

**CEEn-2018CPST-007**

# **Woodland Hills Snow Run-off Drainage Analysis**

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# Introduction

## What?

- Drainage Analysis of Woodland Hills
- Culvert and Channel Design

## Why?

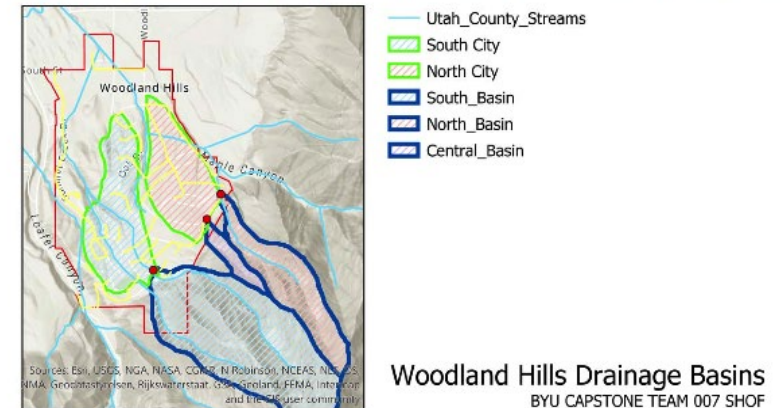
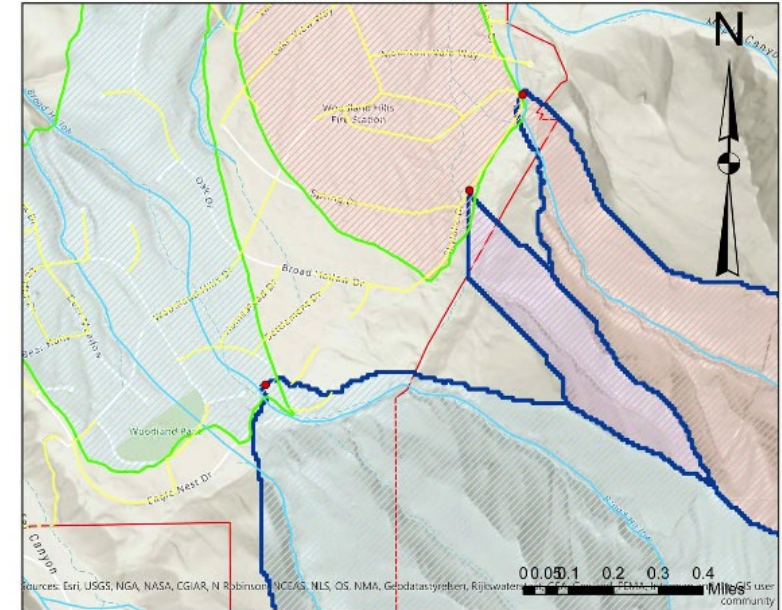
- Help mitigate negative effects of snow and rain run-off



# Design, Analysis and Results

## Project Tasks:

- **Task 1: Data Collection**
  - Flow, Elevation, and Watershed data
- **Task 2: System Analysis**
  - HY-8 and Hydraulic Toolbox Programs
- **Task 3: Recommendations**



Field Location	10-year Peak Flow (cfs)	Tailwater Channel Slope	Culvert Type	Culvert Size (in)	Overtop Flow (cfs)
N Skylake (North)	17.7	0.0890 (max 0.110)	Corr. PE	24	22.38
			Corr. Al	24	22.38
			Concrete Pipe	24	22.20
Broad Hollow (Central)	4.82	0.0705	Corr. PE	18	8.34
			Corr. Al	18	8.33
Grizzly (South)	29.7	0.0262	Corr. PE	30	31.6
			Corr. Al	30	30.92
			Concrete Pipe	30	31.40

Woodland Hills Drainage Basins  
 BYU CAPSTONE TEAM 007 SHOF

# Conclusions and Recommendations

## Channels

- Triangular
- Class I riprap
- Divide flow into two channels in Southern Basin (Grizzly Road)

## Culverts

- Corrugated plastic most economical
- Inlet configuration: mitered or square edge with headwall
- Consider wingwalls and debris mitigation on culverts at outlet points indicated on GIS Map
- Develop mitigation plan for 25- and 50-year storm events



Location	Item	Size	Price Estimate	Unit	Quantity	Probable Total Cost
N Skylake	Corrugated Polyethylene	24in	\$ 25.43	linear foot	18ft	\$ 457.74
	Corrugated Aluminum	24in	\$ 64.00	linear foot	18ft	\$ 1,152.00
	Concrete Pipe (Class V)	24in	\$ 68.50	linear foot	18ft	\$ 1,233.00
Broad Hollow	Corrugated Polyethylene	18in	\$ 16.34	linear foot	24ft	\$ 392.16
	Corrugated Aluminum	18in	\$ 44.00	linear foot	24ft	\$ 1,056.00
Grizzly	Corrugated Polyethylene	30in	\$ 41.56	linear foot	40ft	\$ 1,662.40
	Corrugated Aluminum	30in	\$ 86.00	linear foot	40ft	\$ 3,440.00
	Concrete Pipe (Class V)	30in	\$ 94.00	linear foot	40ft	\$ 3,760.00



**The End**