

# **Flower Garden Banks & Beyond**

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***Flower Garden Banks National Marine Sanctuary Advisory Council***

Presentation to  
Idle Iron Workshop  
Houston, Texas  
September 13, 2012

# **Offshore Gulf of Mexico Oil & Gas**

## **Historical Production**

***14+ Billion Bbls Oil and 150+ Trillion cu-ft Natural Gas  
(1.7 Trillion gallons of oil equivalent)***

## **Productive Fields' Remaining Producible Reserves**

***14+ Billion Bbls Oil and 60+ Trillion cu-ft Natural Gas  
(1 Trillion gallons of oil equivalent)***

## **Undiscovered Oil & Gas (BOEM Mean Estimate)**

***45+ Billion Bbls Oil AND 230+ Trillion cu-ft Natural Gas  
(3.5 trillion gallons of oil equivalent)***

\*\*\*\*\*

***25% of US Daily Oil Production – 14% of US Daily Gas Production***

# What's at stake?

## Energy Security = Supply vs. Demand

U.S. OIL DEMAND	Million Barrels/Day	Trillion Gallons/Year
U.S. Gasoline	9.5	146
U.S. Distillate & Fuel Oil	4	61
U.S. Jet Fuel & Kerosine	1.4	21
U.S. Residual & Bunker	0.6	9
U.S. Others - Chem, Lubes, etc.	4.5	69
<b>Total U.S. Oil Demand</b>	<b>20</b>	<b>307</b>
		0
<b>Total World Oil Demand</b>	<b>86</b>	<b>1,318</b>
<b>Total World Oil Supply</b>	<b>86</b>	<b>1,318</b>
U.S. OIL SUPPLY	Million Barrels/Day	Trillion Gallons/Year
<b>U.S. Gulf Offshore Oil Production</b>	<b>1.5</b>	<b>23</b>
U.S. Non-Gulf Oil & NGL Prod.	6	92
Gulf Coast Tanker Crude Imports	5	77
East Coast Tanker Crude Imports	1	15
West Coast Tanker Crude Imports	1	15
Refined Tanker & Pipeline Imports	2.3	35
N.A. Imports	1.5	23
Other supply	1.7	26
<b>Total U.S. Oil Supply</b>	<b>20</b>	<b>307</b>

Source: EIA website

# **Presentation Overview**

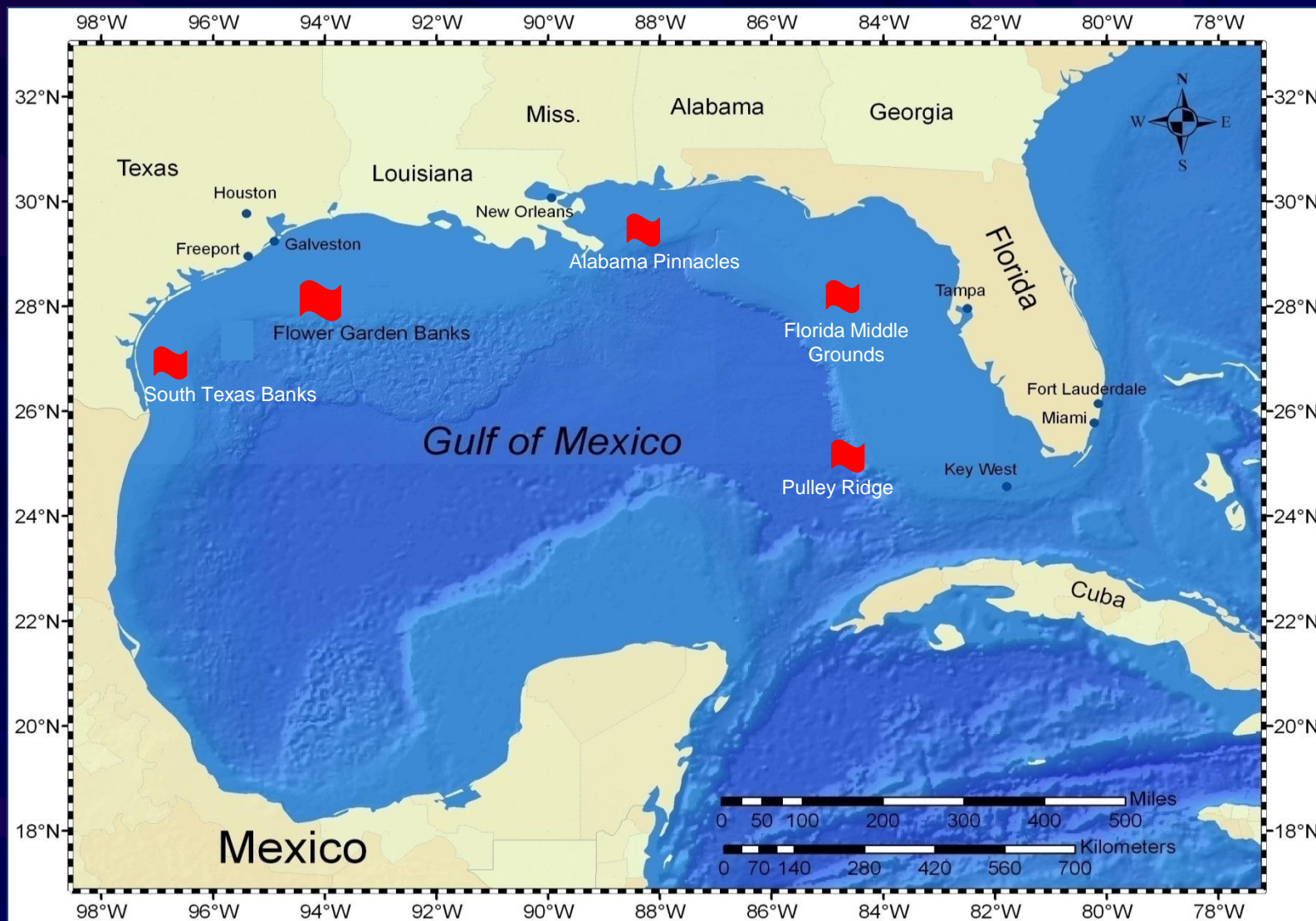
- **Overview of Gulf Region**
- **Flower Garden Banks NMS Boundary Expansion**
- **HI A-389 Platform – Imminent Decommissioning**
- **25 Years from Now**



# 200+ Banks & Reef Features – GOM & Caribbean

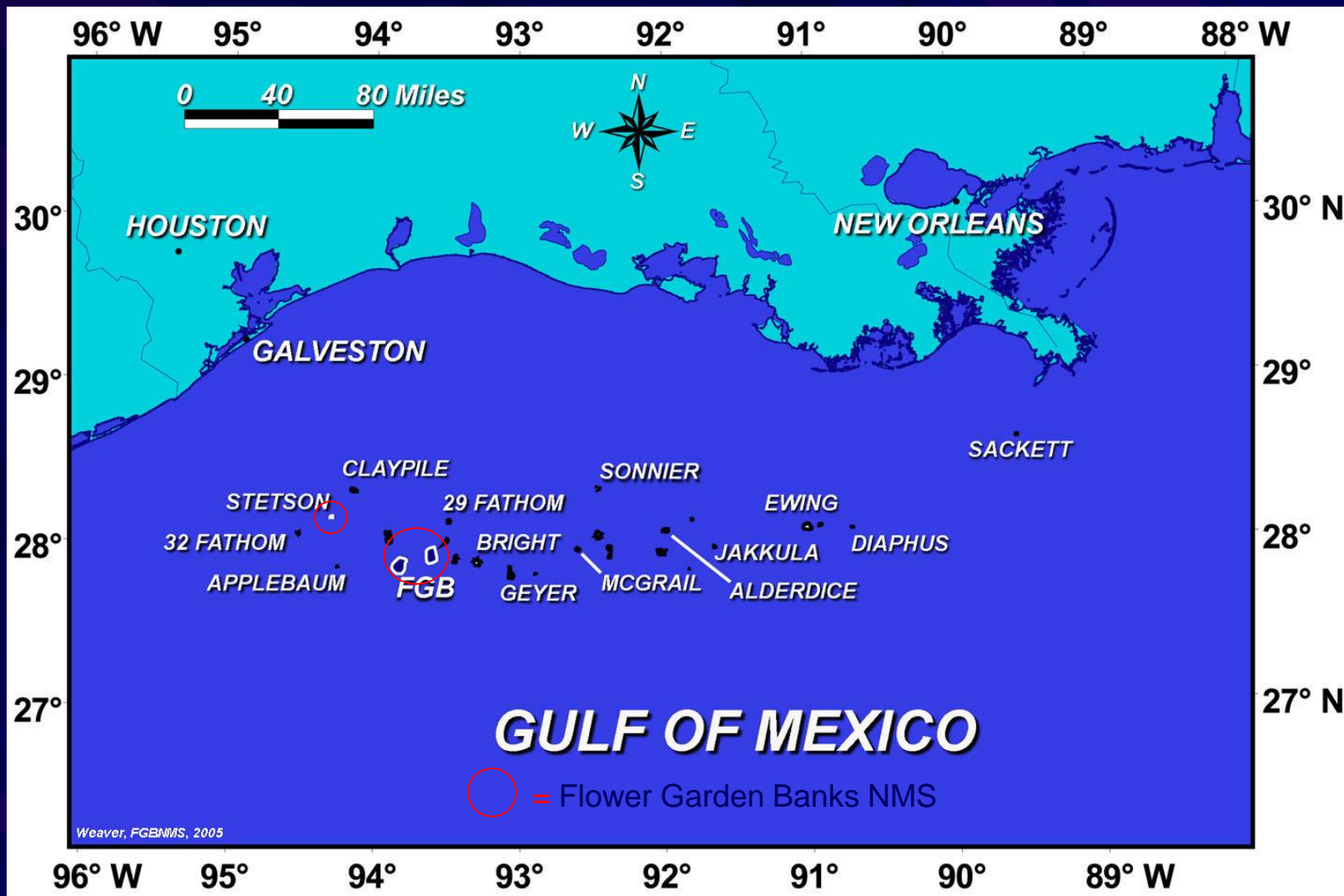


# Major Bank Areas in the Northern Gulf of Mexico





## 25+ Banks on the Outer Shelf & Upper Slope



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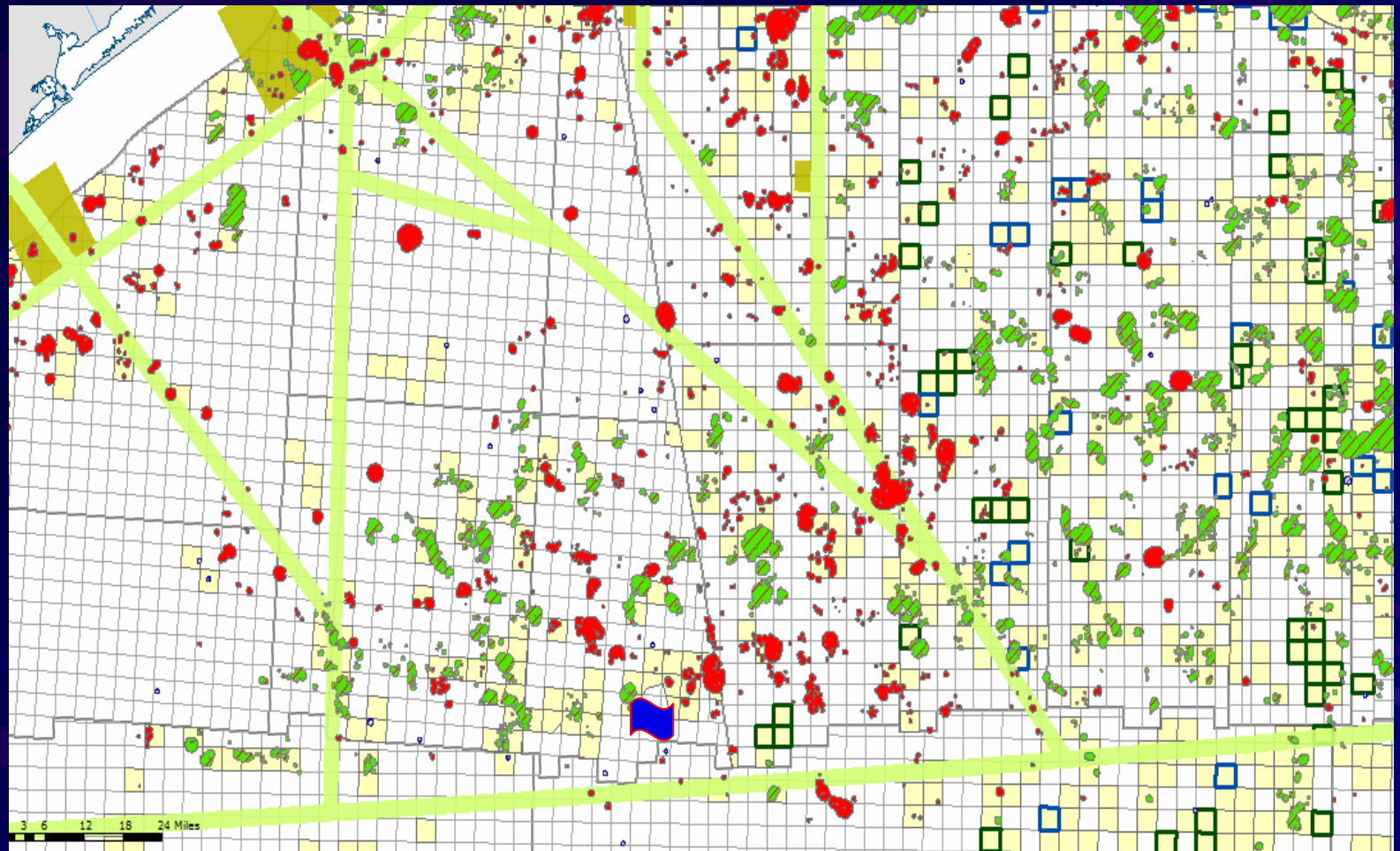




## Flower Garden Banks National Marine Sanctuary

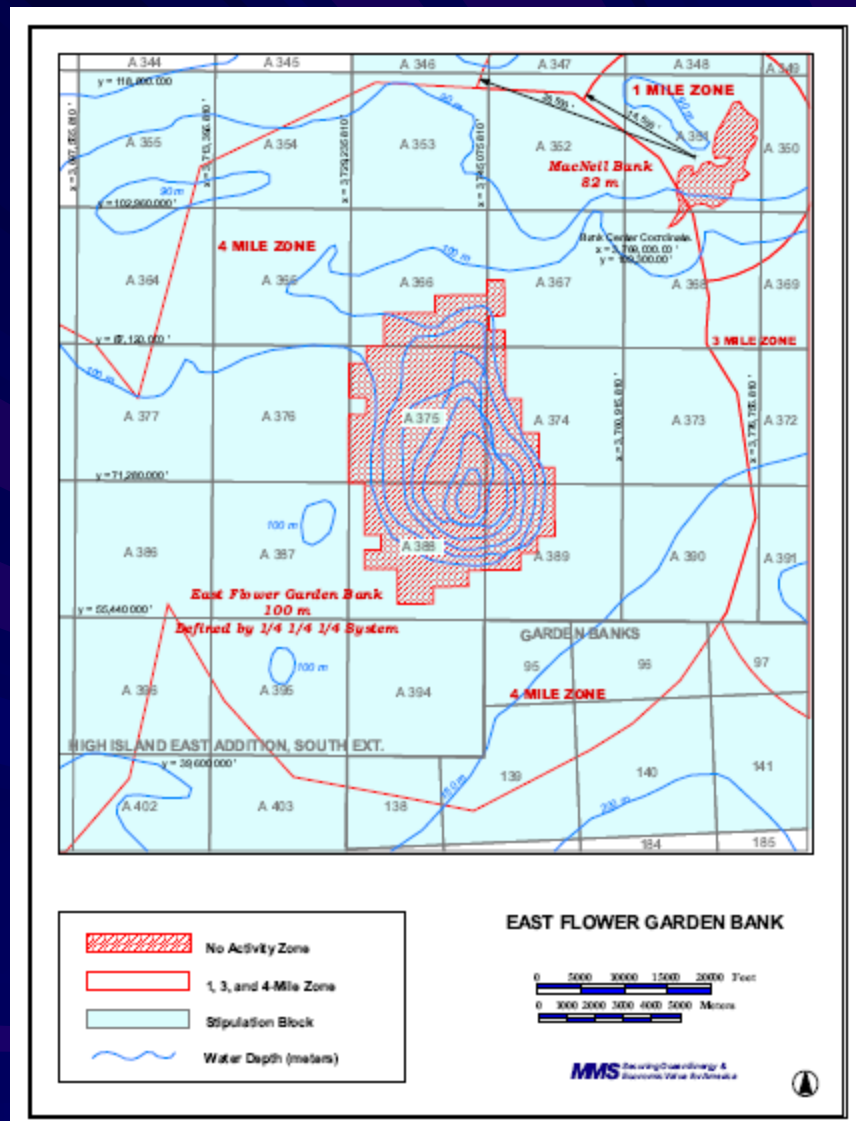
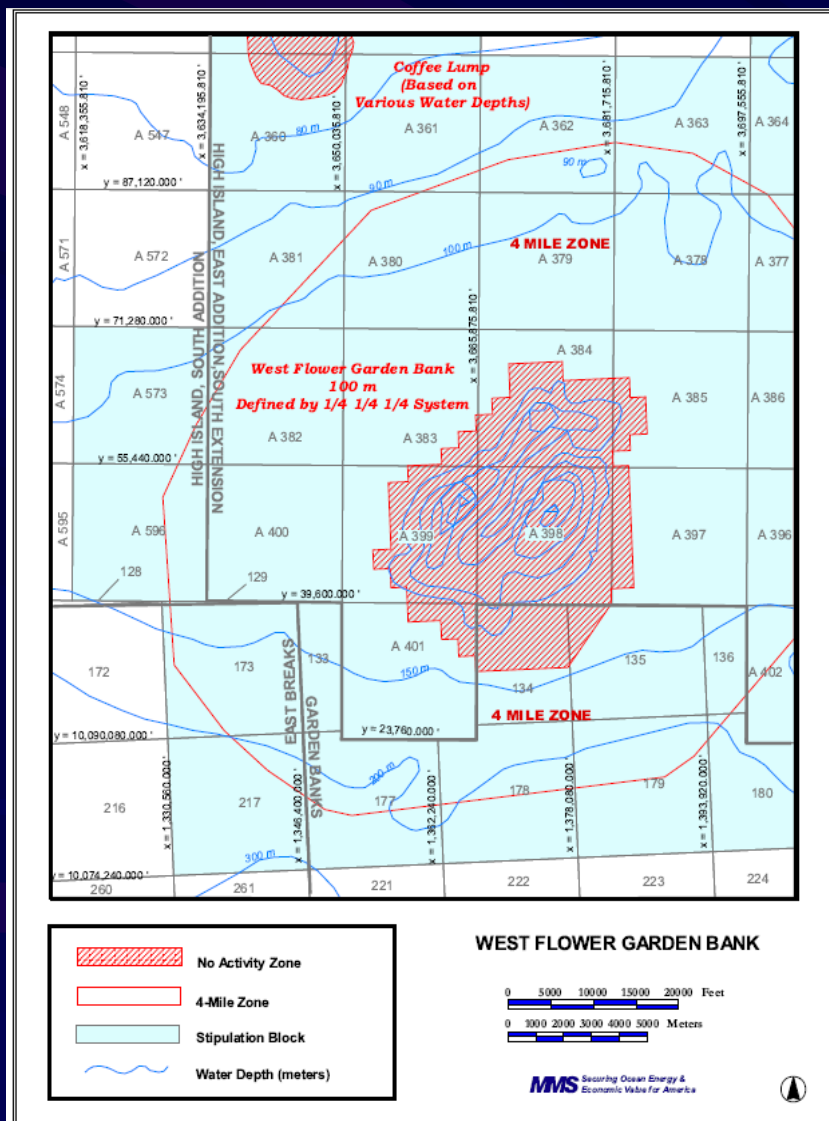
- Designated in 1992
- Includes: East and West Flower Garden and Stetson Banks
- Stetson Bank added in 1996
- Located 93 to 104 nautical miles offshore in the GOM
- Area: 42.5 square nautical miles (56 square statute miles)
- Water Depth: 55' to 500'

# Flower Garden Banks & Oil & Gas Fields



Source: GOMSmart

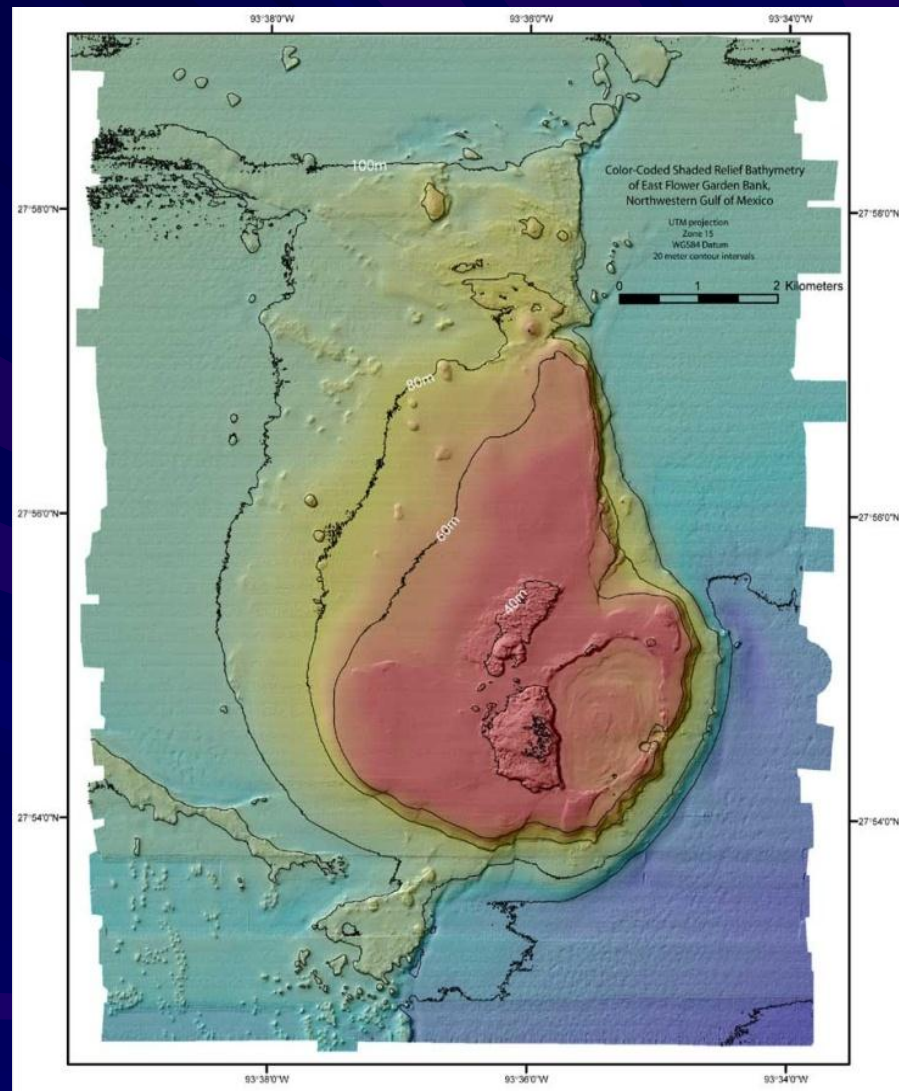
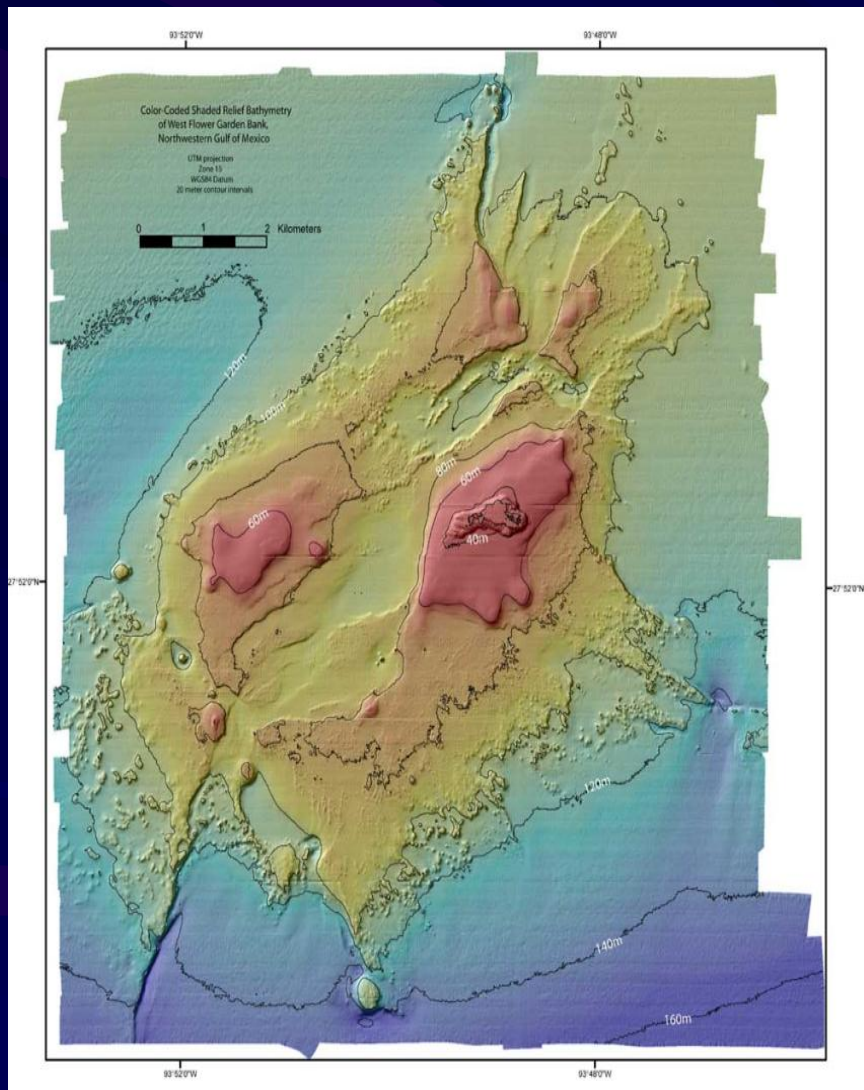
# West & East Flower Garden Banks



Source: BOEM Lease Stipulation Package



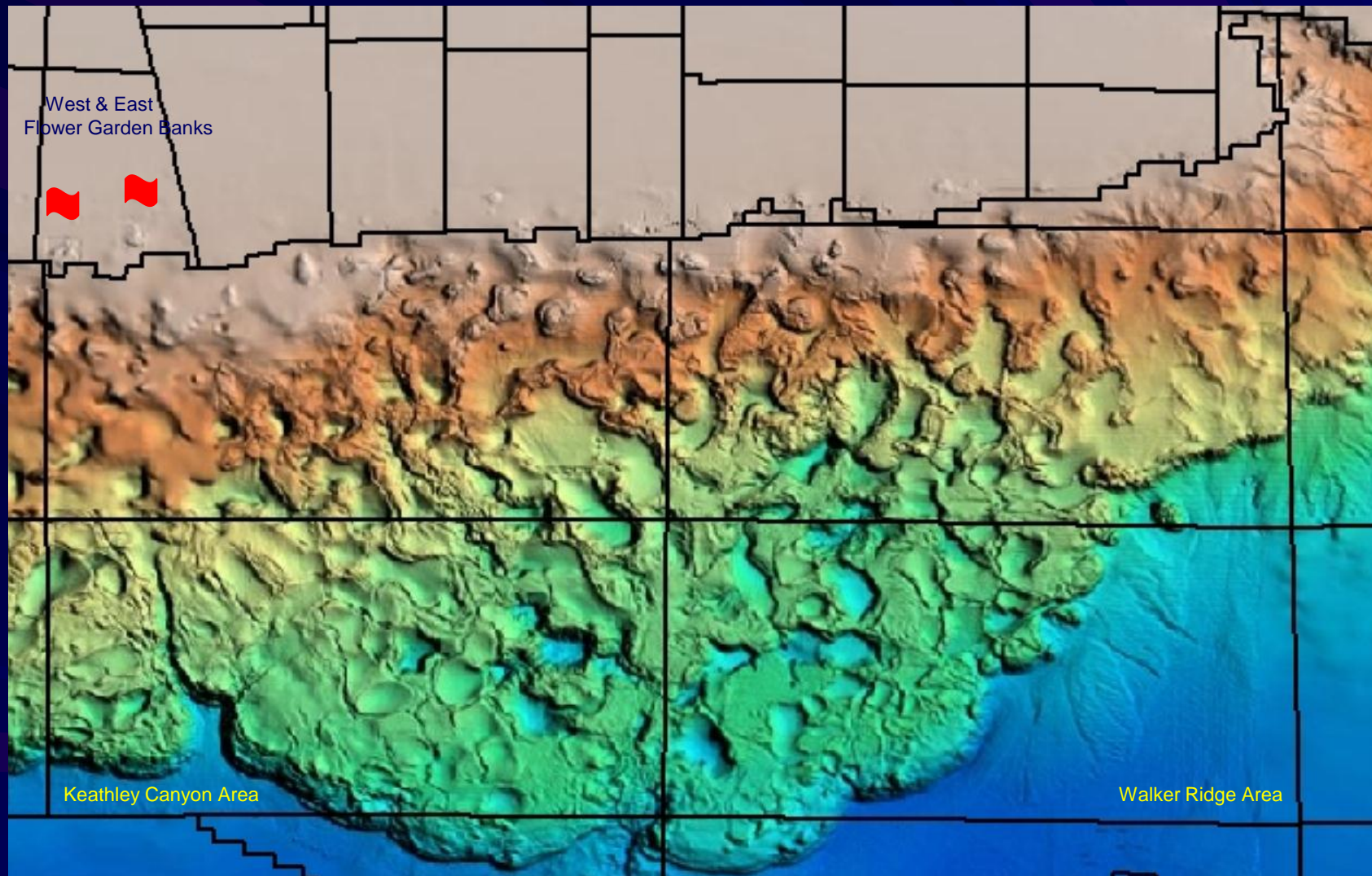
# West & East Flower Garden Banks – 3-D Mosaic



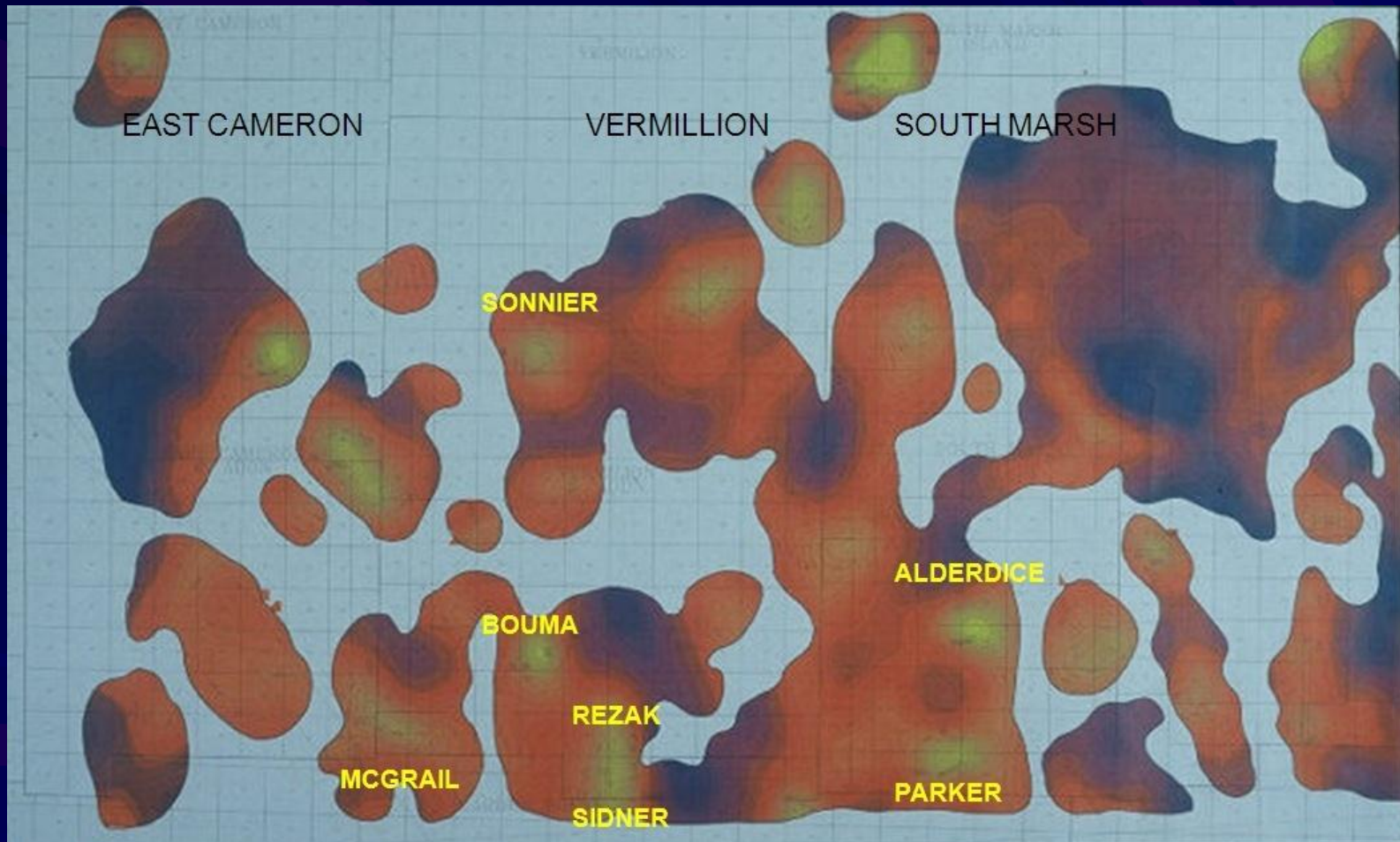
Source: USGS 3-D Mosaic



# Complex Salt-Supported Shelf & Slope Seafloor Domes, Sheets, and Mini-Basins



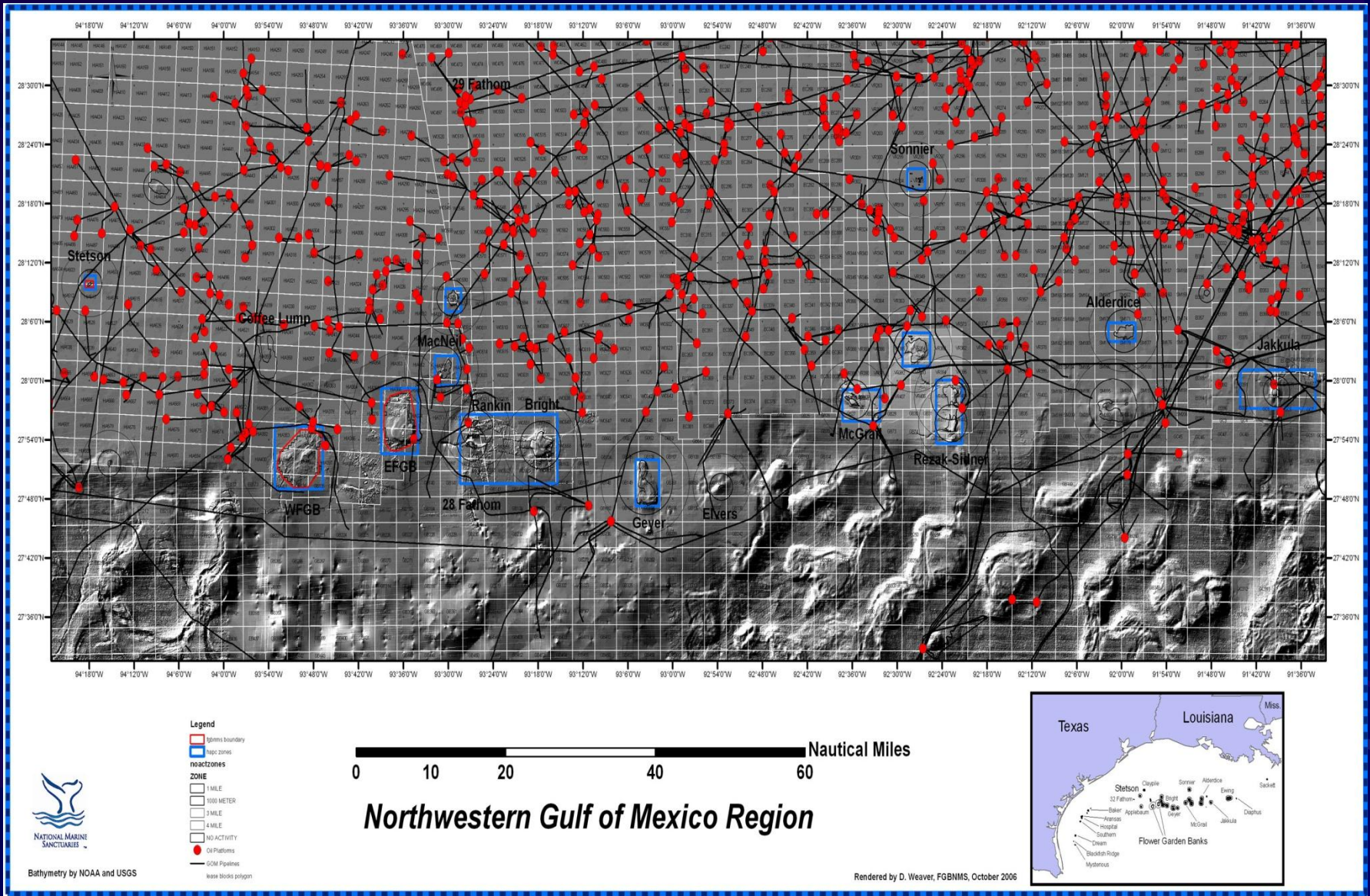
# Bank Salt Domes - Connected to Major Salt Sheets



*(adapted from Moore & Brooks, 1995)*

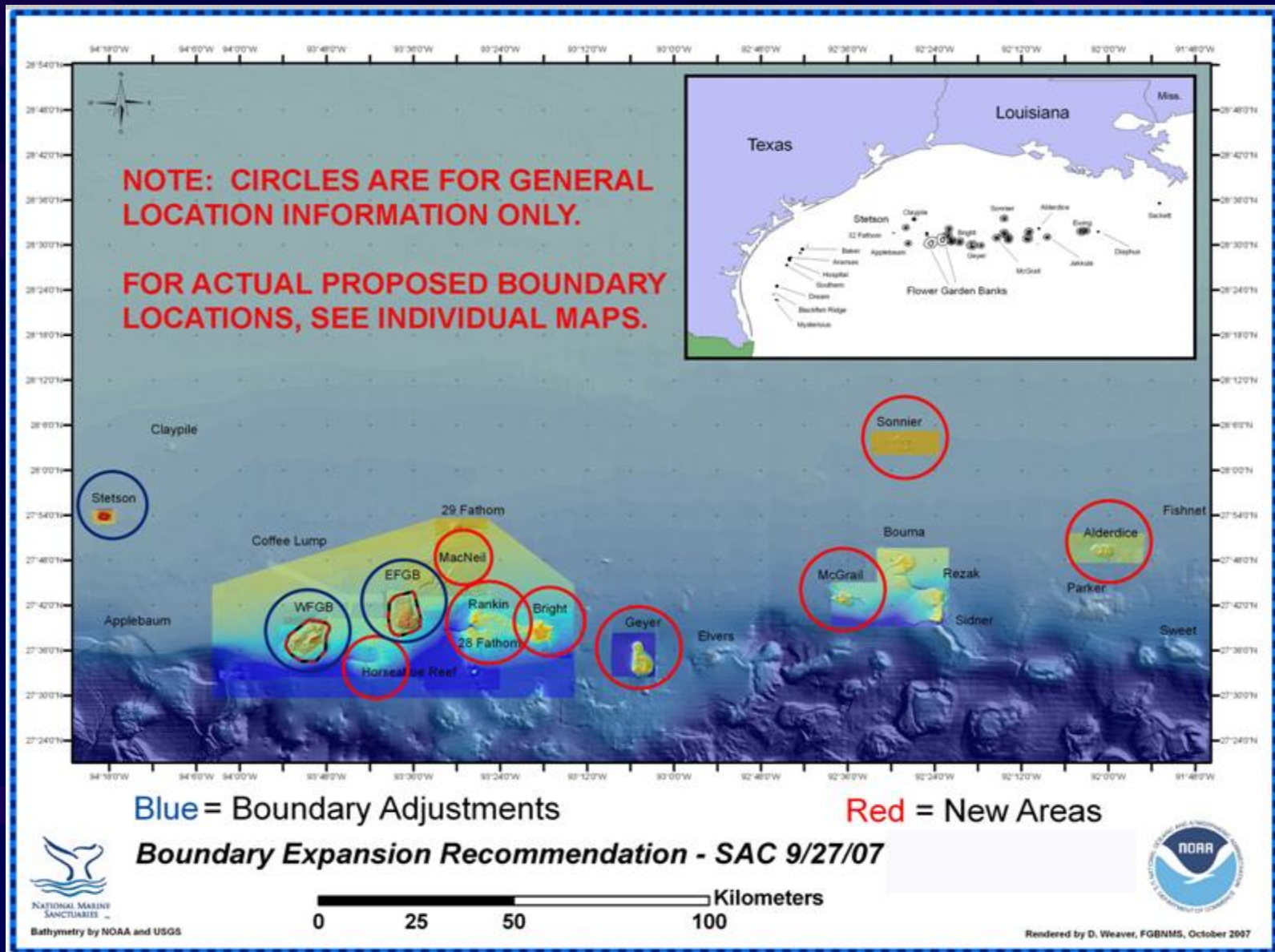


# Infrastructure, Banks, & HAPCs



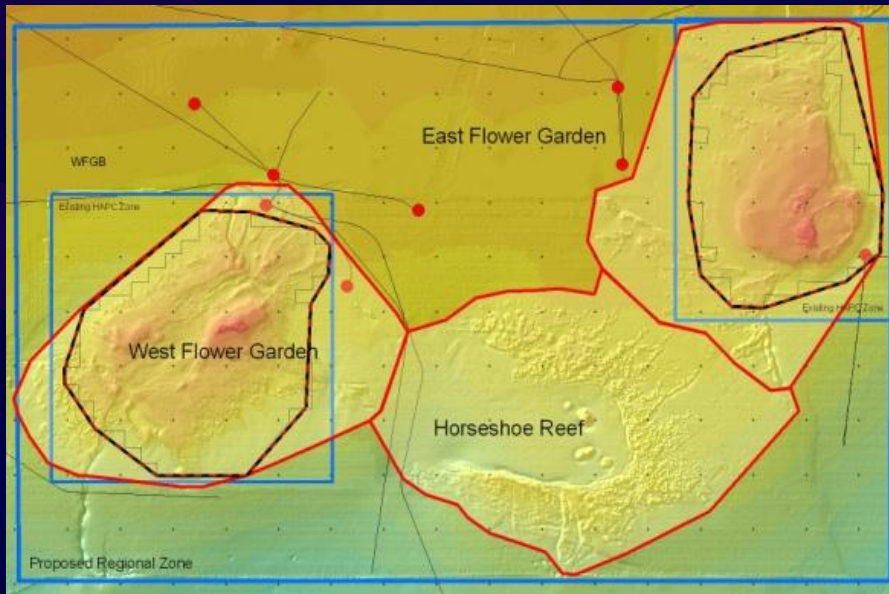


# Existing and Proposed Banks for FGBNMS





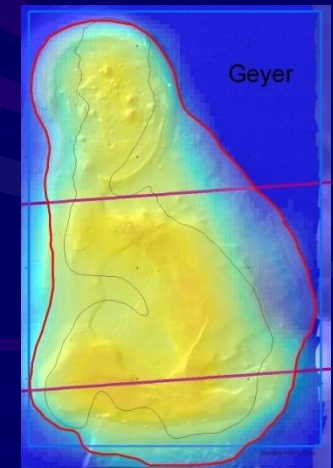
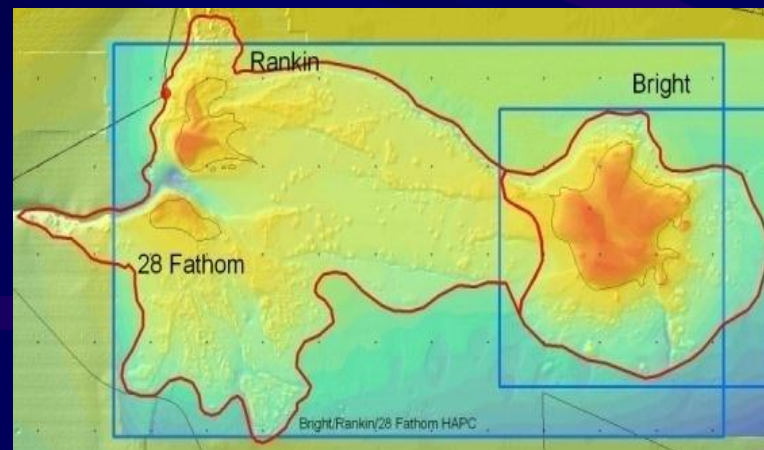
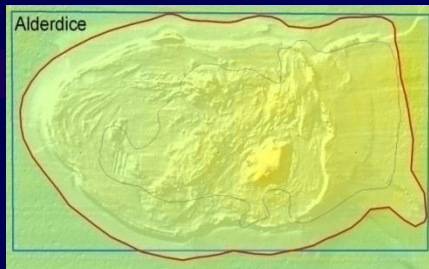
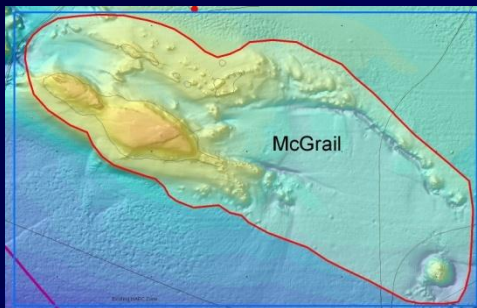
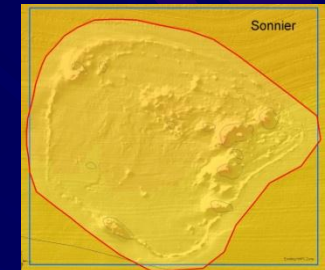
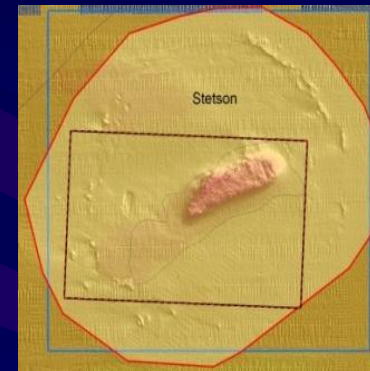
# FGBNMS SAC ALTERNATIVE #5 – 5 times expansion



**Current 3 Bank Area – 35,973 acres**  
**Portions of 17 blocks – 56 sq. smi.**

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**Proposed 11 Bank Area – 179, 866 acres**  
**Portions of 65+ blocks – 281 sq. smi.**



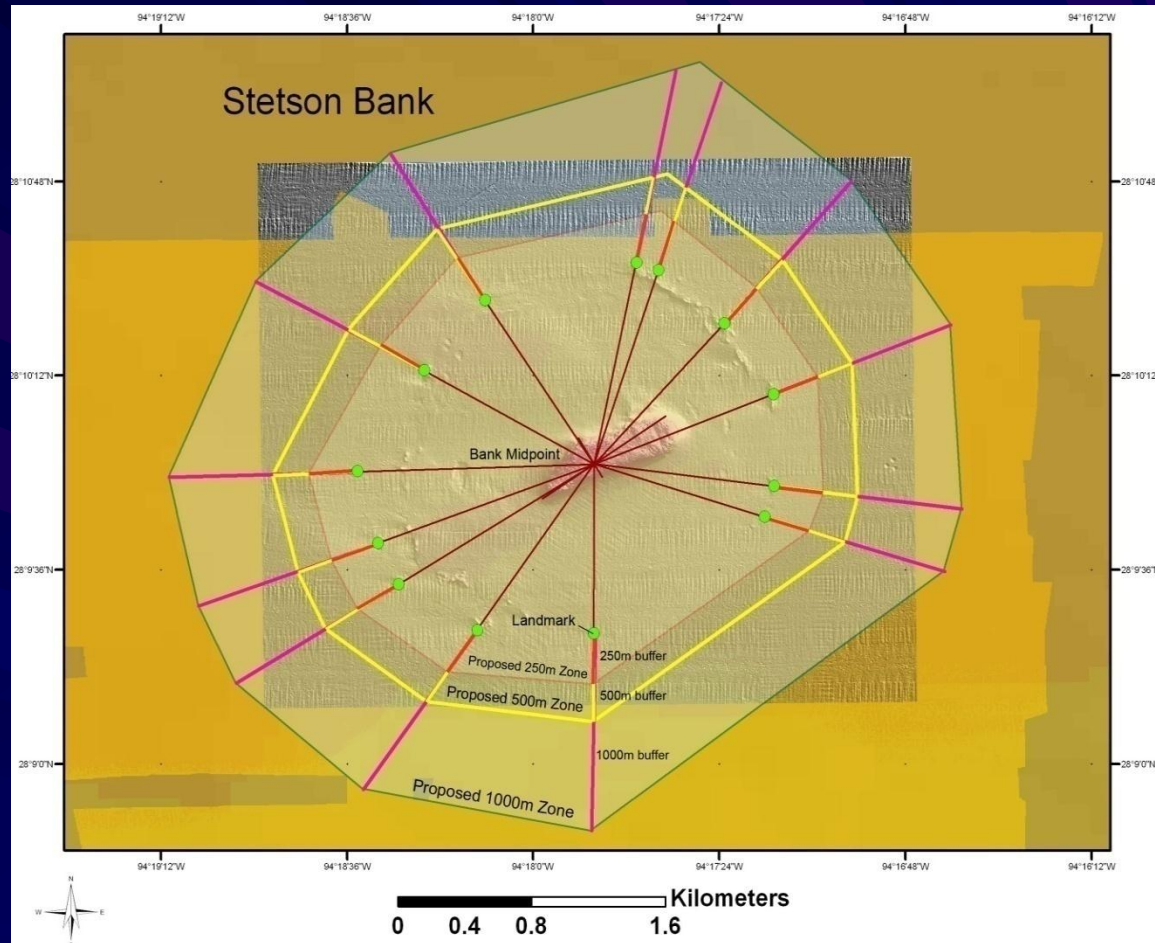
**(maps not all same scale)**

Source: FGBNMS website

# Boundary Selection Criteria

Based on:

- *Ground-truthing using ROV's and submersibles*
- *Prominent features defined as topography greater than 3m in vertical relief and 25m in diameter.*
- *Boundary of core biological zones developed by identifying prominent features, forming the vertices of an irregular polygon.*
- *Buffer zones developed from the outer landmarks of the core polygon, radiating from an approximate midpoint of the bank*



**Working Group assessed:  
250m, 500m, and 1000m buffers.  
Proposed 500m buffer.**

# Ranking Criteria

## Legend

Area or Bank	Area considered for incorporation into the FGBNMS
Zone Priority Index	Biological/Geological Significance/Uniqueness based on MMS criteria and FGBNMS recent acquisition of data
Connectivity Index	Connectivity to current FGBNMS features
Threat Index	Level of known or perceived threat
Public and Sanctuary priority	Level of interest through public scoping and sanctuary knowledge to incorporate site.

Zone Priority Index	High - 3
(Biological/Geological Significance)	Med - 2
	Low - 1

Threat index	High - 3
	Med - 2
	Low - 1

Structural	Contiguous - 3
Connectivity	Connected - 2
	In geographic region - 1

Biological Connectivity	
0-10 km	3
11-20 km	2
21-30 km	1

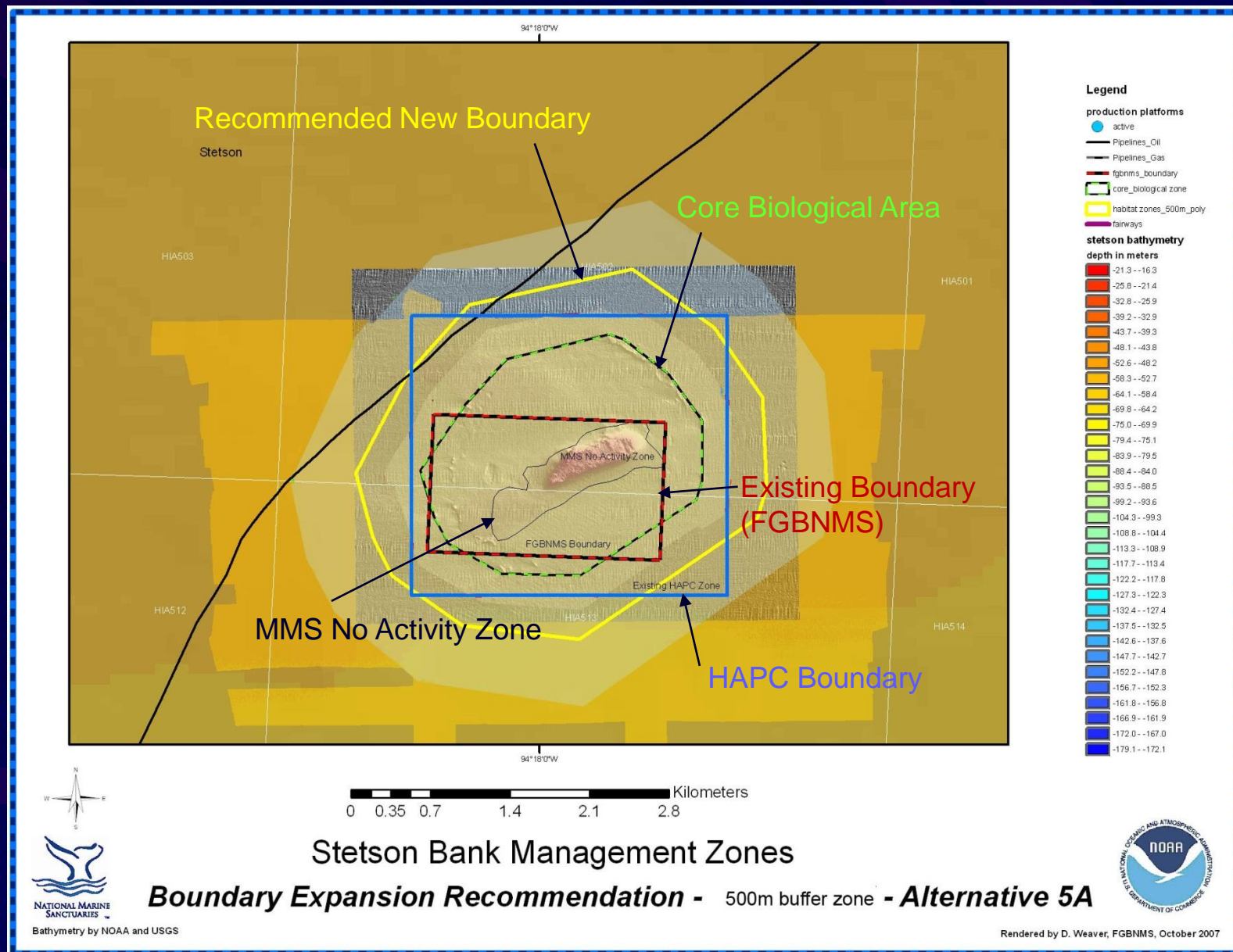
Public and Sanctuary Priority Index	High - 3
(level of interest to incorporate site)	Med - 2
	Low - 1

## Criteria Matrix

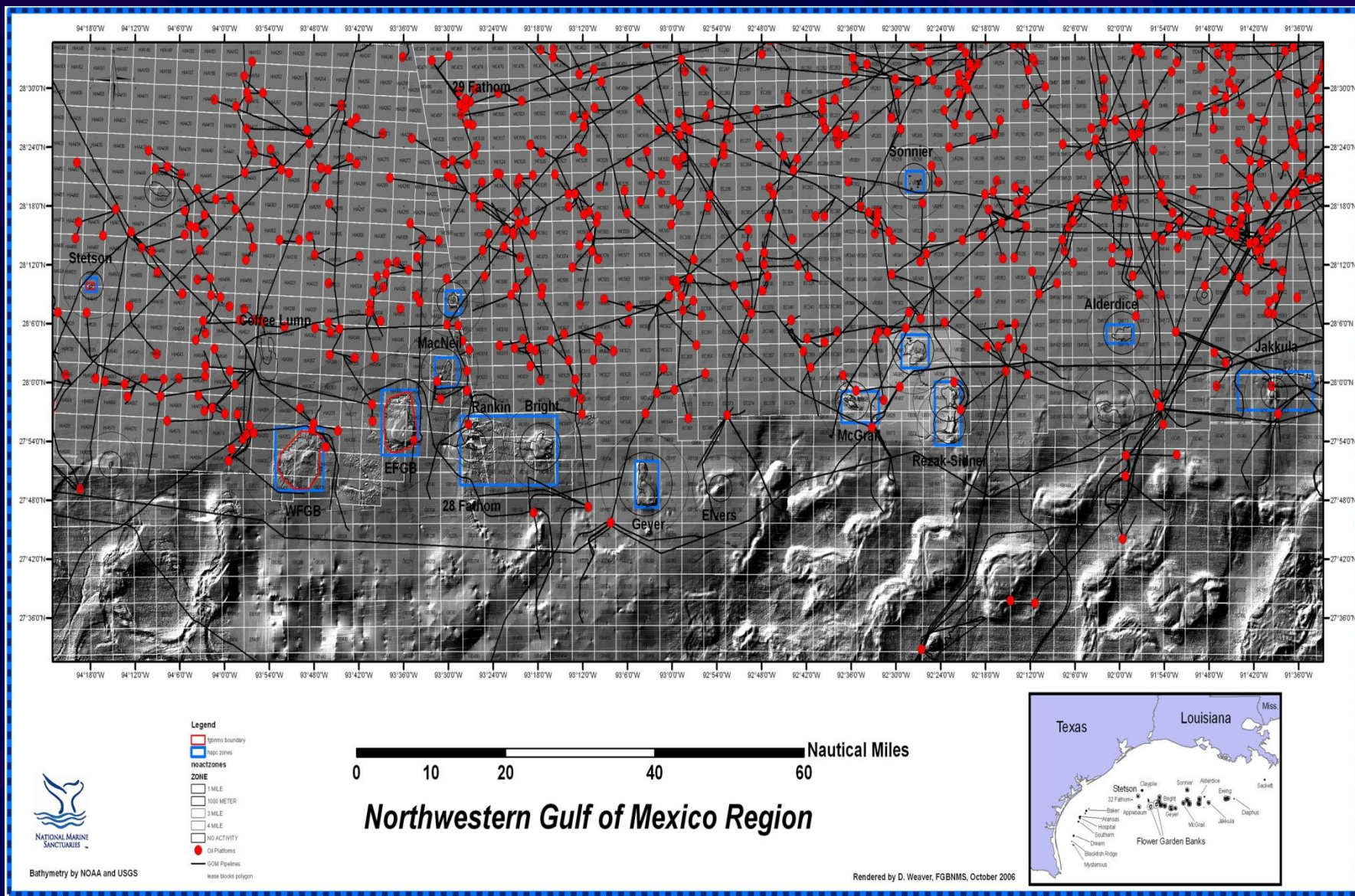
Area or Bank	Zone Priority Index	Structural Connectivity Index	Biological Connectivity	Threat Index	Public and Sanctuary priority	Overall ranking	Nearest Neighbor Distance (km)
Stetson Ring	3	3	3	3	3	12	23.3
McGrail	3	1	2	3	3	11	15.8
Geyer	3	1	2	3	3	11	18.25
Bright	3	2	2	3	3	11	14.8
Sonnier	3	1	1	3	3	10	29.8
"Horseshoe reef"	2	2	3	2	3	10	9.5
Alderdice	3	1	2	2	2.5	9.5	15.7
Rezak	1	1	3	1	2	7	5.9
Sidner	1	1	3	1	2	7	5.9
Rankin	1	2	3	1	1	6	3.4
28 Fathom	1	2	3	1	1	6	3.4
MacNeil	1	2	3	1	1	6	8.5
Bouma	1	1	2	1	1	5	11
Jakkula	1	1	1	1	1	4	23.1
Florida Middle Grounds	2	0	0	2	0	4	115
Alabama Pinnacles	1	0	0	1	0	2	219
Madison/Swanson	1	0	0	1	0	2	115



# Example Boundary Line Key - Applies to All Maps



## Infrastructure, Banks, & HAPCs





# Factoring Impacts

Square HAPC  
Boundaries

=

*Many more*



# Platform Additions from Expansion

The Sanctuary Advisory Council recommendation for boundary expansion incorporated areas that included the following three additional existing oil and gas platforms:

West FGB:        HIA384 - Offshore Shelf LLC-W&T Offshore

Rankin:            HIA371 - Tarpon (removed Nov. 2011)  
                      WC663 - ATP O&G

Already in existing Sanctuary:

East FGB:        HIA389A - W&T Offshore (Now on Idle Iron List)



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- **Overview of Gulf Region**
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- **HI A-389 Platform – Imminent Decommissioning**
- **25 Years from Now**

# W&T HI A-389 – Now Idle Iron!

Only Platform within current Sanctuary boundaries





Source: Save the Blue





Source: Save the Blue





Source: Frank Burek





Source: Save the Blue



# **HI-A-389 Underwater Video**

# Purpose and Goals

- **Study Purpose:** Develop alternatives to removing hydrocarbon platforms in the Flower Garden Banks National Marine Sanctuary and make recommendations to the SAC and FGBNMS Sanctuary Manager.
- **Study Goals:** The recommended alternative(s) will be developed by the Working Group using feedback and inputs from the SAC, Sanctuary Management and Sanctuary users/constituents. The Study and determinations will consider at a minimum the following:
  - Maximizing benefits for the marine environment
  - Maximizing benefits, access and usage by all stakeholder groups
  - Order of magnitude costs for conversions and for annual maintenance
  - Risks and Liabilities
  - Federal regulatory implications
- In addition, a critical goal is to complete this study prior to the start of any significant structural decommissioning activities at HI A-389A platform.

# Summary Plan for Study & Recommendation(s)

- Inputs to AR Working Group
  - Survey Results
  - Evaluation data and information sets pertinent to Options A, B, C, D and E described in survey.
- Once Inputs are completed, AR Working Group will meet (date TBD) to review results, discuss further and formulate recommendation(s)
- Recommendation(s) supported by a written report will be made to SAC and to FGBNMS Management



# AR Study Options

1. Remove Platform in its entirety
2. Leave Platform in place mostly “as-is”
3. Leave Platform in place with one deck for day-use only
4. Leave Structure out of water, but no decks. STB concept.
5. Structure cut below the surface 40-85 ft deep

# AR – Evaluation Data/Information

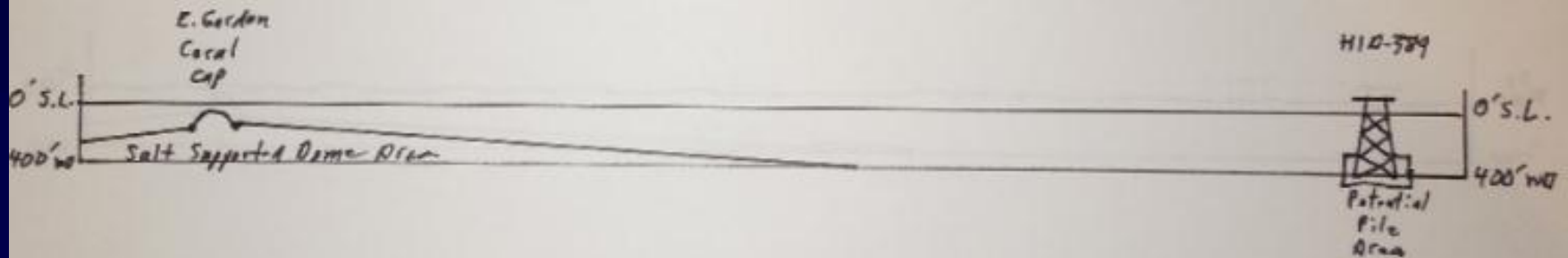
(for each option as appropriate)

- Quantify amount of marine life preserved and amount lost
- Accessibility and Use
- Lifespan estimate for structure and supported marine community
- Costs Incurred and by Whom for:
  - Capital costs for modifications/removals
  - Maintenance costs: painting, repairs, structure upkeeps
  - Navigational systems
  - Corrosion protection system
  - Monitoring/inspections
  - Insurance costs
  - Other identified costs
- Liabilities
  - Insurance deductibles
  - Risks not covered by general liability insurance policy
- Benefits (including Research and Educational) and/or threats to FGBNMS and nearby natural reefs
- Institutional homes/owners for options B, C, D
- Federal regulatory requirements and if needed, amendments
  - For needed amendment(s): what, how, and expected timelines

# Schematic of EFGB & HI-A-389

WEST FLOWER GARDEN BANK  
DISTANCE FROM  
WIT OFFSHORE'S HI-A-389 PLATFORM

Approx. 8000' from Coral Cap to Platform



Vertical : Horizontal Scale = 800' per 1 inch  $\overline{\text{1 in.}}$



## 25 Years From Now?

- Unless we improve the Rigs to Reef Program, over 80% of platform inventory will have been removed, and massive and significant marine habitat will be lost, negatively impacting the health of the Gulf.
- The National Marine Sanctuary Program in the Gulf of Mexico should adapt to include man-made structures, such as HI-A-389, and many more freestanding reef-in-place structures, while partnering with existing Rigs to Reef Programs.
- Envision a future Gulf of Mexico with either
  - 1) healthy and bountiful marine life aided by 1,000+ platform habitats
  - 2) depleted biomass and major fishing pressure on natural banks

# Acknowledgements

*FGBNMS Staff & Advisory Council  
NOAA Office of National Marine Sanctuaries  
IPAA, API, NOIA, CEA, BOEM, BSEE, EIA*



*Ascending from Bright Bank's dynamited mining pits at 120 feet,*

*Thank You!*