Presentation Resources

GLO Disasters Page

GLO-CDR GIS Hub

Compliance by Coordinates:

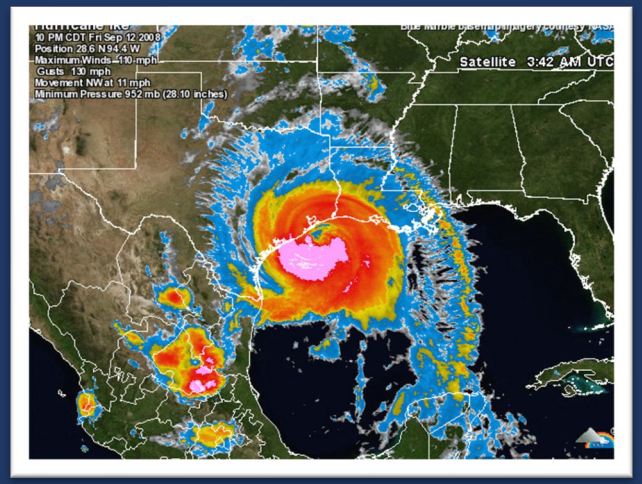
Practical Location Analysis for CDBG-DR Compliance (*No Geospatial Shop Required*)

Wednesday, October 7, 2026

Shawn M. Strange & Ricky Wells

Texas General Land Office

Community Development and Revitalization (CDR) Department





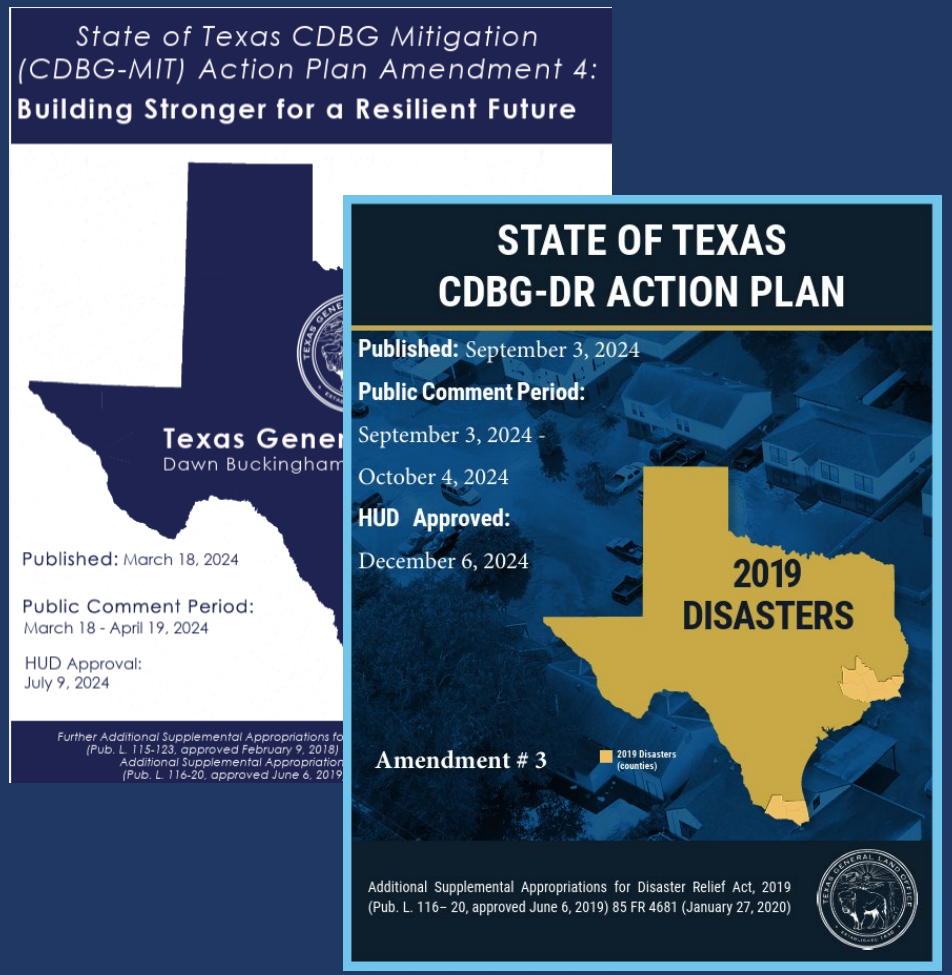






CDR Grant Portfolio

More than $14.8 billion in HUD CDBG-DR/MIT funds for disasters dating back to 2005



CDBG-DR ($10.5 Billion) to <u>Recover</u> From:

- Hurricanes Rita, Dolly, Ike, and Harvey
- 2011 Wildfires
- 2015 and 2016 Storm and Flood Events
- 2018 South Texas Floods and 2019 Disasters
- 2021 Winter Storms
- 2024 Disasters

CDBG <u>Mitigation</u> Funds ($4.3 Billion):

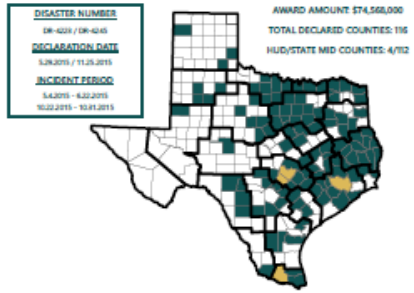
- 2015, 2016, Harvey (*2017*), and 2018

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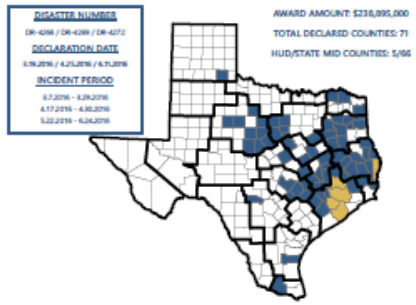
CDBG Mitigation & Disaster Recovery

Presidentially Declared Areas for Texas Most Impacted & Distressed Designations as of June 7, 2023

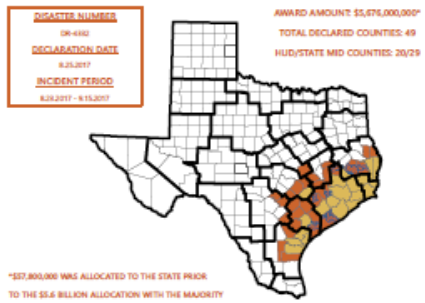
2015 Floods



2016 Floods



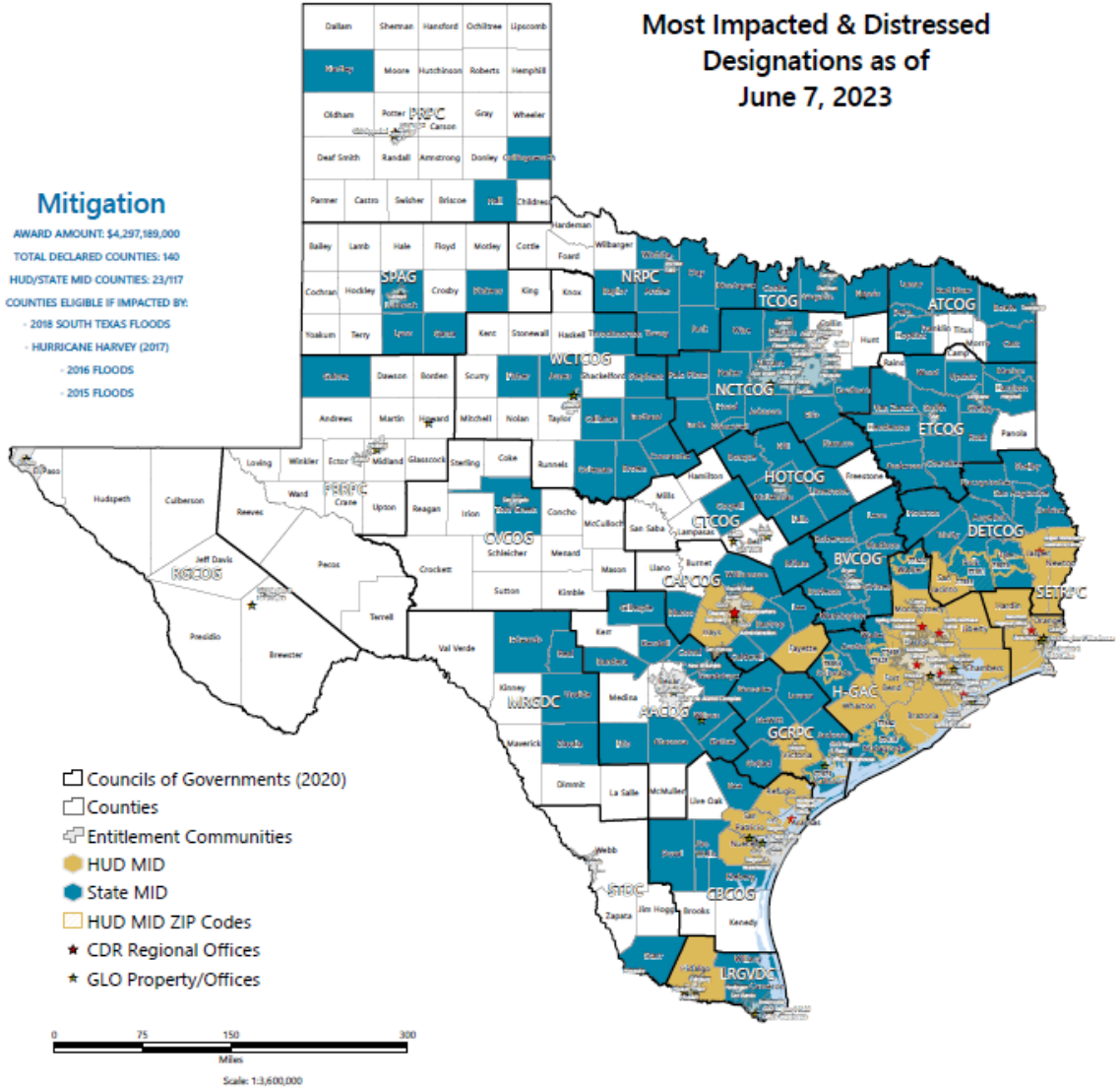
2017 Hurricane Harvey



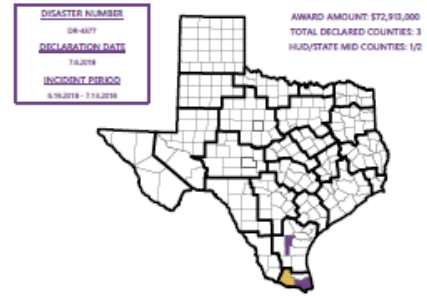
*$57,800,000 WAS ALLOCATED TO THE STATE PRIOR TO THE $5.6 BILLION ALLOCATION WITH THE MAJORITY OF FUNDS GOING TO HARRIS COUNTY

Mitigation

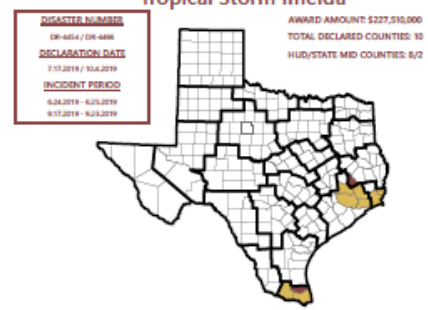
AWARD AMOUNT: $4,297,189,000
TOTAL DECLARED COUNTIES: 140
HUD/STATE MID COUNTIES: 23/117
COUNTIES ELIGIBLE IF IMPACTED BY:
- 2018 SOUTH TEXAS FLOODS
- HURRICANE HARVEY (2017)
- 2016 FLOODS
- 2015 FLOODS



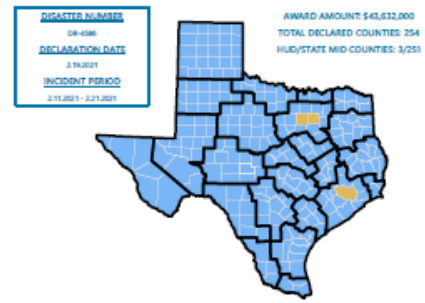
2018 South Texas Floods



2019 Lower Rio Floods & Tropical Storm Imelda



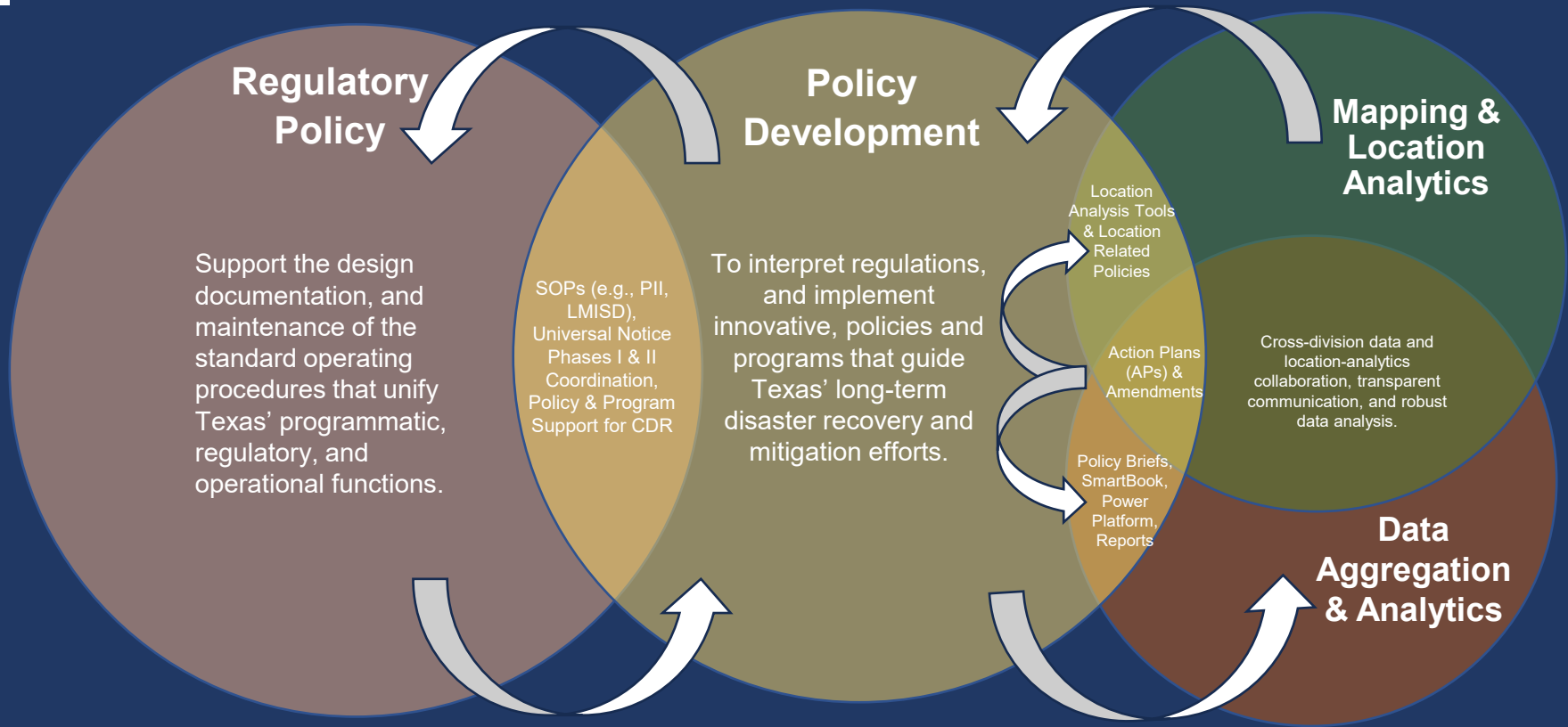
2021 Winter Storms



Data Source: FEMA Disaster Assistance Counties - https://www.fema.gov/disaster; HUD CDBG-Disaster Recovery/Mitigation Federal Register Notices
Author: Texas General Land Office - Community Development and Revitalization Division, Policy and Mapping Group
Date: June 6, 2023

Regulatory, Policy & Planning Section

A “T-shaped” section of three teams comprised of generalists in regulatory, policy development with deep specialist expertise across multiple disciplines (location/data analysis, project management, etc.).



Framework: Innovation & Fiscal Stewardship

Evolving Approach to the Solution

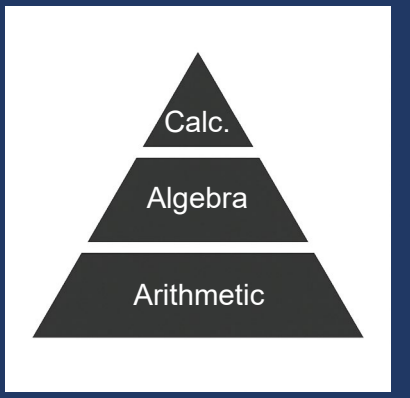
- Appropriately integrate technology
- Enable adaptability and ongoing evolution
- Drive process transformation
- Leverage leadership commitment to streamline operations
- Improve efficiency
- Enhance fiscal stewardship



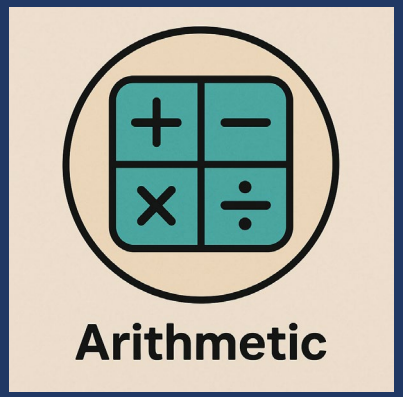
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Tiers of Complexity

Emergency (*On-The-Fly*) Innovation



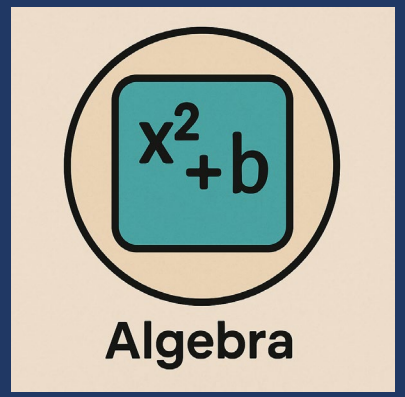
How the integration of particular technologies with evolving regulatory policy needs drives innovation in disaster recovery and mitigation enterprises.



(Foundational)

2 + 2 = 4

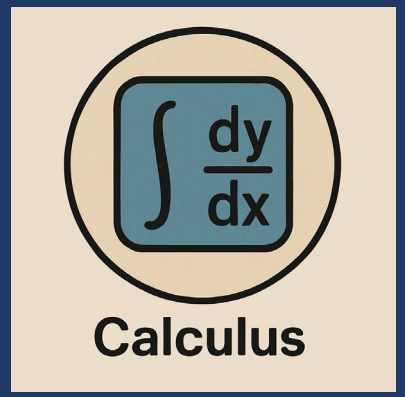
Knowing It



(Intermediate)

2 + a = 4

Figuring It Out

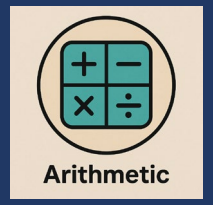


(Advanced)

$f(x) = \int (2x)\,dx \rightarrow x^2 + C$

Analyzing It

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Arithmetic (Basic/Foundational)

Simple, low-tech or off-the-shelf solutions that are rapidly deployable

Accessible to anyone with basic tools and minimal training.

Need - Why	Challenge - What's in the Way	Solution - How
Monitoring Multiple Project Sites	Digitizing limitations for Applicants	Project Sites Map
Targeted Program Outreach	Protecting PII & Large Geographies	Targeted & De-Identified Maps



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Arithmetic: Project Sites Map

Simple, low-tech or off-the-shelf solutions that are rapidly deployable

A layered PDF solution showing the project site locations for a subrecipient and grant manager that is utilized in contract deliverable milestones. Engineer's Lat./Long. coordinates digitized and assigned to regions for easier communication and tracking.

Technology Used:

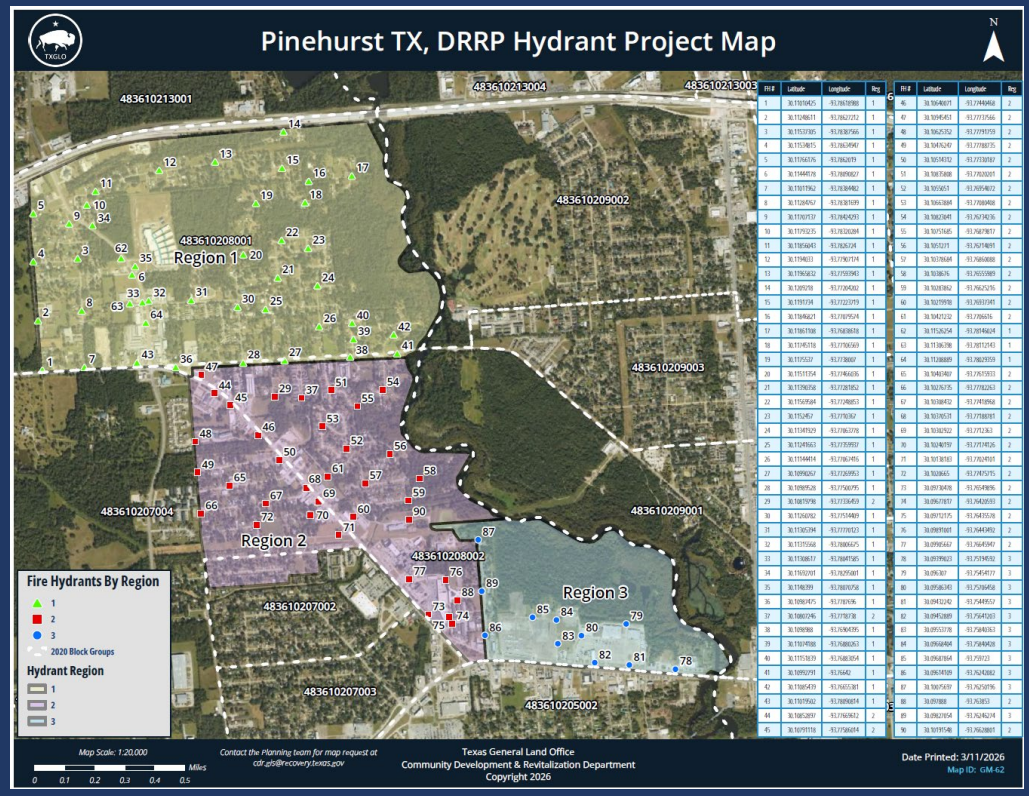
- Microsoft Excel, ArcGIS Pro & Adobe PDF

Development Context:

- Grant Management Team & Local Subrecipient

Impact Achieved:

- Clear visualization of project sites with integrated layers within the PDF for dynamic viewing. Allows for easier communication between grant managers and community while also tying into contract deliverable milestones.

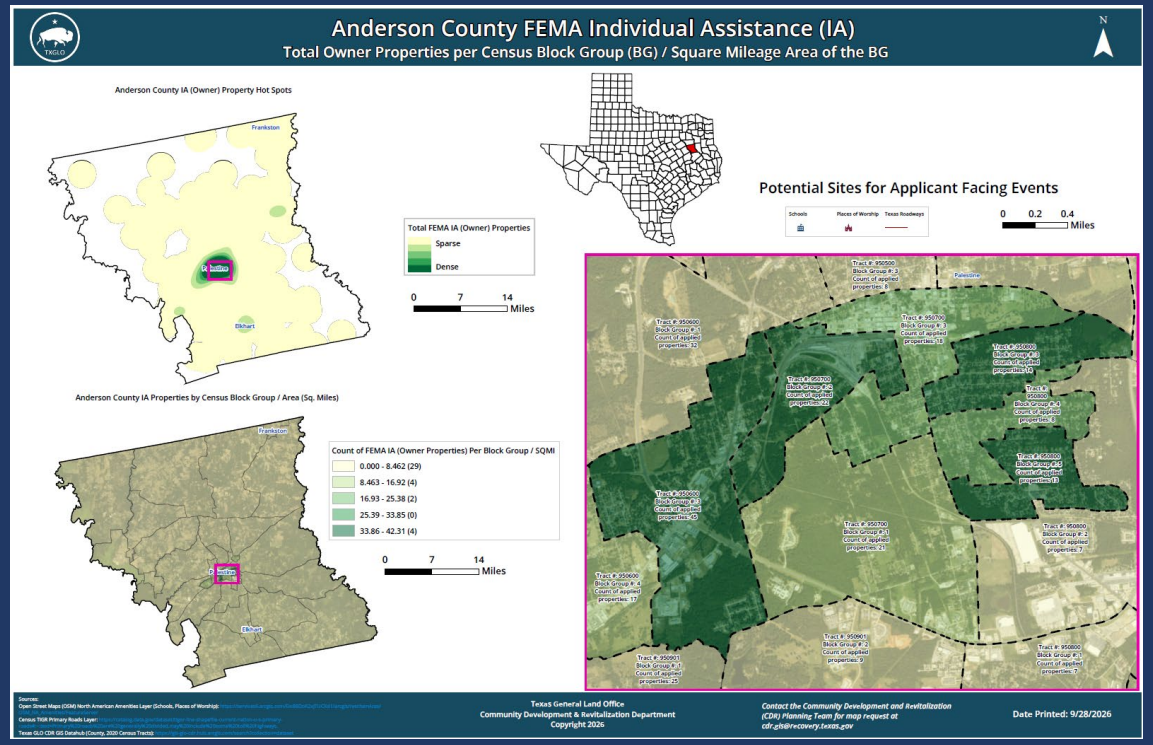


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Arithmetic: Targeting Maps

Simple, low-tech or off-the-shelf solutions that are rapidly deployable

A solution that provides targeted-outreach through mailings and program promotion for housing programs in areas directly-impacted by disasters. Disaster impact data is de-identified through a normalized spatial join and presented with location-specific details, such as roads, sites of interest, and zoning. This enables program staff to promote programs with direct value to communities, ensuring clear tie-back to eligible disasters.



Technology Used:

- Microsoft Excel, ArcGIS Pro & Adobe PDF

Development Context:

- Homeowner Assistance Program, TxGIO/Local Data, & Outreach Coordinators

Impact Achieved:

- Eliminates unnecessary costs by targeting areas within large geographies that have direct tie-back to disasters while also providing streamlined outreach coordination in the field, further reducing drain on program costs.

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Algebra (Intermediate/Integrative)

Combines tools and requires moderate setup or cross-departmental coordination

More coordinated and semi-automated, but still relatively accessible.

Need - Why	Challenge - What's in the Way	Solution - How
Duplication of Benefits (DOB) Review(s)	PII Security & Data Aggregation	Secured DOB Viewer
Visibility of Project & Program Data	Disparate Data Sets	ArcGIS Online Dashboards
Project Location Capture	Systems Setup	Location Entry Form
Contract Validation	Site(s) & Service Area Overlays	Infrastructure Project Map
Field Input from Local Site Visits	User Adoptability & Context	Survey123 for Geotagging & Reports



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Integrative: Secured DOB Viewer

Combines tools and requires moderate setup or cross-departmental coordination

Secured (FedRAMP Moderate) DOB Viewer requiring access request and user-validation. Users review multiple comprehensive datasets in one location where data downloads are not permitted.

Technology Used:

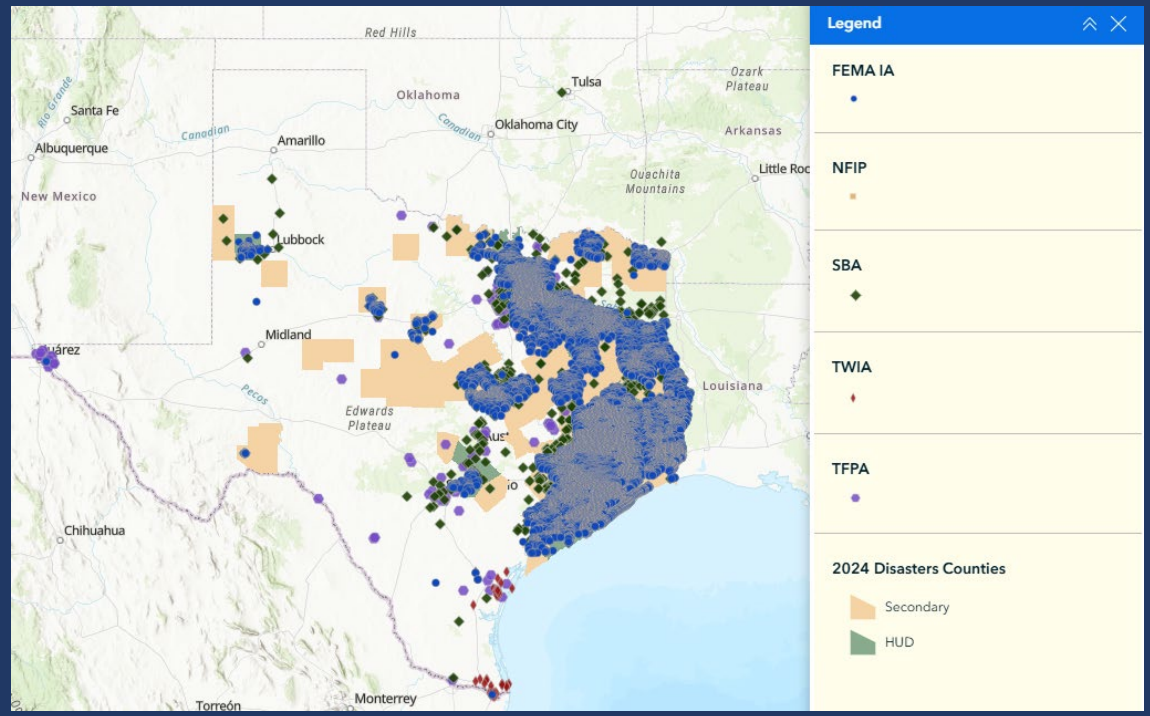
- Esri Hub Premium & Microsoft Power Automate

Development Context:

- Offices of Information Security, General Counsel, & Homeowner Assistance Program

Impact Achieved:

- Data access monitored and controlled with limited risk for data being compromised or downloaded. Reduction in DOB review time by team across varied disaster assistance datasets.

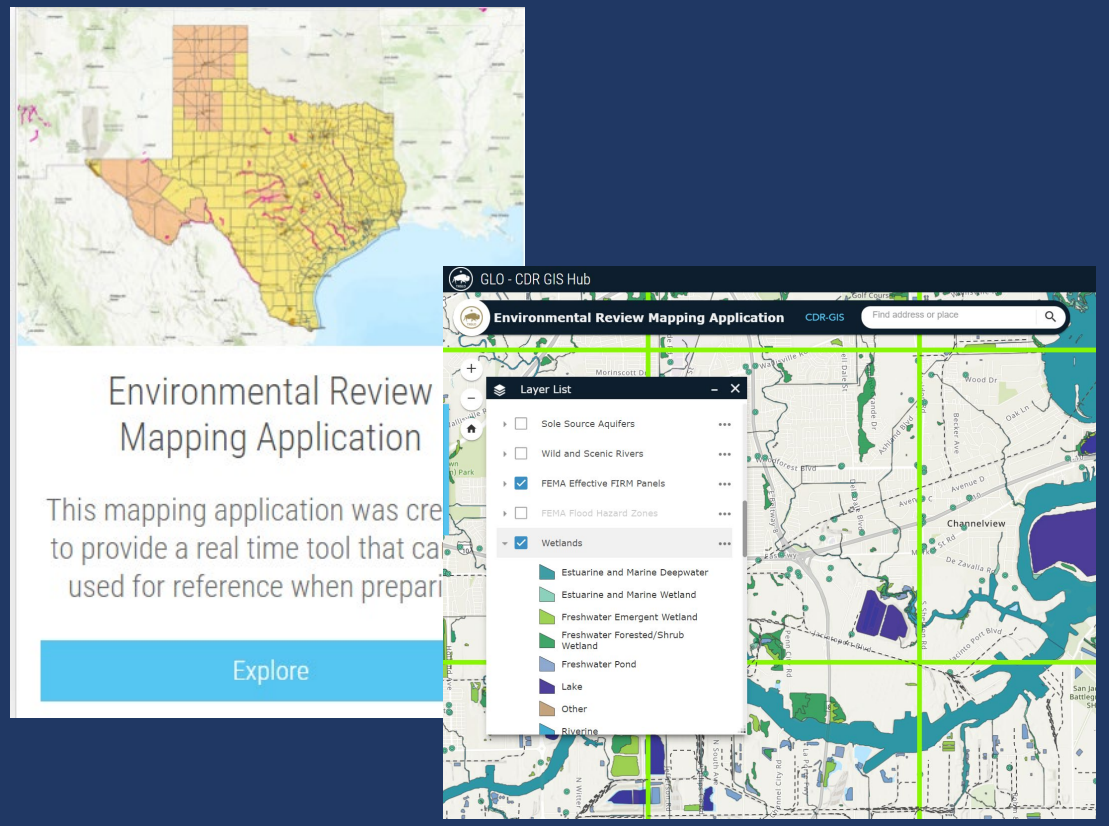


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Integrative: ERMA Viewer

Combines tools and requires moderate setup or cross-departmental coordination

Environmental Review Mapping Application (*ERMA*) designed to assist in preparing 24 CFR Part 58 documents which are the regulations used to satisfy compliance with National Environmental Protection Act (*NEPA*).



Technology Used:

- AGOL Web App Builder + ArcGIS REST Services & Hub Basic

Development Context:

- Coordination with GLO-CDR Environmental Staff & Subrecipients as Responsible Entities

Impact Achieved:

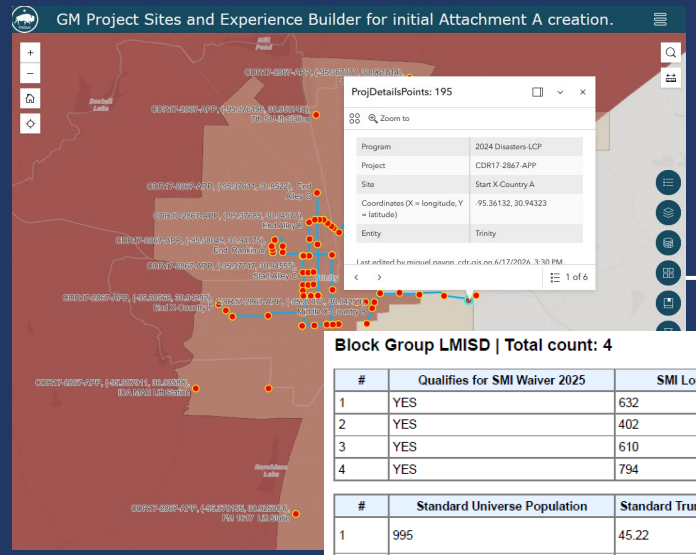
- Streamlined environmental workflows by reducing manual mapping steps, increasing accuracy, and empowering subrecipients to meet NEPA compliance more efficiently and independently.

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Integrative: Project Form & Map

Combines tools and requires moderate setup or cross-departmental coordination

Form-centric solution for collecting project location data (points and lines) provided during standard application intake. Used for site-specific validations and subrecipient contract specifications and location details.

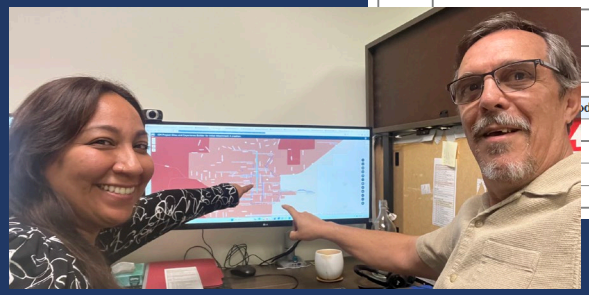


Block Group LMISD | Total count: 4

#	Qualifies for SMI Waiver 2025	SMI Low-Mod Population	SMI Universe Population
1	YES	632	1,312
2	YES	402	616
3	YES	610	1,528
4	YES	794	1,221

#	Standard Universe Population	Standard Truncated Low-Mod Percent	GEONAME
1	995	45.22	Block Group 1, Census Tract 9504, Trinity County, Texas
2	700	69.28	Block Group 2, Census Tract 9505, Trinity County, Texas
		32.53	Block Group 5, Census Tract 9504, Trinity County, Texas
		61.53	Block Group 1, Census Tract 9505, Trinity County, Texas

d Percent	Standard Low-Mod Population	GEOID
	450	484559504001
	485	484559505002
	540	484559504005
	600	484559505001



Technology Used:

- Esri Survey123, Experience Builder, & Near Me (report)

Development Context:

- Grant Management & Special Projects Teams

Impact Achieved:

- Significant reduction in application project-location intake time with low activation-energy for adoption. Reporting function created a consolidated, validation-resource for reviewers and reduction in time for contract specifics.

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Integrative: Survey123 Form

Combines tools and requires moderate setup or cross-departmental coordination

Form-centric solution for collecting data via mobile devices and analyzing results. Used for site quality assurance inspections and form checklists and report generation.



Technology Used:

- Esri Survey123 & Microsoft Power Automate (*Tablets*)

Development Context:

- Quality Assurance team + Compliance Reporting & On-The-Ground Context

Impact Achieved:

- Reduced inspection turnaround time and improved data accuracy by enabling real-time mobile collection, automated routing, and standardized reporting.

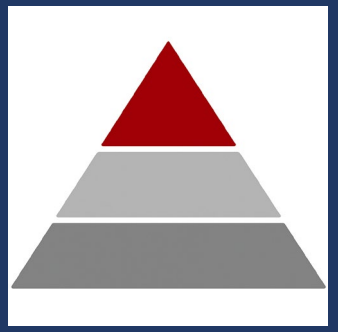
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Calculus (Advanced/Analytical)

Advanced/data-integrated innovations requiring higher planning, technical skill, or infrastructure

Powerful but require planning, cross-sector integration, or specialized staff/tools.

Need - Why	Challenge - What's in the Way	Solution - How
Allocate Funding for Greatest Impact	Shifting/Dynamic Conditions	Predictive Models to Guide Projects
Measure Program Performance	Reports Focus on Inputs	Power BI Dashboards & Integrated Data
Ensure Consistent App. Reviews	Manual Review is Inconsistent	Rule-Based Application Engines
Assess Disaster Damages (*Needs*)	Resource-Intensive Process	Remote Sensing & Machine Learning
Reduce Risk & Ensure Compliance	Disparate Compliance Req's	Automated Validation Systems
Provide Reporting for Admin. Workflows	Data & Systems Fragmentation	FME Automation & Power Platform Tools



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Challenges & Considerations

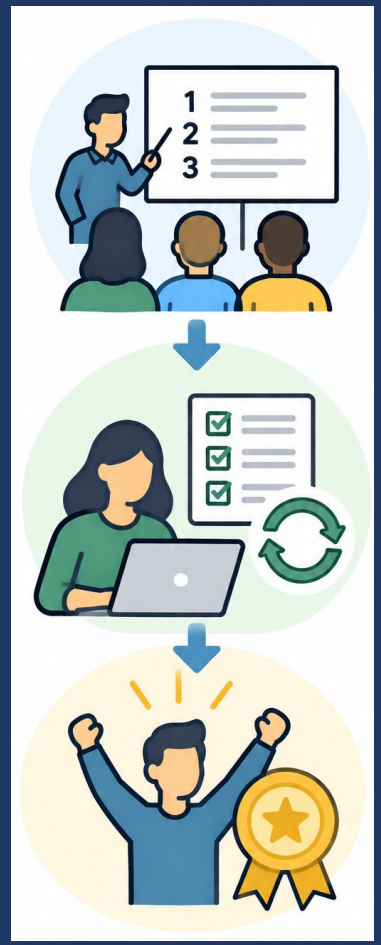
Barriers to Innovation and Paths Through Them

User Adoption

Process by which people begin to consistently use and integrate a new tool, system, or process into their regular work.

Arithmetic is Learned

Simple, repeatable actions that are taught, practiced, and mastered through training and support.



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Bottom Line

Location analytics coupled with data literacy is the practical way (2 Examples)

Capacity Returned



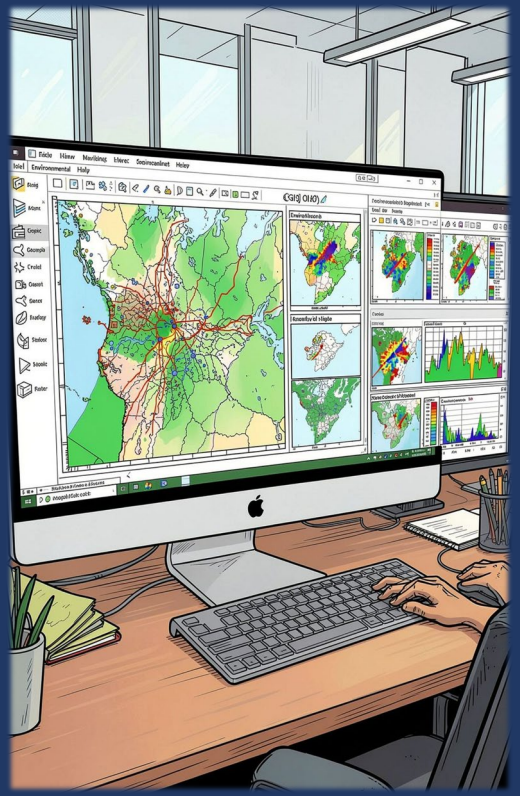
46 Projects Covered
(Full project validated with sound source data)

X

4 Hours Saved Per Project
(Manual validation time eliminated per project)

184 Total Hours Returned
(for the 46 Projects)

Avoided Outside Cost



27
Counties Reviewed
Completed internally by program staff

X

$13K
Per-Review Estimate
Based on typical external cost rates

$351K
Gross Avoided Cost
Total estimated outside vendor expense

$309K
Net Avoidance After Internal Cost
After $42K annual CDR license

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Final Thoughts

Developing and Integrating Disaster Recovery and Mitigation Programs

Scalability of Techniques & Approaches:

- Dependent on funding amounts and disaster type and scale.
- Keep the end-state in mind from the beginning.

Custodians of Techniques & Innovations:

- Ensure maintenance, accuracy, and usability.
- People closest to the solution are closest to the problem (*Context*).
- Consideration of future readiness (*AI & Machine Learning*)

Questions?

Thank You

Presentation Resources

GLO Disasters Page

GLO-CDR GIS Hub



Shawn M. Strange

Director, Regulatory, Policy & Planning Section

shawn.strange@recovery.texas.gov



Ricky Wells

Manager, Policy & Planning Branch

ricky.wells@recovery.texas.gov

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