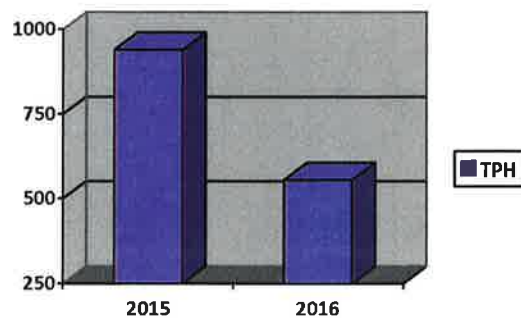


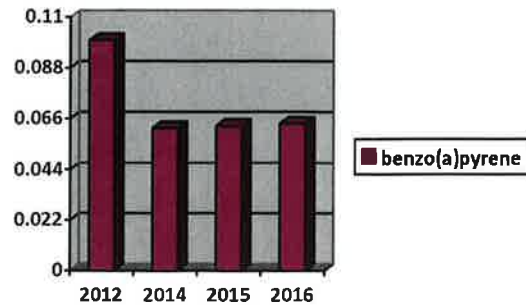
# LINN Energy

Linn Operating, Inc.  
Piceance Asset  
Parachute, Colorado  
May 15, 2017

## I02 697 Landfarming Plan – Facility ID #449050

- History
  - Two wells were drilled and completed on this well pad in 2010. These wells were drilled using diesel based drilling mud. The drill cuttings were blended with clean soil and stockpiled on location. Composite samples of these spoils have taken annually since 2015.
- Current Status
  - Approximately 3,648 cubic yards of spoil material that is being treated on site by land farming is remnants from drilling and completion operations. The landfarming operations have taken place since the summer of 2015. The landfarming material was spread out on location to a depth of approximately 18" on Sept. 1, 2016.
  - In 2017, the landfarmed material was spread out even more, reducing the depth of the material being tilled to approximately 14". A farm tractor with chisel point plows has tilled the soil three times. Based on analysis of the soil samples for nutrients, fulvic acid, phosphorus, and nitrogen amendments have been added to each treatment. Tilling will continue once every 10-14 days until the 910-1 standards are met or until weather prohibits activity.
  - Samples taken since September 23, 2015 indicate that this material fails COGCC Table 910-1 for benzo(a)pyrene at various levels (0.039 – 0.065). The highest reading was taken on September 23, 2015. The most recent reading was taken on October 9, 2016 was 0.0359.
  - TPH also fails the 910-1 table at various readings (556 – 940). The highest reading was taken on September 23, 2015. The most recent reading taken on October 9, 2016 was 556.





- Treatment – 2017
  - Spoil will be turned over by a farm tractor pulling a chisel point plow 10 to 12 times (depending on weather and snow conditions) during the warm months in 2017. The soil will be turned over with the frequency established in the plan as a minimum or with a higher frequency if possible. The soil has been spread out to increase exposure to the atmosphere and sunlight as much as possible on the production pad.
  - Pre-treatment samples taken in the early spring will determine the amount of amendments that will be added to the spoil based on an analysis of nutrients present in the spoils.
  - Amendments.
    - Based on analysis of the pre-treatment samples, Dave Nicholson recommended to add 200 lbs. of phosphorus fertilizer, 240 lbs of nitrogen fertilizer, and fulvic acid during each tilling operation to address the benzo(a)pyrene and TPH.
- Samples and lab tests
  - Phase I - Composite sample will be taken from 8 locations on the spoil pile in early summer and analyzed.
    - If composite sample passes, discrete samples will be taken to confirm the composite samples.
      - If discrete samples pass, spoil will be buried per COGCC rules and interim reclamation of the pad will take place.
      - If discrete samples fail, landfarming will continue.
    - If composite sample fails, landfarming will continue.
  - Phase II - Composite samples will be taken from 8 locations on the spoil pile in fall and will be analyzed to 910-1 standards.
    - Procedure will be the same as Phase I.
- Continuation
  - It is very possible that the 910-1 standards will be met in 2017 and interim reclamation can take place.
  - However, if not, the process will continue into 2018 until spoil passes COGCC Table 910-1, specifically benzo(a)pyrene.