PROCESS AREA
BEST MANAGEMENT PRACTICES

FOR

The City of Bozeman
Water Treatment Plant

In accordance with requirements set forth by the MT DEQ in Groundwater Discharge Permit MTX000224.

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Introduction

This is a Best Management Practices Plan (BMP) for the prevention of chemicals, additives, lubricants, and other wastes or hazardous substances as defined by 40 CFR, Part 116.4 or carcinogens as defined by Circular DEQ-7, from entering the wastewater collection and treatment system of the City of Bozeman Sourdough Water Treatment Plant process area. The process area is comprised of four distinct areas: chemical storage, pretreatment, compressor/blower room, and filtration. The avenue for contaminates entering the wastewater collection and treatment system would be through the floor drains. There is also a vehicle storage/service area which has a system of trench drains that empty into a storage tank. The contents of this tank will be hauled away as necessary by commercial waste haulers.

City of Bozeman Fire Department provides Hazardous Materials Response for the Water Treatment Plant and the region. The team is staffed by personnel trained at the OSHA Hazmat Technician Level.

The Safety Data Sheets for all treatment chemicals, lubricants, and miscellaneous items are located in the Control Room and Shop area in a Right to Know Center. Emergency contact numbers are posted by the telephone in the Control Room.

This BMP is divided into five sections according to the process areas of the plant and vehicle storage and maintenance areas. Also included are appendices listing chemicals, additives and lubricants of concern, SDS for the chemicals, lists of containment devices, absorbents, and personal protective equipment kept in the plant. There are also appendices detailing disposal methods, spill cleanup, truck loading and unloading methods, and employee training.

The BMP will be reviewed and revised as necessary every three months by the Chemical Hygiene Officers. The review will be scheduled and documented in the plant electronic maintenance program (JobCal). Revision dates will be documented in this plan.

Revision Dates

Date of original completion 12/26/12 RJM

Revision 1 __9/26/14 JMM_____

Revision 2 _____

Revision 3 _____

Revision 4 _____

Revision 5 _____

Revision 6 _____

Section 1
Workshops, Vehicle Storage Area, Vehicle Service Bay, Lubricants, and Flammable Storage

The workshops, vehicle storage area, and vehicle service bay floor drains and trench drains all drain through a sand and oil separator into a storage tank (Garage and Shop Wastewater Tank) located outside the water treatment plant. The sand and oil separator will be scheduled for cleaning and inspection at least once a year through the plant computerized maintenance program (JobCal). The contents of the storage tank will be pumped and hauled off site by a commercial waste hauler as needed to the City of Bozeman Water Reclamation Facility.

The Lubricants and Flammables Storage Areas have no floor drains so this precludes the possibility of chemicals, additives, lubricants, and other wastes from entering the wastewater collection and treatment system from these areas. Lubricants and Flammables are stored in rooms which are not located in the process area. Lubricant drums and buckets will be stored on containment decks in the lubricants storage area. All drums, buckets, and other containers will be clearly and plainly marked as to contents, date of acquisition or, in the case of used lubricants, start to fill dates. They will have tight fitting lids and caps that will only be open during filling/emptying procedures. Mobile spill-control platforms will be utilized to transport lubricants to and from the lubricants storage area through the parts/tool room, process area, and the vehicle parking and service bay.

Used automotive and other petroleum based lubricants will be hauled to the City of Bozeman shop for recycling. Used food grade lubricants will stored for disposal by a used oil and waste collection/recycling service.

Solvents and other flammables will be stored in the flammables storage area on containment decks. All containers will have tight fitting lids and be clearly and plainly marked as to the contents. Containers will be marked with dates of acquisition or start to fill dates. Mobile spill-control carts will be utilized when transporting solvents. Used solvents will be disposed of by a hazardous waste transportation service.

The parts washing station in the workshop area will have a tight fitting lid that will be kept closed when the parts washer is not in use.

Absorbents, wipes, containment trays, and portable spill response kits will be stored at convenient locations in the lubricants storage area, vehicle service bay, and workshop areas.

Section 2
Chemical Storage and Feed Area

The chemical storage and feed area contains bulk chemical tanks, chemical totes, day tanks, transfer pumps, chemical feed metering pumps, and associated piping. The chemicals in this area are fully contained with the bulk tanks being mounted in concrete containment areas. The day tanks, totes, transfer pumps, and chemical metering pumps are located on grated that are suspended above the bulk containment areas. In the event of a spill, the containment areas have a minimum of six inches of freeboard over storage capacity. All chemical valves over ½ inches in size are diaphragm valves. Since there are no floor drains the in chemical storage and feed areas, no treatment chemicals or other waste can get into the wastewater collection or treatment system from this area. All sumps in this area drain into the chemical spill tank in the production area.

Haz-Mat absorbents, wipes, and containment trays will be stored at convenient locations throughout the chemical storage and feed areas. Used absorbents will be disposed of by a hazardous materials transport service.

Emergency showers/eyewash stations, first aid kits, burn kits, and PPE are located at convenient locations throughout this area. A list of PPE may be found in Appendix D.

The chemical storage and feed areas will be inspected several times per day as part of the normal operational and maintenance activity.

Procedures for Activities in the Chemical Storage and Feed Areas

I. Unloading Delivery Trucks

A. Two plant personnel will be present any time that chemicals are accepted. This is for safety reasons. One operator will serve as the attending operator. The other operator will be available in case of an emergency.
B. Both the attending operator and the truck driver will wear appropriate PPE during truck unloading operations. This includes chemical boots, coveralls, aprons, gloves, goggles, and face shield.
C. When the truck arrives, both the attending operator and the truck driver will determine if there is enough room in the receiving tank for all of the chemical to be off loaded.
D. The delivery hoses will be inspected by both the attending operator and the truck driver to determine if the hose is of appropriate material, in good shape, and that female hose ends have proper gaskets in place.
E. Both the attending operator and the truck driver will inspect the connection between the truck and the tank fill connection to assure that the connection is made to the proper tank.
F. Both the attending operator and the truck driver will sign the truck unloading record, confirming that steps 1, 2, and 3 have been completed. An example of the truck unloading record is in the Appendix of this BMP.
G. Tanker trucks will be air offloaded using the delivery truck’s air system.

II. Loading Chemicals for Transshipment to the Lyman Plant.

A. There will be two operators present throughout the portable tank loading procedures.
B. Both operators will wear appropriate PPE as described in the delivery truck unloading procedures.
C. Chemicals will be transferred from the bulk tanks into DOT certified Intermediate Bulk Containers (IBCs) of a suitable material for the chemical being transported. The IBCs will be mounted either on a truck bed or a trailer.
D. Before any pump is turned on both operators will sign off that the hose is connected to the appropriate tank. An example sign off sheet is in the Appendix of this BMP.
E. The transfer will be accomplished using the permanently installed chemical transfer pump associated with the bulk chemical tank.

III. Calibration and Maintenance of Chemical Metering Pumps

A. Absorbent pads will be placed under chemical metering pumps during calibration and maintenance procedures. Proper calibration and maintenance procedures will be followed.
B. Used absorbents will be disposed of in accordance with the SDS for the chemicals they have absorbed.

IV. Transfer of Chemicals to Day Tanks

A. Transfer of chemicals between the bulk and day tanks will be accomplished through the use of permanently installed chemical transfer pumps and piping.

Section 3
Pretreatment Area

The Pretreatment Area floor drains empty into the wastewater collection and treatment system. Because of this, extra care must be taken to prevent treatment chemicals and lubricants from entering into it. As part of the normal operations and regularly scheduled preventative maintenance program, this area will be inspected for chemical and lubricant leakage several times per day.

Treatment Chemicals

Treatment chemicals potentially present in this area include: aluminum chlorohydrate (ACH), polyaluminum chloride (PACl), sodium hydroxide (SH), and sodium hypochlorite (SHC). The point of application for all these chemicals is by drip just before the rapid mix. Also

present may be polymer, which is injected into the settled solids pip just before entering the gravity thickener. All treatment chemicals will be carried from the chemical storage and feed areas in double walled pipes, and where appropriate, to the last isolation valve before the point of application. Little to no maintenance will be required for the chemical piping and injection points in this area. A complete list of treatment chemicals present in the facility is in Appendix A.

Lubricants

Machinery requiring lubricants present in this area include: vortex grit removal equipment, grit removal pumps (2), grit classification equipment, rapid mixers (3), and a gravity thickener drive. Both new and used lubricants will be transported to and from the pretreatment area on a mobile spill-control platform. The lubricants used are primarily food grade. Any lubricant spills, leaks, or drips will be promptly cleaned up or contained.

Absorbents, Spill Containment

Haz-Mat absorbents, wipes, and containment trays will be stored at a convenient location near the points of chemical application. Absorbents for lubricants will also be stored at convenient locations near the machinery. Floor drain covers, portable dikes, containment trays, acid neutralizer spill kits, base neutralizer spill kits, and a mobile spill containment cart will be placed at a convenient location in the pretreatment area. Used absorbents will be disposed of by a disposal company. Operators will be trained in the use of the spill containment, absorbent, and neutralization materials. A list of Absorbents, materials handling equipment, and containment equipment present in the facility is in Appendix C. Detailed instructions for used lubricant, spilled chemicals, and used absorbent disposal are contained in Appendices G and H.

Safety

Operators will be trained in the proper use of absorbents, PPE, chemical hygiene, and the physical properties and hazards associated with the chemicals present in the water treatment plant. Operators will wear appropriate PPE whenever working with treatment chemicals and at any other times when it is necessary. Emergency showers/eyewash stations, first aid kits, and burn kits will be stationed at several convenient locations in the pretreatment area.

Procedure for Changing Liquid Lubricants

1. A work order will be generated and an operator will be assigned this activity.
2. The operator shall wear coveralls, goggles, and gloves.
3. The equipment to be service will be locked out and tagged out in accordance with the plant Lock-out Tag-out program.
4. An appropriate absorbent pad will be placed on the floor under the drain plug on the equipment being serviced. A suitable oil pan will be placed under the drain and the drain plug will then be removed, care will be taken to see that the pan is of sufficient capacity to contain all of the waste oil.
5. When draining is complete the drain plug will be replaced and the used oil will be transported on a mobile containment cart to the lubricants storage area.

6. Once in the lubricants storage area, the used lubricant will be prepared for disposal in accordance with the SDS and Appendix G.
7. The appropriate replacement lubricant will then be placed on the mobile containment cart and transported back to the equipment being serviced.
8. After the fill plug has been removed, the appropriate amount of lubricant will be poured through the fill opening and into the equipment being serviced. A properly sized funnel will be used for this purpose.
9. The equipment being serviced and the surrounding area will be cleaned.
10. Empty lubricant containers, rags, and used absorbent pad will be placed on the mobile containment cart for transport to the place of disposal.
11. The equipment will then be placed back in service in accordance with the plant Lock-out/Tag out Program. The completed work order will be will be recorded into the computerized plant maintenance program.

Records

Records of all equipment maintenance activities, including lubricant changes on equipment, are maintained in the plant computerized maintenance program.

Section 4
Production Area

The Production Area floor drains empty into the wastewater collection and treatment system, therefore; extra care must be taken to prevent treatment chemicals and lubricants from entering the wastewater system. As part of normal operations and regularly scheduled preventative maintenance program this area will be inspected for chemical or lubricant leakage several times per day.

Treatment Chemicals

Treatment chemicals potentially present in this area include; polymers, Citric Acid (CA), Sodium Hydroxide (SH), Sodium Hypochlorite (SHC), Calcium Thiosulfate (CTS), and Hydrofluorosilicic Acid (HFA). The polymers will be introduced in the DAFT process. The 50% Citric Acid is diluted to 2% and used in the membrane CIP process. 35% Sodium Hydroxide is introduced at the filtrate tower in the corrosion control process as well as in the membrane CIP process at a 1% solution. Sodium Hypochlorite is introduced at a 6% concentration at the filtrate tower as a disinfectant and will be also used in the membrane CIP process. Calcium Thiosulfate is used for dechlorination and will be introduced near the DAFT units. The Hydrofluorosilicic Acid is introduced at the conduit termination box for fluoridation.

Treatment chemicals will be carried in double containment piping where appropriate. The chemical transfer pumps and associated valving are located over containment tanks within the

lower process corridors. Any leakage or spillage of chemicals is routed to the chemical spill tank which is discussed in Appendix B. The CIP acid, caustic/chlorine, and neutralization tanks are all situated above containment which drains to the chemical spill tank.
Lubricants

Machinery requiring lubricants in this area include a large variety of pumps, motors, gear boxes, and mixers. Most if not all lubricants in this area are food grade. Both new and used lubricants will be transported to and from the lubricant storage room on a mobile spill control platform. Any lubricant spills, leaks, or drips will be promptly cleaned up or contained.

Absorbents, Spill Containment

Haz-Mat absorbents, wipes, and containment trays will be stored at convenient locations near the point of chemical application. Absorbents for lubricants will also be stored at convenient locations near the machinery. Floor drain covers, portable dikes, containment trays, acid neutralizer spill kits, base neutralizer spill kits, and a mobile spill containment cart will be placed at a convenient location in the production area. Used absorbents will be disposed of by a disposal company. A list of absorbents, materials handling equipment, and containment equipment present in the facility is located in Appendix C. Detailed instructions for used lubricants, spilled chemicals, and used absorbent disposal are contained in Appendices G and H.

Safety

Operators will be trained in the use of spill containment, absorbents, neutralization materials, PPE, chemical hygiene, and the physical properties and hazards associated with the chemicals present in the water treatment plant. Operators will wear appropriate PPE whenever working with treatment chemicals and at any other time it is necessary. Emergency showers/eyewash stations, first aid kits, and burn kits will be stationed at several convenient locations in the Production area.

Procedure for Changing Lubricants

1. A work order will be generated and an operator will be assigned this activity.
2. The operator shall wear coveralls, goggles, and gloves.
3. The equipment to be service will be locked out and tagged out in accordance with the plant Lock-out Tag-out program.
4. An appropriate absorbent pad will be placed on the floor under the drain plug on the equipment being serviced. A suitable oil pan will be placed under the drain and the drain plug will then be removed, care will be taken to see that the pan is of sufficient capacity to contain all of the waste oil.
5. When draining is complete the drain plug will be replaced and the used oil will be transported on a mobile containment cart to the lubricants storage area.
6. Once in the lubricants storage area, the used lubricant will be prepared for disposal in accordance with the SDS and Appendix G.
7. The appropriate replacement lubricant will then be placed on the mobile containment cart and transported back to the equipment being serviced.

8. After the fill plug has been removed, the appropriate amount of lubricant will be poured through the fill opening and into the equipment being serviced. A properly sized funnel will be used for this purpose.
9. The equipment being serviced and the surrounding area will be cleaned.
10. Empty lubricant containers, rags, and used absorbent pad will be placed on the mobile containment cart for transport to the place of disposal.
11. The equipment will then be placed back in service in accordance with the plant Lock-out/Tag out Program. The completed work order will be will be recorded into the computerized plant maintenance program.

Section 5
Compressor/Blower Room

The compressor/blower room floor drains empty into the wastewater collection and treatment system so extra care must be taken to prevent lubricants from entering it. As part of normal operations and regularly scheduled preventative maintenance, this area will be inspected for lubricant leakage several times per day.

Lubricants

Machinery requiring lubricants in this area include: air compressors (3) and blowers (2). The lubricants used are food grade and will be transported to and from the lubricant storage room on a mobile spill-control platform. Any lubricant spills or drips will be promptly cleaned up or contained. A complete list of lubricants present in the facility is in Appendix B.

Absorbents, Spill Containment

Absorbents, wipes, and containment trays will be stored at convenient locations near the machinery in this room. Floor drain covers, portable dikes, and suitable containment trays will also be stored here. A complete list of absorbents and containment materials is contained in Appendix C.

Disposal of Used Lubricants and Absorbents

Instructions on the disposal of used lubricants and absorbents are located in Appendix G.

Procedure for Changing Lubricants

1. A work order will be generated and an operator will be assigned this activity.
2. The operator shall wear coveralls, goggles, and gloves.
3. The equipment to be service will be locked out and tagged out in accordance with the plant Lock-out Tag-out program.

4. An appropriate absorbent pad will be placed on the floor under the drain plug on the equipment being serviced. A suitable oil pan will be placed under the drain and the drain plug will then be removed, care will be taken to see that the pan is of sufficient capacity to contain all of the waste oil.
5. When draining is complete the drain plug will be replaced and the used oil will be transported on a mobile containment cart to the lubricants storage area.
6. Once in the lubricants storage area, the used lubricant will be prepared for disposal in accordance with the SDS and Appendix G.
7. The appropriate replacement lubricant will then be placed on the mobile containment cart and transported back to the equipment being serviced.
8. After the fill plug has been removed, the appropriate amount of lubricant will be poured through the fill opening and into the equipment being serviced. A properly sized funnel will be used for this purpose.
9. The equipment being serviced and the surrounding area will be cleaned.
10. Empty lubricant containers, rags, and used absorbent pad will be placed on the mobile containment cart for transport to the place of disposal.
11. The equipment will then be placed back in service in accordance with the plant Lock-out/Tag out Program. The completed work order will be will be recorded into the computerized plant maintenance program.

Training

Water Treatment Plant Personnel will be trained in the proper procedures for inspections and changing lubricants, spill containment, and the use and disposal of absorbents, wipes, and used lubricants.

Records

Records of all equipment maintenance activities, including lubricant changes, are maintained in the plant computerized maintenance program.

Appendix A
Water Treatment Chemicals

Chemical	Liquid Concentration	Injection Location	Use
Polymer	Varies	At residuals handling (DAFT and gravity thickener)	Aid in dewatering sludge
Sodium Hydroxide (SH)	35%	-Filtrate Tower -Before Rapid Mix (if needed) -Caustic CIP Tank -CIP Neutralization Tank	-Corrosion Control -pH adjustment (if needed) -Membrane CIP -pH adjustment
Sodium Hypochlorite	6%	-Filtrate Tower -Before Rapid Mix (if needed) -Caustic CIP Tank	-Disinfection -Pre-oxidation of organics -Membrane CIP
Citric Acid	50%	-Acid CIP Tank	-Membrane CIP
Calcium Thiosulfate	24-30%	-CIP neutralization tank -DAFT effluent	-Dechlorinate CIP waste -Dechlorinate backwash waste
Hydrofluorosilicic Acid	23-30%	Conduit Termination Box	Fluoridation

Appendix B
Chemical Spill Tank

The chemical spill tank is located in the west central area of the production area, near the membrane CIP tanks. It receives drainage from the sodium hydroxide and sodium hypochlorite chemical containment areas only due to the incompatibility of some of the other chemicals and for operator safety. It also receives overflow from the CIP Acid, Caustic/Chlorine, and Neutralization tanks containment areas. All other chemicals remain in their containment areas until pumped out to a truck.

Once material reaches the chemical spill tank the operators can choose to send it to one of three locations: the chemical spill load out for transport to a waste material processing facility, the DAFT feed wet well before reentering the treatment or discharge processes, or to the lagoon for entry into the treatment or discharge processes.

Appendix C
Absorbents, Material Handling, and Containment

Absorbent mats
Absorbent pillows for lubricants
Absorbent neutralizing pillows for acids
Absorbent neutralizing pillows for bases
Absorbent socks for lubricants
Absorbent neutralizing socks for acids
Absorbent neutralizing socks for bases
Loose absorbents for lubricants (peat, cellulose, clay)
Loose absorbents for acids (Spill-X-A)
Loose absorbents for bases (Spill-X-C)
Lime
Bulk rags and wipes
Carts with containment trays
Containment trays
Mobile containment carts
Portable containment dikes
Floor drain covers
Universal Spill Kit for acids
Universal Spill Kit for bases

Appendix D
Personal Protective Equipment and Safety Equipment

PPE

Goggles
Safety glasses
Chemical goggles
Face shields
Chemical boots
Chemical boot covers
Coveralls
Chemical gloves
Chemical suits
Chemical aprons
Ear plugs
Ear muffs
Hard hats

Safety Equipment

First aid kits
Chemical burn kits
Emergency showers/eyewash stations
Confined Space entry equipment
- Air monitors
- Hoists with reels
- Harnesses

Appendix E
Chemical Delivery Truck Unloading Check-Off Sheet

Two operators must be present to accept chemical deliveries.

Attending operator and truck driver MUST BOTH initial one through four before truck is unloaded.

Chemical Being Unloaded _____

Date and Time _____

Company Making Delivery _____

	Operator	Driver
1. Wearing proper PPE (chemical suit, goggles/face shield, gloves, boots)?	_____	_____
2. Enough Room in receiving tank?	_____	_____
3. Delivery hoses in good shape, of proper materials, gasket installed and connected to the correct receiving tank?	_____	_____
4. Bucket available to collect drips?	_____	_____

Appendix F
Chemical Delivery Transshipping Check-Off Sheet

Two Attending Operators must both initial one through three before portable tank is loaded.

Chemical Being Transported _____

Date and Time _____

Quantity _____

	Operator 1	Operator 2
1. Wearing proper PPE (chemical suit, goggles/face shield, gloves, boots)?	_____	_____
2. Hoses in good shape, of proper material, gasket installed and connected to the correct receiving tank?	_____	_____
3. Bucket available to collect drips?	_____	_____

Appendix G
Used Lubricants, Absorbents, Rags, and Solvent Disposal

Petroleum Based Lubricants

Water Treatment Plant vehicles serviced in the vehicle service bay will be the source of most, if not all, of the used petroleum based lubricants. Used petroleum based lubricants will be collected in a clearly and plainly marked drum stored on a spill containment deck in the lubricant storage area. A funnel will be utilized to minimize drips. Periodically, these used lubricants will be transported to the City Shop for recycling.

Food Grade Lubricants

Most water treatment plant equipment utilizes food grade lubricants that are mineral oil based. The used food grade lubricants will be stored in clearly and plainly marked DOT 1A1 drums on a spill containment deck in the lubricant storage room. A funnel will be used to minimize drips. Since the City Shop does not accept mineral oil based lubricants for recycling, when the drums are full they will be collected by a used oil and waste collection and recycling service.

Absorbents, Rags, and Grease

Used absorbents, rags, and grease will be collected and stored in the lubricant storage area in clearly and plainly marked DOT 1A2 drums. A collection and recycling service will furnish these containers and also collect them periodically when they are full. Starting and ending dates for filling will be prominently displayed on all drums.

Solvents

Used solvents will be stored in the flammables room in clearly and plainly marked containers. The containers will be furnished by a collection and recycling service that will also collect the containers periodically when they are full. Starting and ending dates for filling will be prominently displayed on all containers.

A listing of used oil and waste collection and recycling services is on the following page.

Appendix H
Water Treatment Chemical Disposal

Safety Data Sheets

SDSs for all water treatment chemicals are in the Right to Know Center outside of the Control Room. Read the appropriate SDS before starting any spill cleanup.

Small Spills

Spill of less than ten gallons are considered to be small. Use the appropriate clean up method stated in the SDS.

Large Spills

Spills greater than ten gallons are considered to be large. Follow the appropriate protocol in the SDS.

Sodium Hydroxide

Wear full PPE when working with any quantity of sodium hydroxide. Full protective clothing includes: chemical goggles, face shield, full chemical suit, long chemical gloves, and chemical boots. Ensure adequate ventilation.

Small Spills

Small spills will be immediately neutralized with caustic (base) neutralizer absorbent such as Spill-X-C. The neutralizer solidifies the liquid. The neutralized and solidified waste will be collected and deposited in five gallon plastic buckets with tight fitting lids. They will be clearly and plainly labeled as neutralized sodium hydroxide and stored for pickup by a commercial hazardous waste disposal company. After the neutralized waste is cleaned up the spill area will be washed down with copious amounts of water.

Large Spills

In the case of large spills, leave the area of the spill and immediately call 911. Evacuate the plant area until the hazardous materials response team arrives and allows occupancy. The City of Bozeman Fire Department is the regional hazardous materials response agency for this area. Give the response team a copy of the SDS if necessary and follow their instructions. The spilled material will be removed by a commercial hazardous material transport service.

Sodium Hypochlorite

Wear chemical goggles, long chemical gloves, and chemical apron when working with sodium hypochlorite. Ensure adequate ventilation.

Small Spills

Small spills will be immediately neutralized with caustic (base) neutralizer absorbent such as Spill-X-C. The neutralizer solidifies the liquid. The neutralized and solidified waste will be collected and deposited into five gallon buckets with tight fitting lids. They will be clearly and plainly labeled as neutralized sodium hypochlorite and stored for pick up by a commercial hazardous waste disposal company. After the neutralized waste is cleaned up, the spill area will be washed down with copious amounts of water.

Large Spills

In the case of large spills, immediately leave the area and call 911. Evacuate the plant area until the hazardous materials response team arrives and allows occupancy. The City of Bozeman Fire Department is the hazardous materials response agency for this area. Provide them with a copy of the SDS if necessary and follow their instructions. The spilled material will be removed by a commercial hazardous materials transport service.

Aluminum Chlorohydrate or Polyaluminum Chloride

Wear long chemical gloves, chemical boots, chemical suits, and goggles. Ensure adequate ventilation.

Small Spills

Small spills can be neutralized and absorbed with soda ash or lime, but neutralization will release carbon dioxide, which can generate a breathing hazard. Once neutralized and absorbed, the waste will be collected and deposited into five gallon buckets with tight fitting lids. The buckets will be clearly and plainly marked as neutralized ACH or PACl and stored until pick up by a commercial hazardous waste disposal company is arranged. After the neutralized waste is cleaned up, the spill area will be washed down with copious amounts of water.

Large Spills

In the case of large spills, immediately leave the area and call 911. Evacuate the plant area until the hazardous materials response team arrives and allows occupancy. The City of Bozeman Fire Department is the hazardous materials response agency for this area. Provide them with a copy of the SDS if necessary and follow their instructions. The spilled material will be removed by a commercial hazardous materials transport service.

Citric Acid

Wear long chemical gloves, chemical boots, suits, goggles, and face shield. Ensure adequate ventilation.

Small Spills

Small spills will be immediately neutralized with an acid neutralizer such as Spill-X-A. The neutralizer solidifies the liquid. The neutralized and solidified waste will be collected and deposited into five gallon buckets with tight fitting lids. The buckets will be clearly and plainly labeled as neutralized citric acid and stored for pick up by a commercial hazardous waste disposal company. The spill area will be washed down with copious amounts of water after the waste has been cleaned up.

Large Spills

In the case of large spills, immediately leave the area and call 911. Evacuate the plant area until the hazardous materials response team arrives and allows occupancy. The City of Bozeman Fire Department is the hazardous materials response agency for this area. Provide them with a copy of the SDS if necessary and follow their instructions. The spilled material will be removed by a commercial hazardous materials transport service.

Hydrofluorosilicic Acid

Wear long chemical gloves, chemical boots, suits, goggles, and face shield. Ensure adequate ventilation.

Small Spills

Small spills will be immediately neutralized with an acid neutralizer such as Spill-X-A. The neutralizer will solidify the liquid. Once neutralized and absorbed, collect and deposit the waste into five gallon buckets with tight fitting lids. Clearly and plainly label the buckets as neutralized hydrofluorosilicic acid and store for pick up by a commercial hazardous materials disposal company.

Large Spills

In the case of large spills, immediately leave the area and call 911. Evacuate the plant area until the hazardous materials response team arrives and allows occupancy. The City of Bozeman Fire Department is the hazardous materials response agency for this area. Provide them with a copy of the SDS if necessary and follow their instructions. The spilled material will be removed by a commercial hazardous materials transport service.

Calcium Thiosulfate

Wear goggles, face shield, gloves, and an apron.

Small and Large Spills

Absorb spills with an inert absorbent such as peat, clay, or cellulose. Deposit the absorbed material into five gallon bucks (or, in the case of a large spill, a 55 gallon drum) with tight fitting lids. Clearly and plainly label the buckets or drums as absorbed calcium thiosulfate and store for pick up by a disposal company. After the waste has been cleaned up, wash down the spill area with copious amounts of water.

Polymer

Wear neoprene gloves, chemical goggles, and an apron.

Small and Large Spills

Absorb spills with an inert absorbent such as peat, clay, or cellulose. Deposit the absorbed material into five gallon bucks (or, in the case of a large spill, a 55 gallon drum) with tight fitting lids. Clearly and plainly label the buckets or drums as absorbed polymer and store for pick up by a disposal company. After the waste has been cleaned up, wash down the spill area with copious amounts of water.

A list of hazardous waste transport services is on the next two pages.

Appendix I

Training

Operators will be trained on the Process Area Best Management Plan as part of their initial employment orientation and as needed thereafter. They will be required to read the plan and be given the opportunity to ask questions. Thereafter, the operators will be required to review the BMP every six months. The required review will be scheduled and documented in the plant computerized maintenance program. Operators will also be required to review the Safety Data Sheets (SDS), Plant Chemical Hygiene Plan, Plant Emergency Response Plan, and the Plant Hazard Communications Plan on a biannual basis. These reviews will be scheduled and documented in the plant maintenance program.

Operators will be trained in chemical safety and the use of PPE as part of the plant safety program and orientation.

Appendix J
Cleaning Agents

Since we are producing potable water, cleaning agents will only be used sparingly in process areas. The plant has been designed to allow wash down with water in most areas. In most cases, wash down water will suffice.

If it is necessary to use cleaning agents, they will be used sparingly and will be environmentally friendly. Examples of environmentally friendly products include citrus based products (like Simple Green) and water based cleaners.