Drainage Intelligence Report™

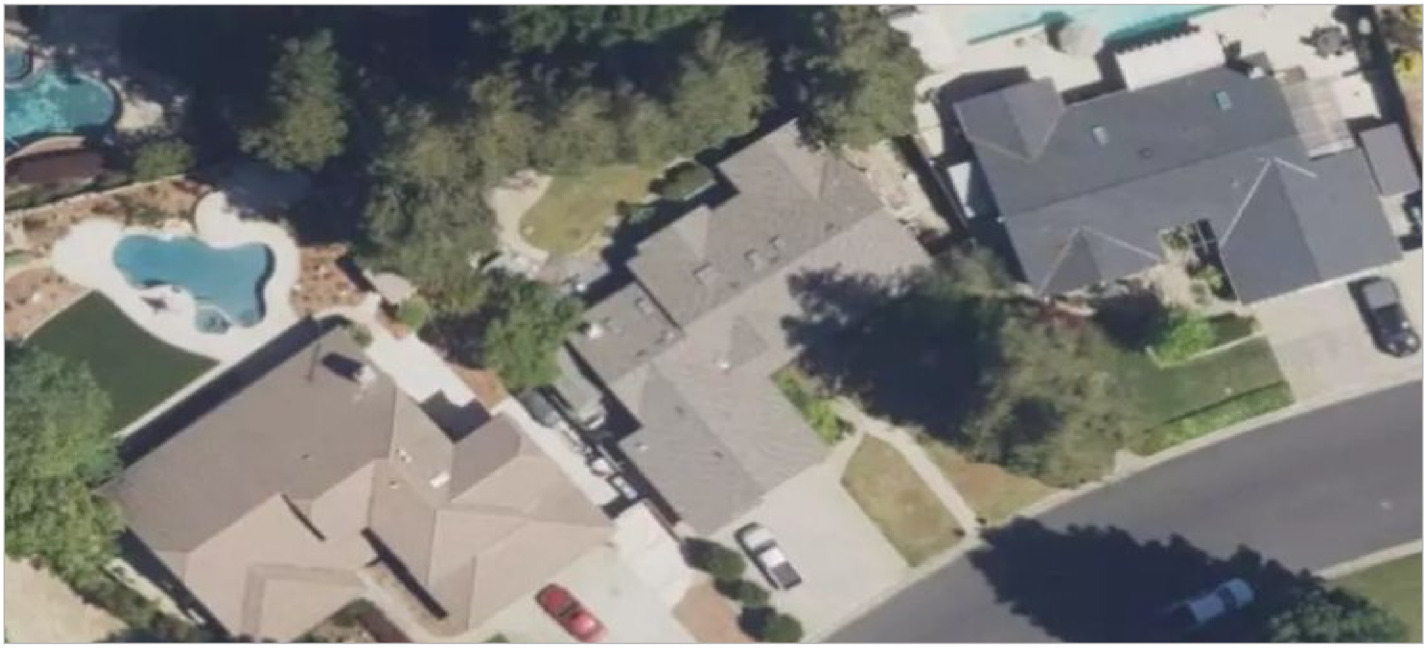
Powered by Low Point Convergence Analysis™ (LPCA™)

1234 Sample Street

Report Date: March 13, 2026

Site Information

Address: 1234 Sample Street, Anytown, US
County: Sample County
Parcel Area: 0.28 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.

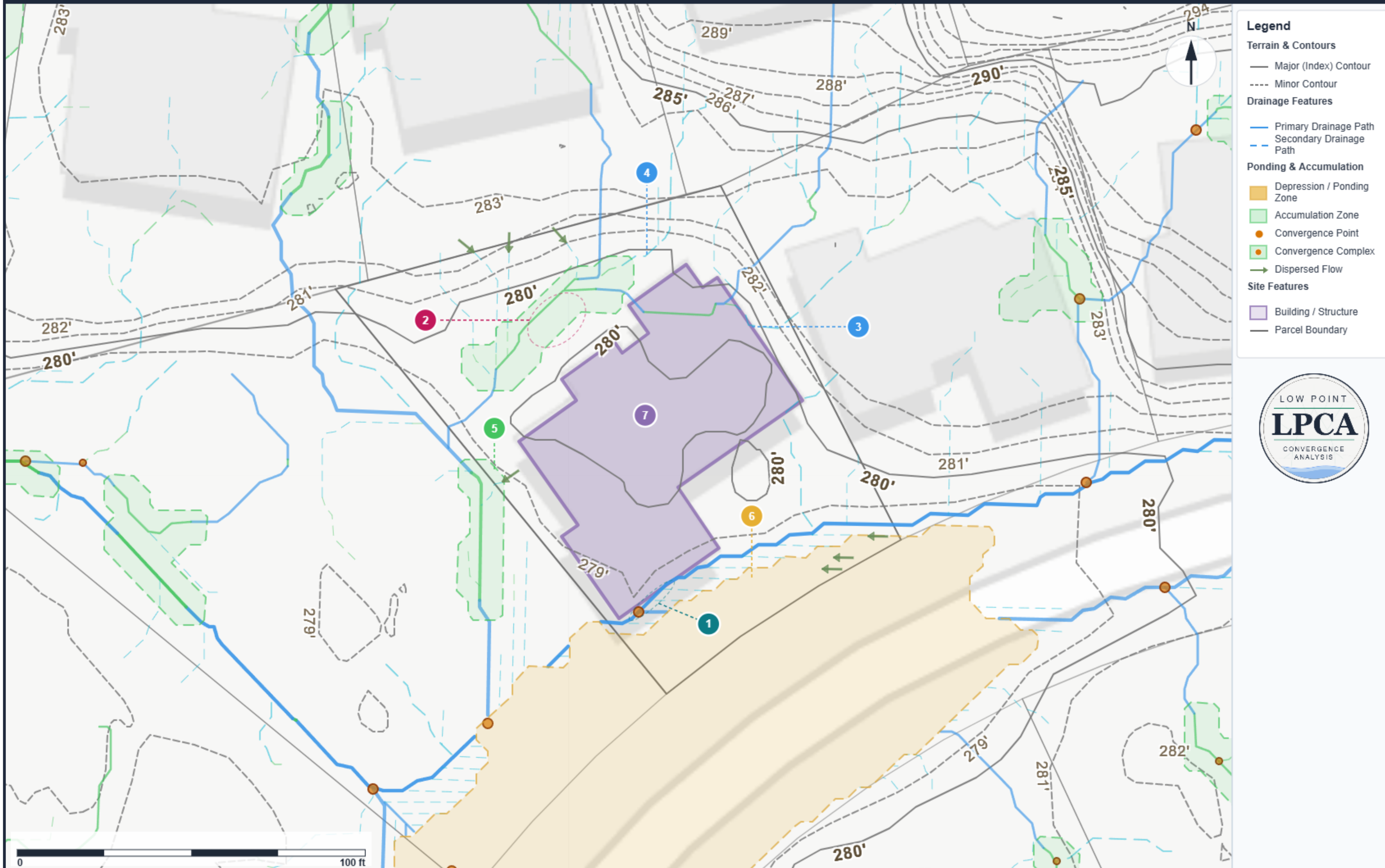
All findings are conceptual and based on bare-earth topography. Actual site conditions - including grading modifications, impervious surfaces, subsurface drainage, and stormwater infrastructure - may substantially alter drainage behavior from what is modeled here. This report is a screening tool intended 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

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

#	Feature Type	Description
● 1	Drainage Cluster	Drainage cluster with 2 major flow paths and 1 convergence point approaching from the south, carrying significant combined drainage volume, adjacent to the south side of the home
● 2	Complex	Complex with 1 convergence point within an accumulation zone, fed by 3 paths from the north and northeast carrying significant flow, approximately 20 feet northwest of the home
● 3	Drainage Path	Drainage path approaching from the northeast with moderate flow volume, reaching the northeast side of the home
● 4	Drainage Path	Drainage path passing alongside the north side of the home from the north, carrying moderate flow volume
● 5	Accumulation	Accumulation zone with significant severity, approximately 10 feet west of the home
● 6	Depression	Broad topographic depression approximately 15 feet southeast of the home
● 7	Structure	Primary Structure

Interpretation & Analysis

The property at 1234 Sample Street encompasses roughly a quarter acre of gently sloping terrain, with approximately four feet of elevation change across the lot. Modeling suggests that surface water generally moves toward the west and southwest, consistent with the subtle grade across the site. Minor surface runoff originating across the property tends to follow this westward gradient, with scattered headwater flows also tracking south and southwest before merging into more defined drainage paths at lower elevations. This overall westward drainage pattern channels water from the higher terrain along the eastern portion of the lot toward the western and southwestern edges, where the analysis identifies the property's most significant flow concentrations.

The most prominent drainage feature on the property is a cluster of concentrated flow paths and a convergence point near the south side of the home (1). This cluster contains two major flow paths - one carrying approximately 3.0 acres and the other approximately 21.5 acres of contributing drainage area - both approaching from the south and flowing westward. A convergence point within this cluster, rated as major in severity, combines roughly 6.3 acres of contributing area where these paths meet adjacent to the structure. The combined drainage loading through this cluster is significant and represents the dominant hydrologic feature on the lot. Approximately 20 feet to the northwest of the home, modeling identifies a convergence-accumulation complex (2) where three feeder paths arriving from the north and northeast deliver significant flow into a moderate accumulation zone. This complex concentrates roughly 0.4 acres of contributing drainage into a small area adjacent to the structure. Along the northeast side of the home, a drainage path (3) approaches from the northeast carrying moderate flow volume, reaching the structure's edge before curving to the southwest. A second path (4) passes alongside the north side of the home, also carrying moderate flow, tracking generally southwest within close proximity. To the west of the home, a small accumulation zone rated as significant in severity (5) sits approximately 10 feet from the structure, where modeling suggests localized ponding may occur as westward-flowing drainage slows along the lower edge of the lot. Southeast of the home, a broad topographic depression (6) spans a substantial portion of the lower yard, with a modeled maximum depth of roughly three feet, positioned approximately 15 feet from the structure.

Soils mapped in this area consist of a Xerarents-Urban land-San Joaquin complex, classified within hydrologic group D, which is associated with low infiltration rates and higher runoff potential. While the soil survey notes a well-drained classification, the group D designation suggests that during intense rainfall, a greater proportion of precipitation is likely to become surface runoff rather than infiltrating into the ground - amplifying the importance of the concentrated flow paths identified near the home. The area receives approximately 30.6 inches of annual precipitation, concentrated primarily during winter months, with an average of nearly 23 days per year exceeding a half inch and single-day events recorded as high as five inches. These seasonal downpours are the conditions most likely to activate the significant drainage pathways approaching the structure. On a favorable note, the property lies within a FEMA-designated area of minimal flood hazard, and the gentle overall slope encourages surface drainage to move across the lot rather than stagnate broadly. This assessment is based on publicly available LiDAR terrain data and regional soil survey mapping, and does not account for existing drainage infrastructure, subsurface conditions, grading modifications, or other site improvements that may substantially alter actual drainage behavior. A professional site evaluation is recommended to assess conditions near the home, particularly along the south and northwest sides where the analysis identifies the greatest concentration of modeled drainage.

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

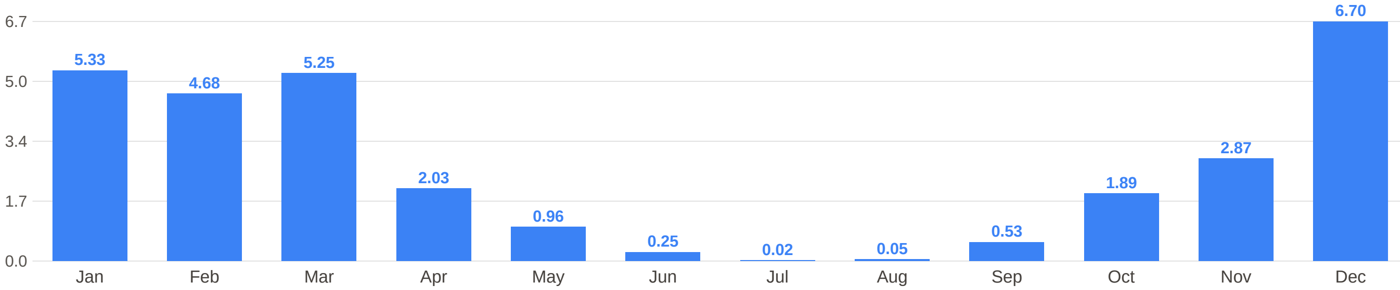
Weather & Climate

Annual Precipitation: 30.6 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	28	0	1.1
Feb	59	41	73	28	0	1.3
Mar	63	44	81	31	0	0.2
Apr	70	48	89	32	0	0
May	79	54	104	41	0.1	0
Jun	89	60	109	50	3	0
Jul	94	64	110	54	4.4	0
Aug	93	64	109	56	4.3	0
Sep	88	61	114	46	2.5	0
Oct	78	54	99	38	0	0
Nov	63	44	83	28	0	0.4
Dec	55	40	69	27	0	1.8

Average Monthly Precipitation (in.)



Precipitation Intensity

Days >0.5 in/yr: 22.5

Days >1.0 in/yr: 6.9

Days >2.0 in/yr: 1.2

Max Single-Day: 5.01 in

Storm Patterns

Avg Events/Year: 31.5

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)	15.3	50%
Spring (Apr-Jun)	3.2	11%
Summer (Jul-Sep)	0.6	2%
Fall (Oct-Dec)	11.5	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
240	Xerarents-Urban land-San Joaqu	D*	Well drained	100%

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

Soils Properties Detail

240 — Xerarents-Urban land-San Joaquin complex, 0 to 5 percent slopes

AWC:	0.00 – 0.00 cm/cm
Slope Range:	0 – 5%
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)