



# Risk Assessment and Pre-Disaster Planning

Disaster Planning and Response in Historic Texas Cemeteries

# Zoom Webinar Housekeeping

- Trouble with computer audio? Try using your phone instead.
  - 1-346-248-7799 Webinar ID 841 3957 8009
- All attendees are in listen-only mode
- This session is being recorded for later viewing
- Use the **chat box** to
  - Ask for help
  - Make comments during the presentation
  - Share links or tips
- Use the **Q & A box** to
  - Ask the presenters a question
  - We'll answer them live at the end of the presentation





## Disaster Planning & Response in Historic Cemeteries

## Webinar Series Introduction and Overview

- The National Park Service (NPS) awarded THC **\$12.3 million** from the Emergency Supplemental Historic Preservation Fund (ESHPF) to address the consequences of Hurricane Harvey on historic properties.
- THC has awarded over **\$9.2 million** in sub-grants to date.



*Rosewood Cemetery, Galveston County*



*Wood Mansion, Refugio County*

# Webinar Series Introduction and Overview

## Online Training Series: Disaster Preparedness & Response for Historic Cemeteries

- **Goal:** Provide cemetery caretakers with the knowledge and skills necessary to build greater resiliency to withstand and recover from future disasters
- **Timeline:** Summer 2021 – Summer 2022
- **Project Team:** Led by Terracon Consultants, Inc.
- **Program:** Six webinars + six stakeholder meetings



*Rockport Cemetery, Aransas County*

## Instructional Webinars

1. Lay of the Land: Cemetery Orientation
2. Cemetery Survey and Data Collection
3. Risk Assessment & Pre-Disaster Planning
4. Immediate Response to Natural Disasters
5. Post-Disaster Recovery & Restoration, plus Preservation Funding
6. People's Choice!

## Stakeholder Meetings

- Highly interactive
- Group discussions
- Feedback opportunities



*McGaffey Cemetery, Jefferson County*

**Stay Up to Date!**

[www.thc.texas.gov/Harvey-cemeteries](http://www.thc.texas.gov/Harvey-cemeteries)

# Review

## Webinar 1

### Lay of the Land: Cemetery Components, Cultural Practices, and Materials

- Recognize the physical components of cemeteries beyond grave markers
- Recognize common cultural funerary practices and recognize items located at gravesites may reflect cultural traditions that should be determined prior to removal or disturbance of these features
- Understanding of basic cemetery safety practices.

The screenshot shows a webinar slide with a white left half and a red right half. On the white side is the Texas Historical Commission logo. The red side contains the title 'The Lay of the Land: Cemetery Orientation' and the subtitle 'Disaster Planning and Response in Historic Texas Cemeteries'. A disclaimer at the bottom reads: 'This material was funded by the Emergency Supplemental Historic Preservation Fund, National Park Service, Department of the Interior. Any opinions, findings, and conclusions or recommendations expressed in this material do not constitute endorsement or necessarily reflect the views of the Department of the Interior or U.S. Government.' On the right edge, there is a vertical sidebar with four circular icons: a green circle with 'AB', a landscape photo, a portrait of a woman, and another portrait of a woman.



## Slide 8

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**CD1** Do we need to replace Ashley with Myself on this slide?  
Connor Dixon, 3/22/2022

## Webinar 2

### Survey and Data Collection

- Historic significance of cemeteries and be able to convey the essential history contained in cemeteries to community stakeholders and potential funding partners.
- Baseline understanding of cemetery documentation methods
- Pre-disaster documentation strategies and data protection methods.

The screenshot shows a webinar slide with a white background on the left and a red background on the right. On the white background, the Texas Historical Commission logo is displayed. On the red background, the title 'Survey and Data Collection' is written in white, followed by the subtitle 'Disaster Planning and Response in Historic Texas Cemeteries'. Below this, a disclaimer states: 'This material was funded by the Emergency Supplemental Historic Preservation Fund, National Park Service, Department of the Interior. Any opinions, findings, and conclusions or recommendations expressed in this material do not constitute endorsement or necessarily reflect the views of the Department of the Interior or U.S. Government.' On the right side of the slide, there is a vertical stack of four circular icons: a photo of a woman, a photo of a cemetery, a circle with the letters 'AB', and a photo of a woman.



# Risk Assessment and Pre-Disaster Planning

Disaster Planning and Response in Historic Texas Cemeteries

*This material was funded by the Emergency Supplemental Historic Preservation Fund, National Park Service, Department of the Interior. Any opinions, findings, and conclusions or recommendations expressed in this material do not constitute endorsement or necessarily reflect the views of the Department of the Interior or U.S. Government.*



*Dory Hill Cemetery - Black Hawk, CO*

## Common threats to historic cemeteries

- Development pressure
- Weathering
- No caretaker or cemetery association
- Theft
- Insufficient mapping
- Lack or loss of records
- Animals
- Natural forces and man-made disasters

## Learning Objective 1

- Identify and understand the potential threats to the cemetery from natural disaster events and identification tools for their region.



*Dory Hill Cemetery - Black Hawk, CO*

## Learning Objective 2

- Understand maintenance, landscape, and pre-disaster preparedness plans and mitigation strategies.



*Port Bolivar Community Cemetery, Galveston County*

## Learning Objective 3

- Learn more about the tools for implementing pre-disaster mitigation plans including basic through comprehensive measures.



*Keng Cemetery, Lee County*

# The Pre-Disaster Plan

## Plan Components

- Cemetery Layout
- Cemetery Survey Efforts
- Risk Assessment and Identification of Threats
- Maintenance Plan
  - Regular
  - Preventative
- Communication Plan
- Safety
- Protective Actions Checklist

City Park Cemetery Pre-Disaster Plan  
UPDATED DECEMBER 2021

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◦ Evacuations / Emergency Procedures	
◦ Command Center / Temporary Space	
Supplies and Services	
Scope and Goals	
Staff Training	
Distribution, Review, and Updating	

PREVENTION

**Assessing Risks: Natural/Industrial/Environmental Hazards**

Please consider and rate the risks in the lists below. Consider which events are most likely to occur and which would have the most serious consequences. Rate each risk on the following scale:

1 = serious risk      2 = moderate risk      3 = minimal risk      4 = not a risk

**Natural Hazards**

Is your institution at significant risk for:

- 1 2 3 4 Hurricane
- 1 2 3 4 Thunderstorms/Lightning
- 1 2 3 4 Tornado
- 1 2 3 4 Severe Winter Storm
- 1 2 3 4 Flooding (located near a lake, stream, or river)
- 1 2 3 4 Coastal Flooding (located in a coastal area)
- 1 2 3 4 Dam Failure (located near a dam)
- 1 2 3 4 Earthquake
- 1 2 3 4 Wildfire/Forest fire
- 1 2 3 4 Other \_\_\_\_\_

# Pre-Disaster Plan -- Cemetery Layout

## City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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*Broadway Cemetery, Galveston, Galveston County*

## Significant Cemetery Features

- Locate and map below-grade elements
- Understand the current drainage systems
- Identify areas of concern in a disaster event
- Determine the condition and location of access roads
- Prioritize areas subject to pre-disaster protection

## City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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### Review Findings of Previous Surveys

- Determine condition of above ground resources in the cemetery and assign damage risk
- Informs the pre-disaster plan on what actions are required to protect resources.
- Prioritize pre-disaster protection efforts
- Compare pre- and post-disaster changes/damage



*Dory Hill Cemetery - Black Hawk, CO*

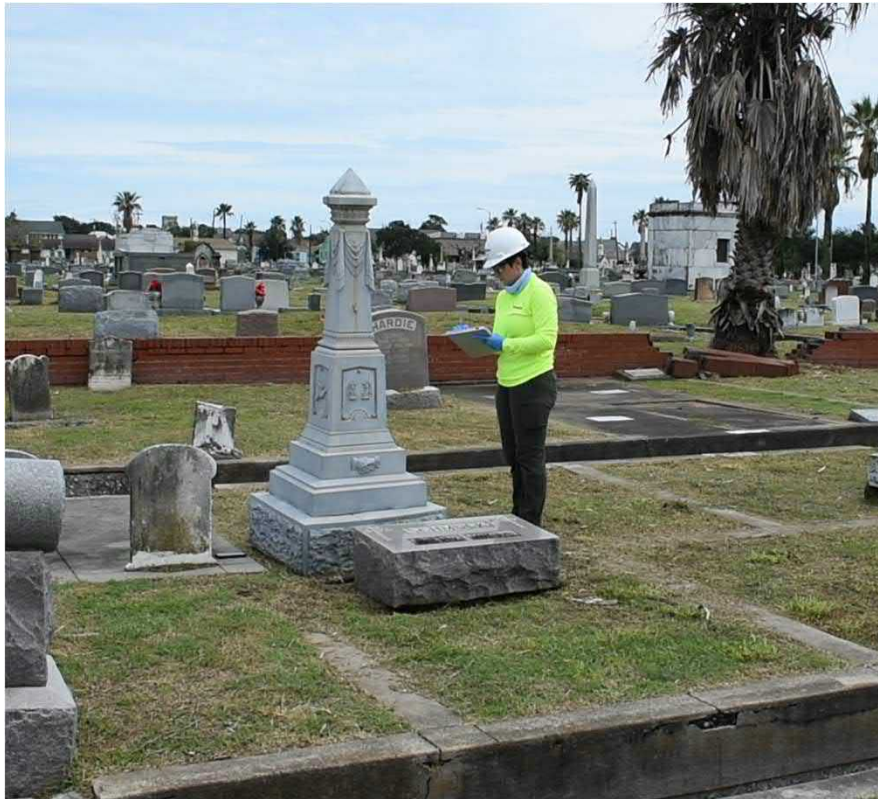
## City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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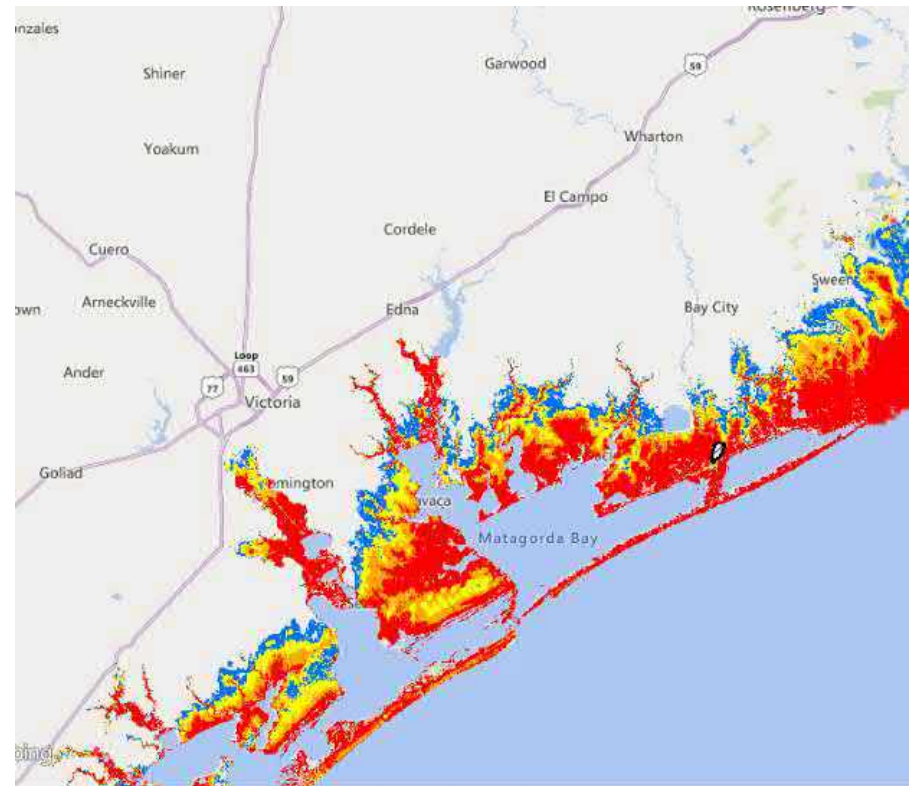
*Broadway Cemetery, Galveston, Galveston County*

## Assessment of Hazards and Threats

- Needs to happen before pre-disaster planning to determine threats, existing issues, and possible conditions the cemetery may experience during a disaster event.
- This will be most effective if the cemetery has been surveyed first.

## Identification of Potential Threats from Natural Disasters

- Document weather predictions for your cemetery
  - Flood zone
  - Hurricane models
  - Historical flood zone maps
- Talk to community members and city officials about known trends



*SLOSH Map, Texas Gulf Coast*

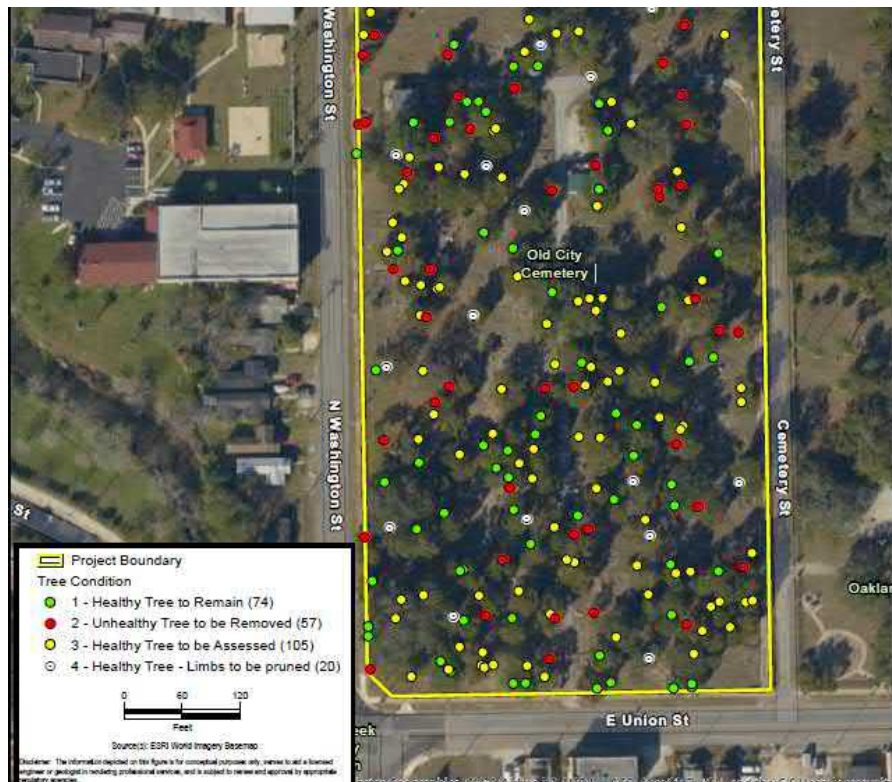


## Confirm Permanent Address of Cemetery

- Apply for address, if doesn't already exist
- Make sure it is clearly marked
- Recorded address is necessary pre- and post-disaster
  - Utility locates
  - Service providers
  - Funding requests



*Port Bolivar Community Cemetery, Galveston County*



*Old City Cemetery - Jacksonville, Florida*

## Tree Health Assessment

- Leading cause of damage after Hurricane Harvey due to trees
- Performed by certified professional every +/- 5 years
  - Priority 1 – remove dead/dying/diseased
  - Priority 2 – limb and trim healthy
  - Priority 3 – trim or remove threats to cultural resources
- Find resources within your community
- Keep healthy and intentional plantings

# The Pre-Disaster Plan

## City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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*Evergreen Cemetery, Jefferson County*

## Building Resiliency

- During risk assessment and prior to any disaster there are some actions which can minimize potential disaster related damage and ease the tasks required during the pre-disaster prepping.

## Understand Plantings

- Initial cleanup
- Use survey findings to understand location of cultural plantings to be preserved
- Identify areas of concern, including results of tree health assessment
- Outline schedule for regular maintenance



*Olivewood Cemetery, Harris County*

## Best Practices

- Find alternatives to harmful treatments
- Remove vegetation safely
- Plan for repair in conjunction with removal of vegetation between mortar joints
- Explore creative options for regular maintenance (short term and long term goals)



*Broadway Cemetery, Galveston, Galveston County*

## Markers and Monuments

- Understand material composition to define appropriate repair technique
- Check for damage before cleaning
- Simple cleanings are typically what's needed

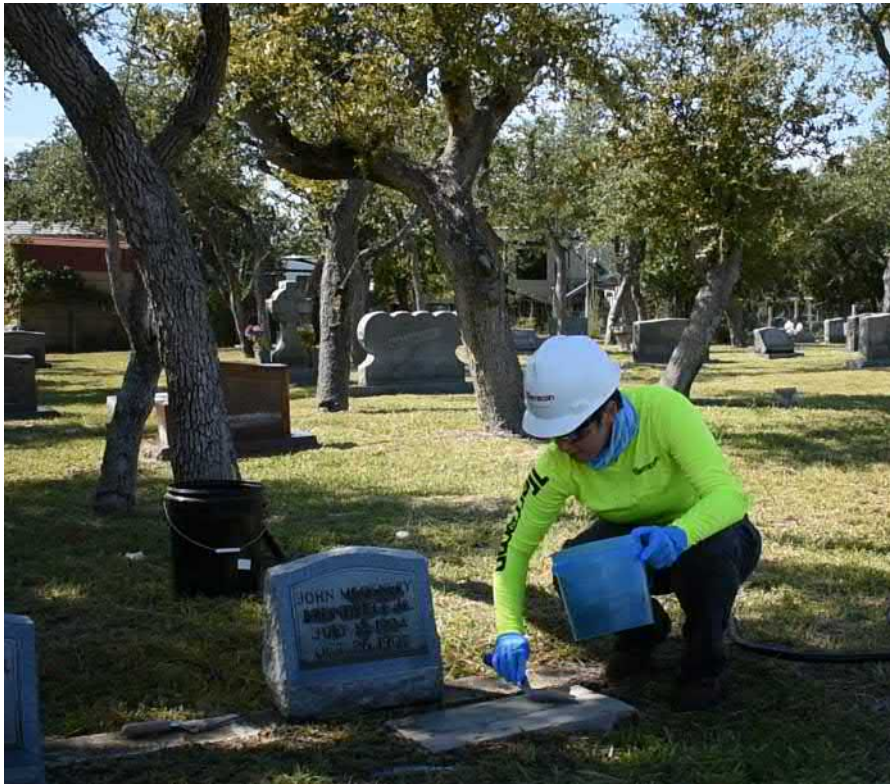


*Broadway Cemetery, Galveston, Galveston County*

# Maintenance Plan

Demonstration Video – Understanding Materials  
Hardness and Repairs; Recognizing Deterioration  
Mechanisms and Issues





*Lamar Cemetery, Aransas County*

## Best Practices

- Repairs should be undertaken by those experienced in conservation of monuments
- Use least invasive conservation and repair techniques necessary
- Consider material properties and structural stability
- When in doubt, leave as-is and seek expert guidance

## City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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## Build Contacts and Establish Roles

- Establish relationships with professionals and volunteers
  - Include professional contracts information within communication plan
- Assign primary and support roles
- Include primary and secondary contact information

Signature Authority	Barbara Jones, President [123 West Avenue]	512-456-7890 512-456-9203
	Carl Wise, Vice President [1809 Center Road]	512-234-5678 407-303-0388
	Deidra Peterson, Board Member [5671 Hwy 29]	512-890-1234 512-890-3294
Protective Actions Checklist	Gilbert Warner, primary [654 Maple Lane]	512-901-2345 407-958-3408
	Bernice Medina, secondary [564 Brazos Road]	512-345-6789 512-345-9685
Volunteer Coordination	Sonja Douglas, primary [6546 Center Road]	512-932-8934 512-858-3494
	Vernon Mitchell, secondary [486 Wolf Road]	512-849-3839 512-849-9583



CITY OF  
Corpus Christi

## Phases of Disaster Management

**Mitigation** is taking action to reduce potential disaster damages to the community BEFORE a disaster threatens. It is the first phase of disaster planning and operations. Hazard Mitigation activities focus on enhancing our knowledge of hazards, understanding their consequences, and implementing appropriate actions designed to reduce those consequences to save lives and reduce damages. Hazard Mitigation is essentially the common sense application of knowledge to save lives and prevent damages from occurring.

### Disasters Typical to Corpus Christi

The first step to mitigating the damage from disaster is to understand what the risks are to Corpus Christi residents: Hurricanes or other tropical weather, Tornadoes, hazardous materials spills, standing water flooding, radioactive incident, armed or terrorist attacks, transportation mishaps, or civil unrest.

### Typical Problems Caused by Most Disasters:

- Prolonged loss of energy systems
- Loss of communications
- Loss of public services including police and fire

## Build Contacts and Establish Roles

- Research disaster plans of local utility providers and municipal governments
- Include contact information for adjacent land owners
- Maintain current contact list; update annually

## Partnerships

- Professional conservators
- Trade organizations
- Volunteers
- Municipal and state agencies
- Emergency managers
- Funeral home directors/coroners



## City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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*Evergreen Cemetery, Jefferson County*

## Site Concerns

- Note overhead hazards (power lines, trees)
- Remove damaged or fallen trees and limbs
- Address areas prone to erosion
- Identify site elements that could create flying debris hazards (signs, shutters)

## Environmental Concerns

- Poisonous vegetation
- Venomous or otherwise dangerous wildlife (wasps, snakes)
- Protected wildlife
- Protected waterways







## Equipment and Supplies Inventory

- Safety equipment
- Ladders
- Tools
- Access to larger equipment (equipment rental contracts)

# Protective Actions Checklist

## City Park Cemetery Pre-Disaster Plan

(UPDATED DECEMBER 2021)

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# Protective Actions Checklist

## EMERGENCY PREPAREDNESS CHECKLIST

### A. Construction Materials

- Plywood for covering or replacing windows.
- Nails, screws.
- Tapes (masking, duct, electrical).
- Adequate plastic tarps for protection against leaks.

### B. Emergency Equipment

- Emergency gasoline powered electrical generator.
- Portable lights (to be powered by the generator if possible).
- Emergency lights and flash lights with extra batteries.
- Fire extinguishers (ABC type recommended).
- Battery operated AM/FM radios with extra batteries.
- Extension cords.
- First Aid kit.

### C. Documents

These important documents should be kept in more than one location (i.e. office, safety deposit box, home.)

Place all documents and photographs in waterproof containers.

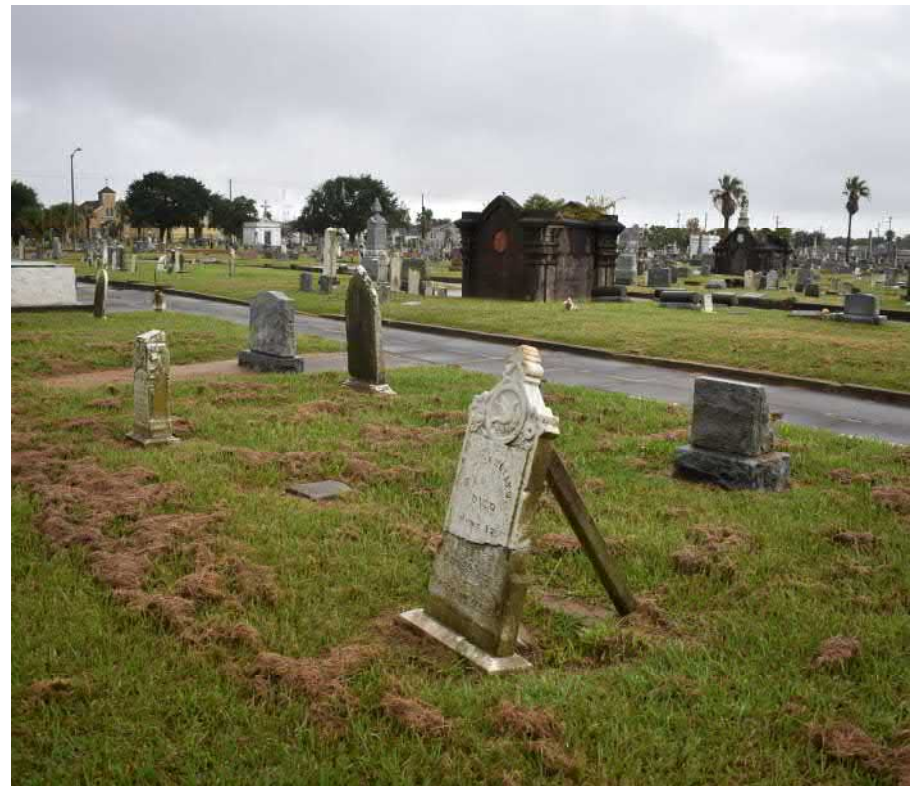
- Current and updated insurance policies and phone numbers.
- Photographs of the entire exterior of the building.
- Photographs of architectural detail of each room.
- Drawings or blueprints of the structure with specific locations of combustible materials indicated.
- Accurate electrical plans.
- Mortgage records and copies of contracts.
- Updated list of personal property including receipts, serial numbers, photographs and video when possible.
- Forms to fill out for advice, assistance, etc. Phone numbers of contractors, painters, plumbers, carpenters, roofers and suppliers.

## Pre-Disaster Checklist

- Understand type of threat
- Instructions on actions to be taken
- Role assignments
- Prioritize tasks
- Include post-disaster response supply list

## Pre-Disaster Actions

- Shut off utilities (water, electricity)
- Secure monuments and buildings prioritized for protection
- Sandbags at areas prone to erosion/flood damage
- Remove hazards prone to become flying debris or falling hazards
- Ensure recovery supplies on-hand in location accessible post-disaster
- Move important documents to safe location

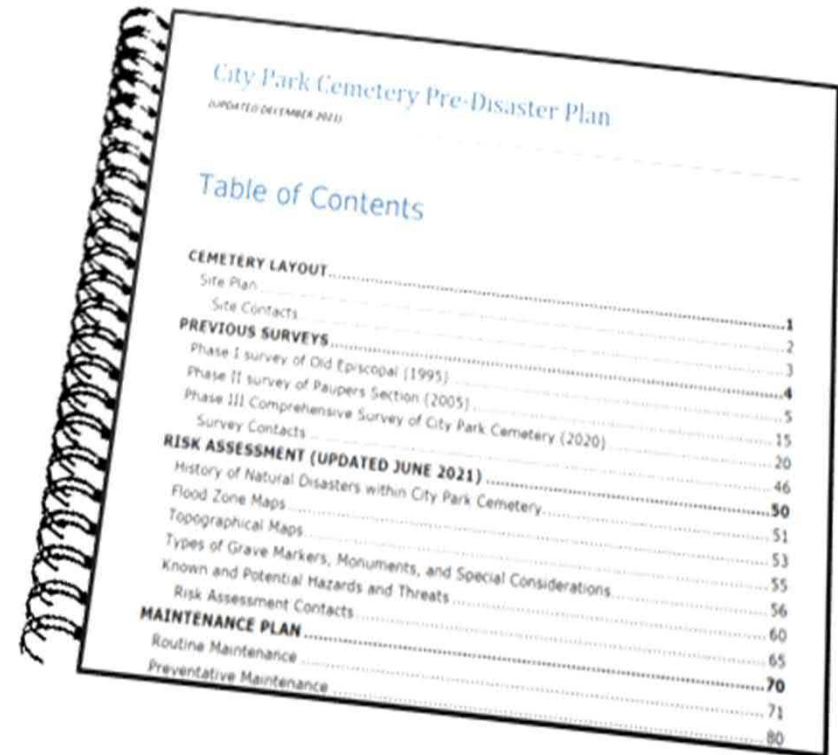


*Broadway Cemetery, Galveston, Galveston County*

# Putting the Plan in Place

## Make it Accessible, but Keep it Safe

- After completing the plan components, compile the written pre-disaster plan based on risks perceived.
- Thorough but adaptable based on the known conditions of an incoming storm/event.
- Store written plan in a safe location (multiple copies)



**City Park Cemetery Pre-Disaster Plan**  
(UPDATED DECEMBER 2021)

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*Glenwood Cemetery, Houston, Harris County*

## Funding

- Annual budget item(s) for disaster preparedness and disaster recovery
- Connect with partner organizations to pool resources
- Grants available for plan components
  - Pre-disaster planning (CLG grants)
  - Post-disaster recovery – depends on disaster declaration

## Community Involvement

- Engage community in setting priorities for disaster protection
- Train volunteers on the pre-disaster plan.
- Run drills to assure volunteers understand their roles, the tasks involved, and location of post-disaster supplies



*Union Hill Cemetery, Williamson County*

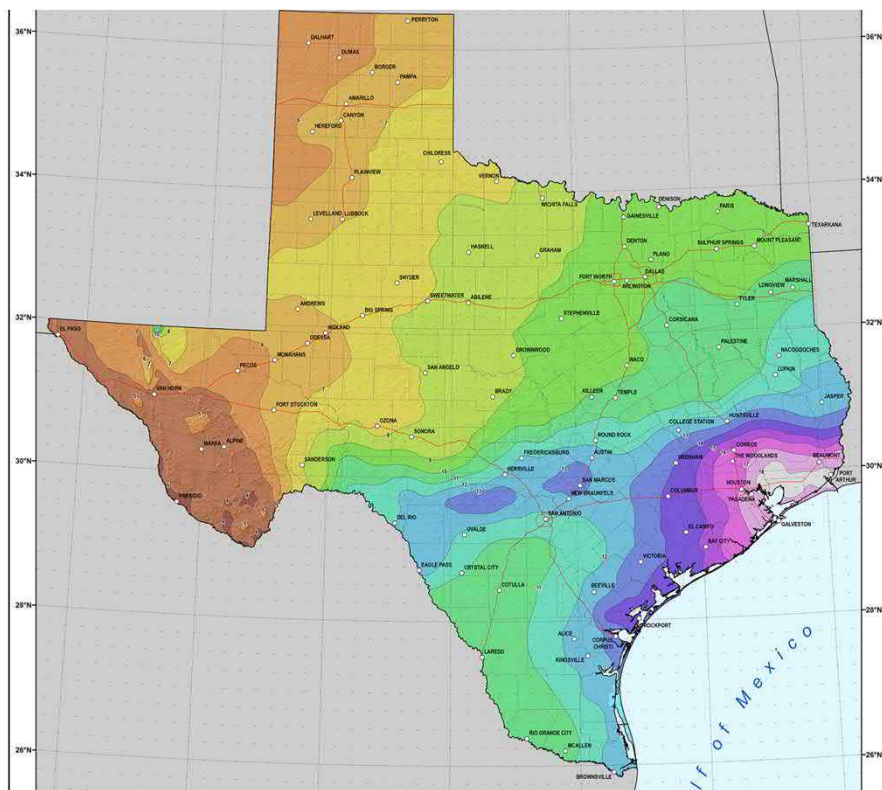


*Site Plan, Eureka Springs Cemetery, Arkansas*

## Pre-Disaster Planning

- What is significant?





*NOAA 24-hour Precipitation Totals Map, Texas*

## Pre-Disaster Planning

- What is significant?
- What is the threat?



*Lamar Cemetery, Aransas County*

## Pre-Disaster Planning

- What is significant?
- What is the threat?
- How to protect significant features?

- Handouts
  - Pre-Disaster Plan
  - Webinar 3 Slides
- Resources
  - General and Cemetery Preservation
  - Risk Assessment and Disaster Preparedness
  - Survey Resources
  - Legal/Legislative References
  - Landscape Preservation Planning and Maintenance



## Webinar Series Information

**Stay Up to Date!**

[www.thc.texas.gov/Harvey-cemeteries](http://www.thc.texas.gov/Harvey-cemeteries)



Questions?

Next time... Sound the Alarm! Natural Disasters and Immediate Response

a Terracon Pinyon production