



Minnesota
Pollution
Control
Agency

Preparing Your Underground Storage Tank for a Flood

Tanks/Underground/Storage Tanks #1.16 • August 2006

What to do if flooding threatens an underground storage tank

If you have not properly anchored your tank and if floodwaters or rising ground water threaten your underground storage tank (UST) system, follow these steps to keep the tank in the ground and prevent water from entering the system:



Figure 1. Tanks are typically buried 3 to 4 feet below finished grade to provide adequate slope for piping and protection from traffic loads. Except in areas with high water tables or areas subject to flooding, the weight of the backfill and pavement over the tank is sufficient to offset buoyance and prevent flotation.

- Keep the tank full of product. This will add weight to the tank so it will not float out of the ground. Do not fill the tank with water; if you do, you will have to properly dispose of the water later, and disposal of contaminated water can be very expensive.
- **Secure all the openings on top of the tank.** Make sure the fill caps are in good condition and fastened securely in place. Also, check the seal on the plungers in the spill buckets so water cannot get into the tank.
- Pressurized piping systems have shear valves. **Close or “trip” the shear valve.** This will prevent product from getting out of the pipelines if debris floats by and knocks over a dispenser.
- **Secure all the openings on top of the tank.** Make sure the fill caps are in good condition and fastened securely in place. Also, check the seal on the plungers in the spill buckets so water cannot get into the tank.
- Turn off the electricity to the UST system. This includes power to the dispensers, pumps, lighting and any other system components.

What to do if a tank floats out of its excavation

If your tank was not anchored when it was installed, it may float out of its excavation. If so, follow these steps:

- If there is any evidence of spilled product, call the Minnesota Duty Officer at 800-422-0798 or 651-649-5451. The Duty Officer will inform Minnesota Pollution Control Agency (MPCA) Emergency Response of the spill.
- Call your local fire department.
- Turn off any power in the vicinity of the tank(s) and piping. If any power lines are down in the area around the tank(s), call the power company immediately.
- Rope off the area and keep people away from the hole in the ground.
- If your tank has not floated away, empty it of all product.
- Call a certified tank removal contractor to remove the piping and tank properly.
- Call the MPCA's Tank Compliance and Enforcement Unit at 651-296-6300 or 1-800-657-3864 for information about tank removal, reinstallation or replacement; or potential assistance.

What to do if the system is submerged by floodwater or subject to abnormally high ground water

In some instances, tanks pop right out of the ground, but in other instances, the tank and piping system may shift in the ground, threatening the integrity of the storage system. If your UST system becomes submerged by floodwater or if it is subject to abnormally high ground water, follow these steps when the floodwater or ground water has receded:

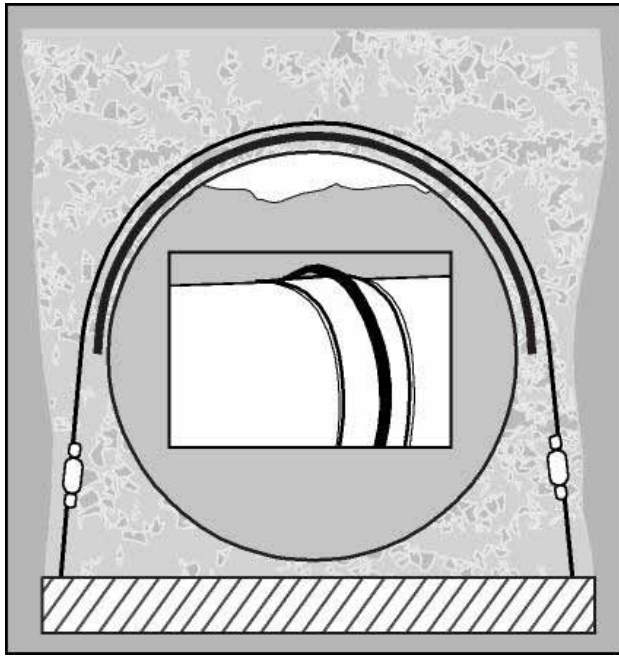
- Turn off the power (electricity) to any UST related equipment before beginning any investigation. This includes the power to the dispensers, pumps, release detection equipment, and other devices.
- Remove water from the sump(s) under the dispensers and above the tanks. Sumps at USTs are commonly located around the fill pipe and the submersible pump. Inspect the piping and fittings for damage and possible leaks.

- Test the leak detection system on your tanks and piping. If no leak detection system has been installed, run tightness tests to ensure the integrity of the entire system.
- Use water finding paste on the end of your gauge stick to determine whether water has entered the tank. If it has not, the UST system is probably intact and further investigation is not needed. Continue to keep good inventory records so that product loss will be easy to identify should a leak occur; good records are essential whether you have a flood or not.
- If there is water in the tank, try to determine its source. Water may have entered through a loose fitting on top of the tank or the UST may have shifted in the ground, damaging the tank, piping or both. Testing of the piping and tank is required if you are unable to determine how water entered the system.
- If the tank has a cathodic protection system, test it to make sure it is still operating properly.

What can be done during tank installation that would help if there's a flood or high water table

There are three main methods of restraint that will prevent a tank from floating because of flooding or a high water table:

- Increase the burial depth and/or amount of pavement above the tank. The extra weight of the backfill and pavement is often enough to keep the tank from floating. Note that the maximum burial depth for fiberglass tanks is seven feet. The burial depth should not exceed the manufacturer's recommendation.
- **Use a hold-down pad.** This is a cement pad placed underneath the tank. (See Figure 2.)
- Use deadman anchors. Deadman anchors are beams of reinforced concrete that are placed along the sides of a tank. Extending straps are placed over the tank and attached to the anchors. (See Figure 3.)



Need more information?

Visit the UST Program at www.pca.state.mn.us/cleanup/ust.html. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864.

Figure 2. A reinforced bottom hold-down pad provides a firm bed for the tank and adds resistance to flotation.

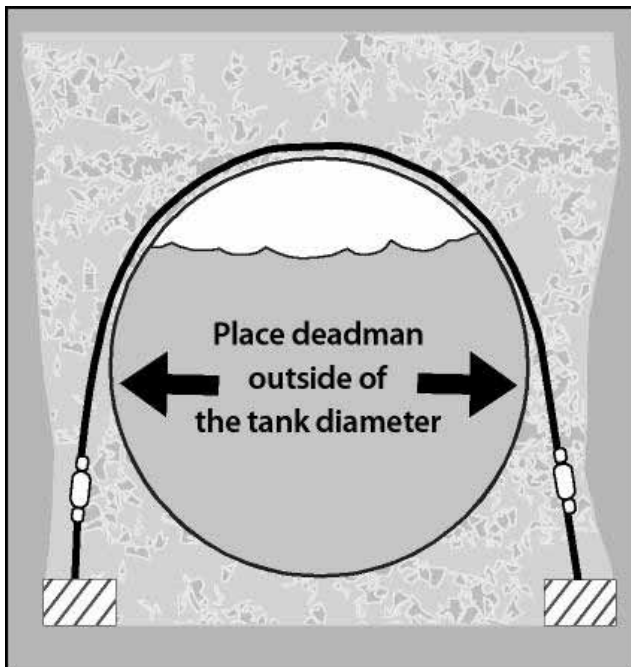


Figure 3. Deadman anchors increase the amount of backfill bearing down on the tank to offset buoyancy.