

Appendix A: Outreach

YOU'RE INVITED!

CENTRAL UTAH WATER
 CONSERVANCY DISTRICT

PUBLIC SCOPING MEETING

The Central Utah Water Conservancy District (CUWCD) and the U.S. Department of the Interior are initiating a study to construct a new pump station and replace a 1.4-mile segment of the Alpine Aqueduct at the mouth of Provo Canyon in Orem. The Alpine Aqueduct, through a connection with the Jordan Aqueduct, delivers water to approximately half of Utah's population including Orem and Provo.

The study, in accordance with the National Environmental Policy Act (NEPA), is being conducted to protect this critical pipeline from geological hazards that are common along the Wasatch Front, such as landslides and earthquakes, and provide reliable service to the CUWCD's customers well into the future.

WHEN:
 Tuesday, Nov. 30, 2021
 6-7:30 p.m.

WHERE:
 Central Utah Water Conservancy District
 1426 East 750 North, Building 2, Orem, UT 84097

PROPOSED ACTION ALTERNATIVE

PROPOSED ACTION ALTERNATIVE

- Alternative
- Option
- Headwork Pump Station & Pipe
- Cascade Pump Station & Pipe

EXISTING SYSTEMS

- Alpine Aqueduct Reach 1
- Provo River Aqueduct
- Aqueduct Lock Project
- Provo Branch Canal
- Oldsmar Pipeline
- Oldsmar Hydroelectric Project

BOUNDARIES

- Flight Line
- Easements

NOTICE OF SPECIAL ACCOMMODATIONS DURING PUBLIC HEARINGS. Any individual needing special accommodations (including auxiliary communicative aids and services) during this meeting should contact the study team five days in advance using the contact information below.

Hotline: 385-376-4400 |
 Email: info@alpineaqueduct.com |
 Website: cuwcd.com/alpineaqueduct.html

CENTRAL UTAH WATER
CONSERVANCY DISTRICT

WE WANT YOUR INPUT

FORMAL COMMENT PERIOD: Nov. 15, 2021 - Dec. 20, 2021

How to Comment

- Attend the Public Scoping Meeting on Oct. 20, 2021, to submit a formal comment.
- Submit a comment on the interactive map at cuwcd.com/alpineaqueduct.html.
- Call the study hotline at 385-376-4400.
- Email the study team at info@alpineaqueduct.com.

- Pick up a physical comment form and copy of the Scoping Document at the CUWCD's Orem office.
- Mail in a physical comment form to:
 Central Utah Water Conservancy District
 c/o Alpine Aqueduct Reach 1 Project
 426 East 750 North, Suite 400
 Orem, UT 84097-5474

Alpine Aqueduct EA
 c/o Horrocks Engineers
 2162 West Grove Parkway, Suite 400
 Pleasant Grove, UT 84062

Sign up for study updates by emailing the team at info@alpineaqueduct.com.

Hotline: 385-376-4400 |
 Email: info@alpineaqueduct.com |
 Website: cuwcd.com/alpineaqueduct.html

ABOUT ▾ CONSERVATION ▾ DOING BUSINESS ▾ RESOURCES ▾ WATER DATA

ENHANCED BY C

Alpine Aqueduct Reach 1 Project

Study Overview

The Central Utah Water Conservancy District (District) and the Department of the Interior – Central Utah Project Completion Act Office (Interior), as Joint Lead Agencies, have initiated an Environmental Assessment (EA) to evaluate the replacement of a 1.4-mile segment of the Alpine Aqueduct at the mouth of Provo Canyon in Orem and the potential addition of pump stations. The Alpine Aqueduct, through a connection with the Jordan Aqueduct, delivers water to approximately half of Utah's population including Orem and Provo.

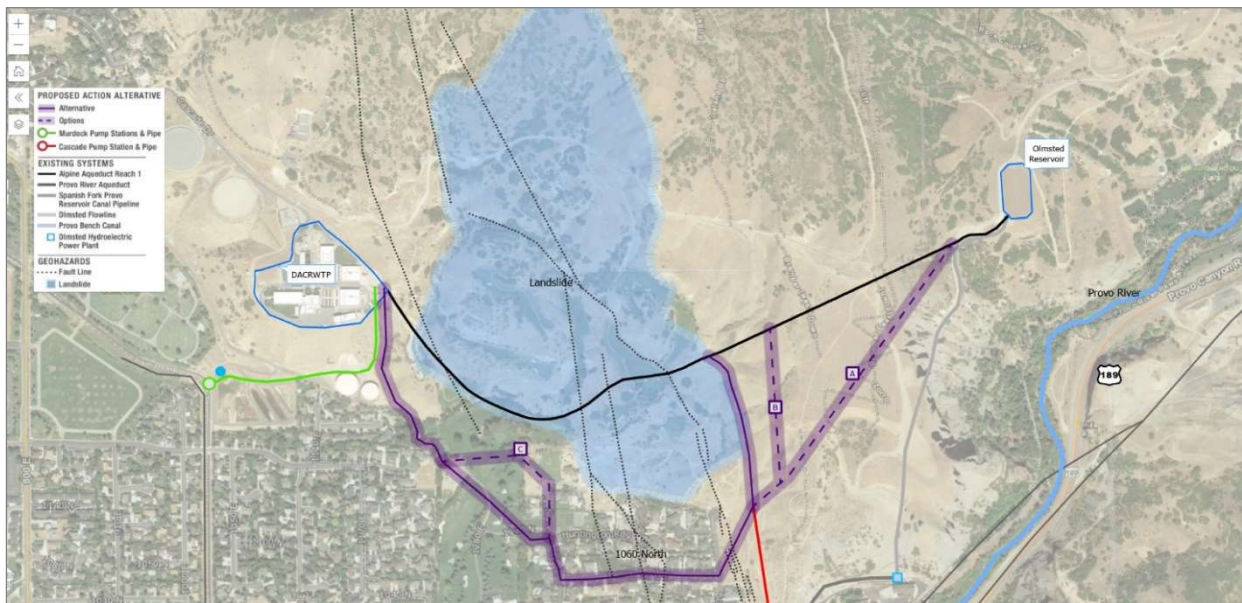
The EA is evaluating these improvements to protect this critical pipeline from geological hazards that are common along the Wasatch Front, such as landslides and earthquakes, and provide reliable service to Utahns well into the future.

Public Meeting

The District hosted a Public Scoping Meeting for the Alpine Aqueduct Reach 1 on **Tuesday, Nov. 30, 2021, from 6:00 - 7:30 p.m.** The meeting was held at the District's Orem office at 1426 East 750 North, Building 2, Orem, UT 84097. To review the materials displayed at the meeting, click [here](#). The public is encouraged to review the [Scoping Document](#) and provide comments on the proposed action. For more information on the background of the associated study and the potential alignments and resiliency measures that were evaluated, please review the [Phase 1](#), and [Phase 2/Final Report](#) of the Alpine Aqueduct Reach 1 Resiliency Assessment.

How Can I Provide a Comment?

- Submit a comment on the interactive map (see below).
- Call the study hotline at **385-376-4400**.
- Email the study team at info@alpineaqueduct.com
- Mail in a physical [Comment Form](#) to:



Alpine Aqueduct Environmental Assessment Notice of Public Meeting and Comment Period

The Central Utah Water Conservancy District (District) and the Department of the Interior – Central Utah Project Completion Act Office (Interior), as Joint Lead Agencies, have initiated an Environmental Assessment (EA) to evaluate the replacement of a 1.4-mile segment of the Alpine Aqueduct at the mouth of Provo Canyon in Orem and the potential addition of pump stations. The study, in accordance with the National Environmental Policy Act (NEPA), is being conducted to evaluate these potential improvements to protect this critical pipeline from geological hazards, such as landslides and earthquakes. The District is initiating the first phase of the EA process (Scoping Phase).

The public is invited to attend a Scoping Meeting on Tuesday, Nov. 30, 2021, from 6-7:30 p.m. to learn more about this effort and provide input to the study team. The meeting will be held at the Central Utah Water Conservancy District (1426 East 750 North, Building 2 Orem, UT 84097). The Scoping Document will be available for review starting on Nov. 15, 2021, and can be accessed online at the study website (cuwcd.com/alpineaqueduct.html) or in-person at the District's Orem office. Written comments can be submitted via email (info@alpineaqueduct.com), mail, or the study website during the formal comment period between Nov. 15, 2021, and Dec. 20, 2021.

In compliance with the Americans with Disabilities Act (ADA), individuals needing special accommodations (including auxiliary communicative aids and services) or language translation services during this meeting should notify the project team five days in advance at the contact information provided above.



Central Utah Water Conservancy District

November 17, 2021 · 🌐



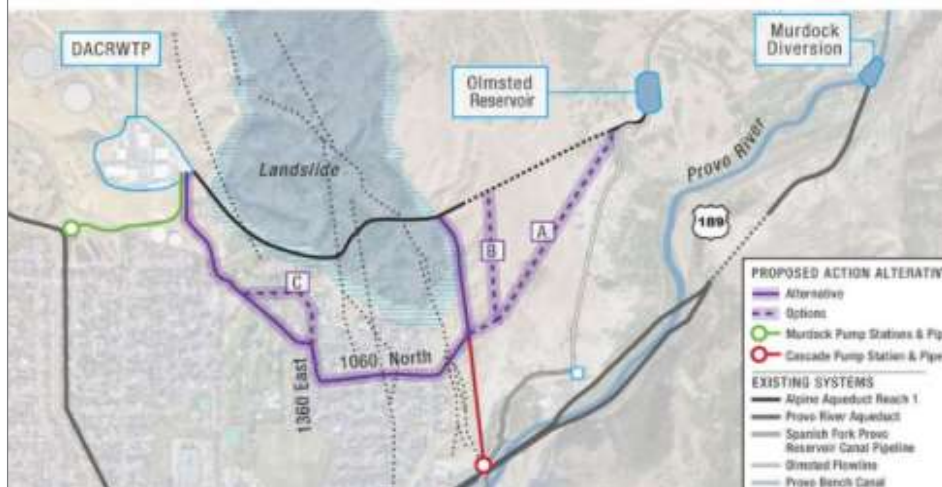
We have initiated an Environmental Assessment (EA) with the Department of the Interior – Central Utah Project Completion Act Office (Interior) as Joint Lead Agencies to evaluate the replacement of a 1.4-mile segment of the Alpine Aqueduct at the mouth of Provo Canyon in Orem and the potential addition of pump stations. The Alpine Aqueduct, through a connection with the Jordan Aqueduct, delivers water to approximately half of Utah's population, including Orem and Provo.

The study is being conducted to protect this critical pipeline from geological hazards that are common along the Wasatch Front, such as landslides and earthquakes, and provide reliable service to our customers well into the future.

Want to learn more? Join us at a Public Scoping Meeting on Tuesday, Nov. 30, 2021, from 6 to 7:30 p.m. to learn about the study and submit feedback. The meeting will be held at our Orem office at 1426 East 750 North, Building 2, Orem, UT 84097.

For information about the study and how to comment, visit cuwcd.com/alpineaqueduct.html, email info@alpineaqueduct.com or call 385-376-4400. The study team is accepting comments from the public through Dec. 20, 2021.

Proposed Action Alternative





City of Orem Government

November 18, 2021

The Central Utah Water Conservancy District and the Department of the Interior – Central Utah Project Completion Act Office have initiated an environmental study to evaluate the replacement of a 1.4-mile segment of the Alpine Aqueduct at the mouth of Provo Canyon in Orem and the potential addition of pump stations.

The Alpine Aqueduct, through a connection with the Jordan Aqueduct, delivers water to approximately half of Utah’s population, including Orem and Provo.


The study is being conducted to protect this critical pipeline from geological hazards that are common along the Wasatch Front, such as landslides and earthquakes, and provide reliable service to Utahns well into the future.

Want to learn more? Attend the team’s Public Scoping Meeting on Tuesday, Nov. 30, 2021, from 6 to 7:30 p.m. to learn about the study and submit feedback. The meeting will be held at the District’s Orem office at 1426 East 750 North, Building 2, Orem, UT 84097.

For information about the study and how to comment, visit cuwcd.com/alpineaqueduct.html, email info@alpineaqueduct.com or call 385-376-4400. The study team is accepting comments from the public through Dec. 20, 2021.


Proposed Action Alternative



 **CUWCD @CUWCDUpdates** · Nov 29, 2021

The Alpine Aqueduct environmental study team wants your feedback! Join us for a Public Scoping Meeting tomorrow, Nov. 30, from 6-7:30 p.m. to learn more about the study and provide input. Visit cuwcd.com/alpineaqueduct... for more information.

Proposed Action Alternative



PROPOSED ACTION ALTERNATIVE

- Alternative
- Options
- Murdock Pump Stations & Pipe
- Cascade Pump Station & Pipe

EXISTING SYSTEMS

- Alpine Aqueduct Reach 1
- Provo River Aqueduct
- Spanish Fork Provo Reservoir Canal Pipelines
- Olmsted Flowline
- Provo Bench Canal
- Olmsted Hydroelectric Power Plant

GEOHAZARDS

- Fault Line
- Landslide

Map labels: DACRWTP, Olmsted Reservoir, Murdock Diversion, Provo River, 480, 1360 East, 1060 North, 800 North, Landslide.

Map icons: Comment, Refresh (1), Like (1), Share

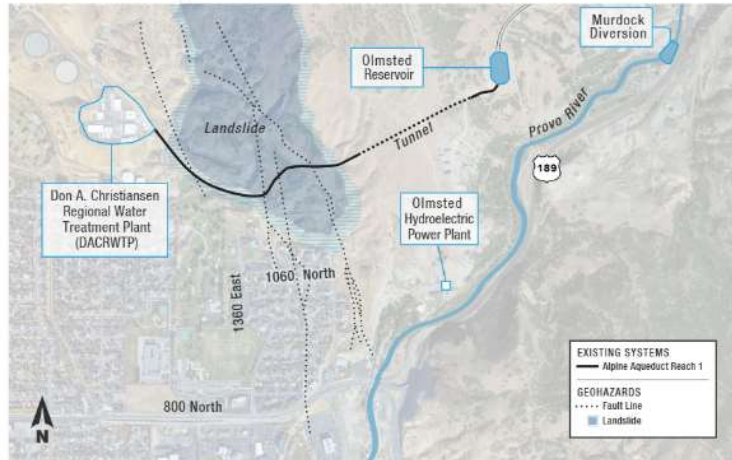
Appendix B: Study Information

ALPINE AQUEDUCT REACH 1 (AA-1) ENVIRONMENTAL ASSESSMENT



CENTRAL UTAH WATER
CONSERVANCY DISTRICT

Current AA-1 Alignment



AA-1

The AA-1 pipeline is part of the regional water delivery systems that traverse the mouth of Provo Canyon and is an integral part of the water delivery systems for Utah and Salt Lake counties. The Alpine Aqueduct, through a connection with the Jordan Aqueduct, delivers water to approximately half of Utah’s population including Orem and Provo.

AA-1 Pipeline:

- 90 inches in diameter
- Approximately 1.4 miles in length
- 1,830-foot-long tunnel
- 5,280-foot below ground section
- 400-foot above ground section
- Connects to the Don A. Christiansen Regional Water Treatment Plant (DACRWTP) and Jordan Aqueduct

Current AA-1 Alignment



REGIONAL FACILITIES

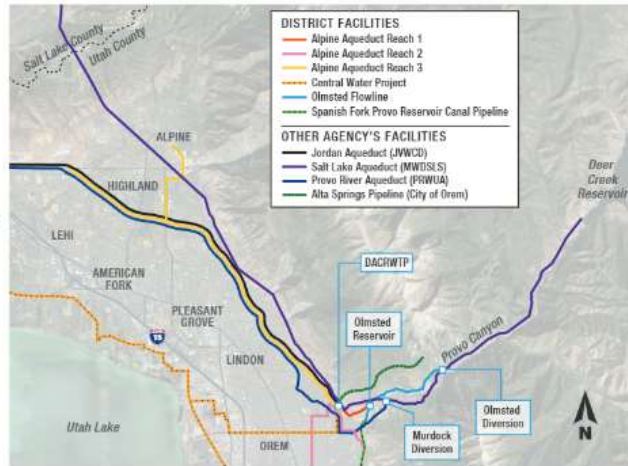
Jordan Aqueduct — The Jordan Aqueduct is a 38-mile-long pipeline between the DACRWTP and 2100 South/Bangerter Highway in West Valley. It is a major conveyance facility for the western and southern Salt Lake Valley areas, delivering water from the Provo River to the Jordan Valley Water Treatment Plant and Point of the Mountain Water Treatment Plant.

Salt Lake Aqueduct — The Salt Lake Aqueduct (SLA) is a 69-inch diameter, 42-mile-long pipeline beginning at the base of Deer Creek Dam. It is a major conveyance facility for the eastern Salt Lake Valley, delivering water from Deer Creek Reservoir to the Little Cottonwood Water Treatment Plant. The SLA can also supply water to the DACRWTP on a space-available basis.

Provo River Aqueduct — The Provo River Aqueduct (PRA), previously known as the Murdock Canal or the Provo Reservoir Canal, is a 21-mile-long pipeline from the mouth of Provo Canyon to the Point of the Mountain. It was enclosed in 2014 with a 126-inch diameter welded steel pipe and delivers water from the Provo River to Utah and Salt Lake counties and to the Jordan Valley and Point of the Mountain water treatment plants.

Alta Springs Pipeline — The Alta Springs Pipeline delivers Orem Municipal and Industrial (M&I) water from springs located about 3 miles up the Provo Canyon to storage tanks near the DACRWTP. It is a steel pipeline that ranges from 16 to 30 inches in diameter.

Regional Facilities Map



6 of 16

BACKGROUND

In 2020, the District completed the AA-1 Resiliency Assessment to evaluate options to improve the AA-1 pipeline and its resiliency.

Resiliency Assessment Objectives:

- Assess risk
- Calculate consequences of failure
- Determine existing resiliency
- Develop reasonable alternatives to decrease consequences of failure
- Evaluate vulnerability
- Increase reliability for the District's customers

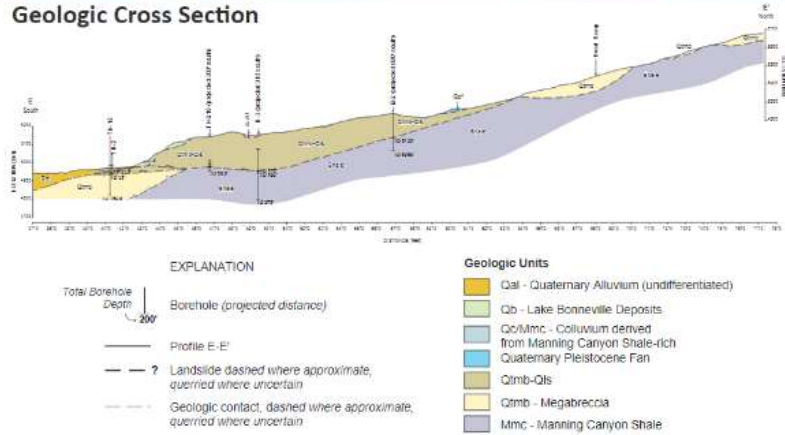
Resiliency Assessment Alignment Options



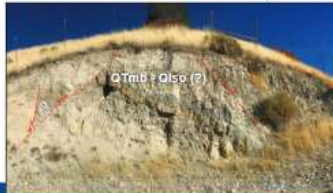
GEOTECHNICAL INVESTIGATIONS

As part of the AA-1 Resiliency Assessment, geotechnical investigations were conducted to determine the stability of the landslide area and better map the three fault traces of the Wasatch Fault Zone (WFZ) that cross the AA-1 pipeline alignment. The findings show that the possibility of a landslide occurring presents an ongoing risk to the pipeline, and the pipeline is subject to movement due to high soil moisture or seismic events. Additionally, the WFZ crossing poses potential AA-1 pipeline ruptures, and replacement alternatives should mitigate this risk.

Geologic Cross Section



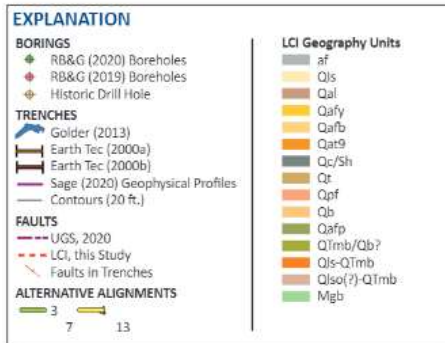
Northern - Service Road Exposure



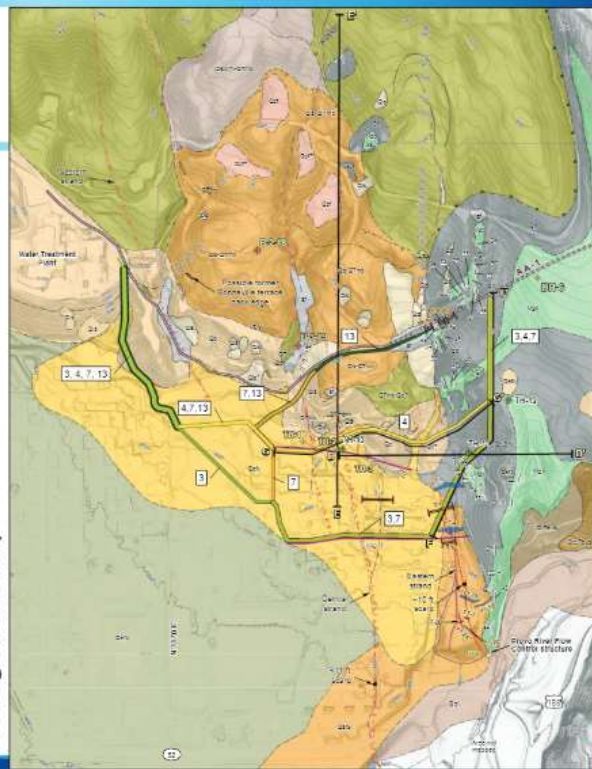
Southern - Abandoned Quarry



GEOTECHNICAL INVESTIGATIONS



Geological Site Map



EVALUATION CRITERIA

The Resiliency Assessment team developed replacement options based on weighted, non-cost evaluation criteria deemed to be most critical to provide safe, reliable operations of the AA-1 pipeline, and these replacement options were ranked. The analyses yielded one potential pipeline alignment that scored higher than the other options evaluated. This alignment is the Proposed Action Alternative.

CRITERIA	ITEMS CONSIDERED	WEIGHT
Reliability	<ul style="list-style-type: none"> • Non-Seismic Events • Seismic Events • Consequences of Failure/Flooding Risk • Potential for Interconnection 	40%
Repairability	<ul style="list-style-type: none"> • Accessibility • Repair Materials and Methods • Time to Repair 	20%
Operations and Maintenance	<ul style="list-style-type: none"> • Access • Maintenance • Security 	20%
Environmental Impacts	<ul style="list-style-type: none"> • Wetlands/Rivers/Groundwater • Species/Land Disruption • Community Impacts • Visual/Safety 	10%
Implementation and Constructibility	<ul style="list-style-type: none"> • Construction Risk • Property/Right-of-Way Acquisition • Schedule 	10%

PROJECT NEED

The AA-1 pipeline is expected to provide reliable service year-round. Failure of The AA-1 pipeline would cause significant economic impacts to the communities it supports and pose a substantial hazard to human life and property located below it. The AA-1 pipeline crosses through and runs along a large landslide complex that has experienced continued and recent localized slippage activity resulting in the rupture and failure of the pipeline multiple times since its construction.

The AA-1 pipeline continues to be at risk of failure from both seismic and non-seismic events, which is unacceptable for a critical water supply. The vulnerability of the AA-1 pipeline greatly decreases the resiliency of the Wasatch Front water delivery facilities. Therefore, there is a need to evaluate the Proposed Action Alternative to increase the AA-1 pipeline’s resiliency and reliability to continue to provide water to Utah and Salt Lake counties.

A portion of AA-1 pipeline had to be removed after the 2000 landslide.



A landslide in 2000 caused pipe failure of the AA-1 pipeline.



A landslide occurred in 2017 that damaged the AA-1 pipeline.



A damaged pipe joint after the 2000 landslide.

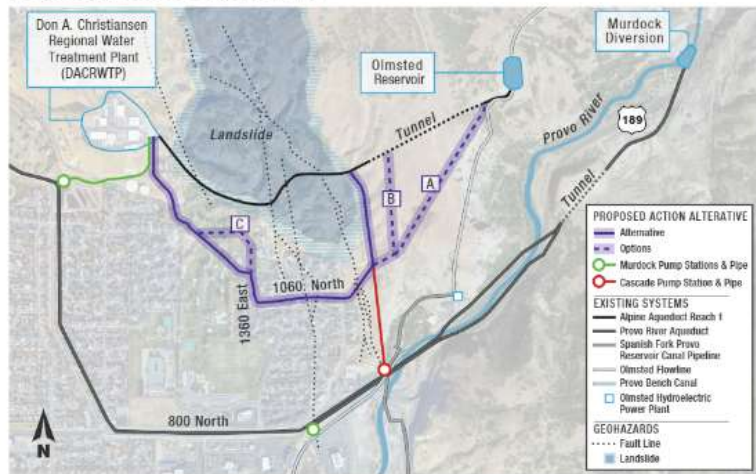


PROPOSED ACTION ALTERNATIVE

The **Proposed Action Alternative** would connect with the existing AA-1 pipeline at its tunnel outlet portal, continue south down the hillside, turn west onto 1060 North in Orem, turn north onto 1360 East, and continue through the former Cascade Golf Course to the DACRWTP. The proposed AA-1 pipeline would be 108-inch diameter welded steel. Three options for alternate pipeline alignments are also under consideration.

No Action Alternative would leave the existing AA-1 pipeline in place and would require ongoing maintenance and repair to the pipeline which currently presents risks to the surrounding area and the regional water delivery system.

Proposed Action Alternative

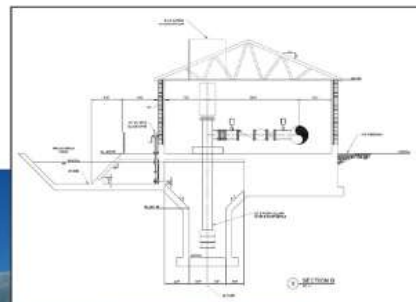


RESILIENCY MEASURES

The AA-1 Resiliency Assessment team considered reliability measures that could be implemented to improve the overall resiliency of the water delivery systems. The measures include the interconnection between pipelines and aqueducts through the construction of proposed pump station(s), installation of valving and stockpiling of pipe. Two pump station options are being considered:

Cascade Pump Station would be located near the 800 North park-and-ride lot and would pump from the Provo Bench Canal into the PRA and/or to the realigned AA-1 pipeline to the DACRWTP.

Murdock Pump Stations would consist of two pump stations: one located south of 800 North that would pump from the Provo Bench Canal into the PRA and the other located near the Orem Cemetery that would pump from the PRA to the DACRWTP.



HOW TO PROVIDE COMMENTS

The comment period is open until Dec. 20, 2021



Hotline: 385-376-4400



Email: info@alpineaqueduct.com



Website: cuwcd.com/alpineaqueduct.html



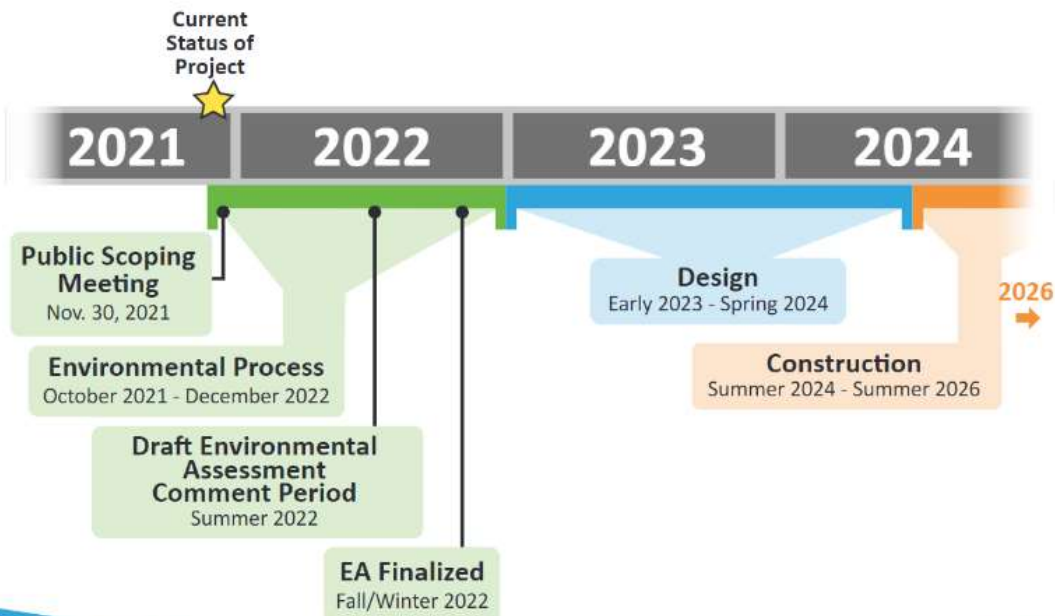
Mail in a physical comment form to:

Central Utah Water Conservancy District
c/o Alpine Aqueduct Reach 1 Project
1426 East 750 North, Suite 400
Orem, UT 84097

How can I provide useful feedback?

- Comments should be clear, concise and relevant to the issues at hand and the actions being considered.
 - Feedback should be solution-oriented and provide specific examples of concerns and ideas.
 - Comments provided to the study team will be reviewed and evaluated as part of the EA process.
- Please remember that commenting is not a form of "voting." The outcome of the EA will be based on technically sound and objective analyses, not on how many people like or dislike what is being studied.

SCHEDULE



Appendix C: Comments & Responses

Comment & Response 1

Comment

I have the following questions/concerns:

1A. I haven't been able to find a map of the fault lines that run through our neighborhood that matches the one you gave me. Would you mind giving me the source of the map?

1B. The proposed route for the new pipeline avoids the landslide but still crosses a number of fault lines on the map you provided. In the information you provided, it states that fault displacement may range from 8-17 feet. If we have an event, I'm not sure having a pipeline run through our neighborhood is any better than having one above it. In my opinion, it would be best to avoid having the pipeline cross any of the fault lines. Could the pipeline be brought down the road that leads to Mama Chus/ gas station then go up 800 North? I know there is a pipeline already there but could a second one be installed that parallels the other one? Would that allow the pipeline to avoid the fault lines?

Also, I have heard several concerns from the neighbors. They are listed as follows:

1C. Limited access to their homes during construction.

1D. Traffic flow through the neighborhood during construction.

1E. Easements that may be granted to the CUWCD to access private property to install and maintain the pipeline.

1F. Risk of flooding if we have an earthquake.

Response

1A. Current mapping of the faults is based on work completed by Jacobs/LCI as part of the AA-1 Resiliency Assessment Project. Section 3 and the references included in Section 11 of the *AA-1 Resiliency Assessment Project Final Project Report (Resiliency Assessment)* describe the geological characteristics of the site and present the current mapping of faults and other geological features.

1B. Unfortunately, crossing of the Wasatch Fault is not avoidable with any of the alignment options as it extends southward. For pipelines that must cross fault lines, the best practice for design is to cross normal fault lines near perpendicular (60 degrees to 90 degrees) where possible and avoid alignments that are parallel to fault lines. This minimizes potential damage to the pipeline at point locations rather than across the whole pipeline. The realigned AA-1 pipeline would be designed and constructed to include specific measures to withstand and not rupture during a 975-year seismic event.

An alignment down 1560 East toward Mama Chus would put a significant length of the Alpine Aqueduct pipe running parallel to the Wasatch Fault (between the eastern and central strand) and thus is not considered to be as resilient of a design alternative compared to the alignment on 1060 North which would cross the fault lines near perpendicular. Additionally, a pipeline in 800 North would be parallel to the 126-inch diameter Provo River Aqueduct and both pipelines would cross the central strand of the Wasatch Fault in the same location. Since both the Provo River Aqueduct and the Alpine Aqueduct are considered critical life-line facilities for water supply, placing these two pipelines in close proximity to one another greatly decreases the resiliency of each pipeline during a seismic event, as the failure of one pipeline could result in failure of the other.

1C and 1D. See Section 3.17 for a full list of construction mitigations and commitments. During construction, vehicle access along the residential streets would be restricted during working hours and for extended periods of time depending on construction activities taking place. At all times emergency vehicle access to residential homes would be maintained. The contractor would be required to temporarily fence the work area to keep non-project related persons out of the construction site. As part of construction, the JLAs would implement construction scheduling and sequencing requirements to reduce disruption to the neighborhood.

1E. The Preferred Alignment and Design Options would only require easements from one private property owner and Orem City.

1F. The realigned AA-1 pipeline would be designed and constructed to include specific measures to withstand and not rupture during a 975-year seismic event. A main consideration of realigning AA-1 is to avoid the active landslide and the issues associated with it. This risk of flooding due to a break of the AA-1 would be much less than leaving the existing pipeline in its current location.

Comment & Response 2

Comment

Reed R. Murray, Program Director Attention: W. Russ Findlay
Department of the Interior, Office of the Secretary Central Utah Project Completion Act Office
302 East Lakeview Parkway Provo, Utah 84606

Re: Alpine Aqueduct Reach I Replacement and Resiliency Project Environmental Assessment

Dear Mr. Murray,

Thank you for your correspondence, regarding the Department of the Interior, Central Utah Project Completion Act Office and the Central Utah Water Conservancy District evaluating a replacement alternative and resiliency measures for the Alpine Aqueduct Reach I (AA-I) near the mouth of Provo Canyon Environmental Assessment. The Hopi Cultural Preservation Office appreciates the Central Utah Project Completion Act Office's solicitation of our input and your efforts to address our concerns.

The Hopi Tribe claims cultural affiliation to earlier identifiable cultural groups in Utah, including the Fremont cultural group. The Hopi Cultural Preservation Office supports the identification and avoidance of our ancestral sites and Traditional Cultural Properties, and we consider the archaeological sites of our ancestors to be "footprints" and Traditional Cultural Properties.

The Hopi Cultural Preservation Office requests consultation on any proposal with the potential to adversely affect prehistoric cultural resources in Utah. If the cultural resource survey of the area of potential affect identifies prehistoric sites that may be adversely affected by project activities, please provide us with copies of the survey report, draft environmental assessment and any proposed treatment plans for review and comment.

In addition, we recommend that if any cultural features or deposits are encountered during project activities, these activities must be discontinued in the immediate area of the remains, and the State Historic Preservation Office must be consulted to evaluate their nature and significance. If any Native American human remains or funerary objects are discovered during construction they must be immediately reported as required by law. Thank you again for your consideration. Respectfully, Stewart B. Koyiyumptewa, Program Manager/THPO

Response

The JLAs conducted a cultural resources investigation within the study area. No prehistoric cultural resources were identified. In addition, if any cultural features or deposits are encountered during construction, the JLAs would immediately cease activities in the area and consult with SHPO.

Comment & Response 3

Comment

Chris,

Thank you for the information. Three other questions for tonight.

3A. Why wasn't option 15 given more consideration? Cost?

3B. Is there any information on how the water would flow through the neighborhood if there were a rupture in the existing system and the current option under consideration?

3C. If the aqueduct were to rupture and flood homes in the neighborhood, would the CUWCD help with any of the costs to repair damage due to the flooding?

Thanks,

Response

3A. Option 15 in the *Resiliency Assessment* (Around the Landslide from Olmsted Reservoir, through Provo Canyon, 800 North, and paralleling the Provo River Aqueduct) was given detailed analysis and consideration in the *Resiliency Assessment*. Although this option completely avoids the landslide, it crosses the eastern and central strands of the Wasatch Fault through narrow corridors and alongside other major pipelines or water delivery

infrastructure (see Response 1B above). This would restrict the ability to design the pipeline to meet seismic requirements. Additionally, this alignment is substantially longer than other alignments considered therefore increasing project costs.

3B. How the water flows through the neighborhood depends mostly upon where the pipeline break is located and the surrounding topography. The previous breaks occurred at or near the above ground section of AA-1. In this case, water flowed down through a natural ravine below the AA-1 pipeline and to 1560 East.

3C. Part of the Project's purpose and need is to realign, design, and construct the AA-1 pipeline to avoid property damages and loss of service due to landslide movement and/or seismic events. In the case of flooding damages, the Districts liability insurance would be responsible to pay for damages as long as the District is negligent.

Comment & Response 4

Comment

This is the ideal pump location. Extend the green line to the headworks for the plant. This is likely more feasible than going north from the pump site, running the aqueduct above ground and into the headworks.

Noting the projections from AIG Climate models for 2070, any routing of the distribution system would be negatively impacted from erosion caused by the projected increase in precipitation.

Response

Thank you for your insightful comment. The pump stations were removed from consideration in this Environmental Assessment. The current AA-1 pipeline would be decommissioned and would remain in place save for the approximately 400-foot above ground section located east of the landslide. The installation of the new AA-1 pipeline may temporarily impact erosion during construction. The new pipeline would be buried or tunneled and designed to withstand the projected increase in erosion caused by increased precipitation.

Comment & Response 5

Comment

Please try to schedule construction through the neighborhood - 1060 North/1360 East in spring/summer/fall - not during winter months when snow would further inconvenience residents having to park away from homes and make plowing of the streets difficult.

Response

Please see Section 3.17 for a detailed list of construction mitigations and commitments. As part of construction, the JLAs would implement construction scheduling and sequencing requirements to reduce disruption to the neighborhood.

Comment & Response 6

Comment

I am writing to request access daily to my house on [Redacted] when you are doing the construction of the new pipeline. Please write it into the contractor's contract.

Thank you,
[Redacted]

Response

See Section 3.17 for a complete list of construction mitigations and commitments. Walking and emergency access to homes would be provided at all times. During construction, vehicle access along the residential streets would be restricted during working hours and for extended periods of time depending on construction activities taking place. At all times, emergency vehicle access to residential homes would be provided. The contractor would be required to temporarily fence the work area to keep non-project related persons out of the construction site. As part of construction, the JLAs would implement construction scheduling and sequencing requirements to reduce disruption to the neighborhood. Based on the location of your home on 1110 North, it would be anticipated that you would have continual access from either Ashby Place or 1360 East.

Comment & Response 7

Please make daily access during the hours of 7 am thru 6 pm to the neighborhood and homes. Some are medical professional and need immediate access in and out of the neighborhood. Some homes have home businesses and have daily freight deliveries which need access as well. Please limit the working "closed" area to 200 feet or less at any one time. Keep the neighborhood clear of debris and dangers for children and mischievous teens.

Response

During construction, vehicle access along the residential streets may be restricted during working hours and for extended periods of time depending on construction activities taking place. At all times, emergency vehicle access to residential homes would be provided. The JLAs and selected contractor would coordinate construction activities with the city, neighborhood, and others that may be impacted during construction.

The contractor would be required to temporarily fence the work area to keep non-project related persons out of the construction site. As part of construction, the District would implement construction scheduling and sequencing requirements to reduce disruption to the neighborhood. See Section 3.17 for a complete list of construction mitigations and commitments.

Comment & Response 8

Comment

I would like to thank you for holding the public meeting on November 30, 2021 regarding the Alpine Aqueduct Reach 1 Replacement and Resiliency Project. Many of the questions and concerns that I had with the project were addressed at the meeting; however, a few remain. At the meeting, I was told by Adam, Dave and Chris that I would receive follow-up on my remaining concerns. They are as follows:

8A. It is my understanding that the majority of structural issues with the current pipeline have occurred in the area of the pipeline that is now above ground located north of the cul-de-sac on 1560 East. The natural flow of water from this area of pipeline is down 1560 East and if there were a problem with the pipeline, water from it would flow down the road avoiding the majority of homes in the Canyon Cove Estates neighborhood. If there is an issue with the pipeline west of the exposed area, I'm not sure how it being underground would affect the flow of the water but, any surface water should flow downhill and a good portion of that water would probably run through the Pedersen's property avoiding most of the homes in our neighborhood. Moving the pipeline would disrupt the natural flow of water and increase the risk of water damage to homes in our neighborhood.

8B. It is my understanding that CUWCD is going to use materials to construct the new pipeline and the immediate area around the pipeline that will mitigate the likelihood of the aqueduct rupturing or being displaced or compressed in a seismic event. I was shown an example of the material that may be used at the meeting and told about various other materials that may be used. I would like to know what materials will be used and that they have been tested to withstand the potential 8-17 feet of vertical displacement and other damage that may occur in a seismic event. I've looked at companies that make pipelines in Japan that are engineered to withstand earthquakes, material such as Geofoam, etc. and if you read the small print I am not sure they are made to withstand the amount of displacement that is described in the report generated for the CUWCD by Jacobs.

8C. At the meeting, we were told that it takes 30-60 minutes to stop the water upstream after a leak is detected. Is there current technology that would allow CUWCD to determine a leak sooner than the technology currently in place and that would decrease the time window of turning the water off upstream?

8D. In proposal #3, the new aqueduct would turn uphill onto 1360 East. If there were a leak, I assume the pipeline would lose pressure and the water headed uphill to the treatment facility would lose its forward momentum and reverse direction and run downhill. Is there a way to gate the pipeline to minimize the amount of water that would run downhill if a leak were to occur?

8E. Last, I know in other areas such as golf courses next to neighborhoods that liability is determined by what was built first. For example, if the golf course was built prior to the homes, the golf course does not have any liability for a window in a home being broken by a golf ball. If

the homes were there first, then the golf course is liable for the damage. With this proposed aqueduct route through our neighborhood, would CUWCD have any financial responsibility for water damage to homes from a failed pipeline? Dave told me he would ask CUWCD's legal department this question and get back with me.

Sincerely,
[Redacted]

Response

8A. Historical failures of the AA-1 pipeline at the location where the pipeline is currently above ground occurred prior to 2002 when the pipeline was still located below ground. These failures have occurred because of landslide movement. Construction of a new pipeline would not change the drainage patterns of the existing site. Moving the pipeline from its current alignment to 1060 North would increase the reliability of the pipeline and substantially decrease the likelihood of failure from landslide movement. As part of the Bonneville Unit of the CUP, the JLAs have constructed over 128 miles of pipelines. One example is the Spanish Fork-Provo Reservoir Canal Pipeline (SFPRC) which is part of the ULS. The SFPRC delivers water from Strawberry Reservoir to Salt Lake County (through a connection to AA-1). This pipeline extends for about 30 miles beginning at the mouth of Spanish Fork Canyon to the mouth of Provo Canyon. It is a buried 60-inch welded steel pipeline which was constructed through residential areas including the cities of Mapleton, Springville, Provo, before terminating in Orem with a connection to AA-1.

8B. It is proposed that the replacement AA-1 pipeline be constructed of welded steel with restrained, double welded pipe joints, and designed to current seismic standards to withstand a 975-year seismic event. Welded steel is considered a flexible and ductile material capable of handling displacement and movement during a seismic event. Additionally, movable backfill material around the pipeline would be installed to help reduce pipeline stresses during a seismic event. Chapter 2 of the Environmental Assessment provides more design information.

8C. Currently, the time to close the valve at the 10 MG Olmsted Reservoir is dictated by operations and safety protocols. Rapidly closing a valve on a large diameter pipeline causes an unsafe environment and can cause major damage to the pipeline system. The JLAs are committed to designing and constructing the safest and most reliable pipeline for the AA-1 project. In the event of an emergency, the District would close the valve as fast as possible without endangering employees, the public, or damaging the pipeline.

8D. Adding a valve at this location would require a large concrete valve box to be located in the street or within private property. The comment suggests that if the break occurred between this new valve and the DACRWTP, it could be shut to reduce water leaving the pipe and damaging homes in the area. However, valving for large diameter pipelines cannot be closed rapidly (see discussion about valve shut times on large diameter pipelines above in Response 8C).

8E. See Response 3C.

Comment & Response 9

Comment

Central Utah Water Conservancy District
c/o Alpine Aqueduct Reach 1 Project

1426 East 750 North, Suite 400
Orem, UT 84097-54742

On behalf of the [Redacted], we appreciate the opportunity to comment on the proposed Alpine Aqueduct Reach 1 Replacement and Resiliency Project. My wife and I attended the November 30, 2021 Open House and we have considered the explanations we received at that time and we have studied the materials you provided.

In summary, we are very concerned about the proposal to route a new aqueduct along 1060 North. Our primary concern is that this proposal exposes our home – and all other homes in our neighborhood that are downhill from the proposed route – to greater long-term risk of water problems than the risk we currently have. In addition, we have the normal concerns about construction and maintenance disruptions in the neighborhood.

Risk Exposure

We moved into our home in the spring of 2011. With the first spring rains, we discovered that our window wells would rapidly fill with water. We (and our extended family when we were out of town) were constantly on-call to drop submersible pumps into the window wells whenever it rained.

9A. In speaking with neighbors, we discovered that they also had ground water problems, and many had installed drainage systems to mitigate the problem. After fighting the problem for a few years, we ultimately installed drainage systems in each of the three window wells that had the problem. Those holes for those systems were deep, well below the house footings. Much to our relief, this seemed to solve the problem. However, after several months, the same problem began appearing in other window wells that had never had the problem. We ultimately applied the same solution, and we have not had a problem in any of our window wells since.

What we suspect is that there are groundwater flows under our neighborhood. When those flows are disrupted – as will most certainly be the case if the aqueduct is installed along 1060 North – the water will move to the next route of least resistance, and we will see new groundwater problems in neighborhood homes. Further, if there is ever a leak in the new

aqueduct, the leaked water will find its way into our underground water flows, and potentially be exposed as water problems in neighborhood houses.

As you likely know, the resolution of a groundwater problem in a house is not a trivial expense. So, the question is – will the Central Utah Water Conservancy District indemnify our neighborhood against any new groundwater problems our houses encounter during or after construction of the new 1060 North aqueduct? At the Open House when we expressed concern about potential flooding and groundwater problems, the response was to minimize the concern. We heard responses like: 1. “The pipe used for the new aqueduct will be very thick and won’t have many leaks.” Our reaction – if that’s the case, replace the existing aqueduct with that kind of pipe or better – or put that kind of pipe along 800 North.

9B. “If there is an earthquake that breaks the new aqueduct, water flooding will be the least of our problems.” Our reaction – the same logic applies to the existing aqueduct. We should not minimize the ongoing concern by simply referencing an extreme catastrophe.

9C. “Your neighborhood already has water problems, just think of the heavy rainstorm several years ago that flooded homes in your neighborhood.” Our reaction – that was a heavy rainstorm over a broad area that affected a few houses. It was not a concentrated break in a 7 or 8-foot pipe that is full of water. Imagine the pressure and resulting blast of water and erosion that will surely inundate houses that are only a few yards from such a break.

9D. Construction and Maintenance Problems

All the problems associated with a major construction project in a compact neighborhood with many children are too many to mention.

However, in addition to the disruption and inconvenience for months, we are extremely concerned about the danger such a project presents for children. This is a neighborhood that is busy with children in the streets and yards – and that is one of the desirable things about our neighborhood. Heavy machinery, large pipes, deep holes, re-routed traffic, etc. all seem like a recipe for serious accident.

9E. The same is true as maintenance will surely be required over time, and that maintenance may bring heavy equipment, excavation and industrial materials into the neighborhood. All of these create the same risk to children as the original construction.

Summary

All in all – it seems that installing a major pipeline in a hillside neighborhood that already has groundwater and soil stability problems has great potential for more extreme problems. It seems to move the problem from one point in our neighborhood to another – but much closer to many more houses.

There are groundwater issues in our neighborhood, and people have adapted to and resolved most of those problems. A new pipeline along 1060 North potentially disrupts those solutions and opens the door to more concentrated water problems in houses that are right next to the pipeline. The risks to children that are created by heavy construction, excavation, and pipeline maintenance in a neighborhood full of children cannot be minimized. Given the nature of our neighborhood, these risks alone may necessitate moving the plan to an alternative route.

9F. We believe there must be other solutions to the aqueduct issues that currently exist – and suggest those alternatives take priority.

Sincerely, [Redacted]

Response

9A. Refer to Section 3.6 in Chapter 3 for more information on groundwater. In researching groundwater for the analysis, the recorded groundwater depths either from water rights well logs or from studies indicate that the groundwater levels in the study area are more than 140 feet deep and could be deeper in today's drought climate. There are no recorded springs other than Orem City's two springs located in Provo Canyon which are well outside the study area. The pipeline installation would include bedding and filling materials for the support and structural stability of the pipeline. These soil types are coarse-grained soils which are porous and conducive for conveying any water in the ground. In the event that a shallow groundwater layer was encountered during construction, its flow path would naturally follow the pipeline due to the soils.

The depth of the realigned AA-1 pipeline through the neighborhood is anticipated to be about 15 feet. A geotechnical report that was required for the development of the eastern portion of the subdivision was reviewed as part of this project. To determine the geotechnical characteristics for this area, 11 test pits were dug that ranged between 8-12 feet in depth. No groundwater was found at any of these test pits. More detailed geotechnical investigations would be conducted during the design phase of the proposed Project.

9B. To summarize what was discussed during the open house, the pipeline would be constructed of welded steel with double welded joints and to withstand a 975-year seismic event. The potential for leakage is if the pipeline ruptures following a seismic event greater than the 975-year event). The realigned AA-1 pipeline would be designed and constructed away from the landslide (cause and location of previous breaks) and to not leak.

9C. The Preferred Alternative would have temporary, short-term impacts to storm water runoff during construction. Construction related storm water impacts are mitigated and addressed through the requirement of the selected contractor to complete and abide by a Storm Water Pollution Prevention Plan (see Section 3.17 in Chapter 3 for more information). However, the realigned AA-1 pipeline would have no long-term impacts to the storm water patterns and flows in the area.

9D. See section 3.17 in Chapter 3. The contractor would be required to temporarily fence the work area to keep non-project related persons out of the construction site. As parents educate their children on the purpose and importance of staying out of construction zones, the resident's safety can be maintained during the construction period

9E. Ongoing and routine maintenance is part of any buried utility. It is anticipated that the majority of the maintenance activities would not be intrusive (e.g., above ground visual inspections, inspections inside the pipeline) and would not require ground disturbing activities. However, should the need to uncover the pipeline through the neighborhood arise, those impacts would be temporary in nature.

9F. The JLAs conducted an extensive evaluation of 15 different options as part of the *Resiliency Assessment*. The JLAs have determined that the Preferred Alternative (and its design options) meet the Project purpose and need as defined in Chapter 1.

Comment & Response 10

Comment

1452 E 920 N Orem

To whom it may concern,

My name is [Redacted] and I live at [Redacted] which is next to the new proposed path for the new aqueduct. I do have a few questions?

10A. Have you found that there is a drop in home values because people prefer not to live next to the aqueduct?

10B. Are you planning to compensate homeowners for the loss in value of their homes because people prefer not to live next to this aqueduct?

10C. If there is ever a break in the aqueduct that causes damage to homes nearby is there an insurance policy in place to compensate homeowners?

10D. Is there an earthquake policy in place that covers damage to homes in the event of an earthquake?

10E. What is the timeframe to complete the new aqueduct?

10F. When will the new route be decided?

Thanks for your time. I look forward to hearing back from you. Can you please reply that you received these questions?

Response

10A. In other areas of Utah County where large diameter water pipelines have been constructed through existing neighborhoods, there has not been a drop in home values. The value of homes continues to increase in today's housing market. The pipeline would be buried and not visible and unless a seismic event greater than a 975-year event occurs, there would be no issues as a result of a pipeline being under the streets.

10B. See Response 10A above. No. After construction, there would be no long-term impact to homeowners.

10C. See Response 3C above.

10D. Please contact your homeowners insurance company to determine what policies could be obtained.

10 E. Design of the AA-1 project is anticipated to start in late fall of 2022 and would last for approximately one year. Construction is estimated to begin in the spring of 2024 and be completed by the fall of 2026. Construction in the neighborhoods would take approximately 6 months, with full construction of the pipeline schedule being closer to 2 years.

10F. Currently, the JLAs are in the NEPA phase of the project and are producing this Environmental Assessment (EA). It is anticipated that the new route would have approval for construction upon completion of this EA and subsequent decision document. The EA is anticipated to be completed in the fall of 2022.

Comment & Response 11 Comment My concerns about the proposed rerouting of the Alpine Aqueduct are as follows:

11A. Moving it into our neighborhood increases the risk to life and property in the event of an earthquake. It does not reduce the number of fault lines crossed but put the risk directly among people and their homes. I understand that the intent is to avoid the landslide area but putting it through the neighborhood also makes it far less accessible for repairs, which seems like a paramount concern if the primary goal is to keep water flowing to the million + users. Surely there will be some repairs required either way.

11B. It also seems like the damage would be much more likely to be catastrophic in an earthquake as opposed to the damage and maintenance required in the slow-moving slide area. As a result, the risk to us and our homes would be compounded - from earthquake damage and then significant flood damage as well.

11C. At the open house, much was made of how much more flexible the new pipe would be - we were shown a sharply bent piece of metal. But surely replacing the current pipe in its

current location with more flexible material would make it much more resilient to movement of the landslide as well. Wouldn't the likely maintenance be reduced in that case as well? I would like the team to consider the potential for reducing maintenance costs in the current location.

11D. I'd also like the team to consider and share the cost comparison between the expected maintenance at the current location, the costs if the existing pipe were upgraded in the current location, and the costs of building the pipe in alternate, much longer route plus its maintaining it there. I was surprised that a cost comparison did not figure more prominently in the criteria defined in the materials I was sent. I expect that costs are rapidly rising with the recent building boom in Utah and the inflation around the country.

11E. In addition, I'd like the study team to consider putting in a gate in the pipe at the east side of the slide area so that the flow of water could more easily be stopped if repairs were needed. It seems like that would mitigate flood damage and facilitate repair and continued water flow more quickly than if the aqueduct has to be accessed under our roads and the water flow stopped well above us in the canyon.

11F. Also, at the open house, we were told that the study team had drilled extensively in the slide area to determine that tunneling to put the aqueduct below ground there was not feasible. But when I asked whether they had drilled under our neighborhood to test the stability of that soil, I was told they had not. I would very much like to see the results of such testing.

11G. We had a sewer line leak about 14 years ago. It was dug up and repaired - about 12 feet down at the street in front of our home. The area in the road and our gutter almost immediately settled and created a dip in the road and the curb where water collects and mosquitos breed in the summer. Many of our neighbors have experienced significant settling of their homes as well - one of them has had to shore up their foundation at significant cost. So, I'm concerned about whether the construction would exacerbate all of that and whether it is really suitable for putting such a large pipe in.

11H. Finally, I'm concerned about the damage construction may cause to our homes. The digging and heavy equipment 30 feet from my front door and going 30+ feet down will surely cause significant vibration. So, I'm concerned about what that will do to the stability of our foundation and the whole structure. Thanks for your consideration. I am hopeful that you can find the best solution and I wish you luck with the project.

Response

11A. The *Resiliency Assessment* (Jacobs 2021) extensively evaluated 15 Options and what would provide the best long-term reliability and resiliency for the AA-1 pipeline that provides critical water supply to over 1.6 million residents. Several options were evaluated that would utilize the existing AA-1 alignment and right-of-way. However, these alternatives would not avoid the landslide complex and would still be at risk of failure. The JLAs determined that the

pipeline be moved outside of the landslide complex, which is located directly north of the residential area. Monitors in the landslide complex indicate that the area is constantly moving and continues to put more stress and strain on the existing AA-1 pipeline. As described in the EA and *Resiliency Assessment*, other alternatives were evaluated but eliminated.

11B and 11C. The realigned AA-1 pipeline would be designed and constructed to withstand the 975-year seismic event. The landslide is anticipated to move up 10 feet during a 975-year seismic which would result in damage to the pipeline if it remained in that location. No upgrades or replacement within the alignment of the existing AA-1 pipeline would be able to withstand the amount of landslide movement that is anticipated during an earthquake.

11D. Continual and ongoing maintenance are one concern regarding the existing AA-1 pipeline. However, the JLAs are concerned that leaving the existing AA-1 pipeline in its current location leaves this critical water pipeline susceptible to failure from the continual movement of the landslide and/or the anticipated seismic activity along the Wasatch Fault Zone.

11E. See Responses 8C and 8D.

11F. During the *Resiliency Assessment*, the JLAs reviewed geotechnical reports. A geotechnical report was prepared prior to construction of the neighborhood per Orem City code. The subsurface materials appear to support the realignment of the AA-1 pipeline.

11G and 11H. See Section 3.17 in Chapter 3 for more information.



Spencer J. Cox
Governor

Deidre M. Henderson
Lieutenant Governor

Jill Remington Love
Executive Director
*Utah Department of Cultural
and Community Engagement*

Christopher Merritt
State Historic Preservation Officer

May 16, 2022

Sarah Sutherland
Environmental Programs Manager
Central Utah Water Conservancy District
355 W. University Parkway
Orem, Utah 84058-7100

RE: Alpine Aqueduct Reach 1 Replacement and Resiliency Project, Utah County (U22HX0280)

For future correspondence, please reference Case No. 22-0825

Dear Environmental Programs Manager Sutherland,

The Utah State Historic Preservation Office received your request for our comment on the above-referenced undertaking on May 13, 2022.

We concur with your determinations of eligibility and “No Historic Properties Affected” for this undertaking.

This letter serves as our comment on the determination you have made within the consultation process specified in §36CFR800.4. Additionally, Utah Code 9-8-404(1)(a) denotes that your agency is responsible for all final decisions regarding cultural resources for this undertaking. Our comments here are provided as specified in U.C.A. 9-8-404(3)(a)(i).

If you have questions, please contact me at 801-245-7246 or by email at sagardy@utah.gov.

Sincerely,

Savanna Agardy
Compliance Archaeologist