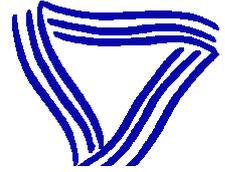


## APPENDIX A: STORYBOARD TEMPLATE



LOCAL HEALTH DEPARTMENT NAME: Three Rivers District Health Department  
ADDRESS: 510 South Main Street, Owenton, Ky. 40359  
PHONE NUMBER: 502-484-3412  
SIZE: 67 Staff  
POPULATION SERVED: 45,118  
PROJECT TITLE: Mandatory backhoe pits to assist in site evaluation

### PLAN

Identify an opportunity and Plan for Improvement

#### 1. Getting Started

**Kentucky On-Site Sewage Disposal Systems Regulation, 902 KAR 10:085 supports the use of backhoe pits where they are thought necessary, to conduct a site-evaluation. At our Environmental meeting on January 26, 2006 we discussed for the first time, the use of backhoe pits, as a tool to conduct more accurate site-evaluations. It was decided, that for the next 18 months, we would implement their use on site that presented difficulties. Over the next 14 months we did require back hoe pits where we thought they would give us a more accurate site-evaluation. At our Environmental meeting on March 30, 2007 we discussed the use of backhoe pits on past sites that we had required and determined that they were quite beneficial and effectively gave us a better evaluation of the soil. Our main concerns and additional reasons for the implementation of the use of back hoe pits, were also discussed.**

Environmentalists spend too much time in digging auger holes to perform site evaluations. At times of

demand, the amount of site evaluations may exceed what an Environmentalist can do in a day's time. A hard day would be to perform 5 to 7 site evaluations after first augering 3 to 4 holes at each site. Regulation already allows for a backhoe pit to be required at the Environmentalist's discretion. Our plan of improvement is to require backhoe pits on every site. This plan of improvement will speed up time required to evaluate sites and thus allow Environmentalists to do more sites in a day's time. Additionally, backhoe pits will allow for a better view of soil conditions, pans, etc. and therefore result in a better site evaluation result to better serve the homeowner and ultimately, the public's health. Whereas augering holes may be restricted in dry or semi-wet weather conditions, a backhoe pit may allow for more windows of opportunity for the evaluation to take place.

#### 2. Assemble the Team

The team that will have input into this improvement will be the Environmentalists that work for Three Rivers District Health Department. Our District contains four counties: Carroll, Gallatin, Owen and Pendleton. With an Environmentalist stationed in each county, the team will be able to offer a large scope of the

success of this proposed implementation.

**Aim Statement:** In October 2006 we expect to adjust our protocols and educate installers that we are beginning to require backhoe pits on challenging sites. By pointing out the deficiencies that we now have with auger holes and identifying the efficient manner that backhoe pits will allow us to do site evaluations, we expect our boards and stakeholders to see the benefits, both to our employees and to the home owners. Having seen the benefits we believe they will support the proposal to require backhoe pits on all sites for evaluation in the future. We expect to use backhoe pits on all sites within our Counties by January 2009.

#### 3. Examine the Current Approach

In our current approach an Environmentalist is required to auger at least 4 holes to evaluate soil for a site evaluation. The existence of rock is a problem in many cases. First a probe rod must be used to determine the presence of rock. Sometimes it requires several probes to find a place to dig that has no rock. On occasion the probe will miss a rock and go down at the edge of rock and after augering a hole down a foot you catch the edge of a rock you did not think was there and then the process starts all over again. The

process is very tiring and very time consuming.

Wet soil conditions make augering very difficult. Wet soil sticks in the auger bucket and most of the time has to be pounded out to dislodge the clay from the bucket.

Very dry conditions cause soil to turn to powder in the auger bucket and make trying to read the soil conditions almost impossible.

Many times with these kind of restrictions, we feel we are not observing all that the soil has to show us.

#### 4. Identify Potential Solutions

In the case of augering holes versus backhoe pits the potential solution is simple.

Implement a procedural change that requires a back hoe pit to be dug on every site for a site evaluation. Once completed, homeowners would be informed at the time of site evaluation application. An informative letter could be sent to all certified installers and education provided at the annual continuing education training for installers. A public interest article could be run in our local papers. Radio stations in our District could make public announcements. Signs could be placed in our offices to notify clients of the change in procedure.

#### 5. Develop an Improvement Theory

Improvement Theories:

\*Time it takes Environmentalist to do a site evaluation will be drastically reduced.

\*A more reliable read of the soil will be attained.

\*Dry/semi-wet soil conditions will not effect the site evaluation results in a negative way.

\*More site evaluations can be done in a day's time increasing our efficiency in times of demand.

- Our homeowners will be better served by a more accurate site-evaluation.
- With a more accurate site-evaluation, a more effective septic system can be installed.

- A more effective system should result in a better treatment of sewage.
- Better sewage treatment results in less sewage potential for disease.
- Our public is better protected.

### DO

Test the Theory for Improvement

#### 6. Test the Theory

The theory will be tested after a eighteen month trial period. Efficiency will be checked.

Site evaluation results will be checked.

Sites done in the dry time of the year will be checked to see if a more accurate site evaluation has been achieved.

### CHECK

Use Data to Study Results of the Test

#### 7. Check the Results

After a 2 year period, results were developed.

We found a 2 year period was needed for evaluation to be sure we had a good look at site evaluation done in the dry season.

Results found were amazing.

\*With the use of back how pits Environmentalist could easily do 10 site evaluations in a day as opposed to 5 before.

100 % increase in efficiency.

\*Environmentalist found they could give a more accurate evaluation because they could see much more ditch sidewall.

\*Dry season evaluations were more accurate because side wall read was much better because soils stayed intact.

\*From the beginning, there was very little complaint from the homeowner when they realized they were getting a more accurate

evaluation and a better system design due to backhoe pit use.

### ACT

Standardize the Improvement and Establish Future Plans

#### 8. Standardize the Improvement or Develop New Theory

In this case the positive results far exceeded the expectation.

Future outlook is that this improvement is so satisfactory that no changes are anticipated in the process.

#### 9. Establish Future Plans

If in the future, we identify that changes need to be made, we can easily adopt changes to improve our results. At current time, legislation requires evaluations be completed within 15 day period. While we are never the cause for a delay of this magnitude, sometimes the homeowner organizing the backhoe pit with the installer can create delays that exceed this. We must work to better communicate with the chosen installer/homeowner with follow ups to assure the delay is within the limits and is not due to our negligence.

- As of January 2009, backhoe pits have been required to be used on every site that is evaluated in our District.
- With the positive benefits that have been seen, we expect that mandatory back hoe pits will continue to be required as part of our site-evaluation process.