San Juan County

Health & Community Services

On-site Sewage System

Operation & Maintenance Program Plan

Adopted by Board of Health: July 23, 2007
Table of Contents

Executive Summary ..................................................................................................................................................... 1

Part 1: Database Enhancement ............................................................................................................................ 2
  A. Inventory ........................................................................................................................................................ 2
  B. Operation & Monitoring – Record Maintenance ....................................................................................... 4

Part 2: Identification of Sensitive Areas & Marine Recovery Areas ........................................................................... 6
  A. Description of the Jurisdictional Environment ............................................................................................ 6
  B. Designating Sensitive Areas .......................................................................................................................... 7
  C. Marine Recovery Areas ................................................................................................................................ 9
  D. Coordination with Planning Entities .............................................................................................................10

Part 3: Operation & Maintenance Requirements ..................................................................................................11
  A. County-Wide Operation & Maintenance Program ......................................................................................11
  B. Policy Issues: ................................................................................................................................................13
  C. Additional Requirements for Sensitive Areas .................................................................................................14
  D. Marine Recovery Area Strategy ....................................................................................................................14

Part 4: Action Items & Projected Cost ..................................................................................................................15
  A. Action Items and Timelines ........................................................................................................................15
  B. Projected Cost ................................................................................................................................................18

Glossary of Terms ......................................................................................................................................................20

Maps ...........................................................................................................................................................................22
  A. Shellfish Growing Areas ..............................................................................................................................22
  B. Critical Aquifer Recharge Areas ..................................................................................................................22
  C. Designated Wellhead Protection Areas ..........................................................................................................22
  D. FEMA Flood Areas .......................................................................................................................................22
  E. Sensitive Areas ...............................................................................................................................................22
Executive Summary

In 2006, San Juan County Health and Community Services formed a citizen advisory committee to develop an operation and maintenance program plan. Plan development was in response to the State Board of Health adoption of Chapter 246-272A WAC and RCW 70.118A which required the twelve Puget Sound Counties develop and submit an On-site Sewage System Management Plan to the State Department of Health by July 1, 2007. The rule and legislation were written to provide greater assurance that existing on-site sewage treatment and disposal systems (OSS) are not causing public health problems or water quality degradation. This is of particular concern within Puget Sound where failing OSS have been linked to numerous shellfish growing area closures and other water quality concerns.

Committee members were selected from a broad range of disciplines and included; State licensed designers, wastewater system inspectors, septic tank pumpers, realtors, shellfish growers, and various environmental groups. Individual committee members are listed below:

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The Operation and Maintenance Program Plan is the result of twelve months of hard work by the committee. The plan is divided into the four sections as follows; Database Enhancement, Identification of Sensitive Areas and Marine Recovery Areas, Operation and Maintenance Requirements, and Action Items and Project Costs. The program plan is designed to provide effective management of on-site sewage disposal systems countywide. Effective management will help identify and correct failing systems, eliminate public health hazards, and maintain pristine water quality.

Highlights of the plan include:

1. Recommending sensitive areas be declared around shallow marine embayments that are used for commercial shellfish production.
2. A phased implementation schedule.
3. Numerous database enhancement recommendations.
4. An annual review to assess the program’s effectiveness.
Part 1: Database Enhancement

The purpose of this section is to describe the current data management system for tracking on-site sewage disposal systems, its limitations, and the plan and timeline for enhancing the system. Fortunately a computer tracking system has been in place for nearly 20 years. However, in order to meet Chapter 246-272A WAC additional work is necessary. Specifically, WAC 246-272A-0015 (1) (a) progressively develop and maintain an inventory of all known On-site Sewage Systems (OSS) in operation within the jurisdiction and (f) maintain records required under this chapter, including all operation and maintenance activities as identified.

A. Inventory

Background: San Juan County began issuing on-site sewage disposal permits in 1972 (prior to 1972 sewage disposal permits were not required). In the mid to late 1980’s, the health department created a database in Paradox to provide computerized tracking of new sewage designs and soil registrations. The database was developed by staff and contained a limited number of data fields. One table was used to track all sewage related activities including soil registrations, design submittals, and final installations. The database was modified several times over the course of the next 10 years.

In 1998, the county began using Microsoft Access as the database platform. Staff converted all records and expanded the number of data fields. In addition, the database was split into three tables (design applications, permit to install and inspection records) that are linked by parcel numbers. The On-site Sewage database is independent from all other databases and can be modified by existing staff as needed. Below are images of the design application and permit to install tables. These tables can be used to provide an inventory of all known systems.
Data Entry, Maintenance & Backup Procedures: All data is entered by front office staff using established data entry procedures. Currently one departmental assistant is the primary data entry person. This person is responsible for entering new sewage design applications, sewage installation records and inspection report information.

Database maintenance is the responsibility of Health & Community Services. Staff developed the database and have the ability to change, modify, add fields and query/export data as needed. Record upkeep has not been a priority and currently there is not a process or procedure in place to systematically/routinely update the records. As a result, many records are incomplete, inaccurate and/or are missing from the database.

All known sewage systems (i.e. sewage record and/or inspection report on file) are being entered into the database. In 2006, a ½ time technician, using the Consolidated Contract Wastewater Management Program and Database Enhancement funds, was hired to complete this work. The process is slow and tedious as efforts are made to identify correct parcel numbers for sewage permits that have been reassigned and/or are missing parcel numbers. The goal is to have all known systems updated & in the database by June 2007.

The database is located on the county’s network and is backed up nightly. This allows the database to be restored with minimal loss of data in the event that the database crashes. The backup system has been tested and will restore the database minus the current day’s information.

Current Records & Reporting Capabilities: Currently there are over 8000 sewage records in the database. However, not all of the systems are active with numerous systems not installed and several hundred that are invalid (system replaced or permit expired). As part of the process invalid systems will be relocated to a separate table creating a table with a complete record of all
known systems. The department estimates there are over 7000 known systems throughout the county with the oldest records from 1971.

The current database will allow the department to report the number, type, age, location (by parcel), inspection records and other information for all known systems. Records can and have been mapped, using the GIS system, by system type for a given set of parcel numbers. Once complete, the database can be used to map systems by type and age throughout the county.

**Identification of Unknown Systems:** The department estimates that there are up to 1000 unknown systems located throughout the county. Unknown systems will continue to be identified when inspections are completed on homes without records. The inspection report requires the inspector/pumper identify the system type, tank size and status. This information is then added to the inspection, design and installation table.

**B. Operation & Monitoring – Record Maintenance**

**Background:** In 2000, the department implemented an Operation and Maintenance (O&M) program. The program was primarily educational but did require inspections at the time of sale or to obtain building permits. The department developed an inspection reporting form and required all pumpers and inspectors to submit the completed forms on a quarterly basis. As part of the process an O&M Table was created in the existing Microsoft Access sewage database. Below is an image of the fields in this table.

![Image of O&M Table](image.png)

**Data Entry, Maintenance & Backup Procedures:** Inspection report data is entered by department staff. In many cases numerous fields, including the parcel number, are left blank making it difficult for staff to enter the data. Staff attempt to identify the parcel number by using the site address and owner information.
Maintenance and backup procedures are identical to the design & installation table and are described above.

**Current Records & Reporting Capabilities:** Currently this table contains over 1400 records of inspection and/or pumping reports. The data allows the department to report the number and location of systems inspected, number of failures identified, and any deficiencies noted. This table is linked to the design information which allows tracking of systems not inspected. Reports showing an inspection history can be generated for specific properties. In addition, the table is used to track and follow-up on all failures identified through the inspection process.
Part 2: Identification of Sensitive Areas & Marine Recovery Areas

The purpose of this section is to describe the process the committee used to determine if the county has any sensitive or marine recovery areas. The State sewage code requires jurisdictions to identify any areas where on-site sewage disposal systems could pose an increased risk to public health. The code specifically listed ten priority areas. In addition, House Bill 1458 required the local health officer to propose a Marine Recovery Area where existing OSS may affect water quality in marine waters.

A. Description of the Jurisdictional Environment

Background: San Juan County is made up of a group of bedrock islands in the northwestern portion of Washington State between the mainland of Washington and Vancouver Island, Canada. There are 428 islands exposed at high tide with a total land area of 114,560 acres or 179.3 square miles and with a total of approximately 375 miles of shoreline. They range in size from 36,432 acres to considerably less than one acre. Many of the smaller islands are uninhabitable or are in public ownership; fewer than fifty are potentially available for private development. Only the four largest islands are served by the Washington State Ferry System: Orcas (36,432 acres), San Juan Island (35,448 acres), Lopez (18,847 acres), and Shaw (4,937 acres).

Land Use: The San Juan County utilizes four principle land use classes and includes, Growth Areas, Activity Centers (including AMIRDS), Rural Lands and Resource Lands. Each land use class has specific goals and policies that are designed to provide direction for guiding residential, commercial, and industrial growth in a manner that protects public health and safety.

Residential density has been established for each area of the county. The permitted density indicates the maximum number of dwelling units that may be constructed per acre of land, or conversely in rural areas, the minimum number of acres per dwelling unit. Attached are the County’s Official Maps for each area.

Three urban growth areas have been designated under the county’s comprehensive plan; Friday Harbor on San Juan Island, Eastsound on Orcas Island and Lopez Village on Lopez. Other growth areas are designated as activity centers (Orcas Village, Doe Bay, Olga, Deer Harbor, Westsound, and North Rosario - all on Orcas) and Master Planned Resorts (Rosario on Orcas and Roche Harbor on San Juan).

Socio-Demographics: In the year 2000, according to the United States Census, there were 6,466 households and 14,077 persons residing in San Juan County, estimated to be 15,500 persons by the end of 2005, remaining approximately 0.2 percent of the population of Washington State. Between 1980 and 1990, San Juan County’s population increased by 28.0 percent, from 7,838 to 10,035 residents. This growth was followed by an additional 40% percent increase during the 1990s to 14,077 residents in the year 2000. Another 10% is estimated by year’s end, 2005. Overall growth was far less for Washington State, for which the population grew 17.8 percent from 1980 to 1990, 21.1 percent from 1990 to 2000, and an additional 5.8% through 2005. Over
the past two decades, the rate of population increase for San Juan County was greatest between 1989 and 1993 with an average increase of more than 5 percent per year. The growth of the population over this time period was fueled largely by the migration of newcomers into the County, rather than by increasing numbers of births.

Income levels for San Juan County residents are higher than those in the State as a whole. The 1990 Census, using income data reported for 1989, indicated an average per capita income of $21,948 for County residents, compared to the Washington State average of $18,777 per capita. The mean household income in the County was $47,983; however, more than 37 percent of households reported incomes of less than $25,000 per year. The per capita income of San Juan County residents was $30,603 in 2000, compared with $22,973 for State residents. The median household income in the County was $43,491, somewhat lower than the State median household income of $45,776.00. This difference probably reflects a smaller average household size in San Juan County in comparison with the statewide size.

Poverty rates in the County decreased between the 1980 and 2000 Census, from 11.9 percent of the San Juan County population living below the poverty level in 1979, to 7.4 percent in 1989 and 9.2 percent in 2000. These 1989 and 2000 rates compare favorably with the Statewide 10.9 and 10.6 percent poverty rates for the same years.

**Water Supply/Topography/Geology:** Water Resource Inventory Area 2 (WRIA 2) corresponds with the boundaries of San Juan County. San Juan County’s water resources are provided by local rainfall only and are characterized by the rain shadow created by the Olympic Mountains to the south and Vancouver Island to the west, by predominantly steep terrain and bedrock geology, by small watershed catchment areas, and by extensive shoreline. These conditions result in low rainfall, limited groundwater storage, and extensive runoff and discharge to the sea. With a few exceptions, streams are intermittent or ephemeral. San Juan County’s freshwater habitat is generally not conducive to spawning of salmonids, but the near shore waters and island shorelines provide critical habitats for juvenile and adult salmon and the small forage fishes they eat.

Most of the concentrated population areas are served by surface water systems. The rural interior and highly desirable shoreline areas are served by a combination of private and community wells. Aquifer conditions vary from a few high producing wells (50 gallons per minute) to wells that go dry or experience seawater intrusion during peak summer use.

The topography and geology varies significantly across the islands. Most islands will vary from nearly level or gently sloping to steep or precipitous. In addition, the geology, with the exception of the smaller islands, will include both glacial deposits and bedrock formations (see attached geologic map).

**B. Designating Sensitive Areas**

The unique environment of San Juan County can present challenges for locating, designing, installing and maintaining on-site sewage disposal systems. With the miles of shoreline, steep rocky terrain, limited groundwater supplies and growth pressures, care must be taken to ensure on-site sewage disposal systems are properly operated to protect public health.
With this in mind, the committee has reviewed various data sources to determine if designation of a sensitive area, with increased operation and maintenance requirements, was necessary to protect public health. The list below includes all areas and the available data that the committee used to assess if OSS posed an increased risk to public health.

1. **Shellfish protection districts or shellfish growing areas** – There are eight commercial shellfish growing areas and numerous recreational beaches throughout the county. These areas are spread out throughout the county with nearly the entire shoreline either a commercial or recreational site (see Map A).

2. **Sole source aquifers designated by the USEPA** – There are no sole source aquifers designed in San Juan County.

3. **Areas in which aquifers used for potable water as designated under the Washington State Growth Management Act, chapter 36.70A RCW are critically impacted by recharge** – San Juan County is currently updating their Critical Areas Ordinance. As a result, the critical aquifer recharge areas (CARA) will be changed significantly. The committee utilized the draft CARA maps which indicates the majority of the county is rated as high to medium susceptibility. (see Map B)

4. **Designated wellhead protection areas for Group A public water systems** – There are nearly 180 Group A water systems county-wide. The larger systems, Town of Friday Harbor, Roche Harbor, Eastsound, Rosario, Doe Bay etc.) rely mostly on surface water. The remaining systems generally utilize well(s) as their water source. All of these wells have wellhead protection zones. Nearly all, with the exception of Eastsound, base their protection areas on concentric circles placed around the wellhead. (see Map C)

5. **Up-gradient areas directly influencing water recreation facilities designated for swimming in natural waters with artificial boundaries within the waters as described by the Water Recreation Facilities Act, chapter 70.90 RCW** – There are no designated natural water swimming areas in the county.

6. **Areas designated by the department of ecology as special protection areas under WAC 173-200-090, Water quality standards for ground waters of the state of Washington** - There are no areas designated by the Department of Ecology for special protection in San Juan County.

7. **Wetland areas under the production of crops for human consumption** – There are no wetlands used for crop production in San Juan County.

8. **Frequently flooded areas including areas delineated by the Federal Emergency Management Agency and or as designated under the Washington State Growth Management Act, chapter 36.70A RCW** – There are several FEMA flood areas mapped in the county. All the areas are immediately adjacent to low-bank marine waterfront or along the edges of a few ephemeral streams. However, in all cases these areas are extremely limited. (see Map D)

9. **Areas where nitrogen has been identified as a contaminant of concern** – No specific areas have been identified. No surface water, marine or freshwater, has data indicating nitrate contamination. There are several groundwater wells that have concentrations above 1 mg/L which is generally attributed to man-made sources. However, there are no known wells with concentrations currently above 10 mg/L which is the EPA’s maximum contaminant level.
10. **Other areas designated by the local health officer** – No other areas have been designated by the health officer.

The committee discussed all of these areas to determine where on-site sewage disposal systems may pose an increased risk to public health. One of the difficulties the group had was determining the appropriate boundary if a sensitive area was declared. Little to no science was available on establishing boundaries around an area. The group debated whether to include the whole watershed or a set distance (100, 500 or 1000 feet) around the area. However, the group agreed by consensus to recommend sensitive areas be declared around shallow marine embayments that are used for commercial shellfish production. Attached are maps of these areas including the parcels that the committee recommends be included in the designation. These parcels were recommended based on where the committee determined on-site sewage disposal systems may pose an increased risk to public health.

Finally, the committee felt it was important to “leave the door open” on designating other sensitive areas and felt strongly that the county review the program annually.

**C. Marine Recovery Areas**

Chapter 70.118A of the Revised Code of Washington requires the twelve Puget Sound local health jurisdictions to identify and develop Marine Recovery Areas (MRA). The law requires the local health officer propose an MRA where existing on-site sewage disposal systems are a significant factor contributing to concerns associated with:

- Threatened or downgraded Shellfish Growing Areas
- Marine water with low dissolved oxygen or fecal coliform
- Marine waters where nitrogen has been identified as a contaminant of concern

The committee reviewed the available marine water quality data throughout the county. This included the State Department of Health’s fecal coliform data for the 8 commercial shellfish growing areas, and the Department of Ecology’s final 1998 Section 303 (d) lists and 2004 Water Quality Assessment (Final) for WRIA 2.

Currently all commercial shellfish growing areas meet the water quality standards for fecal coliform. The Mackaye Harbor growing area has one station that is threatened due to elevated bacteria levels. This area has been reviewed by both State and local Environmental Health personnel who have concluded the elevated counts do not appear attributed to on-site sewage disposal systems and appear to be an anomaly.

Five marine bodies of water (East Sound, Rosario Strait, San Juan Channel, San Juans Outer West Side, and West Sound, Harney Channel & Lopez Sound) were considered for listing on the 303 (d) list due to low dissolved oxygen. However, in all cases the bodies were not listed as, in DOE’s judgment, all excursions beyond the criterion were from natural conditions due to the influence from up-welled, deep water.
Based on all available data the committee has concluded that San Juan County does not have any marine areas that would classify as Marine Recovery Areas. Therefore, no Marine Recovery Areas were identified or designated. However, the committee recommends the county review the marine water quality annually and identify an appropriate Marine Recovery Area should the need arise.

D. Coordination with Planning Entities

Coordination with the various planning entities is relatively simple in San Juan County. With only one incorporated Town, no tribal lands and watersheds that do not cross jurisdictional boundaries, coordination is primarily with San Juan County Community Development and Planning (CD&P). The Health & Community Services department is located in the same building with CD&P and has a good working relationship. Staff interact daily with coordination occurring on several fronts.

All sewage permit applications are routed to CD&P for a critical area review. This review includes setback and compliance with numerous critical areas including wetlands, archaeology sites, steep slopes, frequently flooded areas, Bald Eagle sites, critical aquifer recharge areas, and other critical habitats. Second, the department is asked to review and comment on changes/updates to the Comprehensive Land Use plan, Critical Area Ordinance and other land use issues. Finally, the department works closely with CD&P to determine which code revisions and plans must undergo a State Environmental Policy Act (SEPA) review.
Part 3: Operation & Maintenance Requirements

The purpose of this section is to describe the operation and maintenance program. The section is divided into four parts. Part A describes the program to be implemented county-wide, Part B includes additional requirements for sensitive areas as identified in Part 2 of this plan and Part C will describe actions for identified Marine Recovery Areas. Part D describes the staffing and funding that are necessary to implement the program as describe in parts A, B & C.

A. County-Wide Operation & Maintenance Program

Background: San Juan County developed its first operation and maintenance program in 2000. The program called for on-going inspections for all systems and required proof of proper inspections at either time of sale or to obtain a building permit. The program established an inspector certification process, required installation of various system components (observation ports, risers, etc.) to allow on-going inspections, created an inspection form and developed an inspection database. The program lacked an enforcement component and no mechanism was established to verify inspections. The program provided limited education with the main focus on contractors and realtors. The program has averaged 200 inspection reports being filed per year.

Below is the revised operation, monitoring and maintenance program for San Juan County. The program is divided into four categories, Inspection Requirements & Frequency, Education, Enforcement, and Policy Issues. The program was developed after reviewing the five operation and maintenance models identified by the EPA and several local programs. The program is a combination of the EPA’s Educational and Maintenance Contract Models. The program calls for more active enforcement and education than the previous county program.

Inspection Requirements and Frequency: The property owner is responsible for properly operating and maintaining the on-site sewage system per design standards. All sewage disposal systems need on-going inspections to insure proper operation; however, not all systems require the same inspection frequency. After reviewing State DOH guidelines and discussing system complexities the following inspection frequencies and requirements were developed:

1. The OSS owner is responsible for ensuring that the OSS is inspected by a wastewater system inspector according to items 2, 3, 4 and 5 below except:

   a. The resident owner can inspect their own gravity, pressure distribution, mound and/or sand filter system provided the owner has demonstrated knowledge in the systems particular O&M requirements (Note: Proprietary products must be inspected by a wastewater system inspector). Demonstrated knowledge may include:

   i. County sponsored training;
   ii. O&M courses sponsored by Northwest On-site Wastewater Training Center;
   iii. County accepted training.
b. Verification of knowledge (e.g. certificate, passing test score, etc.) must be included with the inspection report.

2. All systems must be inspected in accordance with WAC 246-272A-0270. Said inspections must be completed as follows:
   a. At least every three years for systems consisting solely of a septic tank and gravity subsurface soil absorption system (SSAA);
   b. Annually for all other systems unless more frequent inspections are specified by the local health officer.

3. Systems serving commercial establishments (activity involving the sale of goods or services) must be inspected as follows:
   a. Systems serving restaurants, markets, deli’s and/or other establishments preparing multiple meals must be inspected quarterly;
   b. Systems serving transient accommodations including, Bed & Breakfast, motels, hotles, resorts and transient rentals, must be inspected annually;
   c. Systems serving other commercial establishments (e.g. offices, automotive centers, etc.) must be inspected annually.

4. The homeowner or maintenance contractor shall report fully on the status of the on-site system using the form prescribed by the director or via electronic submission if available. An annual filing fee, as established by the Board of Health, will be charged for all monitoring and inspection reports.

5. The homeowner or maintenance contractor shall report immediately any identified on-site system failure to the department.

**Education:** The department will develop and provide educational materials regarding operation and maintenance of on-site sewage systems to system owners. Resources may include but are not limited to brochures, videos, newspaper articles, and classes/seminars. Educational outreach may include the following:

1. Reminders and/or informational notices will be placed in the local papers periodically but not less than once a year.
2. Notification reminders will include an educational packet containing information on the properties system type.
3. Training classes on how to inspect and maintain septic systems will be provided.
4. Videos will be purchased and placed in the local libraries.
5. Material will be available on the County’s web page.

In addition, educational information will be distributed to installers and maintenance providers. Finally, partnerships with contractors, realtors and other groups will be formed and used to disseminate educational information to system owners.

**Enforcement:** On-going active enforcement is essential for an effective O&M program. A monitoring program will be established to verify inspections are being conducted as outlined above. Listed below are the steps the department will take to ensure inspections are occurring as required:
1. Notification reminders/educational packets will be sent to property owners and/or designated agent during the year the inspection is due.

2. Notification reminders will be sent to wastewater system inspectors for systems that are under contract.

3. Notice of violations will be sent to property owners who are one year or more behind on the required inspections. Notice of violations will be sent directly to the contract providers on systems that are under contract. Said violation will require the property owner have a licensed wastewater system inspector conduct an inspection prior to obtaining a building permit or at time of sale. In addition, a late fee of double the adopted filing fee will be assessed.

4. Verification that the O&M inspections have been completed per the established inspection schedule will be required prior to obtaining a building permit on the property or at the time of sale.

5. Periodic random quality control inspections of licensed wastewater system inspectors will be conducted.

B. Policy Issues:

Maintenance Components: On-site sewage disposal systems must be equipped with specific maintenance components (e.g. access risers, observations ports, and clean-outs) to be effectively monitored and inspected. Most systems that were designed and installed prior to 1998 do not contain these essential features. Therefore existing systems that do not contain these components will be required to install the following features at time of sale:

1. Access risers on the septic tank and pump chamber
2. Access riser installed on “D”-boxes or the location clearly marked
3. Observation ports in the drainfield, sand filter or mound
4. Cleanouts on pressure distribution laterals
5. Audible and visual alarms on all pumps
6. Effluent filters

In addition, all existing system owners will be encouraged to install these features to allow proper monitoring and inspections.

Records: There are approximately 1000 unknown systems and numerous known systems without adequate records. Therefore in order to identify unknown systems and to complete the records of known systems, a record drawing must be on file for all systems prior to obtaining a building permit or at time of sale. Said drawing must be completed by a licensed installer, a licensed wastewater system inspector or state certified designer.

System Upgrades: Seepage pits will be required to be upgraded to current design standards at time of sale or application for a building permit. If a conforming drainfield cannot be located onsite, then the department may consider allowing pretreatment to Treatment Level A with final disposal into the existing seepage pit.
Phasing: In order to effectively implement and manage the above program a phased approach will be used. During the initial phase the county will develop the mechanisms to notify system owners, receive and track inspection reports, refine the enforcement procedures, track compliance and determine the resources necessary to fully implement the plan. Listed below is the recommended phasing schedule:

**Phase 1:**

Start Date: July 1, 2007

Systems in Program: Aerobic units, packed bed filters and other proprietary systems.

**Phase 2:**

Start Date: July 1, 2009

Systems in Program: Mound, sand filters and pressure distribution systems

**Phase 3:**

Start Date: July 1, 2011

Systems in Program: Standard gravity and all other systems.

C. Additional Requirements for Sensitive Areas

The committee is recommending the following additional O&M requirements be instituted in the declared sensitive areas:

1. All systems are to be inspected annually.
2. Inspections to begin under Phase 1 for all system types, including properties served by "unknown systems."

D. Marine Recovery Area Strategy

No Marine Recovery Areas were identified or designated. Therefore, a separate strategy is not recommended at this time. However, the committee recommends the county review the marine water quality annually and develop an appropriate Marine Recovery Area Strategy should the need arise.
Part 4:  Action Items & Projected Cost

Throughout the planning process the committee identified numerous action items that will be required for a successful program. The committee also recognized that implementation of this program has financial implications to both the general public and county. This chapter lists the action items the committee felt are necessary for a successful program and a review of the projected program costs. As with all plans, the committee recognizes that as the program is implemented the action items and the financial impact may change. However, at the time of plan development these were the identified issues.

A.  Action Items and Timelines

Listed below are the various action items the committee identified as necessary for a successful program. Each action item includes the identified issue, the corresponding action, the timeline to complete the action, and the resources required. The action items have not been ranked and some may be addressed prior to plan adoption. However, at the time of plan development these were the issues the committee identified as necessary for an effective operation and maintenance program in San Juan County.

Issue 1:  There is no procedure for routinely and systematically updating records with correct information. As a result, numerous records have incorrect parcel numbers and/or owner information.

Action:  Develop a written protocol to update sewage records. Assign staff to update records on a monthly basis.

Timeline:  Complete by June 30, 2007

Required Resources:  Can be completed by existing staff.

Issue 2:  Not all records are currently in the computer database or are complete/accurate.

Action:  Initiate a program to ensure all sewage records are entered into the database. As part of process correct existing records to reflect accurate information.

Timeline:  Complete by June 30, 2007

Required Resources:  Can be completed by existing grant funded staff.

Issue 3:  There is no procedure or process in place to cross check home sales with inspection records.

Action:  Develop a mechanism to cross check home sales with inspection reports. This will involve working with the Assessor Office to link home sales data with inspections records.
**Timeline:** December 31, 2007

**Resources Required:** Need capable data systems or linkages to cross check data. Additional staff will be needed to cross check inspection records with home sales.

**Issue 4:** There is no process for rejecting incomplete inspection reports.

**Action:** Develop procedure to review and reject incomplete inspection reports.

**Timeline:** December 31, 2007

**Resource Required:** Need additional dedicated staff to review inspection records.

**Issue 5:** The current database does not allow electronic inspection reporting.

**Action:** Analyze the cost/benefits of developing and/or purchasing a data system to allow electronic inspection reporting. If feasible and practical, purchase or modify existing data system to allow electronic reporting.

**Timeline:** December 31, 2007

**Resource Required:** Funds and/or staff to purchase or modify existing data system to allow electronic reporting.

**Issue 6:** The current data system is not set-up to send mass mailings to all known system owners.

**Action:** If desirable, add and update fields to data system to include owner mailing information to allow mass mailings of educational material, O&M reminder notices and other information.

**Timeline:** December 31, 2007

**Resources Required:** Funds and/or staff to add and update fields to data system. In addition, on-going resources (funds & staff) will be required to keep information updated and accurate.

**Issue 7:** The current database does not allow posting of digital pictures or other site specific diagrams.

**Action:** Add new field to database to allow posting of digital pictures to each record.

**Timeline:** December 31, 2007

**Resources Required:** Depending upon database may be completed by existing staff.
Issue 8: The current database does not contain a site address field.

**Action:** Add a site address data field to database or link parcel numbers to site address database. Linking with address database is preferable as addresses can be revised over time.

**Timeline:** June 30, 2007

**Resource Required:** May be completed by existing staff provided link with existing address database is possible.

Issue 9: Need to identify the number and location of unknown systems.

**Action:** Once all records are inputted, use existing database and GIS system to identify and map unknown system locations.

**Timeline:** June 30, 2007

**Resources Required:** Can be completed with existing staff.

Issue 10: The San Juan County Board of Health must declare sensitive areas. The committee is recommending seven sensitive areas be declared.

**Action:** Declare sensitive areas around shallow marine embayments that are used for commercial shellfish production as depicted in Maps E-1 through E-7.

**Timeline:** Complete by June 30, 2007

**Required Resources:** Declaration required from San Juan County Board of Health.

Issue 11: Staff and resources to implement program.

**Action:** Identify staff & resources necessary to implement program.

**Timeline:** Phase 1 – June 30, 2007; Phase 2 – June 30, 2009 & Phase 3 – June 30, 2011

**Required Resources:** Phase 1 – the department estimates that a half-time employee can effectively execute this phase. Rough cost estimates are $40,000. Phase 2 will require an additional half time employee and another $40,000. To fully implement the program, phase 3, the department estimates 2 full time staff members will be necessary at a cost of $150,000 to $175,000.
**Issue 12:** Database does not contain field to indicate maintenance contract in place to maintain system.

**Action:** Add field to database to indicate contract in place to inspect/maintain system.

**Timeline:** June 30, 2007

**Resources Required:** Can be completed with existing staff.

**Issue 13:** An annual review is necessary to determine program effectiveness. The review must include a review of potential sensitive and marine recovery areas. If necessary, additional areas and/or O&M requirements should be imposed to address any new concerns.

**Action:** Hold an annual review with Local Management Planning committee and modify program as necessary.

**Timeline:** Hold first review in June 2008

**Resources Required:** Can be completed with existing staff.

**B. Projected Cost**

Implementation of this plan has several costs associated with it. The committee felt it was necessary to detail the projected costs to fully appreciate the plan. The costs have been divided into two categories; costs to San Juan County Health & Community Services and cost to property owners. Listed below are the projected costs to fully implement the plan. These are projected costs only and should not be implied as true costs.

1. **Cost to San Juan County Health & Community Services** – To fully implement the plan as written, additional staffing will be required. The plan recommends a phased approach which will allow staff to be added over the course of four years. The table below lists the projected staff costs to fully implement the plan.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Year</th>
<th>Staff Level</th>
<th>Projected Cost/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2007</td>
<td>½ FTE – Environmental Health Technician (EHT) + ¼ Departmental Assistant (DA)</td>
<td>$50,000</td>
</tr>
<tr>
<td>2</td>
<td>2009</td>
<td>1 FTE – EHT + ½ DA</td>
<td>$100,000 - $150,000</td>
</tr>
<tr>
<td>3</td>
<td>2011</td>
<td>Minimum of 2 FTE – EHT + 1 DA</td>
<td>$180,000 - $250,000</td>
</tr>
</tbody>
</table>

In addition to staff cost, the committee is anticipating additional costs to upgrade the computer database and reporting software. This is more difficult cost to project but total one-time costs are estimated to be less than $50,000. Total projected costs including staff and indirect costs are for full program implementation is estimated between $250,000 and $300,000 per year.
2. **Cost to San Juan County Property Owners** – The majority if not all of the projected costs will be borne by the property owners of San Juan County. The table below lists the various projected costs based on the recommended program.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Project Cost per unit</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Phase 1 – 2007</td>
</tr>
<tr>
<td>Retrofitting Systems w/ components</td>
<td>$500/system</td>
<td>N/A – Systems already fitted with components</td>
</tr>
<tr>
<td>Initial O&amp;M Inspection</td>
<td>$425</td>
<td>N/A – Already being inspected</td>
</tr>
<tr>
<td>Initial Projected Cost to Implement</td>
<td></td>
<td>N/A – Already being inspected</td>
</tr>
<tr>
<td>Each Phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-going O&amp;M Inspection</td>
<td>$350 – Includes $50 filing fee</td>
<td>$350,000(^4)/Annually</td>
</tr>
<tr>
<td>Projected On-going Annual Costs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) – Estimating 500 systems in area w/60% having O&M components
\(^2\) – Estimating 3000 systems (Mounds, Sand Filters & Pressure) w/50% having O&M components
\(^3\) – Estimating 3000 systems (Gravity) w/25% having O&M components
\(^4\) – Assumes 500 aerobic & proprietary systems + 500 systems from sensitive areas
\(^5\) – Assuming 1/3 of gravity systems and all other systems being inspected per year
Glossary of Terms

“Aerobic Unit” means a treatment device consisting of a container of various configurations that provides for aerobic biodegradation or decomposition of wastewater constituents by bringing the wastewater in contact with air by some mechanical means. The treated effluent is then disposed through a subsurface soil absorption system.

“Critical Aquifer Recharge Area” (CARA) means areas with a critical recharging effect on aquifers used for potable water. CARA have prevailing geologic conditions associated with infiltration rates that create a high potential for contamination of groundwater resources or contribute significantly to the replenishment of groundwater.

“Gravity subsurface soil absorption system” (SSAA) means a soil dispersal component of trenches or beds containing either a distribution pipe within a layer of drainrock or an approved gravelless distribution technology, designed and installed in original, undisturbed, unsaturated soil utilizing gravity distribution.

“Mound system” means a method of on-site sewage treatment and disposal in which a specified sand filter media is laid on top of a properly prepared original soil surface. The distribution system and wastewater infiltration beds are then placed entirely within the filter media.

“Nitrate” (NO₃⁻) means the oxidized form of nitrogen that is highly mobile in groundwater.

“On-site Sewage System” (OSS) means an integrated system of components, located on or nearby the property it serves, that conveys, stores, treats, and/or provides subsurface soil treatment and dispersal of sewage.

“Operation and Maintenance” (O&M) means the actions necessary to keep the on-site sewage system components functioning as designed.

“Packed Bed Filter” means a biological and physical wastewater treatment component utilizing a bed of various media (e.g. textile) to which (generally) septic tank effluent is applied. The treated effluent is then disposed through a subsurface soil absorption system.

“Pressure Distribution System” means a system of small diameter pipes equally distributing effluent throughout a subsurface soil absorption system.

“Proprietary system” means a sewage treatment and distribution technology, method, or material subject to a patent or trademark.

“Sand Filter” means a biological and physical wastewater treatment component consisting of an under drained bed of sand to which (generally) septic tank effluent is applied. The treated effluent is then disposed through a subsurface soil absorption system.

“Seepage Pit” means an excavation more than three feet deep where the sidewall of the excavation is designed to dispose of septic tank effluent.
“Sensitive Area” means an area of definite boundaries delineated through public process, where the local health officer, determines additional operation and maintenance requirements are necessary to minimize the impacts of on-site sewage systems upon public health.

“Wellhead Protection Zone” means the area surrounding a pumping well or spring that encompasses all areas or features that supply groundwater recharge to the well or spring.
Maps

A. Shellfish Growing Areas
B. Critical Aquifer Recharge Areas
C. Designated Wellhead Protection Areas
D. FEMA Flood Areas
E. Sensitive Areas
   1. Westcott Bay – San Juan Island
   2. Eastsound - Ship Bay – Orcas Island
   3. Buck Bay – Orcas Island
   4. Shoal Bay – Lopez Island
   5. Mackaye Harbor – Lopez Island
   6. Hunter Bay – Lopez Island
   7. Mud Bay – Lopez Island
Map A: Shellfish Growing Areas and Public Beaches

Status of Growing Areas:
- >70ft
- Approved
- Conditional
- Prohibited
- Unclassified
- Upland
- Public Beaches
Map B: Critical Aquifer Recharge Areas

Combined Score: recharge, depth to groundwater, surface geology, and soil

- **Green**: Low risk
- **Yellow**: Medium risk
- **Red**: High risk
Map C: Designated Wellhead Protection Areas

- **Group A well 600-foot radius**
- **Eastsound Water Users' Assoc. delineated well protection zone**
Map E-2: Ship Bay

300-foot buffer

Ship Bay Sensitive Area, Orcas Island
Map E-3: Buck Bay

300-foot buffer

Buck Bay Sensitive Area, Orcas Island
Map E-5, E-6 and E-7

300-foot buffer

Hunter Bay, Mud Bay, MacKaye Harbor Sensitive Areas, Lopez Island