Drainage Intelligence Report™

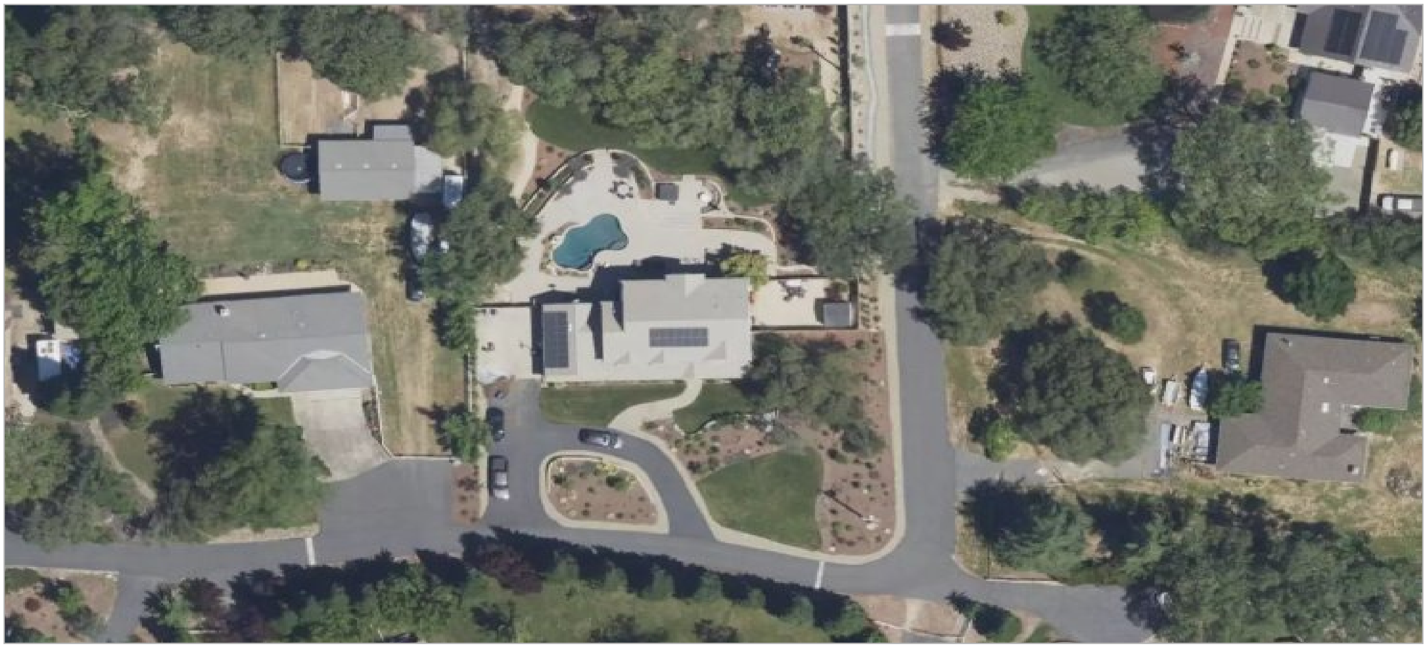
Powered by Low Point Convergence Analysis™ (LPCA™)

1234 Sample Street

Report Date: April 3, 2026

Site Information

Address: 1234 Sample Street, Anytown, US
County: Sample County
Parcel Area: 1.21 acres



Aerial imagery: Mapbox | Building footprints: Mapbox

About This Screening Report

This Drainage Intelligence Report was produced using Low Point Convergence Analysis™ (LPCA™), a terrain-based hydrologic screening methodology developed by Low Point Labs. LPCA uses a multi-phase analytic workflow to predict how stormwater runoff may interact with localized topography and parcel features.

The purpose of this analysis is not to diagnose drainage problems. It is a preliminary screening tool used to compile intelligence that improves the efficiency and focus of on-site inspections. Modeled drainage features represent estimated runoff behavior, highlighting where water is likely to travel and how it interacts with localized topography. Runoff is a natural part of every landscape, but it must be managed effectively to protect property and maintain the utility and enjoyment of yard spaces.

This report identifies areas of hydrologic interest at the residential scale. Based on the nature and location of predicted drainage behavior, LPCA highlights on-site inspection points that help reviewers prioritize where to focus during a field assessment to determine whether water-related issues are present and, if so, whether they are effectively managed.

In many cases, drainage infrastructure-such as catch basins, culverts, French drains, grading elements, swales, sump pump systems, and other water-management features-may already exist near the locations highlighted in this report. Where potential issues are flagged, readers should first evaluate the condition and performance of any existing drainage features before assuming new concerns are present.

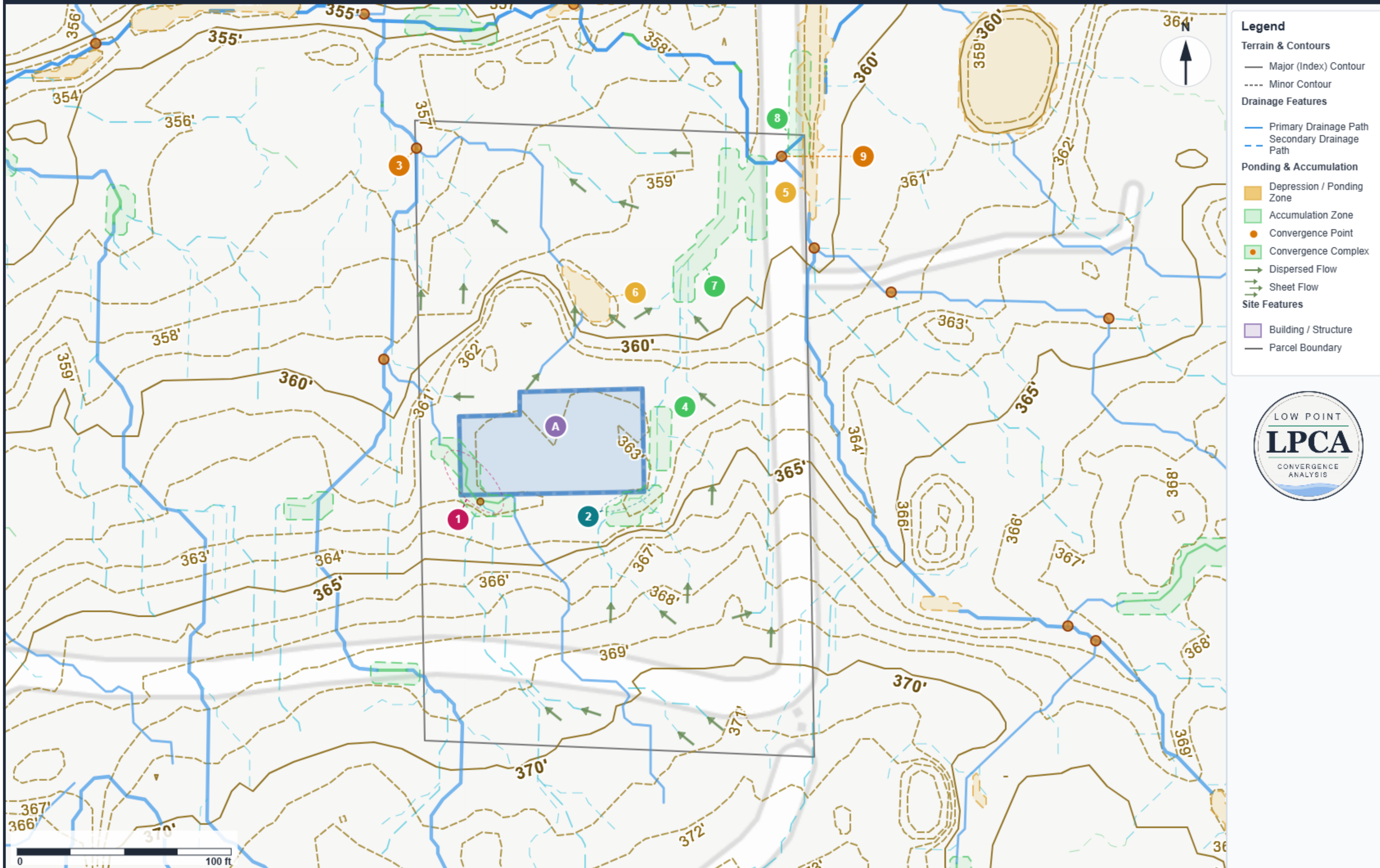
All findings are conceptual and based on bare-earth topography. Actual site conditions-including grading changes, impervious surfaces, subsurface drainage, and stormwater infrastructure-may significantly alter real-world runoff behavior. This report is intended to inform, educate, and identify areas of potential drainage interest. It is not an engineered drainage design, construction plan, or flood certification.

DISCLAIMER

LPCA is a terrain-based screening methodology that uses publicly available topographic data to identify areas of potential drainage interest. It is not an engineered drainage design, construction plan, or flood certification. Drainage Intelligence Reports are intended for informational purposes and early awareness. For construction, regulatory compliance, or definitive property assessments, always consult a licensed professional engineer.

Low Point Convergence Analysis (LPCA) — Drainage Intelligence Map

1234 Sample Street



Conceptual visualization only. Not for engineering design or regulatory compliance.
1234 Sample Street | 4/3/2026 | Low Point Labs | Elevation: USGS 3DEP

LPCA Screening Results - Drainage Intelligence

● Drainage Path ● Convergence ● Depression ● Accumulation ● Complex ● Drainage Cluster ● Structure

#	Feature Type	Inspection Priority	Description
● A	Structure	N/A	Primary Structure
● 1	Complex	High	Convergence-accumulation complex adjacent to the SW side of the home with one convergence point where modeled flow paths from the SE, S converge within a Moderate-severity accumulation zone. Significant estimated contributing drainage; estimated contributing area approximately 0.4 acres.
● 2	Drainage Cluster	High	Cluster of modeled drainage features adjacent to the home consisting of 1 flow path and 1 accumulation zone with substantial estimated contributing drainage. Estimated contributing area at peak approach: 5,227 sq ft.
● 3	Convergence	High	Modeled convergence point approximately 120 feet to the NW of the home, where modeled flow paths from the NE and S and SE converge with significant estimated contributing drainage. Estimated contributing area: approximately 1.4 acres.
● 4	Accumulation	High	Moderate-severity accumulation zone adjacent to the E side of the home. Compact area of roughly 75 square feet where modeled surface flow may briefly concentrate.
● 5	Depression	Moderate	Topographic depression approximately 110 feet to the NE of the home. Covering roughly 2,702 square feet, max depth approximately 1.7 feet, estimated retention volume of about 1,948 cubic feet.
● 6	Depression	Moderate	Topographic depression approximately 30 feet to the NE of the home. Covering roughly 323 square feet, max depth approximately 0.9 feet, estimated retention volume of about 188 cubic feet.
● 7	Accumulation	Moderate	Significant-severity accumulation zone approximately 45 feet to the NE of the home. Compact area of roughly 323 square feet where modeled surface flow may briefly concentrate.
● 8	Accumulation	Moderate	Moderate-severity accumulation zone approximately 130 feet to the NE of the home. Compact area of roughly 140 square feet where modeled surface flow may briefly concentrate.
● 9	Convergence	Low	Modeled convergence point approximately 130 feet to the NE of the home, where modeled flow paths from the E and SE converge with significant estimated contributing drainage. Estimated contributing area: approximately 10.2 acres.

Interpretation & Analysis

The property occupies a uniformly graded hillside that rises along its southern boundary and descends steadily toward the northwest, with approximately fourteen feet of elevation change across the lot. Surface water entering from the higher southern and southeastern edges follows this natural gradient, flowing generally northward and northwestward across the yard. Minor surface runoff dispersed across the site reinforces this pattern, with the majority of headwater flow trending northwest and north, consistent with the prevailing topographic grade. Several of these minor paths feed into more defined modeled drainage corridors that continue through the central and western portions of the property before exiting along the lower northern boundary.

Modeled drainage features of high inspection priority are identified along the eastern, southeastern, southern, and southwestern sides of the home. The highest-priority inspection area is along the southwestern side of the home, where a modeled drainage complex (1) occurs adjacent to the structure. A modeled drainage cluster (2) also occurs near the eastern side of the home, where a flow path runs alongside the building - together these two areas warrant a close look to evaluate actual surface conditions. Farther from the home, a modeled accumulation zone (4) was identified adjacent to the eastern side of the structure, and a small depression (6) is located approximately 30 feet to the north - both are worth examining during a site visit. To the northeast, approximately 120 to 130 feet from the home, a grouping of modeled features (5, 8, 9) occurs near the northern property boundary; while more remote, the convergence point (9) collects modeled flow from a sizable uphill area and sits near a depression (5), so interested parties should inspect this area if time permits. An additional accumulation zone (7) is located approximately 45 feet northeast of the structure, and a convergence point (3) sits roughly 125 feet to the northwest - these remote features are of lower priority but may be reviewed to gain a broader understanding of how surface water behaves across the lot.

Soils mapped for the surrounding area include a well-drained coarse sandy loam classified in hydrologic group B, which generally supports moderate infiltration and helps limit surface runoff under typical conditions. A second soil type mapped in the area falls within hydrologic group D, indicating lower infiltration capacity and a greater tendency for surface flow - where this soil is present, water is more likely to travel overland rather than soak in. The region receives approximately thirty inches of annual precipitation concentrated primarily during the winter months, with occasional single-day rainfall events approaching nearly five inches; these heavier events can generate meaningful surface runoff even on well-drained soils. The property is situated within an area of minimal flood hazard. This screening is a desktop analysis based on computationally modeled LiDAR elevation data and regional soil survey information - it identifies where surface water is likely to concentrate under idealized bare-earth conditions and does not account for existing grading improvements, subsurface drainage, vegetation, or impervious surfaces. A qualified professional should evaluate actual site conditions before drawing conclusions about drainage performance.

More About the LPCA™ Methodology

LPCA begins by constructing a detailed topographic surface around the parcel using high-resolution, 1-meter LiDAR elevation data. This surface is analyzed with a standard hydrologic modeling technique known as D8 (eight-direction) flow accumulation, which estimates dendritic flow-path routing across the terrain. The LPCA model interprets these results to identify hydrologic points of interest - including areas of dispersed and concentrated flow, depressions, accumulation potential, flow-path convergence, and complex interactions that arise when these features occur in close proximity to one another. Once parcel-scale hydrology is characterized, LPCA's structure-aware logic evaluates these phenomena relative to existing buildings and improvements. The model then contextualizes the predicted hydrologic response by incorporating regional soil characteristics and local weather patterns, offering deeper insight into how surface runoff may interact with the ground surface under real-world conditions.

Useful Terminology and Definitions

Accumulation Zone	An area where multiple flow paths converge and water volume increases, often indicating where drainage infrastructure may be needed.
Contributing Area	The total upstream land area that drains to a specific point; larger contributing areas indicate greater potential flow volume at that location.
D8 Flow Accumulation	A hydrologic modeling method that assigns surface water flow from each grid cell to one of its eight neighboring cells based on the steepest downhill slope, used to identify drainage paths and estimate contributing areas.
Convergence Point	A location where two or more drainage paths merge, concentrating flow into a single corridor.
Convergence–Accumulation Complex	A combined feature where flow convergence and accumulation occur together, typically representing the most significant drainage concentration areas on a parcel.
Depression Zone	A topographic low point where water may collect and pond if no outlet or drainage feature is present.
Dispersed Flow	Broad, unconcentrated surface runoff that moves across the landscape following the natural grade before gathering into defined drainage paths. Dispersed flow represents the earliest stage of the runoff process, where precipitation sheds across open ground in response to local slope and terrain shape.
Drainage Cluster	A spatially grouped set of drainage paths, convergence points, or accumulation features near a structure, representing a localized drainage network where multiple flow components interact in close proximity.
Drainage Path (Flow Path)	A modeled route along which surface water flows downhill, classified by contributing area into four tiers from minor sheet flow to major concentrated corridors.
Infiltration Capacity	The rate at which soil can absorb water. Lower capacity (e.g., clay soils, HSG C/D) increases surface runoff and ponding potential.
LiDAR Terrain Data	High-resolution elevation data collected via airborne laser scanning (Light Detection and Ranging), used to model bare-earth topography for drainage analysis.
Runoff	Precipitation that flows over the ground surface rather than infiltrating into the soil, influenced by slope, soil type, and impervious coverage.
Sheet Flow	Shallow, unchannelized water movement across a surface, common on relatively flat or gently sloped terrain before flow concentrates into defined paths.

Regional Characterization Information

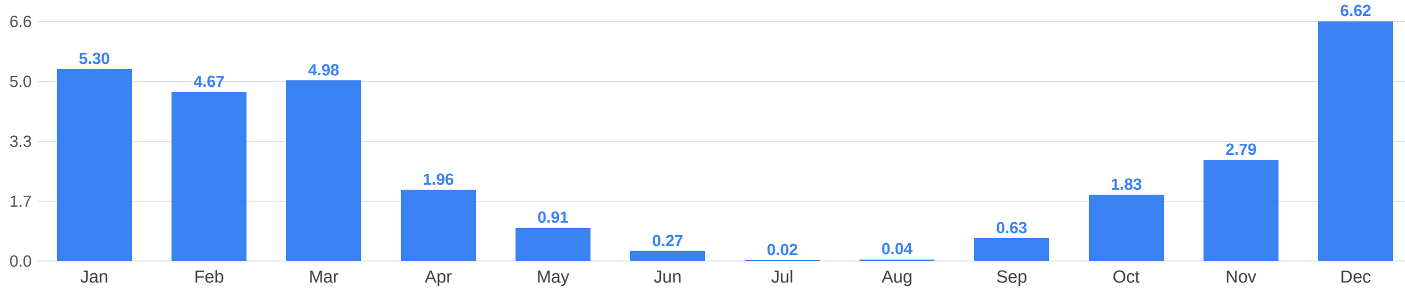
Weather & Climate

Annual Precipitation: 30.0 inches

Avg Temperature Range: 51F - 74F

Month	Avg Hi (F)	Avg Lo (F)	Rec Hi (F)	Rec Lo (F)	Days >=100F	Days <=32F
Jan	56	40	73	27	0	1.2
Feb	59	41	72	27	0	1.4
Mar	63	44	81	31	0	0.2
Apr	71	48	89	32	0	0
May	79	54	105	40	0.1	0
Jun	90	61	110	50	3.5	0
Jul	95	64	112	54	5.4	0
Aug	94	64	109	56	5.2	0
Sep	88	61	116	48	2.5	0
Oct	78	54	100	37	0	0
Nov	63	44	83	28	0	0.5
Dec	55	40	70	27	0	2.3

Average Monthly Precipitation (in.)



Precipitation Intensity

Days >0.5 in/yr: 22.2

Days >1.0 in/yr: 7.0

Days >2.0 in/yr: 1.1

Max Single-Day: 4.77 in

Storm Patterns

Avg Events/Year: 31.2

Avg Event Duration: 2.4 days

Avg Wet Spell: 2.4 days

Max Wet Spell: 11 days

Precipitation Seasonality

Season	Total (in.)	% of Annual
Winter (Jan-Mar)	15.0	50%
Spring (Apr-Jun)	3.1	10%
Summer (Jul-Sep)	0.7	2%
Fall (Oct-Dec)	11.2	37%

Precipitation Seasonality (CV): 89% — The Coefficient of Variation measures the relative spread of monthly precipitation. A value of 89% indicates high seasonality, meaning precipitation is heavily concentrated in certain months, creating significant seasonal drainage demands and potential for overwhelmed systems during wet periods.

Source: Open-Meteo ERA5 Reanalysis (2014-2023)

Soils

Map Unit Table

Symbol	Map Unit Name	HSG	Drainage Class	% Area
106	Andregg coarse sandy loam, 2 t	B	Well drained	58.3%
197	Xerorthents, placer areas	D*	Well drained	41.7%

** HSG inferred from soil properties per TR-55 guidance*

Soils Properties Detail

106 — Andregg coarse sandy loam, 2 to 9 percent slopes

Texture:	Coarse sandy loam
Ksat:	14.0 – 42.0 µm/sec
AWC:	0.10 – 0.13 cm/cm
Particle Size:	Sand 68.3%, Silt 19.2%, Clay 12.5%
Depth to Restriction:	74 cm (Paralithic bedrock)
Slope Range:	2 – 9%
Flooding:	None
Ponding:	None

197 — Xerorthents, placer areas

AWC:	0.00 – 0.00 cm/cm
Slope Range:	2 – 5%
Flooding:	Frequent (Brief (2 to 7 days))
Ponding:	None

Hydrologic Soil Group Definitions

A Low runoff potential; high infiltration rate (sand, gravel)
B Moderate infiltration rate; moderately well-drained (silt loam)
C Low infiltration rate; moderately fine to fine texture (clay loam)
D High runoff potential; very low infiltration rate (clay, shallow bedrock)

Source: USDA SSURGO / Soil Data Access

Flood Zone

Zone: Zone X

Description: Area of Minimal Flood Hazard

FIRM Panel: 123XYZ

Source: FEMA National Flood Hazard Layer (NFHL)