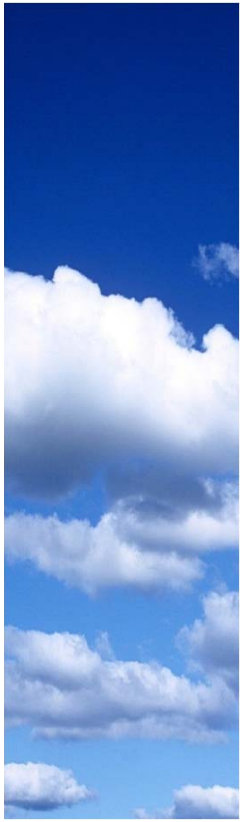
CITY OF WALLA WALLA

Complying with Water Rights, Public Health Protection, and Class A Reclamation Standards

1927 - 2015



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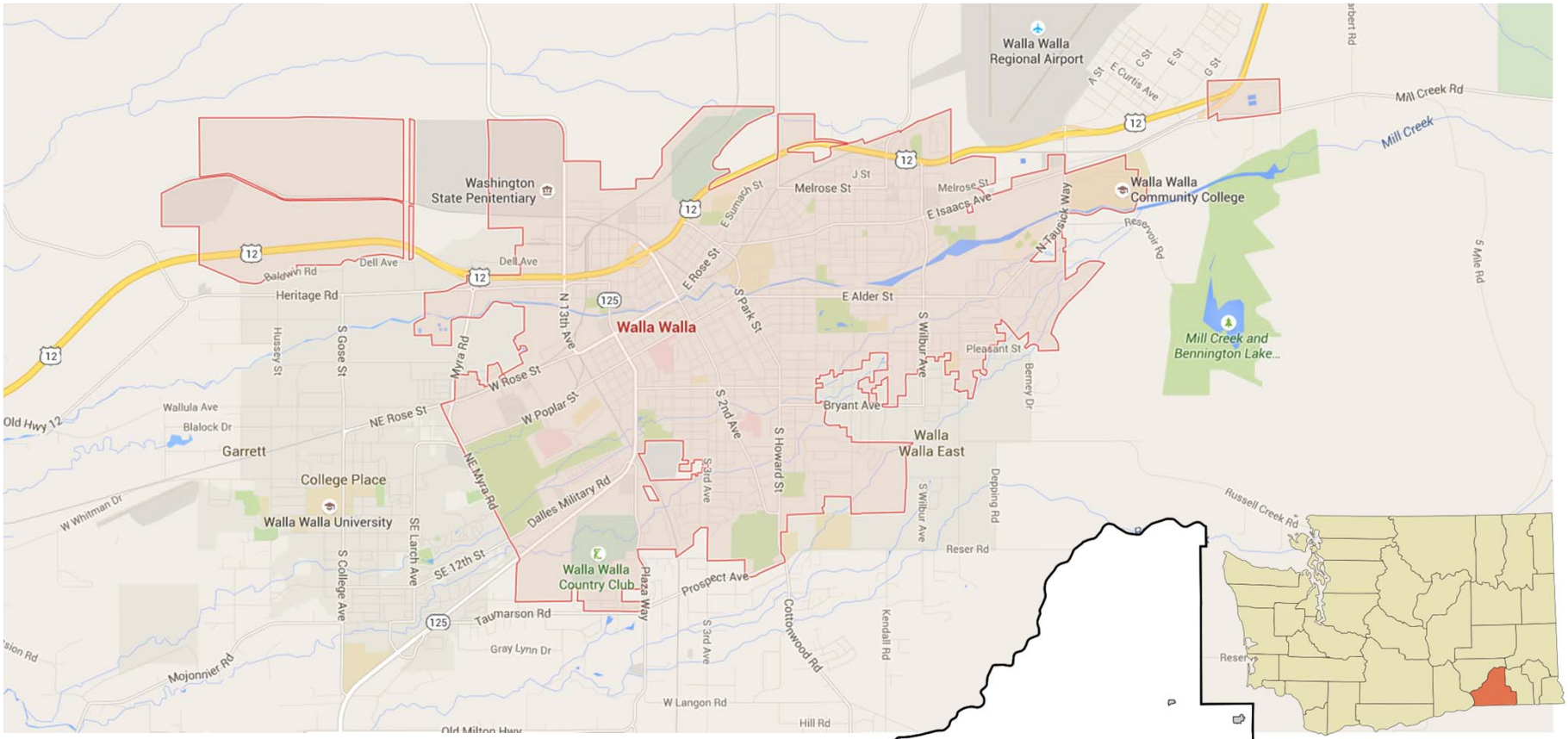
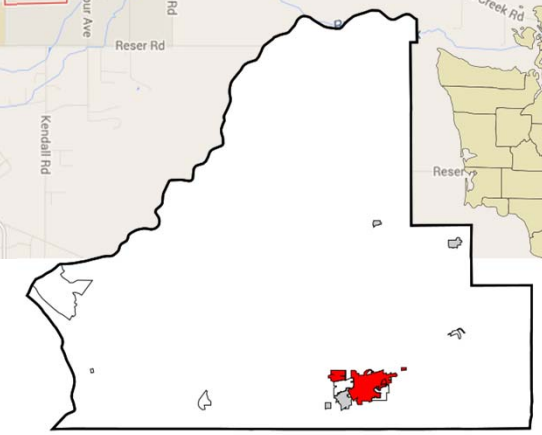
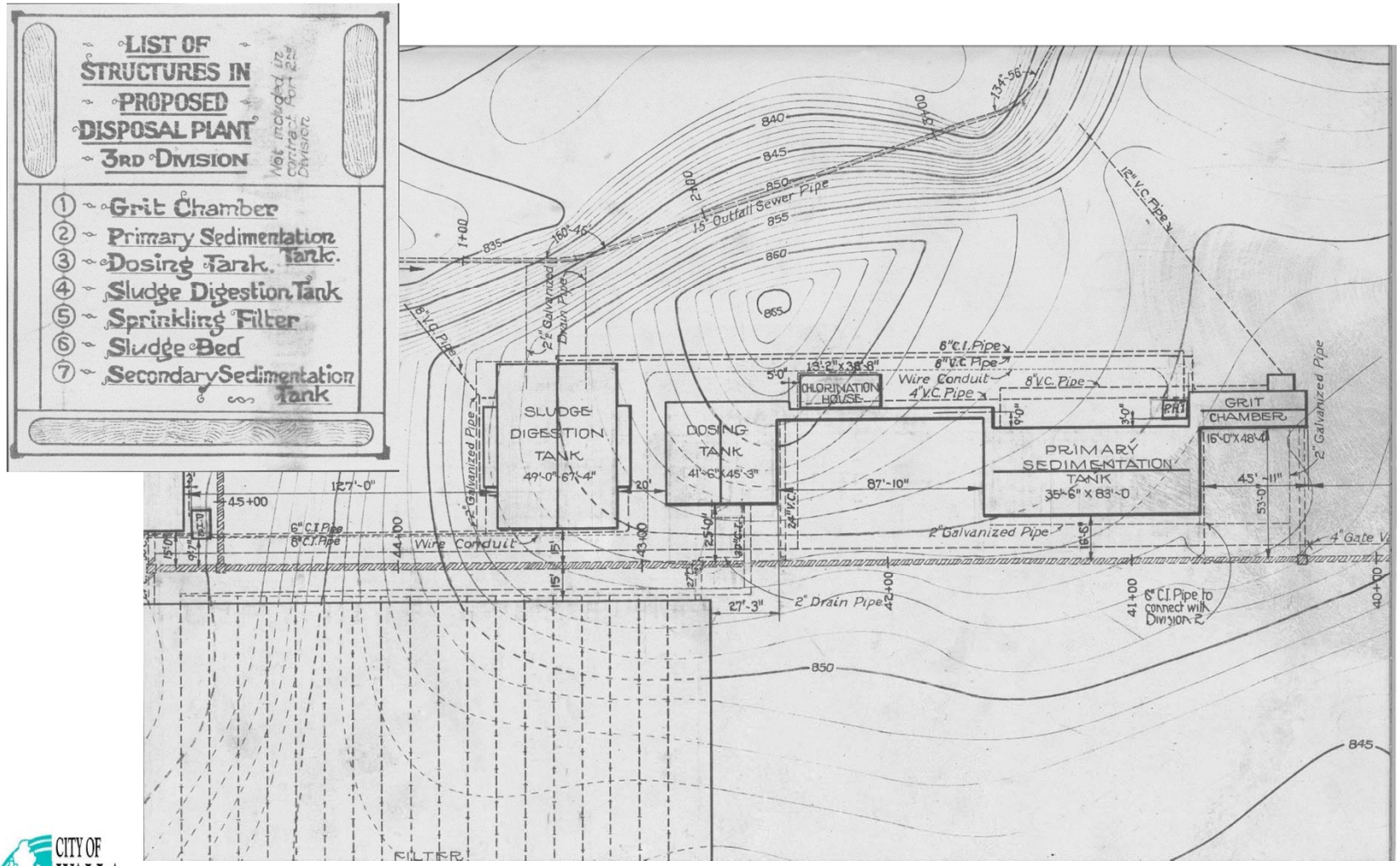




1927 Consent Decree and 80+ Years of Ramifications

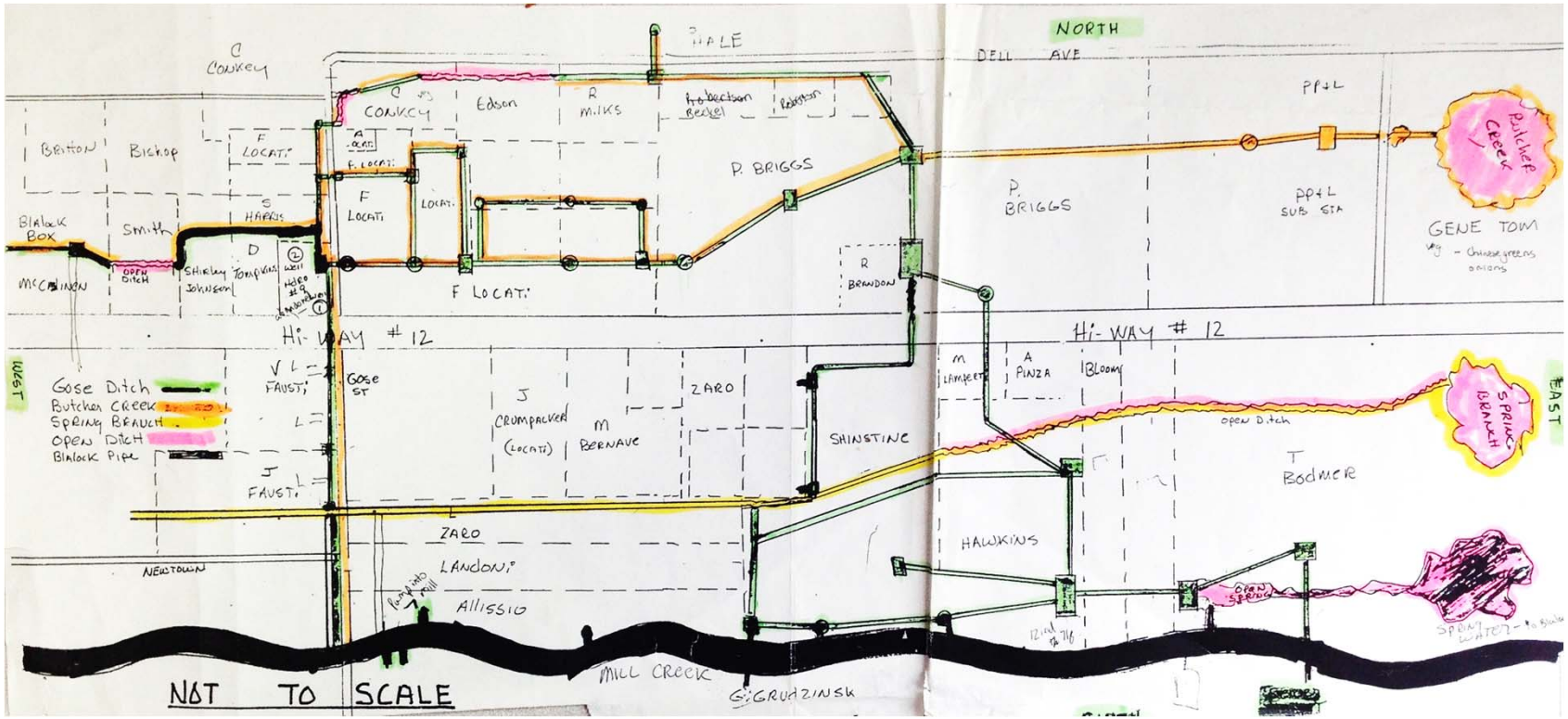
1. The City of Walla Walla must provide adequately treated effluent to Gose and Blalock Irrigation Districts, May 1 to November 30 (7.3 MGD = 11.3 CFS). 1927 Consent Decree.
2. Effluent subject to conditions imposed by Department of Health (DOH). DOH is obligated to impose those conditions necessary to protect public health.
3. TMDL- No loading for ammonia to Mill Creek, May 1 to November 30.
4. Department of Ecology (DOE) Consent Order: Walla Walla must meet Class A Reuse Standards by December 31, 2008.
5. Note: Irrigation Districts are not in City of Walla Walla limits.
6. Blessing in disguise or double-edged sword?

1927 'Advanced' Treatment Plant



Reclamation and Reuse Reality for 80+ Years

Gose Irrigation District



Gose (2003): 1.77 CFS – 180 Ac – 78% Residential/Pasture, 17% Wheat, 5% Vegetable
Blalock (2003): 7.48 CFS – 800 Ac – 49% Residential, 40% Pasture, 11% Vegetable

CITY OF WALLA WALLA

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RCW 90.46.010 – Current Definition of Reclaimed Water

Effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur.

Transition to Current Advanced Treatment

2015 – BNR & Filtered to Class A, Capacity of 7.9 MGD

1996 – Trickling Filters & Food Processing

"Class A" Reclaimed Water

Reclaimed water that, at a minimum, is at all times ***oxidized, coagulated, filtered, disinfected*** wastewater. The wastewater shall be considered adequately disinfected if the median number of total coliform organisms in the wastewater after disinfection does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of total coliform organisms does not exceed 23 per 100 milliliters in any sample. (*Water Reclamation and Reuse Standards, September 1997, Washington DOH and DOE)*

IDEQ/EPA Recreational Water Quality Standard vs ID and WA Class A Reuse/Reclamation

Primary contact recreation requires water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those used for swimming, water skiing, or skin diving.

<126 E.Coli / 100 ml – Geo. Mean of 5 samples over 30 days (1,000 Total Coliforms)

<406 E.Coli / 100 ml – Single sample

Class A - Reclamation (Washington)

Class A - Reuse (Idaho)

<2.2 Total Coliforms per 100 ml – 7 day Mean

< 23 Total Coliforms per 100 ml – Not to exceed any sample

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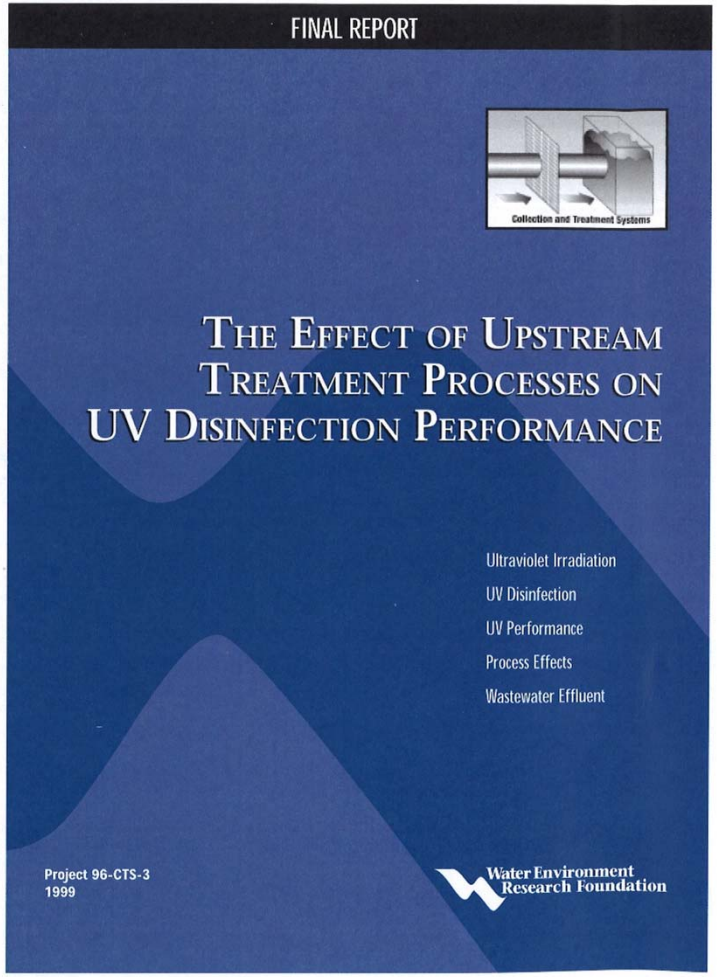
Technology Considerations



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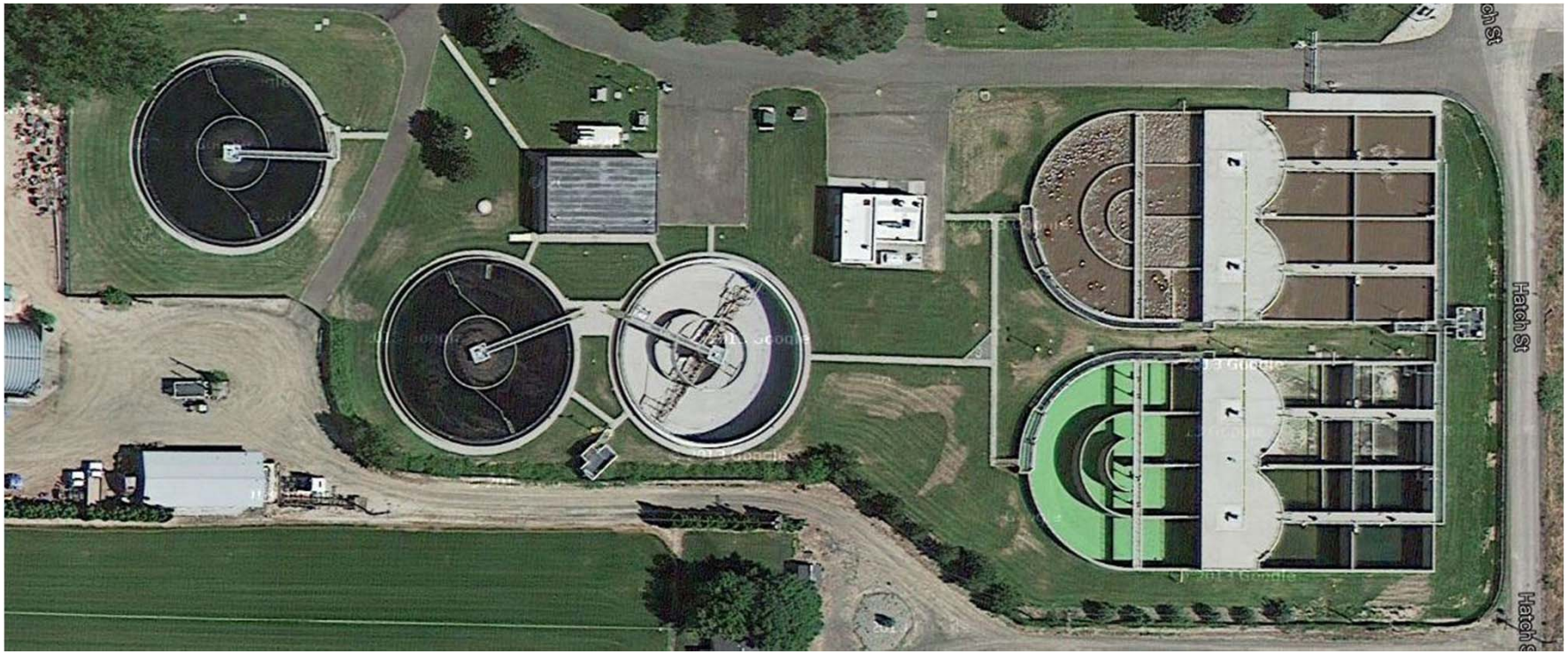
1992

OXIDIZED: Full BNR with TN < 10ppm

Flow → Anaerobic – Anoxic – Oxidation Ditch – Secondary Clarifier →



COAGULATED

Oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated prior to filtration by the addition of chemicals or by an equally effective method.

FILTERED

Oxidized, coagulated wastewater which has been passed through natural undisturbed soils or filter media, such as sand or anthracite, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 nephelometric turbidity units (NTU), determined monthly, and does not exceed 5 NTU at any time.

FILTERED

Rebuilt 'State-of-the-Art' 1980's Traveling Bridge Multi-Media

FILTERED

DISINFECTION

UV Design Criteria

The most widely accepted and the most recently developed design guidelines for UV in reuse applications in 2004 was:

- NWRI/AWWARF publication "Ultraviolet Disinfection Guidelines for Drinking Water and Wastewater Reclamation," 2000.
- For secondary effluent with coagulation and granular medium filtration, the recommended dose is 100 mJ/cm^2.
- The guidelines indicate this dose is intended to be validated through equipment and site-specific NWRI protocol bioassay tests. In the absence of relevant bioassay-validated dose, 100 mJ/cm^2 was selected as the design dose.

UV DISINFECTION
System Design Parameters

Influent to the Disinfection System:	Parameter
Design Max. Day Flow (100 mJ/cm^2 dose applies)	14 mgd
Design average flow	7.9 mgd
Design year 2005 average flow (for O&M cost ests.)	7.3 mgd
Maximum Effluent suspended solids	5 mg/l
Maximum Effluent Turbidity	2.0 NTU
Maximum Effluent TC	10^6 per 100 ml
Effluent Disinfection Requirements	
Maximum Daily total coliform	23 per 100 ml
Maximum monthly average total coliform	2.2 per 100 ml
Redundancy	1 full bank – full capacity with one bank out of service
Replacement Lamp price guarantee	5 years
Multiple channel requirement – ability to remove a channel from service for maintenance – while continuing to treat to approximately 50% total capacity (would allow a channel to be taken out of service and still treat 7.0 mgd)	

UV DISINFECTION

COLOR CODING

All reclaimed water piping, valves, outlets, and other appurtenances shall be color-coded purple [Pantone 522 or other shades of purple acceptable to review agencies], taped purple [Pantone 512 or other shades or purple acceptable to review agencies], or otherwise marked to identify the source of the water as being reclaimed water.

COLOR CODING

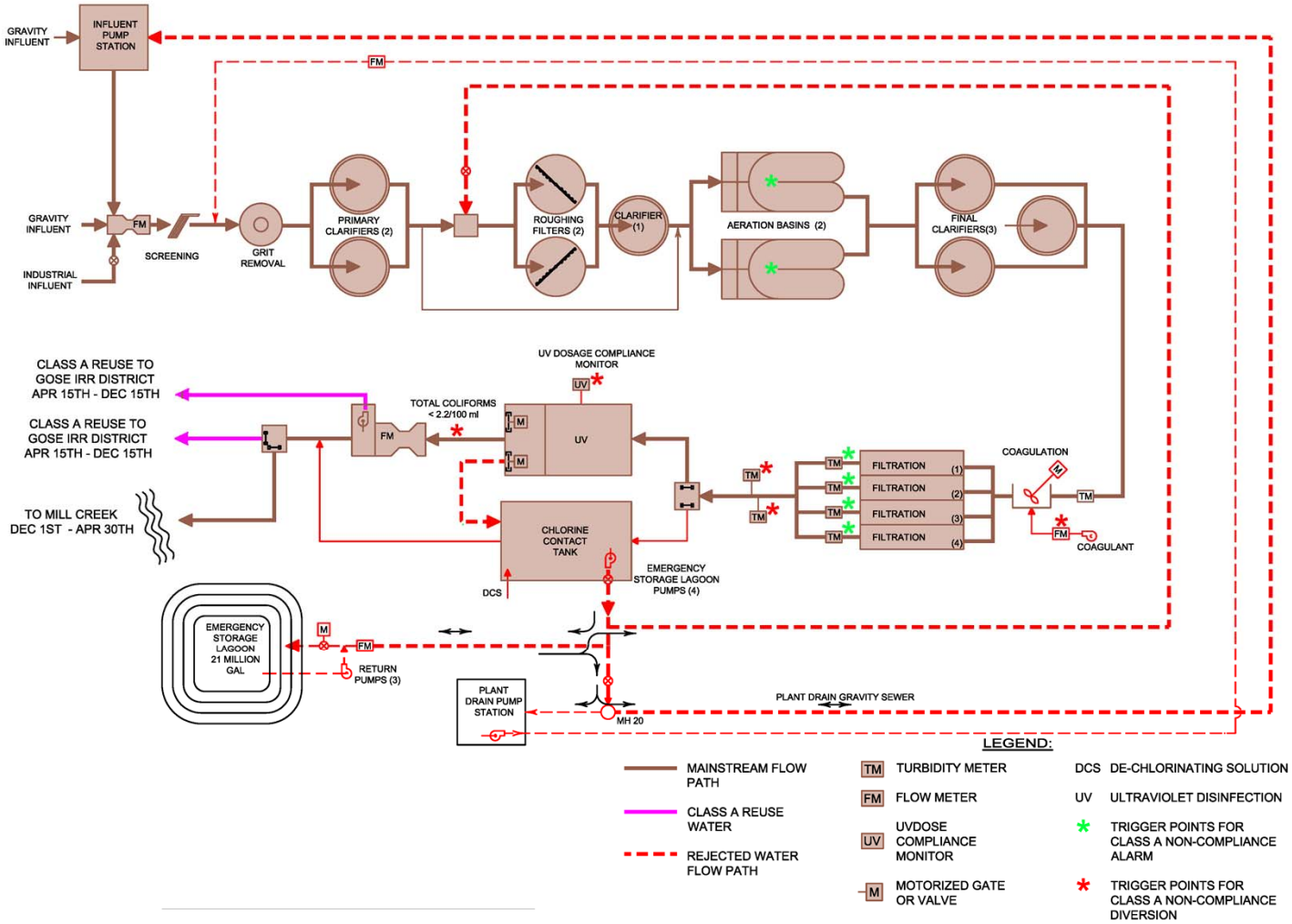
STORAGE
or Approved Alternative Disposal

(a) Where no alternative disposal system is permitted, system storage or other acceptable means shall be provided to assure the retention of reclaimed water under adverse weather conditions or at other times when reuse is precluded.

(b) When wet weather conditions preclude the use of reclaimed water, the system storage volume shall be established by determining the storage period that would be required for the duration of a 10-year storm, using weather data that is available from, or is representative of, the area involved. A minimum of 20 years of climatic data shall be used in storage volume determinations.

(c) At a minimum, system storage capacity shall be the volume equal to three times that portion of the average daily flow of reuse capacity for which no alternative reuse or disposal system is permitted.

Compliance Monitoring
Alarm & Diversion Trigger Point



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STORAGE
or Approved Alternative Disposal

Emergency Storage Lagoon

Fish Love Reclaimed Water

The Future……..

Potential Future Regulations and Concerns

The State of Washington is in the final process of Reclaimed Water Rulemaking to be adopted y October 28, 2015. Additionally the City of Walla Walla must be sensitive to public perceptions and concerns because of the highly visible nature of the reuse – irrigation to food crops. This evaluation included a review of potential changes to the regulations and possible public concerns, and possible effects on disinfection operation. The review is summarized as follows:

- Modifying the reuse criteria
- New Rule: When the existing reclamation permit expires, the City will be required to negotiate a new permit in accordance with the new rule
- Viruses
- Disinfection bi-products
- Giardia and Cryptosporidium
- Emerging Compounds of Concern

Thanks - Frank and Willie

Q/A