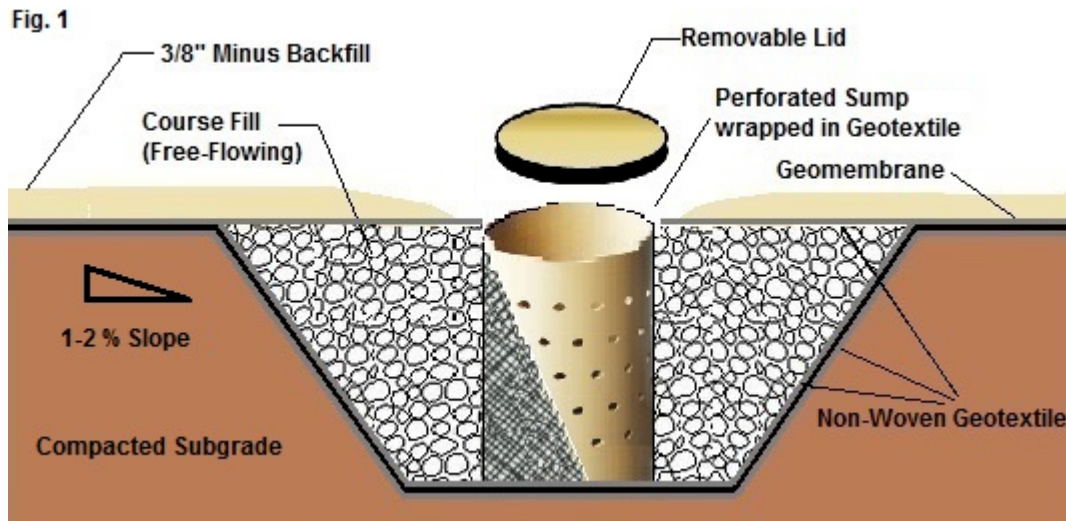


Tech Note: Sump Design



One of the requirements of Alberta Energy Regulators (AER) Directive 55 states that a secondary containment system must include a design feature intended to collect any liquids that may accumulate inside the containment. An excerpt from AER Directive 55 reads;

The area within the secondary containment system must be graded to a sump or low-lying area (within the diked area) to allow for the collection of rainwater, snow-melt water, and any possible leakage from the tanks.

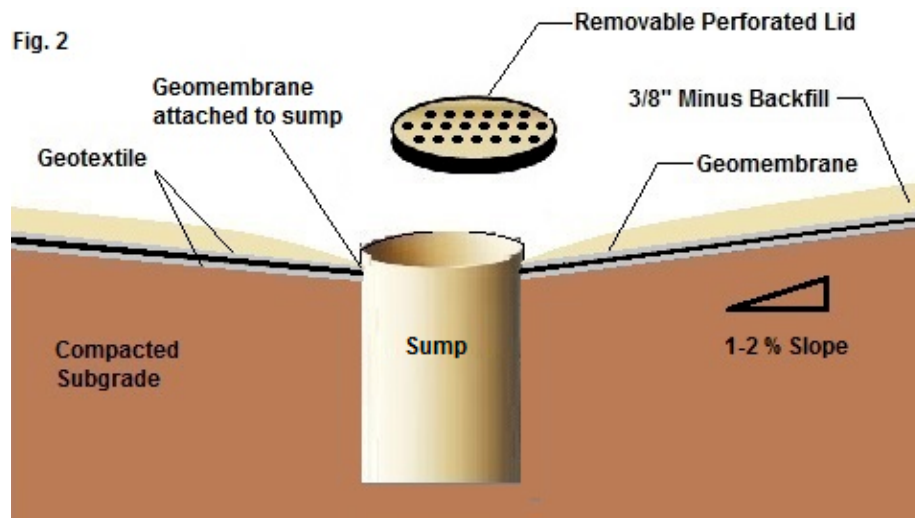
There are a number of methods used to meet this requirement; the simplest method is when the interior of the secondary containment system is graded with a slight slope of 1-2% to a low spot inside the containment so that liquids will flow and collect in this area. This design is often problematic as liquids will naturally infiltrate the backfill inside the secondary containment, and only become visible once the level has been raised above the level of the backfill within this low section.

A more effective design includes the use of a premanufactured sump. Premanufactured sumps are available in a range of sizes and materials or can be "purpose-built" as required. A premanufactured sump is then installed at the low spot inside the containment and is designed to collect, and allow the easy removal of any liquids that enter the secondary containment system.

Tech Note: Sump Design

Prefabricated sumps are typically installed in two different manners; Figure 1 illustrates the installation details of a premanufactured perforated sump. In this design, the containment is sloped to a depression that has been excavated and lined with a geomembrane. A perforated sump is wrapped in a non-woven geotextile to prevent foreign material from entering; the sump is then placed in the depression and backfilled around it with a course free-flowing aggregate. If liquid enters the secondary containment system, its flow is directed to this location entering the sump through its perforated wall.

In Figure 2, when liquids enter the secondary containment system, they are again directed to this low spot via a 1-2% slope throughout the containment, and are collected by the sump, entering through the top perforated lid.



Regardless of which design is selected, if any liquids do find their way into a sump, the liquid must be tested and dealt with accordingly. Again, referencing AER Directive 55; ***No uncontrolled discharge of collected fluids or discharge of untested fluids is permitted.***

Contain Enviro Services Ltd. is the leader in the supply and installation of corrugated steel containment systems for use as primary or secondary containment in a wide variety of challenging applications, and can provide you with the design support to deal with your most demanding application.

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