



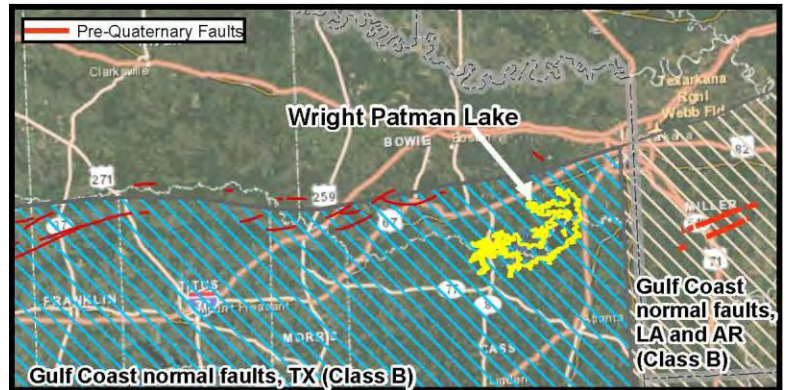
CESWF Dam Safety Factsheet on Structural Geology in the vicinity of Wright Patman Dam

U.S. ARMY CORPS OF ENGINEERS

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Overview:

The Luling-Mexia-Talco fault zone is a pre-Quaternary (greater than 2.6 million years ago) structure that the U.S. Army Corps of Engineers (USACE) has considered during the original geologic and engineering analyses for the planning and design of Wright Patman Dam, which was completed in 1956. The assessments of the subsurface conditions at the dam site are based on information currently available for review. It is important to note that the fault zone was evaluated strictly as it relates to the dam sites and these evaluations may not be applicable to other locations. Furthermore, the structural geology evaluations summarized herein for Wright Patman Dam are for information purposes only and shall not be used for other geologic assessments or engineering design activities either within or outside of these specific site boundaries without written permission from the U.S. Army Corps of Engineers, Fort Worth District (CESWF).



Wright Patman Dam - Structural Geology:

In the vicinity of the Wright Patman Dam site, the Sulphur River follows a down-dropped block bordered by a series of discontinuous northwest-trending faults with displacement of 100 feet or less. The faults at the dam site were initially determined during design from the offset of formerly-continuous lignite beds, with the possibility that the interpretation included an inferred fault in the location of natural lensing out of an individual lignite bed. Original engineering analysis concluded that present-fault movement would not pose risk to the dam.

Regionally, outcropping formations thicken and become younger in the direction of the Gulf of Mexico, striking roughly parallel to the Gulf of Mexico with a regional dip of 30 to 75-feet per mile. This overall regional structure is locally influenced by a reversal of regional dip due to the Sabine Uplift of northern Louisiana and southern Arkansas, and the East Texas syncline, with the axis of this broad arch extending from eastern Texas to point 12-miles south of dam site. The Luling-Mexia-Talco fault system exists north of syncline, and is comprised of an echelon normal faults downthrown toward the Gulf of Mexico, with the Eastern extent of this fault system proximate to dam site. Additionally, the Arkansas Gulf Coast normal fault zone exists east of dam site. The individual faults within the area of Wright Patman Dam are considered to have a remote probability of reactivation following changes in loading or geologic conditions.

Wright Patman Dam - Seismicity:

Refer to the attached plate for structural geology map information compiled by CESWF. Based on existing project-specific USACE engineering studies available to this office, the site area of Wright Patman Dam is considered relatively aseismic. Based on information currently available to this office, it is anticipated that a seismic event would likely be sourced from a considerable distance from the site and is not anticipated to pose a risk to the dam.

Preliminary Recommendations:

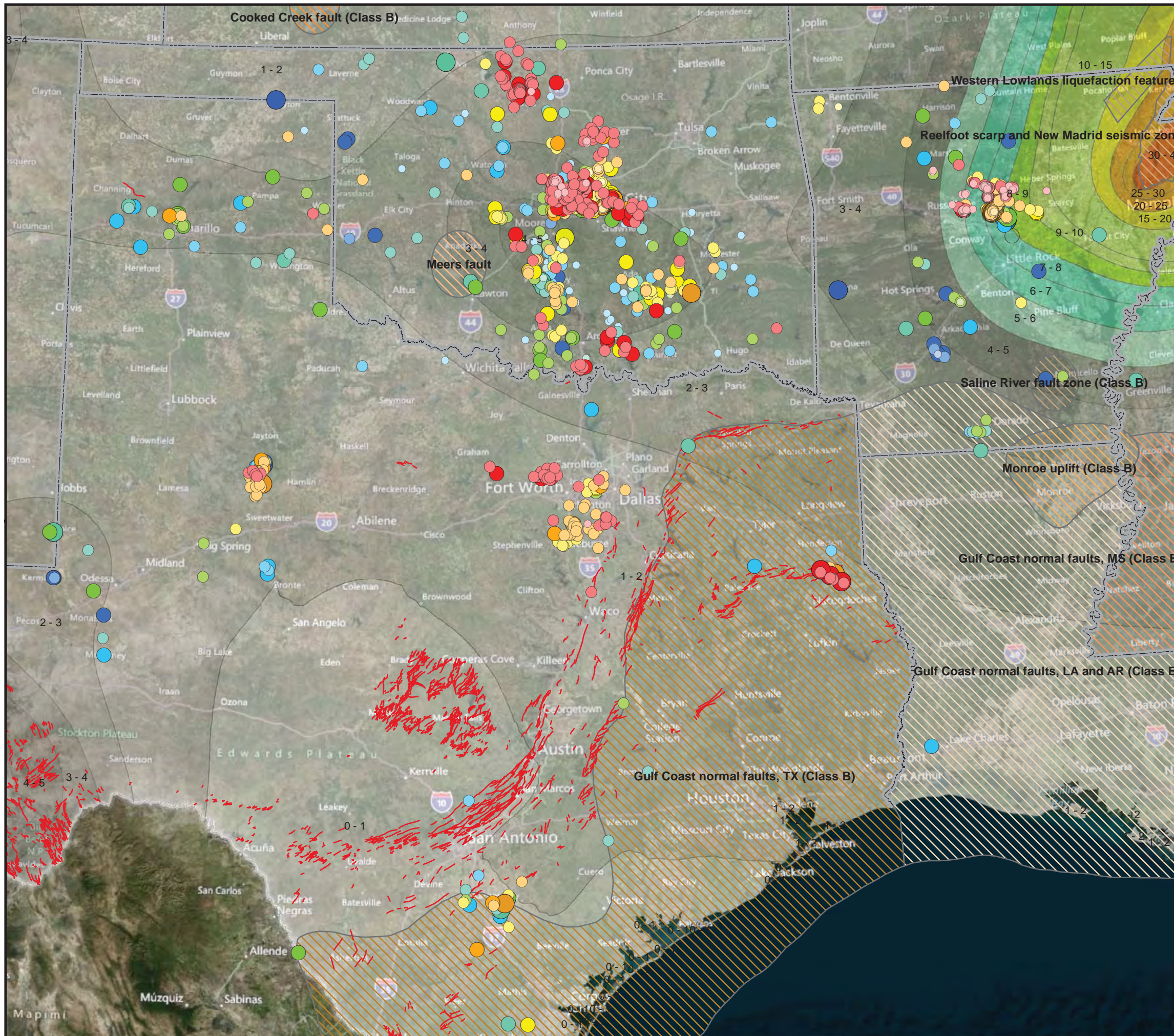
It is emphasized that each site has a unique subsurface geology and each site must be independently evaluated. Characterization of site specific structural geology and seismic hazards requires a thorough geologic and engineering investigation to evaluate the site-specific conditions.

U.S. ARMY CORPS OF ENGINEERS – FORT WORTH DISTRICT, SOUTHWESTERN DIVISION

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LEGEND

Earthquake Magnitude

2013-11/28/13	2000-2008	1974-1979
1.3 - 2.0	1.3 - 2.0	1.3 - 2.0
2.1 - 3.0	2.1 - 3.0	2.1 - 3.0
3.1 - 4.0	3.1 - 4.0	3.1 - 4.0
4.1 - 5.0	4.1 - 5.0	4.1 - 5.0
5.1 - 6.0	5.1 - 6.0	5.1 - 6.0

2011-2012

1.3 - 2.0	1.3 - 2.0
2.1 - 3.0	2.1 - 3.0
3.1 - 4.0	3.1 - 4.0
4.1 - 5.0	4.1 - 5.0
5.1 - 6.0	5.1 - 6.0

2009-2010

1.3 - 2.0	1.3 - 2.0
2.1 - 3.0	2.1 - 3.0
3.1 - 4.0	3.1 - 4.0
4.1 - 5.0	4.1 - 5.0
5.1 - 6.0	5.1 - 6.0

1990-1999

1.3 - 2.0	1.3 - 2.0
2.1 - 3.0	2.1 - 3.0
3.1 - 4.0	3.1 - 4.0
4.1 - 5.0	4.1 - 5.0
5.1 - 6.0	5.1 - 6.0

1980-1989

1.3 - 2.0	1.3 - 2.0
2.1 - 3.0	2.1 - 3.0
3.1 - 4.0	3.1 - 4.0
4.1 - 5.0	4.1 - 5.0
5.1 - 6.0	5.1 - 6.0

Fault Areas

- Cooked Creek fault (Class B)
- Gulf Coast normal faults, LA and AR (Class B)
- Gulf Coast normal faults, TX (Class B)
- Meers fault
- Monroe uplift (Class B)
- Reelfoot scarp and New Madrid seismic zone
- Saline River fault zone (Class B)
- Western Lowlands liquefaction features

10% probability of exceedance in 50 years Percent Ground Acceleration

0 - 1	8 - 9
1 - 2	9 - 10
2 - 3	10 - 15
3 - 4	15 - 20
4 - 5	20 - 25
5 - 6	25 - 30
6 - 7	30 - 40
7 - 8	40 - 60

Faults



0 12.525 50 75 100 Miles

Data provided by: USGS (2013)

Prepared by: Geotechnical Branch

**U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS**

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SEISMIC HAZARD