CALCASIEU PARISH REGIONAL WATERSHED MANAGEMENT STUDY

Jeanne Arceneaux Hornsby,

M.S., P.E., C.F.M.

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FENSTERMAKER

PRESENTATION OUTLINE

- Calcasieu Parish Watersheds and Flooding
- Project Phasing and Timeline
- Webinar Summary and Recommendations
- Programs
- Policy
- Projects
- Summary

CALCASIEU PARISH WATERSHEDS AND FLOODING

2015 DRAINAGE MISSION AND GUIDING PRINCIPLES

To enhance stewardship and protection of the community's drainage watershed resources in a comprehensive and responsive manner.

PROTECT PUBLIC AND PRIVATE INVESTMENTS

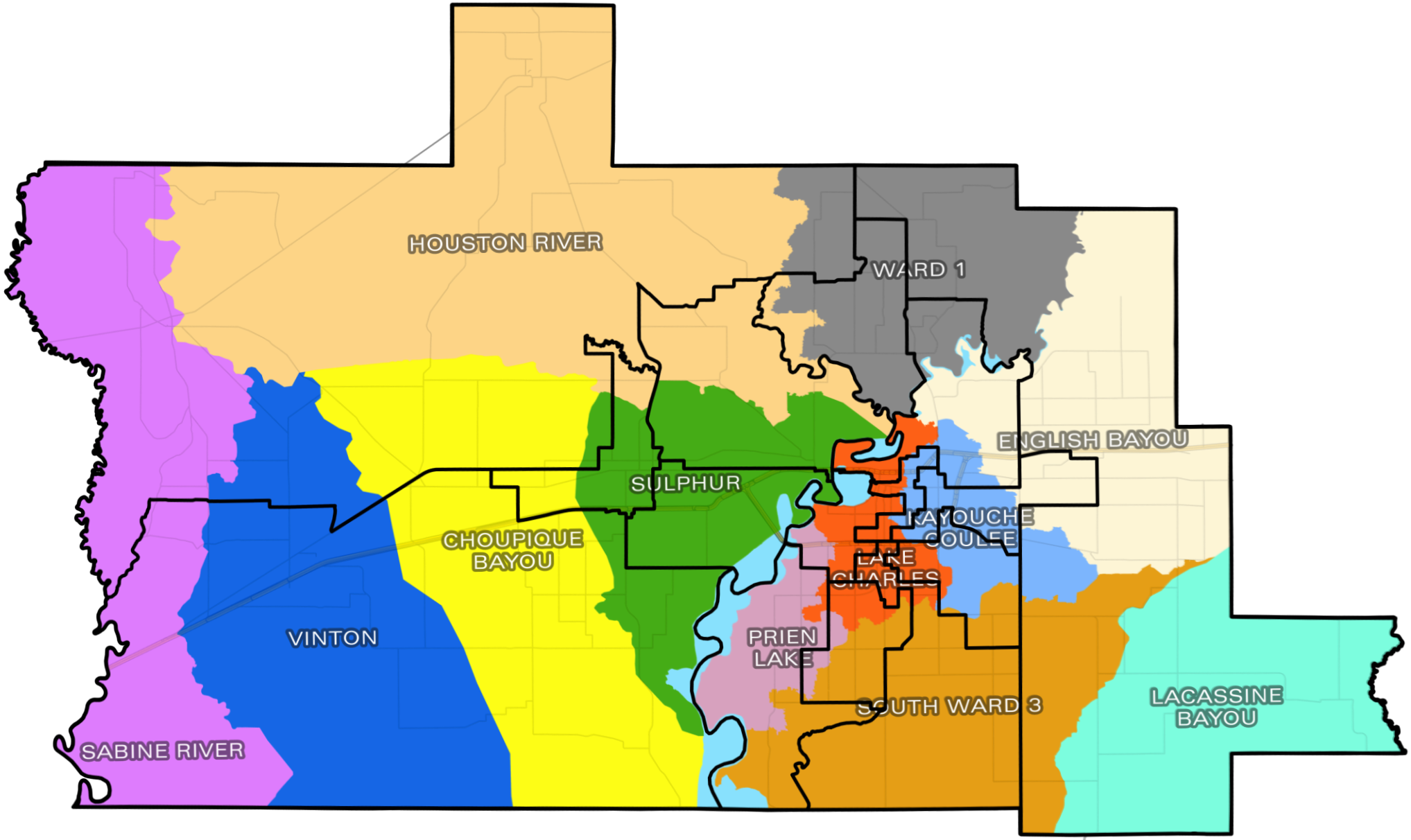
OPTIMIZE CAPACITY FOR ECONOMIC GROWTH/DEVELOPMENT

REDUCE POTENTIAL FOR IMPACTS FROM NATURAL DISASTERS

PROTECT WATER RESOURCES FOR FUTURE GENERATIONS

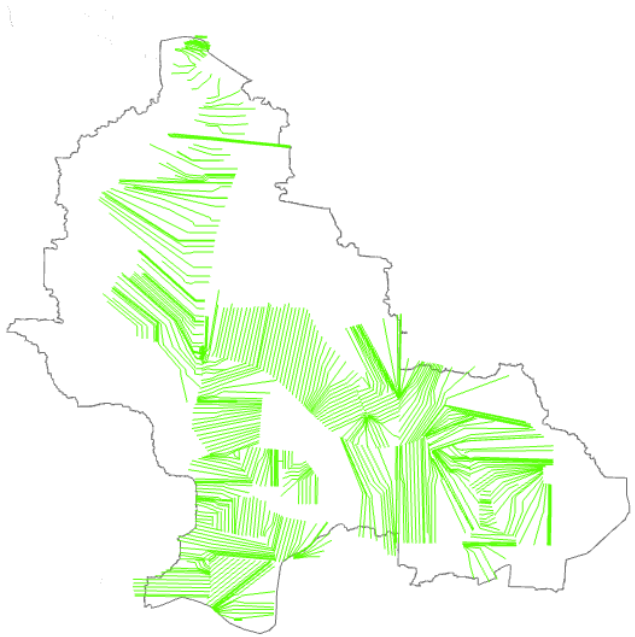
MAXIMIZE EFFICIENCIES OF WATERSHED MANAGEMENT AND MAINTENANCE WITH A UNIFORM FUNDING STRUCTURE

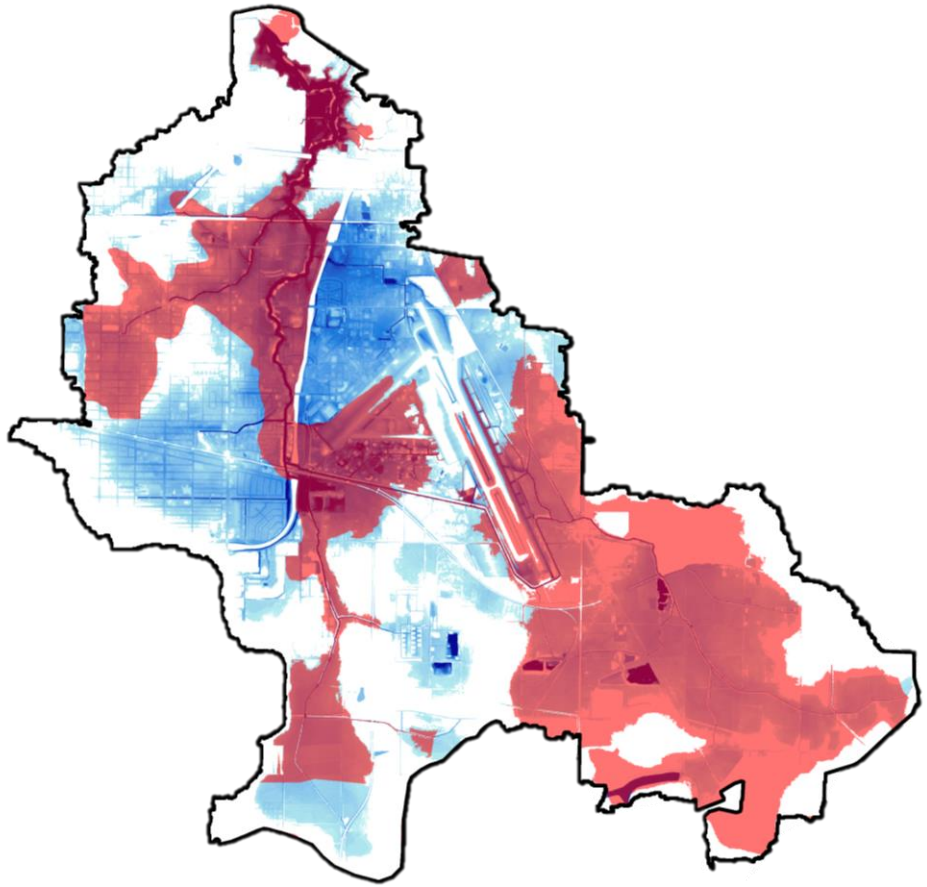
CALCASIEU PARISH WATERSHEDS



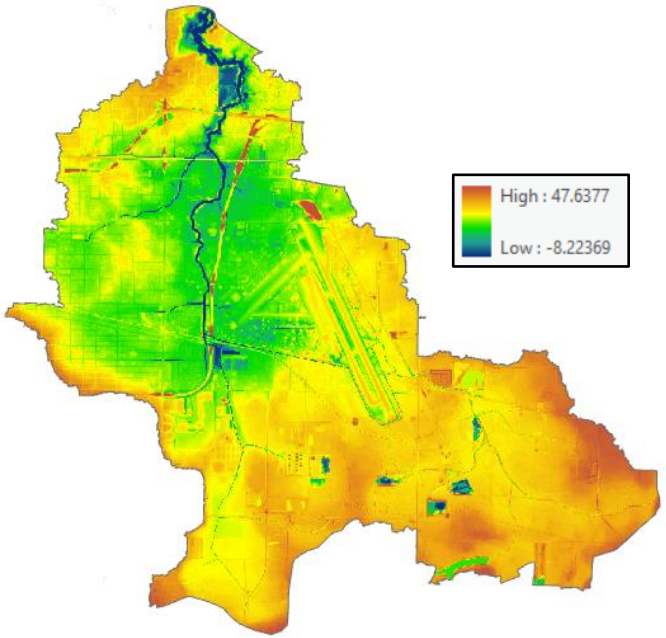
CALCASIEU PARISH WATERSHED MODELS

1-DIMENSIONAL MODELS (2006)



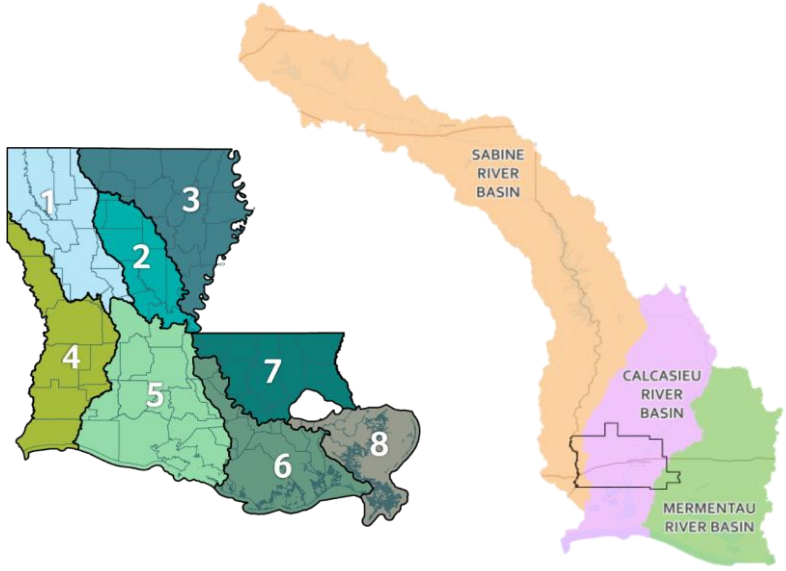


2-DIMENSIONAL MODELS (2022)



WHAT DO THE MODELS PROVIDE?

Louisiana Watershed Initiative Study



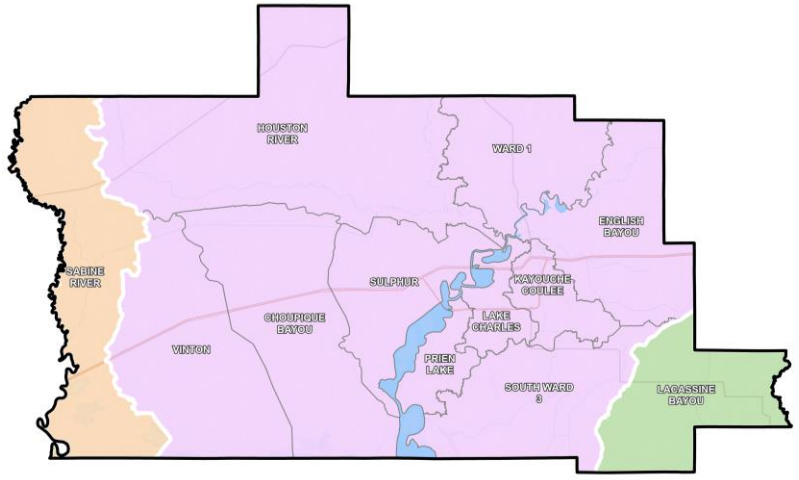
REGIONAL WATERSHED LEVEL

State/Multi-parish

Regional Watershed Models
(HUC 8)

Large Scale Projects
(>150 acres)

Calcasieu Parish Regional Watershed Study



LOCAL WATERSHED LEVEL

Parish/Multi-community

Local Watershed Models
(HUC 10/HUC 12)

Medium Scale Projects
(20-150 acres)

LOCAL SUBWATERSHED LEVEL

City/Town/Neighborhood

Local Watershed Models
(HUC 14)

Small Scale Projects
(<20 acres)

PROJECT PHASING AND TIMELINE

PROJECT MILESTONES

WEBINAR SUMMARY AND RECOMMENDATIONS

SUMMARY OF RECOMMENDATIONS

PROGRAMS
JUNE 15TH 2022 WEBINAR

Community Rating System (CRS)
Buyout Program
Maintenance Programs
Incentives

POLICY
AUG 3RD 2022 WEBINAR

Baseline Policy Adoption
BFE+2ft Freeboard Requirement
Fill Limitations
Development Regulations

PROJECTS
SEPT 13TH 2022 WEBINAR

Pump Stations and Floodgates
Detention Ponds
Channel Improvements
Floodplain Preservation

PROGRAMS

FEMA RISK RATING 2.0 (FEDERAL PROGRAM)

‘Risk Rating 2.0’ Makes National Flood Insurance Program Fairer, More Equitable

New system better accounts for risk in setting premiums, strengthens program solvency

Fairer

Results in premium decreases for nearly 1.2 million policyholders this year and increases of $10 or less per month for 86% of policyholders whose premiums do go up; under the old system, all policyholders would have faced increases.

More equitable

Includes the cost of repairs in premium calculations, helping to ensure that owners of low-and-modest-value properties no longer pay disproportionately high premiums relative to homes with higher replacement costs.

Better able to support flood survivors

Aligns premium rates with the latest, most accurate flood-risk data to ensure that the National Flood Insurance Program will have the funds it needs to continue paying claims to flood survivors.

FEMA RISK RATING 2.0 (FEDERAL PROGRAM)

Equity in Action premiums will more accurately reflect a property's unique flood risk by considering a broader range of variables.

Current Rating Methodology

FEMA-sourced data

Rating Variables
- Flood Insurance Rate Map Zone
- Base Flood Elevation
- Foundation Type
- Structural Elevation (Special Flood Hazard Area Only)

1% Annual Chance of Flooding (Frequency)

Fees and Surcharges

Risk Rating 2.0 Methodology*

FEMA-sourced data

Additional data sources: Federal government-sourced data, commercially available third-party

Cost to Rebuild

Rating Variables
- Distance to Coast/Ocean/River
- River Class
- Flood type — Fluvial/Pluvial
- Ground Elevation
- First Floor Height
- Construction Type/Foundation Type

Broader Range of Flood Frequencies

Fees and Surcharges

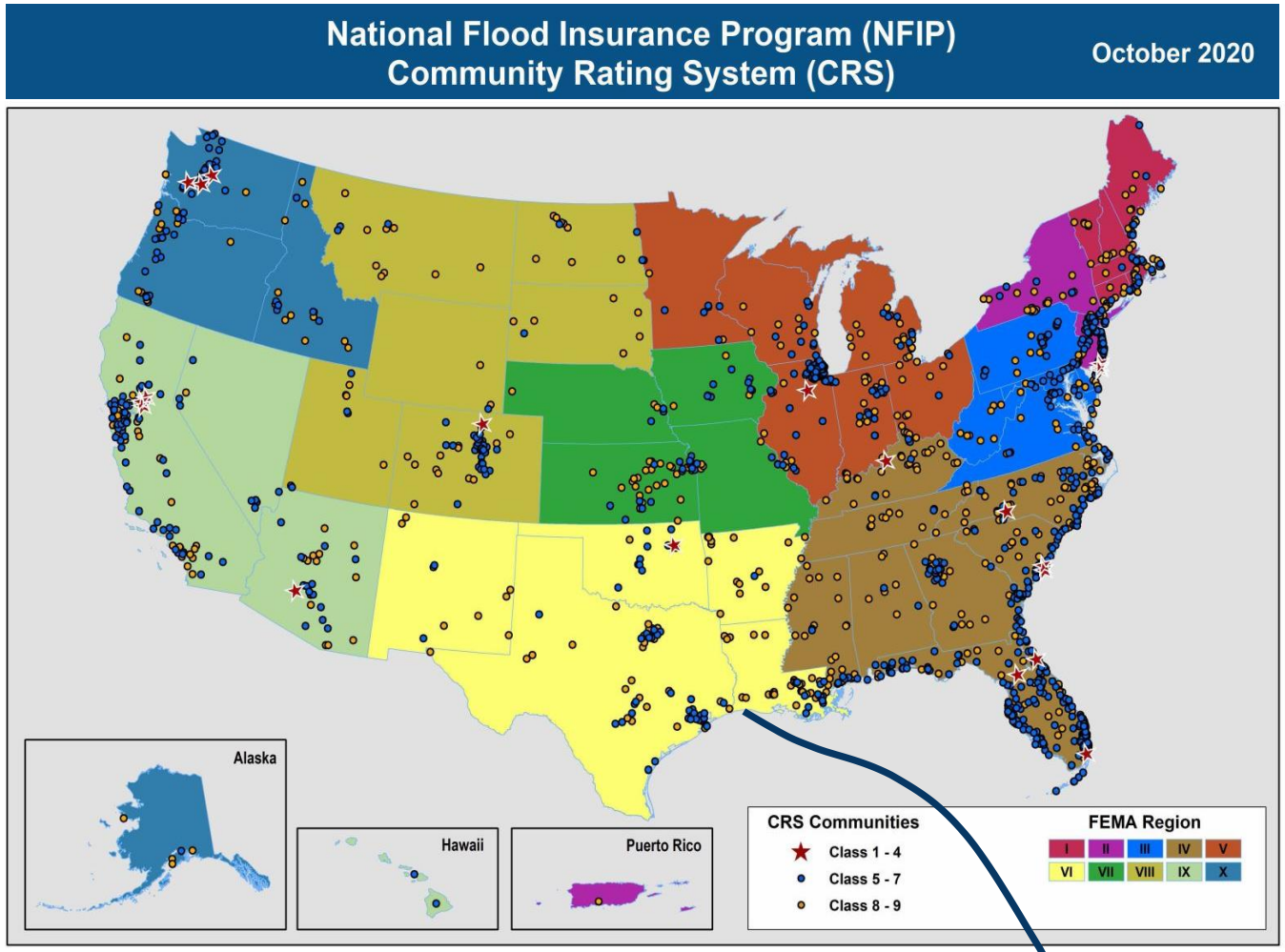
*Additional variables are not shown here

FEMA

Federal Emergency Management Agency

COMMUNITY RATING SYSTEM (CRS)

CLASS	PREMIUM REDUCTION
1	45%
2	40%
3	35%
4	30%
5	25%
6	20%
AVERAGE CLASS → 7	15%
8	10%
9	5%
10	0



Municipalities can participate.
Collaboration is important!

CALCASIEU PARISH
IS **CLASS 8**

CRS - HOW CAN WE IMPROVE?

INCREASE STRENGTH OF DEVELOPMENT STANDARDS AND STORMWATER MANAGEMENT

+

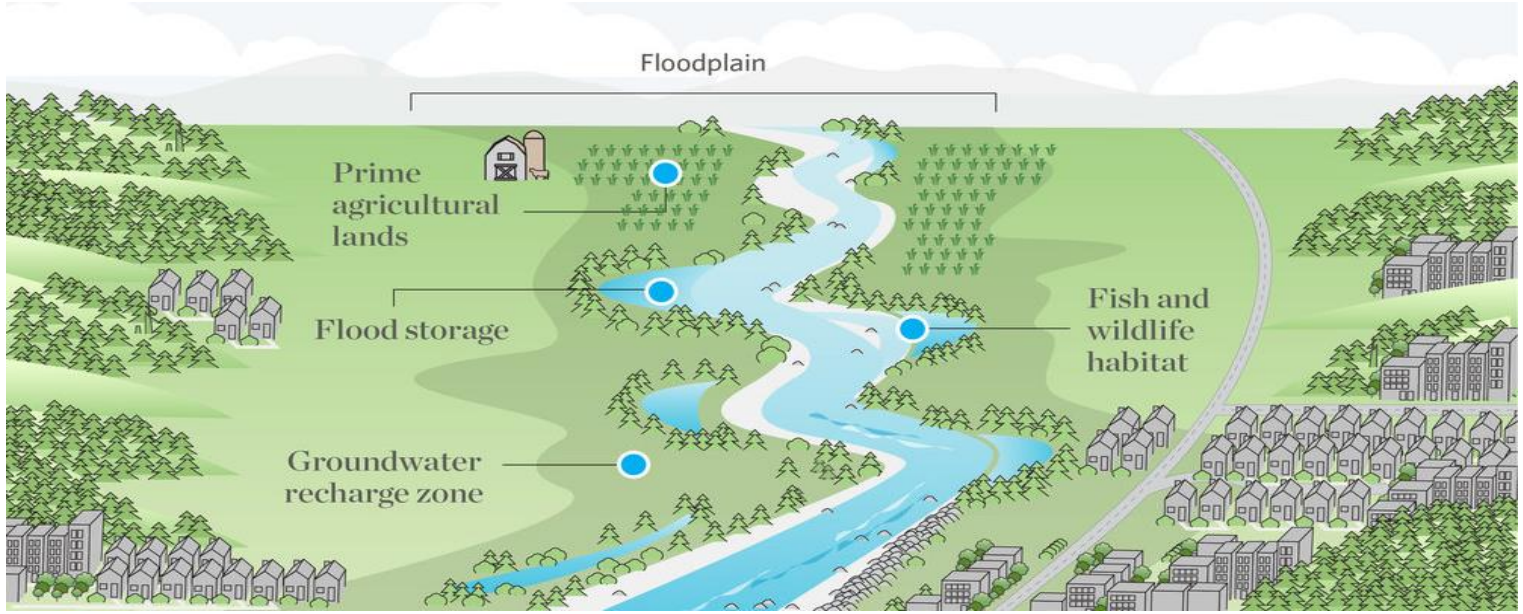
PRESERVE OPEN SPACE WITHIN THE FLOODPLAIN

+

COMPREHENSIVE PLANNING AND REMOVING STRUCTURES FROM THE FLOODPLAIN

=

BETTER CRS RATING

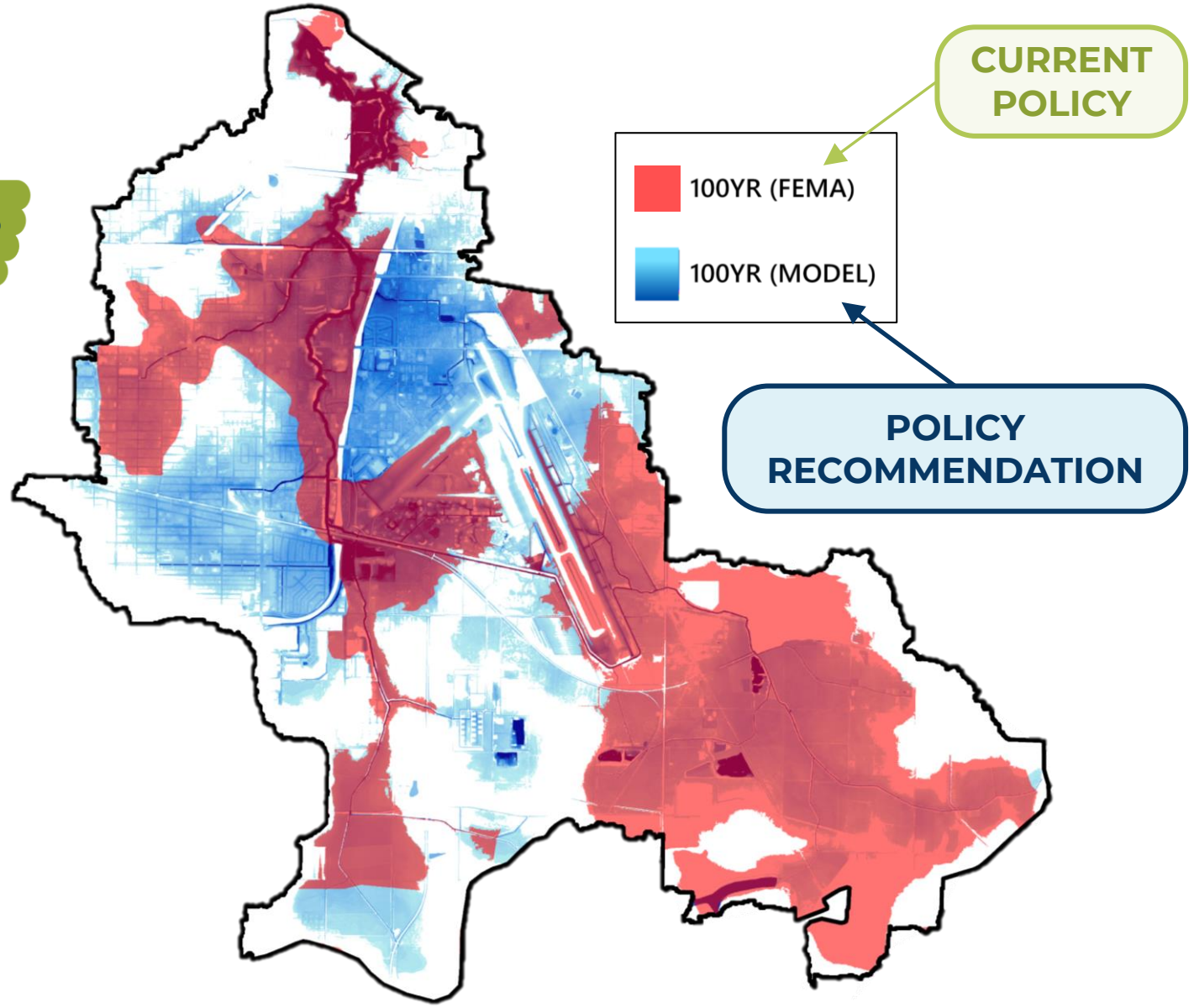


FLOOD MAP REVISIONS

BENEFITS

- Calcasieu Parish would get CRS credit for initiating the flood map revisions
- FEMA will eventually require an update of the maps
- Homeowners located in a remapped flood zone have access to FEMA assistance after natural disasters (repetitive flooding)
- Calcasieu Parish can also receive more hazard mitigation and disaster recovery benefits from FEMA

CRS



MAINTAINING DRAINAGE INFRASTRUCTURE

1,850 miles

of open channels in the Parish's network

200+

bridges crossing Parish maintained channels

2,256 miles

of roadside ditches along Parish roads

Also, thousands of driveways culverts and miles of subsurface drainage as well.

DID YOU KNOW? The total length of roadside ditches maintained by Calcasieu Parish is almost equal to the total length of the Mississippi River (which is 2,320 miles long)

MAINTENANCE PROGRAM RECOMMENDATION

(WATERSHED HANDOUT)

Recommended Maintenance Inspection Plan

COMPONENT	PROCEDURE	ACTIVITIES	PERIOD
MAJOR CHANNELS	Full length of channels walked	Obstructions removed Natural grade returned Natural ground cleared with 10' of banks	Annually
INTERMEDIATE CHANNELS	Visually inspected from public road crossings	Obstructions removed Natural grade returned Natural ground cleared with 5' of banks	Annually
MINOR CHANNELS	Visually inspected from public road crossings	Obstructions removed Natural grade returned Natural ground beyond banks left undisturbed	Annually
CHECKPOINTS	Specific points know to collect debris or subject to issues	Obstructions removed	Quarterly & Following Major Storm Events
STRUCTURES	Visually inspected in conjunction with channels	Obstructions removed Care taken not to damage structure during maintenance operations	Annually
DETENTION FACILITIES	Visually inspected	Obstructions removed Silt deposits removed to restore storage volume	Annually
LOCAL ROADWAYS	Visually inspected	Obstructions removed Vegetation control (Spraying/mowing) Evaluate drainage structures	Annually/biannually

TECHNOLOGY FOR EFFICIENT MAINTENANCE

Calcasieu Parish Watershed Planning Project
Evaluation Data Sheet

Watershed: _____ Project Number: 2187965.00C

Lateral Name: _____ Date Collected: _____

Structure Number: _____ Collected By: _____

Surrounding Land Use: _____ Property Type:
(i.e. - business, residential, commercial, mixed) Accessible Private

Previous 48 Hour Rainfall Total (in.) 0.0

Upstream

Erosion	1 No Erosion	2	3 Rill Washes Present	4	5 Ditch Bank Reconstruction
Existing Vegetation	1 Maintained Grass	2	3 Knee High	4	5 Overgrown Vegetation
Silt Deposits	1 Little/No Silt	2	3 Pipes Half Full	4	5 Pipes Full
Debris/Trash	1 Light (Leaves)	2	3 Small Branches	4	5 Trees/Culvert Blocks

Downstream

Erosion	1 No Erosion	2	3 Rill Washes Present	4	5 Ditch Bank Reconstruction
Existing Vegetation	1 Maintained Grass	2	3 Knee High	4	5 Overgrown Vegetation
Silt Deposits	1 Little/No Silt	2	3 Pipes Half Full	4	5 Pipes Full
Debris/Trash	1 Light (Leaves)	2	3 Small Branches	4	5 Trees/Culvert Blocks

Structure

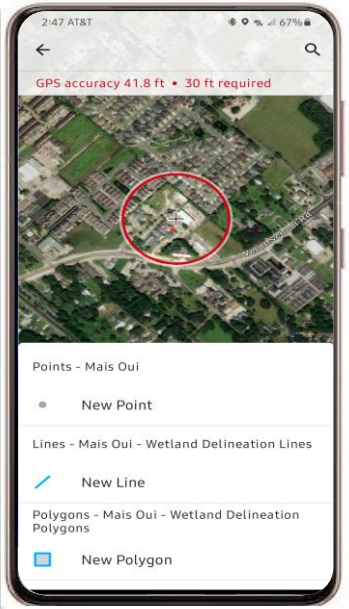
Type: Bridge Culvert Arch Culvert Box Culvert

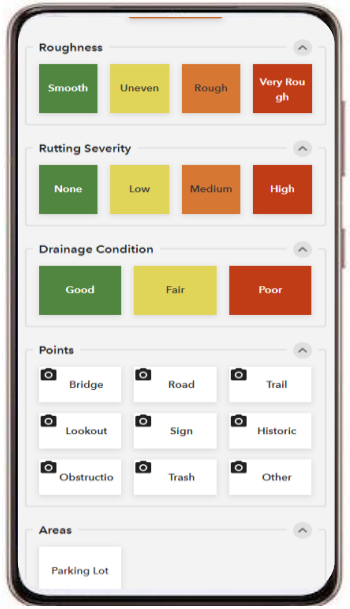
No. of Pipes/Piles: _____ Approximate Diameter: _____

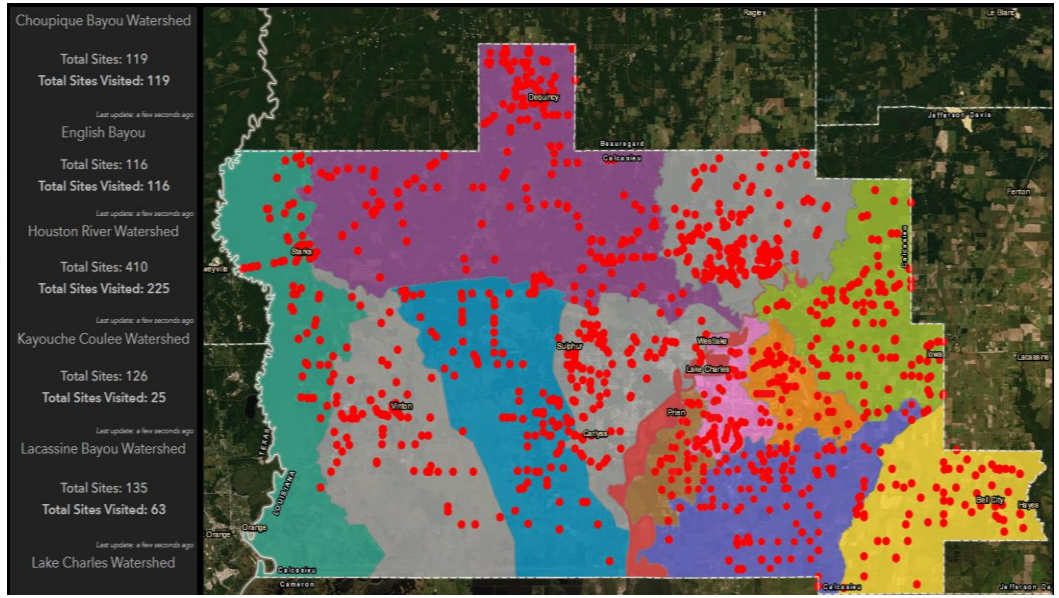
Pipe/Pile Material: _____ Entrance Type: _____

Structure Opening	1 <10% clogged	2	3 50% clogged	4	5 >90% clogged
Structure Condition	1 In good shape and alignment	2	3 Minor damage, little out of place	4	5 Needs to be replaced or shifted

Notes: _____







ESRI
ArcGIS Online
Mapping and analysis: location intelligence for everyone

LOCAL BUYOUT PROGRAM

(WATERSHED HANDOUT)

Buyouts help residents move out of harm's way and relocate to higher and drier ground.

BENEFITS

Reduction in Current and Future Flood Risk

Opportunity for Lower Flood Insurance Premiums

CRS

Quicker Timeline for Buyouts

Convert Land for Community Use

POLICY

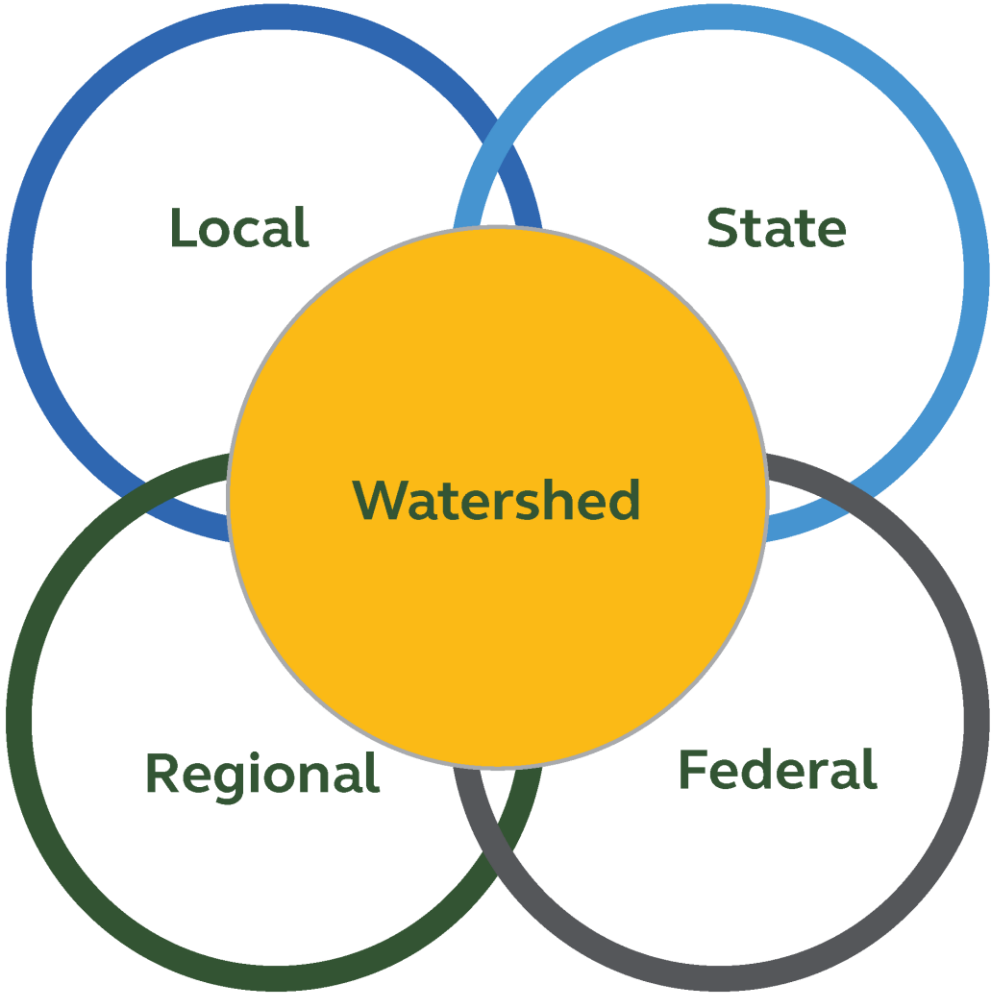
BASELINE POLICY

(WATERSHED HANDOUT)

WHAT DOES BASELINE POLICY MEAN?

A baseline is a minimum level, usually mapped to minimum industry standards.

Baseline policy in Calcasieu Parish would require all municipalities within the Parish to use the minimum floodplain management standards.



BASELINE DESIGN ORDINANCES

- Greenspace
- Development Regulations
- Detention
- Design Rainfall
- Fill Limitations
- Freeboard Requirements

WESTLAKE
A GROWING FAMILY COMMUNITY

TOWN OF IOWA

CITY of LAKE CHARLES, LA.
1867

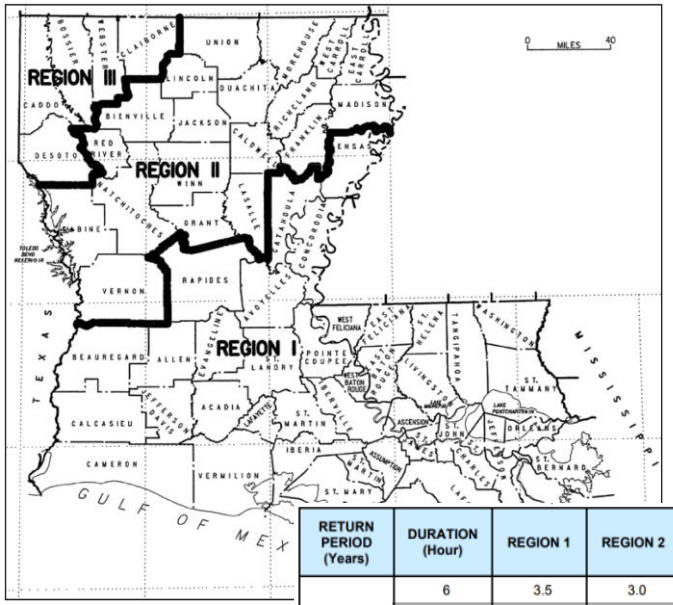
THE POLICE JURY
CALCASIEU PARISH, LOUISIANA

CITY of SULPHUR
FAITH ♣ FAMILY ♣ COMMUNITY

LOUISIANA'S GATEWAY TO
VINTON
CAJUN COUNTRY

DeQuincy
LOUISIANA
SMALL CITY. BIG HEART.
www.CityOfDeQuincy.com

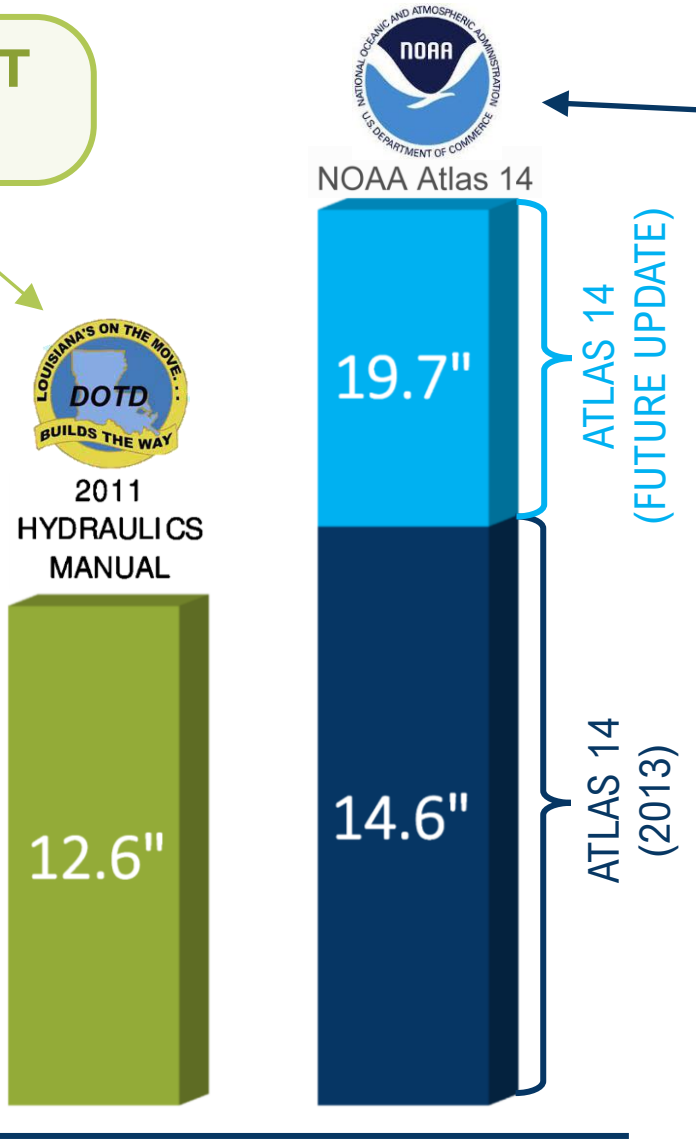
BASELINE - DESIGN RAINFALL

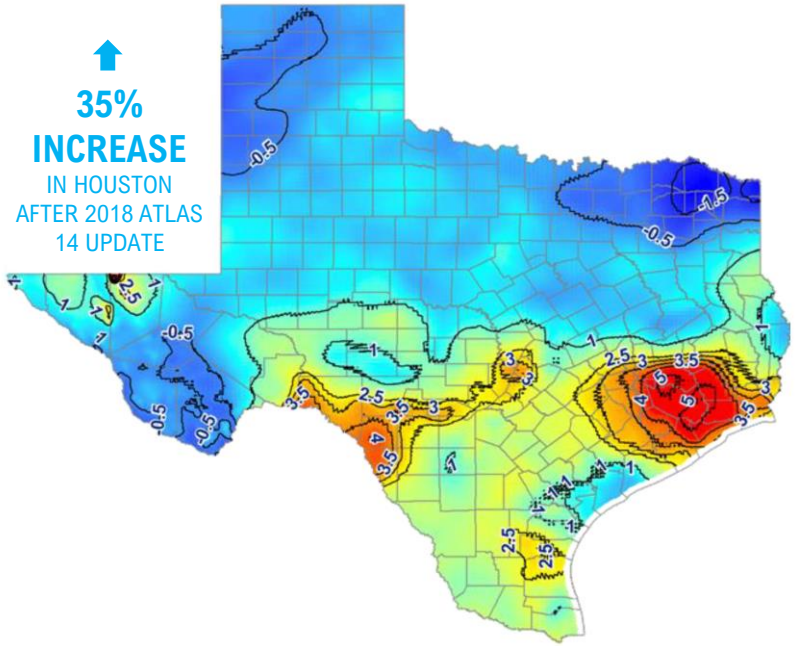


RETURN PERIOD (Years)	DURATION (Hour)	REGION 1	REGION 2	REGION 3
2	6	3.5	3.0	2.8
	12	4.1	3.6	3.2
	24	4.8	4.0	3.6
5	6	4.6	4.0	3.7
	12	5.6	4.8	4.3
	24	6.5	5.4	4.9
10	6	5.5	4.8	4.4
	12	6.7	5.7	5.1
	24	7.8	6.5	5.8
25	6	6.6	5.9	5.3
	12	8.2	7.0	6.2
	24	9.6	8.0	7.0
50	6	7.6	6.9	6.0
	12	9.5	8.1	7.0
	24	11.1	9.2	8.0
100	6	8.6	7.9	6.8
	12	10.9	9.3	7.9
	24	12.6	10.5	9.0

CURRENT POLICY

POLICY RECOMMENDATION





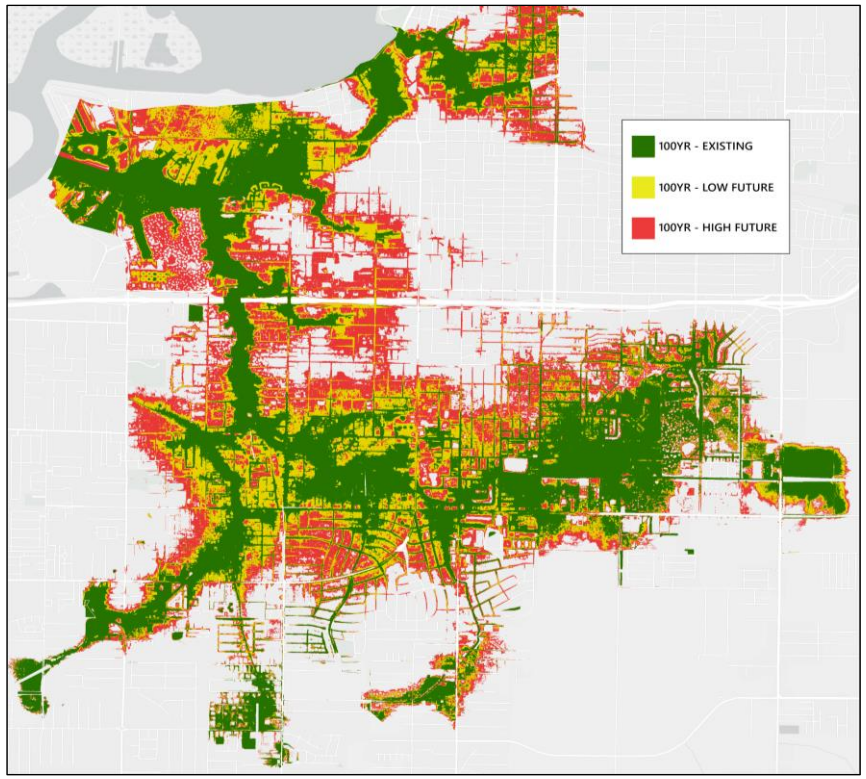
BASELINE - FREEBOARD REQUIREMENT

(WATERSHED HANDOUT)

POLICY RECOMMENDATION

The lowest floor must be elevated two feet above the BFE for all commercial, residential and infrastructure construction.

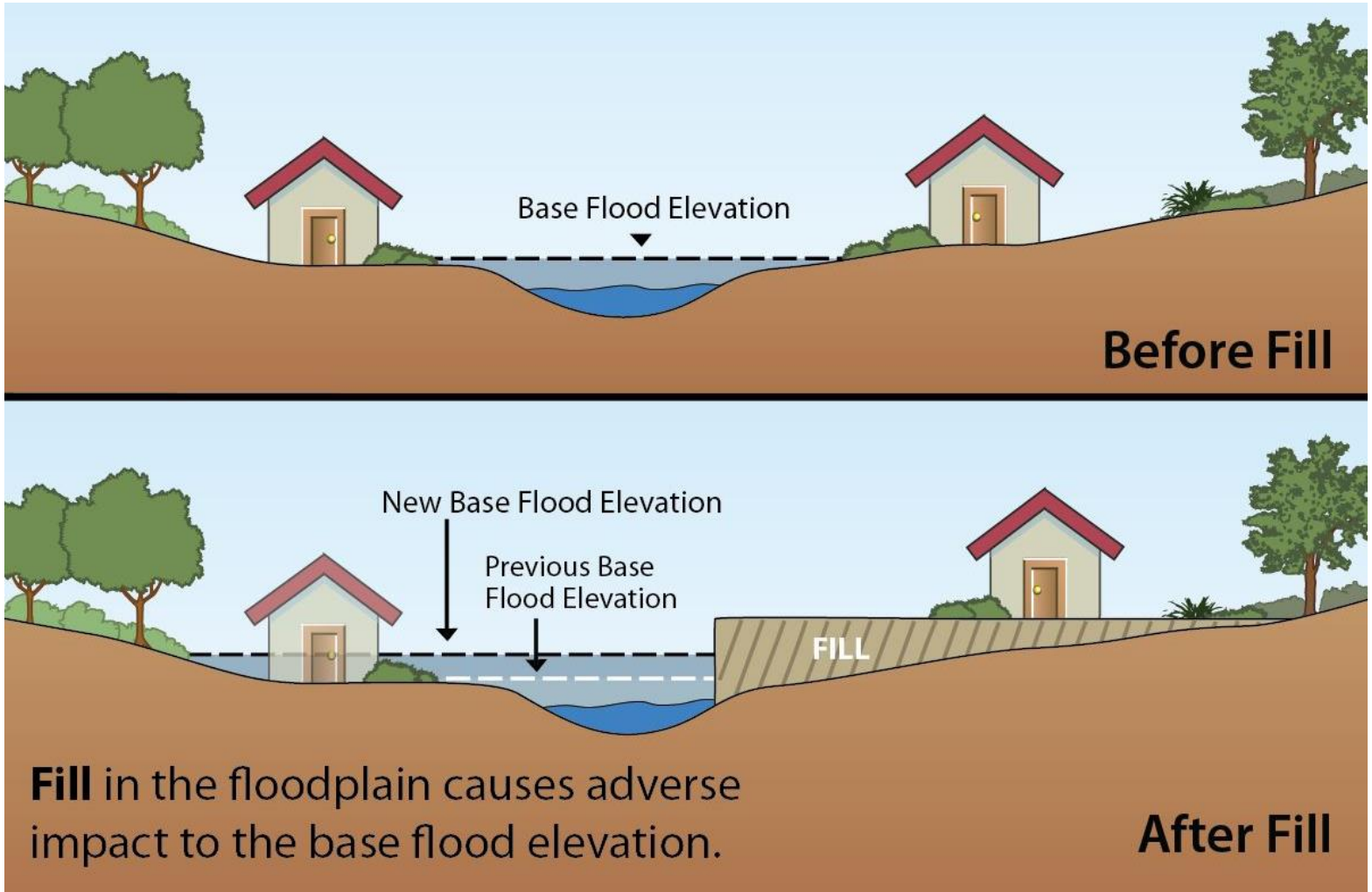
WHY BFE + 2FT?



- Sea Level Rise
- Increased Rainfall
- Increased Flood Depths
- FEMA requires BFE + 2ft

BASELINE - FILL LIMITATIONS

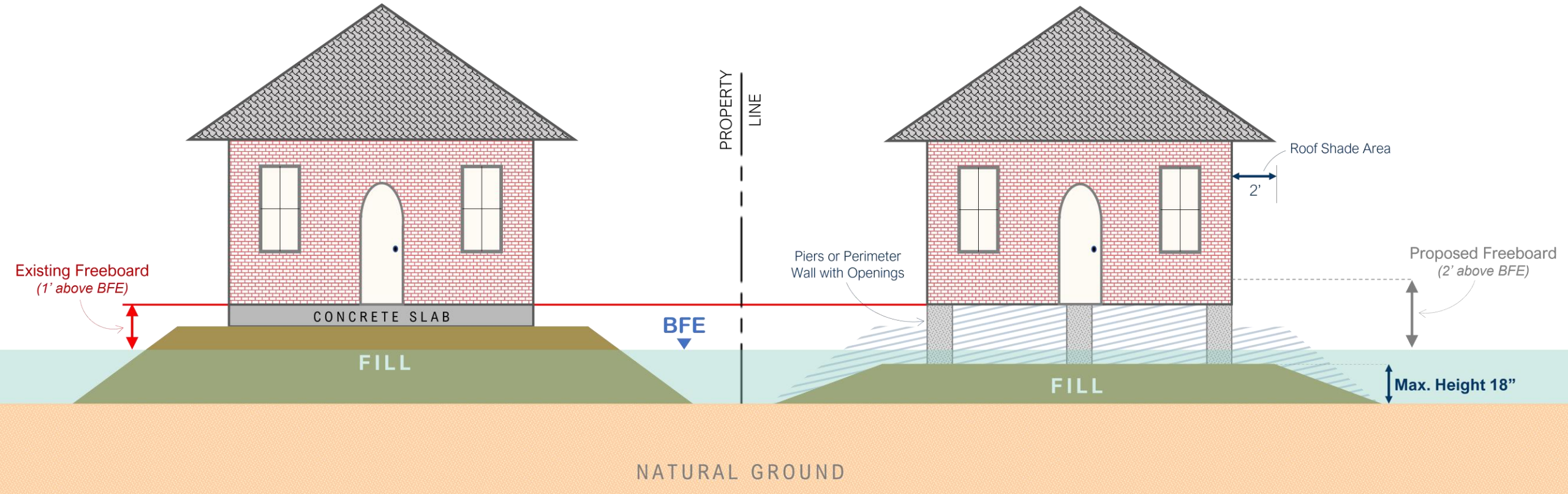
No Net Fill is meant to preserve the ability of the floodplain to store water.



BASELINE - FILL LIMITATIONS

CURRENT POLICY

POLICY RECOMMENDATION



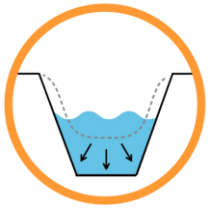
PROJECTS

SCREENING PROJECTS

REGIONAL DETENTION

PUMPS/ FLOODGATES

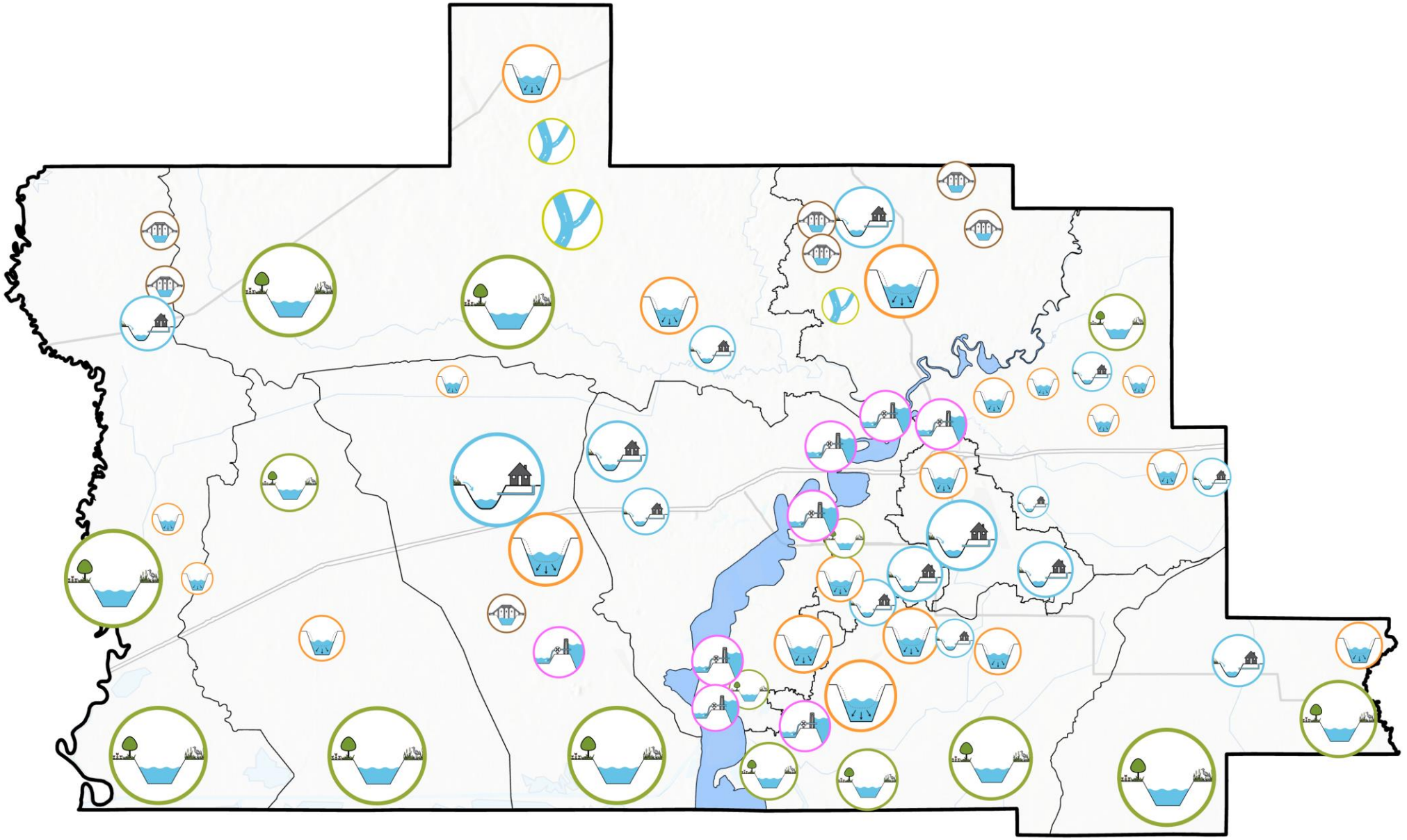
CHANNEL IMPROVEMENTS



ROADWAY ELEVATION

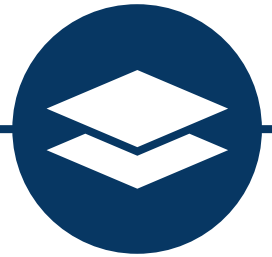
FLOODPLAIN PRESERVATION

FLOW DIVERSION



PROJECT EVALUATION PROCESS

PHASE 1



PROJECT SCREENING AND PRELIMINARY BCA ANALYSIS

PHASE 2

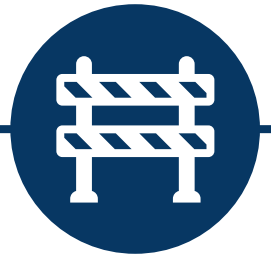
FEASIBILITY, PRE-DESIGN AND FULL BCA ANALYSIS

Calcasieu Parish Regional Watershed Management Study

PHASE 3

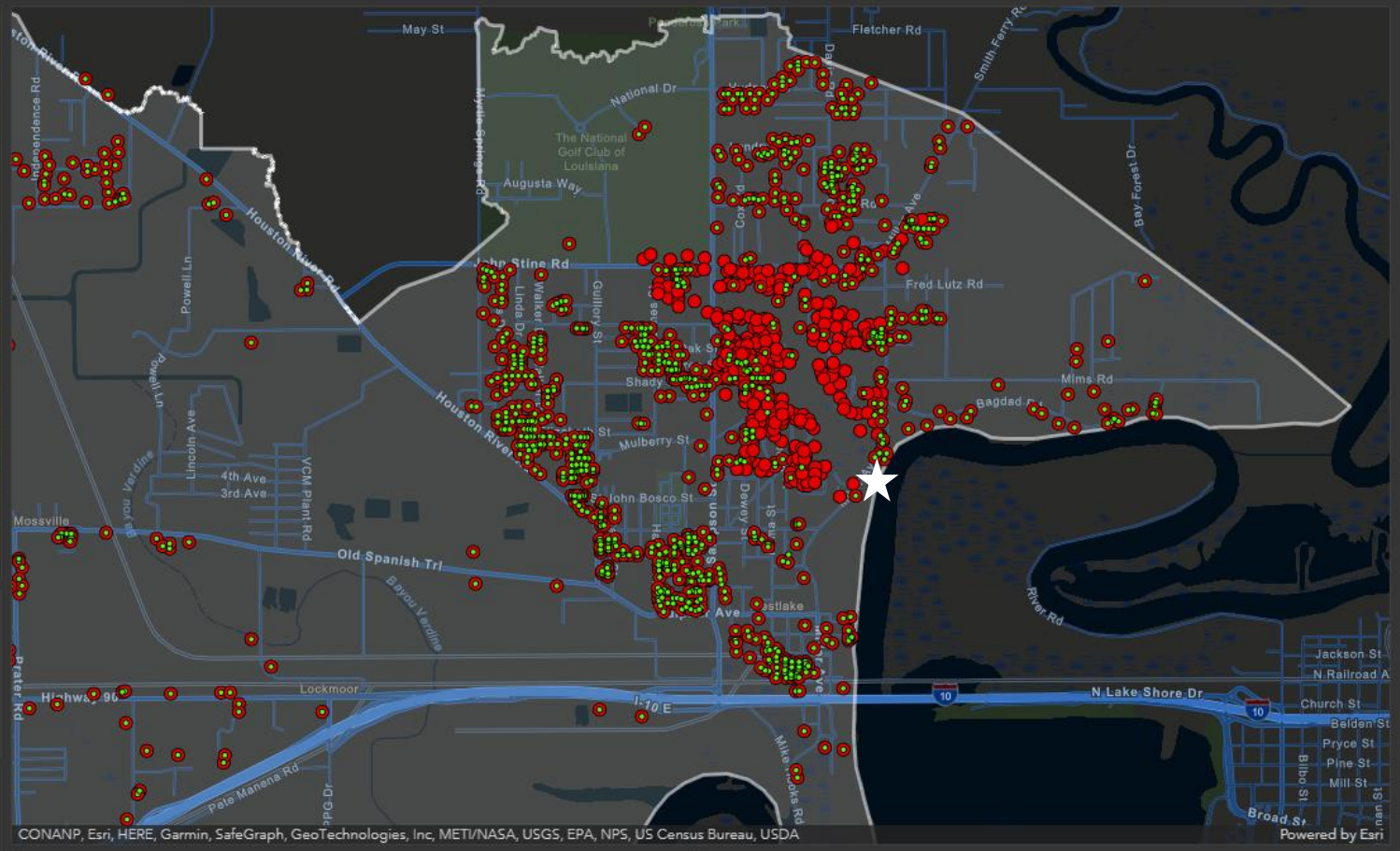
ENGINEERING DESIGN

PHASE 4



CONSTRUCTION

PROJECT ANALYSIS DASHBOARD



Project Details

Miller Avenue
Pump Station & Floodgate
Cost Estimate: $45,000,000

(PRE) Damage Cost $696,000,000 — (POST) Damage Cost $577,000,000

Reduction in Damages

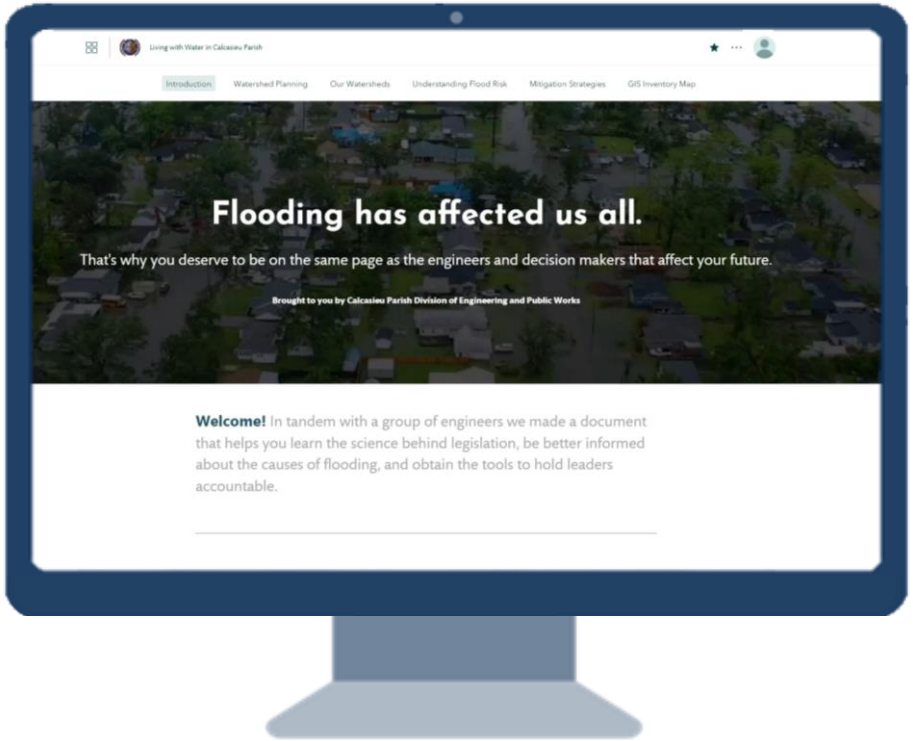
$119,000,000

Dollar Value ($)

Existing Conditions (PRE)			With Project (POST)		
Damage Cost	Acres Flooded	Flooded Structures	Damage Cost	Acres Flooded	Flooded Structures
$696,000,000	30,480	8,660	$577,000,000	30,270	8,350

SUMMARY

IMPLEMENTATION



PROJECT STORY MAP

WEBINAR SERIES

NEXT STEPS

2nd Quarter 2022

Analyze Projects & BCA Screening

3rd Quarter 2022

Project & Program Selection

1st Quarter 2023

Present to Police Jury

2nd Quarter 2023

Submit Watershed Management Plan

Thank You

Questions?