

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

February 6, 2019

EOC Update: Attention Property Owners | Sandbagging Information

Due to high groundwater throughout the Regional District of Okanagan-Similkameen (RDOS), there is a high probability of flooding from freshet - in areas that are prone to flooding. In some areas such as Sportsmens Bowl Road north of Oliver and other regions within the RDOS, there remains an imminent risk of flooding from rainfall events. Property owners living in areas that flood need to be prepared.

“Groundwater levels are currently higher than normal due to wet conditions experienced in 2017 and 2018, creating an increased potential for flooding during freshet in 2019.”

Ecora – Professional Engineers and Environmental Consulting / Dobson Engineering Ltd.

“Property Owners are responsible for protecting their property.”

In British Columbia, property owners are responsible for taking the necessary steps on their property to protect their home and property from flooding, while government emergency programs focus on broader flood response measures. The RDOS will provide sand and sandbags for property owners as needed, in addition to information about sandbag placement. During a flooding emergency, Emergency Management BC (EMBC) may assist with funding for response works such as tiger dams, sand and sandbags, and other emergency resources.

Flooding on private property will typically occur as a result of high stream flow, pooling or slow rising water from a body of water. The following should be considered for protecting your property from flooding:

- **Assess** - Determine potential sources of flooding that may impact your property
- **Act early** - Preparing flood protection takes time and requires manual labour
- **Focus your efforts** – Work on the most effective methods to protect your property for the type of flood risk; to protect the most important areas such as your home or areas where the greatest damage may occur
- **Be Safe** – Avoid working alone around flowing water, use proper safety equipment and techniques to avoid injury
- **Get Help** – Sandbagging is labour intensive and physically demanding work
- **Communicate** - Work with your neighbours; coordinating work with adjacent properties may provide more effective flood defenses
- **Invest** – Properties with routine flooding may wish to invest in improved flood defences that can be quickly deployed and are less labour intensive to put in place than sandbags
- **Streams and flowing water** - Create sandbag walls or other barrier type flood defences alongside the stream; contain the stream or re-direct the flow away from your home and other critical areas of your property; be aware that backing up of flow may cause water to rise or back flow into unprotected areas
- **Pooling or slow rising water from a body of water** - Create sandbag walls with heavy duty poly or plastic sheeting incorporated to completely surround a structure; have pumps on hand to remove seepage of water from within the protected area; be aware that power may be out or disconnected; have a generator on hand if needed

Please see safety information and recommended method for building a sandbag wall on the next pages.

Sandbagging - General Information


Construct sandbag wall (dike) on high ground, as close as possible to your home or building. By being closer to your home or building, fewer bags will be needed, and the sandbag wall will be less exposed to water.

Sandbags must be neatly stacked, not dumped into place. The joints between rows and layers of sandbags should be lapped or staggered to improve strength and reduce water seepage.


- Sandbagging should also focus along existing flood works or any low spots along dikes for maximum protection
- Dig a trench one bag in depth and two bags wide as a foundation for the wall structure
- To be effective, a sandbag wall must be three times as wide at its base as it is high
- Sandbags should be turned right side out and filled half full. They need not be tied shut, just laid overlapping each other
- The open ends of the sandbags should be facing upstream and/or uphill so the moving water will not remove the sand from the bags as readily
- Alternate direction of sandbags with bottom layer, i.e. bottom layer lengthwise with sandbag wall, next layer crosswise
- As individual bags are put in place, walk on bags to tamp them into place to ensure maximum strength. Take care to avoid puncturing the bags
- The butt ends of the bags should be placed facing the stream, for rows that are perpendicular to the stream
- Each successive layer should be set back one-half sandbag width on both sides in each additional layer so a completed sandbag wall has a triangular cross-section
- The number of sandbags needed to protect a home or building varies depending on the local topography and the anticipated depth of water

RECOMMENDED METHOD FOR SANDBAG DIKING

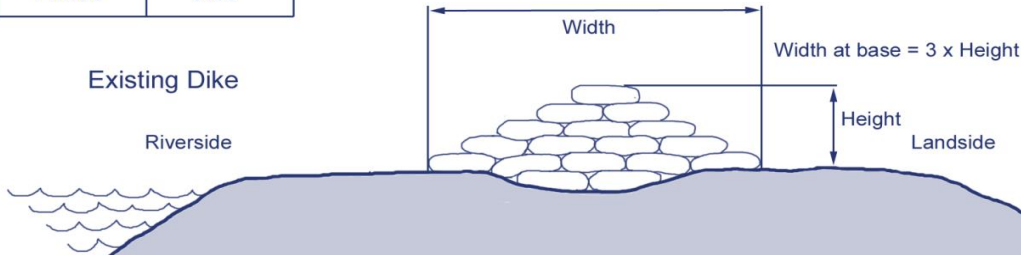
Bags Required per 100 Linear Feet of Dike	
Height Above Dike	Bags Required
1/3 metre	600
2/3 metre	2000
1 metre	3400



Plan of Bottom Layer



Method of Lapping Sacks

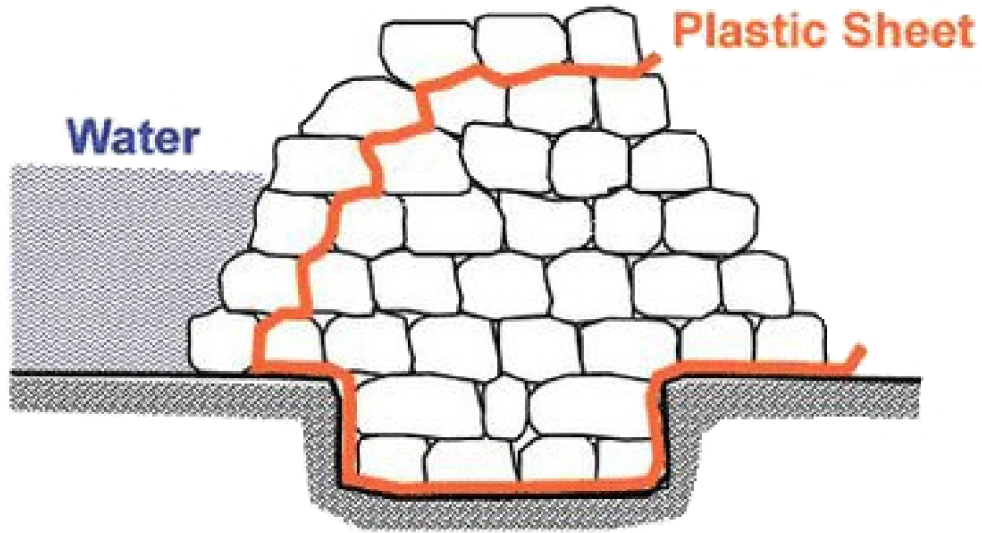


Strip sod before placing bottom layer

Bonding trench, 1 sack deep by 2 sacks wide

1. Alternate direction of sacks with bottom layer, i.e. bottom layer length wise with dike, next layer crosswise.
2. Lap unfilled portion under next sack.
3. Tying or sewing of sacks is not necessary
4. Sacks should be approximately one half full of clay, silt or sand.
5. Tamp thoroughly in place.

SOURCE: EMERGENCY MANAGEMENT BC (EMBC)



Typical Sandbag Walls

SOURCE: TOWNSHIP OF EDWARDSBURGH CARDINAL

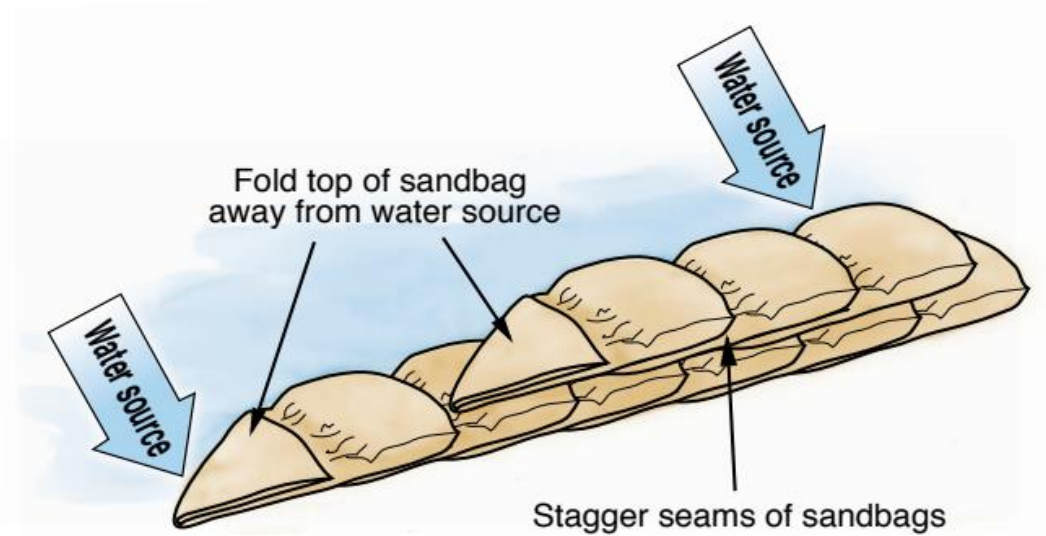


Figure 2: Fill sandbags 1/3 full, fold top of sandbag away from water source and stagger seams of sandbags.

SOURCE: CALIFORNIA NATURAL RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES

General Safety and Health Advice

- Use gloves to protect hands from chemically-treated sandbags and contaminants in sand and floodwater
- Avoid touching your eyes and mouth
- Wash your hands and face before eating or drinking
- Use safety glasses when working with automated equipment
- Wear work boots (waterproofed if working in floodwater)
- Use waterproof gear if working in floodwater or rain
- Use protective clothing if exposed to polluted floodwater
- Wear reflective clothing when working at night
- Use a personal floatation device when working near floodwater

Filling, Moving and Placing Sandbags during Flooding

Manually filling, moving and placing sandbags is physically demanding work. It involves repeatedly lifting and carrying heavy loads, and may involve working in awkward positions. This work may lead to back and other injuries. Automated equipment to fill and move sandbags reduces heavy lifting and should be used when possible.

Shovelling Information

Choose the proper shovel and use it correctly to reduce the risk of injury when shovelling fill into sandbags. The shovel should meet the following criteria:

- Weight – between 1.5-3 kg
- Length – between elbow and chest height
- Shape – triangular or round blades
- Handles can be added to shovels to help keep the back and wrist straight
- Do not shovel more than 22-33 kg of fill per minute

Guidelines

Follow these guidelines to safely fill sandbags:

- Work in pairs - one person should hold the bag while the other shovels in the fill
 - The person holding the bag should stand with feet shoulder-width apart and knees bent
- OR**
- Bag-holding racks can be constructed to hold bags open for filling
 - The person shovelling should keep feet wide apart
 - Place front foot close to shovel
 - Put weight on front foot and dig shovel into fill
 - Shift weight to rear foot - keep load close to body
 - Turn feet instead of twisting - release load into bag
 - Fill the bag about half full
 - If tying the bag, tie at top of bag to allow fill to conform to shape
 - Bags should weigh no more than 15-20 kg
 - Alternate between tasks every 15-20 minutes to allow muscle groups to rest

Automated Filling

- Place bag so the opening is at waist height
- Put bag on a support (ledge, pallet) to reduce the stress on the hands, shoulders and lower back
- Fold the bag opening closed
- Tie only if necessary

Lifting/Lowering Technique

- Sandbags are heavy - use appropriate techniques to put them in place
- Feet should be shoulder-width apart and staggered so one foot is in front of the other
- Place the back foot behind the bag to be lifted
- Bend the knees - do not bend over at the waist
- Keep the back straight and chin tucked in
- Grip one hand around the neck of the bag - place the other hand under the bag
- Stand up using the leg muscles
- Keep arms and elbows close to the body
- When lowering the bag bend the knees not your back

Carrying Technique

- Keep sandbag close to the body

Don't twist the back. To change direction, shift foot direction and turn the whole body.

SOURCE: WorkSafeBC

Sandbagging Information Video

<https://youtu.be/thZwVWyXjMQ>

Important Notes

- Sand and sandbag locations will be listed on the RDOS website: www.rdos.bc.ca
- If you require assistance with sandbagging, please connect with your friends, family or volunteer organizations
- The RDOS does not deliver sand or sandbags to private residences or businesses
- Filled sandbags are not available from the RDOS

For further information, please contact the RDOS EOC: 250-490-4225

RDOS EOC – Emergency Preparedness and Recovery Information

<http://www.rdos.bc.ca/news-events/eoc/active-eoc-information/>