

Council Business Meeting

November 19, 2019

Agenda Item	Ashland Canal Piping Project Direction	
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SUMMARY

Staff is requesting a decision from Council on the Ashland Canal piping project. This item is continued from the September 3, 2019 business meeting when Council requested additional time to examine additional questions from Council members and the community.

Staff is presenting three alternatives for Council deliberation, with staff recommending alternative 1:

- Alt 1 Underground 24” HDPE Pipe entire canal section NPV cost: \$3,472,529
- Alt 2 Underground 24” and 30” HDPE Pipe for all open canal sections
and line existing piped sections NPV cost: \$4,339,897
- Alt 3 Canal Remains Open: Replace open sections of canal with new
concrete channel and urethane under-liner, line existing piped sections: NVP cost: \$4,334,379

PROJECT GOALS

The goals of the canal piping project are to:

- 1) conserve a significant amount of water currently lost primarily through seepage, and
- 2) reduce the amount of contaminates that enter the City owned section of the canal.

By replacing 10,700 feet (approximately 2 miles) of the existing, mostly open, canal with a below ground pipe, the City will be able to better protect a critical source of water supply, better realize water conservation and efficiency goals, replace a vital piece of water infrastructure that delivers an alternate raw water supply to the City’s water treatment plant and remove a source of contamination from entering the canal and Ashland Creek. Only the piping alternatives fully meet both project goals of fully capturing all water loss from seepage and evaporation as well as reducing contaminates from entering the City’s open portion of the canal. All three proposed alternatives conserve water loss through seepage.

POLICIES, PLANS & GOALS SUPPORTED

City Council Goals:

- Essential Service-Drinking Water System
- Emergency Preparedness
- Address Climate Change

Climate Energy Action Plan (CEAP) Goals:

- Natural Systems: Air, water, and ecosystem health, including opportunities to prepare for climate change through improved resource conservation and ecosystem management.
- Strategy NS-2: Manage and conserve community water resources
- Strategy NS-3: Conserve water use within City operations

Continue to leverage resources to develop and/or enhance Value Services Department Goals:

- Maintain existing infrastructure to meet regulatory requirements and minimize life-cycle costs
- Deliver timely life cycle capital improvement projects
- Maintain and improve infrastructure that enhances the economic vitality of the community
- Evaluate all city infrastructure regarding planning management and financial resources

PREVIOUS COUNCIL ACTION

Council approved the Water Master Plan in 2012 which included this canal piping project in the list of capital improvements. Council has heard project updates and this project as a part of the adopted 2017-19 Biennial Budget (BN), 2019-21 BN, and the adopted 20 year Capital Improvements Plan (April 2, 2019 Business Meeting, [page 40](#)).

At the [August 1, 2017 business meeting](#), Council authorized a DEQ Clean Water State Revolving Fund (CWSRF) loan of \$1.3 million to complete the Ashland Canal Piping project. At the January 16, 2018, business meeting, staff received Council approval to award a professional services contract to Adkins Consulting Engineering, LLP (\$192,257). In addition, staff entered into a contract with StingRay Communications (\$31,000) to assist with strategic communications and public outreach, and with Siskiyou BioSurvey (\$14,790) for a vegetation and tree assessment. The Southern Oregon University assisted with a wildlife survey. To date, the preliminary engineering and miscellaneous project expenses total \$295,564.41.

Council has held four study sessions specifically on this topic; February 4, 2019, April 1, 2019, Council Listening Session on June 17, 2019 and July 15, 2019. Council also began the decision-making process at the business meeting on September 3, 2019. In addition, there have been several neighborhood and community meetings that began in March 2018.

PROJECT CONCERNS

Staff will address three specific concerns; shotcrete, cost and construction impacts, that have been brought up through the questions received from Council members. Answers to all questions are attached (Attachment 1).

In addition, David Lohman, City Attorney, responded to specific questions about the risk of lawsuits which are included in the overall responses and also as a stand-alone memo (see Attachment 2)

Shotcrete - As many have pointed out and as presented in the American Shotcrete Association website, shotcrete can be an excellent application method for the placement of concrete. In addition, add mixtures can be infused into the mixture to provide protection and durability for freeze-thaw situations and to improve permeability. For repairs and restoration, *“Shotcrete is often the best alternative when repair and restoration are being contemplated and can be the ideal application method for both reinforced and nonreinforced construction. ... The shotcrete professional must be able to integrate new materials with in-place construction to form a composite that will stand up to exposure and use.”* Shotcrete may be a placement option if Alternative 3 is selected.

The use of shotcrete for the City’s canal application will require the existing canal surface to be removed, cleaned of root intrusion and other penetrations and to ensure that hydraulic grade line is maintained. The state of the existing canal concrete liner is in such poor condition that it would not be fiscally prudent to spend nearly \$1 million without fully preparing the canal channel to allow the concrete (shotcrete) to properly set up and have the desired durability. Placing shotcrete over the existing canal liner is not feasible for anything more than a short-term patch.

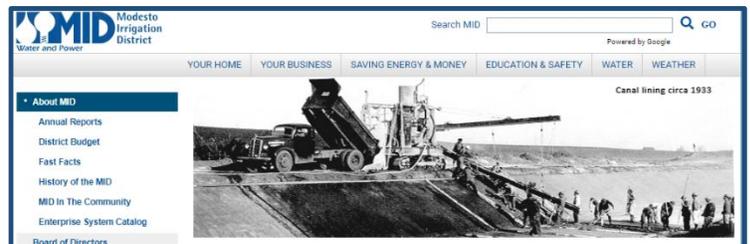
The canal is subject to damage from tree root intrusion, freeze-thaw conditions, hydrostatic pressure differences between when the water is flowing and when the canal is dry, voids beneath the concrete, and other physical deterioration. If the shotcrete is placed over cracks or in an area where there are trees or root intrusion, those cracks will further reflect and develop, and the roots will grow and further crack the new

shotcrete surface. If there are voids under the liner where water continues to seep, those voids will not self-repair and must be removed, filled and treated prior to new concrete placement. The US Bureau of Reclamation (USBR) has an excellent handbook for “Canal Operation and Maintenance: Concrete Lining and Structures.” In their discussion of voids under canals: *“Voids under the concrete lining can occur due to seepage and soil erosion, subsidence, solutioning of soluble soil material, or animal burrows. Water which seeps through cracks or open joints often cause voids to form on the interior embankment slopes and/or the canal invert. Concrete linings can suffer significant damage if the voids are large enough so that the lining is no longer properly supported.”*

The USBR document also discusses crack repair methodology: *“For concrete structures undergoing some type of deterioration, repairing cracks is usually futile ... because the concrete will just crack again. When possible, remove concrete undergoing deterioration, and replace it with concrete designed to handle the conditions. Sometimes, special sealers and coatings may slow down the deterioration if time is needed before repairs can be done. However, this solution is only a stop-gap measure—do not rely on this solution to last more than a few years, if that.”*

In addition to the existing deterioration, staff is concerned with placing 2-4 inches of shotcrete over the existing structure and reducing the surface area and thereby the flow of water into the City’s canal section. The canal cross section is small, and any reduction reduces the water flow thereby defeating the purpose of being able to send water to the treatment plant in water short years.

Supporters of shotcrete have pointed to Modesto (CA) and Turlock (CA) as examples of use and relining projects. In those applications, shotcrete repairs are perfect. From the Modesto Irrigation District website’s home page one can see how large the irrigation canal is in comparison to the Ashland “ditch”.



Likewise, the Turlock Irrigation District canal, which runs down the middle of Canal Drive in the City of Turlock, is a significantly larger conveyance structure that is fenced to keep people and animals out of the water.



The canal that runs through the middle of Canal Drive will undergo construction Nov. 1 through Dec. 7 as Turlock Irrigation District repairs the concrete lining and other structural components (ANGELINA MARTIN/The Journal).

The Arnold Irrigation District in Bend (OR) is looking to pipe an additional 30 miles *“to modernize aging infrastructure. That means taking open irrigation canals that leak much of their water before it's delivered and turning them into underground, closed-pipe systems.”* There are several piping projects being considered in Bend. The Central Oregon Irrigation District has already piped several portions of its canals in Bend, including a section of the Pilot Butte Canal in Juniper Ridge in 2010. Likewise, the Swalley Irrigation District will be piping several miles of “old, leaky canals” beginning in November 2019 (<https://www.swalley.com/piping-other-important-projects>).

Cost - Details of the three proposed alternatives are shown below. Staff is always looking for the most cost-effective solution to this or any other project. The most cost-effective solution is based upon the life of the project, not just the initial capital outlay. The cost to apply shotcrete is less expensive than traditional concrete pumping trucks. If Council selects alternative 3 to have the canal remain open, staff will evaluate placement options to include shotcrete not only for cost but also to be less intrusive to the neighbors. This alternative requires removing the existing concrete liner and reshaping the existing canal bed to ensure all causes for current deterioration are removed. If shotcrete becomes the selected application method, the existing cost estimate may be reduced somewhat, but the cost would not be as low as alternative #1.

Construction Impacts - It is absolutely expected and reasonable for each homeowner to want an explanation for what will happen during construction no matter which option is selected. There will be impacts and frustrations. This will likely be a two-year process. Staff and the selected contractor will do everything possible to minimize disruptions. Every action in someone's yard will be site specific. The answers will not be fully known until construction begins, but staff and the design consultant team will make every effort to advise the homeowner (or dweller) of the process as final design is completed. Construction will take place during the non-irrigation season so as to not disrupt irrigation flows and water that might be needed at the water treatment plant. This means construction would start in October and continue through the winter into April of the following year, stop when irrigation season starts in April then start again that following October.

Yes, this means construction would be during the wet season and work may progress slowly. The plan is to start at one end, remove the existing canal liner, trees that impact the canal or the immediate construction activity zone within the easement, then immediately follow with the pipe or concrete forming. Pipe would be laid in segments that could be completed within one or two days, then back filled. It would be the same for the concrete option depending upon the construction methodology. The hope is that we would be digging, placing for less than a week on any one single property. However, access is difficult and linear so there would likely be construction access (trucks along the easement) for a much longer period depending upon access availability from different streets. It is expected that the final grooming of each site would toward the April timeframe. Again, all of that will be worked out during the final design and may need to be modified during construction to fit the contractor or property owner's needs.

BACKGROUND AND ADDITIONAL INFORMATION

The City of Ashland is fortunate to have three sources of water; the primary raw water source is Ashland Creek held in Reeder reservoir; the second raw water source through a contract to receive up to 1,369 acre-feet of water from the Talent Irrigation District (TID) originating at Hyatt and Howard Prairie Reservoirs and transported through the Ashland canal; and the third source is treated water from the Medford Water Commission through the City's TAP (Talent Ashland Phoenix) intertie pipeline. As the City continues to preserve this water for generations to come, future citizens and visitors will be glad that all steps have been taken to protect these precious water sources.

The City places priority on improving water quality and efficient water management. As identified in the City's adopted 2012 Comprehensive Water Master Plan, piping the front section of the Ashland Canal (approximately 10,700 lineal feet) from Starlite Place to Terrace Street is intended to meet the goal of improving overall water quantity and efficiency as well as improve water quality in Ashland Creek. In years when water supplies are limited, the Ashland Canal is used to transport TID water as a supplemental raw water source. The raw water is treated to drinking water standards at the City's Water Treatment Plant. Water in an open canal is vulnerable to contamination from a variety of sources. These contaminants reduce the water quality of Ashland Creek as the open ditch releases tail waters from the canal into the creek. Ashland Creek routinely exceeds the State's maximums for E.coli bacteria in the summer months. Additionally, open canals are susceptible to water losses through seepage and evaporation. Water losses in the Ashland Canal are approximately 23% (91% of the loss is from seepage and 9% from evaporation).

Staff and council have heard from many constituents that are not in favor of piping the canal. Reasons for not wanting to pipe the canal range from cost to potential tree loss within the easement to perceived loss in property values to the visual and aesthetic values of seeing water in the canal during irrigation season. Some dispute the data collected by staff and the City's consultants. Many just don't want to have the canal piped. One persistent misconception is that the trail will be turned into a "20-foot logging road" denuded of all vegetation – that is simply not the case; it will remain a trail.

This project has produced a significant amount of research and information, all of which is available on the City web site (<https://www.ashland.or.us/ashlandcanal>). Detailed staff project summaries were presented at

the February 4th and April 1st council study sessions. Links are available to all reports on the engineering options, ecological analysis of the trees, wildlife impacts, Ashland Canal Advisory Group (ACAG) meeting presentation and meeting summary notes, answers to frequently asked questions, the project map and current trail easements locations.

FISCAL IMPACTS

The original budget estimate in 2012 was \$1.3 million to pipe the canal; this initial estimate did not include the specifics of being in an urban back yard setting. Current project estimates; including design, permitting, and construction, have grown to a range between \$2.4 to \$3.9 million depending upon the alternative. This range identifies the cost differences for the three final project alternatives including full pipe replacement, piping and partial pipe lining for the existing piped sections, or full canal lining and partial pipe lining for the existing piped sections. Staff is not recommending the 4th alternative which was to aggressively maintain and shotcrete/gunite the canal because this will only temporarily improve the conditions.

When the project was included in the 2012 Master Plan, there was no scoping; it was estimated as a standard piping project. As staff completed preliminary engineering in 2018, the project costs have increased due to the details of being in an urban area, in well-developed private property and a very constricted easement area of only 20 feet in width, necessary tree removal and property protection. For whatever option Council approves, costs will be refined during final engineering as the engineering team can get a better and more complete picture of the specific impacts for each property owner along the canal during the construction phase.

The following summary defines the capital costs, annual operation and maintenance cost the projected life of each construction option, salvage value (remaining life at the end of 60 years) and the resulting net present value (NPV). Alternative #3 has a lower initial capital cost, however the increase in required annual maintenance annualized over the 60-year life drives the resulting net present value costs up.

	Alternative #1	Alternative #2	Alternative #3
Method	Underground 24" Pipe entire section	Underground 24"/30" Pipe open sections; line existing piped portion	Canal Remains Open; Replace Liner; line existing piped portion
Material	Corrugated HDPE Pipe	Corrugated HDPE Pipe	Concrete/Urethane under
Capital Costs	\$3,095,000	\$3,950,000	\$2,429,000
Annualized OM&R	\$12,500	\$12,500	\$39,000
Life of Option	60 - 100 years	60 - 100 years	40 - 60 years
Salvage Value	\$354,280	\$335,560	\$0
Net Present Value *	\$3,472,579	\$4,339,897	\$4,334,379
	* Life Cycle Cost / Net Present Value from Adkins Final Report p. 49; based on 60 year life cycle; 2018 dollars		

As a piping project, it is 100% Systems Development Charge (SDC) eligible. However, as a liner project, costs will be operational and only some SDC eligibility based on conserved water. The 2019-21 Biennium Water Fund Capital Improvement Project (CIP) budget includes \$2,000,000 with an additional \$1,500,000 in FY22 for this project (total in the CIP is \$3,800,000 which includes \$300,000 in prior years). Expenses for this project are intended to be reimbursed through a low interest (1%) DEQ CWSRF loan of \$1.3 million. Additional sources of funding are available for piping alternatives. Staff’s preliminary research indicates probable loans and possible grant funding from Oregon Water Resources, Bureau of Reclamation and potentially Business Oregon Infrastructure Finance Authority.

STAFF RECOMMENDATION

Staff recommends alternative #1 as it is the lowest cost of the piping options that meets both the water conservation and water quality goals of this project. Staff realizes this is unpopular with some residents and those that enjoy the water feature of the open canal. However, the need to maintain our water supply sources and to ensure that the City does not needlessly add contaminants to the Ashland Canal water source are the driving forces behind this recommendation. Either piping option would meet both the water quantity and water quality goals of this project, yet alternative 2 is more costly as it requires a larger pipe to maintain the hydraulic grade line for water flow as it maintains the size and placement of the existing piped sections.

The mayor's appointed Ashland Water Advisory Committee and the Conservation Commission have provided formal recommendations to pipe the canal, as well as the recommendation from the technical committee, ACAG, used to help ground and guide staff.

Once the preferred alternative is identified, final engineering will be completed with more detailed drawings, impacts and any additional right-of-way identified, and a final cost estimate will be prepared. Staff will identify specific additional revenue options to include grant and loan funding prior to returning to council for approval on construction.

Several additional ideas have come up with this process that staff will continue to pursue independent of the decision from Council:

- better understanding of the demand and use of the irrigation water so that there is less tail water being released into Ashland Creek
- additional irrigation water users throughout the City so that there is less demand for potable water for irrigation use
- continuing to work with Parks and Recreation to find ways to keep the area attractive and have walking trails

ACTIONS, OPTIONS & POTENTIAL MOTIONS

1. I move to direct staff to proceed with final design on Alternative #1.
2. I move to direct staff to proceed with Alternative #__.
3. I move to direct staff to _____.

ATTACHMENT:

Attachment 1: Responses to City Council Questions

Attachment 2: Memorandum from David Lohman, City Attorney

REFERENCES

1. September 3, 2019 Council Study Session [staff report](#) and [minutes](#).
2. July 15, 2019 Council Study Session [staff report](#) and [minutes](#); staff report includes:
 - a. Letter of Support – Ashland Water Advisory Committee, pg. 41 of staff report
 - b. Letter of Support – Ashland Conservation Commission, pg. 42 of staff report
3. February 4, 2019 Council Study Session [staff report](#) and [minutes](#).
4. April 1, 2019 Council Study Session [staff report](#) and [minutes](#).
5. June 17, 2019 – Council Listening Session [minutes](#).
6. [2012 Comprehensive Water Master Plan](#), Carollo (see page 7-7)
7. [Atkins Engineering executive summary](#) (Full reports available at www.ashland.or.us/ashlandcanal)
8. [Siskiyou BioSurvey executive summary](#)
9. [SOU Letter \(Wildlife\)](#)
10. [ACAG presentation](#) and [ACAG meeting notes](#)
11. [FAQs](#)
12. [Project Map](#)
13. [Trail Easement Map](#)

Ashland Canal - City Council Questions

[note: all comments or questions from councilors are in black in a different font with staff answers in green and City Attorney in blue in a different font]
finalized November 1, 2019

Dennis

1. The Plan - how are we going to do this? How will we roll this out? If I had it my way there would be a lot by lot plan - what each will take and experience, how long we will be there, etc. Take the "mystery" out of the picture as much as possible. This sounds like a lot of work, but I think it will provide benefit by at least letting people know what they are looking at in a real way.

Staff is currently at 30% preliminary design. "The Plan" will be developed for construction during the final design stage and fully refined and rolled out with the selected construction contractor. Staff anticipates this project will be constructed in stages and will clearly identify the stages once a contractor is on board. Our project team will attempt to meet with every adjoining property owner to discuss individual impacts as specific issues are brought forward. Staff anticipates establishing a neighbor email list that will help us communicate project status and schedule; this will help minimize any surprises.

It is expected the contractor could remove the existing concrete and any vegetation necessary for placement of either the new pipe or to prepare the surface for the new concrete "canal", dig to the required depth (if the prep is for a new pipe digging would likely up to 18-24 inches deeper than the existing trench to place bedding material for the pipe) and stockpile along the easement area, place new pipe, cover new pipe and then have a 2nd crew come behind to repair the disturbed area. If the canal is being prepped for a new concrete structure, then the material would be hauled off as the liner and concrete would be placed on top of the prepared surface. This schedule will only be fully developed with the selected construction contractor unless the City determines that directing the contracted work is required (not typically the case).

It is difficult to realistically gage the impact on each property owner (dweller). In theory, the construction crew would be at a particular property for 3-4 days, but the contractor will be moving equipment back and forth on the property even if the contractor is not physically digging at that site so the impact will be for a longer period of time. Each person experiences "impacts" differently. At this time, it is hoped that the disturbance would be 3-4 weeks at a time. This will be adjusted with final engineering.

It must be remembered that the City has a maintenance easement for the entire length of the canal – basically 10 feet on either side of the canal; 20 feet wide in total. The city would be responsible for repairing or replacing damaged or removed driveways, fencing, landscaping etc. The City would likely not replace trees. To the best of our knowledge, the property owners with driveways that would be impacted would have the ability to access their homes daily but might be inconvenienced for up to 4 hours at a time. The final schedule would be promulgated to and coordinated with the property owner/dweller to reduce impacts. Also see issue paper #10 – Construction.

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

2. If shotcrete isn't a viable alternative, we need to state that simply and directly.
Shotcrete is not a viable option as a long-term repair unless the existing canal surfaces are completely removed, reshaped, and all impacts (trees and other landscaping that have roots or other negative impacts to the canal) removed from the canal impact zone. Option 3 is a concrete option that has a urethane underliner to help stop leaking. Shotcrete is a placement methodology for concrete and with additives, may be an option to pursue for placement. Staff does not expect shotcrete to be the placement option if option 3 is selected but would wait to see what is specified and proposed once final design and bids are completed. addressed in issue paper #8 – Just Patch
http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf
3. Where the money will come from - if the canal piping isn't going to cost the citizens another dollar, we need to get that out there.
Funds are in the water (supply) fund and are included in the overall water fund financial analysis and rate study. The CIP has \$3.5 Million budgeted between FY20 and FY22 allowing for final design in FY20 and construction in two years FY21 and FY22. If the project is a piping project, staff anticipates the ability to get a \$1.5 M grant but will not know until an application can be made pending final Council decision. Currently staff, with Council approval, has secured a \$1.3 M loan from DEQ. It is further anticipated that the DEQ loan could be renegotiated for additional amounts.
4. Dave Lohman address the "threat" of lawsuits (see also separate memo Attachment 2)
 - I. Legal Points
 - a. While the wording of the relevant provisions in the 11 original easements (across 86 current ownerships) for what is now known as the Ashland Canal varies somewhat,
 - i. They all contain provisions providing for a 20-foot right-of-way, except for one which provides an 8-foot wide easement;
 - ii. They all contain a purpose/use provision stating the easement is for a “pipeline” or “pipe line,” as well as other varying infrastructure terms including “ditch”; “flume”; “canal”; “flume”; and “metal or wooden flume”.
 - iii. Most of the easements contain language allowing ingress and egress “along said right-of-way for the purpose of constructing and maintaining said ditch or pipe line” or similar language.
 - iv. Some of the easements specifically make the City liable in the event the property of the grantor of the easement is damaged due to seepage or overtopping from the Canal.
 - b. Court interpretations of easements typically turn on the apparent purposes and uses of the easement in the specific factual circumstances, regardless of the words used to describe those purposes and uses. This is especially true for decades-old easements.
 - c. In court interpretations of the meaning of easements, “maintenance” typically includes repairs or replacements intended to enable the continuance of the purposes and uses for which the easement was originally granted – even absent specification of particular repairs or replacements. For example:
 - i. “Maintenance” typically includes the clearance of vegetation within the right-of-way if that is foreseeably necessary in order to continue the purposes and uses for which the easement was granted.

- ii. “Maintenance” does not typically include repair or replacement of structures (e.g., fences, decks, bridges, etc.) that encroach on the easement right of way without permission from the holder of the easement.
- iii. “Maintenance,” is not typically deemed to include steps to retain “unintended incidental benefits” (that is, benefits beyond the scope of the purposes and uses for which the easement was originally granted, such as collateral aesthetic or financial benefits that have incidentally accrued to the owners of properties that the easement crosses).
- d. The failure to maintain an easement so as to prevent “unintended incidental benefits” from developing on the properties the easement crosses does not establish a legal obligation by the holder of the easement to ensure those incidental benefits continue.
- e. The right to maintain an easement granted to a municipality does not lapse upon suboptimal exercise, or even non-exercise, of that right for some period of years.
- f. The right to maintain an easement includes the right to determine (within reason) the best means for performing that maintenance. The City’s range of maintenance options is broad: When the easement holder is a government entity, it has “discretionary immunity” from lawsuits challenging its choice of maintenance options as long as it does make an advertent choice – as opposed to doing nothing after the need for corrective action has been recognized.
- g. In a statute on conservation and use of conserved water, it is declared to be the policy of the State of Oregon to “aggressively promote [water] conservation “and “encourage local cooperation and coordination in development of conservation projects to provide incentives for increased efficiency and to improve stream flows.” ORS 537.460.
- h. By seeking in Circuit Court a Declaratory Judgment prior to the start of any new Canal construction/maintenance activities, the City may be able to obtain clarification as to the scope of the easement for the Ashland Canal and as to potential liability for maintenance-related damage to benefits that incidentally resulted from the easement.

II. Legal-related Pragmatic Points

- a. Disruptions in and along the easement will be essentially the same whether the maintenance option approved is piping the Canal or just relining it. That is, those two maintenance options have similar impacts in terms of construction activity, noise, and extent of vegetation removal – including tree removals. Just patching existing canal lining probably would have comparatively less impact on current property owners in the near term. But the cumulative impacts of just patching probably would be greater in the long run (80 to 100 years) than those due to piping. The long run costs of just patching plus maintenance would be about the same as piping plus maintenance.
- b. Even lawsuits not likely to be successful can be costly in terms of dollars, community dissension, and staff time and energy that could be spent more productively on other matters. Recognizing this point, opponents of proposed municipal projects – especially neighboring physical improvements -- sometimes file or threaten lawsuits even if they are not likely to be successful.

III. Assessments of Potential Legal Liability

The following table contains in the left-hand column claims parties might make in lawsuits against the City regarding piping, relining, or just patching the Ashland Canal. The right-hand column contains the City Attorney’s best guess as to the likelihood that a potential claim would be successful. The

admittedly subjective ratings in the right-hand column use a scale from 1 to 10 in which the “0” means “not at all likely to succeed” and “10” means “very likely to succeed.” These ratings are based mostly on the points made in the two sections above and on the City Attorney’s experience and intuition. To the extent these ratings are based on legal analysis beyond the points stated above, that legal analysis should occur in communications protected by attorney-client privilege.

PREDICTABLE DAMAGES ALLEGATIONS IN POTENTIAL LAWSUITS	LIKELIHOOD OF SUCCESS
1. Reduction in property value due to removal of trees and vegetation inside the easement.	0-2
2. Reduction in property value due to eventual demise of trees and vegetation that are outside the easement and are arguably dependent on water previously available through seepage.	0-4
3. Reduction in property value due to loss of water feature on plaintiff’s property or nearby.	0-4
4. Reduction in property value expectations established after many years of reliance on minimal changes to Canal maintenance actions.	0-4
5. Reduction in property value because City did not choose the maintenance option that would be least expensive or least disruptive in the near-term.	0-4
6. Repair costs for physical damage to improvements on subject property due to construction activities inside the easement or to geophysical changes from elimination of seepage. (The City probably would voluntarily resolve any such verifiable damage claims so as to forestall resolution by litigation.)	2-6
7. Temporary restriction or loss of convenient access to homes during construction.	0-2
8. Temporarily diminished quiet enjoyment (noise and construction disruption).	0-4
9. Repair costs for physical damage to improvements or landscaping on subject property due to water damage from seepage or from Canal structural failure if the City does not take corrective measures.	6-10

Steff

- An adopted master trail plan in place before we make a decision on the piping canal to identify how piping would impact the use of the trail to connect to other trails in the watershed.

The current Parks and Recreation Trails Master Plan shows the Ashland canal “trail” as part of the City’s desired and planned trail system. The proposed 2019 Trails Master Plan update continues to show the Ashland canal “trail” as part of the trails system. Each individual property owner would have to provide pedestrian easements along the canal to secure connectivity. That is not within the scope of the piping project. There are 86 property owners along the trail. Currently 30 properties (56% of the entire canal length) have trail easements. Others have allowed access but may not have a formal easement. There are several property owners that have blocked access along private property boundaries. See also issue paper #5 – Trails.

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

- A survey to identify how many property owners would close their section of the trail if the open canal was closed due to the fact that there would then not be a natural barrier (the water) to keep hikers from trespassing on property.

The resulting “trail” would be easily identifiable and maintained. The existing 30 properties that have trail easements would have a difficult time rescinding that easement. Staff would prefer to work in partnership with Parks and Recreation staff to see if additional easements could be obtained for the trail use: http://www.ashland.or.us/Files/TRAIL_Easement_Map_11X17.pdf

7. Contingency planning for how to design the TID trail if it is piped to allow walkers with dogs access and create a quality trail which is designed to be more age friendly. (note the streets by the canal in a number of sections do not have sidewalks or lighting so walking in these neighborhoods is less safe)

The resulting “trail” if the project results in a piped solution would be a flat surface, easily walked, biked or used for City maintenance vehicles. The “road/trail” would be about 10 feet in width within the overall 20-foot maintenance easement to allow small city truck access. Although it would generally be in the same location as the canal is today, staff would hope that the landscaping and property owners’ appurtenances would stay clear of the easement area, especially within the 10-foot trail area.

8. An assessment of cost and planning for removal of hazardous trees along the canal both to city and home owners if and when trees die from lack of water.

Construction estimates developed by Adkins Engineering include \$92,300 for tree removal. The exact number of trees that need to be removed and the associated cost will be further refined in the final engineering phase.

Please note that regardless of Council’s selected option, it is likely that trees at risk of mortality due to their dependence on seepage water will be at risk as all options remove seepage as the goal of the project. Staff has not budgeted to compensate property owners for tree loss that might occur after the project is completed.

9. An assessment and plan for slowly reducing water feed to trees so they will be less likely to die as water is reduced. Assistance to home owners with this plan as dry and dying trees increase fire risk and make trees less resistant to disease.

An assessment and cost to remove the necessary trees within the required construction easement has been completed by the engineers and the costs for removal are included in the construction estimates. The City can work with adjacent landowners and provide recommendations regarding how they can irrigate their vegetation to train them to be less dependent on canal seepage. This was a suggestion from Siskiyou BioSurvey in their report on vegetation impacts from piping, available on the project website.

- http://www.ashland.or.us/Files/Final_Ecological_Report.pdf
- http://www.ashland.or.us/Files/Ecological_Appendices.pdf

10. A plan for Cottle open space coordinated between city and parks to prevent tree death and estimate costs for additional watering of this area. Access to the area if TID trail is closed.

The Cottle property is on City owned land adjacent to the canal. Should the City and the Parks Department determine that water is needed to appropriately manage this site, water is readily available from the canal. The Cottle property has three separate access ways; from Terrace Street

north of Ashland Loop Road along the Cottle property trail that travels to Herbert Street; from the canal trail; and the extension of Ashland Street between Terrace Street and Guthrie.

11. An assessment and plan for addressing lawsuits for damage to property and decrease in residential value of property.

See full response in Question #4 (see also separate memo Attachment B)

12. An assessment of how piping this water system would impact wildlife and the ecosystem since this has been a feature of the area for many years.

Wildlife frequents the area in all seasons. During the spring and summer when the canal is flowing, the animals undoubtedly frequent the open canal. There are alternate sources of water in the area including springs and natural drainage ways. It is expected that wildlife will search for and find alternate sources of water if the canal is piped as they do in the months when the canal is not flowing. This has been further addressed in issue paper #11 – wildlife; and issue paper #4 - trees. In addition, wildlife impacts have been partially addressed in a memo from Michael Parker, Ph.D. (SOU) and in the vegetation impacts report by Siskiyou BioSurvey. All documents can be found on our project website.

- http://www.ashland.or.us/Files/Canal_piping_memo_Michael_Parker_SOU.pdf
- http://www.ashland.or.us/Files/Final_Ecological_Report.pdf
- http://www.ashland.or.us/Files/Ecological_Appendices.pdf

13. Impact of an earthquake on a piped system versus an open canal.

The HPDE pipe is not as ridged as concrete or shotcrete and would have more “give” in an earthquake. Regardless of the selected option, staff would be required to assess all infrastructure components to determine any damage due to a sizable earthquake.

14. An assessment of the effectiveness of FRC in alternative 3 and why this is estimated to last only 10 years when it has been used successfully in other areas with a longer lifespan.

The effective lifespan of shotcrete and/or fiber reinforced concrete (FRC) can be debated repeatedly. The lifespan is dependent on local conditions like weather, soils, erosion, freeze/thaw cycles, vegetation encroachment, animal burrows, damage from penetrations/equipment and the existing canal conditions. Shotcrete placed over the existing canal structure would be continually damaged by existing factors resulting in repeated applications to maintain integrity. Most of these concerns can be mitigated by piping. Also see issue papers #8 – just patch and #13 – “option 5”;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

16. Increased threat of erosion and landslides caused by vegetation removal.

Steep hillsides with granitic soils are susceptible to erosion and debris slides when water is intrusively introduced (significant rains, disturbed areas, etc.). Staff and the consultants will address erosivity in more detail with the final design preparations. The hillside is generally decomposed granite and other materials. If totally scarified, the city would need to put measures in place to reduce erosion and debris slides. It is anticipated that any threat with excessive vegetation removal will be minimized with revegetation and landscaping. There are several techniques to minimize erosion on hillside areas with construction disturbances.

17. Impact on wildlife.

See points made in the above statements/referrals in question #12 above

18. SHANOR QUESTIONS:

According to the American Shotcrete Association (www.shotcrete.org)

Technical Questions and Answers Archive

#23 Strength: Shotcrete has significantly better performance than comparable pored form applications. Please address?

#31. Durability: According to ASA, shotcrete properly applied, the durability factor is better than cast in place concrete. Please address?

#37 Waterproofing and Spider cracking. Many waterproofing compounds are available. And, micro crack do not affect strength. Please address?

#52 High velocity placement provides performance improvements over conventional cast-in-place methods when properly placed. Please address?

#54 Shotcrete in commonly placed over existing concrete. Please comment?

#64. Micro cracks do not affect strength. Please comment?

#115 Considering its ease of application, common use for canals and channels, and superior strength, what justification can be given for the cast method? Please answer?

129 A high quality shotcrete mixture exhibits excellent freezing-and-thawing characteristics. Please address?

#132 Shotcrete is commonly applied over existing subgrade. Why must compressed soil be disturbed and concrete be removed(huge disposal problem)? Please address?

#141 Durability Study, Durability Studend, Bureau of Reclamation: " Shotcrete is a very viable means of placing canal linings" So, why do it the hards way? Really!

#153 Shotcrete and two sided cast-in place both give excellent service. So, why choose the most invasive, inefficient method ? Please comment?

#177 Shotcrete and caste-in-place have similar service life. Why ,in our case, choose the most destructive alternative? Please address?

#186 Concrete cracks. So why not choose the method that is easiest to fix? Keep in mind, that staff stated that repairs to cast-in-place would be done with shotcrete cement.? Please comment?

Public Works will not comment on the technical advice or recommendations from the American Shotcrete Association. We are convinced that under the right circumstances, shotcrete applied correctly has significant advantages and adequate durability/life. Please also see the responses to question #2 above.

Questions for Public Works and Council (Julie)

19. I would like to have the alternative of relining the canal with fiber reinforced concrete via "shotcrete" fully looked into. This option would also include relining of the sections currently piped as in alternatives #2 and #3.

The effective lifespan of shotcrete and/or concrete can be debated repeatedly. The lifespan is dependent on local conditions like weather, soils, erosion, freeze/thaw cycles, vegetation encroachment, animal burrows, damage from penetrations/equipment and the existing canal

conditions. Most of these concerns can be mitigated by piping. Also see issue papers #8 – just patch and #13 – “option 5”;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

20. (1.) What can be done about the tail water that currently empties into Ashland Creek? Since this is where the contention lies about the TID water adding E. coli to Ashland Creek, can some “fix” be sought for removing this altogether?

The canal is an open system and will always have some tail water to function properly. Public Works is convinced that we can do a better job of forecasting the water withdrawals and perhaps reduce the amount of water going into Ashland Creek.

21. (2.) I would like to know what the Green House Gas emissions will be for the complete destruction/construction process because of the use of vehicles and small equipment.

This was addressed for major construction materials only in Issue Paper #14 – GHG CO₂;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf. Staff did not address the use of vehicles or small equipment used during construction as they would likely be similar for all construction options. However, with piping having the least amount of long-term maintenance required from operational staff and no relining or concrete repairs would be necessary, piping will have a significantly smaller amount of CO₂ emissions on a life-cycle basis than all other options.

22. (3.) What is the impact to the sequestration of CO₂ due to the removal of 100 -286 trees? Trees remove CO₂, so how much CO₂ will be added to the atmosphere upon the removal of these trees?

There will likely be approximately 100 trees removed. The number of trees removed is the same for all piping options, including shotcrete application. We will pursue an estimate of CO₂ loss.

23. (4.) What/where is going to happen to the old canal waste? How does this impact our environment?

Assuming this is referring to the need to remove the existing canal concrete/gunite; this “waste” material is considered “clean” and can be crushed for future use as base or fill material. All soil spoils are likewise “clean” and can be reused as fill.

24. (5.) According to the Water Master Plan of 2012 the city would work more aggressively to conserve more water (i.e. Santa Cruz, Ca.). This has the potential to save 59 million gallons of water every year.

- 4.8.1 Conservation Goals

- The City considered three increasing levels of conservation to help meet its projected demands. The three levels are 5, 10, and 15 percent reduction in existing per capita demands, beyond the level of conservation already being achieved in the City. Table 4.6 shows the per capita consumption rates and average day demand projections assuming the City achieves 5, 10 and 15 percent reductions. It was assumed that the targeted conservation levels would be reached over a 20-year period (2030), with half of the targeted conservation achieved by 2020. Is the city on track to reach 1/2 of the targeted conservation?

Yes, the City has achieved the conservation goals from the 2012 adopted Water Master Plan. The most recent 2019 update to the Water Master Plan will include a target for an additional 15% reduction in water use by 2040. The City has acquired a water demand and conservation management software program that will assist in evaluating potential future measures that will most cost-effectively achieve the desired demand reductions.

25. Have more aggressive conservation measures been implemented for Ashland such as incentives for rain water catchment, weather sensing water timers, grey water use (thank you for the class, but how about incentives), mulch, gutter replacement programs like Portland, Oregon.

Yes, the City continues to offer several programs, incentives and resources for our customers. The City currently offers rebates for toilets, washing machines, lawn replacement and smart controllers. We also provide free showerheads, faucet aerators, and soil moisture meters. In addition, we offer classes and workshops for rainwater catchment and graywater systems and provide free indoor and outdoor water use evaluations. Using the water demand and conservation management software program, the conservation team will be developing additional conservation programs in the future in order to meet the most recent 15% water reduction goal. Details on the City's conservation program may be found on the website at <http://www.ashland.or.us/Page.asp?NavID=299>

· 4.9 POTENTIAL NEW CONSERVATION PROGRAMS

In order to achieve the conservation goal selected, additional programs will need to be implemented to conserve more water than the City is already conserving with its existing programs. There are several utilities that have implemented aggressive conservation programs, and Ashland could style its new conservation program inspired by the successes of others. Table 4.11 documents some of the measures that are being implemented by other utilities. The utilities chosen for comparison are the following:

- East Bay Municipal Utility District (EBMUD), Oakland, California.
- Denver Water, Denver, Colorado.
- Eugene Water and Electricity Board (EWEB), Eugene, Oregon.
- City of Santa Barbara, California.
- City of Corvallis, Oregon.

· 4.10 RECOMMENDATIONS

26. Meeting the 15 percent conservation target identified by the AWAC will required significant expansion of the City's current conservation efforts, including additional staffing and funding for programs. The next step is for the City to conduct a detailed Water Conservation Study to evaluate the various potential measures to identify the costs and implementation issues associated with them, and select those that will most cost-effectively achieve the desired demand reductions.

Until that study is complete, it is recommended that the City continue its existing water conservation programs, and continue to improve public education and awareness on the importance of water conservation.

The City completed a Water Management and Conservation Plan in 2013 and submitted it to the Oregon Water Resources Department (OWRD). At the beginning of 2019, the City submitted and

received approval on a progress report regarding the efforts that have been made to achieve the conservation goals that were outlined in the initial report to OWRD. Additionally, the City has acquired a water demand and conservation management software program that will assist in evaluating potential future measures that will most cost-effectively achieve the desired demand reductions. <http://www.ashland.or.us/Page.asp?NavID=17541>

Follow-Up Questions Regarding Piping the Ashland Canal (Akins)

General Questions:

27. (1.) What facts and sources were studied to inform the opinion that piping the canal would benefit future generations? What guarantee is there that piping the canal is the best alternative for protecting the water in the Ashland Canal?
- Piping the canal conserves the most water of all alternatives and is a very robust improvement to protect the City's secondary water supply. This water benefits all current and future citizens of Ashland, not only those that live along the canal or directly use as irrigation water fed by the canal. There are no guarantees regarding water quality, but open canals are susceptible to contamination from a variety of sources. Piped canals are influenced by upstream inputs but can be designed to stop all other contaminants from entering the piped section including sources of bacteria and debris that harbors bacteria.
28. (2.) Please clarify the Evaporation Rate for the 2.4 mile section of the Ashland Canal under review. There is a discrepancy between the evaporation rate reported by staff to council and to the public. Staff has quoted the evaporation rates of both 2% and 9%. Are these rates backed by current and valid regional data? What sources were used to determine the evaporation rate?
- Evaporation rates were developed as part of the Seepage Study completed by Adkins Engineering. They used the Western Regional Climate Centers evaporation station records. Average evaporation for the seepage study is 2% or 1,240,000 gallons of water/year. Details regarding the seepage study can be found in the Preliminary Engineering Report at;
<http://www.ashland.or.us/Files/%28Final%29 Preliminary Engineering Report.pdf>
- The 9% was a clarification to a question asked about the percentage of the 23% total water loss of both evaporation (2%) and seepage (21%); $2\%/23\% = 9\%$ of the total water loss (the 23% total) was due to evaporation.
29. (3.) What is the plan for managing the waste left from the destruction of the existing concrete canal liner and existing piping? Has the impact of this waste on the Ashland environment been considered?
- Assuming this is referring to the need to remove the existing canal concrete/gunite; this "waste" material is considered "clean" and can be crushed for future use as base or fill material. All soil spoils are likewise "clean" and can be reused as fill. In general, the contractor will ensure a clean construction site and staff will have oversight management.
30. (4.) There are varying understandings regarding the longevity and usefulness of fiber-reinforced shotcrete being applied over the existing canal liner as proposed by Robinson

Concrete Pumping. What studies/reports were utilized to inform the decision regarding shotcrete’s long-term effectiveness? Staff has reported figures to the council and community that conflict with industry standards.

The effective lifespan of shotcrete and/or concrete can be debated repeatedly. The lifespan is dependent on local conditions like weather, soils, erosion, freeze/thaw cycles, vegetation encroachment, animal burrows, damage from penetrations/equipment and the existing canal conditions. Most of these concerns can be mitigated by piping. Also see issue papers #8 – just patch and #13 – “option 5”;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

31. (5.) What studies/reports were used to inform decisions and determine the long-term maintenance cost of shotcrete? On this point as well, staff has reported figures to the council and community that conflict with industry standards.

The effective lifespan of shotcrete and/or concrete can be debated repeatedly. The lifespan is dependent on local conditions like weather, soils, erosion, freeze/thaw cycles, vegetation encroachment, animal burrows, damage from penetrations/equipment and the existing canal conditions. Most of these concerns can be mitigated by piping. Also see issue papers #8 – just patch and #13 – “option 5”;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

32. (6.) Why can we not get a final cost estimate before council's approval on this CIP rather than after approval of the project?

Staff has presented the current preliminary engineering cost estimates for construction several times, they are included in this link to the 7/15/19 Study Session;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

Capital costs are dependent on which piping alternative is selected. Current project expenses to date are \$295,564.41, this amount is not included in the table below. Estimates are subject to change and will be refined in the final design phase of this project. At the final design phase, a significantly higher level of construction detail is included providing a more accurate construction pricing. The construction contract with the actual bid price from a contractor will be brought back to Council for approval and before construction begins.

	Alternative #1	Alternative #2	Alternative #3
Method	All new 24" pipeline	30" & 24" Pipeline	Replace Canal Liner
Pipe Material	Corrugated HDPE	Corrugated HDPE	Concrete & Urethane
Capital Costs	\$3,095,000	\$3,950,000	\$2,429,000
Annualized OM&R	\$12,500	\$12,500	\$39,000
Life of Option	60 - 100 years	60 - 100 years	40 - 60 years
Salvage Value	\$354,280	\$335,560	0
Net Present Value *	\$3,472,579	\$4,339,897	\$4,334,379

* Life Cycle Cost / NPV from Adkins Final Report p. 49; based on a 60 year life cycle; 2018 dollars

Specific Questions:

Environmental Consequences:

33. (1.) Has the long-term environmental impact of closing off access to an open water source been assessed? Yes or no. If yes, what sources were used to inform those findings? What are those findings?
- Staff has evaluated the long-term impacts of piping to vegetation and wildlife to a lesser degree. That information is found here:
- http://www.ashland.or.us/Files/Final_Ecological_Report.pdf
 - http://www.ashland.or.us/Files/Canal_piping_memo_Michael_Parker_SOU.pdf
- As well as issue papers #4 - trees and #11 - wildlife;
- http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf
- The City's design engineers also completed a wetland determination and found no wetlands present. That information is found in Appendix E of the preliminary engineering report;
- http://www.ashland.or.us/Files/%28Final%29_Preliminary_Engineering_Report.pdf
34. (2.) Does the preliminary engineering report include a plan for accessing the steep and difficult areas of the two-mile canal and a description of the impacts to existing environment?
- An initial assessment was completed with preliminary engineering that supported more details needed. Staff and the consultants will address this in more detail with the final design preparations. The hillside is generally decomposed granite and other materials. If totally scarified, the city would need to put measures in place to reduce erosion and debris slides. It is anticipated that any threat with excessive vegetation removal will be minimized with revegetation and landscaping. There are additional erosion control measures that can be put in place as necessary.
35. (3.) Does the preliminary engineering report include an environmental reclamation plan? Has the cost of reclamation been included in the cost estimate for each alternative?
- The preliminary engineering report includes costs for trail, fence, driveway and road restoration (\$151,300 combined) and tree removal \$92,300. These expenses are estimated to be similar for all project alternatives. These estimates will be refined in the final engineering phase.
36. (4.) Has an Environmental Impact Report been completed?
- No, any environmental permitting required will be completed in the final engineering phase.
37. (5.) Why doesn't the city test storm water run-off for E. coli since there are 19 storm drains above the children's wading area as well as numerous storm drains that empty into the creeks?
- The City is aware that it is common to have E. coli in storm water. One of the goals of this project is to remove the storm flows from the canal, further reducing the conveyance of bacteria into Ashland Creek. At this time the City is not required to test for E.coli in storm culverts.
38. (6.) According to the DEQ Chapter 340, Division 41 regulation 340-041-009 (4) Animal Waste: Runoff contaminated with domesticated animal wastes must be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the

State. What are PW plans for mitigating the additions of E. coli to these waters because of the aforementioned storm drains?

Piping the canal is one of staff's plans to help reduce the amount of E. coli that enters Ashland Creek. One of the goals of this project is to remove the storm flows from the canal, further reducing the conveyance of bacteria into Ashland Creek. The new storm water permitting regulations and master plan will address education and mitigation measures.

Ecological Risks:

The following questions were drawn from the Ecological Analysis completed by Siskiyou BioSurvey, LLC,(SBS) July 2018 prepared by Greg Carey and Gretchen Vos titled "Minimizing Ecological Risks Associated with the City of Ashland Piping of T.I.D. Water between Starlight Station and Terrace Street Pumping Station".

39. (1.) There is some concern that staff underestimated the environmental consequences and ecological risks of piping the canal. The risks to the environment were assessed and described in the Siskiyou BioSurvey (SBS) prepared for the city of Ashland last summer. How have the impacts described in the report been planned for in the budgeting, scheduling and staffing of the proposed piping project?

The City will review the recommendations by SBS in the final design phase. Additional funds specific to elevated environmental risks have not been included in the current budget. We have evaluated the long-term impacts of piping to vegetation and wildlife to a lesser degree. That information is found here:

- http://www.ashland.or.us/Files/Final_Ecological_Report.pdf
- http://www.ashland.or.us/Files/Canal_piping_memo_Michael_Parker_SOU.pdf

As well as issue papers #4 Trees and #11 Wildlife;

- http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

Our design Engineers also completed a wetland determination and found no wetlands present. That information is found in Appendix E of the preliminary engineering report;

- http://www.ashland.or.us/Files/%28Final%29_Preliminary_Engineering_Report.pdf

40. (2.) Within the SBS report (Appendix B pp. 83 – 87), specific Areas of Concern (AOC) are listed. The report divides the 2.4 miles of Ashland Canal into 38 subsections and analyzes environmental impacts to each. 15 of the 38 sections recommend individual consultation with a construction steward and/or homeowner due to risk for potential problems, and 21 of the 38 sections are recommended for follow-up monitoring and/or mitigation due to predicted negative environmental impact. Has the city fully committed to follow through with the SBS recommendations? Where are the funds for these recommendations included in the proposed budget?

The City will review the recommendations by SBS in the final design phase. Additional funds specific to elevated environmental risks or providing a dedicated environmental steward have not been included in the current budget. City staff may advise the property owners along the canal, the City has limited control over private property environmental stewardship and long-term monitoring.

41. (3.) The SBS report recommends using an adaptive approach to meet the complexity of piping the canal with so many "difficult to quantify variables". The report recommends a

construction steward be assigned to help streamline the process. How will this position be written into the budget (Section VII A, p.24)?

The City will review the recommendations by SBS in the final design phase. Additional funds specific to providing a dedicated environmental steward have not been included in the current budget.

42. (4.) Where in the budget and project timeline is the cost for monitoring of forest health along the canal for a minimum of three years as recommended in the SBS report (Section F p.26)? Where is the line item in the budget for this?

The City will review the recommendations by SBS in the final design phase. Additional funds specific to providing a dedicated environmental steward have not been included in the current budget.

43. (5.) The SBS report states, "There are an estimated 200 – 250 trees that will probably require removal prior to construction due to their likely demise following construction and piping" (Section I p.28). What other alternatives would result in less destruction of trees?

All proposed project alternatives are designed to be water-tight structures. Impacts to surrounding vegetation will be similar for all alternatives. Also see issue paper #4 - trees:

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

44. (6.) The SBS report states, "...this process (stopping seepage that provides down slope trees with water) could easily require ten years of supplemental water (Appendix A, Section 4 p.41)". How and where has this recommended maintenance and resulting cost been included in the budget? In view of this, how much of the water that is saved by piping the canal will be used to keep the surrounding environment and forest healthy?

Vegetation management outside of the City's easement is the responsibility of the land owner. The City can offer and aid land owners regarding post-piping vegetation management and responsible irrigation techniques.

45. (7.) Staff has shared that the construction on the Ashland Canal will occur in the fall/winter months. The SBS report recommends "Timing earth moving activities while the soil is dry is recommended to avoid compacting soil in a water impervious pan (Section E p.26)". The hazards of soil compaction are described in the report. What measures will be taken to avoid these hazards given the scheduling of the project has ignored this expert recommendation?

Project scheduling is dictated by the periods the canal is dry as to not interfere with our irrigation customers. The SBS report has some good recommendations that staff will consider in the final design phase. Although much of the rainfall for the City is in the winter and spring, there are significant periods of dry days without precipitation.

46. (8.) "Noxious weeds and invasive plant management along the Ashland canal is an important concern to address within the scope of this project"...."plans need to be in place in advance of construction to decrease the likelihood of spread" (SBS report Section H p.15). Where does the project budget contain a plan to address the aggressive spreading of noxious weeds to the adjacent forest along the canal?

The City cannot control the vegetation on private property. The City will review the recommendations by SBS in the final design phase. Additional funds specific to addressing the aggressive spread of noxious weeds have not been included in the current budget.

47. (9.) The strongest construction related concerns analyzed in the SBS report relate to the environmental impacts caused by removing the current concrete liner with heavy equipment. The report states, “removing the concrete canal liner has the greatest potential to harm a large number of specimen trees by destroying their roots”, and recommends that “some portions of the liner may be left in place in areas with significant root presence since the ecosystem has already reached a balance with it there (Section IV, C p.17)”. Why has staff recommended removing the concrete canal liner rather than taking a more ecological approach and repair the existing liner?

Regardless of which project alternative is chosen, the City must address the root encroachment of the canal and responsibly manage the vegetation within our easements. Although “heavy” equipment will likely be used, construction specifications will require the use of smaller pieces of equipment to minimize major disruption.

48. (10.) Many community members feel that staff has overstated the environmental benefits of piping the canal, listing the benefits as addressing three major areas:
- 1) water lost due to evaporation (2% - 9%, as reported by staff)
 - 2) water lost through seepage
 - 3) issues of e-coli contamination

Actual evaporation rates (1) have yet to be confirmed by staff but existing rates are reported by staff to be either 2% or 9%.

The issue of water seepage (2) can be remediated by repairing the existing canal and relining the piped portions with minor impact on the environment.

The issue of e-coli contamination (3) has been challenged by scientific public testimony and poses less of a threat than described by staff.

Given the amelioration of issues number 2 and 3, how does staff justify the evaporation rate of 2% or 9% (yet to be confirmed) within the 2.4 mile section of the 20 mile canal to be of significant magnitude to expose the environment along the Ashland Canal to the ecological risks described in the SBS study?

Evaporation rates were developed as part of the Seepage Study completed by Adkins Engineering. They used the Western Regional Climate Centers evaporation station records. Average evaporation for the seepage study is 2% or 1,240,000 gallons of water/year. Details regarding the seepage study can be found in the Preliminary Engineering Report at;

<http://www.ashland.or.us/Files/%28Final%29 Preliminary Engineering Report.pdf>

The 9% evaporation rate was a clarification to a question asked about the percentage of the 23% total water loss of both evaporation (2%) and seepage (21%); $2\%/23\% = 9\%$ of the total water loss (the 23% total) was due to evaporation.

Property:

49. (1.) How and where do the cost estimates for each alternative include remediation for damage to homes and adjacent structures?

Staff does not anticipate any damage to homes as a result of this project. The preliminary engineering report includes costs for trail, fence, driveway and road restoration (\$151,300 combined) and tree removal \$92,300. These expenses are estimated to be similar for all piping alternatives. These estimates will be refined in the final engineering phase. The estimated costs for restoration can be found on pages 41-46 in this link;

http://www.ashland.or.us/Files/%28Final%29_Preliminary_Engineering_Report.pdf

50. (2.) If the council votes to move ahead with this project, before they begin any kind of destruction/construction, are each and every one of the residences going to be receive a visit from the Public Works department with a detailed report on what is going to take place on each property and how those properties are going to be affected and restored? What kind of contract will be proposed for each property owner?

Staff is currently at 30% preliminary design. The detailed construction plan will be developed during the final design stage. Staff anticipate this project will be constructed in stages and will clearly identify the stages once a contractor is on board. Our project team will attempt to meet with every adjoining property owner to discuss individual impacts as they become final. We also would like to set-up a neighbor email list that will help us communicate project status and schedule, this will help minimize any surprises. We do not anticipate any “contracts” as we are performing work within the City’s easements. Also see issue paper #10 - construction;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

51. (3.) How will steep driveways that will not be useable for some time be made usable for the property owners? And, if all utility lines are under the driveways how will the city accommodate the need for utilities during construction?

The City would be responsible for repairing or replacing damaged or removed driveways, fencing, landscaping etc. The City would likely not replace trees. To the best of our knowledge, the property owners with driveways that would be impacted would have the ability to access their homes daily but might be inconvenienced for up to 4 hours at a time. It is common for the City to work around various utilities and take measures to keep services available to our customers. The goal is to minimize utility disruptions during construction. Also see issue paper #10 - construction;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

52. (4.) Clarify the Ashland Canal Project Boundaries. There is a discrepancy between the boundaries shown on the preliminary engineering drawing and what has been verbally told to residents

The City owns/maintains the canal from the Starlite monitoring station to the Terrace street pump station, this is the proposed project area. The preliminary drawings show the project extending a little upstream of the Starlite monitoring station, however it is highly unlikely the project will extend upstream of the monitoring station as the City does not have easements in those areas. Staff has directed the engineering team to stay within the City’s boundaries. Should there be any change, staff will immediately discuss the options with the adjacent/affected land owners.

City Policy:

53. (1.) Is the City financially obligated for repairs and/or restoration of landscape, retaining walls, rock walls, driveways etc that are either damaged or otherwise removed during construction? If so, where is that documented and what guarantee is there for property owners? What type of contract will be written between property owners and the city? How will property owners be protected?

This has been addressed in issue paper #10 – construction; the City will repair structures/utilities that are damaged during construction. However, some landscaping within the easement may not be restored and will be evaluated on a case by case basis in the final design. The goal is to retain a 10-foot buffer on either side of the canal or pipeline for maintenance vehicles. Although the easement would remain 20 feet wide, the pathway for routine maintenance would be much less.

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

Discrepancies:

54. (1.) Clarify how many trees will be lost if the canal is piped. There is a discrepancy between the number of trees listed on the Adkins Engineering Report (297), the Siskiyou BioSurvey report (200-250) and the number reported by staff to council and the community (100).

The final number of trees to be removed will be addressed in the final design and is currently estimated to be approximately 100 based upon the initial walk of the likely construction zone. Also note that the recommended number of trees to remove is the same across all piping alternatives. Also see issue paper #4 – trees;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

55. (2.) Clarify the longevity of reinforced shot-crete if used over the existing canal. Staff has reported figures to the council and community that conflict with industry standards. What sources were used to determine that number?

The effective lifespan of shotcrete and/or concrete can be debated repeatedly. The lifespan is dependent on local conditions like weather, soils, erosion, freeze/thaw cycles, vegetation encroachment, animal burrows, damage from penetrations/equipment and the existing canal conditions. Most of these concerns can be mitigated by piping. Also see issue papers #8 – just patch and #13 – “option #5”;

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56. (3.) How can Alt#3 be justified when by just switching from cast-in-place to shotcrete can save more than \$1,000,000? Why not include an uphill curb (not downhill) with shotcrete because it significantly reduces run off into the canal? Why does the shotcrete option require no additional engineering and significantly fewer trees destroyed?

The recommended number of trees to remove is basically the same for all alternatives. Any alternative chosen will require similar costs and engineering to finish the design. We will review curbs and the maintenance requirements to keep them working for the intended purpose and not be clogged or overgrown with vegetation or soil deposits, and many other details in the final design phase. The “shotcrete option” will require engineering and would still require any trees in the canal or the construction zone to be removed.

57. (4.) There have been various reports regarding the seriousness of the threat of e-coli in the 2.4 mile section of the Ashland Canal. Please explain if e-coli remains a significant reason for piping the Ashland Canal. The issue of e-coli contamination has been challenged by scientific public testimony showing e-coli poses less of a threat than previously described by staff.

Removing the ability for new fecal material and E.coli to go into Ashland creek is one of the goals of piping the canal. An open canal will not remove the added waste materials from entering the canal.

See issue paper #2 – E.coli;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

58. (5.) To what extent do we make landowners "whole" in this process? I expect that many of them may have built structures or done landscaping in areas that are within the City's maintenance easement. Do we fix those things too? Do we fully put their landscaping back to what it was if we have to cut into their property?

This has been addressed in issue paper #10 - construction, the City will repair structures/utilities that are damaged during construction. However, some landscaping or structures within the easement may not be restored and will be evaluated on a case by case basis in the final design. The goal is to be able to access these areas for maintenance.

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

59. (6.) Are we planning to do anything to help them navigate the construction process, possibly while utilities are disrupted on their property, etc.?

See issue paper #10 – construction; the City will minimize disruptions to our neighbors to the best of our abilities and communicate work flow/schedule as much as possible.

60. (7.) Can we put together an assessment of the \$1 million proposal and explain all that it doesn't cover? That claim has gotten quite a lot of traction and people don't understand what is missing from that estimate.

Shotcrete (the "\$1 million proposal") is not a viable option as a long-term repair unless the existing canal surfaces are completely removed, reshaped, and all impacts (trees and other landscaping that have roots or other negative impacts to the canal) removed from the canal impact zone. Option 3 is a concrete option that has a urethane underliner to help stop leaking. Shotcrete is a placement methodology for concrete and with additives, may be an option to pursue for placement. Staff does not expect shotcrete to be the placement option if option 3 is selected but would wait to see what is specified and proposed once final design and bids are completed. This was primarily addressed in issue papers #8 – just patch and #13 – "option 5"

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61. (8.) Can staff please close the gap between the claims that shotcrete can do everything we want it to at a lower cost? On one hand, we have staff saying it's not a long-term solution, but on the other, we have citizens bringing forward studies that make it seem that shotcrete is a credible long-term solution. We need to clarify the differences in our systems that allow some irrigation districts to use shotcrete as a long-term solution in a way that won't work here - or explain that gap some way.

The effective lifespan of shotcrete and/or concrete can be debated repeatedly. The lifespan is dependent on local conditions like weather, soils, erosion, freeze/thaw cycles, vegetation encroachment, animal burrows, damage from penetrations/equipment and the existing canal conditions. Most of these concerns can be mitigated by piping. Also see issue papers #8 – just patch and #13 – “option 5”;

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

62. (9.) Is there any merit to the idea that an open canal is beneficial to firefighting efforts in terms of being a fuel break and/or being a water source for firefighters battling a wildfire in the watershed?

The staff and design team have consulted with Ashland Fire and Rescue (AFR) on fire concerns. The open canal is not a central source of water for them. AFR prefers the pressurized hydrants that are prevalent in town. Our design includes inspection ports along the canal that can be used to access water in the canal for pumping by AFR if necessary. The open canal is not large enough to perform as an effective fire break. If piped, AFR will benefit from having increased vehicle access to fire prone areas of the City. Siskiyou BioSurvey has noted that after pipeline construction the canal may act as a significant fire-break (post tree removal);

http://www.ashland.or.us/SIB/files/Ecological_Executive_Summary.pdf

63. (10.) Is there a potential lawsuit regarding the Klamath Adjudication?

Ashland has two water rights from Talent Irrigation District and the Bureau of Reclamation delivered through the TID system; one with a priority date of 1920 and the other dated 1978. The water source is not likely to be disrupted anytime soon and as is the case with water rights in general, is a complex matter. This has been addressed in more detail in issue paper #12.

http://www.ashland.or.us/Files/7.15.19_Ashland_Canal_Study_Session.pdf

The Klamath Adjudication process has been ongoing for over 40 years and is the process for determination of water rights predating Oregon’s 1909 Water Rights Act which defined the process to obtain a valid water right. There is no current lawsuit. The Oregon water resources division has additional information on the adjudication process:

<https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/KlamathRiverBasinAdj/Pages/default.aspx>

Memo

TO: Mayor and Councilors
 FROM: David Lohman, City Attorney
 RE: Ashland Canal
 DATE: October 29, 2019

Among the questions Councilmembers addressed to staff concerning the Ashland Canal project were Questions 4 and 11, which sought Legal Department assessment of potential legal challenges to any of the Canal maintenance options under consideration, with specific reference to possible allegations of damage to property or decrease in property value. The three sections below are intended to collectively address both Questions 4 and 11.

I. Legal Points

- a. While the wording of the relevant provisions in the 11 original easements (across 86 current ownerships) for what is now known as the Ashland Canal varies somewhat,
 - i. They all contain provisions providing for a 20-foot right-of-way, except for one which provides an 8-foot wide easement;
 - ii. They all contain a purpose/use provision stating the easement is for a “pipeline” or “pipe line,” as well as other varying infrastructure terms including “ditch”; “flume”; “canal”; “flume”; and “metal or wooden flume”.
 - iii. Most of the easements contain language allowing ingress and egress “along said right-of-way for the purpose of constructing and maintaining said ditch or pipe line” or similar language.
 - iv. Some of the easements specifically make the City liable in the event the property of the grantor of the easement is damaged due to seepage or overtopping from the Canal.
- b. Court interpretations of easements typically turn on the apparent purposes and uses of the easement in the specific factual circumstances, regardless of the words used to describe those purposes and uses. This is especially true for decades-old easements.
- c. In court interpretations of the meaning of easements, “maintenance” typically includes repairs or replacements intended to enable the continuance of the purposes and uses for which the easement was originally granted – even absent specification of particular repairs or replacements. For example:
 - i. “Maintenance” typically includes the clearance of vegetation within the right-of-way if that is foreseeably necessary in order to continue the purposes and uses for which the easement was granted.
 - ii. “Maintenance” does not typically include repair or replacement of structures (e.g., fences, decks, bridges, etc.) that encroach on the easement right of way without permission from the holder of the easement.



- iii. "Maintenance," is not typically deemed to include steps to retain "unintended incidental benefits" (that is, benefits beyond the scope of the purposes and uses for which the easement was originally granted, such as collateral aesthetic or financial benefits that have incidentally accrued to the owners of properties that the easement crosses).
- d. The failure to maintain an easement so as to prevent "unintended incidental benefits" from developing on the properties the easement crosses does not establish a legal obligation by the holder of the easement to ensure those incidental benefits continue.
- e. The right to maintain an easement granted to a municipality does not lapse upon suboptimal exercise, or even non-exercise, of that right for some period of years.
- f. The right to maintain an easement includes the right to determine (within reason) the best means for performing that maintenance. The City's range of maintenance options is broad: When the easement holder is a government entity, it has "discretionary immunity" from lawsuits challenging its choice of maintenance options as long as it does make an advertent choice – as opposed to doing nothing after the need for corrective action has been recognized.
- g. In a statute on conservation and use of conserved water, it is declared to be the policy of the State of Oregon to "aggressively promote [water] conservation "and "encourage local cooperation and coordination in development of conservation projects to provide incentives for increased efficiency and to improve stream flows." ORS 537.460.
- h. By seeking in Circuit Court a Declaratory Judgment prior to the start of any new Canal construction/maintenance activities, the City may be able to obtain clarification as to the scope of the easement for the Ashland Canal and as to potential liability for maintenance-related damage to benefits that incidentally resulted from the easement.

II. Legal-related Pragmatic Points

- a. Disruptions in and along the easement will be essentially the same whether the maintenance option approved is piping the Canal or just relining it. That is, those two maintenance options have similar impacts in terms of construction activity, noise, and extent of vegetation removal – including tree removals. Just patching existing canal lining probably would have comparatively less impact on current property owners in the near term. But the cumulative impacts of just patching probably would be greater in the long run (80 to 100 years) than those due to piping. The long run costs of just patching plus maintenance would be about the same as piping plus maintenance.
- b. Even lawsuits not likely to be successful can be costly in terms of dollars, community dissension, and staff time and energy that could be spent more productively on other matters. Recognizing this point, opponents of proposed municipal projects – especially neighboring physical improvements -- sometimes file or threaten lawsuits even if they are not likely to be successful.

III. Assessments of Potential Legal Liability

The following table contains in the left-hand column claims parties might make in lawsuits against the City regarding piping, relining, or just patching the Ashland Canal. The right-hand column contains the City Attorney's best guess as to the likelihood that a potential claim would be successful. The admittedly subjective ratings in the right-hand column use a scale from 1 to 10 in which the "0" means "not at all likely to succeed"



and “10” means “very likely to succeed.” These ratings are based mostly on the points made in the two sections above and on the City Attorney’s experience and intuition. To the extent these ratings are based on legal analysis beyond the points stated above, that legal analysis should occur in communications protected by attorney-client privilege.

PREDICTABLE DAMAGES ALLEGATIONS IN POTENTIAL LAWSUITS	LIKELIHOOD OF SUCCESS
1. Reduction in property value due to removal of trees and vegetation inside the easement.	0-2
2. Reduction in property value due to eventual demise of trees and vegetation that are outside the easement and are arguably dependent on water previously available through seepage.	0-4
3. Reduction in property value due to loss of water feature on plaintiff’s property or nearby.	0-4
4. Reduction in property value expectations established after many years of reliance on minimal changes to Canal maintenance actions.	0-4
5. Reduction in property value because City did not choose the maintenance option that would be least expensive or least disruptive in the near-term.	0-4
6. Repair costs for physical damage to improvements on subject property due to construction activities inside the easement or to geophysical changes from elimination of seepage. (The City probably would voluntarily resolve any such verifiable damage claims so as to forestall resolution by litigation.)	2-6
7. Temporary restriction or loss of convenient access to homes during construction.	0-2
8. Temporarily diminished quiet enjoyment (noise and construction disruption).	0-4
9. Repair costs for physical damage to improvements or landscaping on subject property due to water damage from seepage or from Canal structural failure if the City does not take corrective measures.	6-10

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