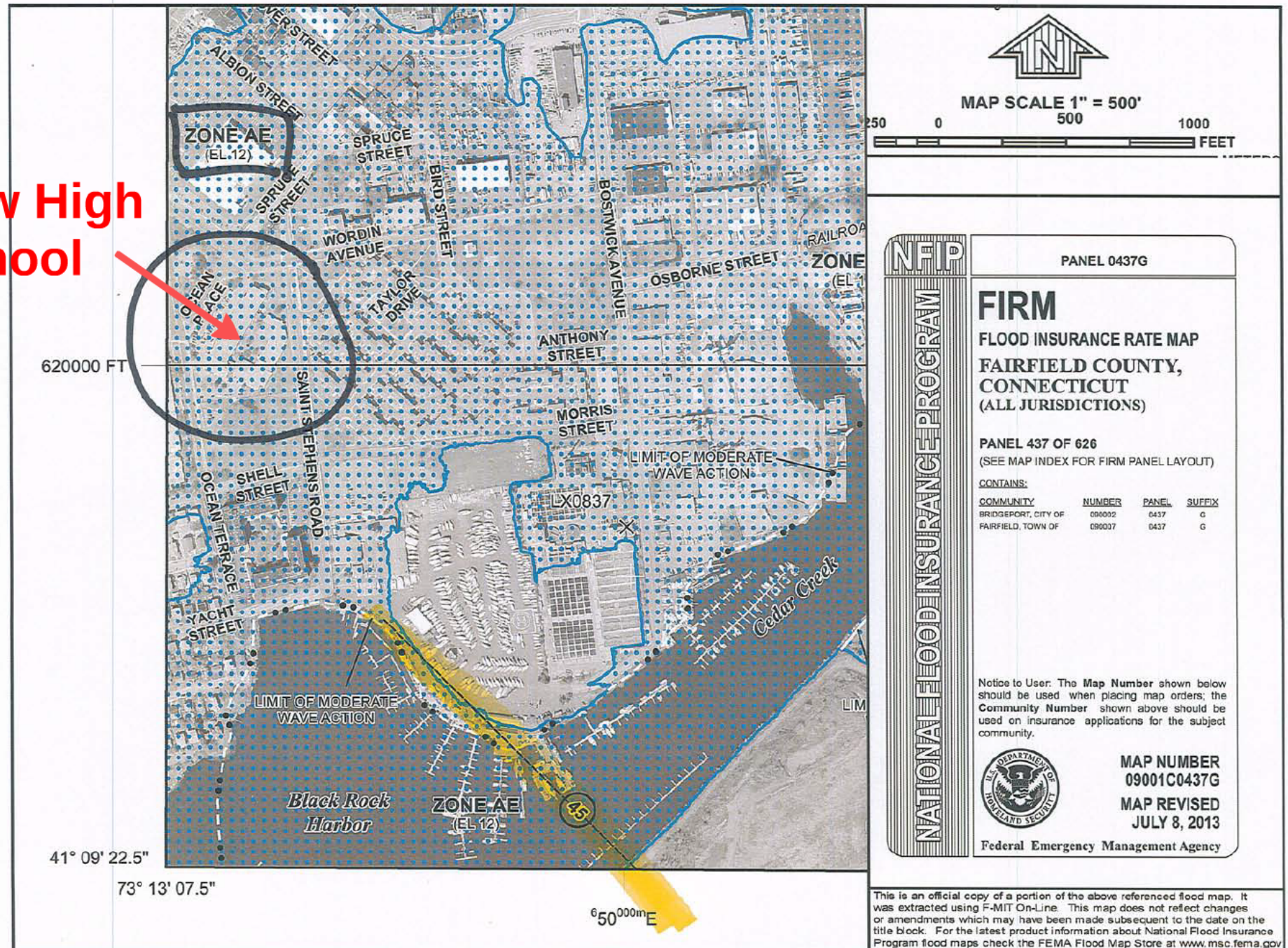
**WAVE SETUP** is an increase in the stillwater surface elevation near the shoreline, due to the presence of breaking waves. Wave setup typically adds 1.5 to 2.5 feet to the 100-year stillwater flood elevation.

**MEAN WATER ELEVATION** is the sum of the stillwater elevation and wave setup.



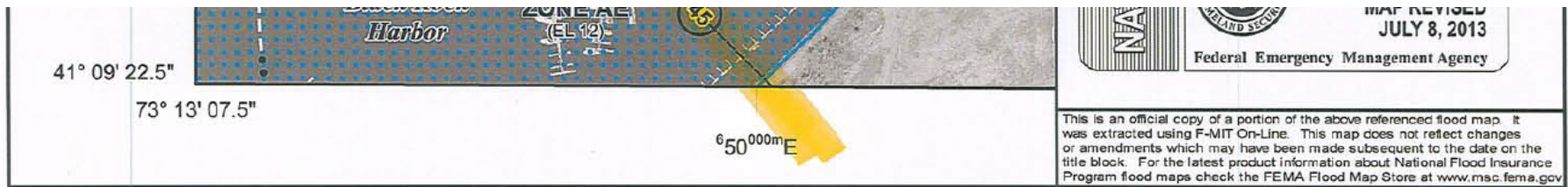
# Design for Critical Activities

New High School



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](http://www.msc.fema.gov)





## Coastal Hydrologic Analyses

The stillwater elevation is the elevation of the water due to the effects of the astronomic tides and storm surge on the water surface. Hydrologic analyses carried out to establish the peak discharge-frequency relationships for Long Island Sound flooding sources

TABLE 8 - SUMMARY OF COASTAL STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NAVD*)			
	10- PERCENT ANNUAL CHANCE	2- PERCENT ANNUAL CHANCE	1-PERCENT ANNUAL CHANCE	0.2- PERCENT ANNUAL CHANCE
LONG ISLAND SOUND				
Willels Point, Tide Station ID: 8516990	8.9	10.7	11.4	13.0
Stamford Hurricane Barrier (41°2.2'N, 73° 32.1' W)	8.5	10.2	10.9	12.3
Bridgeport, Tide Station ID: 8467150	7.8	9.3	10.0	11.3



Bridgeport, Tide Station ID:  
8467150

7.8

9.3

10.0

11.3

TABLE 10 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level <sup>1</sup>	Zone	Base Flood Elevation (Feet NAVD 88) <sup>2</sup>
	10- percent- annual- chance	2- percent- annual- chance	1- percent- annual- chance	0.2- percent- annual- chance	1- percent- annual- chance		
LONG ISLAND SOUND - continued							
Transect 45	7.8	9.3	10.0	11.3	11.6	AE	12-14
						VE	14-17
Transect 46	7.7	9.3	9.9	11.2	12.8	AE	14-15
						VE	15-19
Transect 47	7.7	9.2	9.8	11.1	12.2	AE	12-14

**Where's the 0.2 % Total Water Level?**

 **FEMA** Federal Emergency Management Agency  
U.S. Department of Homeland Security  
475 Rte. 1 North, Suite 201, Silver Spring, MD 20910-6155  
www.fema.gov





TABLE 10 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level <sup>1</sup>	Zone	Base Flood Elevation (Feet NAVD 88) <sup>2</sup>
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<b>LONG ISLAND SOUND - continued</b>							
Transect 45	7.8	9.3	10.0	11.3	11.6	AE	12-14
						VE	14-17
Transect 46	7.7	9.3	9.9	11.2	12.8	AE	14-15
						VE	15-19
Transect 47	7.7	9.2	9.8	11.1	12.2	AE	12-14

**10.00      (Stillwater Elevation 1-percent)**

**X      1.25**

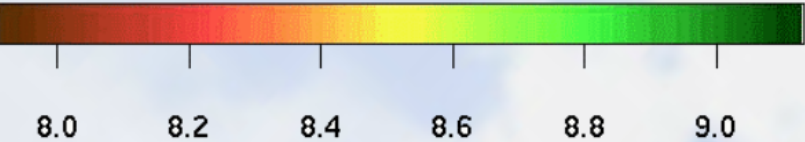
 **12.50      (Total Water Level 0.2-percent)**



# Extreme Precipitation Discussion & Adaptation Measures

## Northeast Regional Climate Center (NRCC) Extreme Precipitation for Connecticut 24 hr 100-year

(inches)



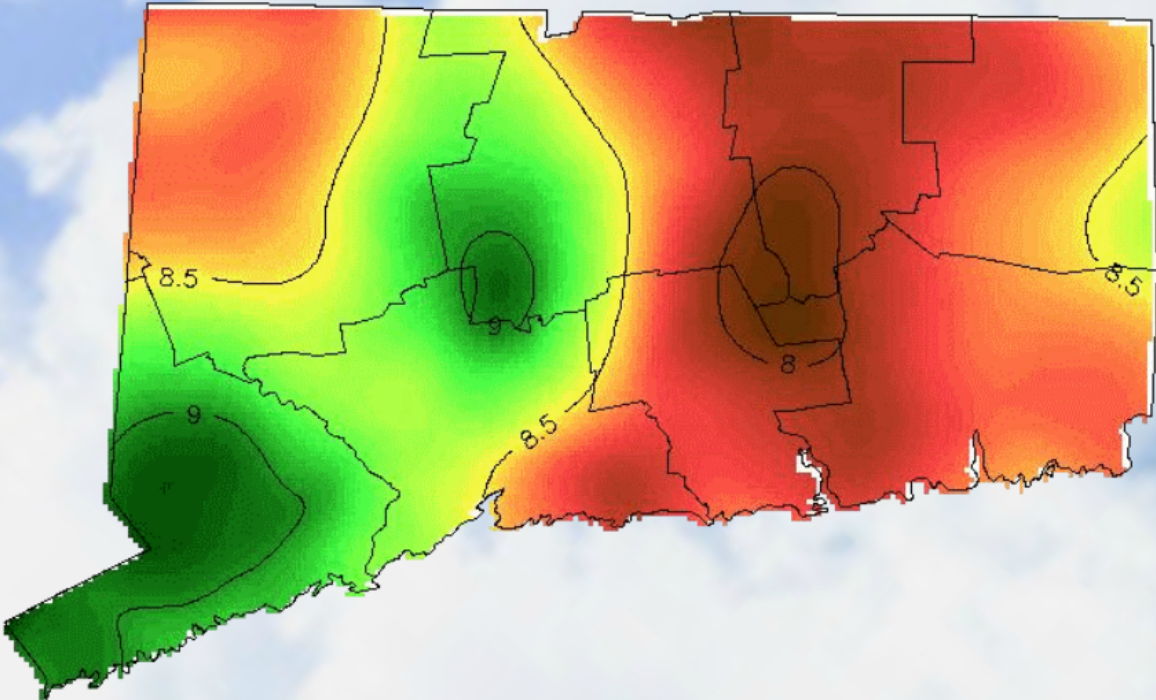
Contour Line Interval: 0.50 inches

Powered by  
**ACIS**  
Northeast Regional  
Climate Center

On a national level, a comprehensive climatology of rainfall events has not been updated since the early 1960s....

In New York and New England this is a concern as the current climatology excludes almost 50 additional years of data....

Recent analyses show, particularly in New York and New England where the frequency of 2 inch rainfall events has increased since the 1950s and storms once considered a 1 in 100 year event have become more frequent...



## ***Extreme Precipitation Discussion***

**DCS used two projects to compare NRCC data with CT DOT Drainage Manual (TP-40) historic data:**

- 1. Eastern Connecticut State University Stormwater Master Plan*
- 2. The Morgan School, Clinton, CT*

**ECSU Stormwater Master Plan Analysis and Results**

*Engineer: Milone & MacBroom, Inc.*

**TABLE 2-2  
Rainfall Data**





## 2. The Morgan School, Clinton, CT

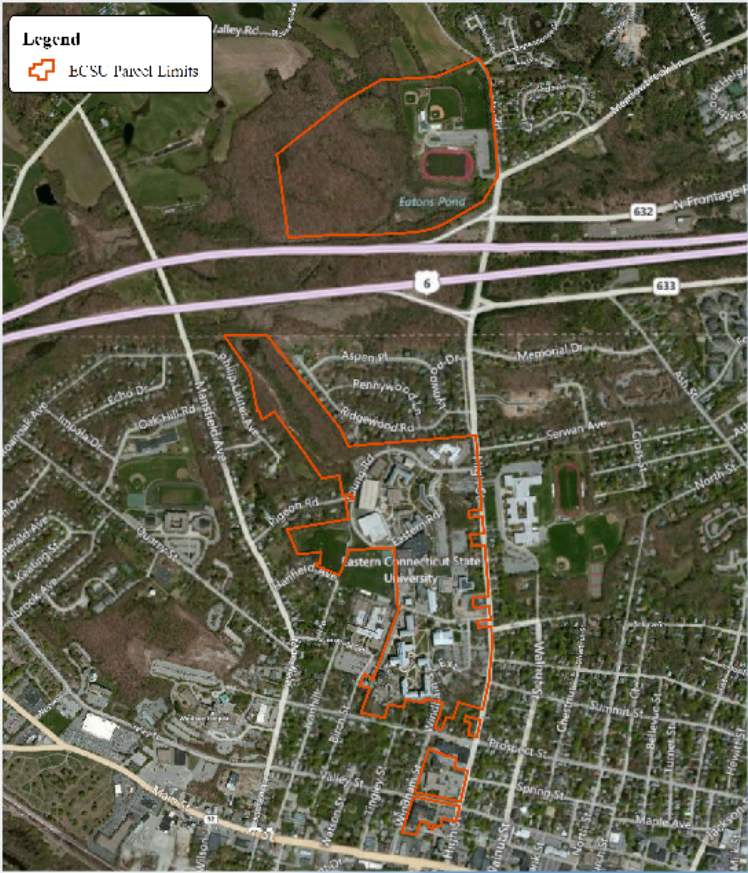
## ECSU Stormwater Master Plan Analysis and Results

**Engineer: Milone & MacBroom, Inc.**

**TABLE 2-2**  
**Rainfall Data**

Annual Chance Storm Event	NRCS 24-Hour Rainfall (inches)	TP-40 24-Hour Rainfall Windham County (inches)
50%	3.22	3.2
10%	4.71	4.8
4%	5.84	5.5
2%	6.88	6.2
1%	8.11	6.9

**Delta**  
0.0  
-0.1  
0.3  
0.6  
1.2



## Hydrograph Return Period Recap

[illegible]

# Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoC

on for AutoCAD® Civil 3D® 2

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								100-yr	Hyc Des
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr		
1	SCS Runoff	-----	-----	5.293	-----	-----	8.088	10.18	12.10	14.36	12.14	WS 70
2	SCS Runoff	-----	-----	3.574	-----	-----	5.745	7.380	8.875	10.63	8.903	WS 80
3	SCS Runoff	-----	-----	3.711	-----	-----	6.136	7.974	9.656	11.63	9.689	WS 90
4	SCS Runoff	-----	-----	5.351	-----	-----	8.087	10.14	12.02	14.24	12.06	WS 100
5	SCS Runoff	-----	-----	0.603	-----	-----	1.094	1.478	1.833	2.254	1.840	WS 200
7	SCS Runoff	-----	-----	5.148	-----	-----	7.960	10.07	12.00	14.27	12.03	2017 WS 70
8	SCS Runoff	-----	-----	3.574	-----	-----	5.745	7.380	8.875	10.63	8.903	2017 WS 80
9	SCS Runoff	-----	-----	3.711	-----	-----	6.136	7.974	9.656	11.63	9.689	2017 WS 90
10	SCS Runoff	-----	-----	5.351	-----	-----	8.087	10.14	12.02	14.24	12.06	2017 WS 100
11	SCS Runoff	-----	-----	0.603	-----	-----	1.094	1.478	1.833	2.254	1.840	2017 WS 200

**NRCC DATA**

**TP-40 DATA**

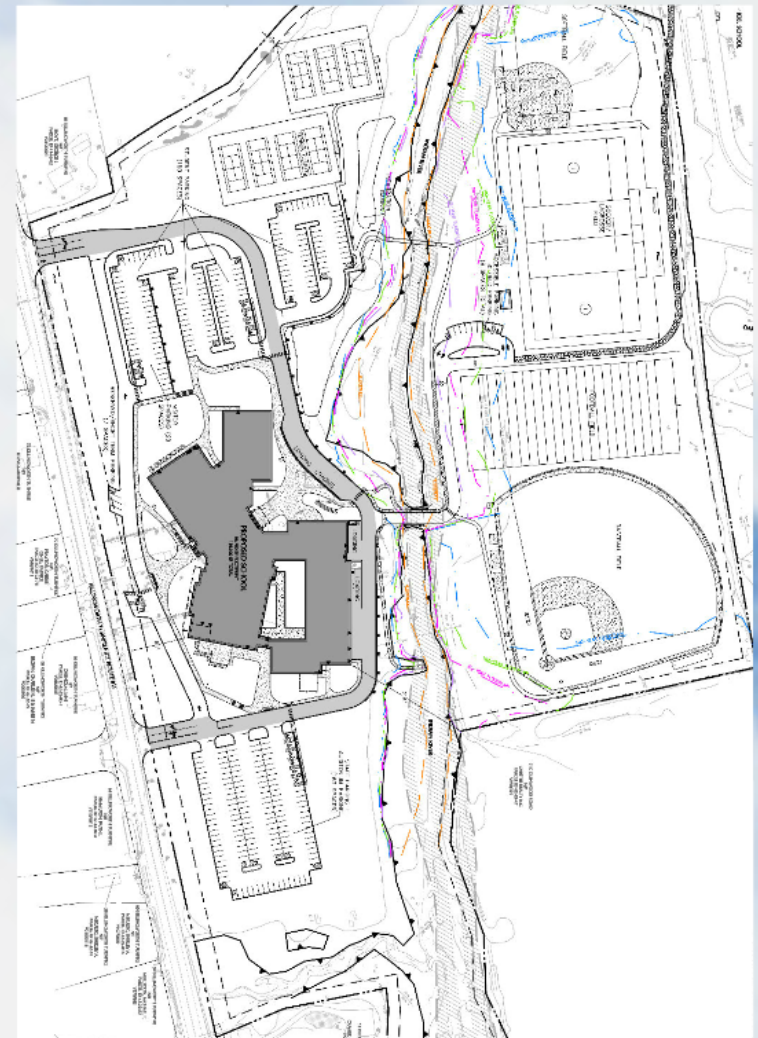


# The Morgan School

Engineer: Langan Engineering

## Peak Runoff Comparison

	100-YEAR					
	Existing		Proposed w/Detention		Proposed w/o Detention	
	CTDOT Values	Extreme Values	CTDOT Values	Extreme Values	CTDOT Values	Extreme Values
Total Flow to Indian River upstream of Culvert	62.90 cfs	75.98 cfs	42.12 cfs		60.93 cfs	74.31 cfs
Total Flow to Indian River downstream of Culvert	34.63 cfs	41.99 cfs	38.34 cfs		38.34 cfs	47.48 cfs
Total Flow to Indian River	92.75 cfs	112.24 cfs	80.35 cfs		99.18 cfs	121.62 cfs
Overland Flow Offsite to the south	16.61 cfs	19.80 cfs	1.16 cfs		1.16 cfs	1.4816 cfs



A review of the comparison indicates the following:

- No effect on the 2-year storm
- Reductions in proposed flow for the 10-year extreme precipitation event.
- Increases in proposed flow for the 25-year and 50-year extreme storms of approximately 9% and 16%, respectively, for total detained flows to the Indian River. However, as compared to existing conditions utilizing extreme precipitation, flows are actually reduced by 17% and 15%, respectively.
- Currently proposed detention facilities are overtopped for the 100-year extreme precipitation event. Increases in proposed flow for the 100-year extreme storm of approximately 23% for total undetained flows to the Indian River. However, as compared to existing conditions utilizing extreme precipitation, the increase in flow is lowered to 8%.

**Thoughts?**

**Other Experiences?**



## ***Adaptation Measures***

- ***Get out of hazard zones AND stay out!***
- ***Consider CT DEEP's estimates on Sea Level Rise (SLR)***
- ***Assess the proximity of the project site to SLR, hurricane zones, and floodplains***
- ***Assess age of the facility in comparison to future risk and mitigation costs***