Small Water System Asset Management

Jeff Tasoff, PE, DCG, Inc.

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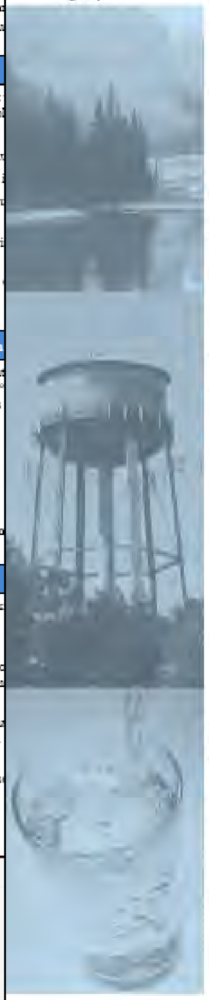
Best Practices Guide and Fact Sheets



EPA United States Environmental Protection Agency

Asset Management for Local Officials

EPA United States Environmental Protection Agency

Building an Asset Management Team

EPA United States Environmental Protection Agency

Asset Management: A Best Practices Guide

Introduction	
Purpose	This guide will help you understand: • What asset management means. • The benefits of asset management. • Best practices in asset management. • How to implement an asset management plan.
Target Audience	This guide is intended for owners, managers, and operators of public water systems, local officials, technical assistance providers, and state personnel.

Asset Management

Maintaining a desired level of service (what you want your assets to provide) at the lowest life cycle cost (best appropriate cost - not without cost).

Challenges faced by Public Water Systems	Benefits of Asset Management
• Aging assets. • Increasing demand for services. • Resistance to rate increases. • Diminishing resources. • Determining the best (or optimal) time to repair, replace, or renew assets. • Rising service expectations of customers. • Increasingly stringent regulatory requirements.	• Budgets focused on activities critical to sustained performance. • Financial management and rates based on sound operational information. • Efficient and focused operations and maintenance to prolong asset life and aid repair/replace decisions. • Ability to meet consumer demands with a focus on system sustainability. • Improved response to emergencies. • Security and safety of assets improved.

Implementing Asset Management: Five Core Questions Framework

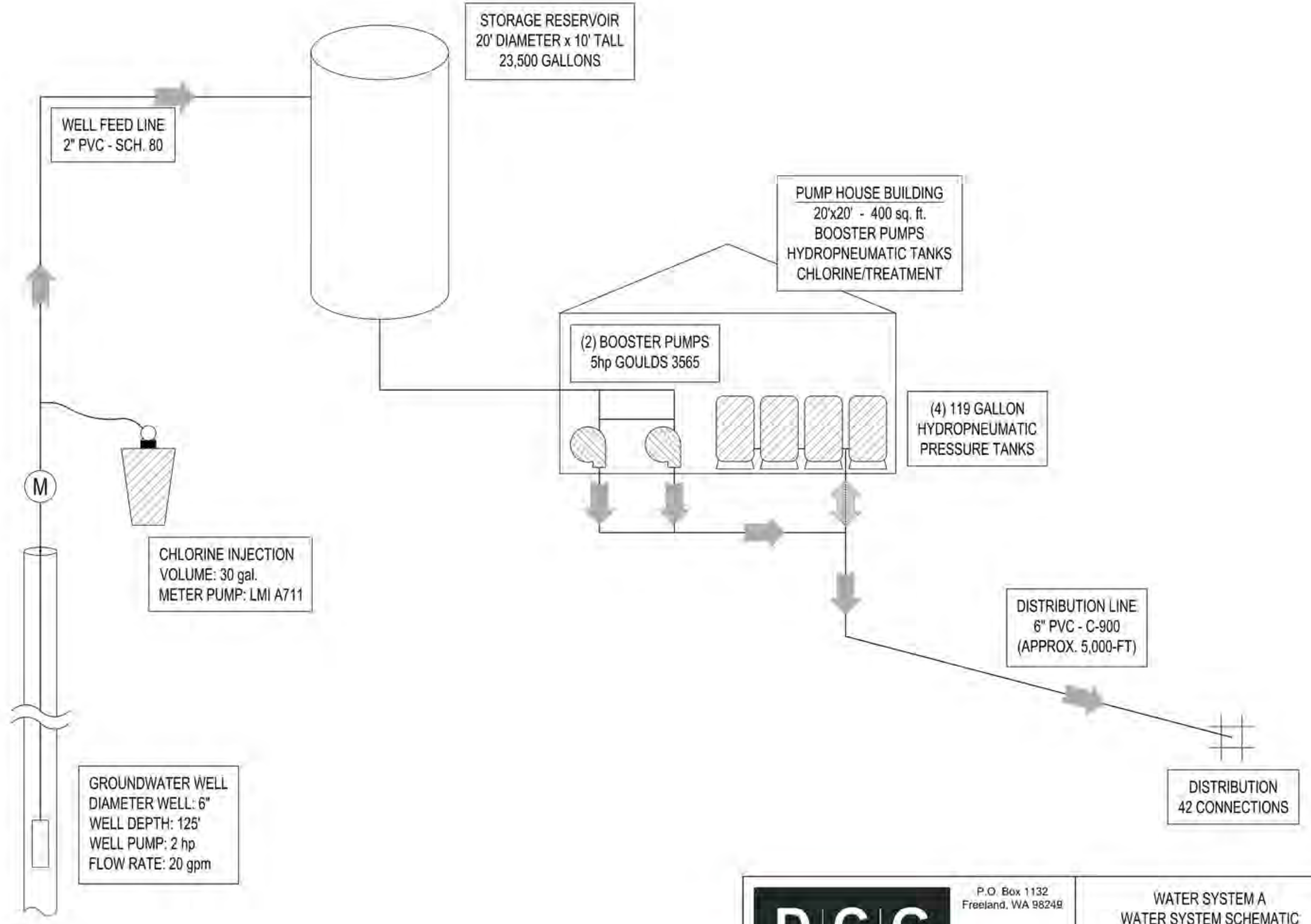
There are many asset management best practices that are constantly being improved upon. You will become more familiar with these approaches as you implement your asset management program. A good starting point for any size system is the five core questions framework. This framework walks you through all of the major activities associated with asset management and can be implemented at the level of sophistication reasonable for a given system.

Why is Knowing your Assets Important

- You are running a Utility Business
- As a business owner you should know your:
  - Revenue
  - Operational Costs
  - Future Liabilities
- Current Assets are Future Liabilities
- Replacement Costs can easily be $100,000 up to $1,000,000+
- If current Water Rates are not $50/month or more, then you are not properly funding for Infrastructure Replacement

Small Water System Planning Process

- Chapter 1 - 1.2   Service Area and Facilities Map
- Chapter 2 – 2.4 Component Inventory and Assessment
- Chapter 3 – 3.1 & 3.2 Asset Replacement
  - – 3.3 Budget
  - – 3.4 Water Rates



DCG
civil structural
P.O. Box 1132
Freeland, WA 98249
P: 360.331.4131
F: 360.331.5131
www.dcgengr.com

WATER SYSTEM A
WATER SYSTEM SCHEMATIC

SYSTEM COMPONENTS AND QUANTITIES

DWG NO. A

SHT 1 OF 1


6" Gate Valves, Typical
From Booster Pumps
6" Piping
Kims Way
Heller Rd
Blow-offs
Air/Vac Release

Common Items

- Wells - $50,000 ($25,000 well + $25,000 testing approval and connection costs)
- Well Pumps - $5,000
- Waterlines - $100 per linear foot
- Storage Reservoirs - $2 per gallon plus $25,000 for prep and site piping
- Booster Pumps - $3,000 (2 HP) $5,000 (larger)
- Pressure Tanks - $20/gallon
- Bladder Tanks - $2,000 (installed)
- Air Release/Blow-off Valves - $5,000 each
- Gate Valves - $2,000
- Oxidation/Filtration Treatment System - $50,000
- Building - $200 per square foot

Table 2-4A
Short-Lived Asset Component Inventory and Assessment (service life is 6 years or less)

Short-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
Hypo-Chlorination System			10 Years		$2,000	☐ No ☐ Yes If Yes, Year
Major Tools			5-9 Years			☐ No ☐ Yes If Yes, Year
Software (billing, SCADA, cross-connection control)			5-9 Years			☐ No ☐ Yes If Yes, Year
Safety Equipment			5-9 Years			☐ No ☐ Yes If Yes, Year
Filters and Filter Media	Filter Media		20 Years		$30/gal $50/ft3	☐ No ☐ Yes If Yes, Year
Pressure Tanks (bladder)			8 Years		$2,000	☐ No ☐ Yes If Yes, Year
Building Heat and Cooling			5-9 Years		$2,000	☐ No ☐ Yes If Yes, Year
Instrument Switches and Gauges			5-9 years		$100	☐ No ☐ Yes If Yes, Year
Other			years			☐ No ☐ Yes If Yes, Year

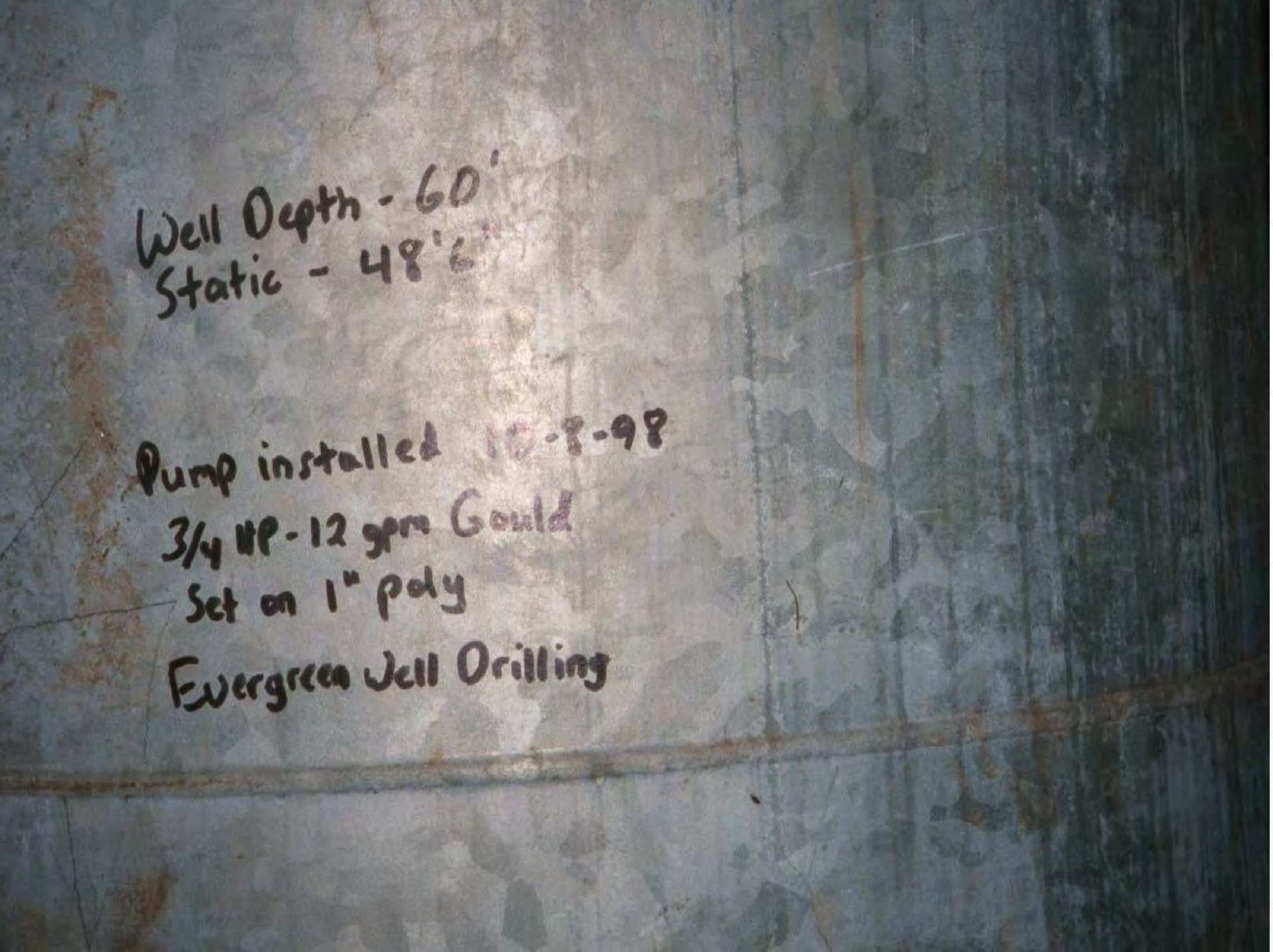
Table 2-4B
Long-Lived Asset Component Inventory and Assessment (service life is longer than 10 years)

Long-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
EXAMPLE Well	Well #1 8-inch diameter and 200 feet deep	Drilled 1924	50-100 years	87 years		☐ No ☒ Yes (Well #1) If Yes, Year 2014
	Well #2 12-inch diameter and 145 feet deep	Drilled 1986		25 years		
EXAMPLE Submersible Well Pump	Well #1 10 hp	Installed 1996	10-15 years	15 years		☒ No ☐ Yes If Yes, Year ____
	Well #2 25 hp	Installed 2006		5 years		
Well			50 years		$50,000	☐ No ☐ Yes If Yes, Year
Submersible Well Pump			15 years		$10,000	☐ No ☐ Yes If Yes, Year
Source Meter			10 years		$1,500	☐ No ☐ Yes If Yes, Year
Well and Pump House			40 years		$200/ft2	☐ No ☐ Yes If Yes, Year
Reservoirs			50 years		$2/gallon	☐ No ☐ Yes If Yes, Year
Gate Valves			50 years		$700/2"	☐ No ☐ Yes If Yes, Year
					$1,000/4"	
					$1,500/6"	
Altitude, Pressure Reducing, Pump Control, Surge Anticipation Valves			20 years		$2,000 (2")	☐ No ☐ Yes If Yes, Year
					$4,000 (4")	
					$6,000 (6”)	

Long-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
Pressure Tanks (hydropneumatic)			50 years		$20/gal	☐ No ☐ Yes If Yes, Year
Booster Pumps			15 years		$3,000/2 HP $5,000/5 HP	☐ No ☐ Yes If Yes, Year
Distribution Pipe and all in-line valves and valve boxes			60 years		$100/lf	☐ No ☐ Yes If Yes, Year
Hydrants and Blow-Offs			50 years		$5,000	☐ No ☐ Yes If Yes, Year
Back-up Power Generator			20 years		$10,000	☐ No ☐ Yes If Yes, Year
Service Meters			10 years		$400	☐ No ☐ Yes If Yes, Year
Electrical Service Panel			20 years		$5,000	☐ No ☐ Yes If Yes, Year
Motor Starter/Control Relays			20 years		$1,000	☐ No ☐ Yes If Yes, Year
Telemetry or SCADA			20 years			☐ No ☐ Yes If Yes, Year
Fencing			30 years		$10/lf	☐ No ☐ Yes If Yes, Year
Other			years			☐ No ☐ Yes If Yes, Year

Items to Be Replaced
How to Determine

- Visual Inspections
- Leakage Rates
- Frequency of Repairs
- Run times or Noise for Booster Pumps
- Static and Pumping Water Levels of Wells
- Treatment Effectiveness


Well Depth - 60'
Static - 48'6"
Pump installed 10-8-98
3/4 HP - 12 gpm Gould
Set on 1" poly
Evergreen Well Drilling


#1
6-15-04
6-15-04


Well #1
ELECTRICAL CONTROLS
Well #2
ELECTRICAL CONTROLS
Wells #1, #2, #3, Controls

Additional Resources

- Your Operator
- Evergreen Rural Water https://www.erwow.org
- USA Bluebook https://www.usabluebook.com/
- Island County Health Department (past submittals in water system files)
- Department of Health https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemAssistance

Jeffrey M. Tasoff, PE
Principal, DCG, Inc

Contact Information

e-mail: jeff@dcgengr.com

phone: 360-331-4131 ext. 203

Freeland Office

1796 E Main Street, Suite 105

PO Box 1132

Freeland, WA 98249

Mount Vernon Office

2210 Riverside Drive, Suite 110

Mount Vernon, WA 98273