



OBJECTIVES:

The purpose of this chapter is to:

- Learn how to identify a malfunction.
- Learn how to determine the cause of a malfunction.
- Learn how to correct malfunctions by following the regulations.
- Understand when Best Technical Guidance (BTG) may be used in a repair situation.
- Understand the procedures for handling nuisance complaints.

Malfunctions



What is a malfunction?

- 1) _____
- 2) _____
- 3) _____



Why do malfunctions need to be corrected?



Sections 73.11(c) & 73.11(f)
Section 14 of the Sewage Facilities Act

- 1) _____
- 2) _____

IDENTIFYING MALFUNCTIONS

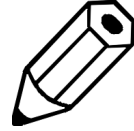
Note: The effluent is going to move in the path of least resistance.

Examples:

1) Homeowner calls and reports that sewage is backing up into the house.

Is this a malfunction?

Explain –

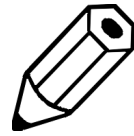


NOTES

2) Mr. Jones writes a letter to the local agency stating that a smell is coming from his neighbor's property and a stream of black slime is flowing from the sand mound.

Is this a malfunction?

Explain –

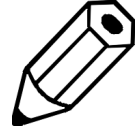


NOTES

3) A homeowner notices that the grass is very green and the soil is soft on top of the absorption area.

Is this a malfunction?

Explain –



NOTES

What is an organic mat?

Because of saturated soil, a lack of oxygen causes anaerobic bacteria to grow within the absorption area. An abnormally thick layer of organic material forms and, ultimately, clogs the pores in the soil, making the soil somewhat impermeable. The effluent may travel to the edges of the absorption area and seep out the sides.

Note: In some cases, if the absorption area is "rested" for a period of time, then the organic mat may dry out and the problem is eliminated.

4) Dr. Weber calls to report that an area at the edge of his property is always wet and squishy. He suspects that his neighbor's absorption area is causing the problem.

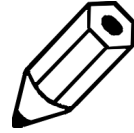
Is this a malfunction?

Explain –

5) Mrs. Adams writes the local agency and complains about the tall grass growing on the sand mound in her neighbor's yard. She feels it is a nuisance.

Is this a malfunction?

Explain –

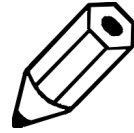


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6) The Smith family had its well tested, and the results showed a high bacteria content.

Is this a malfunction?

Explain –



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REVIEW – TYPES OF MALFUNCTIONS

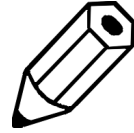
1)

2)

3)



Why must these malfunctions be fixed?



NOTES



Sections 73.11(c) & 73.11(f)
Section 14 of Act 537

INVESTIGATING THE MALFUNCTION

STEP 1: BACKGROUND CHECK

Example

The homeowner calls to report that sewage is backing up into the house.

1) Does a _____ or _____ plan exist?

2) When was the system _____? When was the house built, and how long have you lived in the house?

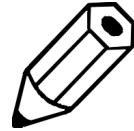
3) When did you last _____ your septic tank?

Appendix 23-A has information on Septic Tank Pumping.

STEP 2: MALFUNCTION INSPECTION



On the site, what would you check?



NOTES



In trying to locate the septic tank, you do not find an inspection port. From what you can tell, it looks like the system is a cesspool. You uncover the cesspool and discover it is full of solids. What could you do?

Review

Four inspection sites:

- 1)
- 2)
- 3)
- 4)

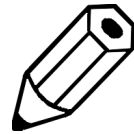
Any or all of these could be the problem.

Finding the source of discharge:

Dye test

This test can sometimes be used to determine the source of the problem. For this test, you must place dye into the septic system. The path of the dye will show you where the effluent is traveling.

Appendix 23-B has procedures for the dye test.



NOTES



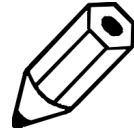
EXERCISE 23-1

In the following examples, go through the steps of identifying and diagnosing the malfunction by gathering background information and conducting a malfunction inspection with the information given.

Explain what you are looking for as far as background materials and what you are looking for when inspecting the system.

- 1) Mr. Jones writes a letter to the SEO stating that a smell is coming from his neighbor Mr. Myers's house and that a stream of black slime is flowing from the sand mound. The permit and plot plan are available for Mr. Myers's onlot system.

Gather background information:



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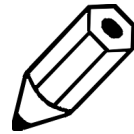
Malfunction inspection:

2) Dr. Weber calls to report that an area along the edge of his property is always wet and squishy. He suspects that his neighbor Mr. Thompson's absorption area is causing the problem. Dr. Weber cannot tell you where his system is located or when it was installed. There is a permit on record for Mr. Thompson's system that places the system over 20 feet from the property line.

Gather background information:

Malfunction inspection:

Note: Do not enter the septic tank under any circumstances! There is no oxygen in the tank, and you may die. A rescuer may also die trying to save you. This is serious, and it does happen.



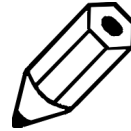
NOTES

STEP 3: RESOLVE THE MALFUNCTION

This is the third step in correcting a malfunction.

Solutions may include the following:

- Change water usage in the house.
- Educate the homeowner about chemicals.
- Replace or repair any broken part or parts – pipe, pump, etc. – of a system.
- Replace or repair the absorption area.
_____ for a repair system must be done if the absorption area is being replaced.



NOTES



What are the steps to correcting a malfunction?

- 1)
- 2)
- 3)

Your goal when dealing with a malfunction is to determine the cause of the malfunction and find a _____ - _____ solution.

In every instance where an absorption area will be installed, testing to determine site suitability must be completed in compliance with Chapter 73 regulations.

When a tank is repaired, a permit is needed.



BEST TECHNICAL GUIDANCE

Section 73.3(b)

This section provides some latitude to the local agency or the Department of Environmental Protection in repair situations where site limitations on existing properties prohibit compliance with all Chapter 73 regulations.

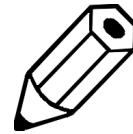
- 1) First, the SEO must consider all individual and community sewage systems in Chapter 73.
- 2) Then, if the use of these systems is not physically possible, best technical guidance must be used to correct the malfunction.

In every instance, all regulations that can be met must be met.

BTG allows the SEO to systematically reduce or waive standards that can't be met on a particular site. This systematic elimination or reduction of a standard is based upon the impact such an action may have on the environment or the protection of the public health. Some standards, such as isolation distances to property lines, may have very little potential to affect the protection of the environment or public health. These less important standards should be eliminated or modified first. Other critical standards, such as depth to limiting zone, may have a significant impact if they are eliminated. Other alternatives should be pursued if critical standards can't be met on a site.

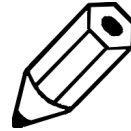
Critical standards the SEO should be concerned with:

- 1) Isolation distances from the system to a water supply.



NOTES

- 2) System sizing versus percolation rate.
- 3) 48-inch verticle separation between bottom of the absorption area aggregate and the top of the limiting zone.



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Note: This is DEP policy. You will not find these criteria in the regulations.

When using BTG, the SEO, to the best of his/her knowledge, should make sure . . .



Section 72.33

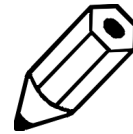
- 1) The system to be installed will not create a nuisance or public _____.
- 2) The system has a reasonable probability of _____ long term.
- 3) The system employs the best available _____.

WRITTEN NOTIFICATION

When using BTG, written notification to the homeowner should include:

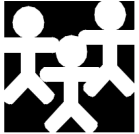
- 1) The site does not meet Chapter 73 standards. All deviation from the regulatory standards must be itemized on the permit.
- 2) There is a possibility of failure of the repair system.
- 3) The SEO must issue a permit under Chapter 72, Section 72.22(b).
- 4) Reduction of water consumption and installation of water conservation devices could help prolong the life of the system.

5) The repair permit does not relieve the applicant of the responsibility to correct any malfunctions that may occur in the future.



NOTES

Note: The SEO must ensure that all the regulations that apply to the location and installation of an onlot sewage disposal system are met whenever possible.



EXERCISE 23-2

Use of BTG

- 1) Read the examples.
- 2) Explain if BTG was used properly.

Example 1:

Problem Identified – Surface malfunction from an in-ground system.

Problem Diagnosed – The problem is in the absorption area.

Investigation – Testing concluded that an elevated system would be a solution on the site.

The sand mound was not an option for the homeowner.

The homeowner could not afford an elevated system, so the SEO used BTG to permit an in-ground system as a repair.



Was BTG used correctly in this situation?

Explain -

Appendix 23-C contains information about PENNVEST.

Example 2:

Problem Identified – Surface malfunction from an in-ground system.

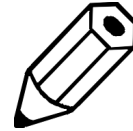
Problem Diagnosed – The problem was in the absorption area.

Investigation – Testing concluded that another site was suitable on the lot for an in-ground absorption area.

The absorption area could only be located 75 feet away from the homeowner's well. Currently, the malfunctioning absorption area is 70 feet away from the well.

Regulations state the well isolation distance is 100 feet.

BTG was used to install another in-ground system as a repair.



NOTES



Was BTG used correctly in this situation?

Explain -



EXERCISE 23-3

Instructions:

- 1) Review the scenarios.
- 2) Explain the cause of the malfunction and the solution for correcting the malfunction.
- 3) Label the system to be installed, if needed, on the plot plan, and explain what tanks are needed.
- 4) Label what parts of the system will be abandoned, if necessary. Those parts of the system would no longer be connected to the onlot system.
- 5) Use BTG only when appropriate, and explain why it is used.
- 6) Prepare class discussion.

Presentation:

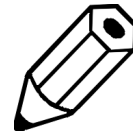
- 1) Elect a spokesperson.
- 2) Elect a person to read the case study.
- 3) The entire group will come to the front of the room during the presentation.

CASE STUDY #1

History:

The Smith site consists of 4+ acres in a rural farming area. This tract is surrounded by cultivated fields owned by others. The house, built in 1882, has been modernized, and a system of unknown type was installed prior to 1961. After "mushy spots" developed, a new sand mound bed was installed in 1982.

In the summer of 1992, after the house sat vacant for several months, a buyer made an offer. The lender required a pretransfer system evaluation as a condition for extending credit. The evaluation revealed the presence of liquid in the absorption area.



NOTES

The following testing information is provided but may not be needed to resolve the problem.

Soils: Silty clay loam

Limiting zone: 22 inches to seasonal high water table (as indicated by mottling)

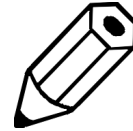
Slope: 3%

Percolation rate: at 20 inches = 93 min./in.

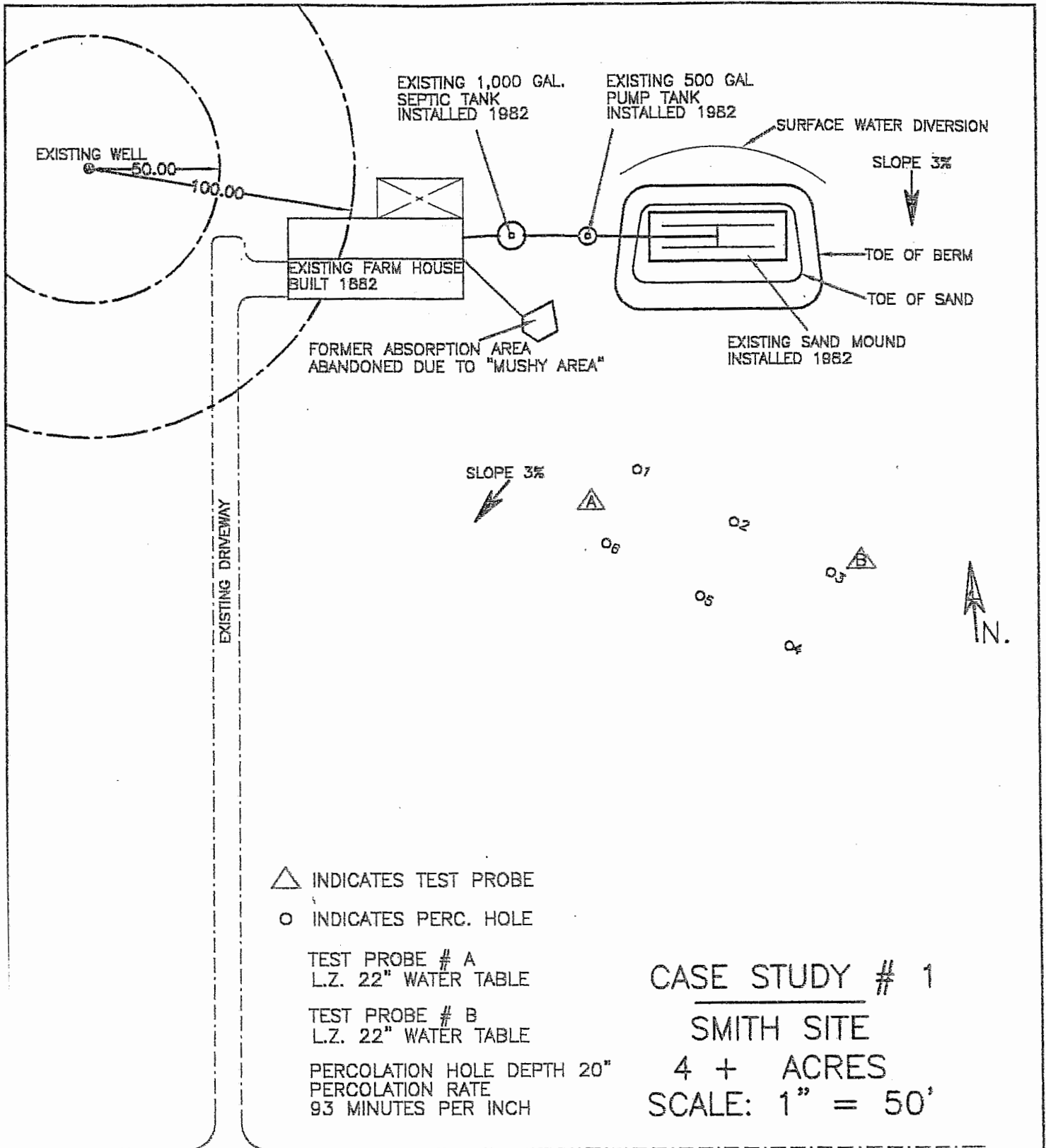
Suspected cause:

Solution:

Installation:



NOTES



HICKORY HILL ROAD

CASE STUDY #2

History:

A letter was sent to Mr. and Mrs. Rodgers stating that their onlot system was showing a surface malfunction. They responded to the letter by asking the SEO what they should do to correct the malfunction.

The Rodgers have no record of a septic system serving their three-bedroom home. A cesspool was found during the site investigation. The Rodgers have not pumped the system regularly, and the system keeps malfunctioning.

The following testing information is provided but may not be needed to resolve the problem.

Soils: Silty clay loam

Limiting zone: 40 inches to open jointed rocks

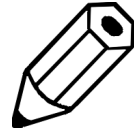
Slope: 3%

Percolation rate: at 20 inches = 28.8 min./in.

Suspected cause:

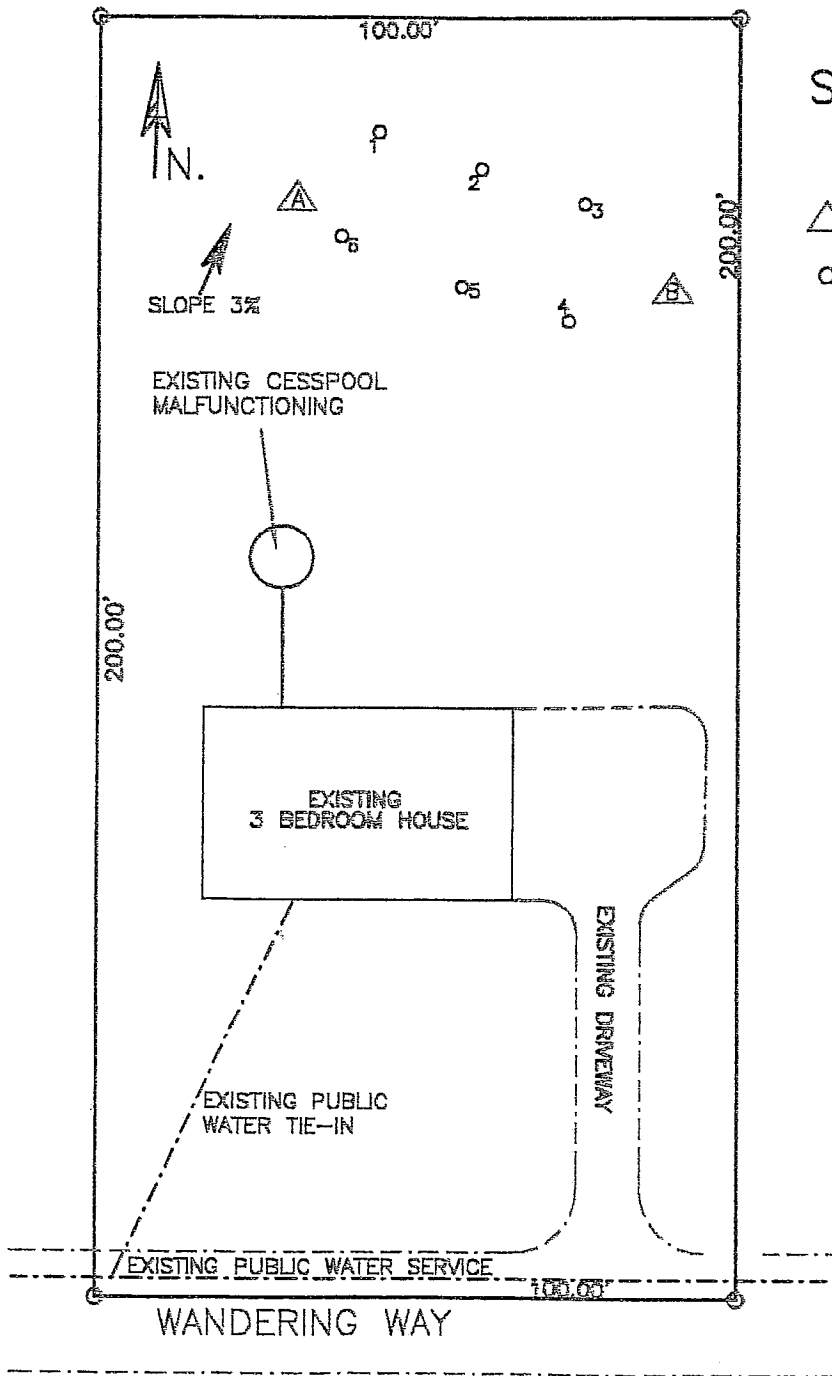
Solution:

Installation:



NOTES

CASE STUDY #2
RODGERS SITE
 20,000 S.F.
 SCALE: 1" = 30'



- △ INDICATES TEST PROBE
- INDICATES PERC. HOLE

TEST PROBE # A :
 L.Z. 40" ROCK

TEST PROBE # B
 L.Z. 43" ROCK

PERCOLATION HOLE DEPTH 20"
 PERCOLATION RATE
 28.80 MINUTES PER INCH

CASE STUDY #3

History:

The Johnsons, a young active family, own a 2-acre lot with a three-bedroom house that is approximately 15 years old. Sewage is backing up into the house, and the absorption area is ponded. They have maintained and pumped the tank regularly. They did mention that their water bill has been higher than normal recently.

The following testing information is provided but may not be needed to resolve the problem.

Soils: Sandy clay loam

Limiting zone: 84+ inches

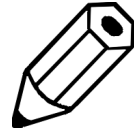
Slope: 3%

Percolation rate: at 36 inches = 17.87 min./in.

Suspected cause:

Solution:

Installation:



NOTES

△ INDICATES TEST PROBE

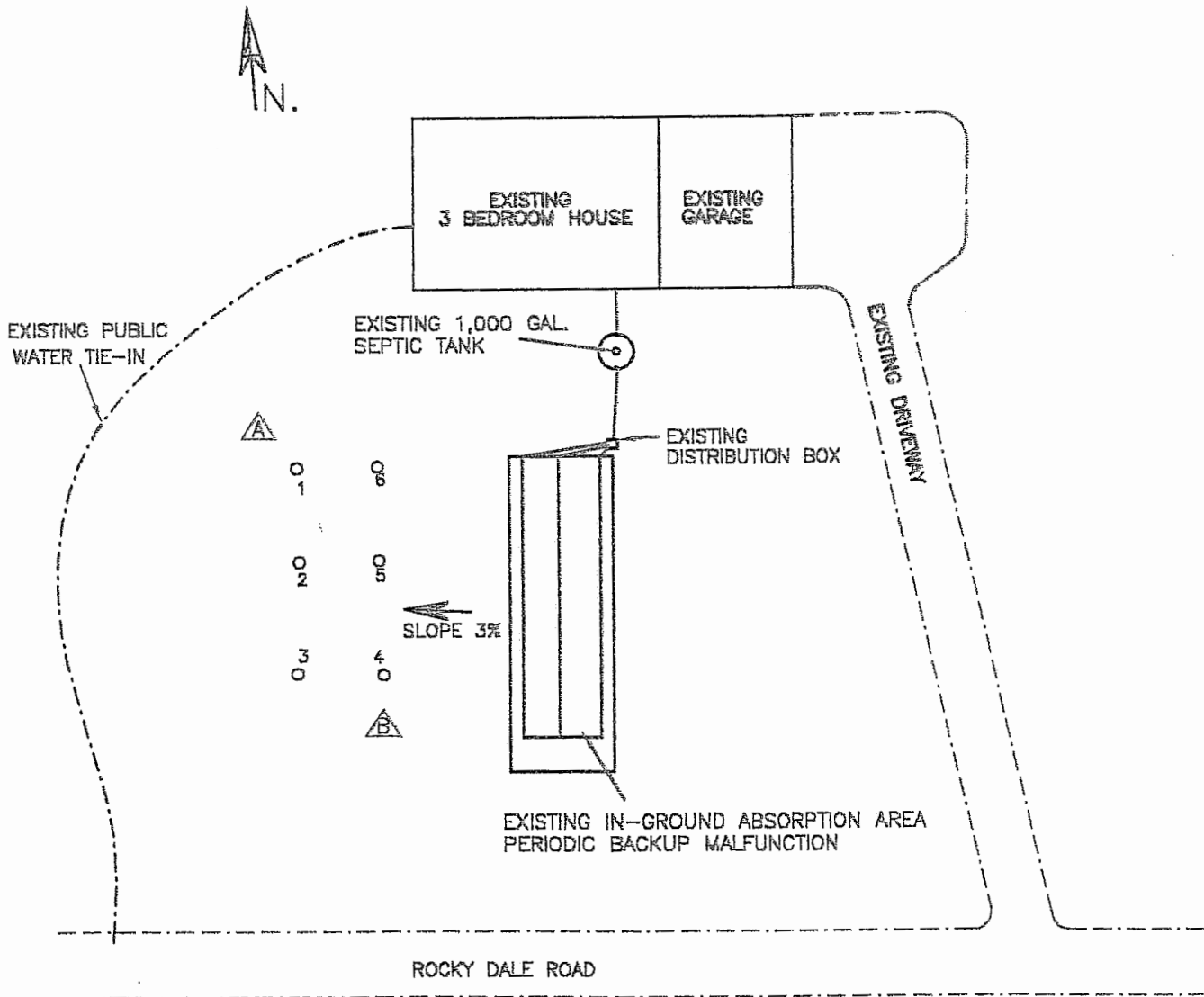
○ INDICATES PERC. HOLE

TEST PROBE # A
L.Z. 84" +

TEST PROBE # B
L.Z. 84" +

PERCOLATION HOLE DEPTH 36"
PERCOLATION RATE
17.87 MINUTES PER INCH

CASE STUDY # 3
JOHNSON SITE
2 ACRES
SCALE: 1" = 30'



CASE STUDY #4

History:

The Harmonds have a four-bedroom home and six teenage children. Their in-ground system has a history of malfunction problems, although they have maintained and pumped the system according to the manufacturer's suggestions.

The following testing information is provided but may not be needed to resolve the problem.

Soils: Clay loam

Slope: 3%

Limiting zone: 56 inches to mottling

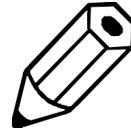
Percolation rate: at 20 inches = 76 min./in.

Testing revealed the only suitable site on the lot to locate an absorption area would be 5 feet from the property line.

Suspected cause:

Solution:

Installation:



NOTES

CASE STUDY #4
HARMONDS SITE
 15,000 S.F.
 SCALE: 1" = 30'

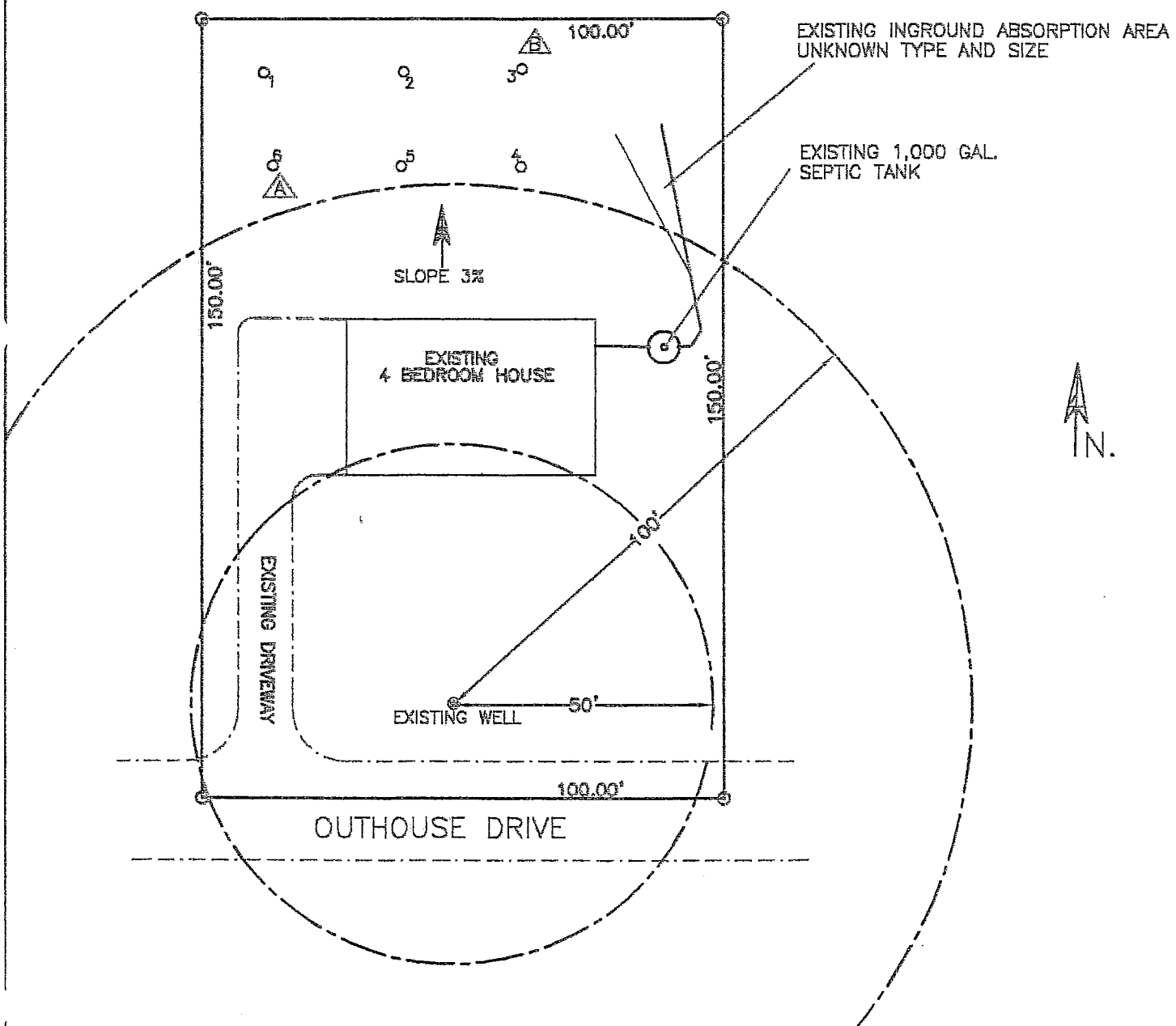
△ INDICATES TEST PROBE

○ INDICATES PERC. HOLE

TEST PROBE # A
 L.Z. 56" WATER TABLE

TEST PROBE # B
 L.Z. 56" WATER TABLE

PERCOLATION HOLE DEPTH 20"
 PERCOLATION RATE
 76.00 MINUTES PER INCH



CASE STUDY #5

History:

The Smiths have a three-bedroom home and a one-chair beauty shop connected to the house. They noticed the absorption area of their onlot system has been getting soft. They contacted the local agency SEO to see what they should do.

The following testing information is provided but may not be needed to resolve the problem.

Soils: Sandy clay loam

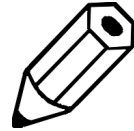
Limiting zone: 84+inches

Percolation rate: at 36 inches = 45 min./in.

Suspected cause:

Solution:

Installation:



NOTES

CASE STUDY #5
SMITH SITE
22,500 S.F.
SCALE: 1" = 30'

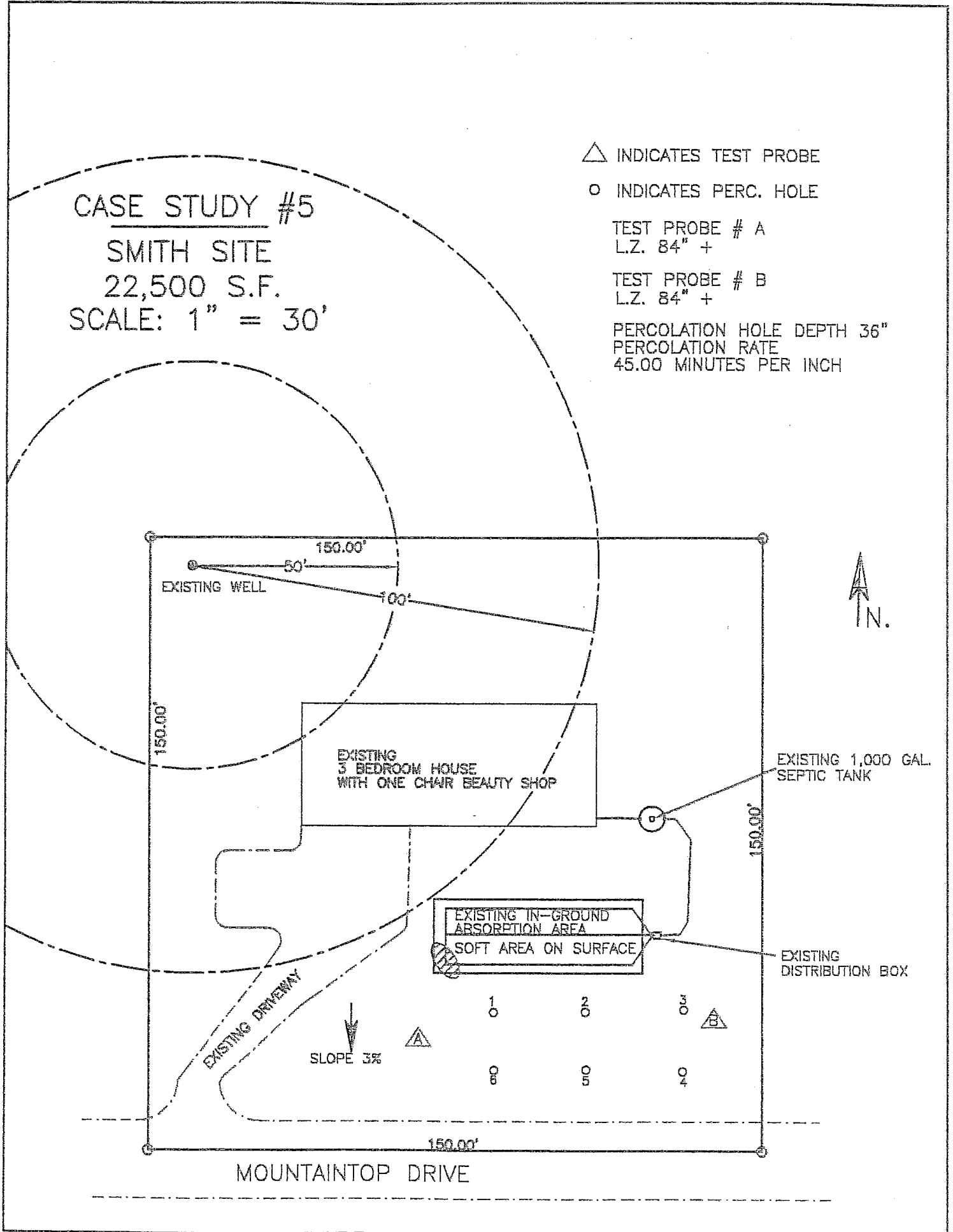
△ INDICATES TEST PROBE

○ INDICATES PERC. HOLE

TEST PROBE # A
 L.Z. 84" +

TEST PROBE # B
 L.Z. 84" +

PERCOLATION HOLE DEPTH 36"
 PERCOLATION RATE
 45.00 MINUTES PER INCH



10	20	30	△
40	50	60	

Handling Nuisance Complaints

A nuisance complaint occurs when a person complains about a possible malfunction of another landowner's onlot sewage disposal system.

Local agencies are responsible for abating public nuisances through the coordinated actions of the following parties:

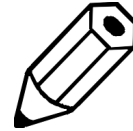
- 1) _____
 - Creates policy regarding complaint processing
 - Develops policy prior to need.

- 2) _____
 - Implements complaint policy.
 - Keeps local agency informed.
 - Serves as an expert witness.
 - Can act as prosecutor.
 - Represents local agency
 - Is an extension of the local agency.
 - His or her actions are the local agency's actions.
 - Must be supported by the local agency.

- 3) _____
 - Implements complaint policy.
 - Advises SEO and local agency.
 - Prepares complaints and other legal papers.
 - Acts as the prosecutor.
 - Represents the local agency.

All nuisance complaints should be given to the local agency SEO verbally or in writing and should include the following information:

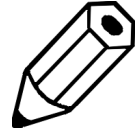
- 1) Identification of landowner with malfunction.
- 2) Property location and type of land use.
- 3) Duration of malfunction, when it started, etc.
- 4) Signature of the individual who is complaining.



NOTES

After receiving the letter, the SEO should notify the landowner of the nuisance with a certified letter that includes the following information:

- 1) A statement acknowledging the complaint has been received.
- 2) An offer of assistance.
- 3) Time limits for response.
- 4) A request to contact the SEO.
- 5) How to contact the SEO.



NOTES



KEY POINTS

- Malfunctions need to be fixed to eliminate _____.
- _____ can only be used in a repair situation and only if the guidelines are being followed.
- A local agency and its SEO should have an official _____ in place for handling nuisance complaints.
- Installing a new absorption area may not always be the best solution.