II. PRIORITY CALL DOWN LIST

This table shows several emergencies – in general the more important ones are at the top. For each emergency you can see some examples of who to call and who you should try to call first. THIS TABLE IS ONLY AN EXAMPLE. MODIFY IT TO REFLECT YOUR CIRCUMSTANCES. Provide specific contact info below. Keep this info handy.

	EMS 911	OERS	LOCAL POLICE	PUBLIC HEALTH	WATER USERS	LIABLE OWNER	LOCAL UTILITY	MAINTE- NANCE
Life Threatening Emergency	1					2		
Chemical Spill from a Tanker		1		2				
Suspected Criminal Acts			1					
Alleged Drinking Water Illness(es)				1	2	3		
Chemical Con- tamination to Well				3	1	4		2
Contamination to Well from Surface Water (flooding)				3	1	4		2
Loss of Power							1	2
Equipment Failure or Broken Line						2		1
Failure of Water Disinfection System				3	1	4		2
Samples Show Bacteria in Water				1	1	3		2

- 1. Call -911- in a Medical Emergency or a life threatening situation. Alternative Emergency Number_____
- 2. In the event of any chemical spill call Oregon Emergency Response System (OERS) @ 1 - (800) 452-0311. Be prepared to provide:
 - Your contact info; Description of spill; Location of incident; When it happened; How it might affect your water system or any other water system.

3. Law enforcement agency _____

Phone number_____

Environmental Health (541) 751-2431.
If no answer or after hours, call 751-2400 and listen to the entire message to receive an emergency contact number. State Staff "may" be available at (971) 673-0405.

5. If you have any tenants who are water users, describe the most logical way to tell them about problems with water (i.e. Flyers, door to door contact or if by phone - make a phone list.)

6. If you are not the liable owner, provide at least 2 contact numbers for owner(s): #1_____ #2 _____

Gas: _____

7. Provide phone numbers for local utilities: Electric Power: _____ Other: _____

Provide at least 2 phone numbers where you could obtain an electric generator: #1 _____ #2 _____

Use the following table as an example to (1) specifically list of all the mechanical equipment in use in a water system, (2) what back-up equipment is on hand, (3) where replacement equipment is available. Consider listing a supplier both in and out of the area.

Make a list of equipment your system needs to operate – identify each piece in a way that would allow you to easily get a replacement - and note if electric power is necessary.	For which equipment do you keep a spare on hand for? Including spare equipment list at 2 retailers where you can get replacement equipment. Consider listing a retailer from out of the area.
Well Pump, Walter Ace Model R200A, Part No. 23210D500, 1/2 HP, 10 GPM, 115 volt	No spare on hand, can be purchased at: J & J Hardware 1234 Some St. Some City, OR phone (541) 882-1754 or Paul's Pumps 6789 Pine Parkway Patron Village, OR phone (503) 971-0711
Chlorinator, Autotrol Model WP1 115 Volt	Rebuilt spare is on hand – can be purchased at: Klorine Kingdom 7654 Disinfection Ave Sanitize City, OR phone (973) 884-2314
Diaphragm 80 gal pressure tank, Model JOPR- 22-080	No spare on hand, but available at either: J & J Hardware or Paul's Pumps (see above)
2" and 1" PVC Piping (NSF approved)	About 20' of both sizes is on hand. It can also be purchased at: Hyrum's Hardware 9871 Hilly Highway HipHop OR phone (541) 756-2020 ext 100

Make a list of equipment and suppliers on a separate piece of paper. The more specific you can describe your equipment, the more likely any supplier will be in finding an alternative choice that will work.

System Components

Where Available?

Considering each component above, make a list of who you could call for help. Make this list even if you think you are able bodied and can do the work your self because for some reason real emergencies only seem to happen when the boss is gone. Incorporate into your list any maintenance help you have on staff and your well service company.

Well Pump		NAME	PHONE
	1 2		
Storage Tank	1 2		
Pressure Tank	2 1	NAME	PHONE
Chlorinator	2	NAME	PHONE
Backhoe for sub- Surface piping?	2		
Who could provide	2	NAME	PHONE
Repair Shops	1 2		
	1 2		
Local Handyman	1 2	<u>NAME</u>	<u>PHONE</u>
On-Call Electrician	1 2		
Other?	1 2.	NAME	<u>PHONE</u>

III. <u>CHEMICAL CONTAMINANTS RESPONSE</u>

If you use a water well and become aware of a chemical spill that is big enough and close enough that it might get chemical into your well, call OERS and turn off your well pump to make sure chemical does not contaminate your whole water system. Do not turn it on again unless you are confident in your contaminant mitigation plan. Consider seeking advice from public health.

If you use water from a river or other surface and become aware of a chemical spill that could get into the water you use, call OERS and turn off your water intake to make sure chemical does not contaminate your whole water system. Do not turn it on again until you know the contaminant is no longer a threat. Consider seeking advice from public health.

If chemically tainted water has not contaminated your water system's plumbing, it may be practical to haul in water via a commercial hauler on go on with business as usual until the chemical has been cleaned up.

WHO CAN DELIVER POTABLE WATER TO YOUR PROPERTY?

If hauling water is not an option or if chemical has contaminated your water system, you will not be able to provide public water until the contaminated parts of your system have been purged. Ideally before purging starts you want to make sure the source of contamination has been stopped.

WATER PURGING

In cases of gross chemical contamination DEQ (269-2721) may have oversight to assure the purging of your well does not result in further contamination to the environment.

If the contamination is limited to the inside of the well casing, you at least need to purge the amount of water your casing holds. If contamination continues to filter into the well purging may need to be on going, off and on, over a multi day period. Off and on purging may also need to occur for a slow flowing well to protect the pump.

How much water to purge can vary according to the amount of contamination and what the contaminant is. Consider seeking competent advice.

To purge a well of contaminated water, open the faucet closest to the well head. This faucet serves best at the well head and before any other equipment in the water line. Attach a hose to this faucet and drain it where it cannot filter back into the well water and re-contaminate it. If you re-contaminate your well you've wasted your time.

Use the same purge process for each part of your water system where chemical contamination has occurred, piping, tank reservoirs, etc...

IV. SURFACE WATER CONTAMINATION RESPONSE

It's an emergency if standing water ever accumulates around your well head to get deep enough to run into the well. Water that comes directly from the surface and gets into your well must be treated as if it is contaminated. This page outlines an emergency response for this contamination.

Consider any logical steps to prevent surface water contamination before it happens. If your well has been dug by hand or with a backhoe, there may be little you can do to prevent surface water intrusion and you may already be dealing with it routinely. Drilled wells should have the following four things in place. If not already in place, consider adding any of the following:

- 1. The well casing should be grouted with something impermeable;
- 2. The ground should be graded to prevent ponding and sloped away from the well;
- 3. A concrete pad should be poured around the casing. (DOES NOT APPLY TO A PITLESS ADAPTER) It should rise at least 6" above the natural grade and be sloped away from the casing; and
- 4. The well casing should extend at least 12" above the concrete pad and higher than the depth of potential flooding or ponding.

Contamination from surface water most be purged from the well. Purging can start when it is obvious surface water is no longer affecting the well. When related to flood waters, be alert to signs of sediments that can damage a pump. Flooding may also result in chemical contamination. Refer to the CHEMICAL CONTAMINANTS page if this is a concern.

WATER PURGING

Prepare to purge at least the amount of water your casing holds.

To purge a well of contaminated water, open the faucet closest to the well head. This faucet should be after the well head and before any other equipment in the water line. (If you don't have this faucet, it is a good idea to install one before you need to purge a well of contamination.) Attach a hose to this faucet and drain where it can't filter back into the well.

Use the same purge process for each part of your water system where any surface water contamination has occurred, piping, tank reservoirs, etc...

CHLORINE DISINFECTION

When flood water contaminates a well both purging and chlorine disinfection is needed. Purging is required first because it will reduce physical and chemical contaminants along with parasites that chlorine does not effectively destroy. Chlorine disinfection is used to eliminate other bacterial contaminants.

Disinfection uses chlorine to eliminate microorganisms that may have entered the water system. A chorine solution is introduced into the well and throughout the entire distribution system that have been affected. According to the CDC a 50 ppm chlorine solution should stand in the system for at least 8 hours before flushing. The water should not be considered potable until it has an "absent" coliform test result. <u>http://www.bt.cdc.gov/disasters/wellsdisinfect.asp#procedure</u>

The next page will help you determine how much chlorine to add for emergency disinfection.

Answer the following questions and then following the example below to determine the amount of chlorine solution needed to disinfect your well.

_What is chlorine concentration of the solution you chlorinate with? If it is 5% continue with this calculation, IF IT IS NOT 5% call the health dept for help. Because most water systems keep a 5% chlorine solution on hand, it is used in this example.

Find your well log. If you do not have a copy try: <u>http://apps.wrd.state.or.us/apps/gw/well_log/</u> or contact your the local water master.

According to the well log,

_What is the size of the well casing (or measure the diameter)? Most small commercial wells have a 6" casing so that is what will be used in this example. If you have a casing other than 6" use the following table...

According to the well log, _How deep is the well?

_____ What is the static water level of the well?

To get 50 ppm of chlorine using house hold bleach				
in a well				
Size of well casing	4"	6"	8"	
Oz of bleach/foot	0.075	0.2	0.35	

_____ Find how many feet of water is in the well by finding the difference between the well depth and its static level.

Example: A well is in need of being disinfected.

5% chlorine solution much like household bleach is in use.

According to the well log,

 $\underline{6"}$ is the size of the well casing

According to the well log,

- 55' is the depth of the well
- 30 ' is the static water level

25 ' is how many feet of water in the level.For a well with a 6" casing, 0.2 oz of 5 % chlorine solution (like unscented household bleach) is needed for every foot of water to achieve a 50 ppm solution.

How Many Feet	Multiplied	0.075	Equals	Ounces of Chlorine	
of Water	By	OZ		Solution Needed	
25 ft	Х	0.2	=	5 oz	
While using the numbers for your own well, following the example above to					
figure how much 5% chlorine solution you would need.					

Using the amount of chlorine you have just calculated follow the outline on the following page when needed for system disinfection.

DISINFECTION WARRANTED

(http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Operations/Pages/shockchlorination.aspx) Chlorine disinfection is warranted following any kind of contamination to the water system, such as <u>surface water flooding</u>, <u>a water line break</u>, a storage <u>tank found open</u> to the environment. It would also be warranted for a water system that must maintain chlorine residual, but for some reason the <u>chlorination system</u> fails for any reason including a power outage. Chlorine disinfection may be warranted after an investigation of any suspected water borne illness by the public health department and in the event of repeat <u>coliform bacteria samples testing "positive"</u> for bacteria in the water system according to a coliform sampling plan. (If you don't have a coliform sampling plan see http://www.co.coos.or.us/Departments/PublicHealth/EnvironmentalHealth/PublicWaterSystems.aspx.)

Tailor the following disinfection description to work for your water system:

- 1. Turn the water "off." Notify any tenants to get water from a safe place until you notify them they can use your water again.
- 2. Using the amount of chlorine (bleach) you calculated from the previous page, dilute it for safety into 5 gallons of water and pour the mixture into the well.
- 3. Circulate this mixture through the well and any pressure tank(s) until thoroughly mixed. To do this, attach a food-grade hose to a hose bibb just downstream from the pressure tank(s), place the hose end in the well casing, and recirculate the water for at least 30 minutes. Be sure to wash down the walls of the casing.
- 4. In the distribution system open a faucet until you can smell the chlorinated water. Then turn off the faucet. Do this at each faucet. Be sure the entire distribution system, including any dead end lines and storage tanks have all been chlorinated.
- 5. Use a chlorine test kit to ensure that the water in the pipes has a minimum chlorine residual of 50 ppm.
- 6. Let the water sit undisturbed in the distribution system for 8 hours.
- 7. Open all the faucets (including any blow-offs for dead end lines) and begin flushing chlorinated water out of the system.
- 8. Reduce chlorine to less than 4.0 ppm (mg/l). If you customarily chlorinate on a daily basis, use a test kit to avoid allowing chlorine levels from dropping too low as per your system's specs. Otherwise you may complete flush out all chlorinated water.
- 9. Wait a few days, and then collect a water sample in the distribution system and test for coliform bacteria. (To avoid a bad bacteria result on the record of the water system and necessary re-sampling you may choose to mark this sample as "investigative" on your lab slip. This won't count as your routine sample result.)
- 10. The water system is considered free of bacterial contamination when the water sample is "absent" for coliform bacteria. At this point your water system may be made available for public use with your business or tenants. Notify your water users that the system has resolved the problem.