



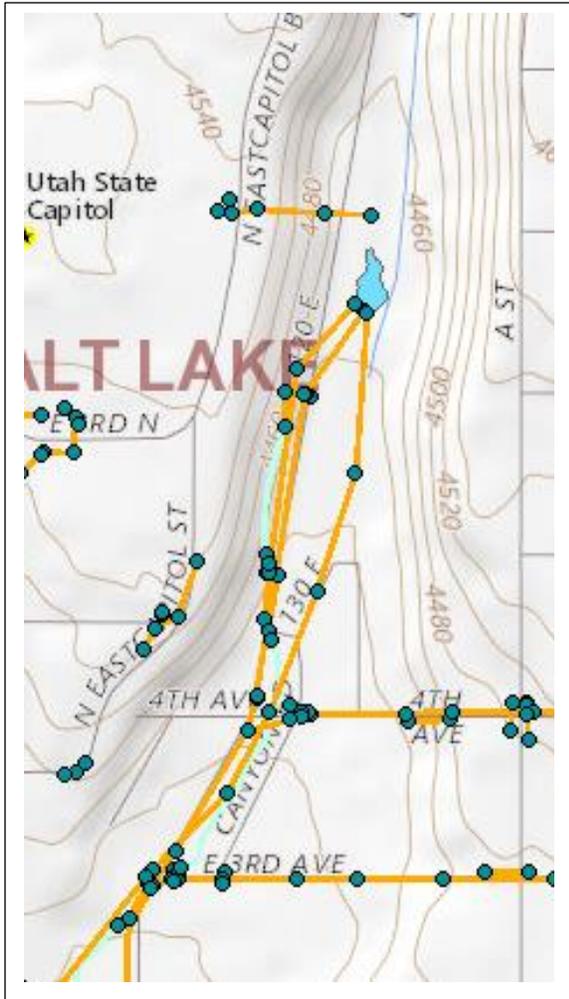
ACTION ITEMS RESPONSES

November 2019

OVERVIEW

On Tuesday, October 22, 2019, Salt Lake City Department of Public Utilities (SLCDPU) held a facilitated working group meeting with residents who live near the proposed 4th Avenue well project to re-boot a process to help identify a workable solution for the project. SLCDPU officials left the meeting with numerous suggestions, questions and requests from residents. The following is SLCDPU response to these action items.

1. **Combine All Public Comments To-Date:** Wilkinson Ferrari & Co. is gathering public comments made to-date during presentations to area community councils, public open houses and Historic Landmark Commission work sessions. They will prepare a comment tracking document.
2. **SLCDPU Obtain Park Usage Survey:** Wilkinson Ferrari & Co. reached out to Winston Seiler and Katie Pugh to obtain the park usage survey. We have not yet received this. Winston did respond that it is more of a petition than a survey.
3. **Provide Residents with Information on Restricting SLCDPU To A Limited Area of The Park to Avoid Future Loss of Green Space:** SLCDPU doesn't have plans for additional above-ground infrastructure once the well-house is completed. However, SLCDPU will work with the City's Attorney's Office and City's Parks Division to understand mechanisms for restricting future development. SLCDPU owns the property and has significant water infrastructure located underground beneath Canyon Side Park. In fact, it is due to the presence of the City's water and stormwater infrastructure that the park exists. The location of the park is where the City Creek channel used to be before the City buried and piped the creek. City Creek is diverted from the pond at Memory Grove through two 60-inch storm drain lines owned by the City that traverses beneath the entire length of Canyon Side Park. Once the City installed the 60-inch stormwater lines and the groundwater well, the open space along Canyon Road was created. SLCDPU is already very constrained with respect to building any additional above-ground infrastructure at Canyons Side Park due to the presence of the large underground storm drains beneath the park. SLCDPU does not allow the construction of structures on top of our underground pipelines. The images below show the stormwater lines (orange) and well location (blue square).



4. Provide Residents with Information on if the Project Will Affect Property Values:

The City does not believe there is a legal basis for considering the effect on property values due to government public works projects. Cities make decisions every day that affect citizens including road maintenance, traffic management, police activities, park management and utility services. For every decision made by a city that people believe negatively affects their lives, there are likely an equal number of decisions that have a positive effect. For instance, the risk of the loss or contamination of water supplies due to the poor condition of the 4th Avenue Well infrastructure could have public health and economic impacts to residents throughout the city. Fixing the well and bringing it above ground so that it continues to be reliable has public health and economic benefits to the City's residents.

We assume the concern raised around the 4th Avenue Well project is related to the diminution of the value of property due to the construction of the new well house. While there are laws and court cases that prevent the unfair distribution of the burdens of government, the City is not aware of any instance where a claim has been successful with facts similar to the 4th Avenue

Well project. In order to sustain such a claim, there must be an economic loss that approaches the complete loss of property value and there is no evidence to suggest that the reconstruction of the well house would have such a drastic effect on property values.

5. **Provide Residents and Specifically Area Resident Alan Walker Information on Why There Isn't Room for An Electrical Submersible Pump:** SLCDPU is moving to a 480-volt system as that is the standard from Rocky Mountain Power. It is planned to line the existing well 20" casing to extend the life of the well. After lining, the well will have an inner diameter of approximately 17.25". If a submersible pump could be specially manufactured at 450 hp 480 volt, the diameter of the pump would likely be approximately 16", the motor would be approximately 15.6", with two sets of conductor leads each lead would be approximately 3.55" by 1.2". In addition, the existing 2300-volt submersible pump is approximately 17" in diameter without the conductor cables. Therefore, neither the existing 2300-volt pump and motor configuration nor a potential 480-volt submersible pump and motor will be compatible with the relined well. Given these dimensions, a submersible pump will not fit in the renovated well casing. This was discussed with Mr. Seiler and Mr. Walker in June 2019 and it was agreed by all that a submersible pump would not be feasible at the 4th Avenue well.
6. **Provide Residents with Information on Why the Current Vault Is Not Safe or Large Enough:** The existing vault, subsurface electrical components and well head do not meet current electrical or Utah Division of Drinking water codes. In discussion with structural engineers, the recommendation is to re-build a vault for any future subsurface appurtenance. At the existing vault there is a single ingress an egress location, there are high voltage electrical components with insufficient clearances, and there is pressurized water infrastructure. These elements together result in an unsafe working environment.
7. **Provide Residents with Safety Facts and The Worst-Case Scenario for Using Calcium Hypochlorite Tablets:** Of note, the tablet disinfection system proposed is similar to systems used for community and home swimming pools. However, the quantities of tablets used at the 4th avenue well will be much less than at a pool application as the concentrations required are orders of magnitude less.

The on-site disinfection calcium hypochlorite tablet system provides a high level of safety that addresses; on-site stored volumes of tablet disinfection, on-site quantity of liquid/solution calcium hypochlorite, and dosing elements for drinking water. Minimal quantities of tablets will be stored on site, we anticipate up to three 55-pound buckets at a time. The storage reservoir for dissolved tablet liquid calcium hypochlorite will likely be less than 90 gallons of dilute solution [300-400 part per million (ppm) as compared to household bleach that is in the range of 50,000 ppm]. A spill of liquid would be contained within the structure and would be discharged to the sanitary sewer following protocols. A dry spill would be swept up, dissolved in water and discharged to the sewer following protocols.

Regarding a worse -case scenario, calcium hypochlorite when combined with an acid or ammonia will form chlorine gas. This is a risk that many homeowners face with various cleaning

products that may contain these chemicals. Unfortunately, there are cases of accidental poisoning when homeowners mix household bleach and ammonia-based products. At the 4th avenue well site we will not have acids or ammonia on site; thus, we will not have the opportunity to form chlorine gas through that chemical process during operations. That said, residents have brought the concern of someone potentially bringing an acid or ammonia to the site for a nefarious act of terrorism. The site will be equipped with locks, alarms, and sensors to identify access and to secure the site. As previously stated, there will be minimal amounts of solid and liquid calcium hypochlorite on site that would limit the effects of terrorist activities.

Some chlorine gas can be a byproduct of decomposition of the calcium hypochlorite. The product decomposes at 338-356 degrees Fahrenheit releasing oxygen and some chlorine gas. Therefore, a worst-case scenario may be related to fire that could affect the few buckets of tablets stored on site. To mitigate this, combustible materials will not be stored in the disinfection room of the facility. Should fire affect the stored buckets it is unlikely that the gas produced would exceed the OSHA permissible short-term exposure limit of 1 ppm.

8. **Develop A Worst-Case Scenario Evacuation Plan:** SLCDPU does not see the need for an evacuation plan associated with the well. However, SLCDPU will work with the City's Emergency Manager to evaluate potential risk and develop a security and risk mitigation plan.
9. **Provide Residents with an Evaluation for Moving the Disinfection System to Another Site:** Moving disinfection off-site is problematic for several reasons. First this would be taking what area residents think is an issue for them and moving it to another residential and park location. Early on in the discussions with the local residents it was suggested that SLCDPU purchase a home across the street from the well site to put the well and disinfection system or just the disinfection system. Given the proximity of moving the disinfection system simply across the street is counter to the objection of having the disinfection system at the site of the existing well. Regardless, SLCDPU has evaluated moving the system to another park further downstream of the existing well. Several issues are related to moving the disinfection system.

Untreated water would need to be conveyed to the site of the potential disinfection system. The available space beneath the roadway is very limited and additional large diameter water lines would be problematic to install. Canyon Road is already very congested with utilities (two 60-inch storm drain lines, one 10-inch storm drain line, one 15-inch storm drain line, one 8-inch water line, one 16-inch water line, one 24-inch water line and one 8-inch sanitary sewer line). In addition, there are power and communication lines. There are three apartment buildings that require disinfected water. The 24" line from the 4th avenue well splits and becomes two lines (24" and 16") approximately 360 feet downstream of the well and approximately 500 feet upstream of a potential location located at City Creek Park at the intersection of State Street, 2nd Avenue, and N. Canyon Road. To accommodate two lines, the disinfected water from the location at City Creek Park would need to be plumbed to accommodate the current distribution needs. This would add additional trenching and lines within the already busy street. Parking has been raised as a concern for the well. The potential location for off-site disinfection would cause additional parking issues for routine maintenance

either on State Street, 2nd Avenue, and N. Canyon Road. Construction for this revised distribution system would potentially cause significant impacts to the community and traffic in the area of City Creek Park. Given the constraints within the already busy utility corridor, it is not recommended to move the disinfection system.

10. **Provide Residents with Building Height Needs and When the Building Design Work Begins, Look at Creative Solutions to Reduce the Impact:** The height of the vertical turbine motor does not dictate the height of the building. We will need an access door on the roof of the building to service the pump and motor. In previous design iterations the size of the sodium hypochlorite storage tank was the controlling factor for height; that alternative is no longer under consideration. The design elements that currently dictate the building height are the interior electrical panels, ceiling-hung HVAC, and worker height requirements. Given the new technical design we will work with our mechanical engineers and architect to identify if the overall height of the building can be reduced and the possibility of a different height for the tablet disinfection room.
11. **Determine the Need for a Driveway:** After discussing with Salt Lake City Planning, the driveway can be removed from consideration. We would install a walkway to the building access doors.
12. **Provide Residents with Upkeep, Maintenance, and Monitoring Plan:** SLCDPU will provide residents with an upkeep and maintenance plan in the future as the project progresses. SLCDPU water operators will inspect this site daily, as is standard practice with all of our well sites. In addition, we will work with Parks and possibly a private maintenance contractor for upkeep of the landscape and property.
13. **Provide Residents with Information on if the Project Will Affect Parking:** The completed project will not affect parking in the neighborhood. There may be temporary impacts during the construction of the project. SLCDPU will need to obtain permits during construction to identify and mitigate parking or road impacts during construction. Future parking and site visits are expected to be similar to current operations.
14. **Provide Residents with Current Noise and Vibration Levels at the Site:** Given the current architectural application we will reduce the noise level from a motor rated at 86 decibels (dB) to approximately 50 dB with just a CMU structure that is approximately 7" thick. As part of the design we will also have an exterior façade on the structure that will increase the overall wall thickness to approximately 14". This includes the CMU, insulation, air-gap, and the façade; thus, further reducing the dB level. The current dB readings at the site were measured on 11/25/19 and 11/26/1919. The decimeter was run for 3.25 hours and 4 hours during each measurement period. The average and maximum dB readings were 55.2 and 72.4 on 11/25/19 and 58.6 and 70.1 on 11, 26,19, respectively. These reading were taken midday. We are currently not operating the well. These measurements are in line with various references give 50 dB as the normal ambient noise level in a "quiet suburb, conversation at home". 40 dB is representative of the inside of a library, or is the "lowest limit of urban ambient sound." 60 dB is the level of conversation in a restaurant or office. The goal in the design should be that the sound level

occurring on the sidewalk outside the building, due to noise emanating from the building, matches an established average ambient value.

15. **Report to Residents if the Project will Trigger Tree Removal to Assure the Site is Clearly Visible and Free of Obstructions:** It is anticipated that two trees will need to be removed for the well project. SLCDPU is not planning on any additional tree removal for the project. If residents are concerned about visibility and obstructions, SLCDPU could discuss those specific concerns about visibility in the future with the Salt Lake City Urban Forester once SLCDPU has a better idea of the new building design.

16. **Provide Residents with Evaluation Information on Moving the Well to Another Location, Such as Feasibility, Costs, and Project Elements:** SLCDPU worked with the engineering firm Hansen Allen Luce (HAL) to evaluate different alternatives, including abandoning and relocating the 4th Avenue well. A memorandum was prepared April 12, 2019, and posted on the City’s 4th Avenue Well project website under the documents portion of the project website. The memorandum includes a discussion regarding feasibility (presented as pro’s and con’s of the different alternatives) and cost. The cost charts below are included in the report. As noted by HAL, well abandonment and relocation introduces water supply uncertainty and significant cost.

We have heard from residents that they would like SLCDPU to consider moving the well, SLCDPU does not recommend abandoning the existing well since it produces a significant quantity of water needed to serve downtown Salt Lake City, is high quality, has an existing water right, and is located on land owned by the City. This is an important part of the City’s current and future water supplies. In fact, SLCDPU has determined that system-wide additional groundwater resources will be needed to meet future population growth, water demand, land use changes, and buffer against the impacts of climate change. Abandonment of the 4th Avenue well would be inconsistent with the City’s water supply planning and needs given its productivity. There is no guarantee that the City would be able to replace this important water resource once the well is abandoned due to legal and hydrogeologic conditions.

#	SCENARIO	PRO	CON
2c-1 & 2c-2	Leave Well In-Place Build Wellhouse Move Chemical Feed Off-Site (Similar to Option 2a)	Added chlorine is a Public Health benefit	Would add a building on the site that is now a walking park
		The well is in the ideal location to provide 5-7 mgd at the right pressure and flow to meet local peaking demands	Requires the purchase of new land
		The existing well provides vital drinking water and fire protection	Requires the construction of a separate building
		Reduces building footprint by approximately 300 ft ² (15' x 20')	New transmission pipelines will be required
		The well is in place and can continue to be a viable and important water source	3 existing trees would be removed but the area would be re-landscaped
		The well can be extended upward and eliminate the hazards of a below grade well and meet DDW Standards	The existing well is now 75 years old and either now or in the future will have to be re-lined
		An above ground facility can be designed to eliminate all current safety and health concerns	There is an increased potential for a loss in communication between facilities which could result in health & safety concerns
		Added chlorine is a Public Health benefit	With two facilities, energy consumption will increase
		Preliminary engineering design has been done with engineering costs expended	Maintenance costs will increase with two facilities
		There is adequate space on-site to construct the wellhouse	Additional permits and engineering will be required
3a	Relocate the Well within 300' of Existing Well	All facilities would be designed and built to meet health and safety codes	There is no guarantee that the well would produce as much as the current location
		A new well would provide a new life for the well over its present condition, perhaps extending its life to 75-100 years	Would require the acquisition of residential properties, involving the purchase of multiple existing homes to acquire enough space to drill the well
		Added chlorine is a Public Health benefit	Requires additional engineering
			Would involve new pipelines and traffic disruptions
			Requires additional permits
		Abandonment of the existing well	

Option	SCENARIO	PRO	CON
3b	Relocate the Well at a Remote Location	The well would be eliminated from the current Neighborhood	There is no guarantee that the well would produce as much as the current location
		All facilities would be designed and built to meet health and safety codes	Will be possible similar local resistance at the new location
		Added chlorine is a Public Health benefit	An up-canyon location will likely receive similar resistance
		A new well would provide a new life for the well over its present condition, perhaps extending its life to 75-100 years	A down-canyon location will interfere with other existing water right holders and likely receive significant opposition
			A well outside the canyon drainage, or on an adjacent hillside will not likely be able to provide the volume of local water needed
			May require the acquisition of property, most likely involving the purchase of multiple existing homes to acquire enough space to drill the well
			Requires an approved water right change application that could take 18 months
			May not be able to acquire an adequate source at a new location
			A new well location may not be proximate to the water demand area
			Requires additional engineering
	Would involve new pipelines and traffic disruptions		
	New pipeline would have to connect with existing pressure zone		
	Sewer upgrades may be needed to meet DDW requirements		
	Requires additional permits		
	Abandonment of the existing well		

COST SUMMARY OF ALTERNATIVES

A more detailed summary of preliminary costs are provided in the attached cost spreadsheet.

Option	Description	Estimated Cost	% of Option 2a
0	Do Nothing	\$0.00	n/a
1	Leave Well In-Place – Add New Well Liner	\$151,800	n/a
2a	Leave Well In-Place – Build Wellhouse	\$2,688,000	100
2b	Leave Well In-Place – Build Wellhouse and Add New Liner	\$2,826,000	105
2c-1	Leave Well In-Place – Build Wellhouse, Add New Liner and Off-Site Chlorinate in Old City Hall Building	\$3,272,000	122
2c-2	Leave Well In-Place – Build Wellhouse, Add New Liner and Off-Site Chlorinate in New Building	\$3,632,000	135
3a	Abandon the Existing Well and Move to an Alternate Location within 300' of the Existing Well	\$5,463,000	203
3b	Abandon the Existing Well and Move to an Alternate Location > 300' of the Existing Well	>\$5,463,000	>203
4	Alternative to Bury the Flow Meter for Options 2a, 2b, 2c-1 and 2c-2	\$20,000	Additive Cost

PROS AND CONS EVALUATION

A general list of major Pro's and Con's to each of the above identified options is provided below, costs are not listed with the pros and cons; rather the costs are listed above. In the Pro's column, dark green is used to identify issues of major importance to the decision-making process. In the Con's column red represents issues that are considered to be of major importance to decision making while yellow represents issues that are less critical.

17. **Provide Residents with Information About the Importance and Value of the Well, as Well as How the Distribution System Works:** The City's water system serves more than 360,000 people that reside in Salt Lake City, Mill Creek City, Holladay City, and Cottonwood Heights City. The system also serves small portions of Midvale, Murray, and South Salt Lake Cities. The City's

water sources include surface water from the Wasatch Mountains and groundwater. The surface water sources emanate from Little Cottonwood, Big Cottonwood, Parleys, and City Creeks, as well as stored water in Deer Creek as part of the Provo River Project and Central Utah Project. The surface water sources are conveyed by gravity to water treatment plants, where they are treated and enter into the distribution system. The City's groundwater resources are collected from wells and springs along the east bench of Salt Lake County. Groundwater resources are pumped directly into the City's distribution system.

The City's water system is very efficient in that the collection, treatment, and distribution system primarily uses gravity rather than large pumping systems to move the water to where it is needed.

The 4th Avenue well is a critical water resource for the City. As with all of the City's other wells, the 4th Avenue well is currently used during the summer when water demand is higher, primarily due to outdoor irrigation. There are times during the summer when the 4th Avenue well provides 100 percent of the water to areas of downtown Salt Lake City. If the 4th Avenue well fails, SLCDPU would need to use another water source to meet demand. This may be difficult due to the different pressure zones and characteristics of the distribution system and water demand patterns. This could result in water supply or water pressure disruptions in downtown Salt Lake City.

SLCDPU also manages its water sources and system to ensure there is redundancy in case of emergencies. For instance, if there is a situation where one or more of the streams cannot be used in the water supply due to infrastructure or water quality issues, groundwater resources, including the 4th Avenue well can help meet demand and avoid water supply disruptions. If the 4th Avenue well fails, the area it serves would lose that redundancy.

18. **Provide a Meeting Summary:** This meeting summary was completed and distributed to area residents on November 5, 2019.
19. **Schedule Next Meeting:** A facilitated working group meeting will be held on December 2, 2019, from 6:30 to 8:30 pm at Memorial House. Area residents were sent information about the meeting on November 19, 2019.