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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION
OF NAVIGATOR HEARTLAND
GREENWAY, LLC FOR A PERMIT UNDER
THE SOUTH DAKOTA ENERGY
CONVERSION AND TRANSMISSION
FACILITIES ACT TO CONSTRUCT THE
HEARTLAND GREENWAY PIPELINE IN
SOUTH DAKOTA**

HP22-002

**RICHARD MCKEAN'S
INITIAL PRE-FILED TESTIMONY
IN SUPPORT OF LANDOWNER
INTERVENORS**

6 **Q: Please state your name and whether or not you are a formal intervenor in**
7 **these proceedings.**

8 A: My name is Richard McKean. I am not a formal intervenor in these proceedings.

9 **Q: Do you either own and or have a possessor interest in land or real property in**
10 **South Dakota, owned or leased either directly by you personally or through an**
11 **entity of which you are an owner or member that you would be negatively**
12 **affected by the proposed Navigator hazardous carbon dioxide pipeline**
13 **(hereafter “proposed hazardous pipeline”)?**

14 A: No.

15 **Q: Are you familiar with the proposed Navigator hazardous carbon dioxide**
16 **pipeline they want to locate through multiple states in the Midwest?**

17 A: Yes. They are proposing to go through approximately 1.5 miles of land that my
18 wife and I own in Iowa.

19 **Q: What have you done to become familiar with that proposed project?**

20 A: I have attended meetings, and I have talked with land agents and company
21 representatives trying to learn more about the proposed route. I have repeatedly
22 asked for additional information without receiving clear answers from Navigator
23 and its agents. When I have asked questions, it appears that the pipeline layout has
24 not taken into account field drainage tile location. Navigator would not disclose to
25 me which contractor they will use for drainage tile repair.

1 **Q: Tell the Commission generally about your background:**

2 A: I received a Bachelor of Science degree from Iowa State University in 1967 with a
3 major in Economics. I then went to work for Westinghouse Electric Corporation
4 full time upon graduation. I was drafted into the US Army during the Vietnam era
5 and served 15 months in Korea before I was honorably discharged in May 1969.
6 While I was in Korea, my father said he planned to retire from farming, so if I was
7 going to farm, I had to start farming while I had the chance. Upon discharge, I came
8 back to my family farm to begin farming the land my father and grandfather had
9 farmed. My grandfather purchased the farm in 1892. I worked for my father for
10 the first year and started farming on my own in 1970. Navigator now proposes to
11 bury a hazardous CO2 pipeline through approximately 1.5 miles of our farmland.

12 **Q: Tell the Commission generally about your experience as a tile contractor:**

13 A: Once I started farming, I started renting additional acres and working with tile
14 became a much larger part of the process. I bought farmland in 1971 and hired a
15 contractor to install a significant amount of tile on that farm the next year. In 1980,
16 my wife and I bought another farm, and I again hired a tile contractor to install tile
17 on that farm. From that point forward, I hired someone with a backhoe to install
18 more tile, and after that, I started purchasing equipment to install and repair field
19 drain tile myself. I started tiling my own land in the early 1980s because I couldn't
20 get contractors due to the high demand for the work and the limited people qualified
21 to do it. We were dealing with old tile systems that needed frequent timely repair. I
22 started tiling for others because my neighbors were in the same situation, and they
23 couldn't get contractors. My equipment progressed over the years, and I have
24 owned backhoes, chain trenchers, a wheel trencher, and a tile plow. I was doing tile
25 repair and tiling before the days of tile plows, lasers, and GPS. I have installed and
26 repaired field drainage tile in several Iowa counties including Emmet, Palo Alto,
27 Kossuth, and Marshall. In general, I worked in an area from my farm north 10 miles
28 to the Iowa/Minnesota state line and 20 miles out in the other directions. This was
29 an area of about 1,200 square miles or 768,000 acres. There was so much tile work

1 in this area, there was no need to venture farther from home. I always had a waiting
2 list of customers.

3
4 I still have much of the equipment and work on my own land, but I have retired from
5 contracting out. I am still a registered drainage tile contractor with the State of Iowa.

6 **Q: What makes you unique compared to other drainage tile contractors?**

7 A: One thing that makes me unique compared to other drainage tile contractors is that
8 I am BOTH a farmer and a tile contractor. This is a very unique perspective as most
9 are a farmer OR a tile contractor. I am a lifetime Iowa farmer, and I understand the
10 agronomy part of the drainage and how it impacts crop yields and have watched
11 first-hand the results of my work. While others in the business have specialized in
12 large scale installation of entire-farm pattern tiling, I have specialized in locating
13 problems in older tile systems, locating existing tile lines, and targeted layout of
14 new lines in our prairie pothole region of Iowa. Experience is the primary factor in
15 locating existing tile lines. I have that experience. A lot of people can run a tile
16 plow and put in thousands of feet of tile, but very few have the background to locate
17 existing tile.

18 **Q: Where do you get training in tiling?**

19 A: Drainage tile installation and repair is not a field where you can earn a degree from
20 a university or a trade school. Most people get into the business by on-the-job
21 experience. Oftentimes, it is a family business that is passed down from generation
22 to generation. In my case, I learned out of necessity on my own farm and by
23 learning from contractors I hired.

24 **Q: Do you have concerns about the construction of a hazardous carbon dioxide
25 pipeline through fields with existing tiling systems, and if so please explain
26 them.**

27 A: Field tile are laid to exact grade because drainage is done by gravity. If the pipeline
28 goes through where the field tile currently exist, you will have a problem. Our
29 drainage tile outlets into drainage ditches and depth, or lack thereof, becomes

1 critical. Depth of tile can range from 12 inches to 15 feet if you need to get through
2 a hill to get to the outlet. Most tile will be in the 3-to-6-foot range of depth. A lot
3 of the grade is 1/10 of 1% to 2/10 of 1% fall.

4
5 My farm is in the prairie pothole region of Northwest Iowa. Where I live in
6 Northwest Iowa, much land is tiled in a targeted pattern tile manner, extending in a
7 radius from the prairie pothole. In general, we don't have long uniform slopes that
8 lend themselves to lengthy straight lines of tile in the field. In pattern tiling, the
9 distance between tile lines becomes critical depending on depth. The proposed
10 pipeline will cut many tile lines at all kinds of angles and directions, not just a few
11 perpendicular cuts. It will be difficult or impossible to reroute the drainage tile and
12 maintain original design characteristics.

13
14 When a natural gas pipeline was installed in our area, they required a channel iron
15 to be placed under the tile across the trench so the tile didn't settle as the dirt
16 settled. As the dirt settles, the tile sags down so any sediment in the tile will settle
17 in the dip and eventually plug up the tile line. The channel iron maintained the grade
18 and maintained drainage across the area. If Navigator's drainage tile contractor
19 places the tile inside a solid pipe or solid steel culvert so it doesn't settle in the
20 pipeline trench or excavated area, you lose drainage in that area and water will not
21 be able to enter the drainage tile.

22
23 Corn roots can grow 10 to 12 feet deep. If Navigator's drainage tile contractor uses
24 sand or sandbags under the drainage tile, you will lose the natural ability of the soil
25 to hold water and nutrients for the corn crop. Yield will be permanently impacted.

26 **Q: Are there records and maps of installed tile available?**

27 A: Records of tile lines can be difficult to come by. They started installing tile in my
28 area in the early 1900s, and there are no existing maps of many tile lines. This will
29 likely be the case for most tile installed before 1970, so there are decades of tile

1 installed without existing records. Until recently, when tile was installed, farmers
2 simply received a survey sheet that only listed the length installed with the bill.

3 **Q: What are your concerns about locating and repairing tile lines?**

4 A: I have many concerns on how the tile lines will be located and fixed. Navigator
5 says it can use Ground Penetrating Radar. That is great for locating underground
6 obstacles, but in their literature at the end they admit the big problem is wet, swampy
7 ground which pretty well sums up our area. Much of the year, the water table is
8 higher than the tile lines. It takes time for the excess water to work its way down to
9 the tile and out of the system. When a trencher goes through, it forces dirt into both
10 ends of the cut tile. If there is enough water flowing, the water will force the tile
11 back open. If it is muddy and mucky in the trench, the tile will seal off and you
12 won't even be able to see it. I have looked for hours trying to find a tile we knew
13 existed, but the black mucky soil sealed off the tile line. Groundwater was pouring
14 into the trench so fast you had very little time to locate the tile line. The tile repair
15 companies have talked about being several days behind repairing the drainage tile
16 lines after they are severed. If the tile repair crew is 2 to 3 days behind, it will create
17 a pipeline trench full of water.

18
19 Capping a tile line while work is being done on the pipeline is not a viable option in
20 many cases. You could blow water out of older tiles if you do that. This may
21 happen a long way from the capped point. On one of our farms, I had to install an
22 intake to relieve the pressure, so the tile wasn't damaged by the water pressure
23 during a heavy rain. Many of our tile systems are overloaded to begin with, adding
24 to the problem.

25
26 You can have hundreds of acres draining through these tile lines, so the impact is
27 far beyond the 50-foot stretch of ground along the pipeline center
28 line. Neighboring farms will also be affected.

29 One of the reasons I started tiling was because, as new tile got put in and old tile

1 was cut off, farmers would have new wet spots in the field they would get stuck in
2 years later. You would have to hunt for the old tile line and then get it hooked up
3 again. You must see the issue when you have the right water conditions for it to
4 show up, because once it dries out, you cannot find where the old tile line was
5 severed. This is why a one-time fix is not sufficient.

6
7 The scope of these projects is enormous, with multiple companies installing
8 multiple pipelines going throughout the Midwest. When you get into the drainage
9 situation in the prairie pothole region, timing and soil conditions are critical and
10 even a company the size of Ellingson won't be able to adequately repair the tile in
11 a timely fashion. Remember, we are dealing with repairs, not nice, neat new lines
12 installed by machines. These repairs take time, and lots of it, to do it
13 correctly. Drainage of excess water from these fields directly relates to yield;
14 standing water can cause a 100% loss in crop yield in that area.

15
16 **Q: What about a rupture in a CO2 pipeline?**

17 **A:** If there is a rupture next to a drain tile, the CO2 could blow into the tile lines and
18 travel down the tile lines. For example., the Navigator centerline is proposed to be
19 about 530 feet from our house in Iowa. Our basement floor drains are connected to
20 the tile lines. A rupture could fill our basement with CO2 instantly as the water in
21 the drain traps will immediately blow out from the force of the CO2 pressure. We
22 have two bedrooms in the basement. Keep in mind this is the same gas used to
23 euthanize animals in slaughterhouses.

24
25 **Q: Do you have concerns about limitations or increased costs landowners could**
26 **face if they seek to install tiling systems after a hazardous carbon dioxide**
27 **pipeline is placed on, under, across, or through their field and, if so, please**
28 **explain them.**

1 A: Landowners will have trouble finding contractors to repair or do drainage work on
2 the farm. There are a very limited number of experienced contractors in the
3 agricultural drainage tile installation business. The contractors can take their choice
4 of jobs that they want to accept. Once you have a pipeline going through a farm,
5 the contractors will avoid the farm because of the liability. They have plenty of
6 work to do elsewhere without the risk. I tiled across a natural gas pipeline once,
7 and I chose never to work on a farm with a natural gas pipeline again.

8
9 The amount of drainage tile installed in a field is often limited by what the
10 landowner can afford to install. Many landowners may intend to install further
11 drainage tile in the impacted farms once they have accumulated the necessary
12 funds. Having the pipeline in the farm will make that future drainage project more
13 expensive, if they can find a willing contractor.

14

15 **Q: What is the size of one of your drainage districts?**

16 A: One of the drainage districts some of our land is in drains approximately 22,000
17 acres. There are 640 acres in a square mile, so that's approximately 34 square miles
18 in the drainage district. You have a lot of acres of land draining through these tile
19 lines, far more than just the 50-to-100-foot swath along the pipeline across the farm.
20 I urge the Commissioners to question Navigator and their tile contractor more on
21 these issues. There are significant expenses associated with tiling and if a tile system
22 is compromised the landowner is more likely than not to incur significant repair
23 costs, down time, and yield loss.

24

25 **Q: Have all of your opinions here be given with a reasonable degree of professional
26 certainty give your background with drain tile?**

27 A: Yes, they have.

28 /s/ Richard McKean
29 Richard McKean