

Lewis and Clark County Septic Maintenance Program

Program Review and Business Process Analysis



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LEWIS AND CLARK PUBLIC HEALTH

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Lewis and Clark County Septic Maintenance Program Program Review and Business Process Analysis

History of the Program

Long standing concerns about water quality trends catalyzed Lewis and Clark County officials to study creation of a septic maintenance district. The 2004 County Growth Policy included a plan to develop a district, and in 2007 the County received Clean Water Act Section 319(h) and Targeted Watershed grants from the U.S. Environmental Protection Agency to pursue this work. In 2007, the County selected the engineering firm, Morrison-Maierle, Inc., to develop options for implementation.

The firm conducted a series of public and stakeholder meetings, surveys of meeting participants, a web-based survey and created an informational website. At these meetings, the firm presented options for management approaches, financing and legal mechanisms for creation of a district. Extensive public input was received regarding citizen and stakeholder concerns, as well as the functions a district might perform.

Input from this process led the firm to recommend using an “operating permit management approach” for a septic maintenance district. It was believed that this approach would allow for the most consistent application of requirements for operation and maintenance of septic systems, with every septic system in the district required to have a permit. Renewal of the permit would be contingent on performance of certain operation and maintenance requirements.

Using the information from the study, the county embarked on a rulemaking process during which there was further deliberation about the details of the district functioning, financing and regulations. Understandably, the firm’s recommendations were not adopted wholesale, and the County opted not to use an “operating permit management approach.” In 2016, the County promulgated comprehensive “On-Site Wastewater Treatment Regulations,” including those governing septic system operation and maintenance (Section 8). Section 8 is summarized below and outlines the key components and requirements of what is referred to as the “Lewis and Clark County Septic Maintenance Program,” the subject of this review.

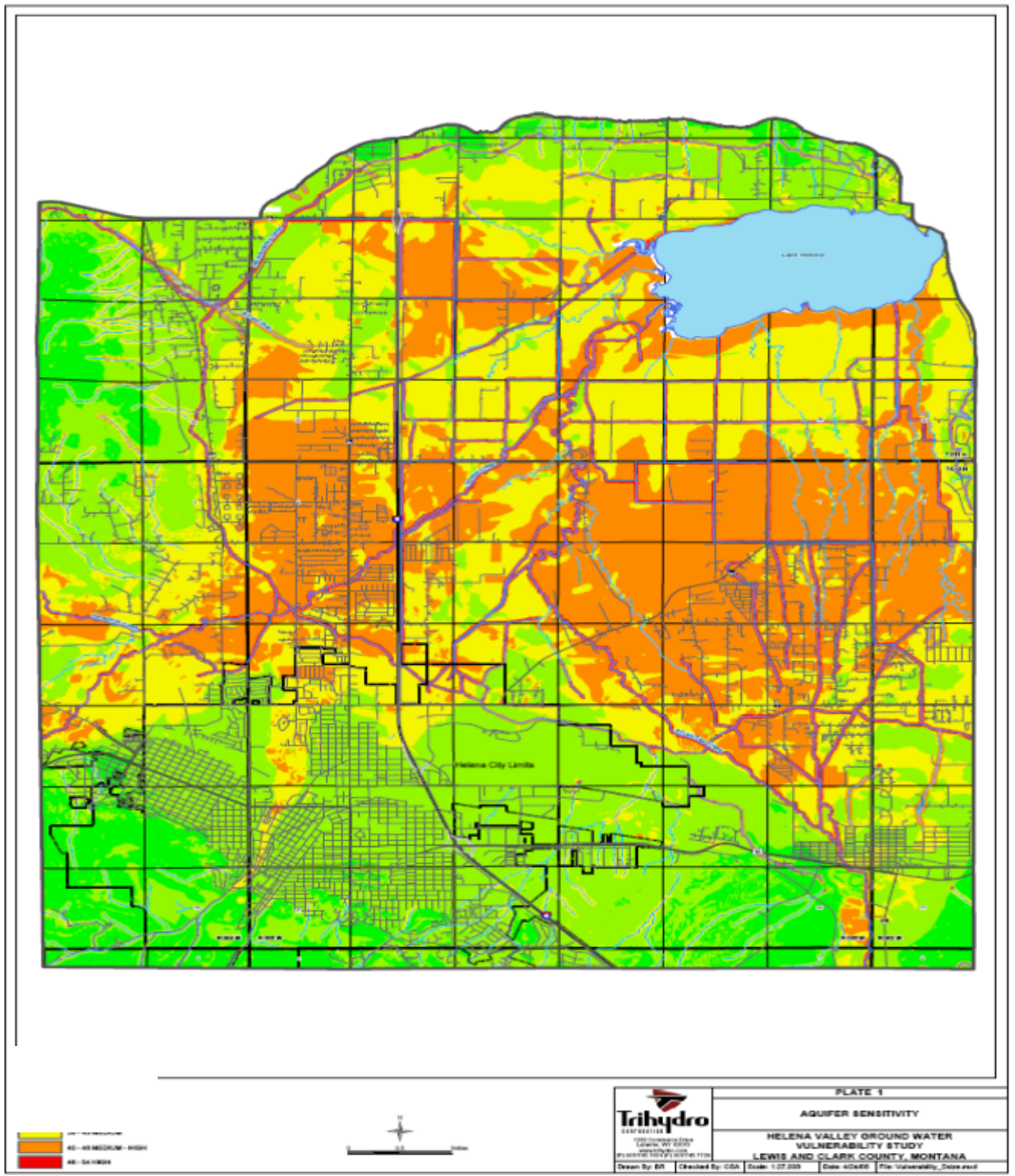
Program Overview

Requirements

The Lewis and Clark County Septic Maintenance Program is administered by Lewis and Clark Public Health, the city-county health department (the Department). As set out in rule, the program took a phased approach to implementation. Based on risk, three geographic areas were prioritized for initial activity:

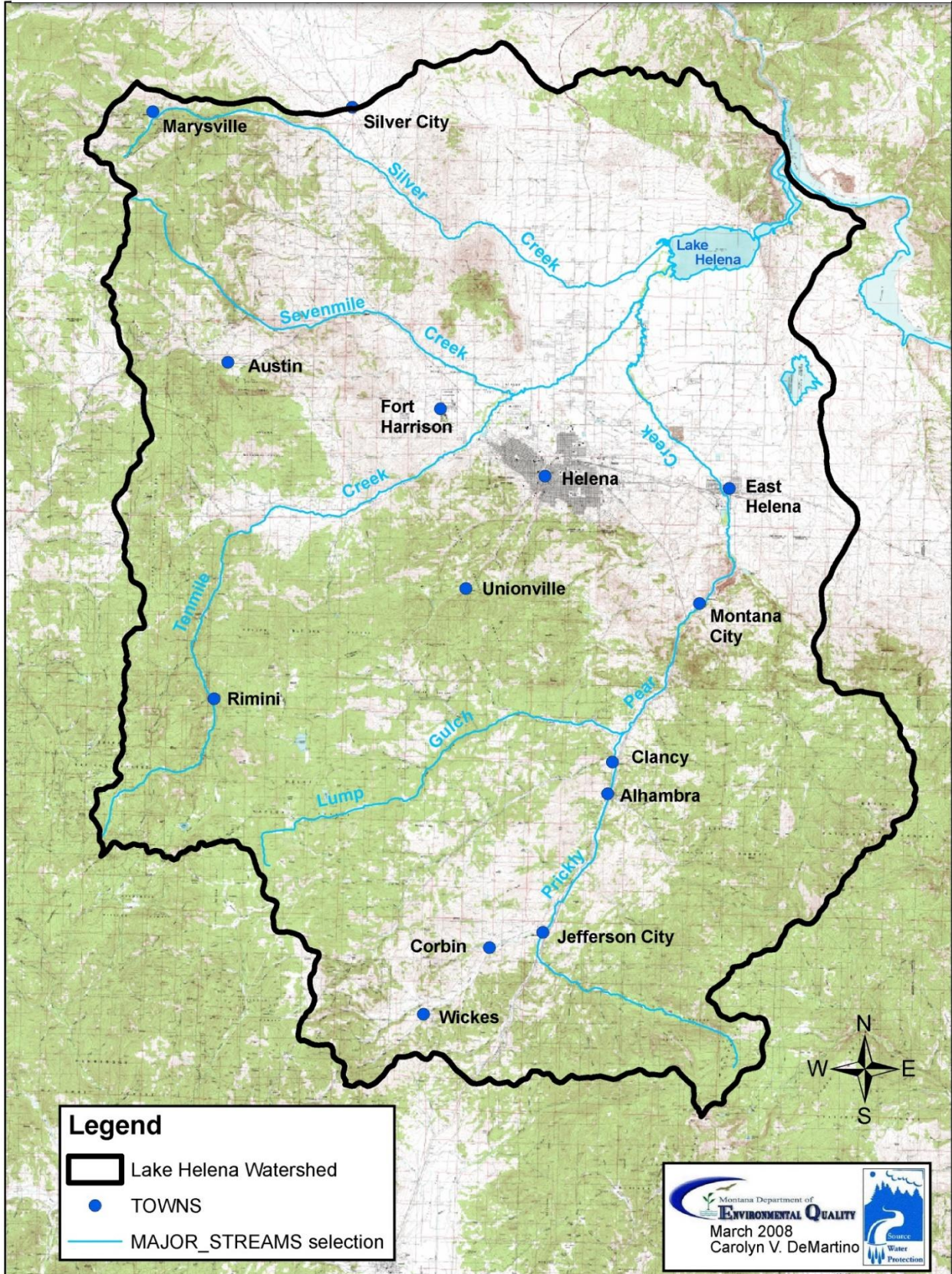
- First Priority - Parcels within the 2008 Helena Valley Ground Water Vulnerability Study area
- Second Priority - Parcels outside the Groundwater Vulnerability Study Area, but within the Lake Helena Watershed
- Third Priority – Parcels outside the Lake Helena Watershed

Figure 1. 2008 Helena Valley Groundwater Vulnerability Study Area



The map above encompasses the 2008 Helena Valley Ground Water Study Area, the first priority area for implementation of the Septic Maintenance Program. The second and third priority areas targeted for program implementation are within and outside of the Lake Helena Watershed, respectively (see map on the next page).

Figure 2. Lake Helena Watershed



Septic system owners are required to have a septic system permit and to ensure that wastewater discharged to the onsite wastewater treatment system does not exceed the permitted design capacity of the system. An exception is given to those with systems installed prior to January 1, 1973. These systems do not require a permit and must ensure wastewater discharged is consistent with the residential wastewater or commercial use at the time the system was installed.

The Department is required to notify septic system owners of operation and maintenance requirements in writing. Owners are required to comply within 45 days in one of the two ways described below.

- 1) Complete a scored self-assessment (either on-line or in paper form) and pump the septic system at the interval indicated by the resulting score (every 3, 4 or 5 years). Criteria used to determine pumping frequency include, but are not limited to system age, type, presence of water softening or garbage disposals, water usage and conservation practices, date of most recent pumping and/or inspection, and number of people served by the system. System owners are required to submit to the Department, the completed self-assessment, pumping record and fee (currently \$50). The self-assessment tool in use as of January 2019 can be found at: <https://www.lccountymt.gov/health/environmental-services/septic-systems/septic-maintenance/assessment-form.html> (accessed January 20, 2019).
- 2) Have an operation and maintenance inspection performed by a certified operation and maintenance (O and M) service provider at least every four years. Pumping must be conducted by a licensed septage hauler. System owners are required to submit the inspection results, pumping record and fee to the Department, and this typically is handled by the inspector.

All septic system owners are required to: 1) report system failures to the county, 2) prevent adverse impacts to the system caused by factors listed in the rules, and 3) monitor their systems for conformance to the rules. All owners are required to correct deficiencies discovered in an operation and maintenance inspection. The rules specify three levels of deficiencies ranging from Type I, the most severe which must be corrected immediately to Type III, the least severe which must be corrected by the next required inspection.

Owners with violations due to alterations to structures and/or load increases to the system are required to either obtain a revised permit or have an operation and maintenance inspection by a certified provider every 3 years. The tank will be pumped if needed and identified deficiencies will be corrected. The inspection will be submitted to the Department.

For septic systems installed or altered without Department approval after January 1, 1973, an operation and maintenance inspection must be completed and the system must be properly permitted within 2 years of the inspection date. Pre-1973 septic systems are not required to have a permit, but are required by the Septic Maintenance Program to perform the same operation and maintenance requirements.

Operation and Maintenance (O and M) service providers must be certified by the Department, requiring they complete an application, pay an annual fee, attend a Department-approved course and pass an exam. Certification is reviewed annually. Detailed requirements, responsibilities and performance criteria for these service providers are also in rule. The rule lists the services they must perform and requirements for working with the Department.

The Department must maintain the appropriate systems to operate the program. Responsibilities and requirements include:

- maintain necessary forms, reporting systems and databases,
- provide written notice to septic system owners about operation and maintenance requirements,
- require complete and accurate documentation from septic system operation, and require correction and re-submittal of information when needed,
- respond to reports of deficiencies within required timelines based on severity,
- oversee O and M service providers,
- investigate, track and when necessary, take reasonable action to eliminate or mitigate public health threats caused by malfunctioning or failing systems, and
- report on the program annually to the Board of Health.

The Department also has responsibility for enforcement of the rules and to impose penalties for violations. Violation of the regulations is a misdemeanor. In addition to criminal proceedings, enforcement may include civil remedies and penalties. Detailed due process procedures, property access rights of both the Department and owner, requirements for written notice, as well as appeals, are described in rule. Administrative civil penalties are \$250 for the first violation and \$500 for each subsequent violation of the operation and maintenance requirements for septic systems.

Septic Systems in Lewis and Clark County

The County began issuing permits and maintaining a database of permitted septic systems in 1973. As of July 1, 2018, the County estimates there are 12,195 permitted systems. From the initiation of the program in January 2011 through June 30, 2017, more than 1,400 septic systems were permitted during new construction. The County estimates the number of unpermitted systems including those illegally installed and those installed prior to 1973 to be approximately 2,247, bringing the estimated total systems to 14,442.

Program Implementation

As of July 1, 2018, there are a total of 6,481 septic systems in Lewis and Clark County for which the property owner has been sent one or more letters with informational packets from the County requesting that they participate in the program. Data in Table 1 shows this number for each geographic area that was prioritized in regulation for implementation.

Table 1. Number of properties for which owners were sent one or more letters requesting participation in the program, 2011 – July 2018

Priority Area	Number receiving 1 or more letters
First Priority - Parcels that lie within the 2008 Helena Valley Ground Water Vulnerability Study area	4,616
Second Priority - Parcels outside of the Groundwater Vulnerability Study Area, but within the Lake Helena Watershed of Lewis and Clark County	1,797
Third Priority – Parcels outside of the Lake Helena Watershed of Lewis and Clark County.	68
County Total	6,481

Program Participation

Between January 2011 and July 2018, a total of 4,651 unduplicated properties have participated in the program for one cycle, and among these 443 completed the process for two cycles. Among all who have completed the process, 4,347 were self-assessments and 747 were completed by certified O and M service providers. Of the 4,347 self-assessments, 2,107 were completed on-line and 2,240 were provided to the County in hardcopy.

Table 2. Number of properties for which owners completed program requirements, 2011-2017

	2011	2012	2013	2014	2015	2016	2017	Total since January 2011
Properties for which owner completed the self-assessment on-line	190	377	247	641	406	178	68	2,107
Properties for which owner completed the self-assessment in hardcopy	76	336	327	434	429	448	190	2,240
Properties for which an inspection was performed by a certified provider	71	93	65	115	126	153	124	747
Totals	337	806	639	1190	961	779	382	5,094
Total unduplicated properties participating in the program for one cycle								4,651
Total unduplicated properties participating in the program for two cycles								443

As of July 1, 2018, of the estimated 14,442 septic systems in the County (12,195 permitted plus 2,247 unpermitted), approximately:

- 45% (6,481) have received letters requesting participation in the program;
- approximately 32% (4,651) have completed program requirements for one cycle; and
- about 3% (443) have completed program requirements for two cycles.

Among those receiving letters (6,481), approximately 72% (4,651) have completed required program activities for one cycle, and about 7% (443) have for two cycles.

When no response to a letter is received after 45 days, additional letters are mailed to property owners. Approximately 1,800 property owners have not responded to one or more notices. In addition, about 250 property owners participated in the program for one cycle, but did not respond to one or more letter sent for a second cycle of participation.

Operation and Maintenance of Septic Systems

The program is intended to improve the maintenance and operation of septic systems with the goals of:

- maintaining the quality of water discharged to the onsite wastewater treatment facility, and
- increasing longevity of septic systems.

Critical to assuring proper operation and maintenance of systems is the identification of septic system failures and deficiencies so they can be replaced or corrected by the property owner. Table 3 displays the number of septic system failures in the county for three years prior to implementation of the program through calendar year 2017. Table 4 displays the numbers of critical, Type II and Type III deficiencies that have been identified and corrected according to the program’s required timeframes, since the program was implemented.

Table 3. Septic system failures in Lewis and Clark County, 2008 – 2017

	Pre-program			Post-program implementation						
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number	17	15	32	23	42	14	11	35	32	27

Table 4. Septic system deficiencies identified during an inspection in Lewis and Clark County, 2011-2017

Type	Number Identified	Number Corrected*
Critical – correct immediately or as directed by Dept	18	18
Type II – correct within 30 days of inspection	21	21
Type III – correct before next required inspection	26	26

*All were corrected according to timelines in administrative rules.

A potential indicator of improved operations and maintenance of septic systems is the frequency of system inspections and pumpings performed. Table 5 displays the number of inspections and

pumpings performed by certified O and M service providers since inception of the program. There are currently six O and M service providers certified by the county. This number has decreased by about half since 2011, but has stayed fairly consistent over the past three years. Most property owners complete a self-assessment, so there is not a high demand for certified O and M inspectors.

Table 5. Number of inspections and pumpings performed by certified providers, 2011-2017*

Year	2011	2012	2013	2014	2015	2016	2017
Number of inspections	71	93	65	115	126	153	124
Number of pumpings	179	271	251	285	118	125	113

*Not all were performed in response to the Septic Maintenance Program, some were at time of property sale.

Table 6 displays the gallons of septage accepted at the Helena Wastewater Treatment Plant for each year since program implementation. When considering these data, keep in mind that as written above, 1,400 systems were permitted during new construction since 2011. In addition, it should be noted that the City of Helena Wastewater Treatment Plan increased its rates for accepting septage during this time period. This may have increased the use of legal land application as a method for disposal of septage.

Table 6. Gallons of septage accepted at the Helena Wastewater Treatment Plan, 2008-2017

Year	2011	2012	2013	2014	2015	2016	2017
Number	1,478,840	1,448,111	1,364,970	1,289,820	1,411,049	1,131,039	1,020,830

Program Operations and Business Processes

Operations

The Septic Maintenance Program is funded approximately half with fees paid by septic system owners and half with county general fund totaling nearly \$89,000 per year. In addition, O and M service providers pay a certification fee of \$125 per year, which generates about \$750 per year. This combination of funding supports 1.2 full-time equivalents (FTEs), however, the program has been down a .5 clerical staff person since July 2016. At present a .6 FTE environmental health specialist performs the work of the program.

The core of the program is maintenance of databases, generation and mailing of letters with informational materials, checking maintenance records for completeness, following up with property owners for additional information, and confirming completeness in writing. In addition, the program locates and ensures electronic copies of all septic system permits are included in the Septic Maintenance Program records stored in the Responsible Management Entity database. Several databases and data stores contribute to the program:

- Orion (Montana Department of Revenue System) - contains property owner information.
- Cadastral (Montana State Library System) - contains property tax and parcel owner information for every parcel in Montana.

- Responsible Management Entity (RME) database – details a variety of information regarding property ownership. It is also used to store a complete record of the septic maintenance records received by the Septic Maintenance Program from property owners. The program locates and stores a copy of the septic permit in this database as well, in order to create complete program records on each system in one location.
- Skipthepaper.com (STP) – is the on-line system at which property owners can file self-assessments and pay fees. This is located at www.lewisandclarkhealth.org.
- ArcMap GIS - is used to house a database with geocoded information about all properties in the county. The property information is taken from the Cadastral system. It also allows selection of parcels and export of property data to an Excel program.
- TRAKit – is a GIS, land-based searchable database that was created in 2016 to house property ownership-related permits issued by the County. Most, but not all of the septic system permits issued by the County are included. Some older ones exist in hardcopy only in the Office of Clerk and Recorder.
- Master list in Excel – houses every property the program is currently processing in various stages of participation. Excel is also used for mail merges to send program materials to septic system owners.

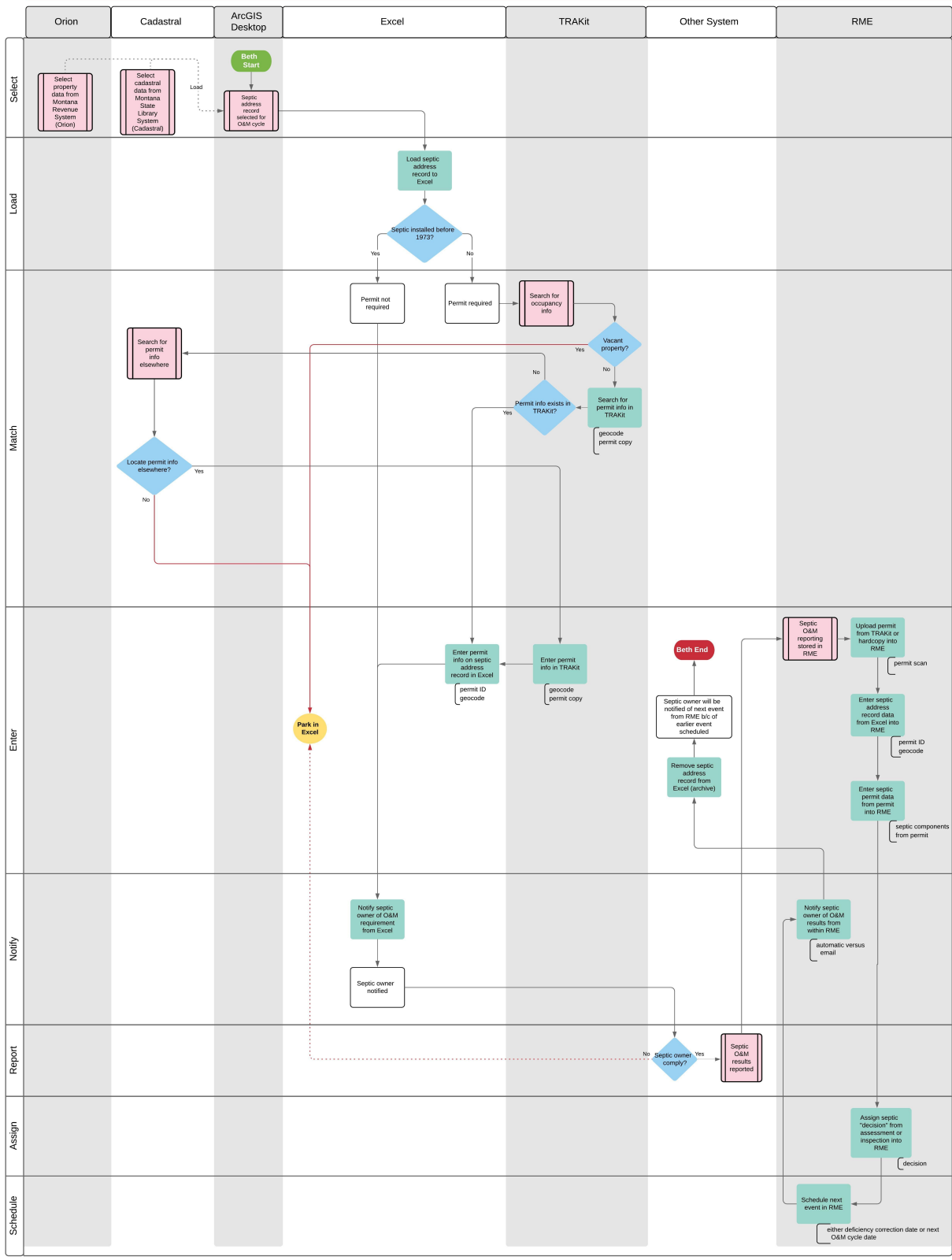
Business Processes

On November 16, 2018, consultants to the project worked with staff to fully describe the program’s business processes and discuss program strengths, weaknesses, opportunities and threats. The detailed business process map on the following page and the SWOT analysis on page 13 document these discussions. Please note the business process map has been provided to County staff in a larger format.

Before septic properties can be selected by staff to be notified to participate in the Septic Maintenance Program, the ArcGIS database is loaded with information from both the Cadastral and Orion systems. Staff members select properties for program participation from the ArcMap GIS database, based on the program’s prioritized geographic areas. These are then downloaded into the Excel master list where they are considered to be “in process.” Septic permits are located in the TRAKit database and/or Office of Clerk and Recorder, and are matched manually to the list by geocode.

Operation and maintenance records are received one of two ways - directly from septic system owners (via STP which flows into RME or via hardcopy entered into RME by staff), or directly from inspectors who enter records into RME. The RME database includes a calendar that is used to schedule events such as follow-up contact events and result notifications. However, a mail merge operation is performed in Excel to generate the event letters. Confirmation that all materials have been received and the process is complete, is sent automatically, via email for those using STP, or by hardcopy.

Figure 3. Lewis and Clark County Septic Maintenance Program Operation and Maintenance Cycle Business Process as of December 2018



Sub-process not included in this process map

Figure 5. Program strengths, weaknesses, opportunities and threats (SWOT analysis)

Strengths	Weaknesses
<ul style="list-style-type: none"> ● Committed staff ● IT support, applications and resources ● Compliance among those touched by the program estimated at 72% ● Awareness of the program and the importance of water quality has been raised by the program ● The loan program for failed system replacements 	<ul style="list-style-type: none"> ● The program has reached less than 50% of septic systems after seven years ● More rural areas may be more resistant to the program ● The program’s business process is clunky ● The program has limited staffing and resources ● Due to difficulty locating permits for older septic systems, the program may not be reaching some that pose higher risks
Opportunities	Threats
<ul style="list-style-type: none"> ● There can be remodeling and reshaping of the program using lessons learned to date ● Regulations can be updated ● Lewis and Clark County is a leader in septic maintenance and water quality ● Continue to educate via the program ● IT staff have potential process improvements in mind 	<ul style="list-style-type: none"> ● Inequity among septic system owners participating versus not ● Can lose the program if funds are not generated ● Compliance is not consistent, so L&C County is vulnerable ● The public health impact of the program is not as great as it could be ● Partial implementation leaves LCPH open to criticism by the public and policymakers

Recommendations

Based on a review of program data and program records, an analysis of the program’s business processes and conversations and meetings with program staff, the consultant team submits the following recommendations for consideration:

- 1) Complete an inventory of all septic systems in Lewis and Clark County.
- 2) Work with the County Attorney to determine if it is necessary to locate septic system permits and attach them to program records.
- 3) Use the business process map, SWOT analysis and other information in this review to undertake a formal quality improvement (QI) project.
- 4) Determine if changes/additions are needed to the self-assessment form.
- 5) Once the program processes have been revised, hire appropriate staff to perform administrative functions of the program.

The following pages provide detailed information regarding each of these recommendations.

- 1) Complete an inventory of all septic systems in Lewis and Clark County.** In order to fully implement the program and to track and reach every septic system, Lewis and Clark County should complete an inventory of all septic systems in the County and/or explore attaching a unique identifier to each septic system. Currently, the program is treating the permit number as the unique identifier. Using the permit number when it exists may make sense, but there are several problems with this approach that need to be resolved, including:
 - 1) Unpermitted systems are typically older ones and are currently not being reached by the program, because they lack a permit number.
 - 2) For systems that have been altered or replaced, the program tracks both the original number and the newest permit number. Multiple numbers create additional manual work for the program to match permits to properties.
 - 3) Permit numbers are housed in several locations and finding them can be time intensive.
 - 4) Illegal systems do not have permit numbers.

- 2) Work with the County Attorney to determine if it is necessary to locate septic system permits and attach them to program records.** Explore with the County Attorney if another approach could be taken that would allow the county to more easily get every system on a regular cycle of maintenance. County regulations require all septic system owners to perform maintenance to the same standards. Staff spend a large amount of time locating permits and permit numbers, and attaching them to property records in the RME database. Staff indicate this is being done so that inspectors can access information about system components. At present, there are typically less than 150 inspections performed each year, and a majority of septic system owners who participate in the program opt to perform a self-assessment. Of the 150, many are completed due to changes in ownership, rather than as part of the maintenance program.

- 3) Use the business process map, SWOT analysis and other information in this review to undertake a formal quality improvement (QI) project.** The aim of the project would be:
 - a. To fully implement the Lewis and Clark County Septic Maintenance Program within the next two years, with every septic system in the county having been contacted at least one time to participate in the required process, and having each septic system scheduled for the next step in the process. This means for each septic system, the owner has: 1) completed the process once and is scheduled for a second cycle; 2) started the process and is scheduled to complete missing administrative steps, such as providing a pumping receipt; 3) been notified once, has not responded, and is scheduled for a follow-up notification; or 4) been scheduled to correct deficiencies identified in the process.
 - b. The project should be designed to address the current situation, which is that the program lacks resources to perform its required functions and has administrative processes that are overly complex, redundant and manual. This has resulted in the following:
 - i. After nearly seven years of operation, of the estimated 14,442 septic systems in the County (12,195 permitted plus 2,247 unpermitted), approximately:
 1. 45% (6,481) have received letters requesting participation in the program

2. 32% (4,651) have completed program requirements for one cycle
3. 3% (443) have completed program requirements for two cycles
- ii. In addition, the program has not consistently enforced compliance.
- c. Include information technology staff in the QI project and consider the following IT issues:
 - i. Streamline the burdensome program processes that exist due to use of a multitude of databases and applications.
 1. In the short-term, identify additional data in Cadastral and Orion that could better inform and streamline the process (e.g., geocode, date the property was established, number of units, single versus multi-family residence, mobile home park or not and other). Migrate this information, or create queries for staff to more easily access it for use in the process.
 2. In the long-term, consider consolidating all information and functions needed by the program into one or two systems of septic records, possibly into TRAKit and the RME database. Consider conducting a census whereby each property is identified and its status is recorded. This could look like:
 - a. Ensure all addresses are in TRAKit and RME. This would include adding new construction properties on an ongoing basis.
 - b. Ensure all Septic Maintenance Program events and actions performed by the owner, an inspector and/or LCPH staff are dated and reportable from RME (letters sent, maintenance performed, records received, deficiencies identified, deficiencies corrected, etc.).
 - c. Explore adding fields to RME, which could assist in describing the status of each septic system, whether or not it is permitted, and that would allow program processes to proceed regardless of permit status. Fields and field values should be scalable and could include:
 - i. **Septic system status** (e.g., yes - a septic system exists; no – a septic system does not exist; unknown),
 - ii. **Septic system maintenance priority** (e.g., new, priority 1, priority 2, priority 3, unknown, not applicable), and
 - iii. **Operation and maintenance status** (e.g., not started, in process, complete). This would allow Operation & Maintenance reviews to trigger and continue regardless of whether or not they are permitted. This would also aid in reporting.
 - d. Determine which properties should be assigned the **septic system status** of “yes – a septic system exists.” For those properties:
 - i. Preset **septic system maintenance priority** level in RME. Set new construction that has been permitted but not yet inspected to “new.” Set existing properties to priority level based on location.

- ii. Set **operation and maintenance status** in RME. If property has already completed the cycle at least once set to “complete.” Properties currently in review should be set to “in process.” Properties that have not yet completed a cycle, and are not currently in review, should be set to “not started.”
 - iii. If status is “yes septic,” schedule next event in RME.
 - e. Separately, of the properties with a **septic system status** of “yes:”
 - i. Indicate **septic system permit status** (e.g., yes – the system is permitted; no – the system is not permitted; unknown).
 - ii. Preload geocode and permit number into RME.
 - iii. Consider keeping the permit scans in TRAKit instead of loading a copy into RME, and determine if there is a way to connect the two via unique identifier.
 - f. Consider tracking and integrating:
 - i. System failures,
 - ii. System alterations, and
 - iii. Complete pumping history.
- As part of the QI process, create meaningful performance metrics, and a process and schedule to track and report on them consistently.

4) Determine if changes/additions are needed to the self-assessment form. It is possible that additional information could be collected from property owners that could assist in identifying deficiencies and/or alterations that may have been made to properties and/or systems, and that would impact the type of maintenance activity that would be required.

5) Once the program processes have been revised, hire appropriate staff to perform administrative functions of the program. This would allow the County to utilize Environmental Health Specialist time for technical work. If administrative functions were performed by an administrative professional, it may be possible to better integrate the program into the daily operations of the Environmental Health Program and share the technical work of the Septic Maintenance Program among Environmental Health Specialists.

The recommendations in this report represent the professional opinions of the consultants hired for this project. They do not necessarily reflect the opinions of Lewis and Clark County staff, nor are they binding upon the County.

References

1. Morrison-Maierle, Inc., *Helena Valley Septic System Maintenance District Implementation Plan*, July 2008.
2. Lewis and Clark County, *On-Site Wastewater Treatment Regulations*, 2016.