Utah Division of Emergency Management
JE Fuller/Hydrology & Geomorphology
AECOM

Study Completed in 2015

Neffs Creek, Utah

Assessing the Flood Hazard on a Urbanized Alluvial Fan









Association of State Floodplain Managers Annual Conference June 20, 2018

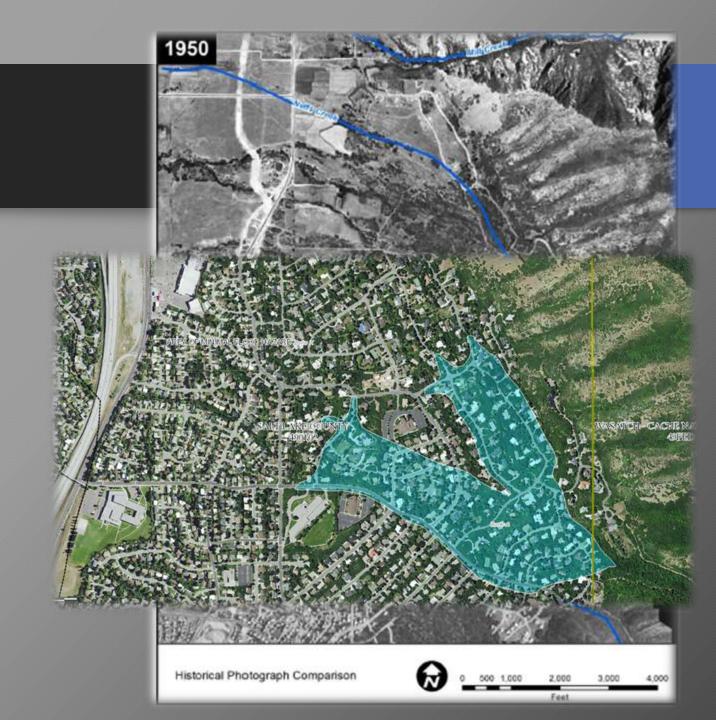
Neffs Creek Canyon, City of Millcreek, UT



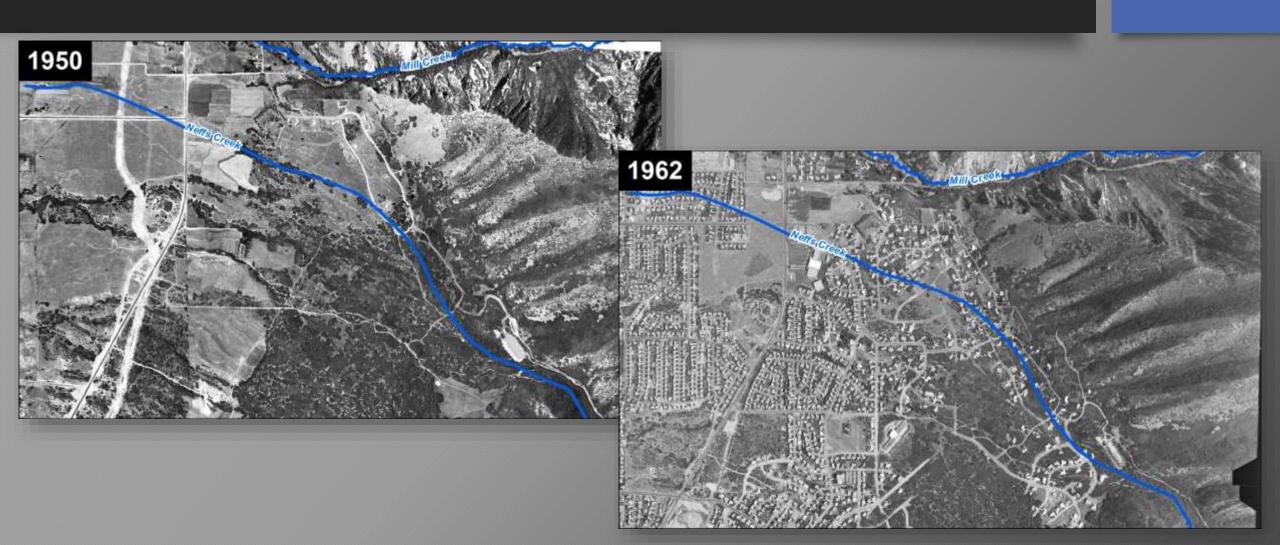


A Necessary Study

- Risk: Developed area next to steep mountain
- Zone A does not accurately portray true flood risk
- 2017 Salt Lake City Cloudburst Flood
- Study:
 - Requested by Salt Lake County
 - DEM lead
 - Funded through FEMA CTP Grant



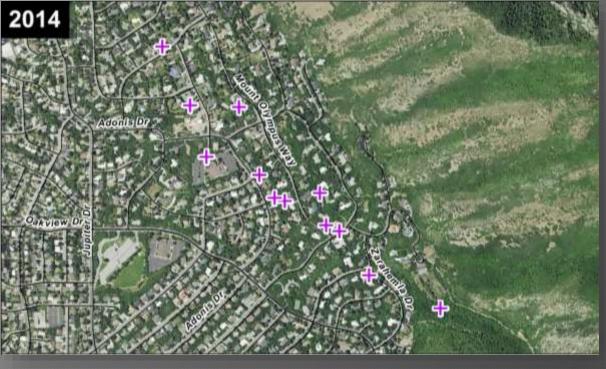
Historical View





Flow Bifurcations



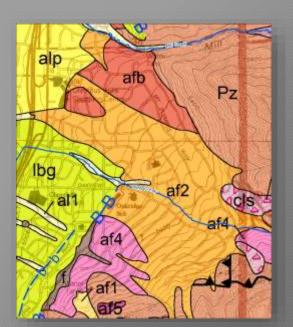


FEMA Alluvial Fan Guidelines Approach

Three-Stage Process

- Stage 1: Recognizing and Characterizing Alluvial Fan Landforms
- Stage 2: Defining Active and Inactive Areas of Erosion and Deposition
- Stage 3: Defining the 100-Year Floodplain (for Active Alluvial Fan Landforms)

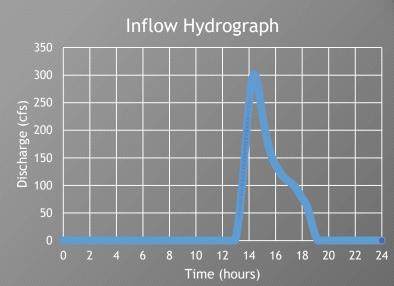


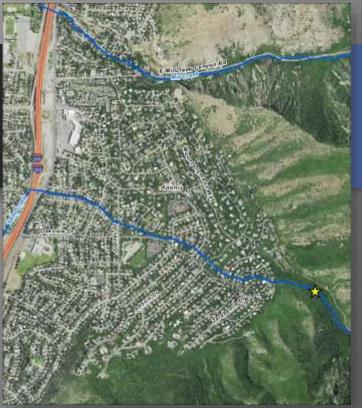




Stage 3 - Defining the SFHA

- Two-Dimensional Model
 - Hydrology County-approved study (2007)
 - Inflow Hydrograph
 - Flood routing on fan surface (no infiltration)
- Flowpath Uncertainty
 - "Virtual" Levees

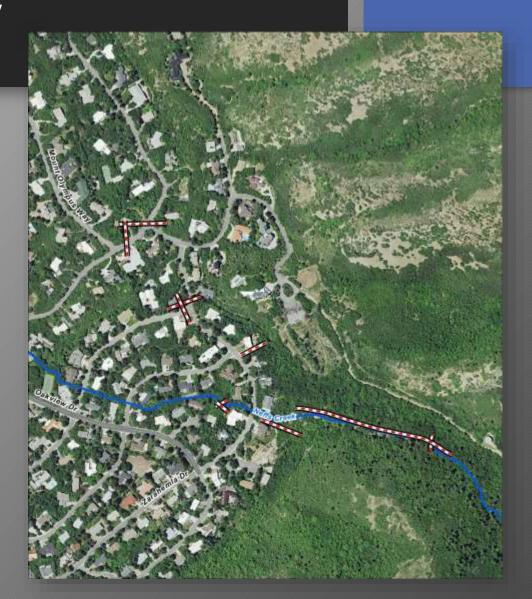


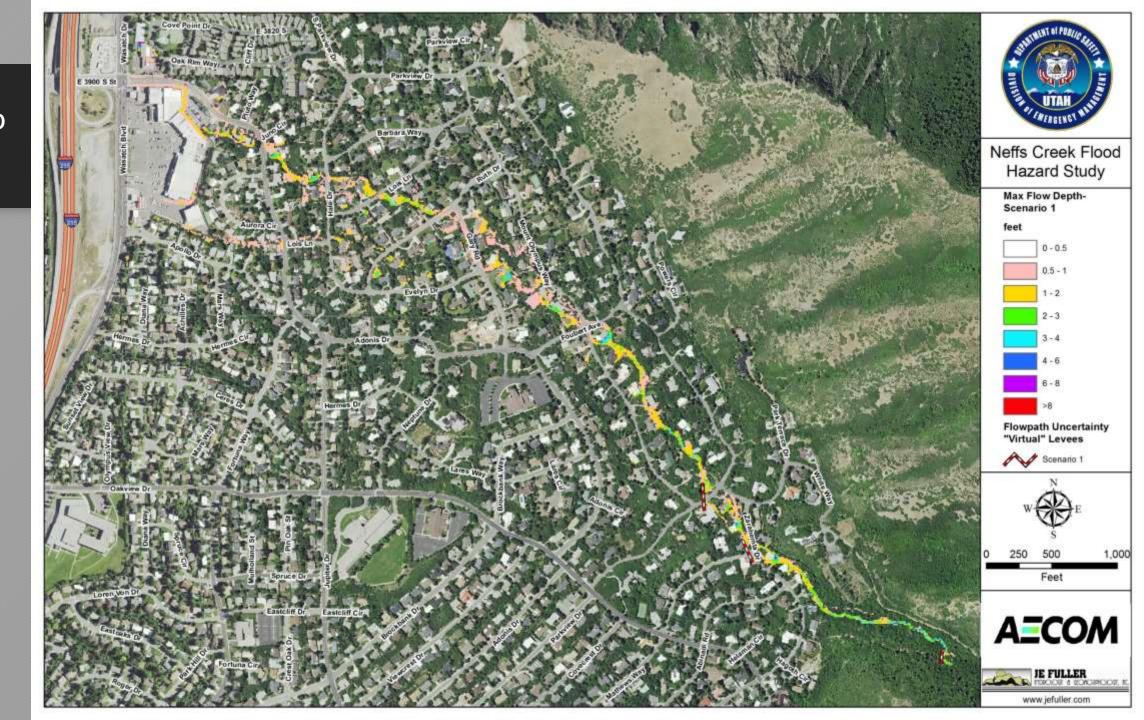


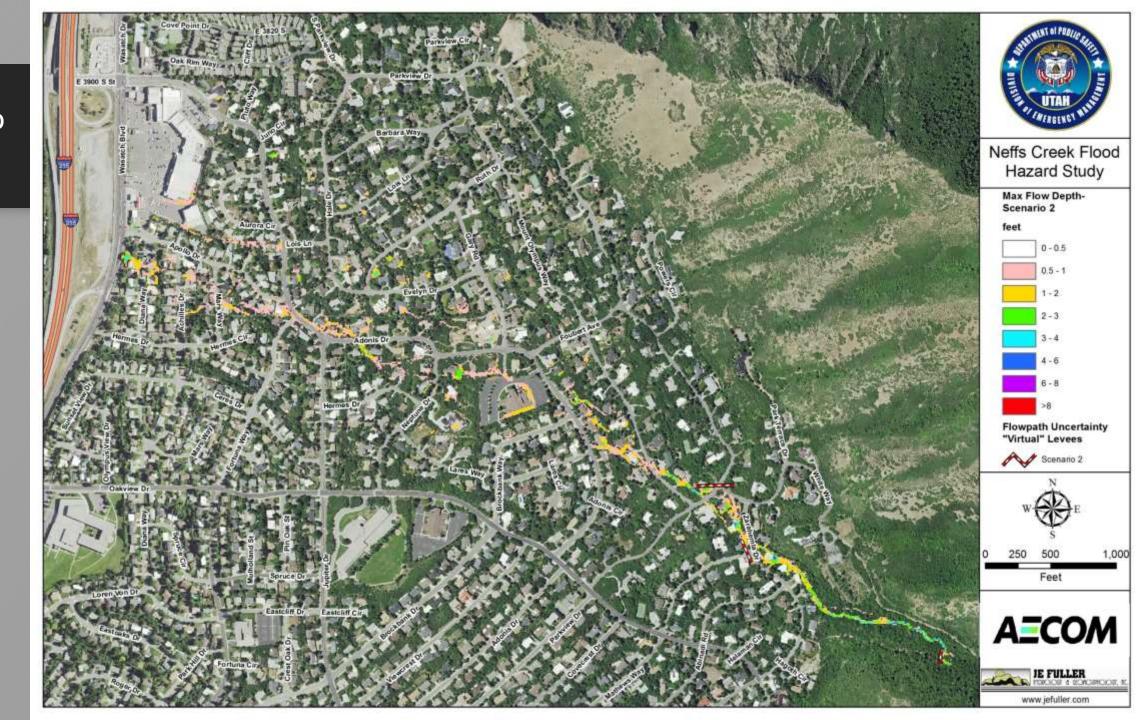
Stage 3 - Flowpath Uncertainty

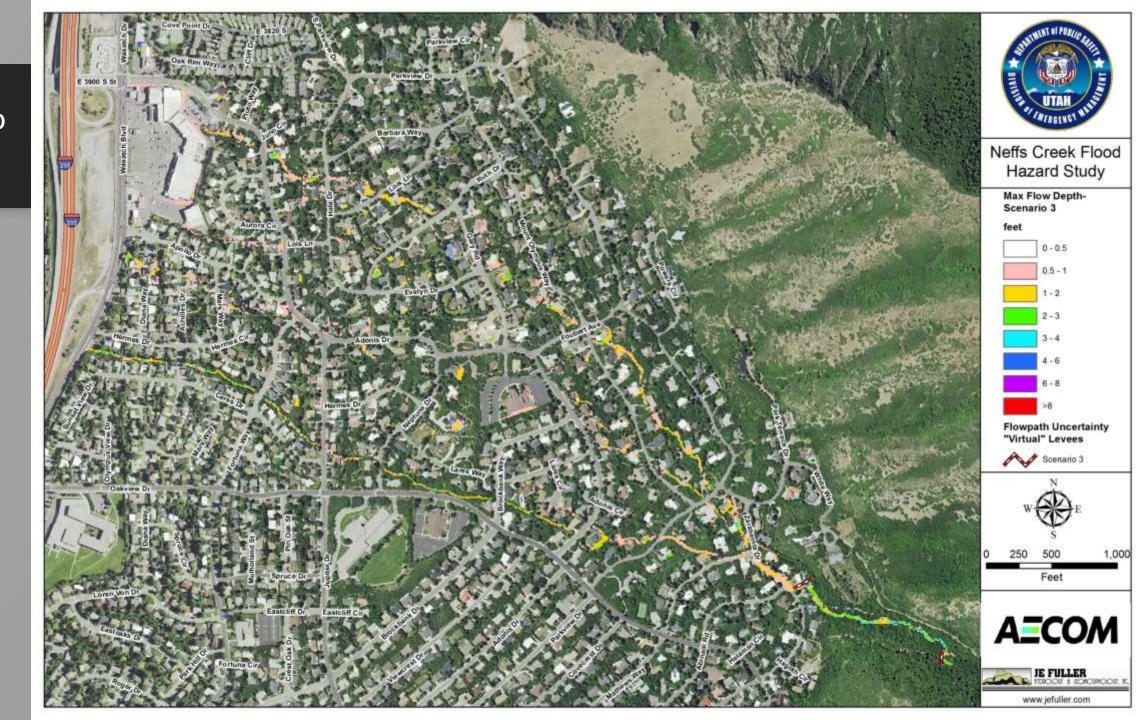
• Seven (7) Scenarios

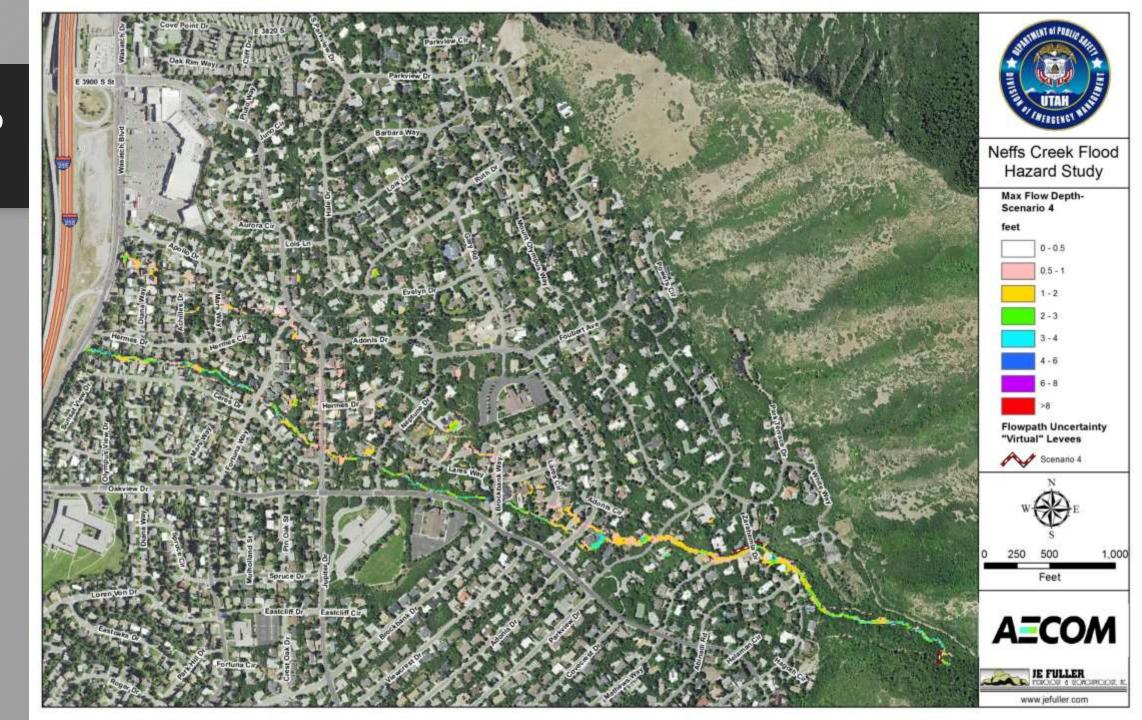
Flowpath Uncertainty Scenario	Description
Base Condition	Existing conditions. No virtual levees were used.
Scenario 1	Virtual levees were placed to direct flow toward the northern portion of the project area.
Scenario 2	Virtual levees were places to direct flow toward the central portion of the project area.
Scenario 3	Virtual levees were placed to split the flow between the northern and southern portions of the study area.
Scenario 4	Virtual levees were places to direct flow toward the southern portion of the project area.
Scenario 5	Virtual levees were places to direct all the flow into the diversion ditch channel.
Scenario 6	Virtual levees were places to direct flow toward the southern fan apex area.
Scenario 7	Virtual levees were places to direct flow toward the central fan apex area.

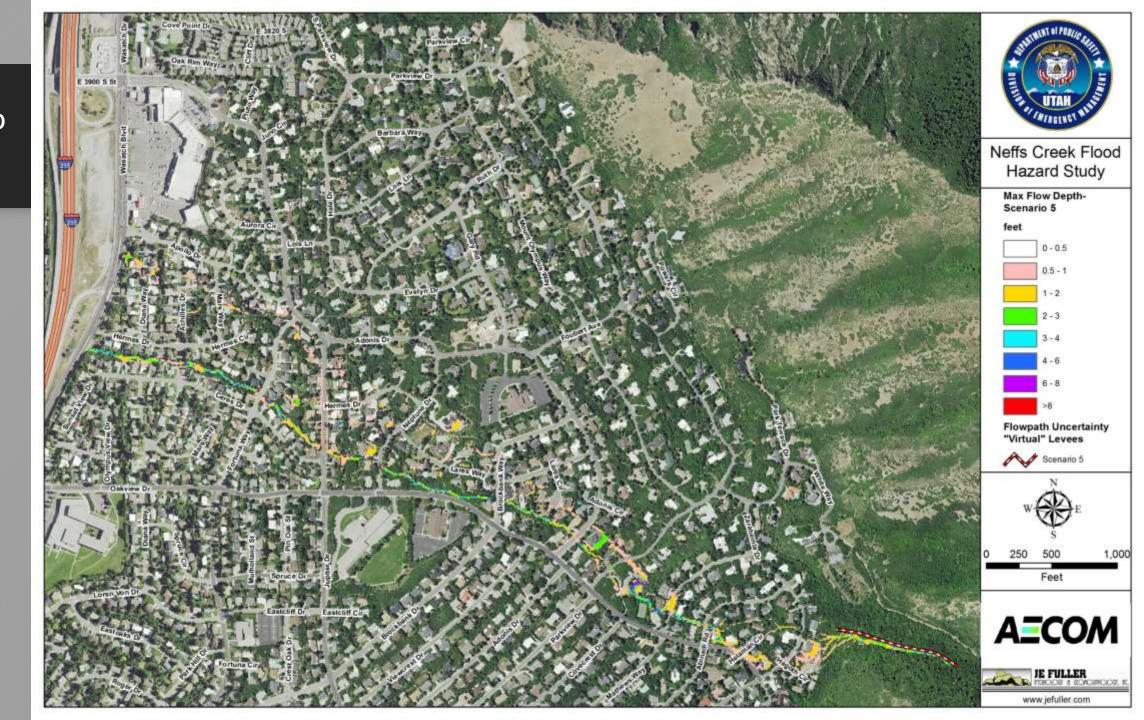


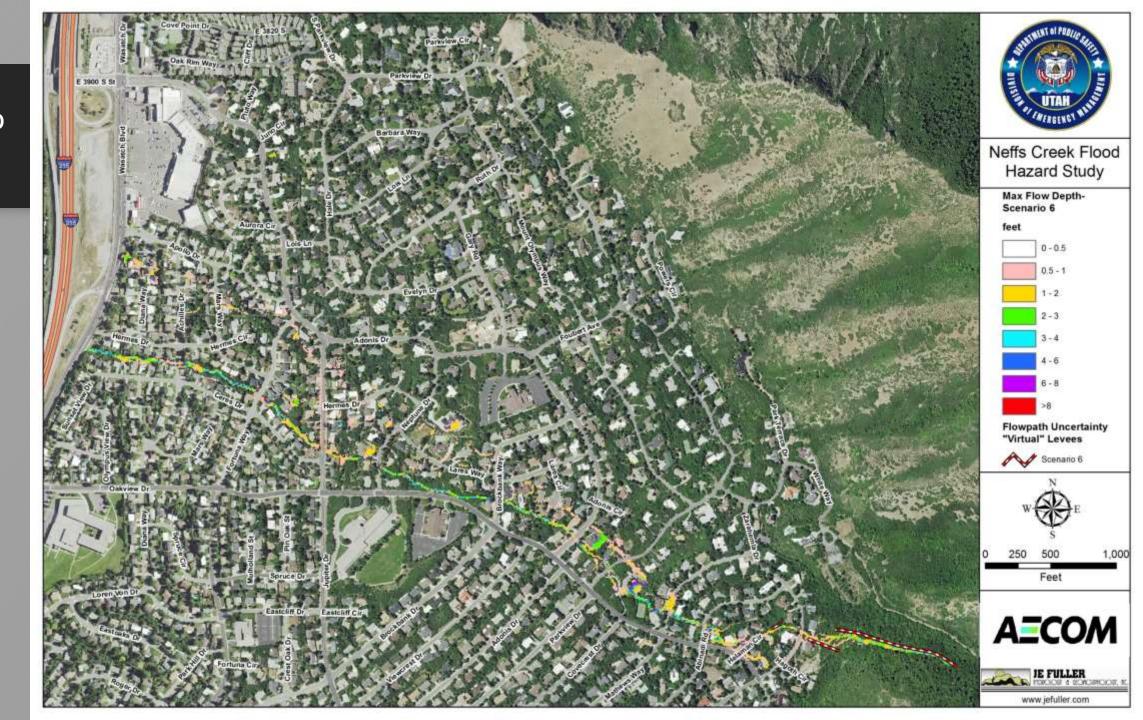


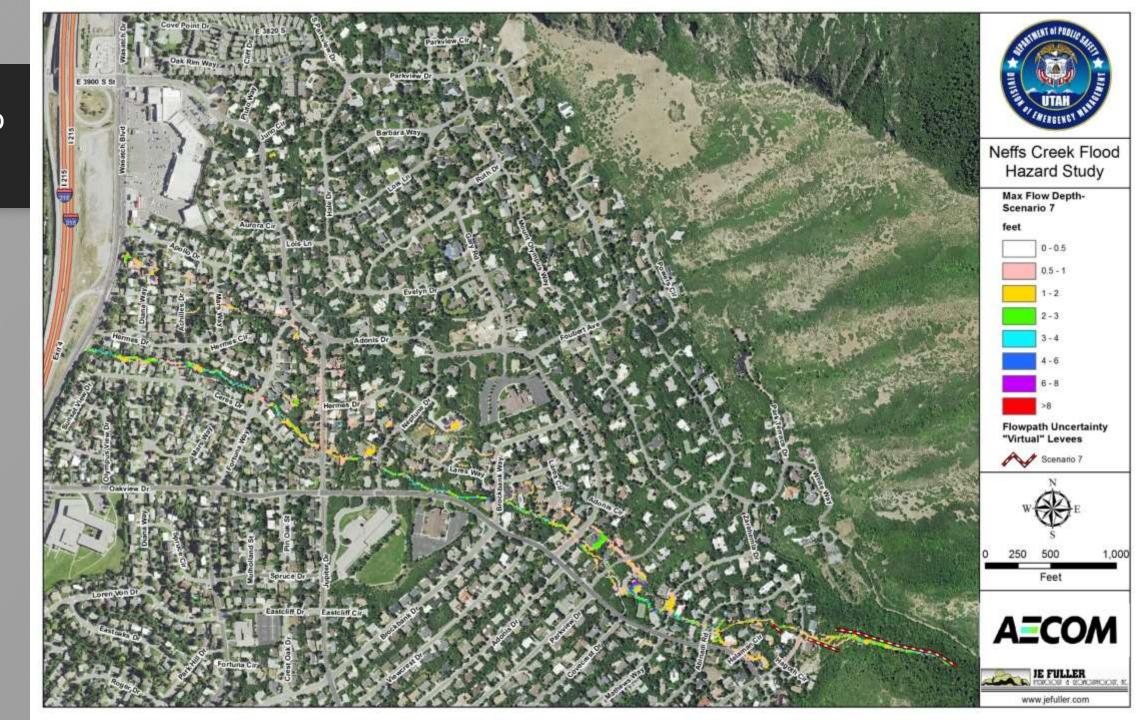




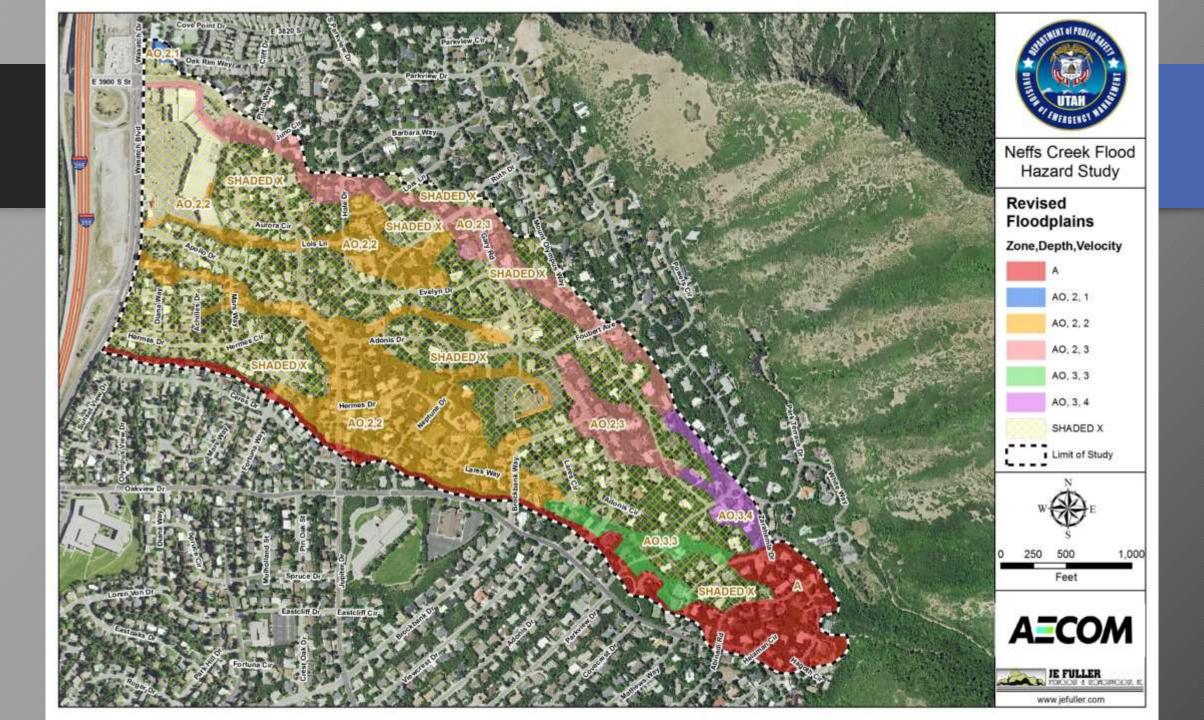




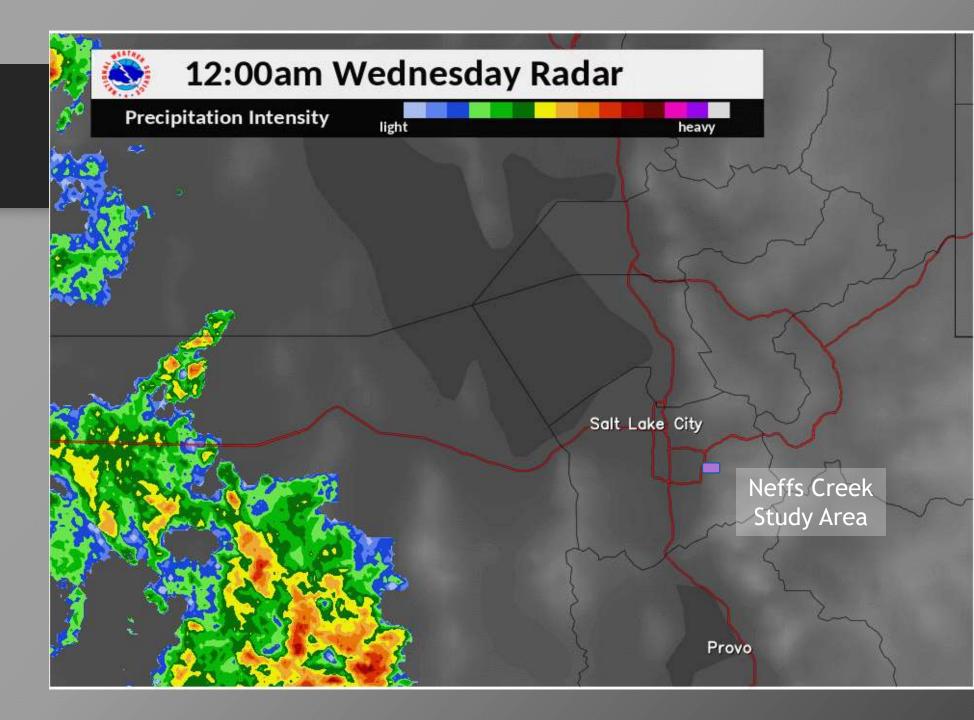








July 2017



Challenges

- Developed area at high risk
- Age of structures
 - New development requirements
- Connected Community
- Area voted into Millcreek City in 2015
- Insurance requirements & need
- Debris Basin voted down by residents
- New CTP



Coordination to Date

Study Outreach

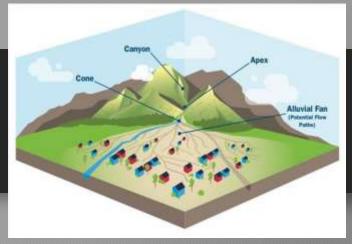
- Jordan Watershed Discovery, June 2013
- Grant Awarded Sept. 2014
- Study Kickoff Meeting Nov. 2014
- Neffs Study Progress Meeting Mar. 2015
- Neffs Flood Study Review Meeting Oct. 2015

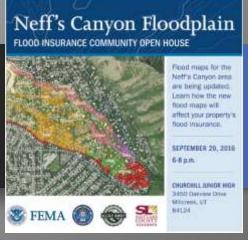
Socialization of Study

- Neffs Public Communication Strategy Jan.
 May 2016)
- Salt Lake County Neff's Study Website
- Congressional Outreach Mar. Apr.
- CERC development of (8) alluvial fan & insurance Fact Sheets
- (2) Public Outreach Meetings May 2016
- Insurance Training Sept. 2016
- Insurance Public Open House Sept. 2016

Ongoing Outreach

- Millcreek joined NFIP
- Flood Risk Review
- Preliminary FIRM release est. fall 2018
- Neffs Coordination Team
- CERC support
- Preliminary FIRM Open House
- Study identified need for state-wide inventory







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WHAT PROPERTY DWNERS NEED TO KNOW

Flood Insurance and Flood Mapping Changes for Neff's Creek



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SEMM

Lessons Learned

- Coordination team of experts
- Coordination early & often
- Think outside the messaging box
- Don't be afraid to communicate with:
 - Internal Leadership
 - Community Leadership
 - Legislators
 - Congressionals



KEEP CALM AND COMMUNICATE

Data Contact & Questions

To obtain study report and/or data please contact:

Jamie Huff

Risk MAP Program Manager

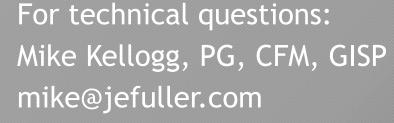
Utah Division of Emergency Management

jhuff@utah.gov

801-538-3752







480-222-5712



