SOIL PROFILE EVALUATIONS (COUNTY DECLARED DISASTER)

WLS-039

PURPOSE:

To determine soil suitability to site and design septic systems.

PROCEDURE:

Qualified Consultants shall independently perform soil profile evaluations to analyze and describe soils, collect soils samples from the soil profile holes, and have the soils analyzed by a soils laboratory. A Qualified Consultant is a Civil Engineer, Environmental Health Specialist, Soil Scientist or Geologist currently licensed or registered in the state of California with expertise in septic systems. The Onsite Wastewater Treatment System Regulation and Technical Standards (OWTS Manual) shall be used as a reference along with this procedure document. A soil classification based on Hydrometer results (Zone 1, 2, 3 or 4) shall be provided for each horizon necessary for system justification. The soil analysis, the soil profile description, and Table 7.2b of the OWTS Manual shall be used together to determine the application rate and sizing of the onsite septic system. Soils laboratory test results shall be attached and submitted with the soil profile evaluation form.

A. **Perform soil profile evaluations**. Soil profile holes shall be excavated and identified on a site plan per the following:
   1. Use a backhoe to excavate a minimum of one profile hole in the proposed primary dispersal area and a minimum of one profile hole in the proposed reserve replacement area. Excavate additional holes, as necessary, to justify extents of suitable soil for the anticipated system size.
   2. Excavate additional profile hole(s) if the two minimum profile holes are within 50 feet of each other and the soils are dissimilar enough to require a different septic design.
   3. Create a site plan that includes all applicable features noted in the Required Site Plan Information section of this form. All profile holes shall be identified on the site plan using numbers, letters, or a combination of both, and by GPS coordinates within the table provided in this form.
   4. Stake each profile hole in the field with the corresponding identification method used on the site plan.

B. **Perform soil description**. A soil description shall be completed for each soil profile hole per the following:
   1. The soil description shall be completed from the ground surface to two to three feet below the proposed trench bottom, dispersal area, or to the limiting layer.
   2. The soil description shall be documented in the tables provided within this form.
   3. Photographs shall be taken of the side wall. Use a measuring tape to show the soil horizons depths that correspond to the field description. Attach photographs to the completed soil profile evaluation form.
   4. A soil sample shall be taken from each horizon for hydrometer testing. See Hydrometer testing procedure below.

C. **Perform Hydrometer testing**. A soil sample shall be taken from each soil horizon proposed for system justification. One hydrometer testing analysis per site is acceptable if the soil profile holes are similar. If soil profile holes are dissimilar as noted in the soil description then multiple profile holes must be sampled and tested to adequately characterize soil variations. Soil samples shall be collected per the following:

1. Collect the soil sample with a blunt knife, core sampler or trowel. Soil samples shall be collected in a careful manner as to not disturb the soil aggregate and placed in plastic bags that are labeled according to the corresponding identification method used on the site plan and soil depth horizon. Avoid crushing or compacting soil samples to be tested for bulk density.
2. Collect a soil sample between 1 and 2 pounds from each soil profile horizon to test for particle size and coarse fragments.
3. Collect a soil sample size, as required by the lab, for bulk density analyses.
4. Complete a slake test, if necessary, to demonstrate soil horizons are not cemented or rock.

D. **Analyze soil texture**. Plot the soil data results on the Soil Texture Triangle Chart based on percent sand, silt and clay as determined by the hydrometer analysis. The Soil Texture Triangle Chart is provided below.

1. Soil percolation testing is required for soils classified as Zone 3 or 4.
    a. If the soil has a Plasticity Index less than 20 then the soil percolation testing may be performed year-round.
    b. If the soil has a Plasticity Index greater than or equal 20 then the soil percolation testing must be performed during open wet weather testing periods.
2. Adjust for coarse fragments by moving the plotted point in the 100 percent sand direction an additional 2% for each 10% (by volume) of fragments greater than 2 mm in diameter (retained using a #10 sieve).
3. Adjust for compactness of soil by moving the plotted point in the 100 percent clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc.
4. **Note:** The bulk density analysis is not required for soils classified as sand, loamy sand, or sandy loam because the bulk density analysis will generally not affect suitability.

E. Complete all remaining fields within this form and sign, stamp, and date the Qualified Consultant Certification section.

F. Submit a completed copy of this form with the septic permit application.

Soil Profile Evaluation Form
(County Declared Disaster)

Site Information:

Site Address

City/Town/Location

Assessor's Parcel Number(s)

Date of Evaluation

Qualified Consultant:

Name

Company (if applicable)

Address

City/State/Zip Code

Email

Phone

Qualified Consultant Certification:

"I certify the soil profile evaluations have been performed by me, or under my responsible charge, in compliance with the procedures contained within this document and the County of Sonoma Onsite Wastewater Treatment System Regulations and Technical Standards (OWTS Manual). The information reported on this form represents the true and accurate results of work performed at the site address on the date of evaluation noted above and my interpretation of laboratory test data."

Signature of Qualified Consultant

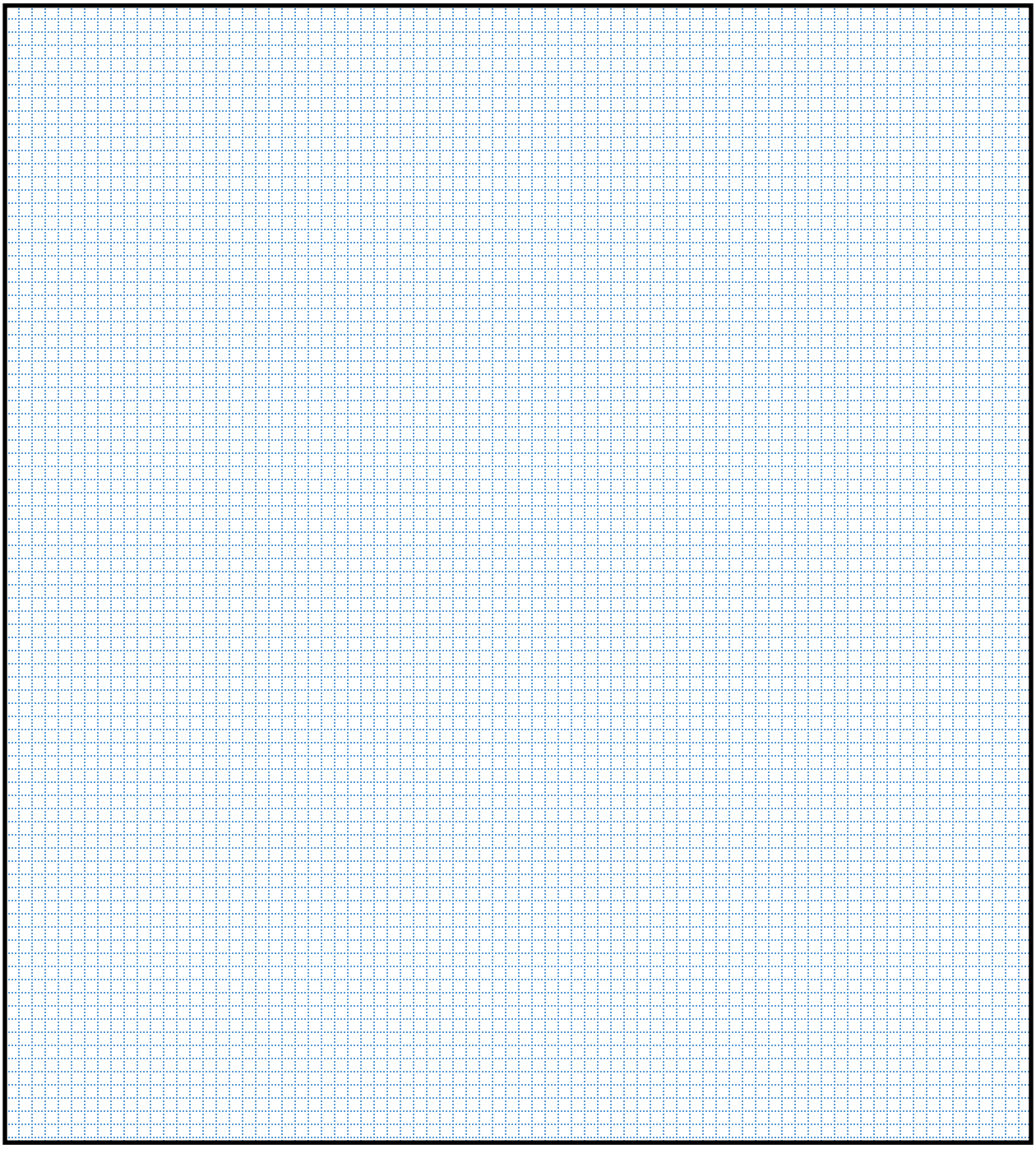
Professional Seal

Date

License/Registration Expiration Date

Required Site Plan Information:

A site plan is required to identify the location of soil profile holes and significant features of the property. The site plan must be of sufficient clarity to identify the following minimum requirements: all soil profile holes clearly labeled and identified, north arrow, property lines, water wells, waterways and drainage features, ponds, cut banks, rock outcrops, building locations, roads, existing septic system components (if applicable), and any other significant site features. The site plan shall either be drawn in the space provided below or be created using conventional drafting techniques or software and be submitted as an addendum to this form.



Soil Profile Holes Results:

Use the tables provided below to record soil profile results. Attach additional sheets as needed.

Soil Profile Hole #: ________ GPS Coordinates: __________________________ (Latitude, Longitude)

Depth (in)	Munsell Color	% Rock	Texture	Structure	Consistency	Moisture	Pores	Roots

Average Ground Slope: ________ % Depth to Groundwater: _______ in Perc Depth: _______ in

Reduction? Yes ☐ No ☐ Oxidation? Yes ☐ No ☐ Mottling? Yes ☐ No ☐

Comments: ____

____

Soil Profile Hole #: ________ GPS Coordinates: __________________________ (Latitude, Longitude)

Depth (in)	Munsell Color	% Rock	Texture	Structure	Consistency	Moisture	Pores	Roots

Average Ground Slope: ________ % Depth to Groundwater: _______ in Perc Depth: _______ in

Reduction? Yes ☐ No ☐ Oxidation? Yes ☐ No ☐ Mottling? Yes ☐ No ☐

Comments: ____

____

Soil Profile Hole #: ________ GPS Coordinates: __________________________ (Latitude, Longitude)

Depth (in)	Munsell Color	% Rock	Texture	Structure	Consistency	Moisture	Pores	Roots

Average Ground Slope: ________ % Depth to Groundwater: _______ in Perc Depth: _______ in

Reduction? Yes ☐ No ☐ Oxidation? Yes ☐ No ☐ Mottling? Yes ☐ No ☐

Comments: ____

____

Abbreviations:

USDA Texture: Gravel=G, Sand=S, Loamy Sand=LS, Sandy Loam=SL, Sandy Clay Loam=SCL, Sandy Clay=SC, Silt Loam=SiL, Loam=L, Clay Loam=CL, Silty Clay Loam=SiCL, Clay=C

Structure: Granular=G, Platy=P, Blocky=B, Prismatic=Pr, Massive=M, Columnar=C

Consistency: Loose=L, Very Friable=VFr, Friable=Fr, Firm=F, Very Firm=VF, Extremely Firm=EF, Solid (BH refusal)=S

Moisture: Dry=Dr, Damp=D, Very Damp=VD, Saturated=S, Seepage=Se

Hydrometer Test Data Form

Soil Data Results:

Does the soil have a Plasticity Index greater than or equal to 20? Yes ☐ No ☐

If "Yes" then wet weather percolation testing is required.

Soil Texture Triangle Chart:

Use the soil texture triangle chart below to determine soil classification.