



## French Drains: Designed to Move Water and Protect Water Quality

### French Drain

French drains were not originally from France, but originated in Massachusetts during the 1800s. Henry French was a farmer who later wrote a book on farm drainage in 1859. Originally the drains were hand-dug trenches which were re-filled with gravel. Henry French later used roof tiles at the center of the gravel to conduct the water through the trench.

### 5 Key Elements to French Drains

**Size** – In general French drain piping is three or four inch in diameter, slotted or with holes (perforations) on the bottom.

**Location** – Locate the French drain in areas where standing water is a problem, such as in paddocks where water collects. The drain discharge should be into a buffer area or vegetated filter strip and never directly into a creek or water body.

**Slope** – Adjust the slope of the French drain to approximately one foot per 100 feet (1percent slope).

**Filtration** – Filtration reduces the amount of silt that can enter the drain. Use landscaping fabric in the trench first to reduce the amount of plant roots that can enter the drain. Just prior to putting in the drain pipe, cover the pipe with a drain pipe sock to keep silt from entering the drain holes.

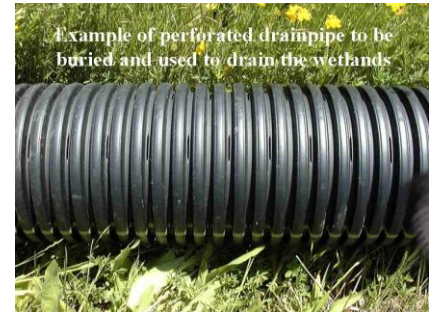
**Keep clean water clean** – If French drains are used with roof runoff structures, the water may be discharged into a creek or water body. If the drain is removing water from livestock areas, this water has the potential to include nutrients and this water should be discharged to a vegetated filter area.

### French Drain Design and Installation

Installing a French Drain is a low-maintenance method of diverting runoff around areas you would rather be kept dry, such as a high use livestock area, composting bin, or even your porch.



Determine the area to be drained, the discharge point, and the path between the two. Dig a trench through the area to be drained and line the trench with landscaping fabric. For a three or four inch pipe the trench is usually 9-12 inches wide and 12 inches deep. The fabric is semi-permeable so water will pass through but it helps keep roots and soil out of the drain pipe. Place a two inch layer of clean washed rock along the bottom to hold the fabric in place and to provide bedding for the pipe to lay on. Check for positive grade to the discharge point (no hills or valleys where water and sediment can collect).



Next prepare the pipe. Drain pipe is available in a variety of forms: continuous rolls up to 100 feet long (black pipe), sticks in lengths of 10 and 20 feet (white pipe), and pre-packed with filters (bottom right). If using the white pipe with holes, be sure that the holes are on the bottom of the pipe. This helps reduce the amount of sediment that can get into the pipe. An elbow at the upstream end that extends above the ground with a cap or cover will help in the future if the pipe starts to run slow, not drain properly, or get clogged. This provides a place to flush the system.



The next step is to add another level of filtration with the drain pipe sock. This covers the pipe and reduces the amount of silt that can get into the pipe. The pre-packed pipe (bottom right) does not need this extra protection. Drain pipe sock is shown to the left.



Now fill your trench with gravel, using a ¾ to one inch washed rock gravel. Using washed rock lets water drain through to the pipe and does not introduce any new silt or dirt into the drain. Fill the gravel to just below the soil level and fold over the landscaping fabric. Top dress the fabric with good draining soil and plant with grass.



Be sure you know where any buried gas, electrical, or water lines are located. And be sure to keep away from septic systems. It is best to run French drains along roads and not in them. Vehicle traffic can compact the rock and may crush the pipe. Keep clean water clean and be sure you are not discharging contaminated water near your drinking water well.

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The Livestock and Land program is operated through The Spokane Conservation District. Funding for program projects are provided in full or part through Ecology Clean Water Fund Grants. For more information, visit [www.livestockandland.org](http://www.livestockandland.org) or [www.sccd.org](http://www.sccd.org) or call 509.535.7274.

