

April 1 Study Session on Piping the Canal

Dr. Carol Voisin, Ashland

I have serious concerns about piping the canal project that is before us. First, the liability of underground piping – out of sight, out of mind until it breaks. Second, no plan for mitigating storm surges which we have annually and that the canal handles by virtue of being open. Third, the risks of piping have not been adequately addressed by staff like the draining for storm surges and the subsurface springs that are prevalent on almost any mountain side. Finally, citizens have an alternative that needs to be taken seriously.*

Does a buried pipe really have a lower risk than a canal? A buried pipe clearly has more risk than does an open canal. A surge of water from heavy rains which we have every year has no place to go without an open ditch. Any plan to close that ditch must address the risk of storm surge going into people's yards and into their basements or even living rooms. There will be property damage – this happened on my property! This could mean more lawsuits for the city.

The risk of ground water springs flowing into the properties below the canal is real. The plan to pipe must address this issue in and through an Environmental Impact Report which includes an extensive hydrology report must come first before any decision is made to pipe this canal.* Also has the staff considered the slow flow of water thru the pipes. Friction slows the H_2O .

Finally, citizens are serious. We are lifting up real life risks and concerns. We also want another alternative, the Citizen's alternative, to be considered. It is really simple. Fix the leaks! Remove the failing gunnite lining; replace it with slipform applied reinforced concrete to line the canal, and maintain the rest. This is different from alternative four presented by staff.*

* Source #1

Source #1

Hi Counselors, Mayor and Paula Brown;

SUBJECT: "Canal Improvement Project"

I don't know the specific history of this Canal but it appears that a decision was made by public works to pre-judge the environmental process and decide the present canal should proceed as a buried pipe project.

I am glad that your decision at the 4/2/19 CC Business Meeting will NOT be to select a preferred alternative but just authorize an Environmental Impact Report (EIR). The EIR will determine the preferred alternative. NOTE: federal funding can't be granted and applied before an EIR is completed (including a public comment period). At the 4/2/19 CC meeting this motion needs to be passed by the Council: The completed EIR must be brought back to the Council for final review.

I am sorry I will be unable to attend the 4/2/19 City Council meeting due to an urgent family medical event out of town.

Below, I have detailed some critical issues for you to consider BEFORE you make your decision. Again thanks you for your service.

#1: Material Choice, "fairness in time frame" assumptions:

The comparison table in the study session paper is OVER ESTIMATING the system life for the HDPE pipe as compared to concrete lining alternatives. The 100 years + life number is a manufacturer's "assertion" based on studies that the HDPE industry has done. NOTE: HDPE pipe has only been around for approximately 25 years. THUS: There are no reference applications yet in existence that would "prove" the "100 years + life number manufacture's "selling point" assertion.

* The RCP (reinforced concrete pipe) industry would argue "WITH PROOF" of 100 year life that RCP is a better choice. These studies also apply to reinforced concrete (RC) as a channel liner option. THUS: The reinforced concrete (RC) channel liner option has the same life as the RCP industry studied pipe material. High Strength Reinforced concrete canal liner can be applied on the canal by the economical "slip forming" process and achieve a "provable" 60-100 year life.

I refer you to the Civil Engineer article about the Marshfield Wisconsin 2015 project to replace their 89 year old storm sewer RCP system for some streets. They chose to put reinforced concrete pipe (not plastic pipe) back. I also urge you to review the NCPA analysis "Comparing RCP and Plastic Pipe". It begins with "When a little bit of knowledge is a dangerous thing".

* There is also the article in Power Magazine (powermag.com) titled : "Underground Piping: Out of Sight, Out of Mind, Until it Leaks". 05/01/15 by Aaron Larson.

In my opinion, the Ashland Mayors and Counselors of the past 90 years have handled this issue well. The original canal was built in 1929 and was reported to be a raised open metal canal. Then in the 1970's, the original canal was converted to the current in-ground canal and lined with (reasonable cost) Shot Crete. This Shot Crete application has been virtually un-maintained for approximately 50 years and has performed well. It now has a 23% leaking situation that can be easily fixed (by either remove and replace the Shot Crete in the offending sections (proven 40-50 year life at a low cost) or remove and replace with a Reinforced Concrete lining section (with 60-100 year proven life) at a higher but still reasonable cost. These applications would result in retaining the open channel, which is viewed by many including myself as a positive. I like to be able to see what is going on. I don't like the "out of sight out of mind, until it leaks" scenario. I would not like to see this Council and Mayor break with 90 years of good stewardship of the canal by your predecessors and fall for a costly better mousetrap trap scenario that you may be second guessed about 30 years from now if it leaks.

Important Technical Concern:

The cross sectional area of an open trapezoidal channel is hydraulically efficient and replacing it with a closed circular pipe will result in a reduction of capacity. The replacement design should compare the Hydraulic Grade Line of the existing canal to the replacement pipe. The 4/1/19 Study Session paper (Item 27) already indicates that there will be a need for an overflow system at the beginning and midpoint to "mitigate potential storm surges." This is a significant cost issue not required by the open channel options. Manholes could also be required every 500 feet. This is another risk issue not required by the open canal.

The current open canal does collect stormwater runoff. All stormwater that is currently tributary to the existing canal will need to be considered.

To maintain existing drain patterns, new inlet structures will need to be built and connected to the closed pipe system. The required manholes and drainage inlets for the new system will be maintenance intensive adding additional cost.

And besides the technical burying a pipe issues, the economics isn't compelling:

#2: Economics, doing the MATH:

The study session report states that the TID irrigation water costs City of Ashland \$0.20/1,000 gallons. The leakage amount identified is 63 million gallons. That Math is \$.0002/gallon x 63 million gallons or \$12,600! Spending almost \$4 million because of a \$12,600 per year leak issue to me makes no sense. Also 77% of the canal is operating well. Only 23% of the canal is really to blame, so fix the 23%, with a reasonable cost option. My vote: a "slip formed applied" reinforced concrete canal lined option for the leaking section. Maintain the rest. But at a reasonable maintenance cost approach.

The 4/1/19 study session comparison table indicates that the buried pipe option will essentially be trouble free for 100 years. Do you believe that? There is no proof anywhere that is the case. HDPE has only been in use for less than 25 years. The table places only a 25 year life on maintaining our present "gunnite" canal when the City of Ashland's own experience suggests at least a 40-50 year life on 77% of the canal. Fix the 23% with the 60-100 year reinforced concrete approach and reflect the 40-50 year life in revised table for the rest of the canal. The 25

year is not a fair value IF the gunnite is maintained. A reinforced concrete alternative will result in a 60-100 year life as detailed in #1 (see above).

The buried HDPE pipe options should use an industry value of 50-100 year life in the comparison table. There is a lot of commentary going on about 100+ year life, but there is no factual proof to support that.

#3. Risks:

The 4/1/ 19 study session report says that a buried pipe option has a lower risk.

I disagree with that as do most irrigation districts (refer to Cal Poly ITRC studies). The only compelling reason Cal Poly cites for requiring a buried pipe was public safety in developments that have schools. I have been told by canal residents there has been no public safety occurrences in the canal in it's 90 year life.. Is this correct? I just think that the risks that come with the "bury the pipe option" have not been thought out. NOTE: "Out of site, out of mind, until it leaks". This is why I believe the pipe options Operations & Maintenance (O&M) costs are understated. Staff needs to think about and quantify those risks associated with pipe burial. Some of which are:

- Storm water costs- many additional man holes required
- Ground water subsurface springs issues
- Tree roots damage in pipe joints, leaks
- Ground movement causing joints to leak

The storm water issue was largely dismissed in the study session report by saying essentially that the street systems above the canal capture the storm water. This viewpoint does not match up with residents observations that during storms the canal often times is "pretty full". In the next phase, a detailed hydrology study must be done before any "bury the pipe" scheme is considered as a preferred alternative. Note: In addition, as in the very well thought out Hersey Ave, ground water analysis being done (before Hersey is re-paved) a ground water study should be done to the elevation that the "bury option" excavation requires. There is a VERY real risk that ground water will be intercepted by the bury excavation and water will move from where it travels now to where it isn't expected. That is a risk. Tree roots getting into pipe joints is a risk that is definitely in the 30 year window of a bury option. The O&M costs for the bury options in my opinion are UNDERSTATED .

As you can tell, I am bury "Risk Adverse". NOTE: "Out of site , out of mind, until it leaks". That comes from experience and I think burying that canal in a pipe on a mountain side residential area is packed with unforeseen risks, never mind the lack of economic justification. For 90 years the above grade canal has successfully and safely avoided serious risks. It now leaks a little, so fix the leak.

Here is an analogy:

Let's say your house has a leak in a waterline to your kitchen. You contact a plumber and he suggests that you remove and replace all the water lines in your house to fix the leak to your kitchen.

4. E-coli issue:

I think the E-coli issue is a non issue as regards the decision to bury the canal in a pipe or not. It is unfortunate there is E-coli in Ashland Creek. But as I understand it, even if E-coli were completely eliminated in the canal, they're will still be E-coli in Ashland Creek.

Again, thank you for your service. Good luck in weighing the issues at hand in this case.

Summary:

My recommendation is to fix the 23% of the canal responsible for the vast majority of the leaking. Remove the existing gunnite lining and replace it with a slip form applied reinforced concrete (60-100 year life) lined canal in the affect area. Maintain the rest. Also, I agree with the proposed plan to line the existing pipes that require it, as determined by the camera inspections. My last recommendation is not to spend money unnecessarily.

Respectfully Submitted
Ted Hall PE
210 East Nevada St.

Peer Reviewed by:
James Robison PE

Ashland Resident Reviewed by:
Shaun Moran
615 Taylor Street