

**ENTERGY WHITE BLUFF PLANT  
RECYCLE POND A AND RECYCLE POND B**

**DEMONSTRATION OF COMPLIANCE WITH  
EPA CCR RULE SITING CRITERIA  
§257.62, FAULT AREAS**

**PREPARED IN COMPLIANCE WITH THE  
EPA FINAL RULE FOR THE DISPOSAL OF  
COAL COMBUSTION RESIDUALS  
TITLE 40 CODE OF FEDERAL REGULATIONS PART 257**



OCTOBER 17, 2018

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EPA CCR RULE SITING CRITERIA  
§257.62, FAULT AREAS

Prepared for

Entergy Arkansas, Inc.  
PO Box 551  
Little Rock, AR 72203

Prepared by

FTN Associates, Ltd.  
3 Innwood Circle, Suite 220  
Little Rock, AR 72211

FTN No. R07920-1862-001

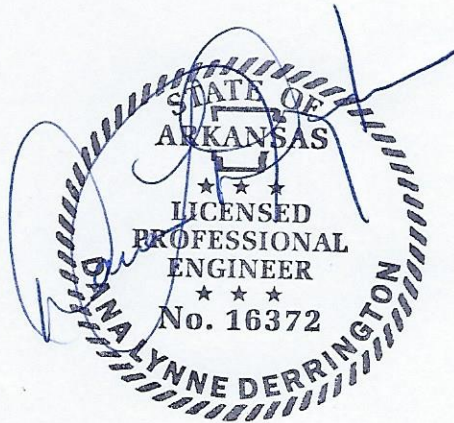
October 17, 2018

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## PROFESSIONAL ENGINEER'S CERTIFICATION

With this certification, I certify that I, as a Professional Engineer in the State of Arkansas, am a qualified professional engineer as defined in §257.53 of Title 40 Code of Federal Regulations (40 CFR) Part 257, that this report has been prepared under my direction in accordance with generally accepted good engineering practices, that the findings are accurate to the best of my knowledge, and that the CCR unit that is subject to this certification meets the location restriction requirements under §257.62 of 40 CFR Part 257.



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Dana L. Derrington, Arkansas PE #16372

10/17/2018  
Date

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## 1.0 INTRODUCTION

Entergy Arkansas, Inc. (Entergy), operates the White Bluff plant located approximately 2.5 miles southeast of Redfield, Arkansas. The plant utilizes two recycle ponds, hereafter referred to as Recycle Pond A (south pond) and Recycle Pond B (north pond), for, among other things, the management of bottom ash transport water. Pursuant to §257.62 of Title 40 Code of Federal Regulations (40 CFR) Part 257, existing coal combustion residual (CCR) surface impoundments must not be located within 200 ft of the outermost damage zone of a fault that has had displacement in Holocene time unless it can be demonstrated that an alternative setback distance of less than 200 ft will prevent damage to the structural integrity of the CCR unit. Holocene time is defined by §257.53 as the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch, 11,700 years before present, to present. This report presents the findings of an evaluation of Recycle Pond A and Recycle Pond B in support of the location restriction requirements of §257.62.

## 2.0 SITE DESCRIPTION

Recycle Pond A and Recycle Pond B are shown on Figure 1 (all figures are located in Appendix A). Recycle Pond A has an approximate surface area of 7.0 acres and Recycle Pond B has an approximate surface area of 6.5 acres<sup>1</sup>. The typical water level elevation in each pond is approximately 278 ft North American Vertical Datum of 1988 (NAVD88) based on a June 2018 field survey. Topography surrounding the immediate vicinity of the recycle ponds was graded during plant construction and is generally flat-lying, with existing ground surface elevations ranging from approximately 277 to 285 ft NAVD88, as shown on Figures 1 and 2. Natural topography in the vicinity of the ponds is gently to steeply sloping (Figure 2).

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<sup>1</sup> Pond surface areas were estimated based on surveyed water levels during field activities in June 2018.

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### 3.0 FAULT AREA EVALUATION

According to the US Geological Survey (USGS) Earthquake Fault Map, the nearest Class A Quaternary fault areas to the plant are the New Madrid seismic zone and Western Lowlands liquefaction features, located in the central part of the Mississippi River Valley physiographic region and northeast of the plant, as shown on Figure 3 (retrieved from USGS, no date). Information about specific faults associated with the New Madrid seismic zone is limited due to poor or absent surface expression of faulting, in part because Quaternary sediments mask all but the youngest geological expressions of seismicity. Similarly, the Western Lowlands contain liquefaction features that are evidence of tectonic activity, but individual faults associated with these features are unidentified. The only Quaternary-age surface expression of a fault in the region is the Reelfoot scarp, which coincides with the underlying Reelfoot fault (Crone and Wheeler 2000). The Reelfoot fault is located in northwestern Tennessee and parts of southeastern Missouri and is identified as having Holocene displacement as shown on Figure 4 (Van Arsdale and Ellis 2004). Other faults shown on Figure 4 have been identified based on seismic reflection surveys and are also reported to have Holocene displacement (Van Arsdale and Ellis 2004). The nearest of these to the plant is the Crittenden County fault.

A Class B Quaternary fault area, shown as the Saline River fault zone on Figure 3, is located to the south-southeast of the plant. However, according to USGS, visible evidence of tectonic origin in this area does not suggest the presence of a significant seismogenic source that might generate damaging earthquakes (Crone and Wheeler 2000).

Based on a review of the USGS documentation included as Figure 3, the plant is located approximately 109 miles from the southwestern edge of the New Madrid seismic zone and 132 miles from the southwestern edge of the Western Lowlands. The Class B Saline River fault zone is located approximately 41 miles to the southeast of the plant. According to Van Arsdale and Ellis (2004), the nearest fault with Holocene displacement is the Crittenden County fault located approximately 104 miles from the plant (Figure 4).

## 4.0 CONCLUSIONS

Based on a review of the available documentation in this report, neither Recycle Pond A nor Recycle Pond B is located within 200 ft of the outermost damage zone of a fault that has had displacement in Holocene time, and therefore both Recycle Pond A and Recycle Pond B at the Entergy White Bluff plant meet the location restriction requirements of §257.62.

## 5.0 REFERENCES

- Crone, A.J., and R.L. Wheeler. 2000. *Data for Quaternary Faults, Liquefaction Features, and Possible Tectonic Features in the Central and Eastern United States, East of the Rocky Mountain Front* [USGS Open-File Report 00-260]. US Department of the Interior, US Geological Survey.
- USGS [US Geological Survey]. 2017a. "USGS US Topo 7.5-Minute Map for Redfield, AR 2017." Rolla, MO and Denver, CO: National Geospatial Technical Operations Center, US Geological Survey. Available online at <https://www.sciencebase.gov/catalog/item/59647cabe4b0d1f9f059f935>.
- . 2017b. "USGS US Topo 7.5-Minute Map for Wright, AR 2017." Rolla, MO and Denver, CO: National Geospatial Technical Operations Center, US Geological Survey. Available online at <https://www.sciencebase.gov/catalog/item/59647d51e4b0d1f9f059ff88>.
- . (no date). "Earthquake Fault Map" [web page]. <https://earthquake.usgs.gov/hazards/qfaults/map/#qfaults>.
- Van Arsdale, R., and M. Ellis. 2004. *Characterization of Active Faults in the New Madrid Seismic Zone*. Urbana, IL: Mid-America Earthquake Center.
- Van Arsdale, R., and W. Cupples. 2013. "Late Pliocene and Quaternary Deformation of the Reelfoot Rift." *Geosphere* 9(6):1819-1831. doi:10.1130/GES00906.1.

# **APPENDIX A**

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**Figures**





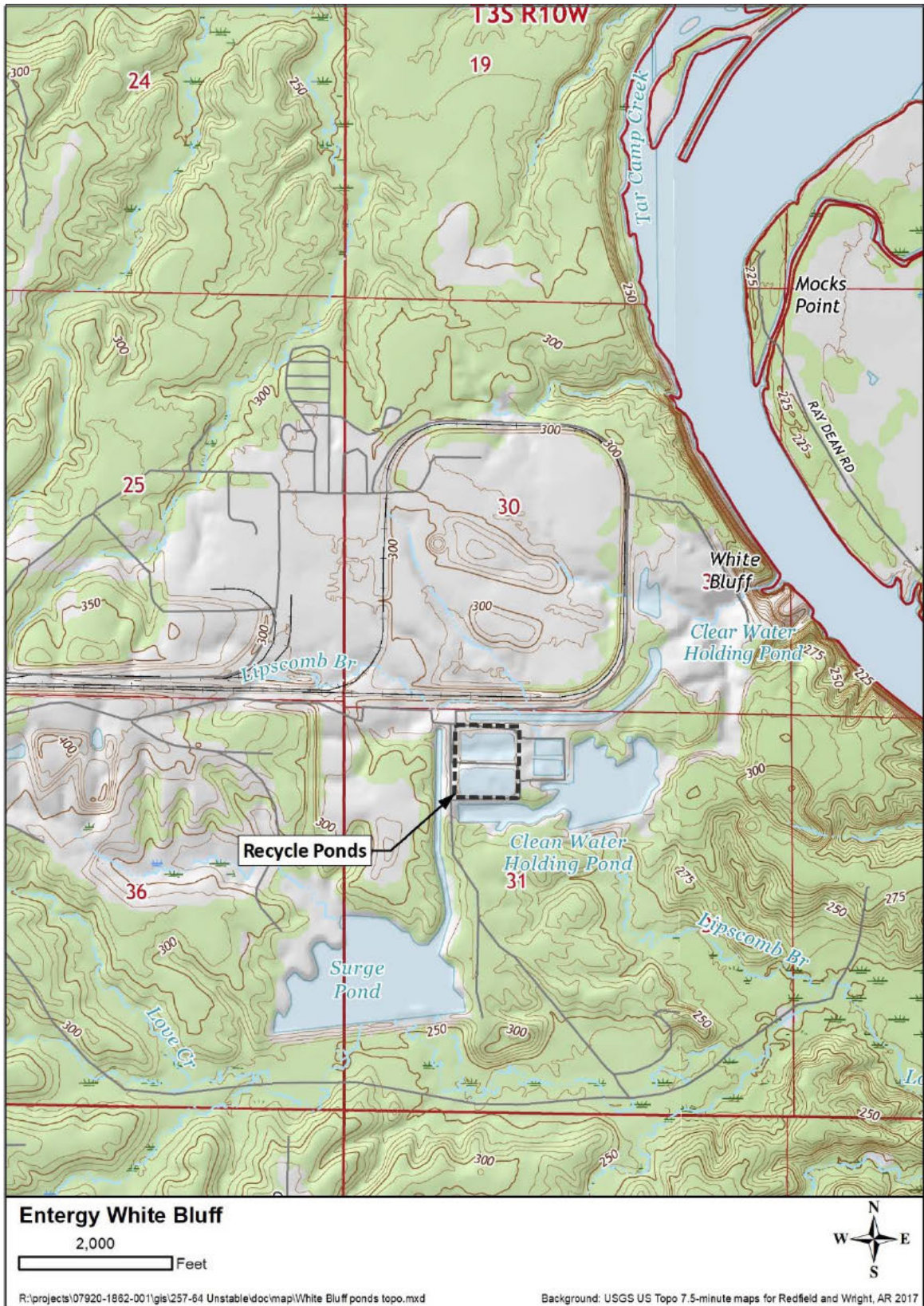


Figure 2. Topography of the recycle ponds and surrounding area based on USGS topographic quadrangles Redfield, AR, and Wright, AR (2017).



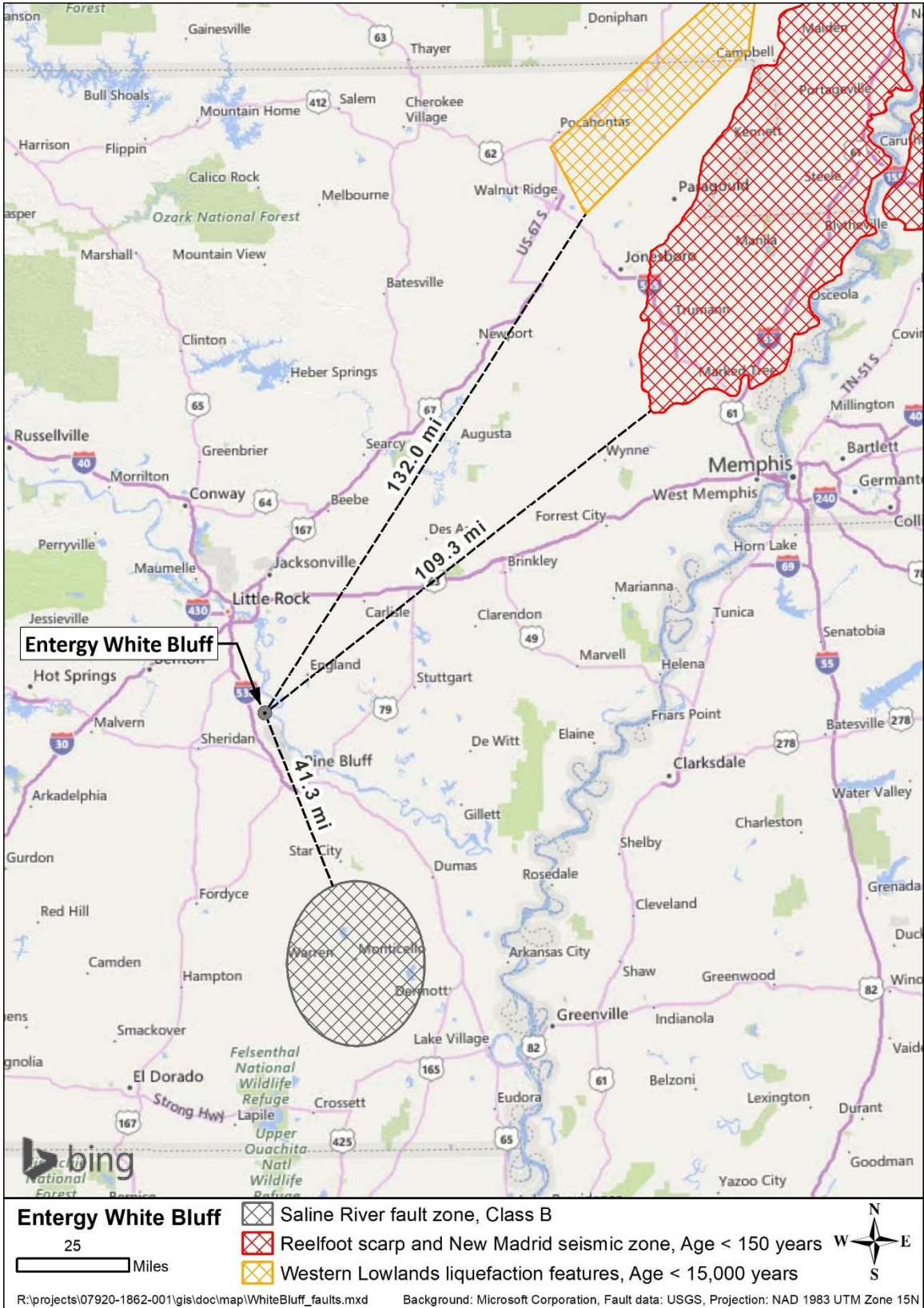


Figure 3. Quaternary fault areas (modified from USGS, no date).

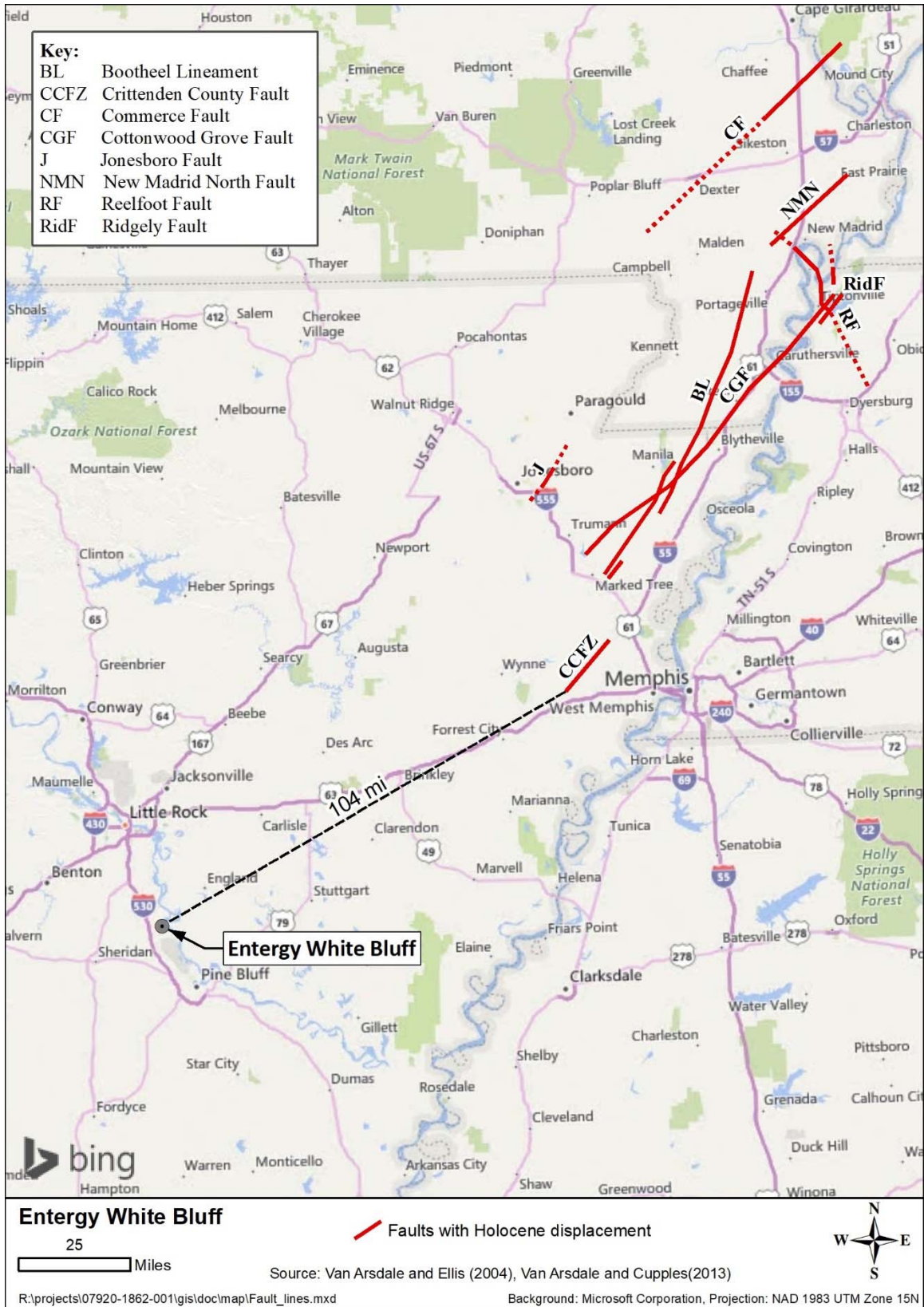


Figure 4. Faults with Holocene displacement.