

Testimony of the North Dakota Department of Health
Steve Tillotson, Assistant Director, Division of Waste Management
Presented Before the Interim Agriculture Committee
Representative Jim Schmidt, Chairman

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Chairman Schmidt and Members of the Interim Agriculture Committee, my name is Steve Tillotson and I am the Assistant Director of the Division of Waste Management of the North Dakota Department of Health and I also manage the Solid Waste Program. My background is in geology and soil science and I am a Registered Professional Soil Classifier. Today I will provide testimony of how the North Dakota Department of Health utilizes information provided by Professional Soil Classifiers.

The North Dakota Department of Health implements the state solid and hazardous waste laws and rules as well as those regarding air quality and water quality. The Division of Waste Management is approved by the U.S. Environmental Protection Agency for administering the state hazardous waste, underground storage tank and municipal solid waste programs. The Division of Waste Management also assists other programs and local government in the cleanup of spills, releases and environmental incidents around the state that may impact surface water, groundwater, soils, vegetation and air quality. The Solid Waste Program regulates the collection, transportation, storage and disposal of nonhazardous solid waste.

The state solid waste law was passed by the legislature in 1975 with some revisions in subsequent years. Most of the current administrative rules for management of solid waste in our state were passed in the early 1990s. The state solid waste rules regulate a wide variety of facilities and activities including:

- 215 inert waste facilities typically for managing bulky construction and demolition waste;
- 13 Municipal Solid Waste Landfills which manage waste generated by communities, businesses and industries;
- Industrial Waste Landfill facilities which manage waste generated by various large industries in our state;
- 36 Coal-Combustion Special Waste Landfills and Surface Impoundments;
- 9 Oilfield Special Waste Landfills; and
- About 30 Nutrient Management Plans for waste from agricultural processing facilities such as sugar beet plants, potato processing plants, grain facilities, livestock facilities, and similar agricultural industries in our state.

To obtain a solid waste permit for a Municipal, Industrial or Special Waste disposal facility, applicants must submit a permit application to the Department of Health addressing

- Location Standards
- Operation Requirements
- Design Requirements
- Ground water Monitoring/Corrective Action Requirements
- Closure/Post-closure Requirements
- Financial Assurance Requirements

Modern solid waste landfills, are highly engineered and science – based systems with underlying clay and synthetic liners, leachate collection systems to remove water contaminated by solid waste, approved operating plans, groundwater monitoring, closure requirements, post closure requirements, and financial assurance all intended to permanently keep the waste in-place. With the heavy investment in a facility, most waste disposal facilities typically mound disposed waste up to 100 feet or more with closure slopes up to 25 percent (4:1) slope.

Closed municipal, industrial and special waste landfills are typically covered at minimum with an 18 inch layer of carefully compacted soil, sometimes combined with a synthetic component to impede water infiltration, twelve inches of subsoil that is capable of supporting plant root growth, and at least six inches of topsoil (Suitable Plant Growth Material). Disposal facilities must establish an excellent growth of adapted native grasses to permanently stabilize the landscape, minimize long term erosion and minimize water infiltration by evaporation and plant transpiration. While major facilities are obligated to monitor and maintain solid waste disposal facilities for at least 30 years after closure, solid waste disposal facilities are a permanent component on the North Dakota landscapes and will be with us forever.

Maintaining the permanent cover and avoiding exposure of waste to the environment hinges on the ability of the soil and vegetative cover to minimize long term erosion or disruption of the cover. The final soil and vegetative cover is the most important element of any disposal facility to minimize long-term impact to human health and the environment.

Solid Waste Permit applicants are required to assess the geology, topography, surface water, groundwater, soils, vegetation and land use as part of any application. This information is vital to determine whether the disposal site is suited for the proposed use and whether a closed facility will adequately protect our citizens. Having adequate supplies of suitable topsoil and subsoil available, removing, storing and maintaining this resource, and applying the protective soil cover is essential for permanently reclaiming a disposal facility. The quality of any final vegetative cover hinges on the soil quality and quantity. The Department has turned down proposals that do not have adequate soil resources. Pursuant to State Rules and related guidelines, Professional Soil

Classifiers are an essential part of the team of engineers and scientists that assess any major facility.

NDAC 33-20 defines "Suitable plant growth material" as that soil material (normally the A and the upper portion of B horizons which are dark colored due to organic staining) which, based upon a soil survey, is acceptable as a medium for plant growth when respread on the surface of regraded areas. Applicants for a solid waste facility permit must provide a soil survey and address segregation of suitable plant growth material. State rules specify all disposal facilities shall identify, quantify, remove, stockpile, and maintain suitable plant growth material for later use in closure. At closure, the final cover of all municipal, industrial and special solid waste disposal facilities must have at least twelve inches of suitable subsoil and at least six inches or more of suitable plant growth material (topsoil) which must be seeded with adapted grasses or native vegetation.

The Department refers applicants and the facility owners to the Department's on-line "Guideline 26, Soil Survey and Management of Suitable Plant Growth Material and Plant Rooting Soil for Solid Waste Disposal Facilities" which describes the soil survey requirements, provides guidance for managing the soil resource, sets soil quality parameters, and references the requirements for Registered Professional Soil Classifiers per the requirements of NDCC 43-36-01. In addition to the survey requirements, the services of Professional Soil Classifiers are very helpful in working with facility staff, equipment operators, and consultants in topsoil and subsoil segregation, removal and management. Registered Professional Soil Classifiers are also used in implementing and evaluating approved final cover placement.

With recent activity in western North Dakota, each oil well generates about 450 tons of salt and oil laden drilling cuttings, mud and similar waste. With about 2000 wells drilled per year, the total amount of oilfield waste is in the range of 9 million tons per year. Disposal of oilfield special and industrial waste at Department-regulated landfills nearly doubled from 2011 to 2012 and increased over 10,000% since 2001. Nearly 1.1 million tons of oilfield waste was disposed in facilities regulated by the Department in 2012. In the past two years, the five existing special and industrial waste landfills that receive oilfield waste applied for facility expansions to manage the burgeoning waste materials. Most of these five facilities are planning additional expansions. In addition, the Department recently permitted five new facilities. There are several additional new proposals either under review or anticipated shortly to manage the extremely saline and/or oily waste from oilfield drilling, spills and cleanups. All sites used the services of Registered Professional Soil Classifiers to ensure adequate topsoil and subsoil is available and is segregated for facility closure. The Department relies on the specialized knowledge and expertise of these individuals.

Recent study and guidance by leading scientists and engineers associated with the Interstate Technology and Regulatory Council evaluated failed landfill cover

systems around the country which highlighted the essential role of adequate soil and vegetative cover. This research and guidance resulted in a re-evaluation of landfill closure requirements in many states. The guidance emphasized the need for adequate soil and vegetative cover. The U.S. Environmental Protection Agency allowed modifications of nation-wide landfill cover requirements based on reasonable soil and plant science principles. North Dakota's closure requirements meet these revised guidelines and standards using soil science principles implemented with the assistance of Professional Soil Classifiers in our state.

In 2012, the Department responded to 1467 spills or releases, an increase of nearly 500 percent compared to years prior to the rapid oil development. The Department receives numerous requests to utilize oilfield brines and salt laden oil drilling waste as fill materials or other unsuited uses. In some cases, oilfield waste is mismanaged or illegally dumped. Salt impacts to the land are widely viewed as more difficult to clean up and remediate than simple oil contamination. Spills, dumping or mismanagement of waste materials, if not adequately assessed and cleaned up will permanently impact soil quality, productivity, plant growth, water quality and the value of our land resources. A sound working knowledge of Soil Science is important for restoring land impacted by spilled or mismanaged waste materials.

Soil Science is a unique multidisciplinary science which few people in other scientific or engineering professions truly understand. Soil Science is the intersection of geology, biology, topography, climate and geologic time. The skills, knowledge and help of professional soil scientists is an essential and practical discipline for protection of North Dakota's land and water resources and for controlling long term liability for our citizens. At this time in North Dakota, we need the valuable knowledge and expertise professional soil scientists have to offer.

That concludes my testimony. I would happy to answer any questions that you may have.