PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Bull Run TREATMENT PROJECTS

Filtration

Technical Memorandum

Subject:	Hazardous Materials Management Plan
PWB Project #s:	W02229
Date:	September 22, 2022
To:	David Peters, Program Director Portland Water Bureau
From:	Qianru Deng, Chemical Lead Carollo Engineers, Inc.
Prepared by:	Michelle Horio, Staff Professional Carollo Engineers, Inc.
Reviewed by:	Jude D. Grounds, Project Engineer Carollo Engineers, Inc.

EXPIRES: 06/30/23
09/22/2022

Stantec

carollo

601 SW 2nd Ave. Ste. 1400
Portland, OR 97204
T: 503-226-7377

Contents

1.0 Introduction 1
2.0 Facility Description 1
2.1 General Facility Description and Site Plan 1
3.0 Summary of Hazardous Materials Inventory 5
4.0 Hazardous Material Operation Plan 5
4.1 Separation, Secondary Containment, and Waste Disposal 6
4.2 Chemical Deliveries 7
4.3 Chemical Storage Area 8
4.4 Chemical Piping 8
4.5 LOX and Ozone Considerations 9
4.5.1 General Safety 9
4.5.2 LOX 10
4.5.3 Ozone Generator 10
4.5.4 Ozone Contactor 11
5.0 Hazardous Materials Emergency Response Plan 11
5.1 Non-Emergency Responsibilities 11
5.2 Recordkeeping 12
5.3 During an Emergency Related to Hazardous Materials 12
5.4 Following an Emergency 13
Attachment A: General Facility Information A-1
Attachment B: Site Maps B-1
Attachment C: Hazardous Materials Inventory Statement C-1
Attachment D: Emergency Response D-1
Attachment E: 2018 International Fire Code – Appendix H E-1

List of Figures

Figure 1. Site Plan 2
Figure 2. Facility Layout 4

List of Tables

Table 1. Summary of Hazardous Materials 5
Table 2. Separation, Secondary Containment, and Waste Disposal 6
Table 3. Emergency Contacts A-2
Table 4. HMIS Summary Report C-2
Table 5. HMIS Inventory Report C-3
Table 6. Hazardous Materials Inventory Statement (HMIS) Inventory Report C-5
Table 7. Facility Liaison D-2
Table 8. Agency D-2

List of Abbreviations

°F	degrees Fahrenheit
C2	combustible liquid
CAS	Chemical Abstract Service
COR	corrosive
County	Multnomah County
Cryo-OX	cryogenic oxidizing
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
ERP	Gresham Fire and Emergency Services
Facility	Bull Run Filtration Facility
ft	feet
gal	gallons
GFES	Gresham Fire and Emergency Services
GOX	gaseous oxygen
HMERP	hazardous materials emergency response plan
HMIS	Hazardous materials inventory statement
HMMP	hazardous materials management plan
HTOX	highly toxic
IBC	International Building Code
IFC	International Fire Code
LAS	liquid ammonium sulfate
lbs/day	pounds per day
LOX	liquid oxygen
mgd	million gallons per day
O&M	operation and management
OHA	Oregon Health Authority
OX1	oxidizer
OXG	oxidizing gas
POC	cationic polymer
PWB	Portland Water Bureau
SHC	sodium hypochlorite
SOP	standard operating procedures
TBD	to be determined
TOX	toxic

1.0 Introduction

This hazardous materials management plan (HMMP) details the proper storage, handling, and management of chemicals used at the City of Portland Water Bureau's (PWB) Bull Run Filtration Facility (Facility) and the emergency response procedures that must be followed in the rare event of hazardous materials spills, fires, explosions, and other incidents.

This plan informs interested regulatory agencies of the Facility's protocols and documents key instructions for the site's operation and management (O&M) staff. To reflect the most up-to-date information that has been coordinated with local authorities and emergency response agencies, this plan must be reviewed annually and updated as required.

The remaining sections of this HMMP are organized as follows:

Section 2: General description for the Facility and its processes.
Section 3: Summary of the Facility's hazardous materials inventory.
Section 4: The Facility's hazardous materials operation plan.
Section 5: The Facility's dedicated hazardous materials emergency response plan (HMERP).
Section 6: The Facility's plan for maintaining records.

Additionally, the following attachments supplement the information presented in this plan:

Attachment A: General facility information.
Attachment B: Facility map and chemical storage area plan.
Attachment C: Hazardous materials inventory statement (HMIS) and report.
Attachment D: Emergency response contacts.
Attachment E: Appendix H of the 2019 Oregon Fire Code or 2018 International Fire Code, which is the basis of this HMMP and HMIS.

2.0 Facility Description

2.1 General Facility Description and Site Plan

PWB provides high quality drinking water, customer service, and stewardship of the critical infrastructure, fiscal responsibilities, and natural resources entrusted to their care. The Bull Run Watershed is one of the water sources that provides potable water to the City of Portland and their wholesale customers. Designed to meet federal drinking water regulations as well as standards established by the Oregon Health Authority (OHA), the Facility will remove *Cryptosporidium* and other potential contaminants from the Water Bureau's Bull Run supply.

Shown in Figure 1, the Facility is located on SE Carpenter Lane, east of Southeast Cottrell Road in Gresham, Oregon. To meet projected peak day demands through 2045, it is designed for a treatment capacity of 135 million gallons per day (mgd) and proposed to operate using ozonation, flocculation, sedimentation, filtration, disinfection, and residuals/solids treatment and disposal.

Figure 1. Site Plan

Figure 2 overviews the Facility's general layout and locates and labels the various assets and site components that are equipped on the Facility. Access to the facility is restricted to authorized employees at all times, and visitors must be escorted by employees.

Hazardous materials used on-site generally consists of above ground liquid oxygen (LOX), ozone, carbon dioxide, sodium bisulfite, liquid ammonium sulfate, polymer, aluminum sulfate, polyaluminum chloride, soda ash, sodium hypochlorite, and diesel fuel. Hazardous wastes that will likely be generated at the Facility are waste solvent, mixed waste oil, and waste paint thinner.

The remaining sections of this plan detail the hazardous materials stored on-site, their management, and emergency response protocols.

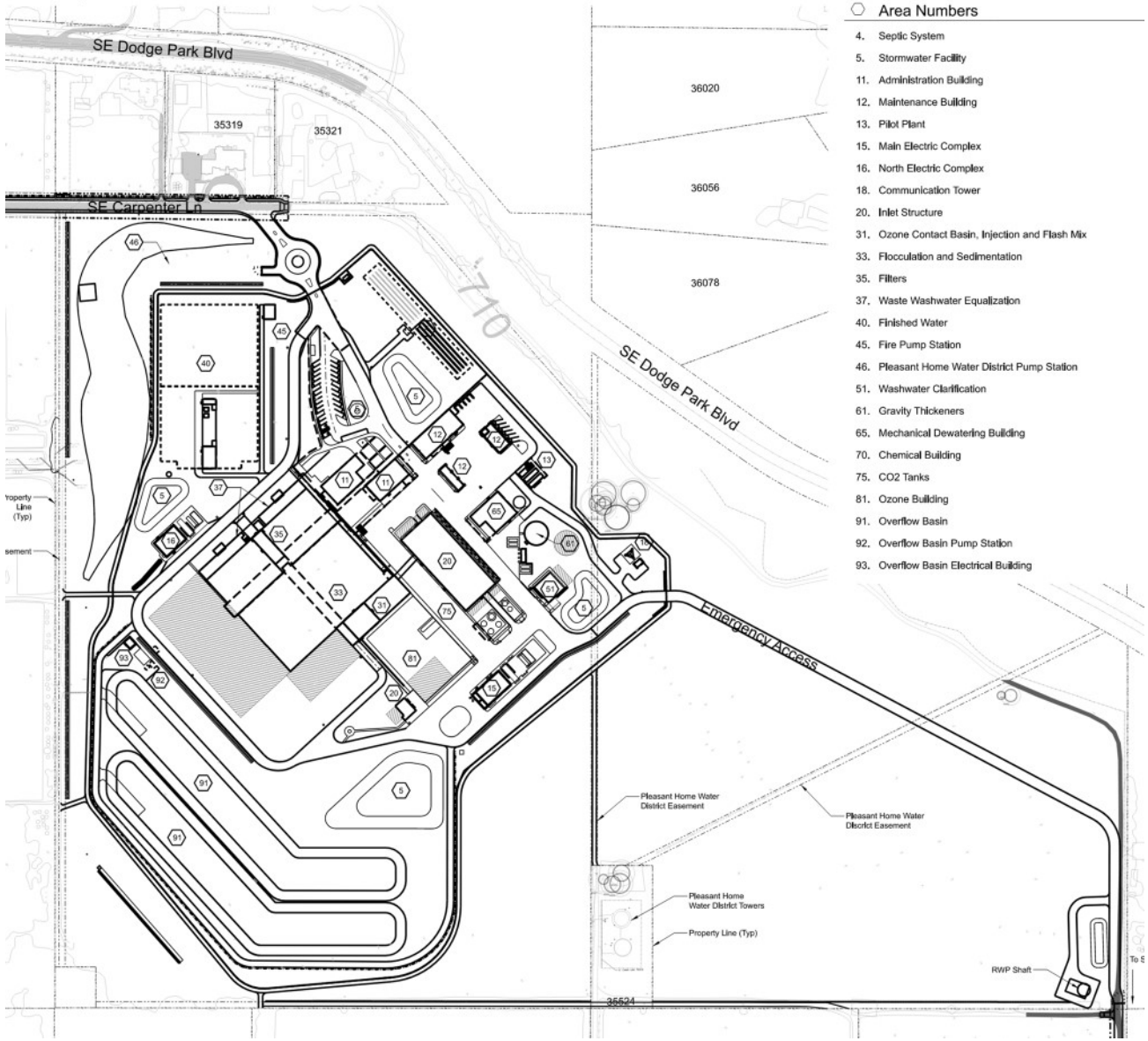

Figure 2. Facility Layout

3.0 Summary of Hazardous Materials Inventory

Table 1 summarizes the hazardous materials at the Facility and their storage locations, the American Chemical Society's Chemical Abstract Service (CAS) number, fire code hazard class, and maximum quantity stored. Attachment A's figures and tables denote storage locations while Attachment B presents a detailed HMIS.

Table 1. Summary of Hazardous Materials

Storage Location	Chemical	CAS Number	Fire Code Hazard Class	Max Quantity
Chemical Building	Sodium Bisulfite	7631-90-5	Corrosive	6,250 gal
	Liquid Ammonium Sulfate	7783-20-2	None	16,000 gal
	Cationic Polymer	Proprietary	None	6,400 gal
	Soda Ash	497-19-8	Corrosive, Toxic	13,676 ft^3
	Salt	7647-14-5	None	120 tons
	Sodium Hypochlorite	7681-52-9	Corrosive, Oxidizing	75,000 gal
	Nonionic Polymer	Proprietary	None	660 gal
	Aluminum Sulfate	10043-01-3	Corrosive	37,500 gal
	Polyaluminum Chloride	1327-41-9	Corrosive	12,500 gal
Ozone Generation Building	Ozone (Generated On-Site)	10028-15-6	Highly Toxic; Oxidizing gas	900 lbs/day
	Liquid Oxygen (LOX)	7782-44-7	Cryogenic Oxidizing	11,000 gal
	Carbon Dioxide	124-38-9	None (Liquefied gas)	120 tons
Ozone Contactor	Water in contact with a sidestream ozone solution. (Ozone is generated and injected into the sidestream in the Ozone Generation Building)			
Mechanical Dewatering Building	Anionic Polymer	Proprietary	Corrosive	330 gal
Main Electrical Complex	Diesel	68476-34-6	Combustible Liquid (Class II, Carcinogen)	24,500 gal
North Electrical Complex	Diesel	68476-34-6	Combustible Liquid (Class II, Carcinogen)	24,500 gal
Fire Pump Station	Diesel	68476-34-6	Combustible Liquid (Class II, Carcinogen)	220 gal

Abbreviations: ft - feet; gal - gallons; lbs/day - pounds per day

4.0 Hazardous Material Operation Plan

The following sections detail the Facility's chemical operation plan, including how hazardous materials are delivered, stored, contained, monitored, and disposed of to minimize their risk of spills and/or contamination. Specific considerations for the Facility's ozone system and oxygen gas areas are also introduced.

4.1 Separation, Secondary Containment, and Waste Disposal

The Facility's hazardous material storage areas will be separated according to the stored chemicals compatibilities and reactivity. As required by the International Fire Code, secondary containment is provided for these materials to further mitigate the risk of a potential spill or contamination.

Table 2 summarizes the typical O&M measures taken to minimize potential emergencies at the Facility.

Table 2. Separation, Secondary Containment, and Waste Disposal

Location	Chemical	Secondary Containment	Monitoring	Monitoring Frequency	Waste Disposal
Chemical Building	Sodium Bisulfite	Quenching Agent Containment Area	Visual Inspection; Tank Low, High, High High-Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
	Liquid Ammonium Sulfate	LAS and POC Containment Area	Visual Inspection; Tank Low, High, High High-Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
	Cationic Polymer	LAS and POC Containment Area	Visual Inspection; Tank Low, High, High High-Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
	Soda Ash	Not Required	Visual Inspection	Visual monitoring during daily rounds	N/A
	Salt	Not Required	Visual Inspection; Low Level Alarm	Visual monitoring during daily rounds; Continuous	N/A
	Sodium Hypochlorite	SHC Containment Area	Visual Inspection; Tank Low, High, High High-Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
	Nonionic Polymer	Polymer Containment Area	Visual Inspection; Tank Low Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
	Aluminum Sulfate	Primary Coagulant Containment Area	Visual Inspection; Tank Low, High, High High-Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
	Polyaluminum Chloride	Primary Coagulant Containment Area	Visual Inspection; Tank Low, High, High High-Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler

Table 2. Separation, Secondary Containment, and Waste Disposal					
Location	**Chemical**	**Secondary Containment**	**Monitoring**	**Monitoring Frequency**	**Waste Disposal**
Ozone Generation Building	Ozone (Generated On-Site)	N/A (Fully Contained Specialized Reactor)	Visual Inspection; Ambient Air Ozone Concentration Sensors	Visual monitoring during daily rounds; Continuous	N/A
LOX/ Carbon Dioxide Storage Area	Liquid Oxygen (LOX)	Double-wall Tank	Visual Inspection; Pressure Drop Alarm; Low Level Alarm	Visual monitoring during daily rounds; Continuous	N/A
	Carbon Dioxide	Double-wall Tank	Visual Inspection; Pressure Drop Alarm; Low Level Alarm	Visual monitoring during daily rounds; Continuous	N/A
Ozone Contactor	Ozone	N/A (Sealed concrete basin with Off-Gas Destruct System)	Visual Inspection; Ambient Air Ozone Concentration Sensors	Visual monitoring during daily rounds; Continuous	N/A
Mechanical Dewatering Building	Anionic Polymer	Polymer Containment Area	Visual Inspection; Tank Low Level Alarm; Containment Sump Level Switch	Visual monitoring during daily rounds; Continuous	Licensed Waste Hauler
Main Electrical Complex	Diesel	Double-wall Tank	Visual Inspection; Containment Sump Level Switch	Visual monitoring during daily rounds	Licensed Waste Hauler
North Electrical Complex	Diesel	Double-wall Tank	Visual Inspection; Containment Sump Level Switch	Visual monitoring during daily rounds	Licensed Waste Hauler
Fire Pump Station	Diesel	Double-wall Tank	Visual Inspection; Containment Sump Level Switch	Visual monitoring during daily rounds	Licensed Waste Hauler

Abbreviations: LAS - Liquid Ammonium Sulfate; POC - Cationic Polymer; SHC- Sodium Hypochlorite

4.2 Chemical Deliveries

The Chemical Building is centrally located within the Facility. Most chemicals will be delivered, in bulk, by tanker trucks that are pressurized to fill the on-site storage tanks at this building. The nonionic and anionic polymers will be delivered in 330-gallon totes. Chemical delivery truck drivers are well trained and follow strict industry standards to ensure safe and effective transfer of chemicals. All chemical loading areas and connections will be locked. During chemical delivery, plant staff will unlock the connections for chemical delivery drivers.

The chemical building has three separate unloading bays, each of which is dedicated to the following chemicals:

- Sodium bisulfite, aluminum sulfate, and polyaluminum chloride.
- Liquid ammonium sulfate and cationic polymer.
- Bulk sodium hypochlorite for temporary operations during an emergency.

These unloading bays are located on the east side of the chemical building under a roof, allowing easy drive-through access as well as protection from wind and rain. Each bay is also sloped towards a trench drain in the middle, facilitating containment in the unlikely event of a spill. The trench drain does not drain during a chemical delivery, and any spill has to be collected and disposed of by a licensed waste hauler. Fill stations are physically located within each containment area adjacent to the unloading bays.

Salt and soda ash will be pneumatically loaded into the outdoor storage south of the chemical building using localized fill connections.

Lastly, the LOX and CO_2 tank storage area is located adjacent to the Ozone Generation Building and across from the soda ash silos, which allows for easy road access for delivery trucks to unload. Similar to the other liquid chemicals, LOX will be delivered in bulk. However, delivery trucks dedicated to LOX and carbon dioxide are pressurized, refrigerated, liquid tank vehicles that can be connected directly without a transfer pump to their respective tanks for filling.

4.3 Chemical Storage Area

As mentioned before, the Facility's chemical building organizes chemicals by their compatibilities and reactivity. Most chemicals are separated into their own containment area, except for liquid ammonium sulfate and cationic polymer, which are combined into one containment area, and aluminum sulfate and polyaluminum chloride, which are combined into the primary coagulant containment area.

These various containment areas are designed to hold the contents of the largest tank plus 10 percent and 20 minutes of fire flow from the fire-suppression sprinklers. Each containment area has a sump with a portable sump pump to pump any chemical spill to a licensed waste hauler tasked with safe transport to an appropriate disposal facility. Chemical feed pumping facilities, as well as ancillary equipment related to chemical feed, are also located in this same containment area, mitigating the risk of minor leaks associated with the pumps or pump piping connections.

4.4 Chemical Piping

All buried chemical piping on-site is double contained, either as flexible tubing pulled through a pipe sleeve or as pre-engineered double-wall pipe.

All interior chemical piping within the containment areas are single wall piping. The interior piping *outside* the containment area for sodium bisulfite, aluminum sulfate, and polyaluminum chloride is pre-engineered double wall piping. All other interior chemical piping remains single wall piping. Double contained chemical pipes are sloped to direct any leaks in the pipe to containment in sumps at either end of the piping.

4.5 LOX and Ozone Considerations

The Facility's ozone system consists of the following pieces of equipment:

- LOX tank.
- LOX vaporizers.
- Ozone generator.
- Ozone sidestream and injection equipment.
- Ozone contactor.
- Ozone destruct units.

Each of this equipment is accompanied by control and monitoring equipment designed to provide a safe and secure operating environment. The system can automatically detect issues and initiate immediate shutdown, isolating each element of the process as needed.

This section presents general safety precautions that all Facility staff must observe and adhere to when working with ozone and oxygen gas. Additionally, Sections 4.5.2 through 4.5.4 detail notable safety, storage, and conveyance considerations that must be made for LOX, gaseous oxygen (GOX), ozone, and the equipment units and areas dedicated to their handle. These sections also generally and chronologically review the Facility's ozone generation and treatment process.

4.5.1 General Safety

The Facility's standard operating procedures (SOPs) will include several general safety precautions and tips for staff working around ozone or oxygen gas. Note that, downstream of the generator, the ozone gas stream is still primarily oxygen, typically between 88 and 92 percent, so safety precautions observed for oxygen areas (LOX and GOX) will also be observed for ozone areas.

Facility management and O&M and other Facility personnel must observe the following safety measures in the oxygen areas (i.e., LOX and GOX) and ozone gas areas:

- Ensure that all staff expected to work with oxygen are properly trained and informed of the risks of working with excess oxygen and the hazards associated with exposure to ozone.
- Use only materials and equipment approved for use with oxygen around the LOX and ozone equipment. Never use replacement parts that have not been approved and cleaned for oxygen service.
- Wear suitable clean clothing, free from oil, grease, or other combustible contaminant.
- Never use oil or grease to lubricate oxygen equipment.
- Verify that all fire extinguishing equipment is in functional condition and unexpired.
- Smoking is strictly forbidden in any area where oxygen enrichment is possible, including the LOX area and ozone building.
- Isolate equipment, provide ventilation, and use an oxygen and ozone analyzer when working in confined spaces where oxygen or ozone is used (e.g., the ozone contactor). Allow entry only for permitted and trained technicians.
- If exposed to oxygen enriched atmosphere, avoid flame or any ignition source until all affected areas have been properly ventilated.
- Properly identify all oxygen apparatus and equipment.
- Maintain clear escape routes at all times.

4.5.2 LOX

At the Facility, LOX will serve as the primary constituent for making ozone.

The LOX tank features double wall construction utilizing specially formulated high-nickel stainless steel. To isolate the outside of the tank from the cold temperatures inside, the annular space between double walls is insulated and under vacuum, allowing the outside of the tank to be safely touched without the risk of frostbite.

To prevent over-pressurization during filling, the LOX tank also features redundant safety valves as well as redundant shut-off valves, including a manual emergency shut-off valve separate from any control interlocks, to isolate the tank. The tank also includes an emergency fill line to allow a LOX tanker truck to feed the vaporizers directly in the event ozone is needed but the LOX tank is not available.

The tank is located adjacent to the ozone generation building at an adequate distance from other structures and with sufficient ventilation to prevent oxygen from accumulating in the unlikely event of a leak. Warning signs around the tank indicate the risk of combustion in its immediate area. Because LOX quickly vaporizes, dilutes, and dissipates in the atmosphere, the increased risk of combustion rapidly decreases at short distances away from the tank itself and is considered non-hazardous beyond the LOX storage and ozone generation area.

LOX is conveyed via vacuum-jacketed piping to the LOX vaporizers where it is converted to GOX. The careful design of the LOX conveyance system and use of specific pipe materials and fittings mitigates the risk of a LOX or GOX leak. However, in the unlikely event of such a leak, additional safety systems will isolate and shutdown the LOX system.

Small leaks in the LOX tank or LOX piping are easily detectable since escaping LOX will cause moisture in the area to freeze, creating noticeable frost in the area of concern. More significant leaks are immediately detected via the increased speed of pressure loss from the tank. In this case, the system can be shut down while the problem is more thoroughly inspected, diagnosed, and remediated.

Meanwhile, the GOX conveyance system consists of vacuum-jacketed piping above ground. All GOX piping is thoroughly tested and corrosion resistant.

4.5.3 Ozone Generator

Using a fully contained, specialized reactor, GOX is converted to ozone within the ozone generator, which is located in the ozone building's ozone generation room.

The ozone generation process is monitored by numerous sensors including pressure, temperature, flow rate, and ozone concentration. Deviation from standard operating parameters will trigger system alarms, including life-safety alarms that detect ambient ozone concentration and, if necessary, trigger an immediate shutdown of the ozone generator. To prevent overheating, the ozone generator is kept cool by a continuous cooling water stream that remains below 75 degrees Fahrenheit (°F), which keeps gas temperatures below 120 °F.

Ozone is conveyed via stainless steel piping to the ozone dissolution and injection equipment on the east wall of the ozone building. This equipment directs ozone gas into a side stream of water, which is then routed in stainless-steel pipes to injectors inside the ozone contactor.

Inside the ozone building, redundant ambient sensors detect elevated levels of oxygen or ozone and trigger alarms that shut down the systems in the event of an abnormal detection. Additionally, the area's ventilation

system can rapidly bring outside air into the building, diluting and venting ozone or oxygen gas to the atmosphere. This process is triggered automatically by sensors but can also be manually initiated via emergency stop buttons located near the building's exits. Emergency shutdown buttons will also be located on the outside of the ozone building at all personnel entrances to facilitate an immediate shutdown.

Ozone is readily identifiable by smell and can be detected by people at levels well below the human health and safety standard. Operations staff are trained to remain alert and aware of increased levels of ozone in the generator area and can manually initiate the emergency stop procedures if needed.

4.5.4 Ozone Contactor

Ozone is injected into the main process stream and allowed time to react inside of the ozone contactor, which is sealed to prevent gas from escaping and equipped with emergency air relief and vacuum relief valves to protect its structure. The ozone destruct unit's blowers keep the contactor under constant vacuum pressure to actively draw out any ozone gas present in the headspace between the water surface and the sealed lid of the contactor. Air from the contactor is then routed through a magnesium dioxide catalyst that converts any remaining ozone to oxygen before the gas is vented back to the atmosphere.

Monitoring equipment on the ozone destruct unit detects ozone concentrations in the vent gas to ensure all ozone is destroyed before leaving the building. Any reading above acceptable set points immediately shuts down the ozone system.

5.0 Hazardous Materials Emergency Response Plan

The Facility will be operated and maintained to minimize the risk of hazardous materials spills, fires and explosions, and other emergencies. Still, this HMMP includes a hazardous materials emergency response plan (HMERP) that establishes best practices and reporting protocols in the event of a hazardous materials spill or emergency. While PWB has a stand-alone emergency response plan (ERP) for the entire water system, this HMERP provides the procedures specific to the Facility and its hazardous materials.

5.1 Non-Emergency Responsibilities

Responsible for implementing the HMERP, the Facility's emergency coordinator and alternate emergency coordinator are as follows:

Emergency Coordinator	Alternate Emergency Coordinator
Operations: Water Treatment Supervisor	Operations: Bull Run Treatment Manager
Day: 503-865-4041	Day: 503-865-6977
Night: 503-823-1140	Night: 503-865-6977

During typical Facility operations, the emergency coordinator or alternate emergency coordinator is responsible for the following tasks:

- Contact emergency service providers for pre-emergency coordination and modify this plan with any arrangements agreed upon by local response agencies to coordinate emergency services.
- Ensure the testing, maintenance, and inspections of the Facility's emergency response equipment, and replace equipment following its use or malfunction.

- Contact a licensed waste hauler to remove routinely generated hazardous wastes from the site. To comply with local, state, and federal hazardous waste regulations, these pickups shall be made every 90 days, at minimum.
- Post evacuation maps at several locations throughout the Facility. If the evacuation route or reassembly area is changed, post new maps immediately.
- Conducting safety audits periodically to ensure compliance with the International Fire Code (IFC).
- Maintain copies of documentation, permits, bill of laden, inspection records, employee training records, and chemical inventory records pertaining to the facility.
- Sign any bill of laden when shipping.

5.2 Recordkeeping

The emergency coordinator or alternate emergency coordinator must maintain the following records:

- Routine inspection records of hazardous materials and waste storage areas.
- Documentation of any reportable or recordable accidental releases of hazardous materials, including wastes, at the Facility.
- Copies of the Underground Storage Tank Unauthorized Release/Contamination Site Report submitted to Multnomah County (County), and reports submitted to the Oregon Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) for hazardous waste releases if an underground storage tank is installed at the facility in the future.
- A copy of this HMMP, including the HMERP, at the facility.
- Updates to any changes in this plan at least annually.

5.3 During an Emergency Related to Hazardous Materials

During an on-site emergency related to hazardous materials, the emergency coordinator, understood to be the incident commander per PWB Incident Command Structure, and/or alternate emergency coordinator is responsible for coordinating all emergency response actions at the Facility. These individuals must be familiar with operations, have full access to the Facility, and be available for response on a 24-hour basis.

Additionally, the emergency coordinator or alternate emergency coordinator, as appropriate, will complete the following tasks during an emergency related to hazardous materials:

- Notify Water Bureau's Emergency Managers.
- Identify the character, exact source, quantity, and area extent of any released hazardous materials.
- Assess possible hazards to human health or the environment that may result from the emergency. Consider both direct and indirect effects (e.g., the effects of any hazardous, irritating, or asphyxiating gases generated, effects of any hazardous surface water run-off or chemical agents used to control fire).
- Notify Gresham Fire and Emergency Services (Gresham Fire), the designated hazardous materials responder, for immediate assistance. Their contact is as follows: (503) 618-2355. 1333 NW Eastman Parkway, Gresham, OR 97030.
- Notify, or task another staff member to notify, the appropriate local authorities (e.g., "911") to request assistance and be available to assist in deciding whether local communities should be evacuated.
- Notify appropriate agency and plant personnel outside the Facility of the emergency.
- Shut down, or delegate another employee to shut down, the water supply and other utilities.

- Monitor for leaks, pressure build-up, gas generation, or ruptures in valves, pipes, or other equipment shut down in response to the emergency incident.
- Take all reasonable measures necessary to minimize the potential of fires, explosions, and releases occurring, recurring, or spreading to other areas at the Facility.
- Activate the Facility's internal communication systems to notify Facility employees of the emergency and request evacuation as appropriate.
- Account for, or delegate an employee on-site to account for, all employees following a Facility evacuation.

5.4 Following an Emergency

Before operations are resumed in areas of the Facility affected by the hazardous materials emergency, the emergency coordinator or alternate emergency coordinator is responsible for the following tasks:

- Conduct re-entry inspections following Facility evacuations and request assistance from Gresham Fire in making these inspections, as needed.
- Provide for proper storage and disposal of recovered waste, contaminated soil, surface water, or any other material that results from an explosion, fire, or release at the Facility.
- Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the Facility affected by the incident until cleanup procedures are completed.
- Ensure that all emergency equipment is cleaned, fit for its intended use, restocked, and functional.
- Inform Gresham Fire that the Facility is in compliance with requirements regarding proper storage and disposal of recovered waste and that no material incompatible with the released material was transferred, stored, or disposed of in areas of the Facility affected by the incident until after all required cleanups.

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Attachment A: General Facility Information

General Facility Information

1) Business Name: Bull Run Filtration Facility
   Address: SE Carpenter Lane, Gresham, OR 97080
   Phone: TBD

2) Person Responsible for the Business:
   Name: Kimberly Gupta
   Title: Treatment Manager
   Phone: 503-865-6977

3) Emergency Contacts:

Table 3. Emergency Contacts

Name	Title	Work Number
Kevin Ceniceros	Plant Supervisor	503-865-4041
Kimberly Gupta	Treatment Manager	503-865-6977
Kim Anderson	Emergency Manager	503-823-7074

4) Person Responsible for the Application/Principal Contact:
   Name: Kimberly Gupta
   Title: Treatment Manager
   Phone: 503-865-6977

5) Principal Business Activity:

   Water treatment operations including ozonation, flocculation, sedimentation, filtration, disinfection, and sludge treatment and disposal for the purpose of providing potable water.

6) Number of Employees: 22-26

7) Number of Shifts: 2

   Number of Employees per Shift: 2- 18 (Depends on shift).

8) Hours of Operation: 24 hours (continuous) daily.

9) Declaration:

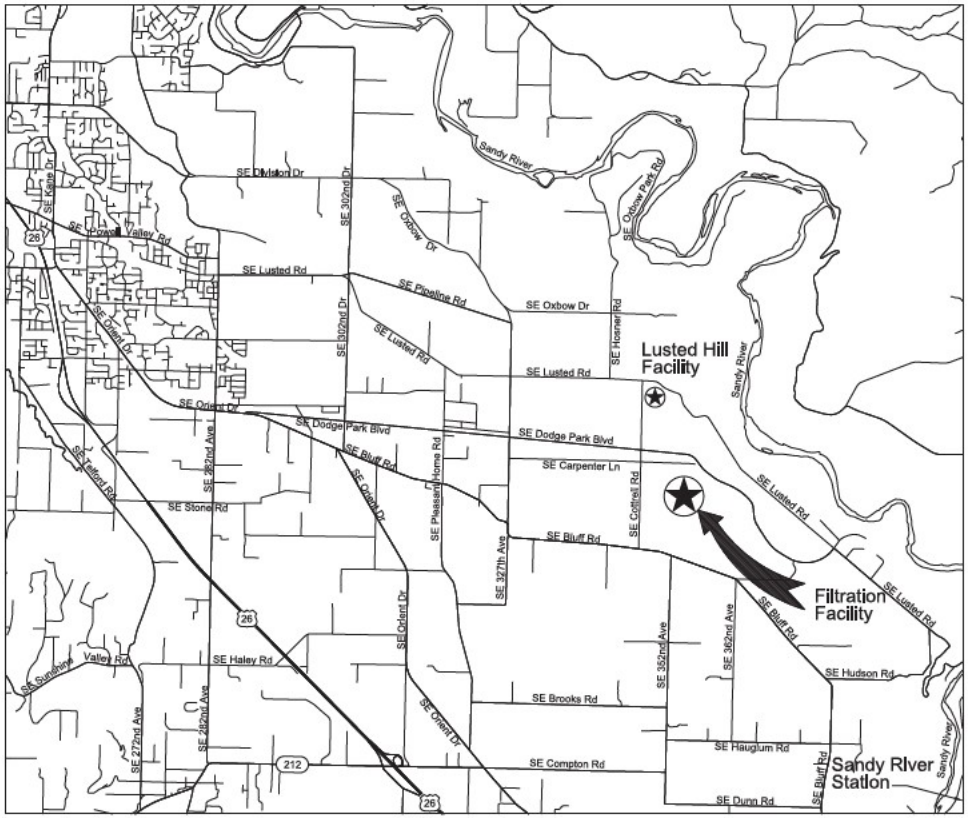
   I certify that the information above and on the following parts is true and correct to the best of my knowledge.

   Signature: _____ Date: _____

   Print Name: _____ Title: _____

Attachment B: Site Maps

Location Map
No Scale



Vicinity Map
No Scale

No	Date	Description	Appd
Revision			
Survey			

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Designed By	CLK	Program Mgr	XXX
Drawn By	CLK	Const Mgr	XXX
Checked By	XXX	Const Supvr	XXX
Project Mgr	XXX	Date	XX/XX/XX

Warning
0 ½ 1
If this bar does not measure 1" then the drawing is not to scale

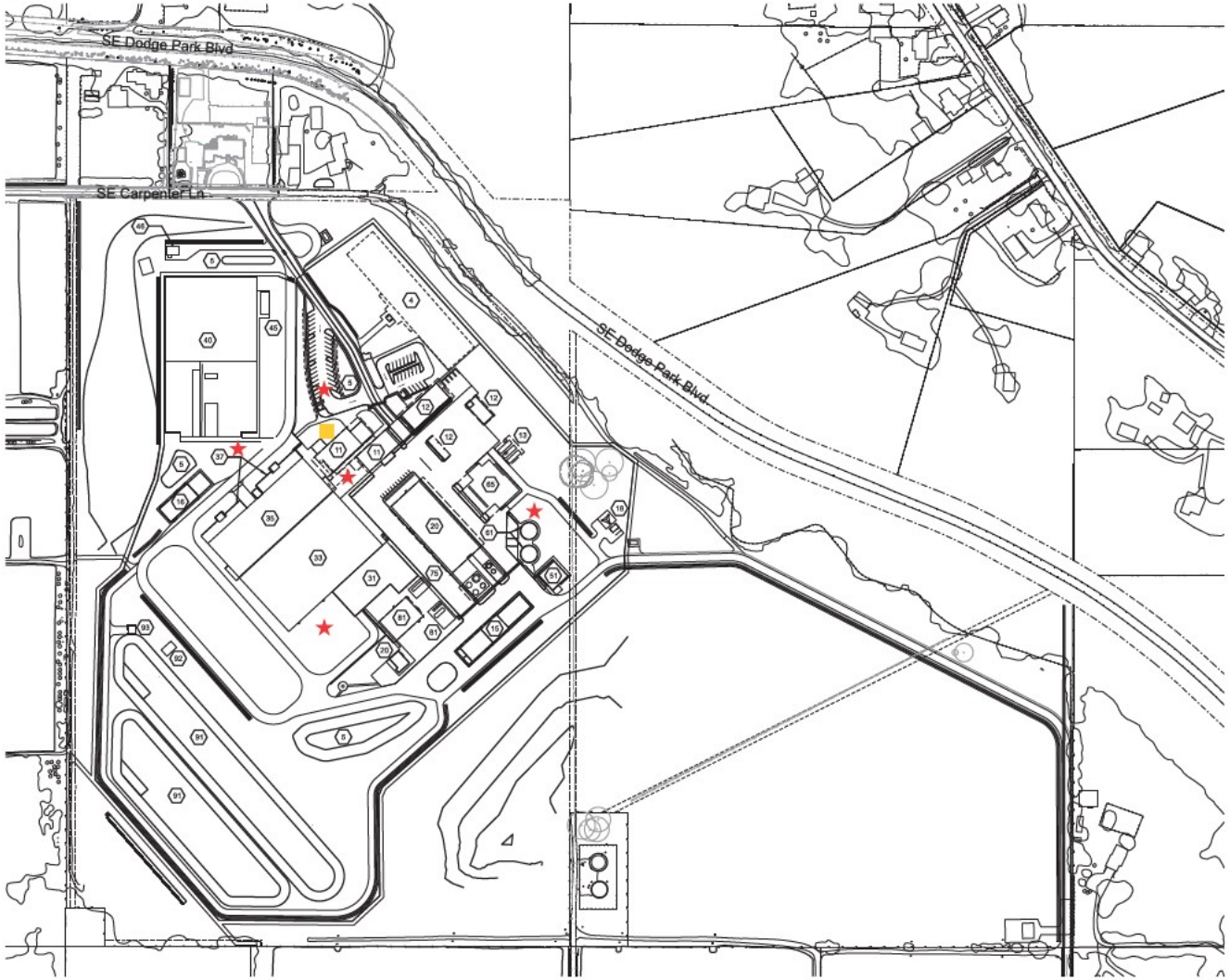
PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

David W. Peters, Principal Engineer, PE No 16683 — Date

Bull Run Filtration Facility

Figure 1
Location and Vicinity Map

SAP Project No	W02229
¼ Section	3765 / 3766
Sheet No	GEN-G-002
	X of X



Area Numbers

4. Septic System
5. Stormwater Facility
11. Administration Building
12. Maintenance Building
13. Pilot Plant
15. Main Electric Complex
16. North Electric Complex
18. Communication Tower
20. Raw Water
31. Ozone Contact Basin, Injection and Flash Mix
33. Flocculation and Sedimentation
35. Filters
37. Waste Washwater Equalization
40. Finished Water
45. Fire Pump Station
46. Pleasant Home Water District Pump Station
51. Washwater Clarification
61. Gravity Thickeners
65. Mechanical Dewatering Building
70. Chemical Building
75. CO2 Tanks
81. Ozone Building
91. Overflow Basin
92. Overflow Basin Pump Station
93. Overflow Basin Electrical Building

Legend

- Evacuation meeting locations
- Emergency liaison meeting location

0 150 300
SCALE IN FEET

$$$$FILENAME$$$$
$$$$USER$$$$
$$$$DATE$$$$

No	Date	Description	Appd
		Revision	
Survey			

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Designed By		Program Mgr	
Drawn By		Const Mgr	
Checked By		Const Super	
Project Mgr		Date	

Warning
0 ½ 1
If this bar does not measure 1" then the drawing is not to scale

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

David W. Peters, Principal Engineer, PE No 16683 — Date

CITY OF PORTLAND OREGON 1851

Bull Run Filtration Facility

Figure 2

Site Plan

SAP Project No	W02229
1/4 Section	3765 / 3766
Sheet No	GEN-G-301
	X of X

Attachment C: Hazardous Materials Inventory Statement

Hazardous Materials Inventory Statement Summary Report

Table 4. HMIS Summary Report							
H-4 (Chemical Building)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Corrosive	COR	2,150,524 (13,676 ft^3)	131,250		5,000	500	
Oxidizer	OX1		75,000			4,000	
Toxic	TOX	2,150,524 (13,676 ft^3)			500		
F-2 (Mechanical Dewatering Building)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Corrosive	COR		330			500	
H-4 (Ozone Generation Building)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Oxidizing Gas	OXG			900[a] lb/day			1,500
Highly Toxic	HTOX			900* lb/day			20
Control Area 1 (Oxygen/Carbon Dioxide Storage Area)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Cryogenic Oxidizing	Cryo-OX		11,000			45	
F-1 (Main Electrical Complex)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Combustible Liquid	C2		24,500			120	

Table 4. HMIS Summary Report							
F-1 (North Electrical Complex)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Combustible Liquid	C2		24,500			120	
F-2 (Fire Pump Station)							
IBC/IFC Hazard Class	**Hazard Class**	**Inventory Amount**			**IBC/IFC Max Allowable Quantity**		
	(Abbreviation)	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**	**Solid (lb)**	**Liquid (gal)**	**Gas (lb)**
Combustible Liquid	C2		220			120	

Note:

a. Ozone is generated on-site.

Abbreviations: IBC - International Building Code; IFC - International Fire Code.

Hazardous Materials Inventory Statement Inventory Report

Table 5. HMIS Inventory Report								
Product Name (Components)	**CAS Number**	**Location**	**Container >55 gal**	**Haz Class 1**	**Haz Class 2**	**Stored (lbs)**	**Stored (gal)**	**Closed (gas)[a]**
Sodium Bisulfite (40% Sodium Bisulfite)	7631-90-5	H-4 (Chemical Building)	Yes	COR			6,250	
Soda Ash (100% Soda Ash)	497-19-8	N/A	Yes	COR	TOX	2,150,524 (13,676 ft^3)		
Sodium Hypochlorite (0.8% Sodium Hypochlorite)	7681-52-9	H-4 (Chemical Building)	Yes	COR	OX1		75,000	
Aluminum Sulfate (49% Aluminum Sulfate)	10043-01-3	H-4 (Chemical Building)	Yes	COR			37,500	
Polyaluminum Chloride (50% Polyaluminum Chloride)	1327-41-9	H-4 (Chemical Building)	Yes	COR			12,500	

Table 5. HMIS Inventory Report								
Product Name (Components)	**CAS Number**	**Location**	**Container >55 gal**	**Haz Class 1**	**Haz Class 2**	**Stored (lbs)**	**Stored (gal)**	**Closed (gas)[a]**
Ozone (10% Ozone)	10028-15-6	H-4 (Ozone Generation Building)	Yes	OXG	HTOX			900 lbs/day[b]
Liquid Oxygen (100% Oxygen)	7782-44-7	Control Area 1 (Oxygen/ Carbon Dioxide Storage Area)	Yes	Cryo-OX			11,000	
Ozone (10% Ozone)	10028-15-6	H-4 (Ozone Contactor)	Yes	OXG	HTOX			900 lbs/day[b]
Anionic Polymer (100% Anionic Polymer)	Proprietary	F-2 (MDB)	Yes	COR			330	
Diesel (100% Diesel)	68476-34-6	F-1 (Main Electrical Complex)	Yes	C2			24,500	
Diesel (100% Diesel)	68476-34-6	F-1 (North Electrical Complex)	Yes	C2			24,500	
Diesel (100% Diesel)	68476-34-6	F-2 (Fire Pump Station)	Yes	C2			220	

Note:

Only chemicals with hazard class included.

a. Not stored, but the use involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations.

b. Ozone is generated on-site.

Table 6. Hazardous Materials Inventory Statement (HMIS) Inventory Report (NOTE: Other Potential hazardous chemicals to be determined following construction)								
Product Name	**CAS Number**	**Location**	**Containe r>55 gal**	**Haz Class 1**	**Haz Class 2**	**Stored (lbs)**	**Stored (gal)**	**Closed (gas)**
Hydraulic Oil	64742-54-7	TBD						
Waste Solvent	Mixture	TBD						
Waste Oil	Mixture	TBD						
Paint Thinner	64742-89-8	TBD						
Oxygen	7782-44-7	Maintenance Building					935[a]	
Acetylene	74-86-2	Maintenance Building					935[a]	
Argon	7440-37-1	Maintenance Building					935[a]	
Helium	7440-59-7	Maintenance Building					935[a]	
CO_2	124-38-9	Maintenance Building					935[a]	

Note:

Anticipated hazardous material changes or additions depend on future equipment selection and maintenance products as well as future operations of equipment. For example, equipment specific lubricants or paints and coatings for equipment maintenance.

a. Estimated volume. Exact quantity will be confirmed after construction.

Abbreviation: TBD - to be determined.

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Attachment D: Emergency Response

Emergency Response

In the event of an emergency the following shall be notified:

Table 7. Facility Liaison		
Name	**Title**	**Work Number**
Kevin Ceniceros	Plant Supervisor	503-865-4041
Kimberly Gupta	Treatment Manager	503-865-6977
Kim Anderson	Emergency Manager	503-823-7074

Table 8. Agency		
Agency	**Contact**	**Phone Number**
Gresham Fire and Emergency Services (GFES)		(503) 618-2355
Other		

Attachment E: 2018 International Fire Code – Appendix H

APPENDIX H

HAZARDOUS MATERIALS MANAGEMENT PLAN (HMMP) AND HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS) INSTRUCTIONS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.

User note:

About this appendix: *Appendix H is intended to assist businesses in establishing a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) based on the classification and quantities of materials that would be found on-site in storage or use. The sample forms and available Safety Data Sheets (SDS) provide the basis for the evaluations. It is also a companion to Sections 407.5 and 407.6, which provide the requirement that the HMIS and HMMP be submitted where required by the fire code official.*

SECTION H101
HMMP

H101.1 Part A (see Example Format in Figure 1).

1. Fill out items and sign the declaration.
2. Part A of this section is required to be updated and submitted annually, or within 30 days of a process or management change.

H101.2 Part B–General Facility Description/Site Plan (see Example Format in Figure 2).

1. Provide a site plan on $8^1/_2$-inch by 11-inch (215 mm by 279 mm) paper, showing the locations of all buildings, structures, outdoor chemical control or storage and use areas, parking lots, internal roads, storm and sanitary sewers, wells and adjacent property uses. Indicate the approximate scale, northern direction and date the drawing was completed.

H101.3 Part C–Facility Storage Map–Confidential Information (see Example Format in Figure 3).

1. Provide a floor plan of each building identified on the site plan as containing hazardous materials on $8^1/_2$-inch by 11-inch (215 mm by 279 mm) paper, identifying the northern direction and showing the location of each storage and use area.
2. Identify storage and use areas, including hazard waste storage areas.
3. Show the following:
    - 3.1. Accesses to each storage and use area.
    - 3.2. Location of emergency equipment.
    - 3.3. Location where liaison will meet emergency responders.
    - 3.4. Facility evacuation meeting point locations.
    - 3.5. The general purpose of other areas within the building.
    - 3.6. Location of all aboveground and underground tanks to include sumps, vaults, below-grade treatment systems, piping, etc.
    - 3.7. Hazard classes in each area.
    - 3.8. Locations of all Group H occupancies, *control areas*, and exterior storage and use areas.
    - 3.9. Emergency *exits*.

SECTION H102
HMIS

H102.1 Inventory statement contents.

1. HMIS Summary Report (see Example Format in Figure 4).
    - 1.1. Complete a summary report for each *control area* and Group H occupancy.
    - 1.2. The storage summary report includes the HMIS Inventory Report amounts in storage, use-closed and use-open conditions.
    - 1.3. Provide separate summary reports for storage, use-closed and use-open conditions.
    - 1.4. IBC/IFC Hazard Class.
    - 1.5. Inventory Amount [Solid (lb), Liquid (gal), Gas (cu ft, gal or lbs)].
    - 1.6. IBC/IFC *Maximum Allowable Quantity per control area* (MAQ). (If applicable, double MAQ for sprinkler protection and/or storage in cabinets. For wholesale and retail sales occupancies, go to Tables 5003.11.1 and 5704.3.4.1 of the *International Fire Code* for MAQs.)
2. HMIS Inventory Report (see Example Format in Figure 5).
    - 2.1. Complete an inventory report by listing products by location.
    - 2.2. Product Name.

2.3. Components. (For mixtures specify percentages of major components if available.)

2.4. Chemical Abstract Service (CAS) Number. (For mixtures list CAS Numbers of major components if available.)

2.5. Location. (Identify the *control area* or, if it is a Group H occupancy, provide the classification, such as H-2 or H-3.)

2.6. Container with a capacity of greater than 55 gallons (208 L). (If product container, vessel or tank could exceed 55 gallons, indicate yes in column.)

2.7. Hazard Classification. (List applicable classifications for each product.)

2.8. Stored. (Amount of product in storage conditions.)

2.9. Closed. (Amount of product in use-closed systems.)

2.10. Open. (Amount of product in use-open systems.)

Facilities that have prepared, filed and submitted a Tier II Inventory Report required by the U.S. Environmental Protection Agency (USEPA) or required by a state that has secured USEPA approval for a similar form shall be deemed to have complied with this section.

SECTION H103
EMERGENCY PLAN

1. Emergency Notification. (See Example Format in Figure 6.)
2. Where OSHA or state regulations require a facility to have either an Emergency Action Plan (EAP) or an Emergency Response Plan (ERP), the EAP or ERP shall be included as part of the HMMP.

SECTION H104
REFERENCED STANDARD

ICC	IBC—18	International Building Code	H102.1

FIGURE 1
HAZARDOUS MATERIALS MANAGEMENT PLAN
SECTION I: FACILITY DESCRIPTION

1. Business Name:_____ Phone:_____
   Address:_____

2. Person Responsible for the Business

Name:	Title:	Phone:
_____	_____	_____

3. Emergency Contacts:

Name:	Title:	Home Number:	Work Number:
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Person Responsible for the Application/Principal Contact:

Name:	Title:	Phone:
_____	_____	_____

5. Principal Business Activity:
   _____
   _____
   _____

6. Number of Employees:_____

7. Number of Shifts: _____
   a. Number of Employees per Shift:
   _____
   _____
   _____

8. Hours of Operation: _____

FIGURE 2
HAZARDOUS MATERIALS MANAGEMENT PLAN SECTION I: FACILITY DESCRIPTION

FIGURE 3
HAZARDOUS MATERIALS MANAGEMENT PLAN SECTION I: FACILITY DESCRIPTION PART C—FACILITY MAP

Business Name	Date
Address	Page of

FIGURE 4
SECTION II—HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS) SUMMARY REPORT[a] (Storage[b] Conditions)[c]

IBC/IFC HAZARD CLASS	HAZARD CLASS	INVENTORY AMOUNT			IBC/IFC MAXIMUM ALLOWABLE QUANTITY[d]		
	(Abbrev)	Solid (lb)	Liquid (gal)	Gas (cu ft, gal, lb)	Solid (lb)	Liquid (gal)	Gas (cu ft, gal, lb)
Combustible Liquid	C2		5			120	
	C3A					330	
	C3B		6			13,200	
Combustible Fiber	Loose/Baled						
Cryogenics, Flammable	Cryo-Flam					45	
Cryogenic, Oxidizing	Cryo-OX					45	
Flammable Gas	FLG						
(Gaseous)				150			1,000
(Liquefied)						30	
Flammable Liquid	F1A					30	
	F1B & F1C		5			120	
Combination (1A, 1B, 1C)			5			120	
Flammable Solid	FLS				125		
Organic Peroxide	OPU				0		
	OP1				5		
	OP2				50		
	OP3				125		
	OP4				NL		
	OP5				NL		
Oxidizer	OX4				0		
	OX3				10		
	OX2				250		
	OX1				4,000		

a. Complete a summary report for each control area and Group H occupancy.
b. Storage = storage + use-closed + use-open systems.
c. Separate reports are required for use-closed and use-open systems.
d. Include increases for sprinklers or storage in cabinets, if applicable.
(This is an example; add additional hazard classes as needed.)

FIGURE 5
SECTION II — HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS) INVENTORY REPORT
(Sort Products Alphabetically by Location of Product and then Alphabetically by Product Name)

Product Name (Components)[c]	CAS Number	Location[a]	Container > 55 gal[b]	Haz Class 1	Haz Class 2	Haz Class 3	Stored (lbs)	Stored (gal)	Stored (gas)[d]	Closed (lbs)	Closed (gal)	Closed gas[d]	Open (lbs)	Open (gal)
ACETYLENE (Acetylene gas)	74-86-2	Control Area 1		FLG	UR2				150					
BLACK AEROSOL SPRAY PAINT (Mixture)	Mixture	Control Area 1		A-L3			24							
GASOLINE, UNLEADED (Gasoline-Mixture) Methyl-t-Butyl-Ether-15% Diisopropyl Ether-7% Ethanol-11% Toluene-12% Xylene-11%	8006-61-9 1634-04-4 108-20-3 64-17-5 108-88-3 1330-20-7	Control Area 1		F1B				5						
MOTOR OIL-10W40 (Hydrotreated Heavy Paraffinic Distillate-85%; Additives-20%)	64742-54-7 Mixture	Control Area 1		C3B				3						
DIESEL (Diesel-99-100%; Additives)	68476-34-6 Proprietary	Control Area 2	Yes	C2				225						
TRANSMISSION FLUID (Oil-Solvent-Neutral; Performance Additives)	64742-65-0	Control Area 2		C3B				3						
OXYGEN, GAS (Oxygen)	7782-44-7	H-3		OXG					5,000					

a. Identify the control area or, if it is a Group H occupancy, provide the classification, such as H-2, H-3, etc.
b. If the product container, vessel or tank could exceed 55 gallons, indicate yes in the column.
c. Specify percentages of main components if available.
d. In cubic feet, gallons or pounds.
(This is an example; add additional hazard classes as needed.)

FIGURE 6
HAZARDOUS MATERIALS MANAGEMENT PLAN
SECTION III: EMERGENCY PLAN

1. In the event of an emergency, the following shall be notified:
   a. Facility Liaison

Name	Title	Home Number	Work Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

   b. Agency

Agency	Contact	Phone Number
Fire Department	_____	_____
LEPC	_____	_____
Other	_____	_____

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