



Oregon

Tina Kotek, Governor

Department of Environmental Quality

Western Region Salem Office
4026 Fairview Industrial Dr SE
Salem, OR 97302
(503) 378-8240
FAX (503) 373-7944
TTY 711

October 25, 2024

Jerry Gillham
City of Sutherlin
126 E Central Ave.
Sutherlin, OR 97479

Re: NPDES Permit Public Notice Period
Comments Due: December 2, 2024, 5 p.m.
File no. 86662
Permit no. 101993
EPA no. OR0020842
Facility: Sutherlin WWTP, 4306 Stearns Lane, Sutherlin
Douglas County

Enclosed please find the Public Notice drafts for your proposed National Pollutant Discharge Elimination System Permit including a copy of the public notice, permit, fact sheet, biosolids management plan, and recycled water use plan. Please be aware that the city may provide additional comment on the permit during this time and submit to:

Trinh Hansen, Water Quality Permit Coordinator
DEQ Western Region
4026 Fairview Industrial Way Dr. SE
Salem, OR 97302
trinh.hansen@deq.oregon.gov

Your comments **must be received by 5 p.m. on December 2, 2024**. DEQ will hold a public hearing if DEQ receives written requests for a hearing during the public comment period from at least 10 people, or from an organization representing 10 or more people. DEQ gives equal weight to written and oral comments. When the public participation period has ended, DEQ will take final action on your application.

Please contact me at 503-378-5055 with any questions about permitting processing.

Sincerely,

Trinh Hansen
Water Quality Permit Coordinator
Western Region, Salem Office

ec: NPDES Permit Issuance Source File, Water Quality Division, DEQ
Andy Ullrich, Medford, DEQ
ORMS



PUBLIC NOTICE

Date posted: 10/25/24

DEQ Requests Comments on Proposed City of Sutherlin Water Quality Permit Renewal

HOW TO PROVIDE PUBLIC COMMENT

Facility name: City of Sutherlin

Permit type: Domestic Minor

Comments due by: Monday, Dec. 2, 2024 at 5 p.m.

Send written comments to:

By mail: Trinh Hansen, Permit Coordinator, Oregon DEQ

4026 Fairview Industrial Dr. SE, Salem, OR 97302

By email: trinh.hansen@deq.oregon.gov

The Oregon Department of Environmental Quality invites the public to provide written comments on the conditions of City of Sutherlin's proposed water quality permit, known officially as a National Pollutant Discharge Elimination System permit.

Summary

Subject to public review and comment, DEQ intends to renew the proposed water quality permit, which allows the Sutherlin Wastewater Treatment Plant to discharge wastewater to Calapooya Creek, Fords Pond, and Fords Creek at 4306 Stearns Lane in Sutherlin. The facility also land applies to the Bainbridge Property at 1030 Isadore Road in Sutherlin, Oregon; the Reddekopp Property at 252 Isadore Road in Sutherlin; and the Banducci Property at 3830 Stearns Lane in Sutherlin.

About the facility

The City of Sutherlin has applied for a water quality permit renewal. DEQ last renewed this permit on July 9, 2019. The upgraded treatment plant begins with influent screens to remove large debris. From there, a new flow paced influent sampler was placed at the influent screen structure. Then, a grit classifier removes solids further and a flow splitter then discharges to the new continuous feed sequencing batch reactor (SBR) activated sludge treatment plant. The SBR system consists of four 355,000-gallon basins. Following the SBRs, effluent flows into the new ultraviolet disinfection system and out to Outfall 001 in Calapooya Creek in the wet weather period and the chlorine contact chamber in the dry weather period to Outfall 002a at Fords Pond. Discharge from Fords Pond to the Fords Creek Outfall 002b in the dry season is not allowed and there is a dam in place to prevent flow into the creek during that period. When stream flow in Calapooya Creek is below 82 cubic feet per second in May, treated wastewater flow is directed to Fords Pond and the dam to Fords Creek is closed.

The facility discharges to Calapooya Creek near the Rochester Covered Bridge from November to May and is permitted to discharge to Fords Pond near Church Road year – round. Calapooya Creek is listed as impaired (category 4 or 5) for several pollutants according to the most recent U.S. Environmental Protection Agency-approved integrated report for Oregon. The proposed permit reflects effluent limits established through reasonable potential analysis, best available technology or the Calapooya Creek Total Maximum Daily Load, or TMDL, for temperature, pH, *E. coli*, and dissolved oxygen.

Translation or other formats

[Español](#) | [한국어](#) | [繁體中文](#) | [Русский](#) | [Tiếng Việt](#) | [العربية](#)

800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

The most recent DEQ inspection of the Sutherlin Wastewater Treatment Plant was on Sept. 23, 2021. DEQ identified violations during this inspection. Sutherlin has had eight water quality violations in the past permit term. The issues related to these past compliance issues are being addressed.

The facility holds no other permits from DEQ.

What types of pollutants does the permit regulate?

This permit sets conditions for how the facility deals with the following pollutants: BOD₅, TSS, temperature, *E. coli*, chlorine, and ammonia, as well as nitrates and nitrites.

DEQ also requires the permittee to maintain a biosolids management/land application plan, and a recycled water plan. As part of this permit renewal, these plans were and will be on public notice. The facility is permitted to treat wastewater solids to produce biosolids for beneficial reuse on agricultural lands located in Douglas County. The biosolids program including the beneficial use sites are described in the biosolids management/land application plan. Details regarding the treatment and use of recycled water are in the recycled water plan.

Would the draft permit change the amount of pollution the facility is allowed to release?

Yes. The draft permit would lower the limit for temperature from November – May 15. The draft permit also features a new daily maximum mass load limit for BOD₅ and TSS from June 1 – Oct 31. It would also lower the chronic limits of ammonia for both Outfall 001 and 002a and creates new nitrate+nitrite limits for Outfall 002a.

Pollutant	Change
June 1 – Oct 31: BOD ₅ and TSS	New Daily Maximum: 150 lb/day
Outfall 001: Temperature	-0.4 million Kcal/day
Outfall 001: Ammonia	Monthly Average -2.2 mg/L
Outfall 002a: Nitrate+Nitrite	New limits: 10 mg/L monthly average and 24.5 mg/L daily maximum.

How did DEQ determine permit requirements?

DEQ evaluates types and amounts of pollutants and the water quality of the surface water or groundwater where the pollutants are proposed to be discharged and determines permit requirements to ensure the proposed discharges will meet applicable statutes, rules, regulations and effluent guidelines of Oregon and the Clean Water Act.

DEQ relied solely on these documents and made no other discretionary decisions for the permit action.

How does DEQ monitor compliance with the permit requirements?

This permit will require the facility to monitor pollutants discharged using approved monitoring practices and standards. DEQ reviews the facility's discharge monitoring reports to check for compliance with permit limits.

What happens next?

Submit comments by sending an email or using mail service addressed to the permit coordinator listed in the “how to provide public comment” box above.

DEQ will hold a public hearing if it receives written requests for a hearing during the public comment period from at least 10 people or from an organization representing at least 10 people.

DEQ will consider and respond to all comments received and may modify the proposed permit based on comments.

For more information

Find more information by reviewing draft permit documents attached to this notice, or Trinh Hansen at (503) 378-5055 or trinh.hansen@deq.oregon.gov with questions or to view documents in person at a DEQ office.

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ’s [Civil Rights and Environmental Justice page](#).



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WASTE DISCHARGE PERMIT

Oregon Department of Environmental Quality
Western Region – City Office
4026 Fairview Industrial Dr. SE
Salem, OR 97302
Telephone: 503-378-8240

Issued pursuant to ORS 468B.050 and the federal Clean Water Act.

ISSUED TO:

Sutherlin, City of
126 E. Central
Sutherlin, OR 97479

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	Calapooya Creek - River Mile 9.8 43.401867, -123.362931
Treated Wastewater	002a	Fords Pond – River Mile 0.40 43.393534, -123.362197
Fords Pond discharge to Fords Creek	002b	Fords Creek - River Mile 0.50 43.395933, -123.369461 Specified in Recycled Water Use Plan
Recycled Water Reuse	003	Specified in Biosolids Management/Land Application Plan
Biosolids	004	

FACILITY LOCATION:

Sutherlin STP
4306 Stearns Lane
Sutherlin, OR 97479
County: Douglas

RECEIVING STREAM INFORMATION:

Receiving stream/NHD name: Calapooya and Fords Creek
USGS 12-Digit HUC: 171003030106
OWRD Administrative Basin: Umpqua
NHD Reach Code & % along reach:
Outfall 001: Calapooya Creek = 17100303000172 - 46%
Outfall 002a: Fords Pond = 17100303058695 – 31%
Outfall 002b: Fords Creek = 17100303011460 – 85%
ODEQ LLID & RM: 1234686433656-9.8–D and 1233740433975-0.50-D
Integrated Report AU ID:
Calapooya Creek: OR_SR_1710030301_02_106418
Fords Pond and Creek: OR_WS_171003030106_02_105275

EPA Permit Type: Minor

Issued in response to Application No. 948184 received 12/06/2023. This permit is issued based on the land use findings in the permit record.

DRAFT

Ranei Nomura, Water Quality Manager
Western Region

DRAFT

Issuance Date

DRAFT

Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to: 1) operate a wastewater collection, treatment, control and disposal system; and 2) discharge treated wastewater to waters of the state only from the authorized discharge point or points in Schedule A in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES or Water Pollution Control Facility permit, or by Oregon statute or administrative rule, any other direct or indirect discharge of pollutants to waters of the state is prohibited.

TABLE OF CONTENTS

SCHEDULE A: WASTE DISCHARGE LIMITS.....	5
1. Outfall 001 – Permit Limits	5
2. Outfall 002a – Permit Limits.....	6
3. Outfall 002b – Permit Limits	7
4. Regulatory Mixing Zone	7
5. Use of Recycled Water.....	8
6. Biosolids.....	8
SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS.....	10
1. Reporting Requirements.....	10
2. Monitoring and Reporting Protocols.....	11
3. Monitoring and Reporting Requirements.....	14
4. Effluent Toxics Characterization Monitoring (Tier 1 Monitoring).....	23
5. Recycled Water Monitoring Requirements: Outfall 003	23
6. Biosolids Monitoring Requirements	24
SCHEDULE C: COMPLIANCE SCHEDULE	26
1. Compliance Schedule to Meet Final Effluent Limits.....	26
2. Responsibility to Meet Compliance Dates	26
SCHEDULE D: SPECIAL CONDITIONS.....	27
1. Inflow and Infiltration	27
2. Emergency Response and Public Notification Plan	27
3. Recycled Water Use Plan.....	27
4. Exempt Wastewater Reuse at the Treatment System.....	28
5. Biosolids Management Plan.....	28
6. Wastewater Solids Transfers.....	29
7. Operator Certification	29
8. Industrial User Survey.....	30
9. Outfall Inspection.....	30
10. Bis(2-ethylhexyl) phthalate Source Identification Study	31
11. Water Quality Trading Umpqua Basin.....	31
SCHEDULE F: NPDES GENERAL CONDITIONS.....	34

Note: Schedule E (Pretreatment Activities) is not part of this permit.

LIST OF TABLES

Table A1: Permit Limits.....	5
Table A2: Permit Limits.....	6
Table A3: Permit Limits.....	7
Table A4: Recycled Water Limits.....	8
Table A5: Biosolids Limits	9
Table B1: Reporting Requirements and Due Dates	10
Table B2: Influent Monitoring Requirements	14
Table B3: Effluent Monitoring Requirements (Outfall 001).....	15
Table B4: Effluent Monitoring Requirements (Outfall 002a).....	19
Table B5: Effluent Monitoring Requirements (Outfall 002a).....	21
Table B6: Receiving Stream Monitoring Calapooya Creek.....	22
Table B7: Ambient Monitoring Fords Pond	22
Table B8: Base-Neutral Compounds (Outfall 002a)	23
Table B9: Recycled Water Monitoring	23
Table B10: Biosolids Monitoring When distributing, land applying, or onsite storage.....	24
Table B11: Biosolids Minimum Monitoring Frequency	25
Table C1: Compliance Schedule.....	26

SCHEDULE A: WASTE DISCHARGE LIMITS

1. Outfall 001 – Permit Limits

During the term of this permit, the permittee must comply with the limits in the following table:

Table A1: Permit Limits

Parameter	Units	Timeframe	Stream Flow (cfs)	Average Monthly	Average Weekly	Daily Maximum
Effluent Flow (See note a.)	MGD	May 1–31	< 82	-	-	0 (No discharge)
		Jun 1–Oct 31	All	-	-	0 (No discharge)
BOD ₅ & TSS (See notes b & c.)	mg/L	Nov 1–Apr 30	All	30	45	-
	mg/L	May 1 – 31	> 82	30	45	-
	lb/day	Nov 1–30	< 45	440	170	260
			45–60		320	480
			> 60–96		440	660
			> 96		660	880
		Dec 1–Apr 30	All	560	840	1100
		May 1 – 31	> 82	560	840	1100
	% removal	Nov 1–Apr 30	All	85	-	-
		May 1 – 31	> 82	85	-	-
Chlorine, Total Residual (See note d.)	mg/L	Nov 1–May 31	All	0.01	-	0.036
Ammonia, Total	mg/L	Nov 1–May 31	All	11.8	-	23.5
pH	SU	Nov 1–May 31	All	Instantaneous limit between a daily minimum of 6.3 and a daily maximum of 9.0		
<i>E. coli</i> (See note e.)	#/100 mL	Nov 1–May 31	All	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		
Excess Thermal Load Limit (ETLL) (See note f.)	Million kcal/day	Nov 1–May 15	All	7-day rolling average: Option A: 6.9 Option B: $(0.3)(Q_e + 0.25Q_r)(2.45)$		
		May 16–31	All	7-day rolling average: Option A: 21 Option B: $(0.1)(Q_e + Q_r)(2.45)$		

Parameter	Units	Timeframe	Stream Flow (cfs)	Average Monthly	Average Weekly	Daily Maximum
Notes: a. If stream flow in May is < 82 cfs, divert effluent flow to Fords Pond. b. Monthly average BOD₅ and TSS limits are not flow-based. c. The weekly average BOD₅ and TSS limits are based on the weekly average flow in Calapooya Creek. d. DEQ has established a Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. Any analysis done for Total Residual Chlorine must have a quantitation limit that is either equal to or less than 0.05 mg/L. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level. e. If a single sample exceeds 406 organisms/100 mL, the permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning within 28 hours after the original sample was taken. A geometric mean of the 5 re-samples that is less than or equal to 126 E. coli organisms/100 mL demonstrates compliance with the limit. f. The permittee must select either Option A or Option B as the applicable 7-day rolling average Excess Thermal Load Limit (ETLL). If the permittee selects Option B, the permittee must calculate the daily ETLL using the above equations. The permittee must then calculate the 7-day rolling average ETLL for each day the Option B limit is selected. Q_e = Daily effluent flow in cubic feet per second (cfs). Q_r = Daily average Calapooya Creek flow (cfs). The permittee must use flow data from the USGS stream flow gage number 14320700 or another DEQ-approved data source. The minimum creek flow value to be used for the Nov. 1 – May 15 period is 19 cfs, the 7Q10 low flow of the creek for this period. The minimum creek flow value to be used for the May 15 - May 31 period is 82 cfs, the minimum flow of the creek when discharge is allowed during this period.						

2. Outfall 002a – Permit Limits

During the term of this permit, the permittee must comply with the limits in the following table:

Table A2: Permit Limits

Parameter	Timeframe	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅ and TSS	Year – Round	mg/L	10	15	-
		lb/day	73	110	150
		% removal	85	-	-
Chlorine, Total Residual (See note a.)	Year – Round	mg/L	0.0053	-	0.019
Ammonia, Total	Year – Round	mg/L	2.0	-	3.5
Nitrate (NO ₃) Plus Nitrite (NO ₂) (See note b.)	Year – Round	mg/L	10	-	24.5

Parameter	Timeframe	Units	Average Monthly	Average Weekly	Daily Maximum
pH	Year – Round	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 8.5		
<i>E. coli</i> (See note c.)	Year – Round	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		
Notes:					
a. DEQ has established a Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. Any analysis done for Total Residual Chlorine must have a quantitation limit that is either equal to or less than 0.05 mg/L. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level. b. The Nitrate (NO₃ Plus Nitrite (NO₂) limit is effective upon the completion of the compliance schedule in Schedule C. c. If a single sample exceeds 406 organisms/100 mL, the permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning within 28 hours after the original sample was taken. A geometric mean of the 5 re-samples that is less than or equal to 126 <i>E. coli</i> organisms/100 mL demonstrates compliance with the limit.					

3. Outfall 002b – Permit Limits

During the term of this permit, the permittee must comply with the limits in the following table:

Table A3: Permit Limits

Parameter	Timeframe	Stream Flow (cfs)	Units	Daily Maximum
Effluent Flow (See note a.)	June 1–Oct 31	All	MGD	0 (No discharge)
	May 1–31	< 82		0 (No discharge)
Note:				
a. If stream flow in Calapooya Creek in May is < 82 CFS, divert effluent flow to Fords Pond and block flow to Fords Creek.				

4. Regulatory Mixing Zone

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone as described below for only Outfall 001:

The allowable Regulatory Mixing Zone (RMZ) for Outfall 001 is that portion of Calapooya Creek that extends 10 feet upstream from the outfall end of pipe and 30 feet downstream out the outfall end of pipe. The Zone of Initial Dilution (ZID) is that portion of the Regulatory Mixing Zone extending 3 feet from the outfall end of pipe.

There is no allowable Regulatory Mixing Zone (RMZ) or Zone of Initial Dilution (ZID) for any discharge to Fords Pond (Outfall 002a) or Fords Creek (Outfall 002b).

5. Use of Recycled Water

The permittee is authorized to distribute recycled water if it is:

- a. Treated and used according to the criteria listed in Table A2.
- b. Managed in accordance with its DEQ-approved Recycled Water Use Plan unless exempt as provided in Schedule D.
- c. Used in a manner and applied at a rate that does not adversely affect groundwater quality.
- d. Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.
- e. Irrigated using sound irrigation practices to prevent:
 - i. Offsite surface runoff or subsurface drainage through drainage tile;
 - ii. Creation of odors, fly and mosquito breeding, or other nuisance conditions; and
 - iii. Overloading of land with nutrients, organics, or other pollutants.

Table A4: Recycled Water Limits

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
A	Class A recycled water must be oxidized, filtered and disinfected. Before disinfection, turbidity may not exceed: • An average of 2 NTUs within a 24-hour period. • 5 NTUs more than five percent of the time within a 24-hour period. • 10 NTUs at any time. After disinfection, total coliform may not exceed: • A median of 2.2 organisms per 100 mL based on daily sampling over the last 7 days that analyses have been completed. • 23 organisms per 100 mL in any single sample.	Class A recycled water may be used for: • Class B, Class C, Class D, and non-disinfected uses. • Irrigation for any agricultural or horticultural use. • Landscape irrigation of parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public. • Commercial car washing or fountains when the water is not intended for human consumption. • Water supply source for non-restricted recreational impoundments.

6. Biosolids

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

- a. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.
- b. The permittee must apply biosolids at or below the agronomic rates approved by DEQ in order to minimize potential groundwater degradation.
- c. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D) and follow the site-specific management conditions in DEQ-issued site authorization letter.

- d. Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32 and one of the vector attraction reduction standards under 40 CFR 503.33.
- e. The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations shown in the table below. The permittee may apply biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, however, the total quantity of biosolids applied cannot exceed the cumulative pollutant loading rates in the table below.

Table A5: Biosolids Limits

Pollutant (See note a.)	Ceiling concentrations (mg/kg)	Pollutant concentrations (mg/kg)	Cumulative pollutant loading rates (kg/ha)
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	–	–
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

Note:

- a. Biosolids pollutant limits are described in 40 CFR 503.13, which uses the terms *ceiling concentrations*, *pollutant concentrations*, and *cumulative pollutant loading rates*.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Reporting Requirements

The permittee must submit to DEQ monitoring results and reports as listed below.

Table B1: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date (See note a.)	Report Form (See note b.)	Submit To:
Tables B2, B3, B4, B5, B6 and B7 Influent Monitoring, Effluent Monitoring, and Receiving Stream Monitoring	Monthly	By the 15th of the following month	Specified in Schedule B. Section 2 of this permit	Electronic reporting as directed by DEQ
Table B8: Effluent Toxics Characterization	Monthly for three years starting Q1 of 2028	Within 45 days of the end of the month	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Inflow and infiltration report (see Schedule D)	Annually	February 15	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Recycled Water Annual Report (see Schedule D)	Annually	January 15	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ Electronic copy to DEQ Water Reuse Program Coordinator
Recycle Water Leakage Estimate Report (See note c.)	Once per permit Cycle	Submit by no later than 24 months after permit effective date	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Biosolids annual report (see Schedule D)	Annually	By February 19 of the following year	Electronic copy in a DEQ-approved form	Attached via electronic reporting as directed by DEQ DEQ Biosolids Program Coordinator
Industrial User Survey (see Schedule D)	Once per permit cycle	Submit by no later than 24 months after permit effective date	1 electronic copy and 1 hard copy in a DEQ approved format	• 1 Hard copy to DEQ Pretreatment Coordinator • 1 Electronic copy to Compliance Officer

Reporting Requirement	Frequency	Due Date (See note a.)	Report Form (See note b.)	Submit To:
Outfall Inspection Report (see Schedule D)	Once per permit cycle	Submit by XX/15/20XX In the 3 rd year of the permit.	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Bis(2-ethylhexyl) phthalate Source Identification Study (see Schedule D)	Once per permit cycle	Submit by XX/15/20XX In the 4 th year of the permit	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Notes: a. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date. b. All reporting requirements are to be submitted in a DEQ-approved format, unless otherwise specified in writing. c. The permittee shall submit to the Department a Lagoon Leakage Estimate Report. This report must comply with the Department's <i>Guidelines for Estimating Leakage from Existing Sewage Lagoons</i> .				

2. Monitoring and Reporting Protocols

a. Electronic Submissions

The permittee must submit to DEQ the results of monitoring indicated in Schedule B in an electronic format as specified below.

- i. The permittee must submit monitoring results required by this permit via DEQ-approved web-based Discharge Monitoring Report (DMR) forms to DEQ via electronic reporting. Any data used to calculate summary statistics must be submitted as a separate attachment approved by DEQ via electronic reporting.
- ii. The reporting period is the calendar month.
- iii. The permittee must submit monitoring data and other information required by this permit for all compliance points by the 15th day of the month following the reporting period unless specified otherwise in this permit or as specified in writing by DEQ.

b. Test Methods

The permittee must conduct monitoring according to test procedures in 40 CFR 136 and 40 CFR 503 for biosolids or other approved procedures as per Schedule F.

c. Detection and Quantitation Limits

- i. Detection Level (DL) – The DL is defined as the minimum measured concentration of a substance that can be distinguished from method blank results with 99% confidence. The DL is derived using the procedure in 40 CFR 136 Appendix B and evaluated for reasonableness relative to method blank concentrations to ensure results reported above the DL are not a result of routine background contamination. The DL is also known as the Method Detection Limit (MDL) or Limit of Detection (LOD).

- ii. Quantitation Limits (QLs) – The QL is the minimum level, concentration or quantity of a target analyte that can be reported with a specified degree of confidence. It is the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration for the analyte. It is normally equivalent to the concentration of the lowest calibration standard adjusted for sample weights, volumes, preparation and cleanup procedures employed. The QL as reported by a laboratory is also sometimes referred to as the Method Reporting Limit (MRL) or Limit of Quantitation (LOQ).
- d. Sufficient Sensitivity of Quantitation Limits
 - i. The Laboratory QLs (adjusted for any dilutions) for analyses performed to demonstrate compliance with permit limits or as part of effluent characterization, must meet at least one of the requirements below:
 - (A) The QL is at or below the level of the water quality criterion for the measured parameter.
 - (B) The QL is above the water quality criterion but the amount of the pollutant in a facility's discharge is high enough that the method detects and quantifies the level of the parameter in the discharge.
 - (C) The QL has the lowest sensitivity of the analytical methods procedure specified in 40 CFR 136.
 - (D) The QL is at or below those defined in Oregon DEQ list of quantitation limits posted online at [DEQ permitting website](#).
 - ii. Matrix effects are present that prevent the attainment of QLs and these matrix effects are demonstrated according to procedures described in EPA's "*Solutions to Analytical Chemistry Problems with Clean Water Act Methods*", March 2007. If using alternative methods and taking appropriate steps to eliminate matrix effects does not eliminate the matrix problems, DEQ may authorize in writing re-sampling or allow a higher QL to be reported.
- e. Quality Assurance and Quality Control
 - i. Quality Assurance Plan – The permittee must develop and implement a written Quality Assurance Plan that details the facility sampling procedures, equipment calibration and maintenance, analytical methods, quality control activities and laboratory data handling and reporting. The QA/QC program must conform to the requirements of 40 CFR 136.7.
 - ii. If QA/QC requirements are not met for any analysis, the permittee must re-analyze the sample. If the sample cannot be re-analyzed, the permittee must re-sample and analyze at the earliest opportunity. If the permittee is unable to collect a sample that meets QA/QC requirements, then the permittee must include the result in the discharge monitoring report (DMR) along with a notation (data qualifier). In addition, the permittee must explain how the sample does not meet QA/QC requirements. The permittee may not use the result that failed the QA/QC requirements in any calculation required by the permit unless authorized in writing by DEQ. If these method criteria are not met for BOD₅, the permittee must: 1) report the daily BOD₅ values with data qualifiers; 2) include these BOD₅ values in the summary statistic calculations (e.g., weekly averages, monthly averages, % removal); and 3) report the BOD₅ summary statistics with data qualifiers.
 - iii. Flow measurement, field measurement, and continuous monitoring devices - The permittee must:

- (A) Establish verification and calibration frequency for each device or instrument in the quality assurance plan that conforms to the frequencies recommended by the manufacturer.
- (B) Verify at least once per year that flow-monitoring devices are functioning properly according to manufacturer's recommendation. Calibrate as needed according to manufacturer's recommendations.
- (C) Verify at least weekly that the continuous monitoring instruments are functioning properly according to manufacturer's recommendation unless the permittee demonstrates a longer period is sufficient and such longer period is approved by DEQ in writing.

f. Reporting Sample Results

- i. The permittee must report the laboratory DL and QL as defined above for each analyte, with the following exceptions: pH, temperature, BOD, CBOD, TSS, Oil & Grease, hardness, alkalinity, bacteria, and nitrate-nitrite. For temperature and pH, neither the QL nor the DL need to be reported. For the other parameters listed above, the permittee is only required to report the QL and only when the result is ND.
- ii. The permittee must report the same number of significant digits as the permit limit for a given parameter.
- iii. (For Discharge Monitoring Reports) If a sample result is above the DL but below the QL, the permittee must report the result as the DL preceded by DEQ's data code "E". For example, if the DL is 1.0 µg/l, the QL is 3.0 µg/L and the result is estimated to be between the DL and QL, the permittee must report "e1.0 µg/L" on the DMR. This requirement does not apply in the case of parameters for which the DL does not have to be reported.
- iv. (For Discharge Monitoring Reports) If the sample result is below the DL, the permittee must report the result as less than the specified DL. For example, if the DL is 1.0 µg/L and the result is ND, report "<1.0" on the discharge monitoring report (DMR). This requirement does not apply in the case of parameters for which the DL does not have to be reported.

g. Calculating and Reporting Mass Loads

The permittee must calculate mass loads on each day the parameter is monitored using the following equation:

Example Calculation: Flow (in MGD) X Concentration (in mg/L) X 8.34 = Pounds per day

- i. Mass load limits all have two significant figures unless otherwise noted.
- ii. When concentration data are below the DL: To calculate the mass load from this result, use the DL. Report the mass load as less than the calculated mass load. For example, if flow is 2 MGD and the reported sample result is <1.0 µg/L, report "<0.017 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day)
- iii. When concentration data are above the DL, but below the QL: To calculate the mass load from this result, use the DL. Report the mass load as the calculated mass load preceded by "e". For example, if flow is 2 MGD, the DL is 1.0 µg/L, the QL is 5 µg/L and the reported sample result is e3.5 µg/L, report "e0.017 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day).

3. Monitoring and Reporting Requirements

- a. The permittee must monitor influent at the influent screens and report results in accordance with Table B1 the table below.

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action (See note a.)	Report Statistic (See note b.)
BOD ₅ (00310)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average
TSS (00530)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average
pH (00400)	SU	Year-round	3/Week	Grab	1. Monthly Maximum 2. Monthly Minimum

Notes:

- a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements.
- b. When submitting DMRs electronically, the permittee must submit all data used to determine summary statistics in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

- b. The permittee must monitor effluent at Outfall 001 after the UV disinfection unit and report results in accordance with Table B1 and the table below:

Table B3: Effluent Monitoring Requirements (Outfall 001)

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
BOD ₅ (00310)	mg/L	Nov. 1 – May 31	2/Week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
BOD ₅ (00310)	lb/day	Nov. 1 – May 31	2/Week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
BOD ₅ percent removal (81010) (See note c.)	%	Nov. 1 – May 31	Monthly	Calculation based on monthly average BOD ₅ concentration values	Monthly Average
TSS (00530)	mg/L	Nov. 1 – May 31	2/Week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
TSS (00530)	lb/day	Nov. 1 – May 31	2/Week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
TSS percent removal (81011) (See note c.)	%	Nov. 1 – May 31	Monthly	Calculation based on monthly average TSS concentration values	Monthly Average

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
pH (00400)	SU	Nov. 1 – May 31	3/Week	Grab	1. Daily Maximum 2. Daily Minimum
Temperature (00010)	°C	Nov. 1 – May 31	Daily	Continuous (See note f.)	1. Daily Maximum 2. Monthly Average 3. 7-day Rolling Average of Daily Maximum
Excess Thermal Load (51405)	Million kcal/day	Nov. 1 – May 31	Daily	Calculation (See note d.)	Maximum 7-day Rolling Average
Excess Thermal Load Limit	Million kcal/day	Nov. 1 – May 31	Daily	Calculation (See note e.)	7-day Rolling Average
<i>E. coli</i> (51040)	#/100 mL	Nov. 1 – May 31	2/Week	Grab	1. Daily Maximum 2. Monthly Geometric Mean
Total ammonia (as N) (00610)	mg/L	Nov 1 – May 31	1/Week	24-hour composite	1. Monthly Average 2. Daily Maximum
Total Residual Chlorine (50060)	mg/L	Nov 1 – May 31	1/Week	Grab	1. Monthly Average 2. Daily Maximum
Alkalinity as CaCO ₃ (00410)	mg/L	Nov 1 – May 31	Quarterly	24-hour composite	Quarterly Maximum
UV intensity	mW/cm ²	Nov 1 – May 31	Daily	Continuous	Maintain records on- site
UV dose	mJ/cm ²	Nov 1 – May 31	Daily	Calculation	Maintain records on- site
UV transmittance	%	Nov 1 – May 31	Daily	Continuous	Maintain records on- site
Dissolved Oxygen (00300)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite (See note g.)	Quarterly Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Nitrate (NO ₃) Plus Nitrite (NO ₂) Nitrogen (00630)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum
Oil and Grease (00556)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	Grab	Quarterly Maximum
Total Phosphorus (00665)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum
Total Dissolved Solids (70295)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Notes: a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 12 PM and 5 PM until continuous monitoring equipment is redeployed. b. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ. c. Percent Removal must be calculated on a monthly basis using the following formula: $\text{Percent Removal} = \frac{[\text{Influent Concentration}] - [\text{Effluent Concentration}]}{[\text{Influent Concentration}]} \times 100$ Where: Influent Concentration = Corresponding Monthly average influent concentration based on the analytical results of the reporting period. Effluent Concentration = Corresponding Monthly average effluent concentration based on the analytical results of the reporting period. d. The daily excess thermal load (ETL) discharged must be calculated using the daily maximum effluent temperature and the corresponding daily effluent flow using the formula below. The 7-day rolling average is then calculated from the daily ETLs. The daily ETL is calculated as follows: $\text{ETL} = 2.45 * Q_e * \Delta T$ Where: ETL = Excess Thermal Load (million kcal/day) Q_e = Daily effluent flow (cfs) ΔT = Daily maximum effluent temperature (°C) minus ambient criterion (18 °C for May 16–May 31 and 13 °C for Nov 1–May 15) e. If the permittee selects Excess Thermal Load Limit (ETLL) Option B from Table A1, then the permittee must calculate the ETLL (million kcal/day) each day the permittee uses this option. The permittee must use the equation and procedure noted in Table A1. f. The permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals. g. For Dissolved Oxygen, the permittee must collect and analyze at least four discrete grab samples over the operating day with samples collected no less than one hour apart. The analytical results for all samples in a day must be averaged for reporting purposes.					

- c. The permittee must monitor effluent at Outfall 002a at the end of the active chlorine contact channel and report results in accordance with Table B1 and the table below:

Table B4: Effluent Monitoring Requirements (Outfall 002a)

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
BOD ₅ (00310)	mg/L	Year-round	2/Week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
BOD ₅ (00310)	lb/day	Year-round	2/Week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
BOD ₅ percent removal (81010) (See note c.)	%	Year-round	Monthly	Calculation based on monthly average BOD ₅ concentration values	Monthly Average
TSS (00530)	mg/L	Year-round	2/Week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
TSS (00530)	lb/day	Year-round	2/Week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
TSS percent removal (81011) (See note c.)	%	Year-round	Monthly	Calculation based on monthly average TSS concentration values	Monthly Average

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
pH (00400)	SU	Year-round	3/Week	Grab	1. Daily Maximum 2. Daily Minimum
Chlorine, Total Residual (50060)	mg/L	Year-round	Daily	Grab	1. Daily Maximum 2. Monthly Average
Temperature (00010)	°C	Year-round	3/Week	Continuous (See note d.)	1. Daily Maximum 2. Monthly Average 3. 7-day Rolling Average of Daily Maximum
<i>E. coli</i> (51040)	#/100 mL	Year-round	2/Week	Grab	1. Daily Maximum 2. Monthly Geometric Mean
Total ammonia (as N) (00610)	mg/L	Year-round	1/week	24-hour composite	1. Monthly Average 2. Daily Maximum
Nitrate (NO ₃) Plus Nitrite (NO ₂) Nitrogen (00630)	mg/L	Year-round	1/Week	24-hour composite	1. Monthly Average 2. Daily Maximum
Alkalinity as CaCO ₃ (00410)	mg/L	Year-round	Quarterly	24-hour composite	Quarterly Maximum
Chlorine used (81400)	lb/day	Year-round	Daily	Scale reading	1. Monthly Average 2. Daily Maximum
Chlorine, Total Residual prior to dechlorination	mg/L	Year-round	Daily	Grab	Maintain records on-site
Dissolved Oxygen (00300)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite (See note e.)	Quarterly Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum
Oil and Grease (00556)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	Grab	Quarterly Maximum
Total Phosphorus (00665)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Total Dissolved Solids (70295)	mg/L	Third and fourth year of permit cycle [2027 – 2028]	Quarterly	24-hour composite	Quarterly Maximum

Notes:

- In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 12 PM and 5 PM until continuous monitoring equipment is redeployed.
- When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.
- Percent Removal must be calculated on a monthly basis using the following formula:

$$\text{Percent Removal} = \frac{[\text{Influent Concentration}] - [\text{Effluent Concentration}]}{[\text{Influent Concentration}]} \times 100$$

Where:

Influent Concentration = Corresponding Monthly average influent concentration based on the analytical results of the reporting period.

Effluent Concentration = Corresponding Monthly average effluent concentration based on the analytical results of the reporting period.

- The permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.
- For Dissolved Oxygen, the permittee must collect and analyze at least four discrete grab samples over the operating day with samples collected no less than one hour apart. The analytical results for all samples in a day must be averaged for reporting purposes.

- The permittee must monitor effluent at Outfall 002b (Fords Creek) at the entrance to Fords Creek and report results in accordance with Table B1 and the table below:

Table B5: Effluent Monitoring Requirements (Outfall 002a)

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Year-round	Daily	Estimate	Monthly Average
BOD ₅	mg/L	Nov 1 – May 31	1/Month	Grab	Value
pH	SU	Nov 1 – May 31	1/Week	Grab	1. Daily Maximum 2. Daily Minimum

- e. The permittee must monitor 001 Calapooya Creek from USGS Gauge 14320700 and report the results in accordance with Table B1 and the table below. The permittee must collect samples such that the effluent does not impact the samples (e.g., upstream for riverine discharges).

Table B6: Receiving Stream Monitoring Calapooya Creek

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action (See note a.)	Report Statistic (See note b.)
Flow, stream (00056)	CFS	Nov 1–May 31	Daily (when discharging)	Reading	1. Daily Maximum 2. Monthly average
Notes: a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 2 PM and 4 PM until continuous monitoring equipment is redeployed. b. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.					

- f. The permittee must monitor in Fords Pond on the opposite end of the pond from the Outfall 002a and report the results in accordance with Table B1 and the table below. The permittee must collect samples such that the effluent does not impact the samples.

Table B7: Ambient Monitoring Fords Pond

Item or Parameter	Units	Time Period (See note c.)	Minimum Frequency	Sample Type / Required Action (See note a.)	Report Statistic (See note b.)
pH (00400)	SU	Year – Round	1/month	Grab	Monthly Maximum
Temperature (00010)	°C	Year – Round	1/month	Grab	Monthly Maximum
Alkalinity as CaCO ₃ (00410)	mg/L	Year – Round	1/month	Grab	Monthly Maximum
Notes: a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 12 PM and 5 PM until continuous monitoring equipment is redeployed. b. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ. c. Monitor when discharging to Fords Pond.					

4. Effluent Toxics Characterization Monitoring (Tier 1 Monitoring)

The permittee must collect and analyze effluent samples for the parameters listed in the table below. The permittee must collect effluent samples at the end of the active chlorine contact channel on the dates in Table B1.

Samples must be 24-hour composites. Sample results must be reported in µg/L unless otherwise specified and submitted to DEQ using approved electronic format.

Table B8: Base-Neutral Compounds (Outfall 002a)

Pollutant	CAS
Bis (2-ethylhexyl) phthalate (See note a.)	117817
Note: a. When sampling for Bis (2-ethylhexyl)phthalate, the permittee must also conduct and report an equipment blank sample analysis on the same day.	

5. Recycled Water Monitoring Requirements: Outfall 003

The permittee must monitor recycled water for Outfall 003 as listed below. The samples must be representative of the recycled water delivered for beneficial reuse at a location identified in the Recycled Water Use Plan.

Table B9: Recycled Water Monitoring

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	Report (See note a.)
Total flow (50050)	MGD	When discharging	Daily	Measure	Monthly Total
Quantity irrigated (51789)	in/ac	When discharging	Daily	Calculate	Monthly Total
pH (00400)	SU	When discharging	2/Week	Grab	1. Monthly Minimum 2. Monthly Maximum
Turbidity (00070) (See note c.)	NTU	When discharging	Hourly	Measure	1. Daily Average 2. Daily Maximum
Turbidity, % of time above 5 NTU limit (61736) (See note d.)	%	When discharging	Daily	Calculate	Daily Maximum
Total coliform (74056)	#/100 mL	When discharging	Daily	Grab (See note b.)	1. 7-Day Median 2. Maximum Single Sample
Total Kjeldahl, Nitrogen (00625)	mg/L	When discharging	Quarterly	Grab	Value
Nitrite + Nitrate (NO ₂ +NO ₃) (00630)	mg/L	When discharging	Quarterly	Grab	Value

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	Report (See note a.)
Total Ammonia [as N] (00610)	mg/L	When discharging	Quarterly	Grab	Value
Total Phosphorus (00665)	mg/L	When discharging	Quarterly	Grab	Value
Nitrogen Loading Rate	lb/acre-year	When discharging	Annually	Calculate	Value for each field

Notes:

- All data collected should be included in the Recycled Water Annual Report in addition to monthly and quarterly reporting as indicated.
- Calculations of the median total coliform levels in Classes A – C are based on the results of the last seven days that analyses have been completed.
- Turbidity measurements must be taken post filtration and prior to disinfection.
- Turbidity cannot exceed five (5) NTU's more than five percent of the time in a 24-hour period.

6. Biosolids Monitoring Requirements

The permittee must monitor biosolids land applied or produced for sale or distribution as listed below. The samples must be representative of the quality and quantity of biosolids generated and undergo the same treatment process used to prepare the biosolids. Results must be reported as required in the biosolids management plan described in Schedule D.

Table B10: Biosolids Monitoring When distributing, land applying, or onsite storage

Item or Parameter	Minimum Frequency	Sample Type
Nutrient and conventional parameters (% dry weight unless otherwise specified): Total Kjeldahl Nitrogen (TKN) Nitrate-Nitrogen (NO ₃ -N) Total Ammoniacal Nitrogen (NH ₃ -N) Total Phosphorus (P) Potassium (K) pH (S.U.) Total Solids Volatile Solids	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B10.	As described in DEQ-approved Biosolids Management Plan
Pollutants: As, Cd, Cu, Hg, Pb, Mo, Ni, Se, Zn, mg/kg dry weight	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B10.	As described in DEQ-approved Biosolids Management Plan
Pathogen reduction	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B10.	As described in DEQ-approved Biosolids Management Plan
Vector attraction reduction	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B10.	As described in DEQ-approved Biosolids Management Plan

Item or Parameter	Minimum Frequency	Sample Type
Record of biosolids land application: date, quantity, location.	Each event	Record the date, quantity, and location of biosolids land applied on site location map or equivalent electronic system, such as GIS.

Table B11: Biosolids Minimum Monitoring Frequency

Quantity of biosolids land applied or produced for sale or distribution per calendar year		Minimum Sampling Frequency
(dry metric tons)	(dry U.S. tons)	
Less than 290	Less than 320	Once per year
290 to 1,500	320 to 1,653	Once per quarter (4x/year)
1,500 to 15,000	1,653 to 16,535	Once per 60 days (6x/year)
15,000 or more	16,535 or more	Once per month (12x/year)

SCHEDULE C: COMPLIANCE SCHEDULE

1. Compliance Schedule to Meet Final Effluent Limits

The permittee must comply with the following schedule:

Table C1: Compliance Schedule

Compliance Date:	Requirement:
By xx/xx/xxxx Within 12 months of permit effective date	The permittee must submit to DEQ an optimization study outlining feasible operational changes that can be made to the current treatment process at Sutherlin STP to maximize reductions of Nitrate plus Nitrite.
By xx/xx/xxxx Within 18 months of permit effective date	The permittee must submit to DEQ a written progress report outlining the progress made towards achieving final effluent limits. The permittee must also submit a design memorandum for denitrification to achieve final effluent limits for Nitrate plus Nitrite.
By xx/xx/xxxx Within 30 months of permit effective date	The permittee must begin implementation of the planned changes outlined in the optimization study.
By xx/xx/xxxx Within 3 years of permit effective date	The permittee must submit to DEQ a written progress report outlining the progress made towards achieving final Nitrate plus Nitrite limits at Outfall 002a. The permittee must include in the report a draft plan and timeline for achieving final effluent limits based on the results of the implementations of the optimization study and design memorandum. Permittee must revise draft plan and timeline in accordance with DEQ comments within 60 days of receiving DEQ comments.
By xx/xx/xxxx Within 4 years of permit effective date	The permittee must achieve compliance with the final effluent limits for Nitrate plus Nitrite in Schedule A of this permit.

2. Responsibility to Meet Compliance Dates

No later than 14 days following each compliance date listed in the table above, the permittee must notify DEQ in writing of its compliance or noncompliance with the requirements. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and a discussion of the likelihood of meeting the next scheduled requirement(s).

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

The permittee must submit to DEQ an annual inflow and infiltration report on a DEQ-approved form as directed in Table B1. The report must include the following:

- a. An assessment of the facility's I/I issues based on a comparison of summer and winter flows to the plant.
- b. Details of activities performed in the previous year to identify and reduce inflow and infiltration.
- c. Details of activities planned for the following year to identify and reduce inflow and infiltration.
- d. A summary of sanitary sewer overflows that occurred during the previous year. This should include the following: date of the SSO, location, estimated volume, cause, follow-up actions and if performed, the results of receiving stream monitoring.

2. Emergency Response and Public Notification Plan

The permittee must develop an Emergency Response and Public Notification Plan ("plan"), or ensure the facility's existing plan is current and accurate, per Schedule F, Section B, and Condition 8 within 6 months of permit effective date. The permittee must update the plan annually to ensure all information contained in the plan, including telephone and email contact information for applicable public agencies, is current and accurate. An updated copy of the plan must be kept on file at the facility for DEQ review. The latest plan revision date must be listed on the plan cover along with the reviewer's initials or signature.

3. Recycled Water Use Plan

The permittee must update and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. The permittee must submit any significant modifications to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to implementing changes to the recycled water program. The permittee must keep the plan updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plan are enforceable requirements under this permit. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications, changes to utilization dates or changes in use within the recycled water class.

- a. Recycled Water Annual Report – The permittee must submit a recycled water annual report by the date specified in Table B1: Reporting Requirements and Due Dates. The permittee must use DEQ approved recycled water annual report form. This report must include the monitoring data and analytical laboratory reports for the previous year's monitoring required under Schedule B.
- b. Leak Test – The permittee must perform a leak test on the upper pond near the seventh fairway at the Oak Hills Golf Club. The permittee must submit the results of the leak test to DEQ two years after permit issuance (**Month** 2026).
 - i. Guidelines and Reports should follow instructions in the *Guidelines for Estimating Leakage from Existing Sewage Lagoons*. However, leakage reports a pond of less than one-half acre does not need certified and signed by a registered engineer or professional hydrologist. For these smaller systems, the reports may be prepared and signed by any qualified wastewater professional.

- ii. Inquiries: Inquiries about these guidelines should be directed to DEQ regional water-quality plan review engineers.

4. Exempt Wastewater Reuse at the Treatment System

Recycled water used for landscape irrigation within the property boundary or in-plant processes at the wastewater treatment system is exempt from the requirements of OAR 340-055 if all of the following conditions are met:

- a. The recycled water is an oxidized and disinfected wastewater.
 - i. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system.
 - ii. Spray and/or drift from the use does not migrate off the site.
 - iii. Public access to the site is restricted.

5. Biosolids Management Plan

The permittee must maintain a Biosolids Management Plan and Land Application Plan meeting the requirements in OAR 340-050-0031. The permittee must submit these plans and any significant modification of these plans to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to implementing any significant changes to the biosolids program. The permittee must keep the plans updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plans are enforceable requirements under this permit.

- a. Annual Report

The permittee must submit a Biosolids Annual Report by February 19 each year documenting biosolids management activities of the previous calendar year as described in OAR 340-050-0035(6). The permittee must use DEQ approved Biosolids Annual report form. This report must include the monitoring data and analytical laboratory reports for the previous year's monitoring specified under Schedule B.

- b. Site Authorization

The permittee must obtain written authorization from DEQ for each land application site prior to its use. Conditions in site authorizations are enforceable requirements under this permit. The permittee is prohibited from land applying biosolids to a DEQ-approved site except in accordance with the site authorization, while this permit is effective and with the written approval of the property owner. DEQ may modify or revoke a site authorization following the procedures for a permit modification described in OAR 340-045-0055.

- c. Public Participation

- i. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications or changes to utilization dates.
- ii. No DEQ-initiated public notice is required for continued use of sites identified in DEQ-approved biosolids management plan.

- iii. For new sites that fail to meet the site selection criteria in the biosolids management plan or that are deemed by DEQ to be sensitive with respect to residential housing, runoff potential, or threat to groundwater, DEQ will provide an opportunity for public comment as directed by OAR 340-050-0030(2).
- iv. For all other new sites, the permittee must provide for public participation following procedures in its DEQ-approved land application plan.

6. Wastewater Solids Transfers

- a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must satisfy the requirements of the receiving facility. The permittee must report the name of the receiving facility, and the quantity of material transferred in the wastewater solids or biosolids annual report identified in Schedule B.
- b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

7. Operator Certification

- a. Definitions
 - i. “Supervise” means to have full and active responsibility for the daily on-site technical operation of a wastewater treatment system or wastewater collection system.
 - ii. “Supervisor” or “designated operator”, means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.
 - iii. “Shift Supervisor” means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.
 - iv. “System” includes both the collection system and the treatment systems.
- b. The permittee must comply with OAR Chapter 340, Division 49, “Regulations Pertaining to Certification of Wastewater System Operator Personnel” and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified in DEQ Supervisory Wastewater Operator Status Report. DEQ may revise the permittee’s classification in writing at any time to reflect changes in the collection or treatment system. This reclassification is not considered a permit modification and may be made after the permit expiration date provided the permit has been administratively extended by DEQ. If a facility is re-classified, a certified letter will be mailed to the system owner from DEQ Operator Certification Program. Current system classifications are publicized on DEQ Supervisory Wastewater Operator Status Report found on [DEQ Wastewater Operator Certification Homepage](#).
- c. The permittee must have its system supervised full-time by one or more operators who hold a valid certificate for the type of wastewater treatment or wastewater collection system, and at a grade equal to or greater than the wastewater system’s classification.

- d. The permittee's wastewater system may be without the designated supervisor for up to 30 consecutive days if another person supervises the system, who is certified at no more than one grade lower than the classification of the wastewater system. The permittee must delegate authority to this operator to supervise the operation of the system.
- e. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor must be certified at no more than one grade lower than the system classification.
- f. The permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.
- g. The permittee must notify DEQ in writing of the name of the system supervisor by completing and submitting the Supervisory Wastewater System Operator Designation Form. The most recent version of this form may be found on [DEQ Wastewater Operator Certification homepage](#) *NOTE: This form is different from the Delegated Authority form. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of the operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 700 NE Multnomah St, Suite 600, Portland, OR 97232-4100. This address may be updated in writing by DEQ during the term of this permit.
- h. When compliance with item (d) of this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

8. Industrial User Survey

Industrial User Survey Update

- a. By the date listed in Table B1, the permittee must submit to DEQ an update to the industrial user survey that was completed in 2022. The update must be completed in accordance with 40 CFR 403.8(f)(2)(i-iii) and provide DEQ with sufficient information to determine the need for development of a pretreatment program.
- b. Should DEQ determine that a pretreatment program is required, the permit must be reopened and modified in accordance with 40 CFR 403.8(e)(1) to incorporate a compliance schedule to require development of a pretreatment program. The compliance schedule must be developed in accordance with the provisions of 40 CFR 403.12(k), and must not exceed twelve (12) months.

9. Outfall Inspection

The permittee must inspect Outfalls 001 and 002a including the submerged portion of the outfall line and diffuser to document its integrity and to determine whether it is functioning as designed. The inspection must determine whether diffuser ports are intact, clear and fully functional. The inspection must verify the latitude and longitude of the diffuser. The permittee must submit a written report to DEQ regarding the results of the outfall inspection by the date in Table B1. The report must include a description of the outfall as originally constructed, the condition of the current outfall and identify any repairs needed to return the outfall to satisfactory condition.

10. Bis(2-ethylhexyl) phthalate Source Identification Study

The permittee must submit by the date specified in table B1 a source identification study to determine potential sources of Bis(2-ethylhexyl) phthalate in the effluent.

11. Water Quality Trading Umpqua Basin

a. Water Quality Trading Plan

The permittee's water quality trading plan is incorporated into this permit by reference as enforceable conditions of this permit provided the plan is approved by DEQ. Prior to approval, DEQ must provide an opportunity for public notice and comment on the trading plan for a minimum of 35 days as a Category III permitting action pursuant to OAR 340-045-0027. Once DEQ approves of the plan, the permittee is authorized to use water quality trading to comply with the Excess Thermal Load waste discharge limitations in Schedule A provided its trading activities comply with the requirements of this section, OAR 340-039, and its trading plan.

b. Water Quality Trading Plan Modifications

Any changes to the plan must be submitted to DEQ for review and approval according to OAR 340-039-0025(7). Prior to approval, DEQ must provide an opportunity for public notice and comment on the trading plan for a minimum of 35 days as a Category III permitting action pursuant to OAR 340-045-0027. DEQ cannot approve of any modifications to the plan if this permit is administratively extended beyond its expiration date.

- i. TMDLs are revised periodically. Development of new or revised TMDLs can change implementation requirements. Any new TMDL requirements must be incorporated into subsequent baseline determinations at project initiation per OAR 340-039-0030.

c. Individual Trading Projects

All individual trading projects and modifications to these projects must be consistent with DEQ-approved plan; they are not subject to public notice and comment and may be modified if this permit is administratively extended beyond its expiration date.

d. Events Beyond the Permittee's Reasonable Control

- i. Damage to a project due to an event beyond the permittee's reasonable control (for example, wildfire, flood, vandalism) is not in and of itself considered a violation of this permit.
- ii. The permittee must report these events as required in Schedule F, Section D whenever applicable. The permittee must also report the following to DEQ within 90 days of the damage:
 - (1) A description of the event, including an assessment of the damage.
 - (2) A plan for addressing the damage. Natural restoration and/or active replanting of the site is allowed if continued maintenance is expected to provide a reasonable potential for the long-term restoration of the shading function in an ecologically appropriate manner. Replacement with an alternate site or sites is also allowed.
 - (3) Schedule for implementation of the permittee's plan.
- iii. Credits from projects that are damaged due to events beyond the reasonable control of the permittee remain valid provided the permittee demonstrates to DEQ that the sites will be restored, or alternative solutions implemented within a reasonable timeframe.

e. Recordkeeping

The permittee must keep the following records for each project site for as long as credits generated at the site is being used. These records must be made available to DEQ within 14 days of request.

- i. Project name and address.
- ii. General description of the project, including land ownership information, a description with latitudes and longitudes delineating the project boundary and, if applicable, the georeferenced GIS shapefile of the project boundary.
- iii. Site-specific design or, for riparian restoration, a planting plan if developed.
- iv. Monitoring documentation including photos.
- v. Name and contact information of party or parties responsible for conducting the planting and monitoring.

f. Annual Report

- i. By May 1 of each year, the permittee must submit an annual report to DEQ. The report must describe trading plan implementation and performance over the past year. The annual report must include information specific to each trading project implemented including:
 - ii. The location of each trading project and best management practices implemented in the preceding year.
 - iii. The trading project baseline.
 - iv. The trading ratios used.
 - v. Trading project monitoring results.
 - vi. Verification of trading plan performance including the quantity of credits acquired from each trading project and the total quantity of credits generated under the trading plan to date.
 - vii. Funding source for each trading project.
 - viii. If applicable, adaptive management measures implemented under the trading plan.

SCHEDULE E: PRETREATMENT ACTIVITIES

A pretreatment program is not part of this permit.

Public Notice Draft

SCHEDULE F: NPDES GENERAL CONDITIONS

October 1, 2015, Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to \$25,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to \$25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to \$250,000, imprisonment for not more than 10 years, or both.

The Clean Water Act provides that any person who violates permit condition, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation.

The Clean Water Act provides that any person who negligently violates any condition, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than 1 year, or both.

In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both.

In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both.

Any person who knowingly violates section any permit condition, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both.

In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both.

An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

Any person may be assessed an administrative penalty by the Administrator for violating any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act.

Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000.

Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

- a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
- b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
- d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
- e. New information or regulations.
- f. Modification of compliance schedules.
- g. Requirements of permit reopener conditions
- h. Correction of technical mistakes made in determining permit conditions.
- i. Determination that the permitted activity endangers human health or the environment.
- j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
- k. For communities with combined sewer overflows (CSOs):
 - (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.

- (2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
- (3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants

The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References

Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees

The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions

- (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be

exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.

- (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- b. Prohibition of bypass.
 - (1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:
 - i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and
 - iii. The permittee submitted notices and requests as required under General Condition B3.c.
 - (2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).
- c. Notice and request for bypass.
 - (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.
 - (2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

- a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
 - (4) The permittee complied with any remedial measures required under General Condition A3 hereof.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single

operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

- a. Definition. "Overflow" means any spill, release or diversion of sewage including:
 - (1) An overflow that results in a discharge to waters of the United States; and
 - (2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the United States.
- b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

- a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
- b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
- c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
- d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
- e. Provide emergency operations; and
- f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than \$10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than \$20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

- a. The date, exact place, time, and methods of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each

schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.

(1) Oral Reporting within 24 hours.

- i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
 - (a) The location of the overflow;
 - (b) The receiving water (if there is one);
 - (c) An estimate of the volume of the overflow;
 - (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
 - (e) The estimated date and time when the overflow began and stopped or will be stopped.
- ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
 - (a) The OERS incident number (if applicable); and
 - (b) A brief description of the event.

(2) Written reporting postmarked within 5 days.

- i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
 - (a) The OERS incident number (if applicable);
 - (b) The cause or suspected cause of the overflow;
 - (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
 - (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
 - (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.

(1) The following instances of noncompliance must be reported:

- i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
- ii. Any upset that exceeds any effluent limitation in this permit;
- iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
- iv. Any noncompliance that may endanger human health or the environment.

(2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

(3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:

- i. A description of the noncompliance and its cause;
- ii. The period of noncompliance, including exact dates and times;
- iii. The estimated time noncompliance is expected to continue if it has not been corrected;

- iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
 - v. Public notification steps taken, pursuant to General Condition B7.
- (4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance

The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports must contain:

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information

The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements

All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information

Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed \$125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be punished by a federal civil penalty not to exceed \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;
- b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

E1. *BOD* or *BOD₅* means five-day biochemical oxygen demand.

- E2. *CBOD* or *CBOD₅* means five-day carbonaceous biochemical oxygen demand.
- E3. *TSS* means total suspended solids.
- E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
- E5. *FC* means fecal coliform bacteria.
- E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
- E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
- E8. *mg/l* means milligrams per liter.
- E9. *µg/l* means microgram per liter.
- E10. *kg* means kilograms.
- E11. *m³/d* means cubic meters per day.
- E12. *MGD* means million gallons per day.
- E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
- E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
- E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
- E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
- E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
- E18. *Quarter* means January through March, April through June, July through September, or October through December.
- E19. *Month* means calendar month.
- E20. *Week* means a calendar week of Sunday through Saturday.
- E21. *POTW* means a publicly-owned treatment works.



State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System Permit Fact Sheet City of Sutherlin

Permittee	City of Sutherlin Sutherlin STP 126 E Central Ave Sutherlin, OR 97479
Existing Permit Information	File Number: 86662 Permit Number: 101993 EPA Reference Number: OR0020842 Category: Domestic Class: Minor Expiration Date: 06/30/2024
Permittee Contact	Jody Gardner Wastewater Division Supervisor 541-459-5768 126 E Central Ave Sutherlin, OR 97479
Receiving Water Information	Receiving stream name: Calapooya Creek and Fords Creek NHD Reach Code & % along reach: Outfall 001: Calapooya Creek = 17100303000172 - 46% Outfall 002a: Fords Pond = 17100303058695 – 31% Outfall 002b: Fords Creek = 17100303011460 – 85% USGS 12-digit HUC: 171003030106 OWRD Administrative Basin: Umpqua ODEQ LLID & River Mile: Outfall 001: Calapooya Creek = 1234686433656-9.8-D Outfall 002a: Fords Pond = 1233621433935-0.4-D Outfall 002b: Fords Creek = 1232321433933-0.35-D Assessment Unit ID: Calapooya Creek: OR_SR_1710030301_02_106418 Fords Pond and Creek: OR_LK_1710030301_00_100200
Proposed Action	Permit Renewal Application Number: 948184 Date Application Received: 12/06/2023
Permit Writer	Helen Sanders 541-241-0152 Date Prepared: 10/23/2024

NPDES Permit Fact Sheet

City of Sutherlin

Table of Contents

1. Introduction.....	4
2. Facility Description.....	5
2.1 Wastewater Facility	5
2.2 Compliance History	10
2.3 Stormwater	11
2.4 Industrial Pretreatment.....	11
2.5 Classification.....	11
3. Schedule A: Effluent Limit Development.....	11
3.1 Existing Effluent Limits.....	12
3.2 Technology-Based Effluent Limit Development.....	14
3.3 Water Quality-Based Effluent Limit Development	17
3.4 Antibacksliding.....	36
3.5 Antidegradation.....	36
3.6 Whole Effluent Toxicity	36
3.7 Groundwater	37
4. Schedule A: Other Limitations.....	37
4.1 Mixing Zone.....	37
4.2 Biosolids	37
4.3 Recycled Water.....	37
4.4 Chlorine Usage.....	38
5. Schedule B: Monitoring and Reporting Requirements.....	38
6. Schedule C: Compliance Schedule	39
7. Schedule D: Special Conditions	39
7.1 Inflow and Infiltration.....	39
7.2 Emergency Response and Public Notification Plan.....	39
7.3 Recycled Water Use Plan.....	39
7.4 Exempt Wastewater Reuse at the Treatment System	40
7.5 Biosolids Management Plan	40
7.6 Wastewater Solids Transfers.....	40
7.7 Operator Certification	40
7.8 Industrial User Survey	40
7.9 Outfall Inspection.....	40
7.10 Bis(2-ethylhexyl) phthalate Source Identification Study.....	40

7.11 Water Quality Trading Umpqua Basin	40
8. Schedule F: NPDES General Conditions	41
Appendix A: Temperature RPA.....	42
Appendix B: Toxic Monitoring List.....	43
Appendix C: Outfall 002a Nitrate plus Nitrite RPA	44

List of Tables

Table 2-1: List of Outfalls.....	9
Table 3-1: Existing Effluent Limits for Outfall 001 Calapooya Creek	12
Table 3-2: Existing Effluent Limits for Outfall 002a Fords Pond.....	13
Table 3-3: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria.....	14
Table 3-4: Design Flows and Concentrations Limits	15
Table 3-5: Outfall 001 BOD ₅ and TSS Technology Based Effluent Limits.....	16
Table 3-6: Outfall 002a Dry Weather BOD ₅ and TSS Technology Based Effluent Limits	17
Table 3-7: 303(d) and TMDL Parameters for Outfall 001	18
Table 3-8: Applicable WLAs.....	19
Table 3-9: Domestic Toxic Pollutants of Concern	19
Table 3-10: Pollutants of Concern	19
Table 3-11: Mixing Zone Dilutions	21
Table 3-12: Outfall 001 BOD ₅ and TSS WQBELs	22
Table 3-13: Outfall 001 pH Reasonable Potential Analysis	23
Table 3-14: Calapooya Creek Temperature Criteria Information.....	24
Table 3-15: Outfall 001 Temperature Criterion Effluent Limits	26
Table 3-16: Outfall 001 Thermal Plume Effluent Limit.....	28
Table 3-17: Fords Pond Temperature Criteria Information.....	28
Table 3-18: Temperature Impact to Fords Pond	29
Table 3-19: Outfall 002a Temperature Criterion Effluent Limits	30
Table 3-20: Outfall 002a Thermal Plume Effluent Limit	30
Table 3-21: Proposed <i>E. coli</i> Limits	31
Table 3-22: Ammonia Analysis Information – Outfall 001 Winter	32
Table 3-23: Ammonia Analysis Information – Outfall 002a Summer	33
Table 3-24: Toxic Pollutants Analyzed	33
Table 3-25: Outfall 002a CuBLM Results.....	35

List of Figures

Figure 2-1: City of Sutherlin Wastewater Treatment Plant Location.....	8
Figure 2-2: Diagram of the Sutherlin Wastewater Treatment Plant	9
Figure 3-1: Fords Pond Temperature 2017 – 2018.....	29

NPDES Permit Renewal Fact Sheet

City of Sutherlin

1. Introduction

As required by Oregon Administrative Rule 340-045-0035, this fact sheet describes the basis and methodology used in developing the permit. The permit is divided into several sections:

Schedule A – Waste discharge limitations
Schedule B – Minimum monitoring and report requirements
Schedule C – Compliance conditions and schedules
Schedule D – Special conditions
Schedule E – Pretreatment conditions
Schedule F – General conditions

A summary of the major changes to the permit are listed below:

- For Outfall 002a, a daily maximum mass load limit was added to Schedule A.
- Schedule A, average monthly ammonia concentration limit decrease for Outfall 001.
- Schedule A, Option A excess thermal load limit decrease for Outfall 001 from (November 1 – May 15).
- Nitrate (NO₃) plus Nitrite (NO₂) limits is added to Table A2 for Outfall 002a.
- UV dose and UV transmittance, and UV intensity is added as a continuous monitoring requirement in Schedule B, Table B3 for Outfall 001.
- Alkalinity, dissolved oxygen, Oil and Grease, total dissolved solids, TKN, nitrate plus nitrite, total phosphorus is included in the effluent monitoring requirements in Schedule B, Table B3 for Outfall 001.
- Temperature is included in the effluent monitoring requirements in Schedule B, Table B4 for Outfall 002a.
- Alkalinity, dissolved oxygen, Oil and Grease, total dissolved solids, TKN, nitrate plus nitrite, and total phosphorus is included in the effluent monitoring requirements in Schedule B, Table B4 for Outfall 002a.
- Ambient monitoring requirements is included for Fords Pond in Schedule B, Table B6 for flow, pH, temperature, and alkalinity, monthly.
- A compliance schedule is added to Schedule C to address the new Nitrate (NO₃) plus Nitrite (NO₂) limits for Outfall 002a.
- A leak test for the upper golf course pond is added as a requirement in Schedule D.
- A Water Quality Trading option is added to Schedule D.

2. Facility Description

2.1 Wastewater Facility

The City of Sutherlin operates a municipal wastewater treatment plant at 4306 Stearns Lane Sutherlin, OR 97479. The facility serves a population of about 8,593 people and the average dry weather design flow is 0.88 MGD. The facility discharges directly to two waterways, Outfall 001 to Calapooya Creek and Outfall 002a to Fords Pond. Fords Pond flows into Fords Creek (Outfall 002b), which is an intermittent stream that connects to the Calapooya Creek.

The Sutherlin sewage collection system consists of over 140,000 feet of gravity pipe and five sewage pump stations. In addition, some of the common sewer collection system utilizes septic tank effluent pump systems. Sutherlin originally installed approximately 54,000 feet of the gravity pipe and a sewage treatment plant in the 1950s. The original treatment plant was demolished after a new treatment plant was constructed at the present site in 1977. The current plant was extensively rebuilt in 2021.

The upgraded treatment plant begins with influent screens to remove large debris. From there, a new flow paced influent sampler was placed at the influent screen structure. Then, a grit classifier removes solids further and a flow splitter then discharges to the new continuous feed sequencing batch reactor (SBR) activated sludge treatment plant. The SBR system consists of four 355,000-gallon basins. Following the SBRs, effluent flows into the new ultraviolet disinfection system and out to Outfall 001 in the wet weather period and to the chlorine contact chamber in the dry weather period.

The effluent goes to the chlorine contact chamber for additional disinfection when discharging to Outfall 002a. During the wet weather season (Nov. 1 to May 31), treated effluent is disinfected with ultraviolet light only and discharged to Calapooya Creek. Though, the facility is permitted to discharge from the chlorine contact chamber to Fords Pond (Outfall 002a) year – round, it typically discharges to Fords Pond in the dry weather season (June 1 – Oct 31). Discharge to Fords Creek Outfall 002b in the dry season is not allowed and there is a dam in place to prevent flow into the creek during that period. When stream flow in Calapooya Creek is below 82 CFS in the month of May, effluent flow must be directed to Fords Pond and the dam to Fords Creek must be closed.

During the dry season (Jun 1 to Oct 31), treated effluent is filtered and disinfected with UV light and chlorine to meet Class A recycled water criteria and discharged to Oak Hills Golf Club for recycled water reuse on the golf course. The discharge process to Outfall 002a for recycled water reuse is as follows: Four vertical turbine pumps (two 30-horsepower and two 40-horsepower) convey Class A recycled water through a common pipeline to Fords Pond and to a pond at the Oak Hills Golf Club. The 20-HP pumps convey water to Fords Pond because the Fords Pond outfall is at a much lower elevation than the golf course pond. Immediately prior to discharge to Fords Pond, the recycled water is dechlorinated at the Fords Pond dichlorination building. The 40-HP pumps convey water to the golf course pond, which has low level (pump on), high level (pump off), and overflow alarm float switches. When high level is reached, the 40-HP pump will shut off and an automated valve in the Fords Pond dichlorination building will direct flow to

Fords Pond. One of the two 20-HP pumps will then turn on sending all flows to Fords Pond. The automated valve is controlled by a radio system. The valve alarms to the SCADA system in the event of failure and is programmed to automatically open in the event of recycled water pumps being off.

Per the City of Sutherlin's recycled water use plan, Sutherlin delivers recycled water in the summer to Oak Hills in a pond on the seventh fairway. Oak Hills irrigates recycled water from this pond. Sutherlin's NPDES permit and recycled water use plan allow Sutherlin to distribute recycled water to Oak Hills Golf Club using sound irrigation practices, including prevention of surface runoff and subsurface drainage. According to the recycled water use plan, irrigates 90 acre-feet (20.5 million gallons) on 38.5 acres. The historic water use is about 45 million gallons per year. However, the Oak Hills Golf Club (formerly Sutherlin Knolls) has a water right dated January 18, 1973, for up to 0.48 cubic foot per second and up to 2.5-acre feet per acre irrigated (96.25 acre feet total or 31.4 million gallons).

Screenings and grit are dewatered and disposed of at the Douglas County landfill near Roseburg, Oregon. Hauled waste is not accepted at the facility. Sutherlin's sewage sludge treatment process consists of two aerobic digesters. Sutherlin currently hauls sludge to Heard Farms year-round. Refer to the BMP for biosolids for additional information.

The addition of Outfalls 002a to Fords Pond and 002b to Fords Creek were approved in 2018 and began discharging in September 2021. Fords pond was previously a log pond for a lumber mill. The property was purchased by the city for wastewater discharge in the dry season, wetland habitat, and aesthetic purposes. The addition of Outfall 002a to Fords Pond and upgrades to the treatment facility in the 2019 permit transitioned the NPDES permit designation from a major to a minor domestic treatment facility. The new average dry weather design flow is 0.88 MGD and the new maximum monthly dry weather design flow is 1.8 MGD. The new average wet weather design flow is 2.01 MGD and the maximum monthly wet weather design flow is 2.7 MGD.

The upgrades to the treatment plant (many of which mentioned above) completed in September 2021 are as followed:

- New influent screening installed in existing screening structure. A flow paced influent sampler was placed at the influent screen structure.
- New influent pumping station consisting of five 43-HP clog-free screw centrifugal submersible pumps rated at 2.6 mgd @ 43' TDH each.
- New headworks consisting of a vortex grit concentrator with a capacity of 10.0 mgd and a grit classifier. A flow splitter that controls discharge to each of the SBR treatment basins through 12-inch mag meters.
- New continuous feed sequencing batch reactor (SBR) activated sludge treatment plant. The system consists of four 355,000-gallon basins. The SBR equipment includes three 769 SCFM positive displacement blowers, four mixers, four 2.0-HP waste sludge pumps, and a WAS flow meter.
- Installation of two rotating disc filters, each capable of treating 3.0 mgd.

- Installation of an effluent magnetic flow meter (24-inch diameter) upstream of the new UV disinfection unit.
- A new ultraviolet disinfection system consisting of a fully enclosed stainless-steel unit with noncontact UV lamps in a horizontal configuration two banks of UV lights in one channel.
- The contact and stabilization tanks of one of the existing donut units was repurposed as additional chlorine contact tankage (170,000 gallons) by adding baffles. Treated water then flows to the existing chlorine contact chamber (106,000) for a total baffled tankage of 276,000 gallons allowing for 132 minutes of contact time at 3.0 mgd. The chlorinated recycled water is also be held in a 150,000-gallon recycled water storage tank prior to use.
- Four new vertical turbine irrigation pumps installed in the existing recycled water storage basin.
- Repurposed four of the chambers of the existing donut units to biosolids treatment and storage. The total volume biosolids aerobic digestion and storage is about 581,000 gallons. The system includes fine bubble diffusers, three rotary positive displacement blowers, four biosolids transfer pumps, and 1 rotary lobe biosolids dewatering press feed pump.
- Installation of a biosolids dewatering system consisting of a polymer injection system, a screw press, screw press conveyer, and associated equipment. The dewatering system has a capacity of 55 gpm at 2% solids and produce a cake of 12 to 16 % solids.
- Installation of two new 500 KW diesel generators for backup power with automatic transfer switch.

Figure 2-1: City of Sutherlin Wastewater Treatment Plant Location

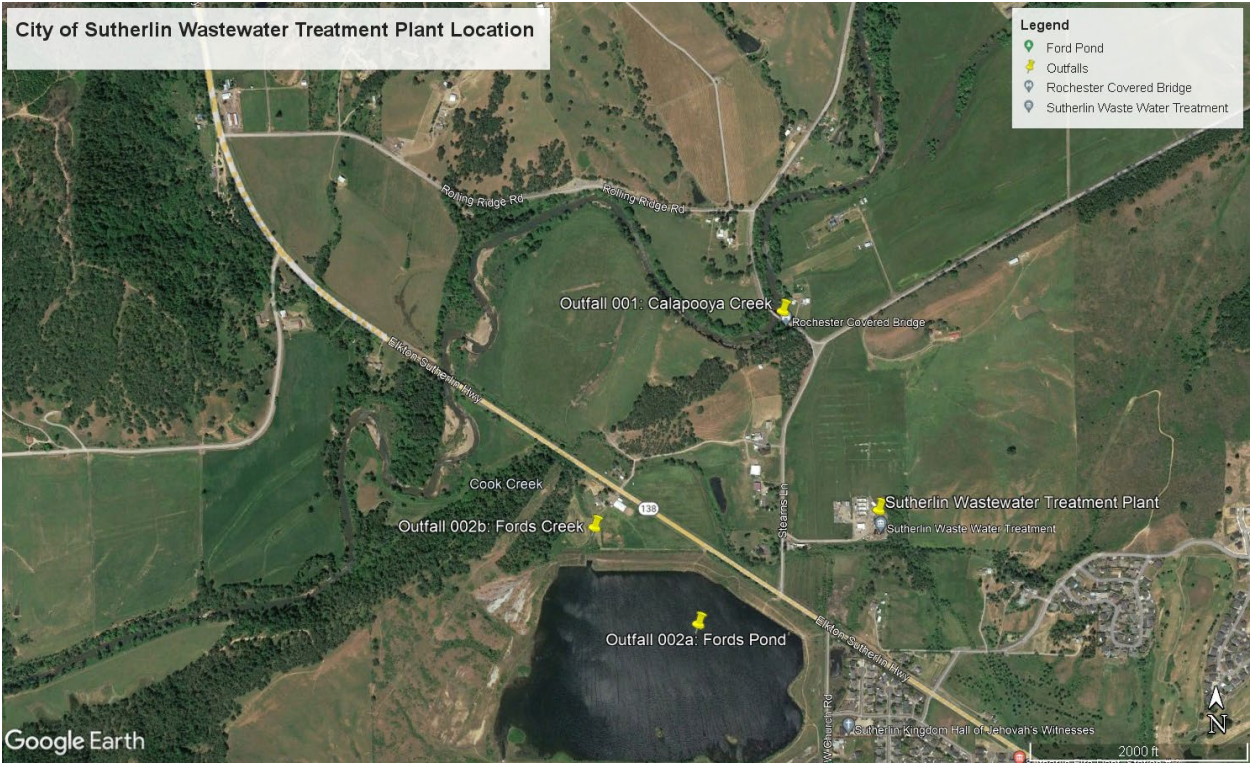


Figure 2-2: Diagram of the Sutherlin Wastewater Treatment Plant

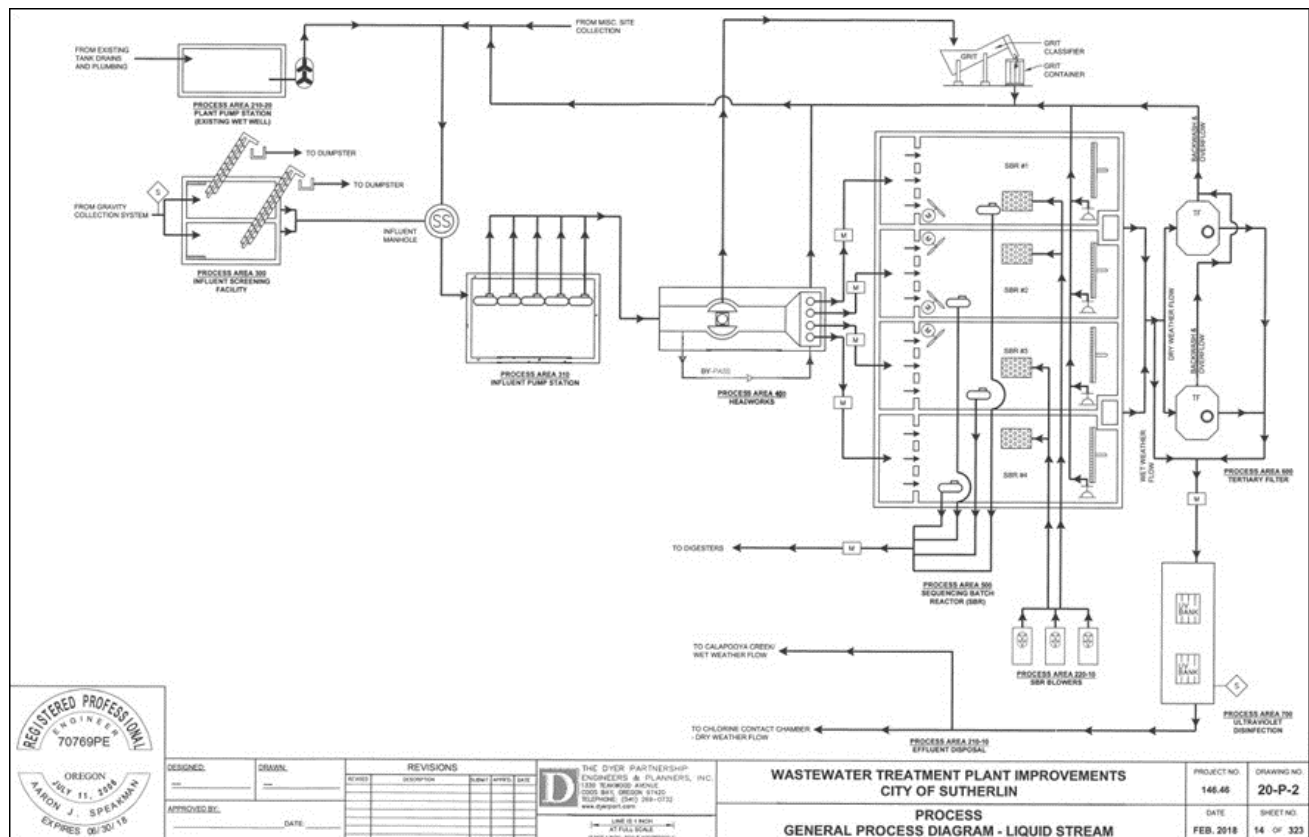


Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long	Design Flow ¹ (mgd)	Existing Flow ² (mgd)
001	Treated Wastewater	43.401867, -123.362931	2.01	2.28
002a	Treated Wastewater	43.394285, -123.363566	0.88	0.47
002b	Fords Pond discharge to Fords Creek	43.395933, -123.369461		
003	Recycled Water Reuse			
004	Biosolids			

1. Design Flow = design average dry weather or wet weather flow
2. Existing Flow = existing average monthly dry or wet weather flow

2.2 Compliance History

In 2005, Sutherlin and DEQ entered into a Mutual Agreement and Order number WQ/M-WR-05-054 because Sutherlin did not have the facilities to irrigate all of the wastewater during the months of May through October. The MAO was amended in 2012 to address ammonia effluent limit violations. The MAO was amended again in 2015 to adjust the project schedule. The final requirement in the Sutherlin MAO is:

“(7) By no later than fifteen (15) months after initiation of operation of the wastewater system upgrades, Permittee must submit a report summarizing the performance testing conducted during the first twelve (12) months of operation and an evaluation of whether the actual performance meets expectations in the DEQ plan approval letter. If performance does not meet the expectation, the report must also include a list of recommended performance improvements.”

The liquids treatment units were completed on February 14, 2020, and the new units began treating sewage on May 6, 2020. Accordingly, this report was due on August 6, 2021. DEQ received the required report on September 9, 2021.

DEQ received the final report on September 9, 2021. Amendment 2 of the MAO states: “Paragraph 18 is replaced with the following: “This MAO will terminate the day after the final task in Paragraph 7 is completed. However, permittee remains liable for stipulated penalties for any violations of the MAO occurring during the period the MAO was in effect and demanded pursuant to Paragraph 15.”

Accordingly, the MAO terminated on September 10, 2021.

On November 12, 2021, DEQ issued a Warning Letter with opportunity to correct (WLOT – 6684) for several permit violations noted in an inspection. Those violations include:

1. Sutherlin violated Schedule A condition b by not managing recycled water in accordance with its DEQ-approved recycled water use plan. Specifically, Sutherlin delivered more water to the Oak Hills Golf Club than allowed by the recycled water use plan and more than Oak Hills Golf Club can reasonably irrigate on 38.5 acres. This contributed to Oak Hills’ unpermitted discharge of recycled water.
2. Sutherlin failed to submit a mercury minimization plan by August 1, 2020, as required by Schedule A.7.
3. Sutherlin does not have a written laboratory quality assurance and quality control program as required by Schedule B condition 1.e.
4. Sutherlin failed to submit timely reports of progress as required by Schedule C.
5. Sutherlin does not have an emergency response and public notification plan as required by Schedule D condition 2 and Schedule F condition B8.
6. Sutherlin failed to submit a significant industrial user survey as required by Schedule D.9.

7. Schedule F condition B1 requires Sutherlin to properly operate and maintain the treatment system. Proper maintenance includes a robust preventative maintenance program. Sutherlin has purchased a computerized maintenance management system but has not yet populated it.

In 2022, Sutherlin and DEQ entered into another Mutual Agreement and Order number WQ/M-WR-2021-180 that included civil penalties because the facility discharged recycled water from a point not authorized by the permit. Oak Hill Golf Club discharged recycled water provided by Sutherlin to Cook Creek. The MAO also includes violations related to improper maintenance and operation and the failure to develop or implement a BMP.

2.3 Stormwater

Stormwater is not addressed in this permit. General NPDES permits for stormwater are not required for facilities with a design flow of less than 1 MGD.

2.4 Industrial Pretreatment

The city conducted an Industrial User Survey during the last permit cycle and determined that a DEQ-approved industrial pretreatment program is not needed. No categorical industrial users were identified in the IU survey update submitted with the city's permit renewal application. [Include if relevant] The proposed permit requires the permittee to conduct and submit to DEQ an updated Industrial User Survey (Survey) within one year of permit issuance. DEQ will review the Survey results and, if DEQ determines that a pretreatment program is required, the permit may be reopened and modified to require development of a pretreatment program.

2.5 Classification

OAR 340-049 requires all permitted municipal wastewater collection and treatment facilities receive a classification based on the size and complexity of the systems. DEQ evaluated the classifications for the treatment and collection system, which are publicly available at: <https://www.deq.state.or.us/wq/opcert/Docs/OpcertReport.pdf>.

3. Schedule A: Effluent Limit Development

Effluent limits serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. Effluent limitations can be based on either the technology available to control the pollutants or limits that are protecting the water quality standards for the receiving water. DEQ refers to these two types of permit limits as technology-based effluent limitations (TBELs) and water quality-based effluent limits (WQBELs) respectively. When a TBEL is not restrictive enough to protect the receiving stream, DEQ must include a WQBEL in the permit.

3.1 Existing Effluent Limits

The tables below show the limits contained in the existing permit.

Table 3-1: Existing Effluent Limits for Outfall 001 Calapooya Creek

Parameter	Stream Flow (CFS) ^a	Units	Average Monthly	Average Weekly	Daily Maximum
Effluent Flow (June 1 – Oct. 31)		MGD	No discharge (Daily max limit = 0 MGD)		
Effluent Flow (May 1 to May. 31)	< 82	MGD	No discharge (Daily max limit = 0 MGD)		
BOD ₅ & TSS (May 1 to May 31) ^{b,c}	≥ 82	mg/L	30	45	-
		lb/day	560	840	1100
BOD ₅ & TSS (Nov. 1 to Nov. 30) ^{b,c}	<45	mg/L	30	45	-
		lb/day	440	170	260
	45 – 60	mg/L	30	45	-
		lb/day	440	320	480
	>60 – 96	mg/L	30	45	-
		lb/day	440	440	660
	>96	mg/L	30	45	-
		lb/day	440	660	880
BOD ₅ & TSS (Dec. 1 to April 30) ^{b,c}	All	mg/L	30	45	-
		lb/day	560	840	1100
		% removal	85	-	-
Chlorine, Total Residual (Nov. 1 to May 31)		mg/L	0.01	-	0.036
Ammonia, Total (Nov. 1 to May 31)		mg/L	14	-	24
pH (Nov. 1 to May 31)		SU	Instantaneous limit between a daily minimum of 6.3 and a daily maximum of 9.0		
<i>E. coli</i> (Nov. 1 to May 31)		#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		

Parameter	Stream Flow (CFS) ^a	Units	Average Monthly	Average Weekly	Daily Maximum
Excess Thermal Load Limit (ETLL) (May 16 to May 31)		million kcal/day (Mkcal/day)	Option A: ETLL = 20.2 as a 7-day rolling average Option B: $ETLL=(0.1)(Q_e+Q_r)(2.45)$ as a 7-day rolling average, where: Q_e = Daily average effluent flow rate (cfs) Q_r = 25% of receiving stream daily average flow rate (cfs)		
Excess Thermal Load Limit (ETLL) (Nov. 1 to May 15)		million kcal/day (Mkcal/day)	Option A: ETLL = 7.3 as a 7-day rolling average Option B: $ETLL=(0.3)(0.25Q_r+Q_e)(2.45)$ as a 7-day rolling average, where: Q_e = Daily average effluent flow rate (cfs) Q_r = 25% of receiving stream daily average flow rate (cfs)		
Notes: a. Stream flow in Calapooya Creek. b. Monthly average BOD and TSS limits are not flow based. c. The weekly average BOD and TSS limits are based on the weekly average flow in Calapooya Creek.					

Table 3-2: Existing Effluent Limits for Outfall 002a Fords Pond

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅	mg/L	10	15	-
	lb/day	73	110	-
	% removal	85	-	-
TSS	mg/L	10	15	-
	lb/day	73	110	-
	% removal	85	-	-
Chlorine, Total Residual	mg/L	0.0053	-	0.019
Ammonia Total Final ^a ((November 1 to April 30))	mg/L	2.0	-	3.5

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
Ammonia Total Interim ^a (November 1 to April 30)	mg/L	5.0	-	5.0
pH Final ^a (November 1 to April 30)	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 8.5		
pH Interim ^a (November 1 to April 30)	SU	Instantaneous limit between a daily minimum of 6.3 and a daily maximum of 8.5		
<i>E. coli</i> (November 1 to April 30)	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		
Note:				
a. These interim limits are effective upon permit issuance. The final limits are effective after completion of the compliance schedule as specified in Schedule C.				

3.2 Technology-Based Effluent Limit Development

40 CFR 122.44(a)(1) requires publicly owned treatment works (POTW) to meet technology-based effluent limits, for five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS) and pH (i.e., federal secondary treatment standards). Substitution of 5-day carbonaceous oxygen demand (CBOD₅) for BOD₅ is allowed. The numeric standards for these pollutants are contained in 40 CFR 133.102. In addition, DEQ has developed minimum design criteria for BOD₅ and TSS that apply to specific watershed basins in Oregon. These are listed in the basin-specific criteria sections under OAR 340-041-0101 to 0350. During the summer low flow months as defined by OAR, these design criteria are more stringent than the federal secondary treatment standards. The basin-specific criteria are not effluent limits but are implemented as design criteria for new or expanded wastewater treatment plants. The table below shows a comparison of the federal secondary treatment standards and the basin-specific design criteria for the Umpqua basin.

Table 3-3: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria

Parameter	Federal Secondary Treatment Standards		Umpqua Basin-Specific Design Criteria (OAR 340-041-0326)
	30-Day Average	7-Day Average	Monthly Average
BOD ₅ (mg/L)	30	45	10 mg/L (May 1 – October 31), 30 mg/L (November 1 – April 30)
TSS (mg/L)	30	45	10 mg/L (May 1 – October 31), 30 mg/L (November 1 – April 30)
pH (S.U.)	6.0 – 9.0. (instantaneous)		6.5 – 8.5

Parameter	Federal Secondary Treatment Standards		Umpqua Basin-Specific Design Criteria (OAR 340-041-0326)
	30-Day Average	7-Day Average	Monthly Average
BOD ₅ and TSS % Removal	85%	Not applicable	Not applicable

The limits for BOD₅ and TSS shown in the table above are concentration-based limits. Mass-based limits are required in addition to the concentration-based limits per OAR 340-041-0061(9). For any new facility or any facility that has expanded its dry weather treatment capacity after June 30, 1992, OAR 340-041-0061(9)(b) requires that the mass load limits be calculated based on the proposed treatment facility capabilities and the highest and best practicable treatment to minimize the discharge of pollutants. The permittee's facility has been engineered to achieve BOD₅ and TSS monthly average concentrations of 10 mg/L during the dry weather season and 30 mg/L during the wet weather season. DEQ uses the maximum monthly design flow to calculate the mass load limits as shown below for the dry and wet weather seasons.

Monthly Avg Mass Load = Design Flow* x Monthly Concentration Limit x Unit Conversion factor

Weekly Average Mass Load = 1.5 x Monthly Average Mass Load Limit

Daily Maximum Mass Load = 2 x Monthly Average Mass Load Limit

* Design flow is the design maximum monthly dry weather flow (DMMDWF) or design maximum monthly wet weather flow (DMMWWF).

The following table lists the effluent flows and concentration limits used for the calculations.

Table 3-4: Design Flows and Concentrations Limits

Season	Maximum Monthly Design Flow (mgd)	Monthly TSS Concentration Limit (mg/L)	Monthly BOD ₅ Concentration Limit (mg/L)
Dry Weather	1.8	10	10
Wet Weather	2.7	30	30

001 Wet Weather Mass Load Calculations:

Monthly Average: $2.7 \text{ [design flow] mgd} \times 30 \text{ [concentration] mg/L} \times 8.34 = 675.5 = 675$ (rounded to two significant figures)

Weekly Average: $675 \text{ lbs/day monthly average} \times 1.5 = 1012 \text{ lbs/day}$

Daily Maximum: $675 \text{ lbs/day monthly average} \times 2 = 1350 \text{ lbs/day}$

The current permit mass load limits for the design flow of 2.22 MGD for November – May are more stringent than the maximum monthly design flow (2.7) and, will remain in this renewal to meet antidegradation and antibacksliding requirements. The high and low flow periods in OAR 340-041-032(4) are approximate. The flow in Calapooya Creek remains relatively high through the month of May. Accordingly, DEQ has chosen to extend the high flow season through the month of May.

The proposed BOD₅ and TSS limits are listed in the following tables.

Table 3-5: Outfall 001 BOD₅ and TSS Technology Based Effluent Limits

Parameter (See note c.)	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅ (November 1 to May 31): (See notes a and b.)	mg/L	30	45	-
	lbs/day	560	840	1100
	% removal	85	-	-
TSS (November 1 to May 31): (See notes a and b.)	mg/L	30	45	-
	lbs/day	560	840	1100
	% removal	85	-	-
Notes: a. Refer to Table 3-13 for the WQBEL calculated mass load limits in November. b. Limits in May only apply when stream flow is ≥ 82 cfs. No discharge to Outfall 001 in May when stream flow is <82 cfs. c. Wet weather discharge may flow to either Outfall 001 or 002a.				

Outfall 002a Dry Weather Mass Load Calculations:

Monthly Average: $1.8 \text{ [design flow] mgd} \times 10 \text{ [concentration] mg/L} \times 8.34 = 150 \text{ lbs/day}$

Weekly Average: $150 \text{ lbs/day monthly average} \times 1.5 = 225 \text{ lbs/day}$

Daily Maximum: $150 \text{ lbs/day monthly average} \times 2 = 300 \text{ lbs/day}$

The current average monthly and average weekly permit mass load limits for the average dry weather design flow of 0.88 MGD for June - October are more stringent than the maximum monthly dry weather design flow (1.8) and, will remain in this renewal to meet antidegradation and antibacksliding requirements. A new daily maximum mass load limit for both BOD and TSS will be included in the proposed permit. The daily maximum mass load limit was omitted by error in the previous permit and, for the proposed permit, will be based off the 0.88 MGD day weather design flow.

Table 3-6: Outfall 002a Dry Weather BOD₅ and TSS Technology Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅ (Outfall 002a: June 1 – October 31)	mg/L	10	15	-
	lbs/day	73	110	150
	% removal	85	-	-
TSS (Outfall 002a: June 1 – October 31)	mg/L	10	15	-
	lbs/day	73	110	150
	% removal	85	-	-

3.3 Water Quality-Based Effluent Limit Development

40 CFR 122.44(d) requires that permits include limitations more stringent than technology-based requirements where necessary to meet water quality standards. Water quality-based effluent limits may be in the form of a wasteload allocation required as part of a Total Maximum Daily Load (TMDL). They may also be required if a site-specific analysis indicates the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion. DEQ establishes effluent limits for pollutants that have a reasonable potential to exceed a criterion. The analyses are discussed below.

3.3.1 Designated Beneficial Uses

NPDES permits issued by DEQ must protect the following designated beneficial uses of the Calapooya Creek. These uses are listed in OAR-340-041-0326 for Umpqua Basin. Sutherlin wastewater treatment plant discharges seasonally into Calapooya Creek at river mile 9.8. Calapooya Creek is a tributary of the Umpqua River in the Umpqua Basin and enters the Umpqua at approximately river mile 103.

- Public and private domestic water supply
- Industrial water supply
- Irrigation and livestock watering
- Fish and aquatic life (including salmonid rearing, migration, and spawning)
- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality
- Hydropower

3.3.2 303(d) Listed Parameters and Total Maximum Daily Loads

The following tables lists the parameters that are on the 2022 303(d) list (Category 5) within the discharge's stream reach. The table also lists any parameters with a TMDL wasteload allocation assigned to the facility (Category 4).

Table 3-7: 303(d) and TMDL Parameters for Outfall 001

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_SR_1710030301_02_106418
AU Name:	Calapooya Creek
AU Status:	Impaired
Year Listed	2002
Year Last Assessed	2022
303d Parameters (Category 5)	Flow Modification, Habitat Modification, <i>E. coli</i> , Dissolved Oxygen year-round, Temperature year round, Iron (total)-Aquatic Life Toxics
TMDL Parameters (Category 4)	
Temperature, pH, Dissolved Oxygen, <i>E. coli</i>	

3.3.3 TMDL Wasteload Allocations

DEQ issued a TMDL for the Umpqua Basin in 2006. The TMDL parameters that apply to Sutherlin STP are temperature, *E. coli*, pH, and dissolved oxygen.

The Umpqua Basin temperature TMDL addresses the non-spawning period (May 16 through October 14) and has assigned a temperature wasteload allocation to the facility as discussed in Section 3.3.8, below.

The facility is not discharging to Calapooya Creek between June and October. As such, the Sutherlin STP is meeting *E. coli* the requirements in the TMDL which prohibits discharge to the creek in the summer recreational period.

The TMDL for pH is for the summer period, of which the facility is not discharging to Calapooya Creek. Thus, Sutherlin STP is meeting the pH requirements in the TMDL. A wasteload allocation to address the fall-winter-spring dissolved oxygen limitation was not completed at the time of the dissolved oxygen TMDL issuance. Instead, a wasteload allocation for inorganic and total phosphorus was created in the TMDL from June 1 – October 31. This WLA does not apply for Sutherlin STP since the facility does not discharge to Calapooya Creek during those months.

Fords Pond where Outfall 002a discharges to was constructed in 2019 from a previous logging pond. As a relatively new enclosed waterbody with no TMDL or 303(d) listing associated with it, Table 3-8 depicts the TMDL parameters for the watershed in general, not specifically for Fords Pond.

Table 3-8: Applicable WLAs

Parameter	WLA	Time Period
Temperature	See Section 3.3.8, below	May 15 – October 15
<i>E. coli</i>	Log mean of 126. Not to exceed 406	June – October

3.3.4 Pollutants of Concern

To ensure that a permit is protecting water quality, DEQ must identify pollutants of concern. These are pollutants that are expected to be present in the effluent at concentrations that could adversely impact water quality. DEQ uses the following information to identify pollutants of concern:

- Effluent monitoring data.
- Knowledge about the permittee's processes.
- Knowledge about the receiving stream water quality.
- Pollutants identified by applicable federal effluent limitation guidelines.

Table 3-9: Domestic Toxic Pollutants of Concern

Flow Rate	Pollutants
≥ 0.1 mgd	Total Residual Chlorine
≥ 0.1 mgd and < 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen
≥ 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen, Metals, Volatile Organic Compounds, Acid Extractable Compounds, Base Neutral Compounds

DEQ identified the following pollutants of concern for this facility listed in the following table.

Table 3-10: Pollutants of Concern

Pollutant	How was pollutant identified?
pH	Effluent Monitoring
Temperature	Effluent Monitoring
<i>E. coli</i>	Effluent Monitoring
Total Residual Chlorine	Effluent Monitoring
Total Ammonia Nitrogen	Effluent Monitoring
Nitrate plus Nitrite	Effluent Monitoring
Bis (2-ethylhexyl)phthalate	Effluent Monitoring

The sections below discuss the analyses that were conducted for the pollutants of concern to determine if water quality-based effluent limits are needed to meet water quality standards.

3.3.5 Regulatory Mixing Zone

The proposed permit contains a mixing zone as allowed per OAR 340-041-0053. The regulatory mixing zone from the existing permit is specific to Outfall 001 and is described as:

The allowable mixing zone is that portion of Calapooya Creek contained within a band extending out no more than $\frac{1}{2}$ the stream width and extending from a point ten (10) feet upstream of the outfall to a point thirty (30) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) is that portion of the allowable mixing zone that is within three (3) feet of the point of discharge.

The proposed permit contains an updated regulatory mixing zone description for Outfall 001 which is described as follows. The description was updated to remove the allowable width, as the dilution factor at the edge of the RMZ and ZID is determined at the downstream boundary, rather than a width.

The allowable Regulatory Mixing Zone (RMZ) for Outfall 001 is that portion of Calapooya Creek that extends 10 feet upstream from the outfall end of pipe and 30 feet downstream out the outfall end of pipe. The Zone of Initial Dilution (ZID) is that portion of the Regulatory Mixing Zone extending 3 feet from the outfall end of pipe.

There is no allowable Regulatory Mixing Zone (RMZ) or Zone of Initial Dilution (ZID) for any discharge to Fords Pond (Outfall 002a) or Fords Creek (Outfall 002b).

The dilution factors at the edge of the Regulatory Mixing Zone and Zone of Initial Dilution are shown in Table 3-12. These dilutions are based on a 2008 mixing zone study and a 2019 mixing zone memo by DEQ. The mixing zone memo documenting this review and analysis is in a December 21, 2023, Mixing Zone Memo which is part of the administrative record. For this memo, updated ambient and effluent flows and temperatures were used to model the effluent plume.

The Sutherlin WWTP outfall is a single 27-inch diameter metal pipe mounted on a concrete block in the stream bed with no diffuser. The discharge point is located approximately 15 feet from the left bank (looking downstream) of the river. At the 7Q10 low flow, the pipe is perched above the water's surface. The outfall end of pipe is located at 43.401867, -123.362931. Additional engineering drawings, photos of the outfall, and other information is available in the Mixing Zone Memo.

Table 3-11: Mixing Zone Dilutions

Dilution Summary – Nov 1 to Apr 30 (Wet Weather)						
Water Quality Standard	Stream Flow (cfs)		Effluent Flow (mgd)		Dilution Factor	Location
	Statistic	Flow	Statistic	Flow		
Aquatic Life, Acute	1Q10	13 cfs	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	2.246 MGD	1.9	ZID (3 ft)
Aquatic Life, Chronic	7Q10	19 cfs	☐ ADWDF ☐ Max Monthly Avg ☐ Other	1.024 MGD	4.9	RMZ (30 ft)
Human Health, Non-Carcinogen	30Q5	87 cfs	☐ ADWDF ☒ Max Monthly Avg ☐ Other	1.024 MGD	8.3	RMZ (30 ft)
<i>ADWDF = Average dry weather design flow</i> <i>PF = Peaking factor (1.5)</i>						

Dilution Summary – May 1 to May 31 (Discharge allowed when ambient > 82 cfs)						
Water Quality Standard	Stream Flow		Effluent Flow		Dilution Factor	Location
	Statistic	Flow	Statistic	Flow		
Aquatic Life, Acute	Flow based limit	82 cfs	☒ ADWDF x PF ☐ Max Daily Avg ☐ Other	0.88 MGD	2.4	ZID (3 ft)
Aquatic Life, Chronic	Flow based limit	82 cfs	☒ ADWDF ☐ Max Monthly Avg ☐ Other	0.88 MGD	9.0	RMZ (30 ft)
<i>ADWDF = Average dry weather design flow</i> <i>PF = Peaking factor (1.5)</i>						
Comments: Facility is only permitted to discharge in May when the ambient flow is greater than 82 cfs, so dilution calculated using ADWDF and 82 cfs ambient flow.						

3.3.6 BOD₅ and TSS

As mentioned above in Table 3-7, Calapooya Creek is water quality limited for dissolved oxygen during the spawning period (Oct 15 – May 15). During 1998, DEQ evaluated the discharge's impact to Calapooya Creek using the water quality simulation program MULTISTP. The modeling predicts water quality impacts during low periods in May and November if Sutherlin were to discharge at the maximum permitted levels. To protect water quality, DEQ will continue to place restrictions on discharges during the months of May and November. During May, discharge is allowed only when the stream flow in Calapooya Creek exceeds 82 cfs. During November, the limits are stream flow based as follows:

Table 3-12: Outfall 001 BOD₅ and TSS WQBELs

Parameter	Stream Flow (CFS) ^a	Units	Average Monthly (See note b.)	Average Weekly (See note c.)	Daily Maximum
BOD ₅ & TSS (November 1 to November 30)	<45	mg/L	30	45	-
		lb/day	440	170	260
	45 – 60	mg/L	30	45	-
		lb/day	440	320	480
	>60 – 96	mg/L	30	45	-
		lb/day	440	440	660
	>96	mg/L	30	45	-
		lb/day	440	660	880

Notes:

a. Stream flow in Calapooya Creek.

b. Monthly average BOD and TSS limits are TBELS and not flow based.

c. The weekly and daily average BOD and TSS mass load limits are WQBELS and based on the weekly average flow in Calapooya Creek.

3.3.7 pH

The pH criterion for this basin is 6.5 – 8.5 per OAR 340-041-0326. The previous permit pH limits for Outfall 001 were 6.3 to 9.0. DEQ determined there is no reasonable potential for the discharge to exceed the pH criterion at the edge of the mixing zone based on the current limits. The proposed limit for Outfall 001 is a lower limit of 6.3, which is a WQBEL and an upper limit of 9.0 which is a TBEL. Based on DMRs from 2019-2023, the permittee should be able to meet these limits. Table 3-13 provides a summary of the data used for the analysis.

For Outfall 002a, the final previous permit pH limits were 6.5 to 8.5. There is no mixing zone for Outfall 002a because it discharges to Fords Pond, which is an enclosed waterbody in the dry season when the facility is discharging to Outfall 002a. Therefore, no RPA is necessary and DEQ is proposing to maintain the end-of-pipe pH limits of 6.5 to 8.5, which are both WQBELs.

Table 3-13: Outfall 001 pH Reasonable Potential Analysis

INPUT	Lower pH Criteria	Upper pH Criteria
1. DILUTION AT MZ BOUNDARY (7Q10)	4.9	4.9
2. UPSTREAM CHARACTERISTICS		
a. Temperature (deg C):	17.2	6.0
b. pH:	7.4	8.1
c. Alkalinity (mg CaCO ₃ /L):	29.0	29.0
3. EFFLUENT CHARACTERISTICS		
a. Temperature (deg C):	17.6	11.3
b. pH (S.U.) – Enter existing lower and upper limit	6.3	9.0
c. Alkalinity (mg CaCO ₃ /L):	134.6	134.6
4. APPLICABLE PH CRITERIA	6.5	8.5
pH at Mixing Zone Boundary:	6.5	8.3
Is there Reasonable Potential?	No	No
Proposed Effluent Limits	6.3	9.0
Effluent data source: ICIS summary statistic data 2019-2023.		
Ambient data source: AWQM Ambient Data 2019 – 2023 stations 10996-ORDEQ and 12796-ORDEQ.		

3.3.8 Temperature

3.3.8.1 Outfall 001 (Calapooya Creek) Temperature Criteria OAR 340-041-0028

The following table summarizes the temperature criteria that apply at the discharge location along with whether the receiving stream is water quality-limited for temperature and whether a TMDL wasteload allocation has been assigned. Using this information, DEQ performed several analyses to determine if effluent limits were needed to comply with the temperature criteria.

Table 3-14: Calapooya Creek Temperature Criteria Information

Applicable Temperature Criterion	Rearing/Migration 18°C (OAR 340-041-0028(4)(c))
Applicable dates: May 15 – October 15	
Salmon/Steelhead Spawning 13 °C? OAR 340-041-0028(4)(a)	☒ Yes ☐ No
Applicable dates: October 15 – May 15	
WQ-limited?	☒ Yes ☐ No
TMDL wasteload allocation assigned?	☒ Yes ☐ No
Applicable dates: May 16 – May 31	
TMDL based on natural conditions criterion?	☒ Yes ☐ No
Cold water summer protection criterion applies?	☐ Yes ☒ No
Cold water spawning protection applies?	☒ Yes ☐ No
Comments: Temperature criteria for Calapooya Creek.	

As mentioned in Section 3.3.3, the Umpqua Basin temperature TMDL addresses the period when the rearing and migration fish use applies (May 15 through October 15). Since the facility is only allowed to discharge to Calapooya Creek from November 1 through May 31, the TMDL only applies to this facility from May 16 through May 31. The temperature wasteload allocation in the TMDL is based on the following equation:

$$WLA = (HUA)(Q_e + Q_r)(C_f)$$

Where: WLA = heat load allocation, based on a 7-day rolling average (Mkcal/day)

HUA = human use allowance = 0.1 °C

Q_e = effluent flow rate in cfs based on a 7-day rolling average

Q_r = stream flow (cfs)

C_f = conversion factor = 2.45 million kcal/s/°C·ft³·day

DEQ expresses thermal waste load allocations in permits as “excess thermal loads”. These ETLs are expressed as a formula used to calculate the allowed heat load based on variables that fluctuate, such as streamflow. DEQ designates this limit as “Option B” in the permit. The excess thermal load discharged by the facility is calculated by:

$$ETL = (Q_e)(T_e - T_r)C_f$$

Where: ETL = Excess Thermal Load

Q_e = Effluent Flow (cfs)

T_e = Effluent temperature (°C)

T_r = Temperature criteria (°C) = 18 °C

C_f = conversion factor = 2.45 million kcal/s/°C·ft³·day

DEQ also allows the permittee to determine compliance with a simplified critical case scenario limit, which is necessary for May 16 to May 31 when the facility is discharging to Calapooya Creek. DEQ designates this limit as “Option A”. Option A is calculated using a stream flow of 82 cfs because the permit prohibits Sutherlin from discharging when stream flows are less than 82 cfs in May. The weekly dry weather design flow can be estimated by multiplying the average dry weather design flow by 1.5. DEQ is using the dry weather design flow of the new plant (0.88 mgd). Accordingly, the estimated weekly dry weather design flow is $0.88 \text{ mgd} \times 1.547 \times 1.5 = 2.04 \text{ cfs}$.

The Option A ETL limit is:

“Option A” ETL Limit = $(HUA)(Q_e + Q_R)(C_f) = 0.1 \times (2.04 + 82) \times 2.45 = 21 \text{ Mkal/day}$ (rounded to two significant figures)

The current permit’s limit for this period is based on the same equation and input values, but due to errors (rounding and transcription), is 20.2 million kcals/day. The proposed permit will include the 21 million kcals/day value. Based on the DMR data from 2021 through 2023, the maximum ETL discharged between May 16 and May 31 was 10.0 million Kcals/day. Based on this information, Sutherlin is expected to be able to meet this limit with the existing facilities.

DEQ conducted a temperature reasonable potential analysis for the spawning season (Oct 15 – May 15) since the stretch of the Calapooya Creek that Outfall 001 discharges to is designated as having salmonid and steelhead spawning as a beneficial use under OAR 340-041-0320, Figure 320B. The applicable temperature criterion is 13 °C. Calapooya Creek is listed as water quality limited on the 2022 303d list. The most recent Umpqua Basin TMDL from 2006 does not have a WLA for Sutherlin STP in the spawning season. However, the data DEQ does have indicates that Calapooya Creek temperatures are higher than 13 °C at times. Per DEQ’s Temperature Standard Implementation IMD, the human use allowance applies if temperature data show that the ambient temperature upstream of the source exceeds the numeric criteria. Accordingly, the following analysis follows DEQ’s guidance for a stream that does not meet the temperature criterion.

OAR 340-041-0028(12)(b)(A) states:

“Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius above the applicable criteria after mixing with either twenty five percent of the stream flow or the temperature mixing zone, whichever is more restrictive”.

Appendix A contains a spreadsheet that includes a reasonable potential analysis based on meeting 13 °C at the edge of the mixing zone and after mixing with 25 percent of the stream flow. This analysis is during critical case low flows (November). The effluent temperature value used in this analysis is 19.8 °C. This value was taken from the facility’s DMRs for the period from November 2021 to 2023 and represents the maximum 7-day average of the daily maximums for the spawning season. The analysis indicates that the discharge increases the temperature at the edge of the existing regulatory mixing zone and after mixing with 25 percent of the stream flow by 1.4 °C and 3.4 °C, respectively. As such, DEQ calculated an excess

thermal limit for the spawning season (Nov. 1 – May 15) because there is a reasonable potential for the discharge to exceed the human use allowance. The static limit for this period was calculated as 6.9 million kcals/day. This value is more stringent than the current permit's limit of 7.3 million kcals/day and will be included the proposed permit and is shown as "Option A" in the permit. The "Option B" limit for this period is flow based using the following equation:

$$ETLL = (HUA)(0.25*Q_r + Q_e)(C_f)$$

Where: ETLL = Excess Thermal Load Limit, based on a 7-day rolling average (Mkcal/day)

HUA = human use allowance = 0.3 °C

Q_e = effluent flow rate in cfs based on a 7-day rolling average

Q_r = stream flow (cfs)

C_f = conversion factor = 2.45 million kcal.s/°C.ft³.day

Final effluent limits for Outfall 001 are listed in the following table.

Table 3-15: Outfall 001 Temperature Criterion Effluent Limits

Effluent limit needed? ☒ Yes ☐ No
TMDL WLA Limit: 21 Million Kcals/day or flow-based equation (see above)
Applicable time period: May 16 - May 31 ☐ NA
Temperature Criterion Limit: 6.9 Million Kcals/day or flow-based equation (see above)
Applicable time period: November 1 – May 15 ☐ NA
Comments:

Based on the DMR data from November 2021 through 2023, the discharge from Outfall 001 would have exceeded the Option A ETL limit on 11 days. The discharge would not have exceeded the Option B ETL limits and is expected to remain in compliance.

3.3.8.2 Outfall 001 (Calapooya Creek) Thermal Plume OAR 340-041-0053(2)(d)

In addition to compliance with the temperature criteria, OAR 340-041-0053(2)(d) contains thermal plume limitation provisions designed to prevent or minimize adverse effects to salmonids that may result from thermal plumes. The discharge from Outfall 001 was evaluated for compliance with these provisions as follows:

- OAR 340-041-0053(2)(d)(A): Impairment of an active salmonid spawning area where spawning redds are located or likely to be located. This adverse effect is prevented or minimized by limiting potential fish exposure to temperatures of 13°C or more for salmon and steelhead, and 9°C or more for bull trout.

Sutherlin STP: During the last permit renewal, DEQ confirmed with Oregon Department of Fish and Wildlife that, while active spawning has been identified in Calapooya Creek downstream of the discharge, no active spawning has been identified in the immediate vicinity of the outfall (within the mixing zone, which extends 30-feet downstream of the outfall). As discussed above, the excess thermal load limit included in the permit for the spawning season ensures that discharge will comply with the spawning standard at the mixing zone boundary and downstream. Therefore, impairment of an active salmonid spawning area where spawning redds are located or likely to be located due to this discharge is prevented or minimized.

- OAR 340-041-0053(2)(d)(B): Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32 °C or more to less than 2 seconds.

Sutherlin STP: The daily maximum-recorded temperature of the discharge to Calapooya Creek for the November 2021 to 2023 period was 19.8 °C, well below the 32 °C criterion. Therefore, the discharge does not have the potential to cause acute impairment or instantaneous lethality due to the thermal plume.

- OAR 340-041-0053(2)(d)(C): Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25 °C or more to less than 5% of the cross-section of 100% of the 7Q10 flow of the water body.

Sutherlin STP: As mentioned above, the daily maximum-recorded temperature of the discharge from Outfall 001 for the November 2021 to 2023 period was 19.8 °C, well below the 25 °C criterion. As such, the effluent discharge does not have the potential to result in thermal shock potential within Calapooya Creek.

- OAR 340-041-0053(2)(d)(D): Unless ambient temperature is 21 °C or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21 °C or more to less than 25% of the cross-section of 100% of the 7Q10 flow of the water body.

Sutherlin STP: As mentioned previously, the daily maximum-recorded temperature of the discharge from Outfall 001 for the November 2021 to 2023 period was 19.8 °C, slightly below the 21 °C criterion. As such, the effluent discharge does not have the potential to result in migration blockage within Calapooya Creek.

Effluent limits needed to comply with the thermal plume requirements are shown in the following table.

Table 3-16: Outfall 001 Thermal Plume Effluent Limit

Effluent limit needed? ☐ Yes ☒ No
Calculated limit: N/A
Applicable timeframe: N/A
Comments: The limit for the spawning season presented in the table above ensures compliance.

3.3.8.3 Outfall 002a (Fords Pond) Temperature Criteria OAR 340-041-0028

The following table summarizes the temperature criteria that apply at the discharge location along with whether the receiving stream is water quality-limited for temperature and whether a TMDL wasteload allocation has been assigned. Using this information, DEQ performed several analyses to determine if effluent limits were needed to comply with the temperature criteria.

Table 3-17: Fords Pond Temperature Criteria Information

Applicable Temperature Criterion	Natural Lakes*; OAR 340-041-0028(6)
Applicable dates: Year-Round	
Salmon/Steelhead Spawning 13 °C? OAR 340-041-0028(4)(a)	☐ Yes ☒ No
Applicable dates: N/A	
WQ-limited?	☐ Yes ☒ No
TMDL wasteload allocation assigned?	☐ Yes ☒ No
Applicable dates: N/A	
TMDL based on natural conditions criterion?	☐ Yes ☐ No
Cold water summer protection criterion applies?	☐ Yes ☒ No
Cold water spawning protection applies?	☐ Yes ☒ No
Comments: As discussed below, Fords Pond is an artificial lake, but the natural lake criterion is being applied.	

For Outfall 002a to Fords Pond, DEQ has determined that the temperature standard for natural lakes applies to Fords Pond, which is no more than 0.3 °C increase above the natural condition. (DEQ does not have standards specific to manmade ponds or lakes.) Salmonids are not a listed beneficial use for the pond.

The following mass balance equation is used to determine the temperature increase caused by the discharge:

$$\Delta T = (V_e / (V_e + V_r)) (T_e - T_c)$$

Where,

ΔT = temperature increase

V_e = Volume of effluent = 0.88 million gallons per day

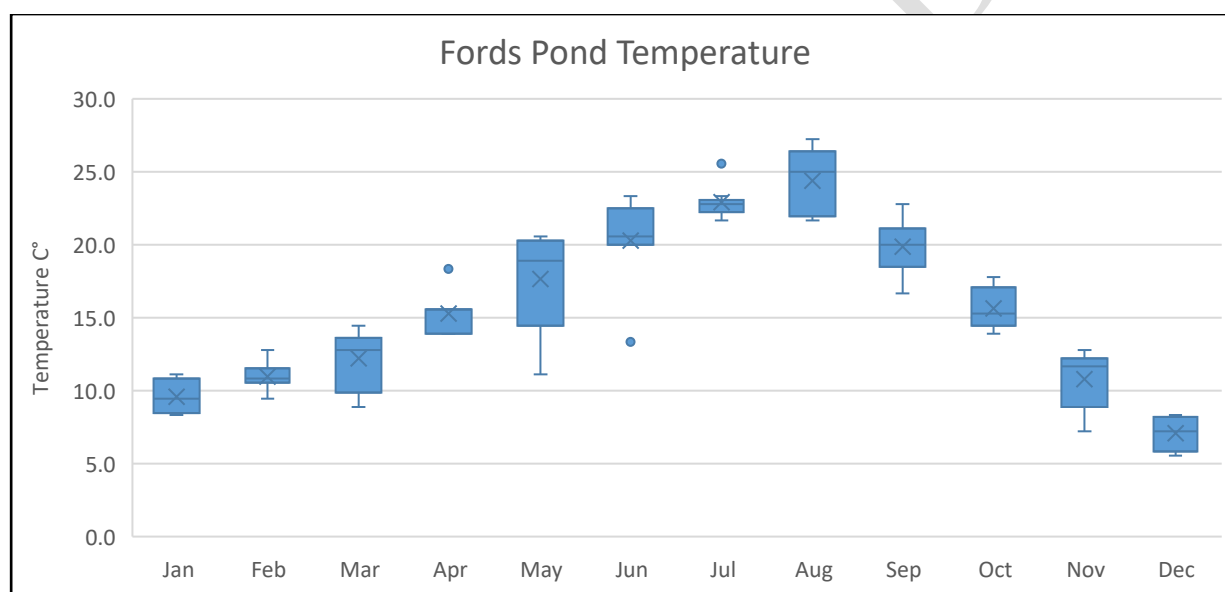
V_r = Volume of receiving water (Fords Pond) = 559 million gallons (upper 2 feet)

T_e = Effluent Temperature

T_c = Temperature criterion = natural condition temperature

The following chart shows the 2017 - 2018 temperatures of Ford Pond prior to effluent discharge into the pond.

Figure 3-1: Fords Pond Temperature 2017 – 2018



The following table contains the results of those calculations based on effluent temperatures for that same timeframe. Based on these conservative estimates, the discharge will not increase the temperature more than 0.3 °C. There is no effluent limit for Outfall 002a at this time.

Table 3-18: Temperature Impact to Fords Pond

Month	Max Effluent Temp	Average Pond Temp	Temperature change (°C)
January	14.1	9.6	0.007
February	14.6	11.0	0.006
March	15	12.2	0.004
April	16.7	15.3	0.002
May	18.6	17.7	0.001
June	22.6	20.3	0.004

Month	Max Effluent Temp	Average Pond Temp	Temperature change (°C)
July	23.1	22.9	0.000
August	23.6	24.4	-0.001
September	23.3	19.9	0.005
October	21.4	15.6	0.009
November	19.4	10.8	0.014
December	16.1	7.1	0.014

Table 3-19: Outfall 002a Temperature Criterion Effluent Limits

Effluent limit needed? ☐ Yes ☒ No
TMDL WLA Limit: None
Applicable time period: Dates ☒ NA
Temperature Criterion Limit: N/A
Applicable time period: Dates ☒ NA
Comments:

3.3.8.4 Outfall 002a (Ford's Pond) Thermal Plume OAR 340-041-0053(2)(d)

As noted above, the fish beneficial use associated with Fords Pond is warm water species, with no salmonids present. Oregon's thermal plume limitation provisions (OAR 340-041-0053(2)(d)) only apply if salmonids are present in the outfall's mixing zone. No salmonids are present, so the provisions do not apply and not associated limits are included in the proposed permit.

Effluent limits needed to comply with the thermal plume requirements are shown in the following table.

Table 3-20: Outfall 002a Thermal Plume Effluent Limit

Effluent limit needed? ☐ Yes ☒ No
Calculated limit None:
Applicable timeframe: N/A
Comments:

3.3.8.5 Outfall 002a (Fords Pond) Temperature Monitoring

Ambient monitoring requirements of temperature in Fords Pond on the opposite end of the pond from the outfall (Outfall 002a) has been added to the permit to evaluate whether the effluent into Fords Pond has no more than a 0.3°C increase above the natural condition limit. The upcoming permit cycle will require an RPA for Outfall 002a.

3.3.9 Bacteria

OAR 340-041-0009(6)(b) requires discharges of bacteria into freshwaters meet a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the geometric mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four-hour intervals beginning within 28 hours after the original sample was taken. The following table includes the proposed permit limits and apply year-round.

Table 3-21: Proposed *E. coli* Limits

<i>E. coli</i> (#/100 ml)	Geometric Mean	Maximum
Existing Limit	126	406
Proposed Limit	126	406

3.3.10 Toxic Pollutants

DEQ typically performs the reasonable potential analysis for toxics according to EPA guidance provided in the Technical Support Document for Water Quality-Based Toxics Control (TSD) (Office of Water Enforcement and Permits, U.S. EPA, March 1991). The factors incorporated into this analysis include:

1. Effluent concentrations and variability
2. Water quality criteria for aquatic life and human health
3. Receiving water concentrations
4. Receiving water dilution (if applicable)

DEQ performs these analyses using spreadsheets that incorporate EPA's statistical methodology. The following sections describe the analyses for various toxic pollutants below.

3.3.10.1 Total Residual Chlorine

The existing permit contains chlorine limits of 0.010 mg/L average monthly limit and 0.036 mg/L maximum daily limit for Outfall 001, and 0.0053 mg/L average monthly limit and 0.019 mg/L maximum daily limit for Outfall 002a. The chlorine limits were evaluated to ensure they were still protective of water quality criteria. For both the Outfall 001 and 002a analysis, the current limits remain protective of water quality criteria and so the existing limits are being retained.

3.3.10.2 Total Ammonia Nitrogen

DEQ's ammonia criteria vary with changes in pH and temperature. DEQ performed a reasonable potential analysis that accounts for changes in the effluent and receiving water pH and temperature to determine the appropriate ammonia criteria. The criterion is more stringent at a higher pH and also at a higher temperature. The following table provides a summary of the data used for the ammonia analysis and the results of the analysis.

The existing permit has a maximum daily ammonia limit of 23.5 mg/L and a monthly average limit of 13.5 mg/L for Outfall 001. Winter season analyses using updated receiving stream, effluent, and mixing zone dilutions determined that there was reasonable potential for the chronic aquatic criteria to be exceeded. The newly calculated maximum daily limit of 33.5 mg/L is less stringent than the existing limits, so the existing limit will remain in the new permit to satisfy anti-backsliding and anti-degradation provisions. The new average monthly limit of 11.8 mg/L is more stringent than the existing permit and will be applied to the new permit. Based on the DMR data from November 2021 through 2023, the discharge would not exceed the new limits. As such, it is estimated that the permittee can meet this new limit.

The existing permit has a maximum daily ammonia limit of 3.5 mg/L and a monthly average limit of 2.0 mg/L for Outfall 002a. Since there is no mixing zone for Outfall 002a an end-of-pipe analysis was done using updated effluent data to calculate the criteria and determine RP. The RPA determined that there was reasonable potential for the existing ammonia limits to exceed the aquatic chronic criteria. The newly calculated maximum daily limit of 5.9 mg/L is less stringent than the existing limit, so the existing limit is being retained to satisfy anti-backsliding and anti-degradation provisions. The new average monthly limit of 2.0 mg/L is the same as the existing permit and will be unchanged to the new permit. Based on the DMR data from November 2021 through 2023, the discharge would have exceeded the average monthly limit on only one occasion and the mean of the average monthly DMR data is 0.62 mg/L. As such, it is estimated that the permittee can meet this new limit.

Table 3-22: Ammonia Analysis Information – Outfall 001 Winter

	Acute	Chronic	
		4-day	30-day
Dilution	1.9	4.9	8.3
Ammonia Criteria	19.3	3.7	1.5
Effluent Data Used			
Ammonia (mg/L)	24.0	24.0	
pH (SU)	6.9	6.9	
Temperature (°C)	17.9	17.9	
Alkalinity (mg/L CaCO3)	64.0	64.0	
Receiving Stream Data Used			
Ammonia (mg/L)	0.0	0.0	
pH (SU)	9.4	9.4	
Temperature (°C)	16.1	16.1	
Alkalinity (mg/L CaCO3)	43.5	43.5	
Ammonia Limit Needed?	Yes		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	11.8	33.5	

Effluent data source
DMR data November 2021-2023. Alkalinity defaults used.
Ambient data source
AWQMS Ambient Data 2021 - 2023 stations 10996-ORDEQ, 11309-ORDEQ, 12796-ORDEQ, 12804-ORDEQ, 33227-ORDEQ, 33549-ORDEQ.

Table 3-23: Ammonia Analysis Information – Outfall 002a Summer

	Acute	Chronic	
		4-day	30-day
Dilution	1	1	1
Ammonia Criteria	12.6	3.8	1.5
Effluent Data Used			
Ammonia (mg/L)	3.5	3.5	
pH (SU)	7.0	7.0	
Temperature (°C)	23.5	23.5	
Alkalinity (mg/L CaCO3)	64.0	64.0	
Ammonia Limit Needed?	Yes		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	2.0	5.9	
Effluent data source			
DMR data 2021-2023 for ammonia and pH. DMR data from 2012-2018 for temperature. Alkalinity defaults used.			

3.3.10.3 Priority Pollutant Toxics

DEQ conducted a reasonable potential analysis for the group of toxics listed in the following table. A complete list of the monitored pollutants is located in the reasonable potential spreadsheet located in appendix C.

Table 3-24: Toxic Pollutants Analyzed

Toxic Group
Metals
Base-Neutral Compounds
Effluent data source: Sutherlin STP Effluent Toxic Monitoring Oct. 2021-2023.
Receiving water data source: AWQMS DEQ Monitoring Station 10996-ORDEQ.

Sutherlin STP conducted monitoring for Lead, Silver, Cyanide, Bis(2-ethylhexyl) phthalate, and Nitrate+ Nitrite in accordance with the frequency and methodology specified in its current NPDES permit. These pollutants were analyzed through the toxic RPA using lognormal distribution. The RPA for Outfall 001 showed that there was no reasonable potential for any of the monitored analytes at that outfall. The results for Outfall 002a indicated that there was reasonable potential for the chronic human health criteria to be exceeded for Nitrate+Nitrite. With the lack of a mixing zone in Fords Pond, there was no dilution to be factored into the analysis. For Outfall 002a, the average monthly limit for Nitrate+Nitrite will be 10 mg/L and the maximum daily limit will be 24.5 mg/L. These are new limits. With the highest Nitrate+Nitrite sample from 2021-2023 measuring at 8.1 mg/L, it is estimated that the permittee can meet these limits. However, there is limited data to determine whether the facility can meet this limit upon permit issuance. The proposed permit contains a compliance schedule that allows time for the facility to make facility modifications to meet the new limits.

For Bis(2-ethylhexyl) phthalate effluent data there was one sample with a quantified detection out of 5 samples collected. However, the samples were collected using a non-CFR 136 approved method. Sample contamination for Bis(2-ethylhexyl) phthalate is a known issue, and no equipment blanks were submitted with the data. Due to the inconclusive nature of the data, Bis(2-ethylhexyl) phthalate limits will not be incorporated into this permit over the next permit cycle. However, because DEQ is unable to rule out the potential presence of Bis(2-ethylhexyl) phthalate in the effluent, the human health criteria for Bis(2-ethylhexyl) phthalate are very low, and Outfall 002a has no mixing zone, the proposed permit contains additional effluent monitoring for Outfall 002a in Schedule B for bis(2-ethylhexyl) phthalate and equipment blanks that will be evaluated at the next permit renewal. In addition, a source identification study will be added to the permit in Schedule D to determine potential sources of the pollutant.

3.3.10.4 Copper Biotic Ligand Model

Monthly copper BLM input data was collected by Sutherlin STP staff and analyzed by various labs starting in July 2021 through October 2023. Samples were only collected during the summer when effluent was being directed through Outfall 002a to Ford's Pond resulting in 16 samples. Ford's Pond is effluent dominated and does not contain a mixing zone, and therefore the RPA analysis was done with a dilution of 1 for all scenarios. Temperature data was not collected during the analysis, temperature data collected in 2017 by the permittee was substituted for the purpose of the RPA. No paired data was collected during the winter months when the permittee discharges to Outfall 001. Because no winter effluent copper data was available, an analysis was not completed. Additionally, since the facility is considered a minor discharger, no additional monitoring will be added to the permit.

For the RPAs, the mixed concentration of each input parameter was then entered into the BLM model to calculate the instantaneous water quality criteria (IWQC) for each data set. Each IWQC was compared to the corresponding copper concentration of the effluent. Table 3-23 below shows the sample date, calculated criterion, calculated copper value, and toxic unit (copper concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a potential for the discharge to exceed the criterion. A toxic unit of NA indicates that either the effluent data was below the calculated criteria, the effluent data was non-detect, or the copper data was in the total recoverable instead of dissolved fraction. For Outfall 002a There is

no reasonable potential to exceed the copper criterion because there were no toxic units that exceeded 1.0.

Table 3-25: Outfall 002a CuBLM Results

Date	Effluent Cu ug/L	BLM CMC	Toxic Units	BLM CCC	Toxic Units
		ug/L		ug/L	
7/22/2021	9.00	28.08	NA	17.44	NA
8/24/2021	0.00	29.23	NA	18.16	NA
9/27/2021	10.00	27.27	NA	16.94	NA
10/5/2021	0.00	33.77	NA	20.98	NA
5/26/2022	2.00	7.98	NA	4.95	NA
6/16/2022	2.00	12.91	NA	8.02	NA
7/7/2022	2.00	19.41	NA	12.06	NA
8/4/2022	2.00	13.77	NA	8.55	NA
9/8/2022	9.00	24.28	NA	15.08	NA
10/18/2022	6.00	20.66	NA	12.83	NA
5/4/2023	7.00	11.97	NA	7.43	NA
6/8/2023	2.00	26.97	NA	16.75	NA
7/13/2023	2.00	22.36	NA	13.89	NA
8/10/2023	2.00	31.87	NA	19.79	NA
9/19/2023	2.00	28.81	NA	17.89	NA
10/12/2023	0.00	19.31	NA	12.00	NA

Because this permittee is now reclassified as a minor domestic, copper is no longer considered a pollutant of concern and no monitoring will be required in the next permit term. The results of this RPA support this conclusion.

3.3.10.5 Mercury – Human Health Criterion

Oregon’s human health water quality criterion for mercury is expressed in terms of a fish tissue concentration rather than a water column concentration. Because of this, DEQ’s approach to performing the reasonable potential analysis for mercury is different from that for other parameters. This approach is described in DEQ’s “Implementation of Methylmercury in NPDES Permits” internal management directive.

According to the IMD, “Any facility contributing significant and consistent concentrations of total mercury to the receiving water body is considered to have the reasonable potential to exceed the water quality criterion unless a site-specific survey determines otherwise.” Because the water quality criterion for mercury is a fish tissue-based concentration rather than a water column concentration, permit limits for mercury cannot be expressed in terms of a concentration. Therefore, when mercury is present in treated effluent on a consistent basis, the permit needs to contain mercury monitoring, plus a narrative effluent limit that consists of a Mercury Minimization Plan (MMP). The MMP was issued in 2023, and sampling will commence in 2024 to determine if the facility would be a likely source of mercury.

3.4 Antibacksliding

The proposed permit complies with the antibacksliding provisions of CWA sections 402(o) and 303(d)(4) and 40 CFR 122.44(l). With the exception of the new excess thermal load limit for Outfall 001 from May 16 – May 31, the proposed limits are the same or more stringent than the existing permit so the antibacksliding provision is satisfied.

As mentioned previously in Section 3.3.8.1, the new excess thermal load limit for Outfall 001 from May 16 – May 31 is slightly higher than the existing limit, changing from 20.2 million kcals/day to 21 million kcals/day. This change is to correct an error in the current permit. In accordance with 40 CFR 122.44(l)(2)(i)(B), backsliding is allowed if it is determined that “technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).” DEQ has determined that the inclusion of the previous limit was the result of a technical mistake and therefore meets the antibacksliding exception. In addition, the limits are both based on a TMDL wasteload allocation. Section 303(d)(4)(A) of the Clean Water Act allows relaxation when the receiving water is not in attainment for the limiting or related pollutant, the effluent limit is based on a TMDL wasteload allocation, and it can be shown that relaxation is consistent with antidegradation requirements. As noted above, the receiving water is water quality limited, and the new limit is based on a TMDL WLA. The antidegradation requirements are discussed below.

3.5 Antidegradation

DEQ must ensure the permit complies with Oregon’s antidegradation policy found in OAR 340-041-0004. This policy is designed to protect water quality by limiting unnecessary degradation from new or increased sources of pollution.

DEQ has performed an antidegradation review for this discharge. The proposed permit contains the same discharge loadings as the existing permit, with the exception of the temperature (excess thermal load) limit for the May 16 – May 31 period as discussed in Section 3.3.8.1, above. This new limit is not considered degradation since it is based on a TMDL wasteload allocation which ensures the temperature increase is an insignificant increase according to the Antidegradation Rule, OAR 340-041-0004(3)(c). Therefore, the new thermal load limit is allowed and is included in the proposed permit.

DEQ is not aware of any information that existing limits are not protecting the receiving stream’s designated beneficial uses. DEQ is also not aware of any existing uses present within the water body that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ’s antidegradation policy. DEQ’s antidegradation worksheet for this permit renewal is available upon request.

3.6 Whole Effluent Toxicity

DEQ does not require whole effluent toxicity testing (WET) for minor domestic facilities because concentrations of toxics are typically very low and WET testing is not warranted.

3.7 Groundwater

The treatment facility does not have any basins, ponds or lagoons that have the potential to leach into the groundwater. No groundwater monitoring or limits are required.

4. Schedule A: Other Limitations

4.1 Mixing Zone

Schedule A describes the regulatory mixing zone as discussed above in section 3.

4.2 Biosolids

The permit holder currently produces a Class B biosolids for land application by distribution or sale and anticipates continuing to do so. On January 30, 2017, Sutherlin submitted a revised biosolids management plan. Per OAR 340-050-0015(8), the biosolids management plan is subject to review and comment during the public participation process required by this permit renewal. DEQ reviewed the biosolids management plan and land application plan. These are available for public review and comment along with the permit. Once approved after public comment, conditions in the biosolids management plan and land application plan become permit conditions.

Schedule A of the permit requires the facility to apply biosolids according to their biosolids management plan. In addition, Schedule A requires the following:

- Apply at or below agronomic rates
- The permittee must have written site authorization for each location from DEQ before land applying and abide by the restrictions for each site
- Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32
- The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations for the nine metals shown in Schedule A of the permit.

Sutherlin is currently authorized to land apply biosolids on the following sites:

- Bainbridge Property, 1030 Isadore, Oakland, Oregon
- Reddekopp Property, 252 Isadore, Oakland, Oregon
- Banducci Property, 3830 Stearns Lane, Oakland Oregon

4.3 Recycled Water

The permit holder currently operates a recycled water program to produce a Class A recycled water for irrigation uses and anticipates continuing to do so. A draft recycled water use plan was submitted to DEQ for review in February 2023 and will be available for public comment with the issued permit. Once approved after public comment, conditions in the recycled water use plan become permit conditions.

Recycled water is used for irrigation at Oak Knolls Golf Course. The golf course is surrounded by homes that are closer than 70 feet from the golf course, requiring the more stringent requirements in Class A where there are no distance setbacks. For Class A, recycled water may not be sprayed onto an area where food is being prepared or served, or onto a drinking fountain. Class A recycled water must also be well oxidized, filtered so that the turbidity is less than 2 Nephelometric Turbidity Units, and disinfected so that the total coliform counts are no more than 2.2 organisms per 100 ml on a monthly geometric mean. Total coliform must be monitored once per day. Also, continuous (hourly) turbidity monitoring is required, and no more than 5 percent of the turbidity reading may exceed 5 NTU.

Schedule A of the permit requires the permittee to apply recycled water according to their recycled water use plan. Schedule A also restricts the application of recycled water to prevent the following:

- Irrigating above agronomic rates,
- Adverse impact to groundwater,
- Offsite surface runoff or subsurface drainage through drainage tile,
- Creation of odors, fly and mosquito breeding, or other nuisance conditions.

4.4 Chlorine Usage

Schedule A of the permit prohibits the permittee from using chlorine or chlorine compounds for effluent disinfection purposes.

5. Schedule B: Monitoring and Reporting Requirements

Schedule B of the permit describes the minimum monitoring and reporting necessary to demonstrate compliance with the proposed effluent limits. In addition, monitoring for other parameters is required to better characterize the effluent quality and the receiving stream. This data will be used during the next permit renewal. Detailed monitoring frequency and reporting requirements are in Schedule B of the proposed permit. The required monitoring, reporting and frequency for many of the parameters are based on DEQ's monitoring and reporting matrix guidelines, permit writer judgment, and to ensure the needed data is available for the next permit renewal.

Receiving stream flow monitoring from USGS Gauge 14320700 is required for Calapooya Creek to determine whether stream flow in May is below 82 cfs and effluent needs to be diverted from Outfall 001 to Outfall 002a. This monitoring is also used to determine which BOD₅ and TSS mass load limits should apply in November based on flow range. The overall purpose of these requirements is because spawning gravels are found about 3/4 mile downstream, just upstream of the Highway 138 bridge. This area would support Chinook salmon spawning during the spawning period of October 15 through May 15. Coho salmon smolts (young fish) would migrate downstream though the Rochester Bridge area from March to May when the flows would be greater and return upstream as adults.

Ambient monitoring in Fords Pond is required across the pond from Outfall 002a. This monitoring is required when discharging to Fords Pond. The ambient monitoring is required to determine the RPA for temperature, ammonia, and pH with the next permit renewal.

6. Schedule C: Compliance Schedule

The proposed permit contains a new effluent limit for Nitrate plus Nitrite to Outfall 002a. There is limited data to determine whether the facility can meet this limit upon permit issuance. The proposed permit contains a compliance schedule that allows time for the facility to make facility modifications to meet the new limits. This compliance schedule lays out a series of milestones which, upon completion, will require the permittee to meet the permit's water quality-based effluent limits for Nitrate plus Nitrite (see 40 CFR 122.47 and OAR 340-041-0061(12)).

DEQ has determined that the proposed compliance schedule requires the permittee to meet the final limits as soon as possible. The permittee must provide process and engineering options for achieving the final effluent limitations. The permittee must determine and begin to implement by the date described in Schedule C of the permit a solution for achieving final Nitrate plus Nitrite effluent limit.

7. Schedule D: Special Conditions

The proposed permit contains the following special conditions. The conditions include the following:

7.1 Inflow and Infiltration

A requirement to submit an updated inflow and infiltration report in order to reduce groundwater and stormwater from entering the collection system.

7.2 Emergency Response and Public Notification Plan

A requirement to develop and submit an emergency and spill response plan or ensure the existing one is current per General Condition B.8 in Schedule F.

7.3 Recycled Water Use Plan

A condition requiring the permit holder to develop and maintain a recycled water use plan that meet the requirements in OAR 340-055-0025. The plan must also include location-specific information describing where and how recycled water is managed to protect public health and the environment.

7.4 Exempt Wastewater Reuse at the Treatment System

A condition that exempts the permit holder from the recycled water requirements in OAR 340-055, when recycled water is used for landscape irrigation at the treatment facility or for in-plant processes, such as in plant maintenance activities.

7.5 Biosolids Management Plan

A requirement to manage all biosolids in accordance with a DEQ-approved biosolids management plan and land application plan. The biosolids management plan and the land application plan must meet the requirements in OAR 340-050-0031 and describe where and how the land application of biosolids is managed to protect public health and the environment.

7.6 Wastewater Solids Transfers

A condition that allows the facility to transfer treated or untreated wastewater solids to other in-state or out-of-state facilities that are permitted to accept the wastewater solids.

7.7 Operator Certification

The permit holder is required to have a certified operator consistent with the size and type of treatment plant covered by the permit per OAR 340-049-0005. This special condition describes the requirements relating to operator certification.

7.8 Industrial User Survey

This condition requires the permittee to conduct or update an industrial user survey. The purpose of the survey is to identify whether there are any categorical industrial users discharging to the POTW and ensure regulatory oversight of these discharges.

7.9 Outfall Inspection

A condition that requires the permittee to inspect the outfall and submit a report regarding its condition.

7.10 Bis(2-ethylhexyl) phthalate Source Identification Study

A condition that requires the permittee to perform a source inspection study for Bis(2-ethylhexyl) phthalate.

7.11 Water Quality Trading Umpqua Basin

A condition that provides the permittee the option to implement a Water Quality Trading Plan in the Umpqua Basin.

8. Schedule F: NPDES General Conditions

Schedule F contains the following general conditions that apply to all NPDES permittees. These conditions are reviewed by EPA on a regular basis.

- Section A. Standard Conditions
- Section B. Operation and Maintenance of Pollution Controls
- Section C. Monitoring and Records
- Section D. Reporting Requirements
- Section E. Definitions

Appendix A: Temperature RPA

Enter data into white cells below:		Data Metric/Source
Mixing Zone Dilution =	4.9	Mixing zone memo 2023
7Q10 =	19 cfs	Mixing zone memo 2023
Effluent Flow =	3.02 mgd	DAWWF x 1.5
Applicable Temperature Criterion	13 °C	
Effluent Temperature	19.8 °C	ICIS Data Nov. 2021-2023
Allowable increase =	0.3 °C	
Dilution at 25% Stream Flow = 2 $\text{dilution} = (Q_r \cdot 0.25) / Q_e + 1$		
ΔT at edge of MZ= 1.4 °C		Reasonable Potential
ΔT at 25% Stream Flow= 3.4 °C		
Thermal Load Limit = 6.9 Million Kcals (7-day Rolling Avg.)		

Appendix B: Toxic Monitoring List

Pollutant	CAS
Nitrate (NO ₃) + Nitrite (NO ₂)	
Silver (total and dissolved)	7440224
Cyanide (Free)	57125
Cyanide (Total)	57125
Bis(2-ethylhexyl)phthalate	117817
Hardness (CaCO ₃)	

Appendix C: Outfall 002a Nitrate plus Nitrite RPA

			Identify Pollutants of Concern					In-Stream Conc.		Det. Reasonable Potential		
Pollutant Parameter	Carcinogen Status	# of Sample	Effluent Conc.	CV	Est. Max Eff. Conc.	RP at end of pipe?	Ambient Conc.	Max Conc. @ RMZ	WQ Crit: Water + Organism	WQ Crit: Organism Only	Is there Reasonable Potential to Exceed? (Yes/No)	
	(Yes/No)		(µg/l)	Default=0.6	(µg/l)	(Yes/No)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	Water + Fish	Fish
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD												
Nitrates-Nitrite	n	10	5490	0.933068174	12094.14947	Yes	187.790784	12094.1495	10000	na	YES	NO

Pollutant Parameter	RP Status		Carcinogen Status	WQ: Criteria		Ambient Conc.	WLAs		CV	Compliance Monitoring	Effluent Limit	
	WQ Crit: Water + Organism	WQ Crit: Organism Only		WQ Crit: Water + Organism	WQ Crit: Organism Only		WQ Crit: Water + Organism	WQ Crit: Organism Only			Monthly (AML)	Max. Daily (MDL)
	(Yes/No)	(Yes/No)		(µg/l)	(µg/l)		(µg/l)	(µg/l)			#/month	(µg/l)
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD												
Nitrates-Nitrite	YES	NO	no	10000	na	187.7907844	10000	--	0.9330682	4	10000	24507.8163

Biosolids Management Plan

2024



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**City of Sutherlin
Douglas County, Oregon
2024**

Table of Contents

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SECTION 1: Biosolids Management Plan

SECTION 2: STP and Digester Flow Diagrams

**Biosolids Management Plan
For
City of Sutherlin
NPDES Permit No. 101993
File No. 86662
Leslie Gardner
(541) 459-5768**

INTRODUCTION

The City of Sutherlin (STP) owns and operates a municipal wastewater collection and treatment system and manages a biosolids disposal program. Wastewater processed by the treatment works is primarily of domestic origin, no formal pretreatment program is required to be implemented under our NPDES permit. The facility does not receive any outside septage. This biosolids management plan, as required by the NPDES permit, outlines the liquids and solids processes at the facility, how biosolids are managed to meet federal and state requirements, and how the biosolids land application program is operated.

WASTEWATER TREATMENT FACILITY

Liquids Processing

The City of Sutherlin operates an activated sludge treatment facility located at 4306 Stearns Road in Douglas County. Treated effluent is discharged November 1st to May 31st to the Calapooya at R.M.9.8. The designed average dry weather flow is 0.88 million gallons per day (MGD). Actual flows during the 2023 dry season averaged 0.78 MGD and during the wet season averaged 1.68 MGD. The peak flow design capacity is 7.0 MGD. The origin of the wastewater processed is 90 percent domestic, 10 percent commercial. A flow diagram of the Sutherlin Sewer Treatment Plant is provided in Figure 1.

As wastewater enters the plant, flow is processed by two screens to remove rags and other debris. An influent pump station then lifts the flow to the elevated headworks. Flow is directed to a vortex removal chamber where solids and inorganics settle out. Flow then enters a splitter box and is conveyed equally to each of the four Sequencing Batch Reactor (SBR) tanks. Settled solids are washed in a grit classifier, dewatered, and disposed of in a dumpster outside the headworks. Washed grit is then transported to a landfill.

Each of the four SBR tanks consists of a pre-react zone, baffle wall, main basin and effluent box. The main SBR basin is operated as a completely mixed reactor. Complete mix reactor stages will be Fill, Aeration and Biological React, Settle, Decant and idle. Waste Activated Sludge (WAS) is withdrawn from the bottom of the basin during the decant stage and pumped to aerobic digesters. A 30 foot long weir decants treated effluent.

During the summer months treated effluent will flow from the SBR through a Tertiary Filter, UV Disinfection. Sodium Hypochlorite is also added for a trace residual, Chlorine Contact Chamber, and then is disposed of as Class A Recycled water. During the winter months treated effluent will bypass the Tertiary Filter, will be UV disinfected and then be conveyed by gravity to an outfall in the Calapooya Creek.

Solids Processing

Aerobic digestion will be utilized as the method of sludge treatment. The existing north donut plant consists of four digester cells which includes one sludge pumping cell. Settled solids from the bottom of the SBR tank will be pumped to the aerobic digester cells. Aerobic digestion will be completed in multiple stages and the cells can be operated in series or parallel. Each digester cell is equipped with air diffusers. Periodically the air will be turned off for settlement of solids and decanting. Supernatant will be decanted to the influent pump station. Solids concentrations in each cell is increased from one percent to two percent. The combined capacity of the digester cells is 613,000 gallons. This is sufficient to provide solids storage for about 128 days. A flow diagram of the Aerobic digesters is provided in figure 2.

Biosolids are then conveyed from the aerobic digester to the Biosolids dewatering building. Dewatering consists of a polymer injection into the biosolids stream and then processed through a screw press. A screw conveyor loads the cake from the screw press into a truck for transportation. Cake is then transported for disposal at one of these locations: Douglas County Land Fill, or Heard Farm (private disposal facility). Typically, the screw press will generate 5 to 8 cubic yards per day. Unprocessed liquid biosolids may be pumped from a digester to a tanker truck for disposal at Heard Farm (private disposal facility).

Septage Processing

The city of Sutherlin STP is not equipped to handle septage.

Pretreatment Program

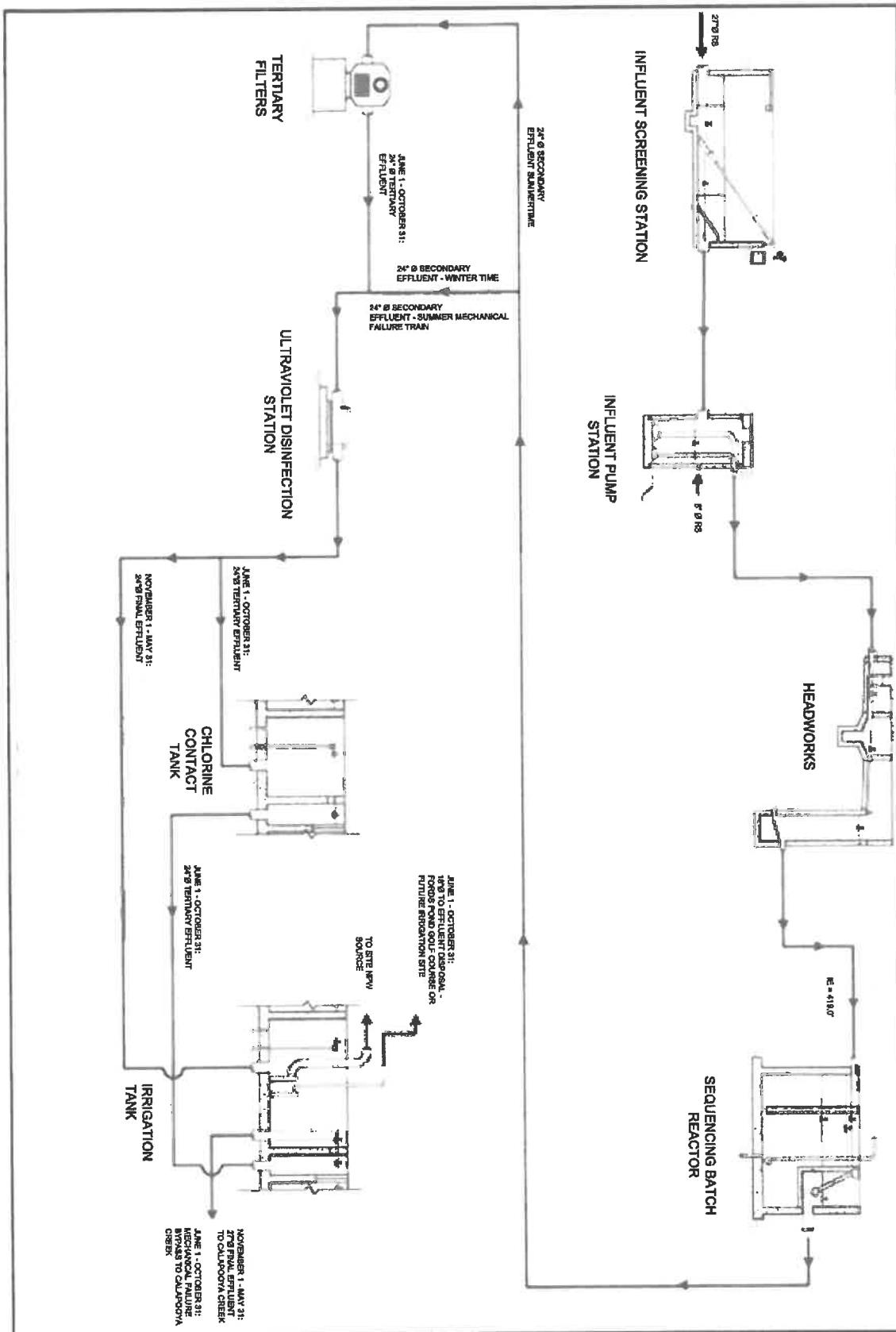
The City of Sutherlin is not required at this time to implement an industrial wastewater pretreatment program. There is no industrial waste treated by the Sutherlin Treatment Plant which requires regulation under a local pretreatment program.

BIOSOLIDS TREATMENT PROCESSES

Under 40 CFR Part 503 and Oregon Administrative Rules Chapter 340, Division 50, pathogen reduction and vector attraction reduction for biosolids must be met prior to land application. Vector attraction reduction requirements can also be met at the time of land application if biosolids are injected below the surface of the land or incorporated into the soil within 6 hours after application to the land. Biosolids are categorized as Class A or Class B depending on the method used to determine pathogen reduction. Biosolids may also be classified as exceptional quality (EQ) if the product meets: pollutant concentration limits in 40 CFR Part 503, one of the Class B pathogen reduction alternatives in 40 CFR §503.32(a), and one of the vector attraction reduction options in 40 CFR §503.33(b) (1),(3),(4) and/or (7). To meet regulatory requirements, pathogen reduction must be met before or at the same time that vector attraction reduction is achieved.

The City of Sutherlin does not land apply, therefore; the city does not test for pathogens and vector attraction reduction in our biosolids.

Pathogen Reduction



Pathogen reduction requirements of 40 CFR Part 503 and OAR 340-050 are met through Class B biosolids, alternative (1). When a digester reaches 2% solids it will be aerated and mixed until it meets Vector Attraction Reduction Specific Oxygen Uptake Rate option (4) requirements. Then it will be tested for pathogen reduction requirement in alternative (1). We will perform periodic testing until the biosolids meet alternative (1) requirements. The biosolids will then be transferred to the tanker truck and transported to a land application site and applied or pumped to a dewatering screw press and conveyed to a dump truck for either disposal at a DEQ approved site, Douglas County Landfill or Heard Farm (private disposal facility).

Class B Pathogen Requirements

**Note: Must meet one of the following alternatives. Check applicable alternative.*

- ☐ Alternative 1: The geometric mean of the density of fecal coliform of seven representative samples shall be less than either 2 million Most Probable Number (MPN) or 2 million Colony Forming Units (CFU) per gram of total solids (dry weight basis).
- ☐ Alternative 2: Biosolids shall be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) described in the table below.
- ☐ Alternative 3: Biosolids shall be treated in a process that is equivalent to a PSRP, as determined by the permitting authority.

Processes to Significantly Reduce Pathogens (PSRP) Listed in Appendix B of 40 CFR Part 503

**Note: Check applicable PSRP*

☐	Aerobic Digestion	Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time (i.e., solids retention time) at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 20°C (68°F) and 60 days at 15°C (59°F).
☐	Air Drying	Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 0°C (23°F).
☐	Anaerobic Digestion	Sewage sludge is treated in the absence of air for a specific mean cell residence time (i.e., solids retention time) at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35°C to 55°C (131°F) and 60 days at 20°C (68°F).
☐	Composting	Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 40°C (104°F) or higher and remains at 40°C (104°F) or higher for 5 days. For 4 hours during the 5-day period, the temperature in the compost pile exceeds 55°C (131°F).
☐	Lime Stabilization	Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 for ≥2 hours of contact.

Vector Attraction Reduction

The City of Sutherlin does not land apply, therefore; the city does not test for vector attraction reduction in our biosolids.

Vector Attraction Reduction Options

**Note: Must meet one of the following options. Check applicable option(s).*

40 CFR Part 503 Requirement		What is Required?	Most Appropriate For:
☐	Option 1 503.33(b)(1)	At least 38% reduction in volatile solids during sewage sludge treatment	Sewage sludge processed by: Anaerobic biological treatment Aerobic biological treatment
☐	Option 2 503.33(b)(2)	Less than 17% additional volatile solids loss during bench-scale anaerobic batch digestion of the sewage sludge for 40 additional days at 30°C to 37°C (86°F to 99°F)	Only for anaerobically digested sewage sludge that cannot meet the requirements of Option 1
☐	Option 3 503.33(b)(3)	Less than 15% additional volatile solids reduction during bench-scale aerobic batch digestion for 30 additional days at 20°C (68°F)	Only for aerobically digested liquid sewage sludge with 2% or less solids that cannot meet the requirements of Option 1 – e.g., sewage sludges treated in extended aeration plants. Sludges with 2% or greater solids must be diluted
☐	Option 4 503.33(b)(4)	SOUR at 20°C (68°F) is ≤ 1.5 mg oxygen/hr./g total sewage sludge solids	Liquid sewage sludges (2% or less solids) from aerobic processes run at temperatures between 10 to 30°C (should not be used for composted sewage sludges)
☐	Option 5 503.33(b)(5)	Aerobic treatment of the sewage sludge for at least 14 days at over 40°C (104°F) with an average temperature of over 45°C (113°F)	Composted sewage sludge (For sewage sludges from other aerobic processes, it will likely be easier to meet option 3 or 4)
☐	Option 6 503.33(b)(6)	Addition of sufficient alkali to raise the pH to at least 12 at 25°C (77°F) and maintain a pH ≥ 12 for 2 hours and a pH ≥ 11.5 for 22 more hours	Alkali-treated sewage sludge (alkaline materials include lime, fly ash, kiln dust, and wood ash)
☐	Option 7 503.33(b)(7)	Percent solids $\geq 75\%$ prior to mixing with other materials	Sewage sludges treated by an aerobic or anaerobic process (i.e., sewage sludges that do not contain unstabilized solids generated in primary wastewater treatment)
☐	Option 8 503.33(b)(8)	Percent solids $\geq 90\%$ prior to mixing with other materials	Sewage sludges that contain unstabilized solids generated in primary wastewater treatment (e.g., heat-dried sewage sludges)
☐	Option 9 503.33(b)(9)	Sewage sludge is injected into soil so that no significant amount of sewage sludge is present on the land surface 1 hour after injection, except Class A sewage sludge which must be injected within 8 hours after the pathogen reduction process	Sewage sludge applied to the land or placed on a surface disposal site. Domestic septage applied to agricultural land, a forest, or a reclamation site, or placed on a surface disposal site
☐	Option 10 503.33(b)(10)	Sewage sludge is incorporated into the soil within 6 hours after application to land or placement on a surface disposal site, except Class A sewage sludge which must be applied to or placed on the land surface within 8 hours after the pathogen reduction process	Sewage sludge applied to the land or placed on a surface disposal site. Domestic septage applied to agricultural land, forest, or a reclamation site, or placed on a surface disposal site

BIOSOLIDS STORAGE

Treatment Facility

From the aerobic digesters, biosolids are dewatered and can be transferred into a truck to either the Douglas County landfill or transported to a private disposal facility in “cake” or liquid form (e.g., Heard Farm). These alternate disposal sites are necessary to accommodate fluctuation in biosolids production rates and equipment maintenance. The digesters are designed with a total volume to accommodate for 128 days of storage.

Staging

The City of Sutherlin does not land apply biosolids. Staging of biosolids is not applicable currently.

Field Storage

Field storage is not authorized by the Department currently.

TRANSPORTATION

The City of Sutherlin owns a 10 yard dump truck to transport biosolids from the wastewater treatment facility either in cake form to authorized disposal sites. The City of Sutherlin may also contract with the Sutherlin Sanitary Service to use a dumpster to transport biosolids to a Douglas County landfill. Alternatively, the City of Sutherlin can contract out biosolids transportation and disposal at a private disposal facility (Heard Farm) or the Sutherlin Sanitary Service. The dump truck is operated by City of Sutherlin’s employees. The city of Sutherlin is able to handle the volume of biosolids produced through these transportation practices.

Dewatered biosolids are loaded from a screw press by an auger conveyor into a dump truck for further processing at an alternative site (Heard Farms). Loading of the dump truck will occur in a garage with a sump in the concrete floor. In case of a spill the biosolids are washed into a catch basin that drains to the influent pump station.

Liquid biosolids are loaded into the tanker truck by being pumped from the digester through a pipe that discharges directly into the truck tank. In case of a spill there is a catch basin directly beneath the tanker truck in the concrete loading dock that drains to the influent pump station.

REMEDIAL PROCEDURES

All spills into waters of the state or spills on the ground surface that are likely to enter waters of the state will be reported immediately to Oregon Emergency Response System (OERS) at 1-800-452-0311 and the Department’s regional biosolids specialist at 541-687-7439. All spills of 40 gallons or more on the ground surface will be reported to the Department’s regional biosolids specialist within 24 hours of the spill incident.

Spill during Transportation of Biosolids

The city of Sutherlin is responsible for cleanup of any biosolids spills that occur while transporting to off site disposal facilities. If a spill occurs during the transport of biosolids between the wastewater treatment facility and biosolids disposal facility, the city of Sutherlin will:

- Contain the spill.

- Post the area and set up temporary fencing if there is a potential for public exposure.
- Remove spilled biosolids with a front-end loader or shovel.
- Cover the area with dry lime if needed.
- Apply absorbent (e.g., sand) if needed.
- Transport spilled product to a department authorized biosolids disposal site.

Solids Treatment Process Failure or Modification

If a mechanical problem occurs with dewatering screw press equipment and replacement parts are not in stock at the treatment facility, an emergency parts order will be placed. During this period, liquid biosolids can be held for approximately 128 days or transported to Heard Farms for disposal.

If maintenance is needed on a treatment process component that will affect compliance with pathogen reduction or vector attraction reduction requirements, the city of Sutherlin will notify the Department and get approval prior to the maintenance activity.

MONITORING AND REPORTING

Monitoring and Sampling Program

The city of Sutherlin does not land apply biosolids. Monitoring and sampling is not currently applicable.

Recordkeeping and Reporting Procedures

The city of Sutherlin does not land apply biosolids.

Annual Reporting

A biosolids annual report is required to be submitted to the Department each year by February 19th or as required by the permit if bulk biosolids have been land applied, or biosolids derived products were sold or given away the previous year. The report will include information on biosolids handling activities and data from the previous calendar year. Some of the information required with the annual report includes:

- Amount of dry tons of biosolids cake generated and disposed of.

Certification Statement

The city **permittee** is capable of meeting Class A/B pathogen reduction and vector attraction reduction requirements. As required under 40 CFR §503.17, the permittee must retain a certification statement indicating whether compliance with pathogen reduction, vector attraction reduction, and certain site restrictions have been met. The certification statement must be retained for a period of five years, and must be submitted with the annual report that is due February 19th or as required by the permit. The **permittee** will retain the following certification statement and it will be signed by a principal executive officer or ranking elected official or their duly authorized representative (e.g., individual or position having responsibility for the overall operation of the system, such as the position of plant manager, supervisor, superintendent or equivalent responsibility).

“I certify, under penalty of law, that the information that will be used to determine compliance with the Class B pathogen requirements in 40 CFR §503.32(b) (2) alternative 1, the vector attraction reduction requirement in 40 CFR §503.33(b) option (4), and the site restrictions in 40 CFR §503.32(b)(5) for each site on which Class B sewage sludge was applied, was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification, including the possibility of fine and imprisonment.”

Signature _____ Date _____

Permittee is also required as the land applier to certify that the management practices in 40 CFR §503.14 are being met. This certification includes that biosolids are being land applied at approved agronomic loading rates as specified in department issued site authorization letters.

“I certify, under penalty of law that the management practices in 40 CFR §503.14 have been met for each site on which bulk biosolids is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification, including the possibility of fine and imprisonment.”

Signature _____ Date _____

BIOSOLIDS CHARACTERISTICS

Pollutant Characteristics

The following table is a representative biosolids analysis for pollutant characteristics. This data and all previous data indicate that pollutant concentrations for all regulated pollutants have been met.

Parameter	Biosolids Analytical Result (mg/kg)	Sample Date	40 CFR §503.13(b)(3) Pollutant Concentration Limits (mg/kg)
Arsenic (As)			
Cadmium (Cd)			
Chromium (Cr)			
Copper (Cu)			
Lead (Pb)			
Mercury (Hg)			
Molybdenum (Mo)			
Nickel (Ni)			
Selenium (Se)			
Zinc (Zn)			

Nutrient Characteristics and Other Parameters

The following table is a representative biosolids analysis for nutrient characteristics and other parameters.

Parameter/measurement unit	Biosolids Analytical Result	Sample Date
Total solids, percent		
Volatile solids, percent		
TKN, percent		
NO ₃ -N, percent		
NH ₄ -N, percent		
Phosphorus (P), percent		
Potassium (K), percent		
pH, standard unit		

BIOSOLIDS UTILIZATION PROGRAM

BIOSOLIDS LAND APPLICATION PLAN

Agronomic Application Rate and Site Crops

Site Inventory of Existing and Potential Sites

Biosolids Land Application Site Inventory

Site Name/Identifier	Type of Crop/Acreage	lb. N/acre	lb. N/site	Time of year applied (month)	Harvest Cycle	Department Authorized?

Site Selection Criteria for a New Site

Public Notification

Site Management Practices

Crop Management Practices



THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.

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MEMORANDUM

DATE June 27, 2024

TO Steve McMillan
Oregon Department of Environmental Quality

FROM Tyler J. Molatore, PE

PROJECT NAME City of Sutherlin – Recycled Water Use Plan

PROJECT NO. 146.60

This Memorandum was developed to address Oregon Department of Environmental Quality (DEQ) review comments in response to the City of Sutherlin's draft Recycled Water Use Plan (RWUP) and the City's responses to the Penalty Enforcement Notice.

1. "Can the City provide a timeline for implementation (items 4, 7.a., and 7.c)?"

RESPONSE: The flow meters at the Golf Course are currently installed, operational, and integrated into the City's Supervisory Control and Data Acquisition System. The City is monitoring the drainage tiles outfalls monthly.

2. Section 5.1 in the Reliability and Redundance it includes a set point as "five percent of the flow turbidity exceeds 5 NTU". I just want to make sure you are aware the turbidity criteria is not exceed 5 NTU more than five percent of the time in a 24 hour period.

- RESPONSE: Section 5.1 of the RWUP is amended to the following, "Turbidity exceeds 5 NTU more than five percent of the time in a 24-hour period."

For the calibration for the continuous turbidity meter uses a 800 NTU turbidity standard solution, is this turbidity meter the appropriate range meter for measuring recycled water criteria as is more than a order of magnitude lower than the turbidity meter calibration standard of 800 NTU?

RESPONSE: The turbidimeter is packaged with the tertiary filtration equipment. The tertiary filter manufacturer and turbidimeter manufacturer have both verified the suitability of the turbidimeter for the application. The turbidity meter will be calibrated in accordance the manufacturer's recommendations.

3. ***Please include for the flow meter's location on the golf course map and include a description (model #s).***

RESPONSE: Figure 9.1.1 has been updated to note the location of the flow meters. Section 9 has been updated to note the following, "Two flow meters are installed to monitor the instantaneous and daily recycled water flow. The flow meters are manufactured by Endress & Houser (Model No. 5W4C1H-155NO/O). The recycled water flows are integrated into the plant SCADA system. The location of the flow meters is identified on Figure 9.1.1."

4. **"Thank you for this for the tracking sheet for determining inches/acre from the flow. In addition, please include how irrigation is scheduled using evapotranspiration, precipitation, and soil type/holding capacity or soil moisture."**

RESPONSE: Section 9 has been updated to include the following information: 1) Soil information from the Natural Resource Conservation Service, and 2) Evapotranspiration data from the Bureau of Reclamation's Lookingglass, Oregon weather station.

In addition, Section 9 has been updated to note The City of Sutherlin will perform monthly audits of the recycled water irrigation system to influence irrigation amounts. The monthly audit will include a review of precipitation values (historical and projected), recycled water irrigation rates as compared to the baseline values from Oregon Crop Water Use and Irrigation Requirements, a review of Bureau of Reclamation's Lookingglass, Oregon weather station data and trends, review of soil moisture data, and other factors.

END OF MEMORANDUM

City of Sutherlin
Douglas County, Oregon

RECYCLED WATER USE PLAN
(REVISED WITH DEQ COMMENTS)

JUNE 2024



The Dyer Partnership
Engineers & Planners, Inc.

Project No. 146.60

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481 S. Main St.
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City of Sutherlin
Douglas County, Oregon

Recycled Water Use Plan
(Revised with DEQ Comments)

June 2024

Project No. 146.60

For
NPDES Permit No. 101993
File No. 86662

Facility:

City of Sutherlin Wastewater Treatment Plant

Physical Address:

City of Sutherlin
4306 Stearns Lane
Sutherlin, OR 97479

Contact Name:

Kristi Gilbert
Phone: 541-459-5768

Mailing Address:

City of Sutherlin
126 East Central Avenue
Sutherlin, OR 97479



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Table of Contents

SECTION 1: INTRODUCTION

1.1 Overview	1-1
--------------------	-----

SECTION 2: BENEFICIAL PURPOSES

2.1 Recycled Water	2-1
--------------------------	-----

SECTION 3: WASTEWATER TREATMENT

3.1 Wastewater Treatment System	3-1
Wastewater Treatment Process	3-1
Control Strategies	3-4
Quantity of Recycled Water.....	3-5
3.2 Water Rights	3-6
Woodruff's Irrigation Water Right	3-7
Lake Farming Company, LLC Water Right.....	3-7
Ford's Pond Water Right.....	3-7
WRD Registration	3-8

SECTION 4: RECYCLED WATER MONITORING & SAMPLING

4.1 Recycled Water Quantity	4-1
4.2 Recycled Water Quality	4-3
Outfall 002a	4-4
Outfall 002b	4-5
Outfall 003	4-6

SECTION 5: SYSTEM MAINTENANCE & CONTINGENCY PROCEDURES

5.1 Maintenance and Contingency	5-1
Operations and Maintenance Manual.....	5-1
Reliability and Redundancy	5-1
Alarms, Controls, and Standby Power.....	5-2
Alarm System Triggers.....	5-3
Class A Recycled Water Startup and Shut-down Procedures	5-4

SECTION 6: RECYCLED WATER TRANSMISSION, STORAGE & DISTRIBUTION

6.1 Recycled Water Storage	6-1
6.2 Recycled Water Transmission, Distribution, & Plumbing ...	6-1

SECTION 7: PUBLIC HEALTH & ENVIRONMENTAL CONTROLS

7.1 Signs	7-1
7.2 Setbacks	7-1
7.3 Special Site Management Restrictions	7-1
7.4 Notification	7-2

SECTION 8: RECORDS & REPORTS

SECTION 9: LAND APPLICATION PLAN

9.1 Oak Hills Golf Course	9-1
Soils	9-2
Net Irrigation Requirement: Current Condition.....	9-2
Net Irrigation Requirement: Future Condition	6-3

SECTION 10: REFERENCES

LIST OF TABLES

1.1.1 City Staff Contact Information.....	1-1
2.1.1 Recycled Water Users Responsible for Program Compliance	2-1
2.1.2 Summary of Beneficial Purposes	2-2
3.1.1 Summary of 2037 Recycled Water Production	3-5
3.1.2 Ford's Pond Water Balance	3-6
3.2.1 Summary of Water Rights	3-7
4.2.1 Recycled Water Quality	4-3
4.2.2 Recycled Water Monitoring Requirements	4-4
4.2.3 Discharge Limits – Outfall 002a.....	4-5
4.2.4 Discharge Limits – Outfall 002b.....	4-5
4.2.5 Recycled Water Limits.....	4-6
9.1.1 NCRS Soils Report – Data Summary.....	9-2
9.1.2 Net Irrigation Requirement – Current Conditions (5 out of 10 yrs) ..	9-2
9.1.3 Net Irrigation Requirement – Current Conditions (19 out of 20 yrs)	9-2
9.1.4 Net Irrigation Requirement – Future Conditions (5 out of 10 yrs)....	9-3
9.1.5 Net Irrigation Requirement – Future Conditions (19 out of 20 yrs) ..	9-3

LIST OF FIGURES

1.1.1	Wastewater Treatment Plant Vicinity Map	1-2
3.1.1	Wastewater Treatment Plant Site Plan	3-2
3.1.2	Wastewater Treatment Plant Process Diagram	3-3
4.1.1	Recycled Water Flow Diagram	4-2
6.2.1	Recycled Water Flow Diagram	6-3
9.1.1	Oak Hills Golf Course Recycled Water Use	9-4

APPENDICES

Appendix A	NPDES Permit
Appendix B	Water Balance Analysis
Appendix C	Golf Course Water Rights
Appendix D	Banducci Water Rights
Appendix E	Ford's Pond Water Rights
Appendix F	WRD Reclaimed Water Registration
Appendix G	Golf Course Irrigation Map
Appendix H	NRCS Soils Report

SECTION 1:

INTRODUCTION

SECTION 1: INTRODUCTION

1.1 Overview

The City of Sutherlin operates a Wastewater Treatment Plant (WWTP) located at 4306 Stearns Lane, Sutherlin, Oregon, 97479. Discharge of treated effluent from the WWTP is regulated under National Pollution Discharge Elimination System (NPDES) Permit Number 101993 issued by the Oregon Department of Environmental Quality (DEQ). A copy of the current NPDES Permit is provided in Appendix A. The City has multiple outfalls: Outfall 001, Outfall 002a, Outfall 002b, and Outfall 003. Outfall permit limitations are described in detail in Section 4 of this plan.

The expiration date for the current NPDES permit is June 30, 2024. In accordance with the NPDES permit, municipal wastewater is treated and effluent is discharged through Outfall 001 during winter months (November 1st through May 31st) to Calapooya Creek. During summer months (June 1st through October 31st) no discharge to waters of the State is allowed. Class A Recycled Water is either land applied or stored in ponds during this period. Class A Recycled Water may also be used year-round in accordance with the requirements of this Recycled Water Use Plan (RWUP). Outfall 002a of the current permit is for discharge of final effluent to Ford's Pond. Outfall 002b allots for discharge from the Ford's Pond impoundment to Ford's Creek.

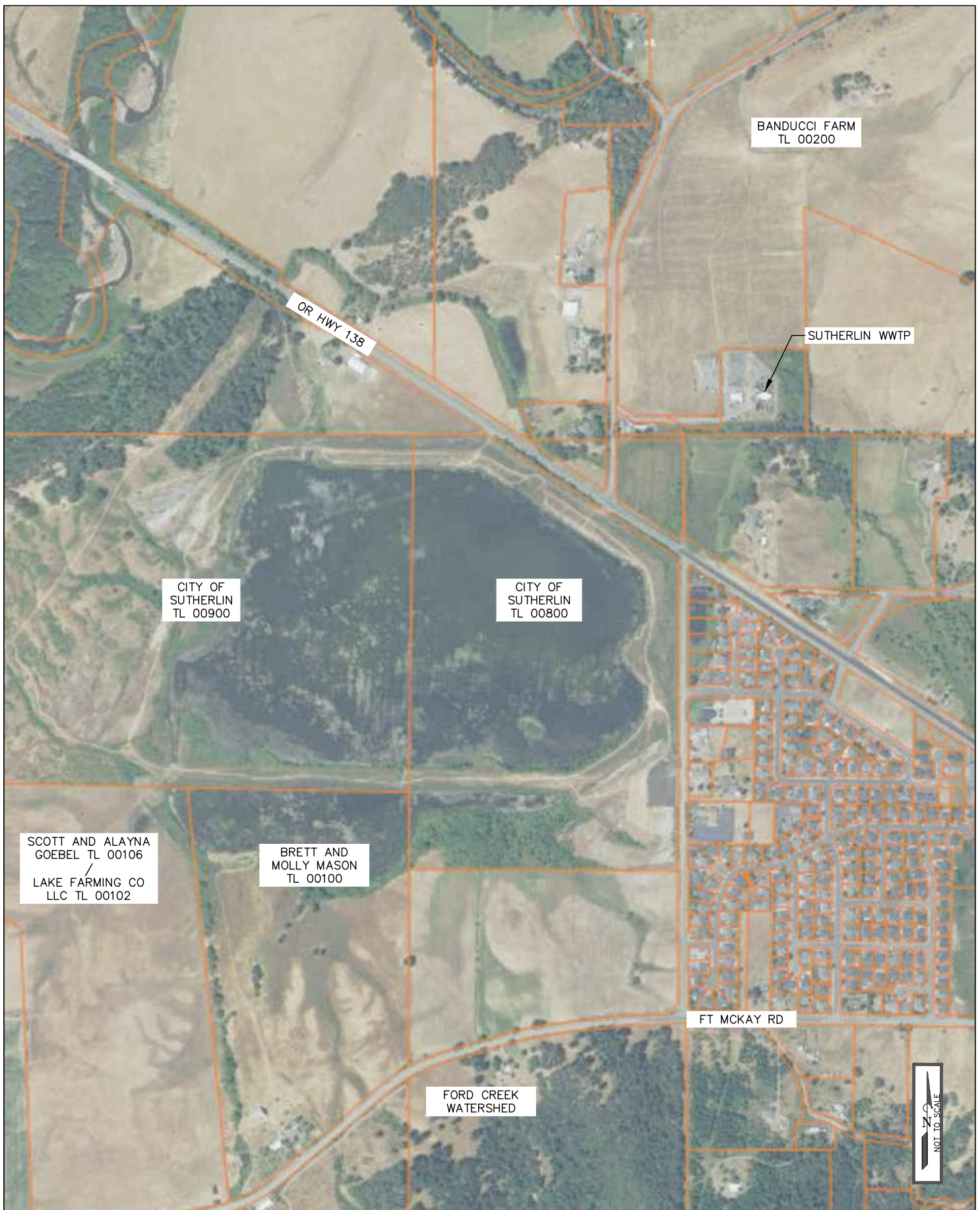
The City's prior Recycled Water Use Plan was prepared by The Dyer Partnership, Engineers & Planners, Inc. in 2018. Due to inaccuracies in the irrigation allocations for The Umpqua Golf Management dba Oak Hills Golf Club (Golf Course), an amendment is necessary. This RWUP provides an updated, comprehensive document that can be used by City employees responsible for implementation, and is intended to supersede any previous plans.

Recycled water storage occurs at a storage pond at the Golf Course. Post-storage the recycled water is irrigated on greens, fairways, and roughs. Ford's Pond, designated as waters of the State, is used for additional effluent storage from June 1st through October 31st. When final effluent is discharged to Ford's Pond, it blends with streamflow from Ford's Creek; and then is either irrigated for agricultural use, or released to Calapooya Creek (after October 31st). The Ford's Pond impoundment may be irrigated for agricultural use for the water users: City of Sutherlin's WWTP, Banducci Farms, Umpqua Resort, Mason Farm, and Goebel / Lake Farming Company.

Sutherlin's recycled water program is governed under Oregon Administrative Rule (OAR) Chapter 340 Division 55 (OAR 340-055) and guided by the Oregon DEQ 2009 Recycled Water Internal Management Directive (IMD). This RWUP is to be updated during each NPDES renewal. Contact information for City Staff responsible for the RWUP is presented in Table 1.1.1.

**TABLE 1.1.1
CITY STAFF CONTACT INFORMATION**

Name	Position	Phone	Email Address
Jerry Gillham	City Manager	541-459-2856	j.gillham@ci.sutherlin.or.us
Kristi Gilbert	Community Development Director	541-459-2856	k.gilbert@ci.sutherlin.or.us
Jody Gardner	Wastewater Division Supervisor	541-459-5768	j.gardner@ci.sutherlin.or.us
After Hours Public Works Emergency	On-Call Staff	541-315-8141 911	-



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	CITY OF SUTHERLIN RECYCLED WATER USE PLAN	FIGURE NO. 1.1.1
DATE: FEB. 2023	WASTEWATER TREATMENT PLANT VICINITY MAP	
PROJECT NO.: 146.60		

SECTION 2:

BENEFICIAL PURPOSES

SECTION 2: BENEFICIAL PURPOSES

2.1 Recycled Water

Recycled water from the City of Sutherlin's Wastewater Treatment Plant (WWTP) will be utilized for crops, Golf Course, recreation, and landscape irrigation. This reduces or eliminates the need for recycled water users to irrigate with local ground water or surface water. Use of recycled water eliminates discharge of treated effluent to surface water (Calapooya Creek) during the summer months.

Contact information for users responsible for compliance with the City's recycled water use program is in Table 2.1.1.

**TABLE 2.1.1
RECYCLED WATER USERS RESPONSIBLE FOR PROGRAM COMPLIANCE**

Name	Site	Location	Contact
Jody Gardner	City of Sutherlin WWTP	Ford's Pond TL 00900,00800	541-459-5768
Bob Banducci	Banducci Farms, LLC	Farm TL 00200	541-643-0685
Scott Zelinski	Umpqua Resort	Golf Course TL 00100,01901,00100	541-459-4422 541-430-1368

Table 2.1.2 summarizes the proposed beneficial uses of the City's recycled water, as required in Oregon Administrative Rules (OAR) 340-055-0025(1)(c). Recycled water will be used to irrigate the Golf Course including: tees, greens, fairways, and roughs. The time period from which recycled water is land applied varies based on weather conditions and other factors.

As defined in the City's Wastewater Facilities Plan Amendment (The Dyer Partnership, 2013) and the Wastewater Treatment Plant record drawings, based on future projections of 2037 Average Dry Weather Flow (ADWF), the projected volume of produced recycled water from May 16th through October 31st, is estimated at 147 Million Gallons (MG).

Table 2.1.2 lists the capacity of each recycled water site that will receive Class A recycled water. This is based on the historical uses and monthly water balances discussed in this Recycled Water Use Plan (RWUP).

**TABLE 2.1.2
SUMMARY OF BENEFICIAL PURPOSES**

Site	Beneficial Purpose	Class of Water	Recycled Water Volumes (MG)	Frequency
Umpqua Resort	Golf Course and Landscape	A	62.8 (5/10 years) ¹ 89.6 (19/20 years) ¹	March through November ^{3,4}
Banducci Farms, LLC	Crops and Pasture	A	See Note 2	April through November

1. Based upon Golf Course net irrigation requirements in Section 9.

2. Water right allows up to 50 percent of the recycled water produced. Reference water right for additional information.

3. Excess recycled water not irrigated is sent to Ford's Pond. Reference Section 3 for water balance information.

4. Recycled water volume based on 5/10 years for irrigation between May 16 - October 31 is 50.75 MG. Recycled water volume based on 19/20 years for irrigation between May 16 - October 31 is 67.39 MG.

SECTION 3:

WASTEWATER TREATMENT

SECTION 3: WASTEWATER TREATMENT

Section 3 describes the treatment system operating at the City of Sutherlin's Wastewater Treatment Plant (WWTP), including information on the quantity and quality of the recycled water, and the permitted use of recycled water.

3.1 Wastewater Treatment System

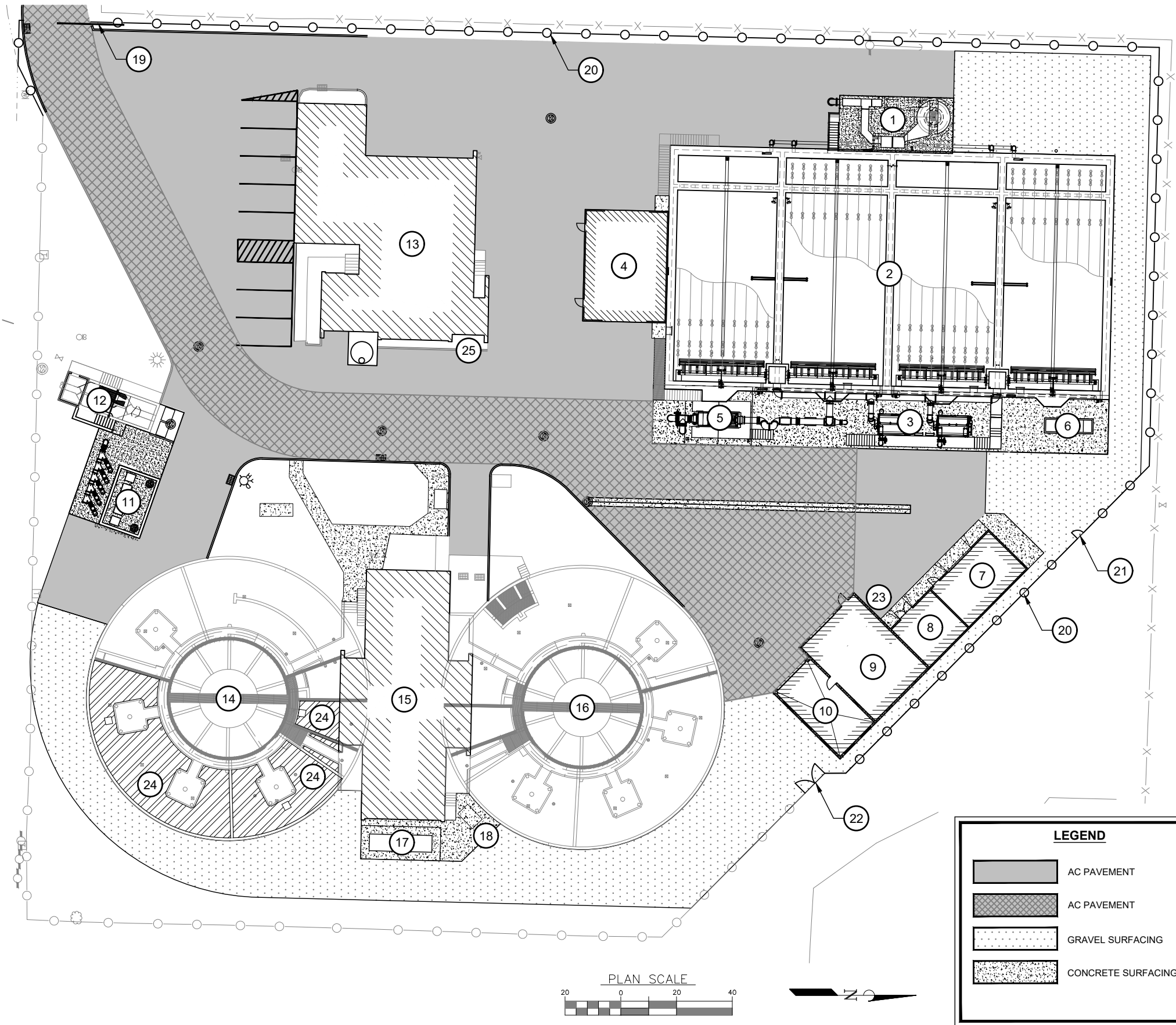
The City of Sutherlin operates a 0.88 Million Gallons per Day (MGD) Average Dry Weather Flow (ADWF) treatment facility which processes wastewater from residential and commercial sources, except for material received from holding tanks at the Public Works Department and the Nonpareil Water Treatment Plant. There are no industrial users in the system.

Wastewater is treated and disposed of in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. 101993 (provided in Appendix A). There are currently multiple effluent outfalls permitted. Outfall 001 is for discharge of disinfected final effluent during the winter months and is located near Rochester Bridge at Calapooya Creek. Outfall 002a is the outfall for final effluent to Ford's Pond. Outfall 002b is permitted to allow discharge from Ford's Pond to Ford's Creek. Outfall 003 is for recycled water to be used for agricultural and landscape irrigation. Outfall 004 is for the distribution of biosolids.

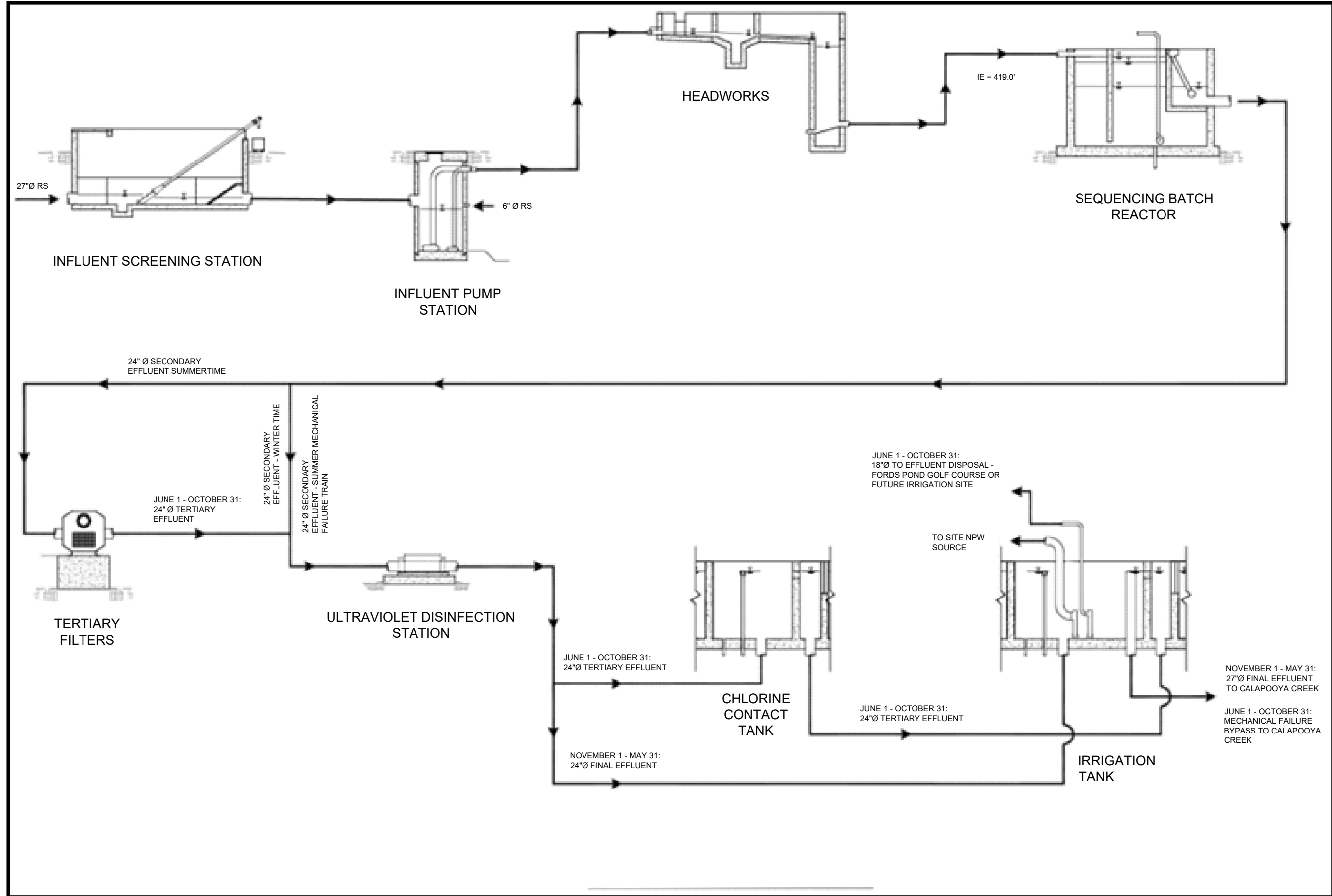
Wastewater Treatment Process

The City's WWTP was initially constructed in 1977 for a design population of 8,000 users. In 2018, the WWTP was upgraded. Previously, the facility was a "donut" style activated sludge plant with a central clarifier. Construction of the new WWTP converted the "donut" style aeration tanks to aerobic digesters, while retaining the chlorine contact chamber and irrigation chamber for recycled water. The current site plan is shown in Figure 3.1.1. Figure 3.1.2 demonstrates the schematic of the wastewater process units. The WWTP includes the following major process units:

- Influent Screening System
- Influent Pump Station
- Headworks / Grit Removal
- Sequencing Batch Reactor (SBR)
- Tertiary Filters
- Ultraviolet (UV) Disinfection System / Sodium Hypochlorite Disinfection System
- Chlorine Contact Chamber
- Recycled Water Pump Station
- Dechlorination System (Ford's Pond)
- Aerobic Digester
- Biosolids Dewatering Screw Press



NO.	CONSTRUCTION NOTES
1	HEADWORKS
2	SEQUENCING BATCH REACTOR (SBR),
3	TERTIARY FILTERS
4	STORAGE BUILDING
5	UV DISINFECTION
6	STAND-BY GENERATOR
7	SBR BLOWER FACILITY
8	ELECTRICAL FACILITY
9	BIOSOLIDS DEWATERING FACILITY
10	DEWATERED BIOSOLIDS FACILITY
11	INFLUENT PUMP STATION
12	INFLUENT SCREENING FACILITY
13	FILTER BUILDING
14	TREATMENT PLANT SOUTH
15	OPERATIONS BUILDING
16	TREATMENT PLANT NORTH
17	NEW STAND-BY GENERATOR
18	BIOSOLIDS DEWATERING FEED PUMP
19	FENCE GATE
20	CHAIN LINK FENCE
21	FENCE GATE (SINGLE)
22	FENCE GATE (DOUBLE)
23	HEAT PUMP
24	TANK COVERS
25	HVAC UNIT



The process units are used to produce Class A Recycled Water during the irrigation season consist of an influent screening system, grit removal system, SBR, tertiary filtration system, UV disinfection system, sodium hypochlorite disinfection system, chlorine contact tank, and dichlorination system. Final effluent from the chlorine contact tank is pumped with vertical turbine recycled water pumps to the various outfalls.

The tertiary filtration system consists of two disc-filters which operate in parallel. The capacity of the filters is based on the ability to process SBR decant at a rate of 3.0 MGD. For redundancy purposes, each disc-filter is able to operate at 3.0 MGD. Under normal operating conditions, both filters will operate simultaneously filtering half of the SBR decant flow. The disc filters have a backwash feature where the backwash wastewater is returned to the influent pump station. In the event one tertiary filter is taken off-line for repairs or maintenance, the remaining disc filter is capable of processing the entire decant flow from the SBR during the recycled water irrigation season.

Filtered plant effluent then undergoes disinfection. For Class A Recycled Water, the primary source of disinfection is the sodium hypochlorite system. The chlorine contact tank is utilized for contact time. From the chlorine contact tank, recycled water enters the irrigation pump tank. Two irrigation pumping systems are located in the irrigation pump tank; one for Golf Course irrigation and the other for conveyance to Ford's Pond. Each pump station is a duplex system. Each pump of the Golf Course pump station is able to convey 1.5 MGD. Each pump of Ford's Pond pump station is capable of conveying 3.0 MGD. Any flow exceeding the irrigation demand is diverted to Ford's Pond for storage. In the unlikely event both filters go off-line or the irrigation pumps are not operating, the flow will discharge through the existing Calapooya Creek outfall.

Flow distribution control strategies are based first on irrigation demands, and second on available storage in Ford's Pond. The Operator will direct the flow distribution destination. A third pumping system supplies minor flows to the non-potable water system. Control strategies associated with the Class A Recycled Water stream are described hereafter.

Control Strategies

After the SBR decant process, effluent from the SBR is conveyed through the tertiary filters. Flow metering occurs after the combined tertiary filter flows.

Next, filtered effluent gravity flows through the UV disinfection system. Sodium hypochlorite is injected into the effluent after the UV disinfection system. Effluent is then conveyed to the chlorine contact tank. From the chlorine contact tank, flow is delivered to the irrigation tank.

There are multiple pumping systems in the irrigation tank. The primary pump system conveys flow to the Golf Course storage pond and to the Banducci Farm irrigation site. The Banducci irrigation site is also fed from Ford's Pond. The secondary pump system conveys flows to Ford's Pond. Recycled water in the chlorine contact tank is utilized as the source for the onsite non-potable water system. Both the Banducci Farm demands and non-potable water demands are negligible. The pump station control strategies are as follows:

Primary Pump System

The primary pump system directs flow to the Golf Course's pond. Each decant cycle volume is conveyed to the irrigation tank. The secondary pump station is locked out of operation and the actuated valve on Ford's Pond distribution lateral is closed during this mode. The Golf Course storage pond is

filled based on the Supervisory Control and Data Acquisition (SCADA) system transmitted Golf Course pond level.

Secondary Pump System

A high-level condition at the Golf Course initiates the secondary pump system. A high-level condition at the Golf Course prompts the actuated valves on the Golf Course lateral and Banducci Farm lateral to close, an actuated valve on Ford's Pond impoundment distribution lateral opens, and the secondary pump station operates. All excess final effluent is conveyed to Ford's Pond.

Non-potable System

Two non-potable pumps convey water from the irrigation tank. Recycled water is supplied for processing equipment and plant wash-down.

In an irrigation tank overflow event, the overflow is bypassed to Outfall 001 (Calapooya Creek).

Quantity of Recycled Water

Treated effluent quantities are projected to the year 2037 as reported in the Wastewater Facilities Plan Amendment (The Dyer Partnership, 2013) and record drawings. Irrigation quantities are based on historical demands of the largest user, the Umpqua Golf Course. Excess flows will be diverted to Ford's Pond impoundment for storage from June 1st through October 31st. A summary of the projected recycled water quantity to be produced is provided in Table 3.1.1.

**TABLE 3.1.1
SUMMARY OF 2037
RECYCLED WATER PRODUCTION**

Month	Quantity Produced ¹ (MG)	Quantity Irrigated ² (MG)	Excess Class A (MG)
May	13.2	-6.18	7.02
June	26.4	-9.8	16.6
July	27.28	-14.9	12.4
August	27.28	-11.88	15.4
September	26.4	-7.22	19.18
October	27.28	-0.75	26.53
Total	147	-50.75	97

1. Based on ADWF (2037) of 0.88 MGD, and land application of recycled water between May 16th and October 31st.

2. Net irrigation requirement based on 5 out of 10 years. Reference Section 9 for additional information.

Approximately 147 Million Gallons (MG) of Class A Recycled Water will be produced by the WWTP in the year 2037. The balance of 97 MG will be conveyed to Ford's Pond impoundment with 50 MG disposed of at the Golf Course.

The volume of storage available in Ford's Pond impoundment is a function of rainfall, evaporation, Ford's Creek streamflow, and the irrigation demand. Irrigation demands are estimated from the largest user's water rights, Lake Farming Company, LLC and Scott Goebel (previously the Wilde Farm). A water balance was originally prepared as part of the 2018 Recycled Water Use Plan (The Dyer Partnership, 2018). This Recycle Water Use Plan (RWUP) amends the quantity of recycled water

produced based on the 2037 ADWF flow projections listed in the 2013 WWFP Amendment, record drawings, and revised recycled water allocations for the Golf Course. Table 3.1.2 summarizes the water balance for Ford's Pond impoundment. The water balance methodology and basis, as developed in the 2018 Recycled Water Use Plan, remains unchanged.

TABLE 3.1.2
FORD'S POND WATER BALANCE

Month	Class A Inflow (MG)	Pond Rainwater (MG)	Ford's Creek Inflow (MG)	Pond Evap. (MG)	Outflow Agg. Irr. (MG)	Accum. Volume (MG)	Pond Change in Depth (feet)
May	7.02	6.19	5.14	-11.33		7.01	0.24
June	16.6	3.13	1.67	-13.92	-4.07	3.4	0.11
July	12.4	1.29	0.05	-19.27	-4.07	-9.6	-0.32
August	15.4	1.49	0.06	-16.66	-4.07	-3.8	-0.13
September	19.18	2.96	1.36	-11.11	-4.07	8.3	0.28
October	26.53	7.04	13.41	-5.2		41	1.4
						Total	1.58

By the end of October, Ford's Pond will require approximately 1.58 feet of storage. A detailed water balance is provided in Appendix B.

3.2 Water Rights

This section summarizes water rights for each beneficial use. Recycled water produced can be sent to the Golf Course, the Banducci Farm, LLC, or to authorized users specified in Table 2.1.1.

Water right documents and water use agreements associated with the Golf Course are included in Appendix C. The Oak Hills Golf Club holds certificates of Water Rights 48815 (Permit R-6140) and 48816 (Permit S-37945) to store and use treated municipal effluent from the City's WWTP. Permit R-6140 authorizes storage of up to 3.6-acre feet of water from an *"unnamed natural drainageway a tributary of Calapooya Creek appropriated under Permit S-37945."* Permit No. S-37945 authorizes use of *"waters of water treatment and discharge and reservoir, constructed under Permit No. R-6140,"* for irrigation of 38.5-acres, the amount used is not to exceed 0.48 cubic feet per second (cfs) *"water treatment discharge; 3.6-acre feet stored water only"* measured at the point of diversion.

On June 13, 1977, the City and Oak Hill Golf Club's predecessor entered into a Sewer Treatment Facility Water Use Agreement (1977 Agreement). On April 28, 2004, the City entered into the First Amendment to Sewer Treatment Facility Water Use Agreement with Van De Hey's successor, L&H Lumber Company, dba Oak Hills Golf Club (2004 Agreement). The 2004 Agreement specifies a maximum amount of reclaimed water released to the Golf Course of 193 million gallons per year, along with other constraints on use.

GSI Water Solutions, Inc. prepared a Municipal Reclaimed Water Registration Form on behalf of the City of Sutherlin in 2022. The reclaimed water registration was to amend the area irrigated at the Golf Course. A copy of the reclaimed water registration form is included in Appendix F. The total acres specified in the Municipal Reclaimed Water Registration Form is based on where the irrigation system could be expanded in the future at the Golf Course.

Banducci Farms, LLC owns 102.66 acres immediately adjacent to the City’s WWTP. The water right documents associated with the Banducci Farms, LLC property are provided in Appendix D.

Recycled water that is not irrigated at the Golf Course or sent to Banducci Farm, LLC is conveyed to and stored in Ford’s Pond. There are three registered water rights for Ford’s Pond, two for irrigation beneficial use, and one for recreational beneficial use. Water rights documents for Ford’s Pond are provided in Appendix E. The following is a summary of the water rights associated with Ford’s Pond.

Woodruff’s Irrigation Water Right

The Woodruff’s irrigation water right is for irrigation of 6.0 acres at 0.075 cfs from Ford’s Creek with any deficiency to be replenished during March 1st through October 31st with 6.5 acre-feet (AF) of stored water (Ford’s Pond), and limited to 2.5 acre-feet for each acre (total of 15 AF) irrigated during the irrigation season. The current property owner is Mason. The current agricultural use is a hay field. The irrigation system for the Mason property is located on the southern side of the dike which intersects Ford’s Pond. Final effluent from the City is discharged into the northern side of the dike.

Lake Farming Company, LLC Water Right

A 50 AF water right is held by Lake Farming Company, LLC and Scott and Alayna Goebel. This water right is for the purpose of irrigating 163.1 acres not to exceed 2.5 AF per acre for each acre irrigated during the irrigation season. Current agricultural use is a hay field and olive orchard.

Ford’s Pond Water Right

The City of Sutherlin Ford’s Pond property (formerly an Oregon Pacificwest Development, LLC water right), has water rights for recreation and irrigation. The maximum storage volume is 980 acre-feet, of which 880 acre-feet are for recreational use; 50 acre-feet are for irrigation purposes. Irrigation use may not decrease the recreational use (880 acre-feet) reservoir level.

Table 3.2.1 summarizes the maximum allowable water right for each beneficial user. A water balance analysis based on environmental conditions and nitrogen loadings is provided in Section 9.

TABLE 3.2.1
SUMMARY OF WATER RIGHTS

Site	Location	Quantity (AF per year)	Notes
Umpqua Resort	Golf Course TL 00100,01901,00100	592	Applied in conformance with the Municipal Reclaimed Water Registration Form from GSI Water Solutions, Inc. in addition to the Land Application Plan (Section 9). The agreement is to use up to 193 MG.
Banducci Farms, LLC	Farm TL 00200	50% WWTP Effluent	50% of the WWTP effluent. Reference water right documents.
City of Sutherlin	Ford’s Pond Recreational TL 00900,00800	880	Blended storage, 880 AF minimum reservoir level.

Site	Location	Quantity (AF per year)	Notes
City of Sutherlin	Ford's Pond Irrigation TL 00900,00800	50	Blended storage, 50 AF not to exceed 2.5 AF per acre for each acre irrigated.
Scott and Alayna Goebel / Lake Farming Co, LLC	Farm TL 00106 / Farm TL 00102	50	Blended storage, 50 AF not to exceed 2.5 AF per acre for each acre irrigated.
Mason	Farm TL 00100	15	15 AF not to exceed 2.5 AF per acre for each acre irrigated. Water source derived from south of dike intersecting Ford's Pond.

WRD Registration

The Oregon Water Resource Department (WRD) has developed a registration process which allows the recycled (reclaimed) water beneficial use without acquiring a water right. The Golf Course and Banducci Farm, LLC both have water rights to the City's recycled water. The Mason property, Lake Farming Company LLC / Scott and Alayna Goebel property, and the City of Sutherlin have water rights to Ford's Pond. Ford's Pond contains a blend of natural drainage flows (Ford's Creek) and final effluent from the City of Sutherlin's WWTP. The Oregon Water Resource Department registration provides a process to resolve claims of injury with beneficial users and other water rights holders.

GSI Water Solutions, Inc. completed a Municipal Reclaimed Water Registration Form on behalf of the City of Sutherlin in 2022 for the Golf Course. The Water Registration Form was updated to reflect the actual area irrigated at the Golf Course. The Municipal Reclaimed Water Registration Form for the Golf Course is included in Appendix F.

SECTION 4:

RECYCLED WATER MONITORING & SAMPLING

SECTION 4: RECYCLED WATER MONITORING & SAMPLING

Section 4 describes the recycled water monitoring and sampling procedures for the recycled water reuse program per Oregon Administrative Rules (OAR) 340-055-0025(1)(e). The City of Sutherlin's Wastewater Treatment Plant (WWTP) produces Class A Recycled Water.

4.1 Recycled Water Quantity

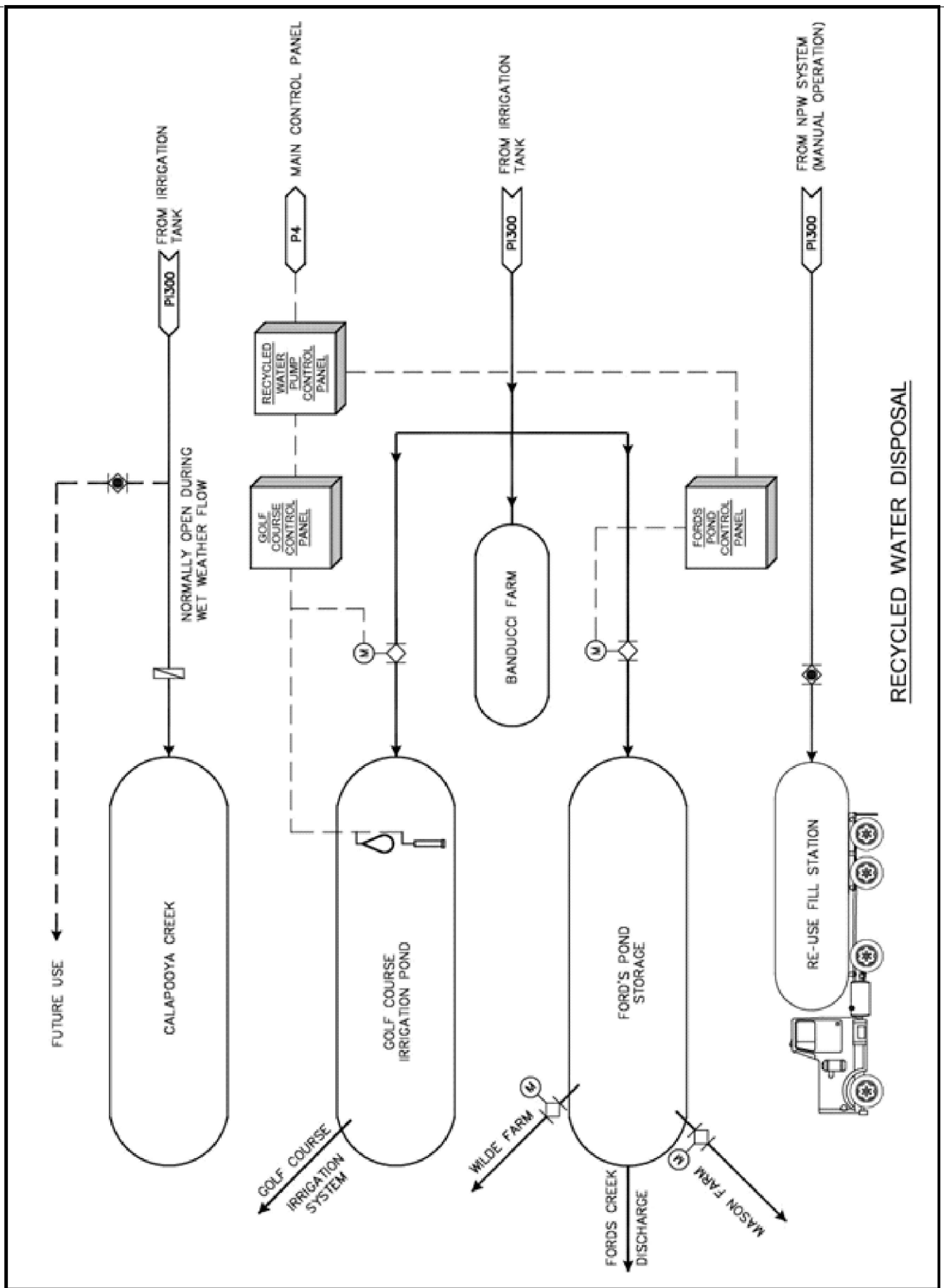
Class A Recycled Water is produced at the WWTP during the dry season, generally beginning in May and continuing into October. Based on the City's Wastewater Facilities Plan Amendment (The Dyer Partnership, 2013) the projected 2037 Average Dry Weather Flow (ADWF) is 0.88 Million Gallons per Day (MGD).

The future quantity of recycled water produced from June 1st through October 31st, is up to 134 Million Gallons (MG) per year. For drier years, if the City can irrigate in May the irrigation will generally begin approximately May 16th and continuing through October. The future quantity of recycled water is projected at 147 MG. A water balance analysis is provided in Section 3, which estimates the quantity of recycled water produced, the irrigation allocations for the Golf Course, and the excess water delivered to Ford's Pond.

Total recycled water flow is measured by a magnetic flow meter located between the tertiary filters and the Ultraviolet (UV) disinfection system. Effluent from the UV system flow is conveyed, after sodium hypochlorite injection, to the chlorine contact chamber and irrigation tank.

Each distribution lateral leading from the irrigation tank is directed to various recycled water outfalls by actuated valves, and flows are measured individually by magnetic flow meters. These distribution lines convey final effluent to Ford's Pond and recycled water to the Golf Course and/or to Banducci Farm, LLC. Each of the magnetic flow meters and actuated valves are connected to the WWTP's control and Supervisory Control and Data Acquisition (SCADA) system located in the Operations Building. A water balance analysis estimates the recycled water flow distribution is described in Section 3.

Figure 4.1.1 is a recycled water process diagram.



RECYCLED WATER DISPOSAL

THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	CITY OF SUTHERLIN RECYCLED WATER USE PLAN	FIGURE NO. 4.1.1
DATE: JAN 2023	RECYCLED WATER FLOW DIAGRAM	
PROJECT NO.: 146.60		

4.2 Recycled Water Quality

The City of Sutherlin has multiple outfalls: Outfall 001, Outfall 002a, Outfall 002b, and Outfall 003. Each outfall is subject to unique discharge permit requirements as specified in the City's National Pollutant Discharge Elimination System (NPDES) permit. The following subsections list the requirements and limitations of each outfall and their subsequent discharge permit requirements. Additional information is provided in the NPDES permit, located in Appendix A. The City is authorized to distribute recycled water if the water meets the following criteria:

- Treated and used according to the criteria listed in Table A4 of the NPDES permit.
- Managed in accordance with the Oregon Department of Environmental Quality (DEQ) approved Recycled Water Use Plan (RWUP); unless exempt as provided in Schedule D.
- Used in a manner and applied at a rate that does not have the potential to adversely impact groundwater quality.
- Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.
- Irrigated using sound irrigation practices to prevent: offsite surface runoff or subsurface drainage through drainage tile; creation of odors, fly and mosquito breeding, or other nuisance conditions; and, overloading of land with nutrients, organics, or other pollutants.

The current WWTP is capable of producing Class A effluent during the recycled water season with the Sequencing Batch Reactors (SBR) and tertiary filters. Historical effluent performance data is summarized in this section, as reported in the City of Sutherlin's 2022 Annual Recycled Water Use Summary. A copy is also located in Appendix A. The quality of recycled water, as reported in the City's 2022 Annual Recycled Water Use Summary, is summarized in Table 4.2.1

**TABLE 4.2.1
RECYCLED WATER QUALITY**

Parameter	Value
pH, SU	6.7 to 7.1
Total Coliform, organism per 100 mL ¹	
7-day median	1
Maximum in any sample	61.3
Turbidity, NTU	
Average	0.14
Maximum at any time	1.11
TKN, mg/L	1.09
Nitrate + Nitrite – N, mg/L	4.04
Ammonia – N, mg/L	
Daily maximum	3.7 mg/L
Monthly Average	0.6 mg/L
Residual Cl, mg/L	2.2

1. Defined from the 2022 Recycled Water Use Summary. Data from June through October.

Monitoring of recycled water is completed in accordance to the NPDES permit. Table 4.2.2 lists the monitoring requirements for recycled water land application.

**TABLE 4.2.2
RECYCLED WATER MONITORING REQUIREMENTS**

Item or Parameter	Minimum Frequency	Sample Type / Required Action
Total Flow (MGD) or Quantity Irrigated (inches/acre)	Daily	Measurement
Chlorine Total Residual (mg/L)	Daily	Grab
pH	2/week	Grab
Total Coliform	Daily – Class A Weekly – Class C	Grab
Turbidity	Hourly – Class A	Measurement

Continuous inline turbidimeters are located on the outlet of each tertiary filter. Turbidimeters are calibrated annually in accordance with manufacturer recommendations. The manufacturer calibration procedures are included in Appendix A for reference.

In the spring prior to bringing the filters online, the filters are monitored for two weeks to verify the effluent turbidity complies with the discharge permit limits. During the verification time period, treated effluent is released to Calapooya Creek, in accordance with NPDES permit requirements related to the surface water outfall. Grab samples for chlorine residual, pH, and total coliform are taken at the irrigation tank once per day, when recycled water is being produced and conveyed.

A laboratory benchtop turbidity analyzer (HACH model TL 2300) will be used to analyze grab samples of the tertiary filter effluent, and for confirmation the process probes within the tertiary filters are calibrated and functioning appropriately.

The City uses Standard Methods 9223 B procedures when testing for total coliform.

Outfall 002a

Outfall 002a is for the discharge of final effluent to Ford's Pond. Discharge permit limits for this outfall are listed in Table 4.2.3.

**TABLE 4.2.3
DISCHARGE LIMITS – OUTFALL 002A**

Parameter	Monthly Average	Weekly Average / Daily Maximum
BOD ₅ and TSS	10 mg/L, 73 lbs/day	15 mg/L (weekly average), 110 lbs/day (weekly average)
% Removal	BOD ₅ and TSS percent removal efficiency may not be less than 85% monthly average	-
pH (Final ¹)		Between 6.5 and 8.5 SU (weekly average)
pH (Interim ¹)		Between 6.3 and 8.5 SU (weekly average)
<i>E. coli</i>	126 organisms per 100 ml ³	406 organisms per 100 ml ² (daily maximum)
Chlorine, Total Residual	0.0053 mg/L ⁴	0.019 mg/L ⁴ (daily maximum)
Ammonia, Total (Final ¹)	2.0 mg/L	3.5 mg/L (daily maximum)
Ammonia, Total (Interim ¹)	5.0 mg/L	5.0 mg/L (daily maximum)

1. These interim limits are effective upon permit issuance. The final limits are effective after completion of the compliance schedule as specified in Schedule C of the NPDES permit.
2. Reported as a monthly geometric mean.
3. Permittee is in compliance with the daily limit if the geometric mean of at least 5 re-samples taken at 4-hour intervals beginning within 48 hours after the original sample is less than or equal to 126 *E. coli* organisms/100 mL.
4. DEQ has established a minimum Quantitation Limit (QL) of 0.05 mg/L for total residual chlorine. Since the total residual chlorine limits are lower than the QL, DEQ will use the QL as the compliance evaluation level.

Outfall 002b

Outfall 002b is for discharge from Ford's Pond to Ford's Creek. Ford's Creek discharge is only allowed from November 1st to May 31st. Table 4.2.4 lists the discharge limits associated with Outfall 002b.

**TABLE 4.2.4
DISCHARGE LIMITS – OUTFALL 002B**

Parameter	Time Period	Effluent Limit
Effluent Flow	June 1 – October 31	No discharge (Daily max limit = 0 MGD)

Outfall 003

Outfall 003 is for recycled water irrigation. Recycled water permit limitations are listed in Table 4.2.5.

TABLE 4.2.5
RECYCLED WATER LIMITS

RECYCLED WATER LIMITS Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
Class A Recycled Water must be oxidized, filtered and disinfected. Before disinfection, turbidity may not exceed: • 2 NTUs (mean) within a 24-hour period. • 5 NTUs more than five percent of the time within a 24-hour period. • 10 NTUs at any time. After disinfection, total coliform may not exceed: • A median of 2.2 organisms per 100 mL, based on the last 7 days that analyses have been completed. • 23 organisms per 100 mL in any single sample.	Class A Recycled Water may be used for: • Class B, Class C, Class D, and nondisinfected uses. • Irrigation for any agricultural or horticultural use. • Landscape irrigation or parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public. • Commercial car washing or fountains when the water is not intended for human consumption. • Water supply source for non-restricted recreational impoundments.
Class B recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 2.2 organisms per 100 mL, based on the last 7 days that analyses have been completed. • 23 total coliform organisms per 100 mL in any two consecutive samples.	Class B recycled water may be used for: • Class C, Class D, and nondisinfected uses. • Stand-alone fire suppression systems in commercial and residential building, non-residential toilet or urinal flushing, or floor drain trap priming. • Water supply source for restricted recreational impoundments.
Class C recycled water may be oxidized and disinfected. Total coliform may not exceed: • A median of 23 total coliform organisms per 100 mL, based on results of the last 7 days that analyses have been completed • 240 total coliform organisms per 100 mL in any two consecutive samples.	Class C recycled water may be used for: • Class D and nondisinfected uses. • Irrigation of processed food crops. • Irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly onto the soil. • Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses. • Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural firefighting using aircraft, street sweeping, or sanitary sewer flushing.

SECTION 5: SYSTEM MAINTENANCE & CONTINGENCY PROCEDURES

SECTION 5: SYSTEM MAINTENANCE & CONTINGENCY PROCEDURES

Section 5 describes how the City of Sutherlin's Wastewater Treatment Plant (WWTP) equipment and processes will be maintained per Oregon Administrative Rules (OAR) 340-055-0025(1)(f), as well as a description of contingency procedures per OAR 340-055-0025(1)(d).

5.1 Maintenance and Contingency

Operations and Maintenance Manual

Operations at the WWTP specify the manufacturer's suggested maintenance intervals for the equipment utilized at the facilities. The WWTP was designed with redundant systems to facilitate maintenance and repair requirements of the various systems. The WWTP is also equipped with requisite spare parts, including spare motors and pneumatic valve actuators, to replace parts expeditiously in the event of equipment failure.

The City also uses Fluke Reliability's eMaint online software as a means to schedule maintenance requirements and frequencies at the WWTP. Additional information of the maintenance and contingency procedures can be found in the Operation and Maintenance (O&M) manual for the WWTP, as prepared by The Dyer Partnership as part of the 2018 WWTP Upgrade project.

Automated alarm systems monitor the recycled water stream. When equipment failure is sensed or a parameter is out of range, the automated alarms are triggered. The following situations will be set to trigger alarms.

Reliability and Redundancy

The recycled water system has a sufficient level of redundant treatment components and monitoring equipment to prevent inadequately treated recycled water from being used. The design of the wastewater treatment facility process equipment allows for flexibility of operation which enables permit compliance under varying circumstances.

The influent screening system, influent pump station, Sequencing Batch Reactor (SBR), tertiary filters, disinfection systems, and effluent pumping systems are all designed for redundancy. The SBR process includes four basins and provides operational flexibility and redundancy. Two tertiary filters operate in parallel providing full redundancy filtration of SBR effluent. Continuous inline turbidimeters monitor the quality of effluent. Real-time turbidity data is integrated into the plantwide Supervisory Control and Data Acquisition (SCADA) system. Backwash from the tertiary filters is conveyed to the influent pump station. An alarm is triggered when the 24-hour mean turbidity exceeds 2 Nephelometric Turbidity Units (NTU). Filtered effluent drains to the influent pump station if any of the following set points occur:

- Turbidity is greater than 10 NTU.
- Turbidity exceeds 5 NTU more than five percent of the time in a 24-hour period.

In the event the effluent turbidity exceeds discharge permit requirements, the City will manually turn off the Golf Course pumps and begin discharging effluent to the Ford's Pond outfall. The City's procedure for addressing turbidity alarms is included in Appendix A. If the effluent turbidity exceeds Class A

Recycled Water standards, the City will immediately notify Golf Course personnel and discontinue delivery of recycled water to the Golf Course.

Each filter is designed for the peak flow (i.e. the peak SBR decant rate) anticipated during the recycled water irrigation season. In the event of mechanical failure of one tertiary filter, the other tertiary filter can process the entire flow from the SBR. In the event both filters simultaneously fail, a mechanical failure alarm is activated, the irrigation pumps are shut off, and a mechanical failure sequence is initiated.

The sodium hypochlorite system is the primary means of disinfection for the WWTP when producing Class A Recycled Water. Following Ultraviolet (UV) disinfection, sodium hypochlorite is injected into the tertiary effluent, then conveyed to the chlorination tank for contact time, and finally sent to the irrigation tank.

The sodium hypochlorite feed system includes a chlorine analyzer which senses the real-time chlorine residual in the final effluent, and communicates the data to the SCADA system. In the event the chlorine residual analyzer senses a chlorine residual below the Operator selected set point in the SCADA system, an alarm shall be triggered, shutting off all effluent reuse pumping systems.

A UV disinfection system was also installed at the WWTP; primarily for disinfecting SBR effluent when discharging to the Calapooya River. Two UV banks are provided. In the event one UV bank fails, operation is automatically transferred to the second UV bank. Automated alarms for the UV disinfection system include: low water level, lamp out, ballast out, low UV intensity, and module communication failure.

In the event the effluent Total Coliform exceeds discharge permit requirements, the City will manually turn off the Golf Course pumps and begin discharging effluent to the Ford's Pond outfall. The City's procedure for addressing Total Coliform exceedances is included in Appendix A. If effluent Total Coliform exceeds Class A Recycled Water standards, the City will immediately notify Golf Course personnel and discontinue delivery of recycled water to the Golf Course.

Recycled water is pumped from the WWTP to an irrigation pond (Pond No. 1) at the Golf Course. Recycled water is used to irrigate the Golf Course including fairway, greens, roughs, and other areas from Pond No. 1. The City will deliver recycled water to Pond No. 1. The City will manage the volume of delivered water to prevent overflow discharge from Pond No. 1 to downstream ponds. Overflow prevention is also achieved by frequently evaluating the Golf Course's need for irrigation. Site visits are performed daily at Pond No.1 by Golf Course personnel in order for irrigation needs to be determined onsite.

Pond No. 1 includes high level and low-level floats monitored by the City's SCADA system. When a high liquid level condition in Pond No. 1 is activated, final effluent will be automatically directed to Ford's Pond. The City will conduct periodic site visits, as necessary, to confirm proper float functionality and pond liquid level management. Coordination with plant personnel is currently under way in order to integrate a high-level float alarm and a level transducer to use as a primary sensor; allotting the utilization of the floats as backup for redundancy.

Alarms, Controls, and Standby Power

The WWTP includes a SCADA system. Alarm devices are established in accordance with OAR 340-055-0030(2). The City verifies alarms are functional annually. An alarm system will autodial a list of phone

numbers until the call is answered. If no one answers, the alarm system will re-call the list. City employees rotate on-call shifts. If there is no response by one of the on-call employees, the system will autodial other employees. When the alarm system calls, it identifies the situation which caused the alarm. Alarms are included for each process area, including the following:

- Influent Screening System
- Influent Pump Station
- Headworks / Grit Removal
- SBR
- Tertiary Filters
- UV Disinfection System
- Sodium Hypochlorite Disinfection System
- Chlorine Contact Basin
- Recycled Water Pump Station
- Golf Course Pond No. 1

The backup generator is located at the north end of the WWTP site. The generator starts automatically and runs when the power from the grid is lost. With this generator running, the WWTP's critical process units can operate normally. The generator runs test cycles weekly to ensure start up and proper working order in the event of a power grid loss. The generator is capable of powering the plant during a power failure.

Alarm System Triggers

The alarms utilized at the plant are triggered based on their specified conditions being met. In the event of a loss of power, two back-up generators are automatically started to provide sufficient power for plant operation.

The tertiary system at the plant will alarm if the backwash pump fails, the disc filter is at a high or low level, if the drum has failed, or if the effluent valve is closed or experiencing failure. The alarm will also signal if the Programmable Logic Controllers (PLC) faults, or if there is a loss of power. There is an alarm for both tertiary filters No. 1 and No. 2.

If the disinfection system experiences a pump failure (to start or stop) or any general pump alarm, plant personnel will be notified. Notification also occurs if there is a valve failure at Calapooya Creek or in the chlorine contact basin. The UV system alarms are triggered by the cooling pump, lamp failure, or an issue with the influent flow vault.

The recycled water pump station will send an alarm if the chlorine level is under 0.2 milligrams per liter (mg/L) or over 5.0 mg/L. Alarms will also activate if the basin has reached the designated high or low level, if the level sensor has failed, or if the pump has faulted.

Class A Recycled Water Startup and Shut-down Procedures

In order for Plant Operators to successfully achieve Class A Recycled Water, the tertiary treatment and irrigation systems are regularly maintained and prepared for summer irrigation needs. Operators first drain the tertiary filters and hose them down with potable water. The filter panels are removed and cleaned in accordance with manufacturer recommendations. Once reassembled the filters are filled with potable water and bleach. The filters are backwashed weekly to ensure no detrimental build-up develops on the filter panels while on standby. Backwash nozzles are inspected in accordance with manufacturer recommendations and cleaned as necessary.

The irrigation chamber and chlorine contact basins are drained and cleaned annually. Operations staff enter the basins for pressure washing, directing the debris to exit through the mud valves to be sent to the plant pump station and influent pump station. The filter valves are then opened, and the filter bypass valve is closed. The chlorine pumps are turned to auto and the chlorine dose is manually checked by plant Operators. The chlorine feed water valve is also turned on to allow the chlorination of carry water.

Outfall No. 2 is then opened to fifty percent, and Outfall No. 1 is closed. The chlorine contact basins are static, and effluent is monitored for chlorine residual as they fill. No effluent is pumped from the irrigation chamber until chlorine residual and total coliform tests have been confirmed to be in compliance with Class A Recycled Water standards; testing is confirmed 24 hours after the final contact chamber has filled.

The City will notify the Golf Course each year that the recycled water contained within the Golf Course irrigation pond must be completely used for irrigation on the last day(s) of irrigation. The irrigation pond will be emptied of recycled water at the end of the irrigation season.

SECTION 6:
RECYCLED WATER TRANSMISSION, STORAGE &
DISTRIBUTION

SECTION 6: RECYCLED WATER TRANSMISSION, STORAGE & DISTRIBUTION

Section 6 describes recycled water transmission, storage and distribution system.

6.1 Recycled Water Storage

At the City of Sutherlin's Wastewater Treatment Plant (WWTP) recycled water is disinfected and then stored in a 106,000-gallon chlorine contact tank and a 150,000-gallon irrigation holding tank. From the irrigation holding tank, recycled water is pumped to Ford's Pond, the Golf Course, or other recycled water sites identified in this Recycled Water Use Plan (RWUP). Recycled water storage is located at the Golf Course. Final effluent in excess of the summertime irrigation capacity will be diverted to Ford's Pond and stored for irrigation and winter time discharge to Calapooya Creek.

Recycled water is pumped to the Golf Course and stored in Pond No. 1. Recycled water is irrigated from this pond. The City will deliver recycled water to the Umpqua Golf Course to prevent overflow from Pond No. 1.

Excess final effluent is diverted to Ford's Pond for long term storage and irrigation. Inflow to Ford's Pond impoundment includes runoff from Ford's Creek, rainwater, and final effluent from the City of Sutherlin's WWTP. Ford's Creek has a 570-acre drainage basin that inflows to Ford's Pond. In addition, 880 acre-feet of Ford's Creek runoff are reserved through water rights for recreational purposes. Rainwater inflows to Ford's Ponds result from over 90 acres of surface area drainage. Each year between October 31st and May 31st rainwater, Ford's Creek basin runoff, and final effluent from the City's WWTP will be released to Ford's Creek through an outlet structure located at the north east corner of Ford's Pond.

6.2 Recycled Water Transmission, Distribution, and Plumbing

The effluent from the tertiary filters is disinfected, conveyed to the chlorine contact tank, and sent to the irrigation tank. Four pump systems convey water from the irrigation tank to the Golf Course or Ford's Pond. The Golf Course pump system is a duplex vertical turbine with variable speed pumps with a design capacity of 1,042 gallons per minute (gpm) at 88 feet total dynamic head. The Ford's Pond pump system is a duplex vertical turbine with variable speed pumps with capacity of 2,083 gpm at 26 feet total dynamic head. Each of these pump stations were designed to operate at the Sequencing Batch Reactor (SBR) summer decant rate of 3 Million Gallons per Day (MGD).

A duplex non-potable recycled water pump system is located downstream of the chlorine contact tank. Each pump is designed to convey approximately 100 gpm. The non-potable water system is used for plant equipment wash down, and also supplies a recycled water tanker truck fill station.

A single 18-inch diameter force main conveys recycled water from the irrigation tank to the various outfalls. Immediately downstream of the irrigation tank is a tee in the force main. One branch of the force main leads to the Banducci Farm, LLC, the other branch leads to a distribution box located near Highway 138. From the distribution box, one lateral conveys recycled water to the Golf Course storage pond and the other conveys final effluent to Ford's Pond. Each of the three laterals (Banducci Farm, LLC, Golf Course, and Ford's Pond) has an inline actuated valve which is controlled by the City's selection and Supervisory Control and Data Acquisition (SCADA) system at the WWTP.

The City of Sutherlin and Scott and Alayna Goebel / Lake Farming Co, LLC have water rights to 50 acre-feet of Ford's Ponds storage. Mason has a 15 acre-feet water right to Ford's Pond. Water rights specify a private flow meter is to be maintained by the beneficial user at the point of diversion from Ford's Pond.

Figure 6.2.1 shows the recycled water distribution system.

C:\Users\hshafar\Desktop\146. Sutherlin\146.60\Figures\dwg\6.2.1.dwg, 2/2/2023 3:25:13 PM February 2, 2023 PLOT DATE



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	CITY OF SUTHERLIN RECYCLED WATER USE PLAN	FIGURE NO. 6.2.1
DATE: JAN 2023	RECYCLED WATER FLOW DIAGRAM	
PROJECT NO.: 146.60		

SECTION 7:

PUBLIC HEALTH & ENVIRONMENTAL CONTROLS

SECTION 7: PUBLIC HEALTH & ENVIRONMENTAL CONTROLS

Section 7 discusses potential public health and environmental concerns associated with Class A beneficial use of recycled water, including measures taken to control adverse effects on public health and the environment.

Multiple barriers are integrated into the Recycled Water Use Plan (RWUP) to prevent, to the extent practicable, the transmission of pathogens and harmful organic and inorganic contaminants contained in the recycled water disseminating to the public and environment. A combination of secondary and tertiary treatment processes, as well as disinfection systems, reduce pathogen and contaminant concentrations.

In the event the effluent quality exceeds Class A Recycled Water standards, the City will immediately notify Golf Course personnel and discontinue delivery of recycled water to the Golf Course.

Environmental controls, including setbacks, access and exposure control, and site management practices are incorporated into the RWUP to protect the public and environment.

7.1 Signs

All irrigation equipment, recycled water pipes and recycled water storage ponds will be labeled with signs that state “non-potable water.” Additionally, signs will be posted in both English and Spanish stating:

- “RECYCLED WATER USED – NOT SAFE FOR DRINKING”
- “AGUS DE REUSO - NO SALUDABLE BEBER”

Size lettering must be readable from an appropriate distance. Provide universal symbol for do not drink. Post signs around the perimeter at locations visible to the public and employees as well as access points to the site.

Signs shall be maintained at each of the four public driveways, one at each of the public parking areas, and at future trail head locations.

7.2 Setbacks

Setbacks will be maintained around sensitive features and at all irrigation sites. Where sprinkler irrigation is used, Class A Recycled Water must not spray onto an area where food is being prepared. Maintain irrigation spray on beneficial use sites.

The irrigation procedures at the Golf Course state the recycled water will not be applied to water sources (ditches, ponds, etc.).

7.3 Special Site Management Restrictions

Site management restrictions for Class A Recycled Water at agricultural sites include:

- Grazing Livestock. Grazing animals are allowed without restriction on fields.
- Recycled water must not be sprayed onto any drinking fountains.

- Class A Recycled Water may be used on food crops without restrictions.

7.4 Notification

In accordance with Oregon Department of Environmental Quality (DEQ) requirements, personnel and public notifications are required in addition to signage at the Golf Course. The following personnel and public notification procedures are implemented at the Golf Course:

- Personnel Notification: Golf Course personnel will be notified the Golf Course uses recycled water in their employee handbook.
- Public Notification: Golfers will be notified the Golf Course uses recycled water on their score cards, noted in their golf cart rental agreement, and a notice will be posted on the counter adjacent to the tee sheet.

SECTION 8:

RECORDS & REPORTS

SECTION 8: RECORDS & REPORTS

The City of Sutherlin maintains records for the following information at the Wastewater Treatment Plant (WWTP) office for a minimum of three (3) years:

- Effluent Quality Monitoring
- Recycled Water System Performance
- Ongoing System Maintenance Records
- Inspection Records
- Quantity of Recycled Water Irrigated at Each Site Monthly

The City submits an annual recycled water report which summarizes water quantity and quality data, as well as operations and maintenance information for the irrigation season by no later than January 15th of each year.

The annual report describes the effectiveness of the system in complying with the approved Recycled Water Use Plan (RWUP), the rules included in Oregon Administrative Rules (OAR) 340-055, and the discharge permit limits and conditions for recycled water. The annual report includes monitoring data for the previous year. Information in the annual report includes, but is not limited to:

- Description of changes to treatment facilities.
- Description of changes to processes specific to production of recycled water.
- Weather data.
- Results of site inspection reports.
- Description of any operational problems (system upsets, overflows, etc.) and the corrective actions taken.
- Description of changes in the beneficial purpose (crop changes, water delivery times, supplemental water sources, etc.).
- Location and amount of recycled water used for each beneficial purpose. Flow measured from each irrigation flow meter will be recorded on a daily basis via the City's Supervisory Control and Data Acquisition (SCADA) system. The application rate (inches/acre) for each irrigation zone will be recorded on a daily basis utilizing the form included in Appendix A.
- Recycled water volume produced.
- Recycled water characteristics including bacteria and other required monitoring results.
- Results from any site monitoring (e.g., soil monitoring).
- Any planned or anticipated changes to the treatment facility equipment or operations during the next calendar year.

- Description of any proposed or anticipated changes in water reuse operations, including major changes in agricultural practices, such as crops.

SECTION 9:

LAND APPLICATION PLAN

SECTION 9: LAND APPLICATION PLAN

Management approaches for land application of recycled water are directed to help ensure irrigation water is used in a responsible manner and protects the public and environment. Section 9 summarizes water balance calculations, and nitrogen loading rate calculations for the Golf Course land application site.

9.1 Oak Hills Golf Course

The Golf Course is located to the southeast of the Wastewater Treatment Plant (WWTP) as shown in Figure 6.2.1. Recycled water is conveyed to the Golf Course based on irrigation requirements. Excess final effluent generated during the non-discharging season is diverted to the Ford's Pond outfall. Management approaches for land application of recycled water at the Golf Course were developed to ensure recycled water is used in a responsible manner and protects the public and environment. Figure 9.1.1 at the end of this section, illustrates the current and future areas irrigated with recycled water at the Golf Course.

Two flow meters are installed to monitor the instantaneous and daily recycled water flow. The flow meters are manufactured by Endress & Houser (Model No. 5W4C1H-155NO/O). The recycled water flows are integrated into the plant SCADA system. The location of the flow meters is identified on Figure 9.1.1.

The net irrigation requirement for pasture irrigation was derived from Oregon Crop Water Use and Irrigation Requirements (Oregon State University Extension Service, 1999). The monthly average net irrigation (5 out of 10 years), and 95 percent probability (19 out of 20 years) net irrigation values were tabulated. Gross irrigation values were calculated based on an irrigation efficiency of 85 percent.

Evapotranspiration data from the Bureau of Reclamation's Lookingglass, Oregon weather station (<https://www.usbr.gov/pn/agrimet/Daily/lkgo.html>) will be referenced to aid in determining irrigation amounts. Evapotranspiration values represent the amount of water lost from the soil due to evaporation in addition to the water used by plants under specific weather conditions.

An irrigation map of the Golf Course is provided in Appendix G. The irrigation system does not include any potable water cross connections. No catch basins are located in irrigated areas. Recycled water is irrigated with Rainbird Par Plus controllers. Irrigation amounts are manually controlled based on daily inspection by Golf Course staff and monthly audits performed by the City of Sutherlin. Monitoring for over-irrigation occurs daily to avoid ponding or any surface overflow of recycled water. No supplemental fertilizer is used except on tees and greens. Fertilization rates are based on Oregon State University best management practices. Clippings from greens are spread in dry areas.

The Golf Course includes various drainage tiles, drainage tile outfalls, and an outfall from the lower pond to Cook Creek. A map of the known outfalls associated with the drainage tiles was developed by the Golf Course and is included in Appendix G. On a monthly basis, the City and Golf Course will inspect the outfalls associated with the drainage tiles, as well as the outfall from the lower pond to Cook Creek, to prevent the discharge of recycled water to surface waters. Discharge of recycled water offsite or subsurface drainage through drainage tile is prohibited.

The City of Sutherlin will perform monthly audits of the recycled water irrigation system to influence irrigation amounts. The monthly audit will include a review of precipitation values (historical and projected), recycled water irrigation rates as compared to the baseline values from Oregon Crop Water Use and Irrigation Requirements, a review of Bureau of Reclamation's Lookingglass, Oregon weather station data and trends, review of soil moisture data, and other factors.

Soils

The Natural Resources Conservation Service (NRCS) soil report for the golf course is included in Appendix H. A summary of data within the soil report is shown in Table 9.1.1 below.

TABLE 9.1.1
NRCS SOILS REPORT – DATA SUMMARY

Soil Type No.	Soil Type Name	Drainage Class	Area Covered (%)	AWC (in)	Ksat (most limiting layer)		
					Low End (in/hr)	High End (in/hr)	Average (in/hr)
44A	Conser Silty Clay Loam	Poorly Drained	25.1	9.2	0.06	0.20	0.13
166E	Nonpareil Loam	Well Drained	10.5	2.9	0.57	1.98	1.28
169C	Nonpareil-Oakland Complex	Well Drained	11.5	5.2	0.57	1.98	1.28
169E	Nonpareil-Oakland Complex	Well Drained	52.9	2.9	0.57	1.98	1.28

The irrigation management plan ensures that crops receive suitable water while safeguarding against runoff due to saturated soil conditions. Soil becomes saturated only when soil moisture exceeds 100 percent of the Available Water Capacity (AWC), when all of the soils void space is displaced by water. This plan assumes that the soil moisture will be maintained at or below 90 percent of the AWC. The water balances take into account historic climate data, vegetation/crops, and agricultural practices.

The Oregon DEQ recommends using the Estimating Soil Moisture by Feel and Appearance (United States Department of Agriculture (USDA), 2005) guidelines as a tool to monitor soil moisture to determine how much recycled water to apply. This guidance will be used as a tool.

Net Irrigation Requirement: Current Conditions

Approximately 88.9-acres of fairways and greens are currently irrigated. Based on average net irrigation values (5 out of 10 years), the total annual irrigation capacity is 62.8 million gallons. Based on a 95 percent probability (19 out of 20 years), the net irrigation requirement is 89.6 million gallons. Tables 9.1.2 and 9.1.3 list the current irrigation requirements for the Golf Course. Detailed net irrigation calculations are included in Appendix B.

TABLE 9.1.2
NET IRRIGATION REQUIREMENT – CURRENT CONDITIONS (5 OUT OF 10 YEARS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Total
Inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
Gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
Million Gallons	0.29	2.27	6.18	9.8	14.92	11.88	7.22	0.75	0.10	53.4
Gross Irrig., MG	0.34	2.67	7.27	11.53	17.55	13.97	8.49	0.88	0.11	62.8
Gross Irrig., MGD	10,993	88,983	234,528	384,345	566,166	450,734	283,052	28,400	3,787	
lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50

TABLE 9.1.3
NET IRRIGATION REQUIREMENT – CURRENT CONDITIONS (19 OUT OF 20 YEARS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Total
Inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
Gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
Million Gallons	2.56	6.08	9.61	12.26	16.34	13.78	9.80	5.60	0.10	76.1
Gross Irrig., MG	3.01	7.16	11.3	14.43	19.23	16.22	11.53	6.59	0.11	89.6
Gross Irrig., MGD	97,102	238,550	364,618	480,905	620,217	523,108	384,345	212,541	3,787	
lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

The estimated Total Nitrogen (TN) load delivered to the Golf Course was calculated. Effluent TN from the WWTP is typically less than 10 milligrams per liter (mg/L). Based on the typical WWTP effluent TN, the nitrogen load conveyed to the Golf Course is well below nitrogen loading rate recommendations for perennial rye grass and annual blue grass fertilization requirements.

Net Irrigation Requirement: Future Conditions

The irrigation system at the Golf Course will be expanded in the future to irrigate additional areas. Figure 9.1.1 on the following page delineates areas where the Golf Course irrigation could be expanded in the future. The total area for potential irrigation in the future is approximately 95-acres. Based on average net irrigation values (5 out of 10 years), the total annual irrigation capacity is 67 Million Gallons (MG). Based on a 95 percent probability (19 out of 20 years), the net irrigation requirement is 95.6 million gallons. Tables 9.1.4 and 9.1.5 list the net irrigation requirements for future conditions. Detailed net irrigation calculations are included in Appendix B.

TABLE 9.1.4
NET IRRIGATION REQUIREMENT – FUTURE CONDITIONS (5 OUT OF 10 YRS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Total
Inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
Gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
Million Gallons	0.31	2.42	6.59	10.46	15.92	12.67	7.70	0.80	0.10	57.0
Gross Irrig., MG	0.36	2.85	7.76	12.3	18.73	14.91	9.06	0.94	0.12	67.0
Gross Irrig., MGD	11,730	94,949	250,251	410,112	604,122	480,952	302,029	30,304	4,041	
lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50

TABLE 9.1.5
NET IRRIGATION REQUIREMENT – FUTURE CONDITIONS (19 OUT OF 20 YEARS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Total
Inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
Gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
Million Gallons	2.73	6.49	10.25	13.09	17.44	14.71	10.46	5.98	0.10	81.2
Gross Irrig., MG	3.21	7.64	12.06	15.39	20.52	17.30	12.30	7.03	0.12	95.6
Gross Irrig., MGD	103,612	254,543	389,063	513,145	661,797	558,178	410,112	226,790	4,041	
lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71



TOTAL AREA IRRIGATED: 88.9 ACRES
FUTURE (PHASE II) IRRIGATED: 5.96 ACRES

RECYCLED WATER FLOW METER
TYP. OF 2

SECTION 10:

REFERENCES

SECTION 10: REFERENCES

Internal Management Directive, Implementing Oregon's Recycled Water Use Rules (Oregon Department of Environmental Quality, June 2009).

City of Sutherlin, Oregon, Reclaimed Water Management Plan (Brown and Caldwell, 2003).

City of Sutherlin Wastewater Facilities Plan (The Dyer Partnership Engineers and Planners, Inc., 2013).

City of Sutherlin Recycled Water Use Plan (The Dyer Partnership Engineers and Planners, Inc., 2018).

City of Sutherlin Annual Recycled Water Use Summary (City of Sutherlin, 2021).

Technical Memorandum, Tyler Molatore, PE. (The Dyer Partnership Engineers and Planners, Inc., 2022).

City of Sutherlin Municipal Reclaimed Water Registration Form (GSI Water Solutions, Inc., 2022).

City of Sutherlin Annual Recycled Water Use Summary (City of Sutherlin, 2022).

APPENDICES

APPENDIX A: NPDES PERMIT

DEQ Recycled Water Annual Report

4.29.22 Technical Memorandum

Golf Course Watering Zone Schedule

NPDES Permit

Oak Hills Watering Zone Schedule

Solitax Turbidity Probe Calibration Process

Total Coliform Exceedance Procedure

Turbidity Alarm Procedure



Recycled Water Annual Report
Part I: Recycled water production and disposition

A. REPORTING PERIOD			
1.	This report is for recycled water produced during the calendar year: 2022		

B. PERMIT INFORMATION			
1.	Permit Type (select one): ☒ NPDES or ☐ WPCF	DEQ File No.: 86662	
	DEQ Permit No.: 101993	EPA Permit No.: OR 002842	

C. FACILITY INFORMATION			
1.	Legal name of facility: City of Sutherlin		
2.	Physical address		
	Street Address: 4306 Stearns Lane		
	City: Sutherlin	State: Oregon	Zip code: 97479
3.	Mailing address ☐ Same as physical address.		
	Mailing Address: 126 East Central Avenue		
	City: Sutherlin	State: Oregon	Zip code: 97479
4.	Facility Type (check all that apply)		
	☐ Major or Tier 1 facility (design flow of 1 mgd or greater, or serving a population of 10,000 or greater)		
	☒ Minor or Tier 2 facility (design flow less than 1 mgd or serving a population less than 10,000)		
	☐ Class I wastewater treatment facility (i.e., facility with a pre-treatment program)		
	☐ Other, please specify:		

D. CONTACT INFORMATION			
1.	Responsible official		
	Name: Leslie Gardner		Title: Wastewater Division Supervisor
	Email Address: j.gardner@ci.sutherlin.or.us		Telephone: 541-459-5768
	Mailing Address: 126 East Central Avenue		
	City: Sutherlin	State: Oregon	Zip code: 97479
2.	Recycled water contact ☒ Same as responsible official		
	Name:		Title:
	Email Address:		Telephone:
	Mailing Address:		
	City:	State:	Zip code:

E. RECYCLED WATER TREATMENT PROCESSES		
Please indicate the recycled water treatment processes used at your facility (mark all that apply)		
Treatment technology	Filtration technology	Disinfection technology
1. ☐ Primary Clarifier☐ Secondary Clarifier☐ DAF☐ Lagoon☐ Membrane reactor☐ Trickling filter☒ Other: SBR	☐ Sand filter☐ Mixed media filter☐ Bio-filtration☐ Artificial wetland☒ Other: Disc Filtration	☒ Ultraviolet☐ Chlorine☐ Ozone☐ Paracetic acid☐ Hydrogen peroxide☒ Hypochlorite☐ Pasteurization☐ Other:

F. RECYCLED WATER SAMPLING and PRODUCTION					
Select your facility's regulatory monitoring frequency:					
Water Class	A	B	C	D	Non-disinfected
1. Monitoring frequency	☒ Daily/hourly	☐ 3/week	☐ 1/week	☐ Once per month	☐ As specified in permit
Parameters	Total Coliform (daily) Turbidity (hr)	Total coliform	Total coliform	E. coli	As Specified in permit
Please indicate total volume of each class of recycled water produced at your facility.					
2. Total quantity produced (gal)	136.2 (MG)		1.851 (MG)		

G. SUMMARY OF ATTACHMENTS	
1.	Information required with some annual reports: ☐ Additional copies of tables in Part II for all recycled water produced during the calendar year.☐ Laboratory reports showing analytical results only. NO LAB QA/QC
2.	Example of documentation held by the permittee and available upon request: ☐ Additional land application site information.☒ Daily irrigation and records. ☒ Nitrogen loading calculations☒ Daily or hourly sampling results

H. SIGNATURE OF LEGALLY AUTHORIZED REPRESENTATIVE		
I certify that the information in this report is true, correct and representative of the recycled water produced at my facility to the best of my knowledge and belief. Information and records used or referenced with this report will be maintained and made available to the Oregon Department of Environmental Quality on request.		
Wastewater Supervisor		
Signature <i>Leslie Gardner</i>	Title	Date <i>1-6-2023</i>
Print Name: Leslie Gardner		



State of Oregon
Department of Environmental Quality
700 NE Multnomah St. Suite 600, Portland, OR 97232

DEQ use only

Recycled Water Annual Report
Part II: Sampling and Monitoring Summary

I. RECYCLED WATER CLASSIFICATION															
	Month	Turbidity (NTU)				Total Coliform (organisms/100mL)					E. coli (organisms/100mL)				
		Max 24hr Mean	Avg 24 hr mean	Max	Ave	# of samples	Max 7day median	Avg 7day median	Max	Ave	# of samples	Max 30day log mean	Avg 30day log mean	Max	Ave
1.	Jan														
2.	Feb														
3.	Mar														
4.	Apr														
5.	May			.25	.12	21	9.7	3.9	156.5	28.9					
6.	Jun			1.11	.19	30	1.0	1.0	2.0	1.0					
7.	Jul			.32	.15	31	1.0	1.0	12.2	1.4					
8.	Aug			.35	.19	31	1.0	1.0	61.3	3.5					
9.	Sep			.33	.12	30	1.0	1.0	1.0	1.0					
10.	Oct			.50	.12	31	1.0	1.0	21.6	2.3					
11.	Nov														
12.	Dec														
13.															
14.															
15.	Annual			daily high		174									
Attach additional pages as needed to report all sampling.															

** Please attach laboratory report showing sample results only. No lab QA/QC.

J. RECYCLED WATER CHARACTERIZATION													
	Month	pH (SU)				Residual Cl (mg/L)				Sodium (mg/L)			
		# of samples	Min	Max	Ave	# of samples	Min	Max	Ave	# of samples	Min	Max	Ave
1.	Jan												
2.	Feb												
3.	Mar												
4.	Apr												
5.	May	13	6.7	6.9	6.8	8	0.8	5.6	2.4				
6.	Jun	13	6.8	7.1	6.9	30	0.66	8.6	3.2				
7.	Jul	14	6.7	7.0	6.9	31	0.8	3.5	1.5				
8.	Aug	15	6.7	6.9	6.8	31	0.8	2.8	1.3				
9.	Sep	13	6.8	7.0	6.9	30	0.9	>8.8	3.4				
10.	Oct	13	6.8	6.9	6.8	31	0.7	4.1	1.4				
11.	Nov												
12.	Dec												
13.													
14.													
15.	Annual	81				161							
Attach additional pages as needed to report all sampling.													

** Please attach laboratory report showing sample results only. No lab QA/QC.

K. RECYCLED WATER NUTRIENT															
Month	Nitrogen TKN (mg/L)			Nitrogen NO2 + NO3 (mg/L)			Ammonia NH3-N (mg/L)			Phosphate PO4 (mg/L)			Potassium K (mg/L)		
	# of samples	Max	Ave	# of samples	Max	Ave	# of samples	Max	Ave	# of samples	Max	Ave	# of samples	Max	Ave
Jan															
Feb															
Mar															
Apr															
May							5	0.7	0.5						
Jun							4	3.7	1.1						
Jul							4	0.4	0.4						
Aug							5	1.7	0.7						
Sep	1	1.09	1.09	1	4.04	4.04	4	0.8	.38						
Oct							4	0.62	0.47						
Nov															
Dec															
Annual	1			1			26								

Attach additional pages as needed to report all sampling.

** Please attach laboratory report showing sample results only. No lab QA/QC.

L. RECYCLED WATER APPLICATION

Month	Site Name:	Umpqua Golf Resort			Site Name:	Umpqua Golf Resort			Site Name:	Fords Pond			Site Name:	Fords Pond		
	Class:	A			Class:	C			Class:	A			Class:	C		
	Use or Crop:	Turf Grass			Use or Crop:	Turf Grass			Use or Crop:	Recreational			Use or Crop:	Recreational		
	Area (acres):	95			Area (acres):	95			Area (acres):	98			Area (acres):	98		
	Agronomic rate:	174 lb/acre			Agronomic rate:	174 lb/acre			Agronomic rate:				Agronomic rate:			
	Soil moisture monitoring:				Soil moisture monitoring:				Soil moisture monitoring:				Soil moisture monitoring:			
	Additional N sources:				Additional N sources:				Additional N sources:				Additional N sources:			
	# of days discharging	Total Volume applied	Ave Daily Loading	Max Daily Loading	# of days discharging	Total volume applied	Ave Daily Loading	Max Daily Loading	# of days discharging	Total Volume applied	Ave Daily Loading	Max Daily Loading	# of days discharging	Total Volume applied	Ave Daily Loading	Max Daily Loading
		gal	in	in		gal	in	in		gal	in	in		gal	in	in
Jan																
Feb																
Mar																
Apr																
May	3	576000	.074	.094	2	204000	0.39	.066	13	10872000	.314	.723	2	934000	.175	.349
Jun	18	6205000	.133	.338					29	30428000	.394	1.028				
Jul	31	12330000	.154	.232					31	11704000	.141	.261				
Aug	30	11963000	.154	.244	1	28000	.010	.010	30	9716000	.121	.263	1	685000	.257	.257
Sep	20	6025000	.116	.253					30	15106000	.189	.304				
Oct	17	1218000	.027	.067					31	20597000	.249	.340				
Nov																
Dec																
Annual	119				3	232000			164	98.4 MG			3	1619000		

Attach additional pages as needed to report all sites.

Daily Loading (inches) =
$$\frac{\text{Volume Applied (gallons)}}{\text{Area (acres)} \times 27,152 \left(\frac{\text{gallons}}{\text{acre inches}}\right)}$$



THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.

759 W Central Ave.
Sutherlin, Oregon 97479
Ph: (541) 459-4619
www.dyerpart.com

MEMORANDUM

DATE April 29, 2022

TO Jon Gasik, Oregon Department of Environmental Quality

FROM Tyler J. Molatore, PE

PROJECT NAME Sutherlin WWTP Recycled Water Use Plan

PROJECT NO. 146.00C

On September 23, 2021, the Oregon Department of Environmental Quality (DEQ) inspected the City of Sutherlin's (City) Wastewater Treatment Plant (WWTP). The purpose of the inspection was to determine compliance with the conditions of the National Pollutant Discharge Elimination System (NPDES) permit number 101993. During the site visit, violations were identified and summarized in a subsequent letter submitted to the City on November 12, 2021. DEQ imposed corrective actions in response to the violations. One of the required corrective actions was for the City to update their Recycled Water Use Plan (RWUP), to ultimately eliminate the prevention of delivering excess recycled water to Umpqua Golf Management (dba Oak Hills Golf Club) based on golf course irrigation requirements. This Technical Memorandum summarizes irrigation requirements for the Oak Hills Golf Club, and other measures that the City will implement to ensure that recycled water is managed in accordance with NPDES permit requirements.

1. Background

Violation No. 1 in the November 12, 2021 Warning Letter stated the following: *"Sutherlin violated Schedule A condition b by not managing recycled water in accordance with its DEQ approved recycled water use plan. Specifically, Sutherlin delivered more water to the Oak Hills Golf Club than allowed by the recycled water use plan and more than Oak Hills Golf Club can reasonably irrigate on 38.5 acres. This contributed to Oak Hills' unpermitted discharge of recycled water. This is a Class I violation per OAR 340-012-005(1)(c)."*

The corrective action, imposed by DEQ, was for the City to update the recycled water use plan to include measures to prevent the delivery of more recycled water to the Oak Hills Golf Club than they can irrigate per discharge permit requirements. DEQ required that the revised recycled water use plan be completed and submitted to DEQ no later than June 1, 2022. The golf course currently irrigates approximately 88.9 acres, not the 38.5 acres referenced in the City's RWUP. Water use registration changes are therefore necessary. However, due to the time required for water use registration changes per the Oregon Water Resources Department, submitting an updated Recycled Water Use Plan to DEQ by June 1, 2022 is not feasible. Based on a conference call conducted on March 29th with DEQ, the City, and The Dyer Partnership, DEQ suggested that the amended Recycled Water Use Plan be delayed until the water use registration is completed. In the meantime, in the time until the Recycled Water Use Plan is updated and submitted to DEQ, this Technical Memorandum will summarize irrigation requirements and explain other measures that the City will implement to prevent delivering more recycled water to the Oak Hills Golf Club than they can irrigate per the discharge permit.

2. Water Use Registration and Agreements

The Oak Hills Golf Club holds certificates of Water Rights 48815 (Permit R-6140) and 48816 (Permit S-37945) to store and use treated municipal effluent from the City's treatment plant. Certificate 48815 authorizes storage of up to 3.6-acre feet of water from an "unnamed natural drainageway a tributary of Calapooya Creek appropriated under Permit No. 37945." Permit No. S-37945 authorizes use of "waters of water treatment and discharge and reservoir, constructed under Permit No. R-6140," for irrigation of 38.5-acres, the amount used not to exceed 0.48 cfs "water treatment discharge; 3.6-acre feet stored water only" measured at the point of diversion.

On June 13, 1977, the City and Oak Hill Golf Club's predecessor entered into a Sewer Treatment Facility Water Use Agreement ("1977 Agreement"). On April 28, 2004, the City entered into the First Amendment to Sewer Treatment Facility Water Use Agreement with Van De Hey's successor, L&H Lumber Company, dba Oak Hills Golf Club ("2004 Agreement"). The 2004 Agreement specifies a maximum amount of reclaimed water released to the golf course of 193 million gallons per year, along with other constraints on use. Water use information, including the 1977 Agreement and 2004 Agreement, are enclosed in Exhibit C of this Technical Memorandum.

In accordance with the Oregon Water Resources Department (WRD) and DEQ, the City is in the process of filing a recycled water use registration with the WRD that is in alignment with the actual area irrigated at the golf course (inclusive of future areas at the golf course to be irrigated). Upon completion of the water use registration process, which is expected to take several months, the City intends to update their Recycled Water Use Plan with the required water registration documentation. The City anticipates submitting the amended RWUP to DEQ no later than January 30, 2023. As noted previously, this Technical Memorandum serves as interim guidelines, until the water use registration is finalized, that the City will adhere to when irrigating recycled water.

3. Recycled Water Storage

Recycled water is pumped from the WWTP to an irrigation pond (Pond No. 1) at the Oak Hills Golf Club. From Pond No. 1 at the golf course, recycled water is used to irrigate fairways and greens. The City is proposing to deliver recycled water to Pond No. 1, and manage the volume of delivered water to prevent overflow discharge from Pond No. 1 to downstream ponds. Pond No. 1 includes high level and low-level floats that are monitored using the City's SCADA system. When a high liquid level condition in Pond No. 1 is activated, recycled water will be automatically directed to Ford's Pond. The City will conduct periodic site visits, as necessary, to confirm proper float functionality and pond liquid level management.

4. Oak Hills Golf Club Land Application Plan

Management approaches for land application of recycled water at the golf course were developed to ensure recycled water is used in a responsible manner and protects the public and environment. Recycled water will be sent to the golf course based on irrigation requirements. Recycled water generated in excess of the required irrigation amounts will be diverted to the Ford's Pond outfall.

To facilitate calculating the amount of recycled water required for irrigation, an updated map of the area that is irrigated at the golf course was generated. Figure 1 (reference Exhibit A, enclosed) delineates the current area irrigated at the golf course.

The net irrigation requirement for pasture irrigation was derived from Oregon Crop Water Use and Irrigation Requirements (Oregon State University Extension Service, 1999). The monthly average net irrigation (5 out of 10 years), and 95 percent probability (19 out of 20 years) net irrigation values were tabulated. Exhibit B (enclosed) lists the monthly irrigation requirements for the golf course. Gross irrigation values were calculated based on an irrigation efficiency of 85 percent.

Approximately 88.9-acres of fairways and greens are currently irrigated. Based on average net irrigation values (5 out of 10 years), the total annual irrigation capacity is 62.8 million gallons. Assuming a 95 percent probability (19 out of 20 years), the net irrigation requirement is 89.6 million gallons. Tables 4.1 and 4.2 list the current irrigation requirements for the golf course.

The estimated Total Nitrogen (TN) load delivered to the golf course was also calculated. Effluent TN from the WWTP is typically < 10 mg/L. Based on the typical WWTP effluent TN, the nitrogen load conveyed to the golf course is well below nitrogen loading rate recommendations for perennial rye grass and annual blue grass fertilization requirements.

TABLE 4.1
NET IRRIGATION REQUIREMENT – CURRENT CONDITIONS (5 OUT OF 10 YRS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Tot.
Inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
Gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
Million Gallons	0.29	2.27	6.18	9.80	14.92	11.88	7.22	0.75	0.10	53.4
Gross Irrigation, MG	0.34	2.67	7.27	11.53	17.55	13.97	8.49	0.88	0.11	62.8
Gross Irrigation, MGD	10,993	88,983	234,528	384,345	566,166	450,734	283,052	28,400	3,787	
lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50

TABLE 4.2
NET IRRIGATION REQUIREMENT – CURRENT CONDITIONS (19 OUT OF 20 YRS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Tot.
Inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
Gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
Million Gallons	2.56	6.08	9.61	12.26	16.34	13.78	9.80	5.60	0.10	76.1
Gross Irrigation, MG	3.01	7.16	11.30	14.43	19.23	16.22	11.53	6.59	0.11	89.6
Gross Irrigation, MGD	97,102	238,550	364,618	480,905	620,217	523,108	384,345	212,541	3,787	
lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

The irrigation system at the golf course will be expanded in the future to irrigate additional areas within the golf course. Figure 1 (reference Exhibit A, enclosed) delineates areas where the golf course irrigation could be expanded in the future. The total area that could be irrigated is approximately 95-acres. Based on average net irrigation values (5 out of 10 years), the total annual irrigation capacity is 67 million gallons. Assuming a 95 percent probability (19 out of 20 years), the net irrigation requirement is 95.6 million gallons. Tables 4.3 and 4.4 list the net irrigation requirements for future conditions.

TABLE 4.3
NET IRRIGATION REQUIREMENT – FUTURE CONDITIONS (5 OUT OF 10 YRS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Tot.
Inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
Gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
Million Gallons	0.31	2.42	6.59	10.46	15.92	12.67	7.70	0.80	0.10	57.0
Gross Irrigation, MG	0.36	2.85	7.76	12.30	18.73	14.91	9.06	0.94	0.12	67.0
Gross Irrigation, MGD	11,730	94,949	250,251	410,112	604,122	480,952	302,029	30,304	4,041	
lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50

TABLE 4.4
NET IRRIGATION REQUIREMENT – FUTURE CONDITIONS (19 OUT OF 20 YRS)

Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Ann. Tot.
Inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
Gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
Million Gallons	2.73	6.49	10.25	13.09	17.44	14.71	10.46	5.98	0.10	81.2
Gross Irrigation, MG	3.21	7.64	12.06	15.39	20.52	17.30	12.30	7.03	0.12	95.6
Gross Irrigation, MGD	103,612	254,543	389,063	513,145	661,797	558,178	410,112	226,790	4,041	
lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

END OF MEMORANDUM

EXHIBIT A



TOTAL AREA IRRIGATED: 88.9 ACRES
FUTURE (PHASE II) IRRIGATED: 5.96 ACRES

LEGEND

TAX LOTS

IRRIGATION LIMITS

EXCLUDED AREAS

PHASE II IRRIGATION AREAS, CURRENTLY EXCLUDED



THE DYER PARTNERSHIP ENGINEERS & PLANNERS		CITY OF SUTHERLIN		FIGURE NO.
DATE:	APRIL 2022	OAK HILLS GOLF COURSE RECYCLED WATER USE		1
PROJECT NO.:	146.00			

EXHIBIT B

Sutherlin RWUP Calculations
Project No. 146.00C
Existing Conditions

Site	Useable Acres	Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Totals (Annual)
Oak Hills Golf Course (Net Irrigation, 5 out of 10 yrs)	88.9	inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
		useable acres	89	89	89	89	89	89	89	89	89	
		gallons	289,658	2,269,068	6,179,816	9,800,802	14,918,462	11,876,834	7,217,832	748,337	96,563	
		million gallons	0.29	2.27	6.18	9.80	14.92	11.88	7.22	0.75	0.10	53.4
		gross irrigation (85% eff), million gallons	0.34	2.67	7.27	11.53	17.55	13.97	8.49	0.88	0.11	62.8
		Gross irrigation (85% eff), mgd	10,993	88,983	234,528	384,345	566,166	450,734	283,052	28,400	3,787	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50
Oak Hills Golf Course (Net Irrigation, 19 out of 20 yrs)	88.9	inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
		useable acres	89	89	89	89	89	89	89	89	89	
		gallons	2,558,642	6,083,032	9,607,683	12,263,072	16,342,716	13,783,886	9,800,802	5,600,458	96,563	
		million gallons	2.56	6.08	9.61	12.26	16.34	13.78	9.80	5.60	0.10	76.1
		Gross irrigation (85% eff), million gallons	3.01	7.16	11.30	14.43	19.23	16.22	11.53	6.59	0.11	89.6
		Gross irrigation (85% eff), mgd	97,102	238,550	364,618	480,905	620,217	523,108	384,345	212,541	3,787	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

(1) Effluent TN is typically less than 10 mg/L according to operational staff.

(2) Net irrigation data based on Oregon Crop Water Use and Irrigation Requirements (Oregon State University Extension Service, 1999).

Sutherlin RWUP Calculations
Project No. 146.00C
Future Condition

Site	Useable Acres	Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Totals (Annual)
Oak Hills Golf Course (Net Irrigation, 5 out of 10 yrs)	94.86	inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
		useable acres	95	95	95	95	95	95	95	95	95	
		gallons	309,077	2,421,190	6,594,121	10,457,863	15,918,620	12,673,076	7,701,727	798,507	103,037	
		million gallons	0.31	2.42	6.59	10.46	15.92	12.67	7.70	0.80	0.10	57.0
		gross irrigation (85% eff), million gallons	0.36	2.85	7.76	12.30	18.73	14.91	9.06	0.94	0.12	67.0
		Gross irrigation (85% eff), mgd	11,730	94,949	250,251	410,112	604,122	480,952	302,029	30,304	4,041	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50
Oak Hills Golf Course (Net Irrigation, 19 out of 20 yrs)	94.86	inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
		useable acres	95	95	95	95	95	95	95	95	95	
		gallons	2,730,177	6,490,849	10,251,797	13,085,208	17,438,359	14,707,980	10,457,863	5,975,922	103,037	
		million gallons	2.73	6.49	10.25	13.09	17.44	14.71	10.46	5.98	0.10	81.2
		Gross irrigation (85% eff), million gallons	3.21	7.64	12.06	15.39	20.52	17.30	12.30	7.03	0.12	95.6
		Gross irrigation (85% eff), mgd	103,612	254,543	389,063	513,145	661,797	558,178	410,112	226,790	4,041	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

(1) Effluent TN is typically less than 10 mg/L according to operational staff.

(2) Net irrigation data based on Oregon Crop Water Use and Irrigation Requirements (Oregon State University Extension Service, 1999).

EXHIBIT C

STATE OF OREGON

COUNTY OF

DOUGLAS

COPY

CERTIFICATE OF WATER RIGHT

This Is to Certify, That

BUDICK, INC.
dba SUTHERLIN KNOLLS

of PO Box 479, Sutherlin, State of Oregon 97479, has made proof to the satisfaction of the Water Resources Director, of a right to the use of the waters of water treatment discharge and reservoir, constructed under Permit No. R-6140

a tributary of Calapooya Creek for the purpose of irrigation of 38.5 acres

under Permit No. 37945 and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from January 18, 1973

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.48 cubic foot per second, water treatment discharge; 3.6 acre feet stored water only

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NE $\frac{1}{4}$ NW $\frac{1}{4}$, as projected within Knott DLC 53, Section 19, Lot 4 (SW $\frac{1}{4}$ SW $\frac{1}{4}$) Section 18, T. 25 S., R. 5 W., W.M.; Nos. 1 and 2 - 100 feet South and 1900 feet East from the NW Corner, Section 19; No. 3 - 1350 feet South and 980 feet East from W $\frac{1}{2}$ Corner, Section 18

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth of one cubic foot per second per acre, or its equivalent for each acre irrigated from direct flow and shall be further limited to a diversion of not to exceed 2 $\frac{1}{2}$ acre feet per acre for each acre irrigated during the irrigation season of each year from direct flow and storage from reservoir constructed under Permit No. R-6140

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

SEE NEXT PAGE

0.48 CUBIC FOOT PER SECOND = 310,211 GALLONS/DAY

3.6 ACRE FEET STORED WATER ONLY = 1,173,052 GALLONS

1/8 OF ONE CUBIC FOOT PER SECOND PER ACRE =

5.1 acres NE $\frac{1}{4}$ SW $\frac{1}{4}$
2.7 acres Lot 5 (NW $\frac{1}{4}$ SW $\frac{1}{4}$)
2.5 acres NW $\frac{1}{4}$ SW $\frac{1}{4}$
6.8 acres SW $\frac{1}{4}$ SW $\frac{1}{4}$
both as projected within J. Knott DLC 54
1.2 acres Lot 4 (SW $\frac{1}{4}$ SW $\frac{1}{4}$)
2.3 acres SW $\frac{1}{4}$ SW $\frac{1}{4}$
2.4 acres SE $\frac{1}{4}$ SW $\frac{1}{4}$
both as projected within L. Knott DLC 53
3.1 acres Lot 3 (SE $\frac{1}{4}$ SW $\frac{1}{4}$)
Section 19
T. 25 S., R. 5 W., W.M.

6.5 acres NE $\frac{1}{4}$ SE $\frac{1}{4}$
6.9 acres SE $\frac{1}{4}$ SE $\frac{1}{4}$
both as projected within J. Knott DLC 59
Section 13
T. 25 S., R. 6 W., W.M.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described, and is subject to the existing minimum flow policies established by the Water Policy Review Board.

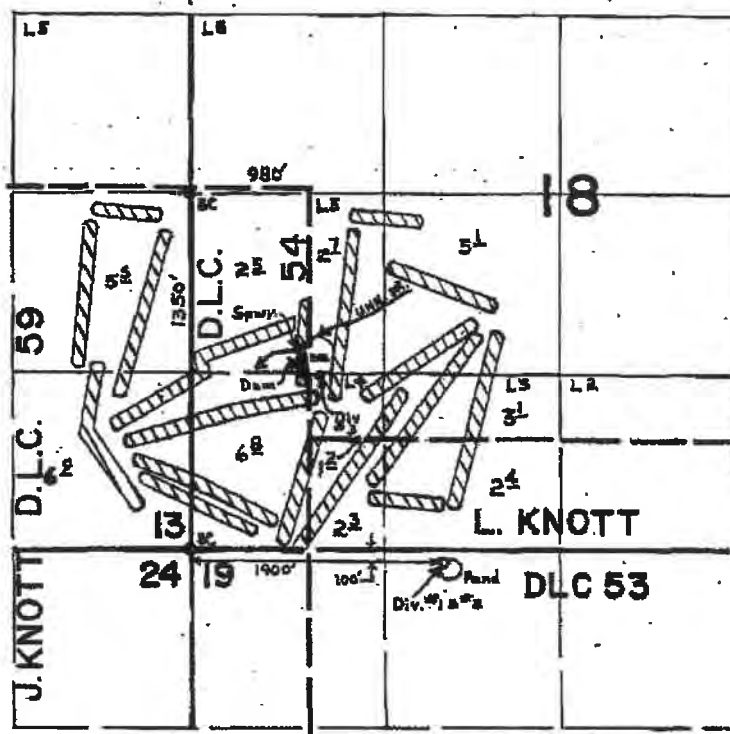
WITNESS the signature of the Water Resources Director, affixed

this date. December 20, 1979


Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 42 , page 48816

R.5 W.	R.5 W.
--------	--------



R-49985 R-6140
Application No. 49986 Permit No. 37945
IN NAME OF

Surveyed MAR. 17, 1978, by D.W. SPARKS

STATE OF OREGON

COUNTY OF

DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, That

BUDICK, INC.

dba SUTHERLIN KNOLLS

of PO Box 479,

Sutherlin

, State of Oregon 97479 , has made

proof to the satisfaction of the Water Resources Director, of a right to store the waters of
an unnamed natural drainageway a tributary of Calapooya Creek appropriated under
Permit No. 37945

irrigation

for the purposes of

under Reservoir Permit No. R-6140

, and that said right to store said waters has been

perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed

dates from January 18, 1973

that the amount of water entitled to be stored each year under such right, for the purposes afore-

said, shall not exceed 3.6 acre feet $\approx 1,173,052$ gallons

The reservoir is located in

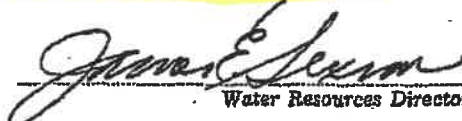
Lot 5 (NW 1/4 SW 1/4)

Section 18

T. 25 S., R. 5 W., W.M.

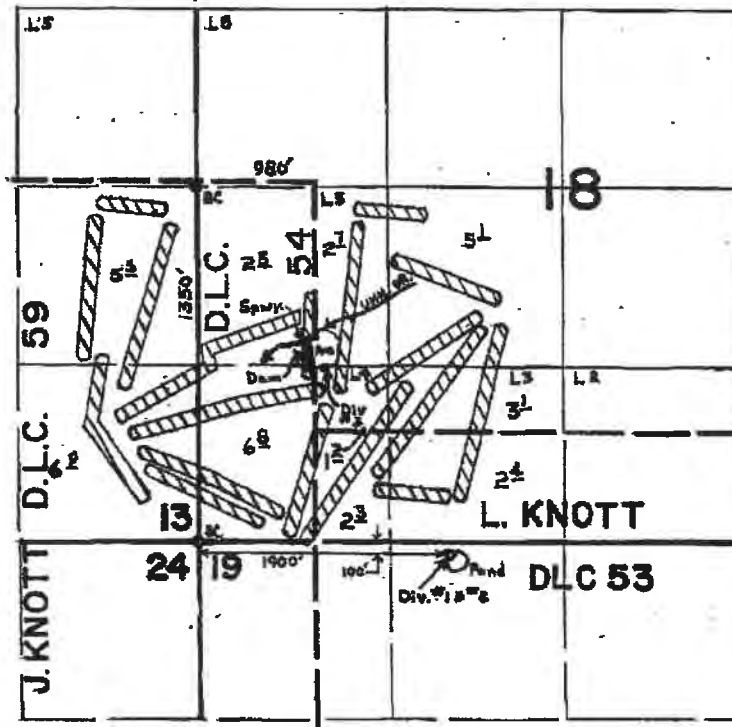
WITNESS the signature of the Water Resources Director, affixed

this date. December 20, 1979


Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 42 , page 48815

R.6 W.	R.5 W.
--------	--------



R-49985 R-6140
Application No. 49986 Permit No. 37945
IN NAME OF

Surveyed MAR. 17. 1978, by D.W.SPARKS

* -- Property Data Selection Menu -- *

Prop ID : R21696✓ (5797.01) Owner: L&H LUMBER CO &
 Map Tax Lot: 25-05W-18C-00100 (7715) DBA OAK HILL GOLF CLUB
 Legal : P.P. 2005-18, PARCEL PT 1, ACRES 859 W LOOKINGGLASS ST
 56.09, OPEN SPACE PATL ROSEBURG, OR 97471-2427

Situs : 0 SCARDI BLVD Year Built :
 SUTHERLIN, OR 97479 Living Area:
 Name(s) : 2013 Roll Values
 Area : 13002 RMV Land Non-LSU \$ 0 (+)
 Sale Info : 09/22/98 \$1,325,000 RMV Land LSU \$ 1,093,755 (+)
 Deed Type : DEED RMV Improvements \$ 63,000 (+)
 Instrument: 1998-22004 RMV Total \$ 1,156,755 (=)
 2013 Tax Status * No Taxes Due * Land LSU \$ 555,291
 Current Levied Taxes : 7,780.54 Total Exemptions \$ 0
 Special Assessments : M5 Net Value \$ 618,291
 M50 Assd Value \$ 617,382

(AD) Alt Disp	(Y) primary	(SE) condary	(L) and/Impr
(O)wnership	(H)istory	(W) Spec Assmt	(.) More

Enter Option from Above or <RET> to Exit: _

25 5 18
& INDEX
SUTHERLIN



645,500

DEC 25 5 17B

25 5 1708

MAY 23 5 12PM '51

R.P. 1974-100

1. 58°32'28"N 218°24'
2. 58°35'18"N 260.22'
3. 59°44'23"N 268.57'
4. 59°52'48"N 285'
5. 59°57'48"N 291.80'
6. 59°42'22"N 308.37'
7. 59°59'23"N 319.83'
8. 59°32'48"N 329.24'
9. 60°02'37"N 328.52'
10. 60°13'54"N 319.92'
11. 59°11'34"N 301.22'
12. 58°15'54"N 47.18'
13. 48°38'38"N 290.53'

TAXLETT 701
 2. 100% 100% 100% 100%
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 5. 100% 100% 100% 100%
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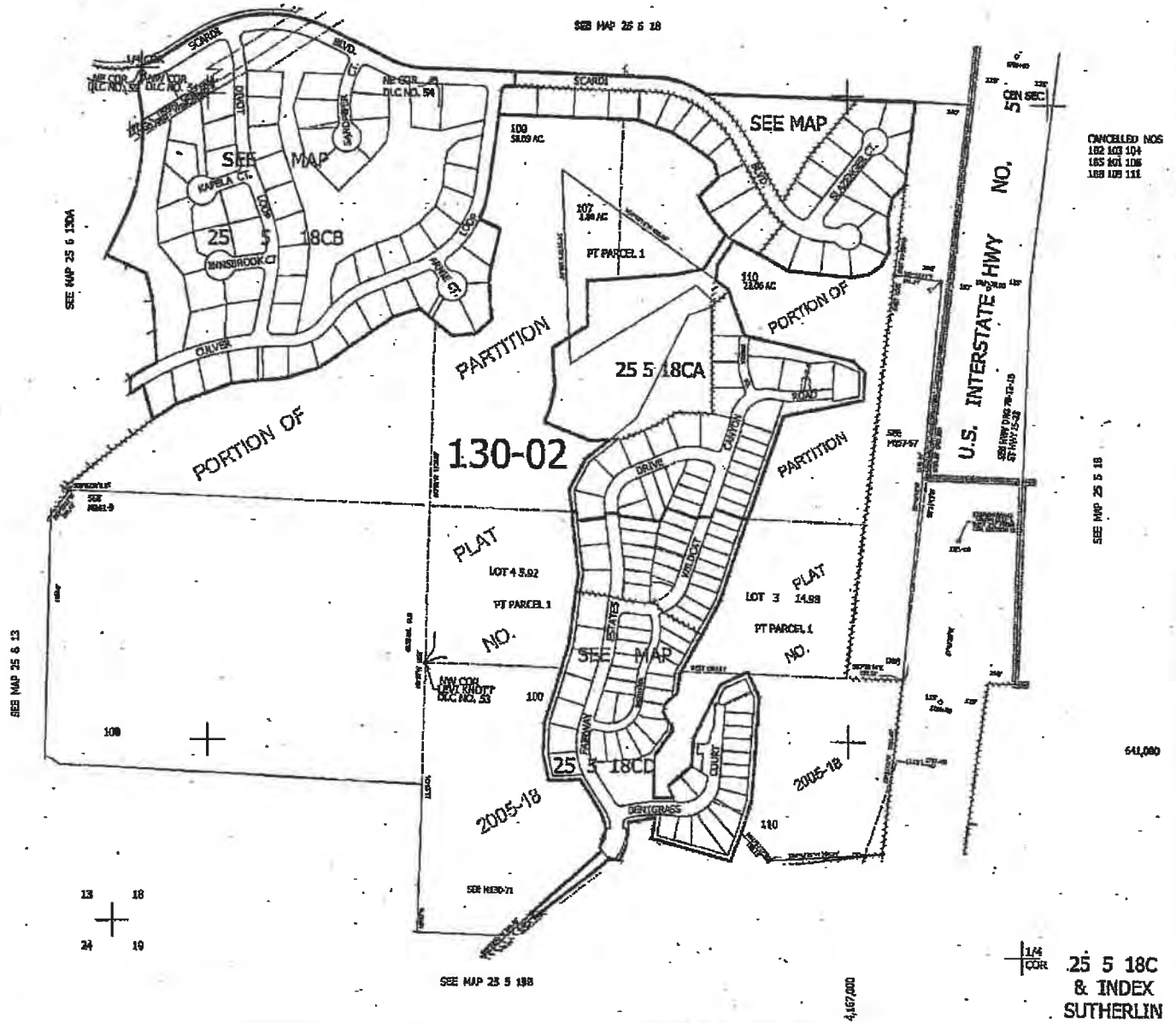
25 5 18
& INDEX
SUTHERLIN

THIS MAP WAS PREPARED FOR
ASSESSMENT PURPOSE ONLY.

SW1/4 SEC.18 T.25S. R.5W. W.M.
DOUGLAS COUNTY
1" = 200'

REVISED ON
11-8-12

25 5 18C
& INDEX
SUTHERLIN



GOLF COURSE

APPENDIX A
SEWER TREATMENT FACILITY WATER USE AGREEMENT
(JUNE 13, 1977)

SEWER TREATMENT FACILITY WATER USE AGREEMENT

WHEREAS, the City of Sutherlin, hereinafter referred to as "City", is contemplating the construction of a new municipal sewage treatment facility on the real property described in Exhibit "A" attached hereto and by express reference made a part hereof, and

WHEREAS, Van De Hey Track Transport, Inc., an Oregon corporation, dba Sutherlin Knolls, hereinafter referred to as Van De Hey Track Transport, Inc., are the owners of the real property described in Exhibit "B" attached hereto and by express reference made a part hereof, the same being more commonly referred to as the Sutherlin Knolls Golf Course and related facilities, and

WHEREAS, the City, pursuant to governmental regulations, must not discharge treated sewer effluent or discharge water from said sewage treatment facility into Calapooia Creek during certain times of the year, and must dispose of all of said sewer effluent or discharge water from said facility elsewhere during said times, and

WHEREAS, Van De Hey Track Transport, Inc., is desirous of taking all of said sewer effluent or discharge water from said sewage treatment facility, not heretofore committed by the City, for the purpose of using said sewer effluent or discharge water in connection with the operation and maintenance of the Sutherlin Knolls Golf Course and related facilities located on the real property referred to as Exhibit "B",

NOW, THEREFORE, IT IS HEREBY AGREED between the City and Van De Hey Track Transport, Inc., as follows:

1. The recitals above are expressly made a part of this agreement.
2. The City shall deliver to Van De Hey Track Transport, Inc., and Van De Hey Track Transport, Inc., shall and must take and receive from the City all of the sewer effluent or discharge water from the new municipal sewage treatment facility, after the construction and commencement of operation of the same which has not heretofore been committed by the City to the estate of Robert Henry Bainbridge as set forth in that certain option to purchase real property agreement recorded in Book 590, Page 195, Book of Records, Douglas County, Oregon, and the deed executed by the City having due reference

thereto, at all times when the City is not permitted to discharge said sewer effluent or discharge water into Calapooia Creek.

c. Van De Hey Track Transport, Inc., shall not be required to pay to the City any money for water ^{sewer effluent} delivered by the City to Van De Hey Track Transport, Inc. The consideration given by Van De Hey Track Transport, Inc. is the requirement that Van De Hey Track Transport, Inc. shall and must take said sewer effluent or discharge water when the City is not permitted to discharge the same into Calapooia Creek.

4. Van De Hey Track Transport, Inc. shall not be required to take said sewer effluent or discharge water referred to herein if the City can legally discharge same into Calapooia Creek. However, Van De Hey Track Transport, Inc. shall have the option to take said water at those times should Van De Hey Track Transport, Inc. desire use of said water.

5. This agreement shall continue for as long as the Sutherlin Knolls Golf Course and related facilities are used as a golf course and thereafter until terminated by the City of Sutherlin and this agreement shall be binding upon the successors, heirs, legatees, personal representatives and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals this 13 day of June, 1977.

CITY OF SUTHERLIN

By Phillip J. Cook

STATE OF OREGON }
County of Douglas } ss.

VAN DE HEY TRACK TRANSPORT, INC.,
an Oregon Corporation,
dba Sutherlin Knolls

By Philip J. Cook
Philip J. Cook, 1977.

Personally appeared the above named PHILLIP J. COOK, Mayor of
the City of Sutherlin, who has acknowledged the foregoing instrument to be

his voluntary act and deed, and that he has executed the same pursuant to Resolution of the City of Sutherlin.

Before me:

John R. Harris
Notary Public for Oregon
My commission expires: 3-29-79

STATE OF OREGON }
County of Douglas } ss.

Personally appeared *Robert Van De Hey* _____, 1977.

who, being duly sworn, did say that he is *the* President of Van De Hey Track Transport, Inc., an Oregon Corporation, dba Sutherlin Knolls, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors; and acknowledged said instrument to be its voluntary act and deed.

Before me:

Thomas Canatta
Notary Public for Oregon
My commission expires: 4-28-80

**FIRST AMENDMENT
TO SEWER TREATMENT FACILITY WATER USE AGREEMENT**

PARTIES:

CITY OF SUTHERLIN ("City")

L&H LUMBER COMPANY, DBA OAK HILLS GOLF COURSE ("Oak Hills")

RECITALS:

A. City and Van De Hey Track Transport, Inc., dba Sutherlin Knolls ("Sutherlin Knolls") are parties to a Sewer Treatment Facility Water Use Agreement dated June 13, 1977 (the "Water Use Agreement"), a copy of which is attached hereto. Sutherlin Knolls was the owner of the real property described in Exhibit B to the Water Use Agreement. Sutherlin Knolls no longer owns that real property, and it is now owned by L&H Lumber Company, dba Oak Hills Golf Course. That Water Use Agreement, and now this First Amendment, are binding upon successors, heirs and assigns.

B. The Oregon Department of Environmental Quality has required that water reuse agreements contain certain provisions, thereby necessitating this First Amendment.

AGREEMENTS:

1. **RECLAIMED WATER QUANTITY AND QUALITY STANDARDS.** The maximum quantity of reclaimed water that will be released to Oak Hills is 193 million gallons per year. The City shall make all reasonable effort to provide Oak Hills with at least Level II effluent.

2. **SPECIFIC USE.** Oak Hills shall use the reclaimed water received from the City for irrigation consistent with all applicable federal, state and local environmental laws and regulations and the City's NPDES Permit (hereinafter collectively referred to as "Environmental Requirements"). Such requirements shall include but not be limited to:

2.1. Irrigation that conforms to the irrigation management guidelines contained in the City of Sutherlin "Reclaimed Water Reuse Plan, 2003", also known as the irrigation management plan, approved by the Department of Environmental Quality ("DEQ").

2.2. Unless otherwise approved by DEQ, irrigation only on land covered with a deep-rooted, permanent grass that is periodically cut and removed to ensure maximum evapotranspiration and nutrient care; and

2.3. Distribution of the reclaimed water on land, for dissipation by evapotranspiration and controlled seepage by following sound irrigation practices so as to prevent:

- 2.3.1 Prolonged ponding of treated reclaimed water on the ground surface;
- 2.3.2 Surface runoff or subsurface drainage through drainage tile;
- 2.3.3 The creation of odors, fly and mosquito breeding or other nuisance conditions;
- 2.3.4 The overloading of land with nutrients, organics, or other pollutant parameters; and
- 2.3.5 Impairment of existing or potential beneficial uses of groundwater.

3. SURFACE WATERS. Oak Hills acknowledges that the direct release of any reclaimed water to the surface waters of the state of Oregon is prohibited under this First Amendment and applicable Environmental Requirements.

4. SUSPENSION. The City may suspend delivery of reclaimed water to Oak Hills if the City determines that Oak Hills is not using the reclaimed water in compliance with this First Amendment or Environmental Requirements. Any suspension of delivery of reclaimed water under this provision shall resume once Oak hills has remedied its non-compliance or taken steps satisfactory to the City toward complying.

5. VIOLATIONS. Oak Hills shall immediately report to City Public Works Director or the Wastewater Treatment Plant Operator any and all violations of Environmental Requirements, including the terms of this agreement and the rules set forth in Division 55 of Oregon Administrative Rules applicable to reclaimed water users.

6. STATUS OF WATER REUSE AGREEMENT. Except as amended by this First Amendment, the Water Use Agreement shall remain in full force and effect.

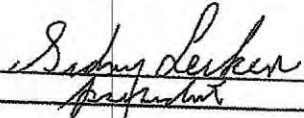
7. ENTIRE AGREEMENT. The Water Use Agreement, as amended by this First Amendment, represent the parties' entire agreement with respect to the subject matter hereof and supersede any and all prior agreements and understandings, written or oral, with respect to such subject matter.

Dated as of 4/28/, 2004.

CITY OF SUTHERLIN

L&H LUMBER COMPANY, DBA
OAK HILLS GOLF COURSE

By: 
Title: City Manager

By: 
Title: President

OAK HILLS GOLF CLUB - ZONE WATERING SCHEDULE - ALL TIMES IN MINUTES

HOLE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6	YARDS
	TEE AREA	FIRST 150YDS	SECOND 150YDS	LAST 150YDS	APPROACH	GREEN	
1							340
2							381
3							379
4							181
5							420
6							541
7							202
8							578
9							523
10							358
11							440
12							170
13							312
14							517
15							173
16							415
17							177
18							507
PUTTING GREEN							35
CHIPPING GREEN							30
Total Acreage							

$$\text{Daily Loading (Inches)} = \frac{\text{Volume Applied (gallons)}}{\text{Area (acres)} \times 27,152 \left(\frac{\text{gallons}}{\text{acre inches}} \right)}$$

Kristi,

I need to know the acres for each zone to be able to calculate ac/in applied. Call if you have any questions.

Jody

Expiration Date: June 30, 2024
Permit Number: 101993
File Number: 86662
EPA Number: OR0020842
Page 1 of 40



**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT**

Oregon Department of Environmental Quality
Western Region – Salem Office
4026 Fairview Industrial Drive SE, Salem, OR
Telephone: (503) 378-8240

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act (The Clean Water Act)

ISSUED TO:

Sutherlin, City of
126 E. Central
Sutherlin, OR 97479

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	Calapooya Creek - River Mile 9.8 43.401867, 123.362931
Treated Wastewater	002a	Fords Pond – River Mile 0.40 43.393534, 123.362197
Fords Pond discharge to Fords Creek	002b	Fords Creek - River Mile 0.50 43.395933, 123.369461
Recycled Water Reuse	003	Specified in Recycled Water Use Plan
Biosolids	004	Specified in Biosolids Management/Land Application Plan

FACILITY LOCATION:

4306 Stearns Lane
Sutherlin, OR 97479

Treatment System Class: Level III
Collection System Class: Level II

RECEIVING STREAM INFORMATION:

WRD Basin: Umpqua
USGS Sub-Basin: Umpqua
Receiving Streams: Calapooya and Fords Creeks
LLIDs: 1234686433656-9.8-D and 1233740433975-0.35-D
County: Douglas

Issued in response to Application No. 967429 received March 23, 2011. This permit is issued based on the land use findings in the permit record.

Ranei Nomura, Manager
Western Region

July 9, 2019
Signature Date

August 1, 2019
Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to: 1) operate a wastewater collection, treatment, control and disposal system; and 2) discharge treated wastewater to waters of the state only from the authorized discharge point or points in Schedule A in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES permit, or by Oregon statute or administrative rule, any other direct or indirect discharge of pollutants to waters of the state is prohibited.

TABLE OF CONTENTS

SCHEDULE A- WASTE DISCHARGE LIMITS.....	4
1. Outfall 001 – Treated Effluent – Calapooya Creek.....	4
a. Effluent Limitations.....	4
b. Effluent Limitations – Excess Thermal Loads.....	5
c. Regulatory Mixing Zone.....	5
2. Outfall 002a – Treated Wastewater - Fords Pond	6
a. Effluent Limitations (Year round)	6
3. Outfall 002b – Fords Pond discharge to Fords Creek.....	6
a. Effluent Limitations.....	6
4. Outfall 003 – Treated Effluent - Recycled Water.....	7
5. Biosolids (Outfall 004).....	9
6. Groundwater Protection.....	9
7. Mercury Minimization Plan.....	9
SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS.....	11
1. Monitoring and Reporting Protocols.....	11
2. Influent Monitoring and Reporting Requirements	15
3. Outfall 001 - Effluent Monitoring and Reporting Requirements	16
4. Calapooya Creek (Receiving Stream) Flow Monitoring Requirements.....	17
5. Outfall 002a – Discharge to Fords Pond Monitoring and Reporting Requirements (Year Round).....	17
6. Outfall 002b – Discharge from Fords Pond to Fords Creek Monitoring and Reporting	19
7. Outfall 003 - Recycled Water Use Monitoring and Reporting Requirements.....	19
8. Outfall 004 - Biosolids Monitoring and Reporting Requirements	20
9. Effluent Toxics Characterization Monitoring.....	21
10. Permit Application Monitoring Requirements	22
SCHEDULE C: COMPLIANCE SCHEDULE	23
1. Compliance Schedule to Meet Excess Thermal Load Limits.....	23
2. Interim Limits.....	23
3. Responsibility to Meet Compliance Dates	23
4. Re-opener Clause.....	24
SCHEDULE D: SPECIAL CONDITIONS.....	25
1. Inflow and Infiltration	25
2. Emergency Response and Public Notification Plan	25
3. Recycled Water Use Plan	25
4. Exempt Wastewater Reuse at the Treatment System	26
5. Biosolids Management Plan.....	26
6. Wastewater Solids Transfers	26
7. Hauled Waste Control	26
8. Operator Certification.....	27
9. Industrial User Survey	28
SCHEDULE F: NPDES GENERAL CONDITIONS.....	29

List of Tables

Table A1: Outfall 001 Limits	4
Table A1-a: Outfall 001 Excess Thermal Load Limits	5
Table A2: Outfall 002a Limits.....	6
Table A3: Outfall 002b Limits	6
Table A4: Outfall 003 - Recycled Water Limits	8
Table A5: Biosolids Limits (Outfall 004).....	9
Table B1: Reporting Requirements and Due Dates.....	11
Table B2: Influent Monitoring	15
Table B3: Effluent Monitoring (Outfall 001).....	16
Table B4: Calapooya Creek (Receiving Stream) Monitoring.....	17
Table B5: Effluent Monitoring and Reporting (Outfall 002a).....	18
Table B6: Outfall 002b Fords Creek Monitoring	19
Table B7: Outfall 003 Recycled Water Use Monitoring.....	19
Table B8: Biosolids Monitoring.....	20
Table B9: Biosolids Minimum Monitoring Frequency	21
Table B10: Effluent Characterization for Toxics	21
Table B11: Copper Biotic Ligand Model.....	22
Table B12: Effluent Monitoring Required for NPDES Permit Application.....	22

SCHEDULE A- WASTE DISCHARGE LIMITS

1. Outfall 001 – Treated Effluent – Calapooya Creek

a. Effluent Limitations

Permittee must comply with the requirements in Table A1 upon the effective date of this permit.

Table A1: Outfall 001 Limits

Parameter	Time Period	Stream Flow (cfs) ^a	Monthly Average	Weekly Average	Daily Maximum
Effluent Flow	Jun 1 to Oct 31	All	No discharge (Daily max limit = 0 mgd)		
Effluent Flow	May 1 to May 31	< 82	No discharge (Daily max limit = 0 mgd)		
Biochemical Oxygen Demand (5 day) And Total Suspended Solids	May 1 – May 31	≥ 82	30 mg/L, 560 lbs/day	45 mg/L, 840 lbs/day	1100 lbs/day ^b
	Nov 1 – Nov 30	<45	30 mg/L ^c , 440 lbs/day ^c	45 mg/L ^d , 170 lbs/day ^d	260 lbs/day ^b
		45 – 60		45 mg/L ^d , 320 lbs/day ^d	480 lbs/day ^b
		>60 – 96		30 mg/L ^d , 440 lbs/day ^d	660 lbs/day ^b
		>96		30 mg/L ^d , 660 lbs/day	880 lbs/day ^b
	Dec 1 – Apr 30	All	30 mg/L, 560 lbs/day	30 mg/L ^d , 840 lbs/day ^d	1100 lbs/day ^b
BOD and TSS % Removal	Nov 1 – May 31	Greater than or equal to 85% monthly average			
pH	Nov 1 – May 31	Between 6.3 and 9.0 SU			
Parameter	Time Period	Monthly Average		Daily Maximum	
<i>E. coli</i>	Nov 1 – May 31	126 organisms per 100 ml ^f		406 organisms per 100 ml ^e	
Chlorine, Total Residual	Nov 1 – May 31	0.010 mg/L ^g		0.036 mg/L ^g	
Ammonia, Total	Nov 1 – May 31	14 mg/L		24 mg/L	

Notes:

- a. Stream flow in Calapooya Creek
- b. The daily mass load limit is based on the daily flow in Calapooya Creek and is suspended on any day in which the flow to the treatment facility exceeds twice the design average dry weather flow. The design average dry weather flow of the existing facility is 1.3 MGD. The design average dry weather flow of the new facility is 0.88 MGD.
- c. Monthly average BOD and TSS limits are not flow based.
- d. The weekly average BOD and TSS limits are based on the weekly average flow in Calapooya Creek.
- e. Reported as a monthly geometric mean.
- f. Permittee is in compliance with the daily limit if the geometric mean of at least 5 re-samples taken at 4 hour intervals beginning within 48 hours after the original sample is less than or equal to 126 *E. coli* organisms/100 mL.
- g. DEQ has established a minimum quantitation limit (QL) of 0.05 mg/L for total residual chlorine. Because the total residual chlorine limits are lower than the QL, DEQ will use the QL as the compliance evaluation level.

b. **Effluent Limitations – Excess Thermal Loads**

These effluent limits are subject to a compliance schedule. See Schedule C. Permittee must comply with the requirements in Table A1-a beginning June 1, 2021.

Table A1-a: Outfall 001 Excess Thermal Load Limits

Time Period	Option A (Max 7-day Ave ^a)	Option B (Max 7-day Ave ^a)
May 16 – May 31	20.2 million kcals/day	$ETLL = (0.1)(Q_e + Q_r)(2.45)^b$
Nov 1 – May 15	7.3 million kcals/day	$ETLL = (0.3)(0.25Q_r + Q_e)(2.45)^b$
Notes:		
a. “Max 7-day ave” means the maximum rolling 7-day average that occurs in a calendar month.		
b. Q_e = Effluent flow rate in cubic feet per second (cfs)		
Q_r = Receiving stream flow rate in cfs		

c. **Regulatory Mixing Zone**

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone as described below:

The allowable mixing zone is that portion of Calapooya Creek contained within a band extending out no more than 1/2 the stream width and extending from a point ten (10) feet up-stream of the outfall to a point thirty (30) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) is that portion of the allowable mixing zone that is within three (3) feet of the point of discharge.

2. Outfall 002a – Treated Wastewater - Fords Pond

a. Effluent Limitations (Year round)

Permittee must comply with the requirements in Table A2 upon the effective date of this permit.

Table A2: Outfall 002a Limits

Parameter	Monthly Average	Weekly Average
BOD ₅ and TSS	10 mg/L, 73 lbs/day	15 mg/L, 110 lbs/day
% Removal	BOD ₅ and TSS percent removal efficiency may not be less than 85% monthly average	
pH (Final ^a)	Between 6.5 and 8.5 SU	
pH (Interim ^a)	Between 6.3 and 8.5 SU	
Parameter	Monthly Average	Daily Maximum
<i>E. coli</i>	126 organisms per 100 ml ^c	406 organisms per 100 ml ^b
Chlorine, Total Residual	0.0053 mg/L ^d	0.019 mg/L ^d
Ammonia, Total (Final ^a)	2.0 mg/L	3.5 mg/L
Ammonia, Total (Interim ^a)	5.0 mg/L	5.0 mg/L
Notes:		
a. These interim limits are effective upon permit issuance. The final limits are effective after completion of the compliance schedule as specified in Schedule C.		
b. Reported as a monthly geometric mean,		
c. Permittee is in compliance with the daily limit if the geometric mean of at least 5 re-samples taken at 4 hour intervals beginning within 48 hours after the original sample is less than or equal to 126 <i>E. coli</i> organisms/100 mL.		
d. DEQ has established a minimum quantitation limit (QL) of 0.05 mg/L for total residual chlorine. Because the total residual chlorine limits are lower than the QL, DEQ will use the QL as the compliance evaluation level.		

3. Outfall 002b – Fords Pond discharge to Fords Creek

a. Effluent Limitations

Permittee must comply with the requirements in Table A3 upon the effective date of this permit.

Table A3: Outfall 002b Limits

Parameter	Time Period	Effluent Limit
Effluent Flow	Jun 1 to Oct 31	No discharge (Daily max limit = 0 mgd)

4. Outfall 003 – Treated Effluent - Recycled Water

The permittee is authorized to distribute recycled water if it is:

- a. Treated and used according to the criteria listed in Table A4.
- b. Managed in accordance with its DEQ-approved Recycled Water Use Plan unless exempt as provided in Schedule D, condition 4.
- c. Used in a manner and applied at a rate that does not have the potential to adversely impact groundwater quality.
- d. Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.
- e. Irrigated using sound irrigation practices to prevent:
 - i. Offsite surface runoff or subsurface drainage through drainage tile;
 - ii. Creation of odors, fly and mosquito breeding, or other nuisance conditions; and
 - iii. Overloading of land with nutrients, organics, or other pollutants.

Table A4: Outfall 003 - Recycled Water Limits

Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
Class A recycled water must be oxidized, filtered and disinfected. Before disinfection, turbidity may not exceed: • 2 NTUs within a 24-hour period. • 5 NTUs more than five percent of the time within a 24-hour period. • 10 NTUs at any time. After disinfection, total coliform may not exceed: * A median of 2.2 organisms per 100 mL based on daily sampling over the last 7 days that analyses have been completed. * 23 organisms per 100 mL in any single sample.	Class A recycled water may be used for: • Class B, Class C, Class D, and nondisinfected uses. • Irrigation for any agricultural or horticultural use. • Landscape irrigation of parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public. • Commercial car washing or fountains when the water is not intended for human consumption. • Water supply source for non-restricted recreational impoundments.
Class B recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 2.2 organisms per 100 mL, based on the last 7 days that analyses have been completed. • 23 total coliform organisms per 100 mL in any single sample.	Class B recycled water may be used for: • Class C, Class D, and nondisinfected uses. • Stand-alone fire suppression systems in commercial and residential building, non-residential toilet or urinal flushing, or floor drain trap priming. • Water supply source for restricted recreational impoundments.
Class C recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 23 total coliform organisms per 100 mL, based on results of the last 7 days that analyses have been completed. • 240 total coliform organisms per 100 mL in any two consecutive samples.	Class C recycled water may be used for: • Class D and nondisinfected uses. • Irrigation of processed food crops; irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil. • Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses. • Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural fire fighting using aircraft, street sweeping, or sanitary sewer flushing.

5. Biosolids (Outfall 004)

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

- a. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan.
- b. Except when used for land reclamation and approved by DEQ, biosolids must be applied at or below the agronomic rate required for maximum crop yield.
- c. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D, Condition 6) and follow the site-specific management conditions in the DEQ-issued site authorization letter.
- d. Biosolids must meet one of the pathogen reduction standards under 40 CFR §503.32 and one of the vector attraction reduction standards under 40 CFR §503.33.
- e. Biosolids containing pollutants in excess of the ceiling concentrations in Table A5 below may not be applied to the land. Biosolids containing pollutants in excess of the pollutant concentrations in Table A5, but below the ceiling concentrations in Table A5, may be applied to the land; however, the total quantity of biosolids applied may not exceed the cumulative pollutant loading rates in Table A5.

Table A5: Biosolids Limits (Outfall 004)

Pollutant	Ceiling concentrations ^a (mg/kg)	Pollutant concentrations ^a (mg/kg)	Cumulative pollutant loading rates ^a (kg/ha)
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	N/A	N/A
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800
Note:			
a. Biosolids pollutant limits are described in 40 CFR Part 503.13, which uses the terms ceiling concentrations , pollutant concentrations , and cumulative pollutant loading rates .			

6. Groundwater Protection

The permittee may not conduct any activities that could cause an adverse impact on existing or potential beneficial uses of groundwater. All wastewater and process related residuals must be managed and disposed of in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR 340-40).

7. Mercury Minimization Plan

By August 1, 2020, the permittee must submit an MMP (Mercury Minimization Plan) for DEQ approval. At a minimum, the MMP must include the following:

- a. Identification and evaluation of current and potential mercury (both MeHg and total) sources
- b. Identification and evaluation of conditions (i.e., anaerobic conditions) that might contribute to the methylation of elemental mercury in the collection and treatment systems
- c. Identification of industrial, commercial and residential sources of mercury
- d. A monitoring plan to confirm current or potential sources of mercury (Monitoring Plan)
- e. Identification of potential methods for reducing or eliminating mercury. These may include but are not limited to:
 - i. BMP requirements or limits for industrial and commercial sources of mercury to a collection system
 - ii. Material substitution
 - iii. Material recovery
 - iv. Spill control and collection
 - v. Waste recycling
 - vi. Process modifications
 - vii. Laboratory housekeeping, use and disposal practices and
 - viii. Public education.
- f. Ongoing monitoring of effluent to enable evaluation of the effectiveness and implementation of the MMP.

Permittee must revise the plan to address DEQ comments within 60 days of receiving DEQ's comments. DEQ will put the revised plan on public notice. DEQ will evaluate comments received and may request additional plan revisions. Permittee must begin implementation of the plan within one month of DEQ's written approval. If DEQ determines that the MMP is not effective at reducing sources of mercury from entering its collection system, or if a water column translation of the fish tissue criterion is developed, DEQ may reopen the permit to modify the permit conditions. These modifications may include but are not limited to the addition of a numeric effluent limit.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Monitoring and Reporting Protocols

- a. The permittee must submit to DEQ monitoring reports as listed in Table B1.

Table B1: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date	Submittal Requirements
Table B2: Influent Table B3: Effluent – Outfall 001 Table B4: Receiving Stream Table B5: Fords Pond – Outfall 002a Table B6: Fords Creek – Outfall 002b	Monthly	15 th day of the month following data collection	Enter summary statistics in NetDMR and attach DMR containing all data collected during the month.
Recycled water annual report as described in Schedule D, condition 3.b., including monitoring described in Table B7: Outfall 003 Recycled Water Use Monitoring	Annually	January 15	Paper copy to DEQ's Water Reuse Program Coordinator and attach an electronic copy to December NetDMR submittal. (See Schedule B, condition 1.c.)
Wastewater solids annual report describing quality, quantity, and use or disposal of wastewater solids generated at the facility.	Annually	February 15	Paper copy to DEQ's Water Reuse Program Coordinator and attach an electronic copy to January NetDMR submittal. (See Schedule B, condition 1.c.)
Biosolids land application annual report describing solids handling activities for the previous year and includes the information described in OAR 340-050-0035(6)(a)-(e). Table B8: Biosolids Monitoring	Annually	February 19	Paper copy to: • DEQ Regional Office, and • DEQ Biosolids Program Coordinator (See Schedule B, condition 1.c.)
Hauled Waste Annual Report (See Schedule D, condition 7.b. for description)	Annually	April 15	Attach an electronic copy to March NetDMR submittal.
Inflow and infiltration annual report (see Schedule D, condition 1 for description)	Annually	February 15	Attach an electronic copy to January NetDMR submittal.
Significant Industrial User Survey (see Schedule D, condition 9 for description)	Every 5 years	Within 24 months of permit effective date	Submit paper copy to DEQ Pretreatment Coordinator. (See Schedule B, condition 1.c.)

b. All Submissions

- i. All reports must be in a DEQ-approved format.
- ii. Name, certificate classification, and grade level of each responsible principal operator as well as identification of each system classification must be included on DMRs.
- iii. Equipment breakdowns and bypass events must be noted on DMRs.
- iv. The permittee must sign and certify submittals of DMRs, reports, and other information in accordance with the requirements of Section D8 within Schedule F of this permit.

c. Paper Submissions

Prior to December 21, 2020, and until directed by DEQ, the permittee must submit any Pretreatment Program Reports, Biosolids/Sewage Sludge, Sewer Overflow/Bypass Event Reports, and other required information to DEQ in paper format as follows:

- i. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date.

d. Electronic Submissions

The permittee must report electronically using NetDMR as follows:

- i. The permittee must report all of the monitoring requirements listed in the report statistic columns of Tables B2, B3, B4, B5, and B6 of this permit via NetDMR.
- ii. The permittee must report all data used to calculate summary statistics as a separate attachment approved by DEQ via NetDMR. The attachment must include excess thermal load, 7-day average flow and 7-day average temperature calculations.
- iii. Beginning after December 21, 2020, or when directed by DEQ, the permittee must submit electronic reports for Pretreatment Program Reports, Biosolids/Sewage Sludge, Sewer Overflow/Bypass Event Reports, and other required information to DEQ via EPA's electronic reporting system.

e. Laboratory Quality Assurance and Quality Control

- i. Laboratory Quality Assurance and Quality Control (QA/QC) – The permittee must develop and implement a written QA/QC program that conforms to the requirements of 40 CFR Part 136.7.
- ii. If QA/QC requirements are not met for any analysis, the permittee must re-analyze the sample. If the sample cannot be re-analyzed, the permittee must re-sample and analyze at the earliest opportunity. If a sample does not meet QA/QC requirements, the permittee must include the result in the discharge monitoring report (DMR) along with a notation (data qualifier) explaining how it does not meet QA/QC requirements, but the permittee must not use the result in any calculation required by the permit unless authorized by the DEQ permit writer or inspector.

f. Flow Meter and Instrumentation Validation/Calibration

- i. Permittee must verify all flow meters used for monitoring required by this schedule at least twice per year following manufacturer's recommendations. Permittee must calibrate flow meters per manufacturer's recommendations as needed.

- ii. Permittee must calibrate all instrumentation used for monitoring required by this schedule following manufacturer's recommendations.

g. Detection and Quantitation Limits

- i. Detection Level (DL) – The DL is defined as the minimum measured concentration of a substance that can be distinguished from method blank results with 99% confidence. The DL is derived using the procedure in 40 CFR Part 136 Appendix B and evaluated for reasonableness relative to method blank concentrations to ensure results reported above the DL are not a result of routine background contamination. The DL is also known as the Method Detection Limit (MDL) or Limit of Detection (LOD).
- ii. Quantitation Limits (QLs)¹ – The QL is the minimum level, concentration or quantity of a target analyte that can be reported with a specified degree of confidence. It is the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration for the analyte. It is normally equivalent to the concentration of the lowest calibration standard adjusted for sample weights, volumes, preparation and cleanup procedures employed. The QL as reported by a laboratory is also sometimes referred to as the Method Reporting Limit (MRL) or Limit of Quantitation (LOQ).
- iii. For compliance and characterization purposes, the maximum acceptable QL is stated in this permit.
- iv. The Laboratory QLs (adjusted for any dilutions) for analyses performed to demonstrate compliance with permit limits or as part of effluent characterization, must be at or below the QLs specified in the permit unless one of the conditions below is met.
 - (A) The monitoring result shows a detect above the laboratory reported QL.
 - (B) The monitoring result indicates nondetect at a DL which is less than the QL.
 - (C) Matrix effects are present that prevent the attainment of QLs and these matrix effects are demonstrated according to procedures described in EPA's "Solutions to Analytical Chemistry Problems with Clean Water Act Methods", March 2007. If using alternative methods and taking appropriate steps to eliminate matrix effects does not eliminate the matrix problems, DEQ may authorize re-sampling or allow a higher QL to be reported.

¹ DEQ recognizes that high TSS levels in influent can make achievement of QLs difficult, and at this time DEQ is not requiring that influent monitoring be performed using the QLs listed in the permit.

h. Reporting Sample Results.

The permittee must follow the procedures listed below when reporting sampling results.

- i. The permittee must report the laboratory DL and QL as defined above for each analyte, with the following exceptions: pH, temperature, BOD, CBOD, TSS, O&G, hardness, alkalinity, bacteriological analytes and nitrate-nitrite. For temperature and pH, neither the QL nor the DL need to be reported. For the other parameters, the permittee is only required to report the QL and only when the result is ND.
- ii. The permittee must report the same number of significant digits as the permit limit for a given parameter.
- iii. CAS Numbers. CAS numbers (where available) must be reported along with monitoring results.
- iv. (for Discharge Monitoring Reports) If a sample result is above the DL but below the QL, the permittee must report the result as the DL preceded by DEQ's data code "e". For example, if the DL is 1.0 µg/l, the QL is 3.0 µg/L and the result is estimated to be between the DL and QL, the permittee must report "e1.0 µg/L" on the DMR. This requirement does not apply in the case of parameters for which the DL does not have to be reported.
- v. (for Discharge Monitoring Reports) If the sample result is below the DL, the permittee must report the result as less than the specified DL. For example, if the DL is 1.0 µg/L and the result is ND, report "<1.0" on the discharge monitoring report (DMR). This requirement does not apply in the case of parameters for which the DL does not have to be reported.

i. Calculating and Reporting Mass Loads

The permittee must calculate mass loads on each day the parameter is monitored using the following equation:

Example calculation: Flow (in MGD) X Concentration (in mg/L) X 8.34 = Pounds per day

- i. Mass load limits all have two significant figures unless otherwise noted.
- ii. When concentration data are below the QL: To calculate the mass load from this result, use the DL. Report the mass load as less than the calculated mass load.
- iii. When concentration data are above the DL, but below the QL: To calculate the mass load from this result, use the detection level. Report the mass load as the calculated mass load preceded by "e".

2. Influent Monitoring and Reporting Requirements
The permittee must monitor influent at the influent screens and report results as listed below.

Table B2: Influent Monitoring

Item or Parameter (ICIS Code)	Units	Time Period	Minimum Frequency	Sample Type/Required Action	NetDMR Summary Statistic
BOD ₅ (00310)	mg/L	Year-round	2/week	24-hr composite	Monthly average
TSS (00530)	mg/L	Year-round	2/week	24-hr composite	Monthly average
pH (00400)	SU	Year-round	3/week	Grab	Daily max Daily min

3. Outfall 001 - Effluent Monitoring and Reporting Requirements

When discharging from Outfall 001, the permittee must monitor effluent after the UV disinfection unit and report results as listed in Table B3 below.

Table B3: Effluent Monitoring (Outfall 001)

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	NetDMR Summary Statistic
Flow (50050)	MGD	Year-round	Daily	Metered ^a	Monthly average Daily max
BOD ₅ (00310)	mg/L	Nov-May	2/week	24-hr composite	Monthly average Max weekly average
BOD ₅ (00310)	lbs/day	Nov-May	2/week	Calculation based on 24-hr composite	Monthly average Max weekly average Daily Max
BOD ₅ Percent Removal (81010)	%	Nov-May	Monthly	Calculation ^b	Monthly average
TSS (00530)	mg/L	Nov-May	2/week	24-hr composite	Monthly average Max weekly average
TSS (00530)	lb/day	Nov-May	2/week	Calculation based on 24-hr composite	Monthly average Max weekly average Daily Max
TSS Percent Removal (81011)	%	Nov-May	Monthly	Calculation ^b	Monthly Average
pH (00400)	SU	Nov-May	3/week	Grab	Daily max Daily min
Ammonia, Total(00610)	mg/L	Nov-May	1/week	24-hr composite	Daily Max Monthly average
Temperature (00010)	°C	Nov-May	Daily	Continuous ^a	Daily max
Excess Thermal Load (51405)	Mkcal/day	Nov-May	Daily	Calculation ^c	Max 7-day rolling average
<i>E. coli</i> (51040)	MPN/100 mL ^d	Nov-May	2/week	Grab	Daily max Monthly geometric mean
Chlorine Used (81400)	lbs/day	Nov-May	Daily	Grab	Daily max Monthly average
Chlorine, Total Residual (50060)	mg/L	Nov-May ^e	Daily	Grab	Daily max Monthly average
UV dose (61938)	mJ/cm ²	Nov-May ^e	Daily	Calculation	Daily max Daily min Monthly average

Notes:

- a. DEQ acknowledges that uninterrupted data collection from continuous monitoring instrumentation is not guaranteed due to vandalism, theft, damage or disturbance. In the event of equipment failure or loss, the permittee must notify DEQ within 24 hours of becoming aware of the situation. Permittee must monitor grab measurements daily until new equipment is deployed. The daily temperature grab must be collected between 4 p.m. and 6 p.m.
- b. Percent removal is calculated on a monthly basis. $\text{Percent removal} = ((\text{BOD}_{\text{inf}} - \text{BOD}_{\text{eff}}) / \text{BOD}_{\text{inf}}) \times 100$, where BOD_{inf} is the monthly average influent concentration in mg/L and BOD_{eff} is the monthly average effluent concentration in mg/L.
- c. The daily Excess Thermal Load (Mkcal/day) is calculated using the formula below. The 7-day rolling average is a simple moving average that includes values from 6 prior days, using only daily ETLs within the criteria period (for example, do not include daily ETL values from May 9 through May 15 to calculate average ETL for May 16). Note that the first day of the month will include values from the prior month. The maximum 7-day average is the maximum value during the month. If the calculation results in an ETL value less than zero, report zero:

$$\text{ETL} = Q_e \times (T_e - T_c) \times C_f$$

Where;
 Q_e = daily effluent flow (cfs)
 T_e = daily maximum effluent temperature (°C)
 T_c = applicable criterion (°C) (18°C for May 16–May 31 and 13°C for Nov 1–May 15)
 C_f = 2.45 Mkcal-s/°C-ft³-day
- d. Permittee may choose to use membrane filtration method for *E. coli* and report results as CFU/100 ml.
- e. Total chlorine residual monitoring is required only when chlorine is used. UV dose monitoring is required only when the UV disinfection system is used.

4. Calapooya Creek (Receiving Stream) Flow Monitoring Requirements

When discharging from Outfall 001, the permittee must report Calapooya Creek flow from USGS gage 14320700 Calapooya Creek Near Oakland, OR as listed in the table below.

Table B4: Calapooya Creek (Receiving Steam) Monitoring

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	NetDMR Summary Statistic
Flow Rate (00056)	CFS	Nov-May	Daily (when discharging)	Reading (See Note a.)	Daily Max Monthly average
Note: a. DEQ acknowledges that uninterrupted data collection from continuous monitoring equipment is not guaranteed due to vandalism, theft, damage or disturbance. In the event of equipment failure or loss, the permittee must notify DEQ within 24 hours of becoming aware of the situation. Permittee must estimate stream flow daily until the stream gage is repaired.					

5. Outfall 002a – Discharge to Fords Pond Monitoring and Reporting Requirements (Year Round)

When discharging from Outfall 002a, the permittee must monitor effluent after the UV disinfection unit (except for chlorine) and report results as listed in Table B5 below. Permittee must monitor chlorine at the discharge to Fords Pond.

Table B5: Effluent Monitoring and Reporting (Outfall 002a)

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	Report Statistic
Flow (50050)	MGD	Year Round	Daily	Measurement	Daily max Monthly average
BOD ₅ (00310)	mg/L	Year Round	2/week	24-hr composite	Monthly average Max weekly average
BOD ₅ (00310)	lbs/day	Year Round	2/week	Calculation	Monthly average Max weekly average
BOD ₅ Percent Removal (81010)	%	Year Round	Monthly	Calculation	Monthly average
TSS (00530)	mg/L	Year Round	2/week	24-hr composite	Monthly average Max weekly average
TSS (00530)	lbs/day	Year Round	2/week	Calculation	Monthly average Max weekly average
TSS Percent Removal (81011)	%	Year Round	Monthly	Calculation	Monthly average
pH (00400)	SU	Year Round	3/week	Grab	Daily max Daily min
<i>E. coli</i> (51040)	MPN/100 mL	Year Round	Daily	Grab	Daily max Monthly geometric mean
Chlorine, Total Residual (50060)	mg/L	Year Round	Daily	Grab	Daily max Monthly average
Ammonia Total (00610)	mg/L	Year Round	1/week	24-hr composite	Daily max Monthly average

6. Outfall 002b – Discharge from Fords Pond to Fords Creek Monitoring and Reporting

When discharging from Outfall 002b, the permittee must monitor effluent at the pond outfall as listed in Table B6 below.

Table B6: Outfall 002b Fords Creek Monitoring

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	Report Statistic
Flow (50050)	MGD	Year Round	Daily	Estimate	Monthly average
BOD ₅ (00310)	mg/L	Nov-May	1/month	Grab	Value
pH(00400)	SU	Nov-May	1/week	Grab	Daily max Daily min

7. Outfall 003 - Recycled Water Use Monitoring and Reporting Requirements

When irrigating recycled water from outfall 003, permittee must monitor as listed in Table B7 below. The samples must be representative of the recycled water delivered for beneficial reuse at a location identified in the Recycled Water Use Plan.

Table B7: Outfall 003 Recycled Water Use Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report Statistic
Total Flow (MGD) or Quantity Irrigated (inches/acre)	Daily	Measurement	Daily max Monthly average Annual total
Chlorine, Total Residual (mg/L)	Daily	Grab	Daily max Monthly average
pH	2/Week	Grab	Daily max Daily min
Total Coliform	Daily (Class A) Weekly (Class C)	Grab	Daily max 7-day median
Turbidity	Hourly (Class A only)	Measurement	Daily max Max % of time over 5 NTU in any 24-hr period

8. Outfall 004 - Biosolids Monitoring and Reporting Requirements

The permittee must monitor biosolids land applied or produced for sale or distribution for the parameters listed Table B8 and at the frequency specified by Table B9 below. The samples must be representative of the quality and quantity of biosolids generated and must have undergone the same treatment process used to prepare the biosolids.

Table B8: Biosolids Monitoring

Item or Parameter	Minimum Frequency	Sample Type
Nutrient and conventional parameters (% dry weight unless otherwise specified): 1) Total Kjeldahl Nitrogen (TKN) 2) Nitrate-Nitrogen (NO ₃ -N) 3) Ammonium Nitrogen (NH ₄ -N) 4) Total Phosphorus (P) 5) Potassium (K) 6) pH (S.U.) 7) Total Solids 8) Volatile Solids	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B9.	As described in the DEQ-approved Biosolids Management Plan
Pollutants: As, Cd, Cu, Hg, Mo, Pb, Ni, Se, Zn (mg/kg dry weight)	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B9.	As described in the DEQ-approved Biosolids Management Plan
Pathogen reduction	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B9.	As described in the DEQ-approved Biosolids Management Plan
Vector attraction reduction	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B9.	As described in the DEQ-approved Biosolids Management Plan
Record of biosolids land application: date, quantity, location.	Each event	Record the date, quantity, and location of biosolids land applied on site location map or equivalent electronic system, such as GIS.

Table B9: Biosolids Minimum Monitoring Frequency

Quantity of biosolids land applied or produced for sale or distribution per calendar year		Minimum Sampling Frequency
(dry metric tons)	(dry U.S. tons)	
Less than 290	Less than 320	Once per year
290 to 1,500	320 to 1,653	Once per quarter (4x/year)
1500 to 15,000	1,653 to 16,535	Once per 60 days (6x/year)
15,000 or more	16,535 or more	Once per month (12x/year)

9. Effluent Toxics Characterization Monitoring

The permittee must monitor effluent after the disinfection system for the pollutants in Table B10, except for mercury, once per month during June 2021, July 2021, Aug. 2021, Sep. 2021, Oct. 2021. The permittee must monitor the effluent for mercury once per month during Feb. 2024, May 2024, Aug. 2024, and Nov. 2024. Effluent monitoring must be 24 hour composites, except for cyanide and alkalinity (which are grab samples). Report results in µg/L, except hardness.

Table B10: Effluent Characterization for Toxics

Pollutant ^a	CAS ^b	QL	Pollutant ^a	CAS ^b	QL
Silver (total and dissolved)	7440224	1.0	Mercury (total)	7439976	0.001 ^e
Cyanide (Free) ^{c&d}	57125	5.0	Bis (2-ethylhexyl)phthalate	117817	1.0
Cyanide (Total) ^d	57125	5.0	Hardness (Total as CaCO ₃) report mg/L		

Notes:

- The term “total” used in reference to metals is intended to cover all EPA-accepted standard digestion methods and is considered to be equivalent to the term “total recoverable”.
- Chemical Abstract Service
- There are multiple approved methods for testing for free cyanide. For more information, refer to DEQ’s analytical memo on the subject of cyanide monitoring at <https://www.oregon.gov/deq/FilterDocs/sToxicscyanide.pdf>
- When sampling for Free or Total Cyanide, the permittee must collect at least six discrete grab samples over the operating day with samples collected no less than one hour apart. The aliquot must be at least 100 mL and collected and composited into a larger container that has been preserved with sodium hydroxide to insure sample integrity.
- Mercury samples must be collected by trained personnel using “Clean Hands/Dirty Hands” sampling techniques described in Method 1669.

The permittee must monitor the effluent and receiving stream for the pollutants in Table B11 once per month during the months of May through October beginning July 2021 and ending October 2025. Upstream and effluent samples must be collected on the same day (as close to dawn as possible). Effluent monitoring must be 24 hour composites collected after filtration, except for pH and alkalinity (which are grab samples). Upstream monitoring is grab samples in Fords Pond near the Fords Creek inlet (approximately 43°23'26.4"N, 123°22'03.0"W).

Table B11: Copper Biotic Ligand Model

Parameter	Units	Sampling Location
Copper, Total and Dissolved ^a	ug/L	Upstream and Effluent
Dissolved Organic Carbon	mg/L	Upstream and Effluent
pH	S.U.	Upstream and Effluent
Temperature	°C	Upstream and Effluent
Calcium	mg/L	Upstream and Effluent
Magnesium	mg/L	Upstream and Effluent
Sodium	mg/L	Upstream and Effluent
Potassium	mg/L	Upstream and Effluent
Sulfate	mg/L	Upstream and Effluent
Chloride	mg/L	Upstream and Effluent
Alkalinity	mg/L	Upstream and Effluent
Note: a. The quantitation limit for copper is 2.0 ug/L.		

10. Permit Application Monitoring Requirements

The renewal application for this permit requires 4 scans for the parameters listed in Table B12 below at both Outfalls 001 and 002a. This data may be collected up to 4.5 years in advance of submittal of the renewal application.

Table B12: Effluent Monitoring Required for NPDES Permit Application

Parameter
Dissolved Oxygen
Total Kjeldahl Nitrogen (TKN)
Nitrate Plus Nitrite Nitrogen
Oil and Grease

SCHEDULE C: COMPLIANCE SCHEDULE

1. Compliance Schedule to Meet Excess Thermal Load Limits

a. Final Compliance Date

The permittee must meet the final effluent limits for excess thermal load for Outfall 001 in Schedule A by June 1, 2021. The permittee must meet the final effluent limits for pH and Ammonia for Outfall 002a in Schedule A by December 1, 2022.

b. Interim Compliance Dates

In the interim, the permittee must take the following actions:

- i. By March 1, 2020, complete construction of the new or upgraded wastewater treatment plant.
- ii. By January 1, 2021, submit a report of progress towards meeting the final pH and ammonia limits at Outfall 002a, including a list of corrective actions as necessary.
- iii. By March 1, 2021, submit a report of progress toward performance testing of the new or upgraded wastewater treatment plant.
- iv. By June 1, 2021, submit a report summarizing the performance testing conducted during the first twelve (12) months of operation and an evaluation of whether the actual performance meets expectations in the DEQ plan approval letter. If performance does not meet the expectations, the report must also include a list of recommended performance improvements.
- v. By December 1, 2022, submit a report of progress towards meeting the final pH and ammonia limits at Outfall 002a, including a list of corrective actions as necessary.

2. Interim Limits

While the schedules of compliance specified in Schedule C, condition 1 are in effect, the permittee must comply with interim effluent limitations and monitoring requirements as specified in Schedule A.

3. Responsibility to Meet Compliance Dates

No later than 14 days following each milestone, the permittee must notify DEQ in writing of its compliance or noncompliance with the interim requirements.

Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and a discussion of the likelihood of meeting the next scheduled requirements.

4. Re-opener Clause

This permit may be re-opened and modified to be consistent with conditions or mitigation measures imposed as a result of EPA's Endangered Species Act consultation with NMFS and USF&WS on DEQ's rule authorizing the use of this compliance schedule. If such a re-opener is necessary, DEQ will commence modification of this permit by notifying the permittee and seeking public comment on the proposed modifications within two years after the later of (1) the date EPA's re-approval of Oregon's compliance schedules rule becomes final, or (2) the date DEQ completes any required implementation of EPA re-approval, unless the date for completion of implementation exceeds two years from the date of EPA's action, in which case the modifications must commence within a period of four years from the date of EPA's re-approval.

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

The permittee must submit to DEQ an annual inflow and infiltration report as directed in Schedule B. The report must include the following:

- a. An assessment of the facility's I/I issues based on a comparison of summer and winter flows to the plant.
- b. Details of activities performed in the previous year to identify and reduce inflow and infiltration.
- c. Details of activities planned for the following year to identify and reduce inflow and infiltration.
- d. A summary of sanitary sewer overflows that occurred during the previous year. This should include the following: date of the SSO, location, estimated volume, cause, followup actions and if performed, the results of ambient monitoring.

2. Emergency Response and Public Notification Plan

The permittee must develop and maintain an Emergency Response and Public Notification Plan (the Plan) per Schedule F, Section B, and Conditions 7 & 8. The permittee must develop the Plan within six months of permit issuance and update the Plan annually to ensure that telephone and email contact information for applicable public agencies are current and accurate. An updated copy of the Plan must be kept on file at the wastewater treatment facility for DEQ review. The latest plan revision date must be listed on the Plan cover along with the reviewer's initials or signature.

3. Recycled Water Use Plan

- a. In order to distribute recycled water for reuse, the permittee must have and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. Conditions in the plan are enforceable requirements under this permit.
- b. Plan Revisions - All plan revisions require written authorization from DEQ. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for changes to utilization dates and/or changes in use within the recycled water class.
- c. Recycled Water Annual Report – The permittee must submit a recycled water annual report by the date specified in Table B1. This report must describe the effectiveness of the system in complying with the approved recycled water use plan, the rules included in OAR 340-055, and the permit limits and conditions for recycled water contained in Table A4. The plan must also include the monitoring data for the previous year specified in Table B7.

4. Exempt Wastewater Reuse at the Treatment System

The permittee is exempt from the recycled water use requirements in OAR 340-055 when recycled water is used for landscape irrigation or in-plant processes at the wastewater treatment system and all of the following conditions are met:

- a. The recycled water is an oxidized and disinfected wastewater.
- b. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system. Land that is contiguous to the property upon which the treatment system is located is considered to be part of the wastewater treatment system site if under the same ownership.
- c. Spray or drift or both from the use does not occur off the site.
- d. Public access to the site is restricted.

5. Biosolids Management Plan

The permittee must maintain a Biosolids Management Plan meeting the requirements in OAR 340-050-0031(5). The permittee must keep the plan updated. Conditions in the plan are enforceable requirements under this permit.

- a. Plan Revisions. All plan revisions require written authorization from DEQ. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for changes to utilization dates.

6. Wastewater Solids Transfers

- a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must satisfy the requirements of the receiving facility. The permittee must report the name of the receiving facility and the quantity of material transferred in the wastewater solids annual report identified in Schedule B.
- b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

7. Hauled Waste Control

- a. The permittee may accept hauled wastes at discharge points designated by the POTW after receiving written DEQ approval of a hauled waste control plan. Hauled wastes may include wastewater solids from another wastewater treatment facility, septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewaters and commercial/industrial wastewaters.
- b. Hauled Waste Annual Report – The permittee must submit a hauled waste annual report by the date specified in Table B1. The report must include:
 - i. A summary of hauled waste received by type and volume;
 - ii. A summary of all tests done on hauled waste;
 - iii. A description of any plant upsets caused by hauled waste, if any; and

- iv. A list of all loads rejected with reasons for the rejections.

8. Operator Certification

- a. Definitions
 - i. "Supervise" means to have full and active responsibility for the daily on site technical operation of a wastewater treatment system or wastewater collection system.
 - ii. "Supervisor" or "designated operator", means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.
 - iii. "Shift Supervisor" means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.
 - iv. "System" includes both the collection system and the treatment systems.
- b. The permittee must comply with OAR 340-49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel" and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified on p.1 of this permit.
- c. The permittee must have its system supervised full-time by one or more operators who hold a valid certificate for the type of wastewater treatment or wastewater collection system, and at a grade equal to or greater than the wastewater system's classification as specified on p.1 one of this permit.
- d. The permittee's wastewater system may not be without the designated supervisor for more than 30 days. During this period, there must be another person available to supervise who is certified at no more than one grade lower than the classification of the wastewater system. The permittee must delegate authority to this operator to supervise the operation of the system.
- e. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor must be certified at no more than one grade lower than the system classification.
- f. The permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.
- g. The permittee must notify DEQ in writing of the name of the system supervisor. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 700 NE Multnomah St, Suite 600, Portland, OR 97232-4100. This address may be updated in writing by DEQ during the term of this permit.
- h. When compliance with item (e) of this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

9. Industrial User Survey

The permittee must conduct an industrial user survey to determine the presence of any industrial users discharging wastewaters subject to pretreatment and submit a report on the findings to DEQ within 24 months of the permit effective date. The purpose of the survey is to identify whether there are any categorical industrial users discharging to the POTW, and ensure regulatory oversight of these discharges to state waters. If the POTW has already completed a baseline IU Survey the results of this survey are to be provided to DEQ within two months of the permit effective date.

Guidance on conducting IU Surveys can be found at
<http://www.deq.state.or.us/wq/pretreatment/docs/guidance/IUSurveyGuidance.pdf>

Once an initial baseline IU Survey is conducted it is to be maintained by the POTW and made available for inspection by DEQ. Every 5 years from the effective date of the permit, the permittee must submit an updated IU survey.

SCHEDULE F: NPDES GENERAL CONDITIONS
DOMESTIC FACILITIES
October 1, 2015 Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to \$25,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to \$25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to \$250,000, imprisonment for not more than 10 years, or both.

The Clean Water Act provides that any person who violates permit condition, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation.

The Clean Water Act provides that any person who negligently violates any condition, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than 1 year, or both.

In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both.

In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both.

Any person who knowingly violates section any permit condition, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both.

In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both.

An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

Any person may be assessed an administrative penalty by the Administrator for violating any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act.

Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000.

Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

- a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
- b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
- d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
- e. New information or regulations.
- f. Modification of compliance schedules.
- g. Requirements of permit reopener conditions
- h. Correction of technical mistakes made in determining permit conditions.
- i. Determination that the permitted activity endangers human health or the environment.
- j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
- k. For communities with combined sewer overflows (CSOs):
 - (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.

- (2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
- (3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants

The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References

Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees

The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been

necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions

- (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.
- (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

- (1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:
 - i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and
 - iii. The permittee submitted notices and requests as required under General Condition B3.c.
- (2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).

c. Notice and request for bypass.

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

- a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
 - (4) The permittee complied with any remedial measures required under General Condition A3 hereof.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

- a. Definition. "Overflow" means any spill, release or diversion of sewage including:
 - (1) An overflow that results in a discharge to waters of the United States; and
 - (2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the United States.
- b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

- a. Ensure that the permittee is aware (to the greatest extent possible) of such events;

- b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
- c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
- d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
- e. Provide emergency operations; and
- f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than \$10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such

person, punishment is a fine not more than \$20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

- a. The date, exact place, time, and methods of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.

(1) Oral Reporting within 24 hours.

- i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
 - (a) The location of the overflow;
 - (b) The receiving water (if there is one);
 - (c) An estimate of the volume of the overflow;
 - (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
 - (e) The estimated date and time when the overflow began and stopped or will be stopped.
- ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
 - (a) The OERS incident number (if applicable); and
 - (b) A brief description of the event.

(2) Written reporting postmarked within 5 days.

- i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
 - (a) The OERS incident number (if applicable);
 - (b) The cause or suspected cause of the overflow;
 - (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
 - (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
 - (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.

(1) The following instances of noncompliance must be reported:

- i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
- ii. Any upset that exceeds any effluent limitation in this permit;

- iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
 - iv. Any noncompliance that may endanger human health or the environment.
- (2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).
- (3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
- i. A description of the noncompliance and its cause;
 - ii. The period of noncompliance, including exact dates and times;
 - iii. The estimated time noncompliance is expected to continue if it has not been corrected;
 - iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
 - v. Public notification steps taken, pursuant to General Condition B7.
- (4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance

The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports must contain:

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information

The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements

All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information

Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by

a fine not to exceed \$125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be punished by a federal civil penalty not to exceed \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;
- b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

- E1. *BOD* or *BOD₅* means five-day biochemical oxygen demand.
- E2. *CBOD* or *CBOD₅* means five-day carbonaceous biochemical oxygen demand.
- E3. *TSS* means total suspended solids.
- E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
- E5. *FC* means fecal coliform bacteria.
- E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
- E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
- E8. *mg/l* means milligrams per liter.
- E9. *µg/l* means microgram per liter.
- E10. *kg* means kilograms.
- E11. *m³/d* means cubic meters per day.
- E12. *MGD* means million gallons per day.
- E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
- E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
- E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.

- E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
- E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
- E18. *Quarter* means January through March, April through June, July through September, or October through December.
- E19. *Month* means calendar month.
- E20. *Week* means a calendar week of Sunday through Saturday.
- E21. *POTW* means a publicly-owned treatment works.

OAK HILLS GOLF CLUB - ZONE WATERING SCHEDULE - ALL TIMES IN MINUTES							DATE:	
HOLE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6	YARDS	ACRES
	TEE AREA	FIRST 150YDS	SECOND 150YDS	LAST 150YDS	APPROACH	GREEN		
1	0.68	1.49	1.27		0.21	0.28	340	3.93
Time per zone								
Gallons								
2	0.84	1.87	1.58	0.44	0.31	0.24	381	5.28
Time per zone								
Gallons								
3	0.89	1.76	1.62	0.49	0.44	0.38	379	5.58
Time per zone								
Gallons								
4	0.77	1.72				0.34	181	2.83
Time per zone								
Gallons								
5	0.7	1.92	1.88	0.53	0.28	0.41	420	5.72
Time per zone								
Gallons								
6	0.91	2.07	2.29	1.39	0.37	0.37	541	7.4
Time per zone								
Gallons								
7	0.81					0.49	202	1.3
Time per zone								
Gallons								
8	0.96	2.14	2.09	1.71	0.19	0.43	578	7.52
Time per zone								
Gallons								
9	0.64	1.33	1.13	0.84	0.24	0.47	523	4.65
Time per zone								
Gallons								

HOLE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6	YARDS	ACRES
	TEE AREA	FIRST 150YDS	SECOND 150YDS	LAST 150YDS	APPROACH	GREEN		
10	0.31	1.54	1.69		0.46	0.67	358	4.67
Time per zone								
Gallons								
11	0.84	2.46	2.11	0.62	0.41	0.49	440	6.93
Time per zone								
Gallons								
12	0.26	2.03				0.51	170	2.8
Time per zone								
Gallons								
13	0.97	1.23	1.06		0.44	0.39	312	4.09
Time per zone								
Gallons								
14	0.77	2.06	2.13	2.09	0.26	0.61	517	7.92
Time per zone								
Gallons								
15	0.93				0.89	0.57	173	2.39
Time per zone								
Gallons								
16	0.76	2.17	2.08	1.04	0.31	0.43	415	6.79
Time per zone								
Gallons								
17	0.92					0.48	177	1.4
Time per zone								
Gallons								
18	0.68	1.79	2.26	1.11	0.24	0.71	507	6.79
Time per zone								
Gallons								
PUTTING GREEN						0.38	35	0.38
Time per zone								
Gallons								
CHIPPING GREEN						0.52	30	0.52
Time per zone								
Gallons								
ACRES	13.64	27.58	23.19	10.26	5.05	9.17		88.89
GALLONS	0	0	0	0	0	0		
Gallons per Acre Inch	0	0	0	0	0	0		

4.6.1 Setting the Outmode

1. From the Main Menu, select SENSOR SETUP and press confirm.
2. Select the appropriate sensor if more than one is attached and confirm.
3. Select CALIBRATE and press confirm.
4. Select SET OUTMODE. Select the available Out Mode (Active, Hold, Transfer) and confirm.

4.6.2 Calibration for Turbidity

Turbidity calibration requires the use of a Turbidity Standard Solution. The manufacturer recommends the 800 NTU Turbidity Standard Solution (part of the calibration kit No. 57330-00). A zero-point calibration using deionized water is also recommended.

1. From the Main Menu, select SENSOR SETUP and press confirm.
2. Select the appropriate sensor if more than one is attached and confirm.
3. Select CALIBRATE and press confirm.
4. Select SENSOR MEASURE and confirm.
5. Place the sensor in the calibration cylinder with deionized water, mounting it with the supplied clamp. The tip of the probe should be approximately 1-inch below the surface of the water. Record the reading from the sensor measure display.
6. Select OFFSET. Multiply the reading obtained in step 5 and enter the value.
7. Select SENSOR MEASURE.
8. Rinse the outside of the StabiCal® 800 NTU standard with water to remove any dust or debris adhering to the surface of the bottle. Gently invert both StabiCal standard bottles a minimum of 50 times. Remove the lid and seal from each bottle. Slowly (to avoid creating bubbles) pour the contents of the bottles into the calibration cylinder. Immediately place the tip of the probe into the positioning bracket in the calibration cylinder. The tip of the probe should be approximately 1-inch below the surface standard. Allow the reading to become stable on the SENSOR MEASURE screen. Record the value (measured value). Calculate the factor. Refer to section 4.6.2.1.
9. Select FACTOR to display the corrected measurement.

4.6.2.1 Calculating the Factor

$$\text{New Factor} = \frac{800 \text{ NTU Standard}}{\text{measured value}}$$

For example, if a sample measures 750 NTU using the sensor and the standard is 800 NTU, the new factor would be calculated as follows:

$$\text{New Factor} = \frac{800 \text{ NTU}}{750 \text{ NTU}} = 1.07$$

Total Coliform Exceedance Procedure

1. If total coliform exceeds 23 organisms per 100 ml sample on any given test turn off golf course recycled water pumps in the pump room.
2. To turn off the golf course recycled water pumps, manually turn the switches for pumps 1 and 2 on the control panel in the pump room to the off position.
3. Verify that the golf course recycled water pumps are not pumping any recycled water to the golf course.
4. Once the total coliform test results are below 23 organisms per 100 ml sample, turn the golf course recycled water pumps to the Auto position on the control panel in the pump room.

Note: If a median exceeds 2.2 organisms per 100 ml sample based on daily sampling over the last seven days that analyses have been completed, recycled water must not be discharged to the golf course. Turn the golf course recycled water pumps off on the control panel in the pump room. See #2 above.

Once the median falls to 2.2 organisms or below per 100 ml sample based on daily sampling over the last seven days that analyses have been completed, turn the golf course recycled water pumps to the Auto position on the control panel in the pump room.

Turbidity Alarm Procedure

1. Verify that the turbidity is reading correctly by taking a sample and measuring the turbidity in the lab with the desk top turbidimeter.
2. If turbidity is reading above 2.0 on average for the last 24 hours. shut off the golf course pumps by manually turning the switch to the off position on golf course pumps 1 and 2. The effluent should now only be pumping to Ford's Pond. Verify this by checking on the SCADA screen in the lab that the Ford's Pond valve is in the "open" position. You can also verify that the effluent is being discharged to Ford's Pond by checking the SCADA screen to see that the Ford's Pond pumps are running.
3. Silence the 24- hour turbidity alarm by acknowledging it on the SCADA screen. This does not reset the alarm. The alarm can not reset until the 24-hour turbidity average falls below 2.0.
4. Once the 24-hour turbidity average falls below 2.0 verify by taking a sample and measuring it on the lab desk top turbidimeter. The alarm for the 24-hour turbidity average should have reset and cleared itself. Verify that the 24-hour turbidity alarm has cleared by checking on SCADA and at both filters 1 and 2.
5. After verifying that the 24-hour turbidity has fallen below 2.0 turn on the golf course pumps by manually turning the switch to the auto position on golf course pumps 1 and 2.

Note: At no time can recycled water be discharged to the golf course with the 24-hour turbidity average above 2.0.

APPENDIX B: WATER BALANCE ANALYSIS

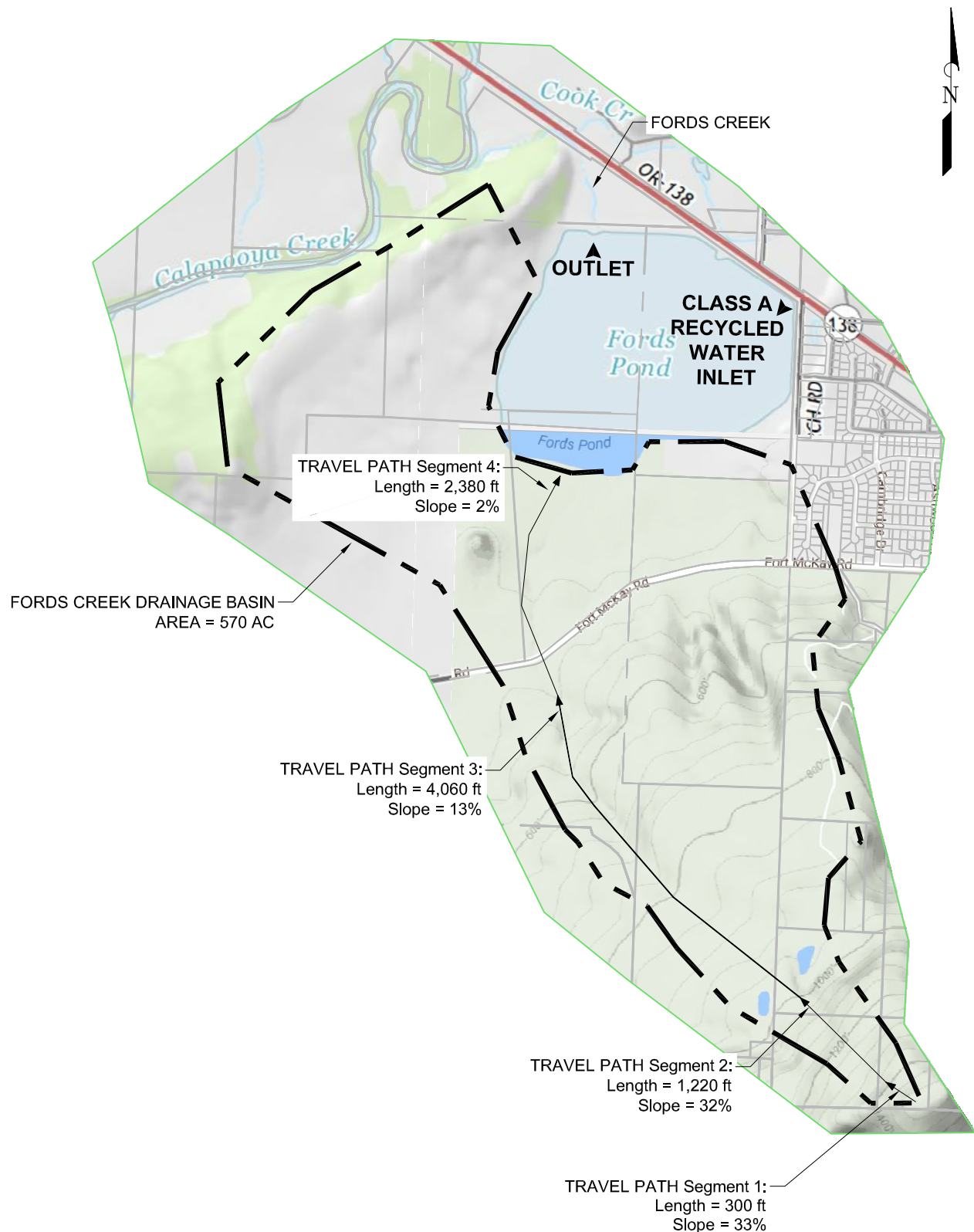
Ford's Creek Basin

Ford's Pond Water Balance

Sutherlin Average Precipitation

OR Typical Evaporation Rates

Net Irrigation Calculations



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	City of Suthelrin RECYCLED WATER USE PLAN	FIGURE NO.
DATE: DEC, 2016 PROJECT NO.: 146.47	FORDS CREEK DRAINAGE BASIN	1

Water Balance

Date: February 19, 2024

Assumes from Second Week in May to October 31st Class A Recycled water will be land applied on the Golf Course. Wilder Farm actively irrigates crops in June. Other irrigation sites are negligible use. Water Balance analysis, is based on Metcalf & Eddies Wastewater Engineering Treatment and Reuse, Chapter 13.

Fords Pond Area (PA): 3,987,300 sf

Computational Table 1
Fords Pond Water Inflow

Month	Days	Average Rainfall, inches	Inflow Gallons			
			Pond Rainwater	WWTP Class A	Golf Course Irrigation ¹	Fords Creek ²
(1)	(2)	(3)	(4) = (3) x PA	(5)	(6)	(7)
May ⁵	15.00	2.49	6,189,500	13,200,000	-6,180,000	5,137,000
June	30.00	1.26	3,132,000	26,400,000	-9,800,000	1,665,000
July	31.00	0.52	1,292,600	27,280,000	-14,920,000	48,000
August	31.00	0.60	1,491,400	27,280,000	-11,880,000	59,000
September	30.00	1.19	2,958,000	26,400,000	-7,220,000	1,360,000
October	31.00	2.83	7,034,700	27,280,000	-750,000	13,410,000
Total				147,840,000	-50,750,000	21,679,000

Computational Table 2
Fords Pond Water Balance

	Outflow, Gallons				Change In Pond Depth, ft.
	Pond Inflow	Evaporation Rate, inches	Pond Evaporation	Agg Use Irrigation ⁴	
	(9)	(10)	(11)	(12)	(13)
	(4+5+6+7)		(10x PA)		(9-11-12)
May ⁵	18,346,500	4.56	11,335,000		7,011,500
June	21,397,000	5.60	13,920,200	4,073,000	3,403,800
July	13,700,600	7.75	19,264,600	4,073,000	-9,637,000
August	16,950,400	6.70	16,654,500	4,073,000	-3,777,100
September	23,498,000	4.47	11,111,300	4,073,000	8,313,700
October	46,974,700	2.09	5,195,200		41,779,500
Total					40,082,900

Notes:

¹ Golf Course Irrigation only based on h2023 RWUP.

² Estimated inflow from Fords Creek, requires stream monitoring to determine actual flow

³ Evaporation rate based on Western Regional Climate Center, 1949-2005 Cottage Grove Dam average

⁴ Based on maximum allowable be water rights for Wilder Property.

⁵ Assumes Class A distribution starts and Fords Pond outflow stops the third week of May

Back to:



NOTE:

To print data frame (right side), click on right frame before printing.

1981 - 2010

- [Daily Temp. & Precip.](#)
- [Daily Tabular data \(~23 KB\)](#)
- [Monthly Tabular data \(~1 KB\)](#)
- [NCDC 1981-2010 Normals \(~3 KB\)](#)

1971 - 2000

- [Daily Temp. & Precip.](#)
- [Daily Tabular data \(~23 KB\)](#)
- [Monthly Tabular data \(~1 KB\)](#)
- [NCDC 1971-2000 Normals \(~3 KB\)](#)

SUTHERLIN 2 W, OREGON (358260)

Period of Record Monthly Climate Summary

Period of Record : 03/01/1978 to 05/28/2016

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)						Insuff	icient	Data					
Average Min. Temperature (F)						Insuff	icient	Data					
Average Total Precipitation (in.)	5.68	4.64	4.36	3.36	2.49	1.26	0.52	0.60	1.19	2.83	6.19	6.75	39.88
Average Total SnowFall (in.)	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.

Max. Temp.: 1.8% Min. Temp.: 1.8% Precipitation: 97.8% Snowfall: 98% Snow Depth: 96.9%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center; wrcc@dri.edu

OREGON															
MONTHLY AVERAGE PAN EVAPORATION (INCHES)															
	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
ASTOR EXPERIMENT STN	1948-1973	0.56	0.96	1.47	2.21	3.75	3.95	4.65	4.10	2.95	1.65	0.87	0.70	27.82	
BEND 7 NE	1991-2005	0.00	0.00	0.00	4.25	6.14	6.69	8.66	7.91	5.42	0.00	0.00	0.00	39.07	
CORVALLIS STATE UNIV	1889-2005	0.00	0.00	1.79	2.96	4.59	5.86	7.70	7.07	5.06	2.33	0.96	0.00	38.32	
COTTAGE GROVE DAM	1943-2005	0.00	1.27	2.16	3.07	4.56	5.60	7.75	6.70	4.47	2.06	0.82	0.00	38.46	
DETROIT DAM	1954-2005	0.19	1.16	1.69	2.51	4.38	5.90	7.68	6.64	4.24	2.05	0.88	0.46	37.78	
DORENA DAM	1948-2005	0.00	1.01	1.94	2.95	4.98	6.11	8.19	7.15	4.66	2.01	0.00	0.00	39.00	
FERN RIDGE DAM	1943-2005	0.39	0.79	1.92	3.17	5.03	6.21	8.12	7.09	4.76	2.21	0.67	0.34	40.70	
HERMISTON 2 S	1928-1997	0.00	0.00	3.44	5.43	7.91	9.67	11.32	9.66	6.32	3.97	0.00	0.00	57.72	
HOOD RIVER EXP STN	1928-2005	0.00	0.00	0.00	0.00	6.45	6.80	8.81	7.04	3.32	3.09	0.00	0.00	35.51	
KLAMATH FALLS AGR STN	1949-2004	0.70	1.31	2.81	4.73	7.21	8.79	10.24	9.41	6.30	4.37	0.00	0.67	56.54	
LOOKOUT POINT DAM	1955-2005	0.00	1.76	2.29	3.10	4.67	5.77	7.69	6.89	4.45	1.96	1.01	0.00	39.59	
MADRAS 1 NNW	1952-2005	0.00	0.00	0.00	4.72	7.12	8.66	10.23	9.17	6.21	3.16	1.70	0.00	50.97	
MALHEUR BRANCH EXP STN	1943-2005	0.00	0.00	0.00	5.68	7.71	8.94	11.06	9.57	6.17	3.14	0.72	0.00	52.99	
VOLTAGE 2 NW	1959-2005	0.00	0.00	0.00	4.37	6.22	7.67	9.58	8.52	5.86	3.19	0.00	0.00	45.41	
MEDFORD EXP STN	1937-2003	0.53	1.02	2.26	3.56	5.29	6.54	8.24	6.78	4.05	1.81	0.76	0.44	41.28	
MORO	1928-2005	0.00	0.00	2.96	5.11	7.74	9.60	12.34	11.18	7.15	3.56	0.00	0.00	59.64	
N WILLAMETTE EXP STN	1963-2005	0.63	1.18	2.29	3.31	5.15	6.01	7.40	6.78	4.68	2.39	1.05	0.57	41.44	
ODELL LAKE LAND PAN	1948-1980	0.00	0.00	0.00	0.00	3.17	4.13	5.54	3.81	1.90	0.67	0.00	0.00	19.22	
ODELL LAKE WATER PAN	1945-1959	0.00	0.00	0.00	0.00	1.87	2.71	3.97	4.01	3.44	2.02	0.00	0.00	18.02	
PELTON DAM	1958-2005	0.00	0.00	0.00	4.48	6.77	8.26	9.98	8.12	5.22	2.49	0.00	0.00	45.32	
PENDLETON BR EXP STN	1956-2005	0.00	0.00	3.41	5.09	6.93	8.81	11.78	10.85	7.02	3.80	0.00	0.00	57.69	
SUMMER LAKE 1 S	1957-2005	0.00	0.00	0.00	5.19	7.28	8.71	10.88	9.79	6.48	3.48	1.90	0.00	53.71	
UNION EXP STN	1928-2005	0.00	0.00	0.00	3.16	4.80	6.03	7.49	6.80	4.32	2.74	0.00	0.00	35.34	
WARM SPRINGS RESERVOIR	1931-1974	0.00	0.00	0.00	4.85	7.21	8.66	11.73	10.19	6.77	3.49	0.00	0.00	52.90	
WICKIUP DAM	1941-2005	0.00	0.00	0.00	2.99	5.14	6.46	7.99	6.84	4.68	2.46	0.00	0.00	36.56	
WINCHESTER	1950-2005	0.00	0.00	0.00	2.25	3.79	5.51	6.93	6.38	4.51	1.33	0.00	0.00	30.70	
WINCHESTER 3 W F STN	1981-1989	0.91	0.96	2.06	3.62	5.04	6.62	8.48	8.19	4.94	2.46	1.17	0.87	45.32	

Oregon Typical Evaporation Rates

Sutherlin RWUP Calculations
Project No. 146.00C
Existing Conditions

Site	Useable Acres	Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Totals (Annual)
Oak Hills Golf Course (Net Irrigation, 5 out of 10 yrs)	88.9	inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
		useable acres	89	89	89	89	89	89	89	89	89	
		gallons	289,658	2,269,068	6,179,816	9,800,802	14,918,462	11,876,834	7,217,832	748,337	96,563	
		million gallons	0.29	2.27	6.18	9.80	14.92	11.88	7.22	0.75	0.10	53.4
		gross irrigation (85% eff), million gallons	0.34	2.67	7.27	11.53	17.55	13.97	8.49	0.88	0.11	62.8
		Gross irrigation (85% eff), mgd	10,993	88,983	234,528	384,345	566,166	450,734	283,052	28,400	3,787	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50
Oak Hills Golf Course (Net Irrigation, 19 out of 20 yrs)	88.9	inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
		useable acres	89	89	89	89	89	89	89	89	89	
		gallons	2,558,642	6,083,032	9,607,683	12,263,072	16,342,716	13,783,886	9,800,802	5,600,458	96,563	
		million gallons	2.56	6.08	9.61	12.26	16.34	13.78	9.80	5.60	0.10	76.1
		Gross irrigation (85% eff), million gallons	3.01	7.16	11.30	14.43	19.23	16.22	11.53	6.59	0.11	89.6
		Gross irrigation (85% eff), mgd	97,102	238,550	364,618	480,905	620,217	523,108	384,345	212,541	3,787	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

(1) Effluent TN is typically less than 10 mg/L according to operational staff.

(2) Net irrigation data based on Oregon Crop Water Use and Irrigation Requirements (Oregon State University Extension Service, 1999).

Sutherlin RWUP Calculations
Project No. 146.00C
Future Condition

Site	Useable Acres	Gross Irrigation	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Totals (Annual)
Oak Hills Golf Course (Net Irrigation, 5 out of 10 yrs)	94.86	inches	0.12	0.94	2.56	4.06	6.18	4.92	2.99	0.31	0.04	22.12
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	3,258	25,524	69,514	110,245	167,812	133,598	81,190	8,418	1,086	
		useable acres	95	95	95	95	95	95	95	95	95	
		gallons	309,077	2,421,190	6,594,121	10,457,863	15,918,620	12,673,076	7,701,727	798,507	103,037	
		million gallons	0.31	2.42	6.59	10.46	15.92	12.67	7.70	0.80	0.10	57.0
		gross irrigation (85% eff), million gallons	0.36	2.85	7.76	12.30	18.73	14.91	9.06	0.94	0.12	67.0
		Gross irrigation (85% eff), mgd	11,730	94,949	250,251	410,112	604,122	480,952	302,029	30,304	4,041	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	0.3	2.1	5.8	9.2	14.0	11.1	6.8	0.7	0.1	50
Oak Hills Golf Course (Net Irrigation, 19 out of 20 yrs)	94.86	inches	1.06	2.52	3.98	5.08	6.77	5.71	4.06	2.32	0.04	31.54
		gallons/acre-inch	27,152	27,153	27,154	27,154	27,154	27,154	27,154	27,154	27,155	
		gallons/acre	28,781	68,426	108,073	137,942	183,833	155,049	110,245	62,997	1,086	
		useable acres	95	95	95	95	95	95	95	95	95	
		gallons	2,730,177	6,490,849	10,251,797	13,085,208	17,438,359	14,707,980	10,457,863	5,975,922	103,037	
		million gallons	2.73	6.49	10.25	13.09	17.44	14.71	10.46	5.98	0.10	81.2
		Gross irrigation (85% eff), million gallons	3.21	7.64	12.06	15.39	20.52	17.30	12.30	7.03	0.12	95.6
		Gross irrigation (85% eff), mgd	103,612	254,543	389,063	513,145	661,797	558,178	410,112	226,790	4,041	
		Effluent TN, mg/L	10	10	10	10	10	10	10	10	10	
		lbs N/acre	2.4	5.7	9.0	11.5	15.3	12.9	9.2	5.3	0.1	71

(1) Effluent TN is typically less than 10 mg/L according to operational staff.

(2) Net irrigation data based on Oregon Crop Water Use and Irrigation Requirements (Oregon State University Extension Service, 1999).

APPENDIX C: GOLF COURSE WATER RIGHTS

MEMORANDUM

To: Brian Elliott
From: Richard M. Glick
Date: March 2, 2016
Subject: Reclaimed Water Rights

In November 2015, I prepared an insert to the reclaimed water use registration submitted by the Umpqua Golf Resort ("Resort"), with the City's assistance. You have asked that I submit the information in a Memorandum format for the City's records.

Resort holds Certificates of Water Rights 48815 (Permit R-6140) and 48816 (Permit S-37945) to store and use treated municipal effluent from the City of Sutherlin ("City") treatment plant. Certificate 48815 authorizes storage of up to 3.6 acre feet of water from an "unnamed natural drainageway a tributary of Calapooya Creek appropriated under Permit No. 37945." Permit No. S-37945 authorizes use of "waters of water treatment discharge and reservoir, constructed under Permit No. R-6140," for irrigation of 38.5 acres, the amount used not to exceed 0.48 cfs "water treatment discharge; 3.6 acre feet stored water only" measured at the point of diversion. Both certificates have a priority of right from January 18, 1973. The Certificates are attached hereto as Exhibits A and B.

In addition, on June 13, 1977, the City and Resort's predecessor, Van De Hey Track Transport, Inc., dba Sutherlin Knolls ("Van De Hey"), entered into a Sewer Treatment Facility Water Use Agreement ("1977 Agreement"). The 1977 Agreement is premised on the City's understanding of wastewater regulatory requirements then in place, which prohibited discharge of treated sewer effluent into Calapooia Creek during certain times of the year. The Agreement provides that the City will deliver to Van De Hey, which "shall and must take and receive from the City all of the sewer effluent or discharge water from the new municipal sewage treatment facility . . . which has not heretofore been committed by the City to the estate of Robert Henry Bainbridge [under a separate instrument] . . . at all times when the City is not permitted to discharge said sewer effluent or discharge water into Calapooia Creek." The 1977 Agreement is attached hereto as Exhibit C.

On April 28, 2004, the City entered into the First Amendment to Sewer Treatment Facility Water Use Agreement with Van De Hey's successor, L&H Lumber Company, dba Oak Hills Golf Course ("2004 Agreement"). The 2004 Agreement was in response to new requirements of the Oregon Department of Environmental Quality. It specifies a maximum amount of reclaimed water released to the golf course of 193 million gallons per year, along with other constraints on the use. The 2004 Agreement is attached hereto as Exhibit D.

DWT 29023483v1 0097926-000002

As noted, the 1977 Agreement, as amended, is subject to the terms of a real estate transaction between the City and the Estate of Robert Henry Baimbridge ("Baimbridge"). On December 23, 1975, Baimbridge granted an Option to the City to acquire certain real property. That option reserves to Baimbridge "a first and prior water right to take up to 50% of the outfall or discharge water from the city sewer treatment plant . . ." for use on other property owned by Baimbridge. That water is to be supplied by the City "under pressure." The Baimbridge Option is attached hereto as Exhibit E.

By Warranty Deed granted September 10, 1976, Etta Baimbridge conveyed to the City the optioned real property. That Warranty Deed invokes the Baimbridge Option reservation of water rights described above. The Warranty Deed is attached hereto as Exhibit F.

The successor in interest to Etta Baimbridge is Bob Banducci. We recommend that the City's position be that the certificated water rights held by Resort are senior in time to whatever interest Mr. Banducci may have in the City's treated effluent. Resort's contractual rights under the 1977 and 2004 Agreement are supplemental to the certificated rights. These contractual rights may be constrained by Mr. Banducci's interest.

The water rights reservation described in the Option and Warranty Deed, written over 40 years ago, lacks specificity as to the purpose to which the water will be put, whether the intended use comports with current regulatory standards, the point from which it will be taken, the method of delivery, what is meant by "under pressure," and other important details. These details are the subject of future negotiations between the City and Mr. Banducci.

Please call if you have questions.

STATE OF OREGON
COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, That BUDICK, INC.
of PO Box 479, Sutherlin dba SUTHERLIN KNOLLS
, State of Oregon 97479 , has made
proof to the satisfaction of the Water Resources Director, of a right to store the waters of
an unnamed natural drainageway a tributary of Calapooya Creek appropriated under
Permit No. 37945

for the purposes of
irrigation
under Reservoir Permit No. R-6140 , and that said right to store said waters has been
perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed
dates from January 18, 1973

that the amount of water entitled to be stored each year under such right, for the purposes afore-
said, shall not exceed 3.6 acre feet

The reservoir is located in

Lot 5 (NW $\frac{1}{4}$ SW $\frac{1}{4}$)
Section 18
T. 25 S., R. 5 W., W.M.

WITNESS the signature of the Water Resources Director, affixed
this date. December 20, 1979


Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 42 , page 48815

STATE OF OREGON
COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, That BUDICK, INC.
dba SUTHERLIN KNOLLS

of PO Box 479, Sutherlin, State of Oregon 97479, has made
proof to the satisfaction of the Water Resources Director, of a right to the use of the waters of
water treatment discharge and reservoir, constructed under Permit No. R-6140

a tributary of Calapooya Creek for the purpose of
irrigation of 38.5 acres

under Permit No. 37945 and that said right to the use of said waters has been perfected in
accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from
January 18, 1973

that the amount of water to which such right is entitled and hereby confirmed, for the purposes
aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed
0.48 cubic foot per second, water treatment discharge; 3.6 acre feet stored
water only

or its equivalent in case of rotation, measured at the point of diversion from the stream.
The point of diversion is located in the NE $\frac{1}{4}$ NW $\frac{1}{4}$, as projected within Knott DLC 53, Sec-
tion 19, Lot 4 (SW $\frac{1}{4}$ SW $\frac{1}{4}$) Section 18, T. 25 S., R. 5 W., W.M.; Nos. 1 and 2 -
100 feet South and 1900 feet East from the NW Corner, Section 19; No. 3 - 1350
feet South and 980 feet East from W $\frac{1}{2}$ Corner, Section 18

The amount of water used for irrigation, together with the amount secured under any other
right existing for the same lands, shall be limited to one-eightieth of one cubic foot per second
per acre, or its equivalent for each acre irrigated from direct flow and shall be
further limited to a diversion of not to exceed 2 $\frac{1}{2}$ acre feet per acre for each
acre irrigated during the irrigation season of each year from direct flow and
storage from reservoir constructed under Permit No. R-6140

and shall
conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and, to which such right
is appurtenant, is as follows:

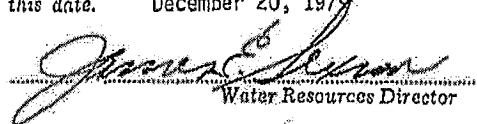
SEE NEXT PAGE

5.1 acres NE $\frac{1}{4}$ SW $\frac{1}{4}$
2.7 acres Lot 5 (NW $\frac{1}{4}$ SW $\frac{1}{4}$)
2.5 acres NW $\frac{1}{4}$ SW $\frac{1}{4}$
6.8 acres SW $\frac{1}{4}$ SW $\frac{1}{4}$
both as projected within J. Knott DLC 54
1.2 acres Lot 4 (SW $\frac{1}{4}$ SW $\frac{1}{4}$)
2.3 acres SW $\frac{1}{4}$ SW $\frac{1}{4}$
2.4 acres SE $\frac{1}{4}$ SW $\frac{1}{4}$
both as projected within L. Knott DLC 53
3.1 acres Lot 3 (SE $\frac{1}{4}$ SW $\frac{1}{4}$)
Section 18
T. 25 S., R. 5 W., W.M.

5.6 acres NE $\frac{1}{4}$ SE $\frac{1}{4}$
6.9 acres SE $\frac{1}{4}$ SE $\frac{1}{4}$
both as projected within J. Knott DLC 59
Section 13
T. 25 S., R. 6 W., W.M.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described, and is subject to the existing minimum flow policies established by the Water Policy Review Board.

WITNESS the signature of the Water Resources Director, affixed
this date. December 20, 1979


Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 42 , page 48816

SEWER TREATMENT FACILITY WATER USE AGREEMENT

WHEREAS, the City of Sutherlin, hereinafter referred to as "City", is contemplating the construction of a new municipal sewage treatment facility on the real property described in Exhibit "A" attached hereto and by express reference made a part hereof, and

WHEREAS, Van De Hey Track Transport, Inc., an Oregon corporation, dba Sutherlin Knolls, hereinafter referred to as Van De Hey Track Transport, Inc., are the owners of the real property described in Exhibit "B" attached hereto and by express reference made a part hereof, the same being more commonly referred to as the Sutherlin Knolls Golf Course and related facilities, and

WHEREAS, the City, pursuant to governmental regulations, must not discharge treated sewer effluent or discharge water from said sewage treatment facility into Calapooia Creek during certain times of the year, and must dispose of all of said sewer effluent or discharge water from said facility elsewhere during said times, and

WHEREAS, Van De Hey Track Transport, Inc., is desirous of taking all of said sewer effluent or discharge water from said sewage treatment facility, not heretofore committed by the City, for the purpose of using said sewer effluent or discharge water in connection with the operation and maintenance of the Sutherlin Knolls Golf Course and related facilities located on the real property referred to as Exhibit "B",

NOW, THEREFORE, IT IS HEREBY AGREED between the City and Van De Hey Track Transport, Inc., as follows:

1. The recitals above are expressly made a part of this agreement.
2. The City shall deliver to Van De Hey Track Transport, Inc., and Van De Hey Track Transport, Inc., shall and must take and receive from the City all of the sewer effluent or discharge water from the new municipal sewage treatment facility, after the construction and commencement of operation of the same which has not heretofore been committed by the City to the estate of Robert Henry Bainbridge as set forth in that certain option to purchase real property agreement recorded in Book 590, Page 195, Book of Records, Douglas County, Oregon, and the deed executed by the City having due reference

thereto, at all times when the City is not permitted to discharge said sewer effluent or discharge water into Calapooia Creek.

c. Van De Hey Track Transport, Inc., shall not be required to pay to the City any money for water ^{sewer effluent} delivered by the City to Van De Hey Track Transport, Inc. The consideration given by Van De Hey Track Transport, Inc. is the requirement that Van De Hey Track Transport, Inc. shall and must take said sewer effluent or discharge water when the City is not permitted to discharge the same into Calapooia Creek.

4. Van De Hey Track Transport, Inc. shall not be required to take said sewer effluent or discharge water referred to herein if the City can legally discharge same into Calapooia Creek. However, Van De Hey Track Transport, Inc. shall have the option to take said water at those times should Van De Hey Track Transport, Inc. desire use of said water.

5. This agreement shall continue for as long as the Sutherlin Knolls Golf Course and related facilities are used as a golf course and thereafter until terminated by the City of Sutherlin and this agreement shall be binding upon the successors, heirs, legatees, personal representatives and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals this 13 day of June, 1977.

CITY OF SUTHERLIN

By Phillip J. Cook

STATE OF OREGON }
County of Douglas } ss.

VAN DE HEY TRACK TRANSPORT, INC.,
an Oregon Corporation,
dba Sutherlin Knolls

By Philip J. Cook
Philip J. Cook 1977

Personally appeared the above named PHILLIP J. COOK, Mayor of
the City of Sutherlin, who has acknowledged the foregoing instrument to be

his voluntary act and deed, and that he has executed the same pursuant to Resolution of the City of Sutherlin.

Before me:

Leo Norrie
Notary Public for Oregon
My commission expires: 3-29-79

STATE OF OREGON }
County of Douglas } ss.

Personally appeared Richard Van De Hey 7, 1977.
who, being duly sworn, did say that he is the President of Van De Hey Track Transport, Inc., an Oregon Corporation, dba Sutherlin Knolls, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors; and acknowledged said instrument to be its voluntary act and deed.

Before me:

Phyllis Tanatta
Notary Public for Oregon
My commission expires: 4-28-80

COPY

**FIRST AMENDMENT
TO SEWER TREATMENT FACILITY WATER USE AGREEMENT**

PARTIES:

CITY OF SUTHERLIN ("City")

L&H LUMBER COMPANY, DBA OAK HILLS GOLF COURSE ("Oak Hills")

RECITALS:

A. City and Van De Hey Track Transport, Inc., dba Sutherlin Knolls ("Sutherlin Knolls") are parties to a Sewer Treatment Facility Water Use Agreement dated June 13, 1977 (the "Water Use Agreement"), a copy of which is attached hereto. Sutherlin Knolls was the owner of the real property described in Exhibit B to the Water Use Agreement. Sutherlin Knolls no longer owns that real property, and it is now owned by L&H Lumber Company, dba Oak Hills Golf Course. That Water Use Agreement, and now this First Amendment, are binding upon successors, heirs and assigns.

B. The Oregon Department of Environmental Quality has required that water reuse agreements contain certain provisions, thereby necessitating this First Amendment.

AGREEMENTS:

1. **RECLAIMED WATER QUANTITY AND QUALITY STANDARDS.** The maximum quantity of reclaimed water that will be released to Oak Hills is 193 million gallons per year. The City shall make all reasonable effort to provide Oak Hills with at least Level II effluent.

2. **SPECIFIC USE.** Oak Hills shall use the reclaimed water received from the City for irrigation consistent with all applicable federal, state and local environmental laws and regulations and the City's NPDES Permit (hereinafter collectively referred to as "Environmental Requirements"). Such requirements shall include but not be limited to:

2.1. Irrigation that conforms to the irrigation management guidelines contained in the City of Sutherlin "Reclaimed Water Reuse Plan, 2003", also known as the irrigation management plan, approved by the Department of Environmental Quality ("DEQ").

2.2. Unless otherwise approved by DEQ, irrigation only on land covered with a deep-rooted, permanent grass that is periodically cut and removed to ensure maximum evapotranspiration and nutrient care; and

2.3. Distribution of the reclaimed water on land, for dissipation by evapotranspiration and controlled seepage by following sound irrigation practices so as to prevent:

- 2.3.1 Prolonged ponding of treated reclaimed water on the ground surface;
- 2.3.2 Surface runoff or subsurface drainage through drainage tile;
- 2.3.3 The creation of odors, fly and mosquito breeding or other nuisance conditions;
- 2.3.4 The overloading of land with nutrients, organics, or other pollutant parameters; and
- 2.3.5 Impairment of existing or potential beneficial uses of groundwater.

3. SURFACE WATERS. Oak Hills acknowledges that the direct release of any reclaimed water to the surface waters of the state of Oregon is prohibited under this First Amendment and applicable Environmental Requirements.

4. SUSPENSION. The City may suspend delivery of reclaimed water to Oak Hills if the City determines that Oak Hills is not using the reclaimed water in compliance with this First Amendment or Environmental Requirements. Any suspension of delivery of reclaimed water under this provision shall resume once Oak Hills has remedied its non-compliance or taken steps satisfactory to the City toward complying.

5. VIOLATIONS. Oak Hills shall immediately report to City Public Works Director or the Wastewater Treatment Plant Operator any and all violations of Environmental Requirements, including the terms of this agreement and the rules set forth in Division 55 of Oregon Administrative Rules applicable to reclaimed water users.

6. STATUS OF WATER REUSE AGREEMENT. Except as amended by this First Amendment, the Water Use Agreement shall remain in full force and effect.

7. ENTIRE AGREEMENT. The Water Use Agreement, as amended by this First Amendment, represent the parties' entire agreement with respect to the subject matter hereof and supersede any and all prior agreements and understandings, written or oral, with respect to such subject matter.

Dated as of 4/28/, 2004.

CITY OF SUTHERLIN

L&H LUMBER COMPANY, DBA
OAK HILLS GOLF COURSE

By: [Signature]
Title: City Manager

By: [Signature]
Title: President

76-00604

BOOK 590 PAGE 195

OPTION FOR PURCHASE OF REAL ESTATE

KNOW ALL MEN BY THESE PRESENTS, That MARJORIE SPENCER, Personal Representative of the Estate of Robert Henry Bainbridge, aka Harry Bainbridge, Deceased the *party of the first part, for and in consideration of ONE HUNDRED and 00/100 (\$100.00) Dollars, to the first party paid, do hereby bargain, give and grant to

THE CITY OF SUTHERLIN, OREGON, a municipal corporation

the *party of the second part, for a period of one year

from the date hereof, the sole, exclusive and irrevocable right and option to purchase that certain real estate situated, lying and being in the County of Douglas and State of Oregon, and more particularly bounded and described as follows, to-wit:

The property described in Exhibit "A" attached hereto and made a part hereof as if fully written herein.

The property described in Exhibit "B" attached hereto and made a part hereof shall have a first and prior water right to take up to 50% of the outfall or discharge water from the city sewer treatment plant after the same has been constructed on the real property described in Exhibit "A" above. The owners of the real property described in Exhibit "B" shall have the option at any time to use or not to use said water, and they shall not lose the right to use said water by nonuse irrespective of the length of time of nonuse. The city shall supply said water under pressure and shall charge for said water at the rate of two cents per 1,000 gallons based on present electric power rates. Said rates shall not be altered by the city at any time hereafter except to cover power rate increases incurred in the cost of pumping said water. Upon the purchase of the real property described in Exhibit "A" the city shall concurrently execute a water right agreement awarding to the real property described in Exhibit "B" said water right in perpetuity irrespective of who the actual owners of said property may

at and for the agreed price of EIGHT THOUSAND and 00/100 (\$8,000.00) Dollars to be paid (if the said party of the second part shall elect to purchase hereunder) in manner and form as follows, to-wit:

The full sum of \$8,000.00 to be paid forthwith upon the exercise of said option.

The water right shall run with the land and shall be effective from the date of purchase of the property described in Exhibit "A" and shall be subject to the terms and conditions of the water right agreement.

and in case said party of the second part shall elect to purchase said premises hereunder and shall pay said consid-
eration and deliver any liens or other documents to said party of the first part, in time, manner and form as here-
inbefore specified, then the said party of the first part agrees forthwith to convey said premises free of all encum-
brances except El Paso Natural Gas Company, easement of right-of-way, Recorder's
No. 318299 and No. 326599, Book of Records, Douglas County, Oregon, and lease
referred to in Recorder's No. 75-11122, Book of Records, Douglas County, Oregon
to said party of the second part by good and sufficient deed with covenants of warranty, together with title insurance
insuring good marketable title; but in case said party of the second part shall not within said period elect to pur-
chase said premises as aforesaid then this agreement shall at the expiration of said period become at once null and
void, and the said party of the first part may and shall retain to first party's own use and benefit all money before
that time paid hereunder.

Done at Oakland, Oregon, this 23rd day of December, 1975.

It executed by a corporation, official corporate seal

Personal Representative of the Estate
of Robert Henry Baimbridge, aka Harry
Baimbridge, Deceased

John R. Seehawer
Mayor
Lloyd E. Norris
City Recorder

Marjorie Spencer
Marjorie Spencer

STATE OF OREGON.

County of Douglas
December 23rd, 1975

Personally appeared the above named Marjorie
Spencer, Personal Representative of
the Estate of Robert Henry Baimbridge,
aka Harry Baimbridge, Deceased

and acknowledged the foregoing instru-
ment to be his/her own act and deed.

Before me:
(OFFICIAL
SEAL) [Signature]
Notary Public for Oregon
My commission expires: 11-17

STATE OF OREGON, County of Douglas

January 12, 1976

Personally appeared Lyle Seehawer, Mayor and
Lloyd Norris, Recorder who, being duly sworn,
deposed for himself and not one for the other, did say that the above is the
Mayor
Recorder
Sutherland, a municipal corporation

and that the seal affixed to the foregoing instrument is the corporate seal
of said corporation and that said instrument was signed and sealed in be-
half of said corporation by authority of its board of directors; and each of
them acknowledged said instrument to be its voluntary act and deed.

[Signature]
Notary Public for Oregon
My commission expires: 3-8-79

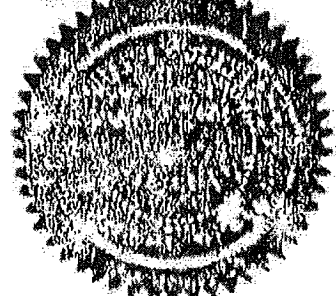


EXHIBIT "A"

BEGINNING at a point on the South line of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon, said point being located South 89° 54' East a distance of 654.91 feet from the Southwest corner of the said Donation Land Claim;

thence North 0° 30' West a distance of 500.00 feet;
 thence South 89° 54' East a distance of 500.00 feet;
 thence South 0° 30' East a distance of 500.00 feet to a point on the South line of the said Donation Land Claim;
 thence, along said South line, North 89° 54' West a distance of 500.00 feet to the point of beginning, being a portion of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon.

ALSO, BEGINNING at a point on the South line of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon, said point being located South 89° 54' East 654.91 feet from the Southwest corner of the said Donation Land Claim;
 thence, along the said South line, North 89° 54' West a distance of 221.39 feet to the Southeast corner of that certain parcel as described in Volume 250, page 659 of the deed records of the said Douglas County;

thence, along the Easterly and Northerly lines of the said parcel as follows; North 0° 06' East a distance of 12.50 feet;
 thence North 63° 44' West a distance of 132.30 feet;
 thence North 89° 39' West a distance of 176.03 feet;
 thence North 54° 57' West a distance of 118.40 feet, more or less, to the Easterly line of a County Road;
 thence, along said Easterly line, North 0° 52' East a distance of 48.35 feet;

thence, leaving said road, parallel with and 40.00 feet at right angles from the Northerly line of the aforementioned parcel as follows: South 54° 57' East a distance of 133.08 feet;

thence South 89° 39' East a distance of 172.73 feet;
 thence South 63° 44' East a distance of 160.44 feet to a point lying 40.00 feet Northerly, when measured at right angles, from the South line of the aforementioned Donation Land Claim;
 thence, parallel with the said South line, South 89° 54' East a distance of 186.33 feet;
 thence South 0° 30' East a distance of 40.00 feet to the point of beginning, being a portion of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon.

BOOK 590 PAGE 198

EXHIBIT "B"

That part of Douglas County Assessor's Tax Lot 5 in Section 13,
and that part of Douglas County Assessor's Tax Lot 11 in Sec-
tion 12, all in Township 25 South, Range 6 West, Willamette
Meridian, Douglas County, Oregon, lying Southerly and Easterly
of the County Road.

1274 76-00604
STATE OF OREGON }
COUNTY OF DOUGLAS } ss.
I, Doris L. Wadsworth, County Clerk and ex-officio
Recorder of said County, do hereby certify that the within instrument was
filed _____ County Clerk _____ 11-15-94
and Recorded in Volume _____
at Page _____ of **BOOK OF RECORDS**
Records of Douglas County, Oregon
DORIS L. WADSWORTH
County Clerk
Margaret Reef

BOOK 610 PAGE 337

EXHIBIT "A"

BEGINNING at a point on the South line of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon, said point being located South 89° 54' East a distance of 654.91 feet from the Southwest corner of the said Donation Land Claim;

thence North 0° 30' West a distance of 500.00 feet;

thence South 89° 54' East a distance of 500.00 feet;

thence South 0° 30' East a distance of 500.00 feet to a point on the South line of the said Donation Land Claim;

thence, along said South line, North 89° 54' West a distance of 500.00 feet to the point of beginning, being a portion of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon.

ALSO, BEGINNING at a point on the South line of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon, said point being located South 89° 54' East 654.91 feet from the Southwest corner of the said Donation Land Claim;

thence, along the said South line, North 89° 54' West a distance of 221.39 feet to the Southwest corner of that certain parcel as described in Volume 250, page 659 of the deed records of the said Douglas County;

thence, along the Easterly and Northerly lines of the said parcel as follows, North 0° 06' East a distance of 12.50 feet;

thence North 63° 44' West a distance of 132.30 feet;

thence North 89° 39' West a distance of 176.03 feet;

thence North 54° 57' West a distance of 118.40 feet, more or less, to the Easterly line of a County Road;

thence, along said Easterly line, North 0° 52' East a distance of 48.35 feet;

thence, leaving said road, parallel with and 40.00 feet at right angles from the Northerly line of the aforementioned parcel as follows: South 54° 57' East a distance of 133.00 feet;

thence South 89° 39' East a distance of 172.73 feet;

thence South 63° 44' East a distance of 160.44 feet to a point lying 40.00 feet Northerly, when measured at right angles, from the South line of the aforementioned Donation Land Claim;

thence, parallel with the said South line, South 89° 54' East a distance of 186.33 feet;

thence South 0° 30' East a distance of 40.00 feet to the point of beginning, being a portion of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon.

SUBJECT TO:

1. Roads and highways and the rights of the public therein.

2. This property lies within the boundaries of the Clatsop Water Control District and is subject to the levies and assessments thereof.

3. Rights of way granted to El Paso Natural Gas Company, recorded in Vol. 320 of the Deed Records of Douglas County, Oregon, Recorder's No. 318299 and in Vol. 326 of the Deed Records of Douglas County, Oregon, Recorder's No. 326599.

4. Unrecorded lease, including terms and provisions therein contained from Marjorie Spencer, Administrator of the Estate of Robert Henry Bainbridge, Deceased to Mobil Oil Corporation, a New York corporation, as evidenced by Memorandum of Gas Lease recorded in Book 577, page 987 Records of Douglas County, Oregon, Recorder's No. 75-11122.

RESERVING unto Grantor, her heirs and assigns, the prior water right to take up to 50% of the outfall or discharge water from the City Sewer Treatment Plant after the same has been constructed on the above described real property, as is more fully set forth in that certain Option for purchase of real estate recorded in Book 590, Page 195, Instrument No. 78-00604, Book of Records, Douglas County, Oregon.

December 2015

Table 1 – Summary of Water Rights for Ford's Pond

Parties with Interest	Application	Permit	Transfer/Amendment	Certificate	Source	Priority Date	Development Deadlines	Type of Beneficial Use	Maximum Rate/Volume (cfs/AF)	Period of Use	Conditions	Status/Comments	Options/Recommendations
Oregon PacificWest Development, LLC Popeye's Griffind LLC	R-29411	R-1669	T-6695	87889 239663	Ford Creek (tributary to Calapooya Creek)	8/19/1954	None	Storage (for Recreation and Irrigation)	980 AF (880 AF for recreation, 50 AF for Irrigation for Oregon Pacific West Development LLC, and 50 AF for Irrigation for Popeye's Griffind LLC.)		- All water stored or appropriated under these rights shall come from Ford Creek only. *When required by OWRD, the water user shall install and maintain a headgate, an in-line flow meter, weir, or suitable measurement device for measuring and recording the quantity of water diverted.	- All interest in Transfer T-6695 was assigned to Lone Rock Timber Company by an Assignment recorded 6/4/2001. - All interest in Transfer T-6695 was assigned to Oregon Pacific West Development by an Assignment recorded 11/3/2008. 50 AF of the storage for Irrigation under Transfer T-6695 was assigned to Popeye's Griffind by an Assignment recorded 8/23/2012. - The COBU for Transfer T-6695 documented the storage volume of Ford's Pond to be 980 AF.	Submit a Certificate of Water Right Ownership Update to notify OWRD that the City of Sutherlin owns the interest in the portion of the water right in the name of Oregon Pacific West Development LLC.
Oregon PacificWest Development, LLC	S-29412	S-23163	T-6695	87888 239662	Ford Creek (tributary to Calapooya Creek)	8/19/1954	None	Maintenance of water level in Ford's Pond (to make up for seepage and evaporation) for Recreation.	0.55 cfs		- Maintenance of the reservoir is for recreation only; any decline in the reservoir level due to use of water for Irrigation shall not be made up by diversion of water under this right. *When required by OWRD, the water user shall install and maintain a headgate, an in-line flow meter, weir, or suitable measurement device for measuring and recording the quantity of water diverted.	- Transfer T-6695 changed the character of use from Maintenance of a Log Pond to Maintenance of a Pond for Recreation and the Point of Diversion to the dam impounding water in Ford's Pond. - All interest in Transfer T-6695 was assigned to Lone Rock Timber Company by an Assignment recorded 6/4/2001. - All interest in Transfer T-6695 was assigned to Oregon Pacific West Development by an Assignment recorded 11/3/2008.	Submit a Certificate of Water Right Ownership Update to notify OWRD that the City of Sutherlin owns the property associated with this water right.
Popeye's Griffind LLC	S-67856	S-54810			Ford's Pond (tributary to Calapooya Creek)	1/7/2013	4/18/2018	Irrigation of 59.9 acres	50 AF	3/1-10/31	- Install and maintain a totalizing flow meter at each point of diversion - Install, maintain, and operate fish screening and by-pass devices at each point of diversion.	This water right is held by Popeye's Griffind, LLC.	Maintain agreements with Popeye's Griffind, LLC
Dale L, Betty M, Scott G., or Donna L Woodruff	S-72567	S-52161		COBU submitted 8/4/2006	Ford Creek and Ford's Pond (tributaries to Calapooya Creek)	7/20/1992	10/1/2006	Irrigation of 59.9 acres	0.75 cfs from Ford Creek with any deficiency from 65 AF from Ford's Pond	3/1-9/30 Ford Creek 3/1-10/31 Ford's Pond	Install and maintain a meter or measuring device	This water right is held by Dale L, Betty M, Scott G., or Donna L Woodruff	Maintain agreements with Woodruff. Review OWRD file for Permit S-52161 to confirm claim of 15 AF of water use).

*When required – this condition is typically triggered when the Watermaster needs to regulate use among water right holders or needs to confirm amount of water use.

December 2015

Table 2 – Summary of City's Water Rights for Cooper Creek and Cooper Creek Reservoir

Name on Permit	Application	Permit	Certificate	Source	Priority Date	Development Deadlines	Type of Beneficial Use	Maximum Rate/Volume (cfs/AF)	Period Of Use	Conditions	Status/Comments	Options/ Recommendations
City of Sutherlin	S-44016	S-32426	See recommendations – once the City obtains its permit extension it should seek a water right certificate (or partial perfection) to secure this water right	Cooper Creek and *Cooper Creek Reservoir	8/29/1967	10/1/2010	Municipal	5.0 cfs from Cooper Creek and from 500 AF of stored water in *Cooper Creek reservoir	Year-round	Submit updated WMCP by 12/31/2016 Current WMCP approval dated 8/8/2007 provides access to water at a rate of 5.0 cfs	- Permit extension currently pending to extend development deadline to 10/1/2020 - GSI worked with OWRD to demonstrate max use to date of 3.0 cfs. - The undeveloped portion of the permit (2.0 cfs) will be subject to "fish persistence" conditions. - ODFW has confirmed that the stored water use will not be subject to "fish persistence" conditions.	Complete the permit extension process; focus on use of 3.0 cfs from Cooper Creek. The 3.0 cfs is the maximum use prior to 10/1/2010. As part of the extension process help ODFW and OWRD understand that the point of diversion is in the reservoir. Currently, the extension application proposes a new development deadline of 10/1/2020. GSI will work with City staff to determine whether this date should be beyond 2020. The 2.0 cfs portion of the permit (undeveloped portion as of 10/1/2010) will be conditioned as part of the permit extension. The conditions are based on flows in Cooper Creek (not use of stored water) and are unlikely to have any impact on the City's water supply. The proposed conditions are attached. After the extension is completed City needs to submit updated WMCP and re-document the need for all 5 cfs under the permit (and specifically seek access to the 2.0 cfs undeveloped portion of the permit). After the WMCP is approved City may seek a water right certificate; GSI's certified Water Rights Examiner can assist the City to demonstrate 5 cfs of use from Cooper Creek and 500 acre feet from Cooper Creek Reservoir. If capacity of the current system is less than 5 cfs and less than 500 acre-feet is used, consider doing a "partial perfection" (partial certificate) for the maximum amount possible. The portion not certificated in the partial perfection will need to be certificated by 2020 (or later as modified by City) or another permit extension will be needed. City install a weir/measuring device in Cooper Creek above reservoir so City can internally track natural flow use and stored water use for future management. Maintain/secure the City's agreement with Sutherlin Water Control District to access the stored water in Cooper Creek Reservoir. In the future as needed, the City should explore the option of obtaining more stored water from the District (transfer of recreation use to municipal use).

*Note: Water is stored in Cooper Creek Reservoir under Certificate 48586, in the name of Sutherlin Water Control District. The Certificate identifies that the District is storing 500 AF of water for municipal use.

December 2015
Table 3 – Summary of Water Rights for Calapooya Creek

Name on Permit	Application	Permit	Certificate	Source	Priority Date	Development Deadlines	Type of Beneficial Use	Maximum Rate/Volume (cfs/AF)	Period Of Use	Conditions	Status/Comments	Options / Recommendations
City of Sutherlin	S-58288	S-44066	See recommendations- information is available to demonstrate full use of the 1.0 cfs under this permit. The City should seek a water right certificate and subsequently withdraw the permit extension request	Calapooya Creek	5/11/1979	10/1/2010	Municipal	1.0 cfs	Year-round	Submit updated WMCP by 12/31/2016 Current WMCP approval dated 8/8/2007 provides access to water at a rate of 1.0 cfs	- Permit extension currently pending to extend development deadline to 10/1/2020. - Draft permit extension Proposed Final Order indicates demonstrated use of 0.78 cfs (in combination with other City water rights at the same point of diversion) to date. - GSI has worked with City staff to confirm evidence of full beneficial use of 1.0 cfs (4.0 cfs total) found in 2005. Since this is before the current completion date of 10/1/2010 no extension of time is needed. - Since the permit was fully developed prior to 10/1/2010 fish persistence conditions will not apply	A total of 4.0 cfs of water use from Calapooya Creek before 10/1/2010 can be demonstrated (1.0 cfs under Permit S-44066). Therefore, GSI's Certified Water Rights Examiner can assist the City in developing and submitting a Claim of Beneficial Use (COBU) for Permit S-44066. The COBU will request the issuance of a water right certificate. Once the certificate is issued the City can withdraw the permit extension application. Be sure updated WMCP does not undercut the demonstrated need for 1.0 cfs under this permit.
	S-9945	S-6610	6344	Calapooya Creek	12/3/1924	None	Municipal	0.75 cfs	Year-round	None	Fully certificated	Continue to report Calapooya Creek annual water use to OWRD.
	S-19502	S-15016	19629	Calapooya Creek	9/5/1941	None	Municipal	2.25 cfs	Year-round	None	Fully certificated	Continue to report Calapooya Creek annual water use to OWRD.

Table 4 – Summary of Water Rights for North Umpqua River

Name on Permit	Application	Permit	Certificate	Source	Priority Date	Development Deadlines	Type of Beneficial Use	Maximum Rate/Volume (cfs/AF)	Period Of Use	Conditions	Status/Comments	Options/Recommendations
City of Sutherlin	S-59416	S-44926	The City has until 2050 to develop and fully beneficially use the water under this permit. See Recommendations.	North Umpqua River	5/11/1979	10/1/2050	Municipal	3.0 cfs	Year-round	Submit updated WMCP by 12/31/2016 The City's previous WMCP approval dated 8/8/2007 provided access to water at a rate of 3.0 cfs. The permit extension order dated 11/14/2014 precludes use of water until an updated WMCP is submitted demonstrating the need for water during a 20-year planning period. Fish persistence conditions apply to all 3.0 cfs on permit.	Permit development timeline has been extended to 10/1/2050.	Understand the impact of fish persistence conditions on use of water under the permit. GSI can examine available data at USGS gage identified in fish persistence advice and compare stream flows with conditions to develop statistics regarding frequency and magnitude of Impacts. Submit updated WMCP and document the long term need for the 3 cfs under the permit. Submit a permit amendment to add a point of diversion to the regional water supply point of diversion (Umpqua Basin Water Association). Over time, document activities taken to develop this water right. These could include but are not limited to: planning for the water use through master plans and WMCPs, activities to develop the water right such as permit amendments and permit extension, financing and infrastructure improvements, and actual water use. To the extent possible, demonstrate the beneficial use of water under this permit and submit a Claim of Beneficial Use (COBU) and certificate request before 2050 or another permit extension will be needed.

APPENDIX D: BANDUCCI WATER RIGHTS

TC

Bob Brinducci

76-00604

BOOK 590 PAGE 195

OPTION FOR PURCHASE OF REAL ESTATE

KNOW ALL MEN BY THESE PRESENTS, That MARJORIE SPENCER, Personal Representative of the Estate of Robert Henry Baimbridge, aka Harry Baimbridge, Deceased

the *party of the first part, for and in consideration of ONE HUNDRED and 00/100-----

(\$100.00)-----Dollars, to the first party paid, do hereby bargain, give and grant to

THE CITY OF SUTHERLIN, OREGON, a municipal corporation

the *party of the second part, for a period of one year

from the date hereof, the sole, exclusive and irrevocable right and option to purchase that certain real estate situate, lying and being in the County of Douglas and State of Oregon, and more particularly bounded and described as follows, to-wit:

The property described in Exhibit "A" attached hereto and made a part hereof as if fully written herein.

The property described in Exhibit "B" attached hereto and made a part hereof shall have a first and prior water right to take up to 50% of the outfall or discharge water from the city sewer treatment plant after the same has been constructed on the real property described in Exhibit "A" above. The owners of the real property described in Exhibit "B" shall have the option at any time to use or not to use said water, and they shall not lose the right to use said water by nonuse irrespective of the length of time of nonuse. The city shall supply said water under pressure and shall charge for said water at the rate of two cents per 1,000 gallons based on present electric power rates. Said rates shall not be altered by the city at any time hereafter except to cover power rate increases incurred in the cost of pumping said water. Upon the purchase of the real property described in Exhibit "A" the city shall concurrently execute a water right agreement awarding to the real property described in Exhibit "B" said water right in perpetuity irrespective of who the actual owners of said property may*

at and for the agreed price of EIGHT THOUSAND and 00/100 (\$8,000.00)-----Dollars to be paid (if the said party of the second part shall elect to purchase hereunder) in manner and form as follows, to-wit:

The full sum of \$8,000.00 to be paid forthwith upon the exercise of said option.

CAN HE SELL EXCESS WATER IF HE CAN NOT USE?

*be, it being understood said water right shall run with the land described in Exhibit "B". Said water right and terms to be effective only in the event the City of Sutherlin exercises this option and purchases said real property described in Exhibit "A".

and in case said party of the second part shall elect to purchase said premises hereunder and shall pay said consideration and deliver any liens or other documents to said party of the first part, in time, manner and form as hereinbefore specified, then the said party of the first part agrees forthwith to convey said premises free of all encumbrances except El Paso Natural Gas Company, easement of right-of-way, Recorder's No. 318299 and No. 326599, Book of Records, Douglas County, Oregon, and lease referred to in Recorder's No. 75-11122, Book of Records, Douglas County, Oregon

to said party of the second part by good and sufficient deed with covenants of warranty, together with title insurance insuring good marketable title; but in case said party of the second part shall not within said period elect to purchase said premises as aforesaid then this agreement shall at the expiration of said period become at once null and void, and the said party of the first part may and shall retain to first party's own use and benefit all money before that time paid hereunder.

Done at Oakland, Oregon, this 23rd day of December, 1975.

If executed by a corporation, affix corporate seal

Personal Representative of the Estate of Robert Henry Baimbridge, aka Harry Baimbridge, Deceased

Lyle R. Seehawer Sr.
Mayor
Lloyd E. Norris
City Recorder

Marjorie Spencer
Marjorie Spencer

STATE OF OREGON,
County of Douglas
December 23rd, 1975.

Personally appeared the above named Marjorie Spencer, Personal Representative of the Estate of Robert Henry Baimbridge, aka Harry Baimbridge, Deceased

and acknowledged the foregoing instrument to be voluntary act and deed.

Before me:

Richard Schwab
Notary Public for Oregon

My commission expires: 7-11-79

STATE OF OREGON

STATE OF OREGON, County of Douglas ss.

January 12, 1976

Personally appeared Lyle Seehawer, Mayor and Lloyd Norris, Recorder who, being duly sworn, each for himself and not one for the other, did say that the former is the Mayor

Recorder and that the latter is the Secretary of City of Sutherlin, a municipal corporation

and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors; and each of them acknowledged said instrument to be its voluntary act and deed.

Before me:
Richard Schwab
Notary Public for Oregon

My commission expires: 3-9-79

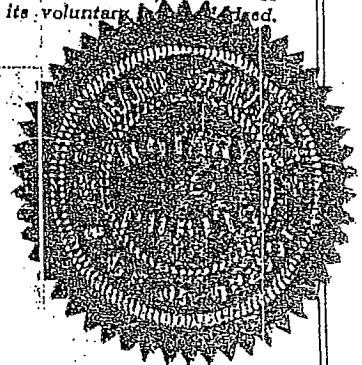


EXHIBIT "A"

BEGINNING at a point on the South line of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon, said point being located South 89° 54' East a distance of 654.91 feet from the Southwest corner of the said Donation Land Claim;

thence North 0° 30' West a distance of 500.00 feet;
thence South 89° 54' East a distance of 500.00 feet;
thence South 0° 30' East a distance of 500.00 feet to a point on the South line of the said Donation Land Claim;
thence, along said South line, North 89° 54' West a distance of 500.00 feet to the point of beginning, being a portion of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon.

ALSO, BEGINNING at a point on the South line of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon, said point being located South 89° 54' East 654.91 feet from the Southwest corner of the said Donation Land Claim;
thence, along the said South line, North 89° 54' West a distance of 221.39 feet to the Southeast corner of that certain parcel as described in Volume 250, page 659 of the deed records of the said Douglas County;

thence, along the Easterly and Northerly lines of the said parcel as follows, North 0° 06' East a distance of 12.50 feet;

thence North 63° 44' West a distance of 132.30 feet;

thence North 89° 39' West a distance of 176.03 feet;

thence North 54° 57' West a distance of 118.40 feet, more or less,

to the Easterly line of a County Road;

thence, along said Easterly line, North 0° 52' East a distance of 48.35 feet;

thence, leaving said road, parallel with and 40.00 feet at right angles from the Northerly line of the aforementioned parcel as follows: South 54° 57' East a distance of 133.08 feet;

thence South 89° 39' East a distance of 172.73 feet;

thence South 63° 44' East a distance of 160.44 feet to a point lying 40.00 feet Northerly, when measured at right angles, from the South line of the aforementioned Donation Land Claim;

thence, parallel with the said South line, South 89° 54' East a distance of 186.33 feet;

thence South 0° 30' East a distance of 40.00 feet to the point of beginning, being a portion of the Elisha Williamson Donation Land Claim No. 48 in Section 13, Township 25 South, Range 6 West, W.M., Douglas County, Oregon.

EXHIBIT "B"

That part of Douglas County Assessor's Tax Lot 5 in Section 13, and that part of Douglas County Assessor's Tax Lot 11 in Section 12, all in Township 25 South, Range 6 West, Willamette Meridian, Douglas County, Oregon, lying Southerly and Easterly of the County Road.

For 12⁰⁰ PM No. 76-00604
 STATE OF OREGON }
 COUNTY OF DOUGLAS } ss.
 I, Doris L. Wadsworth, County Clerk and ex-officio Recorder of ~~County of Douglas~~, in and for said County, do hereby certify that the within instrument was
 filed County Clerk at 11:15 A.M.
 and Recorded in Volume _____
 at Page _____ of **BOOK OF RECORDS**
 Records of Douglas County, Oregon.
DORIS L. WADSWORTH
 County Clerk
 By Mary J. Bent Deputy

12.00 PM
City of Sutherlin
✓ P.O. Box 459
Sutherlin, OR 97479
Tax Add Same as Above

FORM No. 633-1UOMA, KELLEY & WOLKE-IMMEDIATELY USED.

78-14660

BOOK 610 PAGE 336

KNOW ALL MEN BY THESE PRESENTS, That ETTA BAIMBRIDGEhereinafter called the grantor, for the consideration hereinafter stated, to grantor paid by CITY OF SUTHERLIN, OREGON, a Municipal Corporation, hereinafter called the grantee, does hereby grant, bargain, sell and convey unto the said grantee and grantee's heirs, successors and assigns, that certain real property, with the tenements, hereditaments and appurtenances thereunto belonging or appertaining, situated in the County of DOUGLAS and State of Oregon, described as follows, to-wit:

The real property described in Exhibit "A" attached hereto and made a part hereof as if fully written herein.

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE SIDE)

To Have and to Hold the same unto the said grantee and grantee's heirs, successors and assigns forever.

And said grantor hereby covenants to and with said grantee and grantee's heirs, successors and assigns, that grantor is lawfully seized in fee simple of the above granted premises, free from all encumbrances,

and that grantor will warrant and forever defend the above granted premises and every part and parcel thereof against the lawful claims and demands of all persons whatsoever, except those claiming under the above described encumbrances.

The true and actual consideration paid for this transfer, stated in terms of dollars, is \$ 8,000.00.
However, the actual consideration consists of or includes other property or value given or promised which is part of the consideration (indicate which):

In construing this deed and where the context so requires, the singular includes the plural.

WITNESS grantor's hand this 10 day of September, 1976.Etta Baimbridge
Etta BaimbridgeSTATE OF OREGON, County of DOUGLAS ss. Sept 10 1976
Personally appeared the above named Etta Baimbridgeand acknowledged the foregoing instrument to be her voluntary act and deed.Before me, Walter P. Kelley
Notary Public for OregonMy commission expires Sept 17, 1978

NOTE-The notary before me the symbol Q. If not applicable, should be deleted. See Chapter 462, Oregon Laws 1967, as amended by the 1967 Special Session.

ETTA BAIMBRIDGE

STATE OF OREGON

County of _____

I certify that the within instrument was received for record on the _____ day of _____, 19____, at _____ o'clock _____, and recorded in book _____ or page _____ or as file number _____, Record of Deeds of said County.

Witness my hand and seal of County affixed,

By _____ Title _____
By _____ Deputy

GRANTOR'S NAME AND ADDRESS

CITY OF SUTHERLIN, a
Municipal Corporation

GRANTEE'S NAME AND ADDRESS

After recording return to:

Walter P. Kelley
NAME, ADDRESS, ZIP

Until a change is requested all tax statements shall be sent to the following address:

Walter P. Kelley
NAME, ADDRESS, ZIP

COMMERCIAL TITLE CO.

Selling, Closing, Abstracting

BOOK 610 PAGE 337

EXHIBIT "A"

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 thence North 54° 57' West a distance of 118.40 feet, more or less, to the Easterly line of a County Road;
 thence, along said Easterly line, North 0° 52' East a distance of 48.35 feet;
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SUBJECT TO:

1. Roads and highways and the rights of the public therein.
2. This property lies within the boundaries of the Calapooia Water Control District and is subject to the levies and assessments thereof.
3. Rights of way granted to El Paso Natural Gas Company, recorded in Vol. 320 of the Deed Records of Douglas County, Oregon, Recorder's No. 318299 and in Vol. 326 of the Deed Records of Douglas County, Oregon, Recorder's No. 326599.
4. Unrecorded lease, including terms and provisions therein contained from Marjorie Spencer, Administrator of the Estate of Robert Henry Baimbridge, Deceased to Mobil Oil Corporation, a New York corporation, as evidenced by Memorandum of Gas Lease recorded in Book 577, page 987 Records of Douglas County, Oregon, Recorder's No. 75-11122.

RESERVING unto Grantor, her heirs and assigns, the prior water right to take up to 50% of the outfall or discharge water from the City Sewer Treatment Plant after the same has been constructed on the above described real property, as is more fully set forth in that certain Option for purchase of real estate recorded in Book 590, Page 195, Instrument No. 76-00604, Book of Records, Douglas County, Oregon.

BOOK 610 PAGE 338

6212 76-14660
STATE OF OREGON }
COUNTY OF CLATSOP } ss.
I, Doris L. Wadsworth, Clerk and ex-officio
Recorder of said County, do hereby certify that
the foregoing is a true and correct copy of the
original as the same appears in the records of
said County.
SEP. 13 1976 31212
and Recorded in Volume
at Page
Records of Douglas County, Oregon.
DORIS L. WADSWORTH
Clerk
Mary L. Seal
Deputy

APPENDIX E: FORD'S POND WATER RIGHTS

STATE OF OREGON
COUNTY OF DOUGLAS
CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

DALE L WOODRUFF
BETTY M WOODRUFF
SCOTT G WOODRUFF
DONNA L WOODRUFF
PO BOX 95
UMPQUA OR 97486-0095

confirms the right to use the waters of AN UNNAMED STREAM AND SUTHERLIN LOG POND (AKA FORD'S POND), CONSTRUCTED UNDER PERMIT R-1669, TRIBUTARIES OF CALAPOOYA CREEK, for IRRIGATION of 6.0 ACRES.

This right was perfected under Permit S-52161. The date of priority is JULY 20, 1992. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.075 CUBIC FOOT PER SECOND FROM LIVE FLOW WITH ANY DEFICIENCY TO BE MADE UP FROM 6.5 ACRE-FEET OF STORED WATER or its equivalent in case of rotation, measured at the point of diversion.

The period of allowed use is March 1 through September 30 from live flow; March 1 through October 31 from stored water, when necessary for beneficial use.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	DLC	Measured Distances
25 S	6 W	WM	14	SW SE	45	280 FEET NORTH AND 1425 FEET WEST FROM SE CORNER, SECTION 14

The amount of water used for irrigation under this right, together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-EIGHTIETH of one cubic foot per second (or its equivalent) and 2.5 acre-feet for each acre irrigated during the irrigation season of each year.

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q	DLC	Acres
25 S	6 W	WM	23	NE NE	45	2.0
25 S	6 W	WM	23	SE NE	45	4.0

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484 and ORS 536.075. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 183.484, ORS 536.075 and OAR 137-004-0080, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied. In addition, under ORS 537.260 any person with an application, permit or water right certificate subsequent in priority may jointly or severally contest the issuance of the certificate within three months after issuance of the certificate.

Measurement, recording and reporting conditions:

- A. The water user shall maintain the meter or other suitable measuring device as approved by the Director in good working order.
- B. The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.
- C. The Director may require the water user to keep and maintain a record of the amount (volume) of water used and may require the water user to report water use on a periodic schedule as established by the Director. In addition, the Director may require the water user to report general water use information, the periods of water use and the place and nature of use of water under the right. The Director may provide an opportunity for the water user to submit alternative reporting procedures for review and approval.

This right is limited to any deficiency in the available supply of any prior right existing for the same lands.

Failure to comply with any of the provisions of this right may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the right.

This right is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described.

Issued OCT 23 2015.


Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

STATE OF OREGON

COUNTY OF DOUGLAS

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

DALE L., BETTY M., SCOTT G., OR DONNA L. WOODRUFF
1469 FORT MCKAY RD
OAKLAND, OREGON 97462

(541) 459-1400

The specific limits for the use are listed below along with conditions of use.

APPLICATION FILE NUMBER: S-72567

SOURCE OF WATER: AN UNNAMED STREAM AND SUTHERLIN LOG POND (AKA FORD'S POND), CONSTRUCTED UNDER PERMIT R-1669, TRIBUTARIES OF CALAPOOYA CREEK

PURPOSE OR USE: IRRIGATION OF 59.9 ACRES

RATE AND VOLUME OF USE: 0.75 CUBIC FOOT PER SECOND FROM LIVE FLOW WITH ANY DEFICIENCY TO BE MADE UP FROM 65.0 ACRE-Feet OF STORED WATER

PERIOD OF ALLOWED USE: MARCH 1 THROUGH SEPTEMBER 30 FROM LIVE FLOW, MARCH 1 THROUGH OCTOBER 31 FROM STORED WATER, WHEN NECESSARY FOR BENEFICIAL USE

DATE OF PRIORITY: JULY 20, 1992

POINT OF DIVERSION LOCATION: SW 1/4 SE 1/4, SECTION 14, T25S, R6W, W.M.; 280 FEET NORTH AND 1425 FEET WEST FROM THE SE CORNER OF SECTION 14

The amount of water used for irrigation under this right, together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-EIGHTIETH of one cubic foot per second (or its equivalent) and 2.5 acre-feet for each acre irrigated during the irrigation season of each year.

THE PLACE OF USE IS LOCATED AS FOLLOWS:

SW 1/4 SE 1/4 4.1 ACRES
SE 1/4 SE 1/4 1.8 ACRES
SECTION 14
NE 1/4 NE 1/4 34.5 ACRES
NW 1/4 NE 1/4 13.8 ACRES
SW 1/4 NE 1/4 0.3 ACRE
SE 1/4 NE 1/4 5.4 ACRES

SECTION 23

TOWNSHIP 25 SOUTH, RANGE 6 WEST, W.M.

Application S-72567 Water Resources Department

PERMIT 52161

Measurement, recording and reporting conditions:

- A. Before water use may begin under this permit, the permittee shall install a meter or other suitable measuring device as approved by the Director. The permittee shall maintain the meter or measuring device in good working order.
- B. The permittee shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.
- C. The Director may require the permittee to keep and maintain a record of the amount (volume) of water used and may require the permittee to report water use on a periodic schedule as established by the Director. In addition, the Director may require the permittee to report general water use information, the periods of water use and the place and nature of use of water under the permit. The Director may provide an opportunity for the permittee to submit alternative reporting procedures for review and approval.

This right is limited to any deficiency in the available supply of any prior right existing for the same land.

STANDARD CONDITIONS

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

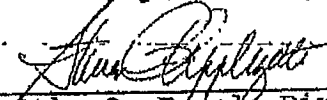
By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.

The Director finds that the proposed use(s) of water described by this permit, as conditioned, will not impair or be detrimental to the public interest.

Actual construction work shall begin within one year from permit issuance and shall be completed on or before October 1, 1998. Complete application of the water to the use shall be made on or before October 1, 1999.

Issued May 14, 1996


for Martha O. Pager, Director
Water Resources Department

B C C C C

Application No. 72567

Permit No. 52161

52161
RECEIVED

JUL 20 1992

WATER RESOURCES DEPT.
SALEM, OREGON

WATER RIGHT APPLICATION MAP

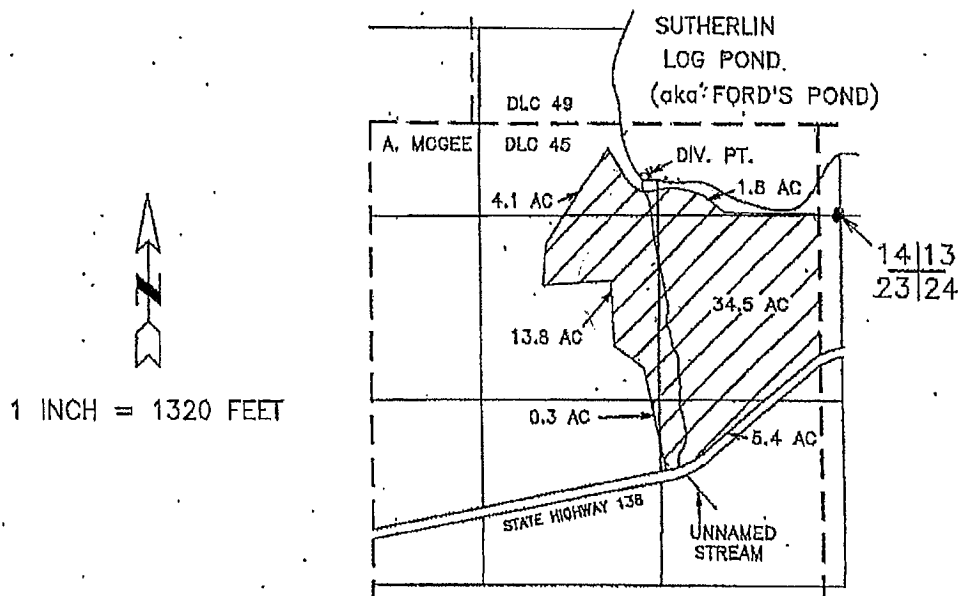
FOR: DALE L. WOODRUFF, BETTY M. WOODRUFF,
SCOTT G. WOODRUFF, OR DONNA L. WOODRUFF

BY: COMPUMETRICS

IN: A. MCGEE DLC 45 AND SECTIONS 14 & 23,

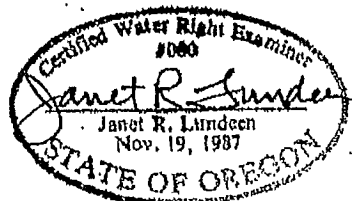
T. 25 S., R. 6 W., W. M.

DATE: JULY 1992



THE DIVERSION POINT IS LOCATED 280 FEET NORTH AND 1425 FEET EAST FROM THE SE CORNER OF SECTION 14, BEING WITHIN THE SW 1/4 OF THE SE 1/4 OF SECTION 14, T. 25 S., R. 6 W., W. M., AS PROJECTED WITHIN A. MCGEE DLC 45.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF THE WATER RIGHT. IT IS NOT INTENDED TO PROVIDE LEGAL DIMENSIONS OR THE LOCATION OF PROPERTY OWNERSHIP LINES.



52161

DRAFT

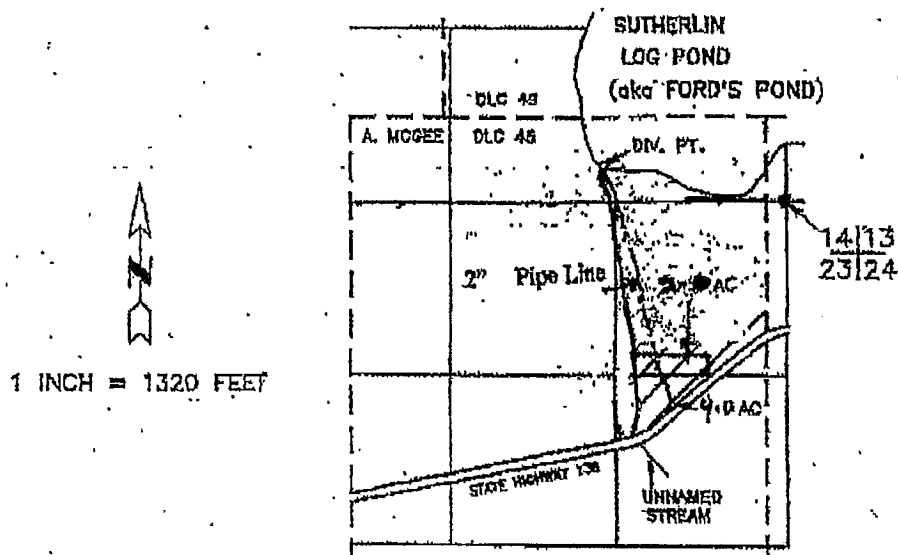
CLAIM OF BENEFICIAL USE
FOR: SCOTT G. WOODRUFF
AND DONNA L. WOODRUFF

BY: DUANE W. KIRBY
T25S, R6W, W.M., SEC. 23

APPLICATION NO. 72567

PERMIT NO 52161

DATE: JULY 2006



THE DIVERSION POINT IS LOCATED 280 FEET NORTH AND 1425 FEET EAST FROM THE SE CORNER OF SECTION 14, BEING WITHIN THE SW 1/4 OF THE SE 1/4 OF SECTION 14, T 25, S, R 6 W, W M, AS PROJECTED WITHIN A. MCGEE DLC 45.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF THE WATER RIGHT. IT IS NOT INTENDED TO PROVIDE LEGAL DIMENSIONS OR THE LOCATION OF PROPERTY OWNERSHIP LINES.

**DRAFT**

STATE OF OREGON

COUNTY OF DOUGLAS

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO:

POPEYE'S GIRLFRIEND LLC
3720 SW BOND AVE UNIT 408
PORTLAND OR 97239

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: S-87856

SOURCE OF WATER: FORD'S POND, CONSTRUCTED UNDER PERMIT R-1669, TRIBUTARY OF CALAPOOYA CREEK

PURPOSE OR USE: IRRIGATION OF 163.1 ACRES

MAXIMUM VOLUME: 50.0 ACRE FEET

DATE OF PRIORITY: JANUARY 7, 2013

PERIOD OF USE: MARCH 1 THROUGH OCTOBER 31

Authorized Point of Diversion:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
25 S	6 W	WM	14	SW SE	715 FEET NORTH AND 1550 FEET WEST FROM SE CORNER, SECTION 14

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to a diversion of not to exceed 2.5 acre-feet per acre for each acre irrigated during the irrigation season of each year. The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described.

Authorized Place of Use:

Twp	Rng	Mer	Sec	Q-Q	Acres
25 S	6 W	WM	14	SE SW	11.4
25 S	6 W	WM	14	SW SE	12.4
25 S	6 W	WM	23	NE NE	1.1
25 S	6 W	WM	23	NW NE	38.1
25 S	6 W	WM	23	SW NE	19.7
25 S	6 W	WM	23	SE NE	1.5
25 S	6 W	WM	23	NE NW	39.3
25 S	6 W	WM	23	NW NW	5.3
25 S	6 W	WM	23	SW NW	7.5
25 S	6 W	WM	23	SE NW	26.8

Measurement, recording and reporting conditions:

- A. Before water use may begin under this permit, the permittee shall install a totalizing flow meter at each point of diversion, and maintain the meter(s) in good working order.

- B. The permittee shall allow the watermaster access to the meter(s); where a meter is located within a private structure, the watermaster shall request access upon reasonable notice.
- C. The Director may require the permittee to keep and maintain a record of the amount (volume) of water used, and may require the permittee to report water use on a periodic schedule as established by the Director. In addition, the Director may require the permittee to report general water-use information, the periods of water use, and the place and nature of use of water under the permit. The Director may provide an opportunity for the permittee to submit alternative reporting procedures for review and approval.
- D. The Director may provide an opportunity for the permittee to submit alternative measuring and reporting procedures for review and approval.

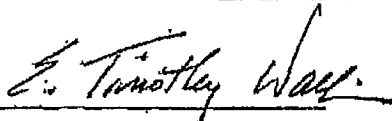
The water user shall install, maintain, and operate fish screening and by-pass devices consistent with current Oregon Department of Fish and Wildlife (ODFW) standards. Fish screening is to prevent fish from entering the proposed diversion, while by-pass devices provide adequate upstream and downstream passage for fish. The required screen and by-pass devices are to be in place and functional, and approved in writing by ODFW prior to diversion of water. The water user may submit evidence in writing that ODFW has determined screens and/or by-pass devices are not necessary.

STANDARD CONDITIONS

- 1. Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.
- 2. Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.
- 3. This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.
- 4. By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.
- 5. The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.
- 6. If the riparian area is disturbed in the process of developing a point of diversion, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with ODFW's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. For purposes of mitigation, the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR Chapter 635, Division 415, shall be followed.
- 7. Completion of construction and application of the water shall be made within five years of the date of permit issuance. If beneficial use of permitted water has not been made before this date, the permittee may submit an application for extension of time, which may be approved based upon the merit of the application.

8. Within one year after making beneficial use of water, the permittee shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner.

Issued APRIL 18 2013.

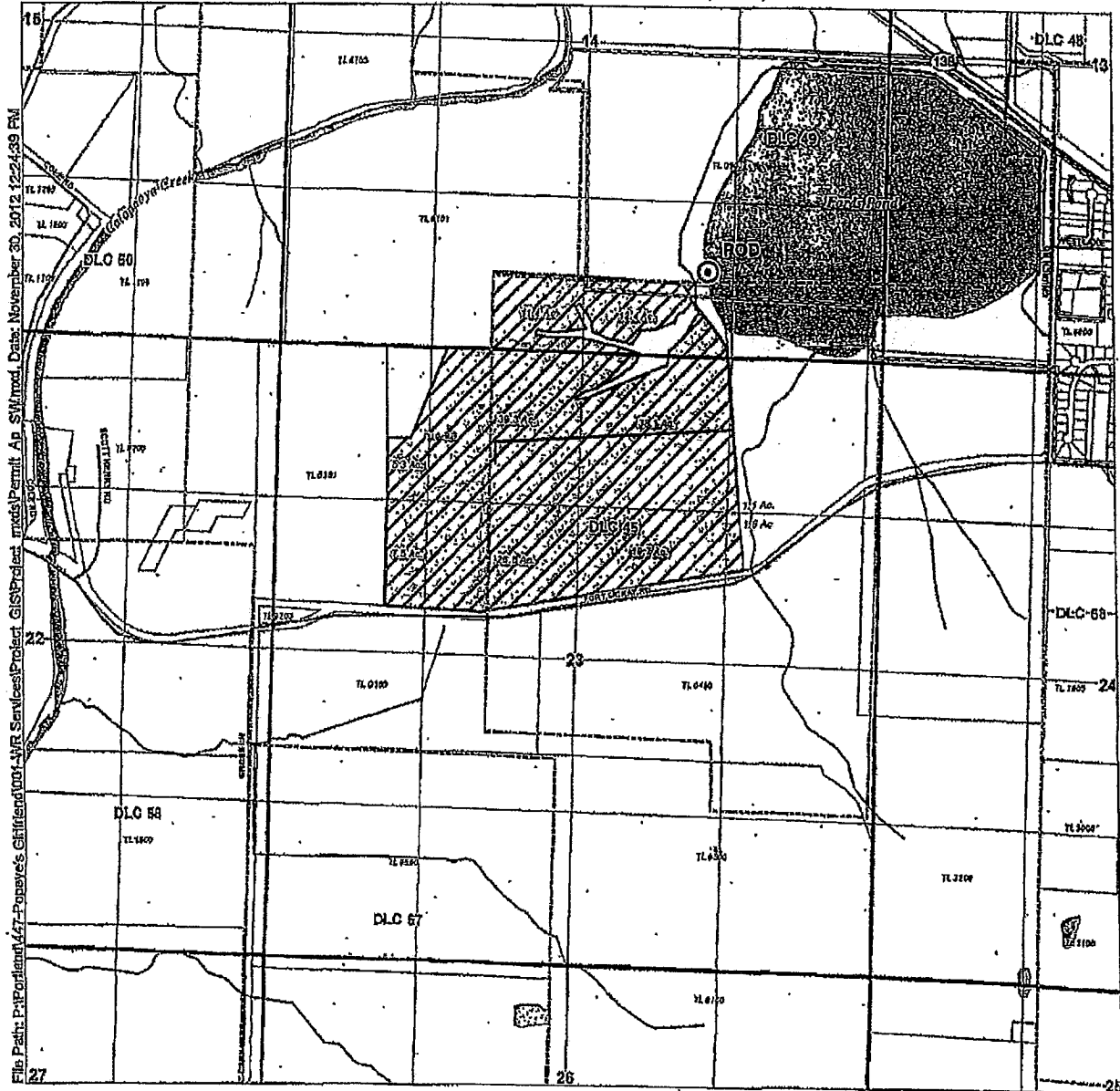


E. Timothy Wallin, Water Rights Program Manager
for Phillip C. Ward, Director

Application for a Permit to Use Surface Water

Application in the Name of Popeye's Girlfriend, LLC

Township 25 South, Range 6 West (W.M.)



LEGEND

- Point of Diversion (POD)
- Place of Use (POU)
- Mainline
- Suburban City Limits
- DLCs
- Tax Lots
- Roads

POD Location Description

POD Located 715 feet North and 1,550 feet West from the SE corner of Section 14, Township 25 South, Range 6 West (W.M.)

S-87856

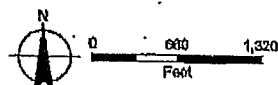
RECEIVED BY OWRD

JAN 07 2013

SALEM, OR

Disclaimer
This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Map Notes
Date: November 28, 2012
Data Sources: CGIC, US BLM
Prepared By: GSI Water Solutions, Inc.



STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

OREGON PACIFICWEST DEVELOPMENT LLC
PO BOX 1001
ROSEBURG OR 97470

POPEYE'S GIRLFRIEND LLC
3720 SW BOND STREET, UNIT 408
PORTLAND, OR 97239

confirms the right to store water perfected under the terms of Permit R-1669. The amount of water used to which this right is entitled is limited to the amount used beneficially, and shall not exceed the amount specified, or its equivalent in the case of rotation, measured at the point of diversion from the source. The specific limits and conditions of the use are listed below.

APPLICATION NUMBER: R-29411

SOURCE: FORD CREEK, A TRIBUTARY OF CALAPOOYA CREEK

STORAGE FACILITY: SUTHERLIN RESERVOIR (a.k.a. FORD'S POND) TO BE MAINTAINED UNDER PERMIT S-23163

PURPOSE or USE: RECREATION AND IRRIGATION

MAXIMUM STORAGE VOLUME: 980 ACRE FEET, BEING 880 ACRE FEET FOR RECREATION AND 50 ACRE FEET FOR IRRIGATION FOR OREGON PACIFICWEST DEVELOPMENT LLC AND 50 ACRE FEET FOR IRRIGATION FOR POPEYE'S GIRLFRIEND LLC.

DATE OF PRIORITY: AUGUST 19, 1954

The dam and point of diversion outlet is located:

Twp	Rng	Mer	Sec	Q-Q	DLC	Measured Distances
25 S	6 W	WM	14	NE SE	49	2560 FEET NORTH & 670 FEET WEST FROM SE CORNER, SECTION 14

The submerged area:

Twp	Rng	Mer	Sec	Q-Q	GLot	DLC
25 S	6 W	WM	13	NE SW	2	
25 S	6 W	WM	13	NW SW	1	
25 S	6 W	WM	13	NW SW		49
25 S	6 W	WM	13	SW SW	3	
25 S	6 W	WM	13	SW SW	3	49

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Trp	Rng	Mer	Sec	Q-Q	GLC	INC
25S	6W	WM	14	SE SW		
25S	6W	WM	14	NE SE		49
25S	6W	WM	14	NW SE		49
25S	6W	WM	14	SW SE		49
25S	6W	WM	14	SE SE		49
25S	6W	WM	14	SW SE		45
25S	6W	WM	14	SE SE		45
25S	6W	WM	14	SE SE		49

The water user shall no longer be able to call water from the mainstem of Calapooya Creek. All water stored or appropriated under these rights shall come from Ford Creek only.

The water used under the right perfected under permit 23163 shall be used to maintain the reservoir for recreation only. Any decline in reservoir level due to use of water for irrigation shall NOT be made up by appropriation of water under the right perfected under permit 23163. The use of water for irrigation shall be from stored water only.

When required by the Department, the water user shall install and maintain a headgate, an in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water diverted. The type and plans of the headgate and measuring device must be approved by the Department prior to beginning of construction and shall be installed under the general supervision of the Department.

This certificate is issued to confirm a change in CHARACTER OF USE AND POINT OF DIVERSION approved by an order of the Water Resources Director entered November 22, 1993, at Special Order Volume 47, Page 376, approving Transfer Application 6695, and supersedes Certificate 23963, State Record of Water Right Certificates.

Issued JAN 17 2013


Dwight W. Ward
Water Right District Administrator for
Phillip C. Ward, Director
Water Resources Department

CLAIM OF BENEFICIAL USE MAP

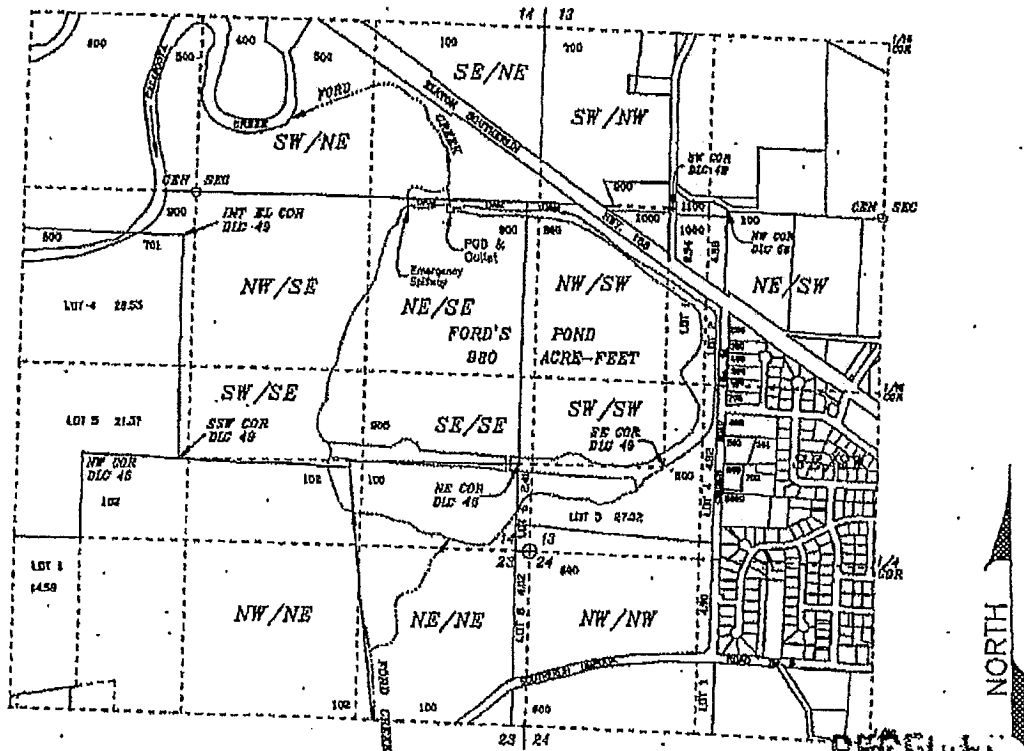
TRANSFER 6695

CERTIFICATE 23963
PERMIT R-1669

CERTIFICATE 23962
PERMIT 23163

SECTIONS 13, 14, 23 & 24, TOWNSHIP 25 SOUTH, RANGE 6 WEST, W.M.

DOUGLAS COUNTY, OREGON



POD & Outlet - NE/SE, DLC 49, 2580 feet north & 670 feet west from the SE corner section 14, T25S, R6W, W.M.

Surface area of Ford Pond - 122.5 Acres

RECEIVED

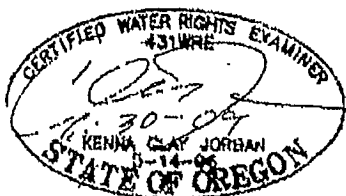
23

WATER RESOURCES

SALEM, OREGON

CERTIFICATE 23963 (PERMIT R-1669) - 940 acre-feet recreation and 40 acre-feet irrigation (8/19/1954)

CERTIFICATE 23962 (PERMIT 23163) - Maintenance of a Pond for Recreation (8/19/1954)



CLAIM OF BENEFICIAL USE FOR:
OREGON PACIFICWEST DEVELOPMENT
P.O. Box 1127
Roseburg, OR 97471

Scale
1 inch = 1320 feet



JORDAN ENGINEERING
460 JORDAN LANE
ROSEBURG, OR 97471
(541) 673-1931

11/6/2008 n.d.
Rev. 11/25/2008 n.d.

This map is not intended to provide legal dimensions or locations of property ownership lines

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

OREGON PACIFICWEST DEVELOPMENT LLC
PO BOX 1001
ROSEBURG OR 97470

confirms the right to use the waters of FORD CREEK, tributary to CALAPOOYA CREEK for MAINTENANCE OF SUTHERLIN RESERVOIR (a.k.a. FORD'S POND) FOR RECREATION CONSTRUCTED UNDER PERMIT R-1669.

This right was perfected under permit S-23163. The date of priority is AUGUST 19, 1954. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.55 CUBIC FOOT PER SECOND, or its equivalent in case of rotation, measured at the point of diversion.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	DLC	Measured Distances
25 S	6 W	WM	14	NE SE	49	2560 FEET NORTH & 670 FEET WEST FROM SE CORNER, SECTION 14

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q	GLC	DLC
25 S	6 W	WM	13	NE SW	2	49
25 S	6 W	WM	13	NW SW	1	49
25 S	6 W	WM	13	NW SW	2	49
25 S	6 W	WM	13	SW SW	3	49
25 S	6 W	WM	13	SW SW	4	49
25 S	6 W	WM	13	SE SW	5	49
25 S	6 W	WM	14	NE SE	1	49
25 S	6 W	WM	14	NW SE	2	49
25 S	6 W	WM	14	SW SE	3	49
25 S	6 W	WM	14	SE SE	4	49
25 S	6 W	WM	14	SW SE	5	49
25 S	6 W	WM	14	SE SE	6	49
25 S	6 W	WM	14	SE SE	7	49
25 S	6 W	WM	14	SE SE	8	49
25 S	6 W	WM	14	SE SE	9	49

The water user shall no longer be able to call water from the mainstem of Calapooya Creek. All water stored or appropriated under these rights shall come from Ford Creek only.

NOTICE OF RIGHT TO RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

The water used under the right perfected under permit 23163 shall be used to maintain the reservoir for recreation only. Any decline in reservoir level due to use of water for irrigation shall NOT be made up by appropriation of water under the right perfected under permit 23163. The use of water for irrigation shall be from stored water only.

When required by the Department, the water user shall install and maintain a headgate, an in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water diverted. The type and plans of the headgate and measuring device must be approved by the Department prior to beginning of construction and shall be installed under the general supervision of the Department.

This certificate is issued to confirm a change in CHARACTER OF USE AND POINT OF DIVERSION approved by an order of the Water Resources Director entered November 22, 1993, at Special Order Volume 47, Page 376, approving Transfer Application 6695, and supersedes Certificate 23962, State record of Water Right Certificates.

Issued JAN 17 2013

A rectangular stamp containing a handwritten signature in dark ink. The signature appears to be "Dwight W. French".

Dwight W. French
Water Right Services Administrator, for
Phillip C. Ward, Director
Water Resources Department

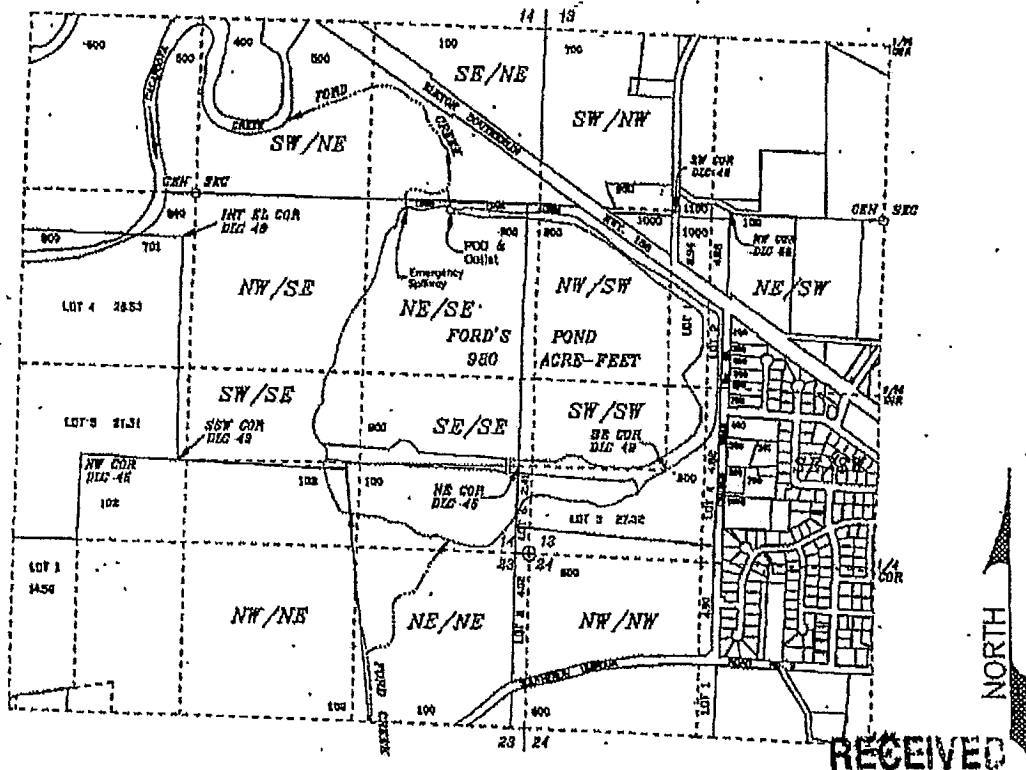
CLAIM OF BENEFICIAL USE MAP

TRANSFER 6695

CERTIFICATE 23963
PERMIT R-1669

CERTIFICATE 23962
PERMIT 23163

SECTIONS 13, 14, 23 & 24, TOWNSHIP 25 SOUTH, RANGE 6 WEST, W.M.
DOUGLAS COUNTY, OREGON



POD & Outlet - NE/SE, DLC 49, 2560 feet north & 870 feet west
from the SE corner section 14, T25S, R6W, W.M.

Surface area of Ford Pond - 122.5 Acres

RECEIVED

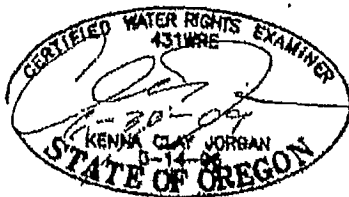
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WATER RESOURCES DEPT

SALEM, OREGON

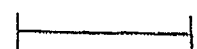
CERTIFICATE 23963 (PERMIT R-1669) - 940 acre-feet recreation and 40 acre-feet Irrigation (8/19/1954)

CERTIFICATE 23962 (PERMIT 23163) - Maintenance of a Pond for Recreation (8/19/1954)



CLAIM OF BENEFICIAL USE FOR:
OREGON PACIFICWEST DEVELOPMENT
P.O. Box 1127
Roseburg, OR 97471

Scale
1 inch = 1920 feet



JORDAN ENGINEERING
480 JORDAN LANE
ROSEBURG, OR 97471
(541) 673-1931

11/5/2008 n.e.d.
Rev. 11/25/2005 n.e.d.

This map is not intended to provide legal dimensions
or locations of property ownership lines

APPENDIX F: WRD RECLAIMED WATER REGISTRATION

Reclaimed Water Use Contract

Recycled Water Flow Diagram

Map of Place of Reclaimed Water Use

Municipal Reclaimed Water Registration Form

Attachment 1: Reclaimed Water Use Contract

FIRST AMENDMENT TO SEWER TREATMENT FACILITY WATER USE AGREEMENT

PARTIES:

CITY OF SUTHERLIN ("City")

L&H LUMBER COMPANY, DBA OAK HILLS GOLF COURSE ("Oak Hills")

RECITALS:

A. City and Van De Hey Track Transport, Inc., dba Sutherlin Knolls ("Sutherlin Knolls") are parties to a Sewer Treatment Facility Water Use Agreement dated June 13, 1977 (the "Water Use Agreement"), a copy of which is attached hereto. Sutherlin Knolls was the owner of the real property described in Exhibit B to the Water Use Agreement. Sutherlin Knolls no longer owns that real property, and it is now owned by L&H Lumber Company, dba Oak Hills Golf Course. That Water Use Agreement, and now this First Amendment, are binding upon successors, heirs and assigns.

B. The Oregon Department of Environmental Quality has required that water reuse agreements contain certain provisions, thereby necessitating this First Amendment.

AGREEMENTS:

1. RECLAIMED WATER QUANTITY AND QUALITY STANDARDS. The maximum quantity of reclaimed water that will be released to Oak Hills is 193 million gallons per year. The City shall make all reasonable effort to provide Oak Hills with at least Level II effluent.

2. SPECIFIC USE. Oak Hills shall use the reclaimed water received from the City for irrigation consistent with all applicable federal, state and local environmental laws and regulations and the City's NPDES Permit (hereinafter collectively referred to as "Environmental Requirements"). Such requirements shall include but not be limited to:

2.1. Irrigation that conforms to the irrigation management guidelines contained in the City of Sutherlin "Reclaimed Water Reuse Plan, 2003", also known as the irrigation management plan, approved by the Department of Environmental Quality ("DEQ").

2.2. Unless otherwise approved by DEQ, irrigation only on land covered with a deep-rooted, permanent grass that is periodically cut and removed to ensure maximum evapotranspiration and nutrient care; and

2.3. Distribution of the reclaimed water on land, for dissipation by evapotranspiration and controlled seepage by following sound irrigation practices so as to prevent:

- 2.3.1 Prolonged ponding of treated reclaimed water on the ground surface;
- 2.3.2 Surface runoff or subsurface drainage through drainage tile;
- 2.3.3 The creation of odors, fly and mosquito breeding or other nuisance conditions;
- 2.3.4 The overloading of land with nutrients, organics, or other pollutant parameters; and
- 2.3.5 Impairment of existing or potential beneficial uses of groundwater.

3. SURFACE WATERS. Oak Hills acknowledges that the direct release of any reclaimed water to the surface waters of the state of Oregon is prohibited under this First Amendment and applicable Environmental Requirements.

4. SUSPENSION. The City may suspend delivery of reclaimed water to Oak Hills if the City determines that Oak Hills is not using the reclaimed water in compliance with this First Amendment or Environmental Requirements. Any suspension of delivery of reclaimed water under this provision shall resume once Oak hills has remedied its non-compliance or taken steps satisfactory to the City toward complying.

5. VIOLATIONS. Oak Hills shall immediately report to City Public Works Director or the Wastewater Treatment Plant Operator any and all violations of Environmental Requirements, including the terms of this agreement and the rules set forth in Division 55 of Oregon Administrative Rules applicable to reclaimed water users.

6. STATUS OF WATER REUSE AGREEMENT. Except as amended by this First Amendment, the Water Use Agreement shall remain in full force and effect.

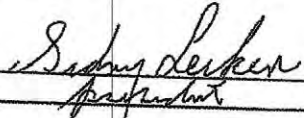
7. ENTIRE AGREEMENT. The Water Use Agreement, as amended by this First Amendment, represent the parties' entire agreement with respect to the subject matter hereof and supersede any and all prior agreements and understandings, written or oral, with respect to such subject matter.

Dated as of 4/28/, 2004.

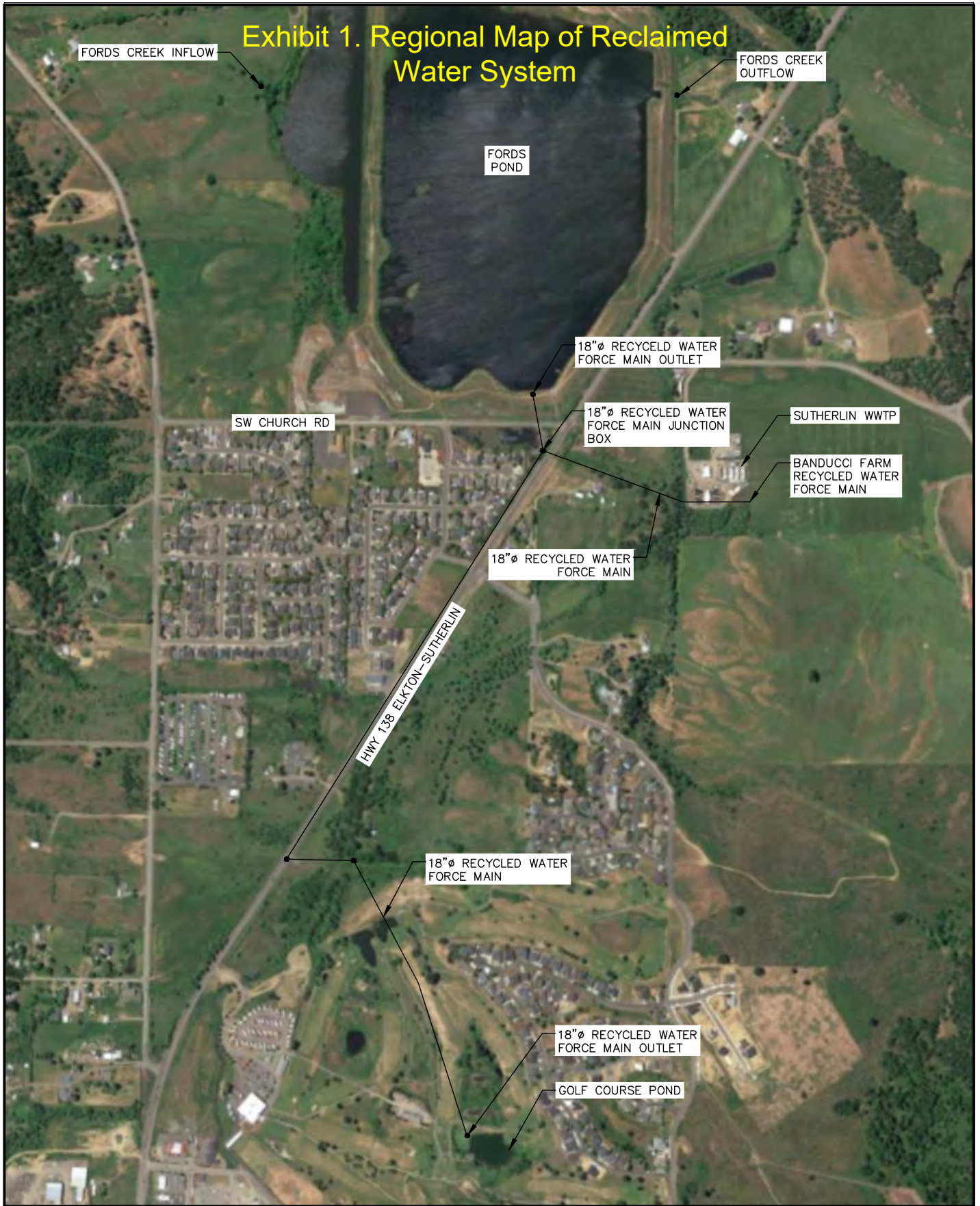
CITY OF SUTHERLIN

L&H LUMBER COMPANY, DBA
OAK HILLS GOLF COURSE

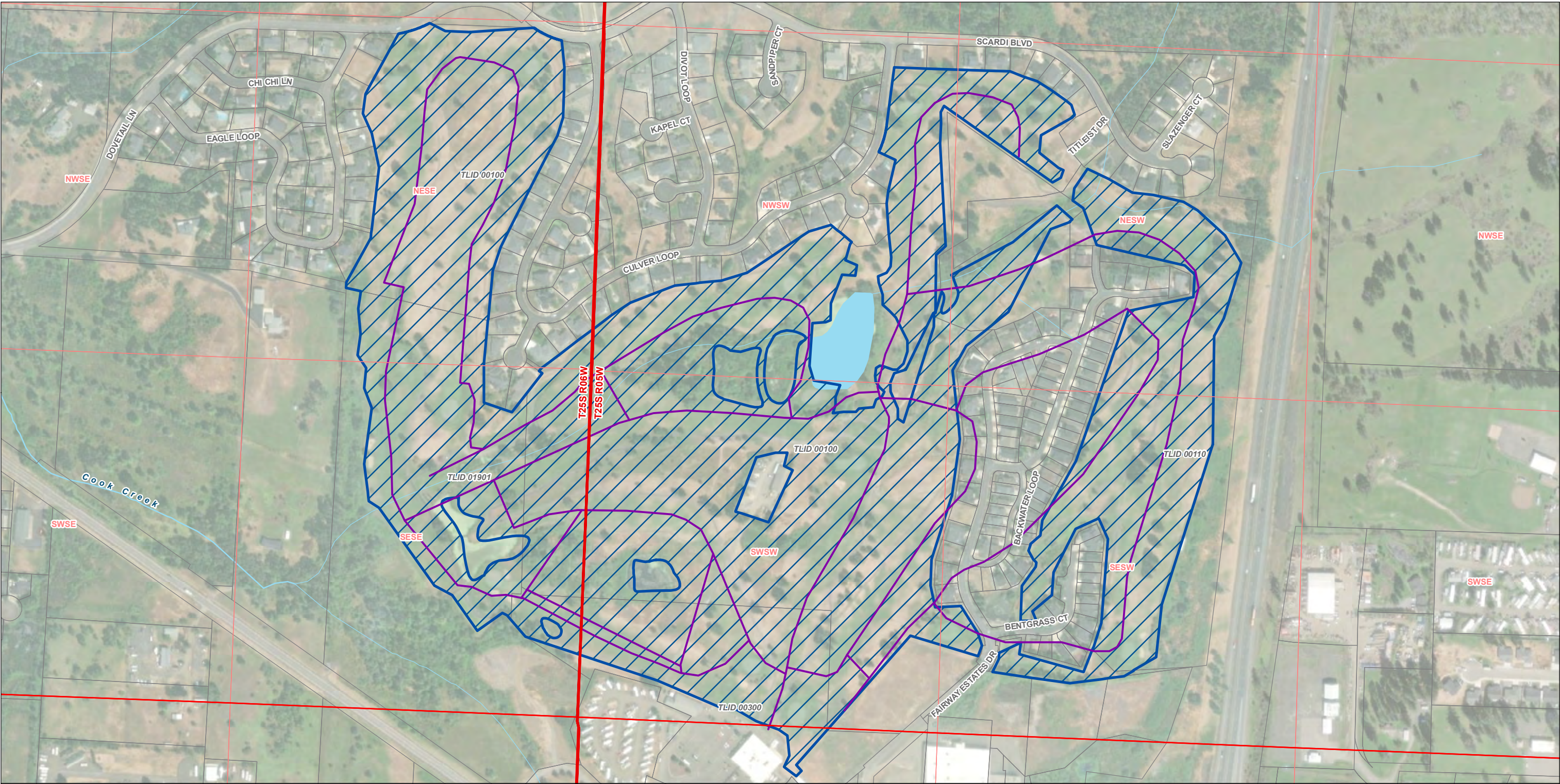
By: 
Title: City Manager

By: 
Title: President

C:\Users\hshafar\Desktop\146. Sutherlin\146. Sutherlin\Figures\dwg\6.2.1.dwg, 2/2/2023 3:25:13 PM February 2, 2023 PLOT DATE



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.		CITY OF SUTHERLIN RECYCLED WATER USE PLAN RECYCLED WATER FLOW DIAGRAM	FIGURE NO. 6.2.1
DATE: JAN 2023			
PROJECT NO.: 146.60			



LEGEND

- Distribution Line
- Approximate Area of Golf Course Irrigation
- Tax Lot
- Watercourse
- Waterbody

DISCLAIMER
This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Date: March 22, 2023, Data Sources: BLM, ESRI, OWRD, USGS

EXHIBIT 2

Map of Place of Reclaimed Water Use

Township 25 South, Range 5/6 West (W.M.)



March 27, 2023

Steve McMillan
Oregon Department of Environment Quality
165 East 7th Ave, Suite 100
Eugene, OR 97401

Dear Mr. McMillan,

On behalf of the City of Sutherlin (City), GSI Water Solutions, Inc. submits this Municipal Reclaimed Water Registration Form (registration) to the Department for review. The attached registration aligns with the City's recently revised Recycled Water Use Plan.

The City has provided reclaimed water generated from the City's wastewater treatment plant to the Umpqua Golf Management dba Oak Hills Golf Club (golf course) for irrigation under the City's water right Certificate 48816, issued by Oregon Water Resources Department. This water right authorizes the use of reclaimed water to irrigate 38.5 acres at this location. The City is submitting this registration to clarify that the golf course will use reclaimed water to irrigate up to 100 acres which overlays the 38.5 acres identified in the Certificate 48816.

If you have any questions or need further information, please do not hesitate to contact me at 971-236-2550.

Sincerely,
GSI Water Solutions, Inc.

A handwritten signature in black ink, appearing to read "Tim Henkle", is written over a light blue rectangular background.

Tim Henkle
Water Resources Planner
thenkle@gsiws.com

Enclosure

Oregon Water Resources Department

Municipal Reclaimed Water Registration Form

A water use permit may not be required if the water being used is reclaimed water as defined in ORS 537.131 **and** the reclaimed water use is both authorized by the Oregon Department of Environmental Quality (DEQ) **and registered** with Oregon Water Resources Department (WRD)(ORS 537.132). Currently there is no fee for registering.

Complete and send this Registration Form **to the DEQ permit writer** managing the wastewater treatment facility discharge permit. DEQ will review and sign this Registration Form prior to sending it on to WRD in Salem. A response letter will be sent by WRD to all parties within 60 days of receipt.

Instructions are available to guide you. If you need assistance, please call 503-986-0900 and ask for the "Water Reuse Coordinator" or contact the local watermaster in your county. Insert "N/A" if the requested information does not apply to your situation.

1. Name of "Registrant". Who will use the reclaimed water?

Name of Reclaimed Water User: Umpqua Resort Golf Course

County where reclaimed water use will occur: Douglas

Mail Address: 1919 Recreation Lane, Sutherlin, OR 97479
Street/P.O. Box City State Zip

Daytime Telephone: (541) 459-4422 E-mail: scott.g.zielinski@gmail.com

2. Does the reclaimed water user own the land where the use will occur?

☐ YES ☒ NO If no, provide the landowner's name and contact information.

Landowner Name: Umpqua Golf Management LLC

Mail Address: 1919 Recreation Lane, Sutherlin, OR 97479
Street/P.O. Box City State Zip

Daytime Telephone: (541) 459-4422 E-mail: scott.g.zielinski@gmail.com

3. Are there existing water rights on the same land where the use will occur?

☒ YES (provide information below) ☐ NO

Application No. S-49986 Permit No. S-37945

Certificate No. 48816 Decree vol. & pg. _____

Will the reclaimed water be used **instead of** existing water rights OR used to **supplement** the continued use of the existing water rights? Supplement the use of the existing water right

4. Has DEQ issued a Municipal Wastewater Treatment Facility Discharge Permit authorizing the use of reclaimed water? (If yes, provide permit number)

☒ YES NPDES Permit No. 101993 or WPCF Permit No. _____
Permit Effective Date: August 1, 2019 Permit Expiration Date: June 30, 2024
DEQ Region: (Check one) ☐ Northwest Region ☐ Eastern Region ☒ Western Region
☐ NO Permit application was submitted to DEQ, but not yet issued.
☐ NO Permit application has not been submitted to DEQ.

5. Who is treating and supplying the reclaimed water to the user?

Name of Supplier: City of Sutherlin Telephone No. (541) 459-2857
Treatment Facility Name: WW treatment plant Telephone No. (541) 459-5768
Mail Address: 4601 Stearns Lane, Sutherlin, OR 97479
Street/P.O. Box City State Zip

6. Which water provider supplies potable municipal water to the city/community that produces the sewage entering the treatment facility?

Municipal Water Provider: City of Sutherlin Telephone No. (541) 459-5768
Source(s) of Municipal Water: Calapooya and Cooper Creeks and Cooper Creek Reservoir
(stream name, groundwater, and/or reservoir name)

7. Will the use of reclaimed water occur inside or outside the water service boundaries of the potable municipal water provider identified above in Question 6?

☒ INSIDE ☐ OUTSIDE

8. What is the length in years of the agreement/contract between the reclaimed water user and the reclaimed water supplier? _Perpetuity

Describe any conditions in the agreement that limit use of the reclaimed water.

Maximum volume of water released to the golf course will be 193 MG/yr. Additional restriction described in contract amendment are provided in Attachment 1.

9. Please describe the transmission system that delivers reclaimed water from the wastewater treatment facility to the place of reclaimed water use.

From the City's WWTP, water is conveyed in an 18" force main to the golf course pond. See Exhibit 1 for a map of the distribution system.

(Include type of construction of diversion works/pump capacity, length and dimensions of supply ditches/ pipelines)

10. What is the Intended Use(s) of Reclaimed Water?

Irrigation

(irrigation, aquifer recharge, wetlands, industrial, cooling, aquifer storage & recovery, etc.)

Irrigation Total Acres: 95 What type of crop? Grass and landscaping at golf course

(hay, pasture, golf course, wood fiber, etc.)

What is the irrigation application system? In-ground distribution lines with rotor heads.

(flood, center pivot, wheel line, drip, micro-sprinklers)

How much Reclaimed Water will be used? Up to 193 MG/yr (0.83 cfs)

(cubic feet per second, OR gallons per minute)

Date use began or will begin: est. June, 1977 Period of use (month/day): from June 1 to Oct. 31

11. What are the water user's motivations to use reclaimed water?

☐

My existing water rights are "junior" and not always reliable.

☐

Another water source is available, but reclaimed water is less expensive.

☐

Reclaimed water is the only source available and enables the use listed in Question 10.

☐

Reclaimed water allows a WRD transfer of existing water rights to a different location.

☐

Reclaimed water use reduces demand on the local municipal water supply.

☒

To assist the treatment facility in meeting DEQ regulatory permit requirements.

☐

To recharge the aquifer or store water in the aquifer for future recovery.

☐

Other (describe): _____

12. Describe the historic reclaimed water disposal method.

A) Into which stream was the reclaimed water discharged? Calapooia Creek

B) Has the reclaimed water been discharged into the stream for 5 or more years?

☒

YES

☐

NO

C) Where did the treated wastewater historically enter the stream?

Approximately river mile 10.

(Township, Range and Section, or distance from landmark, or river mile, or Lat/Long)

D) Does the amount (rate in gpm or cfs) of reclaimed water proposed for use under this registration represent more than 50% of the total average annual flow of the stream?

☐

YES

☒

NO

☐

UNKNOWN

Source of information used to answer this? USGS Station No. 14320700, Calapooya Cr.

13. Is the required map attached showing the reclaimed water transmission

system and place of use? ☒ YES ☐ NO (If No, please prepare and attach map).

The Registration Form is not complete without an adequate map.

See map requirement explanation on page 4.

14. MAP REQUIREMENTS:

This registration must be accompanied by a map, or maps, to show the location of the wastewater treatment facility, location of reclaimed water transmission system (pipelines, canals, etc.) and the place of reclaimed water use. Features of the map(s) should include the following:

- A north arrow.
- Drawn to scale at not less than 4" = 1 mile, with the scale identified.
- Township, Range, Section, Quarter-Quarters, and tax lot number(s).
- Place of use shown by Quarter-Quarter section with shading or diagonal lines.
- Acres, if land application, per Quarter-Quarter section (approximate if not certain).
- Location of main canals or pipelines to and within the reclaimed water use area.
- Streams and roads identified if they cross through the map.
- Other obvious features that would help someone in the field locate the place of use.
- A legend.

A map showing the wastewater treatment facility, transmission system, and place of use at a scale of 4" = >1 mile is fine **only if a second map is provided showing the place of use at not less than 4" = 1 mile.*

15. ADDITIONAL COMMENTS: Provide additional information here or attach additional pages.

Exhibit 1: Regional Map of Reclaimed Water System

Exhibit 2: Map of Place of Reclaimed Water Use

16. Signatures of Registrant and Reclaimed Water Supplier:

I/We certify that the information provided in this Registration Form is an accurate representation of the proposed reclaimed water use to the best of my knowledge:

Registrant Printed Name: _____ *Title:* _____

Registrant Signature: _____ *Date:* _____

Supplier Printed Name: _____ *Title:* _____

Supplier Signature: _____ *Date:* _____

NOTE: Once completed and signed, keep a copy and **send this form to the DEQ permit writer** responsible for the wastewater treatment facility permit. DEQ will sign and forward the form to WRD in Salem. A response letter will be sent by WRD to all parties within 60 days.

This section is to be completed by DEQ

17. Signature of DEQ Water Quality Manager:

Date registration form received at DEQ:_____

Pursuant to ORS 537.132 DEQ has:

- a) Authorized the use of reclaimed water (referred to by DEQ regulations as “recycled water”) as evidenced by the NPDES or WPCF permit issued and described below.

Permit Number: _____ DEQ File Number: _____

Printed DEQ Permit Writer's Name: _____

Mail Address: _____
 Street/P.O. Box *City* *State* *Zip*

Telephone: _____ E-mail: _____

- b) Consulted with State Department of Fish and Wildlife and determined this use of reclaimed water shall not have a significant negative impact on fish or wildlife.**

ODFW contact name: _____

ODFW contact phone number: _____

- c) Determined the use of reclaimed water is intended to improve the water quality of the receiving stream.**

The reclaimed water is (e.g. too warm for salmonids): _____

I certify the provisions of ORS 537.132(1)(a)(b) and (c) for this application are satisfied.

Date _____

DEQ Water Quality Manager Signature

DEQ Water Quality Manager's printed name

Once signed by DEQ, this completed form is to be sent to:

Oregon Water Resources Department
C/O Water Reuse Coordinator
725 Summer St. NE, Suite A
Salem, OR 97301-1266

APPENDIX G: GOLF COURSE IRRIGATION MAP

Drain Tile Map

Irrigation Map

Oak Hills Golf Club

1000 ft



Untitled Map

Lower Pond, Drain

Legend

Google Earth



200 ft



Untitled Map

Irrigation Pond

Legend

Google Earth

200 ft



Untitled Map

Fairway 1

Legend

Google Earth



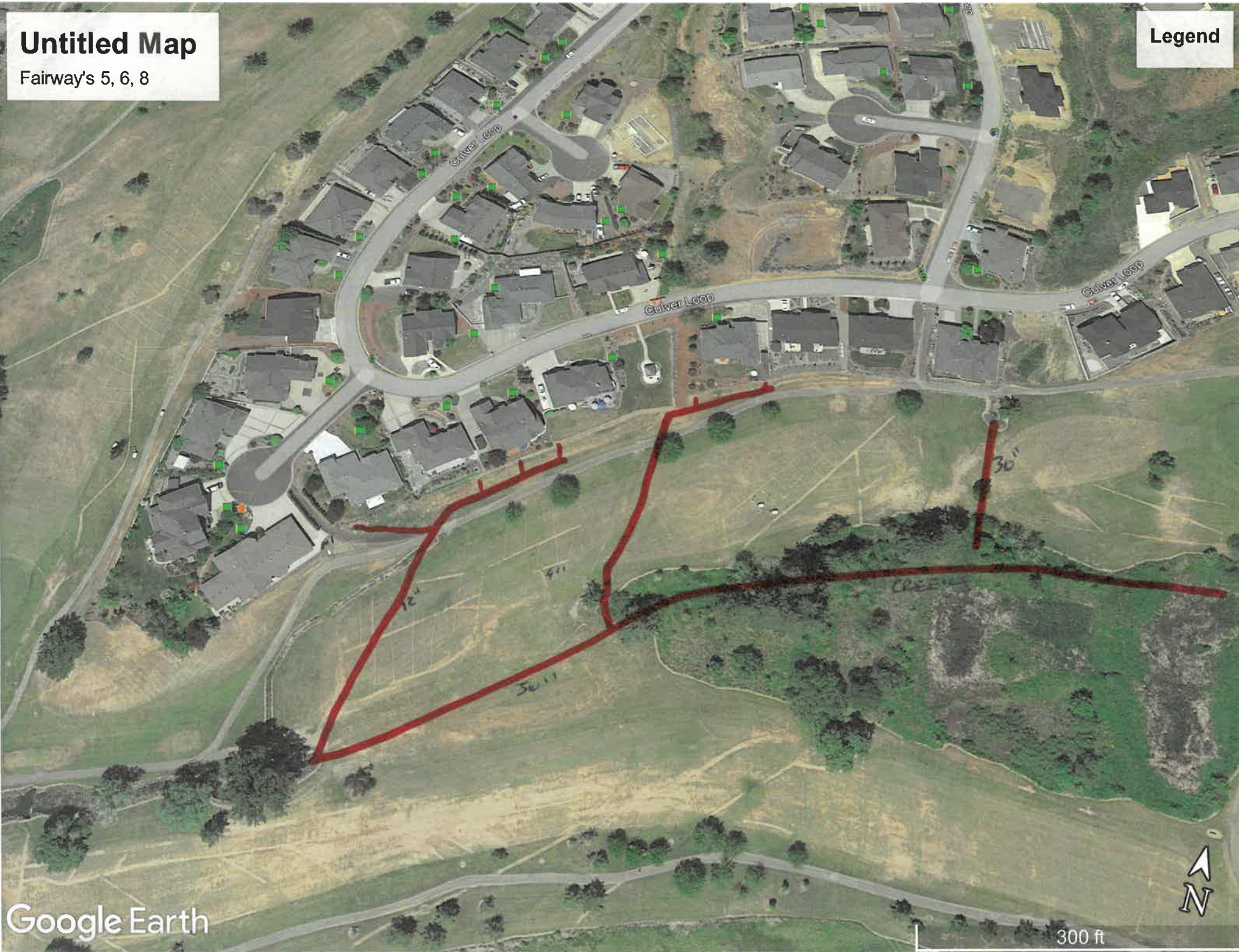
300 ft



Untitled Map

Fairway's 5, 6, 8

Legend



Google Earth

Untitled Map

Fairway's 9, 10, 18

Legend



Google Earth

Oak Hills Golf Club

400 ft

Dakota St

Untitled Map

Fairway's 11, 12, 13

Legend



Google Earth

400 ft

Untitled Map

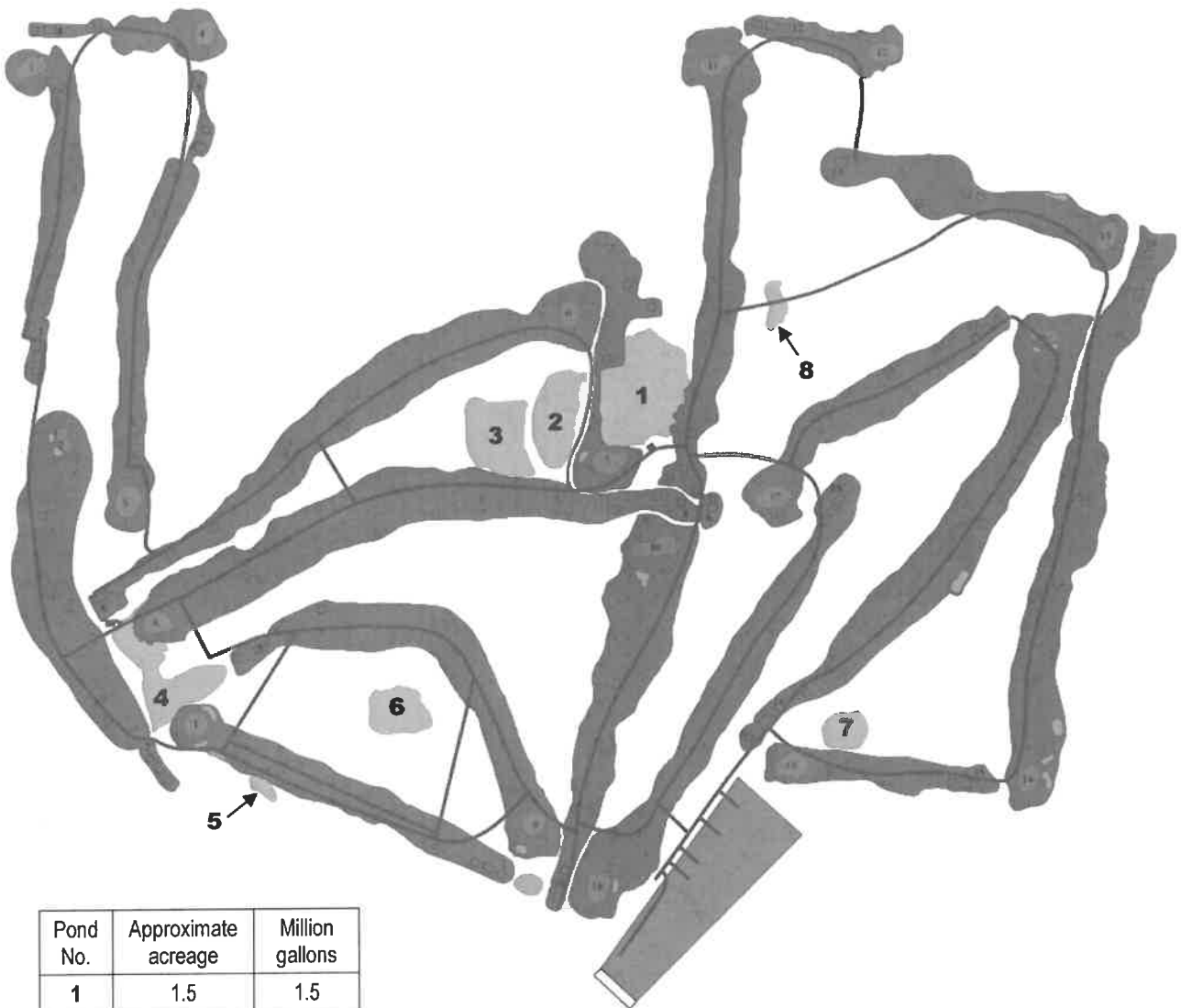
Fairway's 14, 15, 16, 17

Legend



Google Earth

500 ft



Pond No.	Approximate acreage	Million gallons
1	1.5	1.5
2	0.7	0.7
3	0.8	0.8
4	0.7	0.7
5	0.1	0.1
6	0.5	0.5
7	0.3	0.3
8	0.2	0.2

**Figure 6. Oak Hills Golf Club
(irrigation lines shown in purple)**

IRRIGATION SYSTEM DRAWING
PROVIDED BY DEQ

OAK HILLS

From May 1 to October 31 of each year, 100 percent of WWTF effluent is sent to Oak Hills. The golf course, shown in Figure 6, reuses the effluent for irrigation of the fairways and greens. Approximately 95 acres of greens and fairways are under irrigation, with the potential to irrigate an additional 105 acres of rough.

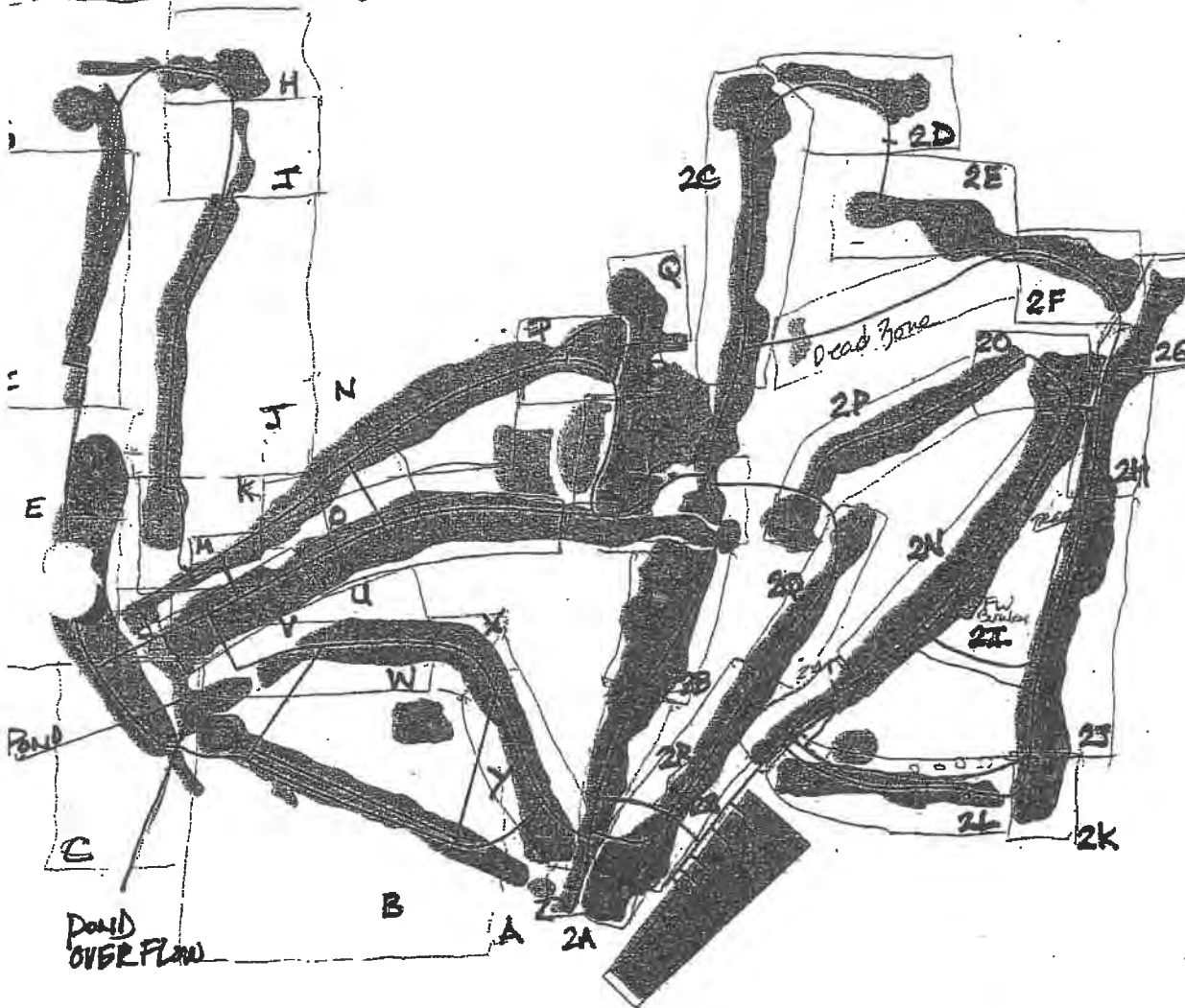


Figure 6. Oak Hills (with irrigation lines shown in purple)

For now, the contract with Oak Hills (included in Appendix A) mandates the City to send 100 percent of the effluent to the golf course. Only holes 2 and 8 are auto-irrigated on the golf course; the rest are manual. No ponding is allowed when golfers begin play, so watering is done at night. Watering time varies with temperature, but averages 30 minutes per day. The grounds superintendent, Scott Zielinski, is responsible for the application of reclaimed water at Oak Hills. The course is owned by Brad Leiken.

This is a draft report and is not intended to be a final representation of the work done or recommendations made by Brown and Caldwell. It should not be relied upon; consult the final report.

OAK HILLS

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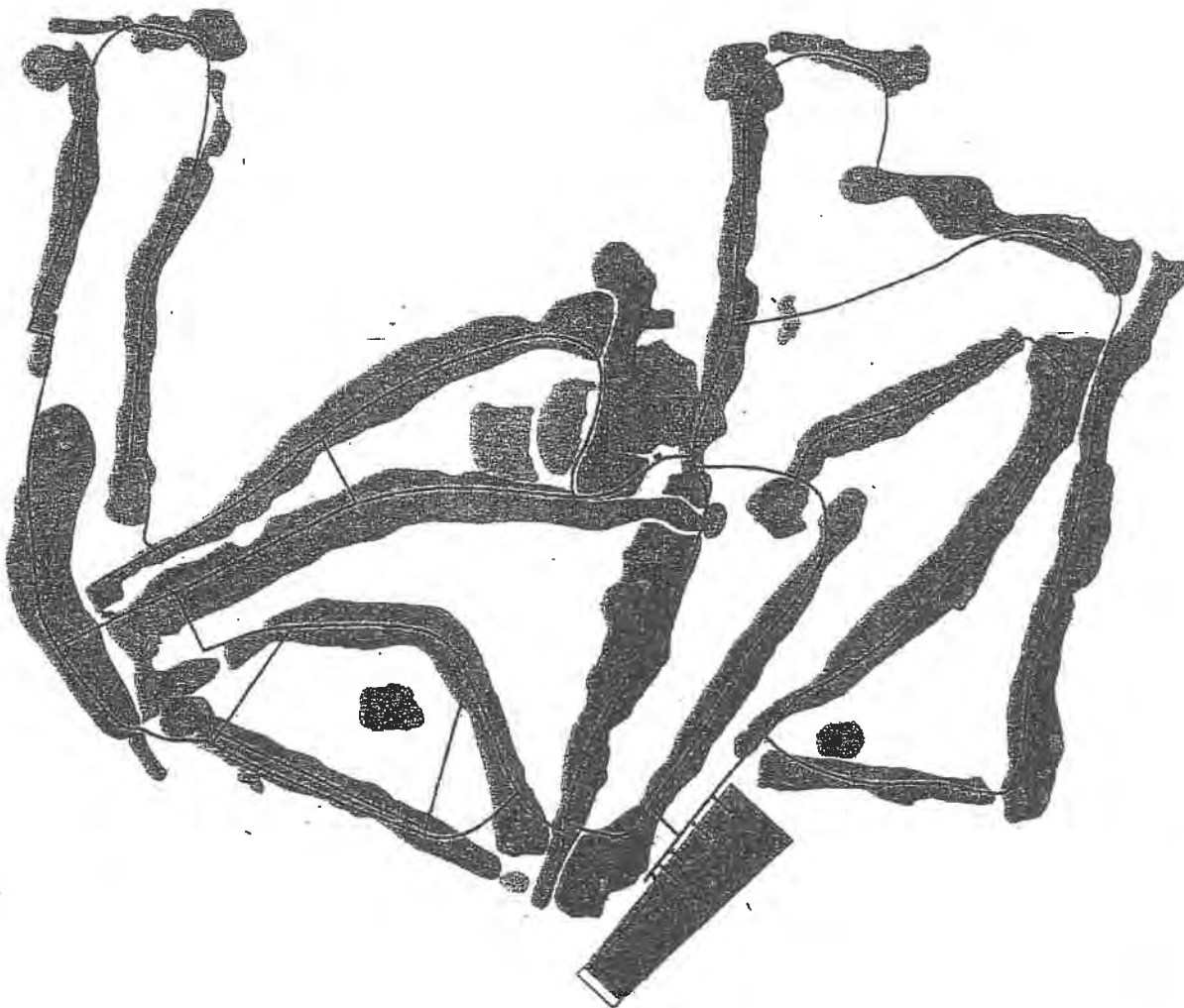
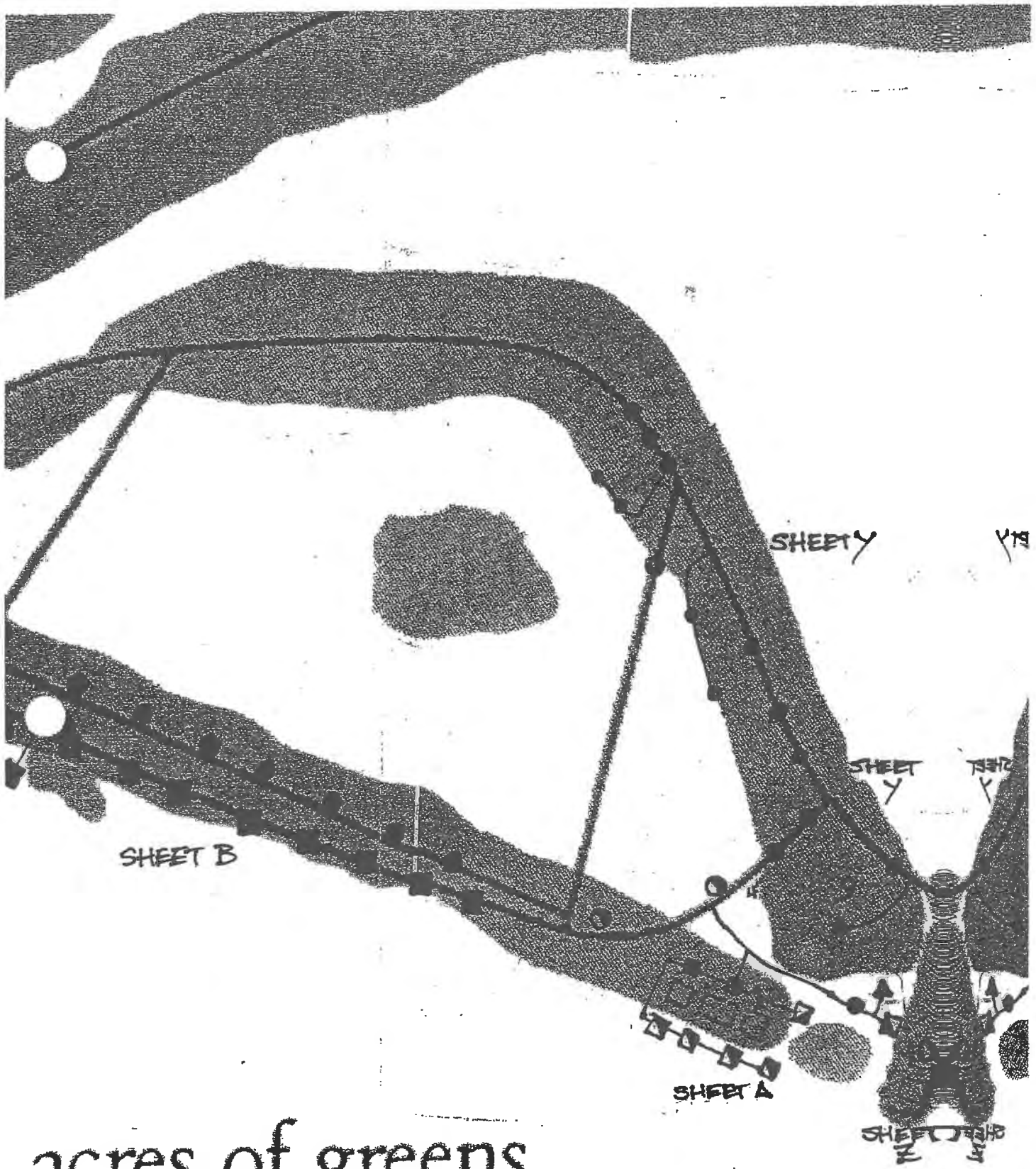


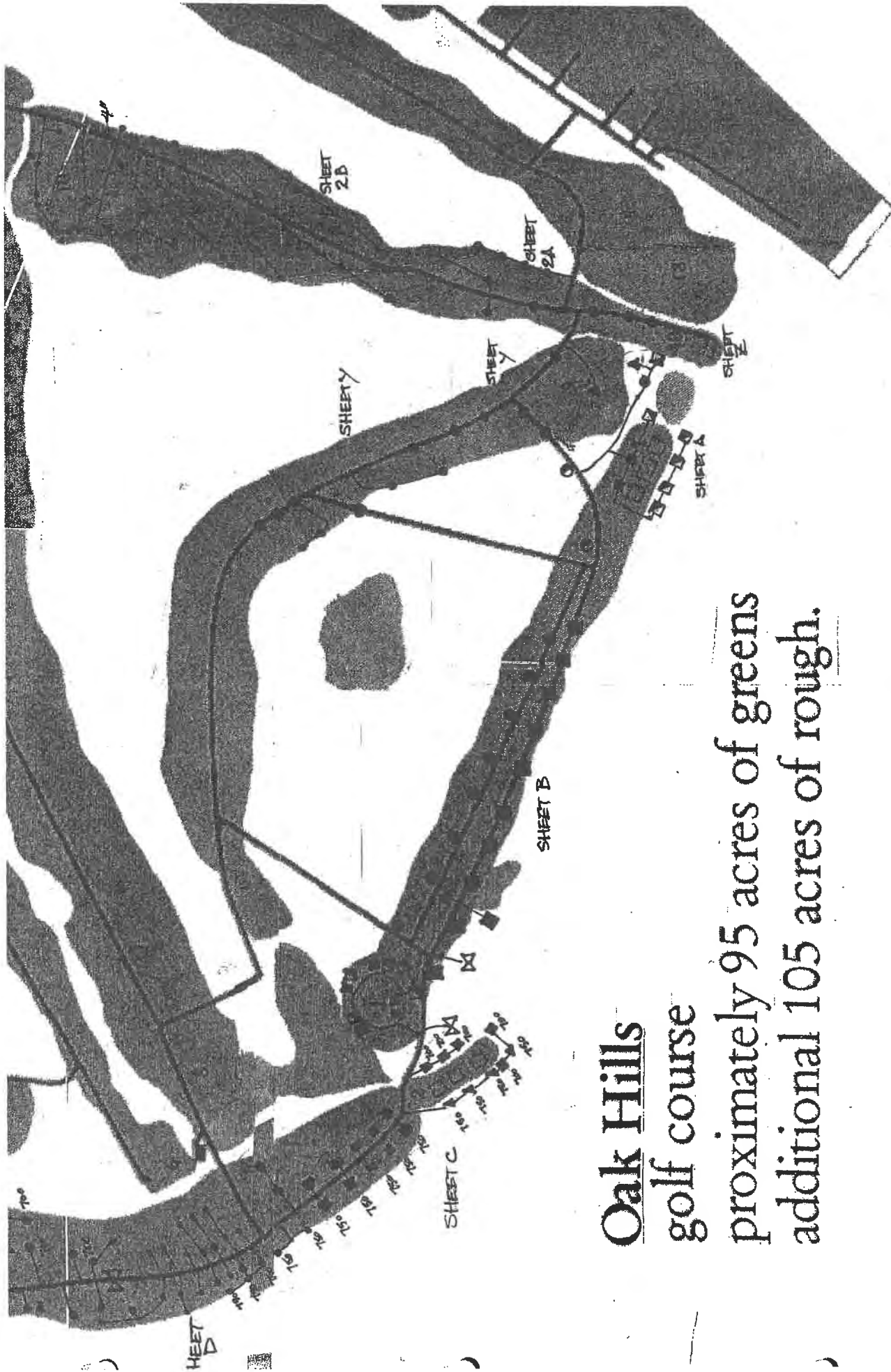
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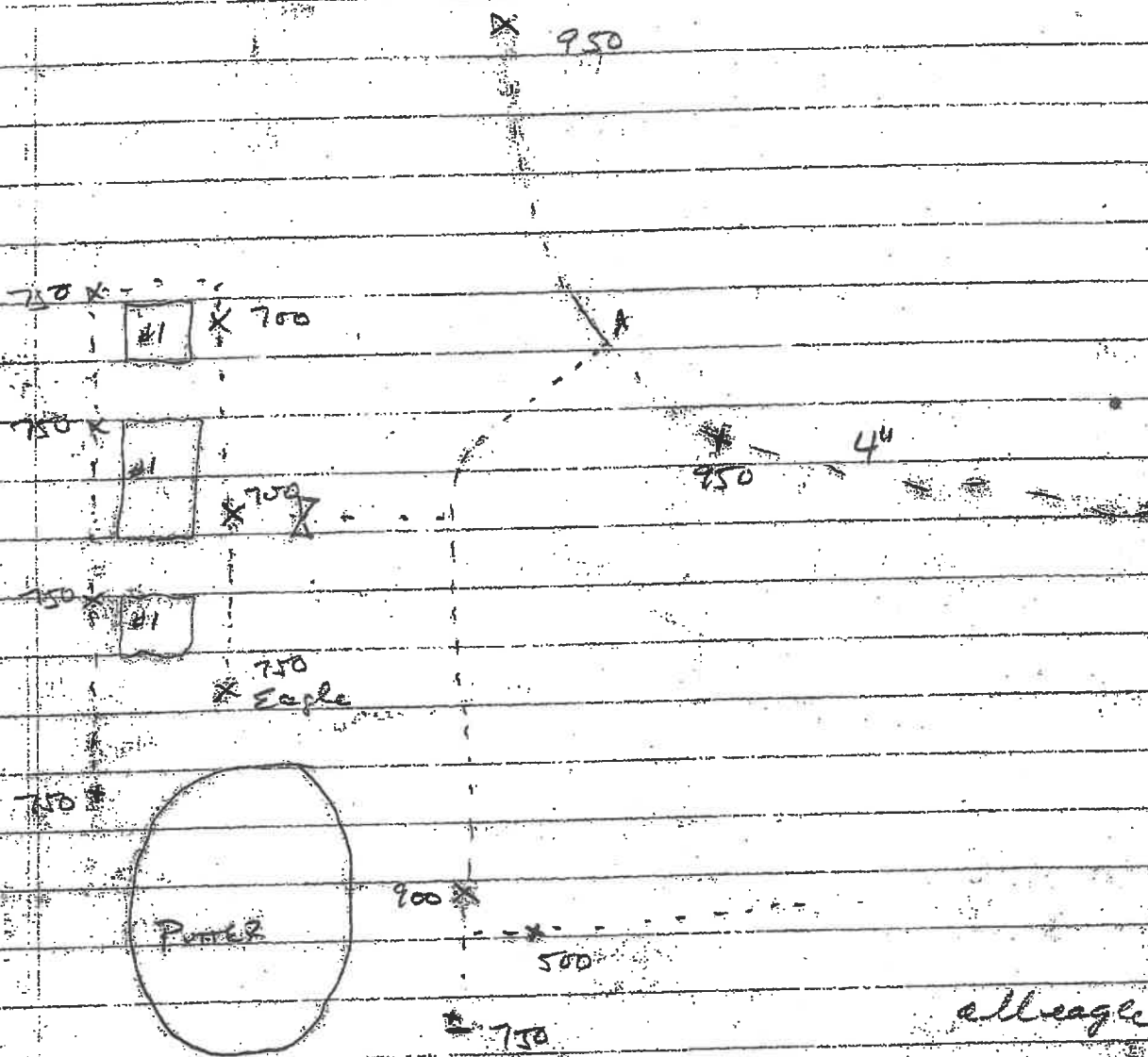
This is a draft report and is not intended to be a final representation of the work done or recommendations made by Brown and Caldwell. It should not be relied upon; consult the final report.



acres of greens
acres of rough.



Oak Hills
golf course
proximately 95 acres of greens
additional 105 acres of rough.



(Start @ 8:30 PM - 9 AM if hit)
 usually start @ 7:30 - 8 PM automated

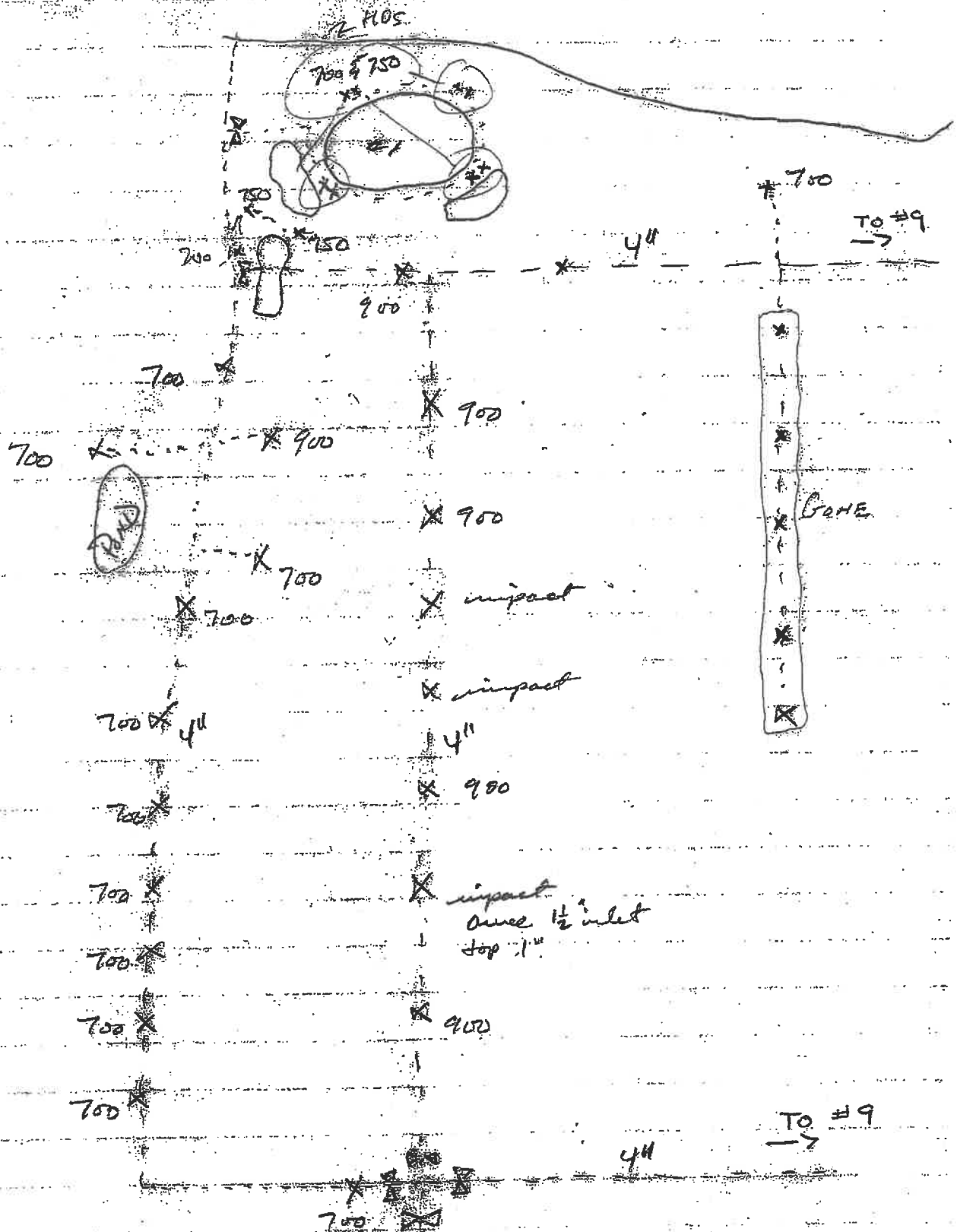
see page #3 Section C

run time

1st greens
 2nd Tees

20-30 min

- # 2
- # 8
- # 7 green
- Drive Range
- # 18 green

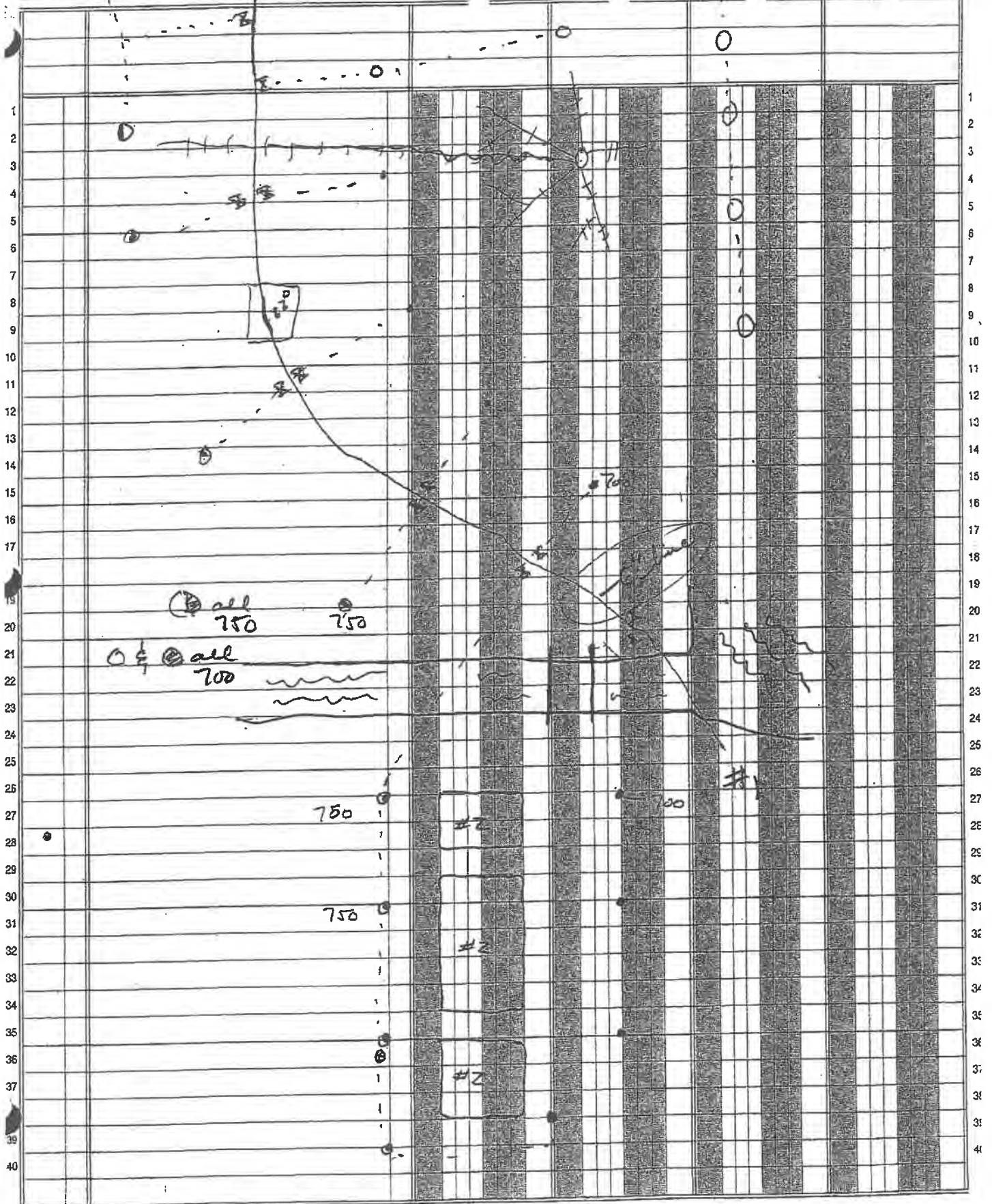


	Initials	Date
Prepared By		
Approved By		

© WILSON JONES

G7504 ColumnWrite

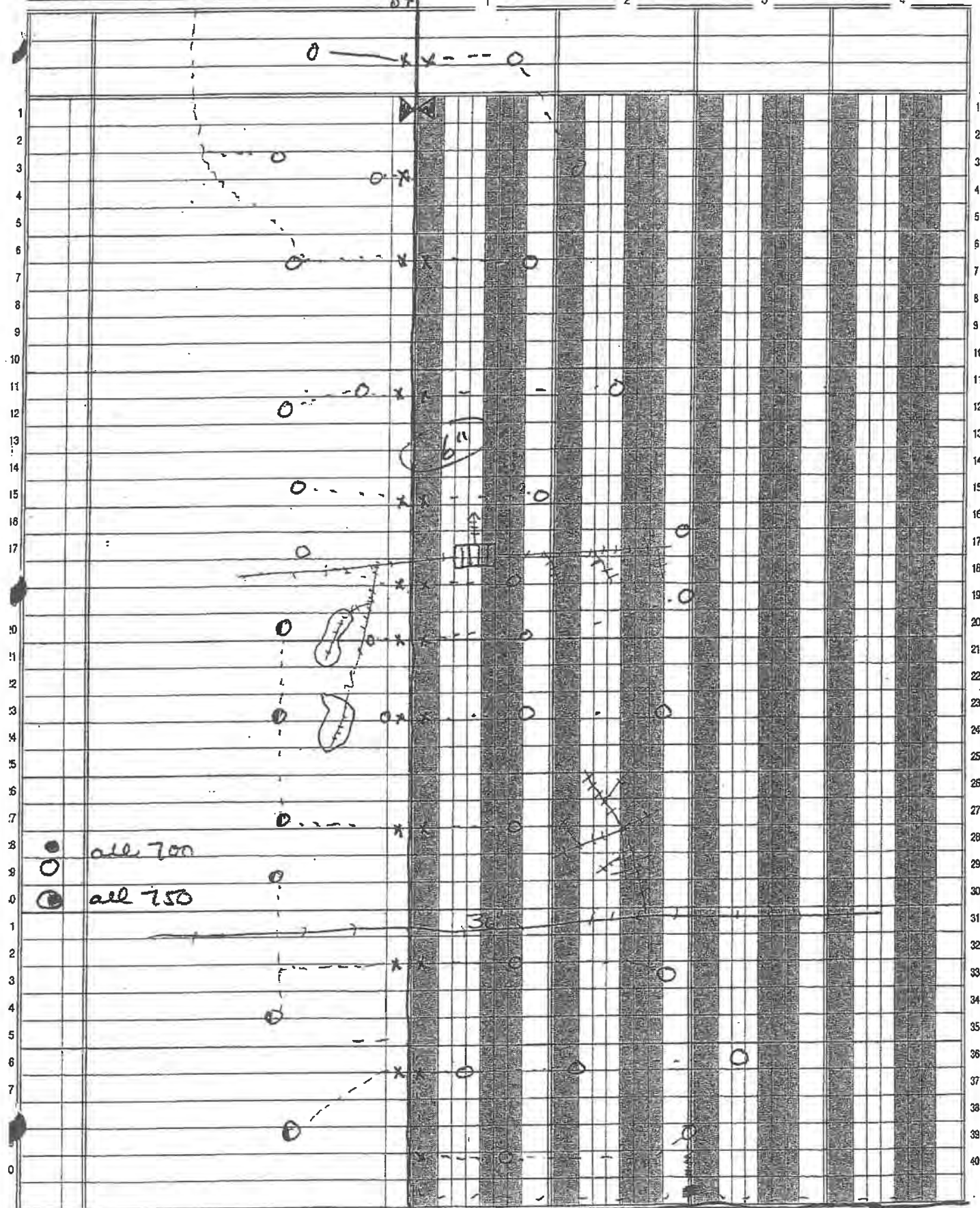
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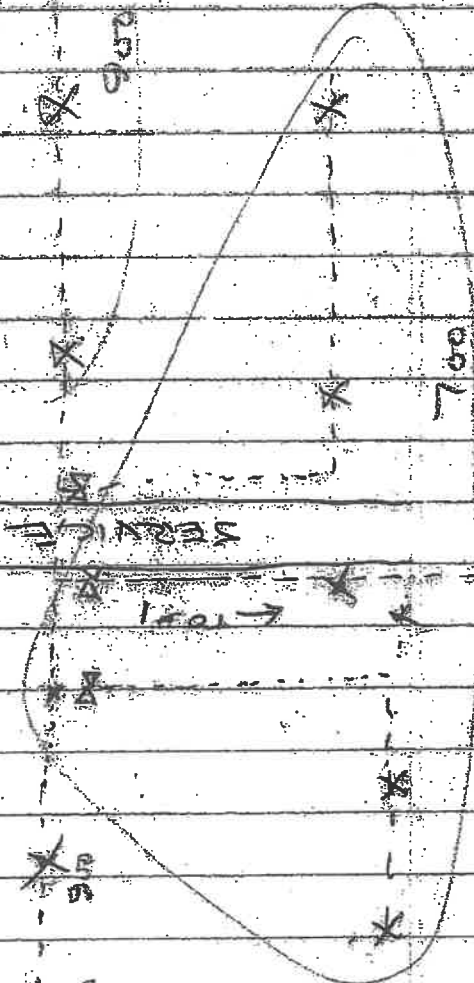
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① G7504 ColumnWrite ©

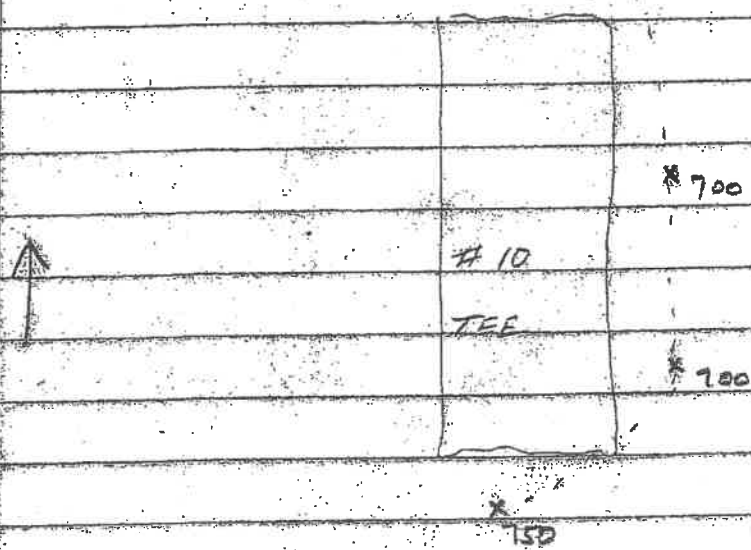


↑
100 ft

SEANICE ROAD



Sheet B
141



#10 Fwy



#700

#750 1 1/4" inlet

so designation

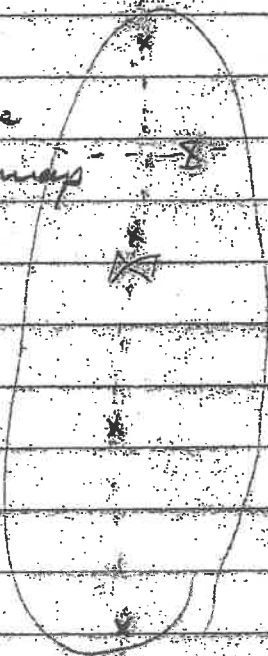
#750 (1/2 head)

#700

1 1/4" inlet
60' spacing

70 #18-7

dead line
not on map

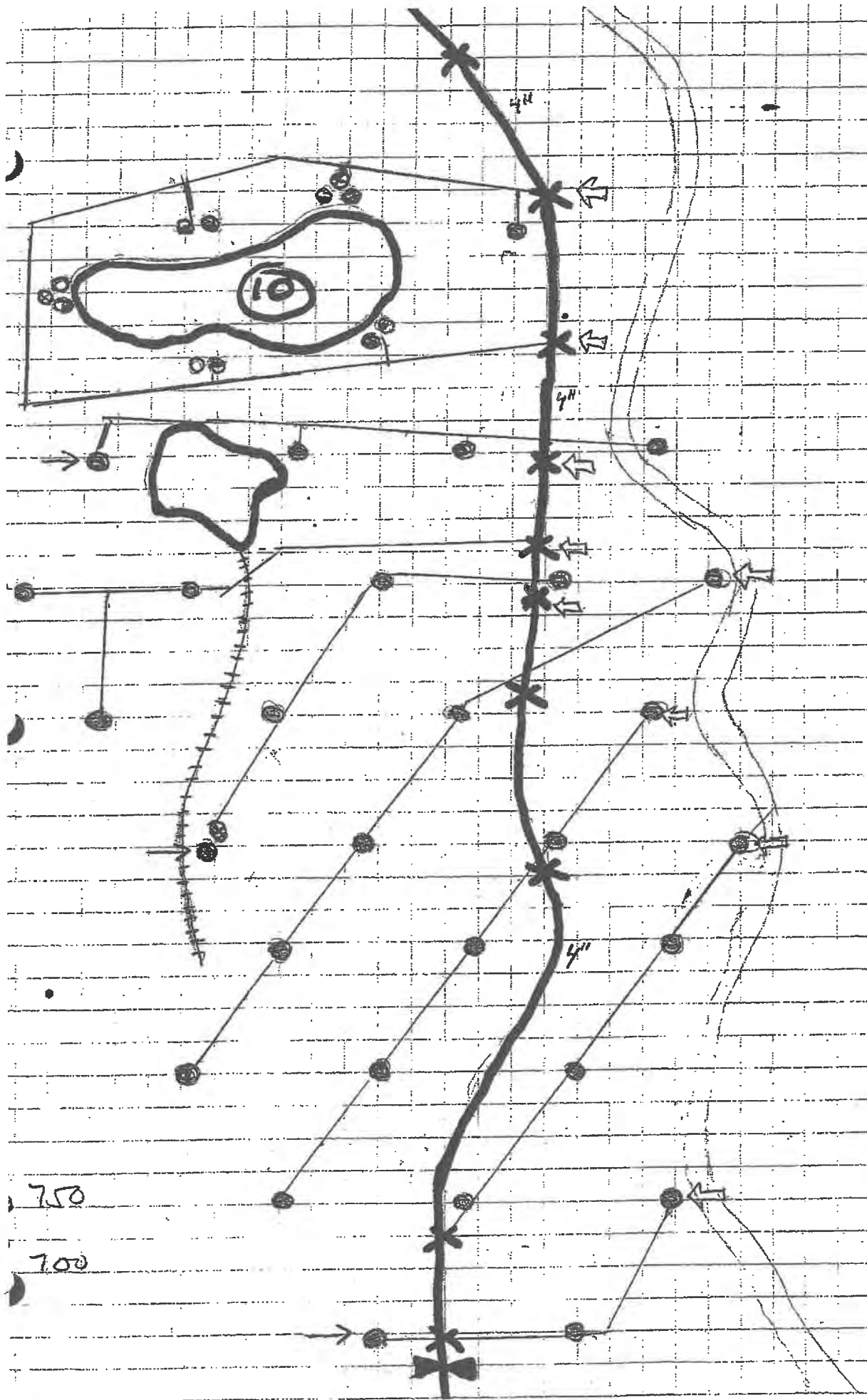


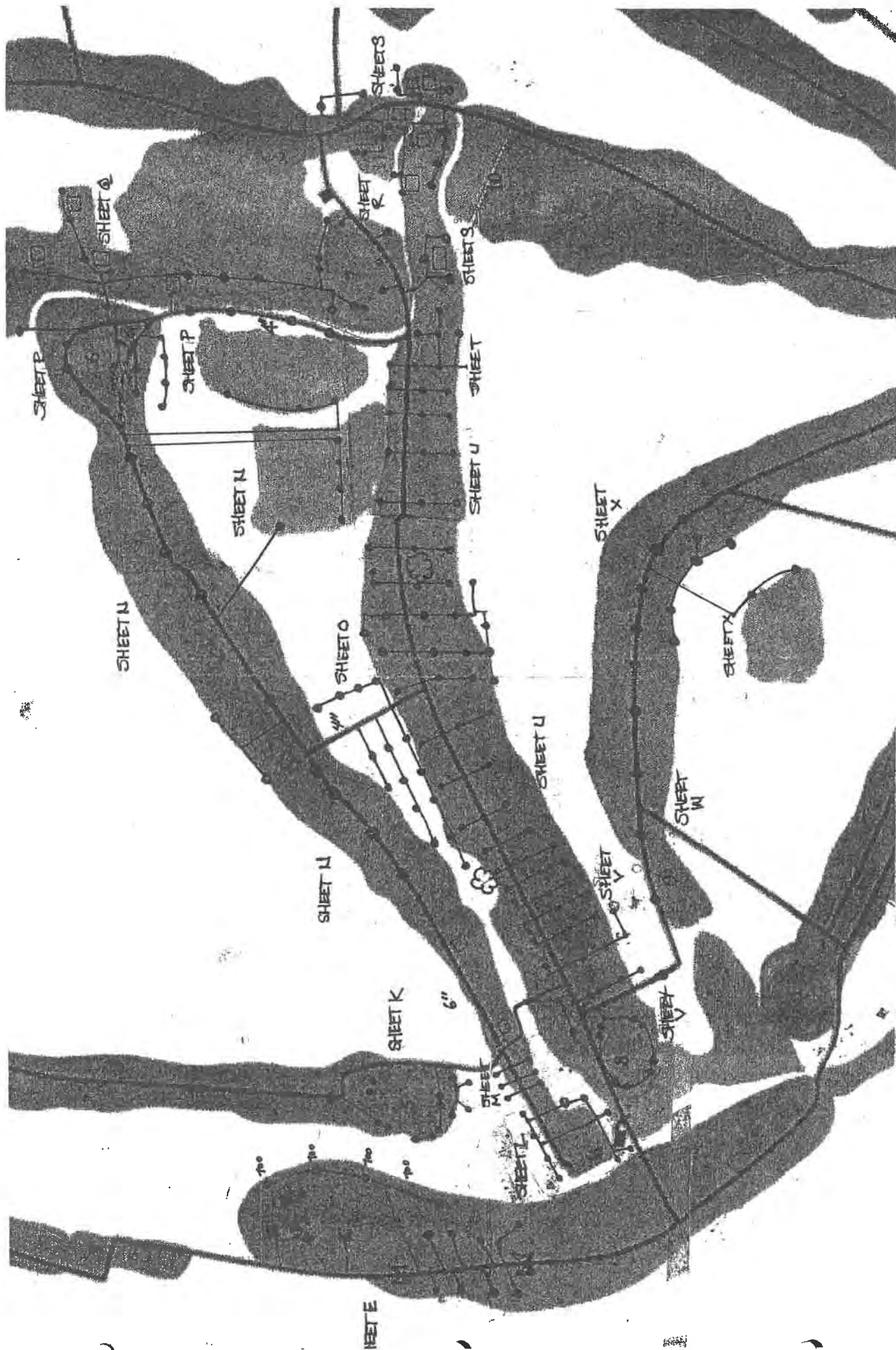
900 1 1/2" inlet

75' - 80'



2B



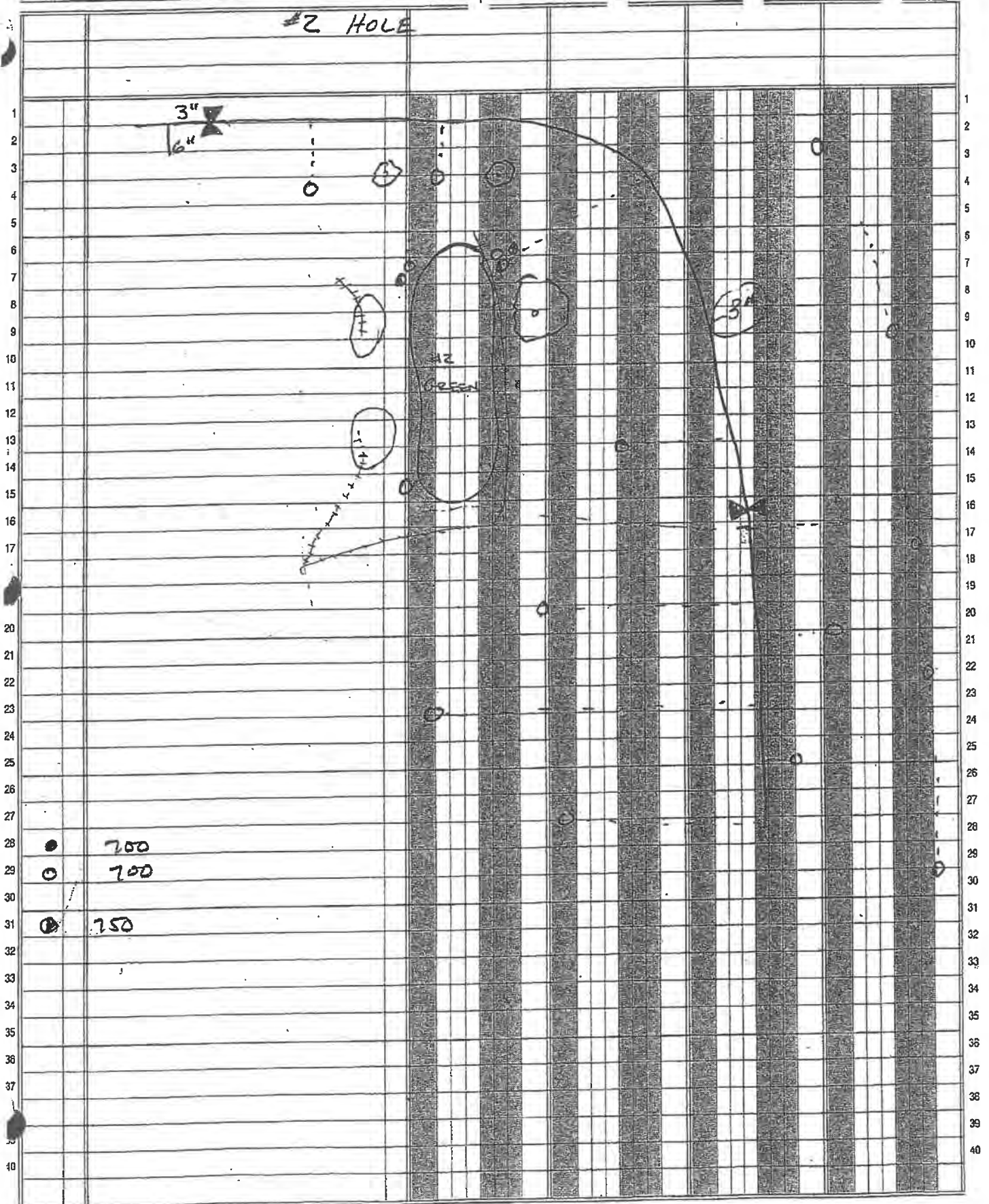


	Initials	Date
Prepared By		
Approved By		

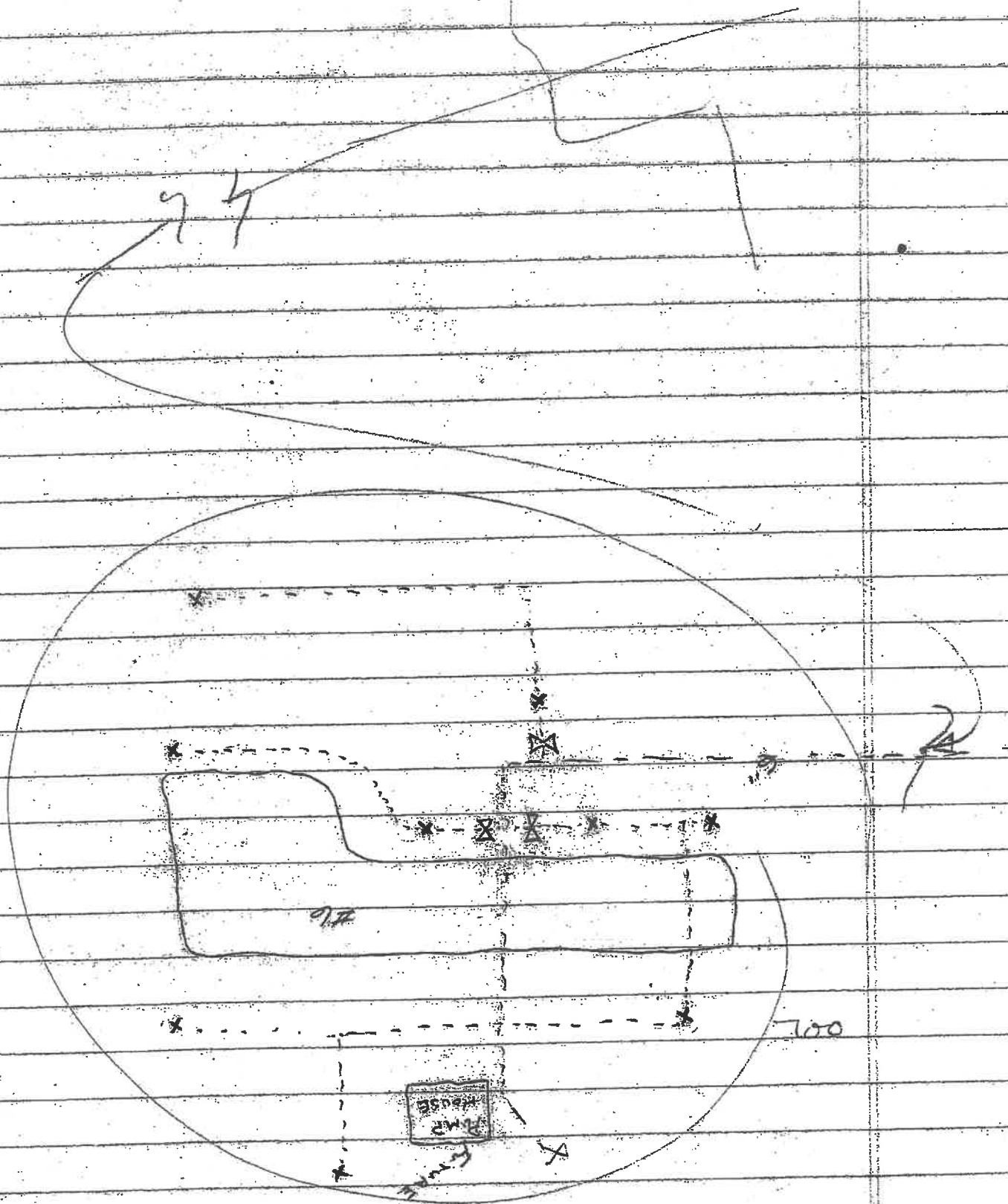
© WILSON JONES

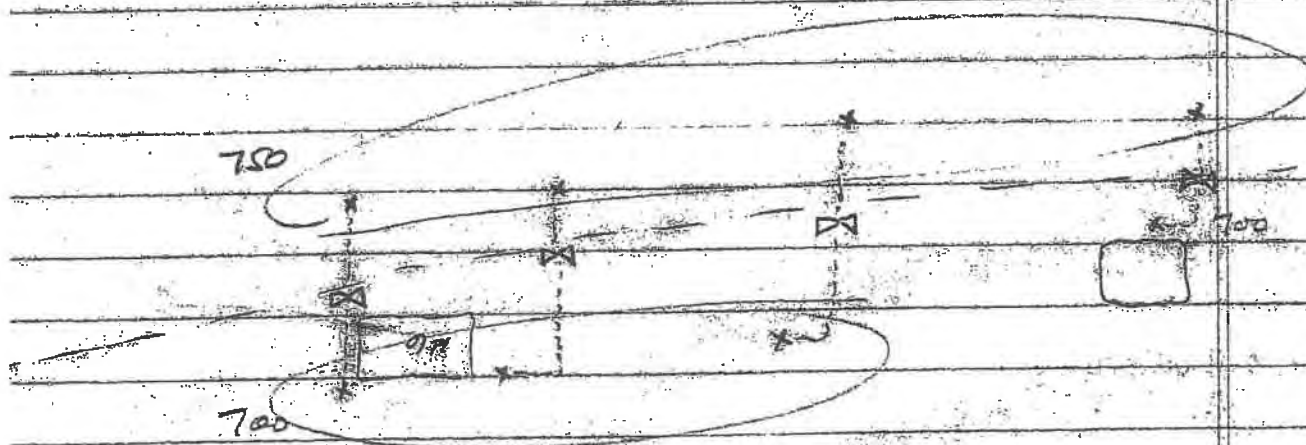
GT504 ColumnWrite ®

#2 HOLE



#5
GREEN





Check

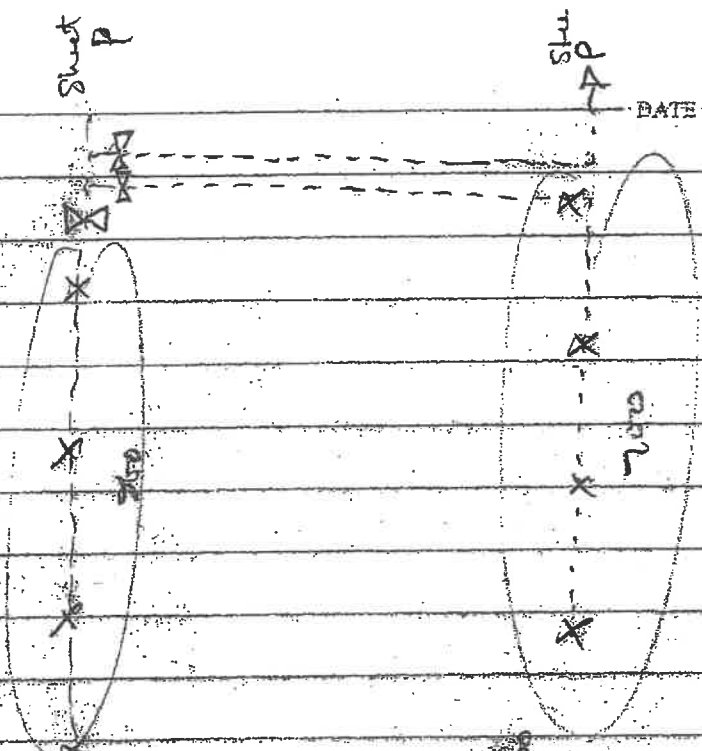
DATE

8-1

N

Shut P

DATE



Shut P

100

100

100

100

100

100

100

TO #8

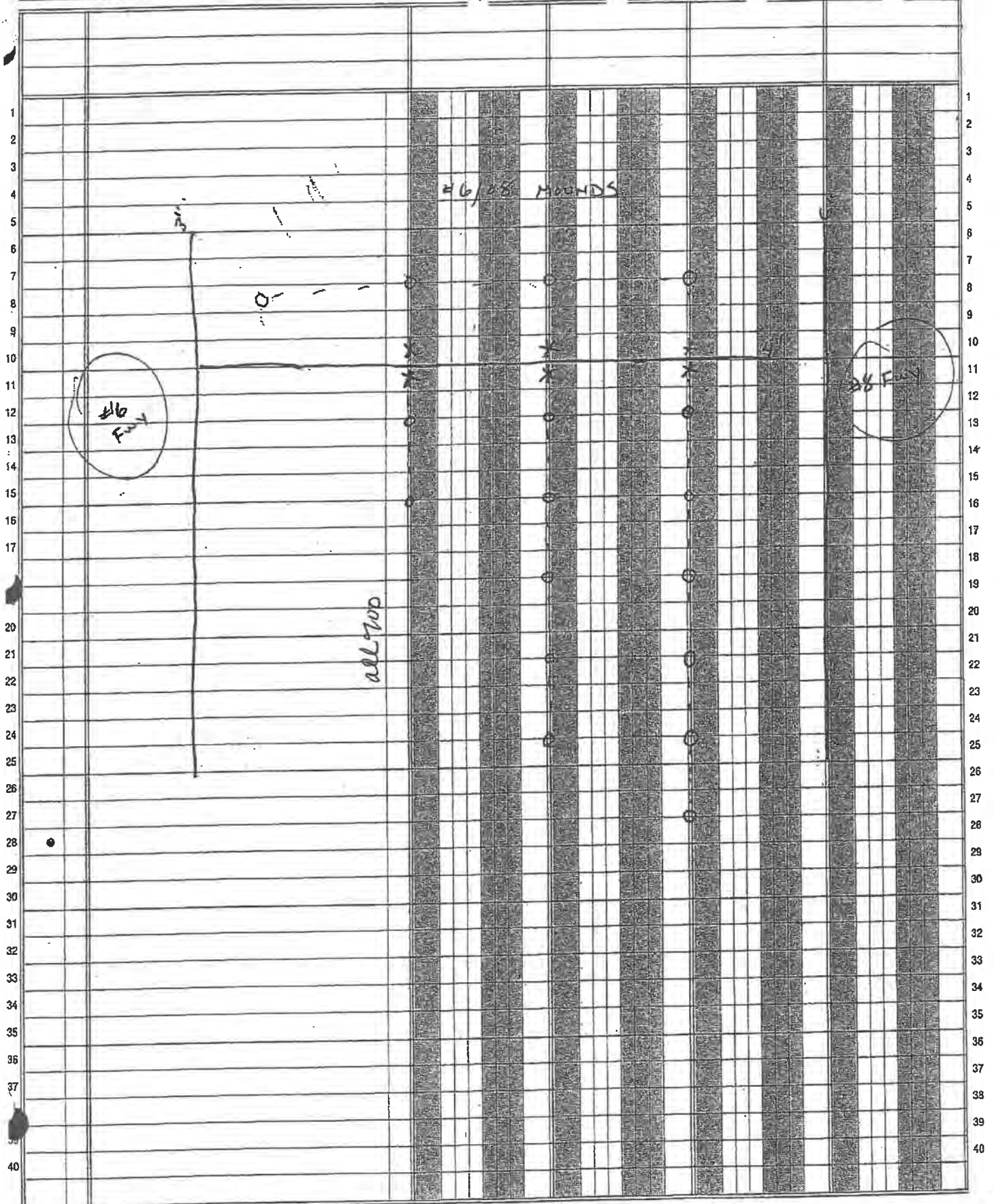
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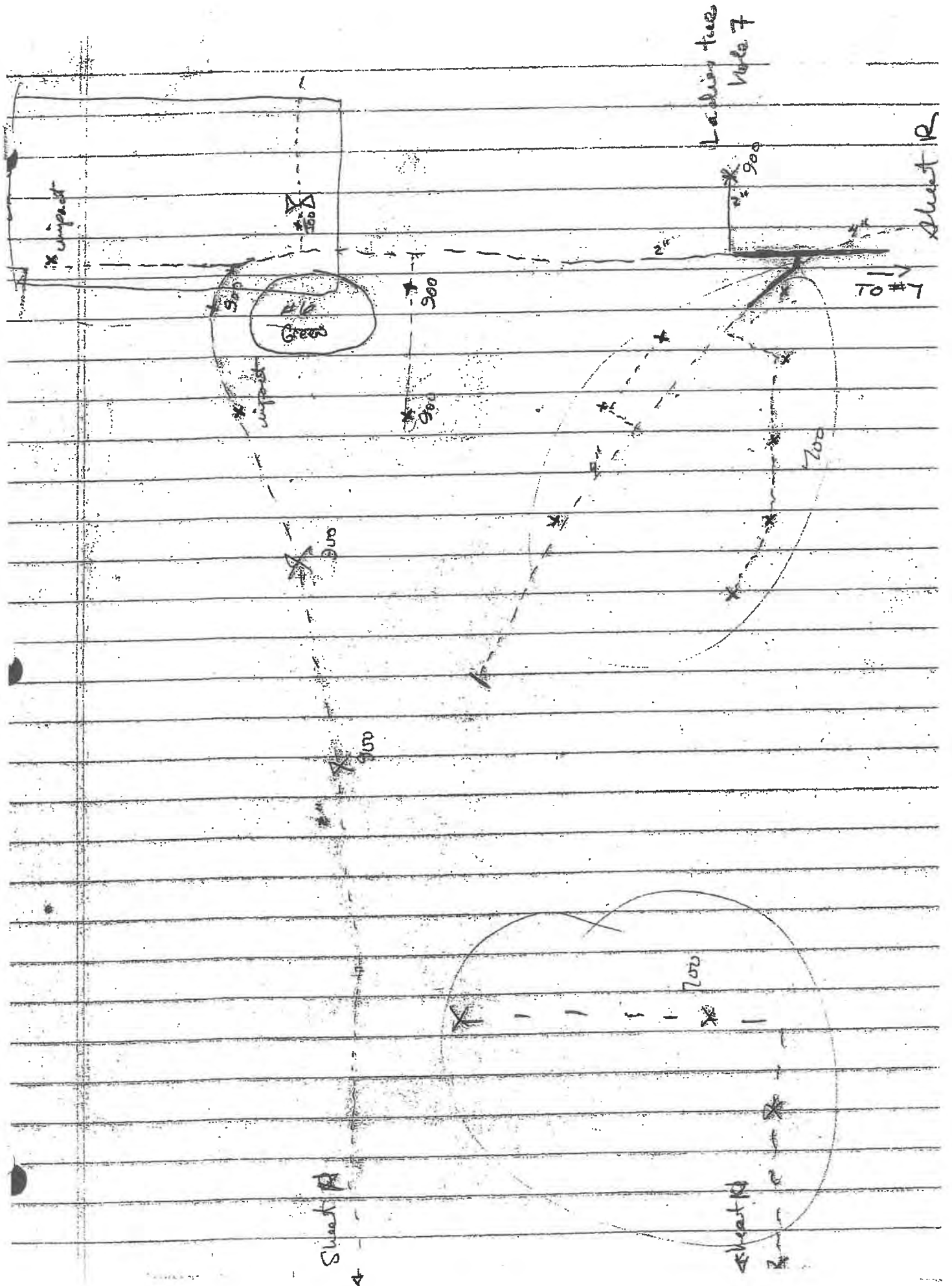
	Initials	Date
Prepared By		
Approved By		

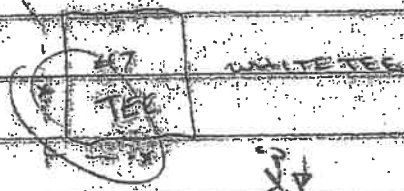
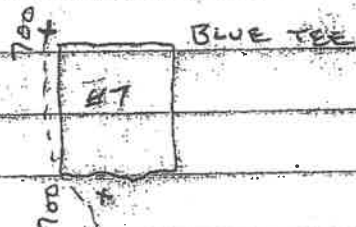
© WILSON JONES

G7504 ColumnWrite ©

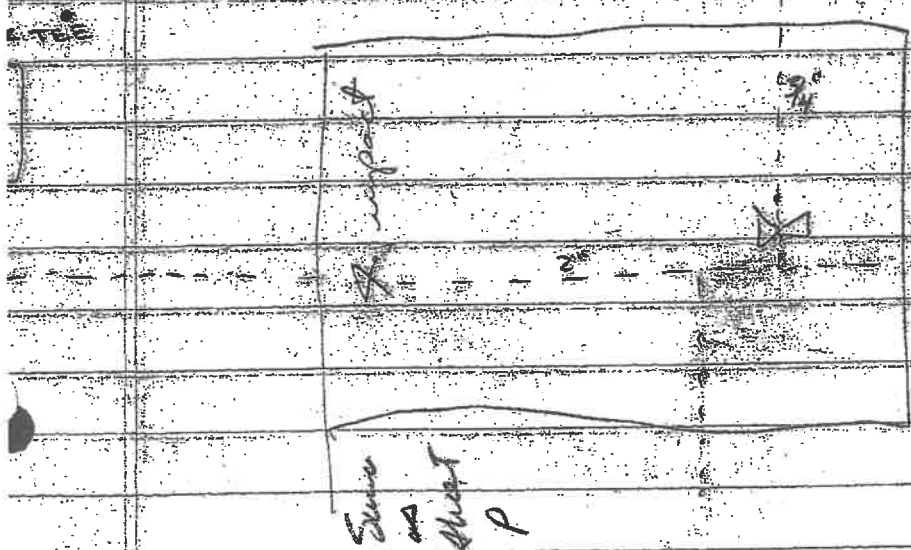
1 2 3 4







*unmarked
point*

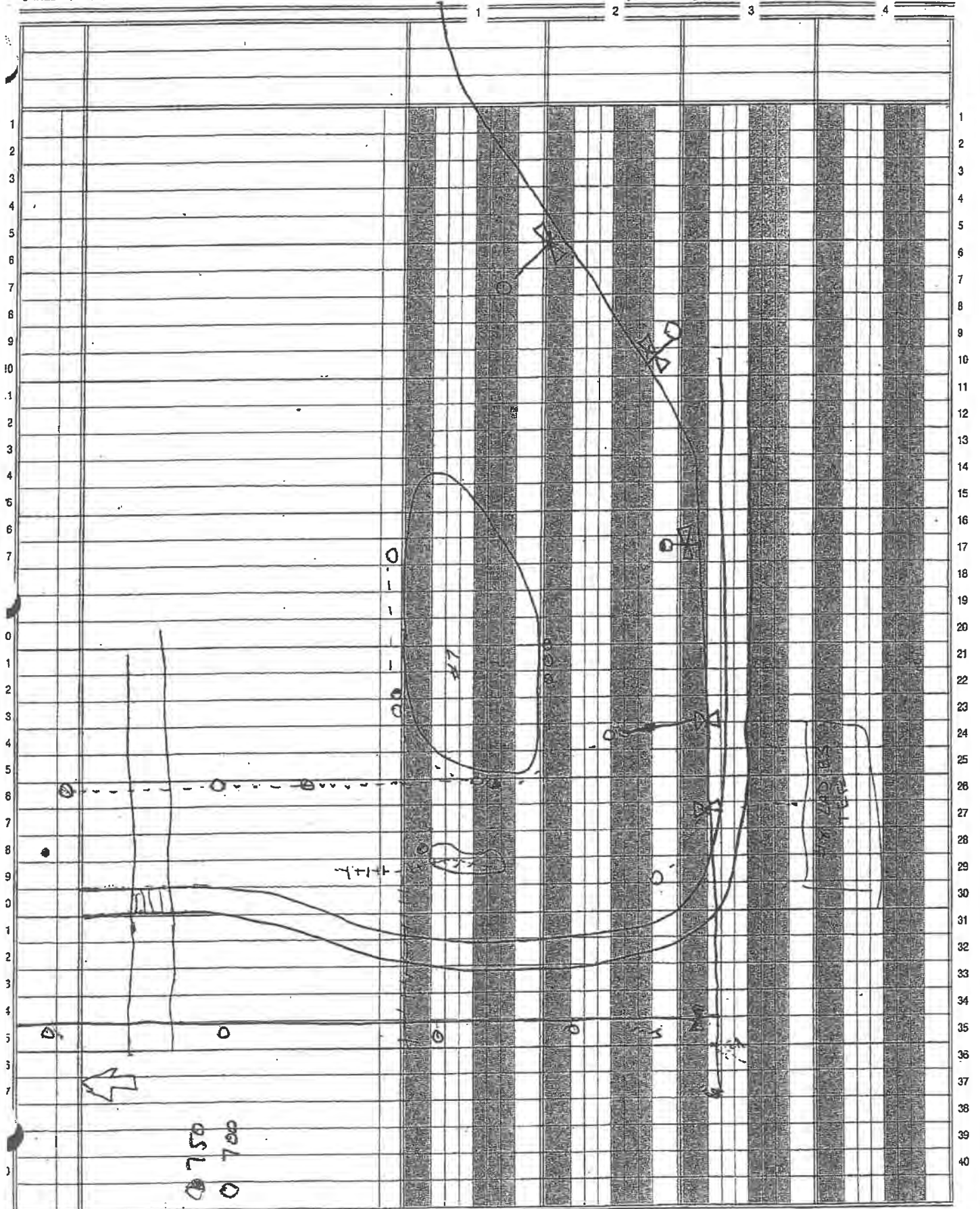


	Initials	Date
Prepared By		
Approved By		

WILSON JONES

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#7 Green



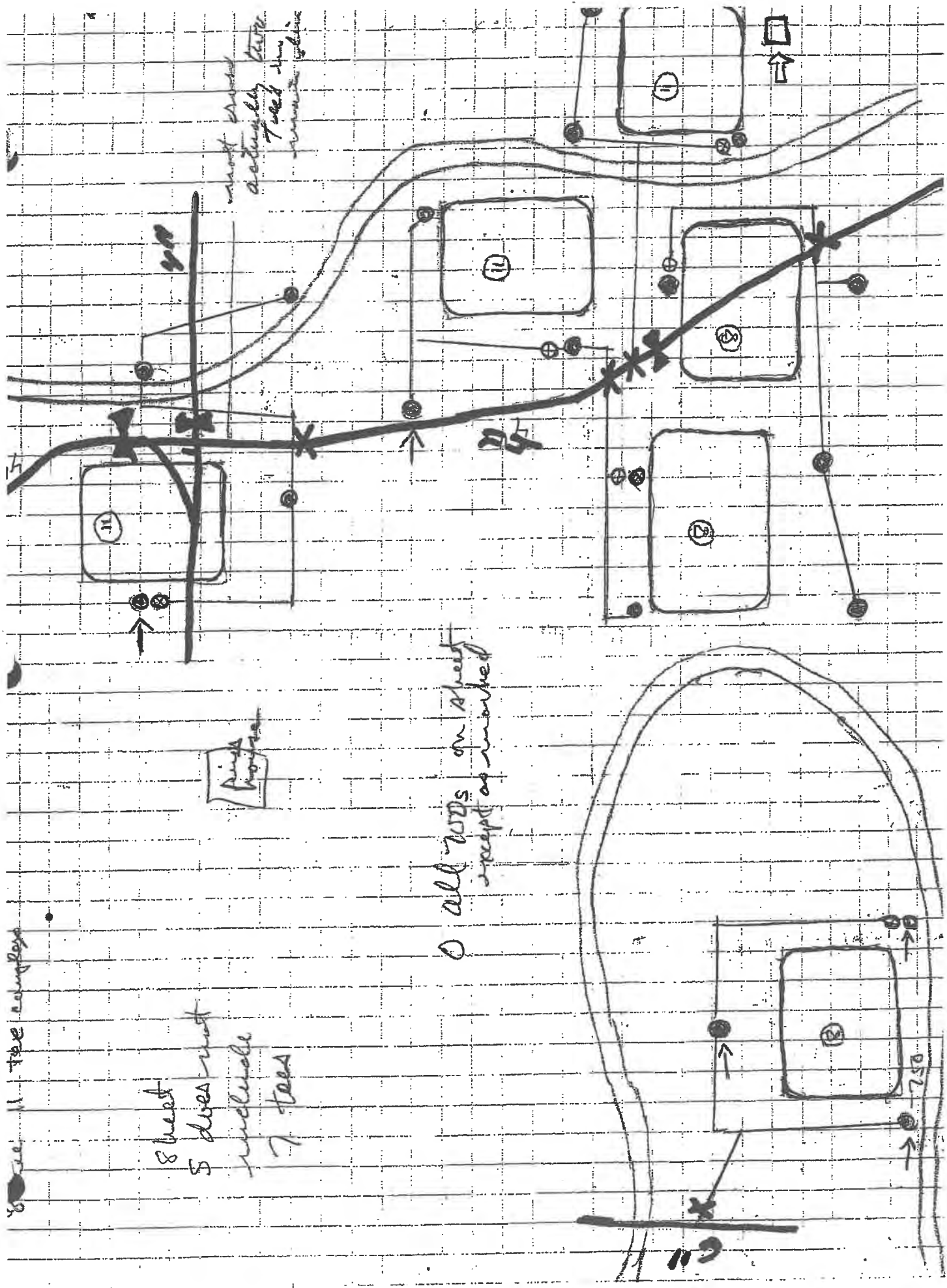
Sheet 11 the compound

Sheet
5 does not
include
7 trees

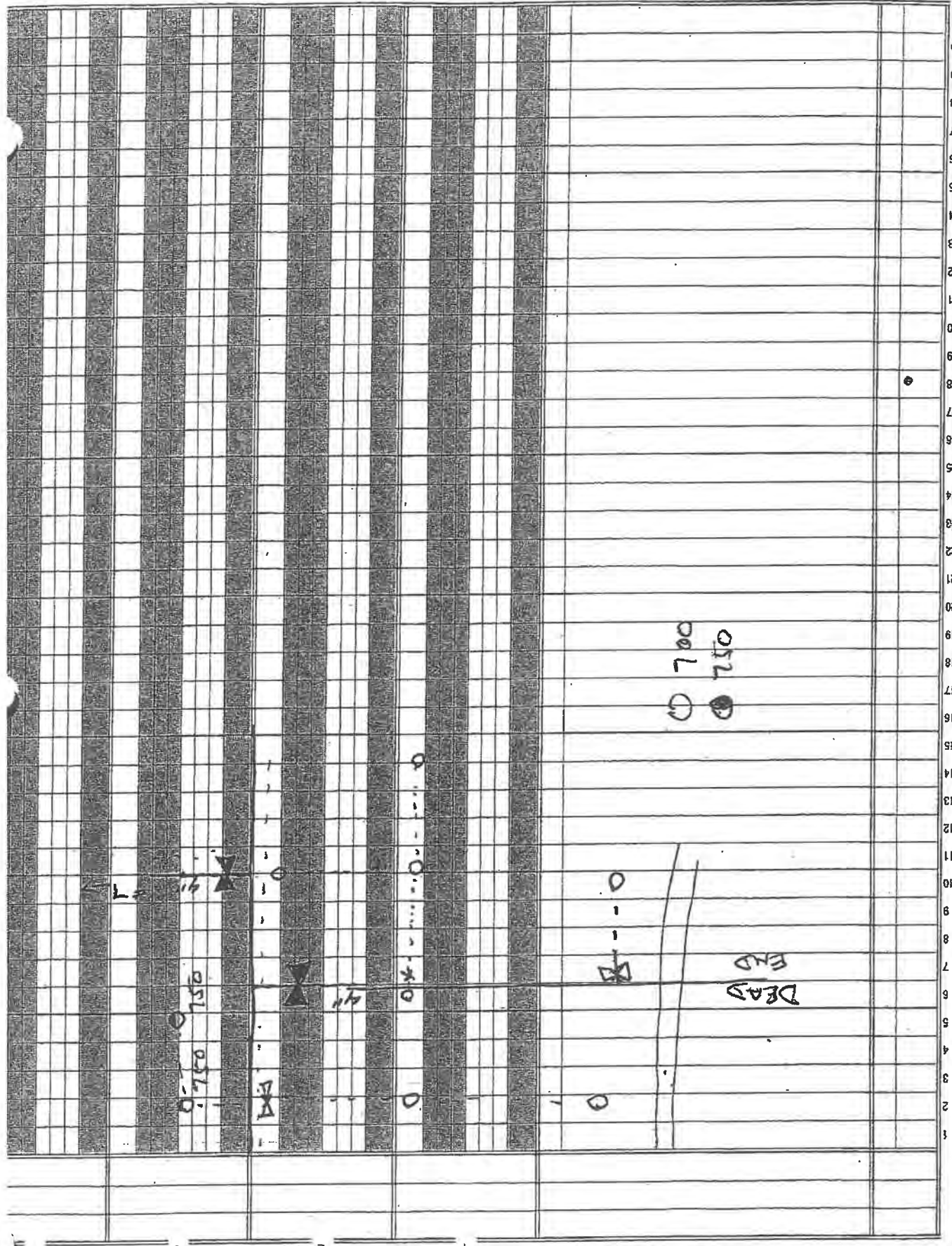
Area
house

all WDS on sheet
except as marked

most roads
actually have
trees on
main line



T



WILSON JONES
d7506 ColumnWrite ①

X-JONES

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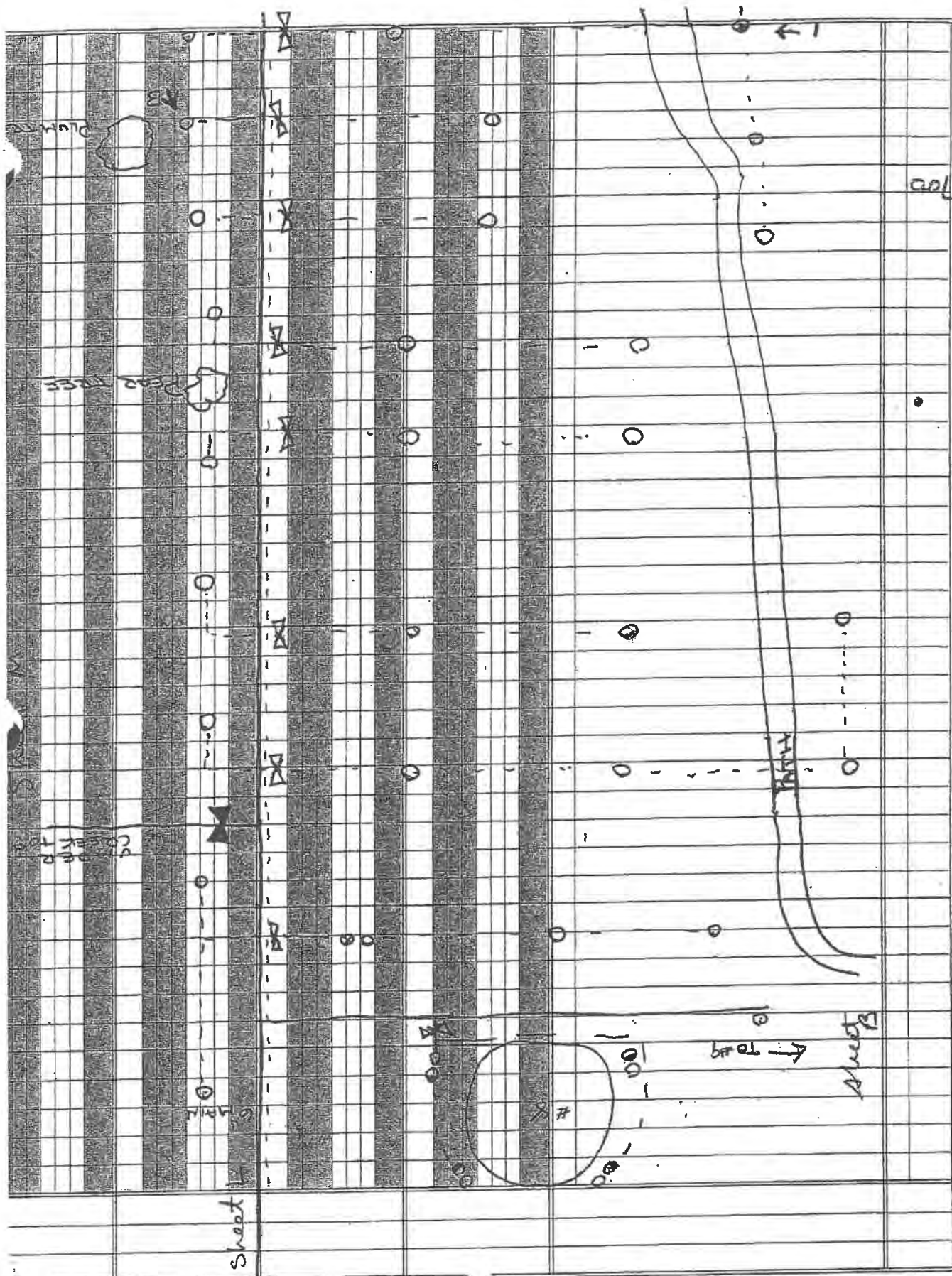
WILSON JONES

07504 ColumnWrite

X = VALVES

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Prepared By	
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© WILSON JONES © 47504 ColumnWrite ©

X = VALUES

Approved By	
Prepared By	
Initials	

9/10/44

uphead



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Sheet 13



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9 May

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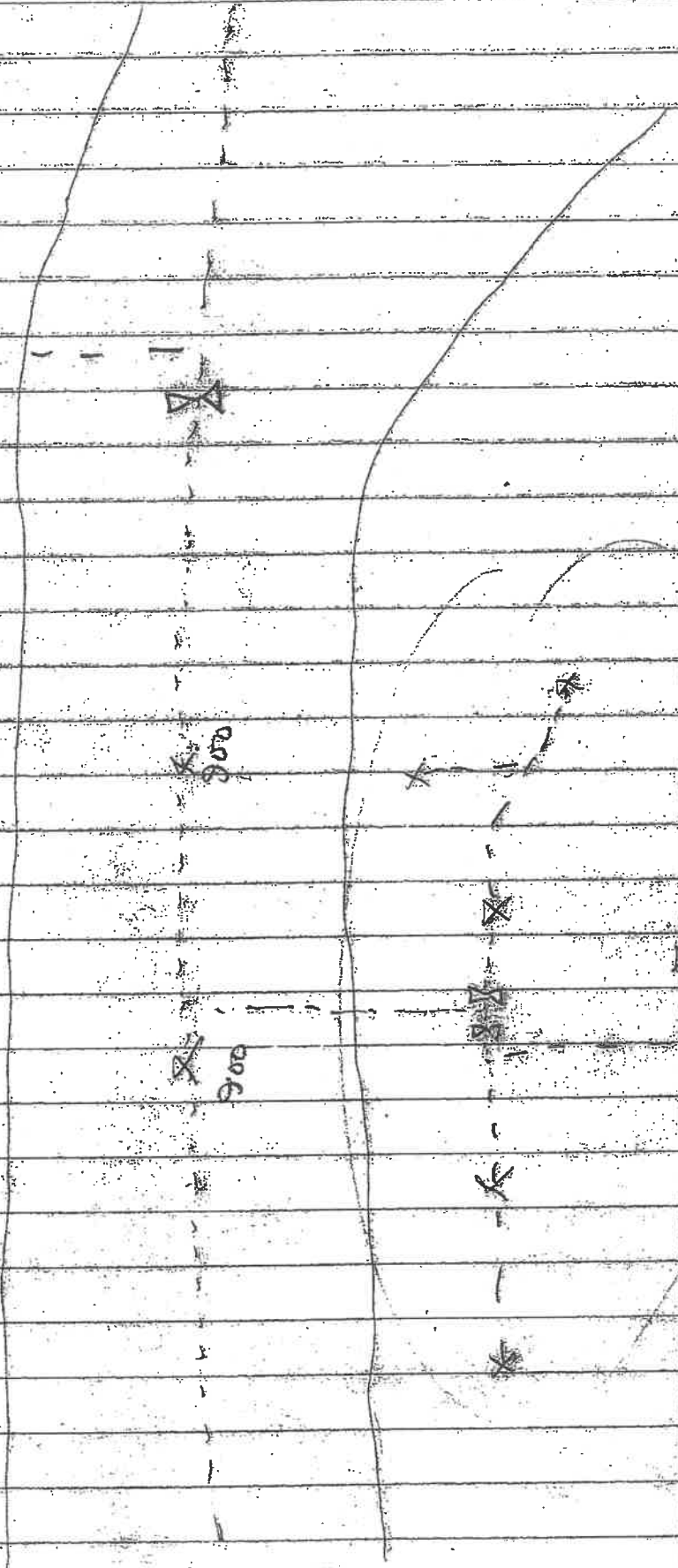
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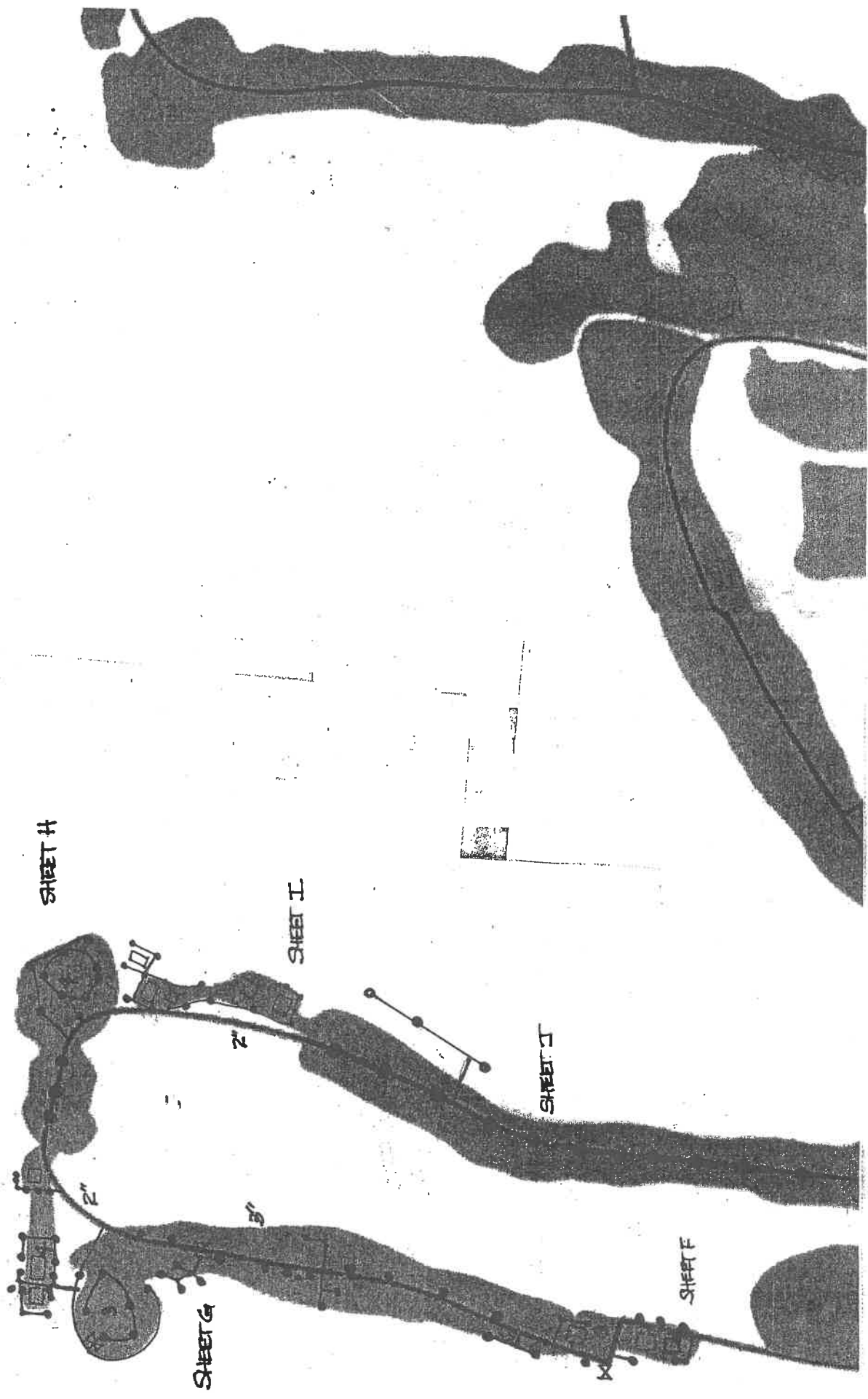
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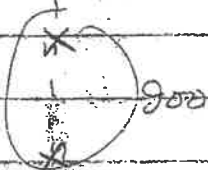
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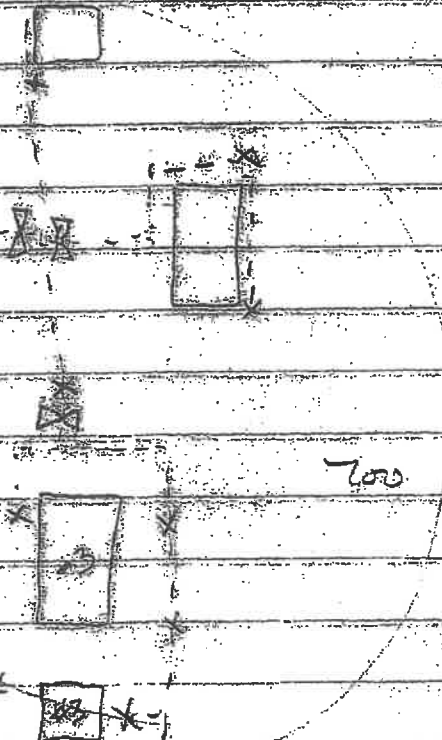
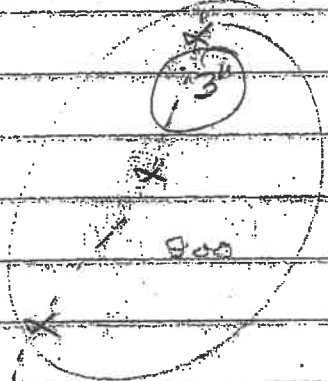
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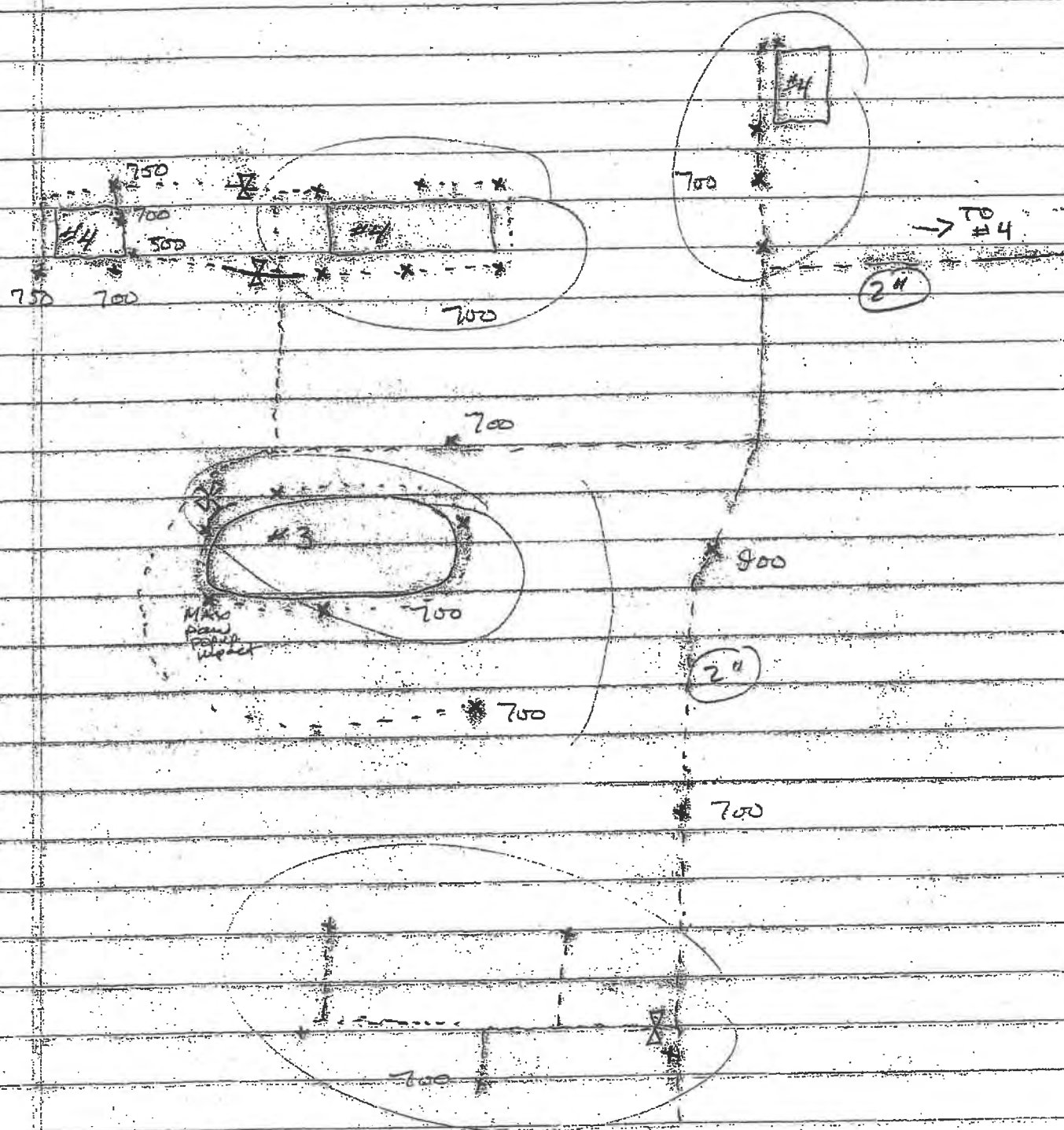
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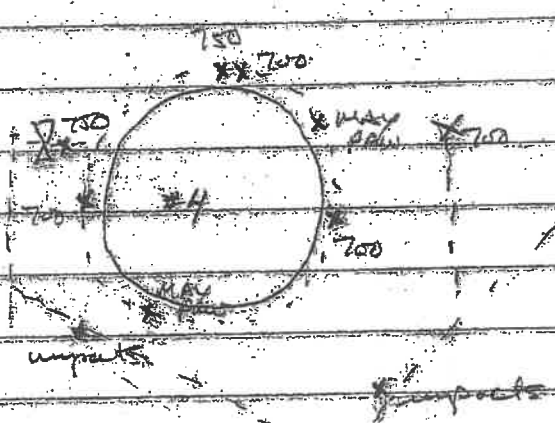
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X impact



PREPARED BY



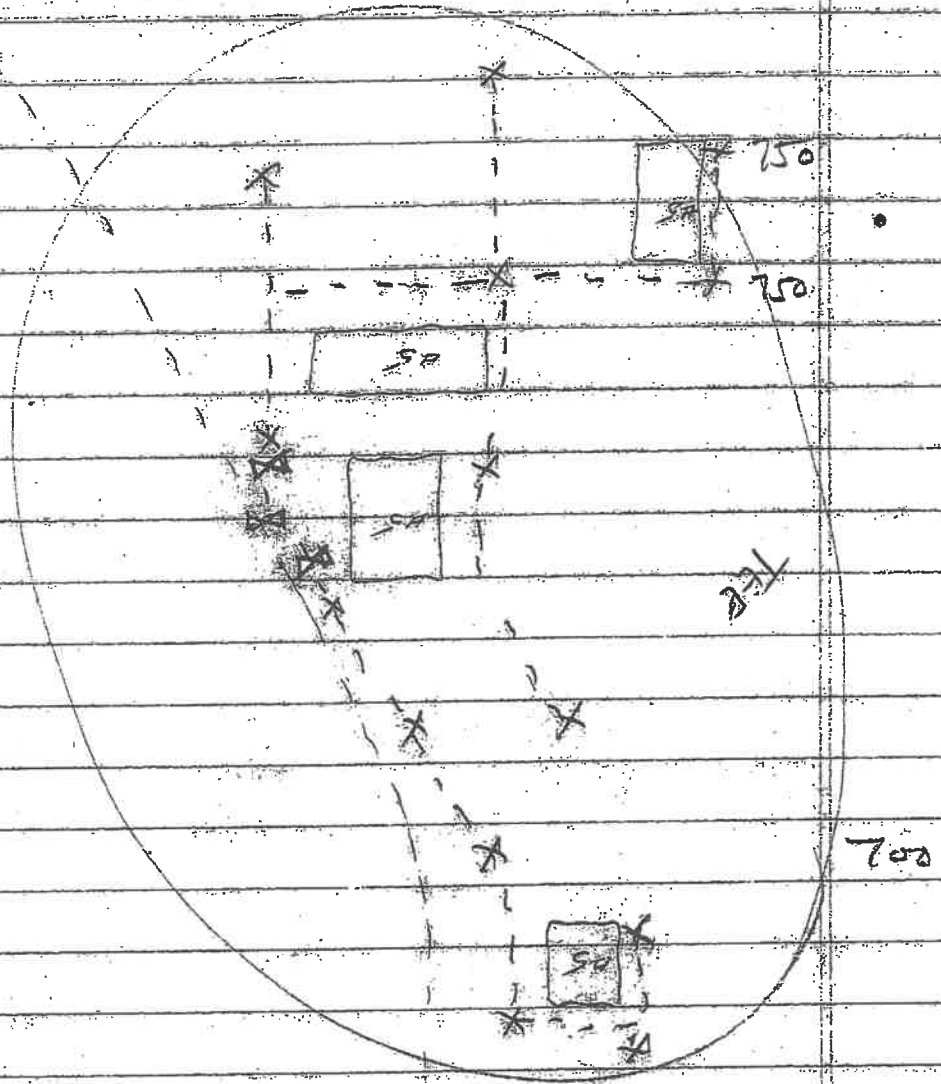


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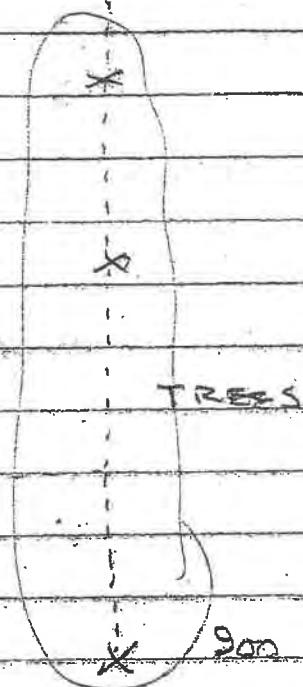
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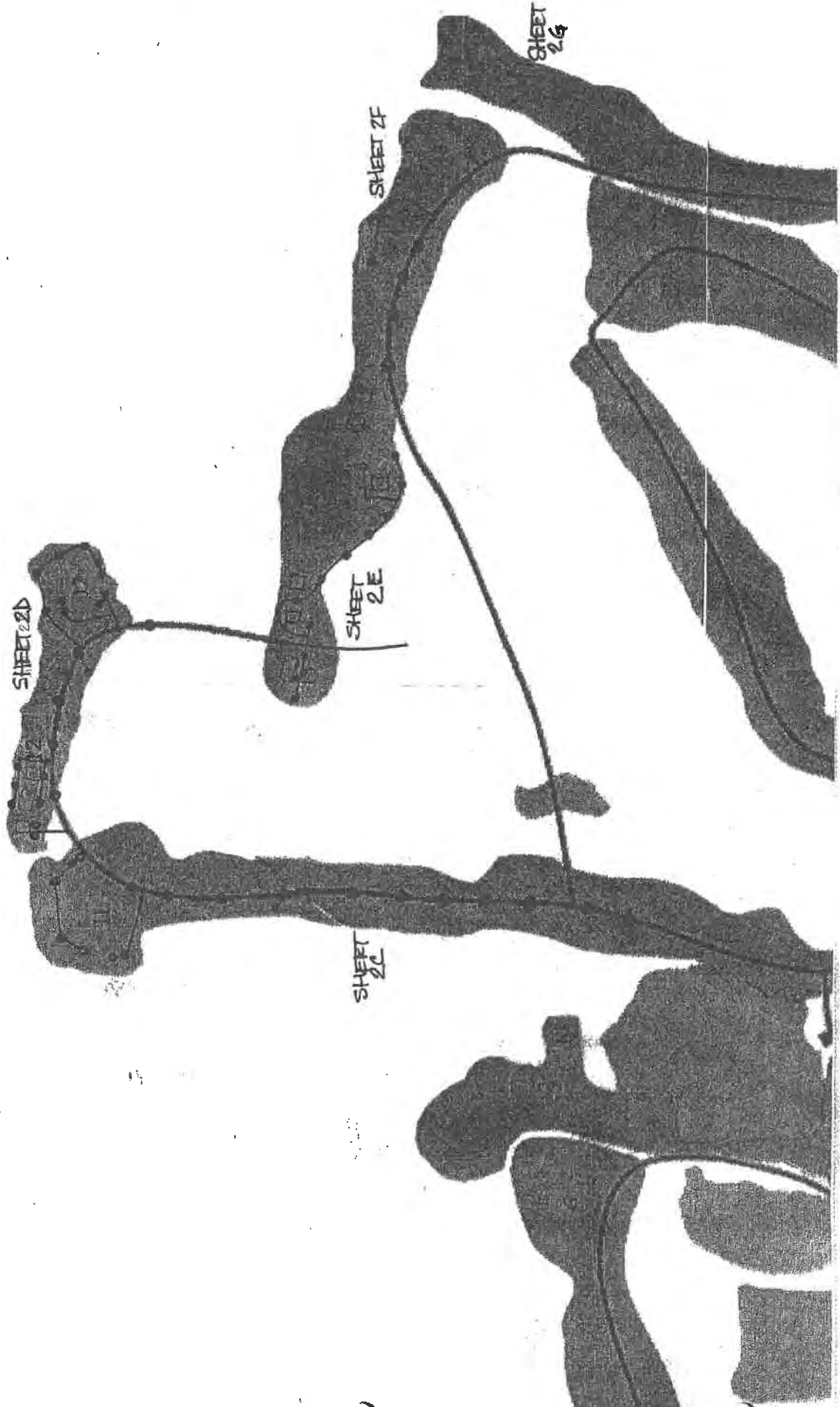
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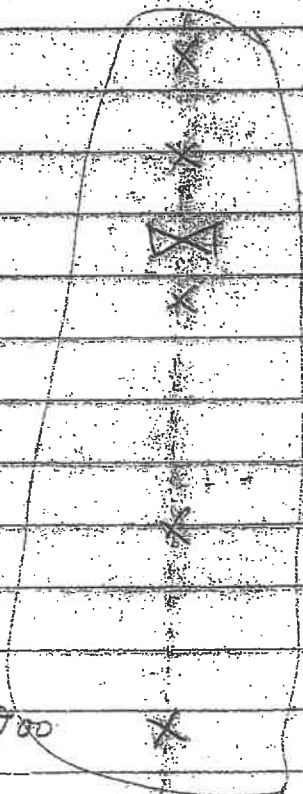


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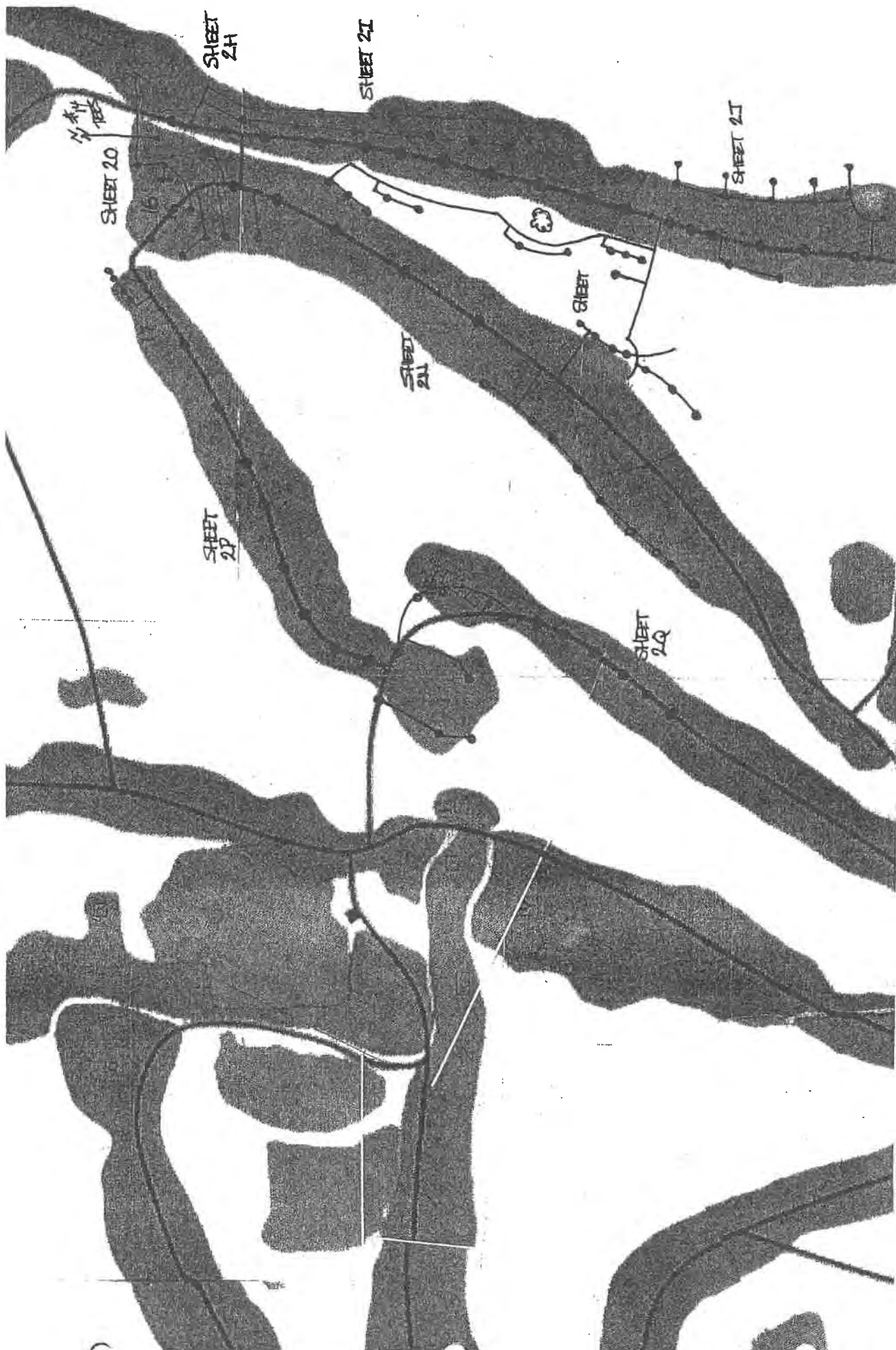
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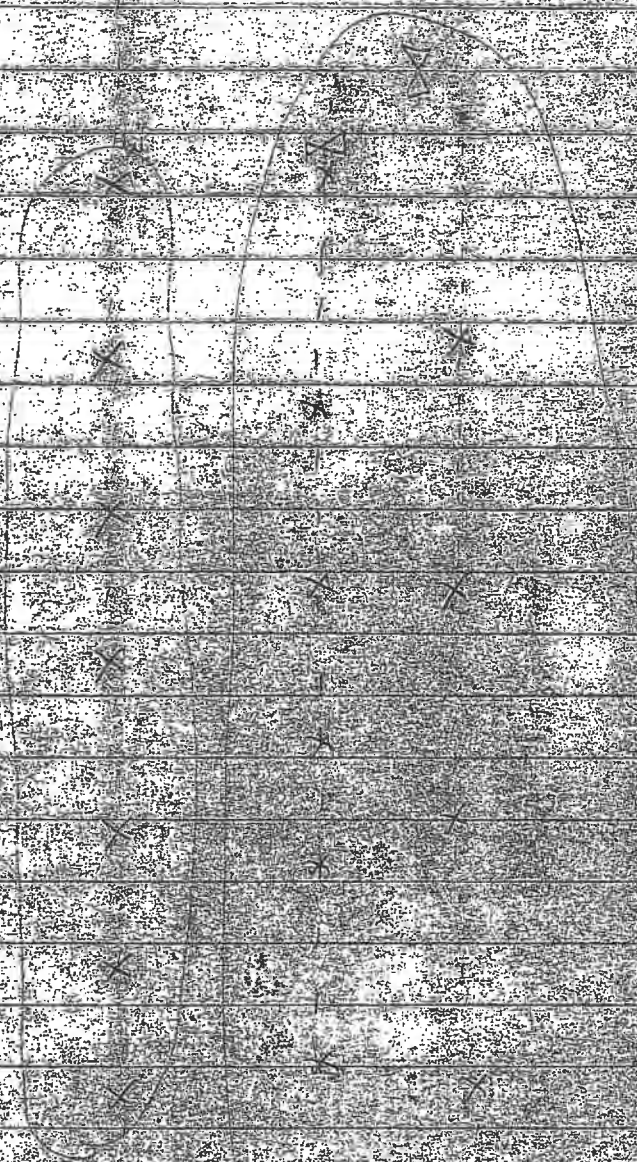
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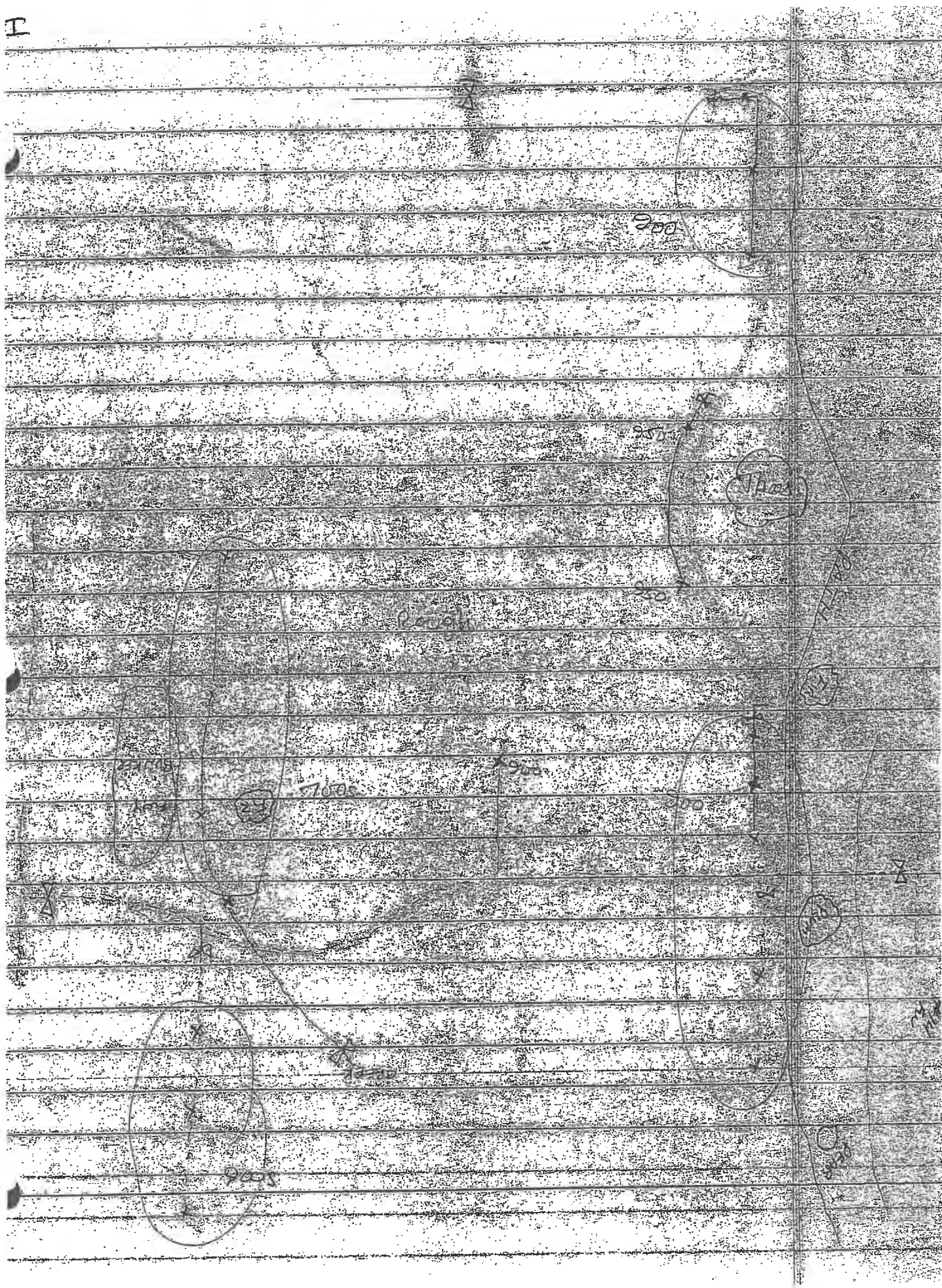
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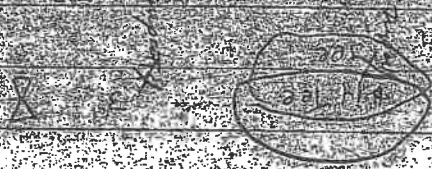
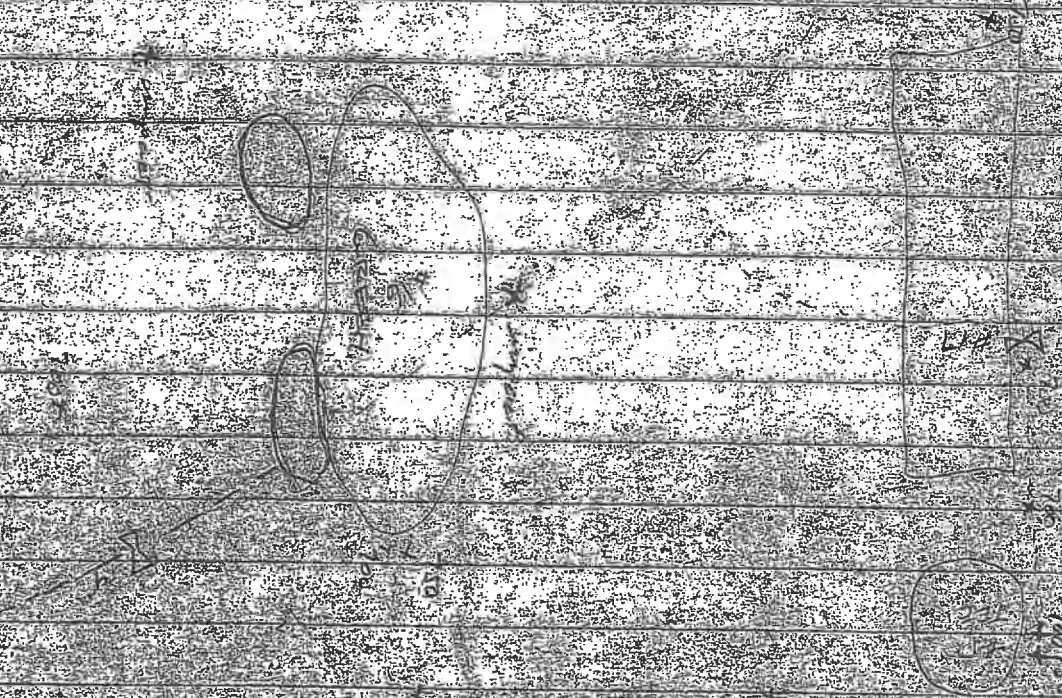
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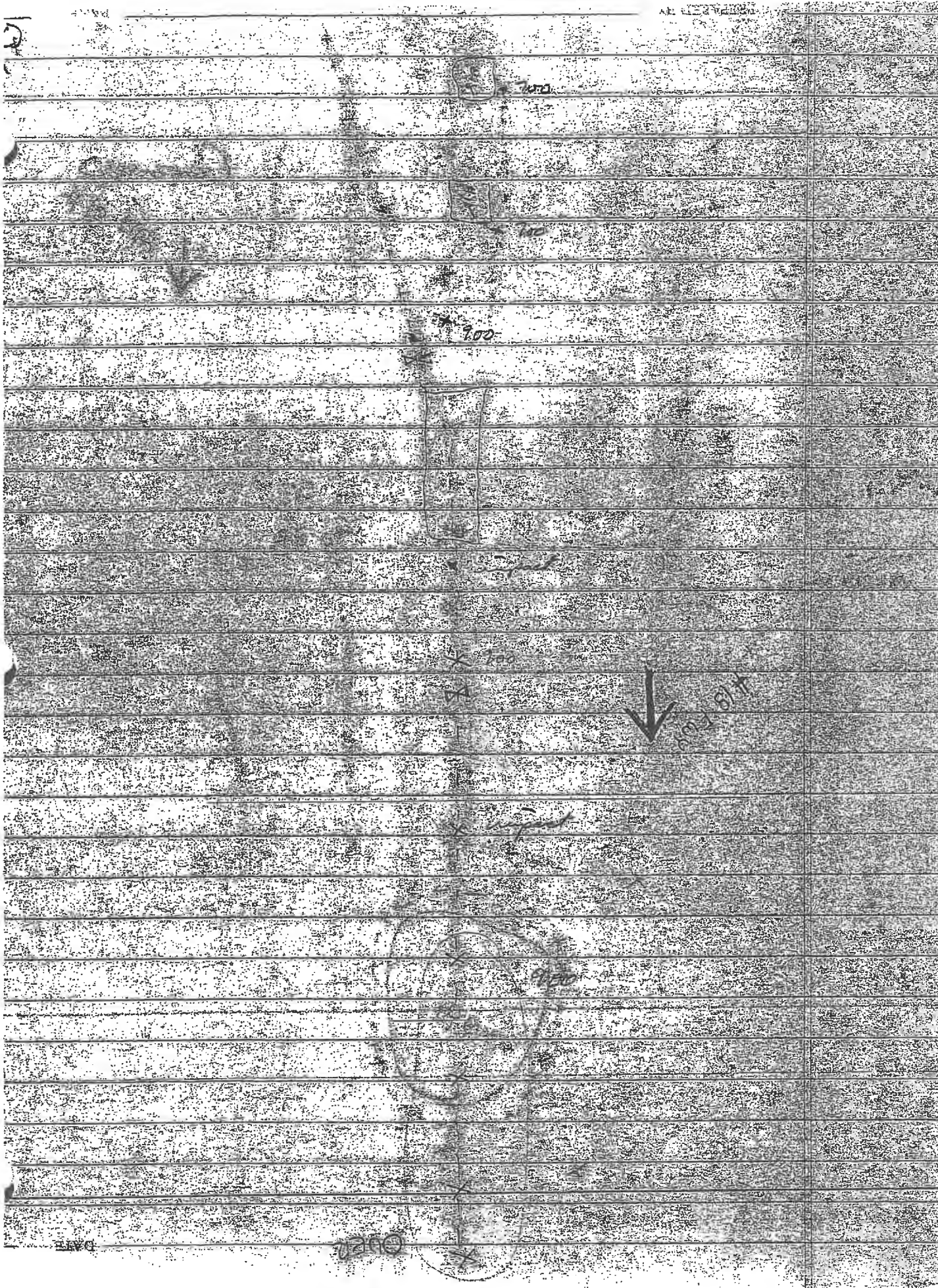
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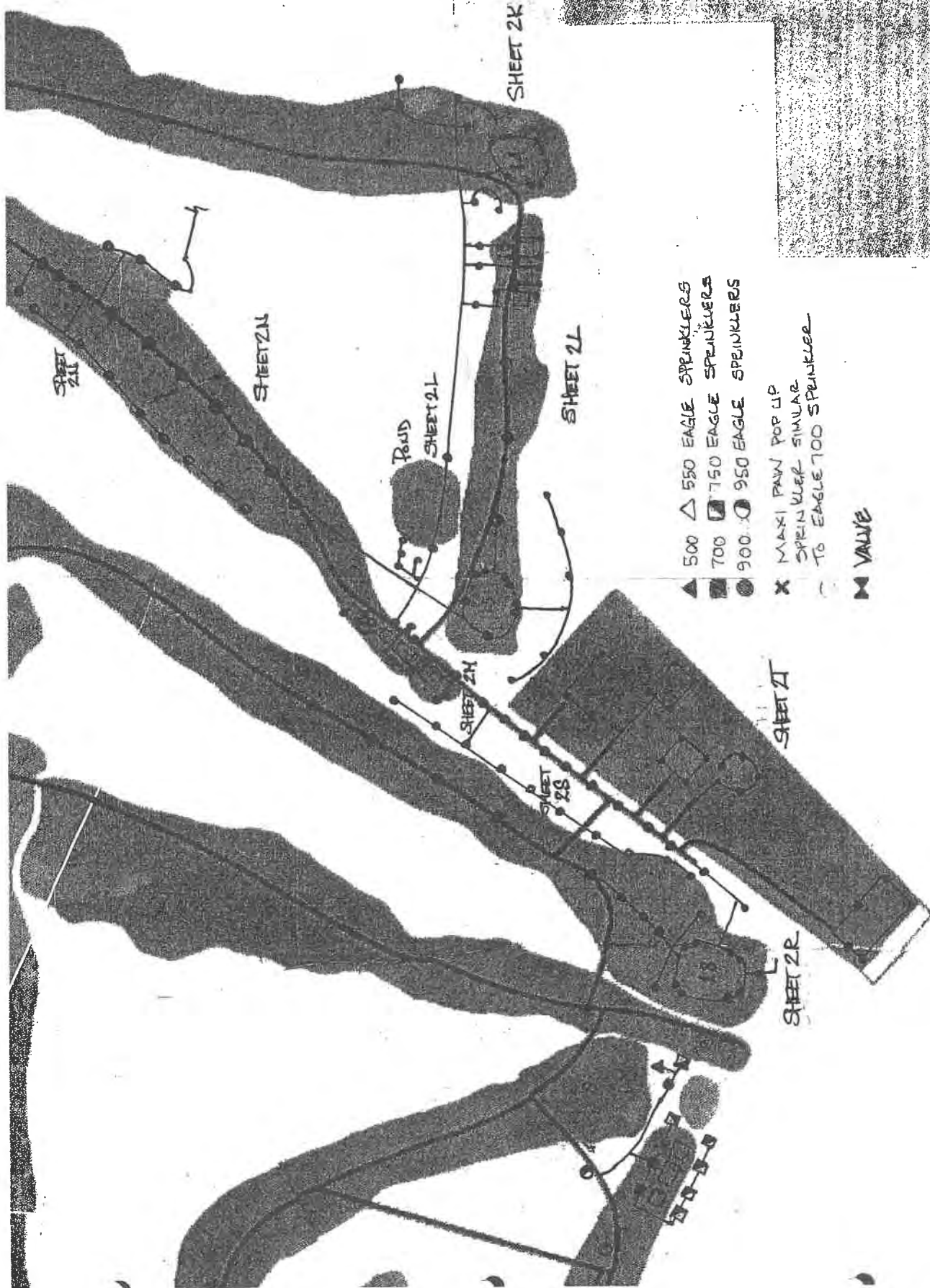


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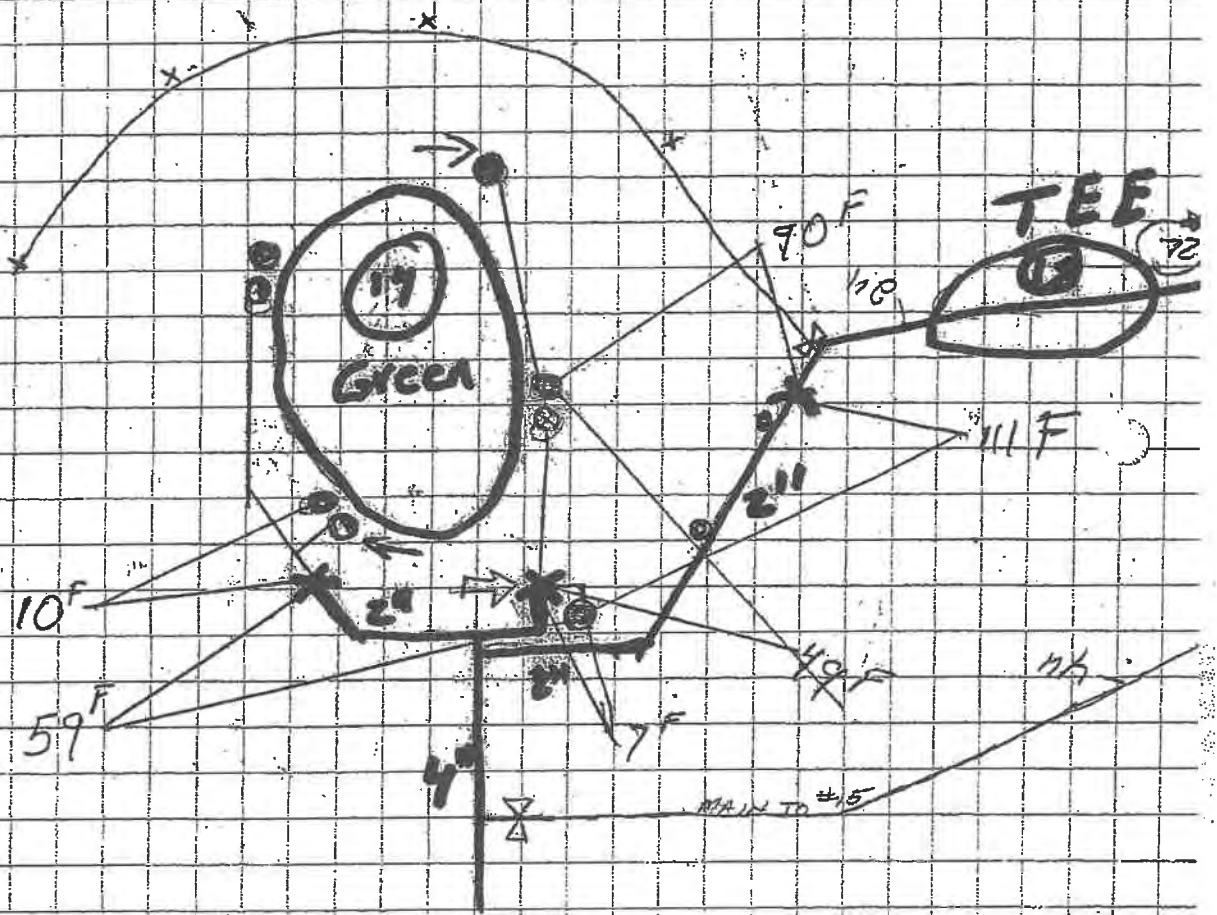
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PREPARED BY _____





- ▲ 500 △ 550 EAGLE SPRINKLERS
- 700 ▣ 750 EAGLE SPRINKLERS
- 900 ○ 950 EAGLE SPRINKLERS
- ✕ MAXI PAW POP UP SPRINKLER SIMILAR TO EAGLE 700 SPRINKLER
- VALVE



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700

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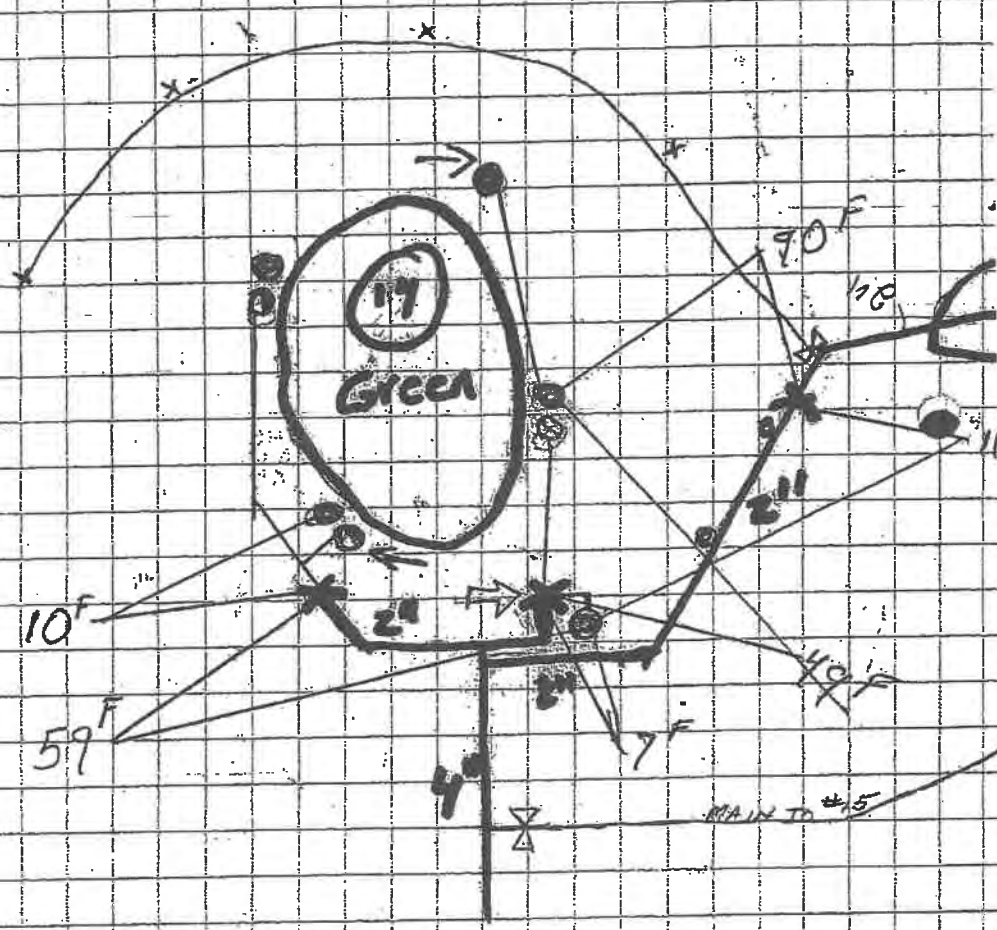
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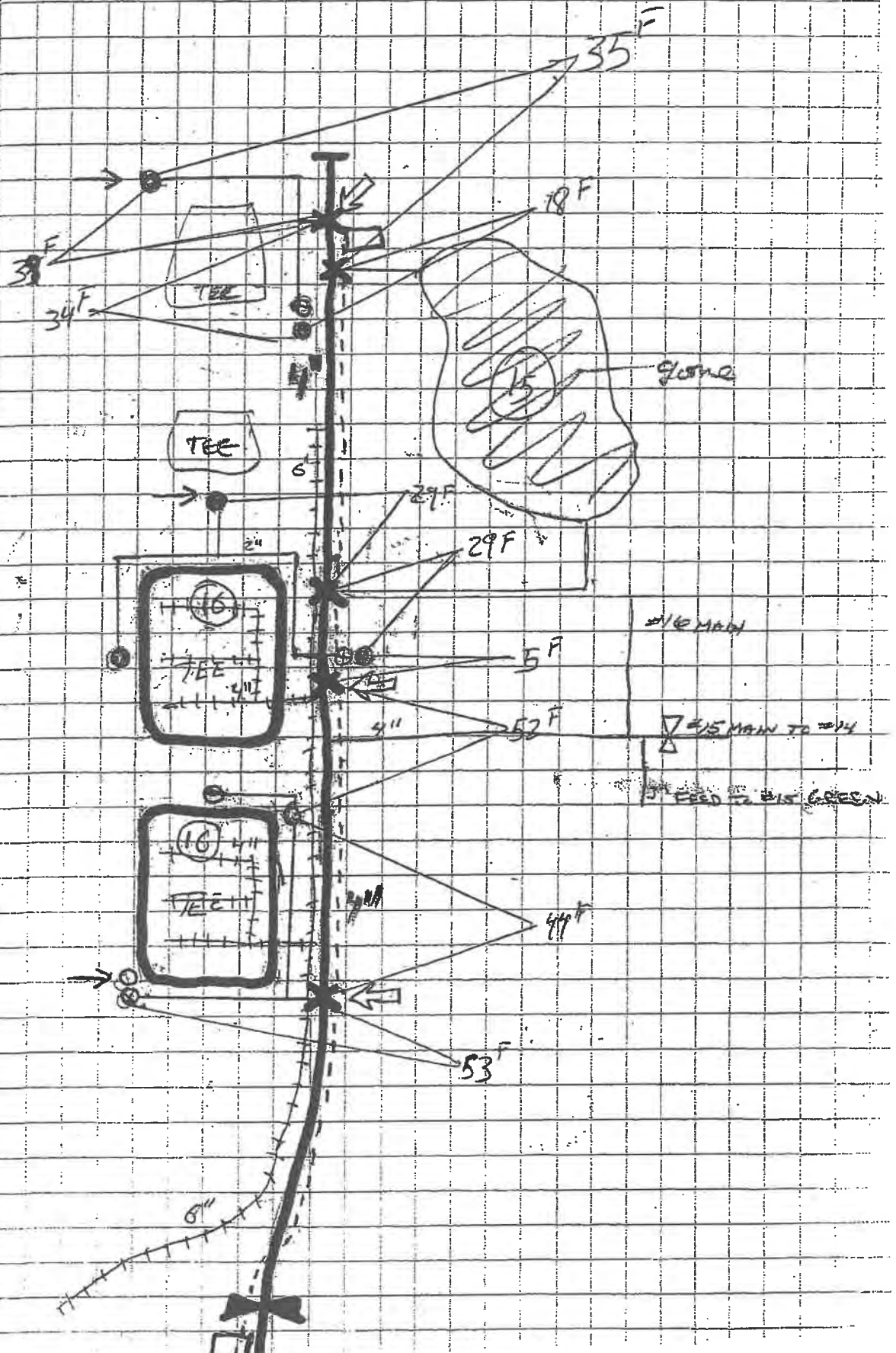
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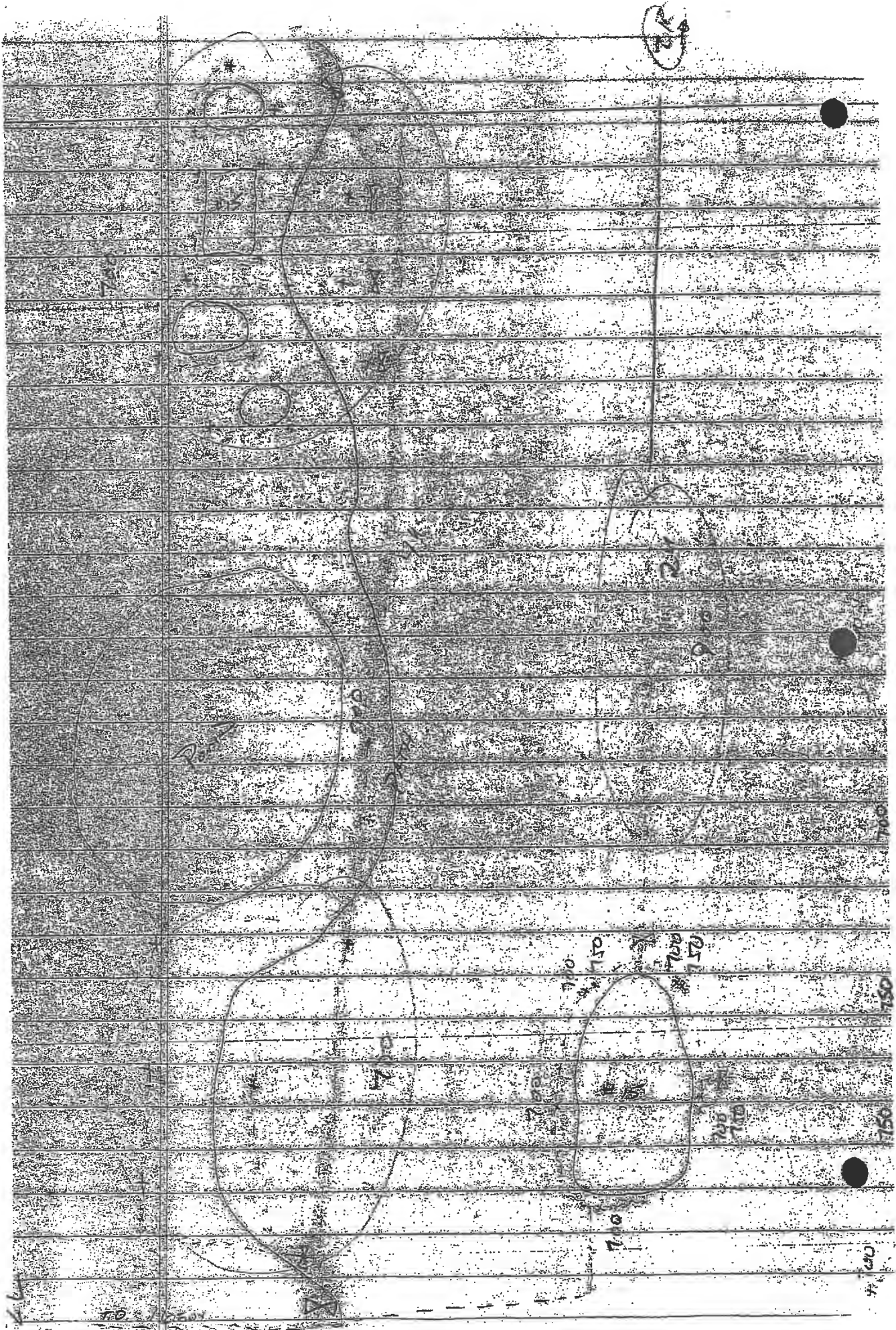
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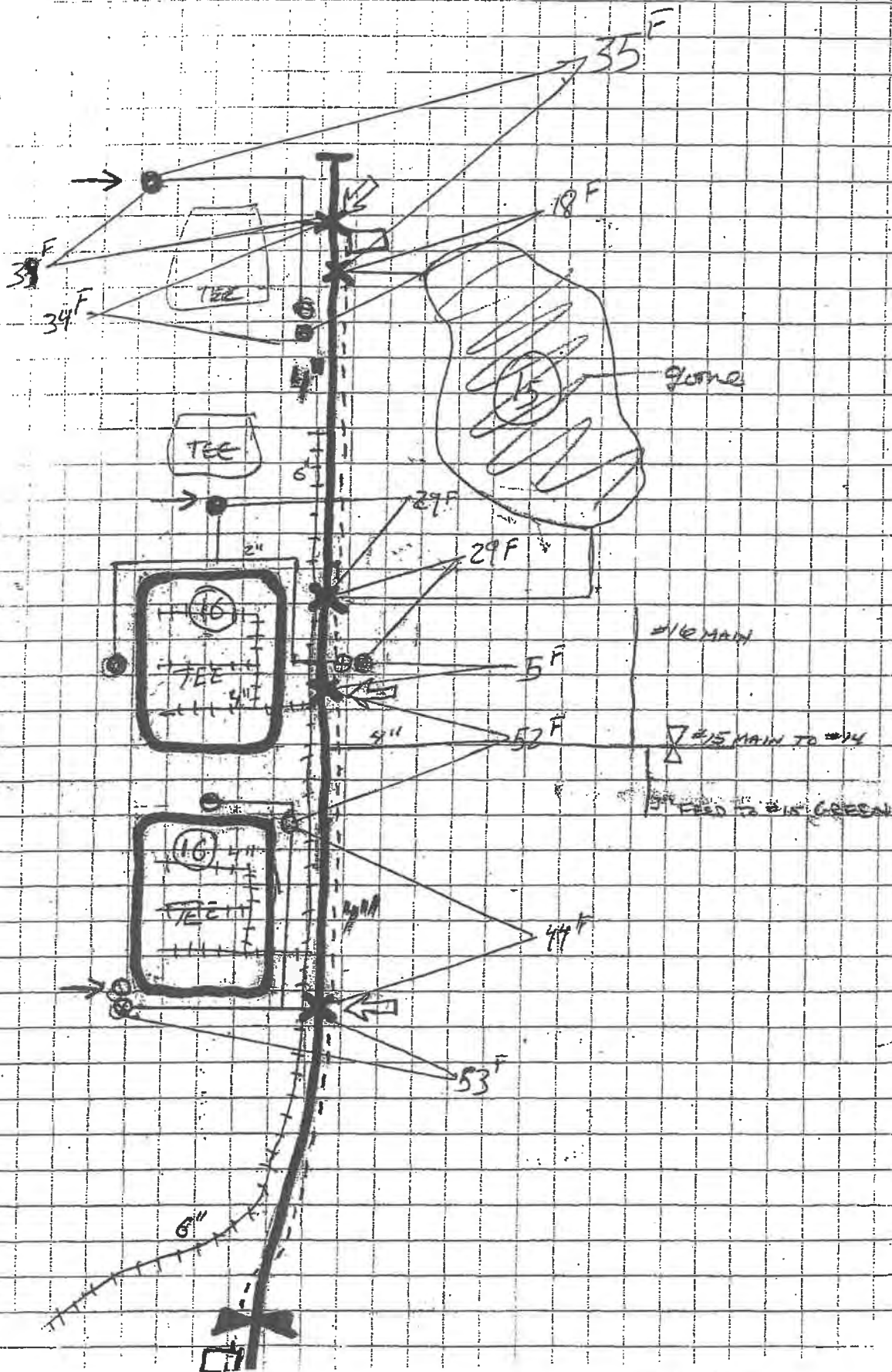
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Impact
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Impact

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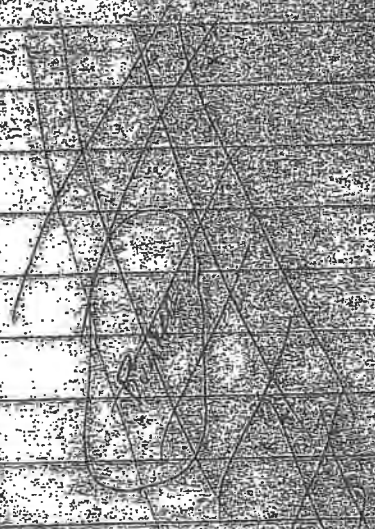
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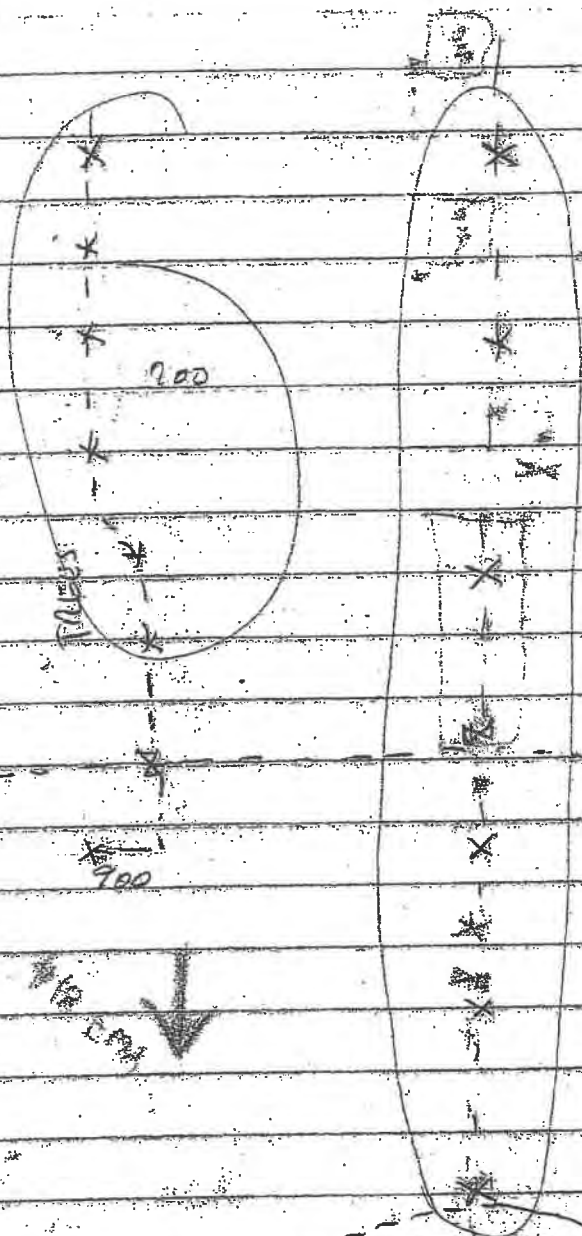
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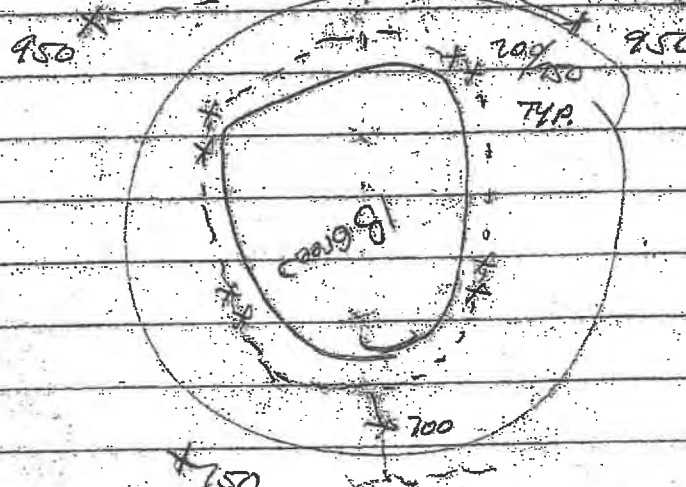
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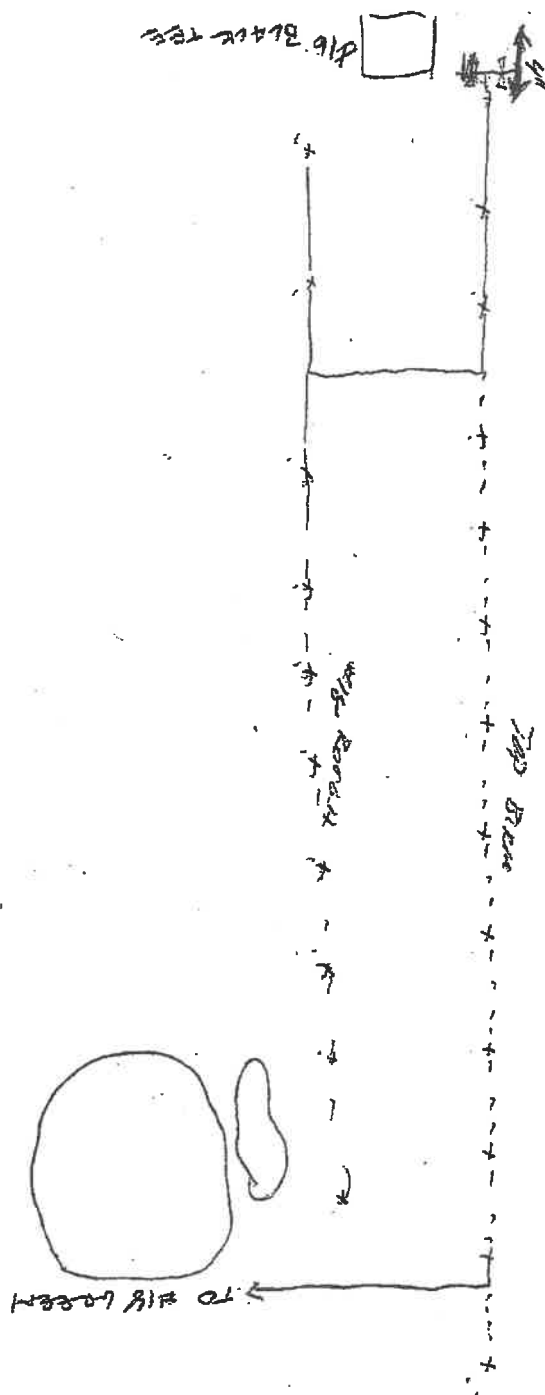
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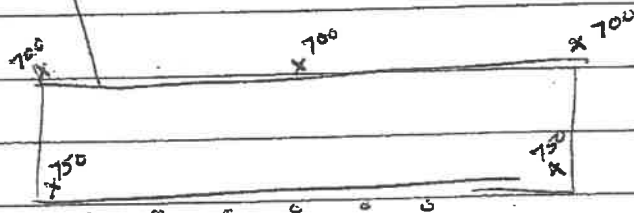
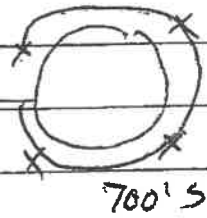
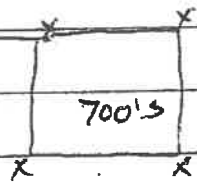
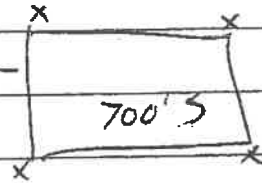
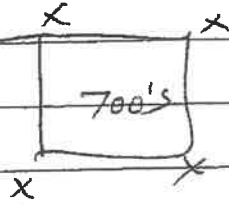
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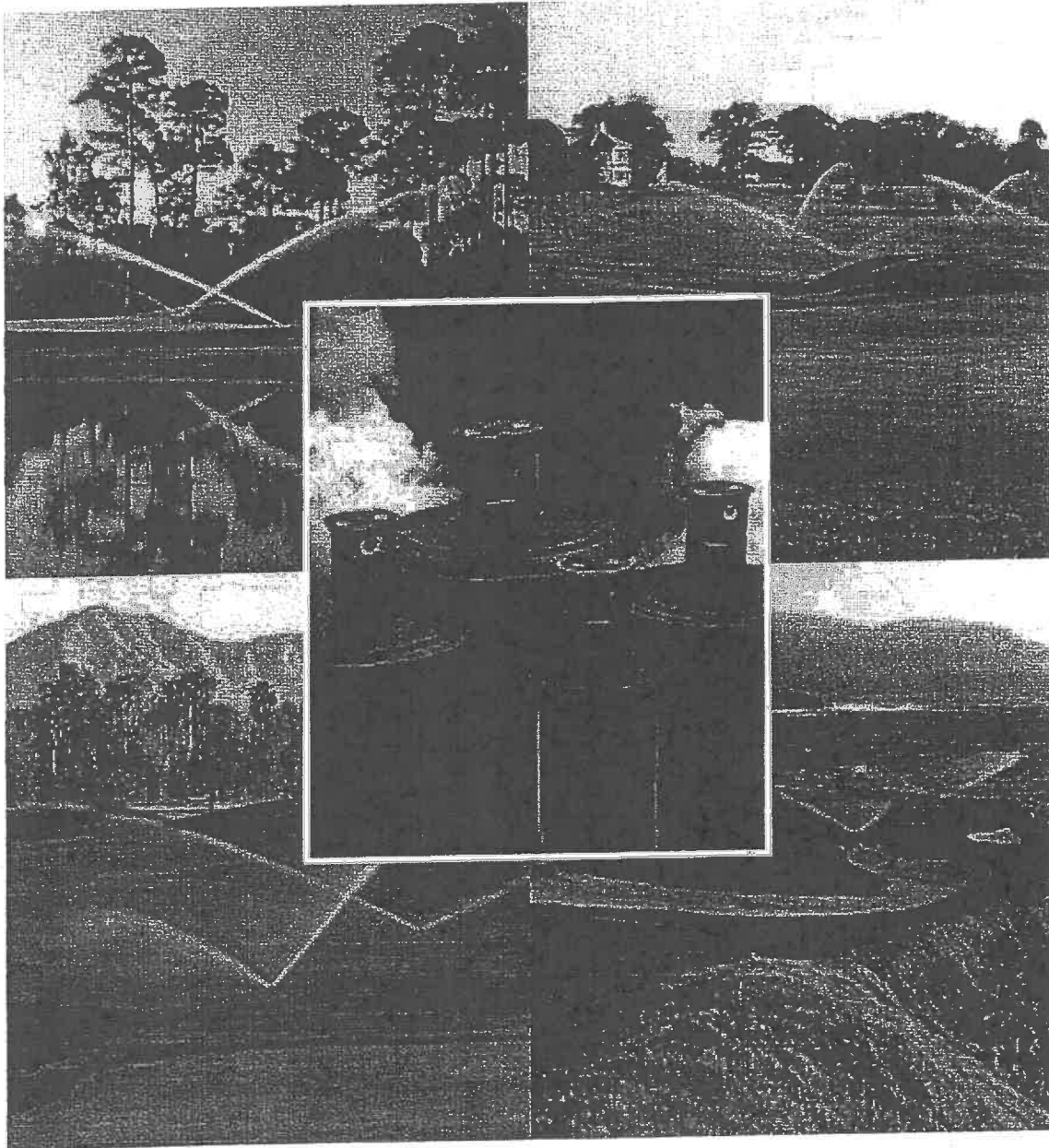


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RAIN ***BIRD***®

EAGLE Series Rotors





Breakthrough Technology That Won't Break Down

The EAGLE™ gear drive rotors from Rain Bird® prove that advanced technology can have practical applications. EAGLE rotors are designed to work right out of the box and keep on working. Closed-case EAGLE rotors have become the choice for golf course professionals who demand superior reliability, unmatched debris-resistance, labor-saving maintenance, uniform water distribution and versatility—all at the highest level of efficiency.

The complete family of EAGLE 500, 700 and 900 series rotors offers radius ranges from 33 to 98 feet (10.1 m to 29.9 m) and is designed with the features that allow unquestioned performance in meeting the rigorous demands of any golf course layout.

Closed-Case Provides Proven Debris-Resistance

True closed-case construction of EAGLE rotors extends the life of the rotor by protecting the motor from debris, outside elements and environmental changes. The industry's only self-flushing mode at pop-up and pop-down adds another barrier to debris that is crucial in fine sand and silty soil types. The closed-case design also permits installation to grade.

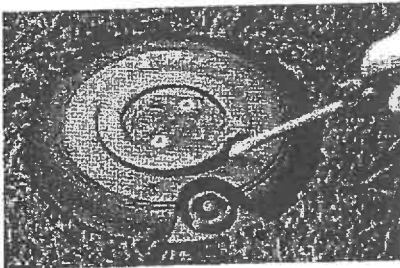




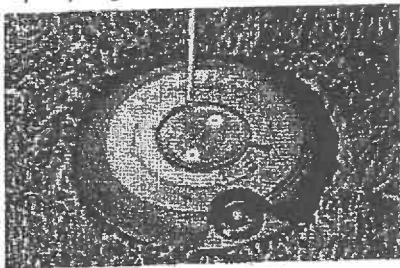
New Top-Serviceable Features Simplify Maintenance

EAGLE rotors are now even more durable and easy to maintain thanks to an integrated Top-Serviceable Rock Screen™ and Replacable Valve Seat. This patented feature allows for the removal of debris and the replacement of the valve seat without flushing or digging.

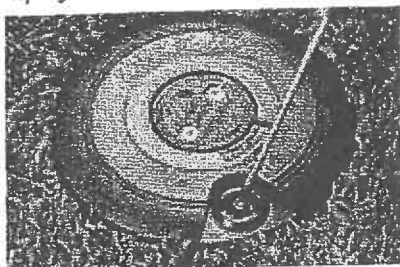
By simply removing the snap ring on the top of the rotor, you can quickly access the internal assembly and valve—with no digging. And pressure regulation and arc adjustment can be made from the top using only a screwdriver.



Top Snap Ring



Top-Adjustable Part-Circle Arc Setting



Top-Adjustable Pressure Regulator

EAGLE™ Rotor Family Matrix

Configuration:	500/550	700/750	900/950
Electric	X	X	X
SAM	X	X	X
Hydraulic	X	X	X
Block	X	X	
Inlet Size:			
1½" (3.8 cm)			X
1¼" (3.2 cm)	X	X	
(Block Only) 1" (2.5 cm)	X	X	
Inlet Thread:			
NPT	X	X	X
BSP	X	X	X
ACME	X	X	X
Flow Rate gpm, m³/h:	4-13 gpm, (0.91-2.90 m³/h)	16-41 gpm, (3.57-9.38 m³/h)	20-60 gpm, (4.55-13.52 m³/h)
Radius of Throw:	33-49', (10.1-14.9 m)	55-82', (16.8-25.0 m)	70-98', (21.3-29.9 m)
Warranty:	3 years, or 5 years when purchased with a Rain Bird Swing Joint.		

Product Line Adds Versatility

EAGLE rotors offer the versatility to meet any challenge, regardless of the climate, soil type, water use and fertigation requirements. EAGLE rotors are available in full- and part-circle versions, with a choice of electric, hydraulic, Stopamatic (SAM) and block (B) models. Should irrigation needs change, some EAGLE Series rotors are interchangeable. Simply install the new internal assembly inside the existing case—without rewiring. The broad line of easily interchangeable color-coded nozzles allows rotors to be easily tailored to differing course applications and requirements. EAGLE rotors also offer the additional flexibility of specialty nozzle kits, including diffuser screws for precise radius adjustment and the EAGLE's Tail™ for watering just behind a part-circle rotor—the perfect solution for stream banks. And the tall 3.25" (8.3 cm) pop-up height ensures effective distribution in all turf types.

Accommodates All Thread Configurations For Added Flexibility

The entire family of EAGLE rotors gives you an added level of flexibility during installation with a choice of inlet threads that fit any configuration—National Pipe Thread (NPT), British Standard Pipe Thread (BSP) or ACME. That means faster installation times and fewer labor hours invested. In addition, the molded-in ACME thread inlet features an o-ring seal style for positive seal without the need for sealant or risk of overtightening.

Water Lubrication Addresses Environmental Concerns

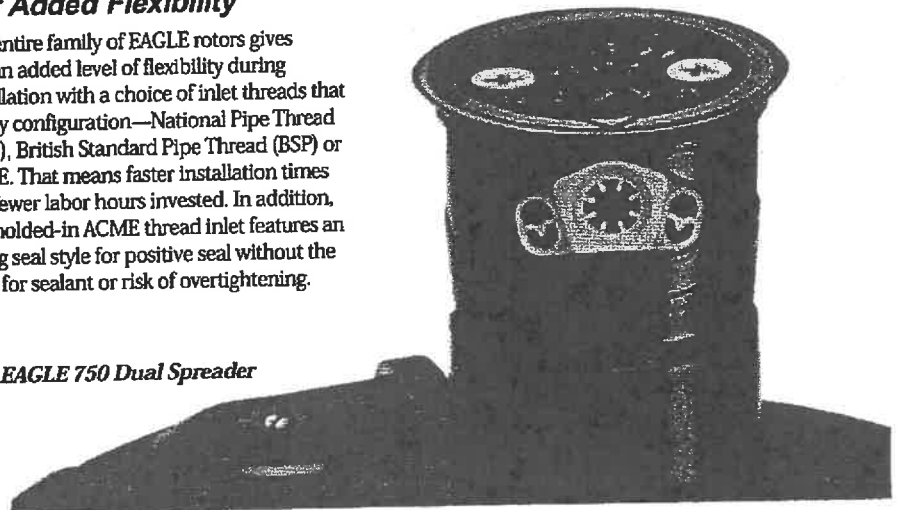
EAGLE gear drive rotors were designed to work in a water environment and require no lubricant for operation. So, there is no risk of oil leaking into the ground. The unique flow-around-the-motor design reduces friction and ensures reliable performance with all types of water conditions—even reclaimed water.

Compound Cluster Gear Delivers Continuous Performance

The EAGLE rotor series uses a compound cluster gear concept to reduce the number of parts in the motor—and the number of problems. These larger gears are more tolerant to grit and leave more room to strengthen the casing to further protect against freezing* and high pressures associated with the heavy loads of golf course equipment.

*In areas where ground temperatures fall below 32° F or 0° C it is necessary to winterize your system.

New EAGLE 750 Dual Spreader





EAGLE™ 900/950 Rotor Series

For fairways and the rough, the EAGLE™ 900/950 rotor series provides superior coverage.

- The EAGLE 900 has a radius of 63' to 91' (19,2-29,6 m).
- The EAGLE 950 has a radius of 70' to 92' (21,3-28,0 m).
- Easily handles pressures from 60 to 100 psi (4,1 to 6,9 bars).
- The EAGLE 900 is a full-circle 360° rotor.
- The part-circle EAGLE 950 offers a 40° to 345° turning range.
- Both versions are available in electric, hydraulic and Stopmatic (SAM) models.
- Electric models have a heavy-duty, two-piece solenoid for easy serviceability and superior life.
- Nozzle pop-up height 3.25" (8,3 cm).
- Thread options include NPT, BSP and ACME 1.5" (3,8 cm).
- Maximum stream height 20' (6,1 m).
- Top-Serviceable Rock Screen™ and Replaceable Valve Seat standard on all EAGLE 900 models.



900E

New high-performance nozzles provide excellent uniformity, especially in larger double-row systems. Distribution is forgiving in stretched spacing and high-wind environments.

3.25" (8.3 cm) pop-up height raises stream above surrounding turf.

One-piece snap cover locks assembly firmly in place.

Top-adjustable pressure regulator offers convenient access to controls.

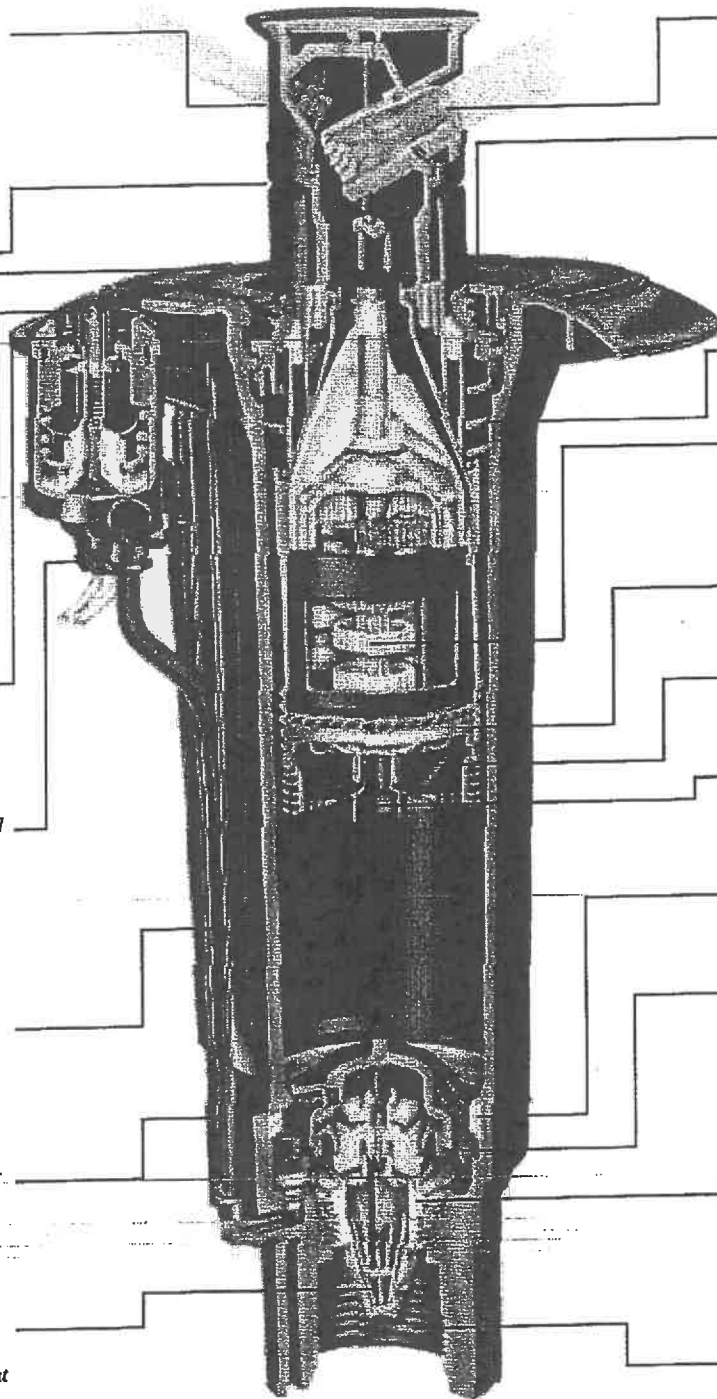
Manual operation selector provides convenient on-the-spot on and off ability.

Heavy-duty, two-piece solenoid offers superior life and can be removed without contaminating the pressure regulation system with dirt.

Reinforced polypropylene case provides excellent protection from outside elements.

Internal bleed port saves water and eliminates puddling around the head.

Patented Top-Serviceable Rock Screen™ and Replaceable Valve Seat allow for debris removal at installation or due to buildup over time.



Color-coded interchangeable nozzles add convenience and flexibility.

Closed-case design with self-flushing action protects internal assembly from debris, allows rotor to be set at grade during installation and ensures performance in all soil conditions.

Heavy-duty spring ensures positive retraction.

Water-lubricated gear drive is environmentally friendly and offers proven, trouble-free performance.

Turbine efficiently powers gear drive mechanism.

Stator ensures consistent rotation speed.

Fine mesh screen keeps debris from entering internal assembly.

Lower dual snap rings lock valve firmly in place.

High-performance diaphragm valve offers reliable performance with little long-term wear. Rubber valve seal can be easily changed if nicked from debris.

Buttress thread of Top-Serviceable Rock Screen prevents misthreading and pushes out any remaining debris during installation.

1.5" (3.8 cm) molded-in NPT, BSP and ACME threads allow for easy installation.



EAGLE™ 900 and 950 Rotors

Model Specifications

The full- or part-circle sprinkler shall be a water-lubricated gear drive rotor capable of covering a ____ (units) radius at a base pressure of ____ (units) and a discharge rate of ____ (units). The rotor shall be installed with a number ____ nozzle that shall be ____ in color for ease of identification.

The part-circle sprinkler shall have adjustable arc coverage of 40° to 345°. Arc adjustment can be performed with or without the rotor in operation and shall require only a flat-blade screwdriver. The part-circle rotor shall rotate through a 180° arc in two minutes or less. Rotation through 360° shall be four minutes or less for the full-circle sprinkler.

The sprinkler shall be fully serviceable from the top without requiring special tools. The internal assembly shall be retained in the case by a plastic snap ring. The Rock Screen and Valve Seat shall be serviceable from the top. The rotor shall have a bearing guide that allows water to flush around the riser stem as it pops up and seals against the riser when it is fully raised. The pop-up height shall be 3.25" (8.3 cm). The retract spring shall be of stainless steel and of sufficient force for positive pop-down.

The nozzle housing cover of the rotor shall indicate the model, identify the installed nozzle and have an arrow to indicate the position of the nozzle, and shall provide a positive seal against debris when the rotor is not in operation. The housing shall be installed with one of eight interchangeable color-coded nozzles. The nozzle shall be tested per ASAE S398.1 and be verified to deliver scheduling coefficient of 1.2 or less and a Christiansen coefficient of uniformity of 90% or greater at the specified spacing.

The rotor body shall be molded of engineering-grade plastic and shall have a double-wall construction female (NPT, BSP or ACME) bottom inlet.

The sprinkler shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California, U.S.A.

Optional Feature—Electric Valve in Head (e.g., 900E or 950E). The sprinkler shall have a 24 VAC 50 or 60 cycle solenoid actuated normally closed control valve in the base of the case. The rotor shall have a pressure regulator which is adjustable from the top using a small flat-blade screwdriver. The rotor shall have a top-serviceable selector that allows the unit to be operated manually, in automatic mode or shut off entirely.

The rotor case shall have a top diameter of 8.25" (21.0 cm) and an overall height of 13.4" (34.0 cm). The case shall have a 1.5" (3.8 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Normally Open Hydraulic Valve in Head (e.g., 900H or 950H). The sprinkler shall have a normally open hydraulic control valve in the base of the case.

The rotor case shall have a top diameter of 8.25" (21.0 cm) and an overall height of 13.4" (34.0 cm). The case shall have a 1.5" (3.8 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Stopmatic Valve in Head (e.g., 900S or 950S). The sprinkler shall have a Stopmatic valve in the base of the case. The valve shall hold back at least 15' (4.6 m) of elevation.

The rotor case shall have a top diameter of 8.25" (21.0 cm) and an overall height of 13.4" (34.0 cm). The case shall have a 1.5" (3.8 cm) NPT, BSP or ACME threaded inlet.

Specifications

Models:

Full-Circle:

EAGLE 900E: Electric
EAGLE 900H: Hydraulic (N.O.)*
EAGLE 900S: Stopmatic (SAM)

Part-Circle:

EAGLE 950E: Electric
EAGLE 950H: Hydraulic (N.O.)*
EAGLE 950S: Stopmatic (SAM)

Arc:

EAGLE 900: Full-circle, 360°
EAGLE 950: Part-circle, 40° to 345°

Maximum Inlet Pressure:

Models 900E: 150 psi (10.3 bars)
Models 900S, 900H: 100 psi (6.9 bars)

Pressure Regulation Range: 60 to 100 psi (4.1 to 6.9 bars)

Factory Pressure Settings:

900E/950E available in 60, 70, 80 psi and wide open—(4.1; 4.8; 5.5 bars and wide open)

Rotation Time:

EAGLE 900: 360° in ≤ 240 seconds;
210 seconds nominally
EAGLE 950: 180° in ≤ 120 seconds;
105 seconds nominally

Inlet Threads: 1.5" (3.8 cm) (15/21)

NPT, BSP or ACME female threaded

Holdback: 900S/950S 15' (4.6 m) elevation

Nozzle Trajectory: 25°

Maximum Stream Height: 20' (6.1 m)

Dimensions:

Body Height: 13.4" (34.0 cm)
Top Diameter: 8.25" (21.0 cm)
Pop-Up Height: 3.25" (8.3 cm)

Solenoid:

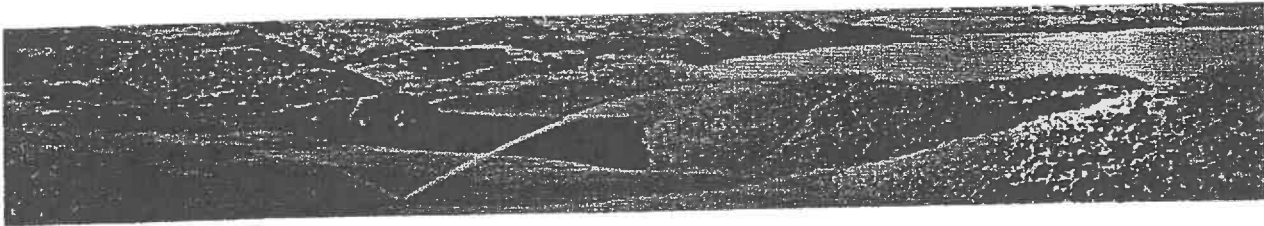
24 VAC Solenoid power requirement—
.41 amp inrush current (9.8 VA)
60 cycle—.25 amp holding current (6.0 VA)
50 cycle—.32 amp holding current (7.7 VA)

Top-Serviceable Rock Screen™ and Replaceable Valve Seat:
All 900 models.

All data are generated from tests conducted in accordance with ASAE Standard S398.1 for at least 30 minutes in zero-wind conditions.

Rain Bird recommends the use of SPACE for Windows, equivalent program or derived performance data to optimize nozzle selection.

* N.O.—Normally open



Performance Data – U.S.

HIGH PERFORMANCE NOZZLES

Base Pressure (psi)	#44 BLUE		#48 YELLOW		#52 ORANGE		#56 GREEN		#60 BLACK		#64 RED	
	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)
60	63	21.4	73	28.9	75	31.9	-	-	-	-	91	47.2
70	67	23.5	73	31.0	79	34.6	83	40.7	87	43.2	91	51.0
80	71	24.7	75	34.1	81	37.1	85	43.5	91	46.4	95	54.0
90	71	26.5	77	35.0	81	39.5	87	46.4	91	49.5	97	57.1
100	73	27.9	77	36.2	83	41.8	89	48.1	91	52.2	-	-

Data reflect no pressure regulation.

Performance Data – Metric

HIGH PERFORMANCE NOZZLES

Base Pressure (bars)	#44 BLUE			#48 YELLOW			#52 ORANGE			#56 GREEN			#60 BLACK			#64 RED		
	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)
4.1	19.2	1.35	4.85	22.3	1.82	6.56	22.9	2.01	7.25	-	-	-	-	-	-	27.4	2.88	10.35
4.5	19.8	1.42	5.11	22.3	1.89	6.81	23.5	2.10	7.57	25.0	2.48	8.94	26.2	2.63	9.47	27.9	3.04	10.94
5.0	20.7	1.50	5.40	22.4	2.00	7.22	24.2	2.22	8.00	25.5	2.61	9.40	26.8	2.78	10.00	28.3	3.21	11.56
5.5	21.6	1.55	5.59	22.8	2.14	7.72	24.7	2.34	8.41	25.9	2.74	9.87	27.7	2.92	10.52	28.8	3.35	12.06
6.0	21.6	1.64	5.90	23.3	2.19	7.88	24.7	2.45	8.81	26.3	2.87	10.34	27.7	3.06	11.03	29.2	3.49	12.57
6.5	21.9	1.71	6.16	23.5	2.24	8.06	24.9	2.55	9.19	26.8	3.00	10.80	27.7	3.20	11.86	29.6	3.60	12.97
6.9	22.3	1.76	6.35	23.5	2.28	8.22	25.3	2.64	9.49	27.1	3.10	11.15	27.7	3.29	11.86	-	-	-

Data reflect no pressure regulation.

Performance Data – U.S.

NOZZLES

Base Pressure (psi)	#18 WHITE-C		#20 GRAY-C		#22 BLUE-C		#24 YELLOW-C		#26 ORANGE		#28 GREEN		#30 BLACK		#32 BROWN	
	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)
60	70	19.5	72	23.0	74	26.5	76	30.8	78	36	-	-	-	-	-	-
70	72	21.3	74	25.1	76	28.8	80	33.5	82	38.7	84	42.9	84	47.3	84	50.4
80	74	22.9	76	27.0	80	30.9	84	36.0	84	41.5	86	47.3	86	50.4	85	53.1
90	75	24.4	78	28.7	82	32.9	88	38.4	86	43.4	89	48.5	90	52.9	88	55.8
100	76	25.8	80	30.5	84	34.6	90	40.5	88	46.7	91	52.2	92	55.8	92	59.4

Data reflect no pressure regulation.

Performance Data – Metric

NOZZLES

Base Pressure (bars)	#18 WHITE-C			#20 GRAY-C			#22 BLUE-C			#24 YELLOW-C			#26 ORANGE			#28 GREEN			#30 BLACK			#32 BROWN		
	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)	Radius (m)	Flow (l/s)	Flow (m³/h)
4.1	21.3	1.23	4.43	21.9	1.45	5.22	22.6	1.67	6.02	23.2	1.94	7.00	23.8	2.27	8.18	-	-	-	25.2	2.90	10.44	25.3	3.10	11.17
4.5	21.7	1.29	4.64	22.3	1.52	5.48	22.9	1.75	6.29	23.8	2.03	7.32	24.4	2.36	8.50	25.2	2.62	9.44	25.8	3.03	10.92	25.7	3.22	11.60
5.0	22.1	1.37	4.93	22.7	1.61	5.81	23.5	1.85	6.66	24.7	2.15	7.75	25.1	2.49	8.95	25.8	2.78	10.00	26.2	3.18	11.43	25.9	3.35	12.05
5.5	22.5	1.44	5.19	23.2	1.70	6.12	24.4	1.95	7.01	25.6	2.27	8.16	25.6	2.61	9.41	26.2	2.98	10.72	26.2	3.29	11.85	26.6	3.46	12.46
6.0	22.8	1.51	5.44	23.6	1.78	6.40	24.8	2.04	7.34	26.5	2.38	8.56	26.0	2.70	9.73	26.9	3.04	10.93	27.1	3.42	12.30	27.3	3.61	13.00
6.5	23.0	1.58	5.68	24.0	1.86	6.69	25.3	2.12	7.64	27.1	2.48	8.93	26.5	2.83	10.18	27.4	3.16	11.37	27.7	3.42	12.30	27.3	3.61	13.00
6.9	23.2	1.63	5.86	24.4	1.92	6.93	25.8	2.18	7.86	27.4	2.56	9.20	26.8	2.95	10.61	27.7	3.29	11.86	28.0	3.52	12.67	28.0	3.75	13.49

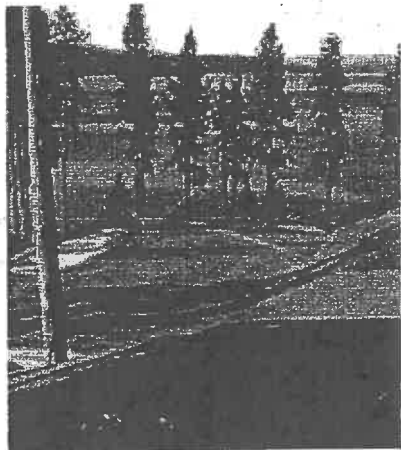
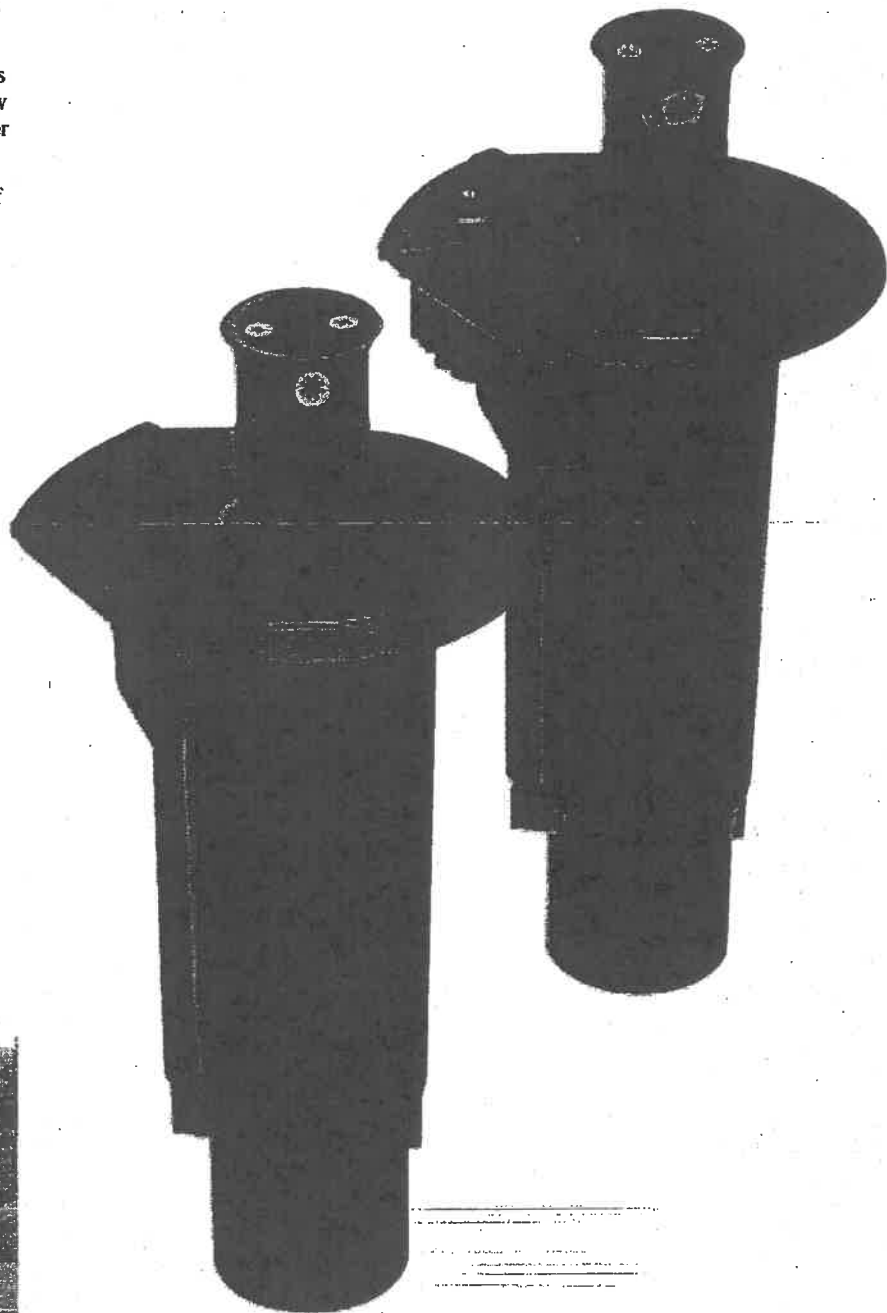
Data reflect no pressure regulation.



EAGLE™ 700/750 Rotor Series

Designed for precise control and high uniformity, the EAGLE™ 700/750 rotor series are suitable for use in single rows for narrow fairways and roughs, or doubled-up to cover more distance.

- The EAGLE 700 rotor provides a radius of 55' to 80' (16,8-24,4 m).
- The EAGLE 750 has a radius of 55' to 83' (16,8-25,3 m).
- Can handle pressures from 60 to 100 psi (4,1 to 6,9 bars).
- Dual Spreader™ nozzle design provides superior water distribution with less sensitivity to spacing difference.
- Top diameter of 6.25" (15,9 cm) reduces the risk of damage from equipment.
- The EAGLE 700 is a full-circle 360° rotor.
- The part-circle EAGLE 750 offers a 30° to 345° turning range.
- Both versions are available in electric, hydraulic, Stopmatic (SAM), block (with SEAL-A-MATIC™ device), and block with rubber cover top (with SEAL-A-MATIC device) models.
- Electric models have a heavy-duty, two-piece solenoid for easy serviceability and superior life.
- Nozzle pop-up height 3.25" (8,3 cm).
- Threads available in NPT, BSP or ACME.
- Top-Serviceable Rock Screen™ and Replaceable Valve Seat standard on all valve-in-head models.



700E

Dual spreader nozzles provide excellent wedge-shape profiles. Distribution is forgiving in stretched spacing and high-wind environments.

3.25" (8,3 cm) pop-up height raises stream above surrounding turf.

One-piece snap cover locks assembly firmly in place.

Top-adjustable pressure regulator offers convenient access to controls.

Manual operation selector provides convenient on-the-spot on and off ability.

Heavy-duty, two-piece solenoid offers superior life and can be removed without contaminating the pressure regulation system with dirt.

Reinforced polypropylene case provides excellent protection from outside elements.

Internal bleed port saves water and eliminates puddling around the head.

Patented Top-Serviceable Rock Screen™ and Replaceable Valve Seat allow for debris removal at installation or due to buildup over time.

Diffuser screw kit allows flexibility to reduce radius of throw in difficult watering applications.

Color-coded interchangeable nozzles add convenience and flexibility.

Closed-case design with self-flushing action protects internal assembly from debris, allows rotor to be set at grade during installation and ensures performance in all soil conditions.

Heavy-duty spring ensures positive retraction.

Water-lubricated gear drive is environmentally friendly and offers proven, trouble-free performance.

Turbine efficiently powers gear drive mechanism.

Stator ensures consistent rotation speed.

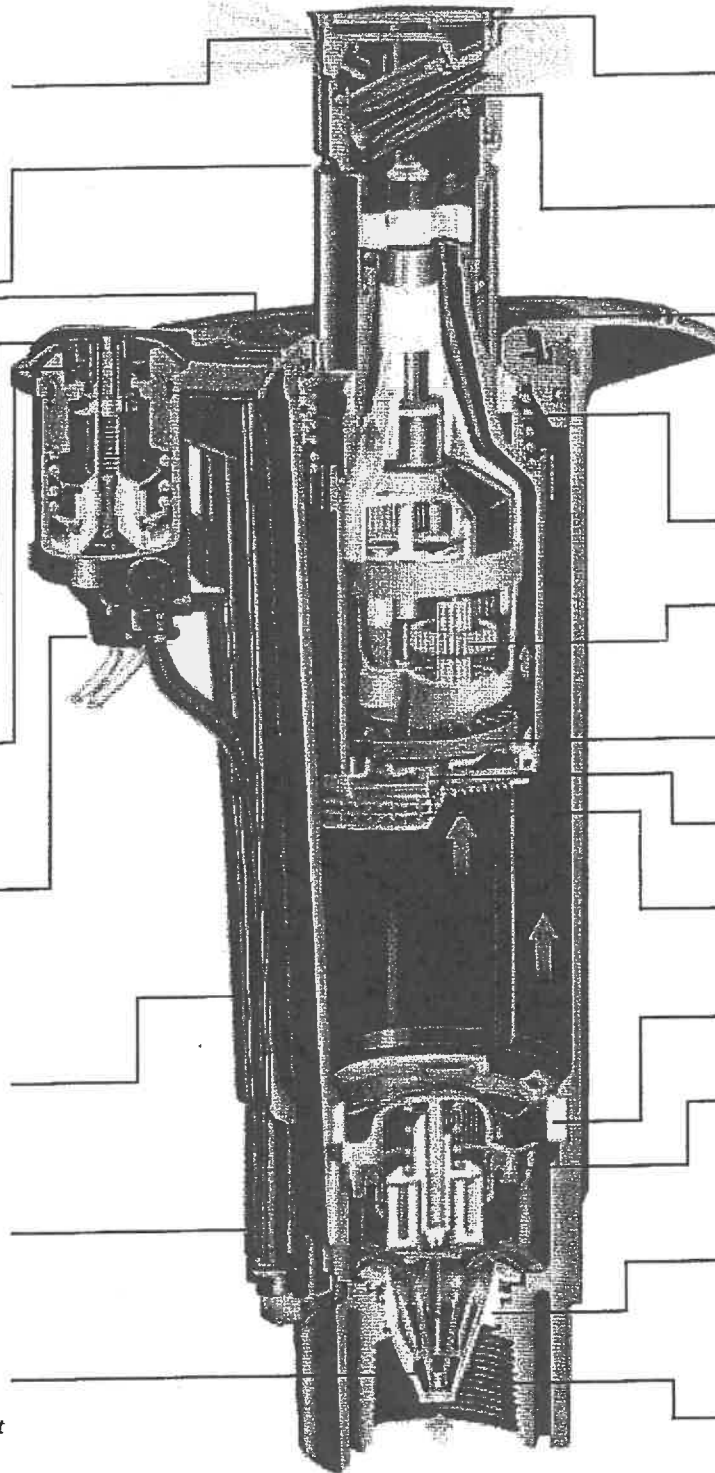
Fine mesh screen keeps debris from entering internal assembly.

Lower dual snap rings lock valve firmly in place.

Diaphragm valve offers reliable performance with little long-term wear. Rubber valve seal can be easily changed if nicked from debris.

Buttress thread of Top-Serviceable Rock Screen prevents misthreading and pushes out any remaining debris during installation.

1.25" (3,2 cm) molded-in NPT, BSP and ACME threads allow for easy installation.





EAGLE™ 700 and 750 Rotors

Model Specifications

The full- or part-circle sprinkler shall be a water-lubricated gear drive rotor capable of covering a ____ (units) radius at a base pressure of ____ (units) and a discharge rate of ____ (units). The rotor shall be installed with a number ____ nozzle that shall be ____ in color for ease of identification.

The part-circle sprinkler shall have adjustable arc coverage of 30° to 345°. Arc adjustment can be performed with or without the rotor in operation and shall require only a flat-blade screwdriver. The part-circle rotor shall rotate through a 180° arc in one and one-half minutes or less. Rotation through 360° shall be two and one-half minutes or less for the full-circle sprinkler.

The sprinkler shall be fully serviceable from the top without requiring special tools. The internal assembly shall be retained in the case by a plastic snap ring. The rotor shall have a bearing guide that allows water to flush around the riser stem as it pops up and seals against the riser when it is fully raised. The pop-up height shall be 3.25" (8,3 cm). The retract spring shall be of stainless steel and of sufficient force for positive pop-down.

The nozzle housing cover of the rotor shall indicate the model, identify the installed nozzle and have an arrow to indicate the position of the nozzle, and shall provide a positive seal against debris when the rotor is not in operation. The housing shall be installed with one of six color-coded nozzles. The nozzle shall be tested per ASAE S398.1 and be verified to deliver scheduling coefficient of 1.2 or less and a Christiansen coefficient of uniformity of 90% or greater at the specified spacing.

The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female (NPT, BSP or ACME) bottom inlet.

The sprinkler shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California, U.S.A.

Optional Feature—Electric Valve in Head (e.g., 700E or 750E). The sprinkler shall have a 24 VAC 50 or 60 cycle solenoid actuated

normally closed control valve in the base of the case. The rotor shall have a pressure regulator which is adjustable from the top using a small flat-blade screwdriver. The rotor shall have a top-serviceable selector that allows the unit to be operated manually, in automatic mode or shut off entirely. The Rock Screen and Valve Seat shall be serviceable from the top.

The rotor case shall have a top diameter of 6.25" (15,9 cm) and an overall height of 12.0" (30,5 cm). The case shall have a 1.25" (3,2 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Normally Open Hydraulic Valve in Head (e.g., 700H or 750H). The sprinkler shall have a normally open hydraulic control valve in the base of the case. The Rock Screen and Valve Seat shall be serviceable from the top.

The rotor case shall have a top diameter of 6.25" (15,9 cm) and an overall height of 12.0" (30,5 cm). The case shall have a 1.25" (3,2 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Stopmatic Valve in Head (e.g., 700S or 750S). The sprinkler shall have a Stopmatic valve in the base of the case. The valve shall hold back at least 15' (4,6 m) of elevation. The Rock Screen and Valve Seat shall be serviceable from the top.

The rotor case shall have a top diameter of 6.25" (15,9 cm) and an overall height of 12.0" (30,5 cm). The case shall have a 1.25" (3,2 cm) NPT, BSP or ACME threaded inlet.

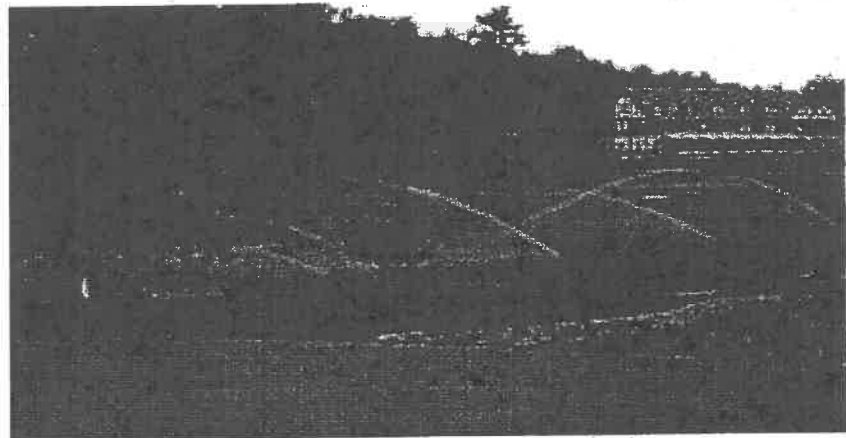
Optional Feature—Block Configuration (e.g., 700B or 750B). The sprinkler shall have a spring-loaded SEAL-A-MATIC™ holdback device in the base of the case and shall be used with a pressure-regulating in-line electrically actuated valve. The device shall hold back at least 10' (3,1 m) of elevation.

The rotor case shall have a top diameter of 4.25" (10,8 cm) and an overall height of 9.6" (24,5 cm). The case shall have a 1" (2,5 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Block Rubber Cover Configuration (e.g., 700BRC or 750BRC). The sprinkler shall have a spring-loaded SEAL-A-MATIC holdback device in the base of the case and shall be used with a pressure-regulating in-line electrically actuated valve. The device shall hold back at least 10' (3,1 m) of elevation.

The sprinkler shall have a three-part rubber cover. The rubber nozzle housing cover shall indicate the model, identify the installed nozzle and have an arrow to indicate the position of the nozzle, and shall provide a positive seal against debris when the rotor is not in operation. The rubber cover shall include a rubber snap ring cover and a rubber outer ring.

The rotor case shall have a top diameter of 4.75" (12,1 cm) and an overall height of 10.0" (25,4 cm). The case shall have a 1" (2,5 cm) NPT, BSP or ACME threaded inlet.





Specifications

Models:

Full-Circle:

EAGLE 700E: Electric
EAGLE 700H: Hydraulic (N.O.)*
EAGLE 700S: Stopmatic (SAM)
EAGLE 700B: SEAL-A-MATIC™ device
EAGLE 700BRC: SEAL-A-MATIC™ device, rubber cover

Part-Circle:

EAGLE 750E: Electric
EAGLE 750H: Hydraulic (N.O.)*
EAGLE 750S: Stopmatic (SAM)
EAGLE 750B: SEAL-A-MATIC™ device
EAGLE 750BRC: SEAL-A-MATIC™ device, rubber cover

Arc:

EAGLE 700: Full-circle, 360°
EAGLE 750: Adjustable, 30° to 345°

Maximum Inlet Pressure:

Models 700E: 150 psi (10.3 bars)
Models 700S, 700H, 700B:
100 psi (6.9 bars)

Pressure Regulation Range: 60 to 100 psi (4.1 to 6.9 bars)

Factory Pressure Settings: 700E/750E available in 80, 70 and 80 psi (4.1, 4.8 and 5.5 bars)

Rotation Time:

EAGLE 700: 360° in ≤ 180 seconds;
150 seconds nominally
EAGLE 750: 180° in ≤ 90 seconds;
75 seconds nominally

Inlet Threads:

Models 700E/750E, 700H/750H,
700S/750S: 1.25" (3.2 cm) (33/42) NPT,
BSP or ACME
Models 700B/750B, 700BRC/750BRC:
1" (2.5 cm) (26/34) NPT, BSP or ACME

Holdback:

700B/750B: 10' (3.1 m) of elevation
700S/750S: 15' (4.6 m) of elevation

Nozzle Trajectory: 25°

Maximum Stream Height: 17' (5.2 m)

Dimensions:

Body Height:

Models 700E/750E, 700H/750H,
700S/750S: 12.0" (30.5 cm)
Models 700B/750B: 9.6" (24.5 cm)
Models 700BRC/750BRC: 10" (25.4 cm)

Top Diameter:

Models 700E/750E, 700H/750H,
700S/750S: 6.25" (15.9 cm)
Models 700B/750B: 4.25" (10.8 cm)
Models 700BRC/750BRC: 4.75" (12.1 cm)

Pop-Up Height:

Models 700E/750E, 700S/750S,
700H/750H, 700B/750B: 3.25" (8.3 cm)
Models 700BRC/750BRC: 2.88" (7.3 cm)

Solenoid:

24 VAC Solenoid power requirement—
41 amp inrush current (9.8 VA)
60 cycle—25 amp holding current (6.0 VA)
50 cycle—32 amp holding current (7.7 VA)

Top-Serviceable Rock Screen and Replaceable Valve Seat:

Models 700/750 E, H and S.

All data are generated from tests conducted in accordance with ASAE Standard S398.1 for at least 30 minutes in zero-wind conditions.

Rain Bird recommends the use of SPACE for Windows, equivalent program or derived performance data to optimize nozzle selection.

* N.O.—Normally open

Performance Data – U.S.

DUAL SPREADER™ NOZZLES

Base Pressure (psi)	#28 WHITE		#32 BLUE		#36 YELLOW		#40 ORANGE		#44 GREEN		#48 BLACK	
	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)
50	55	16.8	58	19.6	60	22.7	64	25.1	—	—	—	—
60	56	18.7	62	21.9	62	24.9	66	27.3	68	29.6	—	—
70	56	19.5	63	22.6	64	26.4	66	28.6	68	31.6	70	36.0
80	59	20.9	64	24.9	66	28.3	68	30.8	68	33.9	72	38.7
90	60	23.2	64	27.2	66	31.0	68	33.9	74	36.8	78	41.6
100	60	24.5	66	28.5	68	32.7	70	35.8	76	38.8	80	44.1

Data reflect no pressure regulation.

Performance Data – Metric

DUAL SPREADER™ NOZZLES

Base Pressure (bars)	#28 WHITE		#32 BLUE		#36 YELLOW		#40 ORANGE		#44 GREEN		#48 BLACK	
	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)
3.5	16.8	1.06	3.82	1.77	1.24	4.45	18.3	1.43	5.16	19.5	1.58	5.70
4.0	17.0	1.16	4.16	18.7	1.35	4.87	18.8	1.54	5.56	20.0	1.69	6.10
4.5	17.1	1.21	4.34	19.1	1.40	5.06	19.2	1.62	5.83	20.1	1.77	6.36
5.0	17.3	1.25	4.51	19.3	1.46	5.26	19.7	1.70	6.10	20.3	1.84	6.62
5.5	18.0	1.32	4.74	19.5	1.57	5.64	20.1	1.78	6.42	20.7	1.94	6.98
6.0	18.2	1.42	5.11	19.5	1.67	6.02	20.1	1.91	6.88	20.7	2.08	7.49
6.5	18.3	1.50	5.40	19.8	1.75	6.30	20.4	2.00	7.21	21.0	2.19	7.88
6.9	18.3	1.55	5.56	20.1	1.80	6.47	20.7	2.06	7.43	21.3	2.26	8.13

Data reflect no pressure regulation.

Performance Data – U.S.

DUAL SPREADER™ NOZZLES

Base Pressure (psi)	#28 WHITE		#32 BLUE		#36 YELLOW		#40 ORANGE		#44 GREEN		#48 BLACK	
	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)
50	55	13.4	57	15.0	61	16.9	63	19.7	—	—	—	—
60	57	15.0	59	16.9	63	18.8	67	21.8	69	24.0	—	—
70	59	16.7	61	18.3	65	20.4	69	23.7	73	27.9	77	31.2
80	61	17.8	63	20.0	67	21.8	71	26.5	75	30.1	79	33.6
90	61	19.3	65	21.1	67	23.5	73	28.4	77	32.2	81	35.9
100	61	20.2	65	22.5	67	24.9	75	30.1	77	34.0	83	38.1

Data reflect no pressure regulation.

Performance Data – Metric

DUAL SPREADER™ NOZZLES

Base Pressure (bars)	#28 WHITE		#32 BLUE		#36 YELLOW		#40 ORANGE		#44 GREEN		#48 BLACK	
	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)
3.5	16.8	0.85	3.04	17.4	0.95	3.41	18.8	1.07	3.84	19.2	1.24	4.47
4.0	17.3	0.93	3.33	17.9	1.04	3.75	19.1	1.16	4.18	20.2	1.35	4.86
4.5	17.7	1.00	3.61	18.3	1.11	4.01	19.5	1.24	4.46	20.7	1.44	5.18
5.0	18.1	1.07	3.86	18.7	1.18	4.25	20.0	1.31	4.71	21.2	1.54	5.54
5.5	18.6	1.12	4.05	19.2	1.26	4.53	20.4	1.37	4.94	21.6	1.67	6.00
6.0	18.6	1.19	4.28	19.6	1.31	4.72	20.4	1.45	5.22	22.1	1.76	6.32
6.5	18.6	1.24	4.46	19.8	1.37	4.93	20.4	1.52	5.47	22.5	1.84	6.62
6.9	18.6	1.27	4.59	19.8	1.42	5.11	20.4	1.57	5.68	22.9	1.90	6.84

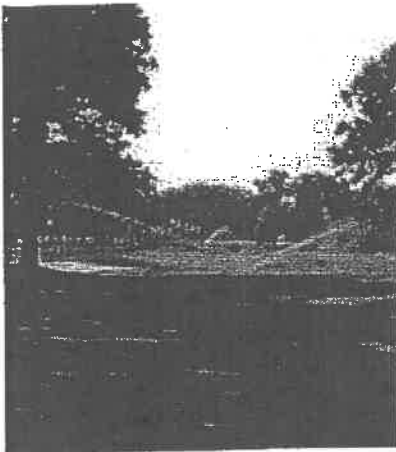
Data reflect no pressure regulation.



EAGLE™ 500/550 Rotor Series

EAGLE™ 500/550 rotors have just the right power and coverage for tee boxes and other small areas throughout the course.

- The EAGLE 500/550 has a radius of 33' to 49' (10,1-14,9 m).
- Operates at pressures from 40 to 100 psi (2,8 to 6,9 bars).
- Quick rotation, less than two minutes full-circle, waters key areas in less time.
- Nozzle design provides superior water distribution with less sensitivity to spacing difference.
- Solid design and construction provide a higher degree of reliability, grit resistance and significantly longer life than commercial-grade products.
- The EAGLE 500 is a full-circle 360° rotor.
- The part-circle EAGLE 550 offers a 30° to 345° turning range.
- Both versions are available in electric, hydraulic, Stopmatic (SAM), block (with SEAL-A-MATIC™ device), and block with rubber cover top (with SEAL-A-MATIC device) models.
- Electric models have a heavy-duty, two-piece solenoid for easy serviceability and superior life.
- Threads available in NPT, BSP or ACME.
- Top-Serviceable Rock Screen™ and Replaceable Valve Seat standard on all valve-in-head models.



550B

3.25" (8,3 cm) pop-up height raises stream above surrounding turf.

Closed-case protects internal assembly from debris and ensures performance in all soil conditions.

Reinforced polypropylene case provides excellent protection from outside elements.

1" (2,5 cm) NPT, BSP and ACME molded-in threads allow for easy installation.

Color-coded interchangeable nozzles add convenience and flexibility.

One-piece snap cover locks assembly firmly in place.

Heavy-duty spring ensures positive retraction.

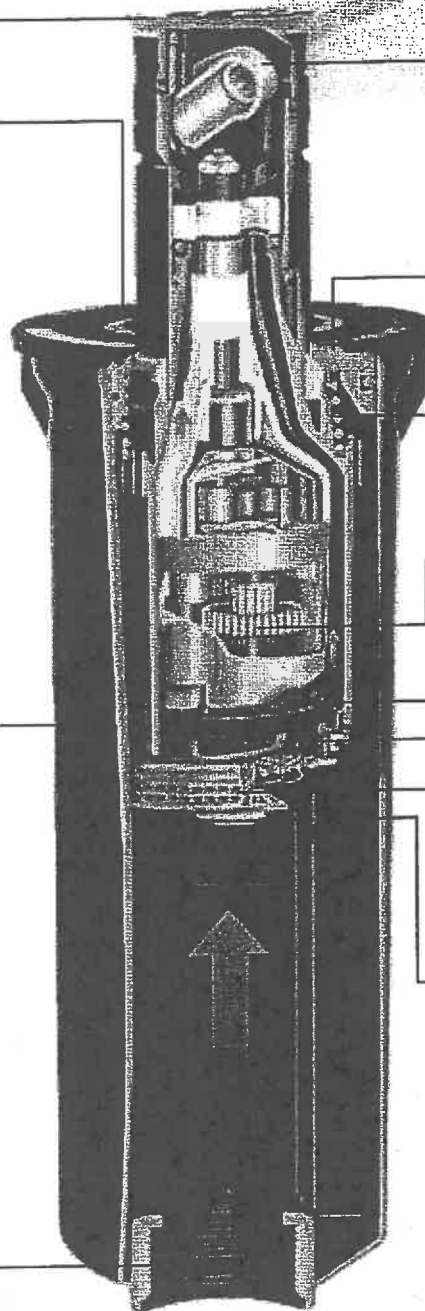
Water-lubricated gear drive is environmentally friendly and offers proven, trouble-free performance.

Turbine efficiently powers gear drive mechanism.

Stator ensures consistent rotation speed.

Screen keeps debris from entering internal assembly.

SEAL-A-MATIC™ device holds up to 10' (3,1 m) of elevation.





EAGLE™ 500 and 550 Rotors

Model Specifications

The full- or part-circle sprinkler shall be a water-lubricated gear drive rotor capable of covering a ____ (units) radius at a base pressure of ____ (units) and a discharge rate of ____ (units). The rotor shall be installed with a number ____ nozzle that shall be ____ in color for ease of identification.

The part-circle sprinkler shall have adjustable arc coverage of 30° to 345°. Arc adjustment can be performed with or without the rotor in operation and shall require only a flat-blade screwdriver. The part-circle rotor shall rotate through a 180° arc in one minute or less. Rotation through 360° shall be two minutes or less for the full-circle sprinkler.

The sprinkler shall be fully serviceable from the top without requiring special tools. The internal assembly shall be retained in the case by a plastic snap ring. The rotor shall have a bearing guide that allows water to flush around the riser stem as it pops up and seals against the riser when it is fully raised. The retract spring shall be of stainless steel and of sufficient force for positive pop-down.

The nozzle housing cover of the rotor shall indicate the model, identify the installed nozzle and have an arrow to indicate the position of the nozzle, and shall provide a positive seal against debris when the rotor is not in operation. The housing shall be installed with one of three color-coded nozzles. The nozzle shall be tested per ASAE S398.1 and be verified to deliver scheduling coefficient of 1.2 or less and a Christiansen coefficient of uniformity of 90% or greater at the specified spacing.

The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female (NPT, BSP or ACME) bottom inlet.

The sprinkler shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California, U.S.A.

Optional Feature—Electric Valve in Head (e.g., 500E or 550E). The sprinkler shall have a 24 VAC 50 or 60 cycle solenoid actuated normally closed control valve in the base of the case. The rotor shall have a pressure

regulator which is adjustable from the top using a small flat-blade screwdriver. The rotor shall have a top-serviceable selector that allows the unit to be operated manually, in automatic mode or shut off entirely. The Rock Screen and Valve Seat shall be serviceable from the top.

The rotor case shall have a top diameter of 6.25" (15.9 cm) and an overall height of 12" (30.5 cm). The case shall have a 1.25" (3.2 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Normally Open Hydraulic Valve in Head (e.g., 500H or 550H). The sprinkler shall have a normally open hydraulic control valve in the base of the case. The Rock Screen and Valve Seat shall be serviceable from the top.

The rotor case shall have a top diameter of 6.25" (15.9 cm) and an overall height of 12" (30.5 cm). The case shall have a 1.25" (3.2 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Stopmatic Valve in Head (e.g., 500S or 550S). The sprinkler shall have a Stopmatic valve in the base of the case. The valve shall hold back at least 15' (4.6 m) of elevation. The Rock Screen and Valve Seat shall be serviceable from the top.

The rotor case shall have a top diameter of 6.25" (15.9 cm) and an overall height of 12" (30.5 cm). The case shall have a 1.25" (3.2 cm) NPT, BSP or ACME threaded inlet.

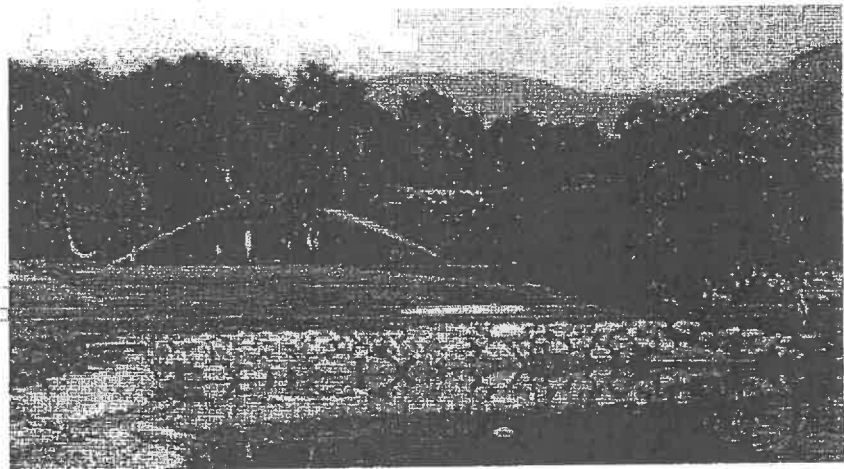
Optional Feature—Block Configuration (e.g., 500B or 550B). The sprinkler shall have a spring-loaded SEAL-A-MATIC™ holdback device in the base of the case and shall be used with a pressure-regulating in-line electrically actuated valve. The device shall hold back at least 10' (3.1 m) of elevation.

The rotor case shall have a top diameter of 4.25" (10.8 cm) and an overall height of 9.6" (24.5 cm). The case shall have a 1" (2.5 cm) NPT, BSP or ACME threaded inlet.

Optional Feature—Block Rubber Cover Configuration (e.g., 500BRC or 550BRC). The sprinkler shall have a spring-loaded SEAL-A-MATIC holdback device in the base of the case and shall be used with a pressure regulating in-line electrically actuated valve. The device shall hold back at least 10' (3.1 m) of elevation.

The sprinkler shall have a three-part rubber cover. The rubber nozzle housing cover shall indicate the model, identify the installed nozzle and have an arrow to indicate the position of the nozzle, and shall provide a positive seal against debris when the rotor is not in operation. The rubber cover shall include a rubber snap ring cover and a rubber outer ring.

The rotor case shall have a top diameter of 4.75" (12.1 cm) and an overall height of 10" (25.4 cm). The case shall have a 1" (2.5 cm) NPT, BSP or ACME threaded inlet.





Specifications

Models:

Full-Circle:

- EAGLE 500E: Fast rotation, electric
- EAGLE 500H: Fast rotation, hydraulic (N.O.)*
- EAGLE 500S: Fast rotation, Stopmatic (SAM)
- EAGLE 500B: Fast rotation, SEAL-A-MATIC™ device
- EAGLE 500BRC: Fast rotation, SEAL-A-MATIC device, rubber cover

Part-Circle:

- EAGLE 550E: Fast rotation, electric
- EAGLE 550H: Fast rotation, hydraulic (N.O.)*
- EAGLE 550S: Fast rotation, Stopmatic (SAM)
- EAGLE 550B: Fast rotation, SEAL-A-MATIC device
- EAGLE 550BRC: Fast rotation, SEAL-A-MATIC device, rubber cover

Arc:

- EAGLE 500: Full-circle, 360°
- EAGLE 550: Adjustable, 30° to 345°

Maximum Inlet Pressure:

- Models 500E: 150 psi (10.3 bars)
- Models 500S, 500H, 500B: 100 psi (6.9 bars)

Pressure Regulation Range: 60 to 100 psi (4.1 to 6.9 bars)

Factory Pressure Settings: 500E/550E available in 60, 70 and 80 psi (4.1, 4.8 and 5.5 bars)

Rotation Time:

- EAGLE 500: 360° in ≤120 seconds; 90 seconds nominally
- EAGLE 550: 180° in ≤60 seconds; 45 seconds nominally

Inlet Threads:

- Models 500E/550E, 500S/550S, 500H/550H: 1.25" (3.2 cm) (33/42) NPT, BSP or ACME
- Models 500B/550B, 500BRC/550BRC: 1" (2.5 cm) (26/34) NPT, BSP, or ACME

Holdback:

- Models 500B/550B: 10' (3.1 m) of elevation
- Models 500S/550S: 15' (4.6 m) of elevation

Nozzle Trajectory: 25°

Maximum Stream Height: 13' (4.0 m)

Dimensions:

Body Height:

- Models 500E/550E, 500S/550S, 500H/550H: 12" (30.5 cm)
- Models 500B/550B: 9.6" (24.5 cm)
- Models 500BRC/550BRC: 10" (25.4 cm)

Top Diameter:

- Models 500E/550E, 500S/550S, 500H/550H: 6.25" (15.9 cm)
- Models 500B/550B: 4.25" (10.8 cm)
- Models 500BRC/550BRC: 4.75" (12.1 cm)

Pop-Up Heights:

- Models 500E/550E, 500S/550S, 500H/550H, 500B/550B: 3.25" (8.3 cm)
- Models 500BRC/550BRC: 2.88" (7.3 cm)

Solenoid:

- 24 VAC Solenoid power requirement: 41 amp inrush current (9.8 VA)
- 60 cycle-.25 amp holding current (6.0 VA)
- 50 cycle-.32 amp holding current (7.7 VA)

Top-Serviceable Rock Screen and Replaceable Valve Seat:

- Models 500/550 E, H and S.

Rain Bird recommends the use of SPACE for Windows, equivalent program or derived performance data to optimize nozzle selection.

*N.O.—Normally open

EAGLE™ 500 Performance Data – U.S.

NOZZLES

Base Pressure (psi)	#52 BEIGE		#53 GRAY		#54 RED	
	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)
40	33	6.0	41	7.7	45	9.3
50	35	6.6	43	8.6	47	10.3
60	35	7.2	43	9.4	47	11.2
70	35	7.7	45	10.1	47	12.0
80	35	8.3	45	10.8	47	12.8
90	37	8.7	43	10.9	47	12.8
100	35	9.1	43	11.2	47	13.2

Data reflect no pressure regulation.

EAGLE™ 550 Performance Data – U.S.

NOZZLES

Base Pressure (psi)	#52 BEIGE		#53 GRAY		#54 RED	
	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)	Radius (ft)	Flow (gpm)
40	33	6.0	41	7.7	45	9.3
50	35	6.6	41	8.6	47	10.3
60	35	7.2	43	9.4	49	11.2
70	35	7.7	43	10.1	49	12.0
80	37	8.3	43	10.8	49	12.8
90	39	8.8	43	11.5	49	12.9
100	39	9.1	45	12.0	49	13.6

Data reflect no pressure regulation.

EAGLE™ 500 Performance Data – Metric

NOZZLES

Base Pressure (bars)	#52 BEIGE		#53 GRAY		#54 RED	
	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)
2.8	10.1	0.38	12.5	0.49	13.7	0.59
3.0	10.3	0.39	12.7	0.51	13.9	0.61
3.5	10.7	0.42	13.1	0.55	14.3	0.65
4.0	10.7	0.45	13.1	0.58	14.3	0.70
4.5	10.7	0.47	13.4	0.62	14.3	0.73
5.0	10.7	0.50	13.7	0.65	14.3	0.77
5.5	10.7	0.52	13.7	0.68	14.3	0.81
6.0	11.1	0.54	13.3	0.69	14.3	0.81
6.5	11.0	0.56	13.1	0.70	14.3	0.82
6.9	10.7	0.57	13.3	0.71	14.3	0.83

Data reflect no pressure regulation.

EAGLE™ 550 Performance Data – Metric

NOZZLES

Base Pressure (bars)	#52 BEIGE		#53 GRAY		#54 RED	
	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)	Radius (m)	Flow (l/s)
2.8	10.1	0.38	12.5	0.49	13.7	0.59
3.0	10.3	0.39	12.5	0.51	13.9	0.61
3.5	10.7	0.42	12.5	0.55	14.4	0.65
4.0	10.7	0.45	12.9	0.58	14.8	0.70
4.5	10.7	0.47	13.1	0.62	14.9	0.73
5.0	10.8	0.50	13.1	0.65	14.9	0.77
5.5	11.3	0.52	13.1	0.68	14.9	0.81
6.0	11.7	0.55	13.1	0.71	14.9	0.81
6.5	11.9	0.56	13.4	0.74	14.9	0.83
6.9	11.9	0.57	13.7	0.76	14.9	0.86

Data reflect no pressure regulation.



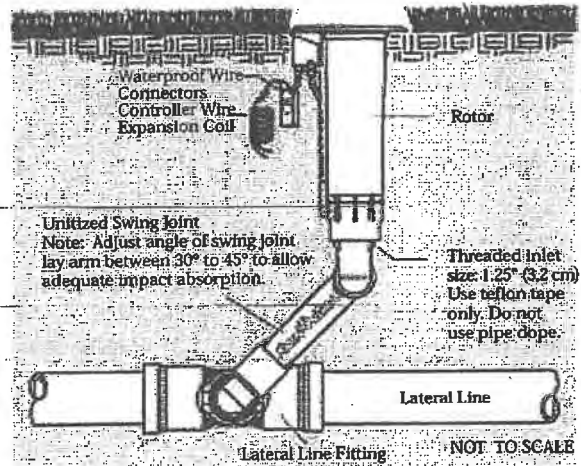
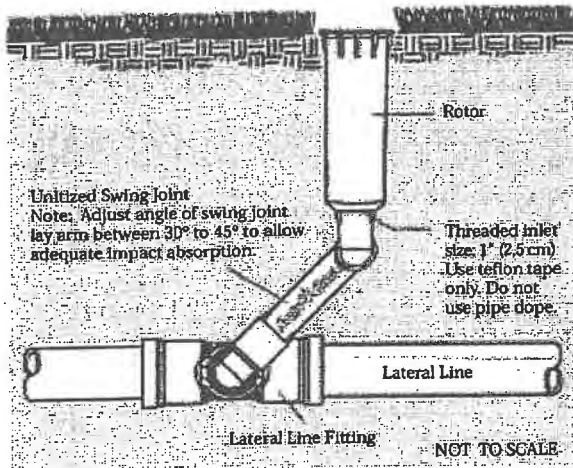
Rain Bird® EAGLE™ Series Rotors

Construction Detail Drawings

500B/550B

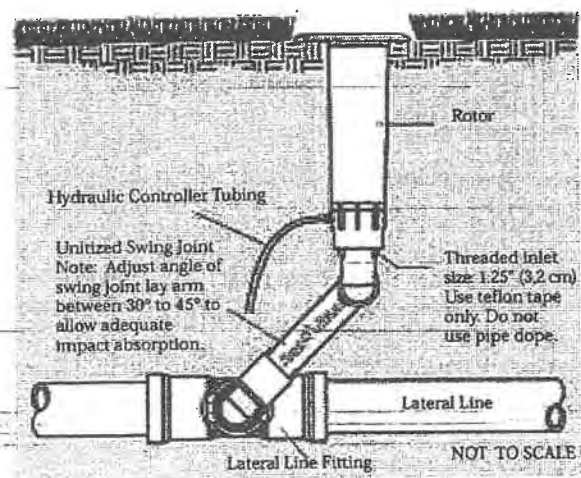
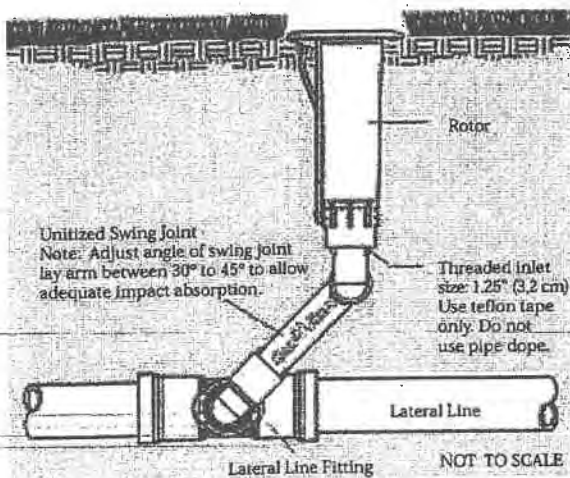
700B/750B

700E



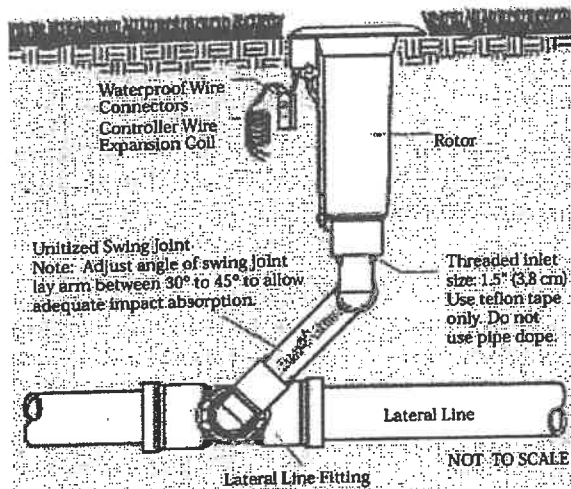
700S

700H

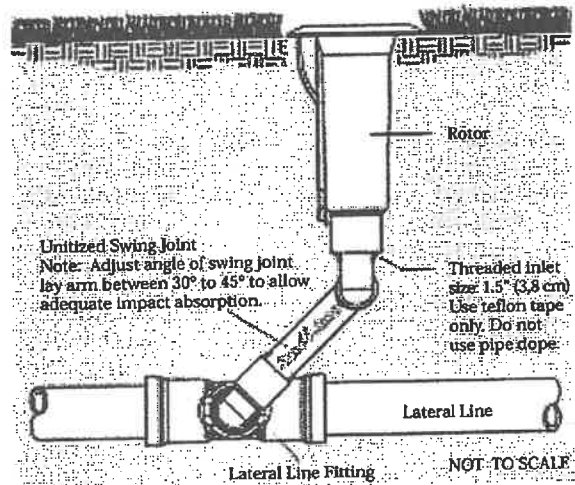


Rain Bird® EAGLE™ Series Rotors Construction Detail Drawings

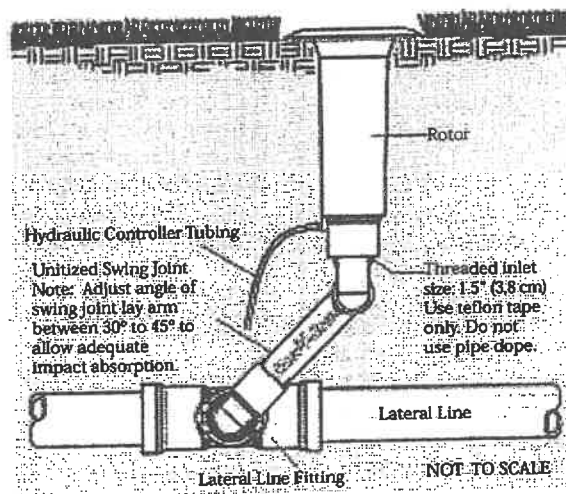
900E



900S



900H





Conversion Factors, Equivalents and Formulas

AREAS

6.452 Sq. Centimeters	1 Sq. Inch
144 Sq. Inches	1 Sq. Foot
9 Sq. Feet	1 Sq. Yard
43,560 Sq. Feet	1 Acre
1 Acre	43,560 Sq. Feet
1 Acre	4,840 Sq. Yards
1 Acre	160 Sq. Rods
1 Sq. Rod	272.25 Sq. Feet
1 Sq. Rod	30.25 Sq. Yards
640 Acres	1 Sq. Mile
640 Acres	1 Section
Area of a Circle	Radius Squared x 3.1416
Area of a Square	One Side Squared
Area of a Triangle	1/2 Base x Altitude
Area of a Rectangle	Length x Width
Area of a Parallelogram	Base x Altitude

LINEAL MEASUREMENTS

1 Centimeter	.3937 Inches
1 Cubit	18 Inches
1 Meter	39.37 Inches
1 Rod	16.5 Feet
1 Rod	5.5 Yards
1 Chain	4 Rods
1 Chain	66 Feet
320 Rods	1 Mile
5280 Feet	1 Mile
Circumference of Circle	Diam. x 3.1416

VOLUME

1728 Cubic Inches	1 Cubic Foot
231 Cubic Inches	1 Gallon
27 Cubic Feet	1 Cubic Yard
1 Cubic Foot	7.48052 Gallons (U.S.)
1 Cubic Yard	202 Gallons (U.S.)
16 Drams	1 Ounce
32 Ounces	1 Quart
4 Quarts	1 Gallon
1 Gallon	3.785 Liters
1 Gallon	.00379 Cu. Meters
1 Gallon	.833 Imperial Gal.
27,154 Gallons	1 Acre Inch
325,851 Gallons	1 Acre Foot
1,000,000 Gallons	3.0689 Acre Feet
1 Acre Foot	43,560 Cubic Feet
Volume of a Cube	Area of Base x Height
Volume of a Pyramid	1/3 Area of Base x Height
Volume of a Sphere	Diam. Cubed x .5236

WEIGHTS

1 U.S. Gallon (Water)	8.3357 Pounds
1 Cu. Foot (Water)	62.3554 Pounds
1 Imperial Gallon	10.0 Pounds
1 Liter	2.2 Pounds
Earth, in Place Undisturbed	100 lbs./cu.ft.
Earth, Dry and Loose	82-90 lbs./cu.ft.
Earth, Moist	75-100 lbs./cu.ft.
Sand, Dry	90-106 lbs./cu.ft.
Shale or Red Rock	162 lbs./cu.ft.
Limestone	160-163 lbs./cu.ft.
Base Gravel	12.0 lbs./sq. ft./inch Thick in Place
Asphalt	12.5 lbs./sq. ft./inch Thick in Place
Sack Cement	94 Pounds
Concrete (Plain)	140 lbs./cu.ft.
Concrete (Reinforced)	150 lbs./cu.ft.

PRESSURES

1 Atmosphere	29.921 Inches of Hg @ 32° F
1 Atmosphere	33.94 Ft. of Water @ 62° F
1 Atmosphere	14.6963 lbs./sq. Inch
1 Pound per Square Inch	2.31 Feet of Head
1 Foot of Water	.433 Pounds/sq. Inch
1 Kilogram/sq. Centimeter	14.22 lbs./sq. Inch
1 Foot of Water	62.3554 lbs./sq. Foot

FLOWS

1 Gallon/Minute (U.S.)	.002228 cu. ft./Second
1 Gallon/Minute (U.S.)	.13368 cu. ft./Minute
1 Gallon/Minute (U.S.)	8.0208 cu. ft./Hour
1 Gallon/Minute (U.S.)	.06309 Liters/Second
1 Gallon/Minute (U.S.)	3.78533 Liters/Minute
1 Gallon/Minute (U.S.)	.0044192 Acre Ft./24 Hrs.
1 Gallon/Minute (U.S.)	.22712 cu. Meters/Hr.
1 Cubic Ft. per Second	448.83 gpm
1 Liter per Second	15.85 gpm
1 Cubic Meter per Minute	264 gpm
1 Acre Inch per Hour	452.57 gpm
1 Acre Foot per Day	226.3 gpm
1,000,000 Gallons per Day	694.4 gpm
1 Cubic Ft. per Second	.992 Acre Inches/Hr.

POWER

Horsepower	$\text{gpm} \times \text{Total Head (Ft.)}$ $3960 \times \text{Pump Efficiency}$
Pump Efficiency	$\frac{\text{gpm} \times \text{Total Head (Ft.)}}{3960 \times \text{BHP to Pump}}$
1 Horsepower	33,000 Ft. Pounds/Minute
1 Horsepower	746 Watts
1 Horsepower	.746 Kilowatts



Hydraulic Formulas for Sprinklers

DISCHARGE FROM NOZZLES

U.S. (gpm)	METRIC (m³/h)	METRIC (lps)
$gpm = \sqrt{P} \times D^2 \times 29.82 \times C$	$m^3/hr = \sqrt{P} \times D^2 \times 259.8 \times C$	$lps = \sqrt{P} \times D^2 \times 935.3 \times C$
$D = \sqrt{\frac{gpm}{C \times \sqrt{P} \times 29.82}}$	$D = \sqrt{\frac{m^3/h}{C \times \sqrt{P} \times 259.8}}$	$D = \sqrt{\frac{lps}{C \times \sqrt{P} \times 935.3}}$
$P = \left[\frac{gpm}{C \times D^2 \times 29.82} \right]^2$	$P = \left[\frac{m^3/h}{C \times D^2 \times 259.8} \right]^2$	$P = \left[\frac{lps}{C \times D^2 \times 935.3} \right]^2$
gpm = Gallons per minute D = Diameter of nozzle in inches P = Pressure in pounds per square inch C = Coefficient of discharge	m³/h = Cubic meters per hour D = Diameter of nozzle in millimeters P = Pressure in bars C = Coefficient of discharge	lps = Liters per second D = Diameter of nozzle in millimeters P = Pressure in bars C = Coefficient of discharge

PRECIPITATION (Rectangular Spacing)

U.S. (gpm)	METRIC (m³/h)	METRIC (lps)
$Pr. = \frac{gpm \times 96.3}{A}$	$Pr. = \frac{m^3/hr \times 1000}{A}$	$Pr. = \frac{lps \times 3600}{A}$
$gpm = \frac{Pr. \times A}{96.3}$	$m^3/h = \frac{Pr. \times A}{1000}$	$lps = \frac{Pr. \times A}{3600}$
Pr. = Precipitation in inches per hour A = Area (Distance between sprinklers on line x distance between lines) gpm = Gallons per minute per sprinkler	Pr. = Precipitation in millimeters per hour A = Area (Distance between sprinklers on line x distance between lines) m³/h = Cubic meters per hour per sprinkler	Pr. = Precipitation in millimeters per hour A = Area (Distance between sprinklers on line x distance between lines) lps = Liters per second per sprinkler

VELOCITY

U.S.	METRIC
$V = \sqrt{\frac{P}{.00674}}$ $P = .00674 \times V^2$ $V = \frac{gpm}{2.45 \times D^2}$	$V = \sqrt{\frac{P}{.01419}}$ $P = \frac{9547 \times lps}{D^2}$ $V = \frac{2652 \times m^3/h}{D^2}$
V = Velocity in feet per second P = Pressure in lbs. per square inch D = Dia. of pipe or nozzle in inches	P = .01419 x V² V = Velocity in meters per second P = Pressure in bars D = Dia. of pipe or nozzle in millimeters

NOTES

A column of water 1 foot high equals .4331 pounds pressure
(A column of water 1 meter high equals 0.098 bars.)
1 pound pressure equals a column of water 2.309 feet high
(1 bar pressure equals a column of water 10.20 meters high.)
1 acre equals 43,560 square feet.
1 acre inch equals 27,154 gallons.
1 cubic foot equals 7.48 gallons.
1 liter per second equals 15.85 gallons per minute.
1 m³/h equals 4.403 gallons per minute.
1 bar equals 14.50 psi (approximately 100 kPa).
1 millimeter equals 0.394 inches.
The height of an equilateral triangle is .866 times its base.
The discharge of a nozzle is in proportion to the square of its diameter and the square root of the pressure.

POWER FORMULA

1 hp = 550 foot pounds per second
= 746 watts or 0.746 kW
= 1 second foot of water falling 8.8'
Water H.P. = $\frac{\text{Second foot of water} \times \text{head in feet}}{8.8}$

= $\frac{\text{Gal. per min. of water} \times \text{head in feet}}{3960}$

Brake hp = $\frac{\text{Water hp}}{\text{Eff. of pump}}$
1 kilowatt (kW) = 1000 watts
= 1,341 hp
= 737.5 foot pounds per second

Service Tools

Rain Bird® offers a full line of quality tools for the service and maintenance of EAGLE™ Series golf rotors. Constructed of heavy-duty metal alloys and durable plastic, these tools are lightweight and easy to use.

SRP
Snap Ring Pliers 900/950

SR-700
Snap Ring Pliers 700/750/500/550

VT-DR
Valve Insertion Tool 900/950

VT-700
Valve Insertion Tool 700/750/500/550

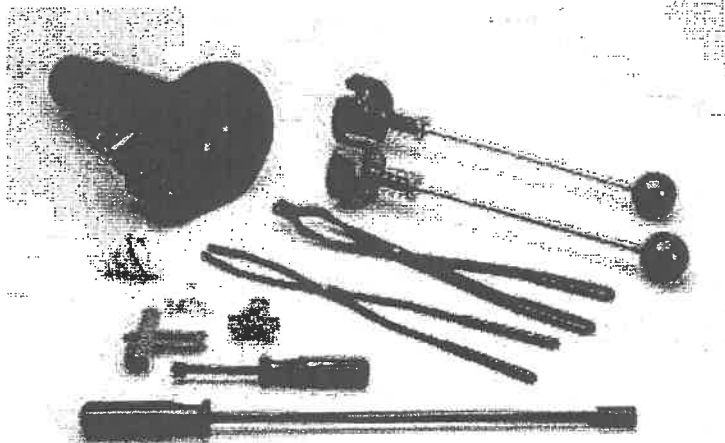
EGL-SVK
EAGLE Selector Service Tool/Key

DR-SVK-7
7" (17,8 cm) Selector Valve Key

DR-SVK-18
18" (45,7 cm) Selector Valve Key

IS-TSRS
Installation Socket for
Top-Serviceable Rock Screen™

UHA
Universal Hose Adapter
(not shown)



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APPENDIX H: NRCS Soils Report



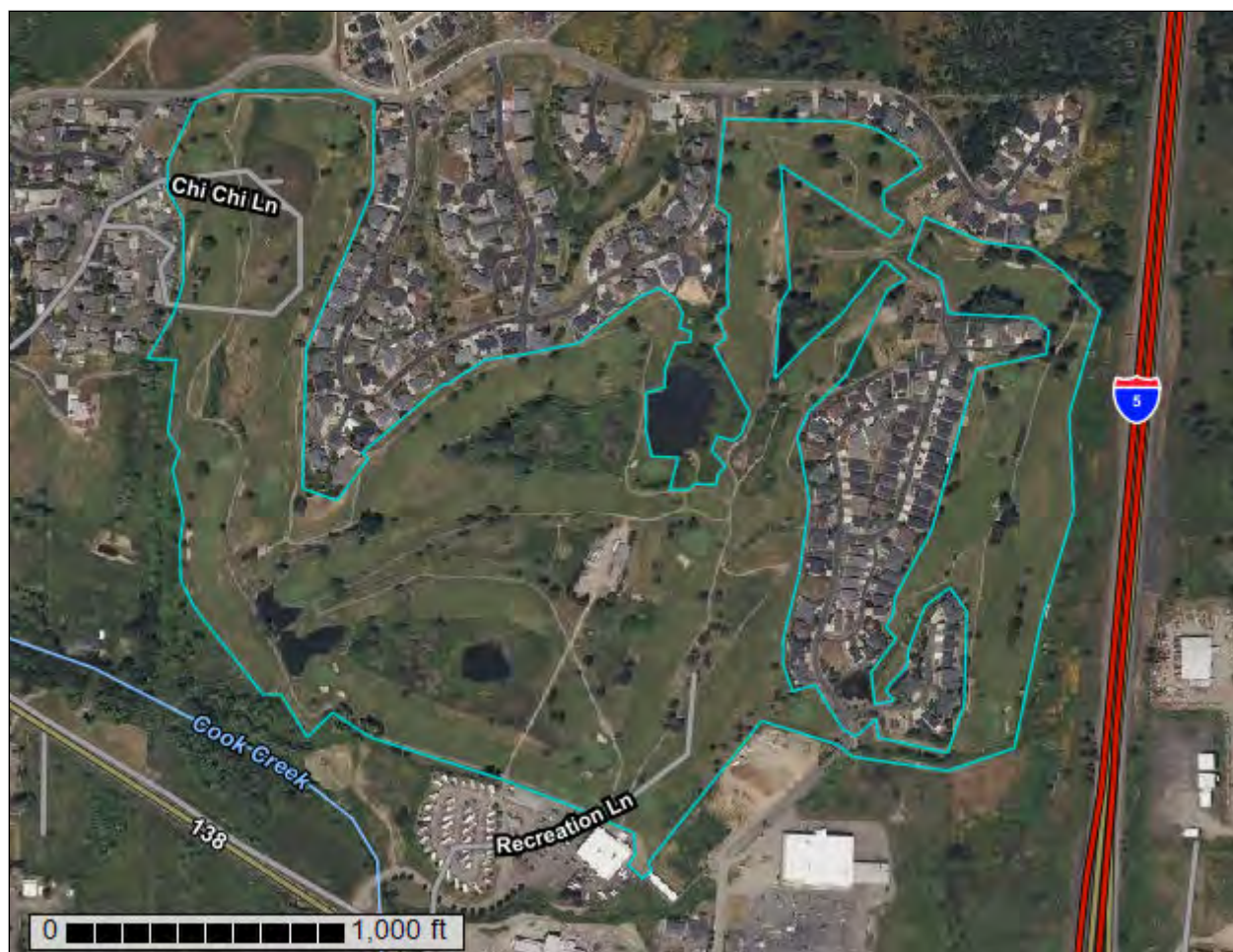
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Douglas County Area, Oregon**



June 12, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Douglas County Area, Oregon.....	13
44A—Conser silty clay loam, 0 to 3 percent slopes.....	13
166E—Nonpareil loam, 12 to 30 percent slopes.....	14
169C—Nonpareil-Oakland complex, 3 to 12 percent slopes.....	15
169E—Nonpareil-Oakland complex, 12 to 30 percent slopes.....	17
References	19

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Douglas County Area, Oregon

Survey Area Data: Version 24, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 19, 2023—Jun 3, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
44A	Conser silty clay loam, 0 to 3 percent slopes	27.2	25.1%
166E	Nonpareil loam, 12 to 30 percent slopes	11.3	10.5%
169C	Nonpareil-Oakland complex, 3 to 12 percent slopes	12.5	11.5%
169E	Nonpareil-Oakland complex, 12 to 30 percent slopes	57.2	52.9%
Totals for Area of Interest		108.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Douglas County Area, Oregon

44A—Conser silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2710

Elevation: 100 to 1,500 feet

Mean annual precipitation: 30 to 60 inches

Mean annual air temperature: 50 to 55 degrees F

Frost-free period: 160 to 235 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Conser and similar soils: 90 percent

Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conser

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey alluvium

Typical profile

H1 - 0 to 4 inches: silty clay loam

H2 - 4 to 63 inches: clay

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D

Ecological site: F005XZ003CA - Terraces

Forage suitability group: Poorly Drained (G005XY009OR)

Other vegetative classification: Poorly Drained (G005XY009OR)

Hydric soil rating: Yes

Minor Components

Waldo

Percent of map unit: 1 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G005XY009OR)
Hydric soil rating: Yes

166E—Nonpareil loam, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: 274r
Elevation: 300 to 2,500 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Nonpareil and similar soils: 75 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nonpareil

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone and siltstone

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 17 inches: loam
H3 - 17 to 27 inches: weathered bedrock

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F005XZ006CA - Mesic Hills <40"ppt

Custom Soil Resource Report

Forage suitability group: Well Drained > 15% Slopes (G005XY003OR)
Other vegetative classification: Well Drained > 15% Slopes (G005XY003OR)
Hydric soil rating: No

Minor Components

Pengra

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: Yes

169C—Nonpareil-Oakland complex, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: 274v
Elevation: 300 to 2,500 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Nonpareil and similar soils: 45 percent
Oakland and similar soils: 30 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nonpareil

Setting

Landform: Hills
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone and siltstone

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 17 inches: loam
H3 - 17 to 27 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Custom Soil Resource Report

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: F005XZ006CA - Mesic Hills <40"ppt

Forage suitability group: Well Drained < 15% Slopes (G005XY004OR)

Other vegetative classification: Well Drained < 15% Slopes (G005XY004OR)

Hydric soil rating: No

Description of Oakland

Setting

Landform: Hills

Landform position (two-dimensional): Summit, toeslope

Landform position (three-dimensional): Interfluve, base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Colluvium and residuum derived from sandstone and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam

H2 - 5 to 24 inches: silty clay loam

H3 - 24 to 28 inches: gravelly silty clay

H4 - 28 to 38 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: F005XZ007CA - Moderately Deep Mesic Hills 40-60"ppt

Forage suitability group: Well Drained < 15% Slopes (G005XY004OR)

Other vegetative classification: Well Drained < 15% Slopes (G005XY004OR)

Hydric soil rating: No

Minor Components

Pengra

Percent of map unit: 2 percent

Landform: Alluvial fans

Hydric soil rating: Yes

169E—Nonpareil-Oakland complex, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: 274w
Elevation: 300 to 2,500 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Nonpareil and similar soils: 45 percent
Oakland and similar soils: 30 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nonpareil

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluvium, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone and siltstone

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 17 inches: loam
H3 - 17 to 27 inches: weathered bedrock

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F005XZ006CA - Mesic Hills <40"ppt
Forage suitability group: Well Drained > 15% Slopes (G005XY003OR)
Other vegetative classification: Well Drained > 15% Slopes (G005XY003OR)

Custom Soil Resource Report

Hydric soil rating: No

Description of Oakland

Setting

Landform: Hills

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Colluvium and residuum derived from sandstone and siltstone

Typical profile

H1 - 0 to 5 inches: silt loam

H2 - 5 to 24 inches: silty clay loam

H3 - 24 to 28 inches: gravelly silty clay

H4 - 28 to 38 inches: weathered bedrock

Properties and qualities

Slope: 12 to 30 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F005XZ007CA - Moderately Deep Mesic Hills 40-60"ppt

Forage suitability group: Well Drained > 15% Slopes (G005XY003OR)

Other vegetative classification: Well Drained > 15% Slopes (G005XY003OR)

Hydric soil rating: No

Minor Components

Pengra

Percent of map unit: 2 percent

Landform: Alluvial fans

Hydric soil rating: Yes

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