Homeowner's Guide

for

Onsite Wastewater Disposal Systems

October 2001

Stinson Beach County Water District
3785 Shoreline Highway
PO Box 245
Stinson Beach CA 94970

sbcwd@stinson-beach-cwd.dst.ca.us
www. stinson-beach-cwd.dst.ca.us
415-868-1333

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BRIEF HISTORY OF MANAGEMENT PROGRAM

Many people who move here from areas that are served by sewers are surprised to find that Stinson Beach has individual onsite wastewater disposal systems (septic systems). Water District employees are asked frequently why septic systems are used, why we don't have a sewer and treatment facility, and why their systems require monitoring. The simple answer is that through the process of community meetings and a bond vote in a special election, the residents of Stinson Beach rejected over ten different sewer plans and chose the alternative of onsite systems.

The issue of a sewer was first raised by a June 1961 directive of the Marin County Board of Supervisors recognizing the potential health hazard of failing septic systems in both Stinson Beach and Bolinas which were contributing to the pollution of Bolinas Lagoon. At that time many of the septic systems in the area were little more than cesspools. With the expected build out projected by the 1961 Bolinas/Stinson Beach Master Plan of 22,000 residents around Bolinas Lagoon, it was felt by the County Health Department that the best solution to the problem would be a centrally located and publicly owned sewage collection and treatment system. Shortly thereafter, the San Francisco Regional Water Quality Control Board (SFRWQCB) urged investigation of plans and costs for sewerage facilities for the area.

As a result, the Stinson Beach County Water District (SBCWD) was formed in November of 1962 to deal with these septic issues. It did not function as a water supplier until 1974 when the Stinson Beach Water Company was sold to the District by then owner George Leonard.

Between the1965 authorization by the Board of Supervisors for a sewerage study and 1974, ten separate sewer studies were undertaken. All were rejected for many different reasons including excessive cost, potential for inducing population growth and increasing population density, failure to recognize environmental concerns, unsuitable locations, and project integrity uncertainties. One project was rejected because it planned a submarine crossing of the San Andreas Fault zone; another because the projected cost exceeded the entire assessed value of the town's property. Finally, in 1974 a sewer plan went to a bond election and was defeated 205 to 146 by the voters of Stinson Beach. Studies were also completed during this time documenting the pollution of the lagoon as well as the degrading of other beneficial water uses, and the SFRWQCB in 1973 adopted a resolution prohibiting any further construction of septic systems and prohibiting use of existing systems after 1977.

During that period, several changes occurred that planned for individual on-site wastewater disposal systems more likely to meet the approval of governmental agencies. The 1961 Master Plan was repealed and replaced with the existing Countywide Plan calling for a much reduced population density around the lagoon; Marin County adopted the 18.06 code requiring more stringent ground water and percolation rate requirements for onsite systems; and the technology

of septic systems had advanced.

In 1975 the SBCWD embarked upon an exhaustive two year study by Eutek Engineering. The study analyzed all sewage treatment alternatives then available and conducted a parcel by parcel survey of groundwater depth, failed systems, and potential costs. The study determined that the most cost effective alternative was individual onsite systems and developed a feasible basis for their continued use. It also developed a mitigation process for failing systems and a timetable for continuing inspection. After much discussion, revision of procedures, and numerous conditions which have resulted in the program now in existence, SFRWQCB agreed to allow Stinson Beach to upgrade and maintain onsite systems, and allowed the resumption of building new septic systems.

Senate Bill 1902 was passed by the legislature on September 13, 1976 which made it possible to form a management District for the operation and maintenance of onsite wastewater disposal systems. This authority is codified in the California Water Code Sections 31145-31149. After the District adopted an acceptable set of rules and regulations, on January 17, 1978, the SFRWQCB passed Resolution 78-01 to allow for the continued use of onsite systems for the treatment and disposal of wastewater in the community of Stinson Beach under the management of the SBCWD.

In 1988, the SBCWD assumed authority from the County of Marin for the permitting of new onsite systems and in 1994 the District Board of Directors undertook the task of completely revamping the sixteen year old rules and regulations. The new Wastewater Code (SBCWD Ordinance 1994-01 and revised in 1996 as SBCWD Ordinance 1996-01) eliminates the relaxed repair code, formalizes design standards for sand filters, requires the installation of a system that meets current code if "new construction" is proposed for the property.

Since the inception of the Onsite Wastewater Management Program (OSWMP), the SBCWD has introduced special systems to the Bay Area that help solve depth to groundwater and poor percolation rate problems. These systems first used in Stinson Beach are being used throughout the county. Stinson Beach is a model for other communities throughout the United States for onsite system management.

INSPECTIONS

District Wastewater Monitoring:

In September of 1995 an Onsite Wastewater Management Program (OSWMP) was initiated to ensure systematic, uniform monitoring of all septic systems within the jurisdiction of the SBCWD. All septic systems require a valid **"Discharge Permit"** issued by the District contingent on passing results from periodic inspections of the system. The frequency of inspections for each system varies, dependent on the type and condition of the system. Most systems in Stinson Beach are inspected every two years, but may be inspected, every three years, every three months or monthly in the case of some holding tank situations.

Many customers have expressed surprise at the thoroughness of the current inspections and have wondered about the new "**Discharge Permits**" and what constitutes "**Failure**."

Prior to Your Inspection:

To facilitate inspection and to avoid the expense of rescheduling and reinspection please comply with the following:

ACCESS **All elements must be accessible - clear all debris/soil from septic tank risers, trim all landscaping, move any obstruction** (i.e., bird bath, monuments, etc.). District inspector must have access to alarms, panels, monitoring wells, pumps, diversion valves, etc. Remove any padlocks from panels or lids. All deck hatches must be easily removable., if screwed down, please remove all screws prior to the inspector's arrival. **All lids must weigh less than 25 pounds.**

WATER Water service must be turned on and easily accessible. Please ensure that irrigation systems do not interfere with water availability.

DOGS During the inspection, please confine all dogs or aggressive pets.

GATES All gates must be unlocked prior to inspection.

POWER If your systems incorporate a pump and/or alarm, then the property owners must ensure that electrical power is activated during the inspection.

We suggest that you don't have your tank pumped prior to inspection (unless directed to by a Repair order). Also, generally the owner's presence is not required for inspection.

What to Expect at Your Routine Wastewater Inspection:

On the morning of your inspection day, an OSWMP inspector will first identify his/her presence

on your property and then get to work. The inspector must locate all components of the wastewater disposal system (septic tank access ports, diversion valve, leach field(s), panels, alarms and monitoring or inspection wells). Prior to starting the inspection, he/she will survey the property for signs of ponded water, unusual plant growth and note any septic odors. The inspector will then locate a source of water and open the septic tank. Upon opening the tank, the static level is noted and measured from a fixed point, and scum and sludge levels are measured. Based on these measurements and the quality of the effluent, a recommendation regarding pumping is given. The inspector will also note the condition of the tank and if sanitary tees are in place. The system is then hydraulically loaded (i.e., water is added to test the system).

At this point the inspection varies depending on the type of system you have.

Gravity System Inspection:

If your system is a single or dual gravity leach field, the inspector will surcharge the septic tank with from 50 to 100 gallons of water per field. During the testing, the inspector will periodically measure the rise in the water surface at the outlet side of the tank. A rise of 1/4 inch to one inch is normal for a properly operating system. If the leach field pipe is either becoming blocked by roots or if the leach field operation itself is becoming impaired, the rise may be closer to three to four inches. At the conclusion of the testing, the inspector watches the tank level to return to normal operating level. The inspector also examines the leach field and downslope areas for surfacing effluent. A system is considered "Failed" if the level of the tank rises more than three inches and if it does not drop within about 45 minutes. Often roots are the cause of these failures. The owner is given the opportunity to remove roots and then the system is scheduled for reinspection. If effluent surfaces or breaks out, this is considered an imminent health risk and you will be contacted immediately.

Pumped System/Sand Filter Inspection:

If your system incorporates a pump or has other components (such as a sand filter), the inspection consists of adding water to initiate pump operation. The inspector then times the pump cycle and compares the length of the cycle to design specifications and/or the time noted during the final construction inspection. The inspector reviews all the plumbing connections for water tightness, checks the adequacy of the check valves, screens and other system components. As with the gravity system inspections, the inspector inspects the sand filter and leach fields for signs of break-out of effluent. The inspector will also take readings from all panels associated with the disposal system and test the alarms to ensure that they are functioning.

After the Inspection:

After the inspection is completed, the District will notify the property owner. If the system meets the minimum criteria, then a "**Notice of Completed Inspection/Repair Order**" is sent. This is to inform the owner that the inspection has indeed been completed, that certain repairs

are required and indicates when the next inspection will take place. After the initial inspection under the reorganized program, "**Discharge Permit**" is issued. The new permit does not have an expiration date; assuming the system remains in good working order, the Discharge Permit will only be updated upon change of ownership or the installation of a new system. The validity of the Discharge Permit is contingent on timely compliance with all Repair Orders. The new Discharge Permit outlines proper disposal practices and includes an average and maximum daily "**Discharge Limit**" that is derived from the original design criteria or from past usage and staff judgment based on the size and condition of the system. Keep this permit in a safe place because this permit will not be re-issued until the property changes hands.

YOUR SEPTIC SYSTEM

All properties in Stinson Beach use some type of onsite wastewater disposal system for the treatment and disposal of domestic wastewater. Systems range from water-tight holding tanks to single or dual gravity leach field systems, to systems that have an aerobic unit (sand or gravel filter) that pretreats the wastewater prior to disposal in a leach field. Common features of most systems are a septic tank and leach fields.

Septic Tank

Wastewater flows by gravity from the various plumbing fixtures in a home into the septic tank. The septic tank provides a place to hold the waste and begin the treatment process. Septic tanks are designed to partially digest the waste in a domestic wastewater. A typical tank has a volume of 1000 to 1500 gallons, has a baffle separating the tank into two chambers (inlet and outlet), has and **inlet and outlet tee** (or effluent screen) to facilitate the separation of liquid effluent from solids and has two manholes for inspecting and servicing the tank. To function property, a tank *must* be watertight. Waste cannot drain directly from the tank into the ground (cesspool) and groundwater must not seep in. Septic tanks for new installations are made of a durable, non-corrosive materials such as concrete, fiberglass or polyethylene. Some cinderblock and redwood tanks predate the OSWMP and are replaced when they are found to have failed (leak).

For an onsite system to function effectively, the septic tank must retain most of the solid material contained in wastewater. Septic tank size is generally at least three times the *daily design wastewater flow rate*. This means that the average cup of water that goes down the drain will spend three days in the septic tank before it flows or is pumped out to the leach fields. During this three day **retention time** the following happens: solid material settles out as sludge, floatable material forms a scum layer, and in the middle a clear liquid zone develops. This liquid zone of partially clarified sewage still contains significant amounts of organic constituents and harmful bacteria and viruses. While in the tank, the liquid and solid material undergo anaerobic (without oxygen) biological digestion. This digestion process reduces the volume of sludge and scum (up to 50% of the solids are digested), produces gases (methane, carbon dioxide, hydrogen sulfide) and effects the metabolism of organic constituents from the clarified liquid zone. The tees, baffles and screens are important to prevent short-circuiting and promote the retention of

solids (septage) in the tank. The relatively clear water between the scum and sludge zones is the treated wastewater that is then disposed in the leach fields. Septic tank treatment can remove up to 50% of the organic material and up to 30% of the nitrogen-rich compounds from domestic wastewater.

For a septic tank system to succeed in separating solids from liquid waste, the accumulated solids must be pumped periodically by a licensed septic tank pumper. The frequency of pumping varies by use and practices of each household. Most full-time residences can expect to pump their system every three to five years. Failure to pump will result in the accumulation of sludge which will start to impinge on the volume in the septic tank which in turn allows less settling time and therefore the effluent will carry more solids into the leach field. This will not cause immediate leach field failure, but such neglect could significantly shorten the effective life of the leach field.

When the tank is pumped, it is important to ensure that all of the solids are removed. (Please note, if there is a heavy sand layer in your tank, the pumper may be unable to remove all of the sand-laden material without damaging his equipment.) If your system has a fiberglass tank, ensure that the pumping contractor removes the septage evenly from both compartments to minimize the risk of damage to the internal baffle. If your system includes an effluent screen, the pumping contractor should clean the screen, inspect it for damage and reinstall it.

Inefficient separation of solid material and liquid in a septic tank can results from: broken or missing tees, broken baffles, excessive accumulation of solids, infrequent pumping and hydraulic overuse of the system. Many of the "Septic System Practices" guidelines are aimed at ensuring maximum solids retention in the septic tank. If the solids are not removed by the septic tank portion of the treatment process, they will be included with the liquid stream that flows to the leach field. Excessive solids in the leach field clog pipes, gravel and soil surfaces that then lead to premature failure of the leach field portion of the onsite system.

Wastewater Leach fields

From the septic tank or pump vault, the wastewater is distributed via a **tightline** into **leach field** trenches that further treat and then dispose of the wastewater. In the past, the main objective of the leach field was to ***dispose*** of the water -- keeping all the sewage (septic tank effluent) underground with little regard to the possible degradation in groundwater quality was the goal. Because of State and Federal mandates, it is now critical to consider the fate of the sewage. This shift in emphasis to treatment has resulted in the following:

a. More rigorous consideration of groundwater depth and movement,
b. Increased scrutiny of soil texture and more rigorous percolation testing,
c. The consideration of aerobic treatment afforded by the trenches has become increasingly important, and
d. The inclusion of aerobic (with oxygen) pretreatment units that further purify the clarified effluent prior to disposal in the leach field trenches.

Basically, all leach fields consist of perforated pipe and gravel that distributes the septic tank effluent into the surrounding soil. The leach fields are sized based on the soil absorptive capacity and the anticipated *wastewater design flow rate*. The effluent either flows by gravity or is pumped into the pipes, flows from the pipes through perforations, drains into the gravel and is absorbed into the surrounding soil. As opposed to the treatment in the septic tank, the trenches rely on aerobic bacteria to decompose most of the pollutants in the effluent. Again, many of the practices enumerated in the "Septic System Practices" guidelines are aimed at ensuring aerobic, unsaturated conditions in the leach fields which will prevent clogging of the soil.

Engineered systems installed in Stinson Beach have two complete leach fields with a **diversion valve**. This manual or automated valve diverts the effluent to one leach field allowing the other to rest. As the waste is applied to the soil in a leach field, the aerobic bacteria utilize the oxygen in the surrounding soil. Organic compounds are taken up by the bacteria, a bio mat is formed, pathogenic bacteria and viruses are trapped and deactivated and the oxygen in the surrounding soil is depleted. When the leach field diversion valve is switched, the oxygen in the resting field is replenished and the bio mat breaks down -- effecting a rejuvenation of the leach field capacity. Some systems are designed to be switched semi-annually; the District generally recommends a schedule that rotates the field that is used during the wet winter months.

Even distribution of wastewater is critical for effective utilization of the leach field capacity and to prevent localized overloading and clogging. While gravity systems are attractive because of their simplicity, they do not provide even distribution of the effluent. Many of these leach field systems are in fact "designed" to fail serially -- one leach line clogs and only then will the effluent flow into the next leach line, etc. until the last line clogs and the entire system has failed. Pressure distribution systems provide for efficient, even utilization of the entire leach field and allow for a dosing-resting cycle so that re-oxygenation and therefore revitalization of the leach field can occur.

Finally, it is critical to maintain unsaturated conditions within and beneath the leach fields. Oxygen transport is inhibited in saturated soils, therefore if the leach field is saturated it is more likely to turn anaerobic. Secondly, saturated conditions under the leach field leads to the transport of pathogens (bacteria and viruses) into the groundwater. In fact, three feet of unsaturated soil is required between the bottom of the leach field trench and seasonally high groundwater for this reason.

Sand & Gravel Filters

Many regions of Stinson Beach do not contain adequate depth to groundwater and/or are comprised of soils or sands that are too coarse, percolate too rapidly and therefore do not adequately purify the effluent of pathogens nor adequately protect the groundwater. To mitigate for these conditions, a sand-filter pretreatment unit is required between the septic tank

and leach fields. Sand filters are a mixed media, self-contained aerobic bed of sand and gravel that removes most of the pathogens, organic compounds and oxygenates the effluent. To ensure the continued ability of a sand filter to pretreat septic tank effluent prior to disposal, the District is requiring property owners to have a contractor ensure that all **distribution laterals** are clear and free of debris and that all perforations are open to ensure even distribution within the bed. Routine pump readings and a check of proper pump operation will also be required.

As with leach fields, once a sand filter starts to become anaerobic, a series of reactions hastens the process until the filter is a clogged, failed unit that is not effectively treating the wastewater. The addition of air into the bottom of the filter appears to be a promising repair strategy for reversing the process and re-oxygenating the units. In addition, changing to time-dosing (instead of on-demand dosing) allows the unit to be dosed evenly and prevents saturation of the filter. The new sand filter units are required to incorporate both design changes.

Maintenance

If you had a brand new Mercedes in your driveway, would you drive it 100,000 miles without changing the oil? Would you be careless about the quality of the fuel? Probably not. Like that Mercedes, your septic system is worth a pretty penny, and it will give you years of trouble free service if you maintain it.

Maintenance is the single most important consideration in making sure a septic system will work well over a long period of time. Too often homeowners forget that whatever goes down the drain or toilet ultimately either finds its way into the soil or remains in the septic tank until it is pumped out. Use common sense and you should have few problems with your septic system.

Why Worry?

The threat of disease is a key problem with treating human wastewater. The epidemics that killed millions of people in the Middle Ages were caused by mixing of human waste with drinking water supplies. Domestic wastewater contains bacteria and viruses that cause dysentery, hepatitis, and typhoid fever. To protect your health, it is important to exclude these organisms from both surface and groundwater. That is why sewage treatment plans use chlorine and other biocides (substances destructive to many organisms). Fortunately, soil and soil bacteria can effectively remove pathogenic (disease-causing) micro-organisms from wastewater treated in a properly functioning septic system.

Nutrients such as nitrogen and phosphorus, contained in domestic wastewater, can cause both health and nuisance problems if allowed to reach surface or groundwater supplies. Nitrogen in its nitrate form poses the most significant threat to our health. When ingested by infants, nitrate can interfere with the blood's ability to carry oxygen, causing "blue baby" syndrome. Nitrogen carried in septic tank wastewater is usually in the form of ammonia. This ammonia is readily transformed into nitrate, which can easily become part of ground and surface water supplies.

SEPTIC SYSTEM PRACTICES

Water Usage

The efficiency of a septic tank for separating solids from the clarified liquid effluent is directly related to the length of time the water is in the septic tank, which in turn depends on the household generation of sewage. The more water used, the faster if passes through the system. Conversely, the less water used, the slower it goes through the septic tank and the longer the solids must settle out so that they are not passed on to the leach field.

In recognition of the required septic tank retention time and the size of your leach field(s), the District has assigned a Discharge Limit (see above) for each system

Remember that all water that goes into the septic tank must eventually be absorbed by the soil. The less water entering the system, the less there will be for the soil to absorb.

Not only is the total amount entering the septic tank critical to proper operation, but the rate at which this water enters is extremely important. For example, doing one load of laundry per day for five consecutive days is easier on the system than doing five loads on one day. Best practice is to spread water usage throughout the day and throughout the week rather than to have dramatic daily peaks. This is important both hydraulically and because the temperature of the wastewater in the tank can be raised by a sudden dramatic inflow of hot water and this can cause solids to be mixed and carried out with the effluent. In recognition of the important of spreading use out through the day, the new systems are incorporating timed dosing of sand filter to minimize peak loading by dosing throughout the day and allowing storage volume in the tank for daily peaks.

To reduce your water usage:

- use water saving devices
- repair leaky faucets and plumbing fixtures
- replace toilets with models that use 1.6 gallons per flush or less
- take shorter showers
- use only a partially filled bathtub
- run clothes washer and dishwasher when they contain a full load
- don't let water run while brushing teeth, washing dishes, etc.
- don't drain spas or hot tubs into your septic system

Disposal Practices

Just as important as how much water goes into your system is ***what*** goes into your system. Remember that all phases of onsite wastewater treatment rely on a mix of biological organisms to clean and purify the wastewater -- a community of bugs is working for you, so do not dispose of products that will kill off these hard working bugs.

As a rule, only three things should go into the septic tank: human wastes, toilet paper and waste from toilets, bathing fixtures and kitchen sinks. A good rule is: don't use your septic system for anything that can be disposed of some other way. The less material you put into your septic tank, the less often it will need pumping.

- Avoid using a garbage disposal unit. Compost scraps or throw them out with the trash.
- Collect grease in a container near the sink rather than pouring grease down the drain.
- Minimize the disposal of paper products. Non-degradable items such as disposable diapers, sanitary napkins or tampons, Kleenex, cigarettes and paper towels are especially harmful. Use a toilet paper that will dissolve quickly upon disposal. To test, place a sheet in a mason jar of water and check in one hour. It should have completely disintegrated after one hour of standing. Anecdotal evidence from pumpers indicates that paper with dye and texture affects the ability of the product to break down and cause a deterioration of the quality of the effluent. Look for brands approved by the National Sanitation Foundation (NSF).
- Minimize the amount of sand entering the system by removing excess sand prior to showering, and by shaking excess sand from clothing prior to laundering.

<u>Household Chemicals</u>

When used in normal quantities and as recommended by the manufacturer, household cleaning products should not have any harmful effects on your system. Excessive quantities of strong bleaches, detergents and drain cleaners will eventually kill off the essential bacteria in your tank. Moderation should be the rule.

Do not use toilet bowl cleaning tablets. These are generally chlorine based and can significantly increase the concentration of chlorine in the wastewater discharged to the septic tank which in turn, could adversely affect the biological communities present in the septic tank.

Do not dispose water softener backwash into your septic system. The backwash brine contains a high level of chlorides that can destroy the bacterial population and inhibit biological digestion that is essential to a properly functioning tank. The brine can also interfere with sedimentation and can increase the hydraulic flow through the tank.

<u>Toxic Chemicals</u>

The disposal of toxic chemicals into your septic system is unlawful and detrimental to your septic system (remember those hard working bugs), the environment and to District personnel and/or septic service personnel.

Toxic chemicals that should not be disposed of into the septic system include but are not limited to the following:

- pesticides
- herbicides
- solvents
- gasoline or other fuel products
- motor oil
- antifreeze
- brake fluid
- radiator cleaners
- caustic chemicals
- degreasers
- paints
- paint thinners or strippers
- wood preservatives
- photographic chemicals
- electroplating solutions
- fiberglass resins

Please contact the District for advice prior to the disposal of chemicals from a hobby or home business.

Additives

While many products on the market claim to help septic systems work better, the truth is there is no magic potion to cure an ailing system. Some proprietary products that claim to "clean" septic tanks contain chemicals that may cause the scum and sludge to be discharged from the tank to the leach field. In essence they change a simple maintenance item (regular pumping of the tank) into a major system failure (clogged leach field).

There are two types of septic system additives: biological (bacteria, enzymes and yeast) and chemical. At best an additive is benign; it provides no benefit and it costs you some money. At worst it can damage concrete or wood tanks and clog the soil; and products that contain solvents can contaminate the groundwater. The consensus among septic system experts is that septic system additives are unnecessary, possibly harmful, and should not be used. The naturally occurring bacterial population in your tank do not need to be augmented for proper operation of your system. The best results come from a balanced and well-maintained system that is not overloaded or abused.

Physical Care

Unless specifically designed for vehicle loading, no portion of your onsite wastewater disposal system should be driven on. If your tank is in an area subject to traffic, install a barricade to prevent damage to the tank and/or risers.

Traffic is generally prohibited from leach fields to prevent compaction of the soil and to minimize the breaking and collapsing of leach field pipes. Soil compaction can severely limit the transfer of oxygen and therefore hasten the development of anaerobic conditions.

Similarly, leach fields should not be paved or cemented over. Decking is generally acceptable; however, access must be provided for District inspections and maintenance work. The supporting structure of the deck must be reviewed by District staff to ensure that the construction is consistent with District code and will not interfere with the wastewater disposal system.

Tenants

If you rent your property, please make your tenants aware that your property is served by an onsite wastewater disposal system, and that there are restrictions regarding the amount and quality of wastewater discharged. Please post the enclosed "Do's & Don'ts" list in the kitchen and/or bathrooms. Please include the phone number of the contractor who maintains your system so that an alarm or pump failure can be addressed. Also, please include the Daily Average and Daily Maximum Discharge Limit so your tenants can modify their use accordingly. The District can install flow restrictors to assist you in ensuring that your tenants do not abuse your onsite system.

COMMON SEPTIC SYSTEM PROBLEMS

Plantings

Contrary to popular opinion, the SBCWD is not set on deforestation of Stinson Beach. The District staff does want to let customers know of the serious problems roots cause in and around your onsite wastewater disposal system. Roots can clog pipes, break apart tanks, infiltrate the gravel in your leach field and render a system completely inoperable. The Monterey Pines and Cypress seem to be the main villains, but the staff has seen problems caused by Eucalyptus, Bay, Junipers and Ice Plant. In the follow-up to your Routine Inspection, staff will advise you to have roots removed if we see them infiltrating into your tank. Also, if your leach field was slow to accept the applied hydraulic loading during inspection, we will require that you investigate the cause. If you act promptly and remove the roots, you may be able to salvage your system and keep it operational.

Customers ask for recommendations regarding landscaping choices. The District office has plant lists from Sonoma County that may guide you with your landscaping choices. The local landscapers are also a wonderful resource. Please keep in mind that typically your system is about 12 to 18 inches below the surface and that plants with invasive or deep roots must be kept from the leach field area.

Plumbing Back-up

If a plumbing back-up occurs suddenly, chances are it is not a problem with your septic system, but a blockage between your household plumbing and your tank. You should have a sanitary clean-out so that a plumber has access to your household server line to clear the blockage. Disposal of non-degradable paper products can clog the inlet to the tank. Tree roots can also infiltrate the household server line.

A sudden plumbing back-up can occur if the septic system relies on a pump, and either the pump has failed or there has been an interruption in electrical power. If you suspect you have a pump problem, contact a septic system contractor. The District maintains a list of local contractors who are licensed to work on systems.

If your plumbing is running slowly, and if either this has been a gradual process or occurs seasonally, then the problem may be associated with your septic system. In our experience, a key culprit is roots. Again, contact a septic system contractor for root removal and remove trees and hedges in the vicinity of your system.

If your plumbing works great in the summer, but is sluggish in the winter, you may have a serious problem of groundwater intrusion into your system (i.e., your leach field is flooded with groundwater). This is the sort of siting problem that was not addressed when the early systems were installed. The District will work with you to help understand the seasonal disposal limits of your system, and if your system must be replaced, the District will allow a "less-than-code"

system through the waiver process.

Odors

Odors emanating from a septic system can be indicative of a saturated field. During normal use of an unsaturated system, the gases in the septic tank will pass with the wastewater into the soil and be absorbed. If a field is saturated, the gases tend to migrate up the plumbing vents and the neighbors will notice a "septic odor". A carbon filter is available for installation on the roof vent to scrub these unpleasant odors. Immediately prior to and during the routine inspection, the District inspector will note if there is significant odor associated with a particular system, and if the system appears to be saturated and not functioning properly, the owner will be notified. Odor associated with surfacing effluent is of serious concern to the District.

Blackout - Brownout

The lights have gone out, you are scrambling around for candles and the last thing on your mind is your septic system. If you have a gravity system, your sewage disposal needs will be met for the duration of the power outage. If your system incorporates a pump, the pump will not function until the return of power. To prevent sewage from backing up in your plumbing, the household must minimize all wastewater generation. Typically, a system has 200 to 300 gallons of emergency storage just for this occurrence and since your electrical appliances (washing machine, dishwasher and electrical hot water heater) won't be working, the household will naturally be using less water. When power returns, you may hear an alarm sound because the alarm has been triggered by the high water conditions in the tank. After the pump lowers the effluent level, the alarm buzzer should stop.

Several years ago, Stinson Beach experienced a prolong period of low voltage (brownout). This condition can destroy refrigerator compressor motors, furnaces, freezers and septic system pumps and panels. This happened to over a dozen of our customers that have sand filter systems because during the brownout, the rainwater infiltrated into the sand filters causing the external basin pump to try to come on even if no one was home. The motor contactors in the panels were destroyed and in some cases the pumps had to be replaced. To prevent this from happening to your system, a low-voltage protector can be installed to isolate the panel and pump from the low-voltage condition. Sand filter owners may want to consider this option with their electrician.

Alarms

There are several reasons why the alarm on your septic system might sound. All are important, and no alarm should be ignored.

1. There may be a pump failure or an interruption of power to the pump. If the pump is not functioning, sewage will fill a septic tank or sump basin until the alarm sounds.
2. There may be an electrical short in the alarm electrical system. There may be a float failure.

3. For systems utilizing timed dosing, if the household has exceeded its maximum limit, an alarm will sound and the pump will distribute a small amount of effluent to the sand filter to immediately relieve the flooded condition. The household must refrain from disposing of excess wastewater immediately, so that the system will not be overused. Each time this "high-use" alarm sounds, an override counter in the electrical panel will record the event. District staff tracks these counts for each system to ensure compliance with the Discharge Limit.

Mosquitoes

Along with the spring wildflowers, Stinson Beach also tends to have a proliferation of mosquitoes this time of year. District staff has met several times with personnel from the Marin/Sonoma Mosquito and Vector Control District to discuss the problems in town. Basically, your septic tank can be an excellent breeding ground for mosquitoes, but the little devils must find their way in and out of your tank. If your tank has PVC risers with bolted fiberglass lids with neoprene gasket, you can be assured that this provides a positive seal against mosquito entry. To further protect against mosquito entry, please ensure that all of your plumbing vents on your house are covered with screening to prevent mosquitoes entering and then leaving your system.

Please remember that anything that holds water can be a breeding ground for mosquitoes: buckets, planters, ponds, rain gutters can all be a source of standing water. In previous years, District staff would add juvenile hormone pellets to the tanks to prevent the mosquito larvae from maturing. This was found to be a temporary solution and as soon as the hormone concentration was reduced through usage of the system, the mosquitoes would be back. The Marin /Sonoma Mosquito and Vector Control District reiterates that the best approach for controlling mosquitoes is to prevent them from breeding by eliminating or restricting access to their breeding sites.

Surfacing Effluent

Effluent ponding in a leach field, breaking out downhill from a system or flooding out the top of the tank is a serious concern to the District and will be addressed immediately. If these conditions are observed during inspection, the property owner will be notified immediately and the Discharge Permit will be revoked. If a report comes into the District regarding suspected surfacing effluent, the District Inspector will investigate promptly. Please limit your exposure to suspected untreated effluent. Keep pets and children from contact and please contact the District with your complaint.

BUILDING, REMODELING OR ENLARGING YOUR HOME

If your parcel is within the jurisdiction of the Stinson Beach County Water District (SBCWD), the Application for Building Permit must be reviewed and endorsed by District staff. Please review the following to avoid unnecessary delays to your project.

Prior to release of the Application for Building Permit, the following requirements must be met:

New single family residence or commercial facility:
The property owner must obtain a construction and discharge permit for an onsite system from the Stinson Beach County Water District. Contact the District for the appropriate forms and fee schedule.

Building additions which add square footage to the conditioned space of a pre-existing structure:
The District defines this a new construction (see definition below) and requires that the onsite wastewater disposal system meet current District code (SBCWD Ordinance 1996-01). Variances to this provision can be applied for if the current system is an engineered system, is in excellent operating condition, and if the residence will not exceed the square footage limitations defined by the size of the current system. The variance procedure is outlined in chapter 4.13 and requires San Francisco Regional Water Quality Control Board review and SBCWD Board approval. If a variance is granted, the applicant must demonstrate that the system is functioning as designed.

> **4.03.252 New Construction.** ***"New construction" shall mean the construction of a new building, or the construction of an addition to, the alteration of, or the remodeling of an existing building which results in an increase in habitable space or other heated or otherwise conditioned space within the building. Further, the construction of any new structure within a setback from a component of a wastewater disposal system required at the time the system was installed shall be deemed to be "new construction." "Conditioned Space" shall mean living space in a residence or detached building that is insulated and/or is provided with the ability to be heated or cooled.***

The District defines this as alterations and additions that do not constitute new construction (see definition below) and requires that the septic system must be found to be adequate for the residence, to be in good working condition, and not jeopardize public health or safety. An evaluation of the onsite wastewater disposal system will be required. This evaluation must be conducted by a qualified professional, usually a civil engineer or registered environmental health specialist.

> ***4.01.410 Alterations and Additions to Buildings.*** *Whenever any person makes application to the County of Marin for a building permit to alter or enlarge a building which alteration or enlargement would not constitute new construction as defined hereinbelow, prior to issuance of the permit and commencement of construction said person shall demonstrate to the District that (1) the wastewater disposal system is not discharging in violation of this code and (2) if the footprint of the building is to be altered, sufficient space exists on the lot to construct a replacement wastewater disposal system which complies with this code.*

If District staff is required to go to the county offices for sign-off of plans, a Plan Check fee will be appended to the applicant's next water bill (this sign-off fee is included in the construction permit fee).

ADVANTAGES OF AN ONSITE WASTEWATER DISPOSAL SYSTEM AND MANAGEMENT PROGRAM

After reviewing this booklet, you may be wondering if an onsite wastewater disposal system is worth it. Believe it or not, these systems have many advantages over a centralized sewage treatment and disposal facility.

1. The wastewater is used for localized groundwater recharge, which enhances greenery on your property.

2. The property owner is responsible. This means each individual property owner is responsible for the quality and quantity of wastewater discharged from the property. This brings environmental concerns right into your backyard and into your home.

3. The soil beneath a well-designed system is a superior filter and will provide a better quality effluent than that from a centralized facility. To achieve this quality of effluent, the system must be in balance, maintained, and not hydraulically overloaded.

4. The Onsite Wastewater Management Program affords for local control of development by professionals and members of the public that are aware of local environmental conditions.

If you have any questions or concerns, please contact the District office or attend the Board of Directors meeting.

GLOSSARY OF TERMS

Discharge Permit	Non-expiring permit issued to property in the name of the property owner, allowing the discharge of effluent.
Discharge Limit	Volumetric limit to amount of effluent allowed to be discharged by the septic system permitted.
Distribution Laterals	Plastic pipes installed at the top of the sand and gravel bed in a sand filter. Wastewater is distributed through 1/8" to 3/16" orifices in these laterals to the mixed media bed.
Diversion Valve	Valve installed between the septic tank and leach fields, so that property owner can switch fields to allow a resting cycle for one field while the other field is dosed.
Failure	A wastewater disposal system which is discharging in violation of the District's Wastewater Code or a wastewater disposal system whose components do not meet the specifications of the Code.
Gravel Filter	A specially designed bed of gravel that can pre-treat commercial wastewater prior to disposal in a leach field.
Gravity System	A leach field that relies on gravity flow of effluent.
Inlet Tee	A sanitary tee or baffle installed at the inlet to the septic tank to facilitate quiescent inlet conditions.
Leach field	Area (typically a trench) filled with gravel for the disposal of septic tank effluent. The wastewater is typically delivered by perforated pipe to the disposal area.
Outlet Tee	A sanitary tee or baffle for retaining scum in a septic tank.
Repair Order	Notice alerting property owner of system maintenance required. Discharge Permit is conditioned on compliance with repair order.
Retention Time	Length of time sewage effluent is retained in the septic tank.
Sand Filter	A specially designed bed of sand and gravel that pre-treats septic tank effluent prior to disposal in a leach field.
Septic Tank	Watertight container for the retention of sewage prior to disposal. The tank is typically sized to contained three days of sewage effluent.
Tightline	A non-perforated pipe between a septic tank and leach field.

Do's & Don'ts
for your Onsite Wastewater Disposal System

Do Practice water conservation -- the amount of wastewater that this Onsite Wastewater Disposal System (Septic System) can handle is limited.

Do Wash clothing and dishes only when you have a full load.

Do Contact the septic system maintenance person if an alarm sounds or other problems develop.

Do Connect all plumbing to the septic tank -- surface discharge of greywater is prohibited.

Do Minimize the amount of sand entering the septic system.

Don't Flush unnecessarily

Don't Dispose of the following into the septic system:
Paper towels, sanitary napkins, tampons, disposable diapers, condoms, cigarettes, coffee grounds, cat litter, grease.

Don't Use water if the power goes out and your system incorporates a pump.

Don't Use septic tank additives.

Don't Drain hot tubs or spas into your septic system.

Don't Plant trees in the leach field area.

Don't Dispose of toxic chemicals in the septic system.

If an alarm sounds or other problems with the system develop, call:
_____

The Discharge of wastewater from this property is limited to:
_____gallons per day Average _____gallons per day Maximum