

ACT 537

SEWAGE DISPOSAL NEEDS IDENTIFICATION



COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection

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PREFACE

The *Pennsylvania Sewage Facilities Act* (Act 537), requires that all municipalities develop, revise and implement Official Sewage Facility Plans (“Act 537 Plan” or simply “Official Plan”). A fundamental part of an Act 537 Plan is the identification and documentation of the sewage disposal needs in a municipality. The purpose of this document is twofold: first, to provide methods that clearly identify and document existing wastewater disposal needs; and second, to provide general guidance for summarizing and presenting the identified needs.

INTRODUCTION

When preparing an Act 537 Plan, a community's wastewater disposal “needs” must be documented. Adequate documentation of these sewage disposal needs is considered fundamental for all following work involving sewage disposal alternatives and solutions. The cost of identifying and documenting sewage disposal needs is normally an expense that is eligible for a planning grant under 25 Pa. Code § 71.41 (relating to grants for the preparation of official plans). Please note that funding for the preparation of update revisions and special studies is available to the extent of the appropriations made by the General Assembly for that purpose. In recent years funding for planning grants has been limited. For an Act 537 Plan to be eligible for a planning grant, cost estimates for eligible planning activities must be adequately documented in the *Task/Activity Report* form (3850-FM-BCW0005) submitted to the Department of Environmental Protection (DEP) for approval. These activities are presently included in the *Act 537 Plan Content and Environmental Assessment Checklist* (3850-FM-BCW0003). Both forms are available electronically in DEP’s eLibrary online at www.depgreenport.state.pa.us/elibrary/. Additionally, adequate needs documentation is required when competing for “needs” prioritized funding, such as from the Pennsylvania Infrastructure Investment Authority (PENNVEST).

Generally, documentation of needs will involve both data collection and an assessment of various factors relating to soils, sewage malfunctions, polluted wells, zoning, etc. This document is organized into two general sections:

- I. Identification of sewage-associated malfunctions and environmental contamination; and
- II. Summary of identified “needs” documentation.

I. IDENTIFICATION OF SEWAGE-ASSOCIATED MALFUNCTIONS AND ENVIRONMENTAL CONTAMINATION

The identification and documentation of sewage-associated problems involves the collection and tabulation of information – much of which currently exists in the form of reports, surveys and administrative actions – and then verifying the data with actual field work.

There are two general needs categories relating to sewage disposal that must be considered:

- Public Health Needs
- Water Pollution Needs

Information obtained in these categories must be subjected to field surveys in order to verify specific needs. Field surveys are instrumental to obtain documentation for inclusion in an Act 537 Plan.

A. Public Health Needs

1. Public health needs are considered to be those health hazards and water pollution problems that involve discharging untreated or inadequately treated sewage to the surface of the ground or to the waters of the Commonwealth (including groundwater). Most commonly, these needs are found to be malfunctioning on-lot disposal systems (OLDS) and malfunctioning community on-lot disposal systems (COLDS). OLDS malfunctions are classified into three categories: confirmed, suspected and potential. Properly functioning OLDS are a fourth category. When determining the public health needs of an area using OLDS/COLDS, all systems inventoried, mapped and analyzed must be placed into one of these four categories:
 - a. **Confirmed Malfunctions:** Those malfunctions documented by dye testing, laboratory test results, observation by a certified Sewage Enforcement Officer (SEO) or a professional with experience in OLDS, “Best Technical Guidance” repair permits, and seasonally wet absorption areas. Also included are piped discharges from a single structure with direct evidence of sewage (i.e., direct observation of soap suds, food residue, solids, odors, etc.), reported system backups, malfunctions with photographic documentation or other similar evidence.
 - b. **Suspected Malfunctions:** Those systems exhibiting some malfunction characteristics such as abnormally green grass in the vicinity of an absorption area, piped discharges from one (or more than one) dwelling without direct evidence of sewage (i.e., no observation of soap suds, food residue, solids, odors, etc.), absorption areas located in known unsuitable soils (i.e., observed wetlands, rock outcropping, etc.), cesspools (in high density development) and pit (not vault) privies.

- c. **Potential Malfunctions:** Those systems that appear to be operating satisfactorily but were constructed prior to system permitting requirements (i.e., preregulatory systems), systems located in areas extremely unlikely to receive permitting by current standards, systems constructed in areas having soils mapped as unsuitable or with severe limitations for OLDS and systems located on exceptionally steep slopes greater than 25 percent. For the purpose of needs identification, OLDS permitting under Act 537 became effective on May 15, 1972. Included as potential malfunctions are permits issued for OLDS repairs that meet Chapter 73 standards. While this needs category does not represent “stand alone” existing needs, the information may be utilized in a needs analysis to locate areas affected by poorly defined adverse circumstances. For example, clusters of legitimate repairs will often indicate areas requiring closer scrutiny.
 - d. **No Malfunction:** Those systems that appear to be operating satisfactorily, were constructed since the implementation of system permitting requirements, and appear to have been constructed in accordance with the permitting requirements in effect at the time of construction. For the purpose of needs identification, OLDS permitting under Act 537 became effective on May 15, 1972.
2. Several other situations exist that must also be inventoried, mapped and analyzed when identifying public health needs for an Act 537 Official Plan or Plan Update Revision. These include: wildcat sewers, borehole disposal, holding tanks, public complaints and sanitation-related illnesses.
- a. **Wildcat Sewer:** These are collection systems (community sewers) serving more than one equivalent dwelling unit (EDU) and discharging untreated or partially treated sewage to the surface of the ground, storm sewers or other waters of the Commonwealth. An EDU is equal to a sewage flow of 400 gallons per day (GPD). The number of EDUs connected to a wildcat sewer is used to “convert” the wildcat sewer into an equivalent number of confirmed malfunctions. (For example, four residential dwellings, each with sewage flows of 400 GPD will equal four EDUs. One restaurant with a sewage flow of 1,200 GPD will equal three EDUs. If all were connected to a wildcat sewer, they would be the equivalent of and reported as seven EDUs, or seven malfunctioning OLDS.)
 - b. **Borehole Disposal:** This includes individual or community systems discharging to a borehole, abandoned water well, drywell, ventilation shaft or other subterranean structure. As in the previous example, the number of EDUs connected to a borehole is used to “convert” borehole disposal into an equivalent number of confirmed malfunctions.

- c. **Holding Tanks:** A holding tank is a watertight receptacle designed to retain sewage for disposal at another location. All holding tanks installed as repairs should be counted as “needs.” Specifically excluded are holding tanks installed to serve new land development or low flow commercial facilities. While not actually spewing sewage into the environment, properly maintained holding tanks, when used in OLDS repair situations, are included in the confirmed malfunction category.
 - d. **Public Complaints:** These include any legitimate complaint received by DEP or the municipality concerning improper sewage disposal. The number, nature and location of public complaints concerning improper sewage disposal are important, yet often overlooked indicators of sewage disposal problem areas.
 - e. **Sanitation-Related Illness:** These include any reported illness, either resulting from or suspected to be resulting from improper sewage disposal. Records and incidents in which polluted water supplies have been suspected or confirmed as the cause of disease is documentation establishing a community's wastewater treatment needs. Confirmed or suspected vectorborne disease that may be attributed to surface ponding of sewage also should be considered.
3. The following paragraphs represent methods that may be used to obtain public health needs information:

- a. **Sewage Sanitary Survey:** These randomly verified field surveys may be conducted in two “tiers” (or steps), depending on the scope of the Act 537 Official Plan revision being prepared. For “municipality-wide” or large area plans, a general or “tier one” approach is appropriate, especially with a goal of identifying and prioritizing sub-areas for closer scrutiny or simply gathering generic information for a large area. The “tier two” survey provides a much closer scrutiny of a study area and is more appropriate for smaller-scale (i.e., smaller than municipality-wide) plans, for accurately defining and documenting suspected problem areas, and for prioritizing the severity of problems found in several areas. The “tier two” survey might also be appropriate for municipality-wide planning where the municipality is uniformly developed throughout or where it is anticipated that the rate of sewage disposal problems will be similar in both densely and less densely developed portions of municipalities that have variable development patterns.

Most “tier one” surveys use a minimum sampling rate of 15 percent. For the “tier two” survey, representative sampling rates vary with the size of the area. In both cases, obtaining this representative sampling is important, as well as random selection of sampling points and sampling in a pattern that provides accurate, complete coverage of the survey area. Please note that a generic “tier one” 15 percent sampling rate will NOT be sufficient to assign a PENNVEST project priority rating for any project smaller than 1,000 units.

A door-to-door survey conducted by consultant or municipal personnel is the preferred method of conducting a sewage sanitary survey. While a “mail-in”

questionnaire survey, with provisions for specific confirmation of reported malfunctions or even a combination of methods that involve both detection and confirmation of sewage disposal problems, may provide helpful information to augment the data gathering process, they are generally considered less reliable and less accurate and may not be substituted for a “door-to-door” survey when determining the sewage disposal “needs” of a study area. “Mail-in” survey results may not be used to prepare PENNVEST project priority ratings. When conducting sewage sanitary surveys, the percent of OLDS or EDUs inventoried in a door-to-door survey, the return rate of mail-in questionnaires and the percentage rate of the questionnaires subjected to field verification must all be reported. Specific examples of survey procedures and sample survey forms are included as Appendix A for “door-to-door” surveys, and Appendix B for “mail-in” surveys.

It is also highly recommended that the local DEP regional office be contacted to discuss appropriate survey methodology for specific situations.

- b. **Existing Sanitary Surveys:** Sanitary surveys completed by DEP, a county health department or other professional organization are acceptable provided that both methodology and results are included in the survey by the latter organizations.
- c. **Well Water Surveys:** Well water surveys may also be completed in similar fashion to Sewage Sanitary Surveys using two tiers (or steps). In “tier one,” a minimum of 15 percent of the wells in the general study area must be sampled. In the second tier, potential sewer service areas are again subjected to closer scrutiny. A representative sampling of wells within these smaller, more defined areas must be completed. As a general rule, representative sampling will be required in sub-areas where total coliform contamination rates are ten percent or greater and fecal coliform contamination rates for those samples testing positive for total coliform are 20 percent or more. In both tier procedures, all wells sampled must be tested for total coliform, fecal coliform and nitrate-nitrogen contamination. (Testing for additional contaminants may be completed at the municipality's or DEP's discretion. Testing for fewer contaminants or lower sampling rates may be coordinated with DEP.)

A representative sample is defined as:

| <u>Wells in Service Area</u> | <u>Percent Sampling Required</u> |
|------------------------------|----------------------------------|
| Up to 50 | 50 percent |
| 51 to 100 | 35 percent |
| 101 to 500 | 25 percent |
| 501 to 1,000 | 20 percent |
| Greater than 1,000 | 15 percent |

These wells must be randomly selected and distributed throughout the study area for the results to be valid. Additional wells above these figures may be sampled to further define specific needs areas. In all cases, it is mandatory that comments

concerning well construction (dug vs. drilled) be included for all wells sampled. Public water service areas also must be identified and delineated since well samples will not normally be taken from these areas. (If private wells are available for sampling in public water service areas, then they should be included in the survey.)

- d. **Windshield Surveys:** Windshield surveys can be useful and productive, but have great limitations for “needs” documentation. This method is usually an inexpensive and efficient utilization of staff; however, such surveys are limited to what observations may be made from streets or roads. All observations made during such a survey must be meticulously recorded and normally will require a site visit to adequately document a need. It is recommended that the windshield survey be utilized only in conjunction with other surveys or data gathering efforts. Under no circumstances may a windshield survey be considered as the sole source of documented information.

B. Water Pollution Needs

Water pollution needs are violations of either the National Pollutant Discharge Elimination System (NPDES) discharge criteria or the Clean Streams Law. In sewage facilities planning, any suspected water pollution, whether originating from existing sewage treatment facilities or malfunctioning OLDS, migrating into surface waters must be confirmed by appropriate sampling of the discharges or the receiving waters. Facts to consider when reporting such sample results are: (1) frequency and duration of discharge; (2) effect on receiving body of water; and (3) flow character of receiving body of water.

1. **NPDES Violations:** When dealing with NPDES issues, DEP regional field office water management programs may provide this data. Information of this type is often available as part of existing data management systems or through file review.
2. **Non-NPDES Contamination:** To establish water pollution needs for non-NPDES situations, stream water samples must be obtained from all suspect area waterways clearly above and clearly below the suspected contamination source area. The same bacterial and chemical testing regime utilized in the well testing program is appropriate for stream testing. Additional appropriate tests (e.g., pH, MBAS, NH₃) may be included at the municipality's discretion. Any stream analysis must evaluate the likelihood of other sources for the observed contamination (i.e., is there a livestock operation straddling the stream in the test area?). Of particular interest is any adverse impact on downstream users. Analysis must include any impact on downstream community water supply intakes, including any raw water sample test reports for community water systems. However, do not concentrate ONLY on known downstream community water intakes. Livestock watering, fishing, scenic and recreational opportunities are examples of often overlooked downstream users.

II. SUMMARY OF IDENTIFIED NEEDS DOCUMENTATION

The data from the sewage disposal needs documentation must be incorporated into a form easily interpreted by others. Since this documentation is frequently utilized to justify construction of a public project or to determine a priority for funding a project, it is most often used by someone not involved in the data gathering. Proper summarizing of needs data is critical to this decision making process.

There are two parts of a data summary: the narrative and the maps.

A. The Narrative Summary

1. Provide a short narrative containing information on who conducted the survey, when it was conducted and under what environmental conditions it was conducted (i.e., freezing, drought, raining, etc.). Include the methodology used to conduct the survey.
2. Organize the data into easily evaluated groupings. No one single formula or technique is considered the correct and only way to accomplish this function. The summary should clearly and concisely support the stages of the Act 537 planning process. In addition to a verbal picture of a study area's needs, data obtained from surveys should be reported in percentages for the reviewing and evaluating authorities. Compiling the data into appropriate groupings is extremely important. Two general examples are provided below to illustrate some desired data groupings.
 - a. When a study area contains needs that will be addressed by more than one method of sewage disposal (e.g., a municipal plan that proposes continued use of OLDS in some areas and a community sewer system in others), group the data to enable separate evaluations. In this example, data must be grouped for the entire municipality, the OLDS area only and the project area only.
 - b. When a study area contains needs that will obviously be addressed by one method of sewage disposal (e.g., a study area originally defined as a potential sewer expansion area), the data may be compiled into one data group for the entire area.

In general, for all groupings, include the number of structures surveyed, the number of structures with known disposal problems (conversely the number without disposal problems), and what kind of problems the structures have. Present the data in descending order of severity from the most significant problems (i.e., wildcat sewers and direct discharges) to the least significant needs (i.e., no problems). The use of tables or charts for organizing survey results is highly encouraged and is beneficial to all agencies utilizing or evaluating the plan. For example, a table should include the house number, show the number of EDUs (for motels, apartments, commercial, industrial, etc.), indicate if it has a malfunctioning OLDS or not and include a brief description of the problem. Be sure to include any observations that may contribute to recognition of the types of problems located that cannot be expressed in hard numbers. For example, “virtually all the homes down by the stream have surface

malfunctions” provides valuable insight to the situation, although provides virtually no quantitative data upon which a comparative evaluation or rating might be based.

3. Retain in narrative form all observations that were not included with the previous groupings. This miscellaneous information will often contain valuable information.

B. The Map Summary

The summary should also be presented in map form. Maps help identify areas of greater concern and help to properly analyze the available alternatives for each identified area. Malfunction percentages may seemingly justify a large-scale project, but adequate mapping may clearly show that all of the problems are located in one concentrated area. Data in the summary should be displayed and keyed or color coded to the map. The detail should be sufficient to support a general description of the needs in the study area. Maps should be of the same scale as those found in the rest of the Act 537 Official Plan. Refer to Appendix C for additional guidance concerning mapping requirements.

Appendix A

The Door-to-Door Survey

The most desirable method of assessing sewage disposal needs in an area is with a door-to-door survey. Specific surveying procedures may vary from one project location to another, but generally, surveys should proceed along the following guidelines. Surveys may be divided into three phases: (A) survey preparation; (B) survey execution; and (C) survey completion.

A. Survey Preparation

1. Identify the study area on a map of sufficient scale to show desired detail. The map should clearly depict each sewage generating structure. Topographical maps or tax maps are good starting points.
2. Contact the municipal solicitor to determine what local protocols exist pertaining to “right-of-entry” situations.
3. Check all available background records, such as municipal OLDS permit applications and complaint investigations, for a history of malfunctions, repairs and complaints in the study area. Interview the SEO, municipal road crews and municipal secretary to help identify specific problem areas. Often the information obtained from such individuals will save valuable time by pinpointing problem areas upon which to concentrate during actual field work.
4. Develop a survey sheet questionnaire with a list of questions to be asked during the survey. The questions must be phrased to obtain the necessary information needed to complete the plan. Keep the questions brief and provide preformatted answers or “check the block” answers where possible. Fit it all on one side of a sheet of paper (sample is included on page 14, “Door-To-Door Needs Survey.”)
5. Copy an area map on the reverse side of the questionnaire developed in number 4 (the survey taker will use this map to mark the location that samples were taken).
6. Develop a plan to collect well water samples. Ensure that a representative sample is obtained. All samples must be collected from the raw water side of any water treatment or purification device serving the structure. See the “Well Water Surveys” portion of this publication for additional information.
7. Locate stream water sampling points. Obtain samples upstream and downstream of the study area. See the Water Pollution Needs, Non-NPDES Contamination section of this publication for additional information.
8. Dye testing is generally not used in a survey. However, dye test procedures are not specifically excluded from surveys, and their results may prove useful. Dye testing may confirm multiple discharges, hidden discharges or document a pathway between sewage disposal systems and contaminated wells or waterways. A negative dye test, however, does not preclude the existence of a malfunction.

9. A Representative Survey is defined as a survey of sample points that includes data confirmed by the minimum number of field-verified survey reports required to validate a Sewage Sanitary Survey. Sample points for field verification are randomly selected. The percentage of field verified survey reports required to validate a Sewage Sanitary Survey will vary with the total size of the survey in accordance with the following table:

| OLDS in the Project Area | Percent OLDS Sampling Required |
|---------------------------------|---------------------------------------|
| Up to 50 | 50 percent |
| 51 to 100 | 35 percent |
| 101 to 500 | 25 percent |
| 501 to 1,000 | 20 percent |
| Greater than 1,000 | 15 percent |

B. Survey Execution

1. Contact the local police department and inform them of the date, time and place the survey will be conducted. It is also desirable to make a public announcement of this same information. Placing notices on community bulletin boards in local markets is often helpful.
2. Choose a logical route, traveling door to door and complete a survey questionnaire data sheet for each structure. Locate the structure on the map and identify it with an identification system that coordinates the map location, the survey form and any samples taken.
3. Field personnel should clearly identify themselves and indicate that they are working for and represent the municipality. They should carry identification and have a telephone number for the municipality available for confirmation of their identity. UNDER NO CIRCUMSTANCES should a survey-taker give the impression they represent DEP. DEP cannot address issues that may arise during a sanitary survey conducted by non-state employees.
4. Using the questionnaire to guide the information gathering, inquire about both the structure and the neighborhood. Clarify any answers that are not understood, unusual, unexpected or easily misunderstood.
5. Ask permission to look around the property:
 - a. If permission is refused, proceed to the next property. Make notes on any apparent needs visible from off the property. In a survey, never attempt to force, bluff or deceive to gain permission to enter property.
 - b. If permission is granted, proceed to step 6.

- c. If no one is home or data collection is denied because the owner is not present on the property, leave a note, like the one immediately below, on the door that seems to be the usual entry to the house. DO NOT PLACE THIS NOTE IN OR ON ANY MAILBOX -- placing anything other than mail in or on a house mailbox is a violation of federal law.

To: The owner of [property address]

Date: / /

Sorry we missed you. Could we get together soon so that data on your property can be included in our township's survey of sewage disposal needs and methods? This survey is conducted to assist your supervisors as they carry out their legal duties required by Act 537. The survey obtains information needed for considering future decisions on this subject when it may affect our township.

We'll try to stop back today. If we do not see you, would you call [surveyor's name] at [survey office phone number] between [hours], so that we can make an appointment with you?

Signature

6. When walking around the property, watch for dogs, geese, bison and any other dangerous livestock; record all observations relating to sewage disposal on the survey form, and; make note of any evidence of an apparent malfunction, such as the type and location of the apparent malfunction. If no evidence of a malfunction is observed, make note of that information. Since the purpose of the walkaround is not only to confirm what has been reported, but also to identify problems of which people may be unaware, the walkaround should be conducted by individuals with knowledge of proper on-lot system operation.

C. Survey Completion

When data gathering is complete:

1. Conduct a thorough debriefing of all survey takers. Have them summarize their experiences, observations and impressions. (This information is quickly lost with the passage of time.)
2. Mark the project map with the location of identified malfunctions or any other “public health needs” found in Section A of this publication.
3. Record and assess both the frequency and severity of malfunctions, identify localized areas of clustered problems and list the probable causes of the malfunctions (e.g., soils, slopes).

**DOOR-TO-DOOR
NEEDS SURVEY**

Munic.: _____ Co.: _____ Study Area: _____ Date: _____

General weather conditions: _____

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: _____ STREET: _____ CITY: _____

ZIP: _____ PHONE #: _____ OWNER OR RENTER? NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? HOW DEEP? _____ ft. Cased? Y / N

How far is the well or spring from the drain field? _____ ft. Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? _____

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

| | | |
|--------------|---------------------|-----------------|
| SEPTIC TANK | INGROUND BED | COMMUNITY SEWER |
| CESSPOOL | INGROUND TRENCH | STORM SEWER |
| OLD WELL | ELEVATED SAND MOUND | PIPE TO DITCH |
| HOLDING TANK | SEEPAGE PIT | PIPE TO STEAM |
| PRIVY | BORE HOLE | PIPE TO SURFACE |
| OTHER _____ | | |

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

| | | |
|--------------|---------------------|-----------------|
| SEPTIC TANK | INGROUND BED | COMMUNITY SEWER |
| CESSPOOL | INGROUND TRENCH | STORM SEWER |
| OLD WELL | ELEVATED SAND MOUND | PIPE TO DITCH |
| HOLDING TANK | SEEPAGE PIT | PIPE TO STEAM |
| PRIVY | BORE HOLE | PIPE TO SURFACE |
| OTHER _____ | | |

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system?

| | | |
|----------------------------|----------------------------------|-------|
| GREEN LUSH GRASS | WETNESS OR SPONGY AREAS | ODORS |
| WATER PONDING OR SURFACING | SYSTEM OVERFLOW | |
| SLUGGISH DRAINS | WASTEWATER BACKING INTO THE HOME | |
| OTHER _____ | | |

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y / N How often? _____ Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Appendix B

The Mail Survey

- A. Identify the study area on a map of sufficient scale to show desired detail. The map should clearly depict each sewage-generating structure. Topographical maps or tax maps are good starting points.
- B. Coordinate with municipal officials to obtain the appropriate names and addresses to contact study area residents or landowners.
- C. Draft a cover letter explaining the purpose of the survey and include the procedures to complete and return the survey form. Include all necessary addresses. A response time of 30 to 60 days is suggested.
- D. Draft a mail-in questionnaire designed to obtain an accurate picture of the study area needs. If possible, include a map and have individuals mark their structure on the map for easy identification. Avoid use of the word “malfunction” where possible, in favor of concentrating on obtaining data about the type of OLDS, location of OLDS and any problems with the system. Ask about other systems in the neighborhood.
- E. Mail questionnaires and receive the return documents. Including a self-addressed, stamped return envelope will enhance the chances of receiving an adequate survey response.
- F. Compute the survey response rate as a percent to determine if the minimum response has been received. The minimum response rate necessary to effectively use the mail-in survey data is equal to the same minimum sampling required to obtain a representative survey in the door-to-door survey. For example, if a survey has 150 questionnaires sent and 80 are returned the return rate is 53 percent. This return rate meets the minimum criteria and the survey results may be used.
- G. The results of mail-in surveys must be randomly validated in order to obtain the greatest benefit from the results. To validate mail-in survey results, a certain number of returned questionnaires selected at random must be field-verified. The percentage of field-verified questionnaires required to validate a survey will vary with the total size of the survey in accordance with the following table:

| OLDS in the Project Area | Percent OLDS Field Verifications Required |
|---------------------------------|--|
| Up to 50 | 50 percent |
| 51 to 100 | 35 percent |
| 101 to 500 | 25 percent |
| 501 to 1,000 | 20 percent |
| Greater than 1,000 | 15 percent |

As can be seen from this table, if a mail-in survey receives only the minimum response computed in step 6 of survey execution, then all returned questionnaires must be field verified. If a response is greater than the minimum, only the minimum must be verified. It is not necessary to verify all reported problems. Field verification should be completed for a random selection of the responses.

Example 1

**SEWAGE NEEDS
MAIL SURVEY**

_____/_____/_____

_____(Boro./Twp.) is conducting a survey to determine what sewage problems may exist in this area. The survey results will be used to determine if sewage problems exist, and the best and most economical way of correcting the problems. Please help us locate and circle your property on the accompanying map. Please complete the form to the best of your ability and return it by ____/____/_____ to the municipal office at:

If you have any questions please contact _____ at (_____)_____-_____.
Please note: this survey may be followed by a partial or whole door-to-door survey.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: _____ PHONE: (_____)_____-_____
ADDRESS: _____

1. How many people live in your house? _____ SEASONAL ALL YEAR
2. How large is your lot? _____
3. Do you have more than one sewage system on your lot? Y / N
If yes, explain: _____
4. What kind of water system do you have? WELL SPRING PUBLIC OTHER _____
Do you treat your water? Y / N If yes, how? _____
If you have a well: Is it DUG or DRILLED? How Deep? _____ ft. Cased? Y / N
5. How far is the well or spring from the drain field? _____ ft. Is well UP/DOWN SLOPE? _____
Have you ever had your water tested? Y / N When? _____
What were the results? _____
6. What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

| | | |
|--------------|---------------------|-----------------|
| SEPTIC TANK | INGROUND BED | COMMUNITY SEWER |
| CESSPOOL | INGROUND TRENCH | STORM SEWER |
| OLD WELL | ELEVATED SAND MOUND | PIPE TO DITCH |
| HOLDING TANK | SEEPAGE PIT | PIPE TO STEAM |
| PRIVY | BORE HOLE | PIPE TO SURFACE |
| PUBLIC SEWER | OTHER _____ | |
7. Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

| | | |
|--------------|---------------------|-----------------|
| SEPTIC TANK | INGROUND BED | COMMUNITY SEWER |
| CESSPOOL | INGROUND TRENCH | STORM SEWER |
| OLD WELL | ELEVATED SAND MOUND | PIPE TO DITCH |
| HOLDING TANK | SEEPAGE PIT | PIPE TO STEAM |
| PRIVY | BORE HOLE | PIPE TO SURFACE |
| PUBLIC SEWER | OTHER _____ | |
8. How old is your system? _____ Was it permitted? Y / N When? _____
9. Have you ever noticed any of the following near your septic system?

| | |
|------------------|----------------------------------|
| GREEN LUSH GRASS | WETNESS OR SPONGY AREAS |
| ODORS | WATER PONDING OR SURFACING |
| SLUGGISH DRAINS | WASTEWATER BACKING INTO THE HOME |
| SYSTEM OVERFLOW | OTHER _____ |
10. Was your system ever pumped out? Y / N How often? _____ Last time? _____
If it was pumped, was it inspected for cracks or broken baffles? _____
11. Was your system ever repaired? Y / N When? _____ By permit? Y / N
What part was repaired or replaced?
TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED
12. Are you aware of any other sewage problems?
13. COMMENTS:

PLEASE READ THIS MESSAGE AND FILL OUT THIS SURVEY FORM

Your municipality has begun to gather information about the current quality and safety of the water we drink. We need to know about current methods of sewage disposal to assure that these do not affect your water. We are also doing this in a way that can be used to update our Pennsylvania Sewage Facilities Act Plan under the related state regulations (Title 25 Pa. Code Chapter 71).

In order to gather this information while respecting your privacy, we ask that you fill out and return this mail survey concerning your water supply and water disposal by _____.

This survey will be used in a variety of ways.

1. It will be used to plan a survey sampling of existing wells in our community. If your well is selected for sampling, please allow the person collecting the samples to collect these at or as close to the well as possible. Due to factors of cost v. benefit, not every well can be laboratory tested.
2. It will be used to identify where we need to send people to verify facts. This is part of the process called "validating the survey." If your property is selected for such a visit, we ask your indulgence and cooperation.
3. It may provide information that will require us to look at certain areas of our community in more detail than other areas, possibly surveying for information door-to-door in a few selected situations.

Please return this form to us. Your answers are very important. Part of the process of "validating the survey" depends on the return of a set minimum number of survey forms. If our mail survey does not meet this minimum, we may have to conduct what is called a "comprehensive door-to-door survey" concerning the same information, at greater expense. In this survey, we hope to obtain data which meets part of the minimum legal standards on which to base future public decisions concerning questions on local water supply safety and wastewater disposal.

Thank you for your help in this survey effort. Your answers will be used so that public money is wisely spent.

Respectfully,

Township Supervisor

Consultant

THIS SURVEY FORM CONCERNS THE HOME LOCATED AT:

Street Address _____

1. Your home gets water from:
 - _____ a. a community water supply.
 - _____ b. a private well.
 - _____ c. a spring or cistern. Please specify. _____

ANSWER THIS SECTION ONLY IF YOU HAVE A WELL OR OTHER PRIVATE WATER SOURCE.

2. Do you have your water periodically tested? Yes _____ No _____
3. If you have had your well tested within the last 2 years, what were the values reported for:

| | |
|--------------------|----------------|
| Nitrate _____ | ppm as N _____ |
| Bacteria _____ | (MPN) _____ |
| Other _____ | _____ |
| measurements _____ | _____ |

4. How is your well constructed? When was it constructed?

| | | |
|---------------------|-----------|------------|
| _____ Drilled _____ | Dug _____ | Year _____ |
|---------------------|-----------|------------|

5. How deep is your well? _____ feet

6. How far away is your well located from the nearest septic system or cesspool (your own or a neighbor's)?

| | |
|--------------------------------|--------------------------|
| _____ less than 100 feet _____ | more than 100 feet _____ |
|--------------------------------|--------------------------|

7. Is the water from your well treated by any method?

| | |
|--|-------------------------------|
| _____ Water Softener _____ | Chlorinator _____ |
| _____ Ultraviolet light treatment unit _____ | Other-Specify Treatment _____ |

8. In the event it is necessary to collect a water sample in your area, would you permit your well to be tested at no expense to you?

| | |
|-----------------|----------|
| _____ Yes _____ | No _____ |
|-----------------|----------|

9. Do you have:

| |
|---------------------------------|
| _____ a. a dug privy |
| _____ b. a vaulted privy |
| _____ c. a chemical toilet |
| _____ d. an incinerating toilet |
| _____ e. a water (flush) toilet |

SEWAGE NEEDS MAIL SURVEY

Example 2

SEWAGE NEEDS MAIL SURVEY

Below, in the first column, are the various disposal methods and systems that are used by people to dispose of water. Because construction of houses can be unique, please check the method that is used to remove water and dispose of it from the indicated areas of your home.

**Bathroom Kitchen Laundry
and Toilet**

SEPTIC TANK _____
 CESSPOOL _____
 OLD WELL _____
 HOLDING TANK _____
 PRIVY _____

INGROUND BED _____
 INGROUND TRENCH _____
 ELEVATED SAND MOUND _____
 SEEPAGE PIT _____
 BORE HOLE _____
 FIELD DRAIN _____

COMMUNITY SEWER _____
 STORM SEWER _____
 PIPE TO DITCH _____
 PIPE TO STREAM _____
 PIPE TO SURFACE _____

**Sump Roof
Pump Drains**

SEPTIC TANK _____
 CESSPOOL _____
 OLD WELL _____
 HOLDING TANK _____
 PRIVY _____

INGROUND BED _____
 INGROUND TRENCH _____
 ELEVATED SAND MOUND _____
 SEEPAGE PIT _____
 BORE HOLE _____
 FIELD DRAIN _____

COMMUNITY SEWER _____
 STORM SEWER _____
 PIPE TO DITCH _____
 PIPE TO STREAM _____
 PIPE TO SURFACE _____

MAINTENANCE PRACTICES

How often do you have your septic tank pumped out?

Never _____ At least once a year _____
 At least once every 3 years _____
 At least once every 5 years _____
 Only when the system backs up. (Please indicate how often this occurs by marking both this space and the appropriate ones from above.)

When your septic system is pumped out, is the interior inspected for cracks or broken baffles?

Yes _____ No _____

Has your system ever been repaired? Yes _____ No _____

Did the repair require a permit? Yes _____ No _____

If your system was repaired, what was done?

| | |
|--|--|
| SEPTIC TANK _____ BUILDING SEWER LINES _____ PUMP (IF APPLICABLE) _____ DISTRIBUTION BOX (IF APPLICABLE) _____ DRAIN FIELD _____ | Repaired _____ Replaced _____ |
|--|--|

**HOUSEHOLDER'S
ADDRESS**

OTHER QUESTIONS CONCERNING YOUR PROPERTY

Have you noticed any of the following near your septic system?

Water ponding on the ground? _____
 Spongy areas or damp ground? _____
 Odors? _____
 Very heavy growth of grass? _____

Does your home experience water backing up into the house? _____
 Extremely sluggish drains? _____
 Septic system overflows? _____

If any of the above occur, during what season do they most frequently happen?

Spring _____ Summer _____ Fall _____ Winter _____

If there are any matters involving drinking water or the disposal of sewage that you feel should be looked into by your municipality, please phone _____.

Appendix C

Mapping

All properly completed needs identification and documentation activities will involve maps, to one extent or another. Since a wide range of base map products may be available for a particular area, no single map type is identified for use in preparing and documenting Act 537 Plan needs. The following guidelines must be considered when using maps in an Act 537 Plan.

- A. **All Maps Must Be User Friendly.** Maps are tools utilized to convey information. Not everyone expected to work with maps will be an experienced map reader.
- B. **Control the Amount and Type Of Information Depicted On Each Map.** Use appropriate data groupings such that the resulting map is neither sparse nor overcrowded with symbology. A single map containing a future sewer service perimeter and malfunctions, holding tanks, wildcat stream discharges, etc. is a good example of appropriate data grouping. A single map depicting all well sample locations, with each sample location followed by a complex code or symbol showing the results of all testing completed for that well, will often result in an unusable (and likely ignored) map. In this latter example, the sheer volume of data presented at each sample point overwhelms all but the most experienced map user.
- C. **A Suggested Map Scale is 1 Inch To 1,000 Feet (1"=1000').** This figure represents a scale that will normally provide sufficient detail (e.g., lot lines) for most large area projects. Plan mapping, however, is not specifically limited to this scale. Other scales are acceptable and are appropriate for use when addressing smaller areas. Most importantly, the map **MUST** be of appropriate scale to adequately depict the intended objective.
- D. **Ideally, a Minimum of Six Maps are Included in an Adequate Needs Identification.** Since local conditions affecting the number of required maps may vary greatly, deviations from these guidelines should be coordinated with the DEP regional office. Listed below, these maps are not exclusive and, while they represent a generic minimum, additional maps depicting additional information or other combinations of data may always be included in a plan as supporting documentation.
 1. All OLDS including Malfunctions (confirmed, suspected), Holding Tanks and Wildcat Discharges.
 2. All OLDS including status (permitted, pre-regulatory, unpermitted and potential malfunctions).
 3. Soil suitability for OLDS (SCS soil limitations, hydric soils, wetlands and, after considering system type, slopes 0-15 percent, 15.1-25 percent, greater than 25 percent).
 4. All water well and stream sample locations and depictions of biological test results. Include delineated areas of community or public water supply service.
 5. All water well and stream sample locations and depictions of chemical test results. Include delineated areas of community or public water supply service.

6. Geologic mapping when geological conditions impact needs identification. Areas utilizing borehole disposal or old mine diggings and areas discharging to karst topography (an area subject to formation of sinkholes and closed depressions due to underlying limestone geology) are two examples of geology impacting needs identification.

Additional mapping will be necessary to comply with all criteria established in DEP's technical guidance document *A Guide for Preparing Act 537 Update Revisions* (362-0300-003) available electronically in DEP's eLibrary online at www.depgreenport.state.pa.us/elibrary/ or by calling the DEP regional office serving your area. If in doubt, coordinate map requirements with DEP's regional office.

For more information, visit www.dep.pa.gov, search term: Sewage or click on "Regional Resources."

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