

Almost Three Decades of Leak Location Data Compiled

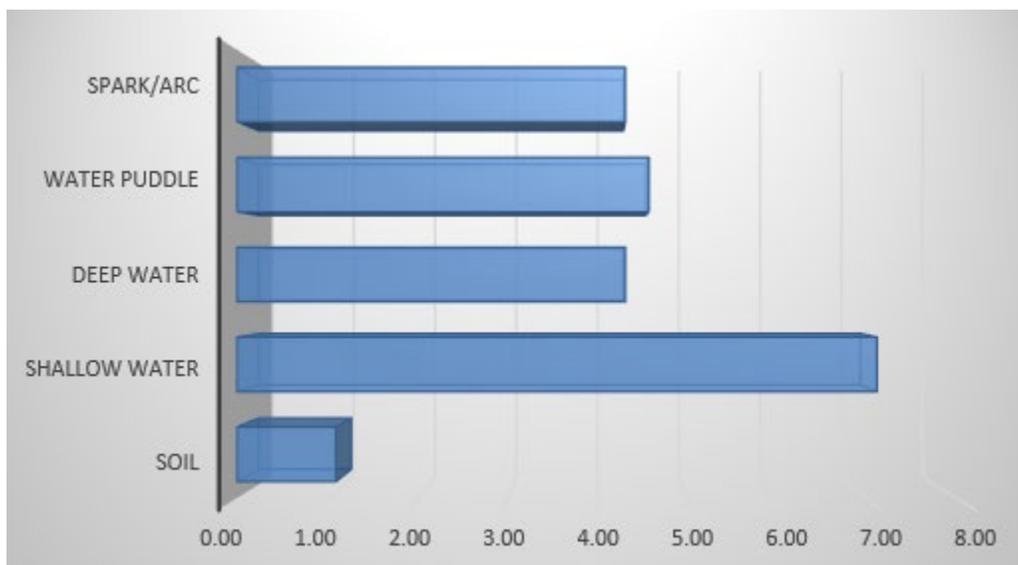
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Leak location surveys have been performed for almost three decades now. During this time there has been an extensive amount of data that has been collected. There are many ways this data can be used to understand what is really happening out in the field. The data that is going to be discussed ranges from the years of 1992 through 2019 and covers over half a billion square feet and almost 4,000 leak location surveys. All of the data comes from the same company in order to help minimize the effect of variables which increases the reliability of the results.

The main question that is always asked is “How many leaks are typically found at a site?” This is a good question and easily answerable; however, there is much more that can be understood about leak location surveys if we dig a little deeper into the data. To start I will break this data down into five sections, soil covered surveys, shallow water surveys, deep water surveys, water puddle surveys and spark/arc surveys. If we lump all of these surveys together, we get approximately four leaks per hectare of area surveyed. This trend is seen repeated most years and even if you combined the entirety of the data it still holds true. But, does this mean regardless of the survey four leaks on average will be found per hectare? After compiling the data, the answer is “no” as can be seen from Graph 1 below.



Graph 1. Survey Method vs. Leaks per Hectare

What type of survey finds the greatest number of leaks per hectare? The answer is the shallow water test at 7.1 leaks per hectare it is the survey method that is far above the others. Now why is this? The shallow water method allows the technician to test directly on top of the liner.

Along with the added head pressure of the water and the ability to find areas of leaks when there are multiples pin holes clustered together, contributes to this high ratio. Does this mean the other leak methods are not as good? Not necessarily. For instance, with a soil survey a leak can show up in the data as a single location but gives off a very large signal most times. Imagine the surprise when it is exposed and there is a small pin hole. Best practice would say to expose a larger area and most every time multiple other leaks will be seen. These leaks have been counted as one leak and not multiples which may lend to the differences. See Image 1 below.



Image 1. One Leak Area

There are many other questions that can be answered such as “On a double-lined system when both layers are tested which one typically has more damage? The answer is the primary (topmost) layer. It’s good to know the answer, but the better follow-up question is why and how much more?

Future questions to be answered and learned from are: How much more helpful is a fabric above the geomembrane when placing cover material on top? What type of damage is being found in each type of survey? What is the effect of using conductive liner instead of nonconductive liner when it comes to detecting damage? All are good questions that I am to answer in the near future.

CONCLUSION

As of the end of the year 2019 a total of 3,750 leak location surveys have been surveyed totaling more than 580,561,500 square feet. This relates to more than 28,650 leaks found and repaired.