RECYCLED WATER DISTRIBUTION PROJECT
JOHN DAY, OREGON

Recycled Water Use Plan

WPCF Permit No. 103281

AUGUST 2023

DRAFT

Prepared By:

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HECO Project No. JD 23-0343

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CITY OF
JOHN DAY

Prepared for:

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1.1 Content Requirements for Recycled Water Use Plan

This Recycled Water Use Plan (RWUP) describes the City of John Day Class A recycled water use program and supersedes any previous water use planning documents. This Plan was prepared in accordance with Oregon Administrative Rules (OAR) OAR 340-055-0025 and closely follows the Internal Management Directive Implementing Oregon's Recycled Water Rules, dated June 2009, Version 1 (IMD).

Casey Myers, Public Works Director, oversees the recycled water use program and reports to the City Manager, who reports to the Mayor and City Council. Contact address for the City of John Day is: City of John day, 450 E. Main Street, John Day, Oregon 97845, Telephone contact number is 541-620-3090. Water Pollution Control Facilities (WPCF) (Permit Number 103281), effective date May 1, 2022, applies to this site and a copy of the WPCF permit is provided in Appendix A.

A RWUP is required per the Special Conditions (Schedule D) of the City's WPCF Permit. In addition, to distribute recycled water, the permittee must submit this RWUP or any significant modifications to Oregon Department of Environmental Quality (DEQ) for review and approval with sufficient time to clear DEQ review and a public notice period prior to distribution of recycled water. The permittee is prohibited from distributing recycled water prior to receipt of written approval of its RWUP from DEQ. 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 the 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.

As requested by DEQ this RWUP includes the *"Municipal Reclaimed Water Registration"* forms for each recycled (reclaimed) water user. The forms are included in Appendix B. DEQ will forward the forms to the Oregon Water Resources Department (OWRD) who requires that all sites receiving recycled water to be registered with their department.

The format for this RWUP closely follows the template and checklist requirements described in the IMD. For example, the headings and subheadings adhere to the template and checklist which are presented in Appendix C for quick reference.

Furthermore, DEQ requires a Recycled Water Use Plan Summary to be attached to the RWUP to further help DEQ Staff and Oregon Department of Human Services Staff with their project review(s). The summary form is presented in Appendix D.

1.2 Facility Description

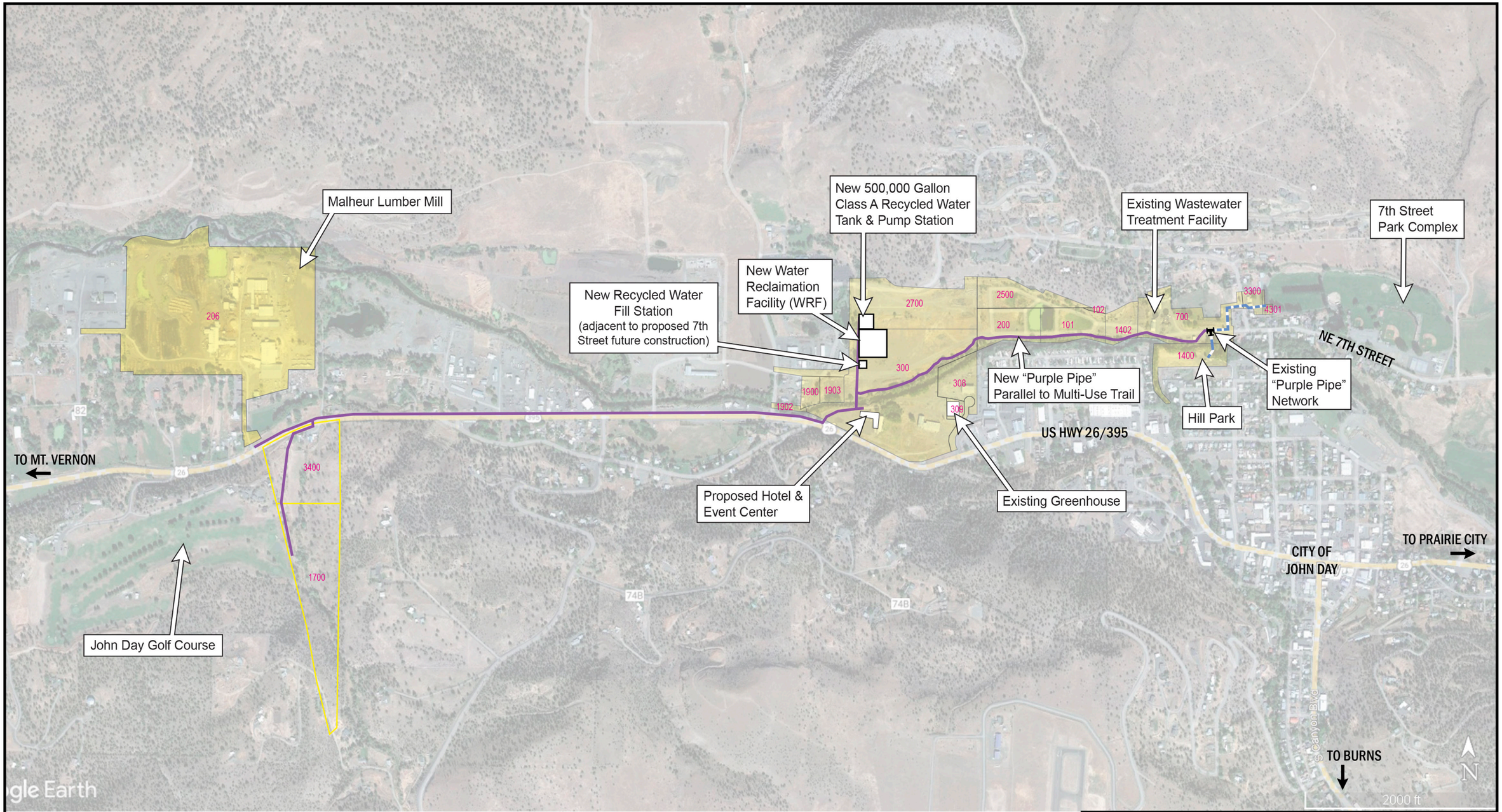
The City of John Day plans to construct a new wastewater treatment facility (WWTF)/(Water Reclamation Facility) (WRF) that will collect and treat municipal wastewater from the City's sewer service area. The WRF will produce Class A recycled water and make it available for a variety of users that currently divert freshwater from the John Day River basin for non-potable uses in Grant County, Oregon. A recycled water distribution (purple pipe) system, including an above storage tank and pump station to be co-located with the WRF, is planned for delivering Class A recycled water to end users for permitted beneficial uses.

John Day owns and operates the public wastewater collection and treatment facilities that serve both John Day and the neighboring community of Canyon City. Casey Myers, Public Works Director, oversees the wastewater system operations. The new WRF replaces the current WWTF, which is a mechanical treatment facility originally constructed in 1949 that consists of an influent lift station, headworks, two primary clarifiers, two trickling filters, one secondary clarifier, chlorine disinfection, two-stage high-rate anaerobic sludge digester, four sludge drying beds, and four infiltration ponds adjacent to the John Day River. Refer to Figure 1-1 which shows the existing WWTF. The WWTF treats over approximately 80 million gallons of wastewater annually. This water is stored after treatment in four percolation ponds and is eventually discharged indirectly into the John Day River and watershed. The WWTF is supervised by one or more operators who are certified in a state classification and grade level equal to greater than system classification.

Once the new WRF is constructed the City is permitted to discharge treated effluent to rapid infiltration basins or utilize treated effluent for beneficial purposes as recycled water under Permit Number 103281. A copy of the WPCF permit is provided in Appendix A. In accordance with the City's WPCF permit, the City of John Day is authorized to operate and maintain a domestic wastewater treatment facility consisting of a sequencing batch reactor (SBR) with tertiary filters and ultraviolet light disinfection with an average dry weather flow of 0.3 MGD. Treated effluent will be discharged to rapid infiltration basins (Outfall 001) or utilized for beneficial purpose as recycled water (Outfall 002) in accordance with a DEQ approved RWUP.

The Recycled Water Distribution Project Preliminary Engineering Report (PER) by HECO Engineers describes the bases of the proposed purple pipe system design as part of the wastewater system improvements originally planned in the City's 2019 Wastewater Facilities Plan Update dated March 12, 2019, by Anderson Perry & Associates, Inc. and the 2022 Wastewater System Improvements Preliminary Engineering Report Addendum 1 dated March 7, 2022 (2022 Report) by Flagline Engineering and Kennedy Jenks.

The 2022 Report identified four treatment alternatives with associated common improvements. These included: Alternative No. 1 – Membrane Bioreactor, Alternative No. 2 – Sequencing Batch Reactor (SBR), Alternative No. 3 – Aero-Mod, and Alternative No. 4 – Oxidation Ditch. The City selected treatment Alternative No. 2. The treatment project includes a new SBR treatment facility with two separate SBR treatment trains including an equalization basin, aerobic digester, and sludge storage tank, tertiary filters, ultraviolet disinfection system, and related improvements to produce treated effluent for discharge to Outfall 001 and Class A recycled water for beneficial use at Outfall 002, the City's purple pipe system.



LEGEND:

- City Property
- New "Purple Pipe" Class A Recycled Water Distribution System
- Existing "Purple Pipe"
- Tax Parcel Boundary

HECO ENGINEERS

City of John Day

Recycled Water Distribution Project
Schematic Layout

2. Treatment Method Description Including Recycled Water Class and Beneficial Purpose

Recycled water may be permitted by DEQ for use in beneficial purposes that are protective of human health, the environment, and provide a resource benefit. Recycled water use is regulated by DEQ under the Oregon Administrative Rules, Chapter 340, Division 55 (OAR 340-055), "Recycled Water Use", which prescribes methods, procedures, restrictions, treatment, and monitoring requirements. The IMD was developed for use by DEQ staff involved with the permitting of recycled water projects.

The Oregon Environmental Quality Commission (EQC) and DEQ encourage the use of recycled water for domestic, agricultural, industrial, recreational, and other beneficial purposes in a manner which protects public health and the environment. The Recycled Water Use Rules identify four Classes or disinfected recycled water, and nondisinfected recycled water. These Classes of water are based upon treatment level. The rules identify a number of approved beneficial purposes or uses for various treatment levels of recycled water. The City of John Day WRF will produce Class A recycled water. The approved Class A water beneficial purposes are identified under OAR 340-055 and are summarized in Table 2-1.

Table 2-1
Recycled Water Beneficial Uses Identified in Rule

Beneficial Purpose	Class A	Class B	Class C	Class D	Nondisinfected
Irrigation					
Fodder, fiber, seed crops not intended for human ingestion, commercial timber	Yes	Yes	Yes	Yes	Yes
Firewood, ornamental nursery stock, Christmas trees	Yes	Yes	Yes	Yes	No
Sod	Yes	Yes	Yes	Yes	No
Pasture for animals	Yes	Yes	Yes	Yes	No
Processed food crops	Yes	Yes	Yes	No	No
Orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil	Yes	Yes	Yes	No	No
Golf courses, cemeteries, highway medians, industrial or business campuses	Yes	Yes	Yes	No	No
Any agricultural or horticultural use	Yes	No	No	No	No
Parks, playgrounds, school yards, residential landscapes, other landscapes accessible to the public	Yes	No	No	No	No

Table 2-1 continued…

Beneficial Purpose	Class A	Class B	Class C	Class D	Nondisinfected
Industrial, Commercial, or Construction					
Industrial cooling	Yes	Yes	Yes	No	No
Rock crushing, aggregate washing, mixing concrete	Yes	Yes	Yes	No	No
Dust control	Yes	Yes	Yes	No	No
Nonstructural firefighting using aircraft	Yes	Yes	Yes	No	No
Street sweeping or sanitary sewer flushing	Yes	Yes	Yes	No	No
Stand-alone fire suppression systems in commercial and residential buildings	Yes	Yes	No	No	No
Non-residential toilet or urinal flushing, floor drain trap priming	Yes	Yes	No	No	No
Commercial car washing	Yes	No	No	No	No
Fountains when the water is not intended for human consumption	Yes	No	No	No	No
Impoundments or Artificial Groundwater Recharge					
Water supply for landscape impoundments including, but not limited to, golf course water ponds and non-residential landscape ponds	Yes	Yes	Yes	No	No
Restricted recreational impoundments	Yes	Yes	No	No	No
Nonrestricted recreational impoundments including, but not limited to, recreational lakes, water features accessible to the public, and public fishing ponds	Yes	No	No	No	No
Artificial groundwater recharge	Yes	No	No	No	No

Once the new WWTF is constructed the City will be permitted to discharge treated effluent to rapid infiltration basins or utilize treated effluent for beneficial purposes as recycled water in accordance with WPCF Permit Number 103281. The permit allows for either Class A or B quality recycled water. The permit treatment levels and beneficial uses are summarized in Table 2-2 below. The treatment facility will achieve Class A recycled water for beneficial uses. The use of recycled water is permitted to be distributed in accordance with OAR 340-055-0012, subject to the following conditions listed the City's WPCF Permit.

- Treated and used according to the criteria listed in Table 2-2 below (Table A.2 in Permit).

- Managed in accordance with its DEQ-approved RWUP unless exempt as provided in Permit Schedule D.
- Used in a manner and applied at a rate that does not adversely affect 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 the following:
  - 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.

Table 2-2
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 approved uses: • 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.

Table 2-2 continued…

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
B.	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 approved uses: • 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.

The City's WPCF Permit also authorizes exempt wastewater reuse at the wastewater treatment system subject to the following conditions:

- The recycled water is an oxidized and disinfected wastewater.
- 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.
- Spray and/or drift from the use does not migrate off the site.
- Public access to the site is restricted.

Applicable beneficial purposes under Class A for recycled water per Table 2-1 above apply for the City of John Day and are anticipated for the variety of end users for the recycled water program. After entering into an agreement between the permittee and recycled water user per IMD section 2.8, recycled water will be utilized by the end user at rates that are protective of public health and the environment. DEQ will review the recycled water quality and application rates and verify it adequately protects surface water, groundwater, crops, and soils. The three primary recycled water quality concerns include: salinity, nutrients, and trace constituents. Oregon State University (OSU) and the Pacific Northwest Extension publication, "Managing Irrigation Water Quality for Crop Production in the Pacific Northwest", Hopkins, et al. August 2007, provides general guidance on water quality considerations for irrigation. Information on agronomic rates is included in Appendix H.

It is anticipated the City of John Day will utilize Class A recycled water at City owned properties primarily to irrigate lawns and landscaping. Class A recycled water is anticipated to contain up to 5 mg/l total nitrogen consistent with permit limits for Outfall 001 summarized in Table 4-2. For lawn turfgrass, irrigation rates and frequency are based on turfgrass species selection, soil type, and evapotranspiration (ET) rates. Per the OSU Fertilizer Guides, irrigation frequency in Central and Eastern Oregon should be increased to compensate for sandy soil, prolonged periods of low precipitation and higher ET rates. For example, tall fescue in Central/Eastern Oregon requires irrigation several times per week. Kentucky bluegrass requires frequent (sometimes daily) irrigation in June and July. Fine fescues require daily irrigation throughout the summer months to prevent dormancy.

Different turfgrass species require different irrigation amounts. The OSU Fertilizer Guides for turfgrass for Eastern Oregon indicate irrigation typically begins in early April and peaks in July. Irrigation is reduced or discontinued usually in September when the ET rates decrease. Per the fertilizer guides, local ET and precipitation data are available at the Bureau of Land Management's Pacific Northwest Region AgriMet website at https://www.usbr.gov/pn/agrimet/. Refer to Table 2-3 which shows the average monthly evapotranspiration for turfgrass in Central/Eastern Oregon.

Table 2-3
Average Monthly Evapotranspiration (in inches) for Turfgrass

Central/Eastern Oregon	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
Baker	0	1.8	4.5	5.4	6.9	6.3	3.8	0	28.7
Christmas Valley	0.1	5.1	5.1	6	7.4	6.2	4.1	0	34.1
Hermiston	1.5	6.8	6.8	8	9.2	8.5	6.5	2.5	49.9
Klamath Falls	0.1	5.4	5.4	5.4	7.7	6.7	4.3	0	36
Madras	0.5	5.2	5.2	5.2	8.5	7.6	4.6	0.8	40
Ontario	1.8	6.3	6.3	6.3	9.3	7.8	5.3	1	45.4

Source: Bureau of Reclamation figures retrieved in 2020 from AgriMet, https://www.usbr.gov/pn/agrimet/, summarized in Oregon State University Extension Service publication "Irrigation Rates and Frequencies for Western and Eastern Oregon Turfgrass", EM 9311, January 2021.

Turfgrass irrigation users should reference OSU published ET rates like the ones shown in Table 2-3 so users can match the irrigation requirements of their site. Refer to Appendix H for agronomic rates provided by OSU for turfgrass and Kentucky bluegrass.

Agricultural beneficial uses will follow agronomic rates for nutrient loading according to the conditions listed the City's WPCF Permit. Crop and site-specific agronomic loading rates for nutrients will be approved by DEQ only after consideration of agronomic rates published in appropriate, region specific, fertilizer guides and proposed by the Permittee. DEQ may require adjustment to the allowable agronomic rates after review of annual reporting and to ensure adequate protection of public waters, including groundwater. The RWUP must list the approved agronomic rates for each proposed crop. The following OAR chapter 340, division 55 requirements for Class A recycled water use will be met:

- **Setback Distances.** Where sprinkler irrigation is used, recycled water must not be sprayed onto an area where food is being prepared or served, or onto a drinking fountain.

- **Access and Exposure.** When using recycled water for an agricultural or horticultural purpose where spray irrigation is used, or an industrial, commercial, or construction purpose, the public and personnel at the use area must be notified that the water used is recycled water and is not safe for drinking. The recycled water use plan must specify how notification will be provided.

- **Site Management.** When using recycled water for a landscape impoundment, restricted recreational impoundment, nonrestricted recreational impoundment, or for irrigating a golf course, cemetery, highway median, industrial or business campus, park, playground, school yard, residential landscape, or other landscapes accessible to the public, signs must be posted at the use area or notification must be made to the public at the use area indicating recycled water is used and is not safe for drinking. The RWUP must specify how notification will be provided.

3. Recycled Water Estimated Quantity to User, Frequency, and Beneficial Purpose

There are several beneficial uses that are approved under OAR 340-055 for Class A recycled water. Current City projects are underway to construct a new WRF and to add a recycled water storage tank, pump station, and purple pipe distribution network to promote the beneficial use of Class A recycled water. The use of recycled water is permitted subject to the conditions listed in the City's WPCF Permit. Refer to Table 3-1 below for a summary of the beneficial purposes. Additional discussion of the recycled water beneficial uses can be found in Section 2 above.

Table 3-1
Summary of Beneficial Purposes

Beneficial Purpose	Class of Water	Quantity	Application Frequency
Permitted Class A recycled water beneficial uses	Class A	Approx. 80 MG/year	Recycled water to City facilities and other end users per user agreements

Per the City's OWRD Grant Application, the project will enable the City to distribute the recycled water produced at the WRF and realize the associated economic and water resources benefits. These OWRD-funded components (recycled water storage tank and pump station, purple pipe distribution system, and in-stream transfer) in combination with the new WRF will create environmental benefits due to freshwater conservation and flow restoration/protection along the John Day Watershed, facilitate municipal reuse of recycled water in lieu of freshwater at local parks and recreational facilities, and also improve water quality protection and augmentation of in-stream flows by transferring existing water rights to legally protect them for in-stream use, while setting the stage for future bioremediation and environmental restoration of the former Oregon Pine mill site (now the John Day Innovation Gateway). Refer to Appendix I for information on water rights.

A major recycled water use site will be the Malheur Lumber mill that is approximately one mile west of the new WRF site. Malheur Lumber currently uses approximately 60 million gallons of freshwater annually from its horizontal and vertical wells. The use of these wells can be discontinued or reduced as part of this project by substituting the City's recycled water for freshwater. Recycled water will also be used for irrigation at municipal parks and for industrial and commercial customers at the John Day Innovation Gateway.

The high-quality recycled water will be used in lieu of existing freshwater use at the properties and locations served by the recycled water distribution system, which will be managed in accordance with the DEQ-approved RWUP. Per the OWRD Grant Application, the goal of the WRF project is to achieve one hundred percent (100%) water conservation within the project area. The project will conserve up to 80 million gallons of freshwater annually by replacing the existing freshwater uses with recycled water.

Existing properties and users that already have a supply of water for their irrigation or industrial water demands are anticipated to use this Class A recycled water as a supplemental source of water, while some sites or users may use this water as their primary source. Since the recycled water supply capacity is limited to the influent flow rate of wastewater to the WRF, recycled water demands may exceed supply at times. It is anticipated that a water use schedule may be necessary during high demand periods to prevent depletion of stored water in the Class A storage tank. The City will manage recycled water use based on WRF recycled water production and water levels in the storage tank. The City's use agreements with recycled water users are anticipated to cover limitations and restrictions.

The intended Class A recycled water beneficial uses have been identified and are outlined below.

- Landscape irrigation supply for areas open to public including City parks such as Hill Park and 7th St. Park Complex, and the City's recreation facilities along the John Day River Multi Use Trail,
- Irrigation supply and landscape impoundments supply for John Day Golf Course,
- Industrial process and log spray water at Malheur Lumber mill,
- Bulk water fill station for permitted beneficial purposes,
- Permitted beneficial uses at the Innovative Gateway facilities such as the City's hydroponics greenhouses, future business park and proposed hotel/event center,
- Irrigation permitted beneficial uses,
- Industrial, commercial, and construction permitted beneficial uses, and
- Landscape and recreational impoundments permitted beneficial uses.

Refer to Figure 1-1 for the project anticipated end user locations.

4. Wastewater Treatment System

The City of John Day selected wastewater treatment Alternative No. 2. from the 2022 Report. Table 4-1 lists the three (3) permitted outfalls. The treatment project includes a new SBR treatment facility with two separate SBR treatment trains including an equalization basin, aerobic digester, and sludge storage tank, tertiary filters, and ultraviolet disinfection system with an average dry weather flow of 0.3 MGD. The treatment facility produces treated effluent for discharge to Outfall 001, which is the rapid infiltration basins. Table 4-2 lists the Outfall 001 Permit limits. It also produces Class A recycled water discharge to Outfall 002. The Class A recycled water limits are listed in Table 2-2 with monitoring requirements summarized in Table 4-3.

The City's new WWTF/WRF will collect and treat municipal wastewater from the City's sewer service area that will make Class A recycled water available for a variety of users that currently divert freshwater from the John Day River basin for non-potable uses in Grant County, Oregon. A purple pipe distribution system, including an above storage tank and pump station to be co-located with the WRF, is planned for delivering recycled water to end users for industrial and agricultural uses.

Table 4–1
Sources Covered Under WPCF Permit Number 103281

Type of Waste	Outfall Number	Location
Domestic Wastewater	001	Rapid Infiltration Basins Lat: 44.42221 Long: -118.97070
Recycled Water	002	Recycled Water Storage Tank
Biosolids	003	Specified in Biosolids Management

Table 4–2
Outfall 001 Limits

Parameter	Units	Monthly Average	Weekly Average	Single Sample Maximum
BOD_5	mg/L	20	35	--
TSS	mg/L	20	35	--
Total nitrogen	mg/L	5	--	9
E. coli	organisms/100ml	126 (geometric mean)	--	406[a]
pH	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 8.5		

Note:
a. No single *E. coli* sample may exceed 406 organisms per 100 mL; however, DEQ will not cite a violation of this limit if the permittee takes at least 5 consecutive re-samples at 4 hour intervals beginning within 28 hours after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 *E. coli* organisms/100mL.

Table 4–3
Outfall 002 Recycled Water Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report
Total Flow (MGD)	Daily	Measurement	Annual Report and monthly
Quantity Irrigated (inches/acre)	Daily	Calculation	Annual Report and monthly per field
pH	2/Week	Grab	Annual Report and monthly
Total Coliform	Daily	Grab	Annual Report and monthly
Turbidity (Class A)	Hourly	Measurement	Annual Report and monthly
Total Nitrogen Loading Rate (lbs/acre-year)	Annually	Calculation	Annual Report
Supplemental Fertilizer Applied	As applied	Record Amounts	Annual Report
Nutrients (TKN, NO2+NO3-N, Total Ammonia (as N), Total Phosphorus)	Quarterly	Grab	Annual Report and monthly

5. Contingencies Procedures to Ensure OAR 340-55 Requirements are Met

OAR chapter 340, division 55 requires the following operational requirements for the treatment and distribution of recycled water:

- **Bypassing.** The intentional diversion of wastewater from any unit process in the wastewater treatment system for a beneficial purpose is not allowed, unless with the unit process out of service the recycled water meets the criteria of this division for a specific class and beneficial purpose described in the recycled water use plan.

- **Alarm devices.** Alarm devices are required to provide warning of power loss and failure of process equipment essential to the proper operation of the wastewater treatment system and compliance with this division.

- **Standby power.** Unless otherwise approved in writing by the department, a wastewater treatment system providing recycled water for use must have sufficient standby power to fully operate all essential treatment processes. The department may grant an exception to this section only if the wastewater treatment system owner demonstrates that power failure will not result in inadequately treated water being provided for use and will not result in any violation of an NPDES or WPCF permit limit or condition or Oregon Administrative Rule.

- **Redundancy.** A wastewater treatment system that provides recycled water for use must have a sufficient level of redundant treatment facilities and monitoring equipment to prevent inadequately treated recycled water from being used or discharged to public waters.

- **Distribution system requirements.** Unless otherwise approved in writing by the department, all piping, valves, and other portions of the recycled water use system that is outside a building must be constructed and marked in a manner to prevent cross-connection with a potable water system. Unless otherwise approved in writing by the department or as required by the rules of this division, construction and marking must be consistent with sections (2), (3), (4), and (5) of the 1992 "Guidelines for the Distribution of Non-potable Water" of the California-Nevada Section of the American Water Works Association.

- **Cross-connection control.** Connection between a potable water supply system and a recycled water distribution system is not authorized unless the connection is through an air gap separation approved by the department. A reduced pressure principle backflow prevention device may be used only when approved in writing by the department and the potable water system owner.

The City has a cross connection control ordinance and program to comply with the OAR requirements for public water systems pertaining to cross-connection control. See Appendix F for detailed information on the City's cross connection control program.

The WRF will include control measures and monitoring equipment to prevent inadequately treated recycled water from being delivered to the water users. These will include necessary automated diversions and alarms. Online turbidimeters and UV disinfection intensity and transmittance meters will be included in the treatment system to verify Class A treatment prior to entry into the 500,000 gallon recycled water storage tank. Only recycled water meeting Class A level of treatment standards will be released into the storage tank for subsequent pumping and distribution to end users through the purple pipe network.

Conditions that require an immediate stop of diversion of recycled water into the recycled water storage tank (Outfall 002) include any of the following:

1. Measured turbidity before disinfection exceeds 2 NTUs,
2. Total coliform after disinfection exceeds a median of 2.2 organisms per 100 mL based on daily sampling over the last 7 days that analyses have been completed,
3. Total coliform after disinfection exceeds 23 organisms per 100 mL in any single sample,
4. Alarm condition or operator observation in SBR treatment process indicating inadequate oxidation,
5. Alarm condition or operator observation in tertiary filters indicating inadequate filtration, or
6. Alarm condition or operator observation in UV disinfection system indicating inadequate disinfection.

The above conditions will require treated effluent discharge to the rapid infiltration basins (Outfall 001) in accordance with WPCF Permit requirements. The WRF will have operating procedures, monitoring instrumentation, alarms, and controls to prevent inadequately treated recycled water from being released into the 500,000-gallon storage tank.

Conditions that require an immediate stop of pumping from the recycled water storage tank to the purple pipe distribution network include the following:

1. Inadequately treated recycled water not meeting Class A level of treatment standards entering the 500,000-gallon recycled water storage tank.

The above condition(s) will require turning the recycled water pump station off and draining the 500,000-gallon storage tank either to the rapid infiltration basins (Outfall 001) if the water meets the treated of the WPCF Permit effluent limits for Outfall 001, or to the WRF headworks for treatment through the

treatment facility. The tank will be drained slowly to the sewer collection system or a designated location at the RWF.

The pump station will be connected to the on-site standby generator serving the WRF. The generator and automatic transfer switch (ATS) are not part of the current recycled water distribution project but will be included in the RWF project. In the event of a power outage, the generator will automatically start and begin powering the pump station. The pump station controls and alarms will notify the WRF operator of pump station alarms 24-hours per day. The City's on duty or on call operator will respond to alarm conditions 24-hours per day.

6. Recycled Water Monitoring and Sampling Procedures

In accordance with the City's WPCF Permit, included in Appendix A, John Day will prepare and submit one-time, monthly, quarterly, and annual reports to the Oregon Department of Environmental Quality (DEQ) Eastern Region Pendleton Office, 800 SE Emigrant, Suite 330, Pendleton, Oregon 97801. All reports shall identify the City, Operator Name, Certificate Classification and Grade Level for each principal operator designated by the City of John Day as responsible for supervising the wastewater collection and treatment systems during the reporting period. Monitoring reports shall also identify each system classification as reported on the WPCF permit. All reports or information submitted to Oregon DEQ must be signed and certified by a designee authorized by the City of John Day.

Recycled water monitoring and sampling will be conducted according to the requirements listed in the City's WPCF Permit. The operator should study this permit carefully and be completely familiar with all parts of it.

During the term of the WPCF permit, the permittee must comply with the effluent limits shown in Table 4-2 for discharge into the rapid infiltration basins. A monitoring point must be located after the UV disinfection and prior to discharge to the rapid infiltration basins. The Outfall effluent monitoring requirements are listed in Permit Table B3.

The permittee must monitor recycled water for Outfall 002 as listed previously in Table 4-3 only when distributing recycled water. The samples must be representative of the recycled water delivered for beneficial reuse through the purple pipe distribution system.

In accordance with WPCF Permit, Schedule F, Section C.3, monitoring must be conducted according to test procedures specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater, unless other test procedures have been approved in writing by DEQ and specified in this permit.

The City must prepare and submit monitoring results and reports to DEQ in accordance with WPCF Permit Schedule B.1 Minimum Monitoring and Reporting Requirements. Table 6-1 summarizes the recycled water annual report requirement. The other requirements for recycled water monitoring and reporting are listed in Table 4-3.

Table 6–1
Recycled Water Annual Report

Reporting Requirement	**Frequency**	**Due Date** (See Note a.)	**Report Form** (See Note b.)	**Submit To:** (See Note c & d)
Recycled Water Annual Report (See Schedule D)	Annually	January 15	Electronic copy in the DEQ-approved format	As directed by DEQ Electronic copy to DEQ Water Reuse Program Coordinator

The following OAR chapter 340, division 55 requirements for Class A recycled water quality standards and requirements will be met:

- Monitoring and reporting in accordance with Permit Table B4 (summarized in Table 4-3) and Permit Table B1 (summarized in Table 6-1).
- **Setback Distances.** Where sprinkler irrigation is used, recycled water must not be sprayed onto an area where food is being prepared or served, or onto a drinking fountain.
- **Access and Exposure.** When using recycled water for an agricultural or horticultural purpose where spray irrigation is used, or an industrial, commercial, or construction purpose, the public and personnel at the use area must be notified that the water used is recycled water and is not safe for drinking. The recycled water use plan must specify how notification will be provided.
- **Site Management.** When using recycled water for a landscape impoundment, restricted recreational impoundment, nonrestricted recreational impoundment, or for irrigating a golf course, cemetery, highway median, industrial or business campus, park, playground, school yard, residential landscape, or other landscapes accessible to the public, signs must be posted at the use area or notification must be made to the public at the use area indicating recycled water is used and is not safe for drinking. The RWUP must specify how notification will be provided.

The City of John Day treats over approximately 80 million gallons of wastewater annually. The treatment system will have online turbidimeters and UV disinfection intensity and transmittance meters to verify Class A treatment prior to pumping to the recycled water storage tank. All recycled water will be metered. The pump station and 500,000-gallon recycled water storage tank will have electromagnetic flowmeters for measuring recycled water pumped into the purple pipe distribution network.

Each end user connection will be metered and monitored, with specific billing rates and requirements identified in the user agreements. The user service meters will measure the flow and volume of recycled water delivered to each user in the system.

7. Maintenance Plan

The wastewater treatment system equipment and facility processes will be maintained and serviced in accordance with the approved Operation and Maintenance (O&M) Manuals. For preliminary purposes, some general industry procedures are summarized below. The RWUP should be updated following project construction and O&M manual approvals for actual system equipment operations and maintenance.

It is anticipated the powered equipment for the recycled water distribution project will consist of the recycled water 500,000-gallon storage tank submersible tank mixer, pump station, and air/vacuum valves installed at the high connection points of purple pipe distribution network. The WRF project will include several powered equipment items. This equipment and its maintenance will be discussed in full detail in the manufacturer's manuals that are bound separate from the project O&M Manual. The operator should keep all manufacturer's manuals and start-up reports available for quick reference. The recommended scheduled maintenance should be scheduled annually on a maintenance calendar. Operating experience will lead to adjustments in scheduling of some operations to accommodate seasonal changes in work load at other municipal facilities.

It is part of the operator's job to set up the maintenance schedule and mark the activity dates on the maintenance calendar. It is his/her responsibility to ensure that the maintenance calendar, as marked, provides for the recommended scheduled tasks to be done at the required frequencies as stated in the equipment discussions. Suggested scheduling targets for the maintenance calendar (to be adjusted by the operator according to concurrent requirements of other facilities) are detailed in the O&M Manuals.

In accordance with Permit Schedule B, Section 2.f.iii, the following apply for flow measurement, field measurement, and continuous monitoring devices:

- Establish verification and calibration frequency for each device or instrument in the quality assurance plan that conforms to the frequencies recommended by the manufacturer.

- 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.

- 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.

Unit maintenance records should be kept for each piece of powered or specialized equipment, listing each item of maintenance work performed and the date it was completed, in log-book form. The entries in the equipment record system individual logs should be more detailed than the entries in the daily log, in that they should include a listing of any spare parts used, by manufacturer's stock or catalog number, and a notation of any parts ordered or received. The equipment for which spare parts must be replaced regularly; the daily log and record copies of the maintenance calendar are adequate maintenance records for very durable, non-mechanical parts of the system. The equipment for which the equipment record system individual log files are especially needed are recycled water pumps, tank mixer, and pump station flowmeter. DEQ expects WRF owners to use an asset management system to schedule and track maintenance activities electronically. While commercial software packages can be expensive, EPA now offers a free, easy-to-use, asset management tool for small wastewater utilities known as Check Up Program for Small Systems (CUPSS). CUPSS includes preventative maintenance scheduling and is available at: https://www.epa.gov/dwcapacity/check-program-small-systems-cupss-asset-management-tool

The City of John Day will retain copies of all records, for example DMR's, as required by the WPCF permit. It is recommended the City retain all operation and maintenance records to include equipment calibrations and all data used to complete the reports for a period of at least 10 years from the date of the calibration, sample, measurements, report, or application to inform system maintenance and future upgrades.

8. Recycled Water Transmission, Storage, Distribution, and Plumbing

8.1 Transmission, Distribution, and Plumbing

The recycled water distribution (purple pipe) system will begin at the storage tank and recycled water pump station located adjacent to the new WRF site. The purple pipe network will generally follow the route shown in Figure 1-1. The pipe and related components will be identified by a purple color and labelled in accordance with the IMD section 5.6.2 Transmission and Distribution System Requirements.

It is anticipated the project will consist of approximately 13,000 linear feet of 8-inch and 6-inch diameter purple pipe mains with 4-inch laterals in accordance with OAR 340-055-0030(5) and IMD guidelines. Distribution pipe will be fusible High-Density Polyethylene (HDPE) conforming to PE4710 recycled water pipe, DIPS Pressure Class 100 psi (DR 21) with materials classification ASTM D 3350.

Tables 8-1 summarizes the design criteria for the recycled water distribution system. Refer to the approved PER for example product information for the distribution system, including pressure pipe, valves, and service meters.

Table 8-1
Distribution System Design Criteria

Design Parameter	Design Criteria for Project
Pipe: HDPE Pressure Pipe, fused joints	4-inch nominal (4.315-average I.D.) HDPE D.I.P.S. Pipe, 100 psi DR 21 Pressure Class with materials classification PE4710 per ASTM D 3350.
	6-inch nominal (6.203-average I.D.) HDPE D.I.P.S. Pipe, 100 psi DR 21 Pressure Class with materials classification PE4710 per ASTM D 3350.
	8-inch nominal (8.136-average I.D.) HDPE D.I.P.S. Pipe, 100 psi DR 21 Pressure Class with materials classification PE4710 per ASTM D 3350.
Isolation Valves	AWWA resilient wedge gate valves.
Air/Vacuum Valves	Wastewater combination air valves, installed at high point connections to allow air release from or admitted into new water main.
Water Services	Per City of John Day standard meter configuration: Badger meters for reclaimed water, ORION cellular AMR, 3-ft service line depth, and 24-inch register depth.
OAR 340-055-0030(5) and IMD Guideline Requirements	Will design and construct in accordance with the OAR requirements.

As shown in Figure 8-1, the purple pipe network will extend east-west along U.S. Highway 26/395 for approximately 1.1 miles, beginning to the east of Patterson Bridge Rd. and extending west to the entrance of Malheur Lumber mill. A lateral will extend to the south through an easement to the John Day Golf Course. From the new WRF, a portion of the pipeline will turn east and follow the existing John Day River multi-use trail, approximately 10-ft outside the north edge of pavement. It will connect to the existing purple pipe network at a 6" tee on 7th Street near the pedestrian bridge to Hill Park.

Utilities will be verified during design and alignment adjustments may be necessary. For construction of the purple pipe system, a 10-foot horizontal separation and a 1-foot vertical separation will be maintained between both parallel potable water mains and sanitary sewer mains. In locations where the minimum separation distances cannot be achieved, the recycled water pipe will be constructed per the following Figure 8-1 below. All purple pipe distribution improvements are anticipated to be on City property or within City right-of-way (ROW), ODOT ROW, or permanent easements.

Each end user connection will be metered and monitored. These meters will measure the volumes of recycled water distributed and used in the system. Data will be sent to the City's utility department through the cellular AMR system. The purple pipe distribution system service lines and meters will be constructed in accordance with the City of John Day Public Works Standards using the City's standard meter type and configuration.

The piping system will be designed with sufficient valving to provide the necessary controls and operator flexibility. Combination air/vacuum valves will be installed at critical points to allow air to be released from or admitted into the main. In addition, pipe locating wire and marking tape will be installed for the buried pipe installation per Oregon Standard Specifications for Construction (OSSC). The distribution system will be constructed in accordance with applicable requirements of the OSSC, Recommended Standards for Wastewater Facilities (Ten States Standards), and City of John Day Standards.

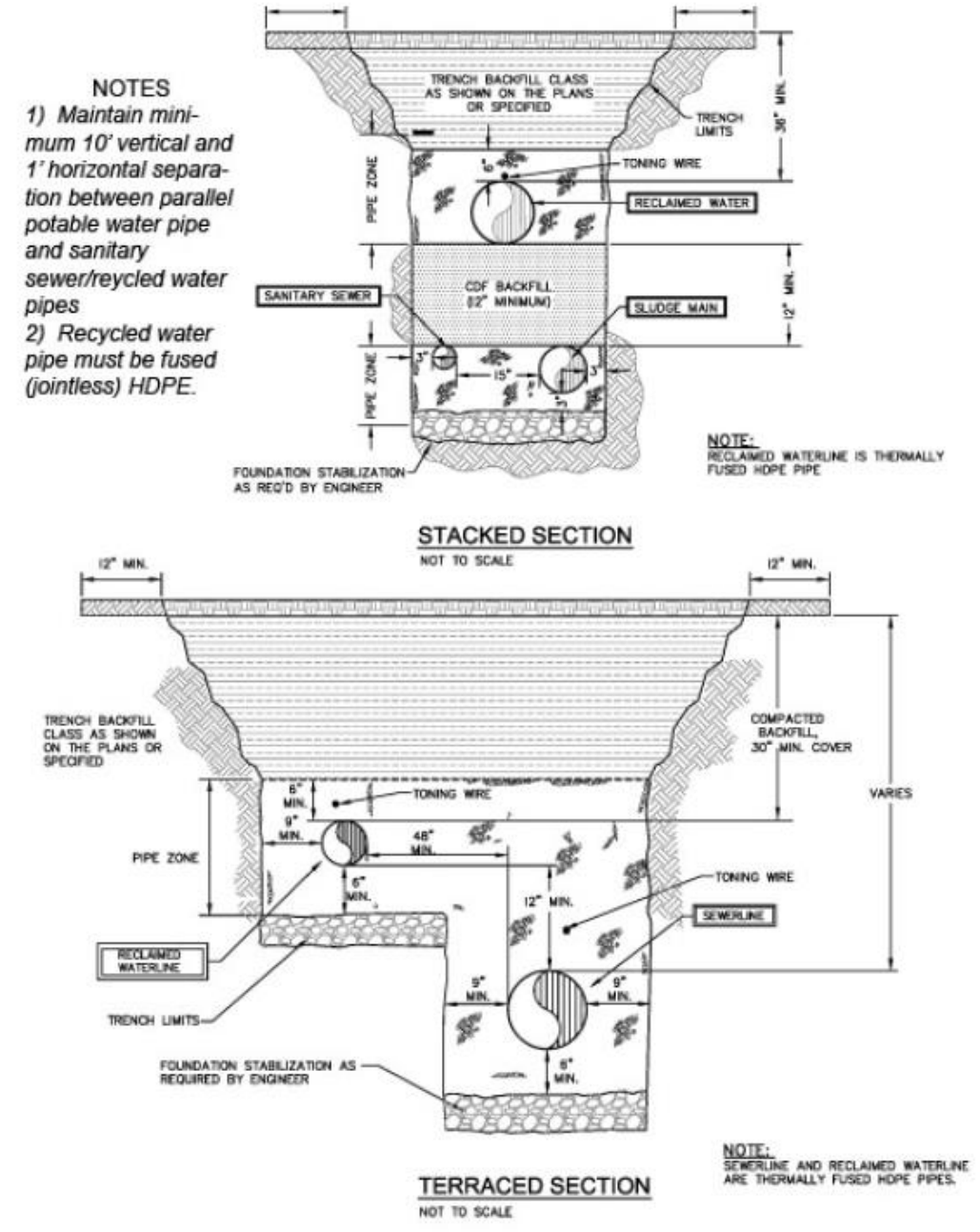


Figure 7. DEQ-approved special construction designs for recycled water systems.

Figure 8-1 DEQ Approved Special Construction Trench Detail

8.2 Storage

The project includes a recycled water storage tank to be located near the northwest corner of the new WRF as shown in Figure 1-1. It will be constructed above the 100-year floodplain. The nominal capacity of the storage tank will be approximately 500,000 gallons. This storage capacity will store 1.67 days of the 0.3 mgd permitted average dry weather flow listed on the WPCF Permit. The tank will store nearly 1.8 days of flow, based on the 20-year design average annual WRF treatment flow rate of 0.282 mgd presented in the 2022 Report. At startup, it will store nearly two days of design annual average flow of Class A recycled water production from the WRF, based on the initial design average annual WRF treatment flow rate of 0.260 mgd listed in the 2022 Report.

The City will manage recycled water use based on available recycled water production from the WRF and water levels in the storage tank. It is anticipated that a water use schedule may be necessary during high demand periods to prevent depletion of stored water.

The tank will be a glass fused, bolted steel reservoir, similar to the City's most recently constructed water reservoirs. It will be constructed in conformance to applicable requirements of OAR 333-061-0050 and AWWA Standards D100 and D103. A submersible tank mixer is proposed inside the tank to help minimize or prevent thermal stratification, stagnation, and short-circuiting within the tank. Table 8-2 summarizes the design criteria for the recycled water storage tank. Refer to the approved PER for example storage tank and tank mixer product information.

Table 8-2
Storage Tank Design Criteria

Design Parameter	Design Criteria for Project
Tank Type	Glass-fused bolted steel storage tank
Nominal Storage Capacity	500,000-gallons
Diameter	52-feet approx.
Height	32-feet approx.
Roof	Self-supported Aluminum dome or Glass-Fused-to-Steel deck
Shell	Glass Fused to Steel
Floor	Glass Fused to Steel Floor
Foundation	Ring wall foundation

8.3 Pump Station

The recycled water pump station will pump water directly from the Class A recycled water storage tank to the purple pipe system. A packaged irrigation pumping station is planned, which will be housed in an insulated and heated enclosure adjacent to the storage tank. The pump station will include three (3) recycled water pumps, each capable of pumping 180 gpm of which one (1) will be a redundant pump. The pump station will be equipped with variable frequency drives (VFDs), control panel, pressure sensor, and flow meter. The pumps will be operated to maintain a consistent pressure in the recycled water distribution system as measured at the pump station discharge pipe.

Each pump has a capacity of 180 gpm. With two pumps running, the pump station will pump approximately 360 gpm at 162 feet total dynamic head (TDH), which is equivalent to about 70 psi outlet pressure. 360 gpm will cover the WRF max month wet weather 20-year design flow rate of 0.507 mgd presented in the 2022 Report. During low flow demands, one pump will meet system demands up to 180 gpm. Demands in the range of 180 to 360 gpm will require two pumps running. The pump controls and VFDs will adjust pumps automatically based on recycled water demands, pressure settings, and tank levels. The lead, lag, and lag-lag pumps will be alternated through the control panel to balance run hours. Pump station flows will be measured with an electromagnetic flow meter at the pump station.

The pump station design parameters are summarized in Table 8-3. Refer to the approved PER for example pump station product information, pump calculations, and hydraulic model results.

Table 8-3
Pump Station Design Criteria

Design Parameter	Design Criteria for Project
Pump Type	End-Suction Centrifugal
Pump Quantity	3
Overall Design Flow	360 gpm at 70 psi discharge pressure
Pump Design Flow (each)	180 gpm at 162 ft Total Dynamic Head (TDH)
Pump HP (each)	15.0 HP
Voltage	480V
Phase	3
Hertz	60
Motor Design	Premium Efficiency
Motor Staring/Controls	VFD – all motors
Pressure Control Type	Pressure transducer system
Flow Meter	Mag meter
Pump Station Enclosure	Marine grade aluminum with insulation & heater to prevent freezing

The pump station will be connected to the on-site standby generator serving the WRF. The generator and automatic transfer switch (ATS) are not part of the current recycled water distribution project but will be included in the RWF project. In the event of a power outage, the generator will automatically start and begin powering the pump station. The pump station controls and alarms will notify the WRF operator of pump station alarms 24-hours per day. The City's on duty or on call operator will respond to alarm conditions 24-hours per day.

The probability of an overflow at the storage tank and pump station is very low since the pump station is piped directly from the storage tank and includes pumping redundancy and alarms to resolve critical problems at the pump station. Also, on-site standby power with automatic transfer will increase the reliability of the triplex pump station and the ability to quickly detect and react to any problems. In the unlikely event of an overflow at the tank/pump station site, the overflow would occur at the storage tank overflow pipe, which will be contained and routed to the WRF headworks for treatment. There is no potential for human or household pet contact on the site. The John Day River is located 800 feet south of the pump station. Downstream piping will be as shown on the plans and has been sized for the design flows of the pump station.

9. Public Health and Environmental Controls/Notification Plan

The primary health and environmental concerns associated with recycled water use are 1) the transmission of waterborne pathogens and 2) the adverse impacts to the environment resulting from high organic and inorganic contaminant loadings.

The project anticipated end user locations are shown in Figure 1-1 and shall meet the setbacks protective of surface waters, groundwater supply, and areas accessible to the public. The regulatory buffer or setback distances reported in the IMD and OAR 340-055-0012(7)(f) for Class A will be met that includes agricultural, horticultural spray irrigation or for an industrial, commercial, or construction purpose and are shown in Table 9-1. Where sprinkler irrigation is used, Class A recycled water must not be sprayed onto an area where food is being prepared or served, or onto a drinking fountain.

Table 9-1
Irrigation Setback Distances

Description	Class A	Class B	Class C	Class D	Nondisinfected
Direct soil application[1] – Distance to site property line.	N/A	0 feet	10 feet	10 feet	*
Sprinkler irrigation[2] – Distance to site property line.	N/A	10 feet	70 feet	100 feet	*
Distance from any irrigation to water supply source	N/A	50 feet	100 feet	100 feet	150 feet
Sprinkler irrigation to food preparation area or drinking fountain	#	10 feet	70 feet	70 feet	*

[1] Soil applied irrigation includes flood, border, ridge and furrow, subsurface manifold and wicking systems, and drip irrigation methods.
[2] Sprinkler irrigation involves pressurized application including water guns, center pivot overhead sprinklers, wheel roll, fixed and movable impact sprinklers, and conventional sprinklers.
[*] Nondisinfected: Other site specific setback distances for irrigation necessary to protect public health and the environment must be established in the RWUP and must be met when irrigating.
[#] Class A: Where sprinkler irrigation is used, recycled water must not be sprayed onto an area where food is being prepared or served, or onto a drinking fountain.

The Recycled Water Use Rules identify signage requirements under site management practices for specific end uses. Signs are passive communication tools to inform the public and personnel (i.e., employees) that recycled water is in use at a reuse site. As part of a recycled water program's operational requirements, recycled water use must be marked to prevent cross-connections. Plumbing codes may also require signage in buildings where recycled water is used. The following signage practices are recommended:

- Signs should contain appropriate language indicating that recycled water is used and is not safe for drinking, such as:

  RECYCLED WATER USED – NOT SAFE FOR DRINKING

  Since Oregon has a significant Spanish-speaking population, signs should also be written in Spanish such as:

  AGUA DE REUSO – NO SALUDABLE PARA BEBER

- Lettering size should be appropriate to the reuse site, but must be readable from an appropriate distance.

- Signs should contain the universal symbol for do not drink.

- Sites should have signs posted around the perimeter at locations visible to the public and employees as well as points of likely access to the site, such as along roads, driveways, and paths from the surrounding area into the property.

- Impoundments or recreational features should also include appropriate warnings against swimming such as: “NO SWIMMING” or (Spanish) “NO NADAR”.

- Signs must be durable and withstand outside weather conditions (when appropriate).

- Signs should be routinely inspected and maintained.

- Potable and non-potable water sources must be clearly identified when both sources are delivered to the same location.

Refer to Appendix G for example recycled water signage product information.

The following access and exposure requirements and site management practices are for Class A recycled water

- **Access and Exposure.** When using recycled water for an agricultural or horticultural purpose where spray irrigation is used, or an industrial, commercial, or construction purpose, the public and personnel at the use area must be notified that the water used is recycled water and is not safe for drinking.

- **Site Management.** When using recycled water for a landscape impoundment, restricted recreational impoundment, nonrestricted recreational impoundment, or for irrigating a golf course, cemetery, highway median, industrial or business campus, park, playground, school yard, residential landscape, or other landscapes accessible to the public, signs must be posted at the use area or notification must be made to the public at the use area indicating recycled water is used and is not safe for drinking.

OAR 340-055 requires notification of recycled water use for all Classes of recycled water and for all end uses. Notification is different from the DEQ-initiated Public Notice procedure required during the permitting process. Notification is an active communication process (or outreach) by the recycled water generator and/or user to persons that may come in direct contact with the recycled water. The rule specifically identifies two audiences at (or near) a recycled water use site—personnel (or employees) and the public, which may include but is not limited to the following types of people:

- Employees working at a recycled water use site (e.g., farm workers, landscapers, maintenance personnel);

- Property owners and residents adjacent to a proposed site who may be affected by recycled water use activities, such as aerosol drift or surface runoff;

- Golfers or other recreationalists; and

- Other interested parties as identified by the permittee, water user, DEQ, WRD, or DHS.

As with other aspects of recycled water use, the exact audience and procedures used to satisfy the notification requirement(s) will vary depending upon the Class of water produced and the specific reuse application.

Table 9-2 lists possible methods for meeting public and personnel notification requirements at recycled water use sites. This is not an exhaustive list of options. The posting of signs alone is not sufficient to meet the notification requirements of the rule.

Table 9-2
Public and Personnel Notification Requirements at Recycled Water Use Sites

Personnel (Employee) Notification
• New employee orientation program • Facilities health and safety training program • Posted information on bulletin boards • Worker training program
Public Notification
• Signed membership agreement (i.e., golf courses) • Information fliers/pamphlets provided to golfers • Letters sent to occupants of adjacent properties (i.e., homes, businesses, etc.) • Publication in local media

Although signs may be part of public outreach on recycled water use, the posting of signs alone is not sufficient to meet the notification requirements of the rule. (Signage is identified as a site management practice and is a passive communication mechanism.)

As part of the Special Conditions in Schedule D of the Permit, the City of John Day must develop and implement an Emergency Response and Public Notification Plan. The City 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 WRF facility for DEQ review. The latest plan revision date must be listed on the plan cover along with the reviewer's initials or signature. The plan identifies measures to protect the public health from bypasses or upsets that may endanger the public health. At a minimum the plan must include mechanisms to:

1. Ensure that the City is aware (to the greatest extent possible) of such events;

2. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;

3. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water system). The response plan must identify the public health and other officials who will receive immediate notification;

4. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;

5. Provide emergency operations; and

6. Ensure that DEQ is notified of the public notification steps taken.

10. Measuring and Reporting Requirements Identified by OWRD

The City of John Day will retain copies of all records and reports as required by the WPCF permit. Other operation, maintenance, and calibration records may not be specifically addressed in the permit, but should be kept to inform system maintenance and future upgrades. The records to be kept are described as parts of the operation descriptions, but are summarized here for quick reference. The list given here is not intended to include records that need to be kept for financial or general management purposes, but deals only with the records needed for proof that the City is doing its recycled water treatment duty.

An annual report shall be submitted to DEQ no later than January 15 of each year that describes the effectiveness of the recycled water system to comply with the approved RWUP, OAR 340-55, and the limitations and conditions of the permit applicable to reuse of recycled water. For example, the Annual Report will summarize the monthly recycled water application rates in inches, the monthly nutrient loading in lbs. per acre, and any additional commercial fertilizer in lbs. per acre applied to help sustain crop growth. Visual observations of any runoff, wind-drift, prolonged ponding or nuisance conditions should also be reported. A DEQ form for the Annual Report should be submitted with a summary by the permittee. The Recycled Water Annual Report form with instructions is included in Appendix E and is also available at https://www.oregon.gov/deq/wq/programs/Pages/Water-Reuse-Recycled-Water.aspx

Measuring and reporting requirements identified by OWRD will be added here.

11. Additional Regulatory Requirements

WPCF Permit No. 103281 requires the City of John Day to meet the applicable requirements for use of recycled water under OAR 340-55 that includes the following:

- All recycled water shall be managed in accordance with this RWUP. No substantial changes shall be made to the plan without written approval from DEQ.
- No recycled water shall be released by the City of John Day to another entity or person as defined in Oregon Revised Statue 468.005, for use unless there is a valid contract between the permittee and that person that meets the requirements of Oregon Administrative Rule (OAR) 340-55-015(9).
- The City of John Day shall notify DEQ within 24 hours if it is determined that the treated effluent is being used in a manner not in compliance with OAR 340-55. The Oregon DEQ regional office can be contacted at 541-276-4063 and the Oregon Emergency Response System at 1-800-452-0311.
- No recycled water shall be made available to a person proposing to recycle unless the person certifies in writing that they have read and understand the provision of DEQ rules. Written certification shall be kept on file at the City of John Day and be made available for DEQ review/inspection.
- All end user sites receiving recycled water must be registered with the OWRD. See Appendix B for a copy of the OWRD form.

12. Appendices

Appendix A – Water Pollution Control Facilities (WPCF) Permit

Appendix B – ORWD Municipal Reclaimed Water Registration Form

Appendix C – DEQ Recycled Water Use Plan Template and Checklist

Appendix D – Recycled Water Use Plan Summary

Appendix E – Annual Report

Appendix F – Cross Connection Control

Appendix G – Recycled Water Signage

Appendix H – Agronomic Rates

Appendix I – Water Rights

APPENDIX A

Water Pollution Control Facilities (WPCF) Permit

State of Oregon Department of Environmental Quality

WATER POLLUTION CONTROL FACILITIES PERMIT

Oregon Department of Environmental Quality
Eastern Region – Pendleton Office
800 SE Emigrant, #330
Pendleton, OR 97801
Telephone: 541-276-4063

Issued pursuant to ORS 468B.050

ISSUED TO:	SOURCES COVERED BY THIS PERMIT:		
City of John Day 450 East Main St. John Day, OR 97845	**Type of Waste**	**Outfall Number**	**Location**
	Domestic Wastewater	001	Lat: 44.42221 Long: -118.97070
	Recycled Water	002	Specified in Recycled Water Use Plan
	Biosolids	003	Specified in Biosolids Management Plan

FACILITY TYPE AND LOCATION:

Sequencing batch reactor with ultraviolet disinfection
700 NW 7th Ave
John Day, OR 97845
County: Grant

RIVER BASIN INFORMATION:

WRD Basin: John Day

USGS Sub-Basin: 170702010902 Upper John Day
Nearest surface water body name: John Day River
LLID: 1206499457318
John Day at RM 248.0

File: 43569 permit 102481 referenced.
Issued in response to Application No. 948631 received December 7, 2021. This permit is issued based on the land use findings in the permit record.

Shannon Davis

Shannon Davis, Acting Water Quality Manager
Eastern Region

4-18-2022
Issuance Date

5-1-2022
Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify or operate a wastewater collection, treatment, control and disposal system in conformance with the requirements, limits, and conditions set forth in this permit.

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

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SCHEDULE A: WASTE DISCHARGE LIMITS

1. Permitted System

The City of John Day is authorized to operate and maintain a domestic wastewater treatment facility consisting of a sequencing batch reactor with tertiary filters and ultraviolet light disinfection with an average dry weather flow of 0.3 MGD. Treated effluent will be discharged to rapid infiltration basins or utilized for beneficial purpose as recycled water in accordance with a DEQ approved Recycled Water Use Plan (RWUP).

2. Effluent Limits for Outfall 001

During the term of this permit, the permittee must comply with the effluent limits in Table A1 for discharge into the rapid infiltration basins. Monitoring point must be located after the UV treatment but just prior to discharge to the rapid infiltration basins.

Table A1: Outfall 001 Limits

Parameter	Units	Monthly Average	Weekly Average	Single sample Maximum
BOD_5	mg/L	20	35	--
TSS	mg/L	20	35	--
Total nitrogen	mg/L	5	--	9
E. coli	organisms/100ml	126 (geometric mean)	--	406[a]
pH	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 8.5		

Note:

a. No single *E. coli* sample may exceed 406 organisms per 100 mL; however, DEQ will not cite a violation of this limit if the permittee takes at least 5 consecutive re-samples at 4 hour intervals beginning within 28 hours after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 *E. coli* organisms/100mL.

3. Surface Water Protection

Direct discharge to navigable waters as defined in OAR Chapter 340 Division 045 Section 0010 (13) is prohibited.

4. Groundwater Protection

Any activity that has an adverse effect on existing or potential beneficial uses of groundwater is prohibited. All wastewater and wastewater solids must be managed and disposed in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR Chapter 340, Division 40). If warranted, at any time, DEQ may evaluate the need for or require a full assessment of the facility's effect on groundwater quality.

The permittee must conduct routine groundwater monitoring as specified in the facility's DEQ approved Groundwater Monitoring Plan.

5. Use of Recycled Water

The permittee is authorized in OAR Chapter 340 Division 055 Section 0012 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 A2: 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 approved uses: • 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.
B.	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 approved uses: • 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.

6. Agronomic rates for Nutrient Loading

Crop and site specific agronomic loading rates for nutrients will be approved by DEQ only after consideration of agronomic rates published in appropriate, region specific, fertilizer guides and proposed by the Permittee. DEQ may require adjustment to the allowable agronomic rates after review of annual reporting and to ensure adequate protection of public waters, including groundwater. The Recycled Water Use Plan must list the approved agronomic rates for each proposed crop

7. Biosolids

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to OAR 340; Division 50 and 40 CFR Part 503, and 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. DEQ may require adjustment to the allowable agronomic rate after review of annual reporting and to ensure adequate protection of public waters, including groundwater.

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 the 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 pollutant applied cannot exceed the cumulative pollutant loading rates in the table below.

Table A3: 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	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 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: (See Note c & d)
Tables B2 and B3 Influent Monitoring and Effluent Monitoring	Monthly	By the 15th of the following month	Specified in Schedule B. Section 2 of this permit	As directed by DEQ
Groundwater Monitoring Plan	One Time	12 months after permit effective date	Electronic copy in a DEQ-approved format	As directed by DEQ
Groundwater Monitoring	Quarterly	By the 15th of the following month after quarter end (See Note e).	Electronic copy in the DEQ-approved form	As directed by DEQ
Surface Water Monitoring Plan	One Time	12 months after permit effective date	Electronic copy in a DEQ-approved format	As directed by DEQ
Surface water monitoring	Quarterly	By the 15th of the following month after quarter end (See Note e).	Electronic copy in the DEQ-approved form	As directed by DEQ
Recycled Water Annual Report (see Schedule D)	Annually	January 15	Electronic copy in the DEQ-approved format	As directed by DEQ Electronic copy to DEQ Water Reuse Program Coordinator
Biosolids annual report (See Schedule D)	Annually	February 19	Electronic copy in the DEQ-approved form	As directed by DEQ DEQ Biosolids Program Coordinator
Inflow and infiltration report (see Schedule D)	Annually	February 15	Electronic copy in a DEQ-approved format	As directed by DEQ
Industrial User Survey (see Schedule D)	One Time	January 15, 2024	Electronic copy in a DEQ-approved format	As directed by DEQ Electronic copy to DEQ Pretreatment Program Coordinator
Hauled Waste Control Plan (see Schedule D)	One time	Submit prior to accepting hauled waste	Electronic copy in a DEQ-approved format	As directed by DEQ

Reporting Requirement	Frequency	Due Date (See Note a.)	Report Form (See Note b.)	Submit To: (See Note c & d)
Hauled Waste Annual Report (see Schedule D)	Annually	January 15	Electronic copy in the DEQ-approved format	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. Electronic reporting information is provided on DEQ's web page (https://www.oregon.gov/deq/wq/wqpermits/Pages/NPDES-E-Reporting.aspx).
d. Email address for biosolids and recycled water coordinator are provided on DEQ's biosolids web page (https://www.oregon.gov/deq/wq/programs/Pages/Biosolids.aspx).
e. Monitoring requirements will not begin until after DEQ approves the city's plan

2. Monitoring and Reporting Protocols

a. **Paper Submissions.**

When submitting paper copies as required by table B1, the permittee must submit to DEQ the results of the monitoring in a paper format as specified below.

i. Until directed by DEQ all Discharge Monitoring Reports (DMRs) must be submitted in an approved paper format:

(A) The reporting period is the calendar month.

(B) 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.

ii. Until directed by DEQ, the permittee must submit any required Pretreatment Program Reports, Wastewater Solids and Biosolids Annual Report, Recycled Water Annual Report, Sanitary Sewer Overflow/Bypass Event Reports, and other required information to DEQ.

iii. The permittee must sign and certify submittals of Discharge Monitoring Reports (DMRs), reports, and other information in accordance with the requirements of Section D8 within Schedule F of this permit.

b. **Electronic Submissions.**

When submitting electronic copies as required by table B1, the permittee must submit to DEQ the results of monitoring in an electronic format as specified below.

i. When directed by DEQ, the permittee must submit monitoring results required by this permit via DEQ-approved web-based Electronic Discharge Monitoring Report (DMR) forms.

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.

iv. When directed by DEQ, the permittee must submit electronic reports for any required Pretreatment Program Reports, Wastewater Solids and Biosolids Annual Report, Recycled Water Annual Report, Sewer Overflow/Bypass Event Reports, and other required information to DEQ via designated web-based reporting process.

c. **Test Methods.**

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

d. **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) – 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.

e. **Implementation**

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.

i. The monitoring result shows a detect above the laboratory reported QL.

ii. The monitoring result indicates non-detect at a DL which is less than the QL.

iii. 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. In the case of effluent characterization monitoring,

f. **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. This plan should include any equipment calibration and maintenance, analytical methods, quality control activities and laboratory data handling and reporting if the permittee conducts any of their own analytical work. 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.

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.

g. **Reporting Sample Results**

i. The permittee must report the same number of significant digits as the permit limit for a given parameter.

3. Monitoring and Reporting Requirements

a. The permittee must monitor influent at the headworks to the treatment plant and report results in accordance with the table below:

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action See note b.	Report Statistic See note a.
Flow (50050)	MGD	Year-round	Daily	Metered	Monthly Average Daily Maximum
BOD_5 (00310)	mg/L	Year-round	Once per Week	24 Hour Composite[c]	Monthly Average
TSS (00530)	mg/L	Year-round	Once per Week	24 Hour Composite[c]	Monthly Average
pH (00400)	Standard Units SU	Year-round	Once per Week	Grab	Monthly Maximum Monthly Minimum
Hauled Waste	Gallons	Year-round	Daily	Amount Received	Monthly Total

Notes:

a. When submitting DMRs electronically, all data used to determine summary statistics shall be submitted in a DEQ approved format unless otherwise directed by DEQ. If submitting paper DMRs, all data collected shall be reported on each DMR.

b. In the event of equipment failure or loss, the permittee must notify DEQ and repair or replace effected equipment to minimize interruption of data collection. If the equipment cannot be immediately repaired or replaced, the permittee must perform grab measurements daily

c. Composite samples shall consist of no less than 6 samples collected over a 24-hour period and apportioned according to the volume of flow at the time of sampling.

b. The permittee must monitor effluent at Outfall 001 prior to discharge to infiltration basins and report results in accordance with Table B1 and the table below:

Table B3: Effluent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
Flow (50050)	MGD	Year-round	Daily	Metered	Monthly Average Daily Maximum
Temperature (00010)	ºC	Year-round	Daily	Metered	Monthly Average Daily Maximum
BOD_5 (00310)	mg/L	Year-round	Once per Week	24-hour composite[c]	Monthly Average Weekly Average
TSS (00530)	mg/L	Year-round	Once per Week	24-hour composite[c]	Monthly Average Weekly Average
pH (00400)	Standard Units (SU)	Year-round	Once per Week	Grab	Daily Maximum Daily Minimum
E. coli (51040)	#/100 mL	Year-round	Once per Week	Grab	Daily Maximum Monthly Median
UV intensity (49607)	mW/cm^2	Year-round	Daily	Continuous	Daily Minimum
UV dose (61938)	(mJ/cm^2)	Year-round	Daily	Calculation	Daily Minimum
UV transmittance (51043)	%	Year-round	Daily	Continuous	Daily Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Year-round	Quarterly	Grab	Quarterly Maximum
Nitrate (NO3) Plus Nitrite (NO2) Nitrogen (00630)	mg/L	Year-round	Quarterly	Grab	Quarterly Maximum
Total Ammonia (as N) (00610)	mg/L	Year-round	Quarterly	Grab	Quarterly Maximum
Total Nitrogen (00600)	mg/L	Year-round	Monthly	Calculated	Monthly
Total Phosphorus (00665)	mg/L	Year round	Monthly	Grab	Monthly
Total Dissolved Solids (70295)	mg/L	Year-round	Quarterly	Grab	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.

Notes:
a. When submitting DMRs electronically, all data used to determine summary statistics shall be submitted in a DEQ approved format as an attachment unless otherwise directed by DEQ. If submitting paper DMRs, all data collected shall be reported on each DMR.
b. 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.
c. Composite samples shall consist of no less than 6 samples collected over a 24-hour period and apportioned according to the volume of flow at the time of sampling.

4. Recycled Water Monitoring Requirements: Outfall 002

The permittee must monitor recycled water for Outfall 002 as listed below only when distributing recycled water. The samples must be representative of the recycled water delivered for beneficial reuse at each location identified in the Recycled Water Use Plan.

Table B4: Recycled Water Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report
Total Flow (MGD)	Daily	Measurement	Annual Report and monthly
Quantity Irrigated (inches/acre)	Daily	Calculation	Annual Report and monthly per field
pH	2/Week	Grab	Annual Report and monthly
Total Coliform	Daily	Grab	Annual Report and monthly
Turbidity (Class A)	Hourly	Measurement	Annual Report and monthly
Total Nitrogen Loading Rate (lbs/acre-year)	Annually	Calculation	Annual Report
Supplemental Fertilizer Applied	As applied	Record Amounts	Annual Report
Nutrients (TKN, NO2+NO3-N, Total Ammonia (as N), Total Phosphorus)	Quarterly	Grab	Annual Report and monthly

5. 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.

Table B5: Biosolids Monitoring

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-N) Total Phosphorus (P) Potassium (K) pH (S.U.) Total Solids Volatile Solids	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B6.	As described in the DEQ-approved Biosolids Management Plan
Pollutants: As, Cd, Cu, Hg, Pb, Mo, Ni, Se, Zn, mg/kg dry weight	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B6	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 B6.	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 B6.	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 B6: 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)

6. Groundwater Monitoring Requirements

The permittee must monitor groundwater as listed below. The samples must be representative of the groundwater flowing through the aquifer at the time of sample collection. The samples will be collected at the monitoring well(s) as identified in the Groundwater Monitoring Plan.

Table B7: Groundwater Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report
Dissolved Oxygen	Quarterly	Measurement	Annual Report
Oxidation Reduction Potential	Quarterly	Measurement	Annual Report
pH	Quarterly	Measurement	Annual Report
Turbidity	Quarterly	Measurement	Annual Report
Temperature	Quarterly	Measurement	Annual Report
Total Suspended Solids	Quarterly	Grab	Annual Report
BOD_5	Quarterly	Grab	Annual Report
Total Dissolved Solids	Quarterly	Grab	Annual Report
Total Nitrogen	Quarterly	Grab	Annual Report
E. coli	Quarterly	Grab	Annual Report
Total Phosphorus	Quarterly	Grab	Annual Report

7. Surface Water Monitoring Requirements

The permittee must monitor surface water of the John Day River as listed below. The samples must be representative of the water flowing in the John Day River at the designated locations. Samples will be collected from the upstream site and downstream site for each sampling event. These samples will be collected at the locations identified in the Surface Water Monitoring Plan. The permittee may request a reduction or termination of this sampling effort after collection of three full years of data if the data clearly shows no evidence of discharge of pollutants from the facility to surface water.

Table B8: Surface Water Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report
Total Flow (MGD)	Quarterly	Measurement	Annual Report
Dissolved Oxygen	Quarterly	Measurement	Annual Report
pH	Quarterly	Measurement	Annual Report
Temperature	Quarterly	Measurement	Annual Report
E. coli	Quarterly	Grab	Annual Report
Total Nitrogen	Quarterly	Grab	Annual Report
BOD_5	Quarterly	Grab	Annual Report

SCHEDULE C: COMPLIANCE SCHEDULE

This permit has no compliance schedule.

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

In order to distribute recycled water, the permittee must develop and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. The permittee must submit this plan or any significant modifications to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to distribution of recycled water. The permittee is prohibited from distributing recycled water prior to receipt of written approval of its Recycled Water Use Plan from DEQ. 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.

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.

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.

c. Spray and/or drift from the use does not migrate off the site.

d. Public access to the site is restricted.

5. Wastewater Solids Annual Report

Until the permittee has an approved biosolids program, the permittee must submit a Wastewater Solids Annual Report each year documenting removal of wastewater solids from the facility during the previous calendar year. The permittee must use the DEQ approved wastewater solids annual report form. This report must include the volume of material removed and the name of the permitted facility that received the solids.

6. Biosolids Management Plan

Prior to distributing biosolids to the public, the permittee must develop and 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 removing biosolids from the facility. 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. 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.

b. 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 the 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 340-050-0015(10).

iv. For all other new sites, the permittee must provide for public participation following procedures in its DEQ-approved land application plan.

7. 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.

8. Hauled Waste Control Plan

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.

9. Hauled Waste Annual Report

Once the permittee has an approved hauled waste program, the permittee must submit a Hauled Waste Annual Report each year documenting volume of hauled waste received at the facility during the previous calendar year. The permittee must use the DEQ approved hauled waste annual report form.

10. Groundwater Monitoring Plan

The permittee must develop a Groundwater Monitoring Plan within **12 months** of permit effective date. This plan must detail the groundwater monitoring well construction, location and sampling activities and techniques such as but not limited to: purge volumes, field parameter collection and stabilization, sample handling and management, laboratory selection, analytical methods, target detection levels, field instrument calibration, and sampling quality assurance and quality control measures. This plan must be submitted to DEQ for approval. A copy of the approved plan must be kept on file at the facility for DEQ review. The latest plan revision date must be listed on the plan cover.

11. Surface Water Monitoring Plan

The permittee must develop a Surface Water Monitoring Plan within **12 months** of permit effective date. This plan must detail the surface water monitoring locations and sampling activities and techniques such as but not limited to: methods used for sample collection, equipment decontamination, field parameter collection, field instrument calibration, sample handling and management, laboratory selection, analytical methods, target detection levels, and sampling quality assurance and quality control measures. This plan must be submitted to DEQ for approval. A 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.

12. 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 the 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 the DEQ Operator Certification Program. Current system classifications are publicized on the DEQ Supervisory Wastewater Operator Status Report found on the 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 who is certified at no more than one grade lower than the classification of the wastewater system supervises. 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 along with the Delegated Authority form?). The most recent version of this form may be found on the 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 (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.

13. Industrial User Survey

Industrial User Survey

a. By the date listed in Table B1, the permittee must conduct an industrial user survey as described in 40CFR 403.8(f)(2)(i-iii) to determine the presence of any industrial users discharging wastewaters subject to pretreatment and submit a report on the findings to DEQ. The purpose of the survey is to identify whether there are any industrial users discharging to the POTW, and ensure regulatory oversight of these discharges to state waters.

Should the 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 for 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.

14. Reopener Clause

This permit may be re-opened and modified to include new or revised discharge limitations, monitoring, or reporting requirements, compliance conditions and schedules, and special conditions. If necessary, DEQ will commence modification of this permit by notifying the permittee and seeking public comment on the proposed modifications.

The permittee is responsible for requesting modification of this permit to incorporate any proposed system alterations that require a change in the compliance conditions of this permit.

SCHEDULE E: PRETREATMENT ACTIVITIES

This permit does not include a pretreatment program.

SCHEDULE F: WPCF GENERAL CONDITIONS - Domestic

SECTION A. STANDARD CONDITIONS

1. 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 grounds for an enforcement action. Failure to comply is also grounds for DEQ to modify, revoke, or deny renewal of a permit.

2. Property Rights and Other Legal Requirements
   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 rights, or any infringement of federal, tribal, state, or local laws or regulations.

3. Liability
   DEQ or its officers, agents, representatives, or employees may not sustain any liability on account of the issuance of this permit or on account of the construction or maintenance of facilities or systems because of this permit.

4. Permit Actions
   After notice by DEQ, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including but not limited to the following:
   a. Violation of any term or condition of this permit, any applicable rule or statute, or any order of the Environmental Quality Commission;
   b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.

5. Transfer of Permit
   This permit may not be transferred to a third party without prior written approval from DEQ. DEQ may approve transfers where the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of this permit and the rules of the Environmental Quality Commission. A transfer application and filing fee must be submitted to DEQ.

6. Permit Fees
   The permittee must pay the fees required by Oregon Administrative Rules.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance
   At all times the permittee must maintain in good working order and properly operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to comply with the terms and conditions of this permit.

2. Standard Operation and Maintenance
   All waste collection, control, treatment, and disposal facilities or systems must be operated in a manner consistent with the following:
   a. At all times, all facilities or systems must be operated as efficiently as possible in a manner that will prevent discharges, health hazards, and nuisance conditions.
   b. All screenings, grit, and sludge must be disposed of in a manner approved by DEQ to prevent any pollutant from the materials from reaching waters of the state, creating a public health hazard, or causing a nuisance condition.

c. Bypassing untreated waste is generally prohibited. Bypassing may not occur without prior written permission from DEQ except where unavoidable to prevent loss of life, personal injury, or severe property damage.

3. Noncompliance and Notification Procedures

If the permittee is unable to comply with conditions of this permit because of surfacing sewage; a breakdown of equipment, facilities or systems; an accident caused by human error or negligence; or any other cause such as an act of nature, the permittee must:

a. Immediately take action to stop, contain, and clean up the unauthorized discharges and correct the problem.
b. Immediately notify the appropriate DEQ regional office so that an investigation can be made to evaluate the impact and the corrective actions taken, and to determine any additional action that must be taken.
c. Within 5 days of the time the permittee becomes aware of the circumstances, the permittee must submit to DEQ a detailed written report describing the breakdown, the actual quantity and quality of waste discharged, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or liability for failure to comply.

4. Wastewater System Personnel

The permittee must provide an adequate operating staff that is duly qualified to carry out the operation, maintenance, and monitoring requirements to assure continuous compliance with the conditions of this permit.

5. 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 entitles (e.g., public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed in accordance with General Condition B.6. 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.

6. 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 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 entities (including public water systems). The 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.

SECTION C. MONITORING AND RECORDS

1. Inspection and Entry
   The permittee must at all reasonable times allow authorized representatives of DEQ to:
   a. Enter upon the permittee's premises where a waste source or disposal system is located or where any records are required to be kept under the terms and conditions of this permit;
   b. Have access to and copy any records required by this permit;
   c. Inspect any treatment or disposal system, practices, operations, monitoring equipment, or monitoring method regulated or required by this permit; or
   d. Sample or monitor any substances or permit parameters at any location at reasonable times for the purpose of assuring permit compliance or as otherwise authorized by state law.

2. Averaging of Measurements
   Calculations of averages of measurements required for all parameters except bacteria must use an arithmetic mean; bacteria must be averaged as specified in the permit.

3. Monitoring Procedures
   Monitoring must be conducted according to test procedures specified in the most recent edition of **Standard Methods for the Examination of Water and Wastewater**, unless other test procedures have been approved in writing by DEQ and specified in this permit.

4. Retention of Records
   The permittee must retain records of all monitoring and maintenance information, including all calibrations, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. DEQ may extend this period at any time.

SECTION D. REPORTING REQUIREMENTS

1. Plan Submittal
   Pursuant to Oregon Revised Statute 468B.055, unless specifically exempted by rule, construction, installation, or modification of disposal systems, treatment works, or sewerage systems may not commence until plans and specifications are submitted to and approved in writing by DEQ. All construction, installation, or modification shall be in strict conformance with the DEQ's written approval of the plans.

2. Change in Discharge
   Whenever a facility expansion, production increase, or process modification is expected to result in a change in the character of pollutants to be discharged or in a new or increased discharge that will exceed the conditions of this permit, a new application must be submitted together with the necessary reports, plans, and specifications for the proposed changes. A change may not be made until plans have been approved and a new permit or permit modification has been issued.

3. Signatory Requirements
   All applications, reports, or information submitted to DEQ must be signed and certified by the official applicant of record (owner) or authorized designee.

4. 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) within 24 hours from the time the permittee becomes aware of the circumstances, unless a shorter time is specified in the permit. During normal business hours, DEQ's regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

The following must be included as information that must be reported within 24 hours under this paragraph:

a. Any unanticipated bypass that exceeds any effluent limitation in this permit;
b. Any upset that exceeds any effluent limitation in this permit;
c. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
d. Any noncompliance that may endanger human health or the environment.

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

a. A description of 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;
d. Steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and
e. Public notification steps taken, pursuant to General Condition B.6.

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

SECTION E. DEFINITIONS

1. *BOD or BOD_5* means five-day biochemical oxygen demand.
2. *CBOD or $CBOD_5$* means five-day carbonaceous biochemical oxygen demand.
3. *TSS* means total suspended solids.
4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
5. *FC* means fecal coliform bacteria.
6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
7. *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.
8. *mg/l* means milligrams per liter.
9. *µg/l* means microgram per liter.
10. *kg* means kilograms.
11. *m^3/d* means cubic meters per day.
12. *MGD* means million gallons per day.
13. *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.
14. *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.
15. *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.
16. *24-hour composite sample* means a combination of at least six discrete sample aliquots of at least 100 milliliters, collected at periodic intervals from the same location, during the operating hours of the facility over a 24 hour period. Four (rather than six) aliquots should be collected for volatile organics analyses. The composite must be flow or time proportional, whichever is more appropriate. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of *Standard Methods for the Examination of Water and Wastewater*.
17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
18. *Quarter* means January through March, April through June, July through September, or October through December.
19. *Month* means calendar month.
20. *Week* means a calendar week of Sunday through Saturday.
21. Commission or Environmental Quality Commission means the governor appointed panel which serves as the Oregon Department of Environmental Quality's policy and rulemaking board.
22. Department means the Oregon Department of Environmental Quality.

Signature: Shannon Davis
Shannon Davis (Apr 18, 2022 16:53 PDT)

Email: shannon.davis@deq.oregon.gov

103281-PERM-JOHNDAYWWTF20220418

Final Audit Report 2022-04-18

Created:	2022-04-18
By:	Patty Isaak (patty.isaak@deq.oregon.gov)
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APPENDIX B

ORWD Municipal Reclaimed Water Registration Form

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:*_____

*County where reclaimed water use will occur:*_____

*Mail Address:*_____
Street/P.O. Box *City* *State* *Zip*

*Daytime Telephone:*_____*E-mail:*_____

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:*_____

*Mail Address:*_____
Street/P.O. Box *City* *State* *Zip*

*Daytime Telephone:*_____*E-mail:*_____

3. Are there existing water rights on the same land where the use will occur?

☐ YES (provide information below) ☐ NO

Application No. _____*Permit No.*_____

Certificate No. _____*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?*_____

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.*_____ or *WPCF Permit No.*_____

*Permit Effective Date:*_____ *Permit Expiration Date:*_____

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:*_____*Telephone No.*_____

*Treatment Facility Name:*_____*Telephone No.*_____

*Mail Address:*_____
Street/P.O. Box *City* *State* *Zip*

6. Which water provider supplies potable municipal water to the city/community that produces the sewage <u>entering</u> the treatment facility?

*Municipal Water Provider:*_____*Telephone No.*_____

*Source(s) of Municipal Water:*_____
(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?_____

Describe any conditions in the agreement that limit use of the reclaimed water.

9. Please describe the transmission system that delivers reclaimed water from the wastewater treatment facility to the place of reclaimed water use.

(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, aquifer recharge, wetlands, industrial, cooling, aquifer storage & recovery, etc.)

*Irrigation Total Acres:*_____*What type of crop?*_____

(hay, pasture, golf course, wood fiber, etc.)

*What is the irrigation application system?*_____

(flood, center pivot, wheel line, drip, micro-sprinklers)

*How much Reclaimed Water will be used?*_____

(cubic feet per second, OR gallons per minute)

*Date use began or will begin:*_____*Period of use (month/day): from*_____*to*_____

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?*_____

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?

_____

(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?_____

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.

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 C

DEQ Recycled Water Use Plan Template and Checklist

Recycled Water Use Plan
For
<Permittee Name>
<NPDES/WPCF> Permit No. <number>
File No. <number>

Facility:
<Legal Name>
<Common Name>

Physical Address
<Address>
<City> <State> <Zip>

Mailing Address (if different)
<Address>
<City> <State> <Zip>

Contact: <Name>
Phone: <XXX.XXX.XXXX>
Email: <name@facility>

<Month> <Year>

INTRODUCTION

Provide an introduction to facility and the recycled water program. Also include the following information:

- ☐ A statement that the current RWUP supersedes any previously plans
- ☐ A brief description of the lines of authority and communication within the recycled water program, including the recycled water user(s); and
- ☐ Contact information of parties responsible for various aspects of environmental compliance.

BENEFICIAL PURPOSES

Beneficial purposes lie at the core of the recycled water use program and can influence wastewater treatment, monitoring, as well as public health and environmental concerns. Beneficial purposes must be identified in the RWUP [OAR 340-055-0025(1)(c)]. Include:

- ☐ A list or table of beneficial purposes and the Class(es) of water. Ex:

Beneficial Purpose	Class of Water	Quantity (mgd)	Frequency
<Beneficial Purpose 1>	Class <A, B, C, D>	<number>	<April - October>
<Beneficial Purpose 2>	Class <A, B, C, D>	<number>	<Year Round>
<etc.>	<etc.>	<etc.>	<etc.>

- ☐ The name, address, and phone number of the owner(s) and user(s) of each site receiving recycled water

WASTEWATER TREATMENT

The RWUP must describe wastewater treatment operations at the treatment facility [OAR 340-055-0025(1)(a)]. The description should include information on the quantity and quality of both wastewater treated and recycled water produced. If the wastewater treatment system operations are described in other documents, those documents may be referenced in the RWUP. Current copies of those documents must be readily available to the Department and should have been approved. The following information is pertinent to describing the wastewater treatment system:

- ☐ A general description of the treatment system, including treatment efficiency capability(an overall flow diagram showing the entire treatment and reuse process recommended);
- ☐ A brief description of the quantity (gpd), and origin (% domestic, % commercial, % industrial) of wastewaters processed in the treatment facility;
- ☐ The operating volumes (gallons) of each component of the wastewater processing stream (diagram recommended);
- ☐ A detailed, step-by-step description of the unit processes used to a specific class of recycled water [OAR 340-055-0025(1)(b)];
- ☐ A summary of the quantity of recycled water produced;
- ☐ A description of any blending operations, including the source of the water, estimates of the blending ratios;
- ☐ A summary of the recycled water quality supplied to each beneficial purpose. The exact data needed to characterize the recycled water may vary based on the specific end use(s), but may include the following common parameters: *E. coli*, total coliform, turbidity, BOD, TSS, TKN, NH_4-N, NO_3-N, total P, K, Ca, Mg, Na, pH, TDS, etc.[1]

[1] Recycled water quality information should generally include at a minimum the basic physical parameters, bacteria, and nutrients. Additional information such a mineral or metals concentrations (e.g., Ca, Mg, TDS, Fe, Mn, etc.) may be necessary for specific end uses, such as boiler water, agricultural irrigation, or other beneficial purposes that may be sensitive to recycled water quality.

RECYCLED WATER MONITORING AND SAMPLING

The RWUP must describe monitoring and sampling procedures [OAR 340-055-0025(1)(e)]. Monitoring and sampling applies to both recycled water quantity and quality. DEQ, WRD [OAR 340-055-0025(1)(h)], or other agencies may specify monitoring requirements. Since monitoring and sampling may vary based upon the Class of water and/or the beneficial purpose, monitoring and sampling procedures must provided the relevant level of detail. For each Class of Water-Beneficial Purpose combination, provide the following information:

- ☐ Recycled water quantity:
  - Estimate of quantity of recycled water produced;
  - Measurement techniques (e.g., flowmeters, flumes);
  - Frequency (e.g., weekly, monthly, seasonal);
  - Location (i.e., at a point representative of recycled water volume sent to distribution systems);

- ☐ Recycled water quality:
  - Parameters and estimated concentrations (e.g., E. coli, total coliform, turbidity, BOD, TSS, TKN, NH_4-N, NO_3-N, total P, K, Ca, Mg, Na, pH, TDS, etc.); Actual data from previous monitoring operations may be provided.
  - Sample type (e.g., continuous, grab, composite);
  - Sampling methods (e.g., autosampler, bailer);
  - Frequency (e.g., weekly, monthly);
  - Location (i.e., a point that is representative of the recycled water entering the distribution systems; a diagram or schematic is recommended);
  - Analytical methods (e.g., Standard Analytical Methods, DEQ approved methods);
  - Field Quality Assurance / Quality Control (QA/QC) procedures (e.g., field equipment calibration, field equipment decontamination, sample duplicates, field blanks, rinse water blanks, trip blanks);
  - Laboratory QA/QC procedures ;

SYSTEM MAINTENANCE AND CONTINGENCY PROCEDURES

The RWUP must include a maintenance plan that describes how the wastewater treatment system equipment and facility processes will be maintained [OAR 340-055-0025(1)(f)], as well as a description of contingency procedures [OAR 340-055-0025(1)(d)].

- ☐ The facility's operations and maintenance plan may be included by reference in the information is provided in another document. However, the referenced document must be readily available to DEQ and should have been previously approved by the Department.
- ☐ A description of the alarm devices or equipment that will be furnished pr provide warning of loss of power, and/or failure of processing equipment essential to the generation of recycled water [2]
- ☐ A description of the standby power systems used to ensure that all essential processes operate during interruptions [3]

---

[2] OAR 340-055-0030(2) Alarm devices. Alarm devices are required to provide warning of power loss and failure of process equipment essential to the proper operation of the wastewater treatment system and compliance with this division.

[3] OAR 340-055-0030(3) Standby power. Unless otherwise approved in writing by the department, a wastewater treatment system providing recycled water for use must have sufficient standby power to fully

- ☐ A description of the redundant treatment systems that will be furnished to provide warning of loss of power and/or failure of process equipment essential to the recycled water generation [4]

RECYCLED WATER TRANSMISSION, STORAGE, DISTRIBUTION, AND PLUMBING

The RWUP should include a description of the recycled water transmission, storage, and distributions systems, including plumbing considerations to avoid cross connections.

- ☐ A characterization of all proposed recycled water storage facilities (short-term, long-term, and emergency), including: facility location(s), dimensions (feet), operating capacity (gallons), and pollution controls (e.g., liners, barriers, or other controls to prevent spills, overflows, or other upsets);
- ☐ A description of the recycled water transmission system used to move recycled water from the treatment facility to storage facilities, satellite facilities, or reuse site(s), including labelling or other identification mechanisms used to prevent cross connections with other systems; and
- ☐ A description of how all piping, valves, and other portions of the recycled water distribution and plumbing systems will be constructed and marked to prevent cross-connection with potable systems
- ☐ A description of measures (e.g., chlorine residual, filtration) used to control water quality, if any, during recycled water transmission, storage, or distribution.

PUBLIC HEALTH AND ENVIRONMENTAL CONTROLS

For each identified beneficial purpose, the RWUP should identify potential public health and environmental concerns as well as the measures taken to control adverse effects on public health and the environment. The RWUP must include a description of public and personnel notification procedures in the reuse area (when required) [OAR 340-055-0025(1)(g)]. For each Beneficial Purpose, provide the following information:

- ☐ Identify any public health (e.g., aerosols, direct contact) and environmental concerns (e.g., groundwater, surface water)
- ☐ A detailed description of an access and exposure controls employed at reuse sites, such as fences, windbreaks, etc.
- ☐ A description of personnel and public notification procedures, including samples of any written materials
- ☐ A map Identifying the reuse site and setbacks to property lines, water supply sources, and food preparation/drinking fountains (these features should be identified on the map)
- ☐ Specific site management practices used at reuse sites designed to protect public health and the environment, including
    - Signage
    - Irrigation scheduling, when appropriate
    - Grazing, crop, and/or harvest restrictions, when appropriate

---

operate all essential treatment processes. The department may grant an exception to this section only if the wastewater treatment system owner demonstrates that power failure will not result in inadequately treated water being provided for use and will not result in any violation of an NPDES or WPCF permit limit or condition or Oregon Administrative Rule.

[4] OAR 340-055-0030(4) Redundancy. A wastewater treatment system that provides recycled water for use must have a sufficient level of redundant treatment facilities and monitoring equipment to prevent inadequately treated recycled water from being used or discharged to public waters.

- ☐ Stormwater control measures, when appropriate
- ☐ Overflow control measures, when appropriate
- ☐ Decontamination procedures for equipment, facilities, or vehicles that contact recycled water.
- ☐ A reference to (or description of) groundwater monitoring activities, if required

For Class B, C, D, or nondisinfected water used for irrigation ONLY.

LAND APPLICATION PLAN

When Class B, C, or D water is used for irrigation, the RWUP must also address various aspects of the land application program, including characterization of the land application site, the irrigation system, the soils and crops, site management practices, and public access control or notification [OAR 340-055-0025(2)(a)-(e)]. Although a Land Application Plan is not required for irrigation with Class A waters, many of the operational considerations are applicable to higher level of treatment and the permittee/applicant should be encouraged to develop an operations plans. Unless a plan for irrigation with Class A water is identified in Schedule D of the permit to protect public health or the environment (e.g., to comply with a GWMA Action Plan), the Department cannot require development of a Land Application Plan for Class A recycled water. A separate land application plan should be submitted for each irrigation system/project. (Multiple land application plans may be included in a single RWUP.) This section may be omitted of the RWUP if irrigation is not an identified beneficial purpose.

Site Description. The RWUP must identify and describe the land application site(s), which should include the following information:

- ☐ Zoning of the irrigation site and neighboring properties;
- ☐ A site map with setbacks, location(s) of and distances to property boundaries, water supply sources, food preparation or drinking fountains, and nearest developed property
- ☐ Street address (if any) and legal descriptions (i.e., county, township, range, section, tax lot) of each site receiving recycled water
- ☐ Location(s) of fields irrigated with recycled water
- ☐ A map(s) identifying:
  - field acreage;
  - the location of any drinking water wells, agricultural dry wells, drainage ditches, surface water features, etc.,
  - the locations of pump station(s), storage lagoon(s), surge basin(s), irrigation distribution system(s), etc.
- ☐ A Land Use Compatibility assessment, such as
  - Zoning
  - Historical land use
  - Present land use
  - Future land use
  - Adjacent land uses

Site Characterization.

The RWUP must provide a site characterization, including a description of soils and crops (or vegetation) at the land application site. A full site characterization should also include information on topography, hydrology, geology, and climate:

- ☐ USGS topographic map
- ☐ A description of topographical characteristics of the sites, including slope, landform (i.e., convex, concave), and site landscape position (i.e., upland, terrace, side slope, etc.)

- ☐ The locations of any perennial or seasonal drainages
- ☐ NRCS soil maps and soil series descriptions
- ☐ Descriptions of soils[5], including: soil texture; structure; rooting abundance and depth; color; presence, depth, and distribution of mottling; drainage class; pore size, continuity and abundance; coarse fragment content (percent by volume); depth to groundwater (both permanent and seasonal); depth to and identification of any restrictive layers (i.e., bedrock, hardpan, fragipan, etc.);
- ☐ An estimate of or actual information on the soil infiltration rate (e.g., saturated hydraulic conductivity, Ksat), permeability, and available water holding capacity, AWHC
- ☐ Regional and local hydrogeology, when required (see AR section for contents)
- ☐ Climatic information including, mean annual and monthly precipitation, evaporation and temperature; the average length of the growing season; average dates of first and last frost; the number of days the mean temperature drops below 32 F; stormwater runoff potential; and prevailing wind direction and intensity

Crops.

A description of particular crops grown on the land application sites (fields), which should include the following information and may be provided in a table:

- ☐ List of proposed crops (e.g., all and everything that is planning on growing on land application sites),
- ☐ Projected harvest (e.g., bu/ac, number of cuttings, protein content, etc.)
- ☐ Current OSU Fertilizer Guides (FG)/other approved agronomic rates (e.g., identified FG guides , or submitted scientific literature to be approved with the RWUP),
- ☐ Crop fertilizer needs—specifically N and P (e.g., OSU total nitrogen numbers, site-specific crop needs that are under the OSU FG, nitrogen numbers according to submitted scientific literature),
- ☐ Any crop sensitivities to water quality (e.g., salts, B, chloride, etc.)
- ☐ Crop specific typical rooting depths of crops selected,
- ☐ Monthly and Annual projected crop water needs (e.g., OSU irrigation planning guide, historic localized crops specific water needs),
- ☐ Timing of application (e.g., spring, summer, fall, winter irrigation amounts for seen to be applied),
- ☐ Double Cropping (e.g., whether or not the concept to be optimized under land application program),
- ☐ List any harvest restrictions due to pathogen issues in the wastewater or wastewater solids (i.e. reclaimed water).

Irrigation System.

The RWUP must include a description of the irrigation system which should include:

- ☐ A description and plot of the irrigation system layout and controls, including but not limited to (engineering plans and specifications recommended):
  - Storage;
  - distributions methods,

[5] Although general soil characteristics can be gathered from the NRCS soil survey, actual soil characteristics can vary widely from those mapped or described. An actual field investigation by a soil scientist is strongly, especially for projects in sensitive areas (e.g., GWMAs, TMDL limited watersheds, etc.). Field investigations should include soil examination to a depth of 5-feet. The actual number of soil pits or bore holes will depend upon the irrigation site characteristics, such as total area and site variability.

- application methods;
- start up procedures;
- typical daily operations (e.g., draining distribution lines to minimize potential odors during startup on the following day);
- shutoff procedures;
- nozzle design

☐ A description of irrigation system operations, including how loading and resting rates will be managed and monitoring in irrigation areas to assure that excess soil saturation, groundwater contamination, and runoff will not occur (e.g., moisture monitoring);

☐ A description and plot of the drainage system layout and controls, including the locations of and connections to surface water features;

☐ An irrigation system maintenance plan;

Application Rates and Irrigation Scheduling.

In order to protect groundwater and surface water, the land application plan needs to address the irrigation scheduling, including consideration for both water application and nutrient application:

☐ An estimated irrigation schedule, including monthly budget calculations:

- A summary of the recycled water quality before and after any blending delivered to the irrigation site, BOD, TSS, TKN NO_3-N, NH_4-N, total P, K, Ca, Mg, Na, SAR, pH TDS
- The quantity of recycled water required to meet the crop nutrient needs, including the methods (assumptions and equations) used to calculate the agronomic rate
- Estimated monthly and annual water application rates that account for crop irrigation requirement, leaching fractions, and irrigation efficiency
- The methods (i.e., assumptions and equations) used to calculate water application rates (i.e., hydraulic loading calculations and agronomic loading calculations), including accounting for leaching fraction, irrigation efficiency, moisture control, etc.;
- An indication of which factor limits recycled water application, either the hydraulic loading rate or agronomic loading rate

☐ Supplemental Water. A description of the land applied supplemental fresh water should include both quantity and quality information.

☐ Precipitation. A description of the average natural precipitation quantities in the specific area that the land application sites are located should be included.

☐ Supplemental Fertilizer. A description of supplemental fertilizer (i.e., commercial, chemical, manure, etc.) applications to the land application sites should include both quantity applied and fertilizer type (quality).

Site Monitoring Plan.

The RWUP should include a description of water and nutrient loadings to the land application site. The site monitoring plan may include information on:

☐ Soil Sampling. A description of any soil sampling and monitoring as needed as part of the nutrient balance and soil salinity tracking on land application sites regarding soil fertility and crop toxicity

☐ Soil Moisture Monitoring. A description of a particular soil moisture sampling and monitoring protocol, as part of the hydraulic balance and prescribed leaching fraction tracking/monitoring on land application sites

☐ Biomass (Crop) Sampling. A description of a particular biomass sampling and monitoring protocol, as part of the nutrient (nitrogen) balance and site-specific nutrient uptake tracking, and crop health on land application sites.

- ☐ Recycled Water Application Monitoring. A description of site-specific wastewater monitoring protocol out on the land application sites (fields) in regards to irrigation accounting of the wastewater, as part of the hydraulic balance, which in turn helps to determine nutrient (nitrogen) loadings

For Class A water used for Artificial Groundwater Recharge ONLY.

ARTIFICIAL GROUNDWATER RECHARGE (AR) PLAN

A detailed description of Artificial Groundwater Recharge operations is required when AR is an identified beneficial purpose. This section may be omitted from plans in which AR is not an identified use.

- ☐ A groundwater monitoring plan in accordance with OAR 340-040-0030(2). If a separate groundwater monitoring plan has been developed, it may be incorporated into the RWUP by reference.
- ☐ A map identifying the groundwater recharge area, groundwater flow direction, the location of any drinking water protection area, and the location of the nearest point of withdrawal.
- ☐ The estimated retention time of recycled water in the aquifer.
- ☐ General geology and hydrogeology, such as stratigraphy, structure, aquifers, aquitards and low permeability layers; groundwater quality.
- ☐ Uppermost aquifer characteristics such as:
    - Type (confined versus unconfined)
    - Material (alluvial, dunal, fractured, volcanic, or other)
    - Depth to uppermost aquifer
    - Depth to seasonal high water table
    - Hydraulic conductivity
    - Storage coefficient
    - Estimated porosity
    - Calculated hydraulic gradient
    - Fluctuations in groundwater flow and direction
    - Contour map of potentiometric surface (i.e., groundwater table)
    - Calculated groundwater flow velocities
    - Interconnection with surface water bodies or other aquifers
- ☐ AR site characteristics, including
    - USGS topographic map
    - A description of topographical characteristics of the sites, including slope, landform (i.e., convex, concave), and site landscape position (i.e., upland, terrace, side slope, etc.)
    - The locations of any perennial or seasonal drainages
    - NRCS soil maps and soil series descriptions
    - Descriptions of soils[6], including: soil texture; structure; rooting abundance and depth; color; presence, depth, and distribution of mottling; drainage class; pore size, continuity and abundance; coarse fragment content (percent by volume); depth to groundwater (both permanent and seasonal); depth to and identification of any restrictive layers (i.e., bedrock, hardpan, fragipan, etc.);

[6] Although general soil characteristics can be gathered from the NRCS soil survey, actual soil characteristics can vary widely from those mapped or described. An actual field investigation by a soil scientist is strongly, especially for projects in sensitive areas (e.g., GWMAs, TMDL limited watersheds, etc.). Field investigations should include soil examination to a depth of 5-feet. The actual number of soil pits or bore holes will depend upon the irrigation site characteristics, such as total area and site variability.

- Information on the soil infiltration rate (e.g., saturated hydraulic conductivity, Ksat), permeability, and available water holding capacity, AWHC
- Climatic information including, mean annual and monthly precipitation, evaporation and temperature; the average length of the growing season; average dates of first and last frost; the number of days the mean temperature drops below 32 F; stormwater runoff potential; and prevailing wind direction and intensity
- Any other information requested by WRD

☐ Verification from WRD that a request for authorization for this use has been initiated.

RECORDS AND REPORTING

RWUPs should contain information on the recycled water use program's record keeping and reporting requirements, including:

☐ A description of the types of records which will be maintained by the facility, such as: effluent quality monitoring; recycled water system performance; on-going system maintenance records; inspection reports; sources and quantities of supplemental water; quantity of recycled water generated; final use of recycled water generated; site monitoring records; irrigation records; etc.

☐ A description of the reporting procedures (i.e., annual report) such as: responsibility for reporting; report contents, date of report, etc.

APPENDIX D

Recycled Water Use Plan Summary

Oregon Department of Environmental Quality

RECYCLED WATER USE PLAN SUMMARY

Directions: Check (✓) appropriate boxes for tables and provide brief narrative where necessary. Submit with Recycled Water Use Plan to DEQ.

State of Oregon Department of Environmental Quality

APPLICANT INFORMATION

Facility Name: City of John Day
Address: 450 East Main St, John Day, OR 97845
Contact Name/Phone Number:

TYPE OF WASTEWATER TREATMENT PLANT

☐	Activated Sludge	☐	Re-circulating Gravel/Sand Filter
☐	Mechanically Aerated Lagoon	☐	Rotating Biological Filter
☐	Aerated Lagoon	☑	Other (Specify): SBR + tertiary filters and UV disinf.

Average Dry Weather Flow, million gallons per day (MGD): 0.3 (average dry weather flow per WPCF Permit)

TREATMENT CLASS IN ACCORDANCE WITH OAR 340-055-0012

☑	Class A	☐	Class C
☐	Class B	☐	Class D
☐	Non-Disinfected water		

TREATMENT EFFICIENCY CAPABILITY DURING REUSE

☑	Tertiary Treatment	☐	85% or more BOD/TSS removal
☐	95% or more BOD/TSS removal	☐	Rotating Biological Filter
☐	90% or more BOD/TSS removal	☐	Other (Specify):

DISINFECTION METHOD

☐	Chlorine injection just prior to irrigation
☐	Chlorine injection with storage of recycled water
☐	Chlorine injection after storage just prior to irrigation
☐	UV exposure just prior to irrigation
☑	UV exposure with storage of recycled water
☐	UV exposure after storage just prior to irrigation
☐	Other (specify):

STORAGE IMPOUNDMENT	Y	N
Is there a storage facility proposed for this project?	☑	☐
If yes, at the WWTP	☑	☐
If yes, located at a location other than the WWTP	☐	☐

If yes to either of the above, specify the location and length of time the storage facility will be used:
Bolted steel storage tank located at the WWTP (Water Reclamation Facility). The storage tank will be used during the irrigation season and drained during the winter months to prevent freezing.

ARE THERE ALARMS FOR VARIOUS UNIT PROCESSES?	Y	N
Are alarms independent of the normal power supply of the plant?	☐	☐
Failure of a disinfection treatment process?	☐	☐
Failure of a clarification process?	☐	☐
Failure of a coagulation process?	☐	☐
Failure of a filtration process?	☐	☐
Are the alarms on separate circuit breakers from the reuse pumps?	☐	☐
Is the Recycled Water back-up generator tested regularly?	☐	☐

IN THE EVENT OF POWER LOSS:	Y	N
Can the plant continue to discharge?	☐	☑
Can there be any irrigation of non-disinfected water?	☐	☑

If no to either of the above, specify control measures that will be in place to stop the irrigation as soon as possible.

The irrigation pumps are powered by the same power supply as the WWTP. In the event of loss of power to the treatment, filtration, and disinfection units, the irrigation pumps will stop and not allow irrigation of non-disinfected water.

RECYCLED WATER WILL BE BENEFICIALLY USED FOR THE FOLLOWING (CHECK ALL THAT APPLY):

✓	Beneficial Purpose	Class				
		A	B	C	D	ND
	Irrigation					
☐	Fodder, fiber, seed crops not intended for human ingestion, commercial timber	Y	Y	Y	Y	Y
☐	Firewood, ornamental nursery stock, Christmas trees	Y	Y	Y	Y	N
☐	Sod	Y	Y	Y	Y	N
☐	Pasture for animals	Y	Y	Y	Y	N
☐	Processed food crops	Y	Y	Y	N	N
☐	Orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil	Y	Y	Y	N	N
☑	Golf courses, cemeteries, highway medians, industrial or business campuses	Y	Y	Y	N	N
☑	Any agricultural or horticultural use	Y	N	N	N	N
☑	Parks, playgrounds, school yards, residential landscapes, other landscapes accessible to the public	Y	N	N	N	N
☐	**Industrial, Commercial, or Construction**					
☐	Industrial cooling	Y	Y	Y	N	N
☐	Rock crushing, aggregate washing, mixing concrete	Y	Y	Y	N	N
☐	Dust control	Y	Y	Y	N	N
☐	Nonstructural fire fighting using aircraft	Y	Y	Y	N	N
☑	Street sweeping or sanitary sewer flushing	Y	Y	Y	N	N
☐	Stand alone fire suppression systems in commercial and residential buildings	Y	Y	N	N	N
☐	Non-residential toilet or urinal flushing, floor drain trap priming	Y	Y	N	N	N
☐	Commercial car washing	Y	N	N	N	N
☑	Fountains when the water is not intended for human consumption	Y	N	N	N	N

✓	Beneficial Purpose	Class				
		A	B	C	D	ND
☐	**Impoundments or Artificial Groundwater Recharge**					
☑	Water supply for landscape impoundments including, but not limited to, golf course water ponds and non-residential landscape ponds	Y	Y	Y	N	N
☐	Restricted recreational impoundments	Y	Y	N	N	N
☑	Nonrestricted recreational impoundments including, but not limited to, recreational lakes, water features accessible to the public, and public fishing ponds	Y	N	N	N	N
☐	Artificial groundwater recharge	Y	N	N	N	N
☐	**Other (describe):**					

PAGES 4 & 5 REQUIRED FOR IRRIGATION ONLY

THE IRRIGATION AREA WILL BE USED FOR THE FOLLOWING (CHECK ALL THAT APPLY):

☐	Crops (specify types):
☐	Pasture
☐	Forest
☑	Public access areas (specify types): Golf course and parks
☐	Natural areas (specify species or mix):
☐	Other (specify):

APPLICATION RATE	**Y**	**N**
Will irrigation be controlled not to exceed the water consumption rate of the crop being grown?	☑	☐
Will irrigation be controlled not to exceed the nutrient requirements of the crop being grown?	☑	☐

What is the proposed application rate of the recycled water? _____
Acreage of irrigation site _____
The months that irrigation will be permitted _____
If irrigation occurs with Class C recycled water at nighttime, will the public access be restricted to allow for sunlight contact on irrigated water? ☐ Yes ☐ No
If so, specify length of time _____

TRANSMISSION & DISTRIBUTION LINES/PIPES	**Y**	**N**
At the end of the irrigation day, will the transport lines/pipes be drained back to the wastewater treatment facility?	☐	☐
Is there a gate/ball shut off valve at the irrigation pump?	☐	☐
Is there an in line pressure relief valve to by-pass reuse water back into the source basin if there is a line transmission plug?	☐	☐
At the cessation of the irrigation season, will the transport lines/pipes be flushed and cleaned?	☐	☐
Is there a gate/ball shut off valve at the irrigation field, or at each irrigation zone?	☐	☐

ZONED LAND USE OF IRRIGATION SITE (CHECK ALL THAT APPLY)

☐	Exclusive Farm Use (EFU)	☐	Industrial
☐	Forestry	☐	State/Federal lands
☐	Rural Residential	☐	Other (Specify):

ZONED LAND USE OF AREA AROUND IRRIGATION SITE (CHECK ALL THAT APPLY)

☐	Exclusive Farm Use (EFU)	☐	Industrial
☐	Forestry	☐	State/Federal lands
☐	Rural Residential	☐	Other (Specify):

Prevailing wind direction during irrigation season (specify): _____
Will irrigation be restricted when winds exceed 10 MPH?: _____

THE NEAREST DEVELOPED PROPERTY FROM IRRIGATION SITE (ft):

North boundary:
South boundary:
East boundary:
West boundary:
What is the nearest developed property downwind of irrigation site (specify type and distance):
Are there any playgrounds, schools, or public parks within ½ mile of irrigation site? (specify):

DOMESTIC WELLS	Y	N
Are there any domestic wells or other domestic water sources located within the irrigation site?	☐	☐
Are there any domestic wells or other domestic water sources located within 150', 100, or 50' of the irrigation site?	☐	☐
If yes to either of the above, identify the number of wells or sources and identify their location on the attached site plan.		

POTENTIAL RUN-OFF POINTS ARE LOCATED AT THE (CHECK ALL THAT APPLY):

☐	North boundary (specify):
☐	South boundary (specify):
☐	East boundary (specify):
☐	West boundary (specify):

PUBLIC ACCESS WILL BE CONTROLLED BY THE FOLLOWING (CHECK ALL THAT APPLY):

☐	No trespassing or warning signs (specify spacing):
☐	Fencing (specify type):
☐	Other (specify):

BARRIERS ON BOUNDARIES THAT MAY MITIGATE AEROSOL DRIFT (CHECK ALL THAT APPLY)

☐	Natural vegetation (specify height and width):
☐	Natural topography (specify):
☐	Tree or fence row (specify height):
☐	Other (specify):
☐	None:

IRRIGATION METHOD (CHECK ALL THAT APPLY)

☐	Set sprinkler heads with spray height of _____ and spray diameter of _____
☐	Wheel irrigation line with spray height of _____ and spray diameter of _____
☐	Big gun irrigation with spray height of _____ and spray diameter of _____
☐	Other (specify):

IRRIGATION EQUIPMENT SPECIFICATIONS (insert more rows as needed)

Sprinkler head types (brand and model)	Irrigation zones/cells	PSI operating ranges

REQUIRED ATTACHEMENTS:

1. Overhead scale diagram/plan view of the wastewater treatment plant that identifies the treatment and disinfection components of the plant.
2. Overhead scale diagram/plan view of the transport line from wastewater treatment plant to the reuse area.
3. Overhead scale diagram/plan of the irrigation site showing surrounding properties and irrigation system layout.
4. A full copy of the Recycled Water Use Plan.

HEALTH DIVISION REVIEW COMMENTS:

Print Form

APPENDIX E

Annual Report

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

DEQ use only

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:

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

C. FACILITY INFORMATION			
1.	Legal name of facility:		
2.	**Physical address**		
	Street Address:		
	City:	State:	Zip code:
3.	**Mailing address** ☐ Same as physical address.		
	Mailing Address:		
	City:	State:	Zip code:
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:	Title:	
	Email Address:	Telephone:	
	Mailing Address:		
	City:	State:	Zip code:
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:	☐ Sand filter ☐ Mixed media filter ☐ Bio-filtration ☐ Artificial wetland ☐ Other:	☐ 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)					

G. SUMMARY OF ATTACHMENTS

Information required with some annual reports:

1. ☐ 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**

Example of documentation held by the permittee and available upon request:

2. ☐ 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.

Signature	Title	Date
Print Name:		

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														
6.	Jun														
7.	Jul														
8.	Aug														
9.	Sep														
10.	Oct														
11.	Nov														
12.	Dec														
13.															
14.															
15.	Annual														
	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												
6.	Jun												
7.	Jul												
8.	Aug												
9.	Sep												
10.	Oct												
11.	Nov												
12.	Dec												
13.													
14.													
15.	Annual												
	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															
Jun															
Jul															
Aug															
Sep															
Oct															
Nov															
Dec															
Annual															
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

	Site Name:				Site Name:				Site Name:				Site Name:			
	Class:				Class:				Class:				Class:			
	Use or Crop:				Use or Crop:				Use or Crop:				Use or Crop:			
	Area (acres):				Area (acres):				Area (acres):				Area (acres):			
	Agronomic rate:				Agronomic rate:				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:			
Month	# 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																
Jun																
Jul																
Aug																
Sep																
Oct																
Nov																
Dec																
Annual																

Attach additional pages as needed to report all sites.

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

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

Recycled Water Annual Report

Instructions for Part I: Recycled water production and disposition

National Pollutant Discharge Elimination System (NPDES) and Water Pollution Control Facility (WPCF) permittees are required to report to the Department of Environmental Quality (DEQ) on the production and use of recycled water. DEQ requests the permit holder submit information on activities during the previous year by the date identified in your permit. You must submit two copies of the report as directed below.

The annual report is in two parts:

- **Part I: Recycled water production and disposition.**
- **Part II: Recycled water sampling and monitoring.**

Copy 1: Send a copy of the completed report to your **regional DEQ office.**

Copy 2: Send an electronic copy of the report to the **DEQ Headquarters (heins.pat@deq.state.or.us) or hard copy:**

ATTN: Recycled Water Program Coordinator
DEQ Water Quality Division
700 NE Multnomah St. Suite 600
Portland, OR 97232

A. Reporting Period

1. The annual report is due to DEQ by the date identified in your permit and provides information on recycled water management activities during the previous calendar year. Enter the calendar year for which the report is being submitted.

B. Permit Information

1. Provide information on your permit:
   a. Identify the type of permit, WPCF or NPDES. Choose only one.
   b. DEQ File No. This information is located on the cover page of your DEQ-issued permit.
   c. DEQ Permit No. This information is located on the cover page of your DEQ-issued permit.
   d. EPA Permit No. Applies to NPDES permits only. This is also on the cover page of your permit.

C. Facility Information

The facility information clarifies what should be included in the report and who should receive copies of the report. It expedites DEQ review of the report and ensures that you have submitted a report that complies with the conditions in your permit.

1. Provide the name of your facility.
2. Provide the physical address of the facility, including street, city, state, and zip code.
3. Provide the mailing address for the facility. If the mailing address is the same as the physical address, you may check the box “Same as physical address.”
4. Identify the type of facility. Check all boxes that apply. If an important identifier has not been listed, please provide the information under “Other:”

D. Contact Information

DEQ uses the contact information for correspondence with the facility on their recycled water program.

1. Provide full contact information for the responsible official at the treatment facility. The responsible official is typically a supervisor, manager, or other person who is accountable for ensuring operations comply with the conditions in the permit. Any official correspondence on the report or the facility’s compliance with requirements in the permit will be communicated to the responsible official.

2. Provide full contact information for the recycled water contact at the facility. If the recycled water contact is the same as the responsible official, check the box "Same as responsible official." Some facilities have a staff person who maintains primary responsibility for the recycled water operations. This person often has the most direct knowledge of information in the report. DEQ will contact the recycled water contact if there are questions on the technical content of the report.

E. Recycled Water Treatment Processes

In addition to helping DEQ provide technical assistance to your program, information on recycled water treatment processes supports efforts to identify national and regional trends in recycled water management and improve beneficial reuse operations. Organizations, such as the Association of Clean Water Agencies (ACWA) and the Water Environment Federation (WEF), often request this type of information when developing technical reports. Research organizations, such as Oregon State University, may use this information to develop best management practices for recycled water land application programs.

1. Identify the various recycled water treatment technologies at your facility. If a technology is not listed, please check "other" and identify the type of technology used. Check as many as apply.

F. Recycled Water Sampling and Production

Recycled water must be sampled and monitored to demonstrate compliance with your permit. The sampled recycled water must be representative of the treatment process(es) and characterize the quantity and quality of recycled water produced. The minimum sampling frequency is based on the quality of recycled water produced; however, additional samples may be required to adequately characterize different treatment processes. For example, a facility that produces class C recycled water must sample a minimum of once per week; however, if the facility produces more than one class of recycled water, additional samples may be required to meet the requirement that samples be representative. You will report both sets of information in this section.

1. The minimum recycled water sampling frequency is based on the quality of recycled water produced. Please select the appropriate testing frequency based on the class of recycled water produced at your facility during the reporting period. Mark all that apply.
2. Please provide the volume of each class of recycled water produced by your facility during the reporting period.

G. Summary of Attachments

1. DEQ requests the following information be submitted with this report:
    a. Additional copies of the tables in Part II of the report to present the summary data for all recycled water produced at your facility during the reporting period.
    b. Analytical laboratory reports from recycled water monitoring showing results. No laboratory QA/QC documents.
2. Example of documentation held by the facility and made available upon request:
    a. Additional land application site information (irrigation schedule, maintenance issues, crop harvest data)
    b. Daily irrigation notes and records
    c. Field nitrogen loading calculations
    d. Daily or hourly sampling results

H. Signature

The report must be signed by a person legally authorized to represent your treatment facility.

DEFINITION OF LEGALLY AUTHORIZED REPRESENTATIVE Please also provide the information requested in brackets [ ].
• **Corporation:** president, secretary, treasurer, vice-president, or any person who performs principal business function; or a manager of one or more facilities that is authorized in accordance to corporate procedure to sign such documents. • **Partnership:** General partner [list of general partners, their addresses, and telephone numbers] • **Sole Proprietorship:** Owner(s) [each owner must sign the application] • **City, County, State, Federal, or other Public Facility:** Principal executive officer or ranking elected official • **Limited Liability Company:** Member [articles of organization] • **Trusts:** Acting trustee [list of trustees, their addresses, and telephone numbers]

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

Recycled Water Annual Report
Instructions for Part II: Sampling and Monitoring Summary

I. Recycled Water Classification

Recycled water must be sampled and monitored to demonstrate compliance with your permit. The sampled recycled water must be representative of the treatment process(es) and characterize the quality of recycled water produced. The minimum sampling frequency is based on the class of recycled water produced; however, additional samples may be required to adequately characterize each of the classes of water produced. For example, a facility that produces Class B water must sample for total coliform three times a week; however, if the facility also produces Class A recycled water, additional samples are required to meet the minimum sampling frequency (daily coliform and hourly turbidity). You will report both sets of sampling data in this section. Use additional copies of these tables to report data for each class of recycled water produced at your facility.

Provide the summary of the data collected in the appropriate field in the table. If you do not sample for an identified parameter leave the field blank. For example if you only produce Class C recycled water provide the summary data for total coliform but you do not need to provide hourly turbidity or *E. coli* data. *Be sure to attach analytical laboratory reports showing the sampling results. Do not include the laboratory's QA/QC documentation.*

J. Recycled Water Characterization

Your permit or site authorization may identify additional monitoring requirements for your recycled water characterization. This table is provided to summarize this data. Leave the columns blank if you do not sample for a given parameter.

K. Recycled Water Nutrient Monitoring

If your recycled water is used for irrigation, it is critical to ensure you are not over applying nutrients to the soil. To verify your application rates, nutrient monitoring is necessary. Your permit may require specific nutrient monitoring. This table provides the locations to report your recycled water nutrient monitoring. *Please attach analytical laboratory reports for nutrient monitoring showing the results only. Do not include the laboratory's QA/QC documentation.*

L. Recycled Water Application

DEQ requires information be submitted in the annual report that is adequate to demonstrate that recycled water was used as specified in the recycled water use plan. If the recycled water was used for irrigation, the information needs to verify it was applied within agronomic loading rates and other required site management practices.

1. For each site on which recycled water was used during the reporting period, please provide the following information. If needed, please attach additional sheets to include all recycled water use sites. You may provide any additional information on land application activities at the sites to demonstrate that land application was in compliance with all permit requirements.
    a. The site name. This should generally correspond to the site name on your DEQ site authorization approval letter or your recycled water use plan.
    b. The class of recycled water used at this site.
    c. The use the recycled water was applied. If the recycled water was used to irrigate a crop identify the vegetation grown on the property. Such as "wheat", "grass seed" "pasture" for animal grazing, or "ornamental" for lawns and general landscape vegetation.
    d. If the recycled water was used for irrigation identify the area irrigated in acres. If the recycled water was used for other purposes leave this blank.
    e. If the recycled water was used for irrigation identify the agronomic rate for nitrogen (quantity of nitrogen needed for productive crop growth as identified in OSU fertilization guide) in lbs N/ac. If the recycled water was used for other purposes leave this blank.

f. If the recycled water was used for irrigation identify the method used for soil moisture monitoring to ensure the recycled water is not over applied. Such as soil block, tensiometers, piezometers, hand method. If the recycled water was used for other purposes leave this blank.
g. If the recycled water was used for irrigation identify all additional nitrogen sources. These would include; commercial fertilizer, biosolids, manure, nitrogen in groundwater used for supplemental irrigation, residual nitrogen remaining in the soil profile. If the recycled water was used for other purposes leave this blank.
h. Identify the total number of days the recycled water was used for each month at the identified site.
i. Identify the total volume of recycled water used (in gallons) at the identified site.
j. If the recycled water was used for irrigation, provide the average daily loading for each month. The daily loading is calculated using the formula below. If the recycled water was used for other purposes leave this blank.
k. If the recycled water was used for irrigation, provide the maximum daily loading for each month. The daily loading is calculated using the formula below. If the recycled water was used for other purposes leave this blank.
l. Provide the annual values in the bottom row of the table.

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

APPENDIX F

Cross Connection Control

CHAPTER 6 CROSS-CONNECTION CONTROL

7-6-1: PURPOSE:

The purpose of this Chapter is:

A. To protect the public potable water supply of the City from the possibility of contamination or pollution by isolating, within the customer's internal distribution system(s) or the customer's private water system(s), such contaminants or pollutants which could backflow into the public potable water system(s) and;

B. To promote the elimination or control of existing and future cross-connections, actual or potential, between the customer's in-plant potable water system(s) and non-potable water system(s), plumbing fixtures and industrial piping system(s) and;

C. To comply with Oregon administrative rules for public water systems pertaining to cross-connection control requirements.

7-6-2: DEFINITIONS:

AWWA: American Water Works Association.

AIR GAP: The physical vertical separation between the free flowing discharge end of a potable water supply pipeline, faucet or fixture and the overflow rim of an open or non-pressure receiving vessel (tank). Physical separations must be at least twice the diameter of the inlet pipe, but never less than one inch. An approved air gap if properly maintained may be installed where the substance which could backflow is hazardous to health.

APPROVED: Accepted by the Oregon State Health Division and the City as meeting an applicable specification stated or cited in this Chapter.

AUXILIARY WATER SUPPLY: Any supply of water used to augment the supply of water obtained from the public water supply which serves the premises in question. These auxiliary waters may include, but are not limited to, wells, springs, rivers or "used waters" that have originated from the public water supply and have deteriorated in quality. These waters may be contaminated or polluted and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

BACKFLOW: The reversal of the normal direction of flow of water caused by either back pressure or back siphonage.

BACK PRESSURE: The flow of water or other liquids, mixtures or substances under pressure into the distribution pipes of a potable water supply system from any source other than the intended source. Booster pumps, elevated tanks, boilers or other means may result in a pressure greater than the supply pressure.

BACK SIPHONAGE: The flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply from any source other than the intended source caused by the reduction of pressure in the public water supply system. Breaks in water mains, low water main pressure due to high demand, and firefighting are causes of back siphonage.

BACKFLOW PREVENTER: An assembly, device or means designed to prevent backflow of water, liquid, mixtures or substances. The term "approved backflow prevention assembly" shall mean an assembly that has been manufactured in full conformance with the standards established by the AWWA and approved for use in Oregon by the State Health Division.

CITY: The City of John Day, Oregon.

CITY WATER SYSTEM (also referred to as public water system): All or any part of the facilities for transporting, storing, pumping, treating, distributing or providing water to water service connections and servicing fire hydrants.

CONTAMINATION: An impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which create an actual or potential hazard to the public health through exposure to disease organisms or substances which may cause harmful physiological effects.

CROSS-CONNECTIONS: Any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems one of which contains potable water and the other non-potable water or industrial fluids through which or because of which backflow may occur into the potable water system, whether such can be separated by a value(s) or not. Bypass connections, jumper connections or any other plumbing arrangements in which it is possible to introduce into any part of the potable water system any polluted or contaminated water, fluid or substance are considered cross-connections.

CUSTOMER: Any person, firm or corporation granted water service by the City.

CUSTOMER LINE: The extension of pipe, valves and fittings leading from the water meter into the premises served.

CUSTOMER SYSTEM: All or any part of the network of pipes, fixtures and plumbing for distributing water on the premises being served past the utility systems meter.

DOUBLE CHECK VALVE ASSEMBLY (DCVA): An assembly of two independently acting check valves with shutoff valves on each side of the check valves and test cocks for testing the water tightness of each check valve. This assembly is designed for low hazard applications.

HAZARD: The term is derived from the evaluation of the potential risk to public health and the adverse effect of the hazard upon the public water system. The degree of hazard is referred to as low hazard, moderate hazard and high hazard.

POLLUTION: The presence of any foreign substance (organic, inorganic, radiological, physical or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which adversely and unreasonably affect such waters for domestic use.

PREMISES: Any building, structure, improvement or parcel of land which now or some future time receives water service from the City.

REDUCED PRESSURE ZONE BACKFLOW PREVENTER (RPZ): An assembly for preventing backflow which has two independent check valves, a differential relief valve located between the two check valves, two shut-off valves, one on the upstream side and one on the downstream of the check valves, and four test cocks for testing the watertightness of the check valves and the operation of the relief valve. This assembly is designed for high hazard applications.

VACUUM BREAKERS: Two types of vacuum breakers are the atmospheric type (AVB) and the pressure type (PVB). The difference between the two devices is that the pressure vacuum breaker is spring loaded to assist the device in opening. Both devices open the pipeline to atmosphere in the event of back siphonage conditions only. Neither device is approved for back pressure conditions. Their primary purpose is to protect the water system from cross-connections due to submerged inlets, such as irrigations systems and tank applications. Shut-off valves cannot be installed downstream of atmospheric devices but can be on pressure devices. The devices must be installed above the highest downstream piping.

WATER, NONPOTABLE: Water which is not safe for human consumption or which is of questionable potability.

WATER, POTABLE: Any water which according to State Health and Federal Standards is safe for human consumption.

WATER PURVEYOR: The owner or operator of the public potable water system supplying water for public use.

WATER SERVICE CONNECTION: The terminal end of the City water system to which a water meter is attached (i.e., where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system). There shall be no unprotected take offs from the service line ahead of any water meter. Service connections shall also include all other temporary or emergency water service connections from the City water system.

WATER USER: Any person using any part of the City water system.

7-6-3: RESPONSIBILITY TO MAINTAIN WATER SYSTEM:

A. Water System: The water system shall be considered made up of two parts: the utility system and the customer system.

B. City to Maintain Utility System: The City shall maintain the utility system facilities which include sources, storage, transmission and distribution mains and service lines and supply potable water to the service connection (point of delivery) of quality meeting the requirements of the Oregon State Health Division and the National Safe Drinking Water Act PL 93-523 or its successor.

C. Water User to Maintain Customer System: The customer system, including the plumbing system(s) within their premises beginning at the utility or system meter, shall be maintained by the water user, and not give cause for any contaminants or pollutants to be introduced that could backflow or back siphon into the public potable water system.

D. Backflow Prevention Device: If, in the judgment of the City's designated representative, an approved backflow prevention assembly is required at the customer's water service connection or within the customer's private water system for the protection of the public potable water system due to the backflow/back siphonage potential of contaminants or pollutants, the City's designated representative shall give notice in writing to said customer to install such approved assembly(s) at the customer's own expense; and failure, refusal or inability on the part of the customer to install, have tested and maintain said assembly(s) shall constitute a ground for discontinuing water service to the premises until such requirements have been satisfactorily met.

7-6-4: POLICY:

A. Discontinuance of Service: No water service connection to any premises shall be installed or maintained by the City unless the public water supply is protected as required by State laws and regulations and the provisions of this Chapter. Service of water to any premises shall be discontinued by the City if a backflow prevention assembly required by this Chapter is not installed, tested and maintained, or if it is found that a backflow prevention assembly has been removed, bypassed, or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected.

B. Inspections: The customer's system should be open for inspection at all reasonable times to authorized representatives of the City to determine whether cross-connections or other structural or sanitary hazards exists. When such a condition becomes known, the City shall deny or immediately discontinue water service to the premises by provided for a physical break in the service line until the customer has corrected the condition(s) in conformance with State and City statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

C. Installation of Approved Backflow Prevention Assembly: An approved backflow prevention assembly(s) for protecting the public water system shall be installed at or near the service connection or immediately inside

the building being served or at the appropriate location upon the approval of the City's designated representative to premises whenever the following conditions exists:

1. There is an auxiliary water supply which is or can be connected to the public water supply. Such auxiliary supply shall be considered connected to the public water supply unless there be a physical break in the piping between such separate water supply and the public water supply.
2. There is piping for conveying liquids other than potable water, and where that piping is under pressure and is installed and operated in a manner which could cause a cross-connection.
3. There is intricate plumbing and piping arrangements, or where entry to all portions of the premises is not readily accessible to ascertain whether or not dangerous cross-connections exist.
4. There are fire protection systems connected to the public water system that are interconnected with an unapproved water supply, pipe material not approved for potable water use, where chemical additives and antifreeze compounds that may be toxic are used, or where stagnant waters that have deteriorated could backflow into the public water system.
5. There are underground sprinkler/irrigation systems that could let water contaminated by weed killers and fertilizers be back siphoned (backflow) into the public water system.
6. There are sprinkler/irrigations systems that provide for chemical injection.
7. There is back siphonage potential.
8. Cross-connections or potential cross-connections exist.

7-6-5: REQUIREMENTS:

A. Approved Type of Assembly: All backflow prevention assembly(s) required by the Oregon State Health Division and this Chapter shall be of a type and model approved by the Health Division and are commensurate with the degree of hazard which exists.

B. Existing Installations: All presently installed assemblies which do not meet the requirements of this Section, but were approved assemblies for the purposes described herein at the time of installation and which have been properly maintained, shall, except for the inspection and maintenance requirements under subsection 7-6-7A be excluded from the requirements of these rules so long as they satisfactorily protect the public water system. Whenever the existing assembly is moved from the present location or requires more than minimum maintenance or constitutes a hazard to public health, the unit shall be replaced by a backflow prevention assembly meeting the requirements of this Section.

7-6-6: INSTALLATION:

A. Assembly not to be Submerged: No part of the backflow prevention assembly shall be submerged in water or installed in a location subject to flooding. If installed in a vault or basement, adequate drainage shall be provided.

B. Protection from Freezing: The assembly must be protected from freezing and other severe weather conditions.

C. Manufacturer's Installation Instructions: All assemblies shall be installed according to the manufacturer's installation instructions and the "Accepted Procedure and Practice in Cross-Connection Control Manual" published by the Cross-Connection Control Committee, Pacific Northwest Section, AWWA. Only assemblies specifically approved by the City's designated representative for vertical installation may be installed vertically.

D. Minimum Clearance Specifications: All assemblies shall be readily accessible with adequate room for maintenance and testing. The minimum clearance specified by the manufacturer's installation instructions shall be closely followed.

E. Installation Kept on File: Upon completion of installation, the City shall be notified and all backflow protection assemblies inspected by the City's designated representative. Each backflow prevention assembly shall be kept on file with the City. The file shall consist of date of installation, location, make, model, size and serial number of the assembly and initial test report.

F. Pipe Joints: All pipe joints shall be restrained.

G. Assembly Tested: The assembly shall be tested upon installation by a State of Oregon certified tester and at least annually thereafter.

7-6-7: TESTING:

A. Water User to Have Inspections; User's Expense: It shall be the responsibility of the customer user at any premises where backflow prevention assemblies are installed to have certified inspections and operational tests made at least once per year. In those instances where the City's designated representative deems the hazard to be great enough he may require certified inspections at more frequent intervals. These inspections and tests shall be at the sole expense of the water customer user. The customer user shall notify the City in advance when tests are to be undertaken so that an official representative of the City may witness the tests if so desired. The repair, overhaul or replacement of any assemblies found defective shall be at the sole expense of the customer user. The results of such testing shall be forwarded to the Oregon State Health Division and the City within ten days of the date of installation and 30 days of the anniversary date for the annual testing.

B. Failure to Test Assemblies: If a water customer user fails to have such tests performed as required by subsection 7-6-7A the City may upon written notification within ten days, order such required tests be performed by a certified tester and all costs added to the customer user's water bill.

(Ord. No. 89-58-5, 5-23-89)

APPENDIX G

Recycled Water Signage

Recycled Water Sign: Recycled Water in Use Do Not Drink (with graphic) (S-4876) Learn More...

Part#	S-4876
SPN#	7TR9
Shape	Square

1 Select Size: 12" x 12"

10" x 10" | **12" x 12"** | 18" x 18"

2 Select Material:

Quantity / Price (Per Sign)

For size: **12" x 12"** **1-2**

REFLECTIVE ALUMINUM SIGNS

3M Engineer Grade Reflective Alum.	$24.75
3M Hi Intensity Reflective Aluminum	**$25.03**

REFLECTIVE ALUMINUM SIGNS - PREMIUM

3M Diamond Grade Reflective Alum.	$29.10

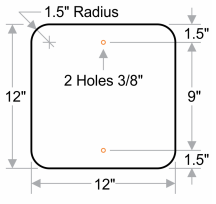
RIGID SIGNS

Aluminum	$21.95

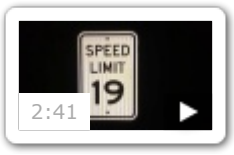
View all quantity based discounts

3M Hi Intensity Reflective Aluminum :

Configuration:
(click to zoom)



10 | BETTER | 168°F | Jul 14 (Hover for more details)



- 63 mil thick aluminum with 3M High-Intensity Grade film.
- 3x as reflective as Engineer Grade.
- 10+ year durability backed by a 3M warranty.
- Rounded corners - for easy handling and a professional appearance.
- Signs have prepunched holes to insure a hassle-free installation.

More Material Details

Select Adder:

3M SmartShield POF Laminate – Superior protection against Fading and Graffiti. **$12.60** for 1 Sign What's this?

4 Order Quantity:

Size: 12" x 12"
Material: 3M Hi Intensity Reflective Aluminum :

Qty: - 1 + Sign

Total Price $25.03
Per Sign $25.03

Add to Cart

Buy quantity and save

Buy 3+	Buy 5+	Buy 20+	Buy 40+
11% OFF $22.28/Sign	17% OFF $20.85/Sign	29% OFF $17.88/Sign	37% OFF $15.68/Sign

Product Description

Use a "recycled water in use do not drink (with graphic)" sign. Signs are popular for a reason.

- Clear sign gets the message across.
- Compliance is easy when you have the signs you need.

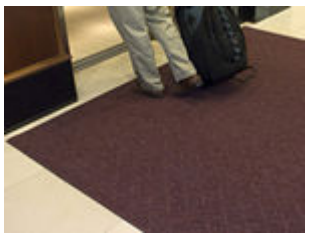
Related Departments

[Recycled Water Signs](#)

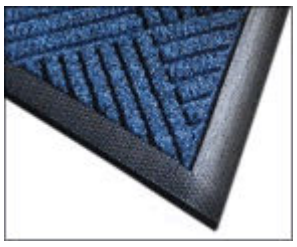
[Do Not Drink The Water Signs](#)

[Reclaimed Water Tags](#)

[Recycled Eco Mats](#)

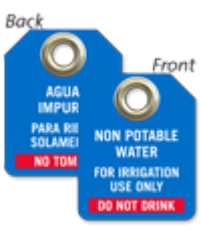


[WaterHog™ Eco Premier Mats](#)



Similar Products

Forgot something? Check out a few more signs, labels, or accessories.Browse our designs below for details on available sizes and materials.



APPENDIX H

Agronomic Rates

EC 1638 • October 2010

Efficient Lawn Irrigation in the Intermountain West

Brian Charlton, Rob Golembiewski, and Tom Cook

Introduction

Maintaining a healthy, aesthetically pleasing lawn depends on many variables including turfgrass species; mowing height and frequency; fertilization; and insect, disease, and weed control. Proper irrigation, despite being one of the most important factors in maintaining a healthy lawn, is the most often overlooked variable in lawn care (figure 1).

Most lawns in the Intermountain West are composed of Kentucky bluegrass, fine fescue, perennial ryegrass, tall fescue, or mixtures of these turfgrass species. Newer turf-type tall fescue varieties are being planted more frequently because of their deep root system and resilience to physical abuse. The challenge with any lawn in this region is that annual precipitation is not sufficient to meet turfgrass water needs; therefore, supplemental irrigation is needed.

When developing an optimum lawn irrigation schedule, you must account for the predominant turfgrass species, soil characteristics, nearby trees and shrubs that affect sun and shade, mowing height, potential for disease problems, and quantity of water your irrigation system can deliver. In the Intermountain West, it is also particularly important to consider the daily weather pattern. High temperatures, intense solar radiation, and frequent wind during summer months all contribute to high irrigation demand.

Proper irrigation avoids the negative effects of overwatering (excess foliar growth; nutrient leaching; shallow rooting; decreased wear tolerance; reduced soil oxygen; and increased succulence, compaction, thatch, and disease activity) and underwatering (loss of color and density, reduced vigor, increased wilting, wear damage in traffic areas, and susceptibility to patch diseases).

Figure 1. This healthy lawn is a result of proper cultural practices, which include mowing, fertilization, and irrigation.

Turfgrass Species

The following paragraphs describe general characteristics, optimum mowing heights, and factors affecting irrigation for several commonly planted turfgrasses.

Kentucky bluegrass (*Poa pratensis*) is the most widely adapted and most common lawn turfgrass in the Intermountain West. It performs extremely well in sunny locations, is very cold tolerant, and forms a dense stand when managed properly. The optimum

Brian Charlton, assistant professor, Klamath Basin Research and Extension Center; Rob Golembiewski, assistant professor, Department of Horticulture; Tom Cook, professor emeritus, Department of Horticulture (all of Oregon State University).

Oregon State University | Extension Service

mowing height is between 1.5 and 2.5 inches. To encourage deep root system development, set your mowing height toward the upper end of this range. Kentucky bluegrass responds well to irrigation rates of 0 to 1 inch per week in early spring and 0.75 to 1.5 inches per week in midsummer. A weakness of Kentucky bluegrass is its tendency to produce excess thatch, which results in reduced rooting in the soil (figure 2). The lack of soil rooting leads to more frequent irrigation throughout the season and an increase in the amount of water needed to produce dense, green turfgrass.

Figure 2. Thatch is a partially decomposed organic layer that develops between the green vegetation and the soil surface.

Fine fescues (*Festuca* spp.) are extremely fine textured and usually mixed with Kentucky bluegrass, perennial ryegrass, or both. Fine fescues perform best in the shade but are adapted to sunny locations if well irrigated. The optimum mowing height is 2 to 2.5 inches. Fine fescues are considered more drought tolerant than Kentucky bluegrass. However, 'Chewings' fescue quickly turns brown under drought conditions. 'Chewings' fescue also produces excessive thatch, which requires increased irrigation to avoid drought stress.

Perennial ryegrass (*Lolium perenne*) closely resembles Kentucky bluegrass in color and appearance. It tolerates wear stress but tends to be less cold tolerant and more prone to winterkill than Kentucky bluegrass. The recommended mowing height is 1.5 to 2.5 inches, and fertilization and irrigation requirements are similar to those of Kentucky bluegrass. Perennial ryegrass generally does not produce much thatch, so roots stay relatively deep in the soil.

Tall fescues (*Festuca* spp.) are more tolerant of heavy traffic than Kentucky bluegrass but slow to recover after wear injury occurs. Compared with Kentucky bluegrass, tall fescues have similar water use but more extensive root systems that allow plants to extract needed moisture from deeper in the soil profile. This allows for less frequent irrigation (figure 3). The newer turf-type tall fescues are better suited for home lawns and reportedly compatible with other turfgrass species; however, local experience suggests these varieties perform better in pure stands.

Figure 3. A tall fescue home lawn may require less water than other turfgrass species but will go dormant without supplemental irrigation.

Seed mixtures are suited for mowing heights of 2 to 2.5 inches. Higher mowing heights result in deeper root systems, maximum surface cover, and lower evaporative water loss. However, higher-cut turfgrass loses more water to transpiration and produces more thatch. For mixtures containing Kentucky bluegrass and fine fescue, higher mowing heights generally result in increased water use as a result of increased thatch production.

Recommended Seed Mixtures for Sun

- 75% Kentucky bluegrass, 25% perennial ryegrass
- 50% Kentucky bluegrass, 25% strong creeping red fescue, 25% perennial ryegrass
- 100% turf-type tall fescue

Recommended Seed Mixture for Shade

- 50% to 75% fine fescue, 25% to 50% Kentucky bluegrass

Soil Characteristics

A particular turfgrass species or mixture requires the same total amount of water no matter what type of soil it is planted in, so it is essential to determine the soil's water holding capacity. In other words, knowing how much water the turfgrass can receive from the soil will help you develop an irrigation schedule to meet the remaining turfgrass water needs.

Sandy soils do not hold much water and require more frequent irrigation. Soils with more silt and clay hold more water and can withstand longer durations between irrigation events. In general, most sandy soils in the Intermountain West hold about 1 to 1.25 inches of water per foot of soil, and heavier soils hold 2 to 2.5 inches of water per foot of soil.

The Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/) from the National Resources Conservation Service is a good starting point for determining the type and specific characteristics of your soil.

Excavation spoils and imported soils, often referred to as topsoil fill, have altered soils at many homesites throughout the Intermountain West. In these circumstances, it is best to collect a soil sample and have a commercial laboratory conduct a full soil analysis. Contact your local Extension office for a list of commercial laboratories in your area.

Sprinkler System Water Delivery

Regardless of the type of irrigation system you have, it is necessary to understand how much water is being delivered in a given period of time. The most accurate method of determining water delivery is to identify how many gallons per minute are being discharged from each sprinkler head. Several manufacturers provide charts with this information online.

If you are unable to locate this information, you can place the sprinkler in a bucket and measure the amount of water collected after 1 minute. This method is especially useful for lawns that do not have underground irrigation systems.

Another method is to place several catch cans (e.g., tuna cans or pint-sized plastic freezer containers) or rain gauges throughout the irrigated area (figure 4). Run your irrigation system for a set amount of time, and then measure the depth of water collected in each can. Calculate the average of all measurements, and convert this number into inches per hour. Note any outlier values, which may reflect plugged or excessively worn nozzles, and replace the irrigation system hardware as needed.

Example: You place 10 catch cans in your lawn and run the irrigation system for 20 minutes. All together, the cans contain 2.5 inches of water. How much water is your irrigation system delivering per hour?

2.5 inches/10 cans = 0.25 inches in 20 minutes

$0.25 \times 3 = 0.75$ inches per hour

Figure 4. Catch cans can be used to evaluate the water delivery rate of a sprinkler system.

How Much Water to Apply

"How often?" and "How much?" are the two most common questions associated with lawn irrigation. From June through August, irrigating from one to five times per week will provide the right amount of water, avoid runoff (a result of applying too much water too quickly), and keep the lawn green and lush. If a dense, vigorous lawn is not your priority, a single irrigation every week is sufficient. This schedule will produce a functional lawn with visible brown spots.

A useful tool for determining how much water to apply is the Pacific Northwest Cooperative Agricultural Weather Network website (AgriMet; www.usbr.gov/pn/agrimet/wxdata.html). Click the "Crop Water Use" link on the left side of the page, then click your state, and then click the name of the weather station nearest your location. Determine daily evapotranspiration (ET) rates for lawns since

Table 1. Average monthly evapotranspiration (in inches) for turfgrass lawns in central and eastern Oregon.

Location	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
Bend	0.6	2.8	4.5	5.6	6.8	5.2	3.4	0.6	29.5
Baker	0.4	2.1	4.7	6.0	7.6	6.2	4.2	0.2	31.4
Silver Lake	0.2	2.3	4.9	6.4	7.7	6.4	4.1	0.0	32.0
Hermiston	1.3	3.7	5.7	7.3	9.0	7.6	4.7	1.3	40.6
Klamath Falls	0.5	3.0	5.2	6.4	7.6	6.3	4.3	0.1	33.4
Lakeview	0.0	2.1	5.0	6.3	7.8	6.9	4.6	0.0	32.7
Madras	0.9	3.2	5.0	6.5	8.2	7.0	4.7	0.9	36.4
Ontario	1.6	4.0	6.0	7.3	8.7	7.5	4.9	1.1	41.1
Prineville	0.6	3.0	4.8	6.2	7.7	6.4	4.3	0.4	33.4

Note: Data are monthly averages from AgriMet weather stations (www.usbr.gov/pn/agrimet/wxdata.html) for the entire period of record; period of record varies among locations.

your last irrigation. Divide this value by the amount of water your irrigation system delivers per hour to determine how long you will need to run your irrigation system to meet turfgrass ET. Table 1 provides historical monthly averages for turfgrass ET in many central and eastern Oregon locations.

Example: Using AgriMet crop water use data, you determine that lawn ET since your last irrigation is 0.47 inches. Your irrigation system delivers 0.5 inches of water per hour. How many hours do you need to irrigate to meet lawn ET?

0.47/0.5 = 0.94 hours (56 minutes) of irrigation are needed to replace turfgrass ET

Depending on your soil type, you may need to irrigate in cycles to avoid runoff.

A simpler method is to irrigate when the lawn shows signs that water is needed, such as footprints or lawn mower tracks that remain at least 30 minutes after traffic has passed. Turfgrass also tends to turn more blue-gray in color when under moisture stress. A quick way to check soil moisture is to insert a 6-inch screwdriver into the lawn. If it penetrates the soil easily, hold off on irrigating.

When to Irrigate

In many humid climates, experts recommend avoiding irrigation between 10:00 p.m. and 6:00 a.m. to reduce disease activity. Because most locations in the Intermountain West are relatively arid with low humidity, disease problems are generally not a concern. Irrigating between 10:00 p.m. and 6:00 a.m. usually overlaps with the natural dew period, reducing the length of time that turfgrass blades are wet and lowering the likelihood of disease development. Night irrigation also avoids conflicts with local water supplies during peak demand periods during the day. In the Intermountain West, this time period is cooler and may be less windy than midday; these conditions reduce evaporative loss.

Lawn Irrigation Strategies

Apply the right amount of water at the right time.

Lawns in the Intermountain West require regular irrigation to survive, and each irrigation cycle needs to supply enough water to last until the next. If you irrigate once per week, you will have to apply enough water to last 7 days. However, if your soil contains a lot of clay or your lawn is on a slope, it may be almost impossible to supply this amount in one irrigation event because water will run off rather than infiltrate. If runoff occurs, split irrigation events into a series of short cycles, and allow the water to soak in between each cycle.

Water requirements vary dramatically from week to week. In July, August, and early September, turfgrass water requirements can range from 1 inch per week in cool weather to 2 inches per week in hot, windy weather. The best approach is to watch the lawn for signs of drought stress or wilting. Even if you have an irrigation schedule, use the screwdriver test in several areas of your lawn before deciding to irrigate. If the lawn looks healthy and the soil is easily penetrated, wait a day and check it again. Irrigate when the soil is dry. This practice will allow you to

increase the time between irrigation events while maintaining an aesthetically pleasing lawn.

Use the minimum amount of water necessary.

If you have an automatic irrigation system (figure 5), you can use it to help determine an appropriate irrigation frequency and duration. Set the system to run for a specified amount of time each day for a week. Check the lawn at the end of the week; if it is uniformly moist and looks healthy, run the system for only 6 days the next week. Continue this process until you identify the fewest number of days of irrigation that will keep the lawn healthy and visually acceptable. You can run the system more or less frequently as needed depending on the weather. Most lawns in the Intermountain West will need to be irrigated from one to five times per week.

A rule of thumb is to wait as long as possible in the spring before starting to irrigate. Once you begin, irrigate consistently so the lawn never turns brown between irrigation events. As fall approaches, try to reduce the amount and frequency of irrigation. Sporadic irrigation is not much better than not irrigating at all. Irrigating daily without regard for turfgrass water use produces lush, green lawns but invariably applies too much water and produces excessive amounts of turfgrass.

Consider the surrounding landscape.

Landscaping often enhances a lawn's attractiveness. However, trees use more water than turfgrass (in some cases up to four times as much water per square foot of area covered by the root system; figure 6). Turfgrass areas around trees will require more frequent or longer irrigation events to stay green. Lawns in shady sites, where tree root competition is not a factor, will require about half as much water as turfgrass in full sun.

Cultural Practices to Maximize Water Use

In areas prone to water curtailments, begin preparing for efficient irrigation in the spring. Remove as much thatch as possible, and core as much of the lawn as possible. Fertilize with 1 to 2 pounds of nitrogen per 1,000 square feet after dethatching and coring. At this time of year, synthetic fertilizer products with both soluble and slow-release nitrogen work better than organic sources because soil temperatures tend to be cool. Plan to fertilize again in early July with a slow-release product at 1 pound of nitrogen per 1,000 square feet. Organic and synthetic fertilizers both work well at this time. In most circumstances, this is the last nitrogen application needed until September.

Set your mowing height toward the upper end of the recommended range for the turfgrass species present. This strategy will maximize root growth in the soil and support healthy, dense turfgrass that is better able to handle drought conditions. As temperatures rise, consider establishing an alternate-day irrigation schedule (i.e., water on odd or even days only). If water deliveries cease, the turfgrass will be

Figure 5. Automatic irrigation systems can be used to apply water efficiently and effectively to home lawns.

Figure 6. Tree roots have a much higher water requirement than home lawns.

in a condition to survive the drought. Expect turfgrass to look drought stressed after a week and drier zones to enter dormancy after 2 weeks (figure 7). In this situation, turfgrass loss will probably be limited to areas over shallow soil, on severe slopes, and in direct competition with tree roots. Lawns generally recover quickly once water deliveries resume.

Figure 7. A dormant turfgrass stand (below) and an irrigated home lawn (above).

Summary

Instead of following a predetermined irrigation schedule, observe your lawn, check the soil moisture regularly, and alter your irrigation schedule to better meet turfgrass needs. The key to successful, efficient irrigation is to apply only as much water as the turfgrass actually requires. In general, the healthier the turfgrass is when heat stress begins, the longer it will stay green and the better it will withstand the stress.

For More Information

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Irrigated Kentucky Bluegrass

(Eastern Oregon)

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Photo: Darrin L. Walenta

Summary

Lime	If soil pH is below 5.5, apply lime and incorporate prior to planting (page 2).
Nitrogen (N)	Rate varies by region. At least half of the total N for the season should be applied during October or November (pages 2–3).
	N rate (lb N/a/season)
	• Grande Ronde Valley: 120–240 • Central Oregon: 140–260 • Columbia Basin: 175–325
Phosphorus (P)	If soil test P is below 20 ppm, apply P according to Table 2 (page 4).
Potassium (K)	If soil test K is below 100 ppm, apply at least 60 lb K_2O/a (Table 3, page 4).
Sulfur (S)	If soil test S is below 10 ppm and irrigation water is relatively free of S, apply 10 to 30 lb S/a (page 4).

Kentucky bluegrass (*Poa pratensis* L.) is a widely used turfgrass in many temperate-climate areas of the United States and the world. It is an adaptable, long-lived perennial that forms a medium-textured, dark green turf with appealing leaf density and aggressive sod-forming rhizomes. Kentucky bluegrass is also included in pasture mixes. However, its low midseason forage yield, aggressiveness in mixtures, and high nitrogen requirements limit its use as a forage grass.

In Oregon, Kentucky bluegrass seed is produced in three main irrigated crop areas: the Grande Ronde Valley near La Grande in northeastern Oregon, the Madras and Culver areas in central Oregon, and the Lower Umatilla Basin near Hermiston in the southern portion of the Columbia Basin. Characteristics of these three areas are shown in Table 1 (page 2).

Kentucky bluegrass seed production practices vary across these regions. In central Oregon and the Columbia Basin, Kentucky bluegrass is typically planted in late summer (August to September). In the Grande Ronde Valley, planting typically occurs in spring (late April to late May). Whether planted in spring or late summer, the first seed crop is harvested the calendar year following planting.

Following seed harvest, straw residue typically is baled and removed from the field. Postharvest baling removes approximately 2 to 4 t straw/a. After baling, fields may be propane flamed.

Clean seed yield typically ranges from 800 to 1,600 lb/a, with yields being lowest in the establishment year, highest in production years 2 and 3, and then declining in subsequent years. Seed yield potential depends on variety and growing conditions.

With proper nutrient, water, residue, and pest management, a Kentucky bluegrass seed field can remain productive for 4 to 6 years, which is typical under central Oregon and Grande Ronde Valley conditions. The crop rotation is shorter in the Columbia Basin, and some growers there produce Kentucky bluegrass as an annual crop.

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Table 1.—Characteristics of irrigated Kentucky bluegrass seed production areas in Oregon.

Region	Elevation (ft above sea level)	Soil texture class	Soil organic matter (%)	Evapotranspiration (in/season)
Grande Ronde Valley	2,600–3,200	Sandy loam and silt loam	2–4	14–18
Central Oregon	1,800–2,800	Loam and sandy loam	Below 2	14–19
Columbia Basin	200–1,500	Sand to loamy sand	0.5–2	18–25

This guide provides nutrient and lime recommendations for irrigated Kentucky bluegrass in eastern Oregon during the establishment year and subsequent years of seed production. Among fertilizer nutrients, nitrogen (N) is the most yield-limiting nutrient for Kentucky bluegrass seed yield. Liming to increase soil pH may be necessary, as well as addition of phosphorus (P), potassium (K), and sulfur (S).

You can obtain maximum return from your fertilizer investment only if plants are healthy and have adequate roots. The nutrient recommendations in this guide are based on the assumption that adequate control of weeds, insects, and diseases is achieved. Applying additional nutrients may not mitigate crop damage caused by uncontrolled pests.

Recommendations in this guide are based on research conducted on both large plots in grower fields and small plots at Oregon State University research facilities in eastern Oregon.

Soil pH and lime

Kentucky bluegrass is well suited to a wide soil pH range, from 5.5 to 8.5. Therefore, application of lime is rarely needed for production. Except for molybdenum, micronutrient deficiencies are common in highly alkaline soils. As soil pH approaches 8.5, micronutrients such as iron, manganese, zinc, and boron become more strongly adsorbed to soil particles and less available to plants.

Soil pH decreases rapidly on irrigated sandy soil receiving urea or other ammonium-N fertilizers, even where lime is applied. In a wheat and potato rotation with an initial soil pH of 6.5, soil pH declined 0.15 unit/year. For more information about factors that influence soil pH, see OSU Extension publications PNW 599-E, *Acidifying Soil for Crop Production: Inland Pacific Northwest,* and PNW 601-E, *Managing Salt-affected Soils for Crop Production*.

For optimum growth, apply lime when soil pH is less than 5.5. Measure soil pH at the same time each year, as pH changes 1 unit or more seasonally on sandy soil in eastern Oregon. Soil pH is lowest in summer and highest in winter or early spring before fertilizer is applied.

If lime is needed, mechanical incorporation before planting is much more effective than surface application to an established stand. Yield of an established stand rarely increases from a surface lime application.

Lime rate can be estimated using soil textural class or a laboratory test. When lime is needed on coarse, sandy soils, apply 1 t/a of 100-score lime. On loam and finer soils, apply 2 t/a of 100-score lime. A more accurate estimate is possible with the SMP buffer test (a rapid laboratory test performed by mixing a soil sample with a buffering solution). For more information about lime score and rates, see FG 52-E, *Fertilizer and Lime Materials*.

When soil test Mg is below 0.8 meq/100 g or 100 ppm, dolomite can be substituted for lime.

Nitrogen (N)

Nitrogen fertilizer use varies by region and growing conditions (see Table 1). Soil organic matter differs in the production areas. The amount of soil organic matter influences the amount of N fertilizer needed.

Total N application rates for a typical growing season are as follows:

- Grand Ronde Valley: 120 to 240 lb N/a
- Central Oregon: 140 to 260 lb N/a
- Columbia Basin: 175 to 325 lb N/a

The lower end of each range is used for new stands and the higher end for established stands. Older stands generally have greater shoot density and therefore require more N fertilizer than young or new stands.

At or before planting, 20 to 40 lb N/a is necessary. Nitrogen can be broadcast before planting or banded with seed at planting.

Figure 1 shows N uptake and biomass accumulation from a Kentucky bluegrass field in Hermiston. Kentucky bluegrass in central Oregon and the Grande Ronde Valley has similar growth and N uptake; however, the calendar dates are later because of cooler growing conditions.

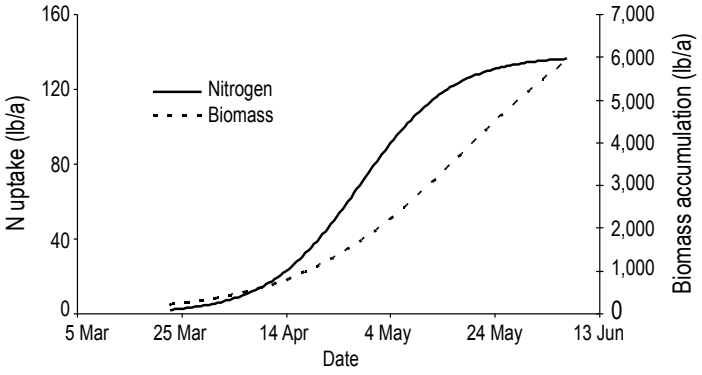

Figure 1.—Average above-ground biomass accumulation and N uptake of Kentucky bluegrass grown at Hermiston, Oregon. Measurement is from spring growth. Above-ground biomass accumulation and N uptake occur later in the season in central Oregon and the Grande Ronde Valley.

Kentucky bluegrass begins to grow slowly at the end of winter and begins rapid N uptake 2 to 3 weeks later. Most of the N uptake for a seed crop is completed in a 60-day period. The peak rate of N uptake is approximately 4 lb/a/day, occurring about 4 to 6 weeks prior to swathing. By the time 50 percent of the above-ground dry matter has been produced, the crop has already taken up 90 percent of its N. Total N uptake varies with biomass (variety), but is expected to be between 120 and 160 lb/a.

Kentucky bluegrass growth is rapid and linear from the time it begins to grow in the spring until seed fill begins. During this period, the grass accumulates approximately 100 lb dry matter/a/day. The growth rate slows as seed is set and maturation occurs. Total biomass production depends on variety, ranging from 3 to 5 t/a at harvest.

Nitrogen must be available before rapid plant uptake in the spring. Data from the Columbia Basin suggest that N can be applied just before Kentucky bluegrass breaks winter dormancy. However, in winter and spring, conditions may not enable timely application of N to ensure adequate incorporation (via precipitation or irrigation) and soil availability prior to rapid plant uptake. The window of application opportunity in the spring may be only 1 to 2 weeks.

Seed yield reductions can occur if all required N is applied in the spring, so we recommend splitting N applications between fall/spring. Apply one-half or more of the total N for the season during October or November (Figure 2).

Figure 2. Apply half of the total seasonal N during October or November. Photo: Darrin L. Walenta

Nitrogen volatilization

Urea, ammonium sulfate (also called AMS), and urea-ammonium nitrate (also called UAN or solution 32) fertilizer products are susceptible to N loss through ammonia volatilization. Volatilization is the movement of ammonia from the soil surface into the atmosphere as gas. As ammonium-N is lost to the atmosphere, the efficiency of N fertilizer application is reduced. Excessive N loss from Kentucky bluegrass fields can result in low seed yield and unsustainable production.

Volatilization loss occurs while fertilizers lay on the soil surface. Factors that increase the risk of ammonia volatilization are:

- Fertilizer with ammonium or urea-nitrogen
- Length of surface exposure time
- Moisture, such as dew, that softens fertilizer pellets but does not completely dissolve them
- High wind speed
- Presence of surface residue from previous crop(s)
- High soil pH

Urea is the most common form of N fertilizer used in irrigated Kentucky bluegrass production, and it is especially susceptible to volatilization. When urea is applied to moist soil with plant residue, conversion to ammonia (NH_3) begins immediately. This process causes a sharp increase in soil pH close to the urea granule, leading to increased ammonia volatilization.

Volatilization is dependent on urease, an enzyme produced by soil microorganisms. The amount of urease present increases with increasing plant residue on the soil surface.

At most, 50 percent of the N in surface-applied urea fertilizers can be lost to volatilization. Recent research indicates that a 20 to 30 percent loss is typical in bluegrass fields. Ammonia volatilization from surface-applied urea fertilizers can be minimized by:

- Treating these fertilizers with a urease inhibitor (such as Agrotain) prior to application
- Irrigation with 0.5 inch of water or more within 24 hours of application

For more information, see Montana State University Extension publication EB 173, *Management of Urea Fertilizer to Minimize Volatilization*.

Figure 3.—Burning increases soil pH at the surface, thus increasing the likelihood of N volatilization from fertilizer on the soil surface. Photo: Rich Affeldt

Phosphorus (P)

Soil test levels below 20 ppm P indicate the need for P fertilization (Table 2). When P fertilizer is necessary for a new seeding, broadcast and incorporate it prior to planting.

On established stands, P fertilizer can be surface applied in the fall, but stratification of P in the soil may occur. Topdress P applications for more than 3 years may require separate 0- to 2-inch and 3- to 12-inch soil samples to adequately characterize soil P (see the sidebar titled "Stratification").

Table 2.—Fertilizer phosphorus rate recommendations for preplant or fall broadcast applications on Kentucky bluegrass.

Soil test P[a] (ppm)	Apply this amount of P_2O_5 (lb/a)
0–5	50–60
5–10	40–50
10–20	30–40
Over 20	0

[a]Soil test P determined by bicarbonate extraction (Olsen).

Phosphorus concentration in straw is lower than K concentration. Thus, without P fertilizer application, P soil test values do not decrease as rapidly as K soil test values when straw is removed from fields. Field burning returns P to the soil.

Potassium (K)

When soil test K is below 100 ppm, apply at least 60 lb K_2O/a. When K fertilizer is necessary for a new seeding, incorporate it before planting. For established stands, topdress K fertilizer in the fall or late winter. Soil test K above 100 ppm will not limit seed yield.

Table 3.—Fertilizer potassium rate recommendations for preplant or fall broadcast applications on Kentucky bluegrass.

Soil test K[a] (ppm)	Apply this amount of K_2O (lb/a)
Below 100	60
Over 100	0

[a]Soil test K determined by ammonium acetate extraction.

For a new seeding, 0- to 12-inch soil samples are appropriate, assuming uniform vertical distribution of K following primary tillage or other ground preparation that thoroughly mixes soil. Topdress K applications for more than 3 years may require separate 0- to 2-inch and 3- to 12-inch soil samples to adequately characterize soil K (see the sidebar titled "Stratification"). Grande Ronde Valley grass seed fields are more likely to develop K stratification because of longer stand life.

Postharvest residue management influences the rate of soil K depletion. Field burning returns K to the soil, while baling removes a substantial amount of K (see "Nutrient removal," page 5). A straw bale survey indicated that straw contains 35 to 55 lb K/t. Assuming 2 to 3 t straw/a is removed, 70 to 165 lb K/a is removed annually. Where the straw load was not removed, soils contained approximately 100 ppm more K in a 0- to 2-inch soil sample than where the residue was removed by vacuum sweep. Monitoring soil K at least once per rotation will determine K fertilization need.

Sulfur (S)

Soil tests for S are difficult to interpret because sulfate (SO_4^--S) is mobile in the soil and irrigation water may contain enough S to satisfy crop need. In general, however, no additional S is needed when soil test SO_4^--S is above 10 ppm in the surface 12 inches of soil (calcium chloride extraction method).

Where S is needed, annual fertilization with 10 to 30 lb S/a provides adequate S for grass growth and seed production. The higher end of this range is appropriate where soils are less than a foot deep or are very sandy and irrigation water does not contain much S. However, irrigation water commonly contains some S, as do some N fertilizers. Irrigation water analysis will give information needed to make S application decisions.

Combined straw and seed biomass contains approximately 15 to 20 lb S/a annually. Burning residue results in loss of S to the atmosphere.

Stratification

Stratification, or large differences in soil test values with depth, occurs when surface-applied fertilizer is not mechanically incorporated. For example, surface application of potassium, phosphorus, and lime changes soil test values only in the top 1 or 2 inches. Irrigation or rainfall does not disperse these materials; mechanical mixing is required. In a 3-year-old stand, a 0- to 12-inch soil sample may not characterize nutrient availability. Therefore, where stratification is likely, collect separate 0- to 2-inch and 3- to 12-inch soil samples.

Stratification is a function of fertilizer application rate and tillage. Once a field is tilled, stratification is eliminated.

Micronutrients

Apply boron (B) when soil test B is less than 0.3 ppm (hot water extraction method). Boron should be surface broadcast at a rate not exceeding 1.5 lb B/a.

Zinc (Zn) deficiencies are rare. Consider an application of Zn when soil test levels are below 0.6 ppm in the surface 12 inches of soil. Zinc fertilizer should be surface broadcast at 5 lb Zn/a.

Fertilization of Kentucky bluegrass with copper (Cu), iron (Fe), manganese (Mn), or molybdenum (Mo) has not been demonstrated to be necessary in eastern Oregon.

Nutrient removal

Nutrients are exported from the field in harvested seed and baled straw, and this removal of nutrients may result in soil nutrient decline. The average amounts of nutrients removed in seed and straw are summarized in Tables 4 and 5.

Baling removes significant amounts of K. One-half inch of rainfall or irrigation prior to straw removal can leach approximately 50 percent of the K from residue, retaining K in the field.

Straw nutrient analysis, in combination with straw yield, will help you estimate nutrient removal from your field. Contact an agricultural service laboratory for straw nutrient analysis.

Foliar nutrient application

Foliar nutrient applications should be considered only when all of the following conditions are met:

- Nutrient deficiency is visible in a growing crop.
- Deficiency is verified by leaf analysis.
- Nutrients can be absorbed through leaves in sufficient quantities to alleviate the deficiency.

A combination of such factors is extremely rare for grass seed production.

Only small quantities of nutrients can be delivered safely at one time through a foliar application. Micronutrients are well suited for this type of application. However, foliar-applied micronutrients have not been shown to increase seed yield.

Table 4.—Average nutrient concentration in Kentucky bluegrass seed and baled straw (eastern Oregon).

	Nutrient in seed	Nutrient in straw (%)	
Nutrient	**(%)**	**Range**	**Average**
Nitrogen (N)	2.7	0.9–2.0	1.3
Phosphorus (P)	0.4	0.1–0.3	0.2
Potassium (K)	0.5	1.8–2.7	2.4

Table 5.—Average nutrient removal from harvested Kentucky bluegrass seed and baled straw (eastern Oregon).

Nutrient	**Nutrient removed in seed (lb nutrient/1,000 lb seed)**	**Nutrient removed in baled straw (lb nutrient/t straw)**
Nitrogen (N)	27	30
Phosphorus (P)	4	5
P_2O_5	9	11
Potassium (K)	5	43
K_2O	6	52
Calcium (Ca)	3	7
Magnesium (Mg)	2	3
Sulfur (S)	2	4
Zinc (Zn)	*	*
Manganese (Mn)	*	*
Copper (Cu)	*	*
Boron (B)	*	*

*Usual or typical micronutrient content is minimal—from 0.01 to 0.05 lb per 1,000 lb of seed or ton of straw.

For more information

Acidifying Soil for Crop Production: Inland Pacific Northwest, PNW 599-E (Oregon State University). http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20789/pnw599-e.pdf

Fertilizer and Lime Materials, FG 52-E (Oregon State University). http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20620/fg52-e.pdf

Management of Urea Fertilizer to Minimize Volatilization, EB 173 (Montana State University). http://msuextension.org/publications/AgandNaturalResources/EB0173.pdf

Managing Salt-affected Soils for Crop Production, PNW 601-E (Oregon State University). http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20788/pnw601-e.pdf

Additional references

Kentucky Bluegrass Growth, Development, and Seed Production, BUL 843 (University of Idaho). http://www.cals.uidaho.edu/edcomm/pdf/BUL/BUL0843.pdf

Kentucky Bluegrass Production, BUL 842 (University of Idaho). http://www.cals.uidaho.edu/edcomm/pdf/BUL/BUL0842.pdf

Kentucky Bluegrass Seed Production in Central Oregon, EM 8807-E (Oregon State University). http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20227/em8807-e.pdf

Nitrogen Uptake and Utilization by Pacific Northwest Crops, PNW 513 (Oregon State University). http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20719/pnw513.pdf

Northern Idaho Fertilizer Guide: Bluegrass Seed, CIS 788 (University of Idaho). http://www.cals.uidaho.edu/edcomm/pdf/CIS/CIS0788.pdf

Seed Production Research Reports (Oregon State University). http://cropandsoil.oregonstate.edu/seed-ext/publications/research-reports

Published July 2011

OREGON STATE UNIVERSITY EXTENSION SERVICE

Irrigation Rates and Frequencies for Western and Eastern Oregon Turfgrass

A. Cain, A. Kowalewski, B. McDonald and C. Mattox

Key topics

- Irrigation rates and frequency based on turfgrass species selection, soil type and evapotranspiration (ET) rates.
- Appropriate turfgrass genus and species for your geographical region.
- Regional variations in soil type and evapotranspiration rates.
- Turfgrass species evapotranspiration replacement requirements.
- Best timing of irrigation applications.

Introduction to turfgrass species

When trying to minimize irrigation inputs, the best turfgrass species for the Oregon climate include perennial ryegrass (*Lolium perenne*) in Western Oregon, Kentucky bluegrass (*Poa pratensis*) in Central/Eastern Oregon and tall fescue (*Schedonorus arundinaceus*) in Western, Central or Eastern Oregon.

Bentgrass, including creeping, colonial, velvet and highland are well-adapted to areas of little or no irrigation. However, they typically are not planted in lawns because of heavy thatch accumulation and lower mowing height recommendations.

Fine fescue is well-adapted to low fertility and shady environments. It is capable of persisting with little or no irrigation. Still, it requires the most frequent summer irrigation to prevent visible drought stress and summer dormancy (straw-brown turfgrass) from developing.

All of these turfgrass species can be maintained without irrigation in Western Oregon if summer dormancy and the presence of drought-tolerant weeds

Alyssa Cain, graduate assistant, Department of Horticulture; Alec Kowalewski, turfgrass specialist and associate professor, Department of Horticulture; Brian McDonald, senior faculty research assistant II, Department of Horticulture; Clint Mattox, research associate (postdoc), all of Oregon State University

Oregon State University

EM 9311
January 2021

Photo: Alec Kowalewski, © Oregon State University

Figure 1: Regularly irrigated turgrass (left) compared to unirrigated turfgrass (right) in Corvallis, Oregon in 2019.

like dandelion, crabgrass and spurge is acceptable (Figure 1). In Central/Eastern Oregon, irrigation will be required for turfgrass to persist.

Perennial ryegrass

Residents of Western Oregon, where winter weather is cool and wet, will likely prefer perennial ryegrass. Perennial ryegrass is a fine-textured turfgrass species that provides a dark green, visually pleasing lawn when maintained with frequent mowing, fertilization and regular irrigation (Figure 2). Perennial ryegrass may be injured in Central/Eastern Oregon because of its poor cold tolerance.

Kentucky bluegrass

For high-quality, aesthetically pleasing lawns in Central/Eastern Oregon, Kentucky bluegrass is the best turfgrass species. During periods of snow cover, Kentucky bluegrass goes dormant. But it recovers in the spring with an aggressive, rhizomatous growth habit. When maintained with frequent mowing, fertilization and irrigation, this species provides a lush, dark-green lawn capable of recovering well from foot traffic. In Western Oregon, however, it is susceptible to cool-weather pathogens, and will not persist as a major component of the lawn.

Tall fescue

Tall fescue provides a drought-tolerant option for those hoping to use less water. Tall fescue is adapted to warm weather and does well in the summer months with minimal irrigation. Its deep root architecture helps tall fescue tolerate droughts.

A mowing height of 3 inches encourages deeper rooting. It is well-adapted to low fertility levels. Breeding has improved the texture of tall fescue, but its leaves are coarser than perennial ryegrass and Kentucky bluegrass, and often will not achieve the visual aesthetics these species possess (Figure 2).

In Western Oregon, tall fescue tends to go semidormant in the winter and is susceptible to leaf spot (*Pyrenophora dictyoides*) and Microdochium patch (*Microdochium nivale*) diseases, especially the first winter after planting. Because of its weak rhizomatous growth habit, tall fescue persists in Eastern/Central Oregon and may be an option for those who want to save water.

Photo: Alec Kowalewski, © Oregon State University

Figure 2: Turfgrass species from fine to coarse leaf texture, left to right: fine fescue, perennial ryegrass, Kentucky bluegrass and tall fescue, Corvallis, Oregon.

Photo: Alyssa Cain, © Oregon State University

Figure 3: Irrigation applied at ¼" depth four times per week (left) and irrigation applied at 1" once per week (right), Sept. 3, 2019, Corvallis, Oregon.

Soil characteristics

While the species plays a large role in the amount of irrigation required for turfgrasses, soil also plays a critical role. Sandy soil, for instance, drains water faster than clay soil.

The type of soil affects irrigation frequency, but not total amount. Sandy soils need to be watered more frequently, but with less water with each application. Excessively watering a sandy soil allows water to move beyond the root zone of the grass. Knowing the texture of a soil is critical for making effective, long-term irrigation schedules.

Soils in Western Oregon are often high in clay content, hold onto water longer and drain slowly. Irrigation can be less frequent on these soils.

Conversely, soils in Central/Eastern Oregon typically have less clay and more sand. These soils have low water-holding capacity, drain rapidly and require more-frequent irrigation.

To assess your soil's composition of sand, silt and clay, consult the USDA Natural Resource Conservation Service's Web Soil Survey at https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. If more accuracy is required or you believe native soil may not be present because of a recent construction project or soil renovation, a sample can be collected and sent to the OSU Soil Heath Laboratory for assessment at https://cropandsoil.oregonstate.edu/shl/soil-testing-osu

Evapotranspiration and precipitation

The loss of water from a vegetative canopy to the atmosphere — also known as evapotranspiration, or ET — and precipitation are major factors to consider when developing an irrigation program. In summer when precipitation is minimal, irrigation is required to keep turfgrass green.

Different turfgrass species require different irrigation amounts. For instance, research conducted in Western Oregon determined that fine fescues (slender creeping red, strong creeping red and Chewings) require the most water — 58% to 96% ET replacement — to achieve high quality. Kentucky bluegrass requires 45% to 50% ET replacement, perennial ryegrass requires 32% to 49% and tall fescue requires 26% to 43%. Evapotranspiration rates increase as summer temperatures increase. Because Oregon receives very little summer rain, turfgrasses depend on irrigation for ET replacement.

In Western Oregon, irrigation typically begins in late May, when annual precipitation rates dwindle. Irrigation should peak in July when ET rates are highest (Table 1). In Eastern Oregon, irrigation should be initiated in early April, with peak application in June and July. In both regions, irrigation may be reduced or discontinued in September when ET rates decrease. Local ET and precipitation data are available at the Bureau of Land Management's Pacific Northwest Region AgriMet website at https://www.usbr.gov/pn/agrimet/.

Irrigation rates and frequencies

Cool-season turfgrass species are inherently shallow-rooted and in Oregon require relatively frequent irrigation to prevent summer dormancy. In Western Oregon, irrigate twice per week for tall fescue and every two to four days for perennial ryegrass. Apply a quarter-inch to half-inch of water to maintain green color in the summer (Figures 3 and 4). In Western Oregon, fine fescues will require irrigation every other day or daily. Apply a quarter-inch to half-inch of water to maintain acceptable green color during peak drought stress.

In Central and Eastern Oregon, irrigation frequency should be increased to compensate for sandy soil, prolonged periods of low precipitation and higher ET rates. Tall fescue in Central/Eastern Oregon will require irrigation several times per week. Kentucky bluegrass will require frequent (sometimes daily) irrigation in June and July. Fine fescues will require daily irrigation throughout the summer months to prevent dormancy.

Irritation timing

The best time to irrigate is at dawn; few people are using the landscape and wind levels are likely at their lowest.

As temperature and wind increase, irrigation efficiency decreases. Irrigating at dawn also provides the plant with water and sunlight at a relatively cool time of day for maximum photosynthesis.

Summary points

- Irrigation requirements vary greatly according to turgrass species, soil type and ET rates across the state of Oregon.
- Turfgrass is inherently shallow-rooted, so one-quarter to a half inch of water should be applied per application. Apply irrigation to cool-season turfgrass at relatively frequent intervals to prevent summer dormancy.
- In Western Oregon, turfgrass can be maintained without irrigation if summer dormancy and weed encroachment is acceptable. However, summer irrigation is necessary for turfgrass to persist in Central/Eastern Oregon.
- Tall fescue will require the least frequent irrigation and lowest ET replacement, and will grow well in all areas of the state.
- Perennial ryegrass in Western Oregon requires irrigation every two to four days depending on the month.
- Kentucky bluegrass in Eastern Oregon will require frequent irrigation to prevent summer dormancy.
- Fine fescues will require the most frequent irrigation and greatest amount of ET replacement to prevent drought stress.

Resources

Blankenship, T., J. Lambrinos, L. Brilman, A. Kowalewski, R. Golembiewski, B. McDonald and C. Mattox. 2020. Water requirements influenced by turfgrass species and mowing height in Western Oregon. *Crop Forage and Turfgrass Management*. doi.org/10.1002/cft2.20020.

Bureau of Reclamation. 2020. AgriMet. https://www.usbr.gov/pn/agrimet/).

USDA Natural Resource Conservation Service. 2020. Web Soil Survey. Retrieved May 5, 2020. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

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Photo: Alec Kowalewski, © Oregon State University

Figure 4: Irrigation application rate of a ½" depth, determined using a rain gauge, Corvallis, Oregon.

Table 1: Average monthly evapotranspiration (in inches) in Western Oregon and Central/Eastern Oregon

Bureau of Reclamation figures retrieved in 2020 from AgriMet, https://www.usbr.gov/pn/agrimet/.

Western Oregon	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
Astoria	1	2.3	4	4.8	5.8	4.8	2.9	1.3	26.9
Bandon	1.4	2.2	3	3.8	3.9	3.1	2.5	1	20.9
Brookings	1.4	2.8	3.4	4.5	3.7	3	2.9	2.4	24.1
Corvallis	1.2	3.2	5.3	6.9	8.6	7.7	4.6	2.3	39.8
Forest Grove	1	2.6	4.4	5.3	6.8	5.5	3.1	1.3	30
Medford	1.3	3.1	4.9	6.5	7.7	6	4	2	35.5
Central/Eastern Oregon	**Mar.**	**Apr.**	**May**	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Total**
Baker	0	1.8	4.5	5.4	6.9	6.3	3.8	0	28.7
Christmas Valley	0.1	5.1	5.1	6	7.4	6.2	4.1	0	34.1
Hermiston	1.5	6.8	6.8	8	9.2	8.5	6.5	2.5	49.9
Klamath Falls	0.1	5.4	5.4	6.6	7.7	6.7	4.3	0	36
Madras	0.5	5.2	5.2	7.5	8.5	7.6	4.6	0.8	40
Ontario	1.8	6.3	6.3	7.7	9.3	7.8	5.3	1	45.4

Published January 2021

APPENDIX I

Water Rights

Records Research Request

Date Requested: April 2021

Information Requested: Water Right Research
(Type of Request)

Requested By: Nick Green, City of John Day

Mailing Address: _____

Phone Number: _____ Fax: _____

Property Location: _____

T-R-S _____ Taxlot: _____

Additional Properties: All City property owned @ this time

_____

_____

Mail to: _____
Address: _____
Phone #(s): _____ Fax: _____

Mail to: _____
Address: _____
Phone #(s): _____ Fax: _____

Date Request was Complete: 4/22/21

Research Completed By: EWF

Comments: _____

_____

_____

Time (hrs / $): _____
Copies (# / $): _____
Total Bill ($): _____

SEARCH RESULTS

REF#	NAMES	MAP#/LOT#	SPI	PROPERTY ADDRESS	
1066	JOHN DAY, CITY OF	13S3126AB 5300	0	450 MAIN	JOHN DAY
1213	JOHN DAY, CITY OF	13S3126BB 1590	0		
1219	JOHN DAY, CITY OF	13S3126BB 1900	0	330 MAIN	JOHN DAY
1224	JOHN DAY, CITY OF	13S3126BD 200	0	316 CANYON	JOHN DAY
1846	JOHN DAY, CITY OF	13S3122D 300	0	500 JOHNSON	COUNTY
6952	JOHN DAY, CITY OF	13S3127 1203	0		
7657	JOHN DAY, CITY OF	13S3126AB 5401	0		
8599	JOHN DAY, CITY OF	13S3122C 1900	0		
8767	JOHN DAY, CITY OF	13S3123BD 1700	0		
8768	JOHN DAY, CITY OF	13S3122D 101	0		
8769	JOHN DAY, CITY OF	13S3122D 200	0		
8770	JOHN DAY, CITY OF	13S3122D 2500	0		
8774	JOHN DAY, CITY OF	13S3123 200	0		
8779	JOHN DAY, CITY OF	13S3123CB 700	0	209 7TH	JOHN DAY
8781	JOHN DAY, CITY OF	13S3123CB 1402	0		
8784	JOHN DAY, CITY OF	13S3123CC 3000	0	250 CANTON	JOHN DAY
8795	JOHN DAY, CITY OF	13S3126AC 800	0		
8805	JOHN DAY, CITY OF	13S3126CA 3600	0		
8807	JOHN DAY, CITY OF	13S3126DC 100	0		
8996	JOHN DAY, CITY OF	13S3123 1101	0		
9284	JOHN DAY, CITY OF	13S3126 4000	0	240 CANYON	JOHN DAY
39390	JOHN DAY, CITY OF	13S3123CA 4301	0		
39447	JOHN DAY, CITY OF	13S3128 2001	0		
39480	JOHN DAY, CITY OF	13S3127D 400	0	587 INDUSTRIAL PARK	JOHN DAY
39482	JOHN DAY, CITY OF	13S3127D 600	0	591 INDUSTRIAL PARK	JOHN DAY
39483	JOHN DAY, CITY OF	13S3127D 700	0	593 INDUSTRIAL PARK	JOHN DAY
39484	JOHN DAY, CITY OF	13S3127D 800	0		
39485	JOHN DAY, CITY OF	13S3127D 900	0	597 INDUSTRIAL PARK	JOHN DAY
39486	JOHN DAY, CITY OF	13S3127D 1000	0	599 INDUSTRIAL PARK	JOHN DAY
39487	JOHN DAY, CITY OF	13S3127D 1100	0	601 INDUSTRIAL PARK	JOHN DAY
39488	JOHN DAY, CITY OF	13S3127D 1200	0	603 INDUSTRIAL PARK	JOHN DAY
39491	JOHN DAY, CITY OF	13S3127D 1500	0	609 INDUSTRIAL PARK	JOHN DAY
39492	JOHN DAY, CITY OF	13S3127D 1600	0	604 INDUSTRIAL PARK	JOHN DAY

39493	JOHN DAY, CITY OF	13S3127D 1700	0	602 INDUSTRIAL PARK	JOHN DAY
39494	JOHN DAY, CITY OF	13S3127D 1800	0	600 INDUSTRIAL PARK	JOHN DAY
39495	JOHN DAY, CITY OF	13S3127D 1900	0	598 INDUSTRIAL PARK	JOHN DAY
39496	JOHN DAY, CITY OF	13S3127D 2000	0	596 INDUSTRIAL PARK	JOHN DAY
39497	JOHN DAY, CITY OF	13S3127D 2100	0	594 INDUSTRIAL PARK	JOHN DAY
39498	JOHN DAY, CITY OF	13S3127D 2200	0	592 INDUSTRIAL PARK	JOHN DAY
39499	JOHN DAY, CITY OF	13S3127D 2300	0	590 INDUSTRIAL PARK	JOHN DAY
39500	JOHN DAY, CITY OF	13S3127D 2400	0	588 INDUSTRIAL PARK	JOHN DAY
39501	JOHN DAY, CITY OF	13S3127D 2500	0	586 INDUSTRIAL PARK	JOHN DAY
39502	JOHN DAY, CITY OF	13S3127D 2600	0	584 INDUSTRIAL PARK	JOHN DAY
39503	JOHN DAY, CITY OF	13S3127D 2700	0	582 INDUSTRIAL PARK	JOHN DAY
39504	JOHN DAY, CITY OF	13S3127D 2800	0	580 INDUSTRIAL PARK	JOHN DAY
39505	JOHN DAY, CITY OF	13S3127D 2900	0		
39608	JOHN DAY, CITY OF	13S3126BC 1700	0		
39609	JOHN DAY, CITY OF	13S3126 3111	0		
39885	JOHN DAY, CITY OF	13S3123CB 601	0		
40113	JOHN DAY, CITY OF	13S3123CB 700	0		

GRANT COUNTY Oregon

SEARCH RESULTS

REF#	NAMES	MAP#/LOT#	SPI	PROPERTY ADDRESS	
643	CITY OF JOHN DAY	13S3122D 102	0		
755	CITY OF JOHN DAY	13S3123CB 1400	0		
756	CITY OF JOHN DAY	13S3123CB 1404	0		
7651	CITY OF JOHN DAY	13S3122D 2700	0	PATTERSON BRIDG	JOHN DAY
8158	CITY OF JOHN DAY	13S3122D 3100	0		
40145	CITY OF JOHN DAY	13S3122A 5002	0		

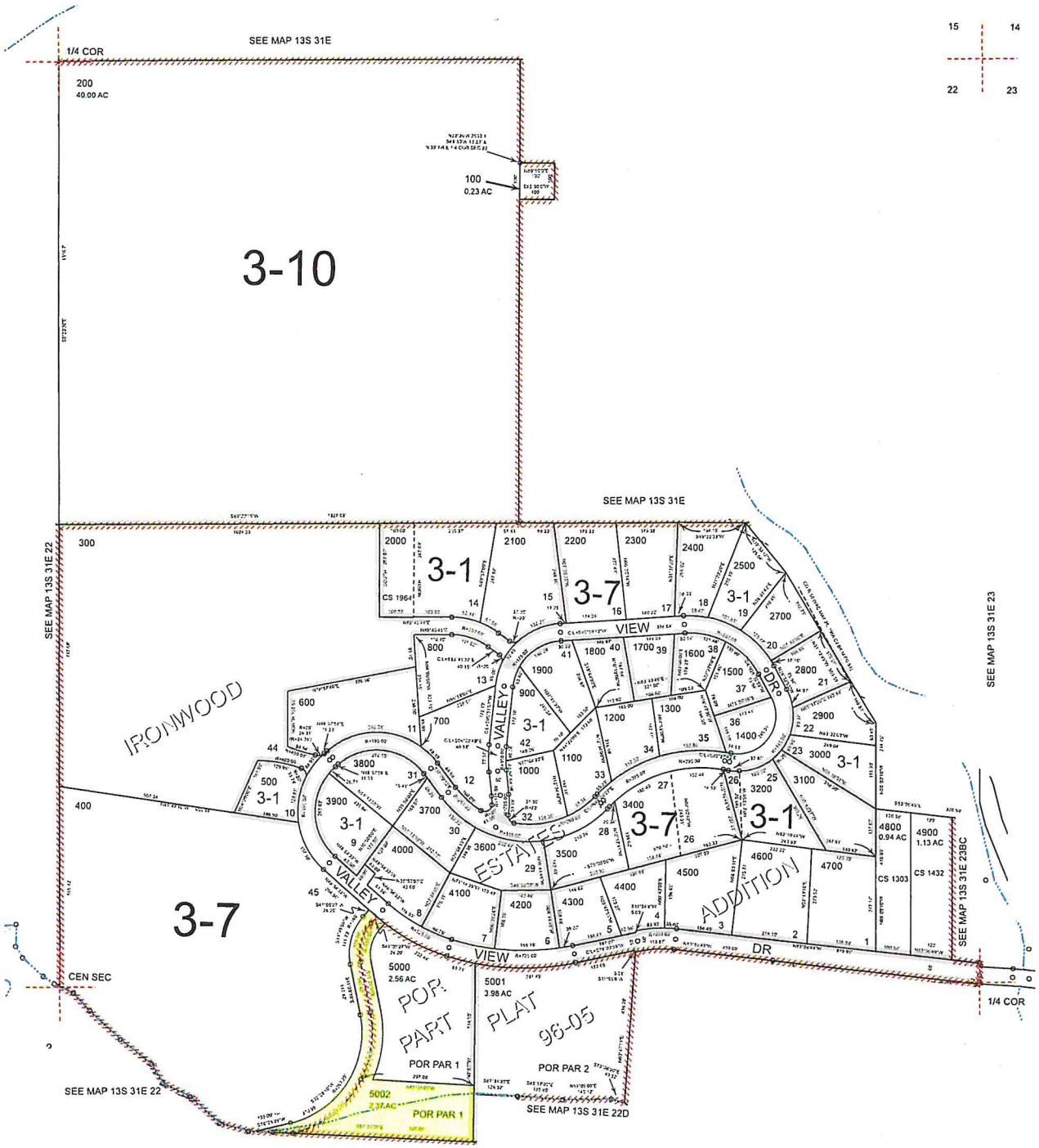
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 100 200 300 400 Feet

N.E.1/4 SEC.22 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E22A
JOHN DAY

Cancelled
2600
3300
5100



Revised: MA
02/05/2021

JOHN DAY
13S31E22A

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 100 200 300 400 Feet

S.E.1/4 SEC.22 T.13S. R.31E. W.M. GRANT COUNTY

13S31E22D & INDEX JOHN DAY

Cancelled
500
600
601
602
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1101
1200
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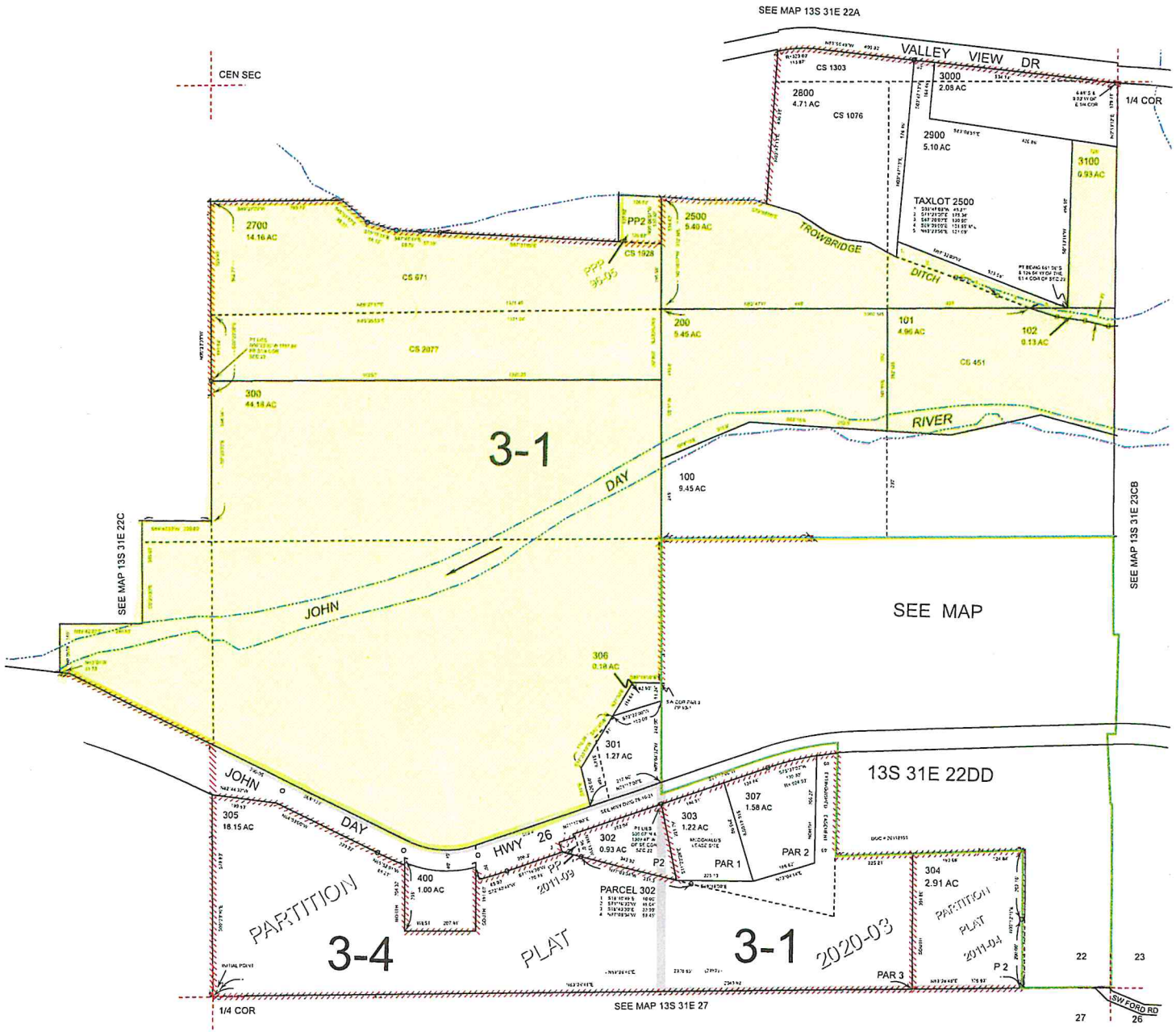


Revised: MA
07/20/2020

JOHN DAY & INDEX 13S31E22D

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* BLUE MOUNTAIN MILLS, INC.

of Box 18, John Day *, State of* Oregon, 97845 *, has made proof to the satisfaction of the Water Resources Director, of a right to the use of the waters of* a sump

a tributary of John Day River *for the purpose of* log deck sprinkling

under Permit No. G-5104 *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* July 17, 1970

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 0.15 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the well. The well is located in the NE¼ SW¼, Section 22, T. 13 S., R. 31 E., W. M., 1340 feet North and 20 feet West from the S¼ Corner, Section 22

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 ---------- of one cubic foot per second per acre,

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:

NW¼ SE¼
Section 22
T. 13 S., R. 31 E., 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.

WITNESS the signature of the Water Resources Director, affixed this date. June 14, 1979

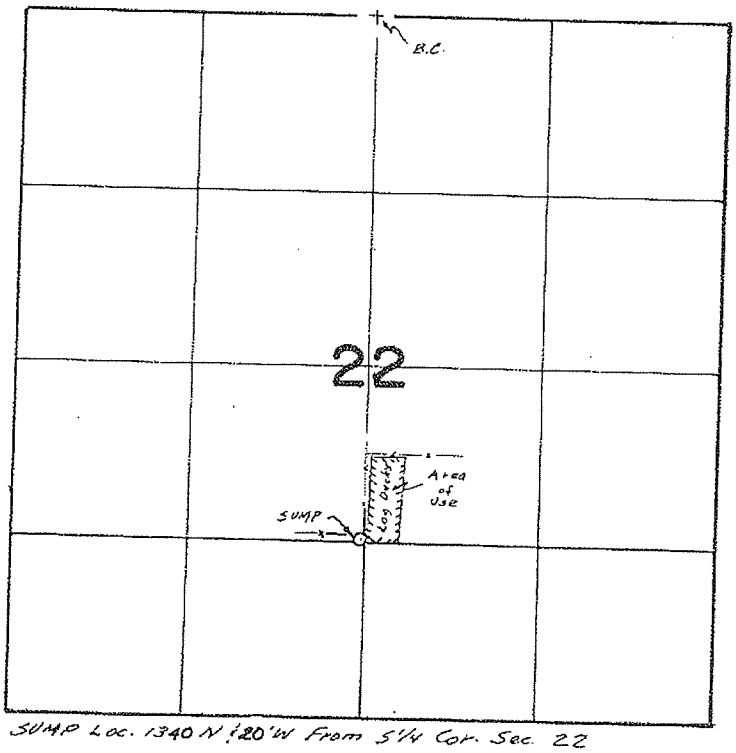
James E. Sexson
Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 41 *, page* 48135

G-5104

49135

T.13S. R.31E. W.M.



SUMP Loc. 1340 N. 120' W From S¼ Cor. Sec. 22

FINAL PROOF SURVEY
UNDER

Application No. G-5251 Permit No. G-5104
IN NAME OF

BLUE MOUNTAIN MILLS, INC.

Surveyed Sept. 16, 1977, by S.C. BROWN

PTS-1977-L Lee

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PRAIRIE WOOD PRODUCTS
PO BOX 386
PRAIRIE CITY OR 97869

confirms the right to use the waters of JOHN DAY RIVER, tributary to COLUMBIA RIVER for INDUSTRIAL USE.

This right was confirmed by decree of the Circuit Court of the State of Oregon for GRANT County. The decree is of record at Salem, in the Order Record of the Water Resources Director in Volume 15, at Page 461. The date of priority is 1863.

The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.375 CUBIC FEET PER SECOND, or its equivalent in case of rotation, measured at the point of diversion.

The use of water is further limited to the irrigation season of each year.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
13 S	31 E	WM	22	SW SE	1160 FEET NORTH & 2525 FEET WEST FROM SE CORNER, SECTION 22

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q
13 S	31 E	WM	22	NW SE

When required by the Department, the water user shall install and maintain headgates, in-line flow meters, weirs, or other suitable devices for measuring and recording the quantity of water diverted. The types and plans of the headgate and measuring device must be approved by the Department prior to beginning construction and shall be installed under the general supervision of the Department.

This certificate is issued to confirm a change in PLACE OF USE AND POINT OF DIVERSION approved by an order of the Water Resources Director entered January 27, 1987, at Special Order Volume 41, Page 35, approving Transfer Application 5865, and together with Certificate 55746, supersedes Certificate 44687, State record of Water Right Certificates.

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.

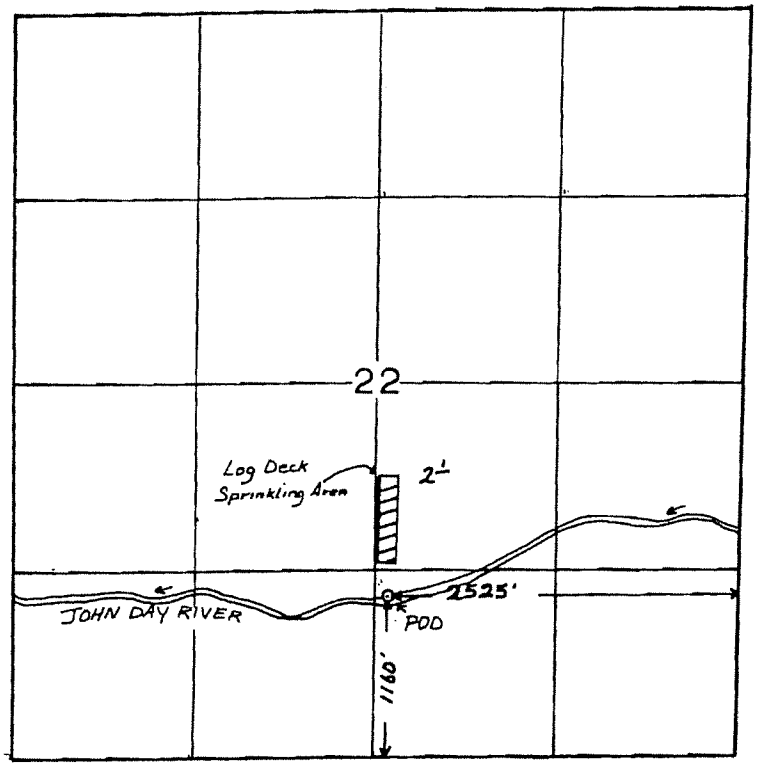
The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described and shall be subject to all other conditions and limitations contained in said decree.

Issued JUN 22 2012

Dwight W. French
Water Right Services Administrator, for
Phillip C. Ward, Director

 Recorded in State Record of Water Right Certificates numbered 87480.

T. 13 S., R. 31 E., W.M.



N

1" = 1320'

FINAL PROOF SURVEY

UNDER

TRANSFER NO. 5865
IN NAME OF

PRAIRIE WOOD PRODUCTS

Surveyed 9-26, 1990, by K. KEMP

Drafted 6-24-1993 JM 41023-279-7R

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* SAN JUAN LUMBER COMPANY, INC.

of P. O. Box 18, John Day *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* John Day River and San Juan Lumber Co. Pond No. 1 constructed under Application No. R-38798, Permit No. R-3287 *a tributary of* Columbia River *for the purpose of* maintenance of log pond

under Permit No. 28872 *of the State Engineer, 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* July 23, 1963

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 0.50 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NE¼ SE¼, Section 22, T. 13 S., R. 31 E., W. M. Diversion point located 1570 feet North and 1420 feet East from S¼ Corner, Section 22.

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 - - - - - - - - -of one cubic foot per second per acre,

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:

SE¼ SW¼
SW¼ SE¼
Section 22
T. 13 S., R. 31 E., 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.

WITNESS the signature of the State Engineer, affixed this date. October 13, 1969

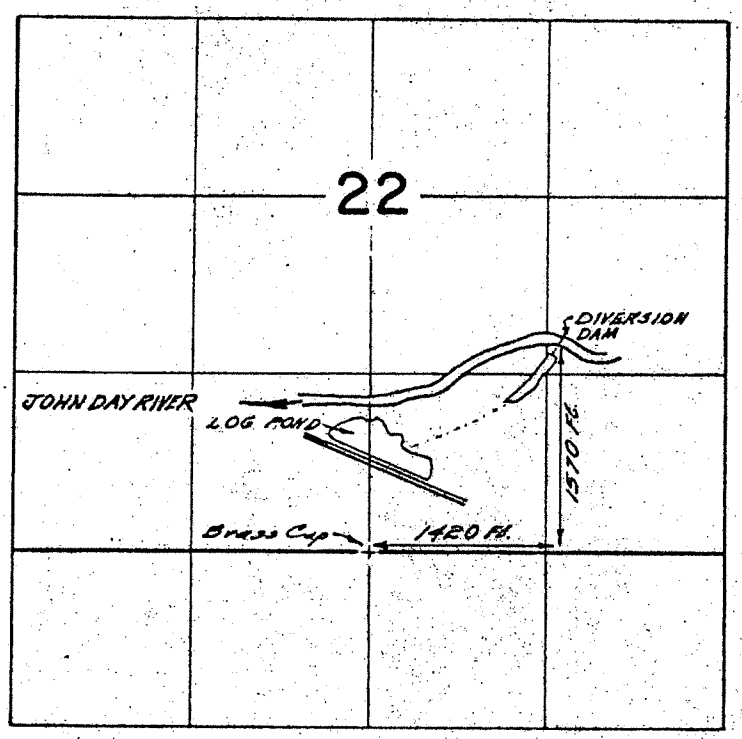
CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 28 *, page* 36368

28872

36348

T.13S. R.31E.W.M.



FINAL PROOF SURVEY

UNDER

R-38798 R-3287

Application No. 38092 Permit No. 28872

IN NAME OF

SAN JUAN LUMBER CO., INC.

Surveyed July 9, 1968, by W. A. Rogers

1968-6

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* SAN JUAN LUMBER COMPANY, INC.

of P. O. Box 18, John Day , *State of* Oregon , *has made proof*

to the satisfaction of the STATE ENGINEER of Oregon, of a right to store the waters of John Day River, tributary of Columbia River in San Juan Lumber Co. Pond No. 1 appropriated under Appl. No. 38092, Permit No. 28872

for the purposes of

log pond

under Reservoir Permit No. R-3287 *of the State Engineer, 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* June 3, 1963 for 11.93 acre feet
July 24, 1963 for 5.35 acre feet

that the amount of water entitled to be stored each year under such right, for the purposes aforesaid, shall not exceed 17.28 acre feet

The reservoir is located in

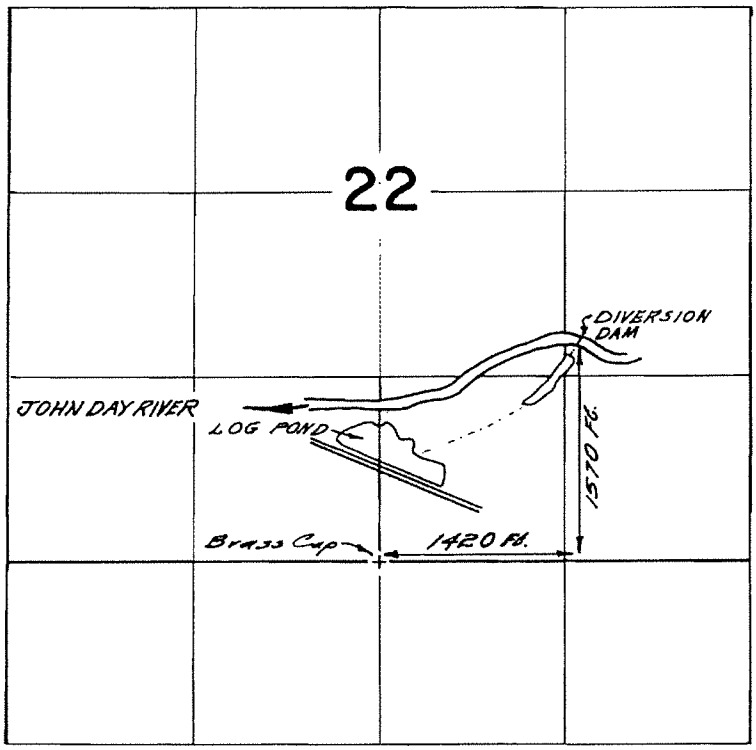
$SE\frac{1}{4}$ $SW\frac{1}{4}$
$SW\frac{1}{4}$ $SE\frac{1}{4}$
Section 22
T. 13 S., R. 31 E., W. M.

WITNESS the signature of the State Engineer, affixed this date. October 13, 1969

CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 28 , *page* 36367

T. 13 S. R. 31 E. W.M.



FINAL PROOF SURVEY
UNDER

R-38798 R-3287
Application No. 38092 Permit No. 28872
IN NAME OF

SAN JUAN LUMBER CO., INC.

Surveyed July 9, 1968, by W. D. Ruppert

1968-6

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

OREGON PINE
PO BOX 66
RIDDLE OR 97469

confirms the right to use the waters of JOHN DAY RIVER, a tributary of the COLUMBIA RIVER, for INDUSTRIAL (LOG DECK SPRINKLING).

This right was perfected under Permit 49897. The date of priority is OCTOBER 10, 1986. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.15 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	GLot	DLC	Measured Distances
13 S	31 E	WM	22	SW SE			1160 FEET NORTH & 2525 FEET WEST FROM THE SE CORNER, SECTION 22

A description of the place of use to which this right is appurtenant is as follows:

Twp	Rng	Mer	Sec	Q-Q	GLot	DLC
13 S	31 E	WM	22	SE SW		

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 right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described.

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. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080, you may either petition for judicial review or 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 at any time before it has issued, and after the time has expired for the completion of the appropriation under the permit, or within three months after issuance of the certificate.

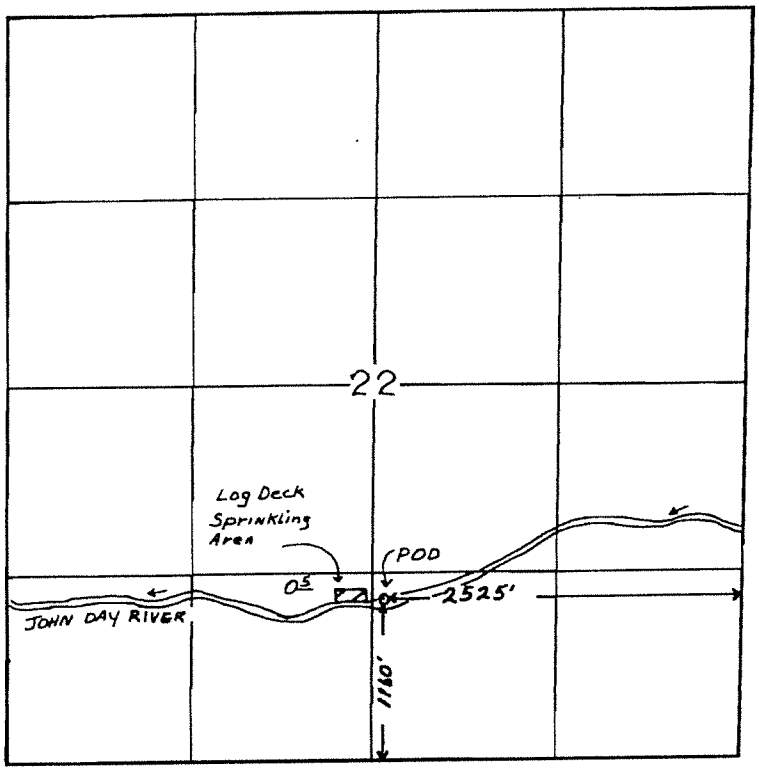
The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.

Issued JUL 3 1 2009.

Phillip C. Ward, Director
Water Resources Department

 Recorded in State Record of Water Right Certificates numbered 85675.

T. 13 S., R. 31 E., W.M.



N

1" = 1320'

FINAL PROOF SURVEY

UNDER

Application No. 68942 Permit No. 49897
IN NAME OF

OREGON PINE

Surveyed 9-4, 1990, by K. KEMP

Drafted 6-24-1993 JM 41023-279-TR

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

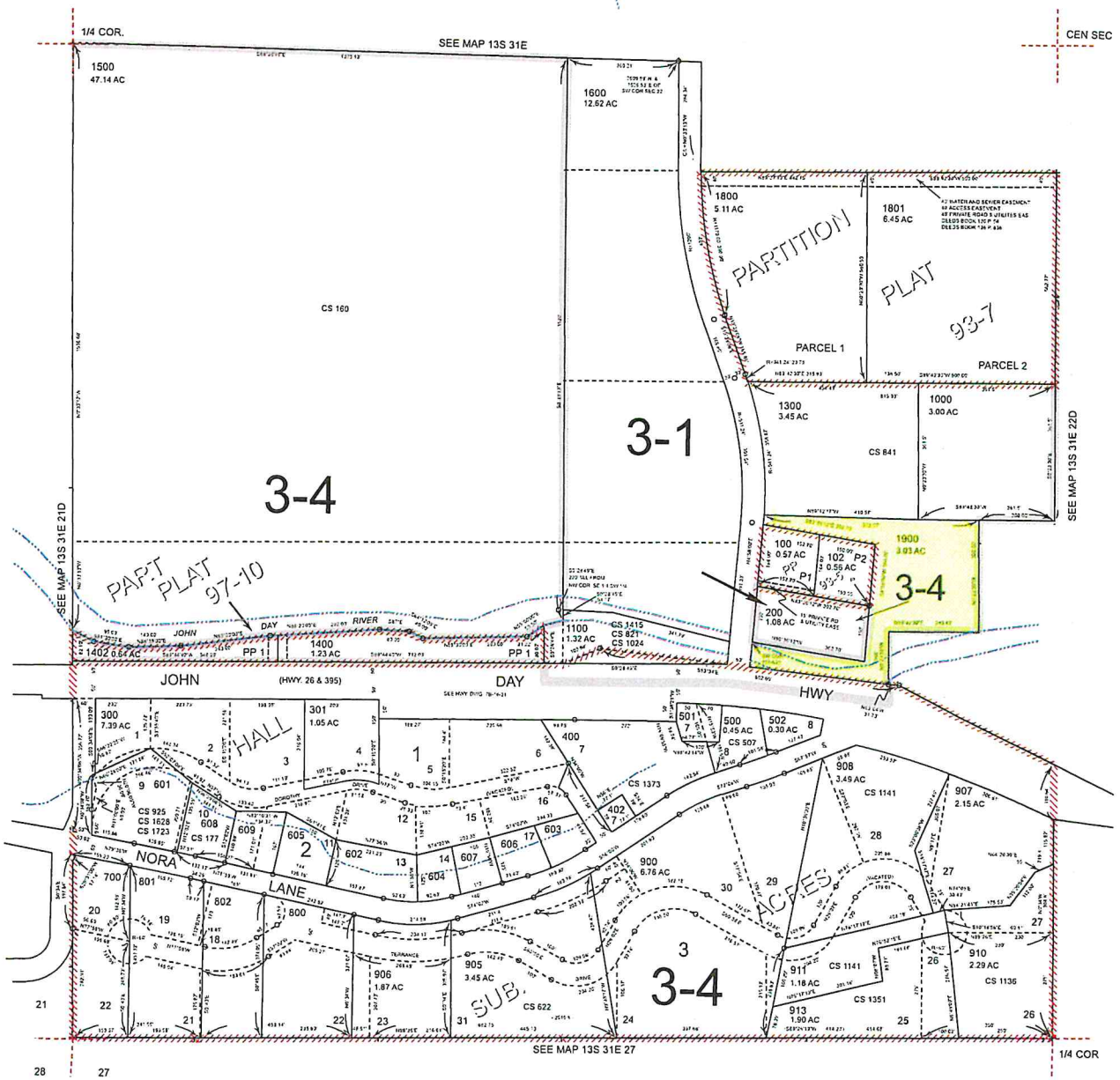
0 100 200 300 400 Feet

S.W.1/4 SEC.22 T.13S. R.31E. W.M.
GRANT COUNTY

1" = 200'

13S31E22C
JOHN DAY

Cancelled
101
401
901 THRU
904
909
912
990
1200
1401
1700



Revised: SH
02/21/2014

JOHN DAY
13S31E22C

690-10-1G 7/78 SP*35674-690

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* GRANT DEVELOPMENT COMPANY

of 101 East Broadway-Suite 200, Eugene *, State of* Oregon, 97401 *, has made proof to the satisfaction of the Water Resources Director, of a right to the use of the waters of* a sump well

a tributary of John Day River *for the purpose of* irrigation of 35.0 acres and supplemental irrigation of 0.8 acre

under Permit No. G-5109 *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* July 23, 1970

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 0.45 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the well. The well is located in the NE¼ SW¼, Section 22, T. 13 S., R. 31 E., W. M., 1880 feet North and 2520 feet East from the SW Corner, Section 22

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-eighth *of one cubic foot per second per acre,* or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3 acre feet per acre for each acre irrigated during the irrigation season of each year; and shall be further limited to appropriation of water only to the extent that it does not impair or substantially interfere with existing surface water rights of others

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:

A portion appears To fall on Tax lot 1900 of 13-31-22c 4/22/21 EMJ

Primary
32.0 acres NE¼ SW¼
3.0 acres SE¼ SW¼
Section 22

Supplemental
0.8 acre SE¼ NW¼
Section 22
T. 13 S., R. 31 E., 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.

WITNESS the signature of the Water Resources Director, affixed this date. May 25, 1979

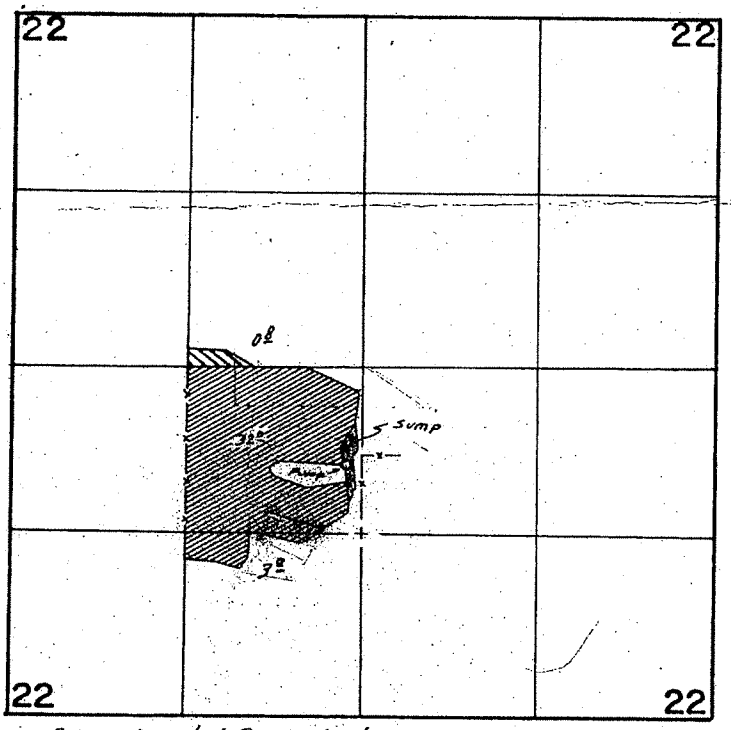
James E. Sexson
Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 41 *, page* 48000

G-5109

48000

T.13S. R.31E.W.M.



Pump Located @ 1880'N & 2520'E From SW Cor. Sec 22

SUPPLEMENTAL

PRIMARY

FINAL PROOF SURVEY
UNDER

Application No. G-5257 Permit No. G-5109
IN NAME OF

GRANT DEVELOPMENT COMPANY

Surveyed Sept. 16 1977, by S.C. BROWN

PTS-1977-L 4RR

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

N.W.1/4 S.W.1/4 SEC.23 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E23CB
JOHN DAY

Cancelled
100 THRU
500
506
702
800
1000
1300
1401
1403
1405
1406
1500 THRU
1799

Revised: MA
01/21/2020

JOHN DAY
13S31E23CB

Court—1M—10-58

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* W. H. SHANK

of John Day , *State of* Oregon , *has a right to the use of*

the waters of John Day River

for the purpose of Irrigation

and that said right has been confirmed by decree of the Circuit Court of the State of Oregon for Grant *County, and the said decree entered of record at Salem, in the Order Record of the STATE ENGINEER, in Volume* 15 , *at page* 461 ; *that the priority of the right thereby confirmed dates from* 1889

that the amount of water to which such right is entitled, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1/40 cubic foot per second per acre irrigated from April 1 to Sept. 30; further limited to one acre-foot per acre per calendar month to July 1 and 3/4 acre-foot per acre thereafter; total five acre-feet per acre for season, measured at point of diversion.

A description of the lands irrigated under such right, and to which the water is appurtenant (or, if for other purposes, the place where such water is put to beneficial use), is as follows:

portion appears to fall on Tax Lot 700 13-31-23 cB

4/16/21

6.5 acres in NW¼SW¼ Section 23, T. 13 S., R. 31 E., W.M.

And said right shall be subject to all other conditions and limitations contained in said decree.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed

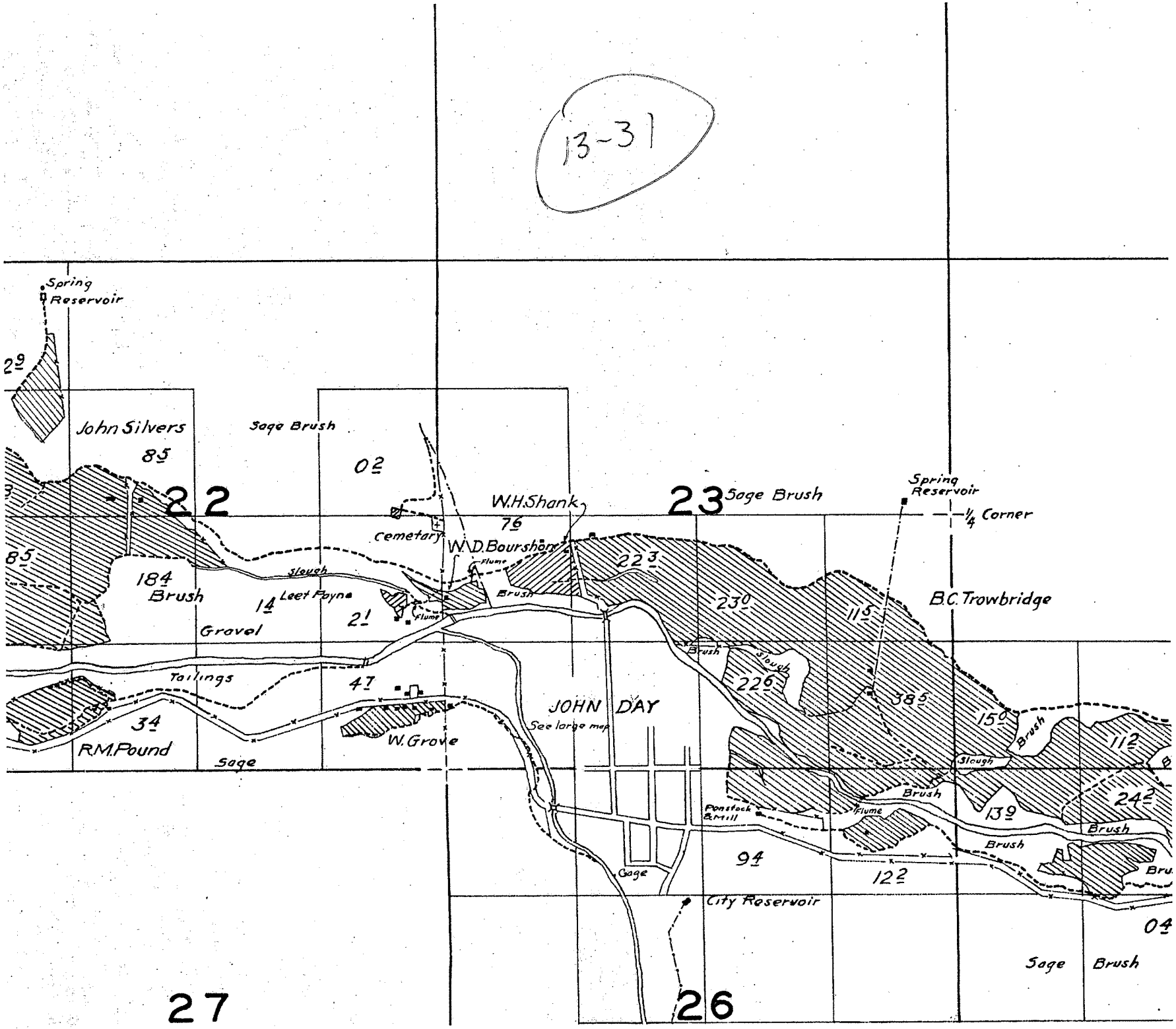
this 1st *day of* May , 19 59 .

LEWIS A. STANLEY

State Engineer

Recorded in State Record of Water Right Certificates, Volume 17 , *page* 25796

Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cubic Feet Per Second	Number Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
Schrier, A. B., (cont'd.) (Proof No. 1177)	1878		78	Irrigation	Trow-bridge ditch	Ingle Creek	7 acres in SE¼NW¼ 17 acres in NE¼SW¼ 17.1 acres in SE¼SW¼ 20.6 acres in NW¼SE¼ 16.3 acres in SW¼SE¼ Section 3, T. 14 S. R. 30 E. W. M.
25782 (Proof No. 1178)	Oct. 10, 1887		20	Irrigation	John Carrey ditch	Fox Creek	20 acres in SE¼NW¼ Section 1, T. 11 S. R. 29 E. W. M.
	(NOTE: This right is inferior to those of Myra Barnard Halstead under Proof No. 569, by reason of adverse user. See Findings paragraph 51, page 52.)						
25783 Schrier, J. L., Mt. Vernon, Oregon. (Proof No. 1179)	1888		43	Irrigation	Lemons ditch	John Day River	8.1 acres in NW¼NE¼ 5 acres in SW¼NE¼ 18.6 acres in NE¼NW¼ 11.3 acres in SE¼NW¼ Section 29, T. 13 S. R. 30 E. W. M.
25784 (Proof No. 1180)	1888			Stock	Ingle Spring	Spring in NW¼NE¼ Sec. 29, T. 13 S. R. 30 E.	Commencing at a point 139 rods West and 18 rods South of NE corner of Sec. 21, T. 13 S. R. 30 E. W. M. thence South 142 rods to the cente of the Section; thence West 69 rods; thence North 142 rods; thence East 69 rods to place of beginning along with other lands not effect ed herein.
25785 Sels, Miss Anna, Canyon City, Oregon. (Proof No. 1181)	Mar. 30, 1899			Domestic	Brewery Spring and Sels and Penfield Spring	Brewery Spring and Sels and Penfield Spring	Located in SE Corner of SW¼SE¼ Section 35, T. 13 S. R. 31 E. W. M.
25786 Shank, W. H., John Day, Oregon. (Proof No. 1182)	1889		6.5	Irrigation	Unnamed ditches	John Day River	6.5 acres in NW¼SW¼ Section 23, T. 13 S. R. 31 E. W. M.
(Proof No. 1183)		(Rights acquired under State Engineer's Permit No. 5953, Certificate No. 5037.)					
25787 Shaw, Ella G., Long Creek, Oregon. (Proof No. 1184)	1877		47.1	Irrigation	Springs and laterals	Paul Creek or Wilson Creek and Springs in NW¼SE¼ Sec. 5, T. 10S. R. 30 E. W. M.	19.4 acres in NE¼SE¼ 13.5 acres in NW¼SE¼ 12.6 acres in SW¼SE¼ 1.6 acres in SE¼SE¼ Section 5, T. 10 S. R. 30 E. W. M.
25788 Shaw, Wesley, Long Creek, Oregon. (Proof No. 1185)	1879			Stock		Unnamed Creek in NW¼SW¼ Sec. 17, T. 10S. R. 30 E.	Located in E½ NW¼, N½ SW¼ Section 17, T. 10 S. R. 30 E. W. M.


13-31
Spring Reservoir
2 9
John Silvers
8 5
Sage Brush
0 2
22
W.H.Shank
7 6
23
Sage Brush
Spring Reservoir
1/4 Corner
Cemetery
W.D.Bourshorn
Flume
22 3
8 5
18 4
Brush
Slough
14
Leet Payne
2 1
Flume
Brush
Gravel
23 0
11 5
B.C.Trowbridge
Brush
Slough
22 6
Tailings
4 7
38 5
15 0
Brush
11 2
34
R.M.Pound
Sage
W.Grove
JOHN DAY
See large map
Slough
Brush
Penstock & Mill
Flume
13 9
24 2
Brush
Brush
9 4
12 2
Gage
City Reservoir
04
Sage Brush
27
26

Permit A-1—1500—2-56 State Printing 92199

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, That STATE OF OREGON, BOARD OF FORESTRY

of 2600 State Street, Salem, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of an unnamed spring a tributary of John Day River for the purpose of domestic, for one family and crew of 5 men, including irrigation of not to exceed ½ acre, under Permit No. 18972 of the State Engineer, 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 September 8, 1949,

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 0.01 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SW¼ NW¼, Section 23, Township 13 South, Range 31 East, W. M.

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 _____ of one cubic foot per second per acre, 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:

A portion appears to fall on Tax lot 600 of 13-31-23 CB
4/16/21

NW¼ SW¼
Section 23
Township 13 South, Range 31 East, W. M.

Land on which water is to be used is a part of that described as follows:

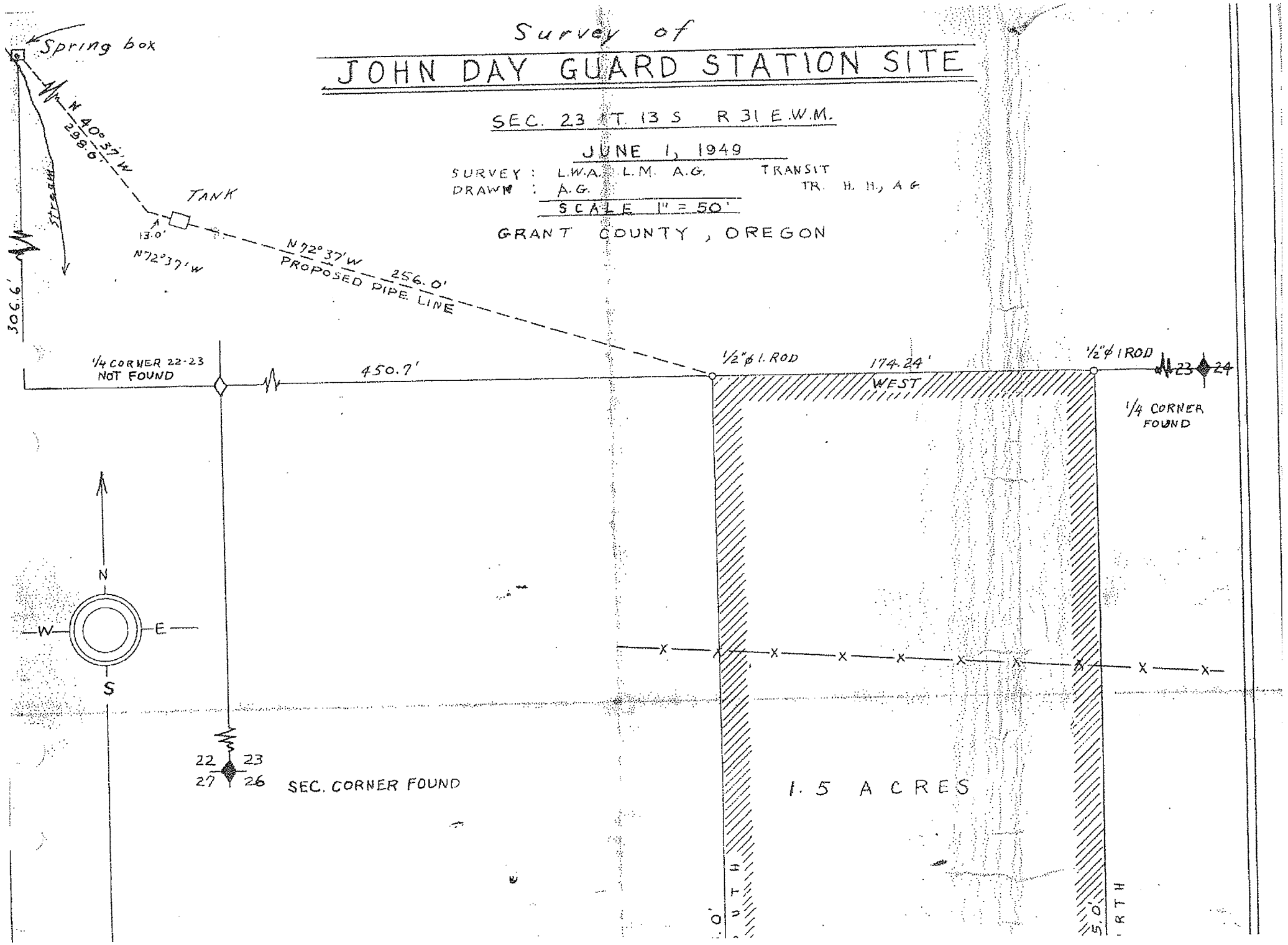
Beginning at a point 945.0 feet North and 660.0 feet West of the SE corner of the NW¼ SW¼, Sec. 23, T. 13 S., R. 31 E., W. M; thence North 375.0 feet; thence West along the North line of said ¼ section 174.24 feet; thence South 375.0 feet; thence East 174.24 feet to the point of beginning, all in Sec. 23, T. 13 S., R. 31 E., W. M., situated and being in the County of Grant and State of Oregon.

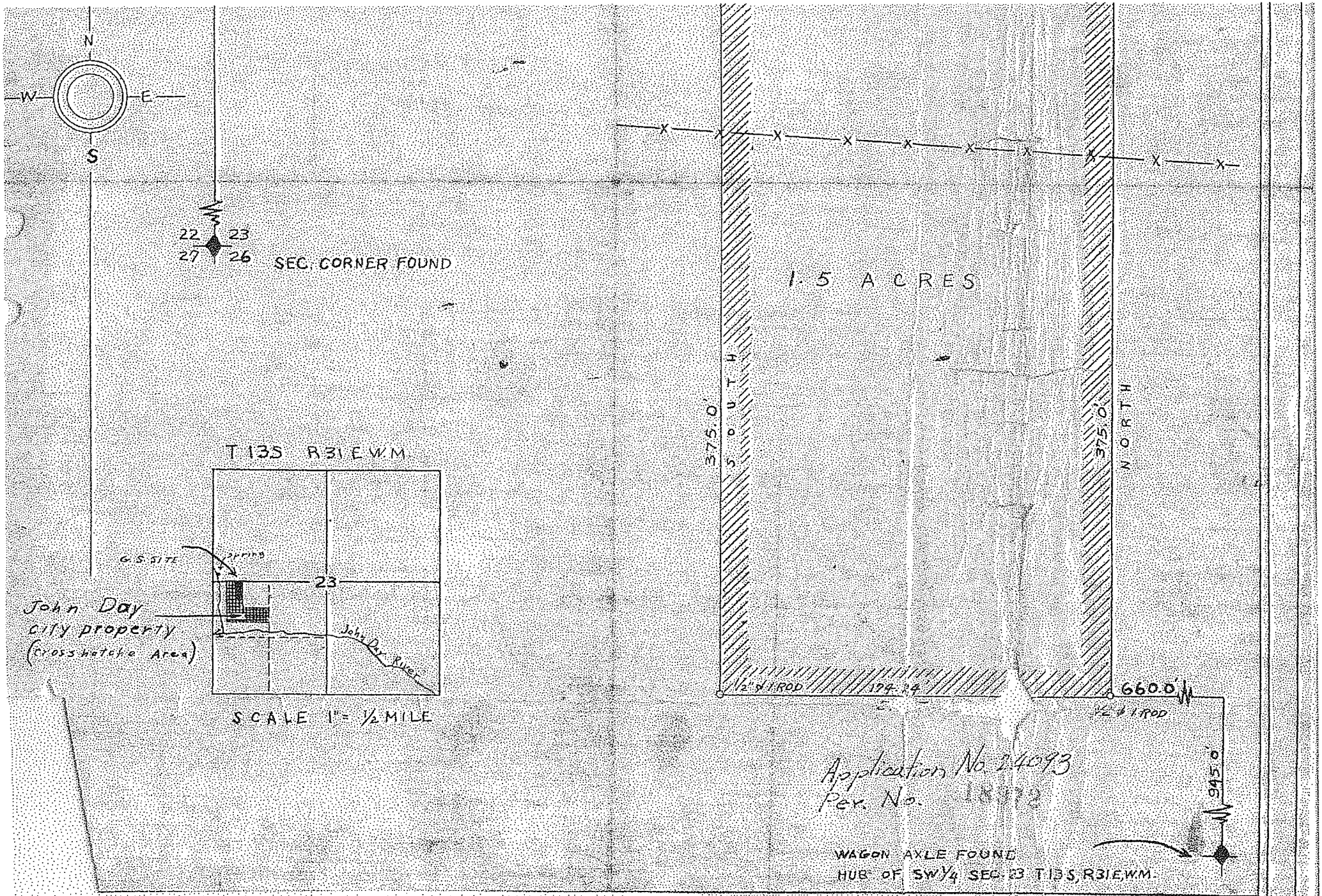
The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this 5th day of April, 19 56.

LEWIS A. STANLEY, State Engineer

Recorded in State Record of Water Right Certificates, Volume 15, page 21202.


Survey of
JOHN DAY GUARD STATION SITE
SEC. 23 T. 13 S R 31 E.W.M.
JUNE 1, 1949
SURVEY : L.W.A. L.M. A.G. TRANSIT
DRAWN : A.G. TR. H. H., A.G.
SCALE 1" = 50'
GRANT COUNTY, OREGON
Spring box
N 40° 37' W
298.0'
STREAM
TANK
13.0'
N 72° 37' W
N 72° 37' W
PROPOSED PIPE LINE
256.0'
306.6'
1/4 CORNER 22-23
NOT FOUND
450.7'
1/2" ø I. ROD
174.24'
WEST
1/2" ø I ROD
23
24
1/4 CORNER
FOUND
N
W
E
S
22
23
27
26
SEC. CORNER FOUND
1.5 ACRES
50.0'
50.0'


N
W
E
S
22
23
27
26
SEC. CORNER FOUND
T 13S R 31 E W.M.
G.S. SITE
Springs
23
John Day
city property
(Cross hatched Area)
John Day River
SCALE 1" = ½ MILE
1.5 ACRES
375.0'
SOUTH
375.0'
NORTH
½" x 1 ROD
194.14
660.0'
½" x 1 ROD
945.0'
Application No. 24093
Per. No. 18972
WAGON AXLE FOUND
HUB OF SW¼ SEC. 23 T 13 S, R 31 E, W.M.

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

S.W.1/4 S.W.1/4 SEC.23 T.13S. R.31E. W.M.
GRANT COUNTY
1" = 100'

13S31E23CC
JOHN DAY

Cancelled
1700
1801
1802
1901
1902
2002
2003
2100
2401
2801
3001
3099
4002
4003
4100
4300
4600
4601
4602
4603
4801
4901
5100
5300
5401

Revised: MA
03/12/2019

JOHN DAY
13S31E23CC

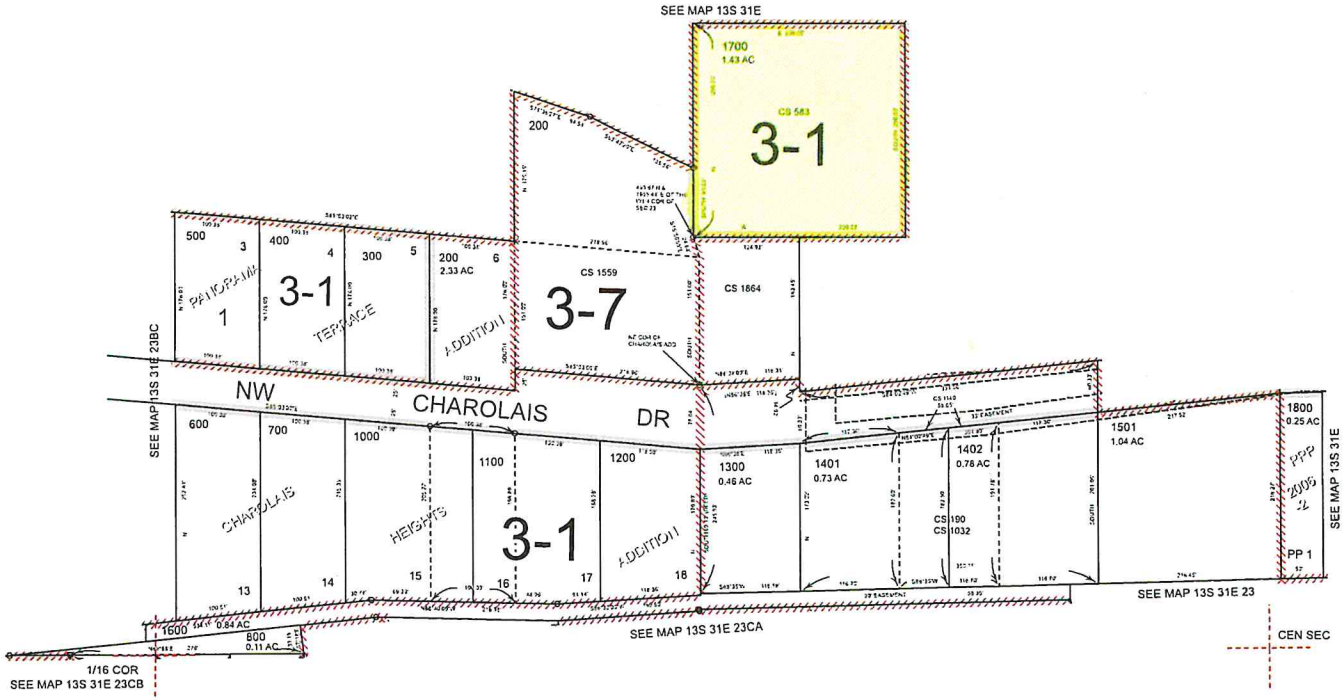
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

50 100 150 200 Feet

S.E.1/4 N.W.1/4 SEC.23 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E23BD
JOHN DAY

Cancelled
100
900
1400
1403
1500
1502



Revised: MA
03/14/2019

JOHN DAY
13S31E23BD

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

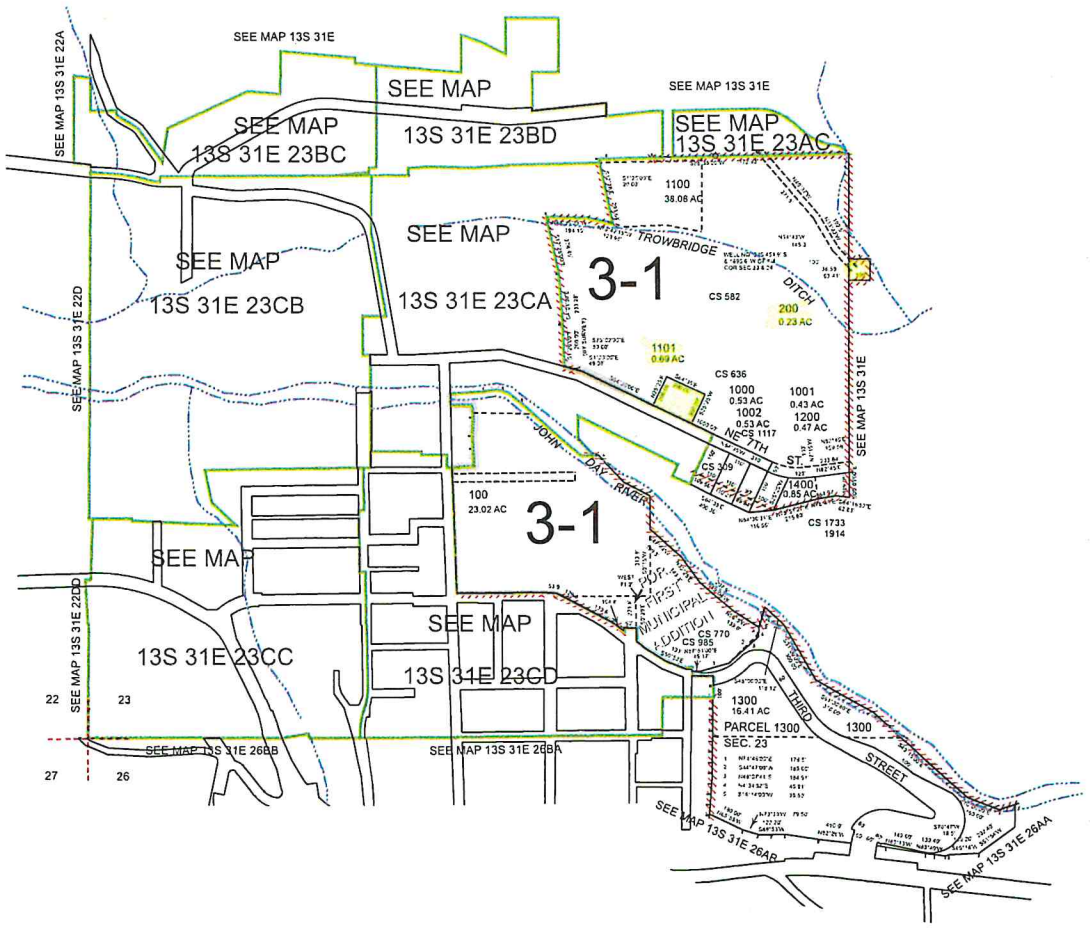
0 200 400 600 800 Feet

SECTION 23 T.13S. R.31E. W.M.
GRANT COUNTY

1" = 400'

13S31E23
& INDEX
JOHN DAY

Cancelled
101
206
207
300
400
500
600
601
700
800
900
1301
1302



Revised: MA
01/06/2021

JOHN DAY
& INDEX
13S31E23

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or 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.

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

DONA K. HOLMSTROM
402 NE 7TH STREET
JOHN DAY, OREGON 97845

confirms the right to use the waters of JOHN DAY RIVER, a tributary of COLUMBIA RIVER, for the purpose of IRRIGATION OF 130.4 ACRES AND STOCK USE FOR TRACT 1, AND IRRIGATION OF 2.6 ACRES FOR TRACT 2.

This right was confirmed by decree of the Circuit Court of the State of Oregon for GRANT COUNTY. The decree is of record at Salem, in the Order Record of the WATER RESOURCES DIRECTOR, in Volume 15 at page 461. The dates of priority are 1863 for Tract 1; and 1875 for Tract 2.

The amount of water used for irrigation together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-FORTIETH of one cubic foot per second per acre irrigated from April 1 to September 30; further limited to 1.0 acre-foot per acre per calendar month to July 1 and 3/4 acre-foot per acre thereafter; total 5 acre-feet per acre for season, measured at the point of diversion.

A description of the place of use to which this right is appurtenant is as follows:

A portion may fall on Tax lot 1101 of 13-31-23 4/16/2021

TRACT 1

NE 1/4	SW 1/4	21.4	ACRES
NE 1/4	SE 1/4	10.0	ACRES
NW 1/4	SE 1/4	23.0	ACRES
SW 1/4	SE 1/4	15.0	ACRES
SE 1/4	SE 1/4	23.0	ACRES

SECTION 23

SW 1/4 SW 1/4 2.0 ACRES
SECTION 24

NE 1/4 NW 1/4 16.0 ACRES
NW 1/4 NW 1/4 11.9 ACRES
SECTION 25

NE 1/4 NE 1/4 8.1 ACRES
SECTION 26

TRACT 2
NE 1/4 NE 1/4 2.6 ACRES
SECTION 26
TOWNSHIP 13 SOUTH, RANGE 31 EAST, W.M.

This certificates describes that portion of the water right confirmed by Certificate 53621, State Record of Water Right certificates, NOT modified by the provisions of an order of the Water Resources Director entered MARCH 12, 1987, approving Transfer 5867.

The issuance of this superseding certificate does not confirm the status of the water right in regard to the provisions of ORS 540.610 pertaining to forfeiture or abandonment.

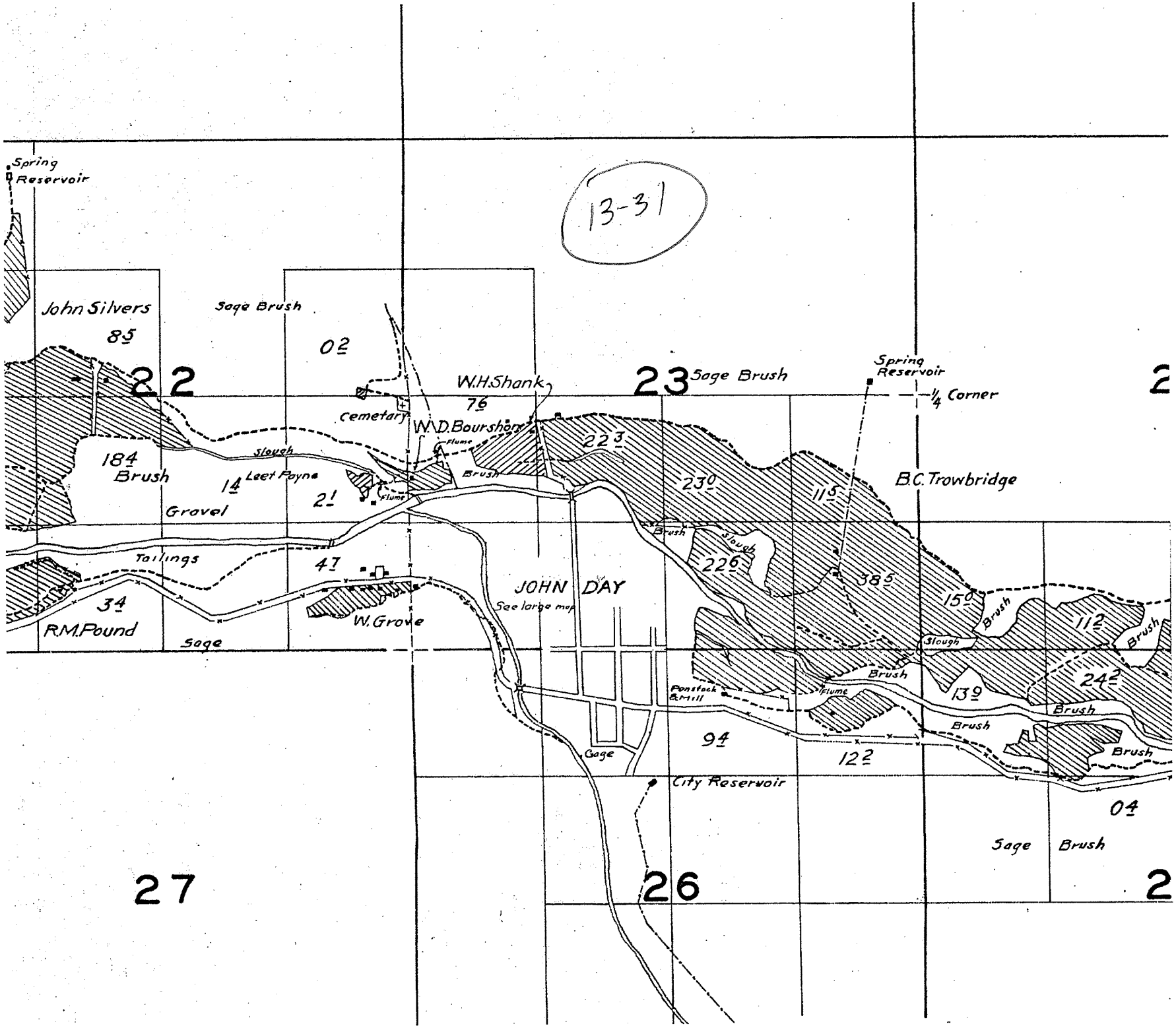
The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described and is subject to all other conditions and limitations contained in said decree.

Issued OCT 0 2 2009

Phillip C. Ward, Director
Oregon Water Resources Department

Recorded in State Record of Water Right Certificates Number 82663.

T-5867_rr.JWG


13-31
Spring Reservoir
John Silvers
85
Sage Brush
02
22
W.H.Shank
76
23
Sage Brush
Spring Reservoir
1/4 Corner
cemetary
W.D.Bourshom
Flume
Slough
184
Brush
14
Leet Payne
21
Flume
Brush
223
230
115
B.C.Trowbridge
Gravel
Brush
Slough
226
385
150
Brush
112
Brush
Tailings
47
JOHN DAY
See large map
Slough
34
R.M.Pound
W.Grove
Sage
Brush
Ponstock & Mill
Flume
139
242
Brush
Brush
Brush
94
122
Gage
City Reservoir
04
Sage
Brush
27
26
2

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 200 Feet

N.E.1/4 S.W.1/4 SEC.23 T.13S. R.31E. W.M.
GRANT COUNTY

1" = 100'

13S31E23CA
JOHN DAY

Cancelled
100
201
500
501
1000
1601
2101
2601
3101
3500
3700
4100
4300
4400
4500
4600

Revised: MA
01/06/2021

JOHN DAY
13S31E23CA

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or 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.

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

DONA K. HOLMSTROM
402 NE 7TH STREET
JOHN DAY, OREGON 97845

confirms the right to use the waters of JOHN DAY RIVER, a tributary of COLUMBIA RIVER, for the purpose of IRRIGATION OF 130.4 ACRES AND STOCK USE FOR TRACT 1, AND IRRIGATION OF 2.6 ACRES FOR TRACT 2.

This right was confirmed by decree of the Circuit Court of the State of Oregon for GRANT COUNTY. The decree is of record at Salem, in the Order Record of the WATER RESOURCES DIRECTOR, in Volume 15 at page 461. The dates of priority are 1863 for Tract 1; and 1875 for Tract 2.

The amount of water used for irrigation together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-FORTIETH of one cubic foot per second per acre irrigated from April 1 to September 30; further limited to 1.0 acre-foot per acre per calendar month to July 1 and 3/4 acre-foot per acre thereafter; total 5 acre-feet per acre for season, measured at the point of diversion.

A description of the place of use to which this right is appurtenant is as follows:

A portion may fall on Tax lot 4301 of 13-31-23CA 4/16/21

TRACT 1

NE 1/4	SW 1/4	21.4	ACRES
NE 1/4	SE 1/4	10.0	ACRES
NW 1/4	SE 1/4	23.0	ACRES
SW 1/4	SE 1/4	15.0	ACRES
SE 1/4	SE 1/4	23.0	ACRES

SECTION 23

SW 1/4 SW 1/4 2.0 ACRES
SECTION 24

NE 1/4 NW 1/4 16.0 ACRES
NW 1/4 NW 1/4 11.9 ACRES
SECTION 25

NE 1/4 NE 1/4 8.1 ACRES
SECTION 26

TRACT 2
NE 1/4 NE 1/4 2.6 ACRES
SECTION 26
TOWNSHIP 13 SOUTH, RANGE 31 EAST, W.M.

This certificates describes that portion of the water right confirmed by Certificate 53621, State Record of Water Right certificates, NOT modified by the provisions of an order of the Water Resources Director entered MARCH 12, 1987, approving Transfer 5867.

The issuance of this superseding certificate does not confirm the status of the water right in regard to the provisions of ORS 540.610 pertaining to forfeiture or abandonment.

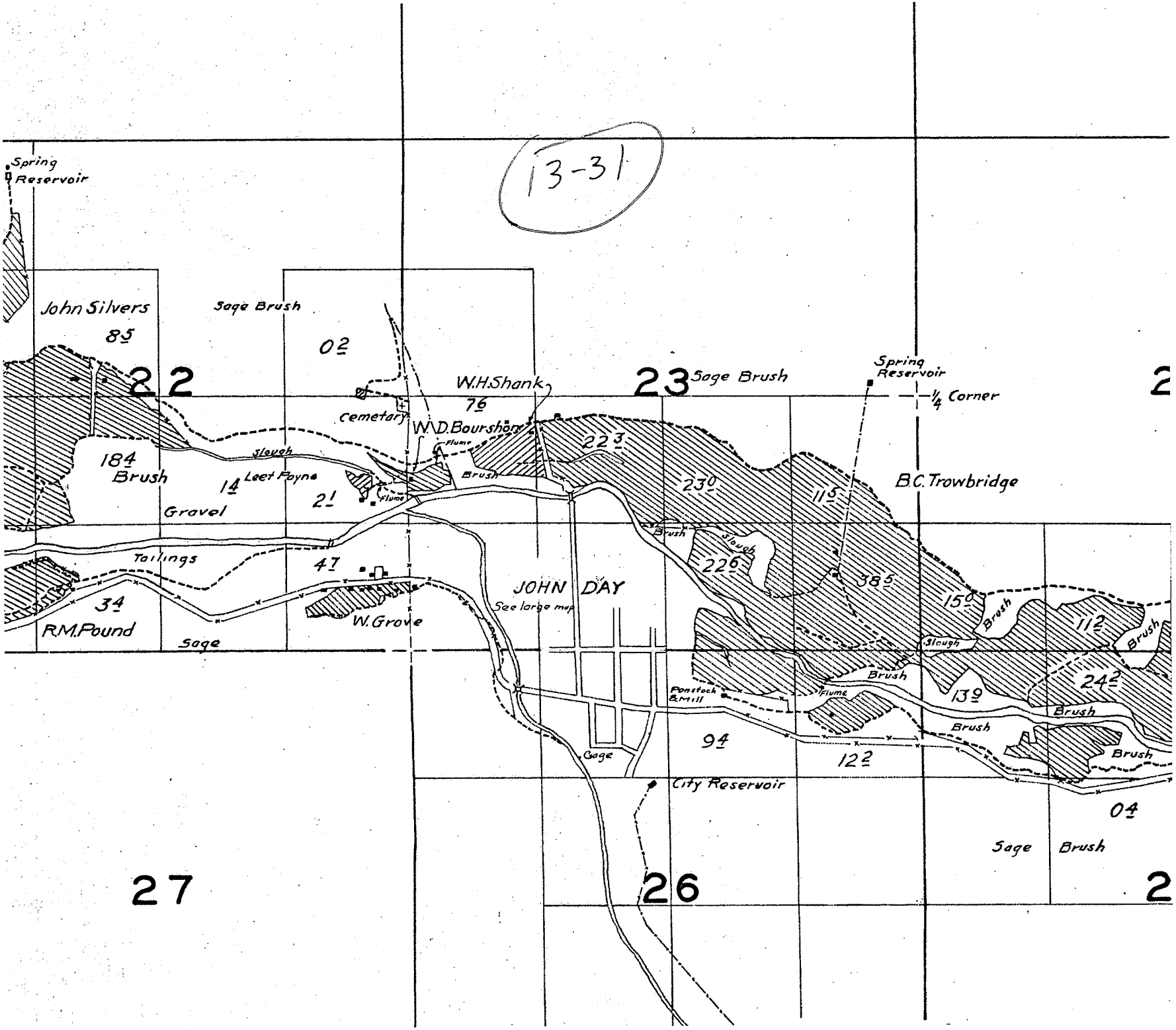
The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described and is subject to all other conditions and limitations contained in said decree.

Issued OCT 0 2 2009

Phillip C. Ward, Director
Oregon Water Resources Department

Recorded in State Record of Water Right Certificates Number 82663.

T-5867_rr.JWG


13-31
Spring Reservoir
John Silvers
85
Sage Brush
02
22
W.H.Shank
76
Cemetary
W.D.Bourshom
Flume
23
Sage Brush
Spring Reservoir
1/4 Corner
184
Brush
Slough
14
Leet Payne
21
Flume
Brush
223
230
115
B.C.Trowbridge
Gravel
Tailings
47
Brush
Slough
226
385
JOHN DAY
See large map
34
R.M.Pound
W.Grove
Sage
150
Brush
112
Brush
Slough
Brush
Penstock & Mill
Flume
139
242
Brush
Brush
94
Gage
122
Brush
City Reservoir
04
Sage Brush
27
26
2

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

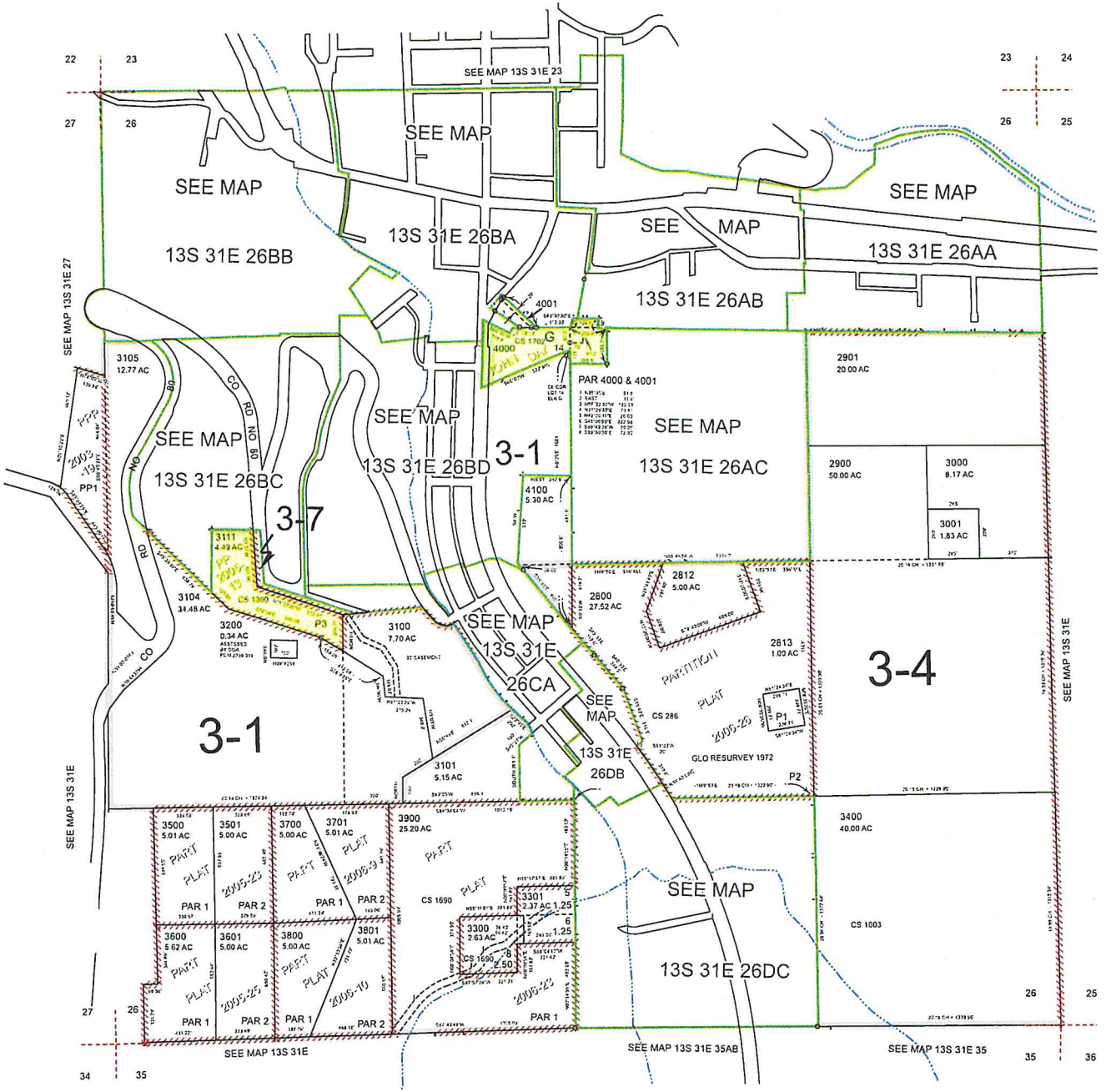
0 200 400 600 800 Feet

SECTION 26 T.13S. R.31E. W.M.
GRANT COUNTY

400'

13S31E26
& INDEX
JOHN DAY
CANYON CITY

Cancelled
2803 THRU
2811
3102
3103
3106
3107
3108
3109
3110



Revised: MA
01/28/2021

CANYON CITY
JOHN DAY
& INDEX
13S31E26

Court—1M—10-55

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, That G. A. RINEHART

of John Day, State of Oregon, has a right to the use of the waters of John Day River for the purpose of Irrigation

and that said right has been confirmed by decree of the Circuit Court of the State of Oregon for Grant County, and the said decree entered of record at Salem, in the Order Record of the STATE ENGINEER, in Volume 15, at page 461; that the priority of the right thereby confirmed dates from 1865

that the amount of water to which such right is entitled, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1/40 cubic foot per second per acre irrigated from April 1 to Sept. 30; further limited to one acre-foot per acre per calendar month to July 1 and 3/4 acre-foot per acre thereafter; total five acre-feet per acre for season, measured at point of diversion.

A description of the lands irrigated under such right, and to which the water is appurtenant (or, if for other purposes, the place where such water is put to beneficial use), is as follows:

A portion appears to fall on Tax lot 4000 of 13-31-26 4/16-21

0.5 acre in NE¼NW¼.
Section 26,
T. 13 S., R. 31 E., W. M.

described as: Being within Lot 13 of Block G, of the City of John Day, Oregon.

And said right shall be subject to all other conditions and limitations contained in said decree.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this 1st day of May, 19 59.

LEWIS A. STANLEY
State Engineer

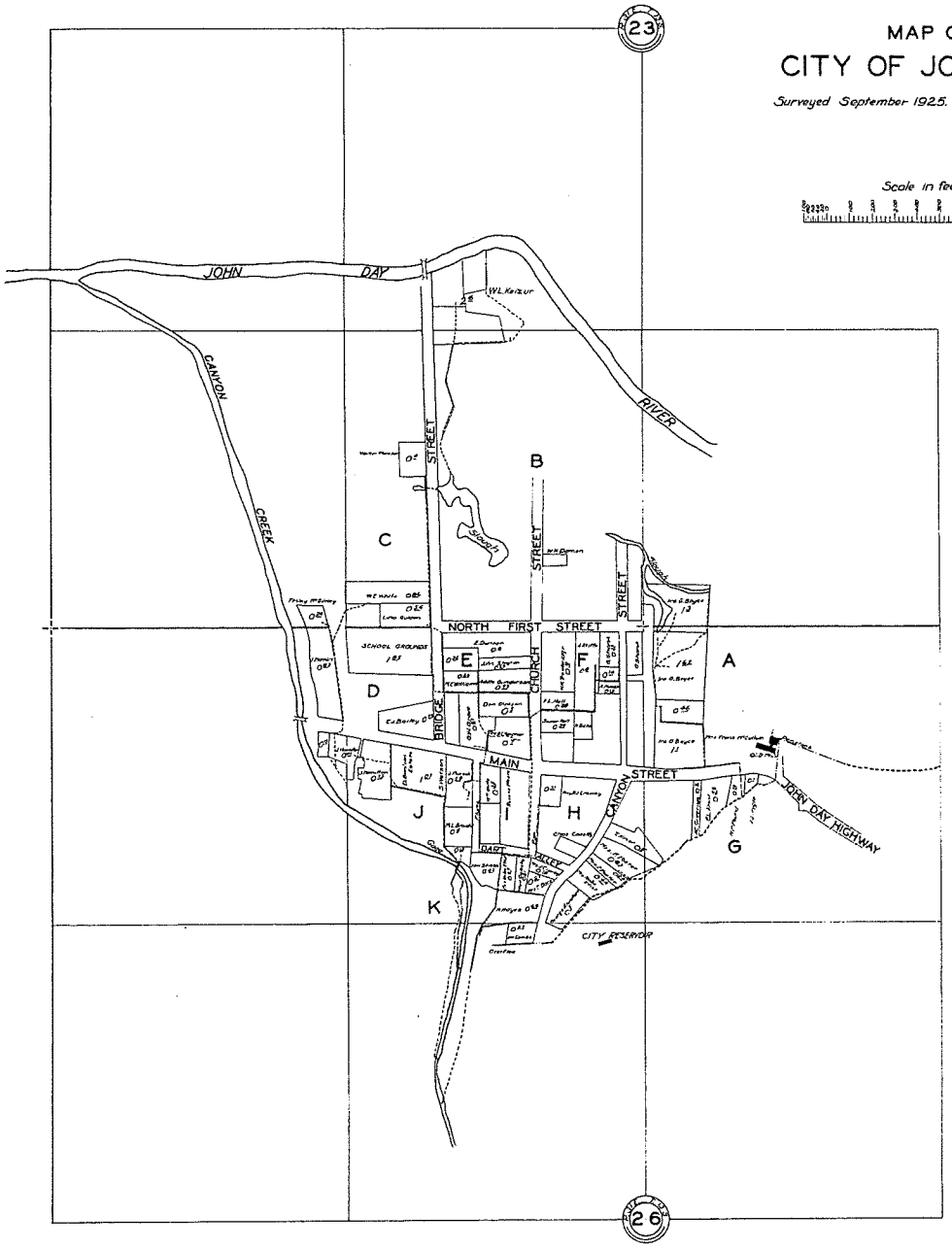
Recorded in State Record of Water Right Certificates, Volume 17, page 25757

Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cubic Feet Per Second	Number Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
25750							
Rhinehart, Ed. A., Pendleton, Oregon. (Proof No. 1136)	1900		20.5	Irrigation and domestic	Unnamed ditch	Hidaway and Camas Creek	5 acres in NE¼SW¼ 15.5 acres in NW¼SW¼ Section 1, T. 5 S. R. 32 E. W. M.
	1880			Stock	Unnamed ditch	Hidaway and Camas Creek	N½ SW¼ Section 1, T. 5 S. R. 32 E. W. M.
25751							
Rhinehart, Marion E., Albee, Oregon. (Proof No. 1137)	1903		62	Irrigation Domestic and stock	Unnamed ditch	Camas Creek	20 acres in SE¼SE¼ 15 acres in SW¼SW¼ 12 acres in SE¼SW¼ 10 acres in SW¼SE¼ Section 2, 5 acres in SE¼SE¼ Section 3, T. 5 S. R. 32 E. W. M.
25752							
Ricco, E. F., Prairie City, Oregon. (Proof No. 1138)	1866		15	Irrigation	Dad's ditch	Dad's Creek through Dad's ditch and Butcher's Gulch	12 acres in NW¼SE¼ 3 acres in SW¼SE¼ Section 24, T. 12 S. R. 33 E. W. M.
25753							
Ricco, Herbert and Henry, Prairie City, Oregon. (Proof No. 1139)	1866		10	Irrigation		Unnamed Spring in W½SW¼ Sec. 18 T. 12S, R. 34 E.	10 acres in W½ SW¼ Section 18, T. 12 S. R. 34 E. W. M.
25754							
(Proof No. 1140)	1866		87	Irrigation and stock	Dad's ditch	Dad's Creek	15 acres in NW¼NE¼ 36 acres in SW¼NE¼ 14 acres in NE¼NW¼ 15 acres in SE¼NW¼ 5 acres in NE¼SW¼ 2 acres in NW¼SE¼ Section 19, T. 12 S. R. 34 E. W. M.
	(See Findings paragraph 39, page 40.)						
	(NOTE: This right is allowed a priority of 1865 until July 1, of each year and a priority of 1897 for the remainder of the irrigation season.)						
82408 ~~45494~~ ~~25755~~							
Ridgeway, C. E., Prairie City, Oregon. (Proof No. 1141)	1881		128	Irrigation	Hillis ditch	Indian Creek	38 acres in NE¼SE¼ 34.5 acres in NW¼SE¼ 30 acres in SW¼SE¼ 25.5 acres in SE¼SE¼ Section 29, T. 13 S. R. 33 E. W. M.
T 406 - 430							
25756							
Ries, N. W., Olex, Oregon. (Proof No. 1142)	1895		15.5	Irrigation	Ries ditch	Rock Creek	7 acres in SW¼NE¼ 8 acres in SE¼NE¼ .4 acre in NE¼SE¼ .1 acre in NW¼SE¼ Section 10, T. 1 S. R. 21 E. W. M.
25757							
Rinehart, G. A., John Day, Oregon. (Proof No. 1143)	1865		.5	Irrigation	Old Mill ditch	John Day River	.5 acre in NE¼NW¼ Section 26, T. 13 S. R. 31 E. W. M. Being within Lot 13 of Block G, of the City of John Day, Oregon.

MAP OF CITY OF JOHN DAY

Surveyed September 1925. Scale 20"=1 Mile

Scale in feet



THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

N.W.1/4 N.E.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E26AB
JOHN DAY

Cancelled
300
1001
1002
2200
2500
2700
3202
3400
3500
3600
4301
4302
4303
4401
4402
5301
5601
6100
6401
6500
7200
8101
8103
8201
8301
8400
8401

Revised: MA
01/21/2020

JOHN DAY
13S31E26AB

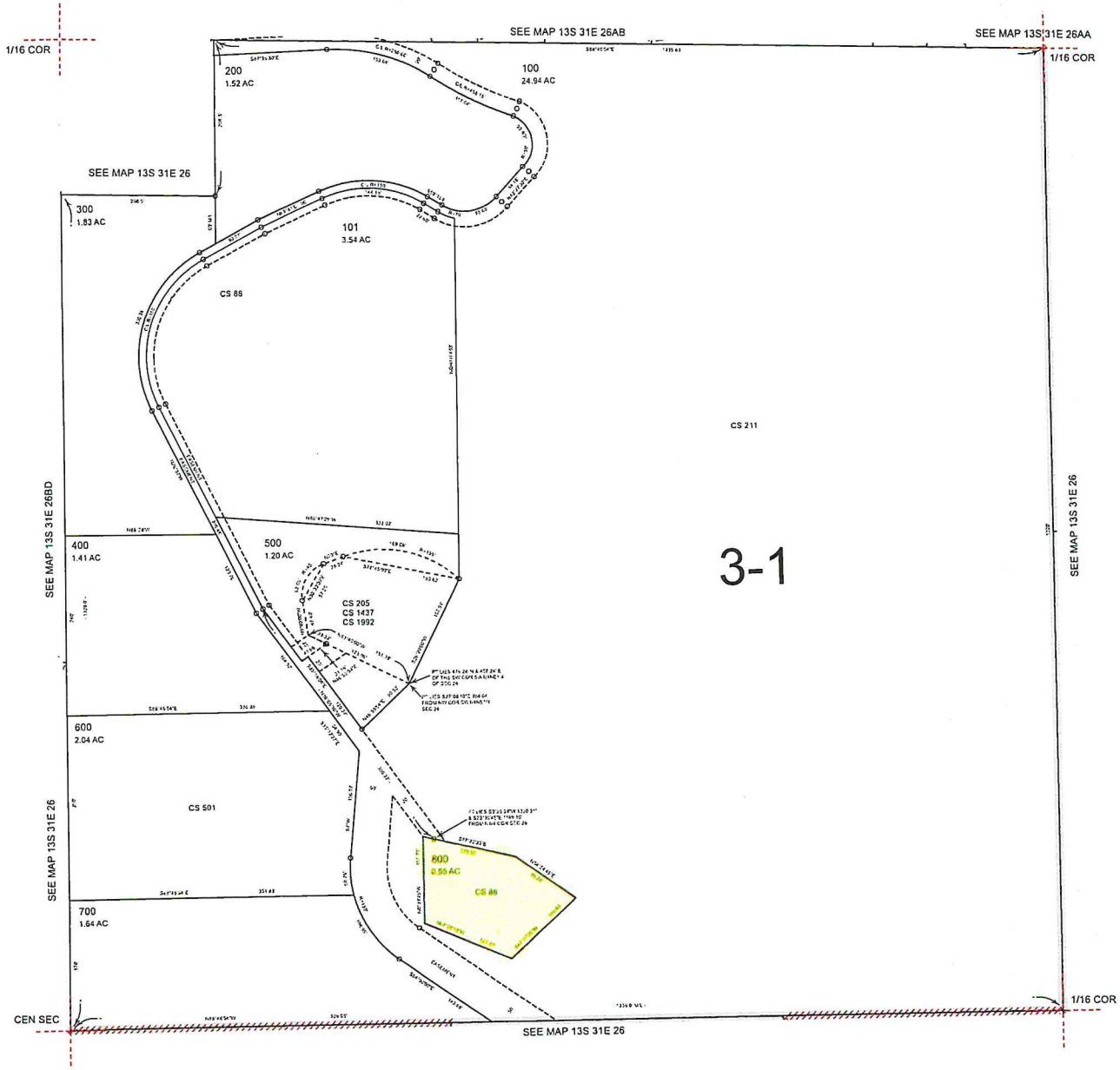
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

S.W.1/4 N.E.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY

~~1" = 100'~~

13S31E26AC
JOHN DAY



Revised: SH
04/14/2014

JOHN DAY
13S31E26AC

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 40 80 120 160 Feet

N.W.1/4 N.W.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY
1" = 100'

13S31E26BB
JOHN DAY

Cancelled
201
401
501
600
901
902
1001
1002
1200
1502
1504
1510
1511
1512
1600
2100
2200

Revised: MA
03/10/2020

JOHN DAY
13S31E26BB

COURT 1M—11-75

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* FOSTER DITCH, BY EARL B. MOORE, TREASURER FOR CELIA W. BOCK, MRS. VERA STEACH & HENRY M. FOSTER

of John Day , *State of* Oregon, 97845 , *has a right to the use of the waters of* Canyon Creek

a tributary of John Day River *for the purpose of* irrigation of 14.77 acres

and that said right has been confirmed by decree of the Circuit Court of the State of Oregon for Grant *County, and the said decree entered of record at Salem, in the Order Record of the WATER RESOURCES DIRECTOR, in Volume* 15 *, at page* 461 *; that the priority of the right thereby confirmed dates from* 1882

that the amount of water to which such right is entitled, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed one-fortieth cubic foot per second per acre irrigated to June 1 and one-eightieth cubic foot per second per acre thereafter; further limited to one acre foot per calendar month to June 1 and four acre feet per acre during season April 1 to September 30, measured at point of diversion.

The point of diversion is located in the SE¼ NW¼, Section 26, T. 13 S., R. 31 E., W. M.

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

2.15 acres SE¼ SW¼
Section 23
12.37 acres NE¼ NW¼
0.25 acre SE¼ NW¼
Section 26
T. 13 S., R. 31 E., W. M.

A portion of this acreage may fall on Tax lot 1900 of 13-31-26 BB 4/16/21

An order of the State Engineer entered September 23, 1974, approved a change in point of diversion and place of use for the irrigation of 1.85 acres. This certificate is issued to confirm the remaining right and supersedes the certificate heretofore issued to Foster Ditch, by Earl B. Moore, Treasurer for Celia W. Bock, Mrs. Vera Steach and Henry M. Foster and recorded at page 25200, State Record of Water Right Certificates.

And said right shall be subject to all other conditions and limitations contained in said decree. The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the Water Resources Director, affixed this date April 21 , 19 76 .

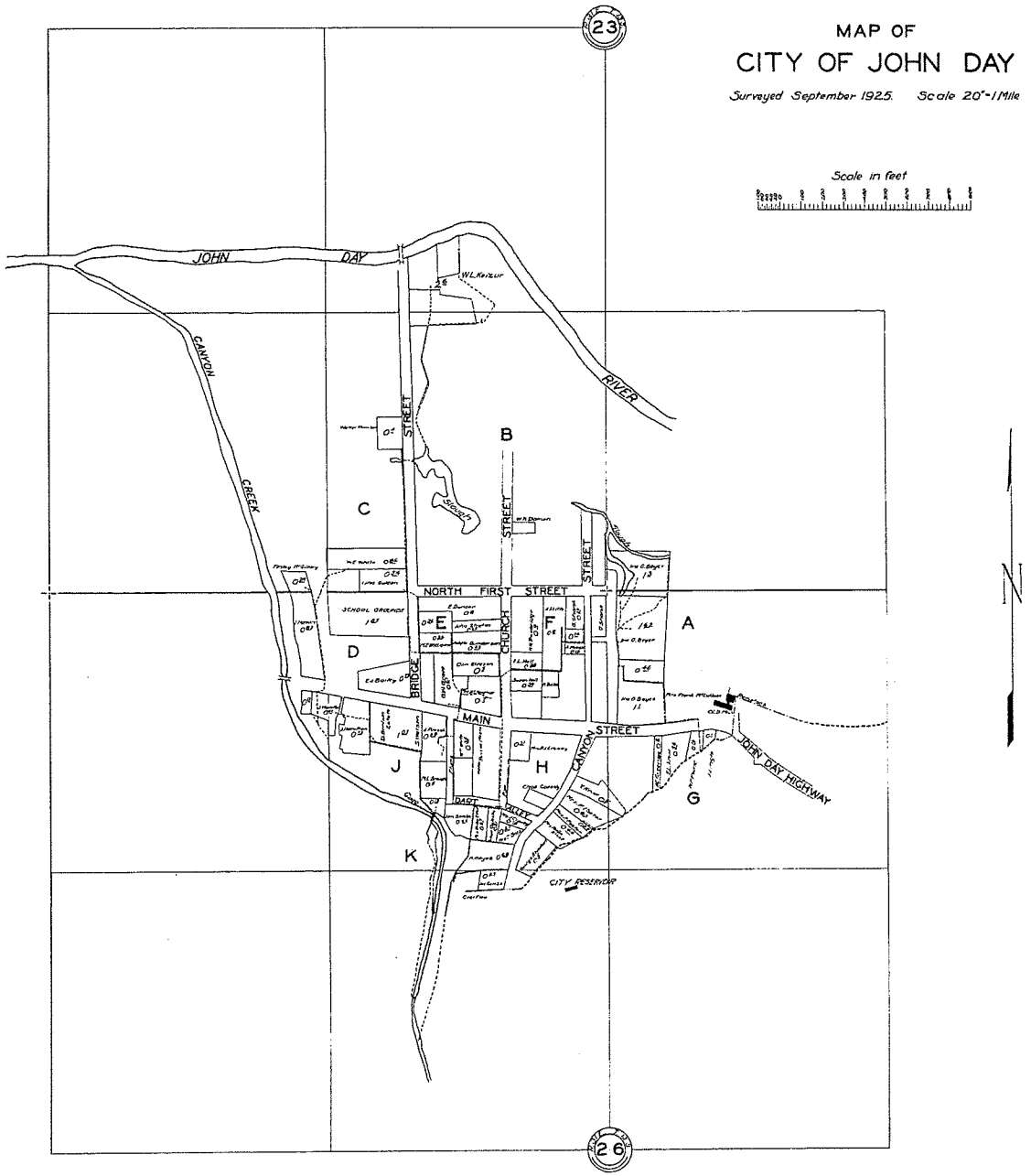
James E. Sexson
Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 34 *, page* 42918

MAP OF CITY OF JOHN DAY

Surveyed September 1925. Scale 20"=1 Mile

Scale in feet



STATE OF OREGON

WATER DIVISION NO. 2 COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, enlargement or secondary permits)

This is to Certify, That NELLIE C. JOHNSON

of 815 E. Flanders Street, Portland, State of Oregon, has made proof to the satisfaction of the STATE WATER BOARD of Oregon, of a right to the use of the waters of a series of springs adjacent to ~~xxxxxxxxxxxxxxxx~~ Canyon Creek, for the purpose of the irrigation of 4 acres of land under Permit No. 1656 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon and duly confirmed by order of the STATE WATER BOARD of Oregon, made and entered of record in the Record of Proceedings of said Board, at Salem, in Volume 1, at page 296, on the 2nd day of August, 1918; that the priority of the right hereby confirmed dates from June 25, 1913; 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 0.05 cubic ~~feet~~ per second., or its equivalent in case of rotation. The use hereunder shall conform to any reasonable rotation system ordered by the proper State Officer.

A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or, if for other purposes, the place where such water is put to beneficial use, is as follows: 3.5 acres in the Northeast quarter of Northwest quarter and 0.5 acres in the Northwest quarter of Northwest quarter of Section Twenty-six, Township Thirteen South, Range Thirty-one East of Willamette Meridian, in Grant County Oregon.

A portion of this acreage may fall on Tax lot 1900 of 13-31-26BB

4/16/21

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described.

Rights to the use of water for power purposes are limited to a period of forty years from the date of priority of the right, as herein set forth, subject to a preference right of renewal under the laws existing at the date of the expiration of the right for power purposes, as hereby confirmed and limited.

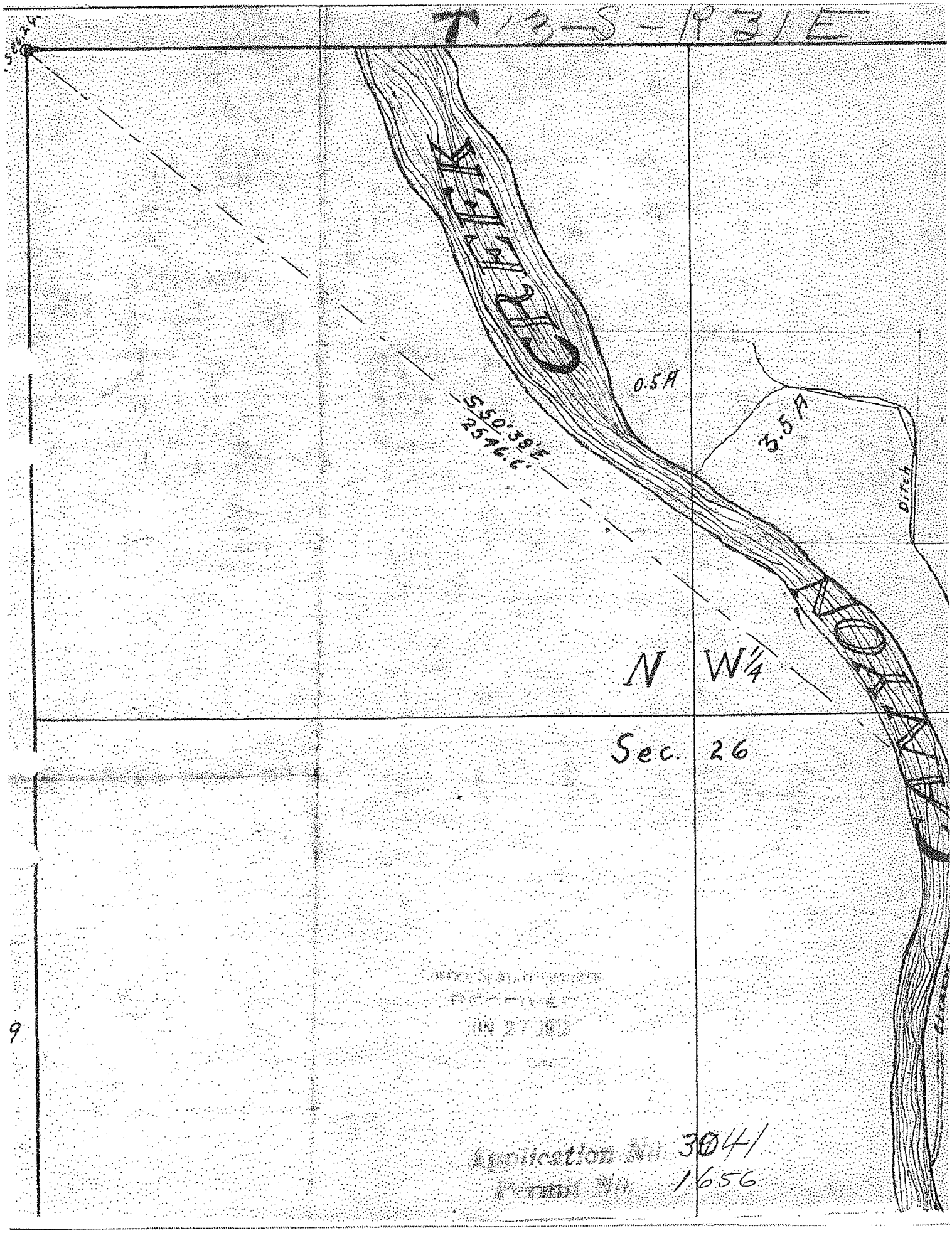
Witness the seal and signature of the STATE WATER BOARD affixed this 26th day of August, 1918.

STATE WATER BOARD

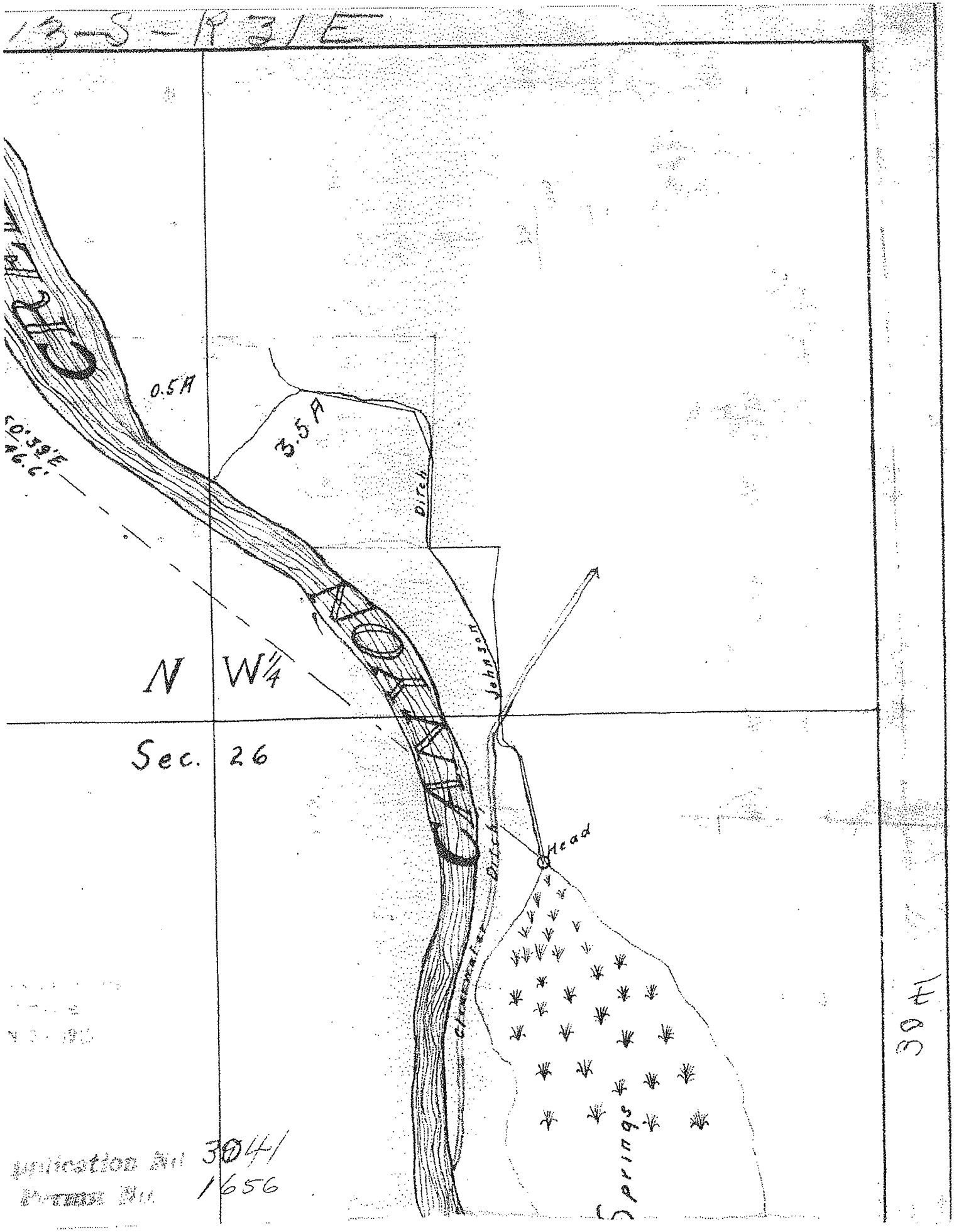
(SEAL OF STATE WATER BOARD) By JOHN H. LEWIS
State Engineer, President

Attest: R. W. POTTER
Secretary

Recorded in State Record of Water Right Certificates, Volume 3, Page 2077



Application No. 3041
Permit No. 1656



Application No. 3041
Permit No. 1656

Court—1M—10-55

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, That J. W. HAMILTON

of John Day, State of Oregon, has a right to the use of the waters of Canyon Creek for the purpose of Irrigation

and that said right has been confirmed by decree of the Circuit Court of the State of Oregon for Grant County, and the said decree entered of record at Salem, in the Order Record of the STATE ENGINEER, in Volume 15, at page 461; that the priority of the right thereby confirmed dates from 1882

that the amount of water to which such right is entitled, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1/40 cubic foot per second per acre irrigated to June 1 and 1/80 cubic foot per second per acre thereafter; further limited to one acre-foot per calendar month to June 1 and four acre-feet per acre during season April 1 to Sept. 30, measured at point of diversion.

A description of the lands irrigated under such right, and to which the water is appurtenant (or, if for other purposes, the place where such water is put to beneficial use), is as follows:

A portion appears to fall on Tax lot 1900 of 13-31-26 BB

4/16/21

2.0 acres in NE¼NW¼
Section 26,
T. 13 S., R. 31 E., W. M.

described as: Being within Lot 3 of Block J of the City of John Day.

And said right shall be subject to all other conditions and limitations contained in said decree.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this 1st day of May, 1959.

LEWIS A. STANLEY
State Engineer

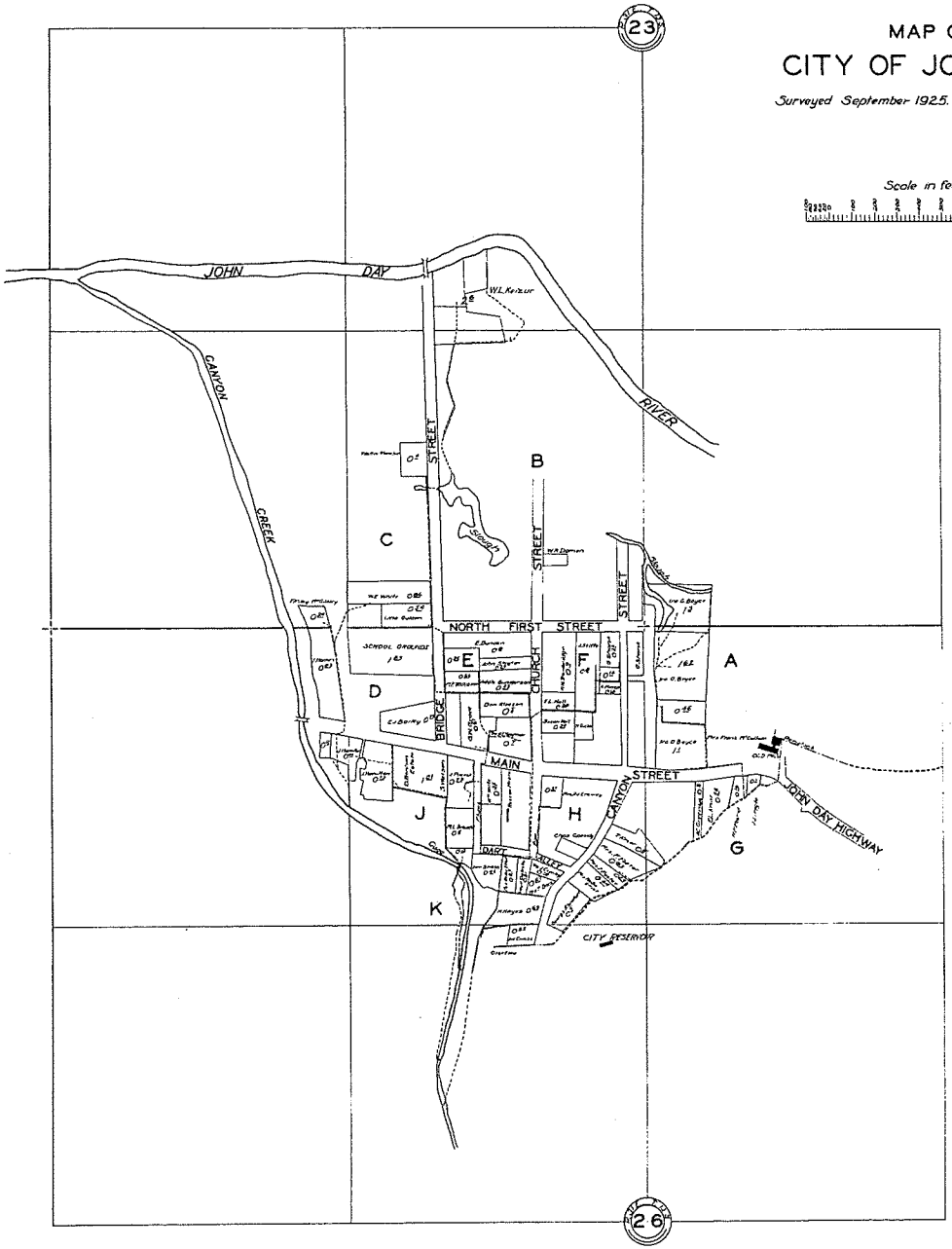
Recorded in State Record of Water Right Certificates, Volume 17, page 25285

Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cubic Feet Per Second	Number Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
Halstead, Myra Barnard (cont'd.) (Proof No. 569)	1888		~~84.1~~	Domestic and stock	Unnamed ditches seepage overflow	Fox Creek and tributaries and spring in SW¼ of Sec. 25 and SE¼ of Sec. 26, T. 10 S. R. 29 E.	From springs in SE¼SW¼ Section 25, and W½SE¼ Section 26, T. 10 S. R. 29 E. W. M.
25284 (Proof No. 570)	1902		4.4	Irrigation	Unnamed ditches and seepage	Spring in NW¼NE¼ Sec. 36 T. 10 S.R. 29 E.W.M.	4.4 acres in NW¼NE¼ Section 36, T. 10 S. R. 29 E. W. M.
25285 Hamilton, J. W., John Day, Oregon. (Proof No. 571)	1882		2	Irrigation	Unnamed ditches	Canyon Creek	2 acres in the NE¼NW¼ Section 26, T. 13 S. R. 31 E. W. M. Being within Lot 3 of Block J of the City of John Day.
(Proof No. 572)	(Rights acquired under State Engineer's Permit No. 7144, Certificate No. 7164.)						
25286 Hamilton, Ralph, Fossil, Oregon. (Proof No. 573)	1883		3	Irrigation	Unnamed ditch	Cottonwood Creek	2.8 acres in NE¼NE¼ 0.2 acres in SE¼NE¼ Section 5, T. 7 S. R. 21 E. W. M.
25287 Hamilton, Thomas S., Ashwood, Oregon. (Proof No. 574)	1884		93.2	Irrigation	Unnamed ditch	Keaton Creek	1.5 acres in NE¼NE¼ 1.8 acres in NW¼NE¼ 0.3 acres in SW¼NE¼ 18.7 acres in SE¼NE¼ Section 25, T. 12 S. R. 22 E. W. M. 23.2 acres in SW¼NW¼ (Lot 2 14 acres in SE¼NW¼ 23 acres in NE¼SW¼ 10.7 acres in NW¼SW¼ (Lot 3 Section 30, T. 12 S. R. 23 E. W. M.
25288 Hamtilton, W. T., Monument, Oregon. (Proof No. 575)	1872		6.5	Irrigation domestic and stock	Hamilton ditch	Spring in NE¼NE¼ Sec. 2 T. 10S.R.28E. trib. of Deer Creek	6.5 acres in NE¼NE¼ Section 2, T. 10 S. R. 28 E. W. M.
25289 (Proof No. 576)	1872		53.5	Irrigation domestic and stock	Hamilton ditch	Deer Creek (West branch of Deer Creek) trib. of John Day River	20.5 acres in SW¼SE¼ 20 acres in SE¼SE¼ Section 35, T. 9 S. R. 28 E. W. M. 1.6 acres in NE¼NE¼ 6.4 acres in NW¼NE¼ 5 acres in SW¼NE¼ Section 2, T. 10 S. R. 28 E. W. M.

MAP OF CITY OF JOHN DAY

Surveyed September 1925. Scale 20"=1 Mile

Scale in feet



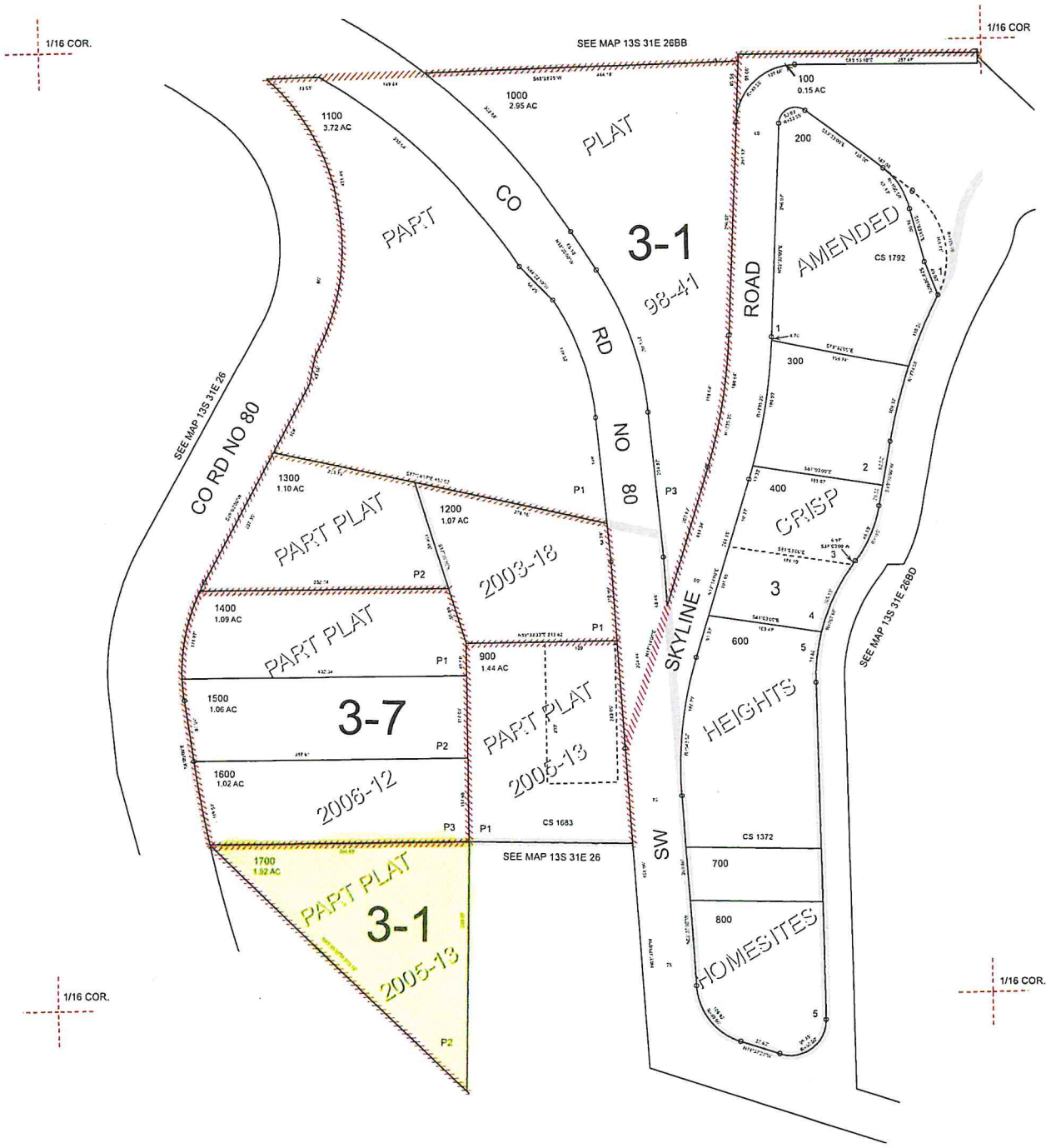
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

S.W.1/4 N.W.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY
1"=~100'

13S31E26BC
JOHN DAY

Cancelled
500



Revised: MA
03/14/2019

JOHN DAY
13S31E26BC

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

S.E.1/4 N.W.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E26BD
JOHN DAY

Cancelled
100
1800 THRU
2400
3901
4700
4800
4900
5200
5201
5400
5699
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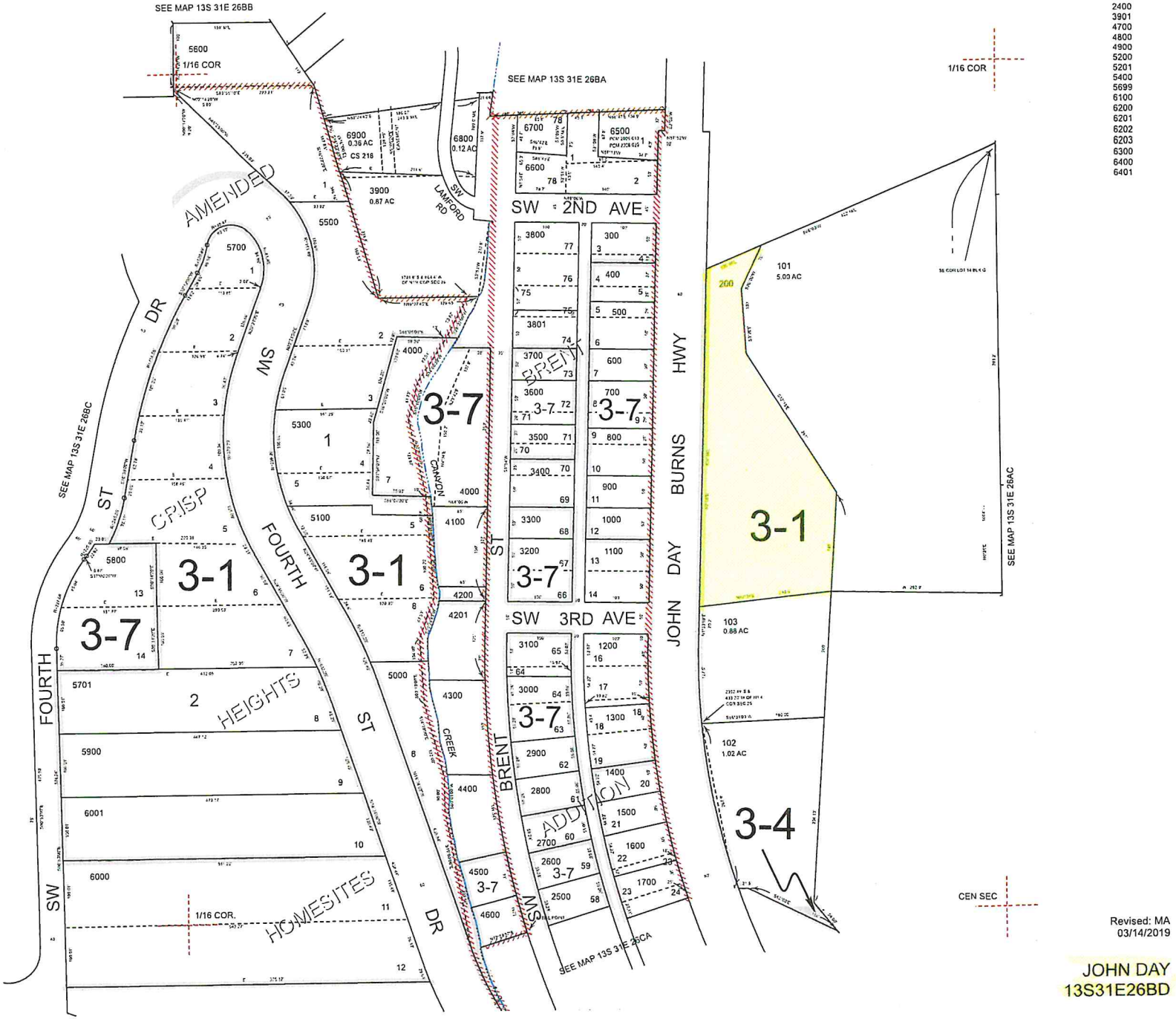
6200
6201
6202
6203
6300
6400
6401



Revised: MA
03/14/2019

JOHN DAY
13S31E26BD

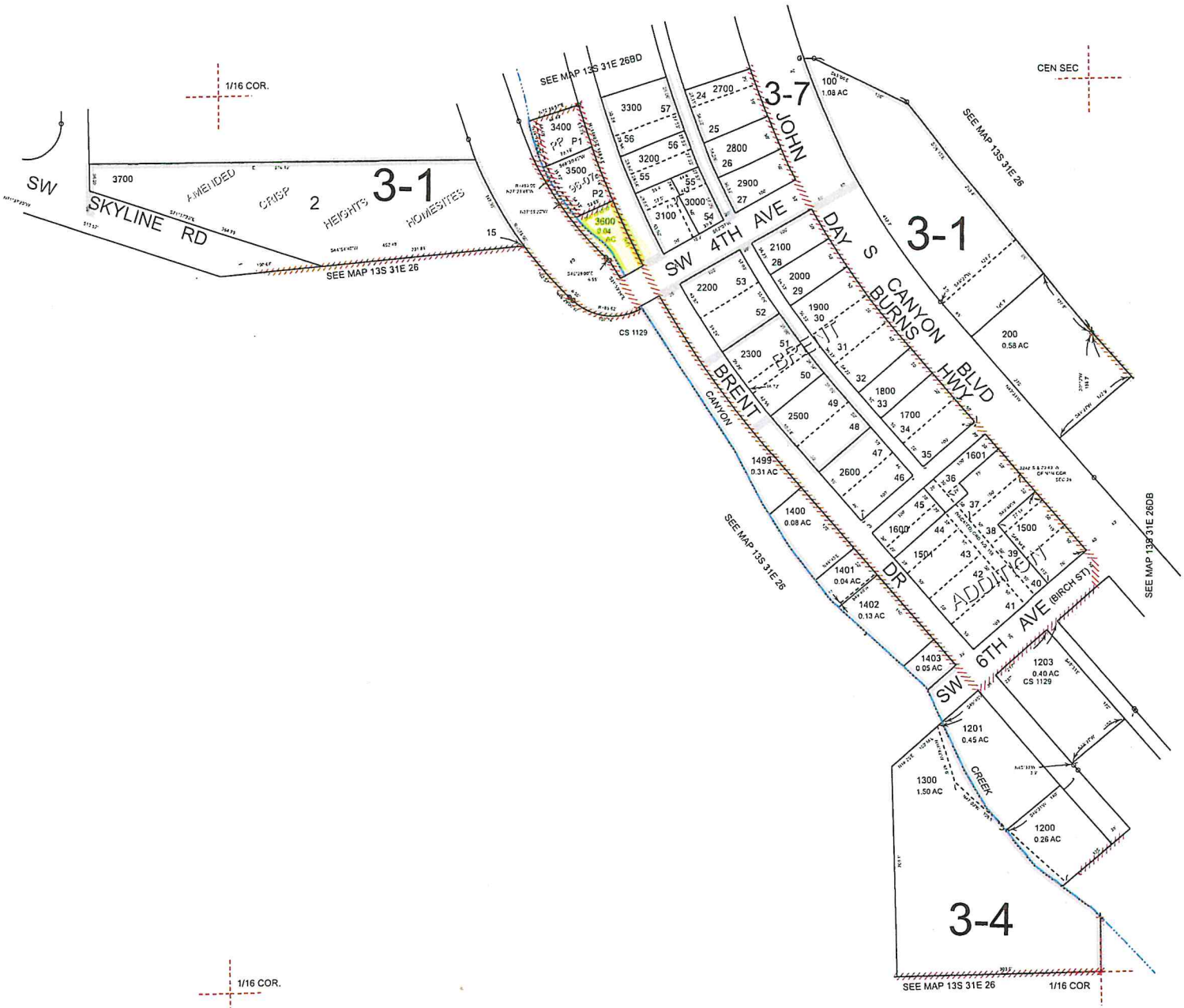
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

N.E.1/4 S.W.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY
~~1" = 400'~~

13S31E26CA
JOHN DAY

Cancelled
201-901
1000
1100
1202
1404
1500A1
2400



Revised: MA
03/14/2019

JOHN DAY
13S31E26CA

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* CANYON CREEK PLACERS *of* 2335 N.E. 48th Ave., Portland *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* Canyon Creek *a tributary of* John Day River *for the purpose of* Mining *under Permit No.* 10988 *of the State Engineer, 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* August 12, 1932;

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 10 cubic feet per second measured at the point of diversion from the stream, *or its equivalent in case of rotation.*

The point of diversion is located in the $SE\frac{1}{4}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$ and $SW\frac{1}{4}SE\frac{1}{4}$, Section 26, Township 13 South, Range 31 East, W. M.

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 of one cubic foot per second per acre, 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:

PLACE OF USE:

$S\frac{1}{2}$ $NW\frac{1}{4}$, $E\frac{1}{2}$ $SW\frac{1}{4}$ and $SW\frac{1}{4}SE\frac{1}{4}$,
Section 26,
Township 13 South, Range 31 East, 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.

After the expiration of fifty years from the date of this certificate or on the expiration of any federal power license issued in connection with this right, and after not less than two years' notice in writing to the holder hereof, the State of Oregon, or any municipality thereof, shall have the right to take over the dams, plants and other structures and all appurtenances thereto which have been constructed for the purpose of devoting to beneficial use the water rights specified herein, upon condition that before taking possession the State or municipality shall pay not to exceed the fair value of the property so taken, plus such reasonable damages, if any, to valuable, serviceable and dependable property of the holder of this certificate, not taken over, as may be caused by the severance therefrom of the property taken in accordance with the provisions of section 47-508, Oregon Code 1930.

WITNESS the signature of the State Engineer, affixed this 2nd *day of* March *, 193* 7.

CHAS. E. STRICKLIN
State Engineer

Recorded in State Record of Water Right Certificates, Volume 11 *, page* 11725

Cert 10700
11725

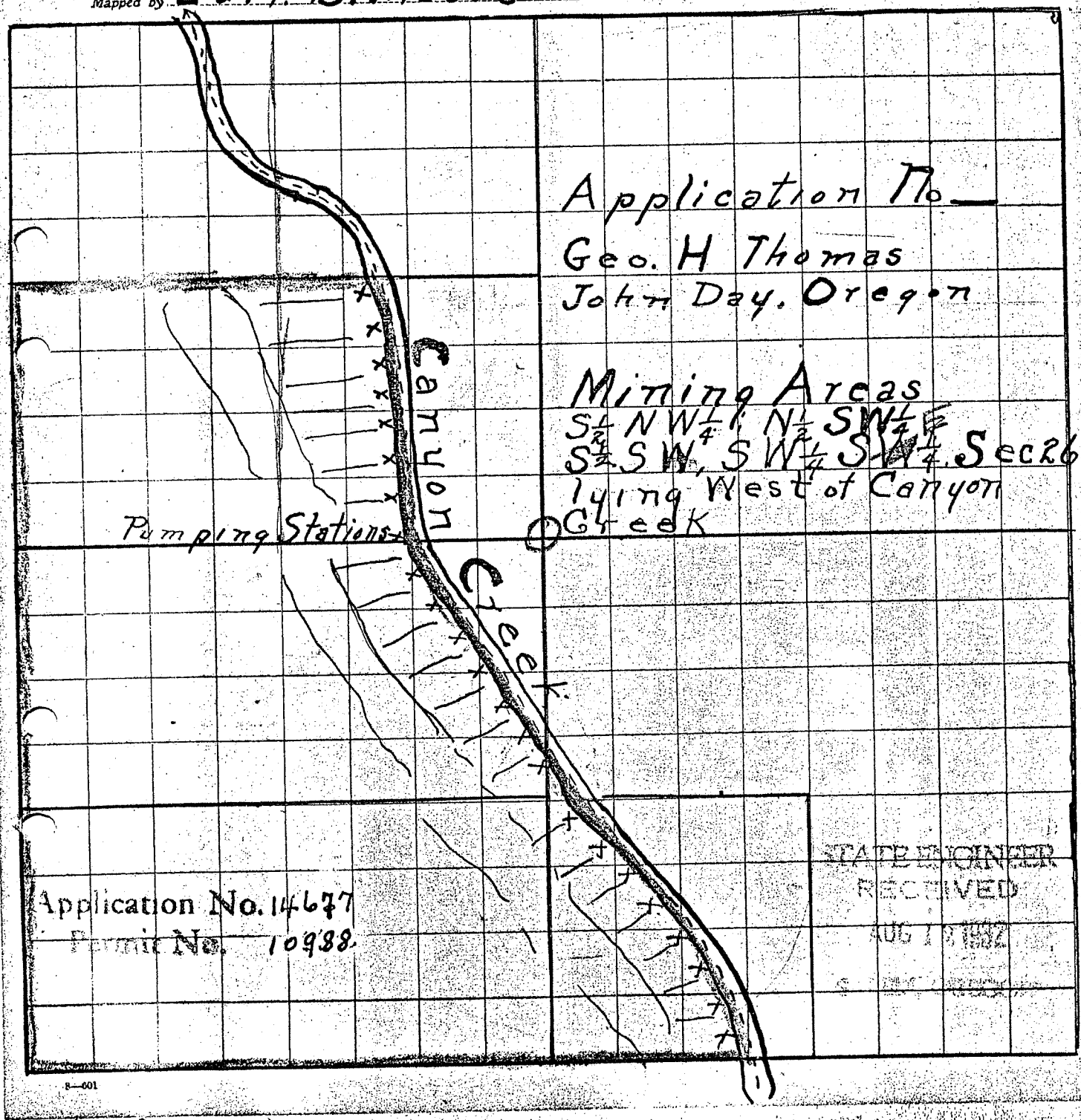
MAP SHEET

_____ No. _____ _____ National Forest.

Division _____ District _____, Block _____

T. 13 S., R. 31 E., _____ M., Section 26, Quarter SW.NW

Mapped by Earl B. Moore Scale: 8 inches=1 mile.



Application No.
Geo. H Thomas
John Day. Oregon

Mining Areas
S½ NW¼, N½ SW¼ E
S½ SW¼, SW¼ SW¼, Sec 26
lying West of Canyon
Creek

8—601

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 50 100 150 200 Feet

S.W.1/4 S.E.1/4 SEC.26 T.13S. R.31E. W.M.
GRANT COUNTY
~~1" = 100'~~

13S31E26DC
JOHN DAY
CANYON CITY

Cancelled
201
202
900
1100
1200
1201
1202
1203
1204
1206

Revised: SH
01/11/2017

CANYON CITY
JOHN DAY
13S31E26DC

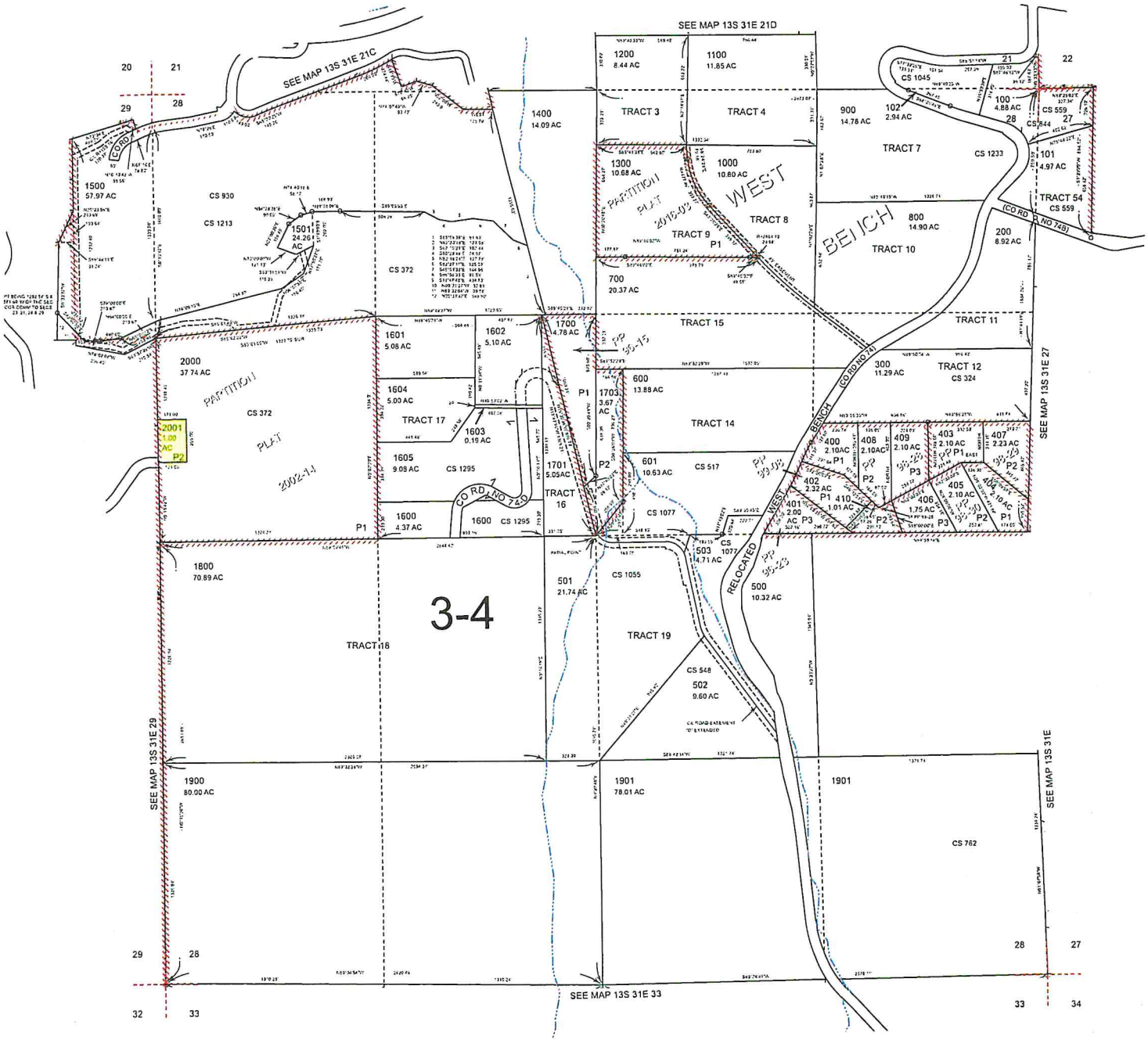
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 200 300 600 900 Feet

SECTION 28 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E28

Cancelled
504
602
1301
1401
1702
1902



Revised: MA
08/17/2020

13S31E28

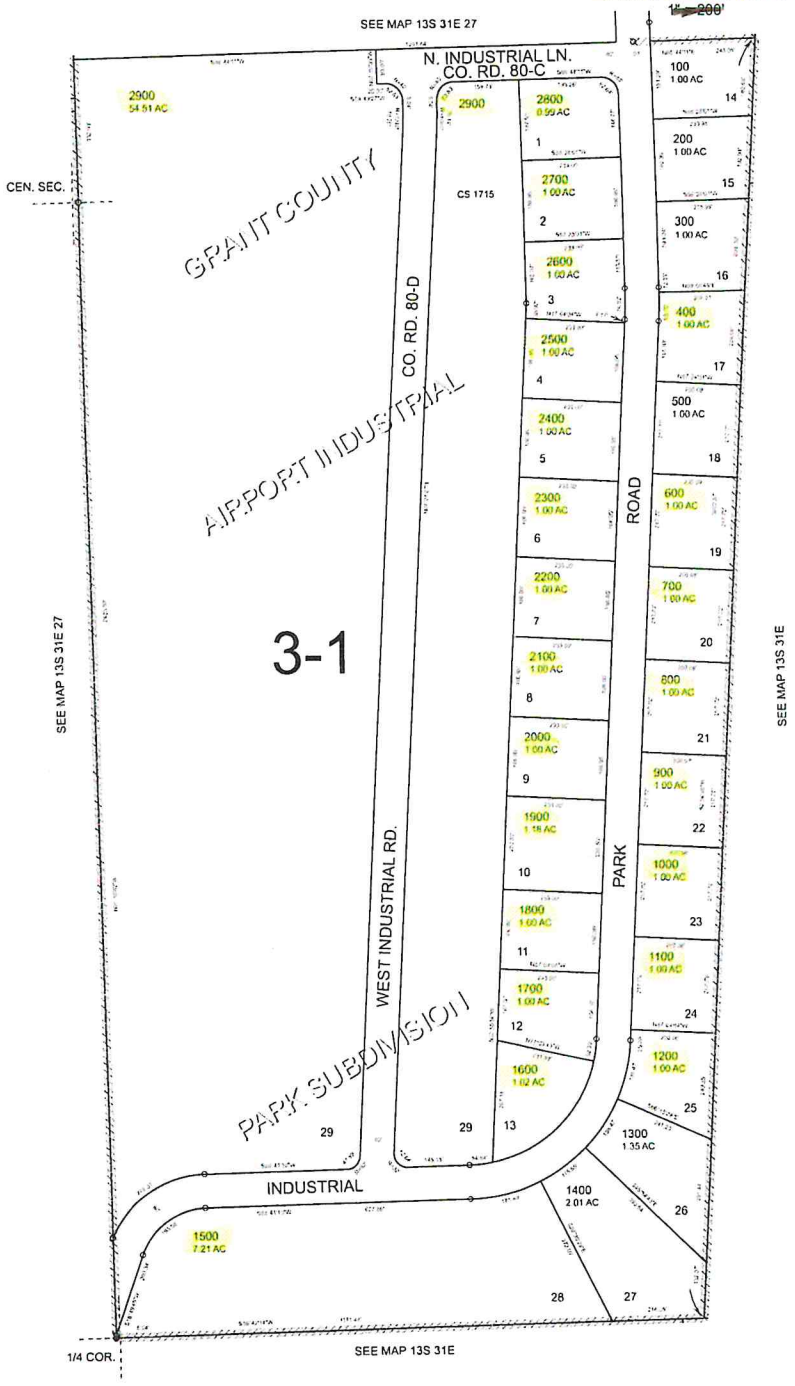
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

100 200 400 Feet

S.E.1/4 SEC.27 T.13S. R.31E. W.M.
GRANT COUNTY

13S31E27D

CANCELLED:



1/4 COR

27 26 34 35

Revised: MRT
4/27/2011

13S31E27D

STATE OF OREGON

COUNTY OF GRANT

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

KEN BREMNER; CITY OF JOHN DAY
450 E MAIN
JOHN DAY, OREGON 97845 (541) 575-0028

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-15640

SOURCE OF WATER: WELL #5 IN JOHN DAY RIVER BASIN

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 2.23 CUBIC FEET PER SECOND

PERIOD OF USE: YEAR ROUND

DATE OF PRIORITY: OCTOBER 22, 2001

WELL LOCATION: NE ¼ SW ¼, SECTION 23, T13S, R31E, W.M.; 1880 FEET NORTH & 1700 FEET EAST FROM THE SW CORNER OF SECTION 23

The place of use is located within the service area boundary of City of John Day.

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, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the permittee to report general water use information, including the place and nature of use of water under the permit.

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.

Use of water under authority of this permit may be regulated if analysis of data available after the permit is issued discloses that the appropriation will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway in

quantities necessary for recreation, fish and wildlife in effect as of the priority date of the right or as those quantities may be subsequently reduced.

The water user shall develop a plan to monitor and report the impact of water use under this permit on water levels within the aquifer that provides water to the permitted well(s). The plan shall be submitted to the Department within one year of the date the permit is issued and shall be subject to the approval of the Department. At a minimum, the plan shall include a program to periodically measure static water levels within the permitted well(s) or an adequate substitute such as water levels in nearby wells. The plan shall also stipulate a reference water level against which any water-level declines will be compared. If a well listed on this permit (or replacement well) displays a total static water-level decline of 25 or more feet over any period of years, as compared to the reference level, then the water user shall discontinue use of, or reduce the rate or volume of withdrawal from, the well(s). Such action shall be taken until the water level recovers to above the 25-foot decline level or until the Department determines, based on the water user's and/or the Department's data and analysis, that no action is necessary because the aquifer in question can sustain the observed declines without adversely impacting the resource or senior water rights. The water user shall in no instance allow excessive decline, as defined in Commission rules, to occur within the aquifer as a result of use under this permit.

Within two years of permit issuance, the permittee shall submit a Water Management and Conservation Plan consistent with OAR Chapter 690, Division 86. The Director may approve an extension of this timeline to complete the required Water Management and Conservation Plan.

STANDARD CONDITIONS

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

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

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

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 shall be limited when it interferes with any prior surface or ground water rights.

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.

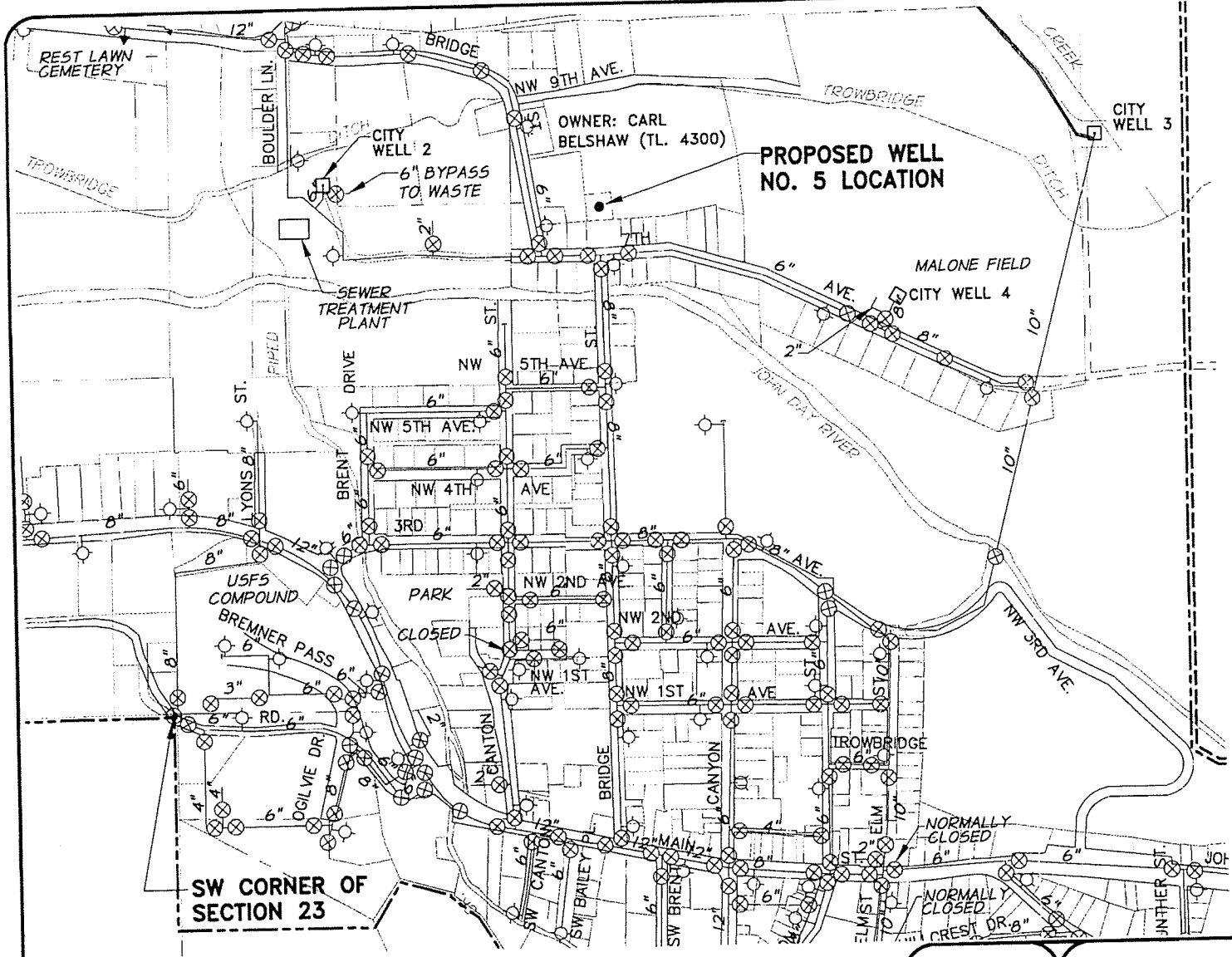
Complete application of the water to the use shall be made on or before October 1, 2006. If the water is not completely applied before this date, and the permittee wishes to continue development under the permit, the permittee must submit an application for extension of time, which may be approved based upon the merit of the application.

Within one year after complete application of water to the proposed use, the permittee shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued July 12, 2002

Paul R. Cleary, Director
Water Resources Department

NOTE: Pursuant to ORS 537.330, in any transaction for the conveyance of real estate that includes any portion of the lands described in this permit, the seller of the real estate shall, upon accepting an offer to purchase that real estate, also inform the purchaser in writing whether any permit, transfer approval order, or certificate evidencing the water right is available and that the seller will deliver any permit, transfer approval order or certificate to the purchaser at closing, if the permit, transfer approval order or certificate is available.



RECEIVED
OCT 2 2 2001
WATER RESOURCES DEPT
SALEM, OREGON

N

SCALE 1"=400'

NOTES:

1. SEE SHEET 1 FOR THE SERVICE BOUNDARY OF PROPOSED WELL. USE AREA IS THE EXISTING DISTRIBUTION SYSTEM WITHIN THE CITY OF JOHN DAY URBAN GROWTH BOUNDARY.

2. WATER WILL BE USED IN GRANT COUNTY, WITHIN RIVER BASIN NO. 6 (JOHN DAY).

3. LEGAL DESCRIPTION OF PROPOSED WELL SITE IS T13S, R31E, SECTION 23, NE OF SW QUARTER. THE PROPOSED WELL SITE IS IN TAX LOT 4300.

4. PROPOSED WELL LOCATION IS 1,700 FEET EAST AND 1,880 FEET NORTH OF THE SW CORNER OF SECTION 23.

Application No. [illegible]
Permit No.

anderson perry & associates, inc.

CITY OF
JOHN DAY, OREGON
GROUNDWATER PERMIT APPLICATION
PROPOSED WELL LOCATION

FIGURE
2

Permit A-1—1500—2-56 State Printing 92180

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, That CITY OF JOHN DAY

of John Day, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of springs a tributary of Long Gulch for the purpose of municipal water supply under Permit No. 5838 of the State Engineer, 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 March 24, 1923;

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

0.06 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SW¼ SE¼, Section 26, Township 13 South, Range 31 East, W. M.

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 _ _ _ _ _ _ _ _ of one cubic foot per second per acre,

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:

SE¼
Section 22
S½
Section 23
NW¼
Section 25
All
Section 26
Township 13 South, Range 31 East, 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.

WITNESS the signature of the State Engineer, affixed this 9th day of April, 19 56.

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 15, page 21130.

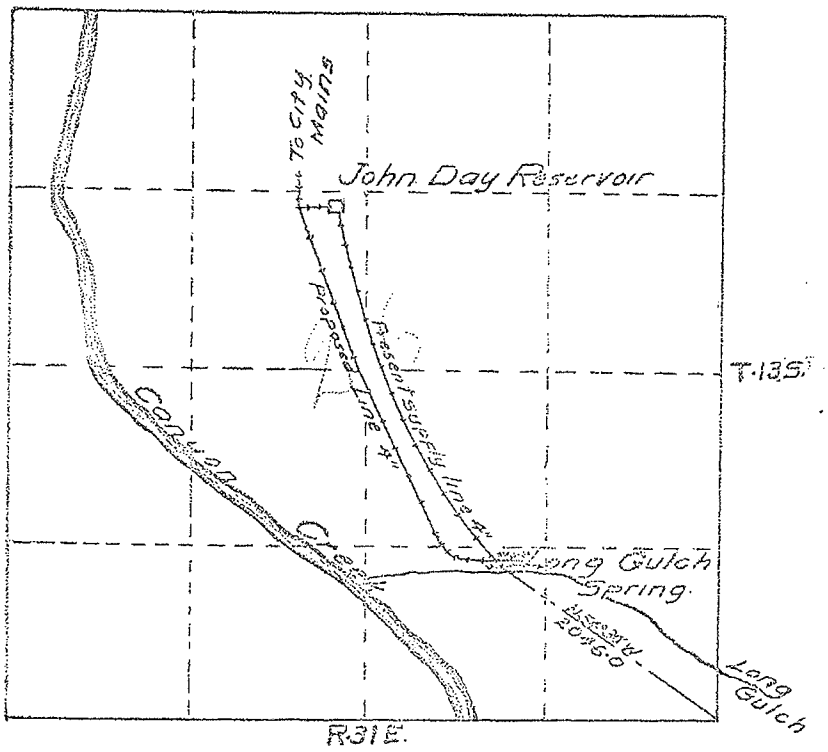
Pet 5838
21130

of

John Day Water System

John Day City, Ore. Appropriater.

Scale 4" = 1 mile.



I, Vernon L. Glaze, hereby certify that I made this map from notes taken during an actual survey made by me on April 2, 1923 and that it correctly represents the works described in the accompanying application.

No. 431

Vernon L. Glaze
Registered Professional Engineer.
NOV. 25. 1919

T. 13 S., R. 31 E.

Vernon L. Glaze

STATE ENGINEER
RECEIVED
DEC 3 1923
SALEM, OREGON

Application No. 8875
Permit No. 5838

Permit A-1—1500—2-56 State Printing 92199

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* THE CITY OF JOHN DAY

of John Day *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* springs *a tributary of* Long Gulch *for the purpose of* municipal use *under Permit No.* 9926 *of the State Engineer, 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* September 19, 1930, ;

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 0.03 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the $SW\frac{1}{4}$ $SE\frac{1}{4}$, Section 26, Township 13 South, Range 31 East, W. M.

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 - - - - - - - - of one cubic foot per second per acre,

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:

$SE\frac{1}{4}$
Section 22
$S\frac{1}{2}$
Section 23
$NW\frac{1}{4}$
Section 25
All
Section 26
Township 13 South, Range 31 East, 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.

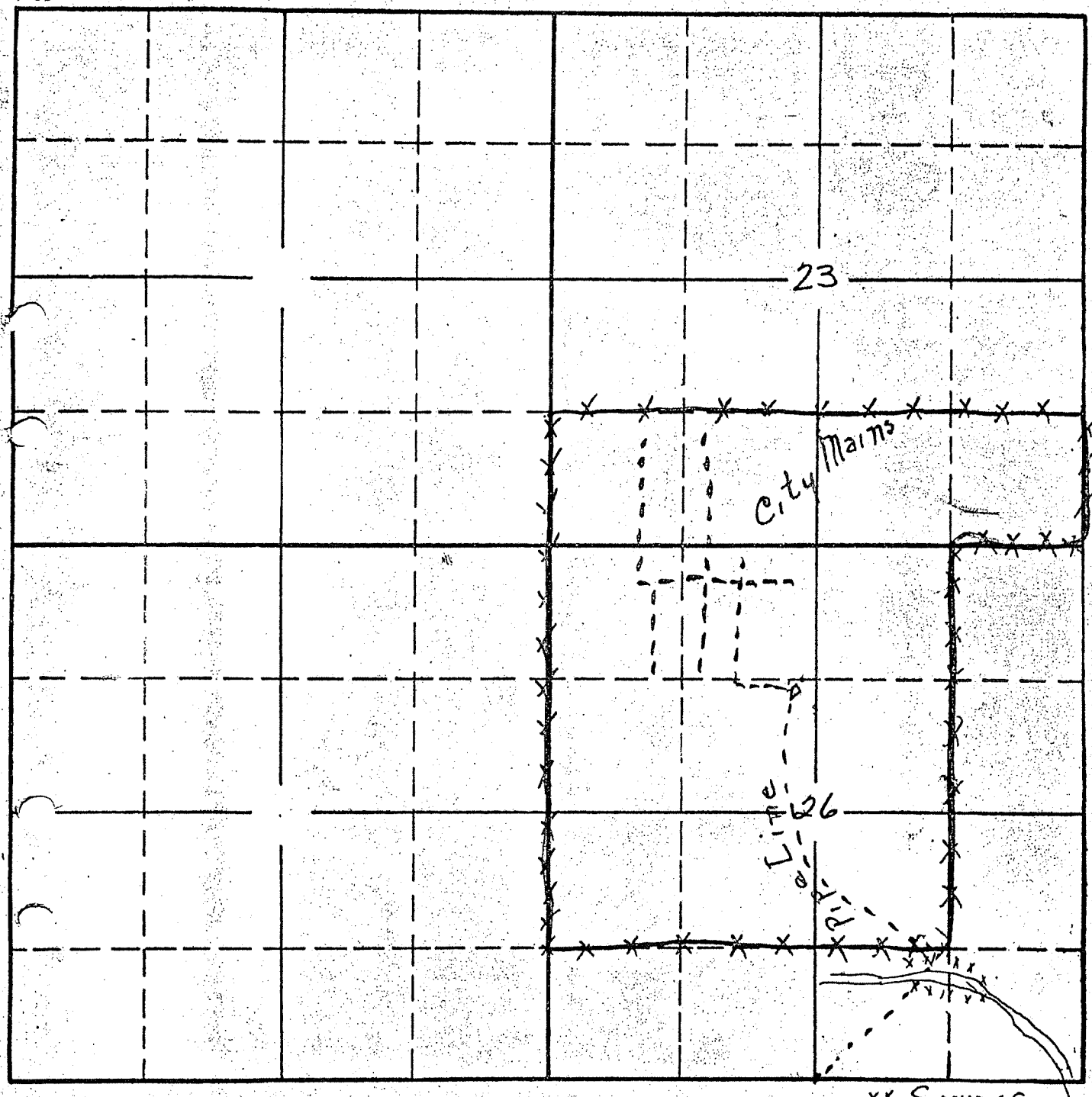
WITNESS the signature of the State Engineer, affixed this 18th *day of* May *, 19* 56

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 15 *, page* 21243.

Sec. 26 Tp. 13S R. 3E

Per # 9926
21243



City of John

APP. No. 13739
PER. No. 9926

Court—1M—10-55

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* CITY OF JOHN DAY, J. D. COMBS, RECORDER
GEORGE G. CARL, MAYOR

of John Day *, State of* Oregon *, has a right to the use of*

the waters of Springs on Long Gulch in SW¼SE¼ Section 26, T. 13 S., R. 31 E., W. M.

for the purpose of Irrigation, Domestic and Municipal

and that said right has been confirmed by decree of the Circuit Court of the State of Oregon for Grant *County, and the said decree entered of record at Salem, in the Order Record of the STATE ENGINEER, in Volume* 15 *, at page* 461 *; that the priority of the right thereby confirmed dates from* 1884

that the amount of water to which such right is entitled, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1/40 cubic foot per second per acre irrigated to June 1 and 1/80 cubic foot per second per acre thereafter; further limited to one acre-foot per calendar month to June 1 and four acre-feet per acre during season April 1 to Sept. 30, measured at point of diversion. -for irrigation

A description of the lands irrigated under such right, and to which the water is appurtenant (or, if for other purposes, the place where such water is put to beneficial use), is as follows:

10.0 acres in SW¼SW¼
30.0 acres in SE¼SW¼
Section 23,
10.0 acres in NW¼NE¼
20.0 acres in NE¼NW¼
5.0 acres in NW¼NW¼
5.0 acres in SE¼NW¼
Section 26,
T. 13 S., R. 31 E., W. M.

Domestic and Municipal - 3.0 cubic feet per second

And said right shall be subject to all other conditions and limitations contained in said decree.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

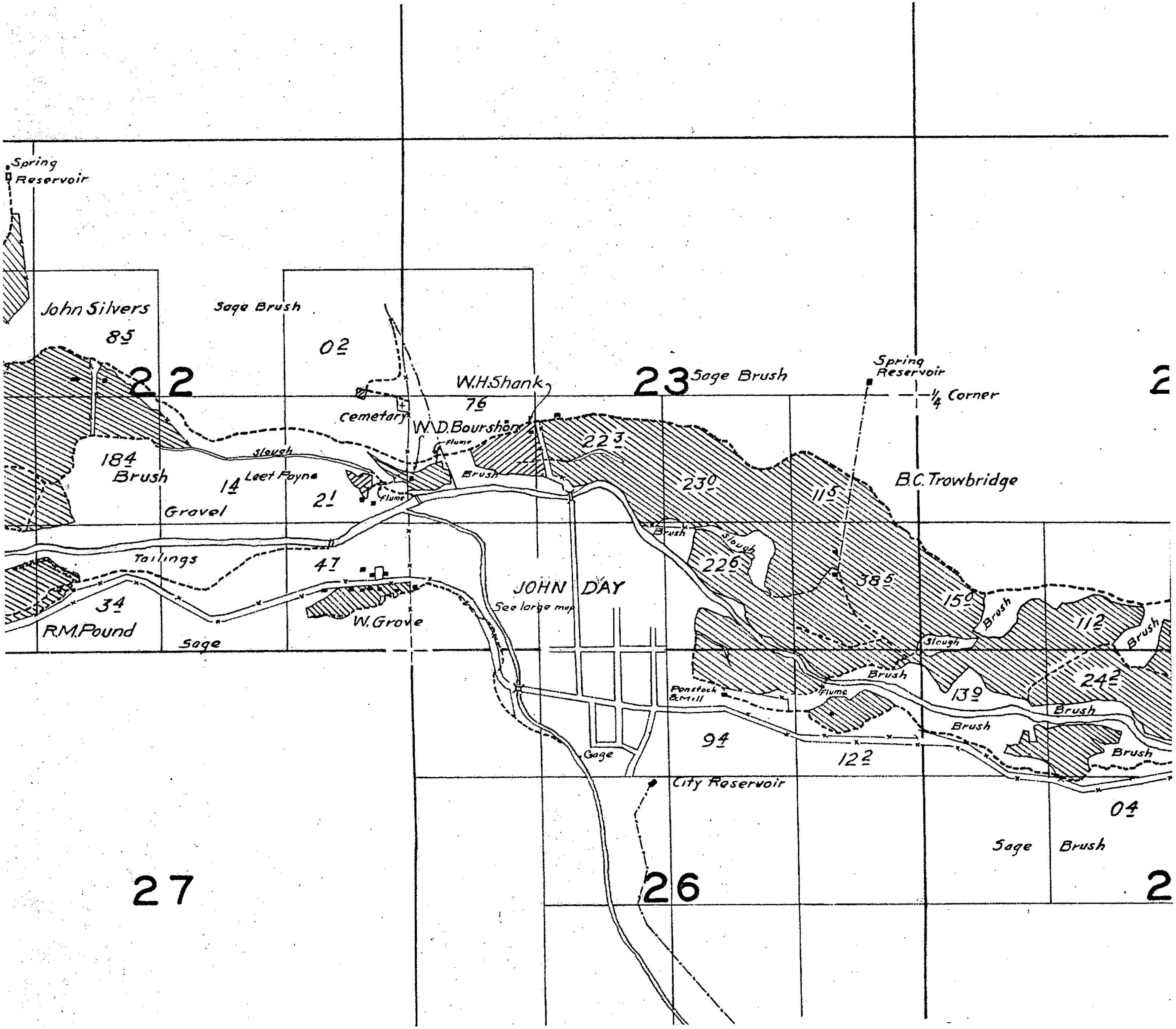
WITNESS the signature of the State Engineer, affixed

this 1st *day of* May *,* 19 59 .

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 17 *, page* 25379

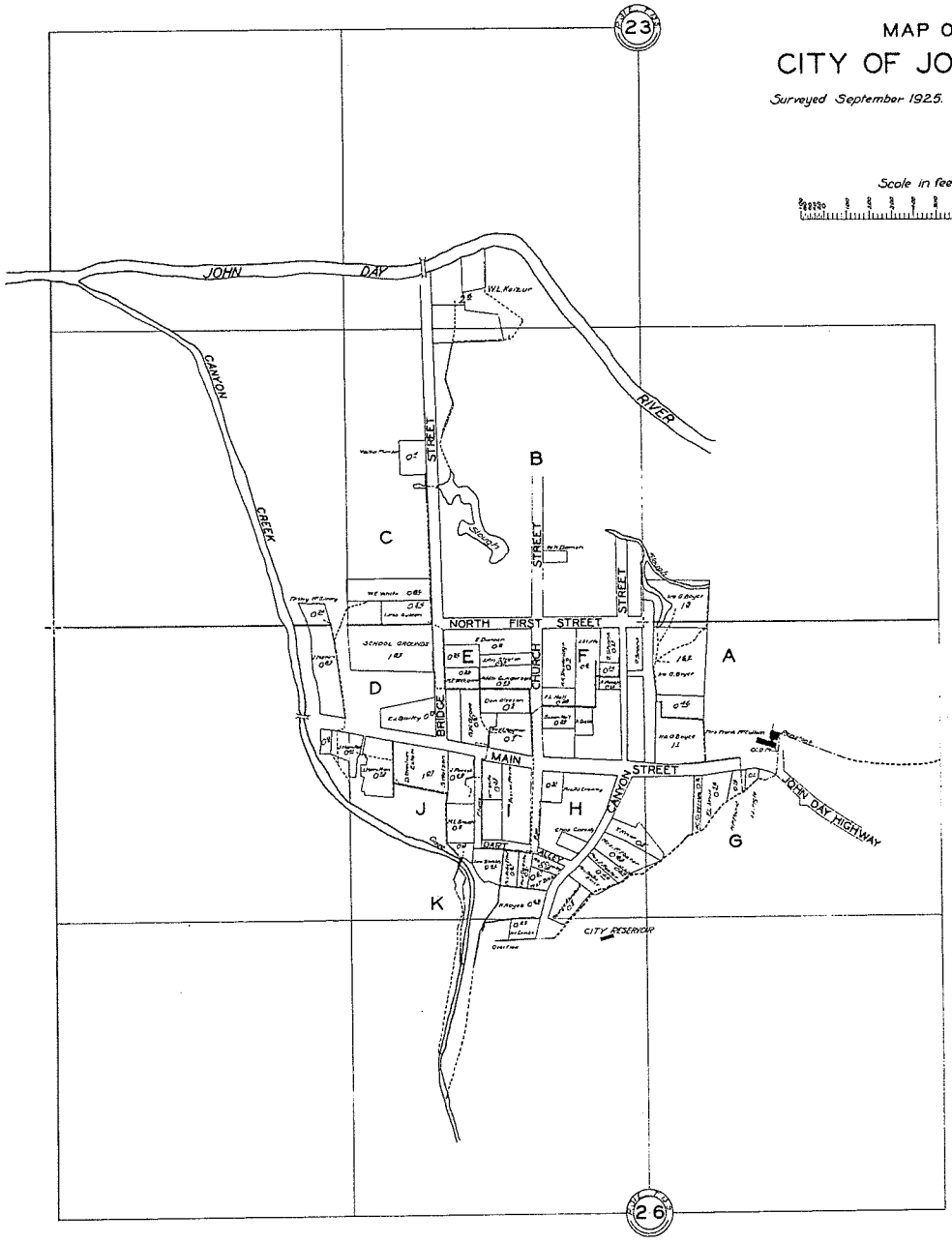
Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cubic Feet Per Second	Number Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
25372 Jackson, C. E., Prairie City, Oregon. (Proof No. 673)	1869		0.41	Irrigation	Lower McHaley ditch	John Day River	0.41 acres in SE¼SW¼ Section 2, T. 13 S. R. 33 E. W. M. Being within Lot 2 in Kilbourne Addition to Prairie City, Oregon.
25373 Jackson, Elva, Hamilton, Oregon. (Proof No. 674)	1888		9	Irrigation	Townsend ditch	Spring in NW¼SE¼ Sec. 14 T. 10S. R. 30E. and unnamed trib. of Long Creek	9 acres in NW¼SE¼ Section 14, T. 10 S. R. 30 E. W. M.
25374 (Proof No. 675)	1899		9	Irrigation	Townsend ditches	Spring in SW¼NE¼ Sec. 14 T. 10S. R. 30E. and unnamed trib. of Long Creek	3 acres in NW¼NE¼ 6 acres in SW¼NE¼ Section 14, T. 10 S. R. 30 E. W. M.
25375 Jackson, Martin J., Richmond, Oregon. (Proof No. 676)	1897		5.6	Irrigation	Harry Trent	Black Rock Creek trib. of Shoo Fly Creek and Springs on land	5.6 acres in NE¼NE¼ Section 23, T. 10 S. R. 22 E. W. M.
25376 Jaeger, Henry, Condon, Oregon. (Proof No. 677)	1903		36.4	Irrigation	Henry Jaeger pumping plant and ditches	John Day River	1.3 acres in NE¼SW¼ 11.5 acres in SE¼SW¼ 15.4 acres in SW¼SE¼ Section 6, 8.2 acres in NE¼NW¼ Section 7, T. 6 S. R. 19 E. W. M.
CANCELED 57539 25377 Cancelled - cp. cr Rec. Vol. 42 P. 163 164 Jenkins, Maggie, Fossil, Oregon. (Proof No. 678)	1888		6	Irrigation	Jenkins ditch	Service Creek	6 acres in SW¼NW¼ Section 25, T. 8 S. R. 22 E. W. M.
25378 Jenkins, R. C., Fossil, Oregon. (Proof No. 679)	1904		6.3	Irrigation	Jenkins-Rosenbaum	Service Creek	6.3 acres in NE¼NE¼(Lot 1) Section 1, T. 9 S. R. 22 E. W. M.
25379 John Day, City of, J.D. Combs, Recorder, George G. Carl, Mayor, John Day, Oregon. (Proof No. 680)	1884	3.0 sec. ft. for Dom. and Mun.	80	Irrigation domestic and municipal	Pipe Line, reservoirs and general city distribution system(John Day Water System)	Springs on Long Gulch in SW¼SE¼ Sec. 26 T.13 S.R. 31 E.W.M.	10 acres in SW¼SW¼ 30 acres in SE¼SW¼ Section 23, 10 acres in NW¼NE¼ 20 acres in NE¼NW¼ 5 acres in NW¼NW¼ 5 acres in SE¼NW¼ Section 26, T. 13 S. R. 31 E. W. M.


Spring
Reservoir
John Silvers
85
Sage Brush
02
22
W.H.Shank
76
23
Sage Brush
Spring
Reservoir
1/4 Corner
Cemetary
W.D.Bourshors
Flume
223
Slough
184
Brush
14
Leet Foyne
Brush
230
115
B.C.Trowbridge
21
Flume
Gravel
Brush
Slough
226
385
150
Brush
112
Brush
Tailings
47
JOHN DAY
See large map
34
R.M.Pound
W.Grove
Sage
Slough
Brush
139
242
Ponstock
& Mill
Flume
Brush
Brush
94
122
Brush
Gage
City Reservoir
04
Sage
Brush
27
26
2
2

MAP OF
CITY OF JOHN DAY

Surveyed September 1925. Scale 20"=1 Mile

Scale in feet



Permit A—4M—1-51 State Printing 22580

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, That CITY OF JOHN DAY

of John Day, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of

City of John Day Well No. 2

a tributary of John Day River for the purpose of

municipal use

under Permit No. G-1218 of the State Engineer, 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 21, 1959

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

0.71 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NW¼ SW¼, Sec. 23, T. 13 S., R. 31 E., W.M. Well located 533.9 ft. S. and 578.2 ft. E. from W ¼ corner, Sec. 23.

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 - - - - - - - - of one cubic foot per second per acre,

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:

SE¼ SE¼
Section 22
SW¼
SW¼ SE¼
Section 23
NW¼
NE¼ SW¼
N½ NE¼
NW¼ SE¼
Section 26
T. 13 S., R. 31 E., 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.

WITNESS the signature of the State Engineer, affixed this date. NOVEMBER 14 1962

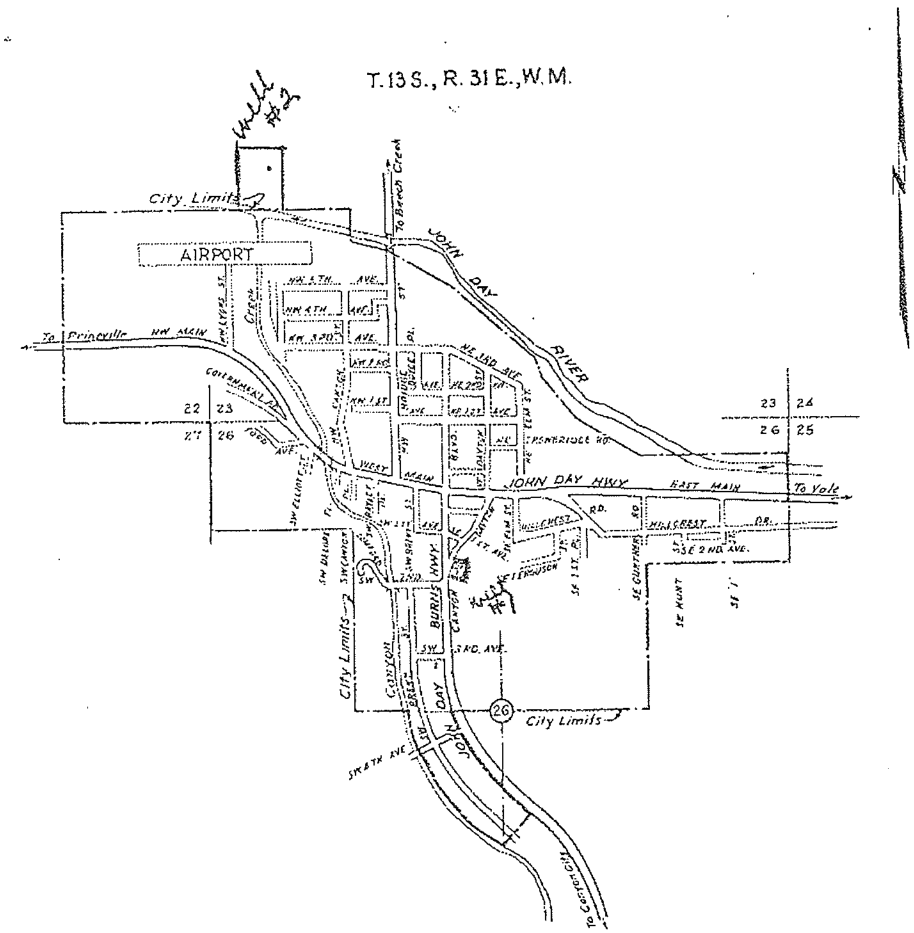
CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 22, page 30270

JOHN DAY

Scale in feet

0 800 1600 2400



Permit G-1218
App. G-839

&

Permit G-1219
App. G-840

~~G-840~~
~~G-83~~
PB 1218
1219
G-1219
G-1218
30270
35080

Rev 4-19-56
9-8-69

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* CITY OF JOHN DAY

of John Day *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* City of John Day Well No. 1

a tributary of Canyon Creek (John Day River) *for the purpose of* municipal use

under Permit No. G-1219 *of the State Engineer, 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 21, 1959

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 0.47 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SE¼ NW¼, Section 26, T. 13 S., R. 31 E., W. M. Well located 447.8 feet West, 48.9 feet South from SE Corner, NE¼ NW¼, Section 26.

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 - - - - - - - *of one cubic foot per second per acre,*

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:

SW¼
SW¼ SE¼
Section 23

NW¼
N½ NE¼
NW¼ SE¼
NE¼ SW¼
Section 26

SE¼ SE¼
Section 22
T. 13 S., R. 31 E., W. M.

This certificate is issued to correct and supersede the certificate of water right issued to City of John Day and recorded at page 30271, Volume 22, State Record of Water Right Certificates, so as to correctly show the location of point of diversion.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. July 25, 1968

CHRIS L. WHEELER
State Engineer

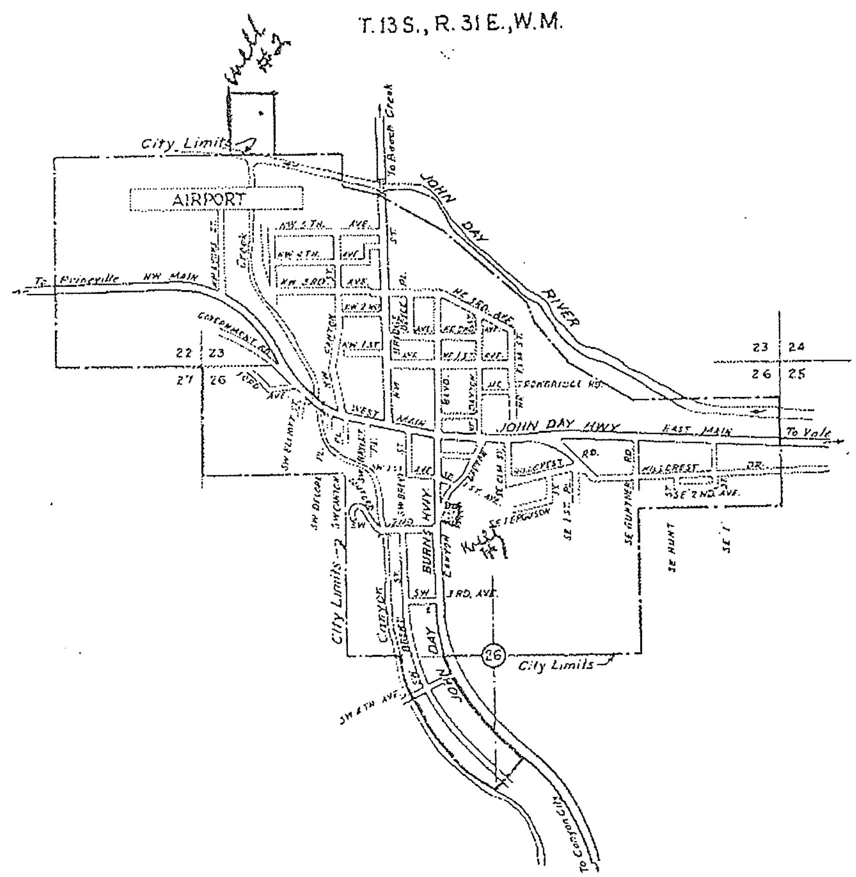
Recorded in State Record of Water Right Certificates, Volume 27 *, page* 35080

JOHN DAY

Scale in feet

0 800 1600 2400

T. 13 S., R. 31 E., W.M.



Permit G-1218
App. G-839

&

Permit G-1219
App. G-840

~~G-840~~
~~G-83~~
PG1218
1219
G-1219
G-1218
30270
35080

Rev. 4-19-56
3-8-49

Permit A—SM—1-76 SP-2955-890

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* CITY OF JOHN DAY

of 240 S. Canyon Blvd., John Day , *State of* Oregon, 97845 , *has made proof to the satisfaction of the Water Resources Director, of a right to the use of the waters of* Well No. 3

a tributary of John Day River *for the purpose of* Municipal

under Permit No. G-2695 *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* March 31, 1964
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 1.34 cubic feet per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NW¼ SE¼, Section 23, T. 13 S., R. 31 E., W. M., 450 feet South and 1700 feet West from the E¼ Corner, Section 23

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 ———— *of one cubic foot per second per acre,*

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:

E½ SE¼
Section 22
SW¼
W½ SE¼
Section 23
NW¼ NW¼
Section 25

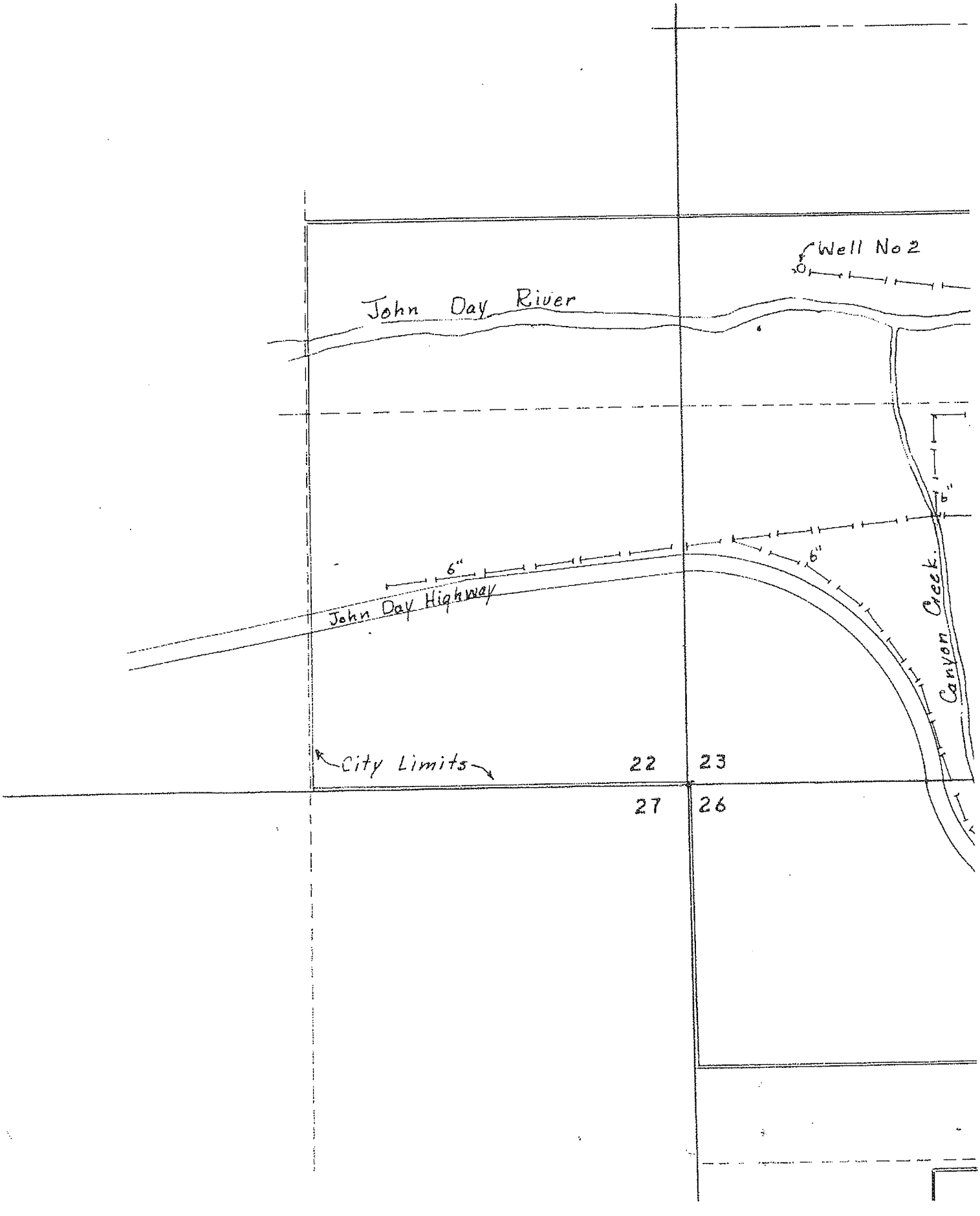
N½ NE¼
SW¼ NE¼
NW¼
N½ SW¼
W½ SE¼
Section 26
T. 13 S., R. 31 E., W. M.

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. June 17, 1977

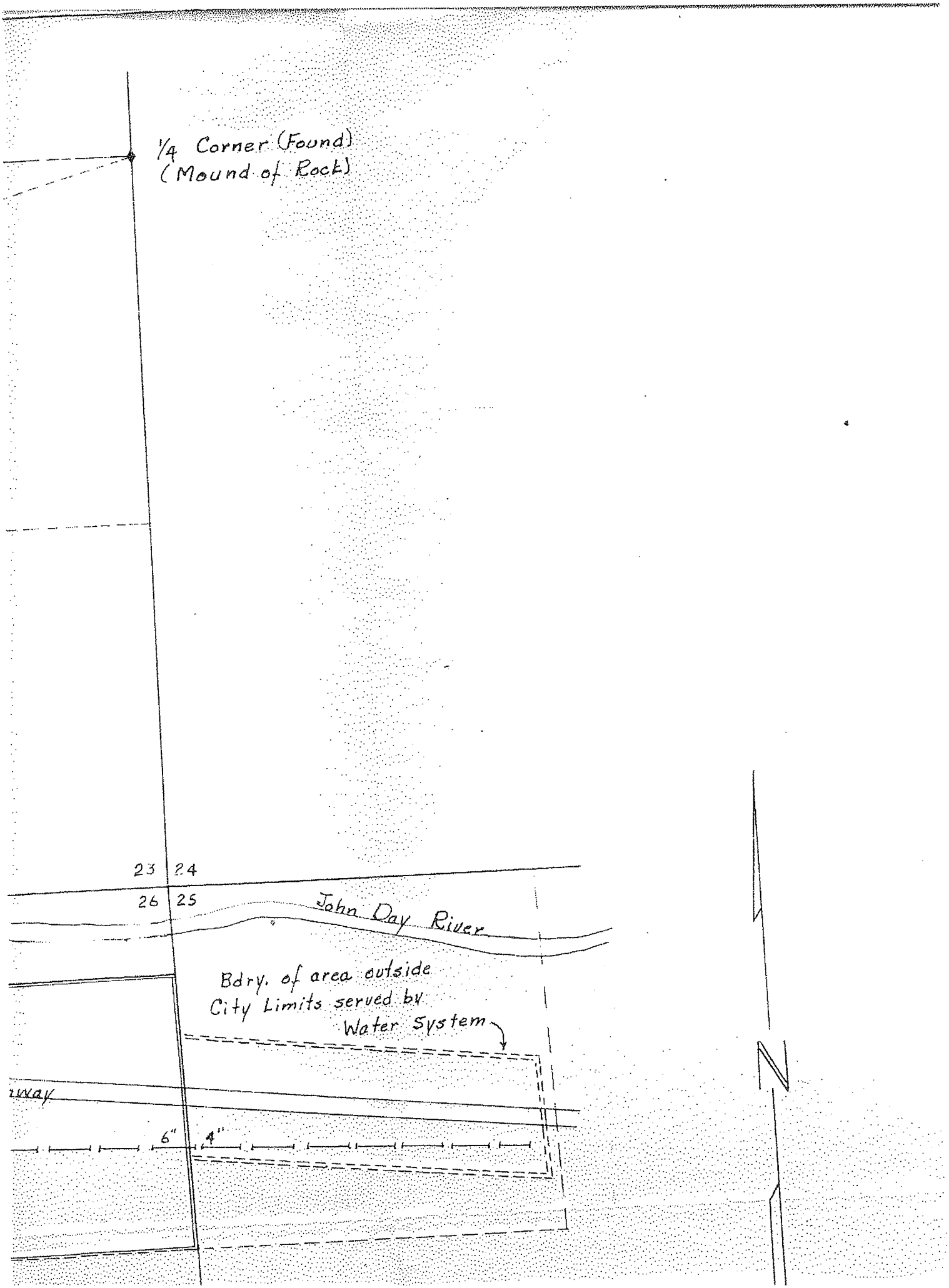
James E. Sexson
Water Resources Director

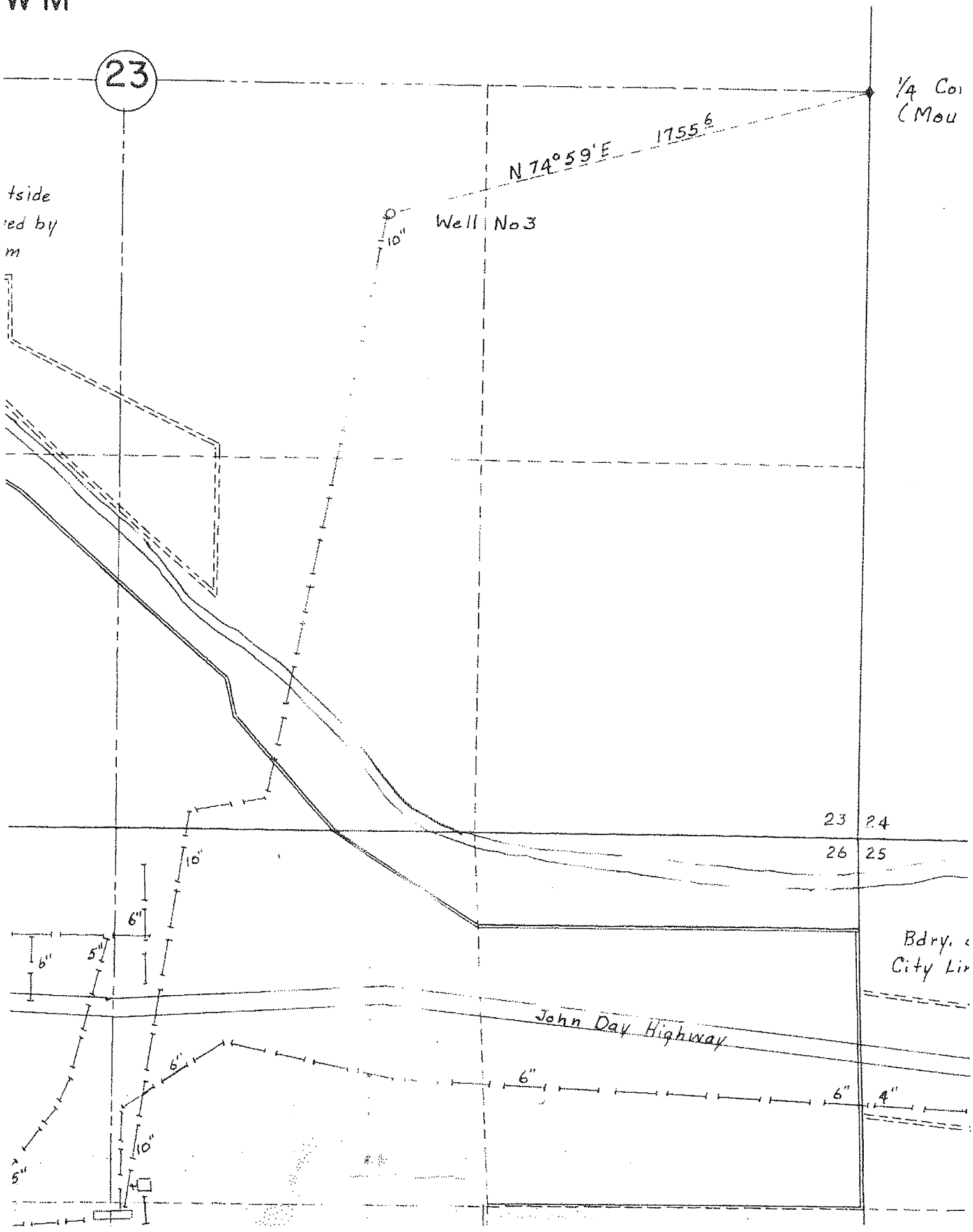
Recorded in State Record of Water Right Certificates, Volume 36 *, page* 44465


Well No 2
John Day River
6"
6"
6"
John Day Highway
Canyon Creek
City Limits
22
23
27
26

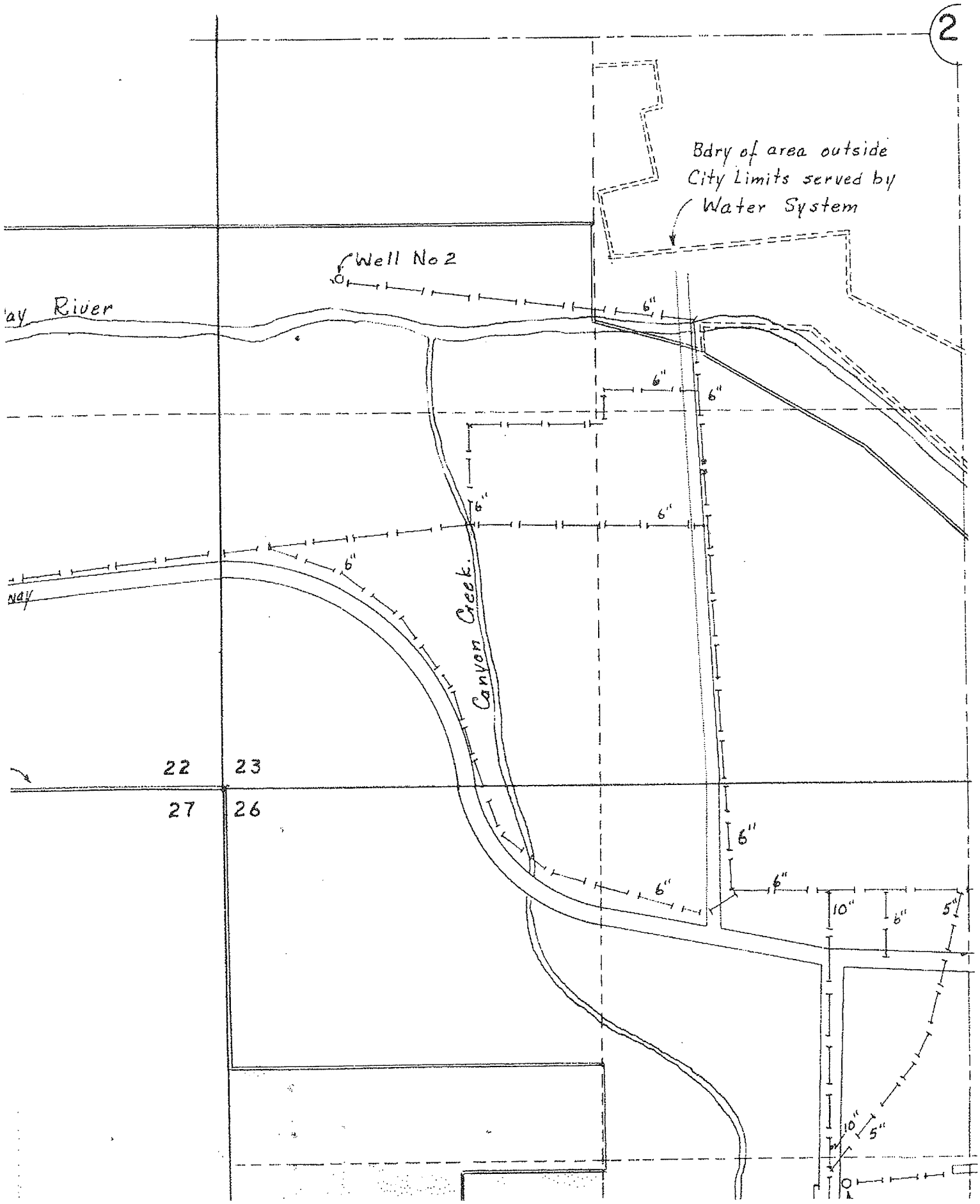
34
35
27
26
John Day - Burns Highway
Canyon Creek
Well No 1
26
6"
4"
10"
5"


City Limits
26
25
35
36


1/4 Corner (Found)
(Mound of Rock)
23
24
26
25
John Day River
Bdry. of area outside
City Limits served by
Water System
6"
4"
N


WM
23
1/4 Co
(Mou
N 74° 59' E 1755.6
tside
ed by
m
Well No 3
10"
23
24
26
25
Bdry.
City Lir
6"
5"
6"
10"
John Day Highway
6"
6"
6"
4"
5"
10"

T13S, R31E. WM


2
Bdry of area outside City Limits served by Water System
Well No 2
Bay River
6"
Canyon Creek
22
23
27
26
10"
5"

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

CITY OF JOHN DAY
240 SOUTH CANYON BLVD.
JOHN DAY, OREGON 97845

confirms the right to use the waters of WELL #3 in the JOHN DAY RIVER BASIN for the purpose of MUNICIPAL USES.

The right has been perfected under Permit G-6690. The date of priority is JUNE 23, 1975. The right is limited to not more than 0.89 CUBIC FOOT PER SECOND or its equivalent in case of rotation, measured at the well.

The well is located as follows:

NW 1/4 SE 1/4, SECTION 23, T 13 S, R 31 E, W.M.; SOUTH 74 DEGREES 59 MINUTES WEST 1755.6 FEET FROM E 1/4 CORNER, SECTION 23.

The right 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, and to which such right is appurtenant, is as follows:

E 1/2 SE 1/4
SECTION 22

SW 1/4
W 1/2 SE 1/4
SECTION 23

NW 1/4 NW 1/4
SECTION 25

N 1/2 NE 1/4
SW 1/4 NE 1/4
NW 1/4
N 1/2 SW 1/4
W 1/2 SE 1/4
SECTION 26
TOWNSHIP 13 SOUTH, RANGE 31 EAST, W.M.

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.

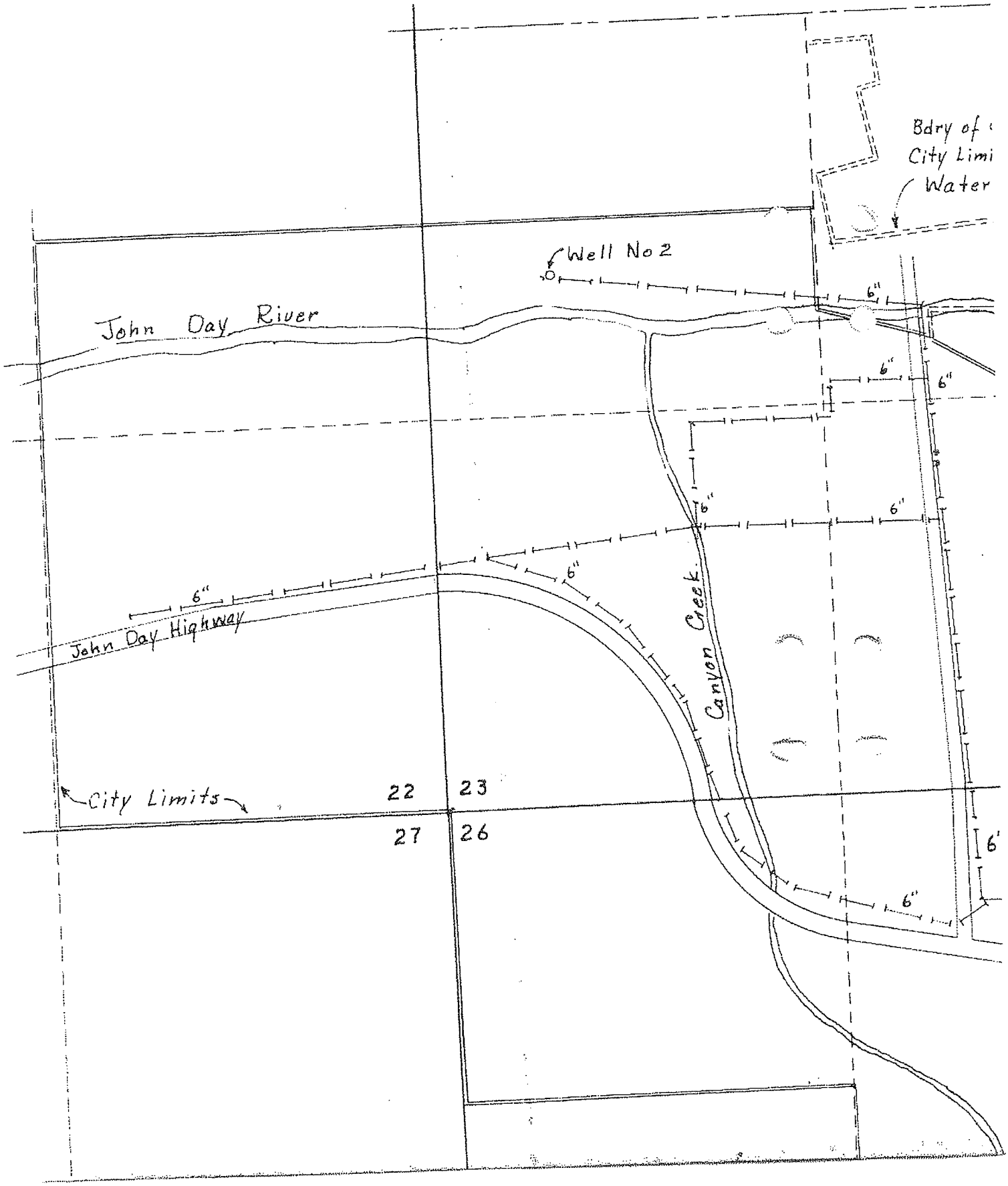
WITNESS the signature of the Water Resources Director, affixed this date NOVEMBER 23, 1988.

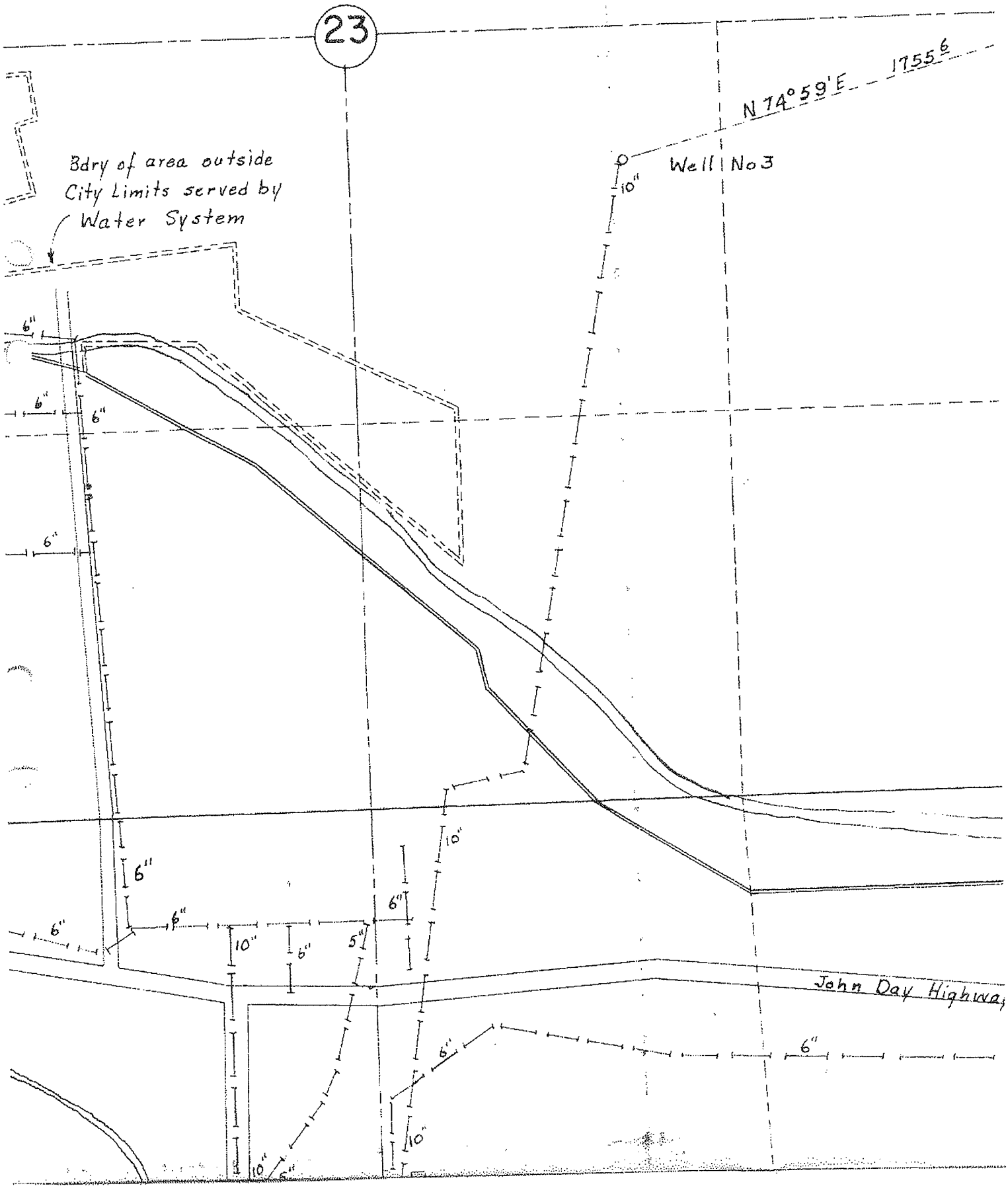
/s/ WILLIAM H. YOUNG
Water Resources Director

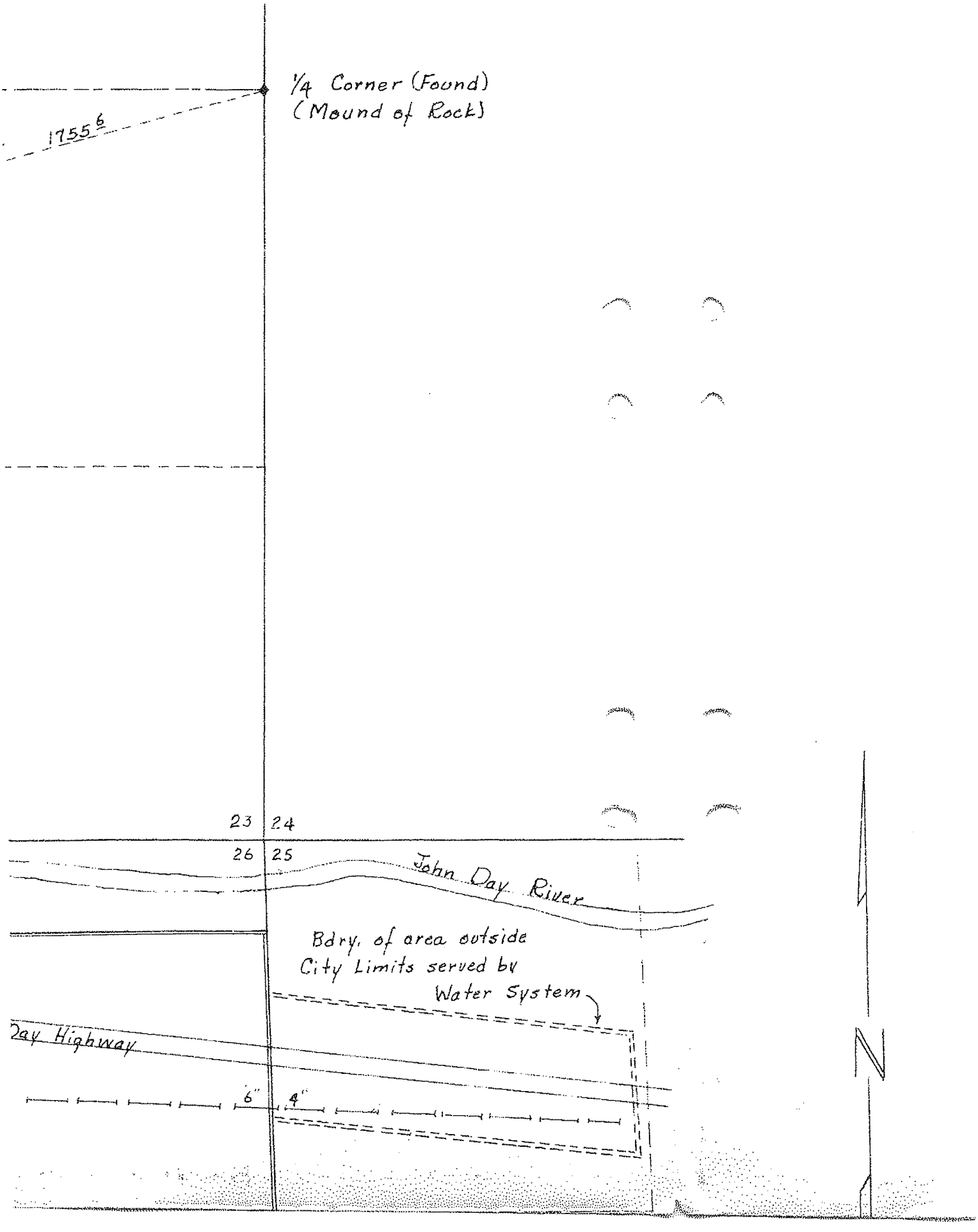
Recorded in State Record of Water Right Certificates numbered 58326

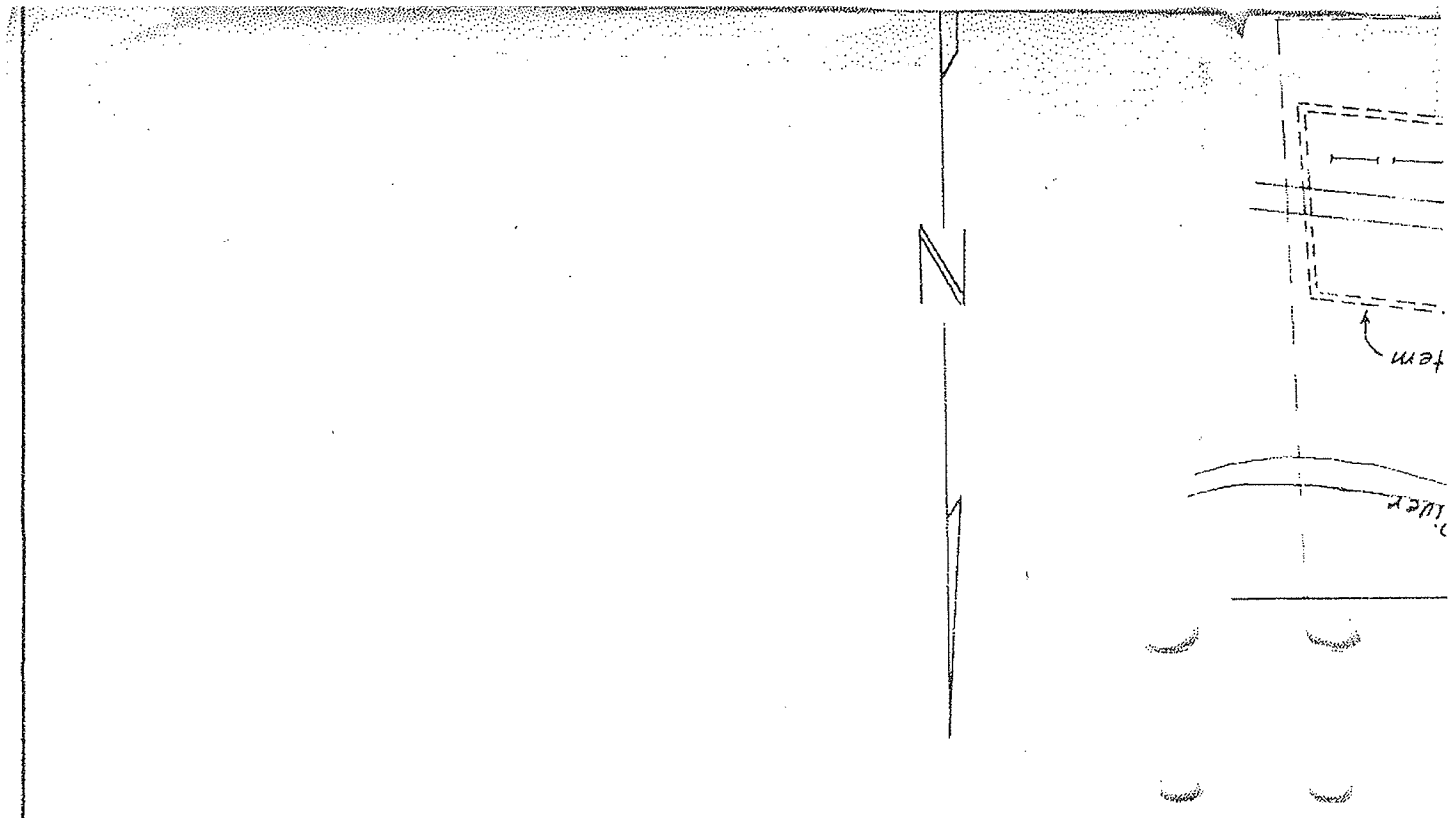
G-7007

T13S, R31


Bdry of
City Limi
Water
Well No 2
John Day River
6"
6"
6"
6"
6"
6"
6"
John Day Highway
Canyon Creek
City Limits
22
23
27
26
6'
6"


S, R 31 E. WM
23
N 74° 59' E 1755.6
Well No 3
Bdry of area outside City Limits served by Water System
John Day Highway
10"
6"
5"


1/4 Corner (Found)
(Mound of Rock)
1755 6
23
24
26
25
John Day River
Bdry. of area outside
City Limits served by
Water System
Day Highway
6"
4"
N



G-6690
58326

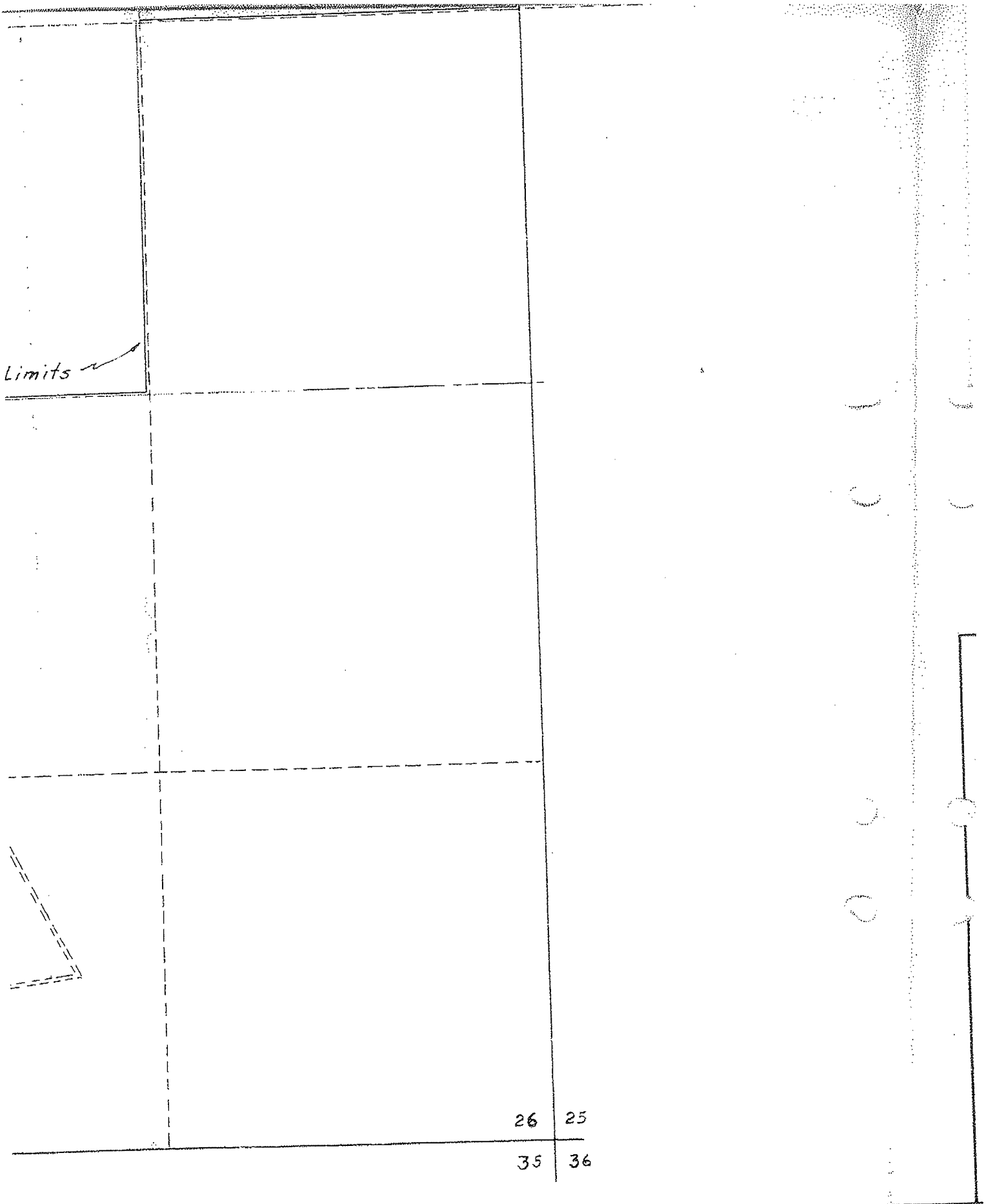
Application No. G 6690
Permit No.

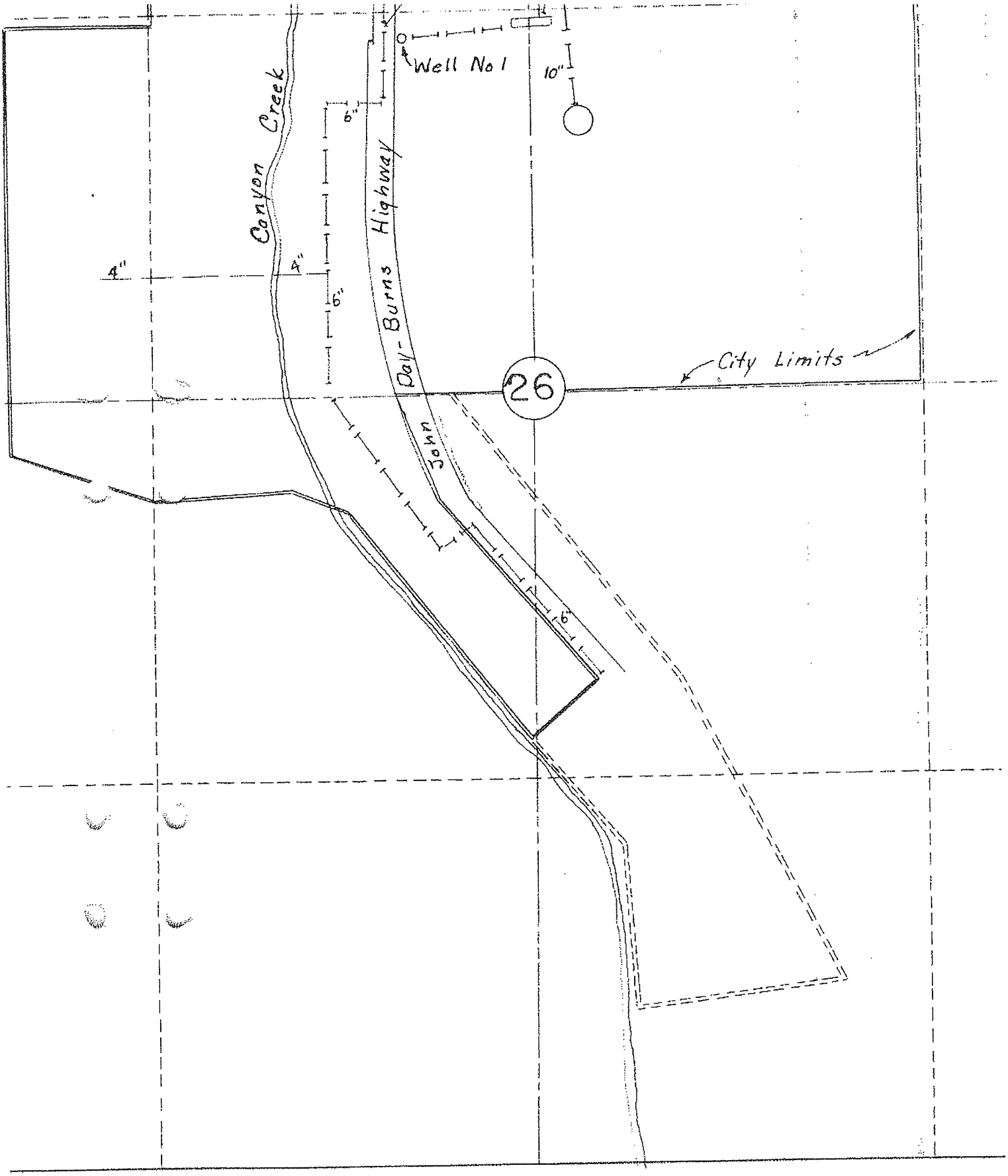
WATER RIGHT APPLICATION MAP for CITY of JOHN DAY, OREGON

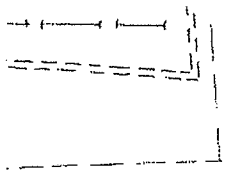
Map by
Elton S. Saunders
O.L.S No. 405
August, 1964

Scale
1" = 400 Feet.

Application No. G-6690
Permit No. 41625


Limits
26
25
35
36


Well No 1
10"
6"
Canyon Creek
Dal - Burns Highway
4"
4"
6"
City Limits
26
John
16"



WATER RIGHT APPLICATION MAP for CITY of JOHN DAY, OREGON

Map by

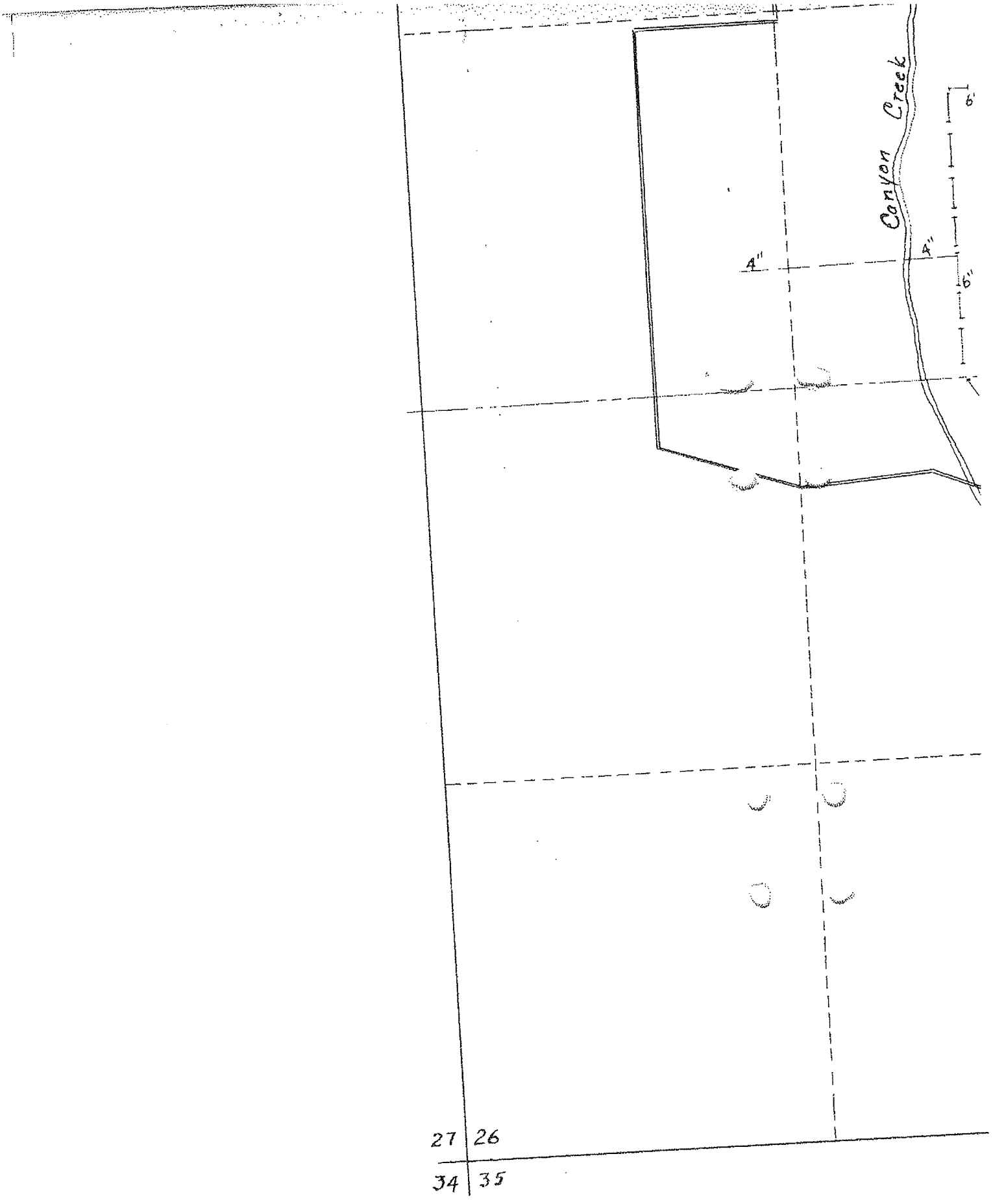
Elton S. Saunders

O.L.S No. 405

August, 1964

Scale

1" = 400 Feet.


Canyon Creek
6"
4"
4"
6"
27
26
34
35

STATE OF OREGON

COUNTY OF GRANT

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

TOWN OF CANYON CITY
CITY OF JOHN DAY
240 SOUTH CANYON BOULEVARD
JOHN DAY, OREGON 97845

confirms the right to use the waters of WELL (#4) in the JOHN DAY RIVER BASIN for the purpose of MUNICIPAL USE.

The right has been perfected under Permit G-9319. The date of priority is APRIL 1, 1981. The right is limited to not more than 2.23 CUBIC FEET PER SECOND or its equivalent in case of rotation, measured at the well.

The well is located as follows:

NW 1/4 SE 1/4, SECTION 23, T 13 S, R 31 E, W.M.; 1530 FEET NORTH AND 110 FEET EAST FROM THE S 1/4 CORNER OF SECTION 23.

The right 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, and to which such right is appurtenant, is as follows:

S 1/2 SE 1/4
SECTION 20
SE 1/4 NE 1/4
S 1/2
SECTION 21
S 1/2 NE 1/4
NW 1/4
S 1/2
SECTION 22
SW 1/4 NE 1/4
S 1/2 NW 1/4
SW 1/4
W 1/2 SE 1/4
SECTION 23
N 1/2
SECTION 25
N 1/2
SW 1/4
W 1/2 SE 1/4
SECTION 26
ALL
SECTION 27
N 1/2
SECTION 28
NE 1/4
N 1/2 SE 1/4
SECTION 29
NE 1/4
N 1/2 NW 1/4
NE 1/4 SE 1/4
SECTION 34
ALL
SECTION 35
TOWNSHIP 13 SOUTH, RANGE 31 EAST, W.M.

SEE NEXT PAGE

W 1/2 SW 1/4
SECTION 36
TOWNSHIP 13 SOUTH, RANGE 31 EAST, W.M.

LOTS 1 & 2 (W 1/2 NW 1/4)
SECTION 30
TOWNSHIP 13 SOUTH, RANGE 32 EAST, W.M.

LOTS 1 & 2 (S 1/2 NE 1/4)
LOTS 3 & 4 (S 1/2 NW 1/4)
N 1/2 SW 1/4
N 1/2 SE 1/4
SECTION 1

LOTS 1 & 2 (S 1/2 NE 1/4)
N 1/2 SE 1/4
SECTION 2
TOWNSHIP 14 SOUTH, RANGE 31 EAST, W.M.

The well shall be maintained in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon.

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.

WITNESS the signature of the Water Resources Director, affixed SEPTEMBER 30, 1992.

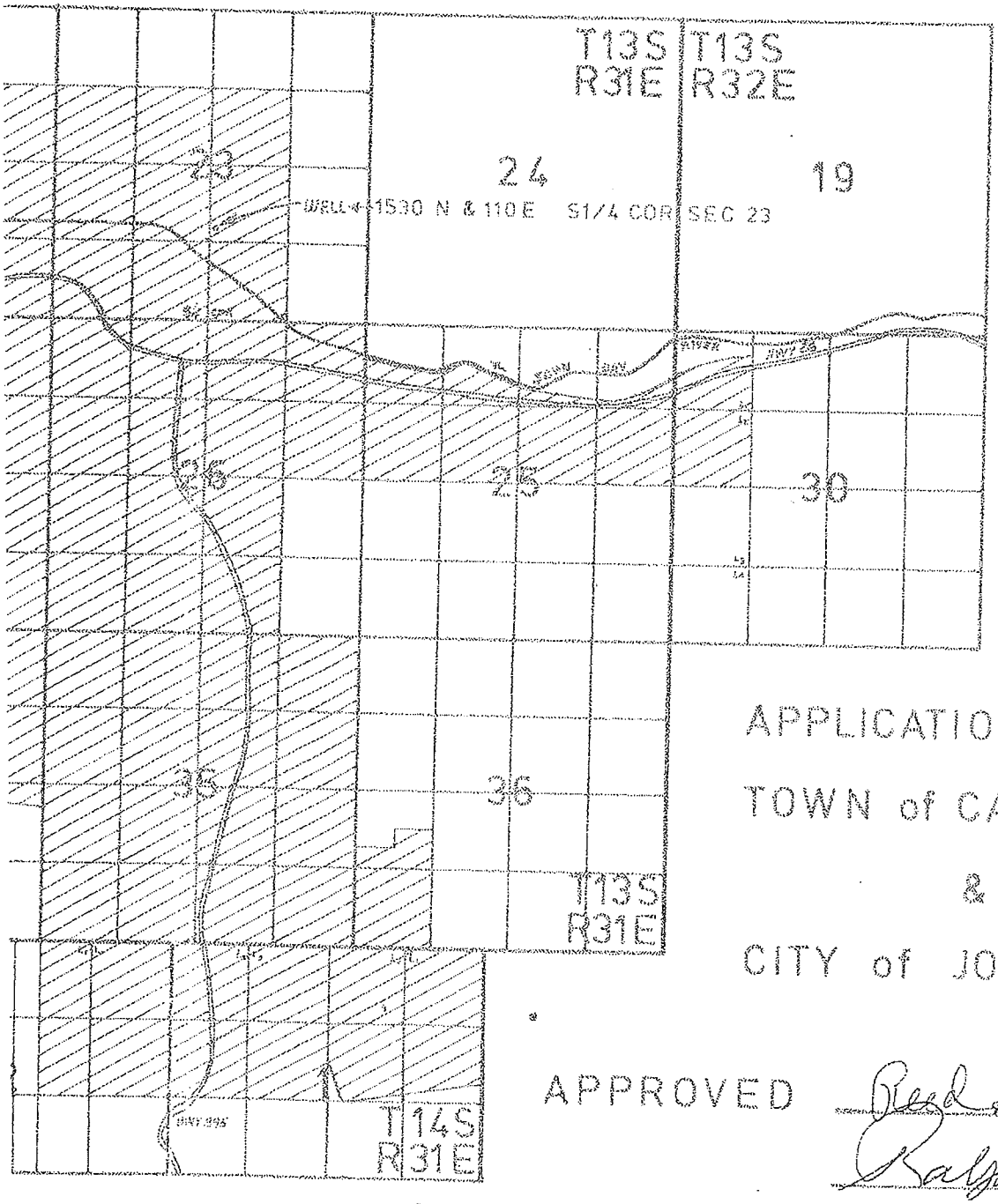
/s/ MARTHA O. PAGEL
Martha O. Pagel

Recorded in State Record of Water Right Certificates numbered 67796.

G-10244.DLM

G-9319

R. 31 E.



APPLICATION MAP FOR

TOWN of CANYON CITY

&

CITY of JOHN DAY

APPROVED Reed B. Patterson

Ralph G. Dunton

Application No. G-10244

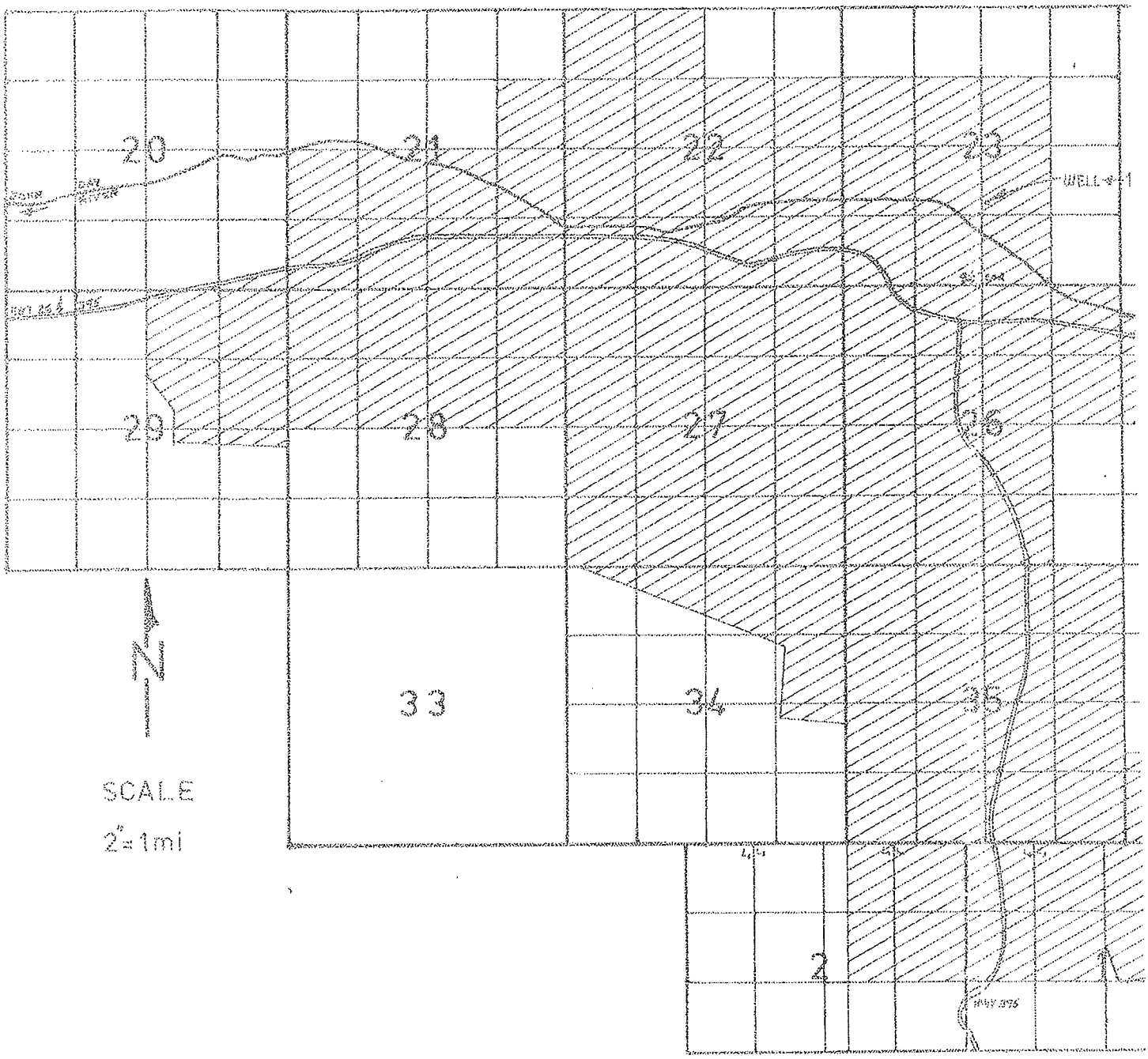
Permit No. G 9319

RECEIVED

APR 1 1981

WATER RESOURCES DEPT
SALEM, OREGON

T.13S., R.31 & 32E., T.14S., R.31E.



Important Disclaimer

This water rights research was conducted by staff at the Watermaster's office located in Canyon City, Oregon. Although every effort has been made to ensure an accurate search, the following discrepancies may occur:

- Acreage shown with a +/- symbol are approximations of the amount of water right on a tax lot. This could mean that a water right does not lie entirely within the tax lot requested or there is some other doubt as to the actual acreage indicated.

- If the recipient of the research wishes to know more accurately the amount of water rights appurtenant to their property they may want to consider hiring a surveyor who offers services to assemble a complete "water right portfolio". Individuals or businesses who perform this type of work can provide more detailed information on the amount of water right acreages on their property and better determine totals of legal flow or rate for each tax lot in question.

- Although a property may have water rights of record, if they have undergone five successive years of non-use they may be subject to cancellation under ORS 540.610. For a copy of this statute or more information, please contact the Watermaster's office.

- Some research may indicate water rights appurtenant to the property may be in "permit" form or may be in "transfer" form. These forms of a water right are a valid water right of record but are in an "Inchoate status". This means the water right is subject to variations, alterations or changes as the water right is processed to completion into a water right certificate. For more information contact the Watermaster Office.

- It is critical that the person requesting the research carefully check any research conducted by staff from this office to be sure that the water right is appurtenant to the property they are interested in. Any listings as a result of a manual search of the Watermaster's records are not based on the official water right of record. The *official* water right records are kept in the Salem office.

Oregon
Kate Brown, Governor

Water Resources Department
725 Summer St NE, Suite A
Salem, OR 97301
(503) 986-0900
Fax (503) 986-0904

Wednesday, March 29, 2017

Irrigation Season

The irrigation season of the John Day River and its tributaries is hereby fixed as the period from April 1st to September 30th of each year.

Rate and Duty

1. **Main John Day River above Picture Gorge:**

A rate of flow limited to one-fortieth of one cubic foot per second per acre during the irrigation season.

A quantity of water limited to one acre foot per acre during any calendar month prior to July 1st, and thereafter not to exceed three-fourths of one acre foot per acre, and a total limitation during the irrigation season not to exceed five acre feet per acre.

2. **Main John Day River below Picture Gorge, and the North and Middle Forks of the John Day River:**

A rate of flow limited to one-fortieth of one cubic foot per second per acre during the irrigation season.

A quantity of water not to exceed one acre foot per acre during and calendar month and a total quantity during the irrigation season not to exceed five acre feet per acre.

3. **South Fork John Day River and tributaries, all tributaries of the Main John Day River, and of the North and Middle Forks of the John Day River.**

A rate of flow limited to one-fortieth of one cubic foot per second per acre prior to June 1st, and thereafter not to exceed one-eightieth of one cubic foot per second per acre during the remainder of the irrigation season.

A quantity of water limited to one acre foot per acre during any calendar month prior to June 1st, and not to exceed, during the irrigation season, four acre feet per acre.

-John Day River Decree, Paragraph 106, Page 79-80

FORFEITURE OF WATER RIGHTS

540.610 Use as measure of water right; forfeiture for nonuse; confirmation of rights of municipalities. (1) Beneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state. Whenever the owner of a perfected and developed water right ceases or fails to use all or part of the water appropriated for a period of five successive years, the failure to use shall establish a rebuttable presumption of forfeiture of all or part of the water right.

(2) Upon a showing of failure to use beneficially for five successive years, the appropriator has the burden of rebutting the presumption of forfeiture by showing one or more of the following:

(a) The water right is for use of water, or rights of use, acquired by cities and towns in this state, by appropriation or by purchase, for all reasonable and usual municipal purposes.

(b) A finding of forfeiture would impair the rights of such cities and towns to the use of water, whether acquired by appropriation or purchase, or heretofore recognized by act of the legislature, or which may hereafter be acquired.

(c) The use of water, or rights of use, are appurtenant to property obtained by the Department of Veterans' Affairs under ORS 407.135 or 407.145 for three years after the expiration of the period of redemption provided for in ORS 18.964 while the land is held by the Department of Veterans' Affairs, even if during such time the water is not used for a period of more than five successive years.

(d) The use of water, or rights of use, under a water right, if the owner of the property to which the right is appurtenant is unable to use the water due to economic hardship as defined by rule by the Water Resources Commission.

(e) The period of nonuse occurred during a period of time within which land was withdrawn from use in accordance with the Act of Congress of May 28, 1956, chapter 327 (7 U.S.C. 1801-1814; 1821-1824; 1831-1837), or the Federal Conservation Reserve Program, Act of Congress of December 23, 1985, chapter 198 (16 U.S.C. 3831-3836, 3841-3845). If necessary, in a cancellation proceeding under this section, the water right holder rebutting the presumption under this paragraph shall provide documentation that the water right holder's land was withdrawn from use under a federal reserve program.

(f) The end of the alleged period of nonuse occurred more than 15 years before the date upon which evidence of nonuse was submitted to the commission or the commission initiated cancellation proceedings under ORS 540.631, whichever occurs first.

(g) The owner of the property to which the water right was appurtenant is unable to use the water because the use of water under the right is discontinued under an order of the commission under ORS 537.775.

(h) The nonuse occurred during a period of time within which the water right holder was using reclaimed water in lieu of using water under an existing water right.

(i) The nonuse occurred during a period of time within which the water right holder was reusing water through land application as authorized by ORS 537.141 (1)(i) or 537.545 (1)(g) in lieu of using water under an existing water right.

(j) The owner or occupant of the property to which the water right is appurtenant was unable to make full beneficial use of the water because water was not available. A water right holder rebutting the presumption under this paragraph shall provide evidence that the water right holder was ready, willing and able to use the water had it been available.

(k) The holder of a water right is prohibited by law from using the water. If the prohibition is subject to remedial action that would allow the use of the water, the water right holder shall provide evidence that the water right holder is conducting the remedial action with reasonable diligence.

(L) The nonuse occurred during a period of time within which the exercise of all or part of the water right was not necessary due to climatic conditions, so long as the water right holder had a facility capable of handling the full allowed rate and duty, and was otherwise ready, willing and able to use the entire amount of water allowed under the water right.

(m) The nonuse occurred during a period of time within which the water was included in a transfer application pending before the Water Resources Department.

(n) The nonuse of a supplemental water right occurred during a period of time when the primary water right used in conjunction with that supplemental water right was leased as an in-stream water right pursuant to ORS 537.348.

(3) Notwithstanding subsection (1) of this section, if the owner of a perfected and developed water right uses less water to accomplish the beneficial use allowed by the right, the right is not subject to forfeiture so long as:

(a) The user has a facility capable of handling the entire rate and duty authorized under the right; and

(b) The user is otherwise ready, willing and able to make full use of the right.

(4) The right of all cities and towns in this state to acquire rights to the use of the water of natural streams and lakes, not otherwise appropriated, and subject to existing rights, for all reasonable and usual municipal purposes, and for such future reasonable and usual municipal purposes as may reasonably be anticipated by reason of growth of population, or to secure sufficient water supply in cases of emergency, is expressly confirmed.

(5) After a water right is forfeited under subsection (1) of this section, the water that was the subject of use shall revert to the public and become again the subject of appropriation in the manner provided by law, subject to existing priorities. [Amended by 1985 c.689 §5; 1987 c.339 §4; 1989 c.699 §1; 1989 c.833 §61a; 1991 c.370 §6; 1995 c.356 §2; 1995 c.366 §1; 1997 c.42 §5; 1997 c.244 §5; 1997 c.283 §1; 1999 c.335 §3; 1999 c.804 §§3,4; 2005 c.222 §1; 2005 c.542 §70; 2005 c.625 §70]