

# Moscow City Council



## Regular Meeting ~Minutes~

Laurie M. Hopkins  
City Clerk

[www.ci.moscow.id.us](http://www.ci.moscow.id.us)

208.883.7015

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**Monday  
June 27, 2022**

**7:00 PM**

**Council Chambers  
206 E. Third St.**

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**The meeting was called to order at 7:00 p.m.**

PRESENT: Mayor Art Bettge, Sandra Kelly, Maureen Laflin, Hailey Lewis, Julia Parker, Gina Taruscio, Anne Zabala

STAFF: Bill Belknap, Mia Bautista, Cody Riddle, Tyler Palmer, Kyle Steele, Evan Timar, David Schott, Laurie M. Hopkins

**PLEDGE OF ALLEGIANCE**

Council Member Parker led the Pledge of Allegiance.

**CONSENT AGENDA**

**1. All Consent Items (ACTION ITEM)**

**A. Approval of Moscow City Council June 6, 2022 Minutes - Laurie M. Hopkins**

**B. Disbursement Report for May 2022 - Sarah Banks**

Staff presented the May 2022 Accounts Payable Report to Public Works / Finance Committee on June 27, 2022. The Committee received the report and approved the disbursements as presented.

**ACTION:** Accept the Disbursements Report for the month of May 2022.

**C. Milton Arthur Park Playground Pad and Pathway Bid Result and Contract Award - Todd Drage**

The 2022 Milton Arthur Pad and Pathway Project entails the completion of earth and concrete site work to facilitate the construction of a new playground. Milton Arthur Park, located on the corner of Granville and Sutton Streets, is currently a field without any park features. In January 2022, the Parks and Recreation Commission (PRD) opened public voting to select a playground from a total of 9 options from potential playground equipment suppliers. The options fitted playground equipment within a 3,200 square foot hexagonal concrete pad. This project provides the construction of the playground pad and a 10 foot wide, 140 foot long ADA-compliant concrete pathway, along with the ancillary site work to compliment the concrete infrastructure. The engineer's estimate for the project was \$91,760. The project was sent out for bid to the City's concrete contractor distribution list in April 2022, however, no bids were received. Because of limited contractor availability, the City widened the contractor distribution list and separated the scope of the project to allow concrete contractors to simply bid on the concrete portion of the work and excavation contractors to exclude the concrete portion. Through this extended solicitation process, the City received 1 bid for \$36,750 from Schmidt Projects LLC for the concrete portion of the project and 1 bid for \$48,500 from Youmans Excavation Services LLC for the remaining scope of the work. This was reviewed by the Public Works/Finance Committee on June 27, 2022 and recommended for approval.

**ACTION:** Accept both bids and award the concrete portion of the project to Schmidt Projects LLC

for \$36,750, award the remaining scope of work for the project to Youmans Excavation Services LLC for \$48,500 for a total project amount of \$85,250, and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount (\$8,525).

**D. Mountain View Restroom Improvements Bid Award - Idaho Community Development Block Grant Project - Demetre Makratzakis / Alisa Anderson**

The City published an advertisement for bids on May 27, 2022 for the Mountain View Restroom Improvements. The project consists of renovating an existing structure to transform two multi-occupant restroom spaces (Mens/Womens) into four unisex, single-occupant restrooms meeting ADA requirements. One of the restrooms will be heated and insulated in order to remain open year-round. The Engineer's Estimate for the project was \$100,602.00. Bid opening for the project took place on June 11, 2022, at which one (1) bid was received. The bid received was in the amount of \$135,000.00 and was submitted by Sprenger Construction. A bid tabulation is included in the Committee packet. This was reviewed by the Public Works/Finance Committee on June 27, 2022 and recommended for approval.

**ACTION:** Accept the low bid from Sprenger Construction, award the contract for \$135,000.00 and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount.

**E. Children Pedestrian Safety Grant Bid Award - Alisa Anderson / Nate Suhr**

The City published an advertisement for bids on May 21 and 28, 2022 for the Children Pedestrian Safety Project. The project included work at two sites. The B and Cleveland portion of the project includes removal of existing asphalt surface which will be replaced with soil and grass, the removal and replacement of an asphalt pathway, removal and replacement of a concrete sidewalk and Type A curb, installation of a pedestrian ramp, and the removal and replacement of a drainage structure. The D and Mountain View portion of the project includes storm sewer modifications, the removal and replacement of sidewalks, installation of pedestrian ramps, the removal and replacement of both Type A and Type B curbing, the obliteration and installation of line marking and thermoplastic symbols, adjustment of utilities, removal and replacement of signs, and the removal and replacement of asphalt surface. The Engineers Estimate for the project was \$270,492.10. Bid opening for the project took place on June 7, 2022, at which one (1) bid was received. The bid received was in the amount of \$278,494.00 and was submitted by M.L Albright. A bid tabulation is included in the Committee Packet. This was reviewed by the Public Works/Finance Committee on June 27, 2022 and recommended for approval.

**ACTION:** Accept the low bid from M.L Albright & Son's, award the contract for \$278,494.00, and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount.

**F. City of Moscow Bee City USA Affiliate Proposal - David Schott**

The City of Moscow is pursuing Bee City USA affiliation. The mission of Bee City USA is to galvanize communities to sustain pollinators responsible for the reproduction of almost 90% of the world's flowering plant species, by providing them with healthy habitat, rich in a variety of native plants and free to nearly free of pesticides. Because there are more than 3,600 species of native bees in the United States, along with introduced honey bees, we have diverse dietary choices rich in fruits, nuts, and vegetables. Pollinator-friendly communities can benefit local and regional economies through healthier ecosystems, increased vegetable and fruit crop yields, and increased demand for pollinator-friendly plant materials from local growers.

**ACTION:** Approve the draft resolution designating the City of Moscow as a Bee City USA affiliate.

### **G. Harvest Park Management Plan Proposal - David Schott**

The City of Moscow staff is seeking approval of the draft Harvest Park Management Plan. This unique park is located between Southview Avenue and Indian Hills Drive in the Indian Hills 8th Addition neighborhood. Harvest Park was acquired to be developed as an 'edible forest' with food-bearing trees, shrubs, and other flora. The 4.09 acre site was historically an active agricultural wheat field. Because of the unique nature of Harvest Park, a draft management plan was drafted utilizing local knowledge through the creation of the Harvest Park Core Development Team. The purpose of Harvest Park is to provide the community with a public food forest with a strong emphasis on public education and outreach about the benefits and pride in growing food. The vision for Harvest Park is a long-term, dynamic landscape. The unique space is intended to provide educational opportunities and an example to our community of stewardship of a public food forest. This unique space will create a sense of place and community pride for the City of Moscow for generations to come.

**ACTION:** Approve the draft Harvest Park Management Plan.

Taruscio moved and Laflin seconded to approve the consent agenda as presented. Roll Call Vote: Ayes: Unanimous. Nays: None. Abstentions: None. Motion carried.

## **REGULAR AGENDA**

### **2. Staff Recognition Report - Bill Belknap**

None offered.

### **3. Mayors Appointments (ACTION ITEM)**

None offered.

### **4. Public Comment and Mayor's Response Period (limit 15 minutes)**

Stevie Steelie Johnson (rural Moscow), Inland North Waste (INW), said she feels INW and the city are on the same page that multi-family recycling program needs to be addressed. Since 2018, INW has been losing \$30,000 by running the recycling center. Use fees are below industry standard and the way the fee structure is constructed she feels disproportionately affects people in multi-family housing who are generally in more vulnerable financial positions. Without swift action INW may default on the franchise agreement due to amounting losses. INW wants to continue this service with Moscow and work with the city to bring new, innovative, progressive waste services.

Matt Williamson (Moscow), said he is here to ask the Council to reform city code and stop criminalizing protected classes. He read part of the Public Nudity City Code section and said suspected of crime is stripped from 4th amendment protections.

### **5. Water Reclamation Facility Plan Presentation (ACTION ITEM) - Tyler Palmer**

The City of Moscow (City) owns and operates a sanitary sewer collection system and Water Reclamation Facility (WRF) which provides collection and wastewater treatment for the City of Moscow, the University of Idaho, and the Southeast Moscow Water and Sewer District. The WRF also provides reclaimed water for the University of Idaho. The plant originally was constructed in 1918, a new facility was constructed in 1938, and from 1996 through 2010, four phases of improvements were implemented to upgrade nearly every part of the WRF. In the summer of 2020, the City of Moscow engaged the services of J-U-B Engineers, Inc. to update the Water Reclamation Facility Plan Study (FPS) in accordance with IDAPA 58.01.16, "Wastewater Rules." A FPS is a comprehensive planning document for the existing infrastructure and includes the plan for the future of the systems, including upgrades and additions. It is usually updated on a regular basis due to anticipated or unanticipated growth patterns, regulatory requirements, or other infrastructure needs.

**PROPOSED ACTIONS:** Accept the Water Reclamation Facility Plan Study; or take other action deemed appropriate.

Palmer introduced the item as written above and gave a history of the facility beginning with the initial treatment plant which was constructed 1918. April 1999 was the last updated facility plan. There must be compliance with the National Pollutant Discharge Elimination System (NPDES) Permit. The permit dictates the required quality of discharge and what the City must measure for, in the attempt to not have the discharge cause a negative impact on the environment.

Corey Baune, JUB Engineers, went through the project scope. Total Maximum Daily Loads (TMDL) have been completed for both Paradise Creek and the South Fork of the Palouse River but temperature remains an issue. The National Pollutant Discharge Elimination System (NPDES) Permit through EPA was taken over by the State of Idaho and is in the process of writing a new permit for Moscow but schedule is unknown. Baune went step by step through the chapters of the facility plan. See attached presentation. An assumed growth rate of 1.22% was used for the analysis. Palmer spoke on the margin for error and peak flows at the facility. At 85% capacity, the facility would need to be in a design phase of an update. Baune provided the recommended improvements and associated capital costs. Of the recommendations, the UV Disinfection upgrade and two of the intermediate pump station pumps are in the current capital plan. Operation changes can also build additional capacity. Baune gave a brief history of the temperature issues and gave three alternatives for compliance improvements (see attached presentation). Palmer said energy use comparison can be looked at independently. The energy use for the chiller is a concern. Conditions for it have changed with Avista's carbon neutrality commitment of 2027. Baune provided 3 alternatives to improve the temperature issue, chillers ranked as the best option. JUB recommended a phase in approach: chiller and UV Disinfection (0 to 5 years), Headworks (5 to 10 years), filtration (10 to 15 years); additional Aeration Basin (15 to 20 years). Capacity for dewatering is not an equipment issue but a staffing issue. Change in staffing shifts to allow the equipment to run longer would help the issue.

With the NPDES Permit, the State can pursue primacy and can take over administering the permit program but EPA is still overseeing it. Belknap said most of Phase 1 is incorporated in the capital plan. There is accumulation in the sewer capital fund and design expenses for the UV disinfection and chillers are in the proposed FY2023 budget. Palmer said the inflow is high and needs to be minimized. Pipe replacement helps to bring the inflow down by minimizing rain water and such mixed in with the sewage in the system.

Kelly moved to accept the plan. Taruscio seconded. Roll Call Vote: Ayes: Unanimous. Nays: None. Abstentions: None. Motion carried.

## **REPORTS**

### **City Council**

*Planning and Zoning Commission* – Kelly reported the Commission is working on a storage unit code.

*Palouse Basin Aquifer Committee* – Taruscio said the new Executive Director begins on July 11.

*Moscow Tree Commission* – Taruscio reported the Commission has an article included in the utility billing flyer; first Heritage Tree on Van Buren.

*SMART Transit* – Taruscio said the Executive Director position announcement is published.

*Sustainable Environment Commission* – Laflin said there were presentations about climate change.

Council members reported on other meetings and events.

### **Mayor**

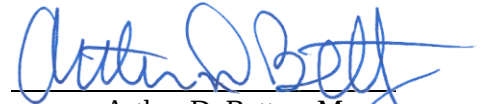
Bettge attended the Association of Idaho Cities conference.

### **Staff**

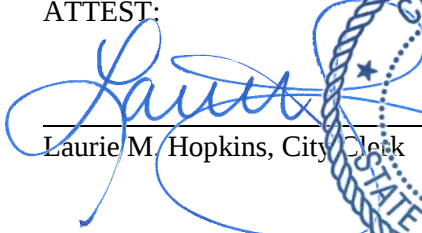
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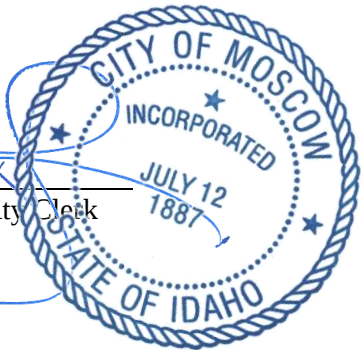
**ADJOURN**

It was moved, seconded and mutually agreed upon to adjourn at 8:24 p.m.

  
Arthur D. Bettge, Mayor

ATTEST:

  
Laurie M. Hopkins, City Clerk





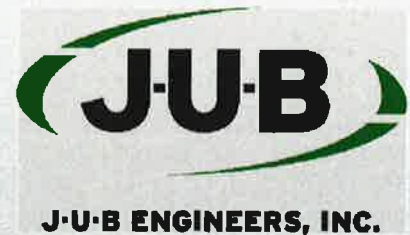
# CITY OF MOSCOW

## WATER RECLAMATION FACILITY (WRF)

### FACILITY PLAN

Council Presentation

June 27, 2022



# Agenda

- **Presentation Outline**
  - Introduction
  - TMDL and Discharge Permit
  - Facility Plan Overview
  - Rate Impact

# Introduction

- **WRF Background**

- First treatment plant originally constructed in 1918
- A new facility was constructed in 1938
- Four phases of improvements completed from 1996 through 2010
- Facility Plans typically updated every 10-20 years

- **Project Scope**

- Evaluate the performance of the existing Water Reclamation and Reuse Facility (WRF)
- Evaluate improvements needed to comply with known discharge limits
- Evaluate alternatives to address effluent temperature limits
- Develop an improvement plan for the next 20 years of service



# TMDL / NPDES Discharge Permit Overview

- **Total Maximum Daily Loads (TMDL)**
  - Total Maximum Daily Loads (TMDL) have been completed for both Paradise Creek and the South Fork of the Palouse River
  - Expected permit conditions for planning purposes
    - **Temperature**
    - Ammonia
    - Dissolved Oxygen
    - Fecal Coliform and *E. coli*
- **National Pollutant Discharge Elimination System (NPDES) Permit**
  - Authorized to discharge treated and disinfected effluent from the WRF to Paradise Creek in accordance with NPDES Permit No. ID-002149-1.
  - The permit became effective on April 14, 1999 and expired at midnight on April 14, 2004.
    - The U.S. Environmental Protection Agency (EPA) has administratively extended the permit since the expiration date.
  - The City has applied to the Idaho Department of Environmental Quality (IDEQ) for a new permit which will be issued under the Idaho Pollutant Discharge Elimination System (**IPDES**).
    - IDEQ's schedule for developing a draft permit is unknown.

# TMDL / NPDES Discharge Permit

## Assumed Future Permit Limits

| Parameter                                     | Units                    | Effluent Limitations |                |                        |
|-----------------------------------------------|--------------------------|----------------------|----------------|------------------------|
|                                               |                          | Average Monthly      | Average Weekly | Maximum Daily          |
| Flow <sup>(a), (b)</sup>                      | mgd                      | --                   | --             | --                     |
| Biochemical Oxygen Demand (BOD <sub>5</sub> ) | mg/L                     | 30                   | 45             | --                     |
|                                               | lbs/day                  | 1,000.8              | 1,501.2        | --                     |
|                                               | % Removal <sup>(a)</sup> | 85 (minimum)         | --             | --                     |
| Total Suspended Solids (TSS)                  | mg/L                     | 15                   | 30             | --                     |
|                                               | lbs/day                  | 498.6 <sup>(c)</sup> | 1,000.8        | --                     |
|                                               | % Removal <sup>(a)</sup> | 85 (minimum)         | --             | --                     |
| <i>E.coli</i>                                 | CFU / 100 mL             | 126 <sup>(d)</sup>   | --             | 406<br>(instant. max.) |
| Total Chlorine Residual <sup>(e)</sup>        | µg/L                     | 9.0                  | --             | 18.0                   |
|                                               | lbs/day                  | 0.3                  | --             | 0.6                    |
| Total Ammonia<br>April 1 – October 31         | mg/L                     | 1.0                  | --             | 2.0                    |
|                                               | lbs/day                  | 33.4                 | --             | 66.7                   |
| Total Ammonia<br>November 1 – March 31        | mg/L                     | 1.7                  | --             | 3.5                    |
|                                               | lbs/day                  | 56.7                 | --             | 116.8                  |
| Total Phosphorus<br>May 15 – October 15       | mg/L                     | 0.136                | 0.27           | --                     |
|                                               | lbs/day                  | 4.5                  | 9.0            | --                     |
| pH                                            | Std. Units               | 6.5 to 9.0           |                |                        |
| Dissolved Oxygen                              | mg/L                     | 8.0, minimum         |                |                        |
| Temperature <sup>(f)</sup>                    | °C                       | --                   | --             | --                     |

<sup>(a)</sup> Measured as near the outfall as possible after diversion of effluent to the University of Idaho.

<sup>(b)</sup> Allowable daily effluent flow is based on stream flow and temperature in Paradise Creek.

<sup>(c)</sup> The calculated value based on a design flow of 4.0 mgd and effluent concentration limit of 15 mg/L is 500.4 ppd. However, the WRRF Wasteload Allocation from the Paradise Creek TMDL (IDEQ, 1997) is 91 tons per year, or 498.6 ppd. It is assumed the mass loading effluent limitation will be capped based on the TMDL.

<sup>(d)</sup> Not to exceed a geometric mean of 126/100 mL based on a minimum of five samples taken every 3 to 7 days.

<sup>(e)</sup> The limits for chlorine are not quantifiable using EPA-approved methods. The minimum level for chlorine is 100 µg/L.

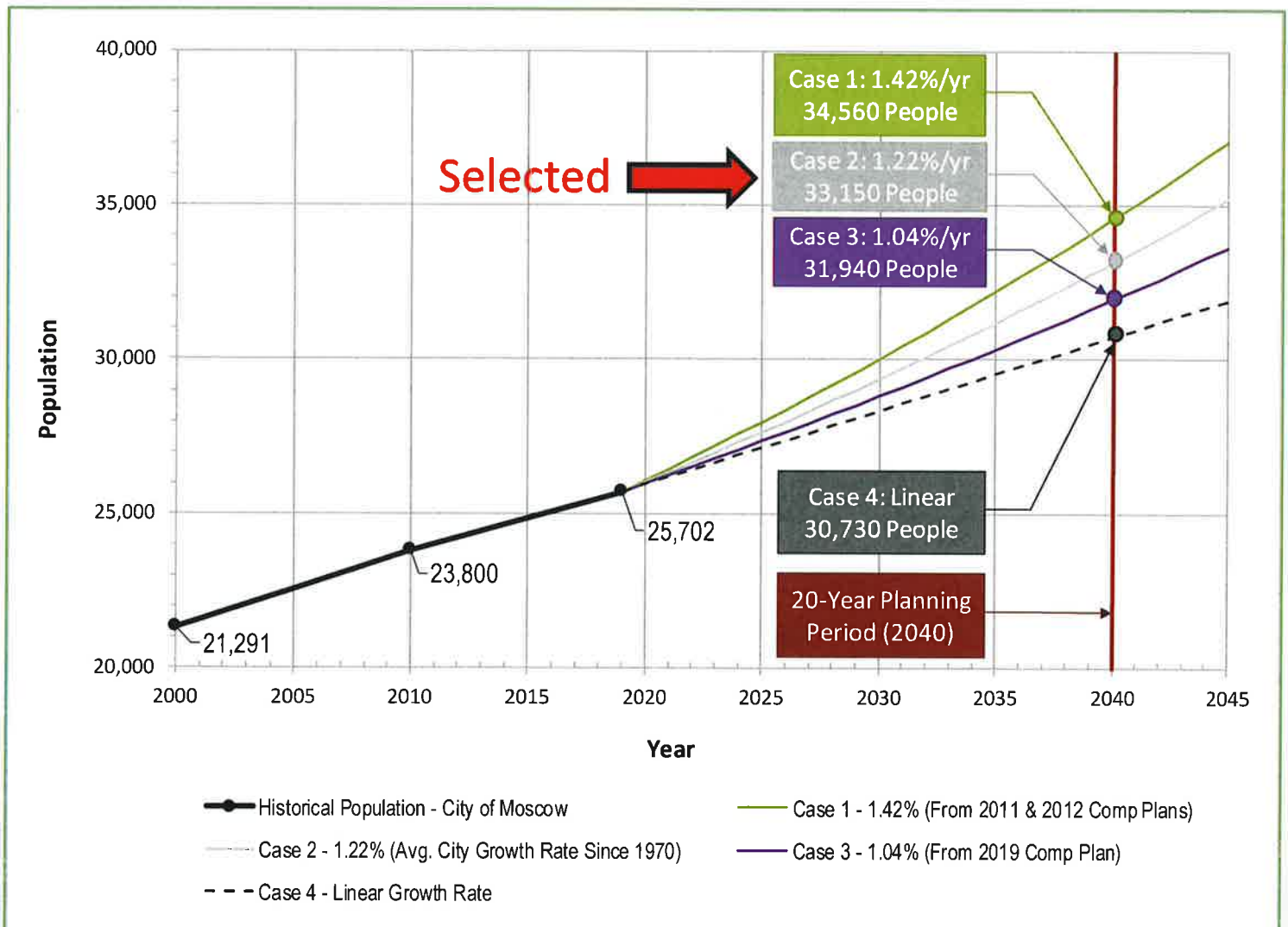
<sup>(f)</sup> The City's NPDES permit requires that WWTP effluent must not increase the downstream temperature in Paradise Creek above 18°C. When WWTP effluent temperatures are below 18°C, the City has no discharge restrictions. When both Paradise Creek and effluent temperatures exceed 18°C, the City is not permitted to discharge. When effluent temperatures exceed 18°C, but Paradise Creek temperatures are less than 18°C, the City is allowed a partial discharge depending on stream temperature, stream flow, and effluent temperature.

# Facility Plan – Organization

- **Executive Summary**
  - Provides and overview of the entire Facility Plan.
- **Chapter No. 1 – Introduction**
  - Summarizes the background and purpose for the Plan.
- **Chapter No. 2 – Planning Area and Existing Environmental Conditions**
  - Presents an overview of the existing planning area and existing local environmental conditions at the WRF and in the surrounding area.
- **Chapter No. 3 – Flows and Loads**
  - Documents and analyzes the historical flows and loads at the Moscow WRF.
  - Presents population projections through the 20-year planning period.
  - Establishes projected loading conditions for the facility through the planning period.
- **Chapter No. 4 – Permit Conditions and Discharge Standards**
  - Summarizes the City’s existing NPDES permit and potential future permit conditions.
- **Chapter No. 5 – Existing WRF Evaluation**
  - Summarizes the existing condition of the WRF.
  - Current operations, performance, and observed deficiencies are discussed to establish a baseline condition for the system.
- **Chapter No. 6 – Alternative Development and Selection**
  - Evaluates the WRF over the planning period.
  - Treatment alternatives to satisfy known NPDES/IPDES limits and City objectives over the projected 20-year planning period are pre-screened and the most feasible are subsequently developed with planning-level capital costs.
- **Chapter No. 7 –Capital Improvement Plan**
  - Presents a phased Capital Improvement Plan (CIP) for improvements at the WRF
  - Discusses potential impacts to rates

# Assumed Growth

- **Case 1** – Assumes an annual growth rate of 1.42%, as presented in the City's 2011 Comprehensive Sewer System Plan and the 2012 Comprehensive Water System Plan.
- **Case 2** – Assumes an annual growth rate of 1.22%, the City's average annual growth rate from 1970 to 2019.
- **Case 3** – Assumes an annual growth rate of 1.04%, as presented in the City's 2019 Comprehensive Plan
- **Case 4** – Assumes a linear trend of the population change observed between 1970 and 2019.
- The City **chose an annual growth rate of 1.22% percent (Case 2).**
  - The 20-year service population is projected to be 33,150 people.



# Flows and Loads

- **Flows**

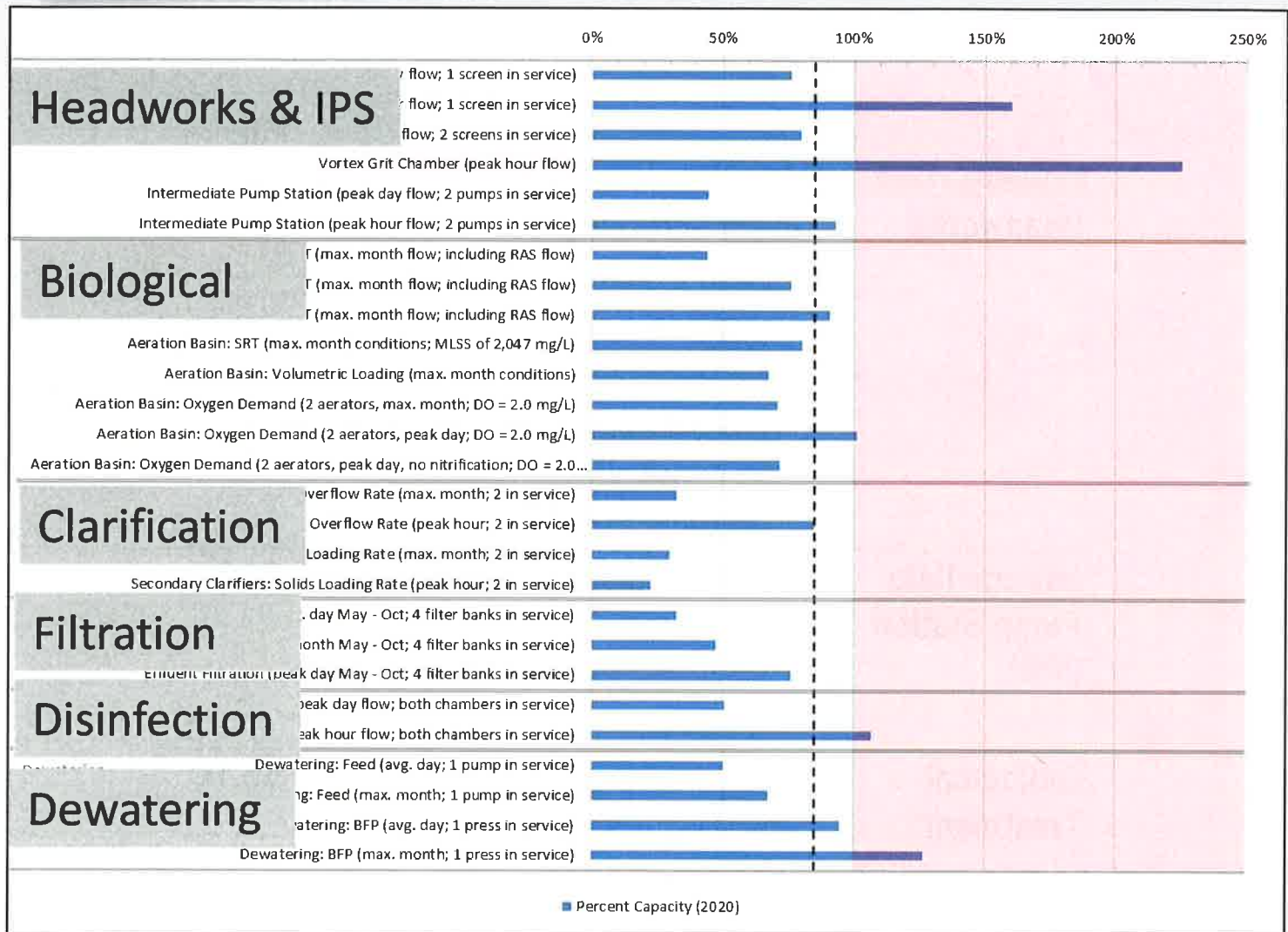
- Average Day (with UI students) = 1.68 mgd
- Maximum Month = 4.10 mgd
- Peak Day = 7.61 mgd
- Peak Hour = 16 mgd

- **Loads**

- Existing average day WRF loading on a pounds per capita per day (ppcd) basis is generally on the low end of typical literature values as summarized below.

| Item                                          | Moscow WRF | Literature Values   |
|-----------------------------------------------|------------|---------------------|
| Biochemical Oxygen Demand (BOD <sub>5</sub> ) | 0.11 ppcd  | 0.11 to 0.26 ppcd   |
| Total Suspended Solids (TSS)                  | 0.12 ppcd  | 0.13 to 0.33 ppcd   |
| Ammonia                                       | 0.017 ppcd | 0.011 to 0.026 ppcd |
| Total Kjeldahl Nitrogen (TKN)                 | 0.027 ppcd | 0.020 to 0.040 ppcd |
| Phosphorus                                    | 0.003 ppcd | 0.003 to 0.010 ppcd |

# Process Capacity Summary



# Recommended General Facility Improvements

| Process Area                    | Identified Improvements                                                                                                                                                                                                                                                                                                                                                                  | Capital Cost |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Headworks                       | <ul style="list-style-type: none"> <li>• Fine Screening                             <ul style="list-style-type: none"> <li>○ Add a third screen and replace existing fine screens</li> </ul> </li> <li>• Grit Removal                             <ul style="list-style-type: none"> <li>○ New 12 mgd vortex grit removal system &amp; replace existing PistaGrit</li> </ul> </li> </ul> | \$6.6M       |
| Intermediate Pump Station (IPS) | <ul style="list-style-type: none"> <li>• In-kind replacement of existing IPS pumps.</li> </ul>                                                                                                                                                                                                                                                                                           | \$1.8M       |
| Biological Treatment            | <ul style="list-style-type: none"> <li>• Vary MLSS seasonally.</li> <li>• Replace vertical turbine aerators</li> <li>• In-kind replacement of equipment:</li> </ul>                                                                                                                                                                                                                      | \$3.1M       |
| Secondary Clarification         | <ul style="list-style-type: none"> <li>• In-kind replacement of existing clarifier rake mechanisms.</li> </ul>                                                                                                                                                                                                                                                                           | \$2.8M       |
| Disinfection                    | <ul style="list-style-type: none"> <li>• Replace existing disinfection system with UV Disinfection.</li> </ul>                                                                                                                                                                                                                                                                           | \$6.4M       |

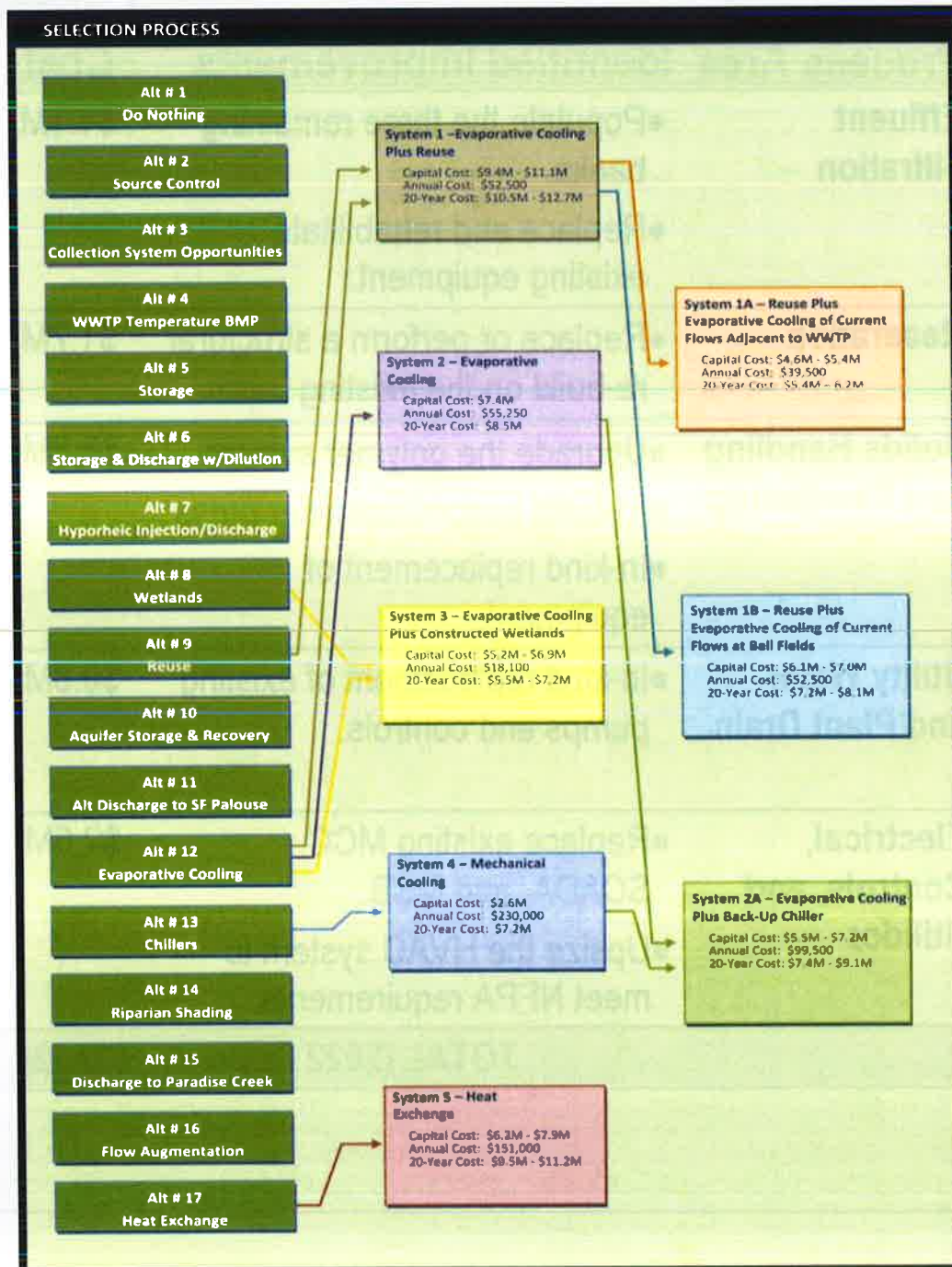
# Recommended General Facility Improvements

| Process Area                       | Identified Improvements                                                                                                                                              | Capital Cost   |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Effluent Filtration                | <ul style="list-style-type: none"> <li>•Populate the three remaining banks.</li> <li>•Replace and rehabilitate existing equipment.</li> </ul>                        | \$4.1M         |
| Reaeration                         | <ul style="list-style-type: none"> <li>•Replace or perform a structural re-build on the existing basin.</li> </ul>                                                   | \$1.7M         |
| Solids Handling and Dewatering     | <ul style="list-style-type: none"> <li>•Upgrade the polymer system</li> <li>•Rebuild second belt filter press</li> <li>•In-kind replacement of equipment:</li> </ul> | \$3.3M         |
| Utility Water and Plant Drain      | <ul style="list-style-type: none"> <li>•In-kind replacement of existing pumps and controls.</li> </ul>                                                               | \$0.8M         |
| Electrical, Controls, and Utilidor | <ul style="list-style-type: none"> <li>•Replace existing MCC, SCADA, and MSB.</li> <li>•Upsize the HVAC system to meet NFPA requirements.</li> </ul>                 | \$2.6M         |
| <b>TOTAL (2022 Dollars)</b>        |                                                                                                                                                                      | <b>\$33.2M</b> |

# Temperature

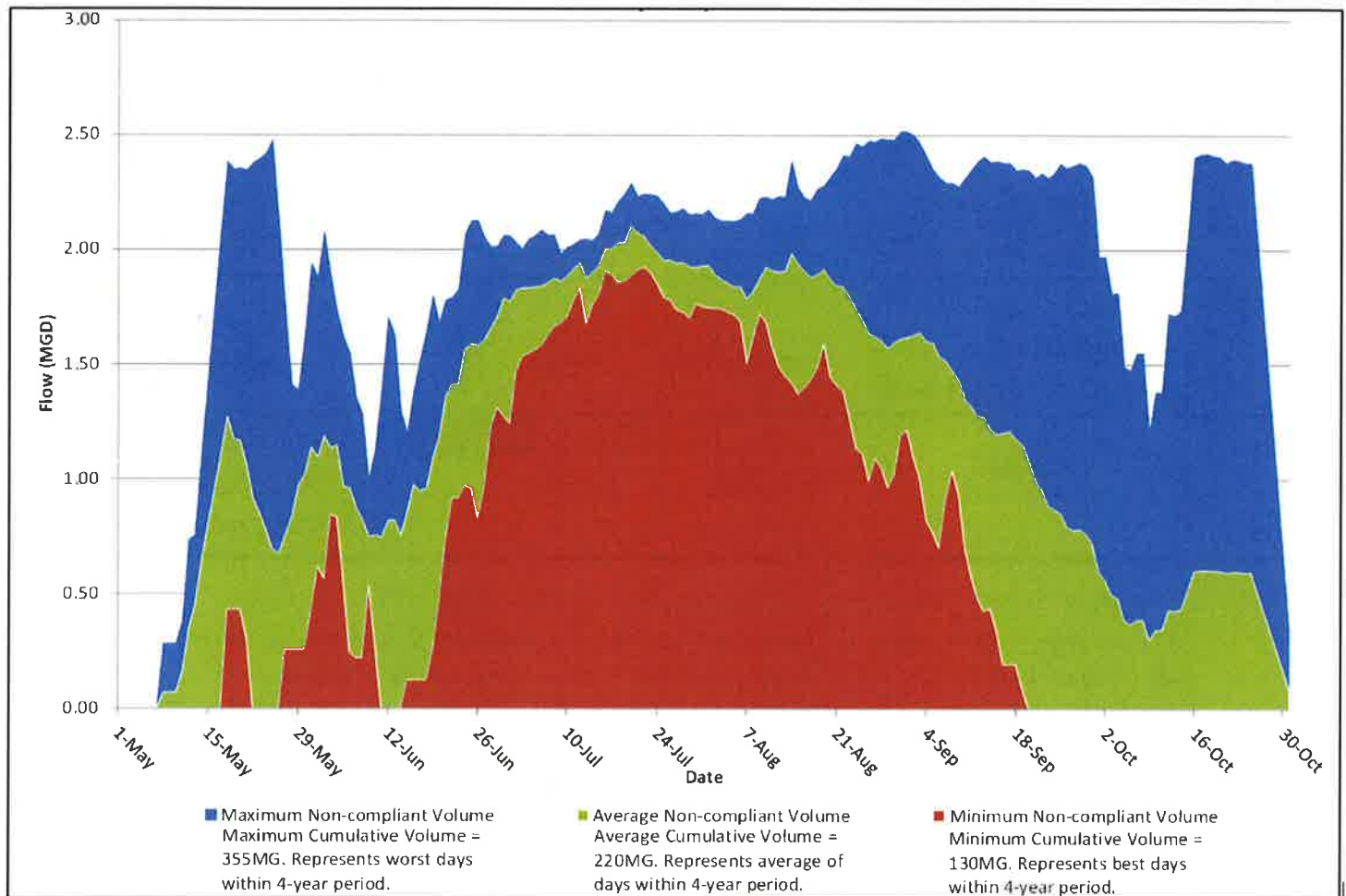
## Previous Temperature Evaluations

- **Wastewater Treatment Evaluation Temperature Report (December 2011)**
- **Wastewater Treatment Evaluation: Constructed Wetlands and Cooling Tower Temperature Reduction Pilot Study (February 2015)**



# Temperature

## Future (2030) Non-Complaint Volume from 2011 Report



# Temperature

## Future Projected Non-Compliant Flow Summary

| Approach                                                        | Non-Compliant Flow (MG) <sup>(a)</sup> |         |                                                                                                                         |
|-----------------------------------------------------------------|----------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------|
|                                                                 | Minimum                                | Average | Maximum                                                                                                                 |
| <b>Max./Min. of All Years</b>                                   |                                        |         |                                                                                                                         |
| 2011 Temperature Study                                          | 130                                    | 220     | 355                                                                                                                     |
| Expanded Data Set, 2005-2020                                    | 70                                     | 186     | 329                                                                                                                     |
| <b>Individual Years</b>                                         |                                        |         |                                                                                                                         |
| 2005-2020 Data (see Figure 6-15 and Figure 6-16)                | 111 (2010)                             | 186     | 278 (2015)                                                                                                              |
| Log-Normal Plot (see Figure 6-17) <sup>(a)</sup> <sup>(b)</sup> | N/A                                    | 140     | <b>Selected</b>  280 (95% Confidence) |
|                                                                 |                                        |         | 290 (98% Confidence)                                                                                                    |
|                                                                 |                                        |         | 310 (99% Confidence)                                                                                                    |

<sup>(a)</sup> The volume estimates assume no discharge to the University of Idaho reuse system.

<sup>(b)</sup> The confidence values reflect the likelihood that the non-compliant flow in any given year is less than or equal to the stated value. Exceedance (shown in the log-normal plot) equals 1 – Confidence; therefore, a 95% confidence level results in a 5% chance of exceedance in any given year.

# Temperature

## Recommended Compliance Improvements

- **Alternative 1 – Storage and Evaporative Cooling**
  - **Summary:**
    - 254 MG (55 acre) storage lagoon
    - Pump stations to convey flow between the WRF and the storage lagoon
    - Land acquisition: 60-70 acres
  - **Advantages**
    - 95% confidence of 280 MG
    - Low O&M
  - **Disadvantages**
    - Suitable land
    - Water quality impacts to WRF
    - Year-round effluent filtration
    - Significant capital costs
  - **Capital Cost: \$31.2M**
  - **Present Worth O&M: \$2.9M**

# Temperature

## Recommended Compliance Improvements

- **Alternative 2 – Reuse/Land Application**
  - **Summary:**
    - 183 MG (40 acre) storage lagoon
    - Pump stations to convey flow between the WRF and the storage lagoon/land application site
    - Land acquisition: 350-450 acres
  - **Advantages**
    - 95% confidence of 280 MG
    - Low O&M
  - **Disadvantages**
    - Suitable land
    - Regulatory permitting
    - Significant capital costs (land)
  - **Capital Cost: \$45.3M**
  - **Present Worth O&M: \$4.6M**

# Temperature

## Recommended Compliance Improvements

### ■ Alternative 3 – Chillers

#### ■ Summary:

- 600-ton cooling capacity
- Pump station to chiller
- New reaeration
- Separate diversion to UI reuse

#### ■ Advantages

- Low capital cost
- Treat up to 2.8 MG and 22.8°C
- On demand
- Small footprint
- Modular design – easily expanded

#### ■ Disadvantages

- Higher O&M costs

#### ■ Capital Cost: **\$5.8M**

#### ■ Present Worth O&M: **\$5.8M**

# Temperature

## Alternative Selection Criteria and Weighting

| Criteria                                | Weight<br>(Percentage) |
|-----------------------------------------|------------------------|
| <b>Cost</b>                             |                        |
| Capital Cost / Rate<br>Payer Impact     | 9.4%                   |
| Operation and<br>Maintenance Cost       | 8.8%                   |
| <b>Effectiveness</b>                    |                        |
| Reliability                             | 15.3%                  |
| Flexibility /<br>Adaptability           | 11.1%                  |
| Growth Potential<br>(Scalability)       | 9.7%                   |
| <b>Feasibility</b>                      |                        |
| Timeline for<br>Implementation          | 10.6%                  |
| Regulatory<br>Acceptance                | 13.9%                  |
| <b>Benefits</b>                         |                        |
| Ecological Impact to<br>Paradise Creek. | 10.6%                  |
| Carbon Footprint                        | 10.6%                  |

# Temperature

## Ranking of Alternatives

| Criteria                                | Weight | Raw Score (5 = best, 1 = worst)                         |                                                |                             | Weighted Score                                          |                                                |                             |
|-----------------------------------------|--------|---------------------------------------------------------|------------------------------------------------|-----------------------------|---------------------------------------------------------|------------------------------------------------|-----------------------------|
|                                         |        | Alternative 1 –<br>Storage and<br>Evaporative<br>Lagoon | Alternative 2 –<br>Reuse / Land<br>Application | Alternative 3 –<br>Chillers | Alternative 1 –<br>Storage and<br>Evaporative<br>Lagoon | Alternative 2 –<br>Reuse / Land<br>Application | Alternative 3 –<br>Chillers |
| Cost                                    |        |                                                         |                                                |                             |                                                         |                                                |                             |
| Capital Cost / Rate<br>Payer Impact     | 9.4%   | 1.1                                                     | 0.7                                            | 5.0                         | 9.9                                                     | 6.9                                            | 46.3                        |
| Operation and<br>Maintenance Cost       | 8.8%   | 5.0                                                     | 3.2                                            | 2.5                         | 44.0                                                    | 28.3                                           | 22.0                        |
| Effectiveness                           |        |                                                         |                                                |                             |                                                         |                                                |                             |
| Reliability                             | 15.3%  | 4.0                                                     | 4.0                                            | 5.0                         | 61.1                                                    | 61.1                                           | 76.4                        |
| Flexibility / Adaptability              | 11.1%  | 4.0                                                     | 4.0                                            | 5.0                         | 44.4                                                    | 44.4                                           | 55.6                        |
| Growth Potential<br>(Scalability)       | 9.7%   | 3.0                                                     | 2.0                                            | 5.0                         | 29.2                                                    | 19.4                                           | 48.6                        |
| Feasibility                             |        |                                                         |                                                |                             |                                                         |                                                |                             |
| Timeline for<br>Implementation          | 10.6%  | 3.0                                                     | 2.0                                            | 5.0                         | 31.9                                                    | 21.3                                           | 53.2                        |
| Regulatory Acceptance                   | 13.9%  | 3.0                                                     | 2.0                                            | 5.0                         | 41.7                                                    | 27.8                                           | 69.4                        |
| Benefits                                |        |                                                         |                                                |                             |                                                         |                                                |                             |
| Ecological Impact to<br>Paradise Creek. | 10.6%  | 2.0                                                     | 1.0                                            | 5.0                         | 53.2                                                    | 42.6                                           | 31.9                        |
| Carbon Footprint                        | 10.6%  | 5.0                                                     | 4.0                                            | 3.0 (a)                     | 31.9                                                    | 21.3                                           | 53.2                        |
| TOTAL                                   | 100%   | 30.1                                                    | 23.0                                           | 40.5                        | 337                                                     | 263                                            | 457                         |

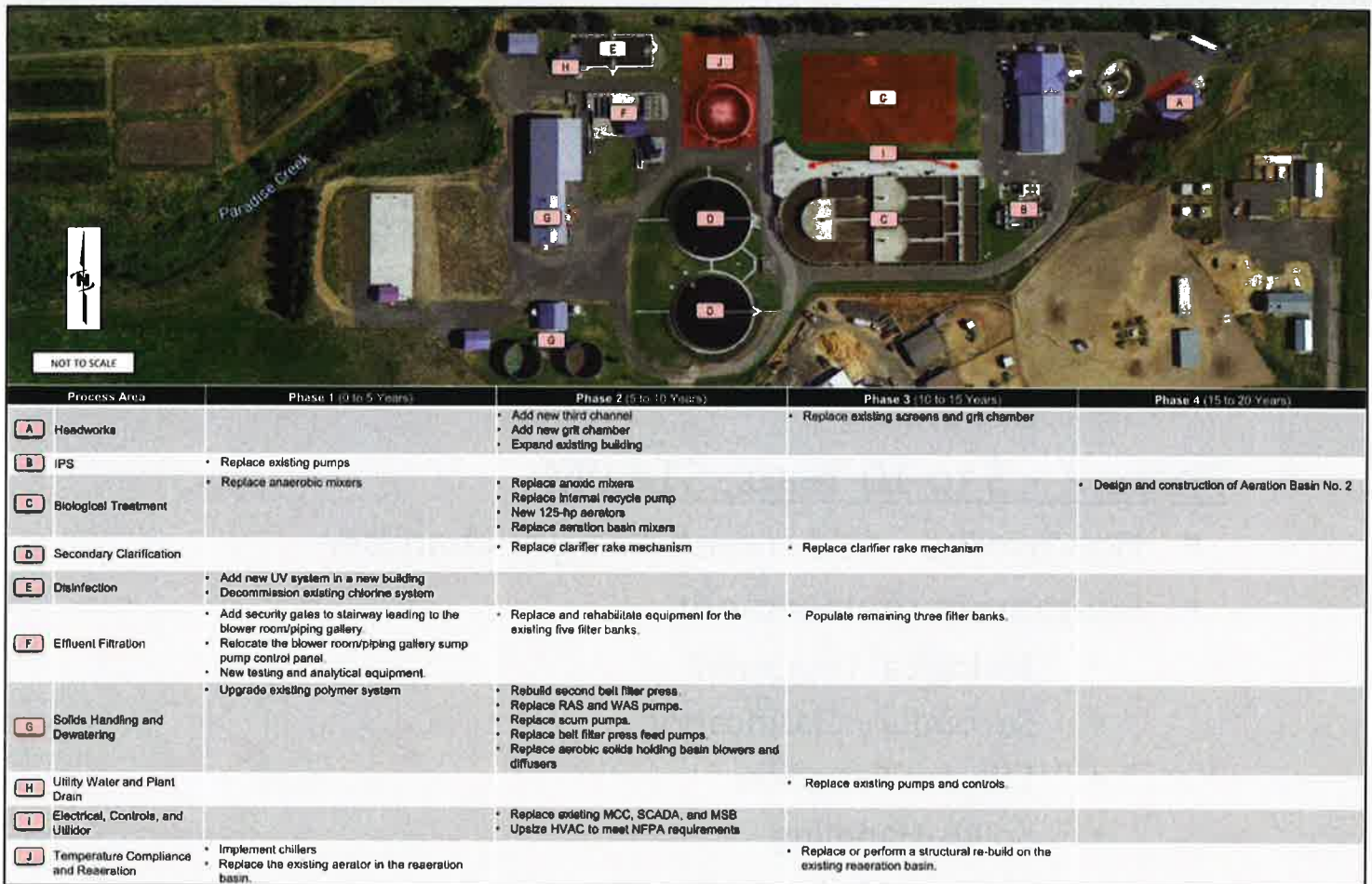
(a) Despite the high electrical demand associated with this alternative, Avista has declared to serve their customers with 100 percent clean electricity by 2045, and to have a carbon-neutral supply of electricity by the end of 2027. In the interim, the City could participate in Avista's "My Clean Energy Program." Participation in this program would offset the additional electrical consumption and thereby reduce the City's overall carbon emissions.

# Temperature

## Ranking of Alternatives

| Criteria                   | Weighted Score             |                          |                             |
|----------------------------|----------------------------|--------------------------|-----------------------------|
|                            | Alternative 1 -<br>Storage | Alternative 2 -<br>Reuse | Alternative 3 -<br>Chillers |
| <b>Cost</b>                |                            |                          |                             |
| Capital Cost               | 9.9                        | 6.9                      | 46.3                        |
| O&M Cost                   | 44.0                       | 28.3                     | 22.0                        |
| <b>Effectiveness</b>       |                            |                          |                             |
| Reliability                | 61.1                       | 61.1                     | 76.4                        |
| Flexibility / Adaptability | 44.4                       | 44.4                     | 55.6                        |
| Growth Potential           | 29.2                       | 19.4                     | 48.6                        |
| <b>Feasibility</b>         |                            |                          |                             |
| Timeline                   | 31.9                       | 21.3                     | 53.2                        |
| Regulatory Acceptance      | 41.7                       | 27.8                     | 69.4                        |
| <b>Benefits</b>            |                            |                          |                             |
| Ecological Impact          | 53.2                       | 42.6                     | 31.9                        |
| Carbon Footprint           | 31.9                       | 21.3                     | 53.2                        |
| <b>TOTAL</b>               | <b>337</b>                 | <b>263</b>               | <b>457</b>                  |

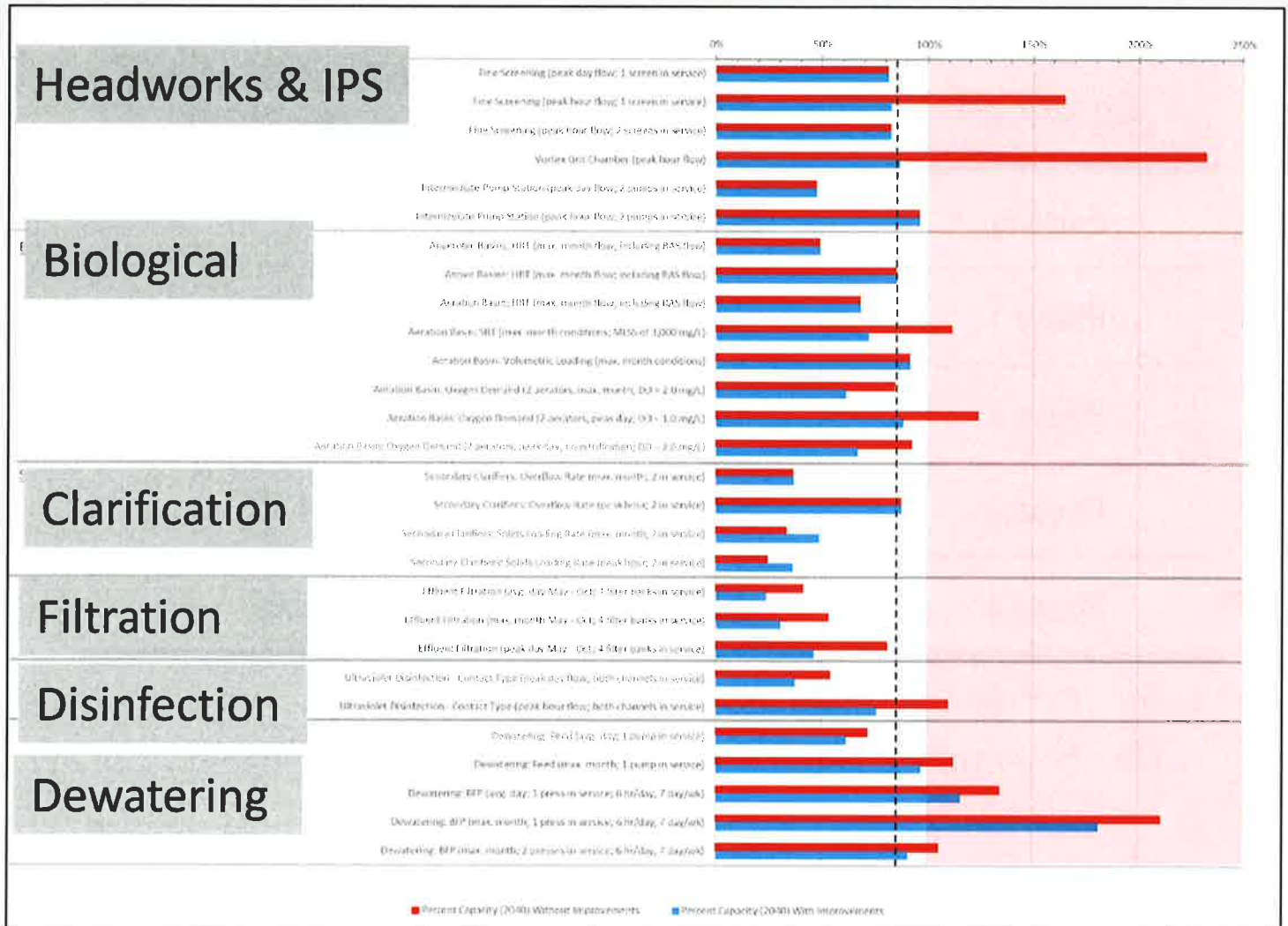
# Improvements Phasing



# Improvements Phasing

- Phase 1 – 0 to 5 Years; \$15.8M
  - Implement Chiller & UV Disinfection
  - Equipment replacement
    - IPS
    - Biological Treatment
    - Effluent Filtration
    - Dewatering
- Phase 2 – 5 to 10 Years; \$14.9M
  - Headworks – add screen and grit chamber
  - Equipment replacement
    - Biological Treatment
    - Secondary Clarification
    - Effluent Filtration
    - Solids Handling
    - Electrical & Controls
- Phase 3 – 10 to 15 Years; \$8.2M
  - Filtration – additional capacity
  - Equipment replacement
    - Secondary Clarification
    - Utility Water and Plant Drain
    - Temperature Compliance
- Phase 4 – 15 to 20 Years
  - Additional Aeration Basin

# Process Capacity With Proposed Improvements



# Rate Impacts

| Condition | ERUs                  | Increase in Monthly Rate (\$/ERU) <sup>(b)</sup> |
|-----------|-----------------------|--------------------------------------------------|
| Existing  | 14,877 <sup>(a)</sup> | -                                                |
| Phase 1   | 15,335                | + \$6.10                                         |
| Phase 2   | 16,293                | + \$3.40                                         |
| Phase 3   | 17,312                | + \$1.77                                         |
| Phase 4   | 18,394                | + \$0.00                                         |

*(a) Per the City's May 2021 rate study (FCS, 2021).*

*(b) From capital costs plus yearly O&M, in 2022 dollars.*

# Next Steps

- City Council approves Facility Plan
- J-U-B submits to IDEQ for review and approval
  - Preliminary approval, pending Plan adoption by the City, was provided by IDEQ on April 15, 2022.
- IDEQ issues approval
- Design and Construction of Phase I Improvements

