Drainage Intelligence Report™

Powered by Low Point Convergence Analysis™ (LPCA™)

1234 Sample Street

Report Date: March 13, 2026

Site Information

Address: 1234 Sample Street, Anytown, US
County: Sample County
Parcel Area: 0.39 acres

Aerial imagery: 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 employs a multi-phase analytic workflow to predict how stormwater runoff may interact with localized topography and parcel features. The process 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.

In many cases, drainage infrastructure - such as culverts, swales, French drains, and catch basins - are likely to already exist at or near the locations identified in this assessment. Where potential drainage issues are flagged, concerned persons should first inspect the condition and functionality of any existing drainage features before assuming new issues are present.

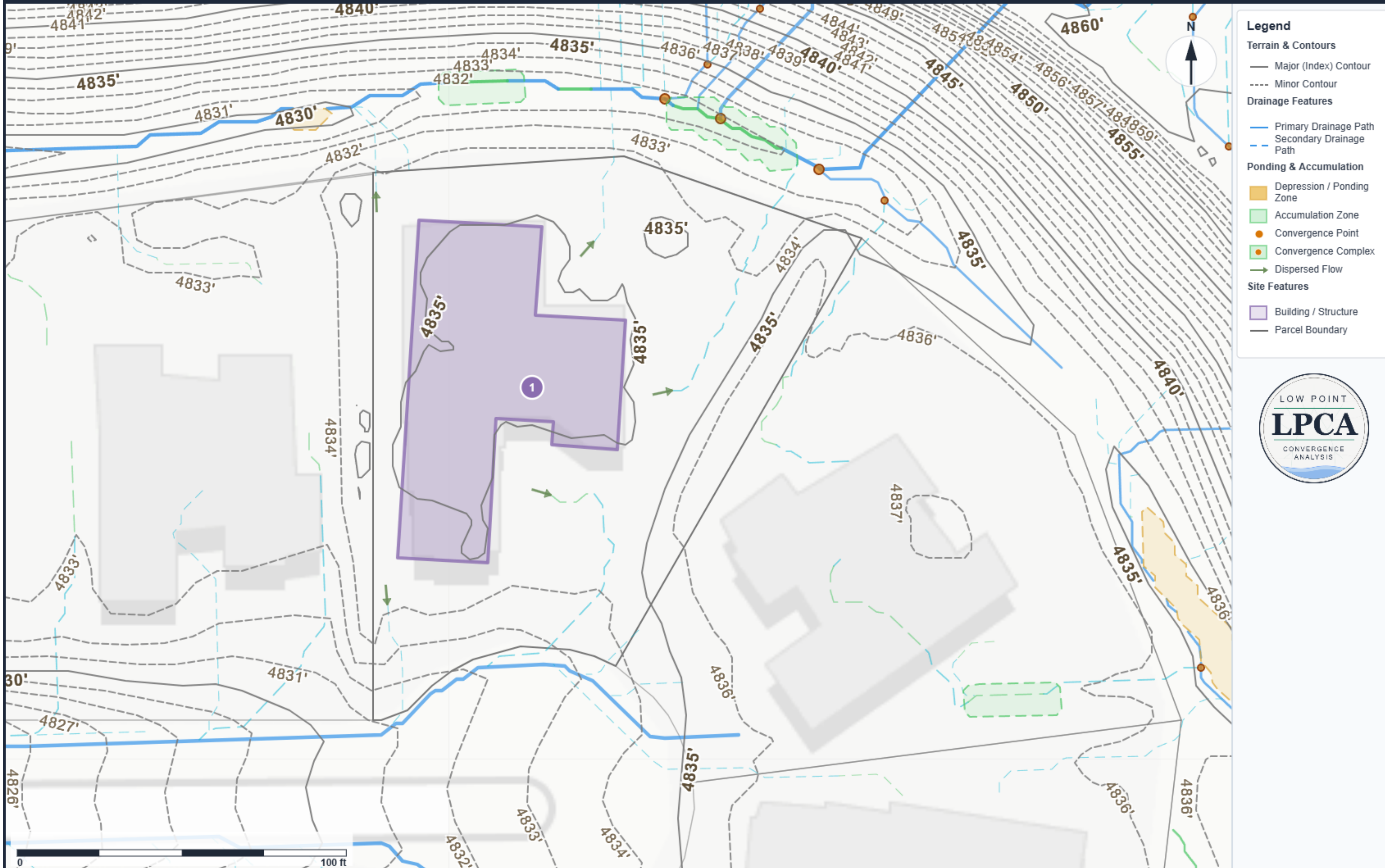
All findings are conceptual and based on bare-earth topography. Actual site conditions - including grading modifications, impervious surfaces, subsurface drainage, and stormwater infrastructure - may substantially alter drainage behavior from what is modeled here. This report is a screening tool intended to inform, educate, and identify areas of potential drainage interest for further on-site investigation by qualified professionals. 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.

Parcel Area Analysis Results — Drainage Features

1234 Sample Street



Conceptual visualization only. Not for engineering design or regulatory compliance.
1234 Sample Street | 3/13/2026 | Low Point Labs | Elevation: USGS 3DEP

LPCA Screening Results - Area(s) of Interest

Annotated Feature Table

No areas of interest or notable drainage features were identified for this parcel.

Interpretation & Analysis

The terrain at this property follows a uniform slope, grading from the east toward the southwest, with approximately four feet of elevation change across the lot. Modeling suggests that surface runoff generally follows this easterly-to-southwesterly gradient, with minor surface flow headwaters dispersing primarily toward the east and south, consistent with the prevailing topographic grade. The analysis identifies seven modeled drainage features across the site - all minor in scale - indicating that stormwater tends to sheet across the property rather than concentrating into well-defined channels. Overall, the drainage model portrays a straightforward flow pattern without significant complexity or competing flow directions.

The drainage analysis does not identify any concentrated flow paths, convergence points, accumulation zones, or ponding features in close proximity to the primary structure. The modeled drainage features on the property consist entirely of minor surface traces that remain remote from the home, suggesting that stormwater is unlikely to concentrate meaningfully against the building under typical rainfall conditions. This is a favorable finding - the uniform slope and absence of flow convergence near the structure indicate that the home sits in a well-drained position where surface runoff sheds away rather than pooling or being directed toward the exterior walls.

Soils mapped in this area are classified as a Fulstone-Reno complex, which falls within Hydrologic Group D - the lowest infiltration category. Although these soils are described as well drained, their low saturated hydraulic conductivity means that during heavier rainfall events, a greater proportion of precipitation is likely to run off the surface rather than infiltrating into the ground. In this semi-arid climate, annual precipitation averages roughly fourteen inches and is concentrated in the winter quarter, with summer months remaining notably dry. Intense single-day rainfall events of nearly four inches have been recorded, which could temporarily generate meaningful surface runoff on these low-permeability soils. The property falls within an area of minimal flood hazard according to FEMA mapping, which is consistent with the site's favorable topographic position. This assessment is based on publicly available LiDAR terrain data and regional soil survey mapping - it does not reflect existing drainage infrastructure, subsurface conditions, or any grading modifications that may have been made to the site. A professional on-site evaluation is recommended for any areas of specific concern.

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

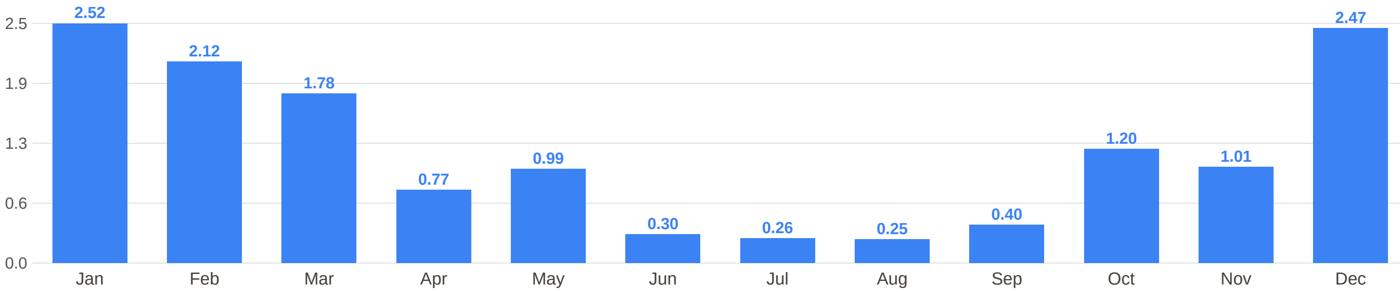
Weather & Climate

Annual Precipitation: 14.1 inches

Avg Temperature Range: 44F - 65F

Month	Avg Hi (F)	Avg Lo (F)	Rec Hi (F)	Rec Lo (F)	Days >=100F	Days <=32F
Jan	43	28	59	0	0	20.5
Feb	47	29	64	6	0	16.6
Mar	52	33	76	14	0	13.1
Apr	62	40	83	21	0	3.1
May	70	48	93	28	0	0.3
Jun	83	58	101	36	0.1	0
Jul	91	66	103	53	0.6	0
Aug	89	64	100	53	0	0
Sep	80	57	100	35	0	0
Oct	67	46	87	20	0	1.4
Nov	51	34	73	8	0	12.1
Dec	42	27	58	7	0	23.2

Average Monthly Precipitation (in.)



Precipitation Intensity

Days >0.5 in/yr: 6.3

Days >1.0 in/yr: 2.0

Days >2.0 in/yr: 0.3

Max Single-Day: 3.71 in

Storm Patterns

Avg Events/Year: 36.6

Avg Event Duration: 2.1 days

Avg Wet Spell: 2.1 days

Max Wet Spell: 11 days

Precipitation Seasonality

Season	Total (in.)	% of Annual
Winter (Jan-Mar)	6.4	46%
Spring (Apr-Jun)	2.1	15%
Summer (Jul-Sep)	0.9	6%
Fall (Oct-Dec)	4.7	33%

Precipitation Seasonality (CV): 70% — The Coefficient of Variation measures the relative spread of monthly precipitation. A value of 70% 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
3140	Fulstone-Reno complex, 2 to 30	D	Well drained	100%

Soils Properties Detail

3140 — Fulstone-Reno complex, 2 to 30 percent slopes

Texture:	Loam
Ksat:	4.0 – 14.0 µm/sec
AWC:	0.09 – 0.12 cm/cm
Particle Size:	Sand 44%, Silt 41%, Clay 15%
Depth to Restriction:	46 cm (Duripan)
Slope Range:	2 – 30%
Flooding:	None
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)