DESIGN GUIDELINES FOR
CONVENTIONAL SEPTIC TANK AND
DRAINFIELD SYSTEMS.

OVERVIEW OF THE PERMITTING PROCESS:

STEP ONE.
SITE EVALUATION: Before you apply for the
construction permit, you will need to apply for a site
evaluation by completing and submitting the form
titled "APPLICATION FOR SITE EVALUATION."
You or your designer will use the
information gathered during the
Site Evaluation to design the
system to meet the features and
limitations specific to your
property.
Soils information is gathered by
means of test holes in the
drainfield area dug to a depth of
at least six feet, or deeper if the
site will be cut or filled. The test
holes must be ramped on one
end so that an inspector can
walk into the hole. The material
removed from the hole must be placed at least two
feet away from the hole. Please have your backhoe
operator contact the Health District to set up an
appointment to inspect these holes.
A minimum of three feet of suitable soil is required
between the bottom of the drainfield trench and any
ground water table, or impermeable layer such as
clay or hard pan. If test holes show that this
separation is not possible, there may be alternative
designs that a qualified designer can prepare that
may be suitable for your site. On the other hand, if
the soil is too permeable, or contains too much
gravel, an alternative system may also be necessary
to prevent sewage from contaminating ground water.
Once the Site Evaluation is completed, you will
receive a copy of the back page of the form
containing the soil and design information you will
need to prepare the system design. If the site is not
suitable, or if a lengthier explanation of the design
requirements is needed, you will receive a letter.

STEP TWO.
WATER AVAILABILITY: Before construction
permits can be issued, you must show evidence of
an adequate water supply. If the system serves
more than two homes, it must be in compliance with
the regulations for public water systems. Have the
manager of the water system complete the form
titled "Public Water Supply Availability Checklist",
then submit the form along with the permit
application.

If your water supply serves only
one or two homes, you will need
to apply to the Health District for a
PRIVATE WATER SYSTEM
REVIEW. There is a separate
fee for this review.
An existing well or spring, or a
future well or spring site can be
inspected during the Site
Evaluation if you indicate so on
the application. A private water
source must be properly located,
developed, and tested before a
building permit can be issued.

STEP THREE.
INSTALLATION PERMIT: A PERMIT to construct
the system is needed to get a building permit. You
can apply for this permit by
completing and submitting the
form titled "PERMIT
APPLICATION FOR ON-SITE
SEWAGE DISPOSAL SYSTEM".
Information on how to design the
system and fill out the application
is given on the following pages.
Private home owners are limited to
designing and installing one
conventional gravity onsite septic
system for their own personal
single family residence within a 12
month period. All other work related to the design,
installation, maintenance, operation, and repair of all
conforming and non-conforming onsite septic
systems shall only be completed by an appropriately
licensed and/or certified professional.
Any changes to the approved plan must be
approved by the Health District, in writing, prior to
installation of the system.

FINAL INSPECTION: State regulations require
that the Health District inspect the installation
before your installer can cover it. This inspection
must be scheduled in advance.
Please make sure your installer notifies us far
enough ahead of time to prevent delays in
inspection and covering of the system.
On page five you can see an example of a design portion of a permit application form. This example shows a typical conventional design for a four bedroom house in sandy loam soil. The actual design you will be using will depend upon the number of bedrooms you will have, and the type of soil and terrain encountered during the site evaluation. Use of the provided design format is not required. You may prepare plans on your own paper or have them professionally prepared. The amount of detail must be at least that shown on the example. The various features of a design are described below.

A PLOT PLAN of your proposal is required, drawn to a suitable scale, such as 1 inch = 30 feet. The plan must be detailed and accurate enough so that additional instructions to your installer will not be needed. The following items must be shown on the plan.

- Property lines with dimensions.
- Septic tank and drain-field layout, including trench length.
- Adjacent streets and roads.
- Surface water, irrigation ditches, drainage ditches.
- Buildings - existing and proposed.
- Direction of slope.
- Driveways and parking areas.
- Easements.
- Water lines and/or wells, including neighbor's wells and abandoned wells within 100' of the property line.
- An area for future drainfield replacement. (Reserve area)
- Interceptor or curtain drains.
- Cuts, banks, fills, irrigation ditches, rock outcrops.
- Arrow indicating North.
- Underground utilities.

AN ELEVATION VIEW drawing shows a profile, or cross-section of the proposal across a representative section of the property, including the drainfield area. This is required on sloping sites, and must show proposed cuts, including basements, and fills for buildings and driveways. Banks and other slopes must also be shown.

Sloping sites may also require the use of relief lines between laterals. A typical detail is shown in the application. Be sure to specify the distance between the trenches.

Also, be sure you specify the trench width, the depth of rock below and around the pipe, the depth of fill over the rock, and the size of the septic tank by filling in the blank spaces on the detail drawings on the application.

WELLS: Evidence of an adequate water supply is required before an on-site sewage disposal system permit can be issued. This means that your private well or spring must be properly located, developed, and tested before your permit can be issued. Please note that there is an additional fee required for review of a private water system. Application for review can be made either at the time of the Site Evaluation, or upon application for the septic system construction permit.

SEPTIC TANKS: Septic systems are sized according to the number of bedrooms in the home. A 1000 gallon septic tank will handle up to four bedrooms. Each additional bedroom will require an additional 250 gallon capacity. Most tanks will need to be sealed to be made water-tight. Some pre-cast septic tanks do not come equipped with an outlet or inlet baffles. These must be built by your installer at the time the tank is placed. A detail drawing provides instructions on how to do this. The leg of the inlet baffle need not be as long as the outlet baffle, but it must extend below the liquid level.

Effluent Filters are a substitute for the "TEE" baffle that are more effective in keeping solids from passing out of the tank to the drainfield.
DOSING OR PUMP TANKS: If your design requires a pump to lift the sewage to a higher level, or to dose it to the drainfield under pressure, you will need to use a separate tank to contain your pump and controls. All pump tanks must contain an emergency storage volume in addition to the ordinary dose volume. This will help to prevent spills when a pump or control is not working. A "high water" alarm is required, as well as the pump-on and pump-off floats.

DRAINFIELDS: A conventional drainfield begins with a trench dug no deeper than three feet, or less if specified on your site evaluation. Six inches of drain rock is placed in the trench, then a perforated drain pipe, with additional drain rock placed around and two inches over the pipe. Filter fabric is laid over the rock to prevent the backfill from infiltrating the drain rock. At least six inches of soil must be placed over the filter fabric. The total depth of the trench, including the rock, pipe and backfill may be no deeper than 36 inches from finished grade. A detail is provided in the application where you will specify the depth of the trench, the rock below the pipe, the fill, and the trench width.

When parallel trenches are used, spacing between the sidewalls should be at least six feet. Greater separation is advised on steeply sloping sites. If a piece of re-bar is buried at the end of each drainfield lateral, it will make later detection of the drainfield ends much easier. Metal locator tape may also be placed all along the trenches.

An area must be identified on the plot plan for future replacement of the system. The same soil and setback requirements will apply to the replacement area unless specified on the Site Evaluation report. The replacement area is normally physically separate from the initial drainfield area.

The drainfield trenches must be dug on a level grade (0 inches of fall in the entire line) across the slope of the ground. This will allow the entire trench to be utilized for absorption of the effluent.

FLOODWAYS AND FLOODPLAINS: All portions of on-site systems are prohibited in floodways. Conventional drainfields are also prohibited within the 10 YEAR FLOODPLAIN. Alternative systems may be approved within the 10 year floodplain if justification is provided to show that the system will function adequately during flood conditions, and that there will be no significant obstruction to the flows of floodwaters. Conventional drainfields may be approved in 100 YEAR FLOODPLAINS if soil tests and design show that the minimum vertical and horizontal separation requirements can be met, and if all components which are vulnerable to flooding are shown to be watertight.

### LINEAR FEET OF DRAINFIELD PER BEDROOM

<table>
<thead>
<tr>
<th>SOIL TEXTURE</th>
<th>THREE FEET WIDE TRENCH</th>
<th>APPLICATION RATE GAL/FT²/DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravelly and very gravelly coarse sands. All extremely gravelly coarse sands, medium sands, loamy coarse sands, loamy medium sands, fine sands, loamy fine sands, sandy loams and loams. All soil types with 90% or more rock fragments.</td>
<td>Alternative system required due to excessive permeability.</td>
<td>1.0</td>
</tr>
<tr>
<td>Coarse sand</td>
<td>40</td>
<td>1.0</td>
</tr>
<tr>
<td>Medium sands, loamy coarse sands, loamy medium sands.</td>
<td>50</td>
<td>0.8</td>
</tr>
<tr>
<td>Fine sands, loamy fine sands, sandy loams, loams.</td>
<td>67</td>
<td>0.6</td>
</tr>
<tr>
<td>Very fine sands, loamy very fine sands; or silt loams, sandy clay loams, clay loams and silty clay loams with a moderate structure or strong structure (excluding a platy structure).</td>
<td>100</td>
<td>0.4</td>
</tr>
<tr>
<td>Other silt loams, sandy clay loams, clay loams, silty clay loams.</td>
<td>200</td>
<td>0.2</td>
</tr>
<tr>
<td>Sandy clay, clay, silty clay and strongly cemented firm soils, soil with a moderate or strong platy structure, any soil with a massive structure, any soil with appreciable amounts of expanding clays.</td>
<td>NOT SUITABLE</td>
<td>NOT SUITABLE</td>
</tr>
</tbody>
</table>
### MINIMUM HORIZONTAL SEPARATIONS (in feet)

<table>
<thead>
<tr>
<th>Items requiring setback</th>
<th>From edge of Drainfield and reserve area</th>
<th>From septic tank, holding tank, pump chamber, and distribution box</th>
<th>From building sewer, collection, and non-perforated distribution line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-public well or suction line</td>
<td>100</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Public drinking water well&lt;sup&gt;1&lt;/sup&gt;</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Public drinking water spring&lt;sup&gt;1&lt;/sup&gt;</td>
<td>200</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>Spring or surface water used as drinking water source&lt;sup&gt;1&lt;/sup&gt; measured from ordinary high water mark</td>
<td>100</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Pressurized water supply line</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Properly decommissioned well&lt;sup&gt;2&lt;/sup&gt;</td>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Surface water/unlined irrigation ditches measured from ordinary high water mark</td>
<td>100</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Building foundation/in-ground swimming pool</td>
<td>10</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Property or easement line</td>
<td>5</td>
<td>5</td>
<td>N/A</td>
</tr>
<tr>
<td>Interceptor / curtain drains/ foundation drains/drainage ditches/other features that may allow effluent to surface</td>
<td>30</td>
<td>5</td>
<td>N/A</td>
</tr>
<tr>
<td>Down-gradient&lt;sup&gt;3&lt;/sup&gt;</td>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Up-gradient&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Down-gradient cuts or banks with at least 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change</td>
<td>25</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Down-gradient cuts or banks with less than 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change</td>
<td>50</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Lined irrigation ditches:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Down-gradient&lt;sup&gt;4&lt;/sup&gt;</td>
<td>50</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Up-gradient&lt;sup&gt;4&lt;/sup&gt;</td>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

1. If the water is used as a public drinking water supply, the designer shall locate all components of the septic system outside of the required sanitary control area.

2. Before any component can be placed within 100 feet of a well, the designer shall submit a "decommissioned water well report" provided by a licensed well driller, which verifies that appropriate decommissioning procedures noted in chapter 173-160 WAC were followed. Once the well is properly decommissioned, it no longer provides a potential conduit to groundwater, but septic tanks, pump chambers, containment vessels or distribution boxes should not be placed directly over the site.

3. The item is down-gradient when liquid will flow toward it upon encountering a water table or a restrictive layer. The item is up-gradient when liquid will flow away from it upon encountering a water table or restrictive layer.

4. Test holes will be required during the irrigation season to show that no water is leaking from the ditch.