



# AGENDA – City Council Meeting

Mayor Jim Miller  
Mayor Pro Tempore Stephen Willden  
Council Member Audrey Barton  
Council Member Christopher Carn  
Council Member Michael McOmber  
Council Member Lance Wadman

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## CITY OF SARATOGA SPRINGS Tuesday, September 17, 2024 @ 6:00 pm

City of Saratoga Springs Council Chambers  
1307 North Commerce Drive, Suite 200, Saratoga Springs, UT 84045

### POLICY MEETING

#### CALL TO ORDER

1. Roll Call.
2. Invocation / Reverence.
3. Pledge of Allegiance.
4. Presentation: Youth Council Oath of Office; Invitation for Youth Officers to Join Council on the Dais.
5. Public Input – *Time for Public Input is limited to no more than 15 minutes total. This time has been set aside for the public to express ideas, concerns, and comments for subject matter not listed as public hearing on the agenda.*

#### REPORTS

1. Mayor.
2. City Council.
3. Administration.

#### CONSENT ITEMS

*The Council may approve these items without discussion or public comment and may remove an item to the Business Items for discussion and consideration.*

1. Approval of Minutes: September 3, 2024.

#### PUBLIC HEARINGS

*The Council will accept public comment on the following:*

1. Proposition #13 Recreation, Arts, and Parks Sales and Use Tax (RAP Tax). Public Hearing to receive input from the Public with respect to the levying of a .1% Sales and Use Tax, and the potential economic impact that the facilities to be financed in whole or in part with proceeds of said tax will have on the private sector.

#### WORK SESSION

1. UDOT Mountain View Corridor southern extension environmental document update. Presented by Avenue Consultants.
2. Saratoga Alluvial Fan study.

#### CLOSED SESSION

Possible motion to enter into closed session for the purchase, exchange, or lease of property; pending or reasonably imminent litigation; the character, professional competence, or the physical or mental health of an individual; or the deployment of security personnel, devices, or systems.

#### ADJOURNMENT

Supporting materials are available for inspection on the City Website, [www.saratogasprings-ut.gov](http://www.saratogasprings-ut.gov). Questions and comments to Staff and/or Council may be submitted to [comments@saratogasprings-ut.gov](mailto:comments@saratogasprings-ut.gov). Meetings are streamed live at <https://www.youtube.com/c/CityofSaratogaSprings>.

PLEASE NOTE: The order of items may be subject to change with the order of the Mayor. One or more council members may participate by electronic telecommunication means such as phone, internet, etc. so that they may participate in and be counted as present for all meeting purposes, including the determination that a quorum is present.

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify the City Recorder at 801.766.9793 at least two days prior to the meeting.



## MINUTES – CITY COUNCIL MEETING

Tuesday, September 3, 2024

City of Saratoga Springs

City of Saratoga Springs City Offices

1307 North Commerce Drive, Suite 200, Saratoga Springs, Utah 84045

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**Mayor:** Mayor Jim Miller called the meeting to order at 6:00 p.m.

### Roll Call:

**Present** Mayor Jim Miller, Council Members Christopher Carn, Audrey Barton, Michael McOmber, Stephen Willden, and Lance Wadman

**Staff Present** City Manager Mark Christensen, Assistant City Manager Owen Jackson, Community Development Director Ken Young, City Attorney Kevin Thurman, Senior Planner Austin Roy, Budget Analyst Spencer Quain, Senior Planner Gina Grandpre, Police Chief Andrew Burton, City Recorder Nicolette Fike and Deputy City Recorder Kayla Moss

**Others:** Logan Johnson, Helen Robson, Crystal Ferrell, Jared Osmond, David Meredith

**Invocation:** Council Member Carn

**Pledge of Allegiance:** Council Member Barton

**Public Input:** Helen Robson, Inlet Springs Drive, has two different concerns. She reached out to council members with concerns about traffic lights going out so often in the last couple of months. This has backed traffic up dramatically. She called in to the police department for one instance and asked if they could send someone to help direct traffic. She was told it wasn't their responsibility and that they have more important things to do than direct traffic. She knows that we aren't a major metropolis but one of the biggest issues the City deals with is traffic. She used to be on the veteran's advisory board and there are a lot of veterans in the city as well as retired police officers. She suggested they may be able to be mobilized to help in these kinds of situations. She also mentioned that snowdrifts in the winter cover the lights almost causing accidents. She is also concerned about the developers in the city that come build big housing developments that bring a lot more children to the city, and then don't help to support schools in the area. This leaves the citizens with major problems in the school system.

**REPORTS:** Council Member McOmber mentioned that he has called in to staff to have police come and respond to a light that was out in the past. He agrees that we should be helping to direct traffic when lights are out. As we are getting close to fall and winter, he asked that we enforce the weeds and garbage in the streets and islands on Market Street to help reduce flooding. The wind is picking up because it is getting to be fall, he would like to remind developers that they need to wet down dirt so that it doesn't become a hazard.

Council Member Carn has been involved with the school district and he wanted it to be on record that Westlake was built to serve 1,750 students and the count of students was 3,200 this year. The overcrowding is a problem, and he is working on ideas to help get this situation fixed sooner rather than later.

Council Member Wadman advised that Harvest Hills Elementary has a beautiful park and there are a lot of people there this time of year to participate in soccer. People have been parking on the east side on Providence creating traffic flow issues. He asked if staff could look into ways to resolve this.

Mayor Miller advised that MAG brought up a question regarding the 5<sup>th</sup> and 5<sup>th</sup> sales tax that was enacted. Concerns were voiced that they may be using the money for Salt Lake County and not Utah County. They are asking for a full accounting of where the money has gone.

50  
51 **CONSENT ITEMS:**

521. **Approval of Minutes: August 20, 2024.**

53  
54 **Motion by Council Member McOmber to approve the Consent Item seconded by Council Member Carn.**

55 **Vote:**

56 **Council Member Chris Carn** Yes

57 **Council Member Lance Wadman** Yes

58 **Council Member Audrey Barton** Yes

59 **Council Member Stephen Willden** Yes

60 **Council Member Michael McOmber** Yes

61 **Motion carried 5-0.**

62  
63 **PUBLIC HEARINGS:**

641. **Budget Amendments for Fiscal Year 2024-2025. Resolution R24-49 (9-3-24).** Budget Analyst Spencer  
65 Quain advised that this is the second budget amendment of the year. Some of the amendments include  
66 HR purchase of a new software to replace one that is being discontinued, adjusting the cemetery budget  
67 to account for the bid received, and additional funding for phase 1 grading for the public works site.  
68

69 Mayor Miller opened the public hearing at 6:17 pm, there were no comments so the public hearing was  
70 closed.

71  
72 **Motion by Council Member McOmber to approve the Budget Amendments for Fiscal Year 2024-2025.**  
73 **Resolution R24-49 (9-3-24) seconded by Council Member Willden.**

74 **Vote:**

75 **Council Member Chris Carn** Yes

76 **Council Member Lance Wadman** Yes

77 **Council Member Audrey Barton** Yes

78 **Council Member Stephen Willden** Yes

79 **Council Member Michael McOmber** Yes

80 **Motion carried 5-0.**

81  
82 **BUSINESS ITEMS:**

83  
841. **Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.04 for**  
85 **Gateway Overlay Parking. Ordinance 24-38 (9-3-24).** Community Development Director Ken Young  
86 advised that currently, parking between buildings and arterial or collector streets is not allowed within  
87 the Gateway Overlay Zone. A current site plan application brought to staff's attention that this  
88 requirement could be overly restrictive. Staff has evaluated the effect of this requirement on all  
89 properties within the Gateway Overlay Zone and believes this requirement is overly restrictive. Many  
90 properties fronting collector streets are smaller and therefore have fewer development options, and  
91 many properties fronting collector streets also front arterial streets. Staff proposes eliminating collector  
92 streets from the requirement and retaining arterial streets from this requirement.  
93

94 City Council agreed that they would like to have staff decide which arterial street would take priority for  
95 access to parking.

96  
97 **Motion by Council Member Willden to approve Amendments to Title 19 Land Development Code of the**  
98 **City of Saratoga Springs, Chapter 19.04 for Gateway Overlay Parking. Ordinance 24-38 (9-3-24) with all**  
99 **staff findings and conditions adding condition that we will clarify at a future meeting the exception that**

**when there are two arterial roads they will identify which has priority seconded by Council Member McOmber.**

**Vote:**

**Council Member Chris Carn                      Yes**

**Council Member Lance Wadman                      Yes**

**Council Member Audrey Barton                      Yes**

**Council Member Stephen Willden                      Yes**

**Council Member Michael McOmber                      Yes**

**Motion carried 5-0.**

**1102. Thrive Drive Daycare Site Plan, located at 204 E Thrive Drive, Logan Johnson as Applicant.** Director Young advised on the Site Plan, located on Lots 3 and Lot 4 of the Riverside Crossing Subdivision Plat A. The applicant is proposing amending this plat to combine Lot 3 and Lot 4. (Currently, Lot 4 has two owners so the Utah County Recorder's Office shows three parcels on these two lots). The proposed site plan fronts on Riverside Drive to the east, which is a collector street. The site plan shows parking between the building and Riverside, which does not meet the current Gateway Overlay requirement for all parking to be located behind a building that fronts on arterial or collector streets. The shape and size of the lot makes it challenging to efficiently layout the site without parking adjacent to the collector. However, following an analysis of roadways in Gateway Overlay areas, staff has proposed to remove prohibiting parking adjacent to collector streets, as this can be overly burdensome to the development of several Gateway properties. This proposed code amendment will be heard at this same City Council meeting. The proposed site plan incorporates 31% landscaping. Access to the lot will be from the south side off of Thrive Drive.

Council Member Carn asked how many kids are in a class.

The applicant Logan Johnson advised that there will be a capacity of about 100 kids at the facility. There will be a drop off window that staggers for about 2 hours in the morning and afternoon. There are 17 parking spots that will be occupied by staff. They have seen some good distribution at other sites with limited issues.

Council Member McOmber had a couple of concerns. When you are coming over the hill you're looking at a parking lot right away, and not the building. He would like to see the parking lot moved to the other side. He also asked if the elevations meet the design standards outlined in the gateway overlay zone.

Director Young advised that the elevations do meet what is outlined in the gateway overlay zone currently.

Council Member Carn asked if he knows what development is kitty-corner from them. That may shield the parking lot depending on what is planned there.

Council Member Wadman asked if there is any shielding between the residential use and this facility.

The applicant advised there is some grading difference, a 5 foot public utility easement and another setback. A fence is not allowed in the gateway overlay zone.

**Motion by Council Member McOmber to deny the Thrive Drive Daycare Site Plan, located at 204 E Thrive Drive, Logan Johnson as Applicant with all staff findings based on the gateway overlay, landscape shielding being minimal, and the position of the parking lot seconded by Council Member Wadman.**

**Vote:**

**Council Member Chris Carn                      Yes**

**Council Member Lance Wadman                      Yes**

150 Council Member Audrey Barton Yes  
151 Council Member Stephen Willden No  
152 Council Member Michael McOmber Yes  
153 Motion carried 4-1.

154  
155 Council Members asked for clarification on what they approved in business item 1. They thought they had  
156 approved something different than what was implied by this application. It was decided they would  
157 reconsider the vote they took previously.

158  
159 Motion by Council Member McOmber to reconsider the vote on business item 1 seconded by Council  
160 Member Carn.

161 Vote:  
162 Council Member Chris Carn Yes  
163 Council Member Lance Wadman Yes  
164 Council Member Audrey Barton Yes  
165 Council Member Stephen Willden Yes  
166 Council Member Michael McOmber Yes  
167 Motion carried 5-0.

168  
169 1. Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.04 for  
170 Gateway Overlay Parking. Ordinance 24-38 (9-3-24).

171  
172 Council Member McOmber would not like to allow parking lot access on the collector roads, he would  
173 prefer that it defaults to the local road if that is an option.

174  
175 City Manager Mark Christensen suggested tabling this item since there was so much hesitancy.

176  
177 Motion by Council Member McOmber to table Amendments to Title 19 Land Development Code of the  
178 City of Saratoga Springs, Chapter 19.04 for Gateway Overlay Parking. Ordinance 24-38 (9-3-24)  
179 seconded by Council Member McOmber.

180 Vote:  
181 Council Member Chris Carn Yes  
182 Council Member Lance Wadman Yes  
183 Council Member Audrey Barton Yes  
184 Council Member Stephen Willden Yes  
185 Council Member Michael McOmber Yes  
186 Motion carried 5-0.

187  
188 The Council decided that they would also like to reconsider their vote on business item 2 since they didn't  
189 come to a conclusion on the ordinance change.

190  
191 12. Thrive Drive Daycare Site Plan, located at 204 E Thrive Drive, Logan Johnson as Applicant.

192  
193 Motion by Council Member Carn to reconsider the vote on business item 2 seconded by Council Member  
194 Wadman.

195 Vote:  
196 Council Member Chris Carn Yes  
197 Council Member Lance Wadman Yes  
198 Council Member Audrey Barton Yes  
199 Council Member Stephen Willden Yes

200 **Council Member Michael McOmber** Yes

201 **Motion carried 5-0.**

202

203 **Motion by Council Member Carn to table the Thrive Drive Daycare Site Plan, located at 204 E Thrive**  
204 **Drive, Logan Johnson as Applicant with all staff findings based on the gateway overlay, landscape**  
205 **shielding being minimal, and the position of the parking lot seconded by Council Member McOmber.**

206 **Vote:**

207 **Council Member Chris Carn** Yes

208 **Council Member Lance Wadman** Yes

209 **Council Member Audrey Barton** Yes

210 **Council Member Stephen Willden** No

211 **Council Member Michael McOmber** Yes

212 **Motion carried 4-1.**

213

214 **3. Adopting Mixed Waterfront Design Standards, City-Wide, City-Initiated. Ordinance 24-39 (9-3-24).**

215 Senior Planner Austin Roy advised that on May 2, 2023, the City Council adopted amendments to Title 19  
216 regarding the Mixed Waterfront Ordinance. The adopted ordinance references a document, the "Mixed  
217 Waterfront Design Standards". The Mixed Waterfront Design Standards went to the City Council on  
218 January 2, 2024 as a work session item. Following the feedback from the City Council, the draft was  
219 updated and went to the Planning Commission for a recommendation on August 15, 2024. There are  
220 three areas in the city that have mixed waterfront zoning. He presented some of the included design  
221 standards to the City Council.

222

223 Council Member McOmber asked if it is outlined in the guide that they can't have one single color on the  
224 elevation of the building. He is concerned there are pictures in the guide that don't depict the accurate  
225 requirements for colors.

226

227 Senior Planner Roy advised that this is in conjunction with all other design standards so they would be  
228 required to have three different colors. Staff and the consultant wanted to be careful in adding colors or  
229 materials to a guide because materials and styles change so much over time and they wouldn't want them  
230 to build exactly what is shown, it was more like a blank canvass. Senior Planner Austin Roy noted they  
231 could add a note indicating it was conceptual in nature only.

232

233 **Motion by Council Member Barton to adopt Mixed Waterfront Design Standards, City-Wide, City-**  
234 **Initiated. Ordinance 24-39 (9-3-24) with all staff findings and conditions seconded by Council Member**  
235 **Wadman.**

236 **Vote:**

237 **Council Member Chris Carn** Yes

238 **Council Member Lance Wadman** Yes

239 **Council Member Audrey Barton** Yes

240 **Council Member Stephen Willden** Yes

241 **Council Member Michael McOmber** Yes

242 **Motion carried 5-0.**

243

244 **4. Jordan Promenade (Wander) Village Plan 3 Major Amendment #2. Located Approximately Riverside**  
245 **Drive and 400 North. Oakwood Homes as applicant. Ordinance 24-40 (9-3-24).** Senior Planner Gina  
246 Grandpre advised The Jordan Promenade ("Wander") Village 3 project, located northeast of the  
247 intersection of Pony Express and Riverside Drive is being amended to reconfigure a section of townhomes  
248 on the north side of Village 3 and to change the number of allowed townhome units in a building from 2-  
249 6 units per building to 2-8 units per building.

Council Member McOmber advised that they haven't allowed 8 units per building in other areas, and did not allow it when they first requested. He does not think this makes the neighborhoods better because it will reduce view corridors. He wants to make sure they are preserving corridors the best they can. He would like to see an upgrade to the design standards instead of downgrading them. He thinks that the product has gotten worse as the development has continued being built.

The applicant respectfully disagreed with Council Member McOmber's assessment that the design has gotten worse as the development has progressed. He also pointed out that Village Plan 3 has the most open space of any of the other villages. He doesn't think that linking up two more buildings will reduce view corridors, he thinks it will open up the corridors.

Council Member Willden would like to see where the change from 6 to 8 is impacting the area. He is okay with approving the layout change but he would like to see where the changes are taking place. He would like them to bring back where the 8 unit connected townhomes would be.

**Motion by Council Member Willden to approve Jordan Promenade (Wander Village Plan 3 Major Amendment #2. Located Approximately Riverside Drive and 400 North. Oakwood Homes as Applicant. Ordinance 24-40 (9-3-24) Except that the change from 6 to 8 units to be brought back at a later date with additional information, and including any other staff findings and conditions seconded by Council Member McOmber.**

**Vote:**

**Council Member Chris Carn                      Yes**

**Council Member Lance Wadman                      Yes**

**Council Member Audrey Barton                      Yes**

**Council Member Stephen Willden                      Yes**

**Council Member Michael McOmber                      Yes**

**Motion carried 5-0.**

**2795. Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.18 – Sign Regulations, Raising Cane's – Crystal Ferrell as applicant. Ordinance 24-41 (9-3-24).** Senior Planner Grandpre advised that the applicant, Raising Cane's, is seeking an amendment to Section 19.18 to permit architectural elements that serve as market branding without categorizing them as signs. The applicant is asking for approval of these revisions to specifically define and allow these types of installations.

The applicant Crystal Ferrell gave a presentation to the City Council regarding what signs they are requesting and gave reasons why they are asking for the code changes.

Council Member Barton advised that she gets nervous allowing any exceptions because of the precedence it sets. She loves the design and that they came back with a concept that fits the city better, but she is nervous what others may bring in the future.

Council Member Wadman was also concerned that if they make the code change it will open the door to other applicants.

Council Member Carn was concerned with how we got here. He is worried that planning commission is writing code with an applicant to try and make their concept work. He doesn't think he can agree to this because of the same reasons that have already been brought up.

**Motion by Council Member McOmber to deny Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.18 – Sign Regulations, Raising Cane’s – Crystal Ferrell as applicant. Ordinance 24-41 (9-3-24) with staff findings and conditions and as per staff recommendation seconded by Council Member Wadman.**

**Vote:**

**Council Member Chris Carn                      Yes**

**Council Member Lance Wadman                      Yes**

**Council Member Audrey Barton                      Yes**

**Council Member Stephen Willden                      Yes**

**Council Member Michael McOmber                      Yes**

**Motion carried 5-0.**

**3116. Redwood Square Preliminary Plat & Site Plan, located approximately Redwood Road and Aspen Hills Blvd., David Meredith as Applicant.** Planning Director Sarah Carroll advised this 5.14-acre development consists of five buildings over two lots and includes 24.56% landscaping with a trail along Redwood Road. UDOT has granted a conditional access permit onto and off Redwood Road. The applicant is also working with the adjacent properties to the north and south to provide access. The proposed site plan provides the required parking for several RC uses including retail, restaurant, and takeout. Based on the parking provided, there is not enough for medical uses, which require a higher parking ratio than retail. The development is governed by a development agreement restricting certain uses in the RC zone and shall comply with those limits as well as the RC zone.

Jared Osmond was present as applicant.

Council Member Carn mentioned to the applicant that he likes their product. He thinks that they are under parked at times because they are always so popular. He wants to make sure the neighbors are screened from hearing too much noise from the development.

**Motion by Council Member Carn to approve Redwood Square Preliminary Plat & Site Plan, located approximately Redwood Road and Aspen Hills Blvd., David Meredith as Applicant with all staff findings and conditions seconded by Council Member Barton.**

**Vote:**

**Council Member Chris Carn                      Yes**

**Council Member Lance Wadman                      Yes**

**Council Member Audrey Barton                      Yes**

**Council Member Stephen Willden                      Yes**

**Council Member Michael McOmber                      Yes**

**Motion carried 5-0.**

**ADJOURNMENT:**

There being no further business, Mayor Miller adjourned the meeting at 8:09 p.m.

\_\_\_\_\_  
Jim Miller, Mayor

\_\_\_\_\_  
Dated

\_\_\_\_\_  
Nicolette Fike, City Recorder



# Mountain View Corridor South

Pioneer Crossing to Redwood Road



## Saratoga Springs City Council Meeting

September 17, 2024

# State Environmental Study (SES)

## Proposed Action

**A 10-mile southern extension of Mountain View Corridor from Cory Wride Highway (SR-73) to Redwood Road, near Pelican Point.**

### Goals:



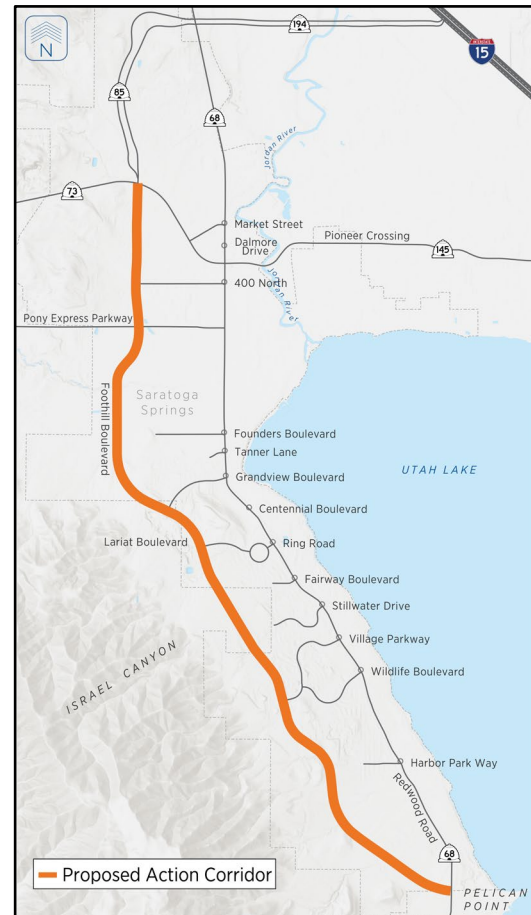
**Enhance network connectivity and vehicle mobility in northwest Utah County.**



**Improve road network connectivity and resiliency in southern Saratoga Springs.**



**Support active transportation improvements parallel to the Proposed Action consistent with existing and planned routes.**



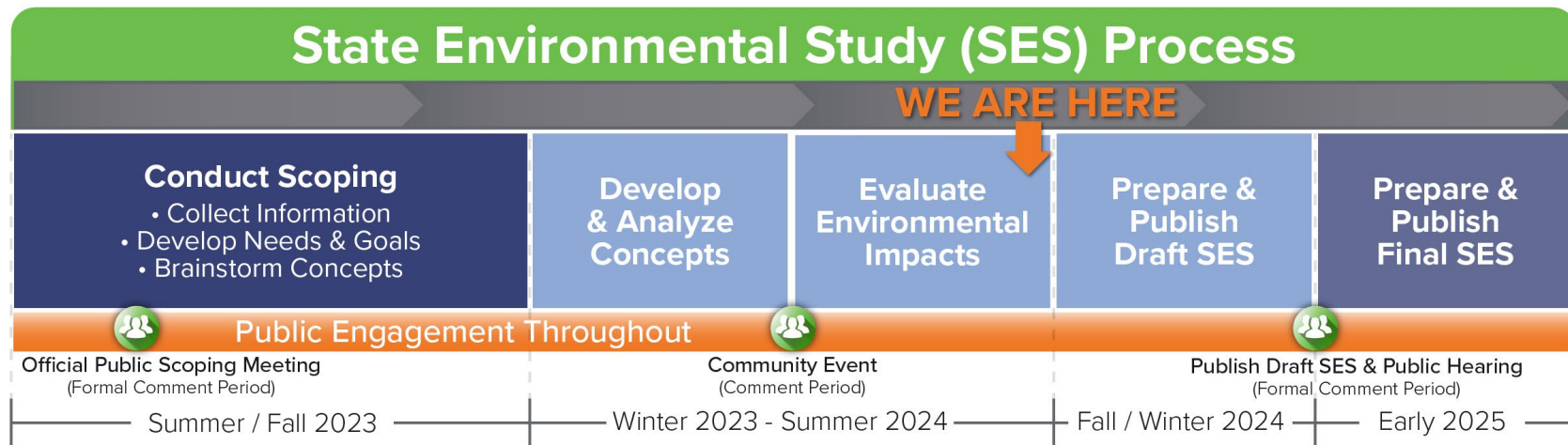
**MVC South**

Pioneer Crossing to Redwood Road

**STUDY**  
by UDOT

**UDOT**  
Keeping Utah Moving

# Schedule

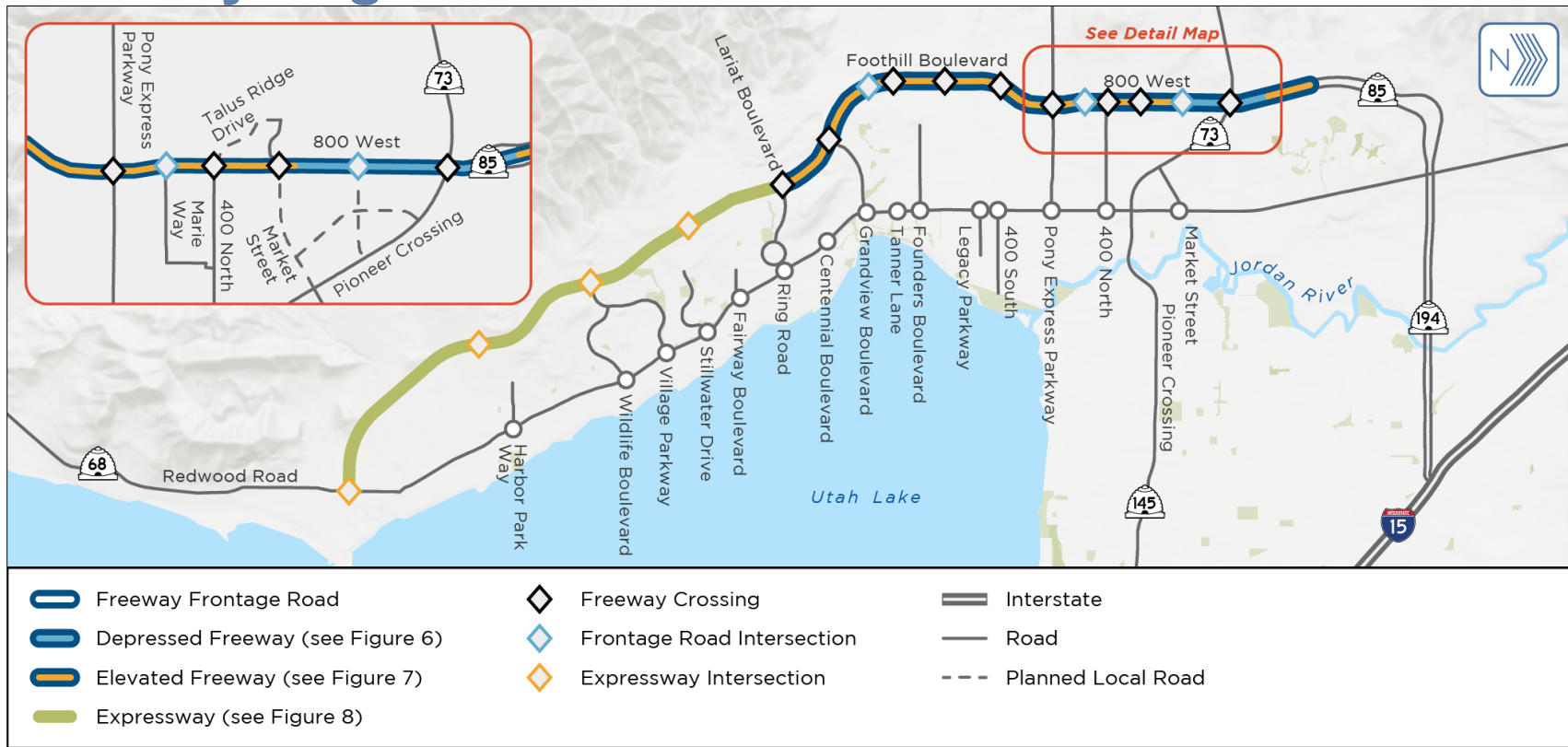


MVC South

Pioneer Crossing to Redwood Road



# Roadway Segments and Access Locations



MVC South

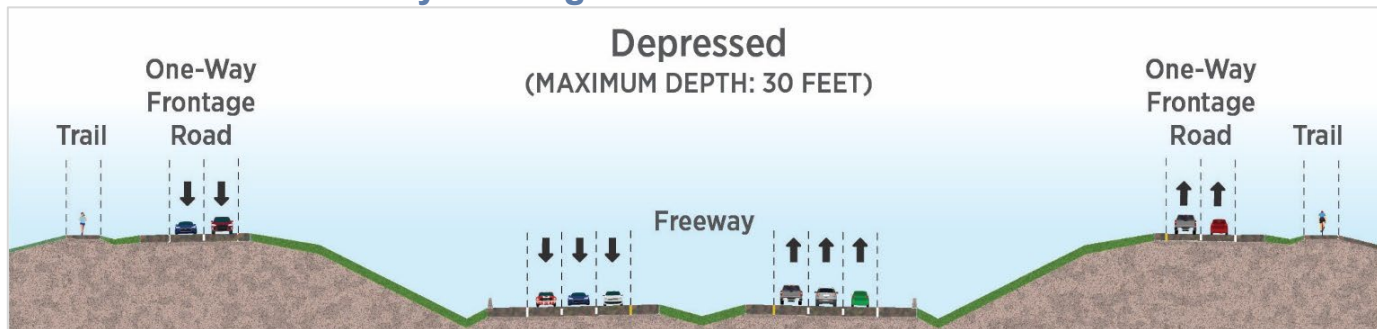
Pioneer Crossing to Redwood Road

**STUDY**  
by UDOT

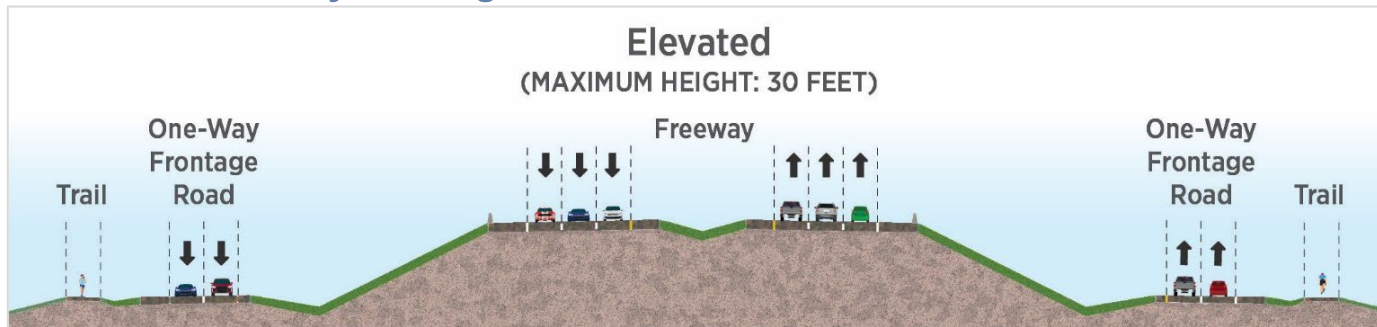
**UTDOT**  
Keeping Utah Moving

# Roadway Cross Section

## Freeway Frontage Road: SR-73 – Sunrise Park

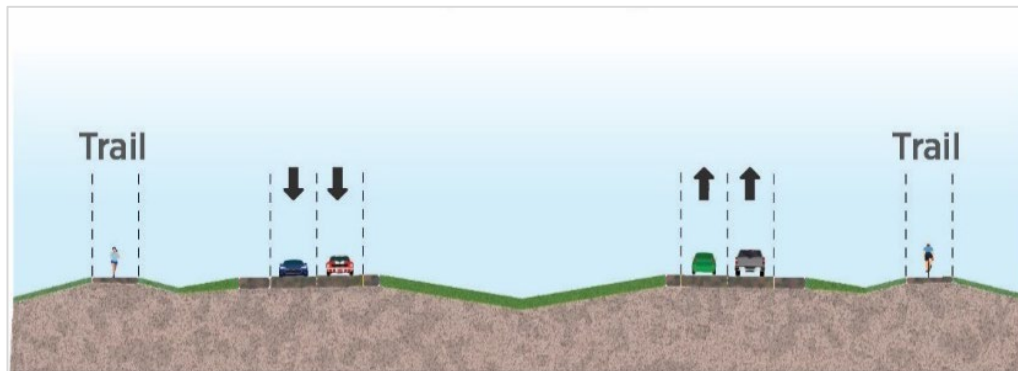


## Freeway Frontage Road: Sunrise Park - Lariat Boulevard



# Roadway Cross Section

## Expressway Road: Lariat Boulevard – Redwood Road



# Public and Stakeholder Engagement (to date)

## Public Scoping

- Online Meeting (Oct. 11, 2023)
- In-person meeting (Oct. 12, 2023)
- Public Comment Period (Oct. 11 – Nov. 10, 2023)

## Preliminary Design Concept

- Splash Days (Jun. 6 – 8, 2024)
- Website Tools
  - Interactive Comment Map, Travel Pathway Visuals, and Cross-sections
- Public Comment Period (Jun. 4 – Jul. 5, 2024)
- Stakeholder Meetings
  - Landowners/developers, Saratoga Springs Engineering, Alpine School District, and Emergency Services





# Evaluate Environmental Impacts (ongoing)



Land Use

Hazardous Materials



Cultural Resources (archaeology)

Air Quality



Traffic Noise

Wetlands and Floodplains



Outdoor Recreation

Right-of-Way Acquisition



Community Facility

Visual / Aesthetics





# Next Steps

## ❑ Prepare and Publish SES

- Anticipated winter 2024



## ❑ Hold Public Hearing and Comment Period



Anticipated early 2025

## ❑ Publish Decision

- Anticipated spring 2025

# Project Contact Information



**Hotline: 385-283-0123**



**Email: [mvcsouth@utah.gov](mailto:mvcsouth@utah.gov)**



**Website: [udotinput.utah.gov/mvcsouth](https://udotinput.utah.gov/mvcsouth)**



*Sign up for project updates here!*

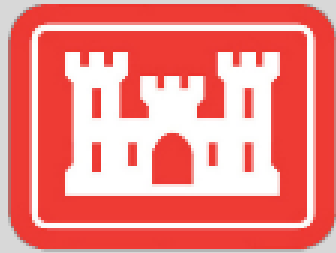
**MVC South**

Pioneer Crossing to Redwood Road



# Discussion

## Questions and Answers



**U.S. Army Corps  
of Engineers**  
Sacramento District



# Presentation of Technical Work of Saratoga Springs Alluvial Fan Flooding

Working Together to Reduce Flood Risk

# Working Together to Reduce Flood Risk

**Michelle Brown**

Flood Risk Program Manager

**Morgan Marlatt, P.E.**

Chief, Hydraulic Engineering Section

**Taryn Lausch**

Geologist

**Sasha Lussier, M.S.**

Water Resources Planner



**U.S. Army Corps  
of Engineers**  
Sacramento District

\*Information labeled CUI in this presentation contains Controlled Unclassified Information and is protected by law, regulation, or government wide-policy.



# Project Background

- The City has experienced flooding and debris flows in the past that have affected residential developments.
- The worst debris flow event was after the Dump Fire (2012) burned approximately 6,000 acres in the Lake Mountains and a rainfall event generated and transported approximately 70,000 tons of debris flow that caused damage to homes, roads, and other infrastructure.
- Previous study (2020) identified fourteen active alluvial fans that have the potential to affect the City.
- The City has constructed two debris basins and has planned five additional debris basins.





# Project Goals and Approach

- **GOAL:** The goal of this project was to further evaluate risks and mitigation strategies associated with alluvial fan flooding in Saratoga Springs, UT.
  - Guidance to help inform development
  - Information to inform mitigation projects – debris basins
- **APPROACH:** To further support the City's flood-preparedness efforts and ability to make risk informed decisions, in 2022 USACE initiated another phase of the project to inform the City of :
  1. Flooding that may result if a range of rainfall events were to occur.
  2. Expected geomorphic hazard (landslide or movement of the earth) given the past and present geologic conditions.
  3. Range of expected debris flow volumes that could be generated within a watershed for various rainfall amounts.



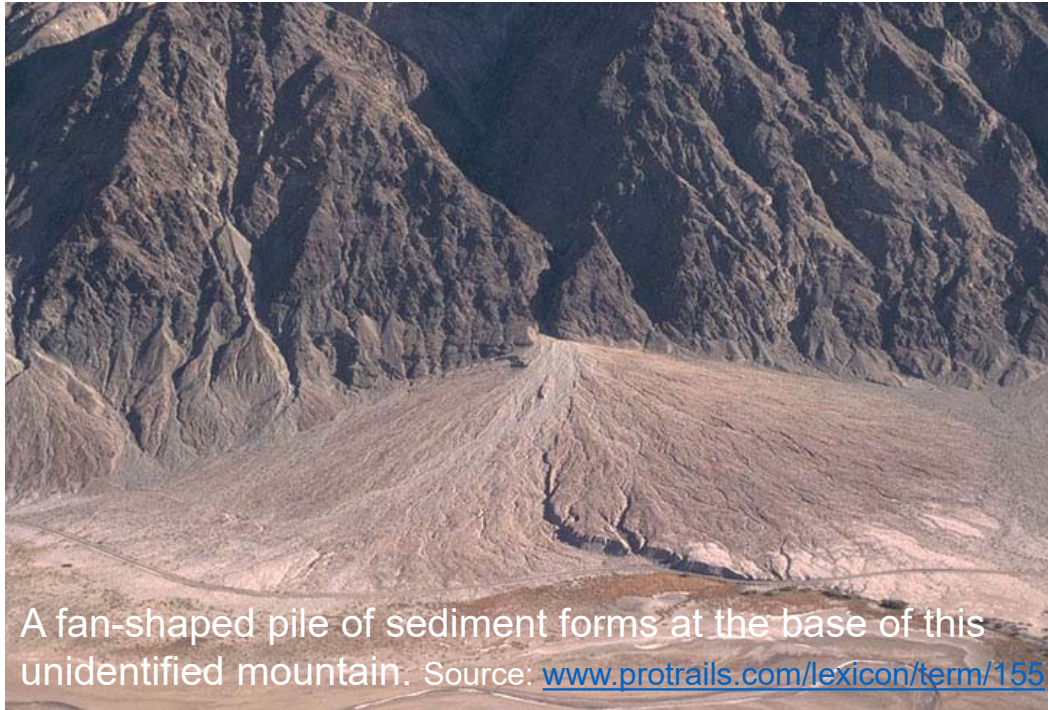
Photo: CRS Engineers Debris Flow Mitigation Saratoga Springs, UT



# Terminology

## Alluvial Fans

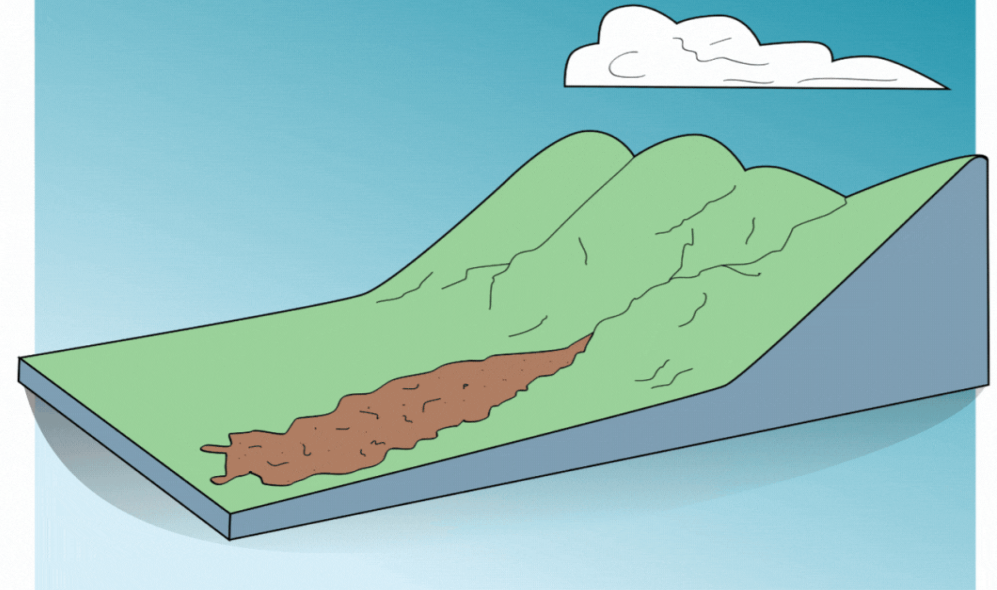
An accumulation of sediment that fans outwards from a concentrated source, such as a narrow canyon.



A fan-shaped pile of sediment forms at the base of this unidentified mountain. Source: [www.protrails.com/lexicon/term/155](http://www.protrails.com/lexicon/term/155)

## DEBRIS FLOW

Rapidly moving mix of water, mud, trees, and other materials that flows downvalley and can travel great distances.

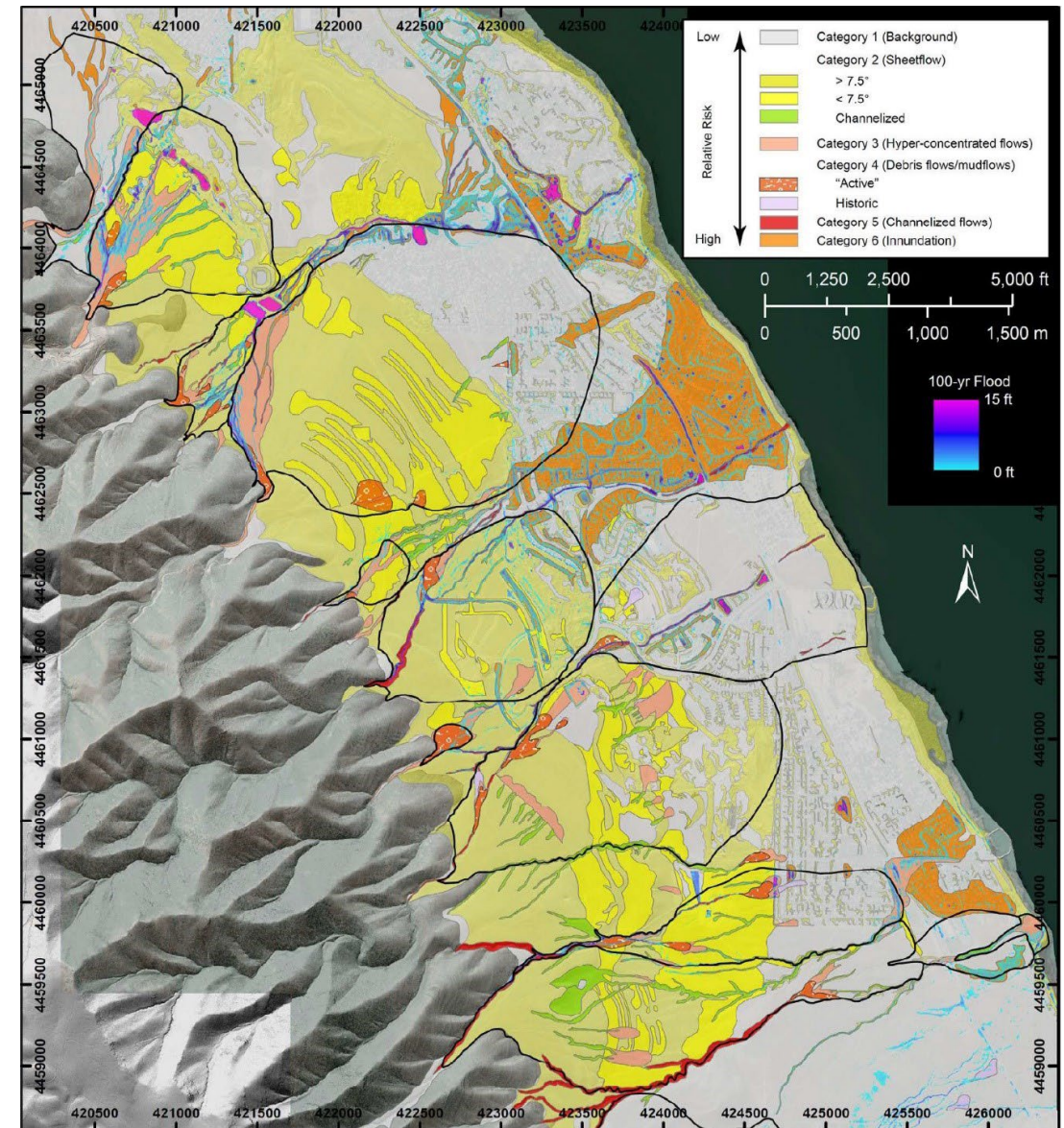


**TYPES OF LANDSLIDES**



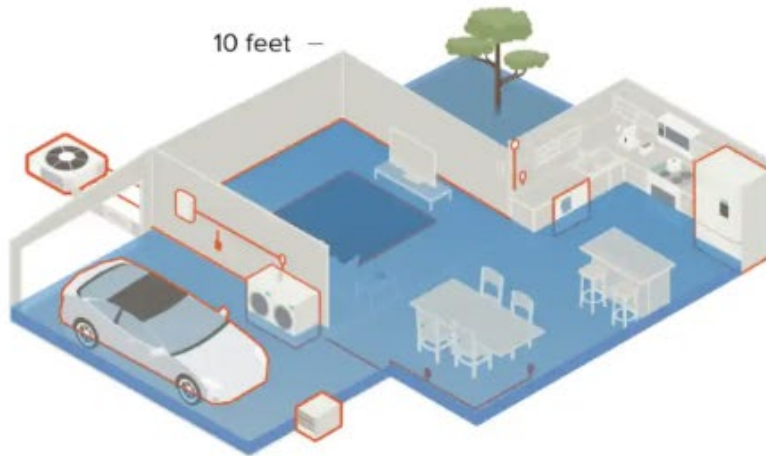
# Geologic Hazard Assessment

- Risk mapping was conducted by studying the shape of the fan surface, with support from observations made during the site visit and analyzing aerial photographs
- Risk mapping in this study is tied to geologic processes
  - Categories range from 1-6, the highest risk categories are 5 and 6 (channelized flows and inundation)
- The geologic hazard analysis does not display substantial evidence of past debris flows
  - Active zones appear limited to minor portions of the large fans
- The highest risk for damaging flows occurs near the top of the fan where confined flows are released and become unconfined, spreading out over the fan surface
  - Damaging flow events are most likely to occur during a large rainfall event after a major fire



The depth of floodwater has a big impact on what could be affected in a flood.

### 1 foot+ of water



If 1 foot of water enters a home, electrical outlets, furnaces, and HVAC systems can be damaged.

### 3 feet+ of water



At 3 feet, floodwater can cause damage to the building's infrastructure, water supply, sewage, and plumbing systems.



# 1% Floodplain

- Likelihood of occurring in a single year is 1%,
- Will likely happen once within a 100-year time frame,
- But does not mean then next one is 100 years away.



- Even **6 inches** of fast-moving flood water can knock you off your feet
- a depth of **2 feet** will float your car!
- **NEVER** try to walk, swim, or drive through such swift water.
- If you come upon flood waters, **STOP!**  
**TURN AROUND**  
**AND GO ANOTHER WAY.**





## 1% Floodplain

- These are not FEMA Flood Insurance Rate Maps(FIRM).
- These maps are not for flood insurance purposes.



# Debris Flow

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- Hydraulic Model updated to reflected debris flows (non-Newtonian behavior).
- Performed for the highest hazard alluvial fans
  - Fox Hallow
  - Israel Canyon
  - Clark Canyon North
- Debris flow maps showing:
  - maximum expected runout extents
  - maximum expected debris depths in the developed areas.



Debris flow damage Saratoga Springs, UT. Source: KSL.com

# Terminology

## Non-Newtonian Fluid

A substance that acts like a liquid when you move it slowly but can behave like a solid when you apply a quick force, like hitting.

These fluids (such as honey, ketchup, or oobleck) change consistency depending on how much force is applied. This differs from regular liquids (water) which have the same "thickness" regardless of how you move them.



## Debris Basins

A structure that captures debris flow; including sediment, gravel, boulders, and vegetative debris that washes out of nearby canyons during heavy rains. This debris basin proactively captures large objects from entering the downstream neighborhoods.



Losee Canyon Debris Basin, Saratoga Springs, Utah.

Source: [Losee Canyon Debris Basin - CRS Engineers](#)





# Maximum Expected Runout Extents, Israel Canyon



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.  
Prepared By CESPK-EDH-A

Spatial Reference  
Name: NAD 1983 StatePlane Utah  
Central FIPS 4302 Feet

Scale: 1:14,000 or 1 inch = 1,167 feet  
0 0.25 0.5 Miles



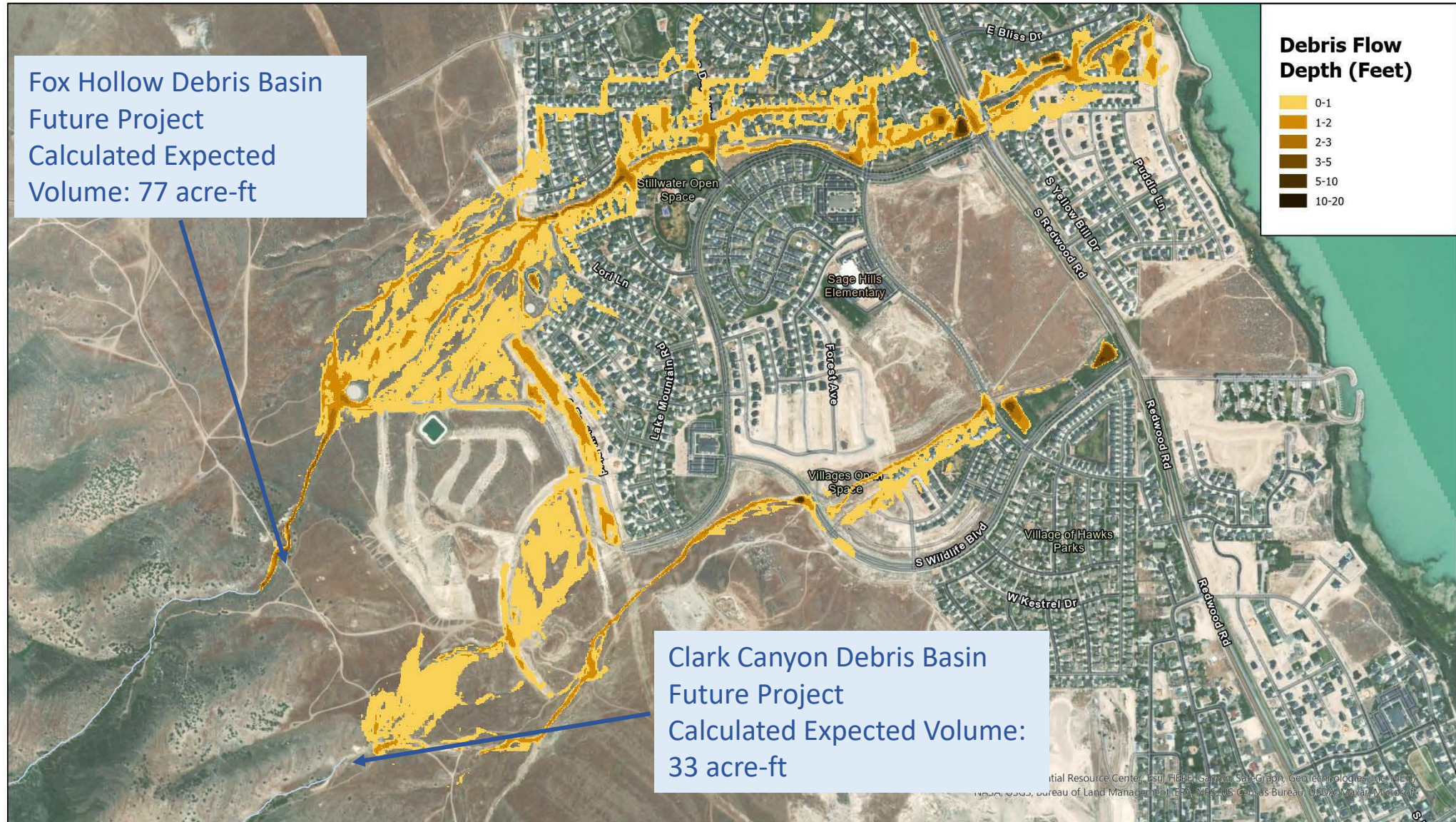
U.S. Army Corps of Engineers  
Sacramento District  
Saratoga Springs, Utah  
October 2023

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# Maximum Expected Runout Extents, Fox Hollow and Clark Canyon North



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.  
Prepared By CESPK-EDH-A

Spatial Reference  
Name: NAD 1983 StatePlane Utah  
Central FIPS 4302 Feet

CUI

Scale: 1:10,000 or 1 inch = 833 feet  
0 0.25 0.5 Miles

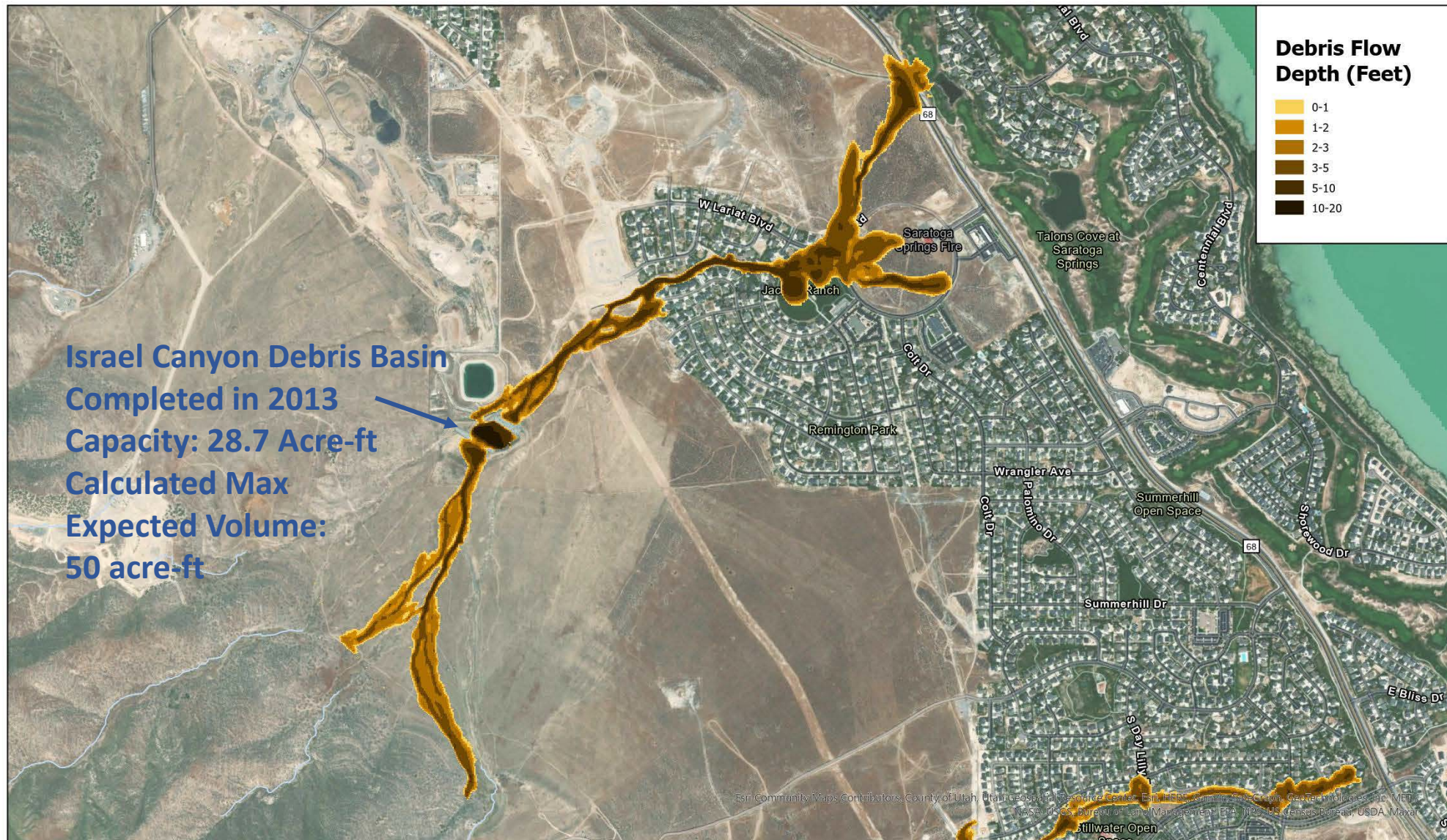


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# Maximum Expected Debris Depths, Israel Canyon



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.  
Prepared By CESPK-EDH-A

Spatial Reference  
Name: NAD 1983 StatePlane Utah  
Central FIPS 4302 Feet

Scale: 1:11,500 or 1 inch = 958 feet  
0 0.25 0.5 Miles



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October 2023





# Maximum Expected Debris Depths, Fox Hollow and Clark Canyon North



Refer to Map Notes for disclaimer, flood warnings, stream gages, and data sources.  
Prepared By CESPK-EDH-A

Spatial Reference  
Name: NAD 1983 StatePlane Utah  
Central FIPS 4302 Feet

Scale: 1:10,000 or 1 inch = 833 feet

0 0.25 0.5 Miles



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# Debris Basins

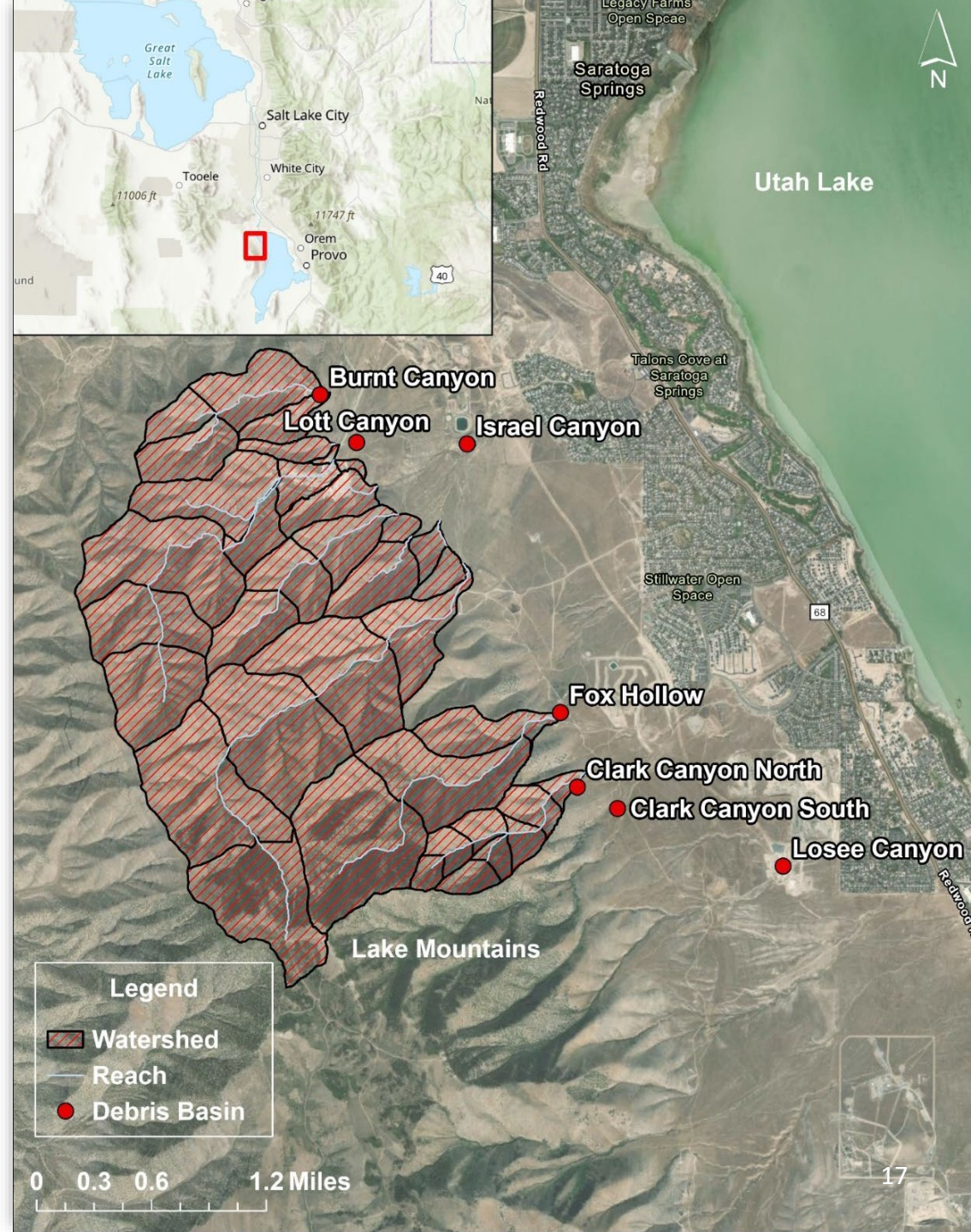
- The City has constructed two debris basins and has planned five additional debris basins.
- The USACE calculated expected ranges of debris volumes to aid in sizing the planned debris basins.

## Completed

- Israel Canyon
- Losee Canyon

## Planned

- Burnt Canyon
- Lott Canyon
- Fox Hollow
- Clark Canyon North
- Clark Canyon South





# Managing Risk

## Policies and Practices:

- Emergency Action Plans
- Risk communication to residents living near active alluvial fans with instructions to prepare for flooding and debris flow
- Flood Warning Systems
- Designating alluvial fan areas not developed on as parks, outdoor amphitheatres, and other nonpermanent structures
- Modify homes already built on high-risk alluvial fans (elevation of structures or flood proofing, ie walls that face the canyon, relocation of furnace, water heaters, appliances and electronics to higher locations).

## New Protective Structures:

- Debris basins
- Reservoirs or Levees
- Enhanced Channel Modifications
- Debris Fences
- Grade Control Structures
- Reinforced Channels



Photo: Losee Canyon Debris Basin  
Source: CSR Engineers

# NEXT STEPS

- 1) Continually update hydraulic modeling to reflect current conditions. (USACE models were for conditions 2019-2022).
- 2) Communicate risk assessment results to stakeholders.
- 3) Review existing local mitigation actions or plans and incorporate and prioritize new risk reduction actions to manage alluvial fan flooding risk.
- 4) Implement zoning ordinances to reduce or disallow construction in flood and debris flow prone areas.



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# Questions



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