

# WASTE MANAGEMENT AND ITS IMPLICATIONS FOR THE DALLAS COUNTY FARM AND CARE FACILITY

## Defining issues

Waste management is an important consideration for any facility's overall management plan. Dealing with waste efficiently and responsibly has been and should continue to be a management goal of the Dallas County Farm and Care Facility. Effective waste management serves to eliminate hazards to humans, livestock, and the environment. It also relieves many social impacts. A reliable waste treatment system eliminates problems with government agencies and avoids disturbing neighbors. Most importantly, a sound waste management strategy allows continued use of the facility with potential for planned growth.

## Existing system

Systems for treating human waste are especially important in rural areas where a municipal treatment system is not available. Currently, the facility operates a sewage treatment lagoon located north and west of the main residence building. This lagoon has been in operation



since 1972. The lagoon is 5 feet deep, spans 223 feet east to west, 141 feet north to south, and has a holding capacity of 1,390,000 gallons. On average, 6,200 gallons of treated water per day are discharged into the Raccoon River under a State of Iowa discharge permit.

Currently, the lagoon is divided into three cells. Influent enters into the first cell at one end of the lagoon and passes into the second cell at the other. A smaller third cell is located at the discharge point. This system of cells allows a greater amount of retention time for maximum treatment of the influent. Two computer-controlled aerators are located in the first cell and one in the second to provide the oxygen necessary for efficient decomposition of wastes.

## Current problems

When operating properly, the existing lagoon system adequately serves the current number of residents, staff and visitors of the Facility and Farm. However, the lagoon has been a problem in the past and continues to be a factor that limits future growth options on the site.

As part of its discharge permit requirements, effluent reports must be submitted to the Iowa Department of Natural Resources (IDNR) each month. Flow from the lagoon is measured and

recorded daily. Effluent is sampled and analyzed for a fee by an independent testing laboratory for biological oxygen demand, ammonium nitrate, dissolved oxygen and suspended solids. In-house testing of temperature, pH and settleable solids is also performed and included in the required monthly reports.

In the past aerators have failed and caused effluent to exceed IDNR limits. This has resulted in IDNR visits to the site. These visits and the ensuing correspondence has resulted in the facility being required to secure a local engineering firm to act as an on-call consultant for quick remediation of system failures. Replacing aerators is no small task. At a cost of about \$1000 per instance, an aerator must be removed with a crane, repaired, and then put back in place, again with a crane.



View of existing lagoon from east side  
(photograph courtesy of Strauss Hsieh)

## Asking Questions

Waste management strategies for the Facility must be consistent with future growth on the site. Therefore, this issue introduces many questions about the future of the Farm and Facility. In order to devise a relevant waste management plan, clear direction must be given to future activities on the site. This is not easy, but it is a necessary part of the management process.

What are the intended future uses for the Dallas County Farm and Care Facility? In a workshop conducted by Iowa State students at the care facility on April 17, 2001, several possibilities for growth on the site were mentioned. Among the possibilities mentioned by those in attendance were a new county office building, a new apartment complex and expansion related to the farm's ongoing partnership with Des Moines Area Community College.

Are improvements or additions to waste treatment infrastructure necessary at this facility? The answer to this question, of course, depends upon future activity on the site. The chance that future demand for sewage treatment on the site will remain the same is very slim. A waste management strategy that is consistent with plans for the future is needed, regardless of those future plans.

## Finding Solutions

A proactive approach to the management of future waste treatment on the site is important for several reasons. The first is to avoid allowing inadequate waste treatment to limit planned growth. By including a waste management strategy in the planning process, factors that may

inhibit desirable expansion can be addressed in a timely manner. The inclusion of waste management in future plans for the site also insures against future breaches of IDNR regulations due to overloading the current lagoon system. This is the second purpose of a waste management plan. Avoiding the cost of fines and the prohibitive nature of further IDNR involvement in site activities is desirable. A third point of argument in favor of a waste management strategy is Dallas County's need to set a positive example for its residents. Government should always consider itself a model for citizens to follow. This is especially fitting here, since government at the county level oversees rural, residential waste treatment installations.

Plans for the future of this site are still uncertain. Based on the assertions of those at the April 17 workshop and the common sense principle that says nothing stays the same forever, the remainder of this chapter will explore four options that could be included in a waste management strategy for the facility.

### **No action**

The difficulties of devising a sound strategy for waste management may be so great and the implementation so costly that those involved will opt for the status quo. This is actually quite viable if the intended facility uses do not demand more of the sewage treatment infrastructure than they do today. With an aging population and a general population increase in Dallas County, though, it seems that a rising demand for the type of health care provided at this facility will only increase the load on the existing lagoon.

In general, a no action solution severely restricts the ability of the county to serve its residents through the existing health care facility. It also creates a significant barrier to future expansion of the site into new and additional uses.

### **Municipal system**

The Dallas County Farm and Care Facility is located between two incorporated communities. Adel, the Dallas County seat, is to the south. Dallas Center is to the north. Both towns have municipal sewage treatment plants that are capable of handling the waste generated by the facility. The major impediment to this solution is distance. Approximately 2.5 miles of sewer pipe would be required to transport waste from the facility to the nearest pipe within Adel city limits. Although the facility is only 0.9 miles from Dallas Center's corporate limits, the nearest sewer hookup for this system is more than 3 miles away. Political issues of fairness and taxation come into play in this scenario as well.

Presently, this option is not a feasible one. The potential may exist, however, for future growth of these neighboring communities to open up the possibility of a hookup. This could be an important factor to consider in a long-term waste management strategy for this site.

### **Septic system**

Installing new septic systems is a common solution for sewage treatment in rural areas. The soils on the site are a significant limitation for septic systems. Dallas County requires a complex soil analysis, rather than a simple percolation test, to be performed in conjunction with septic system installations. The soils most suited for septic system construction on this site are only

moderately suitable due to moderate permeability. Water tables on the site are deep enough to support underground septic systems, but they do not percolate fast enough to allow a traditional lateral trench system.

Solutions are available for alternative septic treatment systems. Mound systems work well to prevent effluent from bubbling out onto the surface of the soil. Systems with buried filter tanks or pits filled with sand or peat are effective as well. Filter systems can be configured to leach effluent into the soil through a filter field or to release effluent into a river or stream. Discharge into any surface stream must be permitted, and effluent must be sampled regularly. If effluent is leached into the soil, special attention must be paid to the two groundwater wells located north of the main residence building.

Alternative septic systems are a viable option for waste management on this site. A clear advantage to this option is that additional systems can be added to fit future demand.

### **Lagoon improvement**

The existing lagoon is essentially running at capacity. Increasing its capacity through additional aerating equipment, partitions and chemical additives may be a possibility. This type of solution would require careful monitoring to insure adequate treatment, and the actual increase in capacity may be negligible.

A second option in this category is the construction of a new lagoon. Although no soils on the site are highly suitable for sewage lagoons, soils with only moderate limitations for lagoon construction can be found. It is important for the size of a new lagoon to be consistent with the volume of waste it will be required to treat. This is to protect the impermeable clay seal in the bottom of the lagoon from being exposed to air and cracking at times when influent and rainfall are not sufficient to keep it full. A cracked clay seal will allow sewage to seep into the groundwater.

The potential could exist, in the future, for surrounding rural subdivisions, which face the same soil limitations for septic systems, to partner with the county in constructing and operating a sewage lagoon. Again, the practicality of this type of solution will depend on the level of demand projected for the facility.

### **Management conclusion**

Waste management is an issue that can be thoughtfully shaped by plans for the future of the Dallas County Farm and Care Facility. It is also an issue that can cripple the county's ability to effectively implement its plans. Waste management issues serve as an impetus for thought about the future of the Facility and Farm. Whatever the future holds for this site, an effective waste management strategy will serve to alleviate pressures from regulation, and it will designate county government as a steward of the land, a good neighbor and a true leader.

## References

Ohio State University Extension. 2001. Soil evaluation for home septic systems.  
[www.ag.ohio-state.edu/~ohioline/aex-fact/0742.html](http://www.ag.ohio-state.edu/~ohioline/aex-fact/0742.html). Accessed 25 April 2001.

Smith, K. Telephone interview. 27 April 2001.

Wilson, D. Telephone interview. 27 April 2001.

Wiltkowski, K. Telephone interview. 26 April 2001.