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August 26, 2013

Utah Department of Environmental Quality  
Division of Water Quality  
195 North 1950 West  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870

**Subject:** Manure Drying Program

Dear Mr. Baker:

Attached to this letter you will find a proposed plan from Circle Four Farms for a Manure Drying Program.

This plan is explained in full detail, and with your approval, we would like to begin as soon as possible.

If you have any question please feel free to contact me at (435) 387-6032.

Sincerely,

Chad R. Blackburn  
Assistant Environmental Manager

Cc: Jim Webb CFF  
Dwight Potter CFF

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DWQ-2013-005889

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## Manure Drying Program Plan

### Introduction

Currently Circle Four Farms has 66 farm sites in operation; there is a primary lagoon at each site where manure solids are collected. It is necessary to remove accumulated solids from the bottom of each primary lagoon at the farm sites. Circle Four Farms has implemented a program to remove the solids from the lagoons and dry the manure on a drying pad near the lagoon. The manure is a valuable nutrient source and the drying of the manure will allow the nutrients to be applied to local cropland at agronomic rates without posing a risk to groundwater. As a result, the manure will not be stored in landfills or other lagoons in perpetuity. This manure drying program is applicable every time a lagoon is de-sludged. Below are the minimum criteria for construction and operation of the manure drying pad:

### Site Selection

- Groundwater must be at least 20 feet or greater
- Drying pads will not be located in stream beds or washes
- The drying pad will be located near the primary lagoon at the selected farm site so manure transportation distances will be minimized.

### Drying Pad Engineering Requirements

- Once a site has been selected, a drying pad will be constructed to the below criteria:
  1. The existing vegetation will be cleared and grubbed.
  2. The existing soil will be scarified to a minimum of 10 to 12 inches below the existing ground surface.
  3. The ground surface will be conditioned so that the moisture content is from optimum to 0 to 5 percent above optimum moisture content.
  4. The soil will be compacted to a minimum of 90 percent of ASTM D698.
  5. Density testing will be performed at a minimum of every 10,000 square feet of surface area.

6. Infiltrometer testing will also be performed prior to any manure transfer. The testing will be a minimum of 1 infiltrometer test per 5 acres. For example if the pad were 25 acres there would be one test randomly located in each corner and one test near the middle.
  7. Soil compaction and infiltrometer testing results will be submitted to the DWQ.
- Berms will be constructed on the downhill side of the drying area with lateral berms to contain any leachate or run-off from precipitation.
  - Sumps, or pumping areas, will be strategically placed inside the berm area and leachate or precipitation will be pumped into a permitted lagoon.
  - While in the liquid stage manure will not be more than 3 feet in depth. However, in the final stage of drying, stacked manure in windrows may be up to 6 feet in height.
  - To sufficiently dry the manure, it may remain on the drying area for up to 9 months. However, it is anticipated that within 30 to 60 days the decanted and free or excess water will be gone. Once the leachate has been removed, and the manure is dry, it will be formed into wind rows. Wind rows will be periodically turned by a composter until it is ready to be hauled to agricultural fields for application.

### **Soil Sampling**

Pre and post soil sampling is not required by the DWQ unless a sensitive area is proposed as a drying site. There will be a total of five soil sample locations in the manure drying pad when soil sampling is required. Soil samples will be located in each corner of the pad and one in the center. Soils will be sampled (if required) at 1 foot intervals to a depth of 10 feet below ground surface and then sent for laboratory testing. Soil samples will be analyzed for:

- Nitrate nitrogen (mg/kg)
- Ammonia - N (mg/kg)
- Chloride (mg/kg)

Post-analysis laboratory results will be submitted to the DWQ if required.