

# 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:** 1.14 acres



Aerial imagery: Mapbox

## About This Screening Report

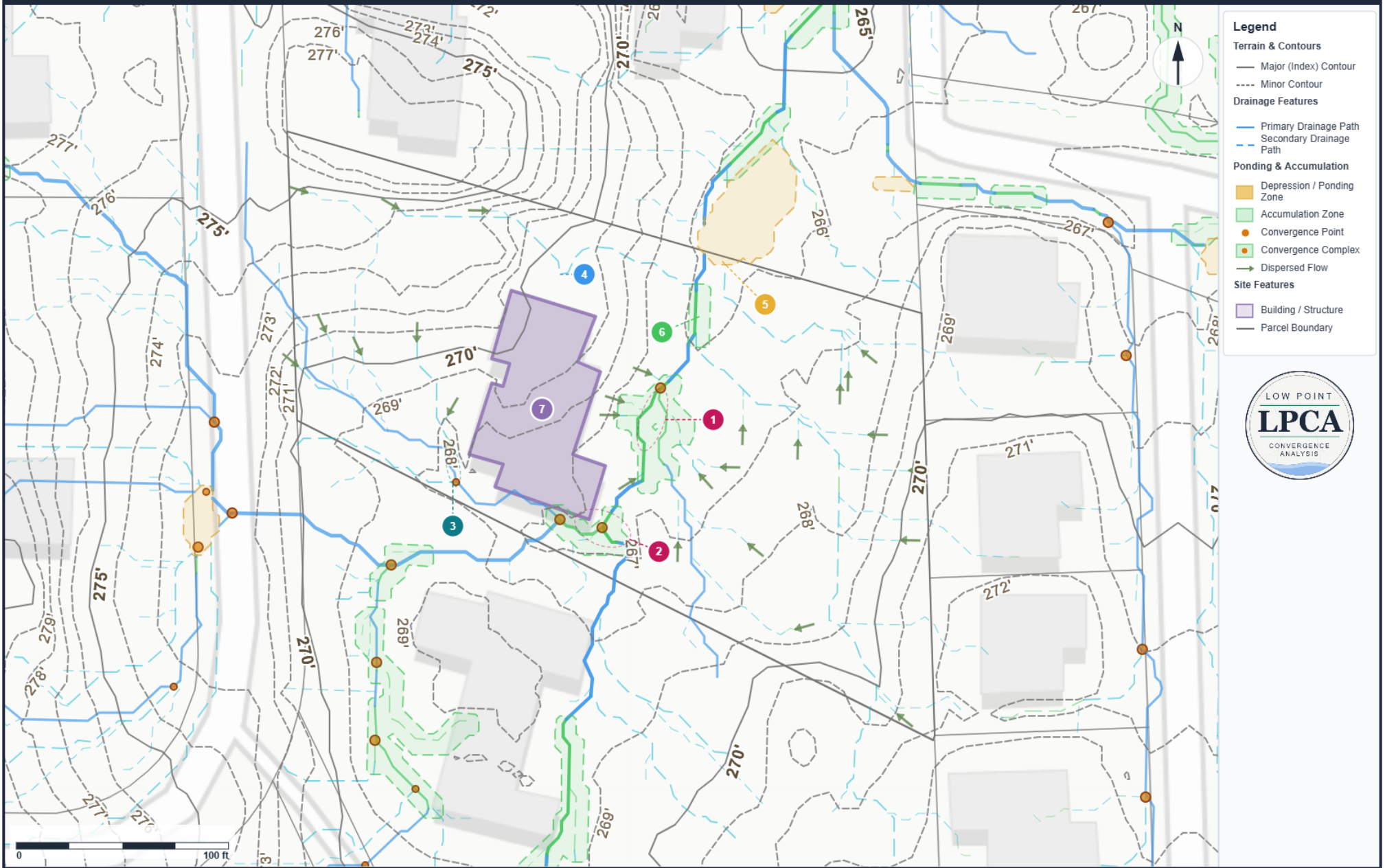
This Drainage Intelligence Report was produced using Low Point Convergence Analysis™ (LPCA™), a terrain-based hydrologic screening methodology developed by Low Point Labs. LPCA employs a multi-phase analytic workflow to predict how stormwater runoff may interact with localized topography and parcel features.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



**Legend**

**Terrain & Contours**

- Major (Index) Contour
- Minor Contour

**Drainage Features**

- Primary Drainage Path
- Secondary Drainage Path

**Ponding & Accumulation**

- Depression / Ponding Zone
- Accumulation Zone
- Convergence Point
- Convergence Complex
- Dispersed Flow

**Site Features**

- Building / Structure
- Parcel Boundary



Conceptual visualization only. Not for engineering design or regulatory compliance.  
1234 Sample Street | 3/13/2028 | 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	Complex	Convergence-accumulation complex with 1 convergence point within an accumulation zone, fed by 3 flow paths from the southwest, south, and west carrying significant drainage volume, approximately 25 feet east of the home
● 2	Complex	Convergence-accumulation complex with 2 convergence points within an accumulation zone, fed by 4 flow paths from the southwest, west, south, and northwest carrying significant drainage volume, adjacent to the southeast side of the home
● 3	Drainage Cluster	Drainage cluster with 2 flow paths and 2 convergence points approaching from the southwest carrying significant combined drainage volume, approximately 10 feet southwest of the home
● 4	Drainage Path	Drainage path passing alongside the north side of the home from the north, carrying substantial drainage volume, approximately 15 feet from the structure
● 5	Depression	Topographic depression approximately 65 feet northeast of the home, roughly 1,660 square feet in area with a modeled depth of about 9 inches
● 6	Accumulation	Accumulation zone approximately 50 feet northeast of the home where surface runoff may briefly concentrate
● 7	Structure	Primary Structure

### Interpretation & Analysis

The property at 1234 Sample Street encompasses roughly 1.1 acres of complex terrain that rises along the northwest portion and grades generally northward, with approximately eleven feet of elevation change across the lot. Modeling suggests that surface runoff originating from the higher northwest ground moves broadly toward the north and east, though the terrain's irregular shape produces varied local flow directions - minor surface flows across the site follow a mixed pattern, with no single dominant direction, instead dispersing northward, eastward, and westward depending on localized grade changes. The drainage analysis identifies several modeled flow corridors that collect this runoff as it crosses the property, concentrating it along the central and eastern portions of the lot before it exits toward the lower-lying northern and eastern edges.

The most notable drainage features the model identifies are two convergence-accumulation complexes and a drainage cluster, all located in close proximity to the home. A complex (1) situated approximately 25 feet east of the structure represents a major concentration point where three feeder flow paths approach from the southwest, south, and west, collectively carrying significant drainage volume from a contributing area of roughly 7.2 acres. A second complex (2) lies adjacent to the southeast side of the home - close to the structure's edge - where four feeder paths converge from the southwest, west, south, and northwest, drawing from approximately 10.2 acres of contributing drainage and carrying significant accumulated flow. Additionally, a drainage cluster (3) along the southwest side of the home, approximately 10 feet from the structure, groups two flow paths and two convergence points approaching from the southwest with significant combined drainage loading. Farther from the home, modeling identifies a drainage path (4) passing alongside the north side of the structure at approximately 15 feet, carrying substantial drainage volume as it flows eastward. A topographic depression (5) approximately 65 feet northeast of the home covers roughly 1,660 square feet with a modeled maximum depth of about nine inches, and a small accumulation zone (6) sits approximately 50 feet northeast of the structure, both suggesting localized areas where runoff may briefly collect before continuing downslope.

Soils mapped in this area consist of coarse sandy loams classified in hydrologic group D, which typically indicates relatively high runoff potential despite the somewhat excessively drained character noted in the survey - this apparent contrast can occur where shallow restrictive layers or steep slopes limit effective infiltration during intense rainfall. The area receives approximately 30 inches of precipitation annually, concentrated heavily in the winter quarter, with an average of about 22 days per year exceeding half an inch of rainfall and single-day maximums recorded near 4.8 inches. These high-intensity winter storms, combined with the group D runoff characteristics, suggest that the modeled drainage concentrations near the home could carry meaningful flow volumes during peak events. The property lies within an area of minimal flood hazard. This analysis is based on publicly available LiDAR terrain data and regional soil survey mapping - it is not a site survey and does not account for existing drainage infrastructure, subsurface conditions, landscaping, or grading modifications that may be in place. A professional on-site evaluation is recommended for any areas of concern, particularly along the south and east sides of the home where multiple modeled flow paths converge near the structure.

## Useful Terminology and Definitions

---

<b>Accumulation Zone</b>	An area where multiple flow paths converge and water volume increases, often indicating where drainage infrastructure may be needed.
<b>Contributing Area</b>	The total upstream land area that drains to a specific point; larger contributing areas indicate greater potential flow volume at that location.
<b>D8 Flow Accumulation</b>	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.
<b>Convergence Point</b>	A location where two or more drainage paths merge, concentrating flow into a single corridor.
<b>Convergence–Accumulation Complex</b>	A combined feature where flow convergence and accumulation occur together, typically representing the most significant drainage concentration areas on a parcel.
<b>Depression Zone</b>	A topographic low point where water may collect and pond if no outlet or drainage feature is present.
<b>Dispersed Flow</b>	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.
<b>Drainage Cluster</b>	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.
<b>Drainage Path (Flow Path)</b>	A modeled route along which surface water flows downhill, classified by contributing area into four tiers from minor sheet flow to major concentrated corridors.
<b>Infiltration Capacity</b>	The rate at which soil can absorb water. Lower capacity (e.g., clay soils, HSG C/D) increases surface runoff and ponding potential.
<b>LiDAR Terrain Data</b>	High-resolution elevation data collected via airborne laser scanning (Light Detection and Ranging), used to model bare-earth topography for drainage analysis.
<b>Runoff</b>	Precipitation that flows over the ground surface rather than infiltrating into the soil, influenced by slope, soil type, and impervious coverage.
<b>Sheet Flow</b>	Shallow, unchannelized water movement across a surface, common on relatively flat or gently sloped terrain before flow concentrates into defined paths.

# Regional Characterization Information

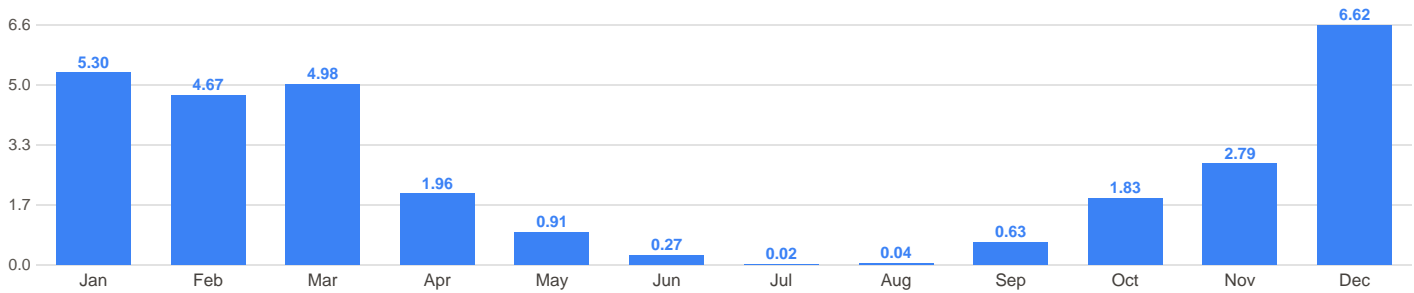
## Weather & Climate

Annual Precipitation: 30.0 inches

Avg Temperature Range: 52F - 74F

Month	Avg Hi (F)	Avg Lo (F)	Rec Hi (F)	Rec Lo (F)	Days >=100F	Days <=32F
Jan	57	40	73	28	0	1.2
Feb	60	41	73	27	0	1.4
Mar	63	44	81	31	0	0.2
Apr	71	49	89	32	0	0
May	79	54	105	40	0.1	0
Jun	90	61	110	50	3.7	0
Jul	95	65	112	54	5.4	0
Aug	94	65	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
130	Caperton-Andregg coarse sandy	D	Somewhat excessively drained	100%

### Soils Properties Detail

**130 — Caperton-Andregg coarse sandy loams, 2 to 15 percent slopes**

<b>Texture:</b>	Coarse sandy loam
<b>Ksat:</b>	14.0 – 42.0 µm/sec
<b>AWC:</b>	0.10 – 0.12 cm/cm
<b>Particle Size:</b>	Sand 67.8%, Silt 22.2%, Clay 10%
<b>Depth to Restriction:</b>	46 cm (Paralithic bedrock)
<b>Slope Range:</b>	2 – 15%
<b>Flooding:</b>	None
<b>Ponding:</b>	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)*