

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON
PORTLAND DIVISION

UNITED STATES OF AMERICA, STATE OF OREGON
BY AND THROUGH DEPARTMENT OF
ENVIRONMENTAL QUALITY,

Plaintiffs,

Case No. 23-cv-968

v.

CITY OF SANDY, OREGON

Defendant.

CONSENT DECREE

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I. BACKGROUND

Plaintiff United States of America, on behalf of the United States Environmental Protection Agency (“EPA”), and the State of Oregon by and through the Oregon Department of Environmental Quality (the “State”) (collectively “Plaintiffs”), have filed a complaint in this action concurrently with this Consent Decree pursuant to Section 309 of the Clean Water Act (“CWA” or “Act”), 33 U.S.C. § 1319, and Oregon Revised Statute (“ORS”) 468.140, alleging that Defendant, City of Sandy, Oregon (“Sandy” or “City”), violated and continues to violate Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342, and ORS 468B.025(2) by failing to comply with the requirements of its National Pollution Discharge Elimination System Permit (“NPDES Permit”) for the City’s Wastewater Treatment Plant located at 33400 Southeast Jarl Road in Boring, Oregon and its 1200-Z Stormwater Discharge General NPDES Permit (“Industrial Stormwater Permit”).

On February 18, 2018, ODEQ and the City entered into a Mutual Agreement and Order (“MAO”) resolving civil penalties assessed for violations of the City’s NPDES Permit. Pursuant to the MAO, the City was to provide an Updated Facility Plan by January 1, 2019, and plant improvements were to be completed by November 1, 2021, that would bring the City into compliance with the terms and conditions of its NPDES Permit.

In April 2019, the City requested a revised schedule for the MAO, as the improvements were not on schedule to meet the November 1, 2021 deadline.

The City submitted a Facility Plan to ODEQ in October 2019 that was approved on January 17, 2020. A “Preliminary Design Report: Sandy WWTP Immediate Needs Upgrades Project,” was submitted in July of 2020 and approved on August 28, 2020. A Preliminary

Design Evaluation Report was submitted to ODEQ in March of 2021 and approved on April 16, 2021 (attached as Appendix A). Preliminary Need Improvements identified in these plans are not scheduled to be completed until August, 2023 due to supply and construction delays and complications with conducting sampling and stress testing in tandem with construction.

The City now estimates that the preferred alternative in the City's 2019 Wastewater System Facilities Plan is cost prohibitive, and seeks to further evaluate alternatives to bring the system into compliance with its NPDES Permit.

Since October 23, 2017, the City has experienced a significant number of violations of its NPDES Permit, including a high volume of waste discharge limitation violations and six bypass events where waste streams were intentionally diverted from a portion of the treatment facility. Due to system improvements in 2021 and 2022, the City has not had any bypass events since June 11, 2022. ODEQ and EPA have determined, based on the extensive history of violations and the lack of information supporting a conclusion that the City has adequate capacity at the Wastewater Treatment Plant for additional peak system flows and that new or modified connections that increase flow may result in increases in the number and extent of violations of the City's NPDES Permit.

Defendant does not admit any liability to the United States or the State arising out of the transactions or occurrences alleged in the Complaint.

The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation among the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section I, and with the consent of the

Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

II. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 309(b) of the CWA, 33 U.S.C. § 1319(b), and over the Parties. This Court has supplemental jurisdiction over the State law claims asserted by the State of Oregon pursuant to 28 U.S.C. § 1367. Venue lies in this District pursuant to Section 309(b) of the CWA, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1391(b) and 1395(a), because the violations alleged in the Complaint are alleged to have occurred in, and Defendant is located in, this judicial district. For purposes of this Decree, or any action to enforce this Decree, Defendant consents to the Court's jurisdiction over this Decree and any such action and over Defendant and consents to venue in this judicial district.

2. For purposes of this Consent Decree, Defendant agrees that the Complaint states claims upon which relief may be granted pursuant to Section 309(b) of the CWA, 33 U.S.C. § 1319(b), ORS 468.035(1)(k) and ORS 468.100.

III. APPLICABILITY

3. The obligations of this Consent Decree apply to and are binding upon the United States and the State, and upon Defendant and any successors, assigns, or other entities or persons otherwise bound by law.

4. No transfer of ownership or operation of the City of Sandy Treatment Works, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Defendant of its obligation to ensure that the terms of the Decree are implemented. At least 30 Days prior to such transfer, Defendant shall provide a copy of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer,

together with a copy of the proposed written agreement, to EPA, the State, and DOJ, in accordance with Section XV (Notices). Any attempt to transfer ownership or operation of the City of Sandy Treatment Works without complying with this Paragraph constitutes a violation of this Decree.

5. Defendant shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties might reasonably include compliance with any provision of this Decree, as well as to any contractor retained to perform work required under this Consent Decree. Defendant shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

6. In any action to enforce this Consent Decree, Defendant shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

IV. OBJECTIVE

7. The Objective of this Consent Decree is for the City to achieve and maintain compliance with the CWA, ORS Chapter 468B, applicable federal and state regulations, its NPDES Permit and its Industrial Stormwater Permit, with the goal of eliminating all untreated discharges and discharges that fail to meet the effluent limitations established in its NPDES Permit.

V. DEFINITIONS

8. Terms used in this Consent Decree that are defined in the CWA, 33 U.S.C. §§ 1251-1387, and ORS Chapter 468B or in regulations promulgated thereunder have the meanings assigned to them in the Act, statutes or such regulations, unless otherwise provided in this

Consent Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions apply:

“2020-2023 Wastewater Improvements” shall mean the 2021-2023 WWTP Immediate Needs Upgrades Project, 2021 Basins 2 and 8 Rehabilitation Project, and 2022 Basins 6 and 7 Rehabilitation Project;

“Basin” shall mean a subdivision of a Wastewater Collection and Transmission System which consists of hydraulically linked sewers that are tributary to a common point in the sewer system. Sewer system evaluation techniques are undertaken on a basin basis. The basins for the City of Sandy are identified in Appendix B;

“City” or “Sandy” shall mean the Defendant City of Sandy, Oregon, including all of its departments, agencies, and instrumentalities and any successors thereto;

“City of Sandy Treatment Works” or “CSTW” shall mean the wastewater collection, treatment, control, and disposal system for the City of Sandy, including the Wastewater Treatment Plant and the Wastewater Collection and Transmission System;

“Complaint” means the complaint filed by the United States and the State in this action;

“Connection” means a physical connection to the WCTS measured at the time the connection is used or is permitted by the City to increase the flow to the CSTW;

“Consent Decree” or “Decree” means this Decree and all appendices attached hereto (listed in Section XXV);

“Day” means a calendar day unless expressly stated to be a business day. In computing any period of time for a deadline under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal holiday, the period runs until the close of business of the next business day;

“Defendant” means the City of Sandy, Oregon;

“DOJ” means the United States Department of Justice and any of its successor departments or agencies;

“EPA” means the United States Environmental Protection Agency and any of its successor departments or agencies;

“Effective Date” means the definition provided in Section XVI;

“Industrial Stormwater Permit” means the 1200-Z Stormwater Discharge General NPDES Permit 17517, ORR900001 authorizing stormwater discharges associated with an industrial activity;

“ODEQ” means the State of Oregon Department of Environmental Quality;

“ODOJ” means the State of Oregon Department of Justice;

“NPDES Permit” means permit number 102492, OR0026573 issued to the City by ODEQ pursuant to ODEQ’s delegated permitting authority under CWA Section 402, 33 U.S.C. § 1342, and any future extended, modified, or reissued permits;

“Paragraph” means a portion of this Decree identified by an Arabic numeral;

“Parties” means the United States, the State, and Defendant;

“Section” means a portion of this Decree identified by a Roman numeral;

“State” means the State of Oregon, acting on behalf of the Oregon Department of Environmental Quality;

“United States” means the United States of America, acting on behalf of EPA;

“Wastewater Collection and Transmission System” or “WCTS” shall mean the municipal wastewater collection, retention and transmission system, including but not limited to, all pipes,

Force Mains, Gravity Sewer Lines, Pump Stations, pumps, manholes, and appurtenances thereto, which are owned or operated by the City and which flow to the City's WWTP;

"Wastewater Treatment Plant" or "WWTP" shall mean all facilities, devices, or systems which are owned, managed, operated, or maintained by the City for the storage, treatment, recycling, or reclamation of municipal wastewater, including the WWTP located at 33400 Southeast Jarl Road in Boring, Oregon, and all components of such wastewater treatment facility;

"Work" shall mean all activities the City is required to perform under this Consent Decree.

VI. CIVIL PENALTY

9. Within 30 Days after the Effective Date, Defendant shall pay the sum of \$250,000 as a civil penalty to the United States, together with interest accruing from the date on which the Consent Decree is lodged with the Court, at the rate specified in 28 U.S.C. § 1961 as of the date of lodging.

10. Defendant shall pay the civil penalty due to the United States by FedWire Electronic Funds Transfer ("EFT") to the DOJ account, in accordance with instructions provided to Defendant by the Financial Litigation Program of the United States Department of Justice after the Effective Date. The payment instructions provided will include a Consolidated Debt Collection System ("CDCS") number, which Defendant shall use to identify all payments required to be made in accordance with this Consent Decree. Payment instructions will be provided to:

Jenny Coker, Public Works Director
City of Sandy
39250 Pioneer Boulevard
Sandy, Oregon 97055

(503) 668-6927
jcoker@ci.sandy.or.us

on behalf of Defendant. Defendant may change the individual to receive payment instructions on its behalf by providing written notice of such change to DOJ and EPA in accordance with Section XV (Notices).

11. At the time of payment, Defendant shall send notice that payment has been made: (i) to EPA via email at cinwd_acctsreceivable@epa.gov and steffen.craig@epa.gov or via regular mail at EPA Cincinnati Finance Office, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268; (ii) to DOJ in accordance with Section XV; and (iii) to EPA in accordance with Section XV. Such notice shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States, et. al v. City of Sandy, Oregon* and shall reference the civil action number, CDCS Number and DOJ case number 90-5-1-1-12501.

12. No later than 30 Days after the Effective Date, Defendant shall pay to the State the \$24,300 penalty assessed in Notice of Civil Penalty Assessment and Order No. WQ/M-NWR-2018-141 (“Notice”), issued by ODEQ to Defendant on February 26, 2019, in resolution of that Notice in the same manner as identified in Paragraph 16.

13. In addition to the civil penalty referenced in the preceding paragraph, a total civil penalty of \$250,000 is payable to the State. In accordance with ODEQ’s Internal Management Directive on Supplemental Environmental Projects (“SEP”), the civil penalty is mitigated to \$50,000 on the condition Defendant completes the approved SEP proposal at Appendix C by December 31, 2028. Defendant shall refrain from using the value of the SEP as a tax deduction or as part of a tax credit application; and, if and when Defendant publicizes the SEP or the results of the SEP, Defendant will state in a prominent manner that the project was undertaken as settlement of an ODEQ enforcement action.

Defendant will be deemed to have completed the SEP when ODEQ receives the following documentation: A written report from the Clackamas River Basin Council confirming that it received at least \$200,000 from Defendant and expended the money in the manner described in the SEP proposal.

14. Defendant shall pay the \$50,000 portion of the civil penalties, not subject to mitigation through the SEP, within 30 Days of the Effective Date.

15. Should Defendant fail to complete the approved SEP by December 31, 2028, Defendant shall pay the balance of the civil penalties, \$200,000, plus 9% interest per annum beginning on the Effective Date, within 30 Days of the completion deadline.

16. Defendant shall pay the civil penalties owed to the State in Paragraphs 12-15 by check or money made out to “Oregon State Treasurer” and submitted to Oregon DEQ, Attn: Business Office, 700 NE Multnomah Street, Portland, OR 97232. At the time of payment, Defendant shall send notice that payment has been made to ODEQ via email to Kieran.ODONNELL@deq.oregon.gov.

VII. COMPLIANCE REQUIREMENTS

17. Defendant shall comply with the CWA, ORS Chapter 468B, implementing regulations, and its NPDES Permit with respect to the CSTW and its Industrial Stormwater Permit.

18. Capacity, Management, Operation, and Maintenance. Within 180 Days of the Effective Date, Sandy shall submit to EPA and ODEQ for review and approval a Capacity, Management, Operation, and Maintenance (“CMOM”) Program for the City’s Wastewater Collection and Transmission System. The CMOM Program shall be developed in accordance with EPA’s 2005 Guidance titled “Guide for Evaluating Capacity, Management, Operation, and

Maintenance Programs at Sanitary Sewer Collection Systems.” The CMOM Program shall be stamped and signed by a registered professional engineer licensed to practice in the State of Oregon, demonstrating that the Program has been developed in accordance with EPA’s 2005 Guidance and sound engineering practices. Upon approval, Sandy shall implement the CMOM Program and shall annually review the Program, by December 31 of each year, and update the Program as necessary to ensure that it is consistent with accepted industry practices to properly manage, operate, and maintain sewer systems, identify and inventory areas within sewer systems with capacity constraints, and implement measures to ensure adequate capacity throughout its sewer systems. Any updates to the CMOM Program shall be completed by March 31 of the year following the annual review of the CMOM Program and the updated CMOM Program shall be provided to EPA and ODEQ no later than 30 Days following completion of the updated CMOM Program.

19. Sewer Assessment and Rehabilitation Program. By December 31, 2025, Sandy shall for all basins within its WCTS: (1) investigate sources of infiltration and inflow by means of smoke testing, CCTV inspection, and other identification methods; and (2) provide EPA and ODEQ for review and approval an annual report and rehabilitation plan, to be submitted by December 31 of each year, containing a schedule for completion of all basins, the results of the smoke testing and other infiltration and inflow identification efforts, and identifying planned corrective measures along with a schedule for implementation. Corrective measures must include removing heavy sediment and making repairs to category 4 and 5 defects from the National Association of Sewer Service Companies (“NASSCO”) rating system. All identified corrective measures shall be completed within 10 years of the Effective Date of the Consent Decree.

20. Preliminary Design Improvements. By October 31, 2023, the City shall complete construction and begin operation of improvements detailed in the 2020-2023 Wastewater Improvements, in accordance with ODEQ approved design plans.

21. Stress Test. The City has previously submitted to EPA and ODEQ, and EPA and ODEQ have reviewed and approved, a plan for conducting a stress test at the Wastewater Treatment Plant as outlined in Paragraph 9.b. of Appendix D. By June 30, 2023, Sandy shall perform the Stress Test in accordance with the plan approved by EPA and ODEQ.

22. Amended Wastewater Facilities Plan. The City shall submit to EPA and ODEQ, for review and approval, an Amended Wastewater Facility Plan that complies with the requirements of Appendix E and proposes alternatives to bring the City into compliance with the terms and conditions of the NPDES Permit. The schedule for final completion of all work under the Amended Wastewater Facility Plan shall be as expeditious as possible, but in no event longer than fifteen (15) years from the date the Facilities Plan is approved by EPA and ODEQ.

23. Capacity Assurance Program. The City shall implement the Capacity Assurance Program outlined in Appendix D that limits new sewer connections until capacity for the additional flows associated with those new or modified connections has been demonstrated within City of Sandy Treatment Works during both dry and peak flows.

24. Approval of Deliverables. After review of any plan, report, or other item that is required to be submitted pursuant to this Consent Decree, EPA and the State will in writing: (a) approve the submission; (b) approve the submission upon specified conditions; (c) approve part of the submission and disapprove the remainder; or (d) disapprove the submission. If all or part of a submission is disapproved, the EPA and the State will explain in writing the reasons for the disapproval, including identifying any deficiencies subject to Paragraphs 25 or 26.

25. If the submission is approved pursuant to Paragraph 24(a), Defendant shall take all actions required by the plan, report, or other document, in accordance with the schedules and requirements of the plan, report, or other document, as approved. If the submission is conditionally approved or approved only in part pursuant to Paragraph 24(b) or (c), Defendant shall, upon written direction from EPA and the State, take all actions required by the approved plan, report, or other item that EPA and the State determines are technically severable from any disapproved portions, subject to Defendant's right to dispute only the specified conditions or the disapproved portions, under Section XI (Dispute Resolution).

26. If the submission is disapproved in whole or in part pursuant to Paragraph 24(c) or (d), Defendant shall, within 60 Days or such other time as the Parties agree to in writing, correct all deficiencies and resubmit the plan, report, or other item, or disapproved portion thereof, for approval, in accordance with the preceding Paragraphs. If the resubmission is approved in whole or in part, Defendant shall proceed in accordance with the preceding Paragraph.

27. If a resubmitted plan, report, or other item, or portion thereof, is disapproved in whole or in part, EPA and the State may again require Defendant to correct any deficiencies, in accordance with the preceding Paragraphs, subject to Defendant's right to invoke Dispute Resolution and the right of EPA and the State to seek stipulated penalties as provided in the preceding Paragraphs.

28. If Defendant elects to invoke Dispute Resolution as set forth in Paragraphs 25 or 27, Defendant shall do so by sending a Notice of Dispute in accordance with Paragraph 57 within 30 Days (or such other time as the Parties agree to in writing) after receipt of the applicable decision.

29. Any stipulated penalties applicable to the original submission, as provided in Section IX, accrue during the 60 Day period described in Paragraph 26 or other specified period, but shall not be payable unless the resubmission is untimely or is disapproved in whole or in part; provided that, if the original submission was so deficient as to constitute a material breach of Defendant's obligations under this Decree, the stipulated penalties applicable to the original submission shall be due and payable notwithstanding any subsequent resubmission.

30. Permits. Where any compliance obligation under this Section requires Defendant to obtain a federal, state, or local permit or approval, Defendant shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. Defendant may seek relief under the provisions of Section X (Force Majeure) for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Defendant has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

VIII. REPORTING REQUIREMENTS

31. Defendant shall submit the following reports to EPA and the State at the addresses set forth Section XV (Notices):

- a. By July 31st and January 31st of each year after the lodging of this Consent Decree, until termination of this Decree pursuant to Section XIX, Defendant shall submit a semi-annual report for the preceding six months that includes: the status of any construction or compliance measures; completion of milestones; problems encountered or anticipated, together with implemented or proposed

solutions; status of permit applications; operation and maintenance; reporting on Capacity Assurance Program in compliance with Paragraph 13 of Appendix D; reports to state agencies; and a summary of costs incurred since the previous report.

- b. The report shall also include a description of any noncompliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If Defendant violates, or has reason to believe that it may violate, any requirement of this Consent Decree, Defendant shall notify DOJ, EPA, and the State of such violation and its likely duration, in writing, within ten business days of the Day Defendant first becomes aware of the violation or potential violation, with an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Defendant shall so state in the report. Defendant shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of its cause, within 30 Days of the Day Defendant becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Defendant of its obligation to provide the notice required by Section X (Force Majeure).

32. Whenever any violation of this Consent Decree or of any applicable permits or any other event affecting Defendant's performance under this Decree may pose an immediate threat to the public health or welfare or the environment, Defendant shall notify EPA and the State by telephone at (206) 553-1816 and (503) 229-5019 and by email to levo.brian@epa.gov, R10enforcement@epa.gov, and bailey.randall@deq.state.or.us as soon as possible, but no later than 24 hours after Defendant first knew of the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

33. Each report submitted by Defendant under this Section shall be signed by an official of the submitting party and include the following certification:

I certify under penalty of perjury that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

34. This certification requirement does not apply to emergency or similar notifications where compliance would be impractical.

35. The reporting requirements of this Consent Decree do not relieve Defendant of any reporting obligations required by the CWA or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

36. Any information provided pursuant to this Consent Decree may be used by the United States and/or the State in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

IX. STIPULATED PENALTIES

37. Defendant shall be liable for stipulated penalties to the United States and the State for violations of this Consent Decree as specified below, unless excused under Section X (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Decree, including any work plan or schedule approved under this Decree, according to all applicable requirements of this Decree and within the specified time schedules established by or approved under this Decree.

38. Late Payment of Civil Penalty. If Defendant fails to pay the civil penalty required to be paid under Section VI (Civil Penalty) when due, Defendant shall pay a stipulated penalty of \$5,000 per Day for each Day that the payment is late.

39. Permit Violations. The following stipulated penalties shall accrue for each violation of any requirement of Defendant's Permits (NPDES Permit and Industrial Stormwater Permit) specified below:

- a. Waste Discharge Limit Violations. For each violation of the requirement to comply with all daily, weekly, or monthly effluent limits on parameters set forth in the Permit or any final effluent limits under any successor permit, Defendant shall pay a stipulated penalty as follows:

Penalty Per Violation

\$5,000 for each violation of each daily limit
\$10,000 for each violation of each weekly or seven day limit
\$20,000 for each violation of each monthly or 30-day limit

- b. Bypasses. The following penalties apply to any bypasses made in violation of the requirements of Defendant's NPDES Permit:

Per Violation Per day

First violation per year	\$15,000 per violation per day
Second and Third violation	\$30,000 per violation per day
Fourth violation or more	\$50,000 per violation per day

- c. Any other violations of the Permit shall be subject to the following penalties per violation per day.

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th Day
\$1,000.	15th through 30th Day
\$2,500.	31st Day and beyond

40. Compliance Milestones.

- a. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements identified in Paragraphs 18-22 of this Consent Decree (CMOM, Sewer Assessment and Rehabilitation Program, Preliminary Design Improvements, Stress Test, Amended Facilities Plan), including failing to meet deadlines set by the Consent Decree or within any deliverables:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$700	1st through 14th Day
\$1500	15th through 30th Day
\$2500	31st Day and beyond

- b. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements of the Capacity Assurance Program:

- (a) For any new sewer service connection or change to an existing connection that results in additional flow that is

approved by the City in violation of Capacity Assurance Program:

\$10,000 per Equivalent Residential Unit calculated as outlined in Paragraphs 15-16 of Appendix D.

41. Reporting Requirements. The following stipulated penalties shall accrue per violation per Day for each violation of the reporting requirements of Section VIII:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$100.....	1st through 14th Day
\$300.....	15th through 30th Day
\$500.....	31st Day and beyond

42. Stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

43. Defendant shall pay stipulated penalties to the United States and the State within 30 Days of a written demand by either Plaintiff. Defendant shall pay 50 percent of the total stipulated penalty amount due to the United States and 50 percent to the State. The Plaintiff making a demand for payment of a stipulated penalty shall simultaneously send a copy of the demand to the other Plaintiff.

44. Either Plaintiff may in the unreviewable exercise of its discretion, reduce, or waive stipulated penalties otherwise due to it under this Consent Decree.

45. Stipulated penalties shall continue to accrue as provided in Paragraph 42, during any Dispute Resolution, but need not be paid until the following:

- a. If the dispute is resolved by agreement of the Parties or by a decision of EPA or the State that is not appealed to the Court,

Defendant shall pay accrued penalties determined to be owing, together with interest, to the United States or the State within 30 Days of the effective date of the agreement or the receipt of EPA's or the State's decision or order.

- b. If the dispute is appealed to the Court and the United States or the State prevails in whole or in part, Defendant shall pay all accrued penalties determined by the Court to be owing, together with interest, within 60 Days of receiving the Court's decision or order, except as provided in subparagraph c, below.
- c. If any Party appeals the Court's decision, Defendant shall pay all accrued penalties determined to be owing, together with interest, within 15 Days of receiving the final appellate court decision.

46. Obligations Prior to the Effective Date. Upon the Effective Date, the stipulated penalty provisions of this Decree shall be retroactively enforceable with regard to any and all violations of Section VI (Compliance Requirements) that have occurred after signature but prior to the Effective Date, provided that stipulated penalties that may have accrued prior to the Effective Date may not be collected unless and until this Consent Decree is entered by the Court.

47. Defendant shall pay stipulated penalties owing to the United States in the manner set forth in Paragraph 10 and with the confirmation notices required by Paragraph 11, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid. Defendant shall pay stipulated penalties owing to the State in the manner set forth in Paragraph 16.

48. If Defendant fails to pay stipulated penalties according to the terms of this Consent Decree, Defendant shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States or the State from seeking any remedy otherwise provided by law for Defendant's failure to pay any stipulated penalties.

49. The payment of penalties and interest, if any, shall not alter in any way Defendant's obligation to complete the performance of the requirements of this Consent Decree.

50. Non-Exclusivity of Remedy. Stipulated penalties are not the United States' or State's exclusive remedy for violations of this Consent Decree. Subject to the provisions of Section XIII (Effect of Settlement/Reservation of Rights), the United States and the State expressly reserve the right to seek any other relief it deems appropriate for Defendant's violation of this Decree or applicable law, including but not limited to an action against Defendant for statutory penalties, additional injunctive relief, mitigation or offset measures, and/or contempt. However, the amount of any statutory penalty assessed for a violation of this Consent Decree shall be reduced by an amount equal to the amount of any stipulated penalty assessed and paid for the same violation pursuant to this Consent Decree.

X. FORCE MAJEURE

51. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Defendant, of any entity controlled by Defendant, or of Defendant's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Defendant's best efforts to fulfill the obligation. The requirement that Defendant exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force

majeure event (a) as it is occurring and (b) following the potential force majeure, such that the delay and any adverse effects of the delay are minimized. “Force Majeure” does not include Defendant’s financial inability to perform any obligation under this Consent Decree.

52. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, Defendant shall provide notice by telephone to (206) 553-1816 and (503) 229-5019 and by email to levo.brian@epa.gov, R10enforcement@epa.gov, and bailey.randall@deq.state.or.us, within 72 hours of when Defendant first knew that the event might cause a delay. Within seven Days thereafter, Defendant shall provide in writing to EPA and the State an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Defendant’s rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. Defendant shall include with any such notice all available documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Defendant from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Defendant shall be deemed to know of any circumstance of which Defendant, any entity controlled by Defendant, or Defendant’s contractors knew or should have known.

53. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for

performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA, after a reasonable opportunity for review and comment by the State, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. EPA will notify Defendant in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

54. If EPA, after a reasonable opportunity for review and comment by the State, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify Defendant in writing of its decision.

55. If Defendant elects to invoke the dispute resolution procedures set forth in Section XI (Dispute Resolution), it shall do so no later than 15 Days after receipt of EPA's notice. In any such proceeding, Defendant shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Defendant complied with the requirements of Paragraphs 51 and 52. If Defendant carries this burden, the delay at issue shall be deemed not to be a violation by Defendant of the affected obligation of this Consent Decree identified to EPA and the Court.

XI. DISPUTE RESOLUTION

56. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Defendant's failure to seek resolution of a dispute

under this Section shall preclude Defendant from raising any such issue as a defense to an action by the United States to enforce any obligation of Defendant arising under this Decree.

57. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Defendant sends DOJ, EPA, and the State a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed 30 Days from the date the dispute arises, unless that period is modified by written agreement. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States and the State shall be considered binding unless, within 20 Days after the conclusion of the informal negotiation period, Defendant invokes formal dispute resolution procedures as set forth below.

58. Formal Dispute Resolution. Defendant shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph 57, by sending DOJ, EPA, and the State a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Defendant's position and any supporting documentation relied upon by Defendant.

59. The United States and the State will send Plaintiffs' Statement of Position to Defendant within 45 Days of receipt of Defendant's Statement of Position. The Plaintiffs' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States and the State. The Plaintiffs' Statement of Position is binding on Defendant, unless

Defendant files a motion for judicial review of the dispute in accordance with the following Paragraph.

60. Judicial Dispute Resolution. Defendant may seek judicial review of the dispute by filing with the Court and serving on the United States and the State a motion requesting judicial resolution of the dispute. The motion (a) must be filed within 20 Days of receipt of the Plaintiffs' Statement of Position pursuant to the preceding Paragraph; (b) may not raise any issue not raised in informal dispute resolution pursuant to Paragraph 57, unless the Plaintiffs raise a new issue of law or fact in the Statement of Position; (c) shall contain a written statement of Defendant's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and (d) shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

61. The Plaintiffs shall respond to Defendant's motion within the time period allowed by the Local Rules of this Court. Defendant may file a reply memorandum, to the extent permitted by the Local Rules.

62. Standard of Review

- a. Disputes Concerning Matters Accorded Record Review. Except as otherwise provided in this Consent Decree, in any dispute brought under Paragraph 60 pertaining to: the adequacy or appropriateness of plans, procedures to implement plans, schedules or any other items requiring approval by EPA and ODEQ under this Consent Decree; the adequacy of the performance of work undertaken pursuant to this Consent Decree; and all other disputes that are accorded review on the administrative record under applicable

principles of administrative law, Defendant shall have the burden of demonstrating, based on the administrative record, that the position taken by the United States is not consistent with the Consent Decree or applicable law.

- b. Other Disputes. Except as otherwise provided in this Consent Decree, in any other dispute brought under Paragraph 58, Defendant shall bear the burden of demonstrating that its position complies with this Consent Decree and better furthers the Objectives of the Consent Decree.

63. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Defendant under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 45. If Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IX (Stipulated Penalties).

XII. INFORMATION COLLECTION AND RETENTION

64. The United States, the State, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any facility covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

- a. monitor the progress of activities required under this Consent Decree;
- b. verify any data or information submitted to the United States or the

State in accordance with the terms of this Consent Decree;

- c. obtain samples and, upon request, splits of any samples taken by Defendant or its representatives, contractors, or consultants;
- d. obtain documentary evidence, including photographs and similar data; and
- e. assess Defendant's compliance with this Consent Decree.

65. Upon request, Defendant shall provide EPA and the State or their authorized representatives splits of any samples taken by Defendant. Upon request, EPA and the State shall provide Defendant splits of any samples taken by EPA or the State.

66. Until five years after the termination of this Consent Decree, Defendant shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to Defendant's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States or the State, Defendant shall provide copies of any documents, records, or other information required to be maintained under this Paragraph.

67. At the conclusion of the information-retention period provided in the preceding Paragraph, Defendant shall notify the United States and the State at least 90 Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States or the State, Defendant shall deliver

any such documents, records, or other information to EPA or the State. Defendant may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Defendant asserts such a privilege, it shall provide the following: (a) the title of the document, record, or information; (b) the date of the document, record, or information; (c) the name and title of each author of the document, record, or information; (d) the name and title of each addressee and recipient; (e) a description of the subject of the document, record, or information; and (f) the privilege asserted by Defendant. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

68. Defendant may also assert that information required to be provided under this Section is protected as Confidential Business Information (“CBI”) under 40 C.F.R. Part 2. As to any information that Defendant seeks to protect as CBI, Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

69. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or the State pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

70. This Consent Decree resolves the civil claims of the United States and the State for the violations alleged in the Complaint filed in this action through the date of lodging.

71. The United States and the State reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree. Defendant retains all rights and defenses to

such claims except as provided in this Consent Decree. This Consent Decree shall not be construed to limit the rights of the United States or the State to obtain penalties or injunctive relief under the Act or implementing regulations, or under other federal or state laws, regulations, or permit conditions, except as expressly specified in Paragraph 70. The United States and the State further reserve all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Defendant's CSTW, whether related to the violations addressed in this Consent Decree or otherwise.

72. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, civil penalties, other appropriate relief relating to the CSTW or Defendant's violations, Defendant shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 70.

73. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Defendant is responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits; and Defendant's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States and the State do not, by their consent to entry of this Consent Decree, warrant or aver in any manner that Defendant's compliance with any aspect of this Consent Decree will

result in compliance with provisions of the CWA, 33 U.S.C. § 1251, et seq., or with any other provisions of federal, State, or local laws, regulations, or permits. Application for construction grants, State Revolving Loan Funds, or any other grants or loans, or other delays caused by inadequate facility planning or plans and specifications on the part of Defendant shall not be cause for extension of any required compliance date in this Consent Decree.

74. This Consent Decree does not limit or affect the rights of Defendant or of the United States or the State against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendant, except as otherwise provided by law.

75. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

76. Nothing in this Consent Decree limits the rights or defenses available under Section 309(e) of the CWA, 33 U.S.C. § 1319(e), in the event that the laws of the State, as currently or hereafter enacted, may prevent Defendant from raising the revenues needed to comply with this Decree.

XIV. COSTS

77. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States and the State shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by Defendant.

XV. NOTICES

78. Unless otherwise specified in this Decree, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and sent by mail or email, (with a preference for email), addressed as follows:

As to DOJ by email (preferred): eescdcopy.enrd@usdoj.gov
Re: DJ # 90-5-1-1-12501

As to DOJ by mail: EES Case Management Unit
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Re: DJ # 90-5-1-1-12501

As to EPA by email (preferred): levo.brian@epa.gov and
johnson.patrick@epa.gov

As to EPA by mail: Brian Levo, Compliance Officer
U.S. Environmental Protection Agency, Region 10
1200 6th Avenue, Suite 155, MS 20-C04
Seattle, Washington 98101

As to the State by email: Randall.bailey@deq.oregon.gov and
Jeff.bachman@deq.oregon.gov and
nina.englisher@doj.state.or.us

As to the State by mail: Randall Bailey
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Jeff Bachman
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Nina Englander
Oregon Department of Justice
100 SW Market Street
Portland, Oregon 97201

As to Defendant by email: tdeems@ci.sandy.or.us and
jcoker@ci.sandy.or.us

As to Defendant by mail: Attn: City Manager
City of Sandy
39250 Pioneer Boulevard
Sandy, Oregon 97055

79. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

80. Notices submitted pursuant to this Section shall be deemed submitted upon mailing or transmission by email, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XVI. EFFECTIVE DATE

81. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket; provided, however, that Defendant hereby agrees that it shall be bound to perform duties scheduled to occur prior to the Effective Date. In the event the United States withdraws or withholds consent to this Consent Decree before entry, or the Court declines to enter the Consent Decree, then the preceding requirements to perform duties scheduled to occur before the Effective Date shall terminate.

XVII. RETENTION OF JURISDICTION

82. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections XI and XVIII, or effectuating or enforcing compliance with the terms of this Decree.

XVIII. MODIFICATION

83. Except as otherwise set forth in Appendix D, the terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court.

84. Any disputes concerning modification of this Decree shall be resolved pursuant to Section XI (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 62, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

XIX. TERMINATION

85. After Defendant has completed the requirements of Section VII (Compliance Requirements), has thereafter maintained continuous satisfactory compliance with this Consent Decree and Defendant's NPDES Permit for a period of 3 years, has complied with all other requirements of this Consent Decree, and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, Defendant may serve upon the United States and the State a Request for Termination, stating that Defendant has satisfied those requirements, together with all necessary supporting documentation.

86. Following receipt by the United States and the State of Defendant's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States, after consultation with

the State, agrees that the Decree may be terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

87. If the United States after consultation with the State does not agree that the Decree may be terminated, Defendant may invoke Dispute Resolution under Section XI. However, Defendant shall not seek Dispute Resolution of any dispute regarding termination until 15 Days after service of its Request for Termination.

XX. PUBLIC PARTICIPATION

88. This Consent Decree shall be lodged with the Court for a period of not less than 30 Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Defendant consents to entry of this Consent Decree without further notice and agrees not to withdraw from or oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendant in writing that it no longer supports entry of the Decree.

XXI. SIGNATORIES/SERVICE

89. Each undersigned representative of Defendant and other Parties to the Decree and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice identified on the DOJ signature page below, certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

90. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Defendant agrees to accept service of process by mail with respect to

all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons. Defendant need not file an answer to the Complaint in this action unless or until the Court expressly declines to enter this Consent Decree.

XXII. INTEGRATION

91. This Consent Decree, including deliverables that are subsequently approved pursuant to this Decree, constitutes the entire agreement among the Parties regarding the subject matter of the Decree and supersedes all prior representations, agreements and understandings, whether oral or written, concerning the subject matter of the Decree herein.

XXIII. HEADINGS

92. Headings to the Sections and Subsections of this Consent Decree are provided for convenience and do not affect the meaning or interpretation of the provisions of this Consent Decree.

XXIV. FINAL JUDGMENT

93. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States, the State, and Defendant.

XXV. APPENDICES

94. The following Appendices are attached to and part of this Consent Decree:

“Appendix A” is the Preliminary Design Evaluation Report.

“Appendix B” is the Collection System Basin Map

“Appendix C” is the State Supplemental Environmental Project

“Appendix D” is the Capacity Assurance Program Evaluations

“Appendix E” is the Amended Wastewater System Facility Plan Requirements

Dated and entered this __ day of _____, 20

UNITED STATES DISTRICT JUDGE

FOR THE UNITED STATES OF AMERICA:

TODD KIM
ASSISTANT ATTORNEY GENERAL
Environment and Natural Resources Division
U.S. Department of Justice

6/30/23
Date

s/ Rachel A. Hankey
RACHEL A. HANKEY
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20044-7611

NATALIE K. WIGHT
United States Attorney

6/30/23
Date

s/ Alexis A. Lien
ALEXIS A. LIEN, OSB #110569
Assistant United States Attorney
Office of United States Attorney
District of Oregon
1000 SW Third Avenue, Suite 600
Portland, Oregon 97204

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:

6/20/23
Date

s/ Beverly Li

BEVERLY LI
Regional Counsel
United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101

OF COUNSEL:
PATRICK JOHNSON
Assistant Regional Counsel
United States Environmental Protection Agency Region 10,
Alaska Operations Office
222 West 7th Avenue, #19
Anchorage, Alaska 99513

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY CONTINUED:

6/29/23
Date

s/ Rosemarie Kelley
ROSEMARIE KELLEY
Director
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency

—
OF COUNSEL:
HANNAH ANDERSON
Attorney-Adviser, Municipal Enforcement Branch
Water Enforcement Division
Office of Civil Enforcement
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

FOR THE STATE OF OREGON:

6/8/23
Date

s/ Nina R. Englander
NINA R. ENGLANDER #106119
Assistant Attorney General
Oregon Department of Justice
100 S.W. Market Street
Portland, Oregon 97201

6/8/23
Date

s/ Kieran O'Donnell
KIERAN O'DONNELL
Oregon Department of Environmental Quality
Manager of Office of Compliance and Enforcement
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

FOR DEFENDANT:

6/6/2023
Date

s/ Tyler Deems
TYLER DEEMS
Interim City Manager
City of Sandy
39250 Pioneer Boulevard
Sandy, Oregon 97055

Preliminary Design Evaluation Report | March 2021

Sandy Wastewater Treatment Plant Condition Assessment Improvements Project

PREPARED FOR

City of Sandy, OR



PREPARED BY



Sandy Wastewater Treatment Plant Condition Assessment Improvements Project Preliminary Design Evaluation Report

Prepared for

City of Sandy

Project No. 964-50-20-01



EXPIRES : 6/30/2022

Project Manager: Preston Van Meter

March 2021

Date

A handwritten signature in blue ink that reads "Timothy R. Banyai".

QA/QC Review: Timothy R. Banyai

March 2021

Date

**Condition Assessment Improvements Project
Preliminary Design Evaluation Report**



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2019 Condition Assessment	Condition Assessment in July 2019
2019 Facilities Plan	Wastewater Facilities Plan in 2019
2019 Facilities Plan	Wastewater Facilities Plan in 2019
2020 PDR	Immediate Needs Improvements Project Preliminary Design Report
AACE	Association for the Advancement of Cost Engineering
AAF	Average Annual Flow
ACH	Air Changes per Hour
ADWF	Average Dry Weather Flow
aSRT	Aerobic Solids Retention Time
ASSB	Aerated Sludge Storage Basin
ASSB	Aerated Sludge Storage Basin
BOD	Biological Oxygen Demand
City	City of Sandy

Condition Assessment Improvements Project Preliminary Design Evaluation Report



CMU	Concrete Masonry Unit
DO	Dissolved Oxygen
EDI	Energy Dissipating Inlet
FRP	Fiberglass Reinforced Plastic
GPM	Gallons Per Mile
I&C	Instrumentation and Control
IMLR	Internal Mixed Liquor Recycle
IOT	Internet of Things
LEL	Lower Explosive Limit
MBR	Membrane Bioreactor
MCCs	Motor Control Centers
MGD	Millions of Gallons
MLSS	Mixed Liquor Suspended Solids
MMDWF	Maximum Month Dry Weather Flow
MMWWF	Maximum Month Wet Weather Flow
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
OPCC	Opinion of Probable Construction Cost
OSHA	Occupational Safety and Health Administration
PDF	Peak Day Flow
PDR	Preliminary Design Report
PIF	Peak Instantaneous Flow
PLC	Programmable Logic Controller
Project	City of Sandy WWTP Condition Assessment Improvements Project
PVC	Polyvinyl Chloride
RAS	Recycled Activated Sludge
RPS	Return Pump Station
SCADA	Supervisory Control and Data Acquisition
SCFM	Standard Cubic Feet Per Minute
SRT	Solids Retention Time
TAG	The Automation Group
TM	Technical Memorandum
UV	Ultraviolet
VFD	Variable Frequency Drives
WAS	Waste Activated Sludge
WWTP	Wastewater Treatment Plant

Condition Assessment Improvements Project Preliminary Design Evaluation Report



1.0 INTRODUCTION

The City of Sandy (City) developed a Wastewater Facilities Plan in 2019 (2019 Facilities Plan), which identified wastewater collection, conveyance and treatment system improvements to be implemented in three phases through 2040. The 2019 Facilities Plan also identified several immediate needs projects required to improve the performance of the Wastewater Treatment Plant (WWTP).

After the 2019 Facilities Plan was completed, the City conducted a Condition Assessment in July 2019 (2019 Condition Assessment), which identified additional immediate needs projects beyond those identified in the 2019 Facilities Plan. The City then performed several operational and mechanical improvements to the WWTP after completion of the 2019 Condition Assessment.

In the summer of 2020, the City developed the Immediate Needs Improvements Project Preliminary Design Report (2020 PDR). The 2020 PDR presented a preliminary design for the improvements required at the WWTP based on the recommendations in the 2019 Facilities Plan, the findings of the 2019 Condition Assessment, and the improvements implemented in 2019.

This report evaluates the recommendations in the 2020 PDR and presents a modified set of recommended improvements, which will more efficiently utilize the City's budget while also effectively addressing the operational and maintenance deficiencies at the WWTP. These improvements will be implemented under the City of Sandy WWTP Condition Assessment Improvements Project (Project).

In addition to the recommended improvements identified in this report, a "Wish List" of improvements that can be implemented under this Project, if funding allows, or under future projects is provided in Appendix E. The items included on the Wish List are improvements identified by City and plant operations staff during site visits conducted for this Project. The Wish List is intended to be a living document that can be changed over time to keep track of small and large improvements that the City wishes to complete.

2.0 OVERVIEW OF EXISTING FACILITIES

The City of Sandy WWTP is located at 33400 SE Jarl Road in Boring, Oregon. A site plan showing the major processes, buildings, and other site features at the WWTP is shown in Figure 2-1. A summary of the design influent flows for the WWTP from the 2020 PDR are provided in Table 2-1. A summary of the major equipment sizing and design criteria from the 2020 PDR are provided in Table 2-2. The existing condition of the major processes, building and other site features are discussed in more detail in Section 3.0.

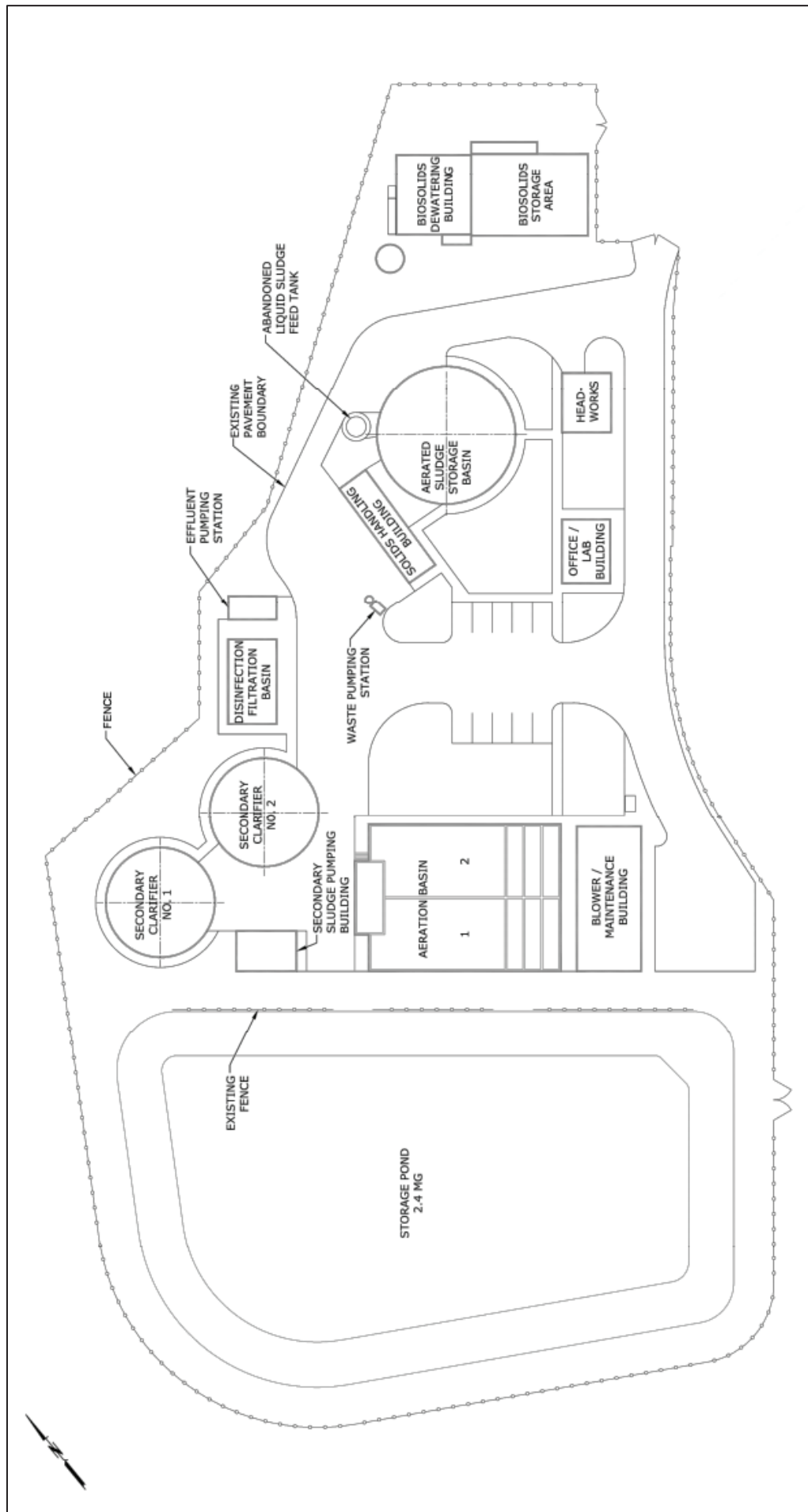


Figure 2-1. Sandy WWTP Site Plan

Condition Assessment Improvements Project Preliminary Design Evaluation Report



Table 2-1. Sandy WWTP Influent Design Flows

Flow Condition	Design Flow, million gallons per day (mgd)						
	Exist	2025	2026 ¹	2030	2035	2036 ²	2040
Average Annual Flow (AAF)	1.4	1.5	0.9	1.1	1.4	0.8	1.2
Average Dry Weather Flow (ADWF)	1.1	1.2	0.7	0.9	1.1	0.6	0.9
Maximum Month Dry Weather Flow (MMDWF)	1.4	1.5	0.9	1.2	1.4	0.8	1.2
Maximum Month Wet Weather Flow (MMWWF)	2.7	2.9	1.8	2.2	2.6	1.4	2.3
Peak Day Flow (PDF)	5.9	5.5	3.9	4.8	5.7	3.2	5.0
Peak Instantaneous Flow (PIF)	9.1	9.9	6.4	7.7	9.1	5.6	7.0

Notes:
1. First phase of the Eastside Satellite Plant begins operation in 2026
2. Second phase of the Eastside Satellite Plant begins operation in 2036.

Table 2-2. Sandy WWTP Existing Design Criteria

Parameter	Value
Raw Screening	
Screen Type	Drum Screen
Screen Capacity	6.7 mgd
Screen Channel Width	4 ft
Screen Bar Spacing	1/4-in
Manual Screen	
Type	Bar Screen Rack
Quantity	1
Width	2 ft
Bar Spacing	3/4-inch
Grit Removal	
Type	Vortex
Max Flow	7.0 mgd
Grit Chamber Diameter	10 ft
Air Scour	75 standard cubic feet per minute (scfm)
Grit Chamber Mechanism Drive Motor	1 hp
Grit Pump	250 gpm @ 30 ft TDH, 5 hp
Grit Concentrator	250 gpm
Grit Classifier Screw Conveyor Drive	1 hp
Influent Flow Measurement	
Type	Parshall flume with level sensor
Throat width	12-inch
Capacity	9.2 mgd
Aeration Basins	
Number of Trains	2

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Table 2-2. Sandy WWTP Existing Design Criteria

Parameter	Value
Total Basin Volume	740,000 gal
Selector Cells (3 per train)	75,000 gal, ea
Aerobic Cells (1 per train)	145,000 gal, ea
Average Sidewater Depth	17.79 ft
Diffuser Type	Fine Bubble Disc, 7 in dia.
Submersible Mixers (Total 4)	4 hp
Internal Mixed Liquor Recycle Pumps (Total 2)	750 gpm @ 12.0 ft TDH, 5 hp ea
Utility Pumps (Total 2)	2,800 gpm @ 12 ft TDH, ea
Blowers (No. 1-3)	
Type	Multi-stage Centrifugal
Capacity	1,350 scfm
Motor	100 hp
Blowers (No. 4)	
Type	Positive Displacement
Capacity	1,199 scfm
Motor	60 hp
Secondary Clarifiers	
Quantity	2
Capacity	3.5 mgd, ea.
Surface Overflow Rate at Capacity	1,500 gal/day per ft ²
Diameter	54 ft
Side-water Depth	15 ft
Mechanism Drive	3/4 hp
RAS Pumps	
Quantity	2
Capacity	600 gpm @ 23 ft TDH, ea
Motor	7.5 hp
WAS Pumps	
Quantity	2
Capacity	260 gpm @ 23 ft TDH, ea
Motor	5 hp
Filters	
Type	Disk Filters
Number of Units	2
Number of Disks per Unit	6
Capacity, total	6 mgd
Average Flow Rate	2 gpm/ft ²
Disk Drive	1/2 hp, ea

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Table 2-2. Sandy WWTP Existing Design Criteria

Parameter	Value
Backwash Pump Quantity	2
Backwash Pump Drive	2 hp, ea
High Pressure Wash Pump Quantity	2
High Pressure Wash Pump Drive	40 hp, ea
Ultraviolet (UV) Disinfection	
Type	Medium Pressure
Number of Channels	1
Peak Flow Rates	7.0 mgd
Dosage	30,010 microwatt sec/cm ²
Headloss	17.7 in
Aerated Sludge Storage Basin	
Center Well	90,000 gallons
Cell No. 1:	90,000 gallons
Cell No. 2:	180,000 gallons
Decant Pumps	
Quantity	3
Capacity	50 gpm @ 22 ft TDH
Motor	1/2 hp
Sludge Transfer Pump	
Quantity	2
Motor	10 hp
Diffusers	
Center Well	270, 7-in dia fine bubble membrane disc
Cell No. 1 and No. 2	16, coarse bubble
Sodium Hypochlorite Storage & Metering Facility	
Number of Tanks	2
Tank Volume	1,000 gallons, ea
Number of Metering Pumps	2
Metering Pump Capacity	5 gph
Waste Pump Station	
Pump Station Type	Wet Pit with valve vault
Wet Pit Diameter	4 ft
Pumps	
Type	Submersible
Quantity	2
Capacity	350 gpm @ 22 ft TDH, ea
Motor	3 hp

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3.0 PRELIMINARY DESIGN EVALUATION

This section summarizes the existing condition of each process area at the WWTP, the improvements recommended in the 2020 PDR, an evaluation of the 2020 PDR recommendations and a modified set of improvements recommended for implementation under this Project. Drawings of the proposed improvements are provided in Appendix A.

3.1 Headworks Facility

3.1.1 Existing Conditions

The existing headworks consists of a drum screen in a 4-foot wide channel with 1/4-inch openings; a manual screen in a 2-foot wide bypass channel; a 10-foot diameter vortex grit removal basin; and a Parshall flume for measuring influent flow. The grit basin is equipped with an airlift pump that pumps grit from the bottom of the basin and discharges it to a grit classifier. The grit classifier removes water and organic material from the grit and conveys the grit via a screw conveyor to a dumpster. The drum screen also discharges screenings to the same dumpster.

The headworks facility has the following deficiencies:

- The headworks equipment is over 20 years old and is reaching the end of its useful life.
- The drum screen does not have adequate capacity to treat future peak wet weather flows.
- Solids and rags leak through the side seals on the drum screen and influent flow periodically overflows the bypass channel isolation gate. This results in poor removal of solids and rags from the influent flow.
- There is no means of removing the screen from the channel to perform routine maintenance on the screen.
- The paddle mixer in the grit removal basin failed recently.
- The grit pump and grit pump discharge piping need replacement.
- There is no redundant mechanical screen or grit removal equipment at the headworks facility.
- The hydraulic grade line of the headworks facility is not compatible with future planned primary clarifiers, which are required to treat the additional solids load from the future Eastside Satellite MBR facility. The headworks facility will need to be relocated to a higher elevation to allow primary clarifiers to be installed at the WWTP.

3.1.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following improvements for the headworks facility:

- Replace the drum screen in-kind.
- Replace the vortex grit removal equipment including paddle mixer, grit pump, grit concentrator, grit classifier, and screw conveyor in-kind.
- Install a motorized crane next to the screen to improve maintenance accessibility.

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- Replace the headworks equipment control panel to improve control from the Supervisory Control and Data Acquisition (SCADA) system.
- Repair/replace the conduit and wiring between field equipment and motor control centers (MCCs) in the blower building.

After reviewing the existing conditions of the headworks facility and the 2020 PDR recommendations, West Yost recommends the City make limited investments in the existing headworks facility for the following reasons:

- The biggest issue impacting operation of the headworks facility is peak flows and system hydraulics. The current headworks is simply not designed for the nearly 10 millions of gallons of (MGD) peak flows that are believed to enter the facility during peak storm events.
- The main bearing on the existing drum screen has been replaced and the screen is functioning adequately.
- Ultimately, the headworks facility will need to be relocated to a higher elevation to support the future installation of primary clarifiers as part of the major planned expansion when the Eastside Membrane Bioreactor (MBR) facility is constructed.

As a result, West Yost recommends a modified approach for addressing the deficiencies at the headworks facility as summarized in the following section.

3.1.3 Modified Preliminary Design Recommendations

Based on the analysis summarized above, it recommended that the following improvements, which will improve permit compliance, treatment performance, and maintenance access be implemented at the headworks facility under this Project:

- Install a motorized gantry crane next to the existing drum screen to assist in removing the screen from the channel for routine maintenance.
- Replace the paddle mixer in the grit basin.
- Replace the grit pump and grit pump discharge piping.
- Implement structural improvements to prevent influent flow from overflowing the bypass channel isolation gate and bypass the screen.

These recommended upgrades are shown on Drawings S000 and M001 included in Appendix A.

3.2 Equalization Basin

3.2.1 Existing Conditions

The existing flow equalization facilities consist of a flow control structure, an equalization basin and utility pumps that drain the basin and discharge flow into the aeration basins. The flow control structure was installed in 2018 and is designed to split flow from the headworks facility to the aeration basin and the equalization basin using two fixed weirs. The weir elevations are set to allow flow to the equalization basin when influent flow exceeds 2.0 mgd. The existing flow equalization facilities have the following deficiencies:

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- The existing flow control structure and equalization basin do not include any instrumentation to measure flow to the equalization basins or water surface level in the basins. As a result, the basin frequently overfills.
- Large plumes of algae have been observed to build up in the equalization basin.
- The existing utility pumps that drain the basin back into the aeration basin are constant speed pumps and are oversized. Therefore, when operation staff begin draining the equalization basin, large slugs of flow with high concentrations of algae are discharged into the aeration basins. The presence of algae in the equalization basins return flow can inhibit the biological treatment in the aeration basins and result in permit violations.

3.2.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following improvements to the flow equalization facilities, which were focused on adding instrumentation to measure flow to the equalization basins and water level in the basins:

- Build a concrete flow control structure in the equalization basin and extend the existing 16-inch Polyvinyl Chloride (PVC) bypass pipe from the aeration basin to this flow control structure
- Install a walkway out to the concrete flow control structure.
- Install a 350 gallons per minute (gpm) submersible pump within the flow control structure to allow for drainage of the equalization basin back to the aeration basin as needed.
- Install a magnetic flow meter on the new bypass pipe and an ultrasonic level transmitter in the equalization basin.

After reviewing the existing conditions of the flow equalization facilities and the 2020 PDR recommendations, a slightly different approach is recommended for the equalization basin upgrades. Instead of building a new flow control structure, it is recommended that existing facilities be modified to better control and measure flow to the equalization basin. It is also recommended that floating aerators be added to the equalization basin to reduce the formation of algae in the basins.

3.2.3 Modified Preliminary Design Recommendations

To meet the deficiencies noted above, the following improvements are recommended for the equalization basin:

- Evaluate the design of the flow control structure using the existing Visual Hydraulics model and modify the elevation of the weirs to reduce the frequency at which raw sewage is discharged into the equalization basins. Proposed modifications include removing the existing baffles and static weir plates in the flow control structure and installing a motorized weir gate in the structure to control flow to the equalization basin.
- Install a level sensor in the existing flow control structure to measure the level over the proposed weir gate. This level measurement can be used to determine flow to the equalization basin and can also be used to send an alarm to operators and the SCADA system to inform them that flow is diverted to the equalization basin.
- Install a level sensor in the equalization basin to allow operators and the SCADA system to know the depth of the basin.

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- Install floating aerators in the equalization basin to limit algae growth.
- Install motorized plug valves on the discharge piping of the existing utility pumps, which can be used to adjust the output from the pumps. This will allow operations staff to return water from the equalization basin back into the treatment plant at a rate that does not overwhelm the treatment process.

These recommended upgrades are showing on Drawings C001 and M003 included in Appendix A.

3.3 Aeration Basins

3.3.1 Existing Conditions

The existing aeration basins are split into two trains each consisting of two anoxic zones and two aerobic zones. The anoxic zones are equipped with submersible mixers and the aerobic zones are equipped with a floor-mounted grid of fine bubble diffusers. A common influent channel conveys raw sewage from the headworks facility into the first anoxic zone, first aerobic zone, or second aerobic zone of either train. Recycled activated sludge (RAS) is discharged into either the upstream or downstream end of the common influent channel where it is mixed with the raw/screened sewage before entering the aeration basins. Mixed liquor from both aeration basin trains is collected in a common effluent channel that directs flow to the secondary clarifiers. The common effluent channel also directs a portion of the flow to an internal mixed liquor recycle (IMLR) pump station that is configured to allow a portion of the mixed liquor to be returned to any of the four zones in each aeration basin train. Bypass piping allows flow from the first aerobic zone of each aeration basin train to bypass the second aerobic zone and be discharged into the common effluent channel. Air is delivered to the fine-bubble diffusers with three 1,350 scfm, 100 hp multi-stage centrifugal blowers and one 1,199 scfm, 60 hp positive displacement blower.

The aeration basins have the following deficiencies:

- Air leaks have been identified in the ductile iron air piping. Some of the air leaks have been repaired, but the air piping is in poor condition.
- The aeration basins do not have an effective aeration control system. There are two dissolved oxygen (DO) probes in the aeration basins. However, the blowers are constant speed and the air piping drop legs delivering air to the fine bubble diffusers in the aerobic zones are not equipped with flow meters and modulating valves. Therefore, airflow cannot be adequately adjusted to meet oxygen demand. This results in periods of low DO concentrations that impairs biological oxygen demand (BOD) and ammonia removal, resulting in permit violations.
- A significant amount of foam builds up in the aeration basins on a regular basis. The low DO in the aeration basins contributes to the foam build-up. Also, the mixed liquor must pass under several flow control slide gates as it flows through the aeration basins. This configuration does not allow foam to exit the aeration basins.
- The openings in the walls separating each zone of the aeration basins are located on the same side of the aeration basin. This configuration does not create a serpentine flow path through the various zones. Instead, the configuration allows flow to short circuit directly from the influent opening to the effluent opening in each zone. This results in inadequate mixing in each zone and inadequate treatment time in each zone.

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- When the bypass piping connecting the first aerobic zone to the mixed liquor effluent channel is used, raw sewage entering the aeration basins will receive very little treatment, because of the short-circuiting issue noted above.
- The influent wastewater does not have adequate alkalinity and prevents the nitrification process from occurring in the aeration basins because the pH is lowered to below recommended levels. The low pH inhibits biological treatment, which results in permit violations.
- The configuration of the mixed liquor effluent channel results in more flow from the eastern train entering the IMLR pump station. Therefore, nitrified effluent from the western train is not adequately returned to the anoxic zones for denitrification.
- There is not adequate means of balancing the flow from the mixed liquor effluent channel into the two secondary clarifiers.

3.3.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following improvements for the aeration basins:

- Replace two multi-stage centrifugal blowers with two new variable speed blowers.
- Install new motor-operated butterfly valves on the air piping drop legs serving each train.

After review, West Yost recommends a slightly different approach for the aeration basin upgrades. We do not recommend replacing the existing blowers as recommended in the 2020 PDR, nor do we think the addition of actuated butterfly valves on the existing aeration header will provide adequate aeration control. As the “heart” of the treatment process, much work is needed in the aeration basin to address the biological process and operational issues. Our recommendations are summarized in the following section.

3.3.3 Modified Preliminary Design Recommendations

A Biowin[®] biological process model was developed to evaluate the performance of the aeration basins and determine the improvements needed to address the deficiencies discussed above. The process modeling is summarized in the technical memorandum (TM) included in Appendix B. Summary of key findings from the process model include:

- Optimization of the secondary process treatment system through mechanical upgrades and operational changes to the aeration basins is necessary to meet the current effluent limitations at the anticipated 2025 wet weather flows and load conditions.
- The key capacity limitation is the solids loading on the secondary clarifiers during peak flow conditions and operating the aeration basins in a fully aerobic mode with an inlet step feed will maximize treatment capacity by lowering the solids loadings to the clarifiers.
- With the recommended changes, the steady-state BioWin[®] modeling predicts the WWTP will be able to meet the effluent limitations following filtration. However, the State Point model predicts clarifier failure at flows exceeding 7.0 mgd which is about 2.0 mgd lower than the defined peak instantaneous flow conditions.
- The steady-state modeling approach used for this analysis does provide a conservative assessment of the available capacity for handling peak flow conditions. However, the dynamic modeling needed to fully optimize the treatment process performance for short-

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term peak flow conditions is complex and requires a significant amount of process data and wastewater characterization that is not available.

- The addition of a third clarifier would eliminate performance concerns with the secondary clarifier system and would allow the aeration basins to be operated at a higher mixed liquor suspended solids (MLSS) concentration, increasing overall performance of the secondary process. However, once the new satellite treatment system is constructed, the overall loadings to the plant will decrease. Therefore, it would not be prudent to construct a new secondary clarifier facility at this time.
- It may also be possible to further lower MLSS concentrations in peak flow conditions by using the Aerated Sludge Storage Basin (ASSB) for contact stabilization. Additional modeling analysis is needed to assess this possible strategy.

Based on the results of the process modeling, it is recommended that the aeration basins be operated as described below and as summarized in Table 3-1 to improve performance and address the deficiencies discussed above:

- **Anoxic/Aerobic Zone Configuration:**
 - Install a divider wall in the last cell of each train, dividing those cells into two smaller cells, creating five cells in each train (Cells A1 – A5 and B1 – B5)
 - Configure the first two cells in each train as swing zones
 - Operate the swing zones in anoxic mode during the dry season and aerobic mode during the wet season
 - Operate the last three cells in each train as aerobic zones year round
- **Step-Feed Operations:**
 - During the dry season, it is recommended that all flow be discharged into the first swing zone
 - During the wet season, it is recommended that half the raw/screened sewage be discharged into the first swing zone of each train and the other half be discharged to the second aerobic zone of each train.
- **IMLR Flows**
 - During the dry season, when the first two cells of each train are being operated in anoxic modes, the IMLR pumps should be operated to return nitrified mixed liquor to the anoxic zones for denitrification. The IMLR flows should be set to the maximum 1.08 mgd per train.
 - During the winter season, when all cells are being operated in aerobic mode, the IMLR should be off.
 - The IMLR piping should be modified so that IMLR flows are discharged to the first cell of each train only.
- **RAS Flows**
 - It is recommended that the RAS pump be modified so that they can achieve a return rate of 50 percent of influent flow during current max day conditions (1,800 gpm).
 - The RAS pumps should be operated at a return rate of 100 percent of influent flows for influent flows up to 2.6 mgd.

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- When influent flows exceed 2.6 mgd, the RAS pump should be operated at their max pumping rate 1,800 gpm.

Parameter	Wet Season Operation	Dry Season Operation
Cell A1 and B1	Aerobic	Anoxic
Cell A2 and B2	Aerobic	Anoxic
Cells A3 – A5 and B3 – B5	Aerobic	Aerobic
Raw/Screened Sewage Discharge Location	33 – 50 percent to Cell A1/B1 50 – 67 percent to Cell A4/B4	100% to Cell A1/B1
RAS Rate	50 – 100 percent of Influent, 1,800 gpm max	50 – 100 percent of Influent, 1,800 gpm max
IMLR Rate	0 gpm	1,500 gpm
Aerobic Solids Retention Time (aSRT)	6.5 days	4.0 days, min
MLSS Concentration, max	1,900 mg/L	2,900 mg/L

Recommended aeration basin mechanical improvements required to implement the proposed operational changes and to address the deficiencies discussed above, are summarized as follows:

- Install a concrete baffle wall to divide the two existing aerobic cells (largest cells in each aeration train) into two smaller aerated cells;
- Replace slide gates on the influent channel with downward opening weir gates to allow control of flow into each zone;
- Modify the RAS and IMLR piping so that RAS and IMLR flows are discharged to the first zone of each train under all conditions;
- Remove the aeration piping and diffusers and install the following aeration system components:
 - Two new stainless-steel air headers, one serving each train of the aeration basins.
 - Three grids of fine bubble diffusers in each aeration basin train: one grid in the anoxic zones, one grid in the first two aerobic zones, and one grid in the final aerobic zone.
 - New air piping drop legs for each fine bubble diffuser grid.
 - New flow meters and motorized butterfly valves on each air piping drop leg.
 - Three DO probes in each train of the aeration basins.
- Install VFDs on the three existing multi-stage centrifugal blowers and implement a control strategy tied to new air drops with air mass flow meters and actuated butterfly valves;
- Implement the following improvements to create a serpentine flow path through each aeration basin train and prevent scum accumulation in each cell:
 - Provide new openings in the wall between Cell A2 and A3 and the wall between Cell B2 and B3. The new opening will be near the center of the basins.

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- Provide openings in the new wall between Cells A4 and A5 and the new wall between Cells B4 and B5. The openings shall be near the outer edge of the basins.
- Add fiberglass reinforced plastic (FRP) baffles at the opening to Cells A4 and B4 to direct flow toward the center of the basins and limit short-circuiting of flow through those cells. Replace the slide gates on the effluent channel and gate between the aeration basin zones with downward opening gates to prevent foam from accumulating in the aeration basins;
- Install a concrete divider wall in the middle of the effluent channel to dedicate a single secondary clarifier to each aeration basin train to improve the flow split between the secondary clarifiers;
- Install new piping below the effluent channel to direct mixed liquor into the IMLR pump station.
- Install a gate on the overflow cutout on the utility pump station.
- If project funding allows, it is recommended to investigate a way to measure flow going into each secondary clarifier. This is placed on a Wish List of improvement included in Appendix E.

These recommended upgrades are shown on Drawings S001, S002, S003, S004, M002, M004, and M007 included in Appendix A.

3.4 RAS/WAS Pump Station

3.4.1 Existing Conditions

The RAS/ WAS pumps station consists of two 600 gpm, 7.5 hp centrifugal RAS pumps and two 100 gpm WAS pump located in the basement of a concrete masonry unit (CMU) block building north of the aeration basins and west of the secondary clarifiers. The RAS/WAS Pump Station has the following deficiencies:

- The RAS/WAS pump station building ventilation system cannot provide the minimum of six air changes per hour (ACH) required by the National Fire Protection Association (NFPA) 820 Standard for a Class 1, Division 2 area.
- The RAS/WAS pump station building does not have a lower explosive limit (LEL) gas sensor, oxygen sensor, or audio/visual gas alarm required by NFPA 820
- The RAS pumps do not have adequate capacity based on the findings of the process modeling TM provided in Appendix B.

3.4.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR did not recommend any improvements for the RAS/WAS pump station. Based on West Yost's biological process modeling, it is recommended that the RAS pumping capacity be increased as summarized in the following section.

3.4.3 Modified Preliminary Design Recommendations

To meet the deficiencies noted above, the following improvements are recommended for the RAS/WAS pump station:

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- Upgrade the HVAC system to ensure proper ventilation within the basement and building and to meet the requirements of NFPA 820.
- Install LEL gas detectors, oxygen sensors, and audio/visual gas alarms in the RAS/WAS Pump Station.
- Replace the RAS pump motors with new 20 hp, inverter duty rated motors to increase the capacity of each pump to 900 gpm.
- Install variable frequency drives (VFDs) for each RAS pump.
- Modify RAS pump discharge piping to accommodate increased pump capacity.

One opportunity that has been proposed by Veolia that was not able to be included in the current preliminary design evaluation is the potential for using ASSB Cells 1 and 2 as a contact zone during peak flows. West Yost believes this idea has merit and could potentially increase the peak WWTP capacity. Under this scenario, RAS would be pumped to ASSB Cell No.1, flow through Cell No.2 after which it would be pumped to the aeration basin. To implement this process change, the following would be required:

- A new valve vault would be constructed on the existing 8" RAS pipe;
- An 8" RAS pipeline extension would be constructed from the valve vault to ASSB Cell No.1;
- A new submersible RAS Return Pump Station (RPS) would be constructed next to the ASSB to return RAS from ASSB Cell No.2 to the aeration basin; and
- A new 8" return pipe would be installed from the RPS to the new valve vault.

If implemented, these upgrades would also allow pressate from the belt filter press to be diverted to the ASSB during peak storm events to reduce flow to the storm water pump station.

These recommended upgrades are showing on Drawings M006 included in Appendix A.

3.5 Secondary Clarifiers

3.5.1 Existing Conditions

There are two existing secondary clarifiers at the WWTP. Each clarifier is 54-feet in diameter with a 15-foot side water depth; and is equipped with a center feed column, energy dissipating inlet (EDI), flocculation well, cantilevered effluent launders with a scum baffle, a multiple uptake pipe/draft tube type sludge collection mechanism, a scum skimmer arm and a scum box. The secondary clarifiers have the following deficiencies:

- The clarifier mechanisms are over 20 years old, have reached the end of their useful life and need to be replaced.
- Scum/foam accumulates in the clarifiers.
- The sludge collection uptake pipes get clogged with rags.
- The effluent weirs are not level causing short circuiting of the flow through the units.

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3.5.2 Previous Preliminary Design Recommendations and Discussion

Ovivo Eimco and Rebuild-It Services Group performed a site visit and inspection of the secondary clarifiers in June 2020. Based on the findings of that site visit and inspection, it was recommended in the 2020 PDR that the following components be replaced:

- Sludge/scum collector mechanism drive.
- Scum skimmer arm.
- Scum beach flush valves.
- Seals on sludge box.
- Sludge uptake pipe valves.
- Spray nozzles.
- Effluent weirs.
- Effluent baffles.

Rehabilitation of the secondary clarifiers and, especially, leveling the launder weirs is an important part of the project. There are a few items West Yost recommends adding to the project if funding allows as summarized in the following section.

3.5.3 Modified Preliminary Design Recommendations

The secondary clarifier improvements summarized in the 2020 PDR are recommended for implementation under this Project. It is also recommended that the following improvements be implemented:

- Replace the existing scum beach and box with a system consisting of two scum beaches and boxes, one on either side of the cantilevered launder. This will allow scum to be removed on each side of the launder.
- Replace the section of scum baffle near the new scum beaches with a deeper baffle to prevent scum from bypassing the baffle.
- If project funding allows and depending on improving gravity flow from the scum boxes, it is recommended the scum pump station be upgraded or replaced. This item is one of the items included on the Wish List of improvements in Appendix E.

These recommended upgrades are showing on Drawings M005 included in Appendix A.

3.6 Filters and UV Disinfection

3.6.1 Existing Conditions

The existing Filter and UV Disinfection Facility consists of two filter basins equipped with cloth disk filters and a UV disinfection channel equipped with 24 medium pressure UV lamps. The existing facility has the following deficiencies:

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- The filter media was replaced in 2020 with new cloth media that was anticipated to allow the initial design capacity of 6 MGD to be achieved.
- However, the current filter operation appears to be limited to a capacity of approximately 3 MGD. This is at least partially due to the poor secondary effluent quality that typically flows to the filters during high flow conditions.
- It is anticipated that the recommended aeration basin and secondary clarifier upgrades will improve secondary effluent quality under higher flow conditions but it is unknown at this time how much additional filter capacity will be “recovered”.
- The existing Trojan 4000 UV disinfection system is over 20 years old and has reached the end of its useful life but Veolia has indicated they are still able to get parts and that replacement of the UV system is not the highest priority in the treatment plant.
- The existing 14” outfall pipeline that connects the UV channel effluent wet well is designed with a horizontal flared inlet which allows the pipe to become airlocked.

3.6.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following improvements for the Filter and UV Disinfection Facility:

- Replace the existing UV system with a new higher capacity UV disinfection system;
- Perform channel modifications required to accommodate the new UV disinfection system; and
- Install a new programmable logic controller (PLC) and operator interface for the new equipment.

3.6.3 Modified Preliminary Design Recommendations

West Yost recommends the following Filter/UV area upgrades:

- Replace the existing horizontal flared inlet on the existing 14-inch outfall pipeline with a 90-degree fluted end bend that points down to help prevent air locking of the pipeline;
- Provide baffles in the filter influent channel to better control the flow split between the filter trains.
- Consider installation of a new 3 MGD tertiary treatment train consisting of a skid-system with new secondary effluent diversion pumps, new cloth media disk filters, new medium-pressure UV system, flow meter and composite sampler; and
- Rehabilitate the metal building components on the Filter/UV area cover and replace the sacrificial anode on the cathodic protection system for the structure.

These recommended upgrades are showing on Drawings C001 included in Appendix A.

3.7 Aerated Sludge Storage Basin

3.7.1 Existing Conditions

The existing ASSB is a circular structure that is split into three cells. Cell No. 1 is a circular cell located at the center of the ASSB with a volume of 90,000 gallons. The two other cells form a “donut” around the center cell. Cell No. 2 has a volume of 180,000 gallons and Cell No. 3 has a volume of 90,000 gallons. WAS

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and secondary clarifier scum are discharged into Cell No. 1 where it is thickened and then overflows into Cell No. 2. Sludge from Cell No. 2 is pumped to a belt filter press with a submersible pump. Filtrate from the belt filter press flows back to Cell No. 3. Decant pumps in Cells No. 2 and No. 3 convey supernatant from those cells back to the Headworks Facility. All three cells are equipped with floor-mounted diffusers that are used to provide mixing, remove ammonia, and prevent anaerobic degradation of stored sludge. Air is supplied to the ASSB with two positive displacement 800 scfm, 25 hp blowers.

A liquid sludge feed tank with recirculation pump is located next to the ASSB. The tank was previously used to mix sludge with lime and provide a sufficient hydraulic grade line for conveyance to the belt filter press. The tank and recirculation pump are currently not in use because the equipment needs to be repaired or replaced.

The ASSB has the following deficiencies:

- The submersible pump in Cell No. 2, which pumps sludge to the belt filter press, cannot meet the design flow and pressure requirements for the belt filter press.
- The ASSB structure and components are in poor condition.
- The walkway around the center cell (Cell No. 1) of the ASSB consists of a single plank of wood and handrailing that is not approved by the Occupational Safety and Health Administration (OSHA). This is a safety hazard for operators.
- The ASSB does not provide adequate sludge detention time to meet the requirements for Class B biosolids.
- There are four davit cranes at the ASSB that do not have adequate reach to remove equipment out of the ASSB and require too much force to crank.
- The existing walkway leading from the side of the ASSB to the center of the ASSB needs to be repaired and re-coated.
- The two existing blowers do not have adequate capacity.

3.7.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following improvements for the ASSB:

- Replace the existing center chamber walkway with 3-foot wide platform with OSHA approved handrailing; and
- Replace the four davit cranes around the ASSB with new cranes that have adequate reach and require less force to crank.

West Yost recommends more extensive upgrades to the ASSB and abandoning the proposed walkways and handrails as summarized in the following section.

3.7.3 Modified Preliminary Design Recommendations

The improvements recommended in the 2020 PDR address some operational and health and safety issues at the ASSB, but do not address solids treatment process deficiencies that would go a long way toward improving solids dewatering performance and reducing polymer consumption. West Yost recommends the following ASSB upgrades be included in the project:

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- Remove the walkway around the center cell (Cell No.1) of the ASSB and do not install a new walkway
- Repair, sandblast, and paint the existing walkway leading from the side of the ASSB to the center of the ASSB.
- Re-route the belt filter press filtrate so that it is conveyed to the aeration basins via the Waste Pump Station without passing through the ASSB (see Section 3.9.3 for further discussion on re-routing of these flows)
- Rehabilitate the ASSB aeration system as follows:
 - Replace the existing aeration piping and diffusers with new piping and diffusers
 - Design the new aeration system to provide adequate mixing and to maintain a DO of 1 to 2 mg/L in each cell of the ASSB.
 - Provide four separate zones of diffusers: one in Cell No. 1, two in Cell No. 2, and one in Cell No.3
 - Provide a separate air piping drop leg for each zone of diffusers, each with a flow meter and modulating butterfly valve. The valve and flow meter will be used to control the amount of air provided to each cell of the ASSB.
 - Install a DO probe in each cell of the ASSB.
 - Install one new 800 scfm, 25 hp positive displacement blower to provide air to the ASSB along with the two existing blowers.
- Convert ASSB Cell No. 3 into an aeration/decant zone for thickening and feeding solids to the belt filter press. One of the existing decant pumps will be relocated from ASSB Cell No. 2 to ASSB Cell No. 3 so there is a decant pump on each end of Cell No.3.

These recommended upgrades are showing on Drawings C002 and M008 included in Appendix A.

3.8 Chemical Storage and Metering Facilities

3.8.1 Existing Conditions

There are two chemical storage and metering facilities at the WWTP: a sodium hypochlorite facility and a sodium hydroxide facility. The sodium hypochlorite facility consists of two 1,000 gallons storage tanks, a diaphragm metering pump skid with two metering pumps and appurtenances, and an emergency eye wash/shower. The equipment is located on the top floor of the RAS/WAS Pump Station.

The sodium hydroxide feed system is located near the headworks and consists of chemical storage totes and a diaphragm metering pump skid. The system is used to increase the pH of the raw wastewater upstream of the aeration basin, to address the low alkalinity issues.

The existing chemical facilities have the following deficiencies:

- The sodium hypochlorite storage and metering facility is not capable of disinfecting the process water system year-round. This creates a health and safety issue for the operators using the water.

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- The current sodium hydroxide storage and metering facility at the headworks uses totes and is a temporary system that is manually controlled and does not allow the chemical metering pump discharge rate to be adjusted based on influent flow or process needs.

3.8.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following chemical storage and metering facility improvements:

- Install a new sodium hypochlorite metering pump system to pump sodium hypochlorite from the existing storage tank into the process water system to provide year-round disinfection of the process water.
- Replace the temporary sodium hydroxide feed system with a permanent system that allows the chemical feed rate to be adjusted based on influent flow and process needs.

West Yost agrees that a more permanent sodium hydroxide storage and feed system is needed, but recommends it be constructed at an alternate location that will also allow the sodium hypochlorite feed pumps for the utility water and RAS systems to be installed in a common building as summarized in the following section.

3.8.3 Modified Preliminary Design Recommendations

Several different configurations of the proposed chemical system improvements were considered. The most cost-effective approach recommended for implementation under this Project includes the following improvements:

- Install a new 16-foot by 24-foot concrete pad on the east side of the existing RAS/WAS Pump Station.
- Install an 8,000-gallon, insulated, double-walled, polypropylene tank with a mixer on the concrete pad for storage of 25 percent sodium hydroxide. It is assumed that 25 percent solution will be delivered to the site and that no on-site dilution will be needed.
- Install a fiberglass shed building on the concrete pad equipped with the following:
 - A sodium hydroxide metering pump skid with two pumps and required appurtenances.
 - A sodium hypochlorite metering pump skid with two pumps and required appurtenances.
 - A heater and ventilation fan.
 - Lighting.
 - Required LEL gas sensors, oxygen sensors, and audio/visual alarms.
- Install an emergency eye wash/shower with a 20 gpm, on-demand, tepid water heater on the new concrete pad.
- Install chemical piping required to allow sodium hydroxide to be injected into the RAS pump discharge header.
- Install chemical piping required to allow sodium hypochlorite to be injected into the process water piping and into the RAS pump discharge header.
- Chemical storage and metering facilities shall be designed to provide a minimum of 15-feet of clearance around the secondary clarifiers to allow adequate space for maintenance vehicles to drive around the clarifiers.

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These recommended upgrades are showing on Drawings C001 and M005 included in Appendix A.

3.9 Waste Pump Station and Stormwater Control

3.9.1 Existing Conditions

The existing Waste Pump Station consists of a circular wet pit with two 350 gpm, 3 hp submersible pumps and an at-grade rectangular valve vault. The wet pit receives flow from the following sources and discharges it into the 24-inch pipeline that conveys raw sewage from the Headworks Facility to the Aeration Basins:

- Filter backwash water.
- Dewatering Building and Sludge Storage Facility floor drains, roof drains and foundation drains.
- Solids Handling Building roof drains and foundation drains.
- Sanitary sewer flow from the Maintenance Building.

Although the Waste Pump Station receives some stormwater runoff from the WWTP site, the majority of stormwater runoff from the site is discharged into Tickle Creek through Outfall 003. This configuration allows for the potential release of hazardous materials or chlorinated process water into Tickle Creek. To prevent accidental discharge, an inflatable plug has been inserted into the outfall. The plug is removed during storm events and re-installed during dry weather. If drainage accumulates in the outfall during dry weather conditions when the plug is installed, the flow is pumped back to the WWTP with a temporary pump.

3.9.2 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following improvements to the Waste Pump Station and stormwater control system:

- Install a new manhole on the existing 15-inch storm drain that discharges into Outfall 003.
- Install new piping to connect the new manhole to the existing Waste Pump Station.
- Install an overflow weir in the manhole that will direct stormwater drainage from the 15-inch storm drain into the Waste Pump Station during normal rain events but allow stormwater drainage during peak events to flow into the Outfall 003.

West Yost believes the proposed storm water upgrades do not provide the assurance City and Veolia staff desire related to ongoing and consistent compliance with the City's National Pollutant Discharge Elimination System (NPDES) 1200z stormwater permit. Recommendations are summarized in the following section.

3.9.3 Modified Preliminary Design Recommendations

The following improvements are recommended for implementation under this Project because they will provide a more comprehensive solution for managing onsite stormwater by directing it entirely back to the headworks downstream of the influent flow meter and composite sampler. In addition, ASSB Cell No. 3 would be freed up for use as the solids decant zone by directing pressate from the belt filter press to

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the storm water pump station to be recycled and treated in the aeration basin. Recommended Waste Pump Station and storm water control upgrades include the following:

- Re-route all storm drain piping to discharge into the Waste Pump Station, except for the 10-inch foundation drains from the secondary clarifiers and Filter/UV Facility and the 8-inch overflow piping from the Filter/UV Facility.
- Re-route the belt filter press pressate piping to discharge into the Waste Pump Station.
- Replace the existing submersible pumps with two new 650 gpm, 20 hp pumps with VFDs.
- Replace the pump discharge piping with larger piping to accommodate the larger pumps.
- Install a new valve vault with new valves to accommodate the larger pump discharge piping.
- Installed a new 6-inch diameter force main to convey flow from the Waste Pump Station to the 24-inch pipeline that conveys raw sewage from the Headworks Facility to the Aeration Basins.

These recommended upgrades are showing on Drawings C002 included in Appendix A.

3.10 Site Improvements

The following site improvements are recommended for implementation under this Project:

- Install a new LEL gas sensor, oxygen sensor and audio/visual alarms at the Dewatering Building
- Install new lighting throughout the site as described in Section 3.11

3.11 Electrical and Instrumentation and Control (I&C) Improvements

3.11.1 Previous Preliminary Design Recommendations and Discussion

The 2020 PDR recommended the following electrical and instrumentation and control (I&C) improvements throughout the plant:

- Inspect the MCCs and Switchgear inspected and have it serviced by a qualified electrician. After the inspection, apply labels to electrical equipment as determined by the assessment.
- It is noted that physical ingress to some electrical equipment is currently not possible because of field modifications to the equipment in the past. These situations will be identified and corrected to help ensure operations staff safety.
- Replace the PLC hardware.
- Replace the SCADA system computer.
- Upgrade the Cimplicity SCADA software to accommodate the Windows 10 operating system.
- Provide Alarming system in the upgraded SCADA.
- Update the screens to incorporate modern graphics that are easy to navigate.
- Modify the graphics for the new UV Disinfection System.
- Install high speed internet to improve remote monitoring.
- Install Ethernet Network between several buildings.

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West Yost worked with The Automation Group, Inc. (TAG) and Landis to further evaluate the electrical and I&C upgrades recommended in the 2020 PDR and determine what improvements are recommended for meeting the objectives of this Project. The major control system components are discussed in Section 3.11.2 and other electrical and I&C improvements are discussed in Section 3.11.3.

3.11.2 Control System Components Evaluation

TAG considered alternatives for each component of the control system recommended for upgrade in the 2020 PDR, evaluated the alternatives, and identified a preferred alternative for each component. The components that were evaluated include:

1. PLC Architecture
2. HMI/SCADA
3. Ethernet Connections via copper CAT6 Shielded vs. Fiber
4. Alarm Dialer via software vs. direct connection (Hardware)
5. Reporting Software
6. Secure Remote Connection

A technical memorandum summarizing the evaluation performed on each of these components is included in Appendix D. The key recommendations from the evaluation are:

- Provide a new SCADA system at the WWTP that is separate from the drinking water and distribution/collections systems. This is to prevent a single failure from affecting the rest of the City.
- Retain as much of the existing PLC system as possible, but replace components needed to upgrade the system to a platform that is fully supported by the manufacturer.
- Re-write the PLC software logic to enhance the process control with the added/upgraded processes.
- Connect new devices to the upgraded PLC system and SCADA by extending the ProfiNet Network to smart communications modules on the new devices
- Use copper CAT6 shielded wire cables to connect PLCs to the new SCADA system. The CAT6 cables can be installed in existing conduits, which may have some tight bends, and can be installed in the same conduit as the camera system ethernet cables. This makes them preferable versus fiber optic cables which cannot be installed in conduits with tight bends or in the same conduits at the camera system cables.
- No new reporting software is needed at this time.
- Connect the alarm dialer system directly to the PLC. This is a more reliable method than using software as the software requires a PC to run continuously.
- Use a Tosi Box Solution to make a secure remote connection to the WWTP, when needed. This type of system uses a two-part authentication (Physical USB Key and Username/Password), which meets the latest Internet of Things (IOT) requirements for a secure connection.

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3.11.3 Modified Preliminary Design Recommendations

Other electrical and I&C improvements required to support the recommended process mechanical and site improvements discussed above are as follows:

- Headworks Facility
 - Provide power from Office/Lab Building for the new jib crane.
 - Replace the four (4) existing column mounted lights with new 4-foot, vaportight, LED fixtures mounted to the steel joists.
 - Disconnect and reconnect the conductors for the grit motor.
 - Provide conduit and CAT6 cabling for camera.
- Equalization Basin
 - Provide conduit and conductors to level transmitter from the RAS Building
 - Provide conduit and conductors to aerators from the RAS Building
- Aeration Basins
 - Provide two (2) Instrumentation panels at the end of the basins. Provide CAT6 cabling back to the Blower Building Control Panel PN-1004.
 - Provide control cabling, conduit and power cabling for four (4) DO Sensors.
 - Provide control cabling, conduit and power cabling for six (7) flow meters.
 - Provide control cabling, conduit and power cabling for six (6) motorized valves.
 - Provide control cabling and conduit for two (2) level sensors.
 - Provide control cabling, conduit and power cabling for four (4) motorized actuators.
 - Provide control cabling and conduit for four (4) motorized slide gates.
- Blower Building
 - Replace existing MCC-A1 section with VFD drives for each of the four (4) blowers and an active harmonic filter.
 - Disconnect and reconnect existing conductors to each of the four (4) blower starters.
 - Provide conduit and CAT6 cabling for two (2) outdoor rated cameras.
 - Provide conduit and CAT6 cabling from new MCC-A1 to Control Panel PN-1004.
- RAW/WAS Pump Station
 - Provide new 400amp, 480/277volt panel at the RAS Building.
 - Provide 400amp conductors in spare conduits in existing conduit duct bank. Provide new conduit from the power vault to the new panel.
 - Provide new conductors and conduit for the two (2) RAS pumps from the new 400Amp panel. Remove existing conductors back to MCC-A.
 - Provide new conductors and conduit for the existing 45kVA transformer from the new 400Amp panel. Remove the existing conductors back to MCC-A.
 - Provide new 120volt branch circuits for the new chemical building from the existing panel CBP-2.
 - Replace existing conductors to the new exhaust fan.

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- Secondary Clarifiers
 - Disconnect and reconnect existing conductors from secondary clarifier motors.
 - Replace existing light fixture (2 total) with new LED fixtures on a collapsible pole.
 - Replace eight (8) existing lights with new vapor tight LED fixtures.
- Filters and UV Disinfection Facility
 - Provide a new 100amp, 480/277volt panel from MCC-B for new UV train.
 - Provide new 100amp conductors and conduit from MCC-B to a new panel. Provide a 100amp circuit breaker in MCC-B.
 - Replace eight (8) existing lights with new vapor tight LED fixtures.
- ASSB
 - Remove all electrical connections.
 - Provide new VFD for new Blower No. 3. Provide new conductors and conduit from MCC-C. Provide new circuit breaker in MCC-C
- Waste Pump Station
 - Provide new VFDs (total 2) for the new stormwater pump controllers. Provide new conductors and conduit from MCC-C. Provide a new circuit breaker in MCC-C.
 - Provide a new instrumentation panel in the building. Provide one (1) CAT6 cable to Dewatering Building using the existing 1-inch conduit.
 - Provide conductors and conduit for controls to the VFDs from the control panel.
 - Provide conductors and conduit for three (3) pressure sensors to the control panel.
- Dewatering Building
 - Provide new CAT6 cable and conduit for the new camera to the control panel PN-1050.
 - Provide new conductors and conduit to the new exhaust fan in the electrical room.
- Site Improvements
 - Replace four (4) existing area pole fixtures with new LED fixtures. The poles will be reused.
 - Add five (5) new LED area lights with 20-foot poles.
 - Replace the existing building mounted flood light on the Solids Handling Building with a new LED spotlight.
 - Add (2) new LED spotlights on the roof of the Solids Handling Building.
 - Add (3) new LED spotlights on the roof structure of the Disinfection Filtration Basin.
 - Add three (3) CAT6 cables in the existing spare conduits between the Office Building and the Blower Building.
 - Add three (3) CAT6 cables in the existing spare conduits between the Blower Building and the RAS/WAS Building.
 - Add three (3) CAT6 cables in the existing spare conduits between the Office Building and the Solids Handling Building.
 - Add three (3) CAT6 cables in the existing spare conduits between the Office Building and the Effluent Pumping Building.

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- Add three (3) CAT6 cables in the existing spare conduits between the Effluent Pumping Building and the Dewatering Building.

These recommended upgrades are showing on the Electrical Drawings included in Appendix A.

4.0 OPINION OF PROBABLE CONSTRUCTION COST

Table 4-1 summarizes the opinion of probable construction cost (OPCC) for the improvements recommended in this PDR. Table 4-1 also summarizes the costs for the improvements recommended in the 2020 PDR and the difference in cost between the 2020 PDR recommendations and the modified set of recommendations included in this PDR.

The OPCC summarized in Table 4-1 was developed using budgetary quotes from vendors and cost data from similar projects and includes the costs listed below:

- Direct Costs = Direct material, equipment, and labor costs
- Subcontractor Markup = 5 percent of material, equipment, and labor provided by subcontractors
- Mobilization and Demobilization = 5 percent of direct costs + subcontractor markup
- Insurance and Bonds = 3 percent of direct costs + subcontractors markup
- OH&P = 6.5 percent of direct costs + subcontractor markup
- Contingency = 15 percent of direct costs + all other markups

Other key information regarding the cost estimate is as follows:

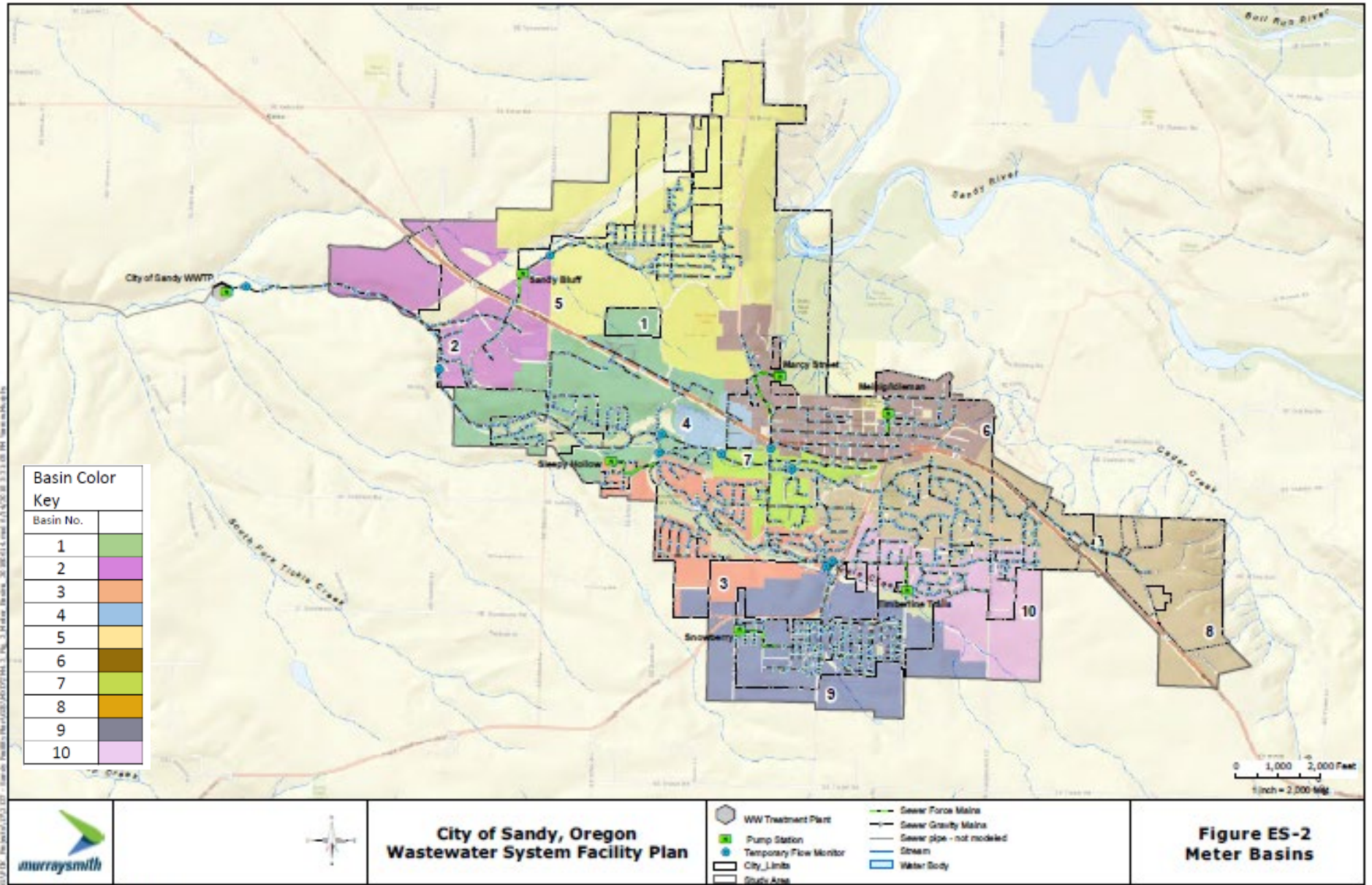
- A detailed breakdown of the costs summarized in Table 4-1 is included in Appendix C
- The OPCC is a Class 4 estimate based on the Association for the Advancement of Cost Engineering (AACE) International guidelines. Typical accuracy ranges for Class 4 estimates are (-)15 to (-)30 percent on the low side and (+)20 to (+)50 percent on the high side.
- The costs for the RAS diversion to the ASSB discussed in Section 3.0 are not included in the OPCC.

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Table 4-1. Opinion of Probable Construction Cost (OPCC) Summary

Item Description	Modified Recommendations	2020 PDR Recommendations	Difference
Headworks Facility	260,000	710,000	(450,000)
Equalization Basin	110,000	0	110,000
Aeration Basin and Blowers	1,400,000	610,000	790,000
Secondary Clarifiers	130,000	350,000	(220,000)
RAS/WAS Pump Station	80,000	0	80,000
Aerated Sludge Storage Basin	560,000	120,000	440,000
Chemical Storage and Metering Facilities	370,000	500,000	(130,000)
Waste Pump Station and Stormwater Control	270,000	70,000	200,000
Site Improvements	510,000	0	480,000
Total Construction Cost	\$3,690,000	\$2,360,000	\$1,330,000
Filter and UV Disinfection Improvements	1,220,000	690,000	530,000
Total Construction Cost + Filter/UV	\$4,910,000	\$3,050,000	\$1,860,000



**Figure ES-2
Meter Basins**

APPENDIX C



Supplemental Environmental Project Application

Oregon Department of Environmental Quality
Office of Compliance and Enforcement
700 NE Multnomah St., Suite 600
Portland OR 97232

Case Name and No. *United States, et. al v. City of Sandy, Oregon*
90-5-1-1-12501

Project Contact: Jordan Wheeler, City of Sandy
39250 Pioneer Blvd. Sandy, OR 97055

Type of Project (choose one):

- Pollution Prevention** – preventing waste or pollution at the source, by conserving energy or natural resources, or by making process changes (such as chemical substitutions) or by making a process more efficient so that less waste is created for a given amount of product.
- Pollution Reduction** – reducing the amount and/or danger presented by some form of pollution, often by providing better treatment and disposal of the pollutant.
- Public Health Protection**- an example is the medical examination of residents in a community to determine if anyone has experienced any health problems because of the violations at issue.
- Environmental Restoration and Protection** –improving the condition of the land, air or water in the area damaged by the violation. For example, restoring a wetland or planting trees along a riparian zone to reduce erosion and provide shade for improved water quality.

Emergency Planning and Preparedness – providing assistance to a responsible state or local emergency response or planning entity. Such assistance may include the purchase of computers and/or software, communication systems, chemical emission detection and inactivation equipment, HAZMAT equipment or training.

Assessments and Audits to determine if the Respondent is causing any other pollution problems or can run its operation better to avoid future violations.

Environmental Compliance Promotion- providing training or technical support to other members of the regulated community to achieve, or go beyond, compliance with applicable environmental requirements.

Other Projects that have environmental merit but do not fit within the categories listed above.

Who is conducting the project? (i.e. Respondent or third party entity such as a watershed council or other nonprofit organization)

Clackamas River Basin Council

Location where project will take place: Tickle Creek Trail Corridor, Sandy, Oregon

Project description (Please attach an extra sheet of paper, if necessary):

This project is a restoration project to improve riparian health and water quality protection along a section of the Tickle Creek Stream Corridor between 362nd Ave to nearly Hwy 211 in Sandy. This section of Tickle Creek is about two miles upstream from Sandy's Wastewater Treatment Plant. The 1.8 mile Tickle Creek Trail travels along parts of this corridor and was built in 2010. The stream corridor is surrounded by residential development (see attachment 1).

This project will accomplish three objectives:

1. Reduce non-native plants in the riparian corridor.

Reduce invasive and noxious non-native plants in a 37-acre stream corridor with a focus on Himalayan blackberry, ivy, holly, and knotweed. Some invasive plant control and planting was conducted along portions of the corridor in 2015. However, there were insufficient funds for multiple years of treatments. Additionally, climate change and adjacent land use have accelerated tree mortality and canopy loss in the last five years.

In years one and two (2023 and 2024) of the project, CRBC and their contractors will conduct initial non-native plant control, including mechanical and chemical treatments, and closing off trampled areas. Planting of native trees and shrubs along the stream will occur in Winter 2025

(year 3). Spot treatments of persistent non-native plants will occur in years 3 and 4. (See detailed prescription, attached.)

Areas with unmarked private property within 100' of the creek will be surveyed to maximize the riparian area that can be enhanced for water quality protection.

2. Increase native plants, particularly shade-providing conifers, hardwoods and shrubs.

Plant site appropriate conifers, hardwoods and shrubs at sufficient densities to occupy the site and reduce re-establishment of non-native plants. Where appropriate, plant long-lived conifers such as Western redcedar and Douglas-fir to provide shade and future large down wood. The number of plants per acre will vary by site conditions. For example, several acres of riparian and wetland forest have been significantly impacted by blowdown and the loss of tree canopy likely due to an adjacent clearcut. The loss of stream shade and the establishment of high levels of non-native blackberry have reduced the riparian corridor health. This area will be planted at approximately 500 plants per acre. The total plants to be installed across the entire 37 acre project area is estimated to be up to 18,500 (dependent on exact project needs; CRBC will truth the total number of acres and quantity of plants).

3. Mitigate erosion and soil compaction from off-trail disturbance.

Numerous unsanctioned trails and trampled areas have become established in the stream corridor. These areas of off-trail disturbance will be obliterated and restored where feasible, which could include soil rehabilitation, erosion mitigation, mulching, covering exposed ground with logs and debris, and/or replanting. Together, CRBC and City of Sandy will identify areas of off-trail disturbance for treatment.

Attached are aerial maps of the project area.

What environmental benefits are expected?

The primary benefit will be improved riparian corridor health including increasing native plants and reducing erosion along the creek, benefiting water quality and wildlife habitat. This project will remove invasive and noxious plants in the stream corridor that compete with native species and reduce native plant diversity. Native trees and shrubs will be installed after invasive and noxious plants have been reduced. This section of Tickle Creek is unusual for its large trees, understory of vine maple, and other shrubs, carpets of native ferns and oxalis, snags, down wood in the creek, and a variety of birds, and wildlife habitat. There are often sightings of coyotes, and occasional bear and cougars along the trail. The large trees and areas of dense native understory provide shade and future large down wood for Tickle Creek. The extreme summer temperatures and drought in recent years have likely contributed to the acceleration of tree mortality in the corridor, along with impacts from adjacent land use.

How will you measure/assess the benefits?

Treatment areas will be mapped for inspection and if necessary, re-treatment and/or replanting the following year. Photo points will be made in key infestation areas. Mortality of tree seedlings will be monitored and replanted the following late winter. While we will plant heavily for expected mortality, we will replant the following late winter, if mortality is excessive. The project corridor will be monitored and documented by City staff and partners over a three-year period.

Success can also be measured by area treated and percent survival after 2 years. The project goal is to treat at least 75% of the project site and achieve a 75% survival rate of native plants at age two. The area treated will be mapped during treatment. The planting success will be documented using photo points showing conditions before treatment and at Year Two after planting.

What is the total projected cost of the project? Explain. (Qualifying costs are all reasonable costs of executing the SEP and may include costs of preparing the SEP proposal, costs of materials and services, wages paid to employees (appropriate to the work), and wages and proportional overhead for employees of a third party executing the project. Qualifying costs do not include entertainment or refreshment costs related to the SEP.)

The total estimated cost of this project is \$200,000 which includes Clackamas River Basin Council oversight costs, noxious weed treatment, shrub and tree planting, off-trail disturbance mitigation, and community outreach and engagement activities. The budget below is calculated based on an assumption of uniform restoration needs across the 37-acre green space; however, actual treatments will vary across the site and total acreages/costs for each implementation activity are expected to be lower, to be determined by detailed survey and site evaluation to be conducted prior to project implementation. Funds not required for restoration implementation can be utilized for community engagement activities, extended maintenance, and/or other relevant project costs. CRBC will manage site preparation, planting, and two years of maintenance treatments; City of Sandy will assume responsibility for maintaining restored areas after this is complete.

City of Sandy will lead communication directed to city residents and park users, focused on project implementation. CRBC will lead communication for volunteer stewardship and community engagement events focused on natural resource stewardship. Both will coordinate on communication activities for consistent messaging.

Task/Item	Date	Estimated cost
Project management	Duration of project	\$8180 (200 hours for CRBC Riparian Specialist at \$35/hr, 20 hours for CRBC Executive Director at \$59/hr.)

Pre-planting weed treatments	Summer 2023 – Fall 2024	\$80,000 (cutting and spraying in 2023, 3 spray treatments in 2024)
Close off-trail disturbance areas and install mitigation measures (e.g., fencing, erosion control, seeding)	Summer-Fall 2023	\$11,500 (200 hours of general labor at \$50/hour, plus materials)
Install 18,500 native plants	Winter 2025	\$34,500 (includes cost of plants and planting)
Post-planting weed treatments	Spring 2025-Fall 2026	\$41,000 (6 spot treatments over 2 years)
Supplemental planting if needed based on survival rate	Winter 2026	\$4,000 (includes cost of plants and planting)
Community engagement, including volunteer and educational activities	Duration of project	\$2,200 (CRBC outreach staff time and supplies)
Vehicle mileage	Duration of project	\$210 (320 miles at \$0.655/mi.)
Administrative overhead		\$18,180 (10%)
Post-project monitoring and reporting	2027 and 2029	\$300
		\$200,000 Project Total

What is the timeframe for the project (most projects are completed within one year)?

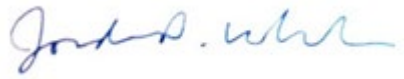
Include milestones and final completion date.

Action	Date	Notes
Site inspection and surveys	Spring 2023	Covered by other funding
Finalize plan, contract work	August 2023	
Pre-planting vegetation treatments	August 2023 to October 2024	
Close off-trail disturbance areas and mitigate impacts	Fall 2023	Public Outreach
Native plant installation	Winter 2025	Establish photo points, pre and post planting photos
Post-planting vegetation treatments	Spring 2025 to Fall 2026	
Community engagement	Duration of project	
Planting photo points	Fall 2026	Year 1 after planting
Planting photo points	Fall 2028	Year 3 after planting

Attachments

Attachment 1 Tickle Creek Stream Restoration Project Area Map

Attachment 2 Tickle Creek Stream Restoration Planting Species List

Date : 4/7/2023 Signature 



TICKLE CREEK DEQ SUPPLEMENTAL ENVIRONMENTAL PROJECT NOTES

Species for stream corridor restoration along Tickle Creek

Shrubs

Rose Spirea – *Spiraea douglasii* (Hook or hardhack) 2-6 feet tall.

Snowberry - *Symphoricarpos albus*: to 6 feet, but can be trimmed lower

Thimbleberry – *Rubus parviflorus*: 4-6 feet

Salmonberry - *Rubus spectabilis*: 3-12 feet, branches have prickles for access deterrence

Red huckleberry - *Vaccinium parvifolium* Sm

Red Elderberry - *Sambucus racemosa*

Willows (live fascines) – low growing variety that is shade tolerant.

Stink currant - *Ribes bracteosum*

Ferns

Western Sword Fern - *Polystichum munitum*

Western Maidenhair Fern - *Adiantum aleuticum*

Lady Fern - *Athyrium filix-femina*

Piggyback plant - *Tolmiea menziesii*

Trillium leaved sorrel - *Oxalis trilliifolia*

Trees

Western red cedar – *Thuja placata*

Douglas fir - *Pseudotsuga menziesii*

APPENDIX D

CAPACITY ASSURANCE PROGRAM (CAP) EVALUATIONS

1. In accordance with Paragraph 23 of the Consent Decree, the City shall implement the Capacity Assurance Program (“CAP”). The CAP will limit new sewer connections or changes to existing connections that result in additional flows to the City of Sandy Treatment Works (“CSTW”) without a demonstration, and approval by EPA and ODEQ, that capacity to accommodate the additional flows within the Wastewater Collection and Transmission System (“WCTS”) and at the Wastewater Treatment Plant (“WWTP”) exists during both dry and peak flows. The CAP will be separated into two time periods, as explained below. Period One is the period between the Effective Date of this Consent Decree and the date the CAP limit is established for Period Two. Period Two establishes a limit on the number of new connections and/or changes to existing connections that result in additional flows (initially determined in accordance with Paragraphs 10, and adjusted over time in accordance with Paragraph 11, of this Appendix) based on established capacity at the WWTP (“CAP Limit”) and then-current peak flow to the WWTP. The CAP will continue until the improvements for Continued Compliance identified in the approved Amended Wastewater System Facilities Plan, as required in Paragraph 8 of this Appendix, have been implemented, permitted, and are fully operational, and the City is in compliance with all Permit Waste Discharge Limitations.

RESTRICTIONS DURING PERIOD ONE

2. The time period between the Effective Date of this Consent Decree and establishment of the CAP Limit shall be considered Period One under the CAP.
3. During Period One of the CAP, the City shall limit new sewer connections or changes to existing connections that result in additional flows to the WCTS to 300 Equivalent Residential Units (“ERUs”) in increased flow (whether from industrial or residential connections). For purposes of the CAP a new connection or changes to existing connections that result in additional flow will be counted for any physical connection to the CSTW at the time that it adds flow to the WWTP.
4. ERUs shall be calculated in accordance with Paragraphs 15-16 of this Appendix, and included in the quarterly reporting outlined in Paragraph 13 of this Appendix.

5. The City shall take all steps reasonably necessary to effectuate the limitations on new connections and changes to existing connections that result in additional flows, including but not limited to putting in place a moratorium consistent with Oregon and local law during Period One of the CAP, and as necessary during Period Two of the CAP.

RESTRICTIONS DURING PERIOD TWO

6. During Period Two of the CAP, prior to approving any new connections or changes to existing connections that will result in additional flows to the WCTS, the City shall ensure that the CSTW has adequate capacity to collect, carry, transmit, and treat said increased flow, combined with the flow predicted to occur from all other existing sources, including authorized sewer service connections during both peak and normal flow conditions. In performing this analysis, the City shall utilize: (i) the evaluations undertaken in accordance with the Stress Test Work Plan and/or Stress Test Report, ii) Comprehensive Capacity Evaluations (“CCEs”), and iii) perform Connection-Specific Capacity Evaluations (“CSCEs”) where appropriate. Once a CAP Limit has been established by EPA and ODEQ in accordance with the process outlined in Paragraph 10 of this Appendix, the City may approve new connections or changes to existing connections resulting in additional flow without approval by EPA and ODEQ until either the CAP Limit has been reached or new Capacity Related Violations occur as set out in Paragraph 7 of this Appendix. All ERUs added and approved Building Permits during this period must be included in the quarterly reporting under Paragraph 13 of this Appendix.
7. If Waste Discharge Limitation exceedances, sewer overflows, or bypasses in violation of the Permit have occurred, the City must demonstrate that capacity in the CSTW exists, that the violations were not due to capacity limitations, and any maintenance required to prevent future violations has been completed or they will be deemed Capacity Related Violations. If the CAP Limit has been reached or Capacity Related Violations have occurred, new connections cannot be authorized and/or added without the City demonstrating capacity exists within the CSTW and receiving approval from EPA and ODEQ. Capacity must be demonstrated by submitting a request to EPA and ODEQ providing i) CCEs as outlined in Paragraph 6 of Appendix E and ii) CSCEs as outlined in

Paragraph 14 of this Appendix. EPA and ODEQ may withhold approval of the City's request to authorize and /or add new connections or make changes to existing connections that result in additional flows under this section if the City has not: i) demonstrated capacity for additional flow and that the new connections will not lead to new violations or ii) Capacity Related Violations have already occurred.

8. The City may seek to end the requirements for Period Two of the CAP by submitting a request for review and approval to EPA and ODEQ demonstrating that the Continued Compliance Improvements identified in the Amended Wastewater System Facilities Plan, as required in Paragraph 9 of Appendix E, have been implemented, permitted, and are fully operational, and the City is in compliance with all Permit Waste Discharge Limitations. EPA and ODEQ will review the report for compliance with the requirements of this Section in accordance with Paragraphs 24-29 of the Consent Decree. Upon approval of the report by EPA and ODEQ, Period Two of the CAP will be deemed ended.

TREATMENT CAPACITY EVALUATION FOR CAP LIMIT

9. **Treatment WWTP Capacity Evaluation** – The City shall carry out a comprehensive evaluation of treatment capacities of its WWTP following completion of the 2020-2023 Wastewater Improvements¹ (as required by Paragraph 20 of the Consent Decree). This evaluation shall include the following:
 - a. **Hydraulic and Loading Capacity Assessment** – A desktop evaluation, stamped by a licensed Professional Engineer in Oregon, of the hydraulic capacity of the entire WWTP using as-built drawings, including the WWTP hydraulic profile, and field survey elevation information (as necessary). This assessment shall include a comparison of the design capacities, detention times and loading rates of each and every WWTP unit process (as modified by the immediate needs projects), to industry guidelines and benchmarks, including the Orange Book, WEF No. FD-08, and Metcalf & Eddy.
 - b. **Stress Test** – A Stress Test of the WWTP in accordance with the following guidance: USEPA's Peak Stress Testing Protocol Framework; Peak Wet Weather

¹ Includes the 2021-2023 WWTP Immediate Needs Upgrades Project, 2021 Basins 2 and 8 Rehabilitation Project, and 2022 Basins 6 and 7 Rehabilitation Project.

Flow Stress Testing Contract No.: GS-10F-0227J; May 2015. The Stress Test shall consider the impacts of peak flows on each unit operation as well as on subsequent compliance with all permit parameters. The Stress Test shall include the following:

- i. Baseline Monitoring – Enhanced monitoring shall include during a period of typical WWTP operation, monitoring of influent and effluent for the following: 5 day biochemical oxygen demand (“BOD5”), chemical oxygen demand (“COD”), total suspended solids (“TSS”), volatile suspended solids (“VSS”), dissolved Solids, Total Kjeldahl Nitrogen (“TKN”), ammonia, Total Phosphorus, alkalinity, and pH. Enhanced operational monitoring shall include during a period of typical WWTP operation, sampling multiple times per day for the following: Mixed Liquor Suspended Solids (“MLSS”), Mixed Liquor Volatile Suspended Solids (“MLVSS”), Return Sludge Suspended Solids (“RSSS”), Sludge Volume Index (“SVI”), Return Activated Sludge (“RAS”) rate, aeration basin DO levels, and sludge blanket depths. This information shall be used to better quantify typical operating conditions as well as to refine the BioWIN and State Point modeling as described below.
- ii. Treatment train-specific flow monitoring – Installation of flow monitoring equipment as necessary as to allow the continuous monitoring of treated flow, RAS, and all other recycles within the treatment train to be used for peak flow testing.
- iii. Peak Flow/Solid Loading Rate Tests – A series of test events across a range of peak flow and solid loading rates equivalent to whole WWTP flow and load rates, including multiple tests that cover the range of hydraulic loading rates at which the WWTP has experienced bypasses during wet weather events. During each such test event, continuous monitoring of treated flow, RAS, and all other recycles within the treatment train shall be conducted, as will frequent aeration basin influent, mixed liquor, clarifier effluent and recycle monitoring. Such monitoring shall include influent and effluent BOD5, COD, TSS, VSS, Dissolved

Solids, TKN, ammonia, Total Phosphorus, alkalinity, and pH, as well as frequent operational monitoring of MLSS, MLVSS, SVI, RAS rate, aeration basin DO levels, and sludge blanket depths.

- iv. Dye testing - During at least one of the solids loading rate tests specified above, carry out slug dye testing to characterize the hydraulic characteristics of the secondary clarifier. Such testing shall employ fluorescent dye and the use of appropriate instrumentation (such as a fluorimeter) and frequent grab sampling to characterize the effluent dye concentration curve.
- c. BioWIN and Clarifier State Point modeling – Utilize the WWTP operational and performance data collected per above to validate and if necessary, calibrate the City’s WWTP BioWIN and State Point models (WEF No. FD-08), and then use those models to update the information provided in the 2021 West Yost Technical Memorandum and to characterize plant performance at flows of Max Month Wet Weather, Peak Day and Peak hour. In particular, the City shall collect data necessary to validate the BioWIN model’s default input parameters, including those for which no details were previously provided as noted in FT 3 of the 2021 West Yost Technical Memorandum, and shall monitor SVI to validate the assumption made in the State Point analysis.
- d. Based upon the results of the above, apply sound engineering judgement to identify the following WWTP capacities, consistent with ODEQ Guidelines for Making Wet Weather and Peak Flow Projections for Sewage Treatment in Western Oregon, based upon the criteria of the WWTP’s ability to remain in full compliance with its current NPDES permit:
 - i. Peak Instantaneous
 - ii. Peak Daily

Capacities may include the use of equalization to manage brief flow peaks; however, consideration of such use must assume operational strategy(s) that can actually be implemented.

10. **Treatment WWTP Capacity Evaluation Report**– The City shall submit to EPA and ODEQ by September 30, 2023, for review and approval, a report that describes and fully documents its completion of the tasks described in Paragraph 9 of this Appendix, and seeks EPA and ODEQ approval of a CAP Limit. This report shall at a minimum include the following:
- a. A detailed description of the Hydraulic Capacity Assessment carried out and its results. All as-built drawings, the hydraulic profile, and all calculations carried out shall be provided as attachments.
 - b. A tabular summary of City design criteria, selected industry guideline used.
 - c. A detailed description of each baseline and peak testing event, and a summary of all the flow and monitoring data collected during each event. For each event in which there is dye testing, a discussion of the results of that testing including the effluent dye concentration curve, shall be provided. All raw data and event operational logs/notes shall be included as attachments.
 - d. A detailed description of the BioWIN and Clarifier State Point models calibration, and a discussion of the impact of those calibrations on the model predictions of the WWTP’s peak capacities. The detailed model inputs and outputs shall be provided as attachments.
 - e. A detailed description of how the City utilized the results of the evaluations required by this section to determine the Sandy WWTP peak capacities. The report shall fully document the bases of the City’s determinations.
 - f. A description of any bypass events or compliance issues at the WTTP that occurred between Consent Decree signing and the Report, and any remedial actions taken.
 - g. A CAP Limit which will be calculated as follows:
 - i. Peak Daily capacity of the upgraded WWTP (as established by the Stress Test, in MGD) minus the peak flow rate in the 5-year/24 hour storm (as simulated by the Model, in MGD) = Available Capacity in MGD.
 - ii. The CAP Limit in ERUs will be equal to Available Capacity in MGD multiplied by 1000. (CAP Limit = [Available Capacity in MGD x 1000])

EPA and ODEQ will respond to the request for approval and/or provide comments on the WWTP Treatment Capacity Evaluation Report within 45 Days of receipt in accordance with Paragraphs 24-29 of the Consent Decree. Upon approval of the report by EPA and ODEQ, the CAP Limit will be deemed established.

SEEKING TO AMEND THE CAP LIMIT

11. The City may seek to amend the CAP Limit at any time by submitting to EPA and ODEQ for review and approval a report providing evidence that capacity has been expanded in the CSTW, such as a CCE, and that there is information sufficient to determine and demonstrate a new CAP Limit can be set without future NPDES permit violations occurring, and setting forth the proposed new CAP Limit. EPA and ODEQ will make best efforts to respond in writing to approve and/or provide comments or request new information within 45 days of receipt in accordance Paragraphs 24-29 of the Consent Decree. Upon approval of the report by EPA and ODEQ, the CAP Limit will be deemed amended.

EXEMPTION FOR ESSENTIAL SERVICES

12. The City may authorize a new sewer service connection or authorize changes to existing connections that result in additional flows, even if it cannot certify that it has adequate treatment, transmission, or collection capacity, for the following:
 - a. essential services such as health care facilities, public safety facilities, public schools, and, subject to EPA/ODEQ review and approval, government and other public facilities; and
 - b. cases where a pollution or health or safety condition exists, including failed septic systems.

Any new sewer service connections, or changes to existing connections that result in additional flows, for essential services will count toward the CAP Limit in Period Two, and shall be included in quarterly reporting.

QUARTERLY REPORTING

13. The City shall submit quarterly reports of new sewer connections or changes to existing connections that result in additional flows, including the number of ERUs and how they were calculated, to EPA and ODEQ.

CONNECTION-SPECIFIC CAPACITY EVALUATIONS (CSCEs)

14. For any developments, industrial or residential, which will result in connections above 50 ERUs, the City shall conduct a connection specific capacity evaluation to ensure capacity exists in the WCTS. Capacity to collect and convey at and below the point of connection shall be evaluated for the 5-year event using the Collection System Model.

EQUIVALENT RESIDENTIAL UNIT (ERU)

15. For the purposes of the Capacity Assurance Plan, an ERU shall be assumed to generate a peak flow of 1,000 gallons per day.² For the purposes of assigning ERUs to each connection to the WCTS, the following assumptions shall be used:

Type of Use/Facility	ERUs
Single-family (incl. manufactured homes, and townhomes with three or more bedrooms)	1
Duplex (incl. manufactured homes)	2
Triplex (incl. manufactured homes)	3
Multi-family (4 or more units)	0.7 per household unit

² Based in part on the Sandy Code of Ordinances, Section 13.16.020 for average flow ERU assignment. Peak flow for residential facilities is assumed to be 4.0 times average flow as per Figure 1, Recommended Standards for Wastewater Facilities; Policies for the Design, Review, and Approval of Plans and Specifications for Wastewater Collection and Treatment Facilities 2014 Edition; A Report of the Wastewater Committee of the Great Lakes - Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers Member States. Other peaking factors assigned based on expected flow variation patterns.

Accessory Dwelling Unit (“ADU”)	0.7
Room & Board Facilities	1 per 3 tenant rooms
Hotel/motel	1 per 3 rental rooms
Restaurants	1 per 8 seats
Tavern/lounges	1 per 15 seats
Food cart(s)	0.1 per cart
Hospitals/similar care facilities	1 per 3 beds
Auto service stations	1 per 6 pumps
Car washes	1 per 330 gpd predicted daily flow
Theaters and meeting venues	1 per 330 seats
Churches	1 per 260 seats
Laundromats	1 per 4 washers
Bakeries	1 per 6 employees
Mortuaries (without residence)	1 per 12 employees
Schools without showers	1 per 80 students
Schools with Showers	1 per 40 students
Colleges without residential facilities	1 per 40 students
Dormitories	1 per 6 two-person rooms
Offices	1 per 2,000 square feet
Retail	1 per 12,000 square feet

Other Commercial	1 per 333 gpd predicted flow
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16. Industrial users and high-volume/high-strength dischargers (collectively, IUs) shall be assigned ERUs based upon predicted wastewater flow volume, patterns and strength as follows:

Assigned Flow ERUs = Higher of average or peak flow ERU value, where:

- Average flow ERUs = Predicted average facility discharge volume, gpd ÷ 250 gpd
- Peak flow ERUs = Predicted daily peak flow rate, gpd ÷ 1,000 gpd

If the IUs' waste is expected to have strength characteristics different than typical sanitary sewage, the impact of its wastewater on the WWTP shall also be evaluated based upon the expected average and maximum monthly loadings of BOD5 and maximum day loadings of TSS on the aeration basins and the final clarifiers following the addition of the proposed IU connection, as compared to the benchmarks identified in accordance with Paragraph 9.a. of this Appendix.

This evaluation shall at a minimum consider: i) aeration basin organic loading (pounds BOD5 per day per 1000 cubic feet of aeration basin capacity), aeration basin F/M ratio (pounds BOD5 per day per pound MLVSS), both at Maximum Monthly conditions; and ii) secondary clarifier peak hourly surface overflow rate (in gallons per day per square foot of clarifier surface area).

17. References

“Orange Book” refers to the Criteria for Sewage Works Design manual, publication number 98-37 (revised January 2022), Department of Ecology, State of Washington.

“WEF No. FD-08” refers to Clarifier Design: WEF Manual of Practice No FD-08.

“Metcalf & Eddy” refers to Wastewater Engineering: Treatment and Resource Recovery, Metcalf & Eddy, 5th Edition.

“2021 West Yost Technical Memorandum” refer to the February 22, 2021 West Yost Technical Memorandum, Sandy WWTP Secondary Process Evaluation

APPENDIX E

AMENDED WASTEWATER SYSTEM FACILITIES PLAN REQUIREMENTS

1. In compliance with Paragraph 22 of the Consent Decree, an Amended Wastewater System Facilities Plan, consistent with the guidelines “Preparing Wastewater Planning Documents and Environmental Reports for Public Utilities,” and the requirements of the State Revolving Fund, shall be submitted for review and approval to EPA and ODEQ. The Amended Wastewater System Facilities Plan shall propose alternatives to bring the City into compliance, and ensure continued compliance, with the terms and conditions of the Permit. A schedule for completion of CSTW improvements shall be included in the Plan. The Amended Wastewater System Facilities Plan shall comply with the requirements of this Appendix.
2. The Amended Wastewater System Facilities Plan shall include an evaluation of the capacity increases that have been achieved in the CSTW thus far, either through plant improvements (based on performance during wet weather events that have occurred in 2022) or infiltration and inflow (“I&I”) reductions, and how they compare to the results anticipated in the 2019 Facilities Plan and 2021 WWTP Preliminary Design Report. This evaluation shall include a review and evaluation of data collected from the completed I&I reduction work in the Basins, to determine if the type and extent of work carried out there achieved the anticipated/desired level of I&I reductions.
3. Wet season rainfall and flow monitoring program – The City shall carry out a wet season (November 1 to April 30) rainfall and flow monitoring program to collect the data necessary to support validation or as necessary recalibration of its Collection System Model in accordance with CIWEM 2017. Monitoring shall consist of the following:
 - a. Rainfall monitoring – The City shall install and operate a minimum of 3 automatic recording/telemetered rainfall gauges. Such gauges shall be capable of measuring 0.01 inches of rainfall and shall be distributed to characterize local rainfall patterns. The rainfall gauges shall be installed in locations throughout the system to provide representative rainfall data, and operated, and maintained in accordance with the gauge manufacturers’ recommendations.
 - b. Flow Monitoring – The City shall install and operate a network of flow monitors and level sensors to facilitate its evaluation of the effectiveness of its Rainfall

Derived Infiltration and Inflow (“RDII”) reduction efforts and to support the development, validation, and recalibration of its Collection System Model.

- i. Flow monitors shall be telemetered Area/Velocity (“A/V”) meters capable of the following: Consistently providing accurate and reliable monitoring data. At a minimum, velocity, depth, and flow shall be accurately measured and recorded, under both open channel and surcharged conditions, and shall be recorded in at most 5-minute intervals. The equipment must allow the collection of data remotely via cellular telemetry.
 - ii. Level sensors shall also be telemetered.
 - iii. Both A/V meters and level sensors shall be capable of measuring surcharge depths above the pipe invert to the manhole rim.
 - iv. Flow meters and level sensors shall be installed in locations throughout the system to provide representative flow data and to monitor each individual sewer basin’s flow rates as well as to support successful model development, calibration, and validation.
 - v. Flow meters shall be operated, and maintained in accordance with manufacturer recommendations.
- c. Data QA/QC – The City shall implement QA/QC practices, consistent with industry standards in Section 3 of CIWEM 2017 and the WRc Guide to Short Term Flow Surveys in Sewers (1987), including weekly data reviews, consistent data qualification procedures and consistent and complete QC documentation protocols.
- d. Data collection will be considered sufficient for proceeding with Collection System Modeling if the following conditions are met:
- i. Flow monitoring and rainfall collection must continue through at least February 28, 2023.
 - ii. Flow and rainfall observations are recorded, reviewed, deemed acceptable quality, and 95% complete during at least one or both of the following:

1. At least one storm with 72-hour rainfall in exceedance of the 1.17-year storm (2.75 inches in 72 hours), AND at least 2 other storms with 2.0 inches in 72 hours (1.08-year frequency); or
 2. Plant flows exceed flows of 6 MGD at least once, and exceed 4 MGD at least two times.
4. Collection System Model Development/Validation/Recalibration – The City shall develop and maintain a calibrated hydrologic/hydraulic model of its WCTS (“the Collection System Model”) to establish existing system wet weather response and hydraulic conditions and limitations and to support implementation of the CAP. The Collection System Model shall be configured, calibrated, and verified in accordance with current good industry practice, as per CIWEM 2017, and shall:
- a. Accurately predict the hydrologic response of each Basin to an appropriate range of wet weather events by each of the City’s ten individual sewer basins. At a minimum, the following precipitation events shall be considered:
 1. OR 5-year 24 hour storm
 2. OR 5-year 6 hour storm with Atlas 14 first quartile distribution
 - ii. Accurately predict flow rate and hydraulic grade line (“HGL”) of wastewater in all portions of the collection system explicitly represented in the Collection System Model in storm events including those listed above in Paragraph 4.a.;
 - iii. Accurately predict surcharge and releases (e.g., Sanitary Sewer Overflows) in all portions of the collection system explicitly represented in the Collection System Model;
 - iv. Utilize dynamic wave routing, including representative simulation of downstream backwater impacts on upstream flows and HGLs; and
 - v. Support accurate analysis of alternative measures for addressing capacity limitations.
- b. Collection System Model configuration/calibration/verification
 - i. The Collection System Model shall be configured based upon accurate hydrologic and collection system attribute information, including that

taken from as-built drawings and as necessary, acquired through field survey activity.

- ii. Dry weather and wet weather calibration shall be carried out using the validated data collected in the monitoring program described in Paragraph 3 above. Calibration shall be carried out in accordance with current good industry practice and the criteria presented in Table 5-1 from the CIWEM 2017. In particular, the following wet weather calibration criteria will be applied:

Table 5-1 Storm Verification Targets

Parameter	General	Critical Locations	Comments
Shape	Good match (NSEC if used >0.5)	Good match (NSEC if used >0.5)	An evaluation technique may be used to compare the shape such as the Nash-Sutcliffe Efficiency Co-efficient (NSEC) method together with a visual check. More information on this approach is included in Appendix G
Time of peaks and troughs	±0.5 hour	±0.5 hour	The timing of the peaks and troughs should be similar having regard to the duration of the event
Peak depth (un-surcharged)	±0.1m or ±10% whichever is greater	±0.1m	
Peak depth (surcharged)	+0.5m to - 0.1m	±0.1m	Relaxation may be appropriate in deep sewers. Where coupled 1D-2D models are used the 'critical locations' criteria should apply
Peak flow	+ 25% to -15%	±10%	
Flow volume	+20% to -10%	±10%	Excluding poor / missing data

- iii. Collection System Model documentation: Fully document configuration, attribute data, initial and final calibration parameters, and calibration performance. Last to include 45-degree scatterplots of individual event peak flow rate and peak depth and total volume for each calibration point.
5. The City shall provide a report to EPA and ODEQ that describes in detail rainfall monitoring, flow monitoring, Collection System Model development and the calibration process, and that at a minimum includes:
- a. Rainfall monitoring – The report shall describe the location and type of each rain gauge employed to collect rainfall data during the monitoring period. The

methodology used to review and qualify rainfall data shall be described, data excluded from use due to quality issues identified, and the results of the data review shall be summarized in a chart like the attached Example 1. Both raw and edited rainfall data shall be provided in a spreadsheet as attachments.

- b. Flow monitoring - The report shall describe the location and type of each flow monitoring installation used to collect flow and HGL data during the monitoring period. The methodology used to review and qualify depth and velocity data shall be described, data issues at each meter location discussed, data excluded from use due to quality issues identified, and the results of the data review shall be summarized in a chart like the attached Example 1. Site installation sheets and scatterplots of all dry and wet weather data shall be provided as an attachment.
- c. Collection System Model software – The report shall identify all software (including versions) utilized, and if not widely utilized within the industry for collection system modeling, shall provide information regarding the capabilities and limitations of that software.
- d. Collection System Model configuration – The report shall describe how all hydrologic processes are represented in the model and shall provide as appendices all initial and final hydrologic parameters. The report shall also describe and illustrate with map(s) and/or schematics, all portions of the system explicitly included in the hydraulic model and shall include as appendices all attribute data input to the model.
- e. Collection System Model calibration and verification – The report shall describe in detail the dry and wet weather calibration processes and rainfall/flow monitoring data utilized, the calibration criteria employed (as per the CIWEM 2017) and the calibration results achieved. The report shall provide:
 - i. A discussion of the overall calibration achieved, limitations of the model and recommendations for future model refinement;
 - ii. Specifically identify each dry weather and wet weather calibration or verification period and shall describe why each such period was selected;
 - iii. Summary tables of calibration and verification peak flow, peak depth, and total event volume model-to-meter statistics;

- iv. For each calibration location/meter -45-degree calibration/verification peak flow, peak depth, and total event volume scatterplots; and
 - v. For each calibration location/meter, calibration/verification meter-to-model comparative hydrographs.
- 6. Comprehensive Capacity Evaluation. As part of the Amended Wastewater System Facilities Plan, the City shall conduct a Comprehensive Capacity Evaluation (“CCE”). The CCE shall be carried out to evaluate and document the then-current peak wet weather capacity of the Sandy collection system and the peak wet weather and longer-term capacities of the Sandy wastewater treatment plant. This will be achieved by a combination of monitoring, modeling, and engineering analyses as described in detail below:
 - a. The CCE shall, at a minimum, consist of the following activities:
 - i. Wet season rainfall and flow monitoring program in Paragraph 3 of this Appendix;
 - ii. Collection System Model Validation/Recalibration in Paragraph 4 of this Appendix;
 - iii. Collection System Model Capacity Evaluation. The City shall carry out a series of simulations to identify any portions of the collection system with inadequate conveyance capacity. For this evaluation, inadequate capacity will be any sewer predicted to surcharge to within 3-feet of the ground surface or would be expected to result in a backup to private property based on expected lowest fixture elevations. This evaluation shall consist of two steps:
 - a. First, the City shall use the model to simulate the performance of the existing system during the OR 5-year Storm and shall identify any portions of the collection system with inadequate conveyance capacity. If any such portions are identified, those portions shall be deemed to have no additional capacity for new connections until measures are completed to increase that capacity.
 - b. The City shall then simulate increased base flow in the portions of the interceptors and main trunk sewers with adequate conveyance capacity

to identify how much additional flow is required to reach inadequate conveyance capacity conditions in that same OR 5-year storm event. The City shall identify the additional baseflow capacity in gallons per day rate for each interceptor and main trunk sewer and provide that information on a sewer map.

- iv. Collection System Record Review and Evaluation. The City shall carry out a review of the last three years of its collection system complaints and maintenance records, to identify all instances of capacity-related overflow or private property backup. For each such instance identified, the City shall provide an evaluation of how the responsible precipitation event compared to the OR 5-year event.
 - v. Treatment Plant Capacity Evaluation in Paragraph 9 of Appendix D;
 - vi. Integrated WCTS and WWTP Evaluation and Identification of Currently Available Capacity
 - a. The City shall utilize the results of the evaluations and analyses described in subparagraphs i-v above, to identify the available additional baseflow capacity for the WWTP and for each portion of the specified interceptors and main trunk sewers.
7. Subsequent CCEs shall be carried out and Reports submitted following the completion of significant collection system or WWTP projects implemented by the City to address specific capacity limitations and to support the submission of requests by the City for increase in the CAP connection limitation(s).
8. Permit Compliance. The Amended Wastewater System Facilities Plan shall include an evaluation of the City’s expected compliance with the Permit, including Capacity Related Violations, to be conducted for both current conditions and with anticipated growth over the next 10 years.
9. The Amended Wastewater System Facilities Plan shall include a set of improvements identified as “Continued Compliance Improvements.” “Continued Compliance Improvements” shall mean improvements which when completed, and permitted, will allow for sufficient capacity to collect, treat, and discharge to meet permit requirements,

including discharge limitations during peak flow, for at least ten years, including expected population growth through the tenth year.

10. Alternatives. Utilizing all of the above information, as well as data on predicted population growth over the next 20 years, the City shall conduct an evaluation of all viable alternative measures to improve capacity in the WCTS and WWTP, including both short-term and long-term improvements to address increased flow, to ensure compliance with the terms and conditions of the Permit, and shall at a minimum include consideration of the following measures:

- (1) Expansion of current tertiary treatment configurations (additional aeration basin, clarifier), and tertiary filtration;
- (2) Converting the existing plant to a Membrane BioReactor System (“MBR”);
- (3) Hybrid installation of an MBR train at the existing plant, and conversion of the existing aeration basin, secondary clarifier and tertiary filtration train to wet weather operation only;
- (4) Pumping wastewater to adjacent treatment facility;
- (5) Detention in a new pump station and equalization basin, or within the existing collection system by limited surcharging;
- (6) Satellite MBR concept.
- (7) Any other temporary or permanent measures the City wishes to consider.

11. References

“CIWEM 2017” refers to



Urban Drainage Group

Code of Practice for the Hydraulic Modelling of Urban Drainage Systems 2017.

www.ciwem.org/groups/udg