



# Guidance for Sewage Treatment System Design and the Site Review Process

The purpose of this document is to explain the skills required for design of a Sewage Treatment System (STS), provide a list of items that are required as part of a STS design, and describe the process through which the Clark County Combined Health District (CCCHD) performs a site review. For those alterations only requiring the replacement of a septic tank please refer to our guidance document for the design of septic tank replacements.

## Designer requirements:

A competent designer may be a Professional Engineer, STS installer, Certified Soil Scientist, homeowner, or any other individual competent in the skills needed for STS design. In order for a STS designer to be considered competent, they must be able to perform the following tasks:

1. Estimate STS flows including, daily design flows, and any expected variations and estimate pollutant concentrations and mass loads exceeding typical residential sewage strength.
2. Interpret and evaluate all site specific information including the soil evaluation, site conditions, site prohibitions and information provided by the owner to determine feasible STS options that will meet the requirements of this chapter.
3. Evaluate site hydraulics and understand how the proposed STS integrates with the site topography and grade to site the STS.
4. Select devices and components capable of meeting performance requirements based on knowledge of the rules and STS technologies approved by the Director of the Ohio Department of Health.
5. Provide approximate installation and operation costs of feasible STS options to assist the owner in selection of the STS to design.
6. Prepare a detailed design including all items required for a STS design, outlined later in this document.
7. Delineate by staking or flagging the proposed soil absorption areas on the site as they relate to topography and contour.
8. Be available to clarify any questions with and make adjustments to the system design, layout, or operational concerns. It may be necessary for the designer to meet with the owner, soil scientist, installer, service provider, or CCCHD during, prior, and after the installation.

## Marking the site:

The STS designer must visit the site where the STS is to be located. The designer must stake or flag the location of the proposed STS and the replacement area (if applicable) in the following manner.

1. Proposed trench or drip distribution systems shall have each trench or drip line marked with at least one flag or stake every 30 feet.
2. Proposed mound systems shall be marked around the perimeter of the mound system with at least one flag or stake every 30 feet.
3. Proposed replacement areas shall be marked around the perimeter with at least one flag every 30 feet.
4. For replacement systems and alterations, the existing sewage system shall be marked around the perimeter with at least one flag every 30 feet.
5. Septic tank or treatment unit locations shall be marked with a single flag or stake labeled "Septic Tank" or "Treatment Unit".

6. Pump station locations shall be marked with a single flag or stake labeled "Pump Station".
7. The proposed location of the well (if applicable) must be marked with a single flag or stake labeled "Well".

These markings must be present when the CCCHD arrives for the site review. Failure to have these markings present at the time the CCCHD arrives for site review will result in delays to your review until the marking is in place. The markings should be preserved through the construction process to aid in preservation of the STS area(s).

## Preparing the design:

The STS design, submitted to the CCCHD, must include the following, as applicable to the system proposed for installation. If you have questions concerning the design elements required for a system, please contact the Division of Environmental Health.

1. A title box or page containing the location of the job site, name of the owner, name of the designer, and date of completion of the design.
2. A description of the building to be served by the STS including:
  - a. Number of bedrooms;
  - b. Declaration as to whether the building(s) is/are residential or non-residential and if residential, how many families would be housed in the structure;
  - c. For new construction, a floor plan of the proposed home or building.
3. Details and calculations for:
  - a. Daily design flow;
  - b. Soil loading rates;
  - c. Length along contour and absorption area dimensions;
  - d. Pump selection and sizing including the pump curve and system performance curve and location of installation of pump controls (if using a pump);
  - e. Pressure distribution network including pump switch elevations (if utilizing pressure distribution).
4. If varying from typical calculations, specified in rule, such as reduction in daily design flow or reduction of length along contour, supply a rationale for this variation.
5. Identification and a description of all materials and system devices and components including septic tanks, dosing tanks, distribution piping, diversion mechanisms, and distribution materials.
6. Identification of applicable sizing requirements for all STS devices and components.
7. If utilizing treatment components possessing approval from the Ohio Department of Health, identification of the approved system manufacturer and model to be used, manufacturer O&M instructions, and means of access for O&M equipment to service the STS.
8. Construction and installation notes for the system installer including manufacturer installation instructions.
9. Copies of or electronic access to O&M requirements, manuals, and instructions for the owner and service provider. This shall include a rotation plan for systems that utilize additional absorption area for the purposes of resting portions of the STS.
10. A legible, scaled site drawing on eight and a half inch by eleven inch or larger paper showing the layout of the STS on the site. The scale of this drawing shall be one inch equals forty feet or less. The drawing shall illustrate the following.
  - a. The proposed location of STS devices and components including the location of the soil absorption component as staked or flagged on site.
  - b. The designated area for complete relocation and replacement of the STS as staked or flagged on site.

- c. The location of all items designated in paragraph (G) of rule 3701-29-06 of the Administrative Code and demonstration that required isolation distances are met to both the proposed STS and the replacement area.
  - d. The location of all surface features that may affect the operation or installation of the STS including, but not limited to, disturbed areas, drainage features, wooded areas, floodways, flood plains, and hardscapes.
  - e. The approximate location of soil borings and/or test holes.
  - f. North directional arrow
  - g. Identification of a benchmark and the benchmark elevation.
  - h. Topographic detail with contours at one foot intervals for lots having an average slope of 6% or less, two foot intervals for lots with 6-12% average slope, and five foot intervals for lots with slope over 12%.
  - i. The location of the discharge point for foundation drains, sump pumps, water softener regeneration water, and down spouts.
11. An enlarged scaled plan view drawing of the STS. The scale of this drawing will likely be one inch equals twenty feet or less. The drawing shall include.
- a. Topographic detail with contours at one foot intervals for lots having an average slope of 6% or less, two foot intervals for lots with 6-12% average slope, and five foot intervals for lots with slope over 12%.
  - b. The proposed location and configuration of the STS with proposed absorption area dimensions and elevations.
12. A profile view of the STS showing elevations of the following.
- a. All devices and components included in the STS.
  - b. A building wall section showing elevations of the building sewer and finished floor.
  - c. Existing grade.
  - d. Finished grade if different from existing grade.

## Applying for a Site Review:

In order for the CCCHD to complete your site review the following must be submitted to us.

1. A complete site review application and fee.
2. A complete soil evaluation performed by a certified soil scientist or other qualified individual as described in the CCCHD "Guidance for the Installation of New or Replacement Sewage Treatment Systems and for the Alteration of Existing Sewage Treatment Systems".
3. Three copies of the complete design as described in the previous section of this document.

Your site review will require that one of our inspectors review the submitted documents both in the office and by visiting your job site. The CCCHD reserves up to 7 business days for completion of a site review.

Upon completion of your site review, you will be notified of the approval or disapproval of your site review. Should your site review be approved, you may pick up a copy of your approved site review at our office. Should your site review be disapproved, you will receive written notice of the disapproval including the reason(s) for disapproval.

If your site review is disapproved, you may re-submit a corrected design, and soil evaluation. A re-submission fee will be assessed should our inspector need to make a return visit to your job site to check your re-submission.

A site review is valid for five years from the date of approval, provided there are no changes to the site conditions or the STS design.