On-Site Management Plan Quarterly Report
April 1, 2008 – June 30, 2008
Snohomish Health District
Contract Number: C14964

Task 1
Identify all failing and unknown onsite sewage systems (OSS) in the Warm Beach beachfront community.
-Review all Snohomish Health District (SHD) files for properties with unknown OSS in the Warm Beach area, along Soundview Drive and Beach Drive.
-Complete a sanitary survey of Warm Beach.
-Confirm that any OSS found to be failing is repaired.

Task #1a: SHD File Review
Up to 170 properties along Soundview Drive and Beach Drive in Stanwood, Washington will be included in the review. In preparation for the sanitary survey, files for properties along these roads will be reviewed to determine 1) the location of known OSS and 2) the likely location of unknown or assumed OSS.

A total of 332 Property Tax Account Numbers were included in the file review for the Warm Beach Sanitary Survey. Survey area was determined by geographical location, soil type as defined in the Soil Survey of Snohomish County Area Washington and resources available.

Geographically, the survey area was confined by a county park to the South, a privately owned camping facility to the North and Port Susan to the West. The survey area is confined to the homes along Soundview and Beach Drive with the exception of five blocks of properties on the South end of Soundview Drive. Properties further east were excluded due to limited resource availability. Snohomish County Public Works Surface Water Management program completed a study in 2001 called the South Warm Beach Master Drainage Plan which indicates that at the time of the study, any fecal contamination entering Port Susan from outfall in the Warm Beach Area were not due to human wastewater. Therefore, it is reasonable to assume that resources will be better spent surveying properties in direct contact with marine water. The soils in the Warm Beach area improve eastward into an Everett Series soil that is deep and well drained. Again, resources will be concentrated in the area with more shallow soils and a higher water table.

All beach front properties were included along a 3.8 mile stretch of Coastline along Port Susan. The southern most property borders Kayak Point Regional Park and the review extends north to the Northern most tip of Beach Drive, fig. X shows a map of the survey area. Properties on the West side of Beach Drive and Soundview Drive were included along with properties on the East side of 95th Ave NW, North of 192nd St NW. Properties on the West side of Clarence Ave were included from 192nd St NW to Kayak Point Rd where the survey area ends next to Kayak Point Regional Park.

Description of review procedure

The purpose of a file review for the Warm Beach sanitary survey is to establish a snapshot of the current state of onsite sewage systems in the community. In order to create that snapshot, 332 properties were reviewed. Each file was categorized as one of the following:

Permitted, Known Systems
Properties in this category have an as-built on file at SHD and conform to the sanitary code enforced at time of installation
Non-permitted, Known Systems
Properties in this category do not have an as-built on file at SHD, but there is a sketch or design in the property file that was added at some point when SHD reviewed the property. These reviews were generally a previous sanitary survey conducted in 1991, or a building clearance review.
Unknown Systems
Properties in this category are served by onsite septic systems that SHD has no record of. It is also likely that some of these properties are vacant land and will be confirmed as such during site review.
Table IX Repairs
Properties in this category meet the requirements of Table IX in the WAC 246-272A-02800, or its equivalent at time of application.

Deliverable
See Appendix A

Description of findings

332 files were reviewed. Here is the breakdown of how those files fit into the categories above:

Number of properties	Type of System	Percent of total
134	Permitted, Known Systems	40%
32	Non-permitted, Known Systems	10%
120	Unknown Systems	36%
46	Table IX Repairs	14%

Sixty four percent of the OSS in the Warm Beach survey area are known. The remaining 36%, or 120 properties, are unknown, and 71 of them are beach front properties.

Eighteen of the non-permitted known systems were identified during the Warm Beach sanitary survey in 1991. The sanitary survey also resulted in the documentation of, at a minimum, the location of the septic tank for most unknown OSS and the appearance of functionality, unless SHD was denied access to the property.

Of the 46 table IX repairs, 78%, or 36 of them, were installed after 1990. 32 of the repairs are waterfront properties

Eleven complaints were made in the survey area since 1995. Four complaints were made on unknown systems. One file has an approved application from 2007. Another complaint indicates that a certified installer repaired the system without benefit of a permit.

Interpretation of findings

SHD has record of the majority of OSS in the Warm Beach area and a history of regulating the repair of failing systems in a timely, efficient manner. Due to the narrow width of most beachfront properties, and the increasing number of conforming OSS, SHD concludes that Warm Beach residents are likely to report a neighboring failing OSS. However, we do not know the condition or exact location of 71 systems along the beach and the sanitary survey will afford SHD the opportunity to confirm or refute conclusion regarding the likelihood of complaint reporting.

As systems were repaired during the last thirteen years, SHD has been diligent in requiring treatment levels consistent with WAC 272-246 at the time of approval. As such, most of the repairs in Warm Beach and all of the repairs along the beachfront include treatment units.

No fecal coliform testing along the Warm Beach waterfront has tested positive for human effluent. SHD expects to find almost all beachfront OSS fully functioning during the sanitary survey. Any OSS found to be failing will be corrected in the same manner as prior repairs completed in this community.

Next steps

The information collected during the file review stage will be used as a tool for the sanitary survey in April, 2008. When reviews are made of properties with as-builts on file at SHD, a copy will be available to share with the homeowner. The survey time will also serve as an opportunity to educate homeowners about their OSS.

Unknown systems will be examined carefully to determine their location and functionality. Secondary information, regarding failures, complaints and other activity on the property will assist the sanitarian reviewing the property and aid in formulating questions about the history of the system.

<u>Task #1b: Public Notification and Education</u>
Notification will be given to the occupants of up to 170 properties along Soundview Drive and Beach Drive in the form of an informational mailing. The mailing will include a brief summary of why we are conducting the survey and when the survey will begin. During the month of April, 2008, concerned or interested community members will be invited to provide feedback about the project via telephone call or appointment at the Health District.

All correspondence regarding the survey between SHD and Warm Beach community member will be documented throughout the designated response time period indicated in the mailing.

A letter was sent to 276 owners and occupants of 179 properties in Warm Beach. A copy of this letter is included as Appendix B. The intent of the letter was to notify the community of the scheduled sanitary survey and give them an opportunity to ask questions or voice concerns. Appendix C contains a complete list of properties that SHD addressed a letter to.

It was decided that educational information would not be included with the letter. Mailing 276 informational packets is wasteful unless each packet can be tailored to the unique interests of each property owner. Due to the large variety of system types in use at Warm Beach, SHD determined that it would be more practical to take a variety of publication into the field during the sanitary survey. This would limit the amount of paper waste generated, and also ensure that each homeowner receives only information that is relevant to their system type.

Description of findings

The letter was sent out April 4, 2008 and community comments were collected through the month of April. A total of five calls were made to SHD regarding the survey. A record of these calls is included in Appendix D. SHD received no contact from the community in resistance to the survey.

<u>Task #1c: Property Inspections</u>
For each inspection, the sanitarians will be equipped with the SHD file for that property, including the as-built, a report notebook to report findings, a digital camera to document suspected failures or outfalls to be tested, and standard field equipment such as a post hole digger, compass, clinometer, and tape measure.

During inspection, the sanitarians will first attempt to greet the homeowner and explain the purpose of their visit. Once granted access, the sanitarians will inspect the septic and pump tanks for any signs of failure. Next they will inspect the drainfield for signs of distress or failure. Any surfacing sewage will be documented and samples collected.

If site review reveals that the as-built does not correctly reflect the location of the drainfield, a sanitarian will attempt to contact the homeowner to collect any information he/she may have regarding the present location and condition of the OSS.

After the initial inspection, the sanitarians will attempt to inspect the bulkhead of beachfront properties for any outfalls or suspected drainfield outlets to the Puget Sound. When any sample is collected, the location will be documented by property tax account number and a brief sketch of the location of the sample on the property. Photographs will also be taken to document all samples taken from the bulkhead.

Once laboratory results are received, any test results with a fecal coliform MPN level higher than 3000 mg/l will initiate correction procedures for the property indicated. If the sample does not come from an obvious drainfield source, further testing may be necessary. Options for confirmation testing include repeat testing of the original source, dye testing, and questioning of the homeowner.

In order to accurately record the information gathered during the survey, a database was created for the project. The entry form for the database became the survey form used to collect data in the field. A copy of that form is included in Appendix E.

Sanitarians began surveying the properties in pairs May 2, 2008. The first attempt to survey all properties was completed May 15, 2008. For this first attempt, sanitarians first knocked on the property front door. If nobody answered and there was an unobstructed path open to the back door, then an attempt was made to contact the occupant at the back entrance as well. If an occupant was present, the sanitarians went through the survey form with the occupant, and walked through the drainfield area to visually survey each component. If an occupant was not present, then the survey was limited to any on-site system components visible from the paths leading to and from the front and back entrances.

Description of findings

The database currently contains records from 150 properties surveyed between May 2 and May 15, 2008. Only 33 occupants were present during this initial phase of the survey. Sufficient information was gathered on 66 of the 179 properties included, and occupants and owners of 84 properties received a secondary letter requesting permission to access the property in their absence. This letter is in Appendix F. As of June 30, 2008, sixteen people had responded to the letter. While analyzing the survey data, it was discovered that 29 properties were mistakenly not surveyed during the initial phase, so they will be included during the secondary phase.

Due to the low percentage (18%) of occupant contact, little data was gathered on unknown systems. Of the 33 occupants we did have contact with, 15 occupy properties with no as-built on file with SHD. Two of those properties are served by an offsite drainfield. Two occupants denied SHD access to the property. One appears to match the approved design on file with SHD, and five unknown drainfields were discussed with the occupant and SHD now has information about the approximate location of these systems.

No sampling was done during the initial phase of the survey because no suspected failure was discovered. Thus far it appears that the onsite septic systems included in the survey area are functioning normally at this time. One suspected failure was visually noted on a property that SHD did not gain access to. Steps have been initiated to follow-up with the property owner and the resolution will be reported in future reports.

A bulkhead inspection was also completed during the first phase of the survey, and no suspicious outfalls were discovered or tested.

Next Steps

The secondary phase of the survey began in June 2008 and will continue until SHD has sufficient documentation on all 179 properties in the survey area.

<u>Task #1d: Enforcement Procedure for All Identified Failures</u>
All failing OSS discovered during this project will be addressed with standard procedure.

Only one OSS suspected failure was found thus far during the survey, and it was on a nonparticipating property. Initial steps have been taken to document the failure and corrective action will begin once the failure has been confirmed.

Further information about the enforcement and ultimate correction of the problem will be documented in future reports.

<u>Task 2</u>
Enhance the Drainfield As-Builts Viewed Electronically (DAVE) database to reflect known or unknown status of all OSS in Snohomish County
-Identify all properties in DAVE without scanned record drawings (as-builts) and modify DAVE to show known/unknown status accordingly.
-Conduct a targeted review of files related to suspected OSS with scanned record drawings (as-builts)
-Complete a homeowner survey to identify unknown systems in a limited area

Tasks #2a and #2b: Determine the number of records in DAVE with OSS and what we currently know about those systems and how many we don't know anything about. Upgrade DAVE to link related files and show 'known' and 'unknown' status.

In April, Environmental Health staff and Information Systems staff at SHD began discussing how the DAVE database would change in order to meet the deliverables for this task. The visible change to DAVE appears simple, with the inclusion of a single data field used to track and count the number of known and unknown OSS in Snohomish

County. This new field appears as ‘System Status’ in DAVE. Two different images of the DAVE database are included in Appendix G, showing this new addition.

In addition to the data field, IS wrote script to allow SHD staff to search by system status, along with numerous other criteria when we are studying the OSS in our county. DAVE now runs an automated monthly script to update system status based on any new information entered by SHD staff or the Snohomish County Assessor’s office.

SHD staff has the ability to manually change system status on any property. The monthly script is run based on the following criteria:

- All property records containing ‘System type’ information are categorized as ‘Known’
- All property records marked as ‘Sewer: yes’ by the county Assessor’s office are categorized as ‘No OSS’
- All properties assigned one of 26 Use Codes determined to represent non-OSS supporting properties are also categorized as ‘No OSS’

All properties that do not fall into one of the above categories are defaulted to the category ‘Not Reviewed’ until they are manually converted to ‘Known’, ‘Unknown’, or ‘No OSS’.

While IS staff worked on the DAVE system, EH staff manually reviewed SHD records for system status to be entered into DAVE when the IS update was completed. The DAVE update was completed on June 16th, 2008 and approximately 4,400 records were updated manually by June 30, 2008.

Description of Findings

As of June 30, 2008 DAVE contains a total of 282,196 property records. Here is the current System Status breakdown:

System Status	**Number**	**Percent of Total**
Known	52,427	19%
Unknown	1,311	0.5%
No OSS	174,507	62%
Not Reviewed	53,949	19%
Total	**282,194**	

Next Steps

SHD has met the project deliverable of 80% system classification for this portion of Task 2. If funding and staff time is available, SHD will continue reviewing files and complete the project by July 2012.

The remaining activities associated with Task 2 are schedule to take place in 2009.

<u>Task 3</u>

Develop and implement an online system for routine OSS Operation and Maintenance (O&M) monitoring for all types of OSS in Snohomish County

1) **Design operational check forms to be distributed to O&M service providers**
2) **Update DAVE database to accept O&M information online**
3) **Develop O&M protocol for gravity and low pressure distribution OSS**
4) **Update all permit processes to indicate necessity to submit O&M information after the first two years**

<u>Task #3A</u>

SHD will be creating a list of O&M information that we would like to collect and make available on DAVE

Deliverables/Outcome: O&M database prototype (O&M form)

Existing operation and maintenance report forms were evaluated from various counties throughout the state. O&M requirements listed in the Washington State Department of Health "Recommended Standards and Guidance" for the various system types were reviewed and incorporated into the proposed on-line O&M form. Discussions were held with several on-site sewage system licensed designers and installers currently performing O&M inspections and their input on the proposed form was received.

The prototype form was designed so that the O&M service provider could enter all pertinent data quickly and easily. The cover sheet provides fields for basic information such as date, property tax account number, the name of the maintenance provider etc. An area for comments was provided. Most of the data entry fields were designated as either "yes/no" or "satisfactory/needs repair" which allows for consistency of data entry and facilitates the search process of specific items when reports or data analysis is done. The legal/disclaimer statement placed on the cover sheet was reviewed and approved by the Snohomish Health District attorney. The various OSS types for the "drop down" menu are consistent with the existing DAVE naming criteria.

The initial version of the on-line form, including the cover form, drop-down menu and data fields is shown in Appendix H.

Deliverable

See Appendix H

Next Steps

SHD has met the project deliverable by completing the O&M database prototype. It has been sent to our IS department and they have begun the process of incorporating it into the DAVE/Contact Management System test environment.

<u>Task 3b: Partner with the IT staff at SHD to determine how the O&M information can be linked into the current DAVE database.</u>

The DAVE database gives the general public access to all as-builts on record and property information directly linked to the Snohomish County Assessor's records. It is not practical to give industry professionals direct access to input or modify data within DAVE.

In order to address this challenge, SHD will hold a key informant meeting to determine the best way to link current O&M information to DAVE in a timely manner without making DAVE vulnerable to erroneous modifications.

The primary outcomes sought by linking the O&M reports to DAVE:

1. **Give the public real-time access to both as-builts and O&M information simultaneously.**
2. **Simplify the process by which industry professionals collect and submit O&M paperwork,**
3. **Give industry providers an easy way to access OSS performance history when needed.**
4. **Give SHD staff an easy way to track compliance with O&M requirements.**

The primary challenges involved in doing so are to create a system that links the reports to DAVE without compromising the system and to develop a mechanism for reporting that is so convenient for industry professionals, they prefer it to current O&M procedures.

A variety of key informants will be invited to a meeting to discuss challenges and develop a solution that everyone agrees to and the IS Team believes is an effective way to reach our goal of linking into the DAVE system. Key informants will include SHD sanitarians, SHD EH office assistants who have experience working with DAVE regularly, industry professionals who have a history of providing consistent O&M reports to SHD, and IS team members who will be involved in the project.

Once a solution is decided on, the IS staff will be contracted to complete the work. The final project will be evaluated by the key informants who assisted in the creation of the system.

Several meetings were held with SHD IS and EH staff to discuss the project. The following is a summary that was prepared by IS and reviewed by both IS and EH, that discusses the primary issues and concerns regarding the on-line O&M project. The four Task 3b primary outcomes stated above are addressed in the summary.

OSS O&M Online

Situation

The DAVE system does not currently include any mechanism by which a homeowner or other interested citizen can access the operations and maintenance (O&M) history of an onsite septic system (OSS). Homeowners with OSS are required, by WAC 246-272A-0270 (1) (k), to have their system inspected every year. At this time, O & M history is not available to homeowners unless they keep all their own records or call Snohomish Health District (SHD). If SHD has the record, it only exists in paper form.

Statement of Scope

The project scope will be dealing with all new O&M history that is inputted by O&M providers online in electronic format. The OSS inspection data to be stored in electronic format will include all data designated by Environmental Health (E.H.) in the analysis phase.

The scope will also include online access to O&M history for use by the public. Online access is to be only used for a single property of interest and will not be designed for public reporting.

Goals

There are three goals for this project:

- Provide the public with online access to as-built and O&M history simultaneously.
- Provide industry professionals with online access to submit OSS reports via electronic form.
- Provide SHD staff with a reporting tool to track compliance.

Project Feasibility

Technical

Currently, the hardware for this project already exists. DAVEPublic is available to all people interested in Snohomish County properties. DAVE will need to be extended to meet the goals and a new system will need to be developed. Information Systems (I.S.) has most of the software tools necessary to design a system to meet the project goals.

Economical

This project has no realized economic impact to SHD.

Operational

There is a front-end and back-end operational impact to this project. The first front-end impact is the I.S. staff time to collect requirements, design, develop and test the product. The second front-end impact is the E.H. staff time to provide the requirements and assist in testing of the product. The first back-end impact is that this adds another system for I.S. to support. The second back-end impact is the E.H. staff time required to create OSS inspector accounts and provide data correction services to the public in the event data is incorrect in the system.

Success Measures

Success will generally be measured by a tangible product that allows the public to see their property O&M history within DAVE Public, allows OSS inspectors to submit their inspection reports to SHD electronically, and provides SHD employees with the ability to create, modify, delete, and report on the data that is provided by the inspectors.

System Introduction

To assist home owners in meeting the compliance of WAC 246-272A-0270 (1)(k) and assisting the inspectors with providing the data to SHD, it has been decided an electronic system will be custom developed. This new system will include four components. The first two components will be developed from the ground up using the latest in web technology. The first component will be used to capture data input from OSS inspectors and the second will be an admin interface that will allow SHD staff with the ability to maintain logon credentials for inspectors. The third component will expand the existing CMS/DAVE system using older web technology. This third component will allow SHD staff to add, delete, modify, and report on OSS data. The fourth component will expand on the existing DAVE Public system home owners, real estate professionals, and builders are accustomed to by providing interface enhancements that'll allow the review of O&M history.

System Requirements

Requirements were gathered by interviewing Bruce McCormick and Kevin Plemel. The I.S. staff that took part in each discussion was Adron Yusuf, Steven Hellyer, and Tim Murphy. The following table represents the requirements gathered, the goals they're mapped to, whether they are required or optional, and the measure used to determine success.

Requirement	Goal	Confirmed Requirement	Measure
Data is updated regularly	Provide the public with online access to as-built and O&M history simultaneously.	x	OSS data in DAVE Public is identical to data in CMS/DAVE within 24 hours.
Data is viewable in the same interface	Provide the public with online access to as-built and O&M history simultaneously.	x	O&M history available via the same graphical user interface (GUI) as DAVE Public.
Unique logon for each industry inspector	Provide industry professionals with online access to submit OSS reports via electronic form.	x	Administration GUI providing the ability to create accounts.
Force data compliance	Provide industry professionals with online access to submit OSS	x	All form options controlled by option dropdowns, with the exception of one comments field.

	reports via electronic form.		
No data duplication	Provide industry professionals with online access to submit OSS reports via electronic form.	x	Only inspection related data stored. All property data is referenced by unique PTA number.
Data is updated regularly	Provide industry professionals with online access to submit OSS reports via electronic form.	x	OSS data from industry professionals is available in CMS/DAVE within 24 hours of being submitted.
Electronic forms simple	Provide industry professionals with online access to submit OSS reports via electronic form.	x	All form options controlled by option dropdowns, with the exception of one comments field.
Allow attachments	Provide industry professionals with online access to submit OSS reports via electronic form.	Optional	Provide upload capability for .doc and .pdf attachments.
Provide canned reports	Provide SHD staff with a reporting tool to track compliance.	x	Report using existing CMS/DAVE interface query dropdowns.
Data creation, editing, and deletion	Provide SHD staff with a reporting tool to track compliance.	x	Ability to create, modify, and delete O&M history for a property.

Next Steps

At this time, the IS department is working on writing the code for the on-line O&M project. EH is in continuous communication and is assisting in providing any information required or answering questions. Once written, a preliminary version of the form will be provided and evaluated on-line in a test environment.

The remaining activities associated with Task 3 are scheduled to begin later on this year.