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| **Project Name:** |       | **Date:** |       |
| **Engineer Name:** |       | **AK P.E. License No.:** |       |
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| This checklist is required for the construction or modification of any treatment system that includes ozone treatment to reduce a primary contaminant or if ozone is a necessary pretreatment for the removal of a primary contaminant. If ozone is proposed for disinfection of a surface water (SW) or groundwater under the direct influence of surface water (GWUDISW) source, please also use the Treatment – SW/GWUDISW Checklist (Checklist Number 6.0).**Note:** When completing this checklist, please answer the question and also include where in the submittal detailed information is found for each submittal requirement. Please be as specific as possible (specify document name, page number, section number, paragraph, etc.). This will accelerate the review process. |

| **Submittal Requirements** | ***Regulatory Reference*** |
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| 1. **Design Documents:** Do the drawings and specifications for construction of the treatment system include the ozone generator, its feed gas system, the ozone/water contact chambers, the ozone destruct unit(s), and the ozone generator power supply? Indicate how the ozone generator will be protected from the entry of non-conditioned gasses and provide a power quality analysis to determine if an uninterruptible power supply (UPS) is required for critical electronic equipment and system alarms.
 | *18 AAC 80.205(a)(2)**18 AAC 80.205(b)(9)* |
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| 1. **Treatment Objective:** Describe the treatment objective(s) for the ozone system.
 | *18 AAC 80.205(b)(5)**18 AAC 80.205(a)(4)* |
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| 1. **Sample Taps**: Which design drawing shows the location of compliance and operational sample points in the water treatment plant? Which specification requires the project to provide fixed labels on all compliance sample taps?
 | *18 AAC 80.655**18 AAC 80.205(c)(6)* |
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| 1. **Chemical Feed Pump(s):** What are the make and model of the chemical feed pump(s)? Has the engineer addressed the selection of the chemical feed pump(s)? Is documentation included of each pump’s suitability for the chemical it will be injecting, and are calculations provided showing the feed pump(s) are sized for the water flow rates and chemical dosages?
 | *18 AAC 80.030**18 AAC 80.205(a)(4)**18 AAC 80.205(b)(9)* |
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| 1. **Water Quality:** Does the submittal include results of laboratory analyses of untreated water for contaminants the proposed treatment system is designed to remove? At a minimum, these results should include the contaminant of interest, iron, manganese, color, total organic carbon, hydrogen sulfide, pH, turbidity, and bromide. Multiple sets of sample results may be necessary to address the full range of seasonal water quality variability expected.
 | *18 AAC 80.205(c)(1)(A)* |
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| 1. **Treatment Scheme:** Does the engineer explain how the proposed treatment scheme is suited for the source water quality including descriptions of any pre- and post‑ozonation treatment required to achieve the intended treatment goal?
 | *18 AAC 80.205(b)(5)* |
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| 1. **Chemical Overfeed Protection:** Does the design include appropriate overfeed protection for chemical feed systems?
 | *18 AAC 80.205(b)(9)**18 AAC 80.025* |
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| 1. **Performance Verification:** Are objective and verifiable data provided to support performance claims, including third party certifications, data from independent third parties, pilot study data, the manufacturer's test data, and approvals from other states, countries, or federal agencies? The information must be sufficient for the Department to verify the effectiveness of the ozone system to meet its treatment objective under the site specific conditions.
 | *18 AAC 80.205(b)(5)* |
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| 1. **Manufacturer’s Specifications:** Are detailed manufacturer's specifications for the proposed ozone system included in the submittal?
 | *18 AAC 80.205(a)(2)* |
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| 1. **Automation and Alarms:** Describe reliability features including system alarms, critical alarm triggers, alarm follow-up actions (e.g. auto shut-off, filter-to-waste), air venting, and the system's capability for effective and safe manual operation.
 | *18 AAC 80.205(b)(9)* |
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| 1. **Oxidation:** Has the engineer provided design calculations for the theoretical ozone oxidation of inorganic and organic constituents necessary to assess if the ozone generation unit sizing is within a reasonable factor of safety? Calculations should use the source water quality sampling results and consider source water variability.
 | *18 AAC 80.205(a)(4)* |
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| 1. **Dissolution:** Has the engineer provided a discussion of the method of ozone dissolution (e.g. bubble diffusion, venturi injection, side stream injection) and the expected ozone transfer efficiency at the injection point(s) including the expected and required ozone dose delivered to the water? For a proposed ozone disinfection system, the discussion must provide justification for each injection point location.
 | *18 AAC 80.205(b)(5)* |
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| 1. **Compressed Air:** If compressed air is proposed, has the engineer shown how air quality will be managed to prevent contaminants from being introduced into the water and that an oilless compressor/blower or food grade lubricants are specified?
 | *18 AAC 80.205(b)(8)* |
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| 1. **Monitoring Scheme:** Describe the monitoring scheme that will be used to assess process efficiency and reliability during daily operation.
 | *18 AAC 80.205(c)(1)(C)* |
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| 1. **Startup** **Disinfection:** Which specifications address disinfection of the treatment plant component(s) affected by the project before use? If AWWA Standard C653 is not specified, does the proposed method include adequate detail for the contractor to implement?
 | *18 AAC 80.205(b)(9)* |
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| 1. **O&M Manual:** Is information included on the schedule and responsible party for completing the system’s O&M manual? Please note that at least a draft version will be required when requesting interim operational approval.
 | *18 AAC 80.207* |
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| 1. **Startup:** Discuss how the plant startup will be implemented including details on any temporary piping and the anticipated startup schedule. If the project is a modification or replacement of an existing water treatment system, where in the submittal is a discussion of how the transition will be made from the existing system to the new and a description of functional and performance tests that will be performed during commissioning/startup? Please note that copies of these test results may be requested for operational approval.
 | *18 AAC 80.205(b)(9)* |
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| 1. **Operator On-site Training:** Does the submitted written plan for training the water system operator(s) to operate and maintain the ozone treatment system include who will provide the training, the scheduled date of training relative to the proposed system startup, training forms to be used, and spreadsheets and schedules the operator will be provided? The scope of training should include collecting, recording, and interpreting data necessary for on-going compliance and performance verification.
 | *18 AAC 80.007* |
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| **Questions below pertain to ozone used for disinfection credit.** | ***Regulatory Reference*** |
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| 1. **CT Calculations:** Do the engineer’s calculations show the system’s ability to meet the required CT for the inactivation of each target pathogen including all assumptions, minimum residual concentration to meet CT, the CT calculation method employed, and how the contact chamber/tank baffle factor (i.e. hydraulic efficiency) was determined, including results of tracer studies if available?
 | *18 AAC 80.205(a)(4)* |
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| 1. **Controls:** What measures will be used to ensure CT will be met at all times (e.g. flow monitoring, flow restriction devices, ozone level alarm systems, auto‑shutoff mechanisms, etc.)?
 | *18 AAC 80.205(a)(2)* |
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| 1. **Ozone Meters:** Which drawings and specifications provide information on the ozone residual meter(s) and their proposed location(s)? Location selection must consider potential interferences and the point where residual concentration used for CT must be monitored.
 | *18 AAC 80.205(a)(2)* |
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