July 30, 2020

South Dakota Public Utilities Commission
Capitol Building, 1st Floor
500 E. Capitol Ave
Pierre, SD 57501-5070
Phone (605) 773-3201

Dear Chairman Hanson, Vice Chairman Nelson, Commissioner Fiegen, and Utility Analyst Thurber:

The National Agricultural Aviation Association (NAAA) would like to bring to your attention our concern with towers erected without considering the safety of aerial applications made to South Dakota's cropland. These could be utility towers, wind-energy towers, or other, similar structures.

In terms of background about the aerial application industry, it is responsible for treating over 127 million acres of U.S. cropland either by seeding, fertilizing, or applying plant protecting pesticides. The NAAA represents over 1,600 members in in the field of aerial application, which consists mostly of small business owners and pilots licensed as commercial applicators that use aircraft to enhance the production of food, fiber and bio-fuel; protect forestry; protect waterways and ranchland from invasive species; and provide services to agencies and homeowner groups for the control of mosquitoes and other health-threatening pests. Within agriculture and other pest control situations, aerial application is a vitally important method for applying pesticides, for it permits large areas to be covered rapidly—by far the fastest application method of crop inputs—when it matters most. It takes advantage, more than any other form of application, of the often too-brief periods of acceptable weather for spraying and allows timely treatment of pests while they are in critical developmental stages, often over terrain that is too wet or otherwise inaccessible for ground applications. It also treats above the crop canopy, thereby not disrupting the crop and damaging it, nor compacting the soil.

Although the average aerial application company is comprised of but six employees and two aircraft, as an industry these businesses, as earlier stated, treat nearly 127 million acres of U.S. cropland each season, which is about 28% of all cropland used for crop production in the U.S.—this doesn't include the substantial amount of aerial applications that are made to pasture and rangeland. Aerial pest control for managers of forests, rangeland, waterways and public health also add to these many millions of acres treated annually. While there are alternatives to making

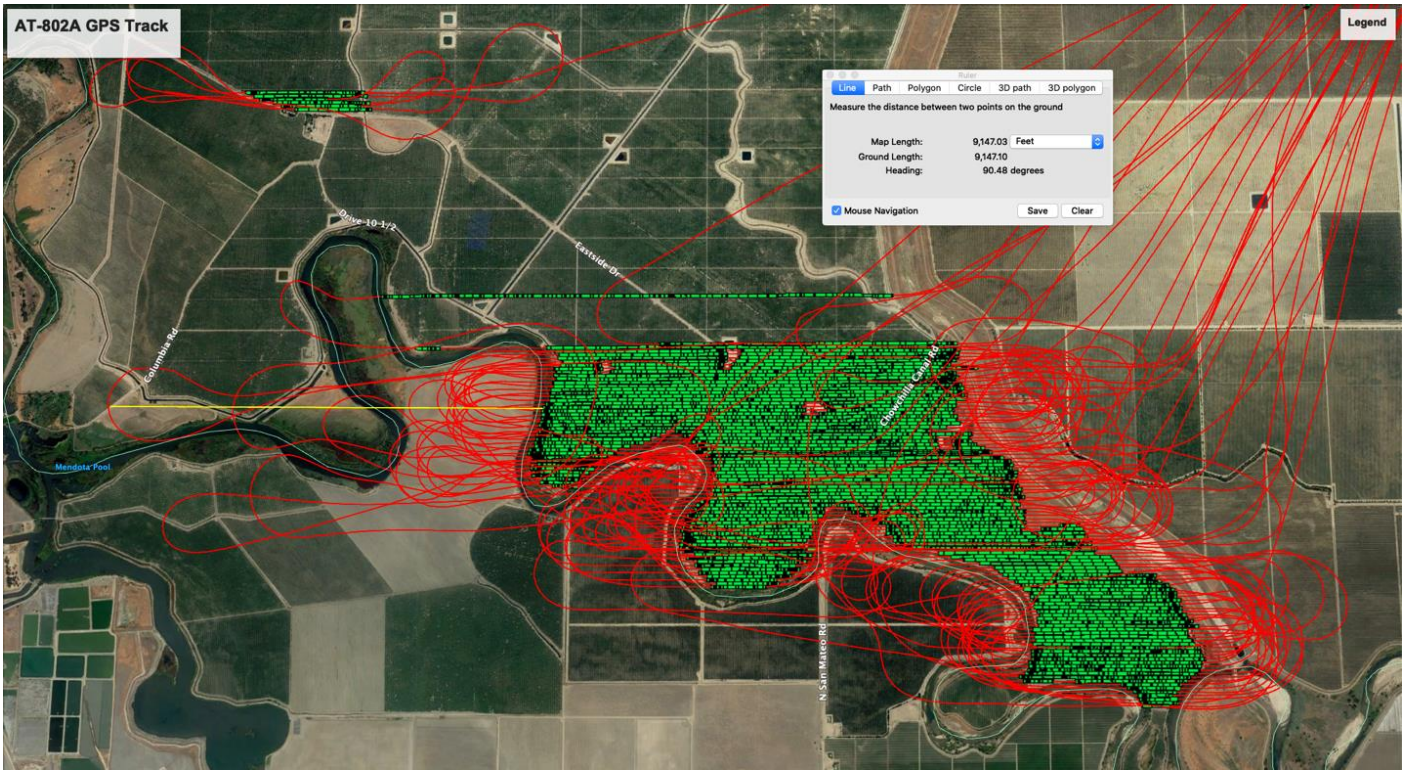
aerial applications of pesticides, these options have several disadvantages compared to aerial application. In addition to the speed and timeliness advantage aerial application has over ground application, there is also a yield difference. Driving a ground sprayer through a standing crop results in a significant yield loss. Research from Purdue University found that yield loss from ground sprayer wheel tracks varied from 1.3% to 4.9% depending on boom width. While this study was conducted in soybeans, similar results could be expected in other crops as well. Research summarized by the University of Minnesota describes how soil compaction from ground rigs can negatively affect crop yields due to nitrogen loss, reduced potassium availability, inhibition of root respiration due to reduced soil aeration, decreased water infiltration and storage, and decreased root growth. Aerial application offers the only means of applying a crop protection product when the ground is wet and when time is crucial during a pest outbreak. A study on the application efficacy of fungicides on corn applied by ground, aerial, and chemigation applications (attached with these comments) further demonstrates that aerial application exceeds ground and chemigation application methods in terms of yield response. The success of aerial application using manned aircraft has resulted in an industry that will celebrate 100 years in 2021. Throughout its 100-year history, the industry has constantly improved itself through the use of research and technology. Aerial applicators constantly strive to incorporate the latest technology that can improve accuracy, including GPS guidance, flow control for variable and constant rate applications, and on-board weather monitoring equipment. Electronic valves that will allow flow to be controlled on individual nozzles is currently being evaluated for use on agricultural aircraft.

Regarding towers, they can be extremely difficult for aerial applicators to see, as their work is conducted while flying at over 100 mph just 10 feet off the ground. From 2008 – 2018, there were 22 agricultural aviation accidents from collisions with METs, communication towers, towers supporting powerlines and wind turbines resulting in nine fatalities. For all general aviation, there have been 40 tower related accidents and incidents resulting in 36 fatalities over the same 11-year period. As such, NAAA has developed the following information on safe distances towers should be located from cropland. It has come to NAAA's attention that a wind farm sponsor in South Dakota has proposed a setback of a mere 500 feet, which is far too short a distance for making safe aerial applications in a field adjacent to a wind turbine or tower location site with a fixed-wing aircraft.

NAAA has calculated a safe distance using aircraft speed and average turn time to estimate the total distance required to make a safe turn via a fixed-wing ag aircraft. An AT-802A with a working speed of 145 mph was used as the example aircraft. The working speed was taken from the midpoint between 130 and 160 mph as denoted on Air Tractor's specifications page for the AT-802A: https://airtractor.com/aircraft/at-802a/. An agricultural turn time of 45 seconds was used; this information was gleamed from operators' experience and used in comments made to EPA on several pesticide re-registrations. A speed of 145 mph is equal to 213 feet per second; 45 seconds to turn multiplied by 213 feet per second is equal to 9,585 feet or 1.82 miles needed to make the turn.

The second method NAAA used to provide evidence on the distance required to make a turn while conducting an aerial application was via GPS as-applied aerial application maps and Google Earth. Google Earth was used to measure the distance into the field that two turns

required. The first was one of the shorter turns from the application from when the aircraft was lighter. This turn pushed 2,273 feet or 0.43 miles into the adjacent field. The second was from a longer turn made when the aircraft was fully loaded. This turn penetrated 9,147 feet or 1.73 miles into the adjacent field.



A Google Earth map showing an application made by an AT-802A. Green represents the flight path spray on, while red represent the flight path with spray off. The yellow line is the ruler tool used to measure the total length into the field a longer turn required: 9,147 feet (1.73 miles).

NAAA hopes that you the South Dakota Public Utilities Commissions finds the above information helpful and takes into account the dangers wind turbines and other obstacles represent to the safety of agricultural aviators in South Dakota where agriculture is such an integral part of the economy.

Thank you for the opportunity to share this information.

Most sincerely,

Andrew D. Moore
Chief Executive Officer