RED RIVER ANALYTICS · DATA PRODUCT

7 SOURCE LAYERS · PARCEL-LEVEL

Physical Risk Collated Dataset

Seven independent physical risk layers joined to every parcel in the Shreveport-Bossier MSA

237,808	7	9,895	393
PARCELS ENRICHED	SOURCE LAYERS	ELEVATED RISK (SCORE ≥50)	ZONE X ANOMALIES

Physical risk to real property in northwest Louisiana cannot be assessed from any single data source. Flood zone designation, ground movement, soil mechanics, terrain elevation, precipitation intensity, and satellite-confirmed inundation history are each independent signals — and each parcel gets a different picture depending on which layers you look at. RRA has assembled all seven into a single scored, parcel-level dataset covering Caddo, Bossier, and DeSoto parishes.

ZONE X ANOMALY — THE REGULATORY BLIND SPOT

393 parcels designated Zone X (minimal flood hazard) show confirmed inundation history from 40 years of satellite observation. FEMA flood maps reflect a modeled 1% annual chance threshold; they do not record observed events. These parcels carry real flood risk that regulatory designation does not capture — and no other commercially available parcel dataset identifies them at the address level for this market.

KEY FINDINGS

9,895 Parcels scoring ≥50/100 on the composite Physical Risk Score — elevated risk across multiple independent dimensions

WHO USES THIS DATA

P&C insurance carriers

Underwrite flood, subsidence, and structural risk beyond FEMA zone — composite score replaces manual multi-source lookup

Mortgage lenders and servicers

13,027 Parcels at or below Base Flood Elevation — no freeboard cushion against a 100-year event

27,308 Parcels in SFHA (Special Flood Hazard Area) — Zones AE, AO, VE — mandatory NFIP insurance zone

393 Zone X parcels with satellite-confirmed 40-year inundation history — regulatory designation diverges from empirical record

Collateral risk assessment across a 30-year horizon — ground movement toward flood zone entry is a long-duration exposure

Reinsurers and cat modelers

Local ground-truth layer to supplement national catastrophe models with MSA-specific physical characteristics

Municipal engineers and planners

Prioritize infrastructure investment — roads, drainage, and utilities in high-risk corridors identified by layer convergence

Commercial real estate and title

Pre-transaction physical due diligence — single-source risk summary replacing multi-agency lookups

DATA SOURCES — SEVEN INDEPENDENT LAYERS

(1) FEMA NFIP flood zones — regulatory designation (SFHA / Zone X / AE / AO / VE) and Base Flood Elevation from FEMA National Flood Hazard Layer. **(2) Ground subsidence velocity** — Sentinel-1 InSAR vertical velocity (mm/yr) from two orbital passes, CORS-calibrated against a NOAA permanent geodetic station. *InSAR coverage: Caddo and Bossier parishes. DeSoto ground movement component is not yet processed; DeSoto parcels carry 0 on this dimension.* **(3) LiDAR terrain elevation** — 10m DTM from USGS 3D Elevation Program (3DEP); freeboard depth computed as parcel elevation minus BFE. **(4) SSURGO soil mechanics** — USDA Web Soil Survey shrink-swell potential, corrosion risk, and flood frequency class at the parcel centroid. **(5) JRC Global Surface Water** — 40-year satellite observation record (1984–2021) at 30m resolution; occurrence frequency and maximum historical extent joined to each parcel. **(6) NOAA Atlas 14 precipitation** — PFDS point estimates for 2yr, 10yr, 100yr, and 500yr storm intensities at the parcel centroid. **(7) Composite Physical Risk Score** — deterministic 0–100 score combining all six source layers: flood zone (0–30), ground velocity (0–25), terrain/freeboard (0–15), soil mechanics (0–20), surface conditions (0–10).

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Delivery options: CSV or GeoJSON by parish · API enrichment integration · Quarterly refresh · GIS-ready (EPSG:4326).
Each record includes: **flood_zone, freeboard_ft, velocity_vert_mmyr, elevation_m, ssurgo soil fields, jrc_occurrence, jrc_max_extent, Atlas 14 precip fields, physical_risk_score**, and parcel centroid coordinates.
The composite Physical Risk Score, ground subsidence velocity, and flood zone

encroachment analysis are also available as standalone products for buyers who need a specific layer rather than the full collated dataset.