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UTAH DIVISION OF WATER QUALITY

<b>IN THE MATTER OF City of Orem Department of Public Works 1450 West 550 North Orem, Utah 84057</b>	<b>PERMIT VARIANCE FOR TECHNOLOGY-BASED PHOSPHORUS EFFLUENT LIMITS</b>
<b>UPDES PERMIT NO. UT0020915</b>	

**BACKGROUND**

1. City of Orem’s (Orem) Orem Water Reclamation Facility (OWRF) in Orem, Utah provides wastewater services within Utah County.
2. Orem’s operations at the OWRF are undertaken subject to UPDES Discharge Permit No. UT0020915 (“Permit”).
3. The OWRF is required to achieve technology-based phosphorus effluent limits (“TBPEL”) on or before January 1, 2020, unless a variance is granted. *See* UAC R317-1-3.3.
4. Orem submitted a variance request, dated December 29, 2017 to the Utah Division of Water Quality (“DWQ”), seeking an extension of the TBPEL implementation date (the “Variance Request.”). The Variance Request is based on the fact that Orem is in the process of designing and constructing improvements to the OWRF to meet TBPEL requirements, however such improvements cannot be completed prior to January 1, 2020, despite the Orem’s diligence.
5. Utah law provides that DWQ may grant a variance as to the implementation date for compliance with the TBPEL in the event that the operator demonstrates due diligence toward construction of a treatment facility designed to meet TBPEL, provided that such compliance date shall not be later than January 1, 2025. *See* UAC R317-1-3.3.C.e.
6. The Director of DWQ has determined that Orem has met its burden to show diligence within the meaning of the UAC R317-1-3.3 and that a variance is appropriate, subject to the limitations and conditions provided herein.

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### **AUTHORITY**

7. The Director of DWQ has authority to grant a variance as to how the annual mean phosphorus concentration is calculated for the TBPEL pursuant to UAC R317-1-3.3 and the corresponding provisions of the Utah Water Quality Act.
8. The State of Utah administers the Utah Pollution Discharge Elimination System (UPDES) permit program under the Utah Water Quality Act.

### **DUE DILIGENCE - FINDINGS**

9. The Variance Request included the following submissions, among others:
  - a. TBPEL Requirements Extension (December 29, 2017).
  - b. Update for Variance from Technology Based Phosphorus Effluent Limits under R317-1-3.3.C.d. and R317-1-3.3.C.e. for the Orem Water Reclamation Facility (July 12, 2019)
  - c. Orem Water Reclamation Facility Tertiary Reuse Project Plan. WaterWorks Engineers (May 2019)
  - d. Orem Water Reclamation Facility Tertiary Reuse Preliminary Design Report. WaterWorks Engineers (May 2019)
  - e. Thermophilic Digester Improvements – Technical Memorandum No. 1 Carbon Management Workshop. Carollo (July 2016)
  - f. Thermophilic Digester Improvements – Technical Memorandum No. 2 Digester Improvements Workshop. Carollo (July 2016)
10. Based on the foregoing submissions, the Director has determined that Orem has established due diligence toward the undertaking of a reuse project to meet the TBPEL, within the meaning of UAC R317-1-3.3.C.e.

### **VARIANCE**

11. The Director hereby grants OWRF a variance as to the compliance alternative to achieve the TBPEL; subject to the following conditions:
  - a. This variance does not expire. The permittee may terminate the variance by notifying the Division of Water Quality in writing.
  - b. Pursuant to UAC R317-1-3.3.C.2, this variance is subject to re-evaluation every five years or in the event that there is any substantive change in the facility design or construction plans provided in the Variance Request. OWRF must provide timely notice to DWQ of any such substantive changes.

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c. Effective January 1, 2020, OWRF shall report the calculated TBPEL Reuse Average Annual Discharge Concentration for the annual average concentration for total phosphorus.

i. OWRF shall comply with the effluent limitations for the annual average total phosphorus concentrations specified in the UPDES permit based on the calculated TBPEL Reuse Average Annual Discharge Concentration.

d. Definitions

i. “Monthly Average Mass Loading” in lbs/d means the pounds per day of a pollutant discharged on average during a calendar month, calculated as the average monthly discharge concentration (mg/L) times the average monthly surface water discharge flow rate (mgd) times 8.34 conversion factor.

ii. “Monthly Average Plant Flow” in mgd means the average of daily plant flows over a calendar month, calculated as the sum of all surface water and reuse outfalls daily discharges measured during a calendar month divided by the number of daily discharges measured during the month.

iii. “Annual Average Mass Loading” in lbs/d means the average of monthly mass loading per day over calendar year, calculated as the sum of monthly average mass loadings measured during a calendar year divided by the number of monthly average plant flows measured during the year.

iv. “Annual Average Plant Flow” in mgd means the average of monthly average plant flows per day over a calendar year, calculated as the sum of monthly average plant flows measured during a calendar year divided by the number of monthly average plant flows measured during the year.

v. “TBPEL Reuse Average Annual Discharge Concentration” in mg/L means the equivalent concentration if the load discharged to the receiving water were carried by the full plant flow without the historic reuse flows, if any, over a calendar year, calculated as the annual average mass loading (lbs/d) divided by 8.34 conversion factor divided by the annual average plant flows (mgd).

vi. Equation for TBPEL Reuse Average Annual Discharge Concentration:

$$C_r = \frac{\sum_n^i \dot{m}_m}{(8.34 * Q_a)}$$

$C_r$  = TBPEL Reuse Alternative Average Annual Discharge for facility (mg/L).

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$\dot{m}_m$  = Monthly average mass loading (lbs/d)

$n$  = Number of monthly average plant flows measured during the year

$Q_a$  = Annual Average Plant Flow - discharge rate of effluent to surface waters and reuse (mgd).



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Date: 1/7/20

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