



August 28, 2025

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**Subject: Kinetikor Data Centre Campus**  
**Water Usage and Fire Flow Requirements**

Z0026600-700

CIMA+ is working on behalf of Kinetikor Holdings to estimate the Water Usage Requirements for the Kinetikor Data Centre Campus in support of finalizing the responses from the review of the Area Structure Plan (ASP).

**Introduction and Methodology**

The total development footprint is 1106.9 acres spanning 7 quarter sections of land with the intended use as a Data Centre Campus. Of the total area 826.62 acres (approximately 75%) will be utilized directly for development broken down as follows:

Designated Use	Total Area (Acres)	Percent of Total Site
Data Centre	826.62	75%
Agricultural	179.03	25%
Public Utility Lot	35.35	
Municipal Reserve	7.35	
Existing Public Roadway	7.95	
Road Widening	13.63	
Internal Roadways	36.97	25%
<b>Total</b>	<b>1,106.90</b>	<b>100%</b>



The campus aims to deliver sustainable Data Centre solutions through clean energy, energy-efficient designs, and water-conscious operations. Cooling systems are expected to incorporate “free cooling” (leveraging ambient air to reduce energy use) along with other advanced technologies, with the intent of minimizing or potentially eliminating the need for water in the cooling process. Water use would primarily be limited to domestic purposes, such as sinks, toilets, and humidification.

### Domestic Water Usage

The site is anticipated to employ approximately 1500 people. Water usage was estimated using the Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems (Alberta Environment, March 2013, Part 4: Wastewater Systems Guidelines for Design, Operating and Monitoring). Per Section 4.1.1.2 (Commercial/Institutional and Industrial), the estimated sewage flow is 45 L/day/employee, reflecting domestic water use. The total water demand is calculated as follows:

$$\begin{aligned}\text{Design Flow (L / day)} &= \text{Population} \times \text{Estimated Sewage Flow (L / day / employee)} \\ &= 1,500 \times 45 \text{ L / day / employee}\end{aligned}$$

$$\text{Design Flow (L / day)} = 67,500 \text{ L / day}$$

$$\text{Design Flow (m}^3 \text{ / day)} = 68 \text{ m}^3 \text{ / day}$$

This estimate assumes full build-out and accounts only for domestic water needs, consistent with the project’s water-conscious design.

### Fire Flow Considerations

In addition to the projected domestic demand of approximately 68 m<sup>3</sup>/day, the primary driver for water system capacity will be fire flow. Rocky View County Servicing Standards identify required fire flows in the range of 166–250 L/s for 2 to 3.5 hours, which translates to as much as 3,150 m<sup>3</sup> of dedicated fire storage. A new reservoir and pump station will therefore be constructed within the ASP area, supplied by a dedicated feed from the Graham Reservoir Water Treatment Plant. The facility will be designed to provide sufficient fire storage, pumping capacity, and distribution pressure to meet RVC’s requirements. Given the relatively low daily domestic demand, future design phases will also need to consider water quality management within large fire storage volumes, including options such as separating non-potable fire storage from potable water storage.

### Cooling System Water Demand Considerations

It is not expected that daily operation of facilities will require constant supply of water from the system for cooling. Typical consumption is limited to domestic uses such as sinks, toilets, and humidification. As a high-level reference of approximately 4,440L/MW may be required to initially fill the system that will recirculate that water for cooling purposes with the ultimate build out of the facility potentially at 900–1,350 MW suggesting total water demand could be in the range of 4,000–6,000 m<sup>3</sup> for cooling purposes. The anticipated timeframe for build out of the entire project is expected to be in the range of 15 to 20



years and subsequent studies related to water usage can be completed or updated with each phase of development.

The Area Structure Plan (ASP) contemplates servicing through a new reservoir and pump station. If cooling water is supported from this system, the following considerations apply:

- **Fire Flow Storage Requirement:** Rocky View County Servicing Standards require fire flows of 166–250 L/s for durations of 2–3.5 hours, equating to up to ~3,150 m<sup>3</sup> of storage dedicated solely to fire protection.
- **Domestic Storage Requirement:** Projected daily domestic demand for the ASP area is approximately 68 m<sup>3</sup>/day. Relative to fire storage, this is minor and does not drive storage sizing.
- **Provision for Cooling System Filling/Maintenance:** One potential strategy is to size the reservoir at approximately 5,000 m<sup>3</sup>, with ~3,000 m<sup>3</sup> reserved for fire protection, ~68 m<sup>3</sup> active for domestic use, and the balance (up to ~2,000 m<sup>3</sup>) available for periodic cooling system filling or maintenance events. To maintain water quality, this additional volume would normally be left vacant and only filled when required.
- **Operational Strategy:** Cooling system filling or maintenance refills could be scheduled in advance, allowing the reservoir to be “trickle filled” over time. Once the required reserve is established, the distribution pump station could provide a higher rate of withdrawal to meet cooling system needs quickly, without compromising fire storage availability.
- **Water Quality Considerations:** Maintaining excess full storage continuously could lead to stagnation. By keeping volumes reserved but not permanently filled, and by scheduling fills as discrete events, potable water turnover is maximized while still allowing for large drawdown when needed.

### **Assumptions and Caveats**

1. Cooling demand figures are subject to change based on use of different technologies that could result in materially higher or lower demand.
2. We commit to ongoing collaboration and will work with County authorities at each phase of development to ensure that water needs are sufficiently managed through the entire project lifecycle.
3. Extrapolation: water needs estimate for the anticipated build-out is linear and does not account for economies of scale or technology changes.
4. Non-Potable vs. Potable Allocation: It is assumed that cooling-related volumes would be isolated from potable supply to the extent possible. Detailed design may consider separate reservoir compartments or cells for potable, fire, and cooling reserves.



5. Trucked Water Contingency: Cooling system water could be supplied via trucking if reservoir capacity is insufficient or unavailable.
6. Priority of Fire Storage: Fire protection remains the governing criterion. At no time can cooling system withdrawal reduce fire storage below Rocky View County requirements.
7. Event-Based Use: It is assumed that cooling-related withdrawals would occur as scheduled events (e.g., initial system filling, major maintenance), not as a continuous daily demand

### Conclusion and Recommendation

The Kinetikor Data Centre Campus is projected to require approximately 68 m<sup>3</sup>/day of domestic water at full build-out, with fire flow storage needs of up to 3,150 m<sup>3</sup> driving the design of a new reservoir and pump station. Cooling system water demands, estimated at 4,000–6,000 m<sup>3</sup> for initial filling over a 15–20-year build-out, can be managed through strategic reservoir sizing and scheduled filling to maintain water quality and prioritize fire protection. Ongoing collaboration with County authorities and phased studies will refine water usage estimates as technologies and needs evolve, ensuring infrastructure aligns with Rocky View County standards and the project's sustainability goals. If you have any comments or questions, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kurt Alksne', is positioned below the 'Sincerely,' text.

Kurt Alksne, C.E.T.  
Project Manager - Infrastructure

KA/

cc Darryl Reinhardt, CIMA+ (darryl.reinhardt@cima.ca)

encl. as noted.