

# Salt of the Earth: Salt, Water and Damage to Land in the Bakken and the Williston Basin

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## Introduction

Oilfield developers in North Dakota's Bakken and the Williston Basin have to worry about two issues that bookend every frack: getting enough fresh water to the well site to perform hydraulic fracturing, or fracking, and then properly disposing of what comes back up to the surface as produced water. Water may prove to be the albatross around the neck of oil development in the Bakken play. And amidst all that produced water there's not a drop to drink because even after treatment it is not suitable for human consumption or agricultural use. Reinjection simply removes the formerly fresh water from the natural hydrological cycle.

## Water, water everywhere

Fracking requires fresh water in Brobdingnagian quantities, and while water resources have been adequate so far, the continuation of that adequacy is far from clear. North Dakota has had several near-record years of precipitation followed by more recent below-average years. The timing was right for the advent of fracking.

It can take from three million to four million gallons of fresh water for a single well frack. Prior to fracking, the water is stored in numerous immense tanks near the wellhead. Fresh water is mixed with fracking fluid, a chemical cocktail including proppants such as

fine-grained sand and other chemicals that keep the cracks in the rock open so that oil and gas can escape, and that mixture is then injected into the well deep underground under high pressure. That pressurized fracking fluid causes formations deep underground to crack, or fracture, releasing the oil and gas that was trapped in the rock.

Joseph Stalin purportedly said that a single death is a tragedy, but a million are a statistic. He could as well have been talking about fracking because it's difficult for the average person to imagine what four million gallons of water looks like. Picture it this way: Royal Caribbean Lines' *Allure of the Seas*, which resembles nothing so much as a floating apartment complex, is the largest cruise ship in the world in service today. It is 1,187ft long (equal to three and a half regulation football fields), and has a displacement of 225,282 tons.<sup>1</sup> At 270 gallons of water per ton,<sup>2</sup> the amount of water used in a single four million gallon frack is equal to the displacement of more than 834 cruise ships of the *Allure* class. If every one of those ships could be placed end to end, you could walk on their promenade decks all the way from Washington DC to the edge of New York City.

And that's just one frack. Worldwide, the oil industry estimates that one million wells will be fracked between 2013 and 2035.<sup>3</sup>

But the western part of North Dakota, where the Bakken lies, is a cold, semi-arid region, and during the year 2008 the entire state experienced severe drought. Much of the excess water from recent heavy precipitation years has not percolated into the ground, or completely evaporated. Appropriation of any water for fracking requires a permit from the North Dakota Water Conservation Commission. In this current time of surplus, withdrawals are now permitted from surface ponds, as well as from the impounded Missouri River waters in Lake Sacajawea and, in closely monitored settings, the state's aquifers. As oil industry production and populations increase in the Bakken, the availability and quality of water—whether for humans, livestock, irrigation, power plant cooling, downstream navigation or fracking use—will become an increasingly divisive issue not only within North Dakota, but also with states downstream, such as Missouri, which are concerned about navigability of their waters.<sup>4</sup>

## Water and the public trust

By statute and case law, all water in North Dakota is public trust property. NDCC 61-01-01 (2013); *United Plainsmen v ND State Water Conservation Comm'n*, 247 N.W.2d 457, 461 (N.D. 1976). In *United Plainsmen*, the

\* Nothing in this article is, or is intended to be, legal advice. With respect to any issue or topic discussed in this article, a reader should consult a licensed attorney in his or her jurisdiction.

<sup>1</sup> See <http://twistedifter.com/2011/03/the-worlds-largest-cruise-ship-allure-of-the-seas/> [Accessed October 14, 2014].

<sup>2</sup> See <http://www.conversion-website.com/volume/gallon-US-liquid-to-ton-water.html> [Accessed October 14, 2014].

<sup>3</sup> "Drillers Begin Reusing Frack Water" *The Wall Street Journal*, November 20, 2012.

<sup>4</sup> "Water Wars Pit Dakotas Against Barges for Missouri Flow" *Bloomberg News*, December 5, 2012. <http://www.bloomberg.com/news/2012-12-05/water-wars-pit-thirsty-dakotas-against-barges-for-missouri-flow.html> [Accessed October 14, 2014].

court explained that the North Dakota Water Commissioners' conduct is measured by the Public Trust Doctrine:

"... [A]t minimum the (Public Trust) doctrine requires evidence of planning in the allocation of public water resources. The State can no more abdicate its trust over property in which the whole people are interested, like navigable waters and soils under them, so as to leave them entirely under the use and control of private parties, except in the instance of parcels mentioned for the improvement of the navigation and use of the waters, or when parcels can be disposed of without impairment of the public interest in what remains, than it can abdicate its police powers in the administration of government and the preservation of the peace."

(*United Plainsmen*, 247 N.W.2d 457 at 461, citing with approval *Illinois Central RR v Illinois*, 146 U.S. 387 at 453 (1892).)

It is often left to the judiciary to protect against improvident dissipation of an irreplaceable resource.

## Fracking fluid

The oilfield service companies regard the components of their fracking fluid as trade secrets. The federal Safe Drinking Water Act (SDWA) is intended to protect the US fresh water supply, but s.322 of the Energy Policy Act of 2005 (EPACT 2005) amended the SDWA to exclude fracking fluid from its coverage.<sup>5</sup> This is known as the Halliburton Loophole in honor of former Vice President Dick Cheney. Cheney, formerly the CEO of oil field services giant Halliburton, was instrumental in including this exemption in EPACT 2005.

While the oilfield service industry is fond of saying that only 1–3 percent of the water injected into a frack is chemicals, that percentage must be applied to the immense volume of water that's being used. It's also worthwhile to note that only 3.5 per cent of the weight of seawater derives from dissolved salts<sup>6</sup>; people don't drink seawater.

The final stage of fracking involves the backflush, or flowback, which brings the fracking fluid back to the surface but leaves proppants behind. Salt water, also called brine or produced water, comes up as a waste fluid with the crude oil. Bakken wells are drilled in extremely hydrophilic layers. Less than half of the fresh water used returns with the crude oil, and the portion that does return comes back as a brine that can be from 35–70 per cent salt by mass, which is saltier than the hypersaline Dead Sea. Salt water spills are becoming more frequent. In July 2014 near Mandaree, North Dakota, a Native American community, 24,000 barrels of drilling brine—more than a million gallons—spilled onto the soil. In 2006, one million gallons of brine spilled into a tributary of the

Yellowstone River. North Dakota produced some 25.5 million barrels of brine in 2012 alone. The quantity and concentration of spilled brines endangers citizens' interest in fresh water, which is their Public Trust Property, and that danger is exacerbated by the inaccuracy, if not complete lack, of records on saltwater spills. The quantity of produced water per barrel of crude varies from location to location. There is no federal or state requirement that the volumes of water either injected or produced be either metered or recorded. Therefore, landowners whose properties have been affected by salt contamination from produced water may, in an action for damages, have to calculate the amount of produced water based on the ratio of produced water to crude oil and the volume of crude oil extracted from the well or wells in question. As wells age, the ratio of produced water to crude oil typically increases.

## Risks to landowners from produced water

In North Dakota brine used to be disposed of mainly by putting it into large, bermed pits called evaporation ponds, or by injecting it back into other wells that were no longer in use. The brine ponds were originally unlined, and it was previously thought that the combined evaporation and seepage back into the ground was the least expensive means of disposing of the great volumes of produced water generated by fracking.

The main constituent of produced water is chlorides from salt brought up in the drilling process, as well as other elements that vary widely from one location to another, but can include arsenic, cadmium, heavy metals such as zinc, lead, chromium and barium, and radioactive elements such as radium.<sup>7</sup>

Abandoned evaporation ponds still contain massive amounts of these salts, which can range to 250 tons or more. Depending on local precipitation, topography and the hydraulic conductivity of the soil, these dry ponds can continue to generate salt leachates for tens, if not hundreds, of years after the pit itself has been abandoned. So much salt is left behind in these pits that, if expressed in terms of livestock salt blocks, a dry pit with just 250 tons of salt would yield a solid salt block measuring 25ft sq and 16ft high. Fractures in the ground layers beneath or near these old ponds can significantly increase the hydraulic conductivity of the soil and aggravate the risk of aquifer contamination. Pits for the permanent storage of salt water are no longer permitted in North Dakota.<sup>8</sup> However, the rapid growth of oil development in the Bakken has placed severe stress on state regulatory enforcement resources, and in some cases, in contravention of applicable regulations, salt water has been stored in open pits, and many of these are unlined. Some have defective or broken liners. Worse still, some

<sup>5</sup> 42. U.S.C. s.300h(d)(a)(B)(ii) (2014).

<sup>6</sup> See <http://oceanservice.noaa.gov/facts/whysalty.html> [Accessed October 14, 2014].

<sup>7</sup> "Dangerous levels of radioactivity found at fracking waste site in Pennsylvania" *The Guardian*, October 2, 2013.

<sup>8</sup> N.D. Adm. Code section 43-02-03-19.3 (2014). Reserve pits for temporary storage of drilling mud and drill cuttings, as distinguished from salt water and crude oil, are permitted subject to regulatory requirements. N.D. Adm. Code section 43-02-02-15.5.

liners have been purposefully broken in misguided efforts to accelerate the drying process. These circumstances have created a phenomenon called “spider-webbing” because the salt is spreading, and brine has been reappearing and killing crops as far as one mile away from the old evaporation pits.<sup>9</sup> One such leak reduced much of a productive grain field to a useless salt flat. Salt contamination cannot be cleaned up easily, if at all.

Salts entering an aquifer can not only render that aquifer useless, they can also severely reduce or even eliminate the agricultural yield of the surface estate, kill trees and other vegetation that is not highly salt-tolerant, exterminate livestock that drink the water, and reduce the market price, and even the marketability of, the property. Perhaps most important for landowners, though, is that local financial institutions that previously loaned against farmland collateral in rural North Dakota have, since the Bakken oil boom, taken note of the risks of salt contamination and its effect on the value of land as collateral, as well as the risk that their institution could find itself embroiled in legal proceedings involving that pollution and its effects on neighboring properties. North Dakota has enjoyed many benefits from the Bakken play. However, a financial institution considering a loan secured by a farm or ranch with oil development will think twice (and perhaps even three times) about whether they care to see Mr Cheney’s Halliburton Loophole figuratively strung around their necks.<sup>10</sup> If the Bakken play begins to choke off agriculture’s access to credit, we could witness a sea change in attitudes toward oilfield development among farmers and ranchers.

### Continuing risks from brine

Treatment or reinjection<sup>11</sup> of brine is certainly preferable to the old evaporation pit method, but there remain significant risks to landowners from the oil companies’ treatment, handling and transport of produced water.

First, while unlined evaporation pits for salt water are no longer permitted in North Dakota,<sup>12</sup> the presence of salt water on land pending proper disposal still poses risks to landowners. Wind can move brine out of an open pit and onto land, and heavy precipitation could cause a pit to overflow. Releases at the wellhead, pipe failures and the like can allow chlorides to seep into groundwater.

Such accidents can occur from a number of causes. For example, the driller might fail to maintain well site equipment, or a driller could reinject produced water at rates in excess of permitted volumes and pressures. Or, as we saw in 2010 during the BP Deepwater Horizon catastrophe, it could fail to install or maintain adequate casing and cementing in its wells. The absence of any requirement to meter water going into or out of wells,

stretched law enforcement resources, and a geographic area so large as to make monitoring nearly impossible, combine to permit such activity to proceed with impunity.

### The clock is ticking

Landowners have commenced actions against drillers and oil companies in the past, often based on theories of trespass, nuisance or negligence. But because of the extended time period over which a subterranean salt plume may affect surface agricultural yield or water quality, a key question in any of these actions is whether the statute of limitations for the particular tort action has run. Even if a landowner has a meritorious claim against a driller or oil company, that claim is worthless if the action is time-barred. The facts, potential causes of action, and applicable limitations periods must be examined closely with counsel. The contract and trespass limitation periods are six years in North Dakota.<sup>13</sup>

To answer the question of whether the limitations period has run on a particular suit for trespass, some courts have distinguished permanent from continuing trespasses. The former is an intrusion on property under circumstances that indicate an intention that the trespass be permanent, i.e. that the intrusion cannot reasonably be removed or abated. For example, one owner builds her residence so that half of it is on a neighbor’s land. In such cases courts have held that the cause of action accrues, and the statute of limitations period begins running, at the time of entry onto the land. Depending on applicable state law, a permanent trespass may enable the landowner to recover damages for past, present and future harm in a single action, generally with diminution in the value of the plaintiff’s property as the measure of damages. However, whether a diminution in value measure of damages would account for the cost of environmental clean-up by the defendant is uncertain.

In contrast, a continuing trespass is an intrusion under circumstances that indicate the trespass may be discontinued or abated. In such circumstances, damages are assessed for present and past harm, but future damages are generally not awarded because the trespass could be discontinued or abated. Damages allowed for continuing trespass may include the value of the use of the property, reasonable costs of repair or restoration, and costs of recovering possession. Costs of clean-up are more likely to be covered under measures of damages of this type.

Local civil procedure codes must be checked because a continuing trespass may be regarded as a series of successive harms. This could mean that while the statute of limitations begins anew with each such harm, the landowner-plaintiff may be required to bring an inconvenient series of successive actions. And while the

<sup>9</sup> *Appraisal of Oil Field Brine Contamination in Shallow Ground Water and Surface Water, Eastern Sheridan County, Montana*, Montana Bureau of Mines and Geology, MBMG Open File No.260 (1993).

<sup>10</sup> And perhaps accompanied by enhanced interrogatories during the discovery phase of litigation.

<sup>11</sup> Whether an oil driller is permitted to reinject salt water will also depend on the terms of its lease or other contractual arrangement under which it is permitted to exploit subsurface oil or minerals (sometimes referred to as the mineral estate).

<sup>12</sup> N.D. Adm. Code section 43-02-03-19.3 (2014).

<sup>13</sup> N.D. Century Code section 28-01-16 (2013).

permanent/continuing trespass distinction can be useful and work substantial justice in a case, if the landowner guesses wrong on whether the salt plume under his land is one and not the other, he or she could walk into the trap of believing the limitations period was tolled, when in fact it was running.

Negligence is another cause of action that has been used in salt damage cases. These may be grounded on facts such as those discussed above in connection with the causes of brine spills.

Landowners should note that, despite the Halliburton Loophole, drilling and brine disposal remain subject to other state and federal regulation, and under the laws of some states failure to comply with applicable regulations governing a certain activity may be deemed per se negligence if the damage occasioned by the violation is the type of damage intended to be prevented by the rule. If not, a showing of negligence may be necessary.

Nuisance is another cause of action that has been used in contamination cases. Generally speaking, in a nuisance action a person is unlawfully performing an act, or omitting to perform a duty, which act or omission injures or endangers others or renders them insecure in their lives or persons, or in the use or enjoyment of their property. The nuisance action can be brought on behalf of a larger group, such as a community, even though effects of a spill on all persons in the community may not be alike. Still, to avoid challenges on standing all of the plaintiffs must in some manner have been affected by the alleged wrong, or otherwise have a stake in the resolution of the issue.

Another theory that may be applicable to salt spills is strict liability. Among the several factors that courts have considered in connection with determining whether strict liability is proper is whether the activity (fracking) is an abnormally dangerous activity. That question remains a subject of much controversy.<sup>14</sup> In several respects, strict liability may be a theory appropriate to actions involving salt spills in the Bakken. The first is the tendency of land in the Bakken and Williston Basin to absorb water. The second is the relative hardness of the geology in these areas, with some layers tending toward brittleness. The vibrations from continual drilling can by themselves fracture layers near the surface, making underlying fresh water aquifers vulnerable to salt contamination. A third consideration is the importance of casing and cementing at the wellhead. The BP Deepwater Horizon disaster showed one type of danger from defects in this area, but another is the risk of leakage of produced water at or near the surface.

Landowners must also reckon with causation challenges. The general rule for torts is that the action or omission of the defendant must be both the cause in fact

and proximate cause of the plaintiff's injury. In an oilfield development area this can present a challenge because different drillers may control different wells in proximity to one another. Landowners should anticipate that, in the event groundwater contamination is discovered, it may be difficult to determine where the contamination came from and how much any particular source might have contributed.

### **Liability under state constitution for taking**

Counsel should also consider any potential liability of the state as trustee of public trust property. A trustee's duty is not only to manage the valuable property comprising the trust res, the freshwater, it also must not transfer it without receiving something of commensurate value. The state is also responsible for managing produced water, which also is state property. Article 1 s.16 of the North Dakota Constitution requires just compensation for the taking of property. The authors take the position that the state's failure to control produced water can reasonably be viewed as a failure to properly manage a public trust property, and the state's permitting of saltwater disposal facilities as an inverse condemnation of property contaminated by salt spills.

### **Potential landowner liability**

To this point we have considered potential liability of drillers and state government to landowners for salt contamination of their water resources. But a landowner should be equally concerned about his or her own liability if contamination on his land moves beneath neighbouring properties.

As salt mixes with subsurface water, it creates a plume of contamination that can last for tens, or even hundreds, of years, and can continue to migrate and act as the cause of further pollution. A salt plume that migrates from one farmer's land into the aquifer of a neighboring property may result in liability for that farmer for trespass, even though it was the driller, and not her, who originally caused the pollution. While the fact and extent of salt plume migration depends on local gradients, topology and the ground's hydraulic conductivity, the key thing is that salt contamination is a latent hazard that may continue to occur and pose risks to the landowner even though there is no drilling or other active source of contamination. Unlike other physical assets whose loss reduces their value to zero, contaminated land may have a negative value because the cost of clean-up often exceeds its value, or because the subsurface salt plume may cast the landowner in liability even though he suffered, rather than caused, the original harm.

<sup>14</sup> cf. "Avoidable 'Fraccident': An Argument Against Strict Liability for Hydraulic Fracturing" (2012) 60 U. Kansas L. Rev. 1215; "Balancing the Need for Energy and Clean Water: The Case for Applying Strict Liability in Hydraulic Fracturing Suits" (2012) 39 Boston College Env. L. Rev. 131.



*Figure 1: aerial view of a salt plume in Bottineau County, ND.*



## Contributory negligence of the landowner

In addition to potential liability to neighboring land owners due to salt plume migration, a landowner must also advert to the possibility that a driller may allege contributory negligence as a defense in an action brought against it to recover damages for injury to land. For example, in a Texas case, the landowner-plaintiff in an action against an oil company drilled several test wells in the affected area, but failed to case, cement and plug the test wells in accordance with applicable state regulations. The oil company argued that the landowner's negligent installation and operation of the testing wells had contributed to the water contamination of which he complained, and in consequence the plaintiff's damages were substantially reduced.<sup>15</sup>

## Just singin' in the rain

Oil companies and drillers have also tried to defend against liability for salt contamination on grounds that, given time, precipitation will recharge the aquifer naturally, thereby resolving any contamination of the subsurface water by salt. This is effectively saying that over time, if no further pollution occurs, the brine would simply be flushed out by natural processes. Whether this is correct or not for a particular situation will depend on a number of factors, including the relative aridity or humidity of the climate, the hydraulic conductivity of the soil, and other factors that might speed or retard recharging of the aquifer. The key term is "given time." It can easily take more than 50 years for polluted groundwater to naturally dissipate beneath the surface, and in such a case it is definitely a "long run" defense. But as economist J.M. Keynes once said, in the long run, we are all dead.<sup>16</sup>

## Remediation

Being proactive in remediation of salt spills and other contamination is very much in the self-interest of oil companies, drillers and related players in the Bakken. One reason for this is that juries in cases of this kind in other jurisdictions have awarded multimillion dollar damage verdicts against the oil companies. For example, in *Corbello v Iowa Production*,<sup>17</sup> Shell Oil argued that, despite severe ground contamination, the plaintiff's damages amounted to only a few hundred dollars representing the rental value of the property for a short holdover period under a lease. The jury and reviewing judge saw the case differently and awarded \$33 million

for property restoration, \$16.7 million for saltwater disposal and improper occupation of the property, and \$4 million in attorneys' fees.<sup>18</sup>

## Measuring damages

As a measure of damages, courts have often used the diminution in value of the property caused by the contamination, but this measure may work to the disadvantage of the landowner if prices for land generally, or for his or her land in particular, are low. On the other hand, while courts have granted damages in the multimillion dollar range for restoration, diminution in value may be the only legitimate measure of damages if the costs of restoration are unreasonable. In other words, it must be possible to clean up the damage done without unreasonable expense. For example, in one case the plaintiff's claim for restoration of salt-contaminated land was based on its plan to excavate 16 acres of land to a depth of 20 feet, hauled that all away, and then replace it with clean dirt.<sup>19</sup> The defendant oil company contended that this was unreasonable because it would involve the extraction of 1.25 million cubic yards of dirt, requiring 250,000 18-wheeler trucks to haul it away from the site.<sup>20</sup> In another case, the plaintiff's proposed remediation would have cost \$2 billion, which would have made it the largest restoration project in history up to the date of that decision.<sup>21</sup> Needless to say, the courts in these cases adhered to the diminution in value measure of damages.

For damage to property not arising from breach of a contract obligation, North Dakota law establishes a presumption of damages measured by the reasonable cost of restoration and the reasonable value of loss of use, unless restoration of the property within a reasonable period of time is impossible or impracticable.<sup>22</sup> Restoration is impracticable when the cost of repairs and loss of use is greater than the diminution in market value caused by the damage. In that case, the measure of damages is presumed to be the difference between market value of the property before and after the damage, plus loss of use until a replacement is obtained. *Id.* Whether and how this provision would apply to migrating salt plumes that reduce a property's value to less than zero (i.e., the property becomes a source of liability to its owner) is not clear. However, placing loss of use damages aside for the moment, nothing in NDCC 32-03-09.1 precludes use of a negative market value in calculating damages (in other words, the damages payable by the defendant would exceed the market value of the property). Further, it is the authors' view that this statute does not limit an action against the state for inverse condemnation.

<sup>15</sup> *Murfee v Phillips Petroleum*, 492 S.W.2d 667 (Tex. App. 1973).

<sup>16</sup> J.M. Keynes, "Tract on Monetary Reform" (1924) *The Theory of Money and the Foreign Exchanges*.

<sup>17</sup> *Corbello v Iowa Production* 806 So. 2d 32 (La. App. 2001); reh'g. denied (2002); aff'd. in part, rev'd. in part, 850 So. 2d 686 (La. S. Ct. 2003); on remand, 851 So. 2d 1253 (La. App. 2003).

<sup>18</sup> *Corbello* 806 So. 2d at 53.

<sup>19</sup> An oxymoron that is perhaps unique to environmental law.

<sup>20</sup> *Simoneaux v Amoco Production Co* 860 So. 2d 560, 572 (2003).

<sup>21</sup> *Starrh and Starrh Cotton Growers v Aera Energy LLC* 153 Cal. App. 4th 583, 601 (2007).

<sup>22</sup> NDCC 32-03-09.1.

Other measures of damages may include the benefits obtained by the defendant through its trespass or other wrong. Under this measure, if available, the theory of recovery goes beyond damages for restoration or diminution of value, and involves creating a stiff economic disincentive for illegal dumping of wastes. Under the benefits obtained approach, some courts have included profits made by the defendant, provided that the plaintiff can show a direct link between the wrong and the profits obtained from the activity.

### Enhancing the safety culture of the oil patch

After the BP Deepwater Horizon disaster in 2010, the oil industry was largely of one voice in affirming that safety was going to be their new regime across the board.

Given the history of the oil industry, the authors do not expect to see any marked change in its safety record. What the authors do expect to see is oil industry players engaging expensive consulting firms to conduct safety awareness training sessions in a well-intentioned effort to win the hearts and minds of workers up and down the line. “Safety first” posters may be tacked on walls at drill sites the world over. But it is doubtful whether these efforts will be any more effective than the late President Gerald Ford’s “Whip Inflation Now” (WIN) buttons.<sup>23</sup>

The authors well recognize the economic benefits that unconventional drilling techniques have brought to the United States generally, and to North Dakota in particular. Fracking has produced a significant number of new jobs; indeed, North Dakota has one of the lowest unemployment rates in the nation. Oil and natural gas prices have fallen since fracking began to augment supplies. Our national security has been enhanced, and, in time, these new US energy resources may more than counterbalance Putin’s weaponization of energy against Ukraine and Western Europe. In short, it is not the authors’ intention to pull the punch bowl out of the party. Rather, they simply propose to moderate the milliliters of absinthe with which the punch is spiked.

The oil industry’s habitually broad statements about the safety of fracking and its vehement lobbying against any effort to regulate or revise fracking procedures undermine its credibility and jeopardize the future of the very process that has made the United States once again a leading world energy producer. Like any other heavy industry, fracking does have risks and does impose environmental costs. For these reasons alone it should be done responsibly and with accountability. The authors submit that, had the industry implemented metering and monitoring of injected fracking fluids, crude oil and produced water, North Dakota would have suffered less environmental damage than it has. Speed (in drilling) and

volume (of crude extracted) drive the oil industry’s bottom line, but if these are the industry’s only considerations, to the exclusion of accountability, then sooner or later that bottom line will change for the worse.

Three years after Deepwater Horizon, in 2013, a six-inch Tesoro pipeline burst in Bottineau County, North Dakota. Because this happened during the growing season without any explosion, the ruptured pipeline continued to spew crude onto prime farmland for more than a month before the landowner discovered it. Ultimately 20,600 barrels of crude oil was dumped into a wheat field. Prior to this, the largest spill had been just a few months earlier in Mayflower, Arkansas when a 20-inch ExxonMobil pipe burst and spilled 7,000 barrels<sup>24</sup> of tar sands crude into a residential neighborhood.

Perhaps the most curious aspect of the Tesoro spill was that it was discovered not by Tesoro or any of its contractors, but by the farmer onto whose land the crude oil was leaking.<sup>25</sup> Bakken field pipelines are usually placed quickly, at shallow depth, and are not well maintained. The state does not require metering or real-time monitoring of pipelines, whether salt or oil. Consequently, when the pipelines break, leaks can go undetected until the land beneath and surrounding the leak is already seriously contaminated. Tesoro’s pipeline leak went undetected by the oil company for nearly a month, despite a record-setting loss of 20,600 barrels of crude. While it can perhaps be understood why oil companies don’t monitor salt water transfers because the fluid represents an expense, at \$100 per barrel Tesoro’s unnoticed leak represented a loss of \$2,060,000. So profligate a waste of resources speaks volumes about the safety culture of the oil industry. Since 2006, state fines against oil field players for salt spills have totaled less than \$200,000<sup>26</sup>—less than a 10th of the value that Tesoro lost on a single crude spill without even noticing it in 2013. To oil companies realizing billions of dollars in revenue from the Bakken play, fines of this order of magnitude do not present an economic disincentive to pollution; rather, they are akin to a rounding error.

### Conclusion

North Dakota has some of the very finest wheat and barley acreage in the world, and it’s distressing that so many acres have been subjected to, and perhaps ruined by, salt contamination. However, support and relief for landowners in North Dakota undoubtedly will be tempered by the support for energy interests arising out of the explosive boom in North Dakota’s economy because of oil.

Oil and oil service companies sometimes settle or resolve these situations and perform the necessary clean-ups without resort to litigation. There have also

<sup>23</sup> In 1974, President Ford apparently believed that diligent and concerted action by citizens, by itself, would remedy the persistent stagflation of the early 1970s. However, the impact of the WIN campaign was precisely nil, and critics took to wearing WIN buttons upside down so that the letters appeared to be “NIM” (No Immediate Miracles).

<sup>24</sup> The Tesoro pipeline spilled almost three times the volume of the Mayflower incident through a pipe less than one third its diameter.

<sup>25</sup> “In remote field, North Dakota oil boom suffers first big spill” *Reuters Business & Financial News*, October 10, 2013.

<sup>26</sup> “Saltwater spills can cause lasting damage” *Prairie Business*, November 18, 2013, available at: <http://www.prairiebizmag.com/event/article/id/16796/> [Accessed October 14, 2014].



been successful cases brought against these companies in which landowners have recovered damages. But such cases are protracted and difficult.

Still, despite the difficulty, contamination of land due to fracking and drilling activity cannot very well be ignored by a landowner. This is so not only because the contamination may render property held and profitably

farmed by a family for generations fallow or even unmarketable, but because it may be a cause of liability for the landowner, even though he suffered rather than caused the contamination. The cleanup cost can easily exceed the market value of the property, yet that only accounts for his own property. Simply owning contaminated property can be a major problem.<sup>27</sup>

<sup>27</sup> See also, J.M. Veron, *Shell Game: One Family's Long Battle Against Big Oil* (Lyons Press, 2007).