



CITY OF FLAGSTAFF  
WATER COMMISSION  
November 21, 2019

**SUMMARIZED MINUTES**

**MEMBERS PRESENT**

John Malin  
Ward Davis  
Timothy Bowers  
Ben Ruddell  
Marie Jones, P&Z Rep  
Jamie Whelan, Council Rep

**MEMBERS ABSENT**

Elizabeth Christy  
Malcolm Alter

**STAFF PRESENT**

Brad Hill  
Debra Valencia  
Ryan Roberts  
Jim Janecek  
Tamara Lawless  
Jim Huchel  
Mary Samar  
Kate Miele  
Monica Rabb  
Erin Young

**OTHERS PRESENT**

Russ Wachter  
Brian Bernard  
Chad Meyer  
Jack Rathjen  
Robert Vane  
Brian Bates

**I. CALL TO ORDER**

Chair, John Malin called the meeting to order at 4:00 p.m.

**II. APPROVAL OF MINUTES – October 17, 2019**

Moved by Ward Davis and seconded by Timothy Bowers to approve the meeting minutes of October 17, 2019. Motion carried unanimously.

- III. PUBLIC PARTICIPATION – Robert Vane, resident of Flagstaff, his topic is about the Seepage Study recently announced by Flagstaff Water Services. This would be to test percolation of A+ reclaimed water at 3 locations in the city. He said if done properly it can be an important element of Flagstaff's water source strategy, however the Flagstaff Water Group is adamantly opposed to doing the recharge using A+ wastewater without further treatment. He said A+ water has significant concentrations of unregulated microcontaminants that are not removed by traditional water treatment processes. Mr. Vane said it is not accurate to say these microcontaminants are harmless to humans and the environment, what is accurate to say is that nobody knows the long-term effects of these chemicals in our water. He would like Water Services to have open public dialogue about what level of risk the public is willing to accept of polluting the aquifer, or what amount they are willing to spend to conduct advanced treatment before introducing it to the aquifer. Commission member Davis said that this item could be added to the agenda at a later time.**

**IV. NEW BUSINESS**

**A. Water Conservation Strategic Plan – Tamara Lawless**

Staff provided an overview of the Water Conservation Strategic Plan Draft, which will be provided to City Council on December 3<sup>rd</sup>.

Erin Young provided some history behind the plan. In 2016 Water Resources and Sustainability came forward to Council to reframe the Water Conservation program. The plan included transforming

Flagstaff into a Water Wise Leader and to develop an innovative water efficiency plan in our community. In 2017 Council developed a goal to be a national leader in conservation across all sectors.

Through a Water Demand Study, it was estimated that the next water supply would be needed in the year 2034, with this plan it pushes that out to the year 2047

Tamara Lawless shows how this plan provides the best return on investment for conservation dollars spent. She shares that The Water Conservation Program has been working with Maddaus Water Management (MWM) on an assessment of current and future water conservation actions in order to ensure that conservation dollars and staff time are invested in strategies that provide the best return on investment to maximize economic and community benefits

After considering several combinations of current and future conservation activities, the Water Conservation Program and MWM compiled a selection that provided both good return on investment and coverage of all customer classes. Tamara said the adoption of this revised workplan for the conservation program has a higher return on investment than the current conservation program and will also allow Flagstaff to be eligible for the Alliance for Water Efficiency's Leaderboard.

Council member Whelan asked what the benefits of being on the Alliance for Water Efficiency's Leaderboard are. Tamara said for Flagstaff to excel on the leaderboard it would show that we are committed and striving to follow all recommended best practices for water conservation.

Council member Whelan asked about the advantage of the City's use of AMI meters, since we have not implemented the use of the software yet. Tamara said they are more efficient, accurate, have twice the life expectancy of the meters they are replacing and have the technology to store daily usage. She said with a life expectancy of 20 years, it is likely that we will tap into that technology in the lifespan of that meter. This plan will help to make it a priority to tap in sooner. Brad Hill added that with an approved Conservation Plan it would help to set priorities.

Commission member Ben Ruddell said it is important to show permanent changes in outdoor landscaping for 3 reasons:

1. It is highly visible; people see it and it changes culture.
2. Outdoor water use has the largest water saving opportunity and is most cost effective
3. Fundamental change to landscape and the way it's built is a permanent change to landscape

Brad Hill added that the savings proposed here is 70% outdoor water use and 30% indoor.

Commissioner Davis said one of the benefits is the delay by 10 years in the need of a new water source and the cost savings associated with that.

Brad Hill said staff will provide a calculation of dollar savings per gallon and per acre feet and he will inform the Commission of those numbers.

## **B. Floodplain Variance – Katlon RV: Jim Janecek**

Property owner of an existing RV storage facility is requesting that a new structure be constructed in the floodway, which is prohibited by City Code Title 12 Floodplain Regulations. The proposed structure is a gate shed located at the entrance of an existing RV storage facility on Old Walnut Canyon Road. This variance request was reviewed and discussed in the previous Water Commission meeting on 10-17-19, and was postponed for discussion at 11-21-19 Water Commission meeting so that additional research on FEMA's rules for this structure could be performed and presented.

Staff is recommending approval of the variance by the Water Commission and forwarded to City Council for their consideration and approval acting as the floodplain board with conditions as highlighted below.

The history of this property as per City of Flagstaff stormwater staff summary prepared for a variance request from this property owner in 2005 states: *The applicant currently operates an existing recreational vehicle storage facility on the adjacent property (5700 E. Old Walnut Canyon Road) under a Floodplain Use Permit issued by the City in 1995. No variance from the Floodplain Regulations was required to obtain this Floodplain Use Permit. A variance was also not required for a subsequent expansion of the storage facility in 2005. Staff have reviewed these permits, and the conditions attached to them, and believe that they were issued based on a misinterpretation of the floodplain regulations.*

For this new variance request, the property owner, through a contracted civil engineering firm, Turner Engineering, Inc., has prepared a response to topics requested by our variance process guidelines outlined in our floodplain regulations. The highlights of their response are that the flood elevations will not increase, and there will not be any adverse impacts to other properties.

Staff is recommending approval of the variance and forwarded to the City Council acting as the floodplain board, for the following reasons and conditions:

1. The floodplain in this area is a backwater floodway which behaves like a lake instead of a river. Based on hydraulic studies performed for large developments along Soliere Ave, the shed is also outside of a *hypothetical* floodway for the Rio de Flag if the railroad ever had large culverts installed to allow the floodwaters to pass without backing up.
2. The applicant has demonstrated that the structure will not have any adverse impacts to the community or adjacent properties, and there is no increase in the flood elevation or flood hazard.
3. The shed is considered an accessory structure in the floodplain regulations as it is not greater than 200 square feet and is used primarily for storage. In this case the storage is for electrical and security equipment. The shed will not be allowed to have kitchen or bathroom facilities.
4. The shed's finished floor elevation is elevated by piers 1 foot above the 100-year flood elevation which will address elevating the utilities in the shed. In general new structures in the floodplain are required to have the *bottom of the lowest horizontal structural member* be elevated 1 foot above the 100-year flood elevation, however this rule is not required for accessory structures used for parking and storage; Commercial accessory structures are allowed to be dry floodproofed or wet-floodproofed below the 100-year floodplain elevation.
5. Volume exchange is considered negligible if the structure is elevated on 4 piers, however volume exchange will be reviewed when the structure is submitted under a building permit.
6. The City's floodway development standards are stricter than FEMA's standards. The City does not allow any floodway encroachments at all without a variance, however FEMA will allow floodway development if it can be shown that there are no adverse impacts to the community or adjacent properties, and there is no increase in the flood elevation or flood hazard.

Moved by Ben Ruddell and seconded by Timothy Bowers to recommend approval. Motion carried.

### **C. Bio Solids Master Plan Results & Recommendations – Ryan Roberts/Carollo**

Ryan Roberts gave a brief explanation that the Bio Solids Master Plan is an extensive study to look at the condition and capacity of the plants and looking forward as to how we will deal with Bio-Solids in

the future. Ryan turned it over to Brian Bernard, the Project Manager for Carollo Engineers to provide an update on the Bio-Solids Master Plan being performed by Carollo Engineering.

Mr. Bernard starts with explaining the City of Flagstaff has two separate water reclamation plants: the Rio De Flag WRP (RDFWRP) located in the central portion, east of downtown and the Wildcat Hill WRP (WHWRP) located in the northeast portion of the City.

The Rio De Flag WRP has no solids handling processing capability. The solids that drop out at the Rio De Flag WRP are sent to the Wildcat Hill Plant and all solids treatment is done there.

As part of the Wastewater Biosolids Master Plan Project, the City is seeking to determine a long-term plan to treat biosolids and their disposal needs. The primary goal is to define long-term strategies for managing, treating, and disposing of biosolids. In addition, the Master plan will determine current and future liquids and solids capacity needs, and identify immediate, mid-term, and long-term improvements at the two facilities, and develop a prioritized list of projects for inclusion in the 10-year Wastewater Capital Improvements Plan (CIP). The CIP will allow the city to effectively manage its wastewater asset and meet the growing needs of the community in a timely and economical manner.

The Class B biosolids produced at the Wildcat Hill is disposed of at the Dedicated Land Disposal (DLD) site that is located on site. The biosolids can currently be disposed of at the DLD site only, because of high water content in the biosolids (approximately 10 percent solids concentration).

**Three main evaluations completed in this Master Plan were to:**

1. Assess the condition of existing facilities at RDFWRP and WHWRP
2. Develop viable biosolids management strategies for the WHWRP
3. Estimate existing treatment capacities and identify near-term and buildout capacity needs

The existing condition of the RDFWRP is in good condition, well maintained and generally in good condition. There are some near term needs of existing assets, such as the existing Splitter Box rehabilitation.

The WCHWRP Wildcat is nearly twice as old as the Rio Plant. A majority of the assets at Wildcat Hill WRP are in the range of 37-47 years old, with most of the major basins and equipment at the end of the asset life. The Wildcat Hill WRP is an end-of-the-line facility making a single point of failure critical.

The Master plan presentation recommends ways to transform the WHWRP solids into end products that may be beneficially reused and/or disposed of at the DLD or Landfill, in a cost-effective manner.

The general approach to biosolids management for WHWRP is to:

- Expand the portfolio of options for overall biosolids management flexibility and program robustness.
- Pursue alternatives that are technically and economically viable and reasonable.
- Develop an environmentally sustainable program consistent with the City goals and policies.

## **Solids Treatment Processes (Biosolids need):**

1. Digester Capacity Expansion at Wildcat Hill WRP - Immediate need (\$9.6 million that is already funded)
2. Add mechanical Dewatering at Wildcat Hill WRP
3. Solar Drying at Wildcat Hill

## **Solar Drying at Wildcat Hill**

### Pros:

- Biosolids are beneficially reused
- Relatively low cost, long-term option for the production of Class A biosolids
- Allows for a broad range of disposal options
- Compatible with existing digestion facility

### Cons:

- Solar drying is a land -intensive process
- Higher cost option (compared to baseline)
- Increased hauling costs

Mr. Bernard introduced Chad Meyer to talk about Liquids Capacity Needs.

Commissioner Bowers asks Mr. Meyer what fraction of biosolids would go through this process to become class A. Mr. Meyer said about 1 MGD equivalent of solids, which is 6-7 percent. He said it is a small percent to start with because we don't know where the market is. He said it will be up to Flagstaff to explore and see, but because it is a modular system it can be easily expanded.

Mr. Meyer says that Wildcat is currently at 90% of its liquids capacity and Rio is currently at 50% of its liquids capacity. He said that under current conditions, the wastewater treatment capacity of 6.3 MGD is expected to be reached by year 2024.

If the Rio De Flag WRP is operated at its maximum capacity of 3.3 MGD, while still sending the solids to Wildcat Hill via the sewer system, no new plant capacity is needed until year 2032. Currently, it is unknown if the Rio De Flag WRP can increase its inflow to 3.3 MGD. Additional information is needed.

If Rio De Flag WRP is operated at its maximum capacity of 3.3 MGD and solids are trucked or conveyed outside the collection system to Wildcat Hill WRP then the total combined treatment capacity will be sufficient until after year 2050.

Instead of spending the money to expand Wildcat Hill WRP they would use the existing basin at Rio to defer that expansion out and save the City a considerable amount of money. They recommend investigating when to modify solids handling at Rio De Flag WRP to thicken and haul solids directly to the Wildcat Hill WRP digesters. This should come with planning development of costs, community outreach and education, potential for odors at Rio, but you will have until 2032 to make those decisions.

## **Summary and Capital Improvement Plan Recommendations:**

- Condition Assessment of Existing Facilities
  - Rio De Flag WRP: most assets in good condition, continue with repair and replacement
  - Wildcat Hill WRP: most assets beyond useful life. Immediate capital needs
- Viable Biosolids Management Strategies (Wildcat Hill WRP)

- Immediate: Expand digester capacity (add 2 more digesters)...already funded. Continue to use Dedicated Land Disposal area
- Long-Term: add mechanical dewatering to Wildcat, consider solar drying for Class A biosolids, investigate new uses such as alternative landfill cover, etc.
- Liquid Capacity at Existing Facilities
  - Rio De Flag WRP: immediately investigate if Rio can increase inflows by 2024 or additional capacity at Wildcat Hill WRP will be needed. Investigate trucking solids to Wildcat Hill WRP by 2032 or expand capacity at Wildcat Hill WRP
  - Wildcat Hill WRP: none needed until after 2050 if above can be accomplished

### **Prioritization of Major Capital Improvement Needs**

1. **Digester Capacity Expansion at Wildcat Hill (add 2 digesters) - Immediate**
2. Repair & Replacement at Wildcat Hill and Rio De Flag WRPs - Immediate
  - PEPS capacity expansion and Primary Clarifiers rehabilitation at WHWRP
  - Secondary Clarifiers weir replacement at Wildcat Hill WRP
  - Splitter Box rehabilitation at Rio De Flag WRP
3. Additional Flow diversion into Rio De Flag WRP – by 2024
4. **Mechanical dewatering and solar drying at Wildcat Hill WRP – 2025 to 2030**
5. New preliminary and primary treatment at Wildcat Hill WRP – 2030 to 2035
6. Liquids capacity expansion at Wildcat Hill WRP
  - Option A – Divert Rio De Flag WRP solids out of collection system
  - Option B – Additional capacity expansion at Wildcat Hill WRP – by 2032
7. Other Repair & Replacement needs at Wildcat Hill WRP - Varies

**Note: Biosolids Projects are highlighted in red**

Council Whelan asks why Biosolids Project 2 before 3? Mr. Meyers responds that mechanical dewatering opens the door to allow trucking of those biosolids immediately to the landfill, or for alternative daily cover at the landfill. What we don't know is the market for class A, therefore making Project 2 more of a priority. Brad Hill says what is immediate is the whole aspect of moving solids outside of the sewer system, so Wildcat doesn't have to treat it and it goes straight to the digester. It would be thickening at Rio and trucking it to Wildcat's new digesters.

Brad adds that there is roughly 11.5 million dollars of recommendations that aren't funded, there's some RR things that are immediate, that aren't funded. The whole next 4-year evaluation, we don't know what that's going to cost, or what that's going to look like. You are going to see immediately a study to help us figure out what do we need to do and 4 years in our business isn't a long time, especially if there's a Capital Project associated with it. It's really an unknown and unfunded, but we've got to do this now or we've got a huge bill coming at Wildcat to upgrade it. One of the recommendations you're going to see in the next 4 years, is we either need to expand Wildcat or put more of the liquids in our sewer system and move it from Wildcat to Rio and have Rio treat more than it currently is. We don't know how to do that. We've seen other Valley cities do it, but it's very significant, a huge lift station, and piping system and pressurized to move it from 1 sub basin to another. The study referred to is the need to immediately look at our options to get Rio up to 3.3 million gallons.

Commissioner Davis asked if it would be done by the time of the rate study and be included or incorporated in any way into that work. Brad said we can get some place holder numbers for the Capital for the rate study.

Brad makes note that if we were to go down this road in 4 years to make Rio a 3.3 million gallon treatment facility, that right now and since Rio's inception in 1993, we have been able to turn Rio

off when we need to, if we go down this road it will no longer be an option. We would then have 2 end of the line treatment plants, which we have never done before. What that means is we have to fund for repair and replacement, which will be a paradigm shift in how we manage our operations on the wastewater treatment side.

Brian Bates, member of the Flagstaff Water Group said lab testing on the soils at the designated land disposal area needs to be done. Because it is being looked at as future use, we need to do chemical lab testing so we can identify the chemical families that are in those compounds within the soils. He said Water Services sent samples of sludge down to the ASU Human Health Laboratory some time ago and the lab results are available. He said they are valuable because they allow for a comparison as a control, to look at what has been in the designated land and what's there now. He said that we need to look at how we can reduce and or eliminate any off-site migration of chemical compounds from both the dewatering and from the designated land area.

Mr. Bates said in looking at the future needs, we should get the best equipment to reduce any potential human health or environmental health issues. He wants the Commission to look at other alternative technologies in addition to what Carollo has presented. He said there are technologies that allow for the production of electricity from the solids.

**V. OLD BUSINESS - None**

**VI. INFORMATIONAL ITEMS TO/FROM THE CHAIR, COMMISSION OR STAFF**

Purchasing process for selecting a contractor for the Water Resources Master Plan.

Erin Young explains the process for acquiring a consultant to work on the Water Resources Master plan. She said that Procurement has an on-call process where consultants can apply to be on our on-call list. For Water Projects there are 5 on the list and all are suitable to do this work. We had been in the process with Brown & Caldwell and Carollo on elements of the Advanced Treatment conversation and Direct Potable Reuse. Brown and Caldwell will essentially lead the Water Resources Master Plan work by developing a scope of work that will come to the Water Commission in December for comments. The proposal will address things like what the community concerns are and reclaimed water quality.

A component of the plan has been budgeted separately. It will be an evaluation of our aquifer system and how we operate the wells within the aquifer system. It will tell if we're dewatering the aquifer and if there are improvement that can be made in well efficiency, so we can get the maximum out of our aquifer systems.

Carollo is preparing a scope of work that will come to the Water Commission for comment in December. The presentation of the Water Resources Master Plan will go to Council in January. The Carollo work is a \$50,000 study and with need to go to City council for contract approval.

The Water Commission will be engaged on the Master Plan probably at least 4 times a year. It is also envisioned that there be stake holder groups and community meetings to talk about water quality, concerns, how we address them and if they are concerns that the whole community feels are important.

The seepage study is ongoing with 3 locations with purple hydrants. The plan is to release 500 gallons a minute for 7 days followed by 1,000 gallons a minute for 7 days. There is instrumentation at a dedicated distance up to a mile at each location to determine the seepage loss. The 3 locations will be compared to determine whether the seepage rate is desirable in terms of a recharge

management plan and if it's a rate that justifies that over well injection. The seepage for what's been leaving the Rio Plant for decades will also be compared.

Robert Vane, resident of Flagstaff receives clarification from Erin that the Water Resources Master Plan Scope of Work has not been split up into 2 pieces. She said the Aquifer Utilization and Maximization Study is just 1 small component of the overall plan. The scope of work will be given to Brown & Caldwell, they will come back with their comments about how they would approach the work along with a quote and it then it will be up to Council to accept or reject.

There is discussion pertaining to the use of reclaimed water going back into the aquifer. There are questions, concerns and what the facts are. Mr. Bates has concerns of using reclaimed water to go back into the aquifer and the potential danger to fetal development and the long-term health concerns to the yet to be born generations if there are endocrine disrupting compounds in the reclaimed water. Brad Hill said he thinks he's got direction from the Commission to put something on the agenda and this is how he has phrased it "Recharge of Class A+ Reclaimed Water, Water Management and Water Quality" as an agenda item for a future meeting.

## **VII. ADJOURNMENT**

Ward Davis moved to adjourned at 6.18 p.m. and seconded by Timothy Bowers.