URBAN SYSTEMS

MEMORANDUM

DATE: September 1, 2026

TO: Jon Poole

CC:

FROM: Scott Shepherd

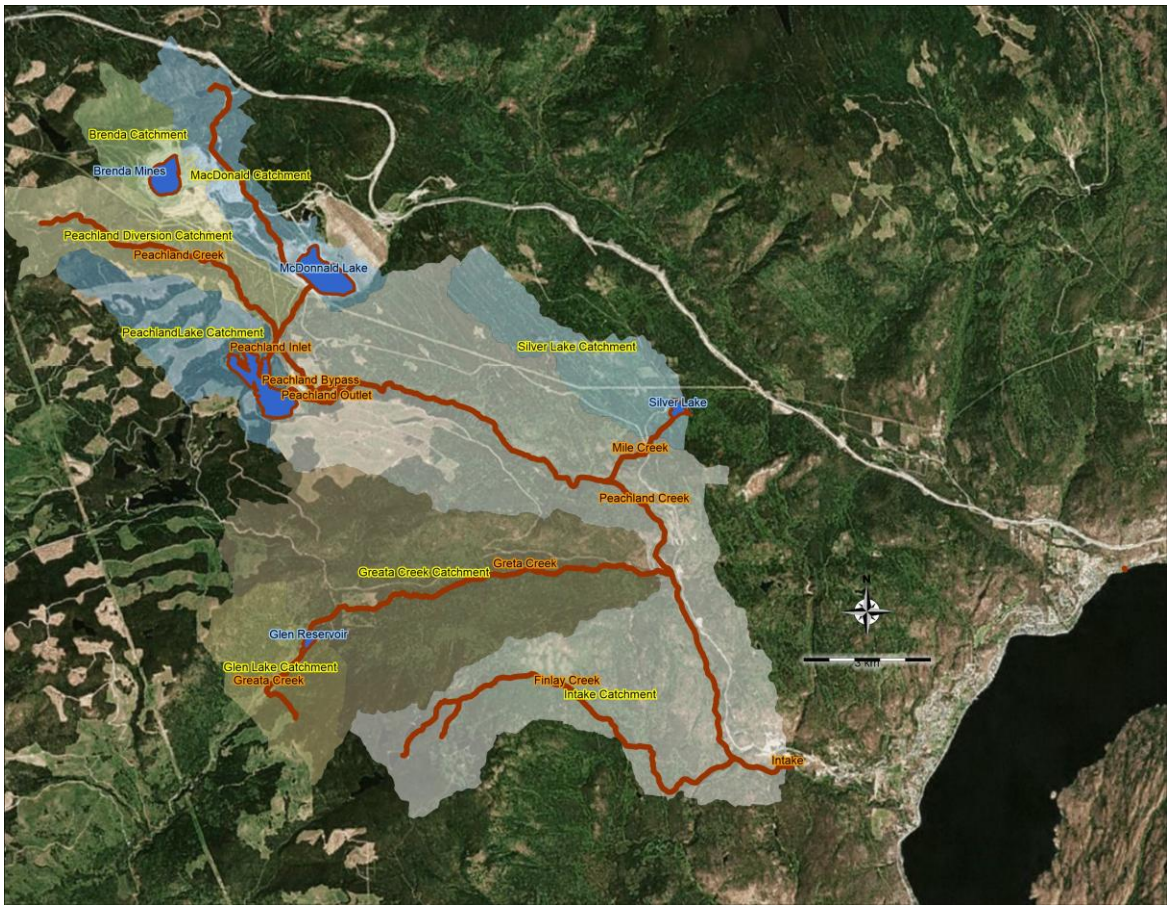
FILE: 0655.0193.04

SUBJECT: **Water Supply Resiliency Option Assessment Summary**

BACKGROUND

Peachland's primary drinking water supply is drawn from the Peachland Creek watershed, with Peachland Lake serving as the main storage reservoir. Peachland Lake is recharged by high-elevation winter snowpack captured during the spring freshet. Other watershed diversions, including MacDonald Creek, Brenda Lake, and Glen Lake, also contribute flows to Peachland Creek (**see Figure 1**).

Figure 1 – Peachland Creek Watershed



Historical Context

As part of the 2007 Water Master Plan, Council selected a single-source water supply strategy based on the following advantages:

- ✓ **Cost Efficiency:** One centralized water treatment plant for the Peachland Creek source was more cost-effective, from both capital and operating perspectives, than upgrading multiple separate treatment facilities.
- ✓ **Regulatory Compliance:** It enabled Peachland to meet new provincial microbiological treatment standards for surface water.
- ✓ **Simplified Delivery:** A filtered water trunk line from Princeton Avenue to the Trepanier Bench enabled the District to eventually decommission less reliable sources, including the Trepanier Creek intake and Ponderosa Well.

Peachland Creek Supply Resiliency Assessment

The 2024 demand and supply assessment confirmed that climate change is affecting the ability of Peachland Creek to continue serving as the District of Peachland's primary water source. The modelling indicates that Peachland Lake can meet current demand, existing climate conditions, and a 3.6% residential growth rate over the next 25 to 30 years. However, climate change and continued growth are expected to put increasing pressure on the system over time.

The assessment identified the following key recommendations to improve water supply resiliency.

1. Continue demand management efforts. Although the District has implemented water metering, maintenance and replacement of service meters is becoming increasingly important.
2. Continue operating and maintaining hydrometric stations on Peachland Creek. Ideally, one station should be located upstream of the Peachland Lake diversion and another immediately upstream of the water system intake near the Water Treatment Plant to improve the District's understanding of its water supply.
3. Continue investigating feasible options to increase water supply and storage.

Existing Conditions

Peachland Lake is currently under stress due to the lowest snowpack recorded in more than 30 years, and stage 3 water restrictions are in effect. In response, District staff have engaged Urban Systems to prepare a report to improve water supply resiliency, consistent with recommendation 3 above.

RESILIENCY OPTIONS

Staff have identified several potential supply and storage improvements to be evaluated as part of this assessment.

These options have been grouped into three broad categories, consistent with the approach used in the 2007 Water Master Plan.

Category 1 – One System (Single Source Supply) Options

1. Maintain one primary water supply by expanding reservoir storage and associated licensing in the Peachland Creek watershed, consistent with the 2015 Water Master Plan Amendment and analysis. This option includes recharging Peachland Lake through a supplemental source.
2. Dredging Peachland Lake to increase capacity.
3. Investigate secondary upland storage.

Category 2 – Split System (Two Source) Supply Options

4. Maintain the current Peachland Creek supply and supplement it with a new Okanagan Lake intake that would convey water to the Peachland Creek WTP settling ponds.
5. Develop a new Okanagan Lake intake, UV treatment system, and pumps to service the Trepanier Bench area, with potential emergency extension to the Peachland Creek WTP ponds.
6. Convert Eagle View Pump Station into a lake intake with a dedicated raw water line from Eagle View Pump Station to Ponderosa Upper Reservoir, with potential extension to the Peachland Creek WTP ponds.

Category 3 – Hybrid (Modified Two Source) Supply System

7. Investigate groundwater as a separate irrigation supply for municipally owned properties, such as park irrigation, or as a supplementary supply to the Peachland Creek intake with a dedicated raw water line.

Feasible Options

Based on a preliminary review of the options, the 2024 demand and supply assessment, applicable regulatory requirements, and Interior Health's request to improve source resiliency, the following options are being considered for further detailed assessment.

1. **One System** – Increase licensing and recharge supply for Peachland Lake.
2. **Split System** – Advance the following two options for further investigation.
    a. Develop a new Okanagan Lake intake, UV treatment system, and pumps to service the Trepanier Bench area, with potential emergency extension to the Peachland Creek WTP ponds.
    b. Convert Eagle View Pump Station into a lake intake with a dedicated raw water line from Eagle View Pump Station to Ponderosa Upper Reservoir, with potential extension to the Peachland Creek WTP ponds.
3. **Hybrid System** – Investigate groundwater as a separate irrigation supply system or a supplement to the potable water system.

Options with Significant Challenges

The following options contain significant regulatory constraints and challenges identified in previous studies.

Dredging Peachland Lake – Dredging Peachland Lake is expected to provide only a limited-term benefit, generally in the range of 10 years, and its effectiveness could be eliminated by a single severe spring freshet. The option would also require significant regulatory approvals, including:

- ✓ *Federal Fisheries Act* – a complex federal authorization and costly habitat offsetting plan would be required.
- ✓ *BC Dam Safety Regulation* – extensive geotechnical reporting would be required to confirm that the work would not create structural integrity risks.
- ✓ *Water Sustainability Act* – a Section 11 Change Approval from the Ministry of Water, Land and Resource Stewardship would be required because dredging could destabilize banks, increase downstream erosion, and alter hydrological flow dynamics.
- ✓ *BC Drinking Water Protection Act* – a permit and mitigation plan would be required to minimize the release of suspended solids, organic matter, and sediment that could overwhelm the Water Treatment Plant.
- ✓ Indigenous consultation would be required and would likely need to confirm that kokanee stocks and habitat are protected and not adversely affected by the dredging.

Upstream Secondary Storage – Secondary upland storage was reviewed as part of the 2007 Water Master Plan. The topography is challenging, and no suitable site was identified with the geometry required to store millions of cubic metres of water without significant earthen dam capital costs. Water rights and environmental flow requirements would also need to be addressed. Given these environmental and terrain constraints, a new upland reservoir was not advanced and expanding licensing on Peachland Lake was considered a more predictable and practical approach.

Supplement Peachland Creek Supply with Untreated Okanagan Lake Water – This option would maintain the current Peachland Creek supply and supplement it with a new Okanagan Lake intake conveying water to the Peachland Creek WTP settling ponds. It was reviewed during the development cost charge (DCC) bylaw update and was determined to be not financially feasible. It could also create treatment challenges due to the mixing of different source waters.

Assessment Considerations

The options are interconnected and the assessment will build upon findings and recommendations from previous studies and reports. Based on our understanding of Peachland's water supply system, the Water Master Plan, and previous discussions with District staff, the following key considerations will be considered in the assessment:

- Available water quantity and quality,
- long-term reliability and redundancy,

- hazards and vulnerabilities of the source,
- licensing and regulatory obligations,
- required infrastructure and its costs,
- value for investment, based on order-of-magnitude capital, operating and life cycle costs,
- phasing and implementation timing,
- potential to be combined with other options, and
- capacity to meet demand across the planning horizon to 2100.

CLOSING

We appreciate the opportunity to support the District in advancing this assessment and improving the long-term resiliency of Peachland's water supply system.

Sincerely,

URBAN SYSTEMS LTD.

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Project Manager

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