2019 IL App (2d) 180380-U
No. 2-18-0380
Order filed April 8, 2019



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IN THE

APPELLATE COURT OF ILLINOIS

SECOND DISTRICT

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| INDIAN CREEK DEVELOPMENT COMPANY, INDABA PROPERTIES, LLC, and CHICAGO TITLE AND TRUST COMPANY, as Land Trustee under Land Trust No. 3291, dated December 15, 1981, | ) | Appeal from the Circuit Court of Kane County. |
| Plaintiffs-Appellants, | ) | |
| v. | ) | No. 07-L-604 |
| BNSF RAILWAY COMPANY, | ) | Honorable James R. Murphy, |
| Defendant-Appellee. | ) | Judge, Presiding. |

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JUSTICE JORGENSEN delivered the judgment of the court.
Justices Hutchinson and Schostok concurred in the judgment.

**ORDER**

¶ 1 *Held*: The trial court properly found that plaintiffs failed prove that fuel from a train collision migrated onto their property. Affirmed.

¶ 2 In 2007, plaintiffs, Indian Creek Development Company, INDABA Properties, LLC, (collectively, plaintiffs or ICDC), sued defendant, BNSF Railway Company, seeking damages for injuries caused by a 1993 fuel spill from a train wreck on BNSF's property that allegedly migrated onto plaintiffs' property and allegedly remains unremediated. Following a 12-day

bench trial, the trial court entered judgment in BNSF's favor. Plaintiffs appeal, arguing that: (1) the trial court's finding that ICDC failed to prove that fuel from the collision migrated onto its property was against the manifest weight of the evidence; (2) the court erred in placing the burden on ICDC to apportion liability; and (3) the trial court erred in finding that ICDC failed to prove that it was entitled to damages. We affirm.

¶ 3 I. BACKGROUND

¶ 4 It is undisputed that there is petroleum contamination on plaintiffs' property. The issue in this case is whether plaintiffs proved that it was diesel fuel from a 1993 train wreck on BNSF's property. Plaintiffs' position is that the collision caused the petroleum contamination currently on their property. BNSF's position is that most of the diesel that spilled from the train wreck sunk below the tracks into the ballast and remained there, that there is no diesel fuel on plaintiffs' property, and that the history of plaintiffs' property over the last century included numerous industrial and heavy machinery activities that used significant quantities of petroleum and heavy fuel oils (HFOs).

¶ 5 A. The Properties

¶ 6 BNSF owns railroad tracks in Aurora near Eola that run east-west. ICDC owns 38.9 acres of property at 1500 Dearborn Avenue and 601 North Farnsworth Avenue in Aurora that is adjacent to, and immediately south of, BNSF's tracks. The tracks' center is about 60 to 70 feet north of, and parallel to, the northern ICDC property line. There are five BNSF tracks, including three mainline tracks that serve more than 155 commuter and freight trains per day. The tracks run about 2,200 feet along the property line. At the time at issue, the parties' properties were divided by a fence that was located about 15 to 20 feet north of the northernmost ICDC building (the warehouse, where contamination was discovered). The track bed where the spill occurred is

about six feet higher in elevation than the ICDC property. Groundwater flows from the center of the tracks and moves in a southerly direction toward the ICDC property.

¶ 7 The ICDC property contains multiple industrial buildings and is bounded on the north by the BNSF property, to the west by industrial and residential properties across Farnsworth Avenue, to the south by residential properties across Dearborn Avenue, and to the east by undeveloped land and industrial properties across McClure Road. Areas that are not improved with buildings are used for equipment and vehicle storage. Indian Creek, the nearest surface water body, traverses plaintiffs' property to the south, and eventually, 2.2 miles west, empties into the Fox River, a source of Aurora's municipal water. It also flows northwest of the tracks.

¶ 8 To the north of the railroad tracks are an access road and a drainage ditch. A storm sewer collects surface drainage flow and discharges into Indian Creek, northwest of the tracks. Groundwater is about three to six feet b.g.s. (*i.e.*, below ground surface), and the uppermost groundwater beneath the site (including ICDC property) generally flows to the southwest.

¶ 9 B. The 1993 Wreck

¶ 10 On January 20, 1993, a locomotive wreck occurred on BNSF's property, resulting in the release of several thousand gallons of fuel. One person was killed. Seven locomotives from BNSF and Southern Pacific Transportation Company crashed on BNSF's tracks, specifically, the west end of the Eola rail yard. BNSF stipulated that its employees' negligence proximately caused the wreck. Fuel tanks from three locomotives (one from BNSF and two from Southern Pacific) ruptured in the wreck, and BNSF estimated that about 5,800 to 6,800 gallons of fuel were released. Only a fraction of the spill was ever recovered, specifically, about 600 gallons. Other petroleum products, including lubricating oil, were on the three locomotives involved in

the collision, but no samples of the products released were collected immediately after the accident.

¶ 11 Initially after the wreck, limited fuel flowed toward the drainage ditches north and south of the tracks. The north ditch, where fuel was ponding, was dammed, standing product was removed with absorbent pads, and stained snow was removed. Also, surface runoff interceptor trenches were placed on both sides of the tracks and booms were deployed at the east and west ends of the storm sewer.

¶ 12 The incident was reported to the Illinois Emergency Management Agency and later transferred to the Illinois Environmental Protection Agency (IEPA) Bureau of Land.

¶ 13 C. Diesel Fuel

¶ 14 Diesel fuels are a class of middle distillate petroleum products that are refined and blended to burn in various kinds of diesel engines and heating furnaces. Diesel fuels are blended to serve three market segments: automotive, heavy truck, and off-road (*e.g.*, railroad diesel). Locomotive fuel is referred to as diesel fuel #2 or #2 fuel oil. There are different types of diesel engines, and each can have its own fuel requirements or tolerances that are written into industry specifications. There are two general classifications for diesel and fuel oil: distillate and non-distillate fuels. Diesel #2 and #2 fuel oil are distillate fuels, often called middle distillates (*i.e.*, all of the material used has been distilled and the material present falls in the middle of the boiling range of a typical crude oil). Diesel fuel has a carbon range/boiling range of C10 to C28; #4 fuel oil has a range of C10 to C35; heavy fuel oil has a range of C10 to C40 or C50, depending on the refinery; and lubricating oils have a range of C18 to C34. Higher carbon numbers are associated with heavier carbons and heavier products.

¶ 15 D. Initial Response and Consultants

¶ 16 Initial cleanup efforts were focused on the north side of the tracks. The IEPA became involved in assessing BNSF's cleanup efforts, because there was a threat of water pollution to Indian Creek, which runs north of the tracks (and through the southern part of ICDC property).

¶ 17 After the accident, BNSF hired several environmental consultants who monitored and tested the site and submitted, on BNSF's behalf, reports to the IEPA.

¶ 18 Ultimately, three remedial actions were completed at the BNSF and ICDC properties: light non-aqueous phase liquid (LNAPL) recovery, in situ bioremediation, and two-phase extraction. Over 140 soil borings were drilled, 40 groundwater monitoring wells were installed, 14 test pits were completed, and 50 UVOST (ultraviolet optical screening tool, a subsurface investigative tool, wherein a UV probe is advanced down a soil column while collecting continuous UV-fluorescence response data) sampling locations were tested. In addition, over 227 soil and sediment samples were collected and, in 2000, soil was removed from ICDC property.

¶ 19 1. Radian Corporation (1993-1994)

¶ 20 BNSF first hired Radian Corporation, a consultant, which, in February 1993, installed groundwater monitoring wells, four north of the tracks and four south of the tracks, 15 to 25 feet deep. In a March 5, 1993, report, Radian stated that there were four main surface stains from the spill, which were not isolated to the track bed, but also appeared on the native soil surface to the south. Also, there was some runoff from the surface-stained areas that had collected between the southernmost tracks and the fence to the south, which was slightly lower in elevation than the track. "An iridescent sheen was visible on the soil." Radian also documented that total petroleum hydrocarbons (TPH), indicators of petroleum contamination, were present in wells 1, 2, 7, and 8, all of which were south of the tracks and adjacent to ICDC's property. Free product,

*i.e.*, as relevant here, undissolved petroleum that floats on water, was observed in MW-1, MW-7, and MW-8, and Radian recommended that BNSF excavate and dispose of the "obviously contaminated soil to the south of the tracks," which BNSF did not do at that time.

¶ 21 In a February 1994 report to the IEPA, Radian stated that the May 1993 data reflected that 1.38 feet of free product was measured in MW-1, located immediately adjacent to, but not on, plaintiffs' property. These samples also contained TPH (16,000 ppm), and Radian reported that soil borings contained strong diesel odors.

¶ 22 2. Remediation Technologies, Inc. (Retec) (1995-2000)

¶ 23 Next, in January 1995, BNSF hired Remediation Technologies, Inc., (Retec) to replace Radian. Retec installed 10 additional monitoring wells in and around the tracks and to the south toward plaintiffs' property (MW-11 to MW-20). MW-14 and MW-19 were installed between the southernmost tracks and plaintiffs' property. (Existing MW-7 and MW-9 were also close to the warehouse building.) In a June 1996 report, Retec reported that, in July 1995, it had detected the highest levels of TPH in MW-11 and MW-14 at 8 to 10 feet below grade. The soil boring log for MW-14 also reported a strong diesel odor. In August and October 1995, Retec measured free product in several wells and reported that wells on the southern property boundary contained up to seven inches of phase-separate product, which it removed in October 1995. Further, "groundwater and floating diesel fuel is moving south of the spill area and *possibly* off [BNSF] property." (Emphasis added.)

¶ 24 In February 1996, BNSF entered into a consent order with the State that required BNSF to investigate and remedy the released diesel fuel, petroleum, and contamination associated with the collision.

¶ 25 In a March 1996 report, Retec stated that "a groundwater flow divide situated along the center-line of the tracks splits the groundwater flow to the north and to the south in the area of the diesel spill. Such a divide was not evident in the 1993 investigation because wells were not positioned along the mainline railroad tracks."

¶ 26 A May 1996 Paragon Analytics analysis of the soil along the fence line between the BNSF and ICDC properties included carbon ranges for diesel fuel and heavier oils. Soil borings 1 and 2 (on BNSF's property and to the west of the warehouse) reflected the presence of hydrocarbons (the main constituents of fuels and oils) in the range of C8 to C36.

¶ 27 A June 1996 Retec report stated that free product was measured in wells on BNSF's property adjacent to the fence (wells 1, 2, 8, and 14) "on at least one occasion in 1995 and 1996." Free product was also measured in other wells. In March 1997, Retec's investigation expanded to include wells on ICDC's property between the fence and the warehouse, specifically, SB-5 to SB-10 and MW-21 to MW-24 (with 10-foot long screens). A March 1997 analysis by Interpoll Laboratories, Inc., for Retec of the samples from ICDC's property reflected that they contained total hydrocarbons as fuel oil #2, but clarified that "[a]lthough quantified as fuel oil #2 as requested, the chromatographic pattern matched that of fuel oil #2 and a heavier grade." (Gas chromatography separates complex mixtures like petroleum, which is made of thousands of chemicals, by taking the material apart, chemical by chemical. The chromatogram is a graphical depiction of a series of peaks that occur over time and correspond to distinct petroleum compounds.) Free product measurements of MW-14 between 1995 and 1997 recorded the following thicknesses: 10.4 inches in August 1995; 6.1 inches in October 1995; 6.6 inches in March 1996; 34 inches in June 1996; and .09 feet (*i.e.*, 1.08 inches) in April 1997. In February 1996, Retec had reported that about 4 to 4.5 gallons of fuel were removed from four wells along

the southern boundary of the BNSF site. "The majority of the fuel (80 to 90%) was obtained with the little bailer at [MW-14a, which replaced MW-14 and was in about the same spot along the fence]. In June 1997, Retec recommended injecting oxygen into the ground over a 20 by 20 feet area in and around MW-14 to accelerate the degradation of the petroleum contaminants. The IEPA approved this proposal, and, in June 1997, Retec injected the oxygen accelerants at MW-14 (and MW-5, near the center of the tracks to the north). It did not inject oxygen on plaintiffs' property.

¶ 28 3. Environmental Management Resources, Inc. (EMR) (2000-2011)

¶ 29 In November 2000, while plaintiffs excavated six pits under the concrete flooring of a bay in the warehouse to lay concrete footings for metalworking equipment, diesel fuel odors ("a strong hydrocarbon odor resembling diesel fuel") were detected from three of the pits near the east end of one of the bays. BNSF authorized Environmental Management Resources, Inc., (EMR) to coordinate disposal of the soil associated with the pits and to check the condition of the on-site monitoring wells. EMR removed about seven to nine truckloads of contaminated soil from plaintiffs' property. Testing showed that BTEX (benzene, toluene, ethyl benzene, and xylenes) analytes were below detection limits; PNA (polynuclear aromatic hydrocarbon) analytes—specifically, phenanthrene and pyrene—were detected in one sample; and DRO (diesel-range organics) concentrations of 424 mg/kg and 1,110 mg/kg were indicated. EMR recommended that the soil be disposed of as non-hazardous special waste at an approved special waste landfill.

¶ 30 EMR installed test pits on the BNSF and ICDC properties to collect additional soil samples. It also collected groundwater samples. In 2002, Friedman & Bruya, Inc., tested samples and concluded that "the majority of the material present in the samples TP-01, TP-02,

and TP-05 seems to be substantially degraded." "[A] difference in the relative abundance of the PAH's [*i.e.*, polycyclic aromatic hydrocarbons] in the samples TP-01, TP-02, and TP-05 is not likely solely due to weathering of the fuels present in the samples. Therefore, these fuels represent *two or more manufacturing batches of product, which indicates a series of fuel releases or, possibly, an ongoing release*." (Emphasis added.)

¶ 31 In an October 2002 report to the IEPA (phase I site investigation report), EMR identified the ICDC property between the fence and warehouse within the *zone of contamination* from the 1993 wreck. It reported that "visual evidence of floating petroleum product in five monitoring wells located on and off Site [*i.e.*, ICDC property], and three test pits, indicated there are also groundwater impacts that are migrative off Site [*i.e.*, onto plaintiff's property]" and "[h]ydrocarbon vapors were detected *** in six of the 14 test pits at the time of excavation." (ICDC property was the only off site location where testing was conducted.) EMR concluded that "the soil and groundwater at the Site were found to not meet the IEPA closure requirements. Because certain BETX (benzene) and PNA constituents exceeded the Site remediation objectives and free produce is present, a separate Remedial Action Plan will be developed to propose remedial options to address the residual impacts caused by the Site contaminants." EMR stated that the "general groundwater flow direction was determined to be in two general directions, to the southeast and to the southwest from the Site, with the flow divide situated along the centerline perpendicular to the main line tracks."

¶ 32 In March 2003, EMR submitted to the IEPA a phase II site investigation report for ICDC's property. EMR added 10 monitoring wells and 21 soil borings (between 12 and 20 feet b.g.s.) on ICDC's property, including the warehouse. Test results showed that three PNA constituents—benzo(a)anthracene, beno(a)pyrene, and dibenzo(a, h)anthracene—exceeded the

soil ingestion route remediation objectives for residential properties. One BETX constituent—benzene—exceeded Tier I, but not Tier 2, soil component of groundwater ingestion route for Class I aquifier standards in 6 of 23 samples. "Sample concentrations for seven PNA constituents exceeded Tier 1 Groundwater Component of the Groundwater Ingestion for Class I Aquifer standards. Hydrocarbon film or sheen was encountered on groundwater in two on- and off-Site monitoring wells." Soil organic vapors were recorded in 20 out of 21 soil borings. Levels ranged from 0 ppm in soil boring SB-04 to 441.2 ppm at five feet b.g.s. in SB-11. EMR concluded that, based on the data (using IEPA Tiered Approach to Corrective Action Objectives (TACO) guidelines, which prescribe remediation methods for contaminated soil and groundwater[1]), "the soil and groundwater at the Site were found to not meet the IEPA closure requirements. *The zone of contamination is isolated to the northern portion of the Subject Site [i.e., ICDC's property], within and to the north of the Northern warehouse.*" (Emphasis added.) Further, "[g]roundwater was encountered in all of the soil borings between 5 feet and 20 feet b.g.s. Free product was observed on groundwater that seeped into four soil borings (SB01, SB03, SB05 and SB08) [*i.e.*, on ICDC's property]." EMR stated that "[v]isual evidence of floating petroleum product in two monitoring wells located on the Subject Site and the Incident Site (BNSF ROW), and in three test pits from an earlier Site investigation, indicated there are also groundwater impacts that are migrating off Site."

¶ 33 In November 2005, EMR submitted an additional site investigation report (phase III), stating that the zone of contamination was the northern portion of the "Subject Site, within and to the north of the Northern warehouse." EMR reported that free product was found in three

[1] 35 Ill. Adm. Code § 742.100 et seq., adopted at 21 Ill. Reg. 7942, eff. July 1, 1997, as amended.

monitoring wells: MW-14 (adjacent to ICDC property); and MW-25 and MW-29 (under the warehouse).

¶ 34 In 2007, Torkelson Geochemistry, Inc., analyzed several soil borings and concluded that material from SB-40 (on BNSF property adjacent to the fence) "could be a very small amount of *extremely weathered middle distillate such as diesel fuel or fuel oil*." (Emphasis added.) Definitive interpretation was "difficult" due "probably" to extreme biodegradation. Similarly the SB-41 (also on BNSF property adjacent to the fence) material "is probably an *extremely weathered middle distillate such as diesel fuel or fuel oil*." (Emphasis added.) The age of the middle distillate portion of the sample was "17 +/-2 years." Torkelson noted as to all samples that they had "probably been altered/weathered which makes an accurate interpretation of product type more difficult since some of the key features of the products may have been altered or removed by the evaporation, water washing, or bacterial processes." Chromatograms for samples from MW-14 (on BNSF property adjacent to the fence where the soil was oxygenated) and MW-25 (under the warehouse) included the range typical for a middle distillate, but extended beyond where that range normally ends. Both samples "could be [ ] extremely weathered heavy fuel oil such as #4 fuel oil." Each sample was "extremely weathered, which is primarily degradation." MW-14 was more weathered than MW-25. Torkelson estimated the age of MW-14 to be "18 +/-2 years" and that of MW-25 to be "19 +/-2 years."

¶ 35 In a February 2008 final site investigation report to the IEPA, EMR summarized its August-September 2007 investigation. EMR reported that free product was observed in MW-14 and MW-25. EMR concluded that "the sediment, soil, and groundwater at the Site were found to not meet the IEPA closure requirements. Contamination is isolated to the southern portion of the BNSF ROW and within and to the north of the northernmost warehouse at [ICDC]. Because

certain PNA constituents exceeded the Site remediation objectives and free product is present, a revised Remedial Action Plan will be developed to propose remedial options to address the residual impacts caused by the Site contaminants."

¶ 36 EMR commenced some remediation work at plaintiff's property in early 2008. The parties had agreed to use a two-phase extraction (TPE) system to remove free product and treat the underlying soil and groundwater from the location with the highest recorded free product level, *i.e.*, MW-25. Remediation work ceased in mid-2008, and, in August 2008, EMR re-evaluated the free-product levels and concluded that such levels "for the most part have remained near zero, except for a slight amount of measured free product (0.01 foot) in MW-25 on August 6, 2008." Free product was measured in MW-14 as well in 2007 and 2008.

¶ 37 4. TRC & Weaver, ICDC Sewer Excavation & UVOST Testing (2011-Present)

¶ 38 An August 2012 report by James E. Bruya of Friedman & Bruya, Inc. for BNSF, which TRC Environmental Corporation (TRC) and Weaver Consultants included in their 2014 report, concluded that: (1) MW-14 (on BNSF property adjacent to the fence) contained "either a non-distillate fuel oil such as Diesel Fuel #4 or a lubricating oil. *** There is no indication that Diesel Fuel #2 is present at this location"; and (2) MW-29 (on ICDC property, in the warehouse) contained "a high boiling point petroleum product such [as] #4 Fuel Oil and a lower boiling product that is consistent with it being a middle distillate. The relative proportion of the middle distillate changed over time and its maximum level was determined to be 3.5% of the total material present at MW-29. The identity of this low boiling material is uncertain due to its presence as a minor component in a complex mixture." Bruya also reported that 2012 testing revealed that samples from MW-1 (on BNSF property south of the tracks) and AK-2, -3, and -4 (on ICDC property between the fence and the warehouse) contained high boiling fuel oils or

lubricating oils higher than that for diesel fuel #2 and that the boiling range varied, which indicated "that different types of products were present."

¶ 39 Ronald St. John, an ICDC environmental consultant and hydrogeologist with St. John Mittelhauser & Associates, reported that, in February 2013, ICDC performed two excavations in the warehouse floor along a portion of the sanitary sewer main (which runs east-west) to install a new cleanout and replace a connection from a nearby restroom. During the first excavation, ICDC encountered fuel odors and visually-impacted soils. Additional excavation revealed groundwater seeping into the north side of the excavation (the south side of the excavation was dry) and "a sheen and a small quantity of what appeared to be degraded diesel fuel *** on water that was seeping from the north sidewall and pooling on the bottom of the excavation."

¶ 40 The second excavation, about 100 feet east of the first one and somewhat northeast of MW-36, revealed odors in the soils excavated from around the sewer. According to St. John, "a significant quantity of what appeared to be degraded diesel fuel collected in the excavation and mixed with the groundwater that was seeping from the north sidewall of the excavation and pooled on the bottom of the excavation. St. John opined that laboratory reports revealed that the excavated free product "appears to be a mixture of #2 diesel and heavier molecular weight compounds." (In contrast, after examining the gas chromatograms, BNSF's forensic chemistry consultant, Allen Uhler, concluded that the petroleum material was heavy fuel oil.)

¶ 41 In February 2014, pursuant to an agreement between BSNF and IEPA, additional testing occurred on the BNSF and ICDC properties, including ultraviolet optical sensing technology (UVOST) testing. UVOST testing involves pushing a push probe that has a sensor on its end through the ground to about 20 or 30 feet. As the probe moves through the soil, it emits ultraviolet light. Petroleum contains chemicals—PAH's—that emit fluorescence when they

absorb ultraviolet light, and a detector on the probe reads the fluorescence response from the surrounding soil. A strong fluorescent response indicates the presence of petroleum. Samples were collected and subjected to forensic analysis. Allen Uhler, BNSF's forensic chemistry expert, analyzed samples and determined that they had a "dominant petroleum signature" of either diesel fuel, No. 4 fuel oil, heavy fuel oil, or lubricant/mineral oil. All samples were from BNSF's property, except for those identified as No. 4 fuel oil and heavy fuel oil, which were located on both BNSF's and ICDC's property.

¶ 42 5. Hydraulic Testing (1996 and 2009)

¶ 43 In 1996, Retec performed a hydraulic conductivity test to determine how fluids flowed in the ground in the collision area, including how fast liquids moved through geologic material. The materials tested included those in and around MW-2 and MW-7, both on BNSF property near the fence. According to Retec's calculations, the hydraulic activity for the tested areas—the uppermost saturated zone—was 0.007041 ft./min. (equivalent to 3.58 times $10^{-3}$ cm./sec.) or about 10 feet per day. (Plaintiffs' expert, Konrad Banaszak, testified that this measurement reflects "fair to midland" hydraulic conductivity, *i.e.*, the soil "is able to move water reasonably well").

¶ 44 In 2009, EMR conducted a hydraulic conductivity test on ICDC property in MW-25 and three observation wells (TPE-1, TPE-2, and TPE-3) concluded that the average hydraulic conductivity at the three observation wells was 6.02 times $10^{-3}$ cm/sec. Thus, liquids would move through the ground in that area at a rate of about 530 feet per year or 1½ feet per day.

¶ 45 6. IEPA's Role

¶ 46 In 1996, BNSF entered into a consent order with the IEPA (to settle claims alleging that BNSF caused or allowed water pollution and a water pollution hazard) that required BNSF to

investigate and remedy the released diesel fuel, petroleum, and contamination associated with the collision. ICDC was not a party to the lawsuit or consent decree.

¶ 47 In September 2001, the IEPA requested a meeting with Retec "[i]n light of some recent information that has come to us from a facility immediately adjacent to the Eola site." IEPA wanted to "discuss the location of test pits on and off the site. The consent order indicates that all on- and off-site contamination must be delineated and remediated. Given the past presence of diesel in the railroad ballast material and its ability to migrate, the [IEPA] will require additional data to evaluate the conditions on and off the site [to] ensure the conditions in the consent order are met."

¶ 48 In an August 2006 letter, the IEPA stated: "Thousands of gallons of free product continue to be present at on[-] and off-site locations. The previous operation of a passive remedial collection system resulted in a few hundred gallons of free product recovery over a several year period. Given the length of time over which little effective remediation has taken place, a more active approach to handling and collecting free product from the impacted areas needs to be undertaken." It requested a revised plan.

¶ 49 In 2009, BNSF and the State entered into an amended consent order that addressed the need to investigate and remediate the ICDC property and included a revised schedule. The order recognized that ICDC was not a party to the amendment and "aquire[d] no rights" as a result of it.

¶ 50 In 2013, plaintiffs performed a sewer excavation within the warehouse and discovered a leaking substance with a diesel odor that they claimed was contamination from the BNSF wreck. Afterwards, plaintiffs removed concrete to install certain heavy equipment. The soil that was exposed under the floor had a strong diesel odor.

¶ 51 Subsequently, IEPA and BNSF agreed, pursuant to the IEPA's TACO guidelines, on a site-specific closure number related to the contamination on plaintiffs' property. They agreed that the contamination was no longer migratory if it was at a concentration of 18,750 ppm of TPH. IEPA's TACO standards do not include a published remediation objective for TPH, but TPH concentrations can be compared to a soil's attenuation capacity, *i.e.*, its ability to hold and break down organic compounds based on its chemical makeup. BNSF consultant Robert Hinchee, an environmental engineer, testified that, at TPH levels below attenuation capacity, the contamination is not mobile and not a threat to moving into nearby waters. IEPA's Tier 1 default TPH remediation objective is 6,000 ppm for the subsurface above one meter and 2,000 ppm for the subsurface below one meter. 35 Ill. Adm. Code § 742.215(b)(1)(A) (2018). BNSF negotiated with IEPA for a site-specific remediation standard for the ICDC property that was *higher* than the default standard, which, according to Hinchee, "is standard practice." The site-specific standard of 18,750 ppm means that, for every 100 pounds of soil, 1.875 pounds would be petroleum hydrocarbons. At the site, all TPH concentrations were below the 18,750 ppm objective, excluding LC-11 on the BNSF property and LC-50 on ICDC's property.

¶ 52 E. Plaintiff's Complaint

¶ 53 Plaintiffs filed their initial complaint against BNSF in November 2007. In a third amended complaint filed on July 16, 2015, plaintiffs alleged that diesel fuel and other petroleum products that were released incident to the collision migrated from the location of the collision over, across, and under the ICDC property without ICDC's approval or permission. Their four-count complaint alleged: (1) trespass (count I); (2) nuisance (count II); (3) negligence (count III); and (4) willful and wanton conduct (count IV). (This appeal involves only the first three counts.) According to plaintiffs, BNSF has not completed the investigation, removal, or remediation of all

of its diesel fuel, petroleum, and contamination that was released, and continues to migrate, incident to the collision. They also asserted that LNAPL material (liquids that floats on water, such as a petroleum hydrocarbon liquids, *i.e.*, diesel, gasoline, etc.) containing locomotive fuel and petroleum released incident to the collision in the form of free product has migrated and continues to migrate to and through ICDC property and has been discovered and observed in groundwater monitoring wells, test pits on ICDC property, and in excavations inside the northernmost building on ICDC property. Further, plaintiffs alleged that organic chemicals (including toluene, xylene, benzo(a)anthracene, and benzo(a)pyrene, which are recognized by governmental health and environmental agencies as carcinogenic, toxic, and/or otherwise harmful to human health and the environment) associated with locomotive diesel fuel and petroleum products released incident to the collision have been detected in the soil and groundwater at ICDC's property and that TPH, a group of organic chemicals measured using certain analytical laboratory testing procedures, released incident to the collision have been detected in ICDC soil.

¶ 54 Plaintiffs further alleged that, between 2000 and 2015, BNSF and its environmental consulting firms detected and measured diesel fuel and petroleum contamination originating from the collision in soil, groundwater, and LNAPL samples collected from plaintiffs' property on various occasions. There is a physical and geological connection between the BNSF tracks and right of way and the ICDC property that has allowed, they argued, the diesel fuel, petroleum, and contamination to migrate through porous and permeable geologic materials from the BNSF tracks and right of way to and through plaintiffs' property. Further, there are common forensic environmental chemistry fingerprints between the diesel fuel, petroleum, and contamination discovered on the tracks and right of way and the diesel fuel, petroleum, and contamination

discovered on plaintiffs' property. According to plaintiffs, BNSF failed to adequately investigate and remediate the diesel fuel and petroleum released incident to the collision and, thereby, failed to prevent the substances and contamination from migrating onto and through ICDC property.

¶ 55 F. Motion *in Limine* to Exclude Evidence of Preexisting Contamination

¶ 56 On October 11, 2016, plaintiffs moved *in limine* to preclude BNSF from introducing evidence of preexisting contamination of plaintiffs' property, arguing that, because there was no physical evidence to support BNSF's claim, it was speculative or anecdotal. Without reliable evidence that there were specific releases of petroleum on ICDC property, plaintiffs argued, BNSF should be precluded from arguing at trial that, because ICDC property was historically used for industrial and manufacturing operations and because various petroleum products were stored and used on the property, any contamination can be attributed to pre-1993 releases.

¶ 57 In its response, BNSF noted that plaintiffs' expert, Konrad Banaszak, agreed that the potential release of petroleum from sources on ICDC property was relevant to the central issue in the case—whether the petroleum contamination on ICDC property came from the 1993 collision or from another source or sources—and acknowledged the likelihood that there were pre-1993 releases on the property. BNSF's expert, John Weaver, reviewed the history of the property and reached a similar conclusion. Observations and conclusions concerning historical use, BNSF argued, were directly relevant to the migration issue and were grounded in the factual history of the types of businesses that operated on the site, the machinery involved, and the presence of oil and petroleum fuel tanks on the site that predated the collision. Thus, they were not speculative and their probative value outweighed any prejudice to plaintiffs. BNSF also argued that such information was a necessary and required component of any competent environmental investigations (citing treatises, industry standards, and statute) and that there was physical

evidence supporting the experts' conclusions, including the forensic testing of the products on ICDC property and photographs of current operations on the site.

¶ 58 In reply, plaintiffs asserted that historical use was a key part of an environmental investigation, but the issue here was whether it was admissible at trial. BNSF had found, it noted, no evidence of historical contamination, thus, historic use of the site should not be introduced at trial to show that, despite any actual evidence, the mere fact of industrial use implies contamination that is tied to its historical use. This constituted speculation in plaintiffs' view.

¶ 59 On December 21, 2016, the trial court denied plaintiffs' motion *in limine* and noted that the testimony would be subject to cross-examination "and will go to the [weight] and not the admissibility of this possib[le] speculation. If that's all he's got, that is all he's got and the Court will disregard it or weigh[ ] it less[ ] than what [BNSF] wants me to weigh[ ] it at[.]"

¶ 60 G. Trial

¶ 61 1. Greg Jeffries – BNSF's Manager of Environmental Engineering

¶ 62 Greg Jeffries, BNSF's manager of environmental engineering in 1993, testified that he has worked for the company for 27 years and is currently manager of environmental remediation. About 155 trains per day traveled on the BNSF tracks, making it one of the busiest rail corridors in the country. A colleague who arrived at the scene shortly after the collision recorded that the contamination was fuel oil or oil; he did not describe the fuel oil as #2 diesel fuel. The trains also carried 240 gallons of petroleum products other than diesel fuel, such as engine or lubricating oil, oil that is heavier than diesel fuel. When Jeffries arrived at the site, he saw only diesel fuel.

¶ 63 Jeffries addressed several internal BNSF documents that consisted of printouts from its

internal CARDS database, which was used for budgeting and accounting associated with site remediation. BNSF personnel managing a project input information into the database. The information was a "30,000 foot overview of the project," including its history, objective, and current status. The entries related to the 1993 collision repeatedly refer to ICDC as impacted due to the diesel fuel release. However, Jeffries testified that the database was not used to make decisions concerning investigations and remediation.

¶ 64 BNSF hired Radian to investigate. In a March 5, 1993, report, Radian stated that the fuel remained in the track bed area and recommended further action to protect the creek to the north from the migration of diesel fuel into it. The track bed is designed so that water drains away from the tracks to the north and south. Radian drilled four soil borings and installed monitoring wells. If water flowed into the monitoring well, the water was examined for any product floating on it. The presence of free product in the wells, Jeffries explained, indicates that the fuel is not solely within the track bed, but has impacted soil and groundwater outside the bed.

¶ 65 Radian did not report to the IEPA that it had detected free product in MW-7 (in BNSF property). The groundwater flow at that well is to the south or southeast according to Radian. Radian reported that the area of free product in groundwater on the south side of the tracks was captured by the groundwater depression pump that was attached to the deeper trench. Upon reading this report, Jeffries was no longer concerned that fuel might be migrating to plaintiffs' property.

¶ 66 2. Konrad Banaszak, Ph.D. – Plaintiffs' Hydrogeology Expert

¶ 67 Konrad Banaszak, Ph.D., an environmental consultant specializing in hydrogeology, testified on plaintiffs' behalf. For the last 40 years, he has worked as a professor, government scientist, and, since 1988, as a consultant. Banaszak has experience working with petroleum

contamination. Banaszak reviewed the materials in this case and obtained material from other sources and opined that the fuel from the collision migrated onto ICDC's property. He based his opinion on the amount of lost fuel, the timing of implementation of methods to collect the spilled materials at depths deeper than 18 inches adjacent to the tracks, the materials between the fuel release location and the ICDC property and then on the ICDC property, and the slopes of the water tables.

¶ 68 Banaszak explained that, because the middle section of tracks have the highest elevation, this location is where he would expect the highest points of the water table. Also, the material making up the roadbed of the tracks is ballast, which is coarse stone, "between a cobble and pebble," and the material on either side of it is "clayey or at best a bit sandy." Coarser material absorbs more fluid, including oil, than finer-grain material.

¶ 69 Turning to his second opinion, Banaszak opined that two extreme floods (one in 1996 and another in 2013) likely moved locomotive diesel fuel onto plaintiffs' property. His third opinion was that the fact that free product (again, undissolved petroleum that floats on water) was observed in soil borings, monitoring wells, and test pits on the BNSF tracks and right of way and on ICDC property, was consistent with the pathways of the slope of the water table. That is, the diesel fuel follows the slope of the water table and the subdued reflection of topography that is the groundwater table. Also, the permissive nature of the material allows the flow of fluids through it. The native materials, which are glacial, can fracture and can contain sand and gravel lenses. BNSF's testing measured the ability of liquids to flow through the geologic material, and Banaszak opined that it was highly transmissive of the fluid.

¶ 70 According to Banaszak, the chemistry "reports were consistent with materials spilled during the accident." The UVOST data showed that the spill on the tracks moved onto plaintiffs'

property. Addressing Radian's 1993 report that listed free product and TPH levels in the wells south of the tracks, Banaszak testified that the observations in the wells so soon after the collision led him to conclude that the fuel "went through the ballast[, which "can transmit fluids fairly rapidly"], on top of the groundwater table and then came into the volumes of sediment that were intersected by the wells at the south end just north of the fence."

¶ 71 Reviewing the soil boring logs in various reports, Banaszak explained how the depths of the observed contamination supported his opinion that the fuel migrated to ICDC property. Specifically, Radian's 1994 report for SB-1 and SB-2 (located at MW-1 and MW-2 just north of the fence) showed contamination depths of eight feet, which was "pretty deep" and was headed "to the south." Retec's 1997 report for borings between the fence and the warehouse documented contamination as deep as 6.5 to 10 feet. Banaszak testified that the warehouse foundation wall's footers were only between 42 and 48 inches deep. Therefore, that "wall would not be deep enough to get to this level" of contamination, allowing "pathways for contamination to migrate under the wall."

¶ 72 The soil composition could impact fuel migration. Banaszak explained that soil boring logs located between the fence and the warehouse wall noted the presence of clay with cracks and fractures. The fractures and cracks are significant because they "are conduits through which fluid can flow and give you a greater permeability when you look at a larger volume of clay than just looking at a small inch or two- or three-inch sample."

¶ 73 Turning to EMR's 2003 site investigation report, Banaszak testified that the investigation extended underneath the warehouse. Soil borings beneath the warehouse (SB-1 and MW-25) showed "free product beads on water collected in sleeves" at the 8-foot depth. SB-3 and MW-26 borings revealed free product at 7.5 feet deep that was " noticeably more common in the 4'-8'

interval" and, at 10 to 11 feet deep, "loose surrounded to angular gravel saturated with free product beads, significant, on water surface, moderate odor observed." There is no mention of contamination at the top, therefore, the contamination was found deep and came from "[s]omewhere not in the immediate vicinity coming straight down clearly, it came horizontally into this area from somewhere." SB-5 samples contained "free product along fractures and around pebbles" that "increases from 4'-7' with increasing depth." The presence of free product around fractures suggests "that there is product moving in fractures in the clay."

¶ 74 Banaszak further testified that Schmidt's paper chromatography analysis of a free product sample showed some red tinting, suggesting that the product causing the contamination had a red dye in it. This was a reference to off-road (*i.e.*, locomotive) diesel fuel. Banaszak's research revealed that, in January 1994, the Internal Revenue Service began requiring red dyeing of diesel. Also, in January 1993, the EPA required dyeing of diesel for non-tax reasons (*i.e.*, sulfur content), but the dye was blue.

¶ 75 Finally, addressing the BNSF's consultant's calculations of conductivity as 6.02 times $10^{-3}$ cm./sec., Banaszak testified that this conductivity was for material "akin to a fine sand *** as opposed to gravel[,] which would have much higher [conductivity,] or clay or a silt which would be lower." This kind of hydraulic conductivity is "consistent with the movement of fluids and contamination from the tracks under the ICDC property."

¶ 76 3. Ronald St. John – Plaintiffs' Hydrogeologist Consultant

¶ 77 Ronald B. St. John, ICDC's hydrogeologist consultant, testified as a fact witness concerning his observations at the site and his analysis of certain samples. St. John is a licensed and certified professional hydrogeologist with 36 years of experience in the field. He has

worked on petroleum contamination sites since the 1980s. A hydrogeologist, he explained, interprets groundwater flow and subsurface migration processes by contaminants.

¶ 78 St. John testified that the glacial till diamicton below the BNSF tracks and ICDC properties are predominantly silty clay material that has coarse-grained lithologies (sizes of grains), *i.e.*, sands and gravel stringers that run through it, as well as fractures that promote nearly all of the groundwater flow through the till ("because the silty clay material that is the matrix of the till is otherwise impermeable").

¶ 79 Addressing TACO, St. John explained that the rules allow an assessment of migration pathways to "calculate the distance contaminants will travel and/or their likely impact on receptors." A no-further-remediation (NFR) letter is issued by IEPA following a remediation program and becomes part of the deed to the property that notifies any purchaser "that there was an environmental condition associated with the property, but that environmental condition ha[s] been remediated." It does not mean that all of the contamination has been removed from the property, but is based on the condition of the material left behind and the land use. (IEPA did not issue an NFR letter for the site.)

¶ 80 Addressing a cross-section of the site that he prepared, St. John testified that the groundwater table sloped downward from the tracks toward plaintiffs' property to the buried sewer line and that the coarse-grained materials interspersed through the clay, together with the fractures in the clay, were "the transport pathways for water and hydrocarbon laterally through the clay to move from point A to point B."

¶ 81 St. John concluded that the free product he observed coming out of the north wall of the sewer excavation ditch was diesel fuel. His conclusion was primarily based on "the fact that there was still 6,000-gallons-plus of diesel fuel still missing from the BNSF spill that had never

been accounted for, the fact that it was very obvious that the hydrocarbon was migrating through discreet zones within the till, *i.e.*, coarse grain, sands and gravels[.]" Further, he explained,

> "[t]he coarse grain lithologies that are circuitously interconnected throughout the till and provide migration pathway as well as the fractures in the till that the migration pathway for the contamination to get over from the BNSF property to the second bay in the Indian Creek property. And the fact that we were able to observe that there were no surficial soil contamination and that you only got down to any contamination when you got down to the water table, the potential metric surface where the hydrocarbon was riding on top of to create a smear zone within the soils at 7 to 8 feet in depth. That all coupled with the fact that the groundwater and hydrocarbon was only seeping in from the north side into the excavation and was apparently discharging into the sewer pipe which was evidenced by the fact that the south wall of both excavations were dry, there was no groundwater, there was no hydrocarbon."

Another factor that influenced his opinion, but was not the determinant factor, was the red dye in the free product/contamination on plaintiffs' property. St. John reported that it was not until January 1994 that red dye was required for diesel by the IRS.

¶ 82 4. John Weaver – BNSF's Hydrogeology Expert

¶ 83 John Weaver, a licensed professional engineer, testified as BNSF's hydrogeology expert. He opined that the contamination on ICDC property did *not* migrate from the 1993 diesel spill on the BNSF property. The contamination on BNSF and ICDC properties, Weaver testified, resulted from a number of sources with releases occurring over an extended timeframe. There were no contaminants of concern with respect to petroleum hydrocarbons on ICDC property that exceed residential environmental standards. In a 2015 report, Weaver stated that the warehouse

foundation and geologic conditions along the northern ICDC boundary hindered diesel migration beneath the building. The fill below the warehouse, he explained, is primarily silty clay, "which is of low permeability." The fractures in the fill are "limited in size and poorly interconnected or discontinuous." "[T]here does not appear to be a clear migration pathway to the south toward ICDC [p]roperty." Weaver further stated in his report that the "isolated or 'spotty' LNAPL identified in select wells over the years did not indicate a larger continuous mass of petroleum migrating from the BNSF property and underneath the ICDC building. Instead, it was consistent with releases from several spills and/or chronic use of petroleum within the impacted area by ICDC, including the former petroleum tanks historically used in this area for heating of the ICDC building." For support, he noted that, during years when LNAPL was detected on ICDC property (*e.g.*, MW-29 in the years 2005 to 2008, 2011, and 2012), there was *none* detected in the up-gradient wells on BSNF property (MW-1, MW-2, and MW-22). Weaver's report also stated that the distribution of elevated TPH impact in the soil was also spotty, which indicated multiple spills and sources. Elevated shallow impacts indicated "a source at the surface of the ICDC building and not migration from the north."

¶ 84 Weaver reviewed all of the cross-sections that had been prepared in this case and opined that no pathway was identified for migration of free-phase diesel fuel from the point of release to a point underneath the ICDC building. This is one piece of evidence, however. Another factor he considered was the depth of contamination found on the side. He noted that it was limited to the top 10 feet, especially the LNAPL. But there were more highly-concentrated hits of TPH in the fill material or near the fill clay interface, which is significant, because diesel floats. When oil gets trapped in the top of clay, it goes down vertically, gets trapped, and "tends to migrate laterally very little." When Weaver "saw the distribution of contaminants under the ICDC

building, to me it makes sense, you know, if you agree that it is HFO (heavy fuel oil) from releases on the ICDC property."

¶ 85 Weaver disagreed with the broadened diesel fuel theory proposed by Gene Schmidt, ICDC's forensic chemistry expert. Weaver opined that there was no evidence that the experimental fuel was used in the locomotives involved in the collision or used by the industry. Also, he stated that the presence of conventional diesel fuel and not heavy fuel oil on BNSF property reflected that diesel fuel was used in the locomotives. Further, the broadened diesel fuel "could not account for the presence of higher boiling hydrocarbons" under the warehouse. Also, Schmidt, in his view, did not account for the long history of industrial operations at the site.

¶ 86 Weaver reviewed various Sanborn maps for the ICDC property for the years 1891, 1907, 1950, and 1958. The maps were originally produced for fire insurance purposes and contain details of operations in certain manufacturing facilities, including fuels and other items that pose a fire hazard. The 1891 map for the ICDC property shows a blacksmith shop and a chimney. A later newspaper article mentioned that the blacksmith shop ran ovens, which, Weaver stated, "require[ ] fuel to run." There was also a coal house/room (we note that coal does not create free product), an oil house (a potential release site for petroleum products, but far away from the sewer line, the north side of the buildings, and the tracks), and a paint shop (paint is not diesel fuel). The map also depicted a dry kiln, which requires heat. The 1907 map depicts a coal shed outside on the north side of the building; two iron oil tanks; and fuel oil, furnace, and a blacksmith shop. It also depicts the oil house and dry kiln. Turning to the 1950 map, Weaver testified that it depicts a boiler room, concrete coal bins, two 8,000-gallon crude oil tanks, and two 1,000-gallon crude oil tanks (on the south side of the property and south of Indian Creek).

The 1958 Sanborn map shows the boiler house east of the reservoir; concrete coal bins; and oil tanks. The outside iron oil tanks are no longer depicted, nor are the coal shed, chimney area, or furnace room. The map shows an underground napthalene tank and a gas tank, both of which were south of the warehouse.

¶ 87 Weaver also reviewed other documents related to petroleum use on the ICDC site, including an air permit application from 1973 that listed the BTU capacity at the site. He could calculate the amount of fuel oil needed to supply the BTUs needed. The document listed a 15,000 gallon diesel oil storage tank and a 15,000 gallon hydraulic oil tank. From other documents, Weaver surmised that the tanks were "generally *** towards the southern part of the site." "We did not investigate around that boiler house to the south of the property, it was distant from the BNSF property." Weaver also reviewed aerial photographs of the site.

¶ 88 Addressing the hydraulic conductivity at the site, Weaver testified that he calculated it to be 1 times $10^{-5}$. In other words, it would take about one year for liquid to move through one foot of the subsurface. His calculation was based on movement through silty clay because it is the "least permeable" material and "at least a piece of the pathway went through it"; "that would be the thing that would slow the flow down." He acknowledged that Retec calculated the actual conductivity to be 350 times faster than what he had assumed (it measured in the fill, not the silty clay) and that EMR calculated it to be 602 times faster. Weaver did not perform his own tests as to the actual conditions to determine hydraulic conductivity; rather, he relied on a "typical value" for conductivity through silty clay, which is only part of the soil composition. He "was just using this as a general rule of reference to give somebody an idea of how slow water flows through clay." Weaver explained, "You know if you run a pump test[, as the other consultants did,] you are taking the water out of the coarse seams, you are not taking it out of everything.

You are going to suck water where water is going to come from, it is going to come out of the coarse seams, so you are not getting a measure of what it is in the silty clay at all." He agreed that there are fractures in the clay and seams of coarse-grained material in the clay.

> "You have got fill, that is where the water is you can get. You have got fractured clay which is going to be 100,000 times less permeable. You run the pump test, you are going to suck all the water out of the fill, you are not going to suck any water out of the clay. If you have a lens down there you might suck a little water out of there, but if it is a lens that is not interconnected—I have done it before, you run a pump test and, gosh, you get water for about a half hour and then your pump goes dry because you have exhausted the capacity of that lens."

Weaver did not install a well that was screened below the fill in the clay where the coarse-grained material is and run a pump test on it. He opined that, based on his review of all the materials, there is a southerly component of groundwater flow at the site on the railway. Weaver disagreed with Banaszak's opinion that two floods accelerated the lateral movement of diesel to the south. He explained that floods have only limited impacts on the water table. The nature of the fill and the ICDC foundation wall "would restrict migration of impacts beneath the ICDC building."

¶ 89 Weaver opined that diesel fuel migration was hindered ("greatly restricted") to the ICDC property, but it was not stopped. The hindrance was the lack of permeability of the wall itself and the fact that the wall was keyed into the clay. The building foundation wall was not watertight and did not stop contamination from going under it.

¶ 90 Weaver first visited plaintiffs' property in June 2012 (with Carolyn Cybulski). Initially, he did not take samples that day, but did so after obtaining IEPA approval to do soil borings and

wipe samples. His team sampled using a grid pattern; they did not "go to a stain and drill right through that stain[.]" Nor did they put borings by every machine, but did so "in the area, yes. I am sure we got some borings near the machines." At his deposition, he stated, "we certainly considered ongoing and prior operations as to how they might have contributed to the contamination of the site, but we didn't do any specific here is a machine, let's go put some borings around that machine and see, you know, to prove up that that is leaking into the ground or not." Clients, he explained, will not pay for borings by every machine. Weaver concluded that the machines at ICDC property leaked, which was confirmed by the photographs.

¶ 91 Weaver noted that BNSF's forensic chemistry expert, Allen Uhler, did not identify any diesel fuel on ICDC property. The majority of the borings contained heavy fuel oil. Ultimately, the soil attenuation capacity for the site was set at 18,750 ppm of TPH, which the IEPA approved. There is one location on ICDC property where the site-specific TPH soil attenuation level of 18,750 is exceeded: at LC-50. Uhler identified that product at LC-50 as heavy fuel oil. In his report, Weaver outlined a remediation process to address LC-50. It involved two options: first, a tier 3 analysis under TACO to leave it in place; or, two, a "hotspot removal, because the sample *** is at 2 to 4 feet *** you cut out the floor slab and dig it out." Weaver estimated the cost of the hotspot removal would be $142,150.

¶ 92 Reviewing one of the cross-sections (E-E') from the 2014 site investigation report, which extended from BNSF property to inside the warehouse, Weaver identified the depths of contamination from each soil boring log and the contamination ranges were drawn on the cross-section (plaintiffs' exhibit No. 20A). He testified that, in 2003, EMR found free product under the building, but opined that "it existed there for decades before that, but that is when we discovered it, first measured it." (In 2002, EMR found free product—heavy fuel oil—up against

the northside wall.) He acknowledged that the cross-section went through the zone of contamination and that the cross-section showed contamination under the building and all the logs going from north to south. The gas oils found up against the north wall were not diesel. Weaver agreed that free product was found in trenches up against the north wall, under the building, and inside the building and that part of the pathway analysis is to connect the dots, "[b]ut I would add if it is soaking down from releases and soaking into the top that connects the dots. Again, it is my opinion, you are not getting significant lateral migration in the silty clays, that just does not happen." "I have seen often that when you have contamination it tends to sink and soak downward into the clay some level and then not migrate far laterally. This does not show and you are not going to get significant lateral migration of petroleum hydrocarbons through this clay." Typically, the clay has fractures at the surface a little bit, but they are a very tortuous path, thin, and you are not going to get that flow of petroleum hydrocarbon laterally through that clay. You have multiple releases that just soak down on the top of the clay. *** [T]hat tends to happen more with the heavy fuel oils than a floater like diesel."

¶ 93 Weaver further testified about his report (plaintiffs' exhibit No. 23—figures 27A, B, and C from SIR report), stating that he used figures portraying data from Uhler's work to illustrate the general spatial distribution of some of the hits of the different contaminants. The figures were based on Uhler's data and TPH chemistry data sampled and analyzed more than 20 years after the accident. He conceded that the figures did not consider Radian's or EMR's data and findings or Retec's data. "This is a depiction of the recent forensic chemistry." Nor did they consider the locations of the free product at the site or the groundwater flow direction, topography, or the information in the soil boring logs.

¶ 94 In his 2015 report, Weaver surmised how to obtain IEPA closure for the ICDC property, stating that mitigation could be accomplished by either hot spot removal or a concrete cap over LC-50, the latter of which the IEPA had suggested. "This option would result in no need for any remedial action on the ICDC Property whatsoever, which would be a zero or minimal cost option. This approach would likely require a land use restriction, such as the maintenance of the current floor slab over impacts or some equivalent engineered barrier."

¶ 95 5. Gene Schmidt – Plaintiffs' Forensic Chemistry Expert

¶ 96 Gene Schmidt, plaintiffs' forensic chemistry expert who worked for 30 years for Amoco (now BP plc), testified that he reviewed the reports, data, and IEPA material in this case.

¶ 97 In a 2014 report, Schmidt opined that BNSF's fuels, which he specified were broadened locomotive diesel fuel *and* possibly diesel #2, were present on and near the ICDC property and that there was very limited evidence of heavy fuel oil. The collision, he stated, "most likely" was the source of contamination on ICDC property. He pointed to "[t]he location of the release (locomotive crashes), the topography, the geology, the hydrogeologic gradient, the timing, [and] the route of surface and subsurface migration of the release[d] petroleum." He also opined that BNSF misinterpreted gas chromatogram data as showing heavy fuel oil, whereas Schmidt interpreted the data to show broadened diesel fuel. He also stated that BNSF had been inconsistent in interpreting the gas chromatogram data by concluding that ICDC property contained one or more releases of a middle distillate (*i.e.*, diesel fuel, in his opinion) and then later concluding that heavy fuel oil was the predominant contamination on plaintiffs' property. Schmidt stated that the nC17/pristane ratio indicated that the petroleum in the sewer excavation sample had been in the subsurface for about 18 to 20 years, which coincided with the 1993 collision. Further, the "near lack of <nC12 hydrocarbons" in that sample "most likely" indicated

broadened diesel fuel, as opposed to heavy fuel oil, which would have shown greater concentrations of <nC12 range hydrocarbons. Schmidt also wrote that the "potential detection of red dye" in the sewer excavation sample "indicates the occurrence of 'off road' diesel/distillate products which can be used in railroad operations."

¶ 98 At trial, Schmidt opined that diesel fuel from the collision was on the BNSF tracks and migrated in a down-gradient direction to plaintiffs' property and under the warehouse. He disagreed with Uhler's opinion that the contamination on ICDC property was predominantly heavy oil. In Schmidt's opinion, it was *mostly* diesel fuel. The contamination found at the tracks was released, based on the age dating of the petroleum products, between 17 to 18 years +/- two years from the time the analysis was conducted, thus, roughly the time of the 1993 accident. This is the same age as the contamination on ICDC property (based, as he stated in his report, on the Hurst and Schmidt Middle Degradation Model).

¶ 99 The presence of heavier carbons beyond the normal diesel range in the samples from BNSF and ICDC properties could have come, Schmidt opined, from a broadened diesel fuel (typically, diesel plus additional higher-boiling components) used in locomotives in the 1980s to early 1990s or the 240-gallon tanks of lubricating oil stored on the locomotives. He was unable to review a chromatogram for broadened diesel fuel.

¶ 100 Schmidt had concerns about the samples collected from MW-14 (along the fence on BNSF property), stating that, because it was subjected to enhanced bioremediation by oxygenate and activator in the area, it sped up the degradation. Further, addressing Uhler's initial report, Schmidt was concerned about the holding time for the samples he collected (from Bruya). Addressing Friedman & Bruya's 2002 analysis, which found that samples from ICDC property were "substantially degraded" and from "one or more releases of middle distillate." Diesel fuel

contains volatile organic compounds and, if samples exceed the holding time, it is possible that the compounds that distinguish diesel fuel can be reduced/evaporated. Schmidt agreed with Torkelson's 2007 analysis, which concluded that the samples from SB-40 and SB-41 on the BNSF property adjacent to the fence were "extremely weathered middle distillate such as diesel fuel or fuel oil." He also concurred with Torkelson's age-dating analysis for SB-41, which estimated the sample was 17 years +/- 2 years old as of the time the analysis was performed in 2007, *i.e.*, about the time of the train wreck. The age dating at the sewer excavation matched the age dating done by Friedman. Schmidt agreed that the process of weathering or biodegradation will not create higher boiling point materials than were there originally.

¶ 101 Schmidt further testified that he age dated samples from the sewer excavation. He based it on research by Christiansen and Larsen (based on the ratio between NC-17 and pristane, two hydrocarbon constituents, which degrades at a predictable rate over time for underground samples), along with follow-up research Schmidt conducted with Hurst. Schmidt's research was divided between deeper samples (10 feet and below) and shallower samples (his garden experiment; up to five feet deep). He plotted curves for the samples. There was a significant difference in the curves, specifically, the age dating was 2½ years for the shallower-sample curve and 20 years for the deeper-sample curve.

¶ 102 Schmidt reviewed the soil sample data collected during the 2013 sewer excavation, specifically, the west sewer, and opined that it was a highly degraded middle distillate diesel fuel. (In his report, he stated that it was broadened locomotive diesel fuel.)

¶ 103 Addressing diesel fuel dyeing, Schmidt explained that it was done for tax purposes (to maintain roads). A heavier dye is used in on-road diesel, not off-road, *i.e.*, locomotive, diesel. The fuel industry has used dye to distinguish between off-road and on-road activity since at least

the 1950s. (It is possible that the tax code could have changed the color.) Schmidt observed red dye in the sewer excavation samples. However, he did not *establish* that dye was making it red. He opined that dye was present in the sample and that this was supported by paper chromatography that showed that there was definitely a red color in the sample. The presence of red color supported his conclusion that red dye was associated with the sample. (In his 2014 report, Schmidt stated that he performed a crude liquid chromatography by placing a drop of the sewer excavation sample on a folded sheet of paper, whereupon he observed a very low red coloration. "The absence of detectable dye in petroleum products does not necessarily mean that the dye compounds were not initially present in 'fresh' products[,] as they can be removed by geochemical processes or other means. Under some conditions (such as clay rich soils and significant petroleum masses)[,] dyes have been known to persist in the subsurface environments for many years.")

¶ 104 Schmidt testified about his review of the forensic analysis performed for BNSF by Paragon in 1996, which found the presence of hydrocarbons in the range of C8 to C36 in SB-1 and SB-2 on BNSF property along the fence. Schmidt explained that compounds in that range could be diesel fuel or diesel fuel mixed with heavier material. (Actually, we note that Paragon found diesel *and* heavier fuel oils.) The 1996 samples would be more reliable than samples collected in 2012 or 2014. The Paragon data supported his conclusion that the contamination on plaintiffs' property originated from the BNSF tracks and that contamination originated from the 1993 collision. Schmidt also found supportive the groundwater flow information in Retec's report.

¶ 105 Addressing a UVOST map (joint exhibit No. 52) prepared by Genesis Engineering, Schmidt testified that it suggested that the source of the diesel fuel contamination on ICDC

property was "the railroad track taking into account that we have groundwater flow direction in that same direction, therefore the contaminants at the track would have migrated onto the plant property." The exhibit depicted contamination under the warehouse.

¶ 106 Schmidt reviewed maps of chromatograms, polynuclear aromatic hydrocarbons (PNAs, which are the same as polyaromatic hydrocarbons (PAHs)), and isoprenoid data that ICDC's consultants created using Uhler's analysis. Like chromatograms, PNA and isoprenoid data are used to identify petroleum products. Each map included graphical data for samples taken across the site. Thus, Schmidt was able to visually compare the results for samples on the ICDC property with those on BNSF property. He testified that the maps led him to conclude that the results for a number of the samples from ICDC property "matched very closely" with those from BNSF property. Addressing the isoprenoid map of the samples he used in the chromatographic map and PNA map, Schmidt explained that the isoprenoids he used "fall within the range of diesel fuel, they don't fall outside the range of diesel fuel," that the isoprenoids occur in the diesel fuel boiling range, and they do not tell you anything about whether the materials are diesel or not, but only that the material is included in the diesel range.

¶ 107 The boiling range for the bulk of diesel fuel, not the actual range, is generally from C-10 to C-25. Heavy fuel oil goes beyond C-25 and more than C-40. Refiners sometimes blend diesel fuel or middle distillate into heavy fuel oil to improve the performance of the heavy fuel oil. Not all fuels referred to as diesel #2 have the same chemical composition. There are variations between refineries and between operators. Degradation times vary for the same release because the availability of oxygen is different in different locations. The chromatograms where most of the compounds are in the sewer excavation fall under the diesel boiling range.

¶ 108 6. Allen Uhler, Ph.D. – BNSF's Forensic Chemistry Expert

¶ 109 Allen Uhler, Ph.D, a forensic chemist, testified for BNSF about his chemical analyses of the samples from the site. He opined that his analysis revealed that there was no diesel fuel in samples from ICDC property, other than a small amount that was chemically distinct from that found on BNSF property. Further, Uhler found no evidence of mixing of diesel with other types of petroleum.

¶ 110 Uhler had worked at Battelle Memorial Institute for 17 years, including during the 1989 Exxon Valdez event, which catalyzed advancements in analytical chemistry as it pertains to measuring hydrocarbons or petroleum hydrocarbons in the environment. Uhler was involved in the development of new genetic tools for purposes of petroleum identification. Forensics emerged in the 1990s, he explained, as scientists began doing more sophisticated testing of petroleum with more rigorous numerical methods of data analysis. In 2004, Uhler left Battelle and joined NewFields Environmental Forensics Practice, which focuses on identifying and distinguishing petroleum at contaminated sites. He has also worked for federal agencies to work on the Deep Water Horizon oil spill to collect and analyze environmental samples from the Gulf of Mexico to understand the detailed chemistry of the oil that was being discharged and to analyze environmental samples from thousands of square miles around the Gulf to assess where the footprint of the spilled oil ended up. His team performed petroleum fingerprinting analysis on the samples.

¶ 111 In the post-Exxon Valdez era, new measurement methods have evolved that can measure certain chemicals, including a class called PAHs (polynuclear aromatic hydrocarbons). They are important from a genetic standpoint, Uhler explained, and from a forensics standpoint. As to the latter, scientists learn about the character of the petroleum. There "are distinctions [in the PAHs that they can measure] that allow us to differentiate between the source or sources of petroleum

used to either—to refine a product." PAHs are a marker for a particular petroleum product. They "have their own distinct boiling points, and therefore PAHs of certain size and volatility will only be found in certain types of fuels." "They are identified through a similar chromatographic process but using a more sophisticated detector called a mass spectrometer, which is both more sensitive and allows you to unambiguously identify the molecular structure of a chemical that you are targeting to measure." Diesel fuel does not contain any higher-boiling PAHs. Those occur in higher boiling petroleum products. Heavy fuel oils are made from refining residual petroleum. "[T]hey can have wildly different chemical character. The character they share is that they are all heavy petroleum diluted down with a little bit of other leftover petroleum product." "The only requirement for heavy fuel oil is a viscosity standard." Chromatograms vary significantly from sample to sample.

¶ 112 Addressing gas chromatography, Uhler explained that it is an analytical chemistry technique that is designed to separate complex mixtures like petroleum, which is made of thousands of chemicals. A detector responds to hydrocarbons or petroleum and the result is a gas chromatograph, *i.e.*, a graphical depiction of time on the bottom axis and detector response on the y-axis, and a series of peaks that occur over time that correspond to distinct petroleum compounds. The collection of peaks is the chromatogram, *i.e.*, the fingerprint from the gas chromatography analysis.

¶ 113 Uhler analyzed soil samples collected from the site in the Spring of 2014. The laboratory he used engaged in gas chromatography fingerprinting and analyzed the samples to measure for PAHs (polycyclic aromatic hydrocarbons) and (for crude oil and heavy fuel oils) biomarker analysis. The PAH and biomarker measurements, he stated, "provide specific information pertinent to the nature and source-specific characteristics of petroleum." He noted that there is

significant overlap in hydrocarbon ranges for many kinds of petroleum products. Gasoline has a range of C4-C12. Kerosene has a range of C6-C16. Diesel has a range of C10-C28. Heavy fuel oil has a range of C10-C40 or C12-C34+. Lubricating oils have a range of C18-C34. "[T]here is a minor deviation in how railroad diesel is blended. It still meets the 2-D specs, but it is blended in a particular way to meet railroad specifications." The gas chromatograph is the same. "You need to use a more sophisticated measurement technique to understand" deviations. The typical carbon range for #4 fuel (*i.e.*, burner fuel for industrial use) is C10-C35. Heavy fuel oils are typically C-10 to C-40 or C-50. Heavy fuel oils are a different class of petroleum products than distillate fuels and are produced in a different way.

¶ 114 In 2013, BNSF retained Uhler. Friedman and Bruya's analysis had concluded that samples they examined showed evidence of higher boiling petroleum products like fuel #4. IEPA inquired whether the high boiling hydrocarbons could have arisen from degradation of diesel fuel. Uhler testified that, while the chemistry changes during degradation of diesel fuel, the carbon range remains the same. "You don't create heavier hydrocarbons through biodegradation." Uhler reviewed Bruya's and Torkelson's analyses and performed his own analysis from a subset of leftover samples from Bruya's analyses using "more robust analytical techniques" and drew his own conclusions. When asked whether the fact that the samples had been in storage for a number of years affect the results and accuracy of his analysis, Uhler stated, "they shouldn't [a]ffect them much." He noted that studies from the Deep Water Horizon spill showed that "hydrocarbon samples in particular of this type can have storage times of at least seven years without worrying about change to character." However, "it is possible that some minor changes occurred to the samples while they are being stored, but not enough to change the

overall character of the residual fuel product for identification purposes." Further, storage time will not create heavier carbon constituents that were not there to begin with.

¶ 115 Uhler analyzed samples collected in the Spring of 2014. His laboratory used gas chromatography fingerprinting and analyzed the samples to measure PAHs and biomarkers. Addressing his findings, Uhler testified that samples from MW-29 (on ICDC property) and MW-14 (on BNSF property by the fence) between 2011 and 2013 (about 18 to 20 years after the collision) "were emblematic of residues of heavy fuel oil." He relied on chromatograms, which he concluded depicted "a broad boiling mixture between C-10 and C-40" that was "heavily weathered" and had "the classic characteristics of heavy fuel oil." Uhler also reviewed the PAH distribution of the liquid oil and noted the presence of "higher molecular PAHs that are not found in diesel and that are very common in heavy fuel oils, they just couldn't get there any other way." The MW-29 and MW-14 samples also contained 2-MA (2-methyl anthracene), which does not occur in crude oil and distillate products of crude oil, like diesel fuel. However, when blended heavy oil is made, which involves "dramatic heating," that process creates 2-MA. "So when you find 2-MA in a sample it is an indication that you are dealing with a residual fuel and not a simple distillate fuel, for example. It is a marker of heavy fuel oil." Uhler further testified that the chemical data, specifically, the gas chromatograms and the PAH data, "comport with heavy fuel oils." However, the variability in the gas chromatograms showed that, although they were all heavy fuel oils, they were "variably sourced. You can't—each of these couldn't have been created from one another, they are variably sourced fuels." "It wasn't the result of instantaneous release of one type of product."

¶ 116 In 2014, Uhler was involved in the UVOST investigation. He identified the following dominant petroleum signatures (*i.e.*, more likely than not the product that originated to create the

sample): (1) six samples with diesel fuel; (2) nine samples with gas oil/#4 fuel oil (a burner fuel); (3) a number of samples with heavy fuel oil; and (4) three samples with lubricating or mineral oil. His testing revealed no lubricating oils at the rail site. Uhler prepared maps plotting the samples based on the contamination type. The maps showed #4 fuel oil and heavy fuel oil on both the BNSF and the ICDC properties. He performed molecular chemistry analysis on the samples to determine whether they came from a common source or multiple sources. Uhler concluded that, for the six diesel samples, "there were four distinct sources, these—there were four groups that fall out into space that indicate to me four different sources of the diesel fuel." Two samples came from SB-1/LC-1 (on BNSF property by the fence). The gas oil samples fell into three groups. Uhler concluded that "amongst these nine gas-oil-type samples there [are] three distinct sources." As to the heavy fuel oil, Uhler determined that there were multiple sources of HFOs, which were "emblematic of variably weathered and variably blended fuel oils." The 2014 UVOST logs, chromatograms, and PAH distribution figures reflect heavy fuel oil at LC-11 (on BNSF property) and LC-34 and LC-50 (on ICDC property).

¶ 117 Uhler examined First Environmental's data from the sewer excavation and concluded from the gas chromatograms that the petroleum material in the samples were heavy fuel oils. He also re-analyzed one leftover excavation sample, and his results concurred with his readings of the original gas chromatograms.

¶ 118 Addressing Schmidt's opinion concerning broadened diesel fuel, an experimental railroad diesel fuel that was under evaluation in the 1980s but "never embraced by the industry, nor offered as a conventional fuel product by the refining industry" and his identification of several locations that he identified as containing that fuel, Uhler disagreed and identified the material as heavy fuel oil. He reviewed the article upon which Schmidt relied and the technical report upon

which it was based (the latter of which Schmidt did not review) and "concluded that broadened diesel fuel from a forensic chemistry standpoint is virtually indistinguishable, would be indistinguishable from #2 diesel fuel, specifically because the change in the boiling endpoint at 50 degrees from about 650 to 700 degrees would result in a—not a final, in a carbon chain endpoint of only two carbons. And that is literally indistinguishable using the types of chromatography tests we employ today in forensic science." Further, Uhler's testing revealed that "residues of conventional Diesel Fuel were discovered in shallow soils in a limited area of the railroad right of way *** rendering Mr. Schmidt's theory about Broadened Diesel Fuel moot."

¶ 119 Uhler also addressed Schmidt's and other consultants' age dating of the samples, which were based on the Schmidt and Hurst research and Christiansen and Larsen research, testifying that the methodologies were not reliable. Uhler and others have authored papers criticizing the methodology, which theorizes that petroleum that is released into the environment degrades in a predictable manner. The work was based on a limited number of sites in Scandinavia. Uhler and other critics believe that there are many variables involved in the rate at which petroleum degrades in the environment, including oxygen content, moisture content, nutrient availability, mineral availability, and temperature. "And those factors vary over time at any given site." Addressing Schmidt's age dating of a sample from the sewer excavation, Uhler noted that this was an example of a variable that can impact the degradation rate. In the Christiansen and Larsen paper, the samples were under a paved surface, whereas a sewer excavation potentially has water flows and "nutrient inputs that conventional rainwater percolating in a soil aren't going to impart on such surface and petroleum and the like."

¶ 120 Next, Uhler addressed his analysis of two samples (GB-02, from different depths 2 ½ to 3 feet and deeper) from ICDC property. He found trace levels of lower boiling hydrocarbons in the shallower sample. Uhler testified that the TPH concentration is very low, about 28.6 ppm. For comparison, he noted that backyard soil can have the same TPH level from naturally occurring biological material like plant waxes. If he viewed only a gas chromatogram, it would look like plant wax. However, Uhler also reviewed a PAH analysis, and "was able to see a trace of what is diesel fuel. And it is probably, you know, a fraction of—it is not probably, it is a fraction of that 28 parts per million, it is probably, you know, few parts per million or 10 parts per million of diesel residue in the soil, *literally a few drops of diesel fuel*." (Emphasis added.) Critically, there was no similarity in the molecular chemistry in the trace diesel and the diesel samples found on the right of way. *Other than the trace sample (which was chemically distinct from the diesel on BNSF's property), Uhler never identified any sample on ICDC property that was diesel fuel*. Middle distillates (which are intermediate products that are prepared at a refinery for many uses, including dilution of heavy fuel oils, but not for sale as middle distillate fuel proper) will be in things like heavy fuel oils, but not diesel.

¶ 121 On cross-examination, Uhler testified that he did not consider the historical information concerning the 1993 collision related to the use of the rail site, ICDC site, the hydrology or the topography of the site. Nor did he consider the volume of the spill reported in 1993 at the accident, the location of the tracks, the date, or groundwater flow. Heavy hydrocarbons, *i.e.*, heavier than diesel hydrocarbons, could not have arisen simply through the biodegradation of petroleum. It is possible that lighter-end middle distillates could degrade to such a point in a mixture with heavy fuel oils that the predominance would be a heavy fuel oil. That is, lighter-end middle distillate, such as diesel, can degrade in a mixture with heavy fuel oils, leaving a

predominance of heavy fuel oil. Uhler was unaware that the location of MW-25 was the location of a two-phase extraction system at one time.

¶ 122 Uhler relied primarily on the chemistry data from Alpha Analytics Laboratory. He did not include any information from the Radian or Retec reports in his analysis. He did not consider or include in his report information or analyses by EMR or Pace Laboratories in his analysis.

¶ 123 Addressing the conclusion by St. John's laboratory that the TPH they analyzed showed diesel fuel within the range of C12 to C22, Uhler stated that "they didn't identify diesel fuel. They identified the operational range of TPHD, which is the diesel range, it is not diesel fuel, it is a mistake that is often made when people interpret TPH data."

¶ 124 Uhler was aware that no one collected a sample of the fuel lost from either the BNSF or Southern Pacific locomotives on the day of the collision. Uhler's testing did not reveal lubricating oil on the rail site. Uhler further testified that he compared the samples he analyzed, which were collected at the site well after 1993, to "general example chromatograms from a textbook from chapters that I have published. Chromatograms, molecular data, pH distributions come from samples that we have analyzed and published in the literature."

¶ 125 Addressing the bioremediation that may have taken place around MW-14, Uhler testified that any such bioremediation that may have taken place prior to the sampling he analyzed would not have affected his identification of the fuel residuals. Bioremediation accelerates degradation, but does not create heavy-end carbons that were not there before. Weathering and biodegradation do impact the existence of lighter-end petroleum hydrocarbons.

¶ 126 7. Carolyn Cybulski – BNSF's Consultant

¶ 127 Carolyn Cybulski, BNSF's consultant, testified as a fact witness that she has an environmental engineering background and is a principal at Weaver Consultants Group. Weaver started working for BNSF in 2011. In 2014, Weaver prepared a site investigation report. Cybulski was involved in preparing the report and reviewed prior consultants' data and reports. She also visited the site in June 2012, including the right of way and ICDC property and took photographs. On ICDC property, Cybulski photographed areas with heavy machinery, drum storage tanks, and equipment pumps and hoses. They depicted staining and leaking oil or solvents and oil absorbant. One photograph showed broken concrete and pitting and cracking in the concrete in a vehicle storage area in the central portion of the ICDC building. Cybulski did not collect any samples from the areas she photographed.

¶ 128 8. Robert Hinchee, Ph.D. – BNSF's Remediation Expert

¶ 129 Robert Hinchee, Ph.D., BNSF's remediation expert testified that he is an environmental engineer with Integrated Science Technology, a remediation firm, and is a registered civil engineer. He opined that BNSF's actions and remediation plan were appropriate and, in some cases, exceeded what is typically done. For example, BNSF installed more wells more rapidly than is normally done. It installed the first round of monitoring wells within one month of the collision and cleaned up what could be cleaned up on the surface and put booms in the stream to control the release of oil. It is within industry standards to have an investigation into a release of this size unresolved after 27 years. "Cleanups are slow, data has to be collected." Migration, Hinchee testified, is not occurring today, nor has it "been for quite a while."

¶ 130 Hinchee reviewed the historical use of the ICDC site, including the Sanborn maps. Addressing the Sanborn maps, Hinchee testified that he did not know of the historical uses of iron oil tanks depicted on the 1907 map or of any documented releases from those tanks. He also

agreed that the 1950 maps did not identify those tanks. He created a map that purported to identify possible sources of contamination on and around the ICDC property. Noting that several hundred gallons of LNAPL were recovered, Hinchee testified that it was a small percent of what was released, which is common. "It is very difficult, you rarely recover more than ten percent as free oil because of the soil's ability to hold the oil, it won't be released. That was—that is actually a pretty significant percent compared to what people usually recover." "[Y]ou can't have an old facility like what is on the Indian Creek property without hydrocarbon in soil and groundwater, I have never seen one, I don't think they exist. But in 2002 what happened was they actually got a confirmation of that through a forensic report, I believe the first one was the Bruya report, that showed that there had been multiple releases, [and] that the contamination was not limited to what came from the locomotive accident."

¶ 131 Addressing Banaszak's opinion that BNSF did not follow some of Radian's recommendations, Hinchee stated that site owners such as BNSF rarely do everything that consultants recommend. As to Banaszak's assertion concerning Retec's failing to report the presence of free product around 1999, Hinchee testified that it was a mistake and that the LNAPL/free product should have been reported, which it ultimately was. It was not uncommon, not a systematic error, and there was no impact.

¶ 132 Hinchee also addressed the appropriateness of ICDC's remediation remedy, specifically, a combination of a large excavation (1,600 truckloads) and a barrier trench. He opined that it was *not* appropriate because most of the soil would be clean; even though it would contain TPH, it would not exceed any regulatory standards. The TPH standard agreed upon by the IEPA was 18,750 ppm, which is based on the TACO requirements and "on the fraction organic carbon in the soil, which is related to the ability of the soil to hold or absorb petroleum hydrocarbon."

There is only one location on ICDC property where the TPH standard was exceeded: LC-50. ICDC's remediation proposal, in Hinchee's view, is not appropriate to remediate LC-50 because it would include too much soil that is not in need of remediation, which is costly and irresponsible. It is irresponsible because it "doesn't meet the State's sustainability requirements for remediation. In other words, it would require the expenditure of carbon of fuel to run excavators and trucks to remove soil that is not in need of remediation. And it also likely would end up in a landfill, and landfill space is valuable, you want to spend it on waste that needs to go into a landfill, you don't want to waste that space on something that doesn't need to go into a landfill." It would also involve excavating clean fill elsewhere and transporting to the site, which involves a carbon footprint. ICDC also proposed an interceptor trench, which, Hinchee opined, would not be appropriate, because the product migration stopped "long ago." Product thickness has declined for a "long time. So to put an interceptor trench today would make no sense whatsoever because there is nothing to intercept, nothing moving, no migration."

¶ 133 Hinchee (like Weaver) also disagreed with Banaszak's flood theory. Hinchee stated that, by his observations, a flood event does not cause the LNAPL in the subsurface to migrate. "In a flood event you increase the moisture content of the subsurface which decreases the permeability and it decreases the ability of the LNAPL to flow. LNAPL flows more readily during droughts and dry events than it does during wet events."

¶ 134 The site-specific remediation standard for the ICDC property is higher than the default standard, but this is "standard practice." The 18,750 ppm TPH limit on the property, the soil saturation limit, means that there is no mobile LNAPL on the property that will move into the soils of the State. The 18,750 TPH standard is not a health-based TPH standard. "Health-based standards would be much higher."

¶ 135 9. Ronald Hill, Sr. – ICDC's Prior Owner

¶ 136 Ronald Hill, Sr., ICDC's prior owner, testified that he and two other individuals purchased the ICDC site in 1981. He was not aware of any petroleum releases on the property at the warehouse at any time other than those caused by the 1993 wreck. The first building built on the property was in 1893, and a company called Austin & Western operated the property from that date for a number of years. During World War II, between 1939 and 1941, Austin & Western built Howitzers for the military on the ICDC property and primarily manufactured heavy hoisting equipment.

¶ 137 When he purchased the property, there was a three-story boiler building located on the property. It was south of the creek, about 50 to 100 feet from the tracks on Dearborn. Four underground tanks were connected to the boiler. Their capacity was 15,000 to 25,000 gallons. They stored fuel oil. Hill had them removed in 1982. They were empty. When he purchased the property, Hill did not have an environmental investigation or inspection of the property, because it was not required at that time.

¶ 138 10. Ronald Hill, Jr. – ICDC's Current Co-Owner

¶ 139 Ronald Hill, Jr., ICDC's current co-owner, testified that he and Jeff Cherif own JB Industries (an HVAC tool and accessory manufacturing business) and INDABA (the land development company that purchased the land from Indian Creek Development Company, which was owned by Lee Larson and Hill, Sr.). He has been familiar with the site since 1981, when his father purchased it.

¶ 140 The ICDC site consists of about 50 acres with a creek that runs through it. The warehouse is an active production facility, with at least 30 employees. During heavy rains, rain

from the tracks runs southwards onto ICDC property and collects north of the warehouse wall along the fence line.

¶ 141 According the Hill, prior to 1993, ICDC owners did not have issues with diesel odors in the areas where they accessed the ground below the warehouse building. He is unaware of any releases of petroleum products in the warehouse building or from the ICDC site, except for the 1993 BNSF spill. He believes that the contamination on his property is from the 1993 collision.

¶ 142 In November 2000, ICDC's tenant, Craftsman Tool and Mold, was digging machine footings along the northern part of the warehouse "pretty close to where the collision occurred" (the middle bay and close to the northern wall). According to Hill, it was "pungent of diesel." The material looked like oil and "had a red dye." His superintendent identified the substance as diesel. ICDC contacted BNSF, who sent personnel to haul away the stockpile material and take it to a hazardous waste landfill.

¶ 143 In 2003, there was a flood that resulted in damage to ICDC property. Parts of the property had 48 inches of water and blew out some walls.

¶ 144 In 2008, remediation activities occurred on the ICDC property. Hill testified that BNSF consultant EMR conducted vapor-extraction activities in the warehouse. In February 2013, ICDC personnel excavated the floor to locate the sewer line to install a bathroom. Hill testified that they discovered "nasty, gooey, gloppy smelly stuff" that smelled had a "[p]ungent diesel smell." There was a sheen on top and red dye in the clay line. It was dirty above the pipe. The north wall of the excavation was impacted with "gloppy diesel smelling muck." Hill videotaped the area. He was unaware of any diesel spill on ICDC property during his tenure. His consultant contacted IEPA. Hill also contacted St. John, who came to the site and observed the excavation.

¶ 145 In 2013, following heavy rains, the water level rose, but there was no water above surface. (Part of the property is on a floodplain.)

¶ 146 Addressing another incident, Hill testified that, in December 2014, in the area known as the burnishing area (*i.e.*, aluminum polishing) the floor was excavated to expose the subsurface in order to install heavy equipment. Diesel odors were noted. "I don't recall any smell before that."

¶ 147 Addressing the historic activities on the ICDC property, Hill testified that the references to a storage tank that once held diesel and another that held oil related to a power plant that was on the site, but it was across the creek on the south side of the property. In 1981, when his father purchased the property, the tanks were no longer in operation and were empty. They were removed. Another incident related to the Mid-State's release, during which a spotter tractor's fuel tank leaked up to about 75 gallons. This incident occurred on the south side of the creek on the southern border of ICDC's property, about 600 feet from the collision.

¶ 148 Hill addressed the damages issue, stating that he wanted the property to be cleaned up and was concerned about exposing his employees and contractors to diesel fumes. He was also concerned about the fact that ICDC was not involved in the consent agreement that led to the remediation standard applicable to his property. Hill wants BNSF to clean up the diesel, the odor, and the oil. If awarded damages in this case, Hill would use them to clean up the property.

¶ 149 11. Jeff Cherif – ICDC's Current Co-Owner

¶ 150 Jeff Cherif, ICDC's current co-owner, JB Industries utilizes about 200,000 square feet at the site and the remaining 400,000 square feet are rented out. Rainwater flows from the tracks to ICDC property. Cherif is unaware of any petroleum fuel releases onto the ICDC property other

than those caused by the 1993 collision. From his experience, Cherif has no indication that any relevant volume of oil was ever stored on the property for any purpose or released at the site.

¶ 151 During the 2013 excavation for the sewer cleanout, Cherif noticed a diesel odor and a substance that looked like diesel fuel; it had a sheen to it and some color. In the excavation, he observed water from the ground coming into the excavation from the north side wall. In December 2014, the excavation for the burnishing department revealed that the pit appeared to contain diesel fuel. "Certainly smelled like diesel fuel. Muck. Gook. Essentially the fumes in the building were pretty extensive."

¶ 152 Reviewing the 1907 Sanborn map, Cherif testified that the coal shed and iron tanks next to it are not on the present ICDC property, but are on what is currently BNSF property.

¶ 153 Cherif wants to bring closure to the site. The litigation has caused "tremendous expense" to the business. Prior to INDABA's purchase of the land, Cherif did not have any phase I or II environmental investigation of the condition of the property. Nor has he had anyone assess whether there are any environmental impacts other than petroleum.

¶ 154 H. Trial Court's Order

¶ 155 The 12-day trial concluded on August 30, 2017. On April 25, 2018, the trial court issued its findings in a 28-page order, largely adopting BNSF's proposed findings of facts and conclusions of law. The court found that ICDC did not prove that: (1) the fuel from the 1993 collision migrated onto or under its property; (2) petroleum contamination found on plaintiffs' property is from the 1993 accident; and (3) petroleum contamination found on plaintiffs' property has caused any recoverable damage to them.

¶ 156 It also found that, even if a *mixture* of diesel fuel #2 migrated from the collision and heavier fuel oil of unknown origin were both on and under plaintiffs' property, plaintiffs did not

present any evidence of the "percentage or division of the applicable responsibilities that would aid the court in apportioning liability." The trial court also found that, even if there was a significant amount of diesel fuel #2 in a mixture on ICDC property, plaintiffs offered only a dig-and-haul remedy, costing about $6 million, such that, "if the court were to apportion that cost between the parties based on an arbitrary percentage, it would be error or an abuse of discretion." The court determined that the remedy should have been considered with other less onerous ones.

¶ 157 Specifically on the migration issue, the trial court found that the evidence showed that the only fuel released in the collision was diesel fuel. The court also addressed the fact that plaintiffs' building has a long history of heavy industrial use, beginning in 1893. It would be reasonable, the court found, to assume there had been petroleum releases prior to 1993. Further, recent use of the property showed potential sources for petroleum contamination, as reflected in photographs of the property depicting, for example, heavy staining on the floor, and as confirmed by laboratory analyses of wipe samples, which showed chemicals of concern related to petroleum products similar to those found in the subsurface materials. However, the court determined that the historical-use evidence was not probative that there was a release or spill at some point other than 1993, but was as relevant as "the speculative testimony by plaintiffs' witnesses that the heavier fuel oils 'could' have come from the 240 gallon oil tanks on the 3 locomotives. Rather than finding that releases prior to 1993 were more likely than not, this evidence serves to counterbalance the speculative theories plaintiffs have asserted, and the result is that plaintiff[s] ha[ve] not proved [their] case as to liability *** by a preponderance of the evidence."

¶ 158 BNSF's response to the spill, its investigation, and its remedial actions, the court found, were reasonable. It relied on its consultants' professional judgment, which advised that the fuel

released in the accident "was likely trapped in the subsurface below the right-of-way and had not migrated off site." Plaintiffs, the court found, presented no evidence that BNSF's consultants failed to exercise their best professional judgment. BNSF, it noted, spent over $2.2 million on the investigation of plaintiffs' property, as requested by regulators, and there was no evidence that it refused any investigative step or process insisted upon by IEPA. The court rejected Banaszak's suggestion that BNSF's consultants made mistakes or did not conduct their investigation in an ideal manner.

¶ 159 Next, the trial court determined that the petroleum products on plaintiffs' property were not diesel fuel, but, instead, heavy fuel oil and gas oil and did not result from the 1993 collision. Thus, the petroleum contamination on ICDC property (it is undisputed that there is contamination on ICDC property) did not come from and was not caused by the 1993 accident. The parties' forensic chemistry experts, Schmidt and Uhler, utilized some of the same forensic tools, but, the court found, Uhler used additional tools and procedures to further identify the products that were the source of petroleum contamination in the samples. He determined that, with one exception, no samples from ICDC property contained diesel fuel and that the exception was a trace amount of diesel that was "genetically distinct from any of the diesel samples located on the BNSF right-of-way." Uhler had also concluded that the contamination on ICDC property resulted from many separate releases and was primarily heavy fuel oil and gas oil. Schmidt, on the other hand, concluded that samples reflected broadened diesel fuel, an experimental fuel described in an article upon which he relied. The trial court found Schmidt's testimony concerning the broadened diesel fuel "unpersuasive and unreliable" and that there was no evidence that the locomotives in the 1993 accident were carrying the experimental fuel. The trial court also found that Schmidt's opinions were "undercut" by his "reliance on the supposed

presence of red 'dye' in the samples from plaintiffs' property as a marker showing that those samples are off-road diesel fuel." Banaszak and legislative history, the court noted, supported a finding that off-road diesel was not dyed red until one year or long after the accident. The court also found unpersuasive and speculative Schmidt's testimony concerning the age dating of the samples. It also found that it was undisputed that weathering does not result in the creation of heavy carbons that were not present in the original sample. Weathering does not account for the heavy carbons out to C40 or beyond in the samples from ICDC property. Thus, the trial court found Uhler more reliable, compelling, and persuasive than Schmidt on the subject of forensic chemistry and the fingerprinting and identification of petroleum products found on the right-of-way and on ICDC property.

¶ 160 Next, addressing the "anectodal reference" to odors in the boring logs as diesel odor, the trial court found it speculative and unreliable evidence of a particular petroleum product that may have been present in the sample. It noted that plaintiffs presented no evidence that odor is an acceptable method to identify a particular petroleum product in an environmental investigation.

¶ 161 Turning to the pathway evidence, the trial court determined that plaintiffs failed to prove that any diesel fuel released during the 1993 accident migrated onto and is present on their property. It noted that neither Banaszak nor Weaver identified a *specific* subsurface pathway form the area of the 1993 release or right of way to any location where petroleum contamination is located on plaintiffs' property. The trial court determined that it was "not necessary" for it to decide which expert was more persuasive as to the various issues upon which they disagreed. Its findings that no diesel migrated onto and is present on ICDC's property from the accident, it noted, was based on: (1) the more compelling and persuasive forensic chemistry evidence of the nature of the petroleum contamination in ICDC property; (2) the wide distribution of such

contamination on ICDC property; (3) the absence of direct evidence of a pathway from the location of the release to the locations on ICDC property where contamination is present; and (4) the evidence of historic use of petroleum products on ICDC property.

¶ 162 The court next addressed the evidence concerning the extent of contamination on ICDC property, finding that plaintiffs did *not* show that the contamination on their property, "which BNSF did not cause and for which BNSF is not responsible," warrants "significant remediation or presents a material risk to human health." It noted that the IEPA had reviewed and approved a site-specific TPH level for ICDC property and that there was only one location on the property (*i.e.*, heavy fuel oil at LC-50 below the warehouse floor) where TPH exceeds that level of 18,750 ppm. The contamination, the trial court determined, "can be addressed without extensive remediation, either by a spot removal at an estimated cost of $142,150, or by agreeing with IEPA to maintain the concrete cap over that area."

¶ 163 Next, the trial court found that plaintiffs' proposed dig-and-haul remediation plan was "unnecessary, unreasonable and unwarranted, and that the cost is unreasonable." It determined that the proposal was based on TPH levels and not on contaminants of concern (which are all below residential levels). The plan required removal of all soils with TPH levels above the TACO default levels and ignored the IEPA-approved TACO site specific TPH level for plaintiffs' property. Further, the court found that plaintiffs presented no evidence that the proposal was required under any regulatory standard, was necessary to protect human health, and it did not comply with IEPA's directives for green/clean remediation.

¶ 164 Also, based on its finding that the petroleum contamination on ICDC property did not come from the 1993 locomotive accident, the court found that there was no diminution in the value of plaintiffs' property.

¶ 165 As to plaintiffs' ability to obtain an NFR letter from the IEPA, the trial court found that there was no evidence presented suggesting that plaintiffs could not obtain such a letter for their property based on BNSF's consultants' work if plaintiffs performed a spot removal of soil at LC-50 or agreed to leave that area under a concrete cap.

¶ 166 Plaintiffs appeal.

¶ 167 II. ANALYSIS

¶ 168 Plaintiffs argue that: (1) the trial court's finding that ICDC failed prove that fuel from the collision migrated onto its property was against the manifest weight of the evidence; (2) the court erred in placing on ICDC the burden to apportion liability; and (3) the trial court erred in finding that ICDC failed to prove that it was entitled to damages. For the following reasons, we uphold the trial court's finding on the migration issue and, thus, need not reach the remaining issues.

¶ 169 A. Migration

¶ 170 The standard of review in a bench trial is whether the judgment is contrary to the manifest weight of the evidence. *Commercial Mortgage & Finance Co. v. American National Bank & Trust Co.*, 253 Ill. App. 3d 697, 702 (1993). A decision is against the manifest weight of the evidence where it is unreasonable. *Brynwood Co. v. Schweisberger*, 393 Ill. App. 3d 339, 351 (2009). It is the trier of fact's role to resolve conflicts in the evidence, assess witnesses' credibility, and determine the weight to be given to their testimony. *Prairie Eye Center, Ltd. v. Butler*, 329 Ill. App. 3d 293, 298-99 (2002). The court's assessment of expert testimony is likewise entitled to great deference. *St. Paul Fire & Marine Insurance Co. v. Michelin Tire Corp.*, 12 Ill. App. 3d 165, 179 (1973). "An opinion of an expert is to be accorded such weight that, in light of all of the facts and circumstances of the case, reasonably attaches to it." *In re Glenville*, 139 Ill. 2d 242, 251 (1990). "Even if several competent experts concur in their

opinion and no opposing expert testimony is offered, it is still within the province of the trier of fact to weigh the credibility of the expert evidence and to decide the issue." *Id.* "Although uncontradicted and unimpeached testimony of an expert cannot be rejected arbitrarily, subjective and unclear testimony need not be given credence by a trier of fact enjoined by law to avoid speculation, guess, or conjecture in its verdict." (Citations omitted.) *Outboard Marine Corp. v. Liberty Mutual Insurance Co.*, 283 Ill. App. 3d 630, 655 (1996).

¶ 171 Plaintiffs' complaint, as relevant here, alleged trespass, nuisance, and negligence. "A trespass is an invasion in the exclusive possession and physical condition of land. In Illinois, one may be liable in trespass for causing a thing or a third person to enter the land of another either through a negligent act or an intentional act. *** [O]ne need not intend to take possession of the encroached-upon premises or deprive occupants of their right to possess those premises to have committed a trespass under Illinois law." (Citations omitted.) *Millers Mutual Insurance Ass'n of Illinois v. Graham Oil Co.*, 282 Ill. App. 3d 129, 139 (1996). "Every trespass to real property is considered to result in legal injury, entitling [the] plaintiff to at least nominal damages." *First National Bank of Des Plaines v. Amco Engineering Co.*, 32 Ill. App. 3d 451, 455 (1975). In their complaint, plaintiffs alleged that the migration of fuel from the tracks constituted unlawful entry onto plaintiffs' property, invaded their possessory right to it, and caused damages by imposing costs upon plaintiffs and diminution in value of their property. Further, they alleged that, even if BNSF immediately removed the contamination, there would still be a stigma associated with the property that would continue to negatively impact its value.

¶ 172 Turning to nuisance, a private nuisance is an invasion of another's interest in the use and enjoyment of his or her land and must be substantial, either intentional or negligent, and unreasonable. *In re Chicago Flood Litigation*, 176 Ill. 2d 179, 204 (1997). Unlike a trespass, a

nuisance is an interference with the interest in the private use and enjoyment of the land and does not require interference with the possession. *Id.* (quoting Restatement (Second) of Torts § 821D, Comment d, at 101 (1979)). Nevertheless, "the interference with the use and enjoyment of property must consist of an invasion by something perceptible to the senses, *** 'something that is offensive, physically, to the senses and by such offensiveness makes life uncomfortable.' " (Emphasis added.) *Id.* at 205 (quoting *Rosehill Cemetery Co. v. City of Chicago,* 352 Ill. 11, 30, 185 N.E. 170 (1933)). Common examples of private nuisance are smoke, fumes, dust, vibration, or noise produced by the defendant on its own land and impairing the use and enjoyment of the neighboring land. *Id.* at 205-06. To state a claim for private nuisance, a complaint must allege a "perceptible element that would influence the physical senses" on the affected property. *Id.* at 206. Plaintiffs alleged that the migration of diesel fuel incident to the release substantially interfered with ICDC's use and enjoyment of its property, caused damages, and diminished its value.

¶ 173 The elements of negligence are: (1) the existence of a duty of care owed to the plaintiff by the defendant; (2) a breach of that duty; and (3) an injury proximately caused by that breach. *Marshall v. Burger King Corp.*, 222 Ill. 2d 422, 430 (2006). In their complaint, plaintiffs alleged that BNSF had a duty to prevent a collision and prevent the migration of diesel fuel and petroleum incident to the collision from migrating from its tracks to ICDC property. BNSF's acts and omission, they asserted, proximately caused the diminution in value and use of ICDC's property. Further, even if BNSF immediately removed any contamination from ICDC property, there would be a stigma associated with the property that would continue to negatively impact and diminish its value.

¶ 174 Turning to the primary issue, plaintiffs argue that the trial court's finding that the fuel from the 1993 collision did not migrate onto ICDC property was against the manifest weight of the evidence. They contend that the only reasonable conclusion was that the fuel migrated onto their property and that this was the initial conclusion that BNSF and its consultants had reached. They point to the consultants' identification, "for years," of ICDC property as being within the zone of contamination and to the investigations and remediation of ICDC property; specifically, the removal of several loads of contaminated soil from the 2000 excavation and the two-phase extraction conducted at MW-25 in the warehouse. Plaintiffs also point to BNSF's acknowledgement in internal documents that the ICDC property "was impacted due to the diesel release."

¶ 175 Plaintiffs note that only a fraction, about 10%, of the spill was ever recovered, that the majority of the staining (per Radian in 1993) appeared south of the center of the tracks, and groundwater at the site flows south toward ICDC property. The data, they assert, confirmed BNSF's initial conclusion, claiming that diesel fuel was found on their property and that the contamination from BNSF's property south of the tracks matched the contamination on ICDC property. They point to 1996 samples taken from BNSF property and 1997 samples taken from ICDC property, both of which, they argue, included carbons in the diesel range, as well as heavier carbons (a reference to the Paragon Analytics, Retec, and Interpol Labs testing/analyses). Plaintiffs also point to EMR's report that soil from the 2000 warehouse excavation tested positive for diesel-range organics (middle distillate per Friedman & Bruya) and to subsequent testing (Torkelson's 2007 analysis and St. John's ) that showed mixtures of diesel-range organics with heavier oils on both properties. They also note that, in 2008, EMR reported that contamination was isolated to the southern portion of BNSF's right of way and "within and to

the north of the northernmost warehouse at" ICDC. EMR used a two-phase extraction system at MW-25 (on ICDC property) "to remove free product and treat the underlying soil and groundwater from the location with the highest recorded level of free product."

¶ 176 Plaintiffs also note that MW-14, the well consistently displaying some of the greatest amounts of contamination, was immediately adjacent to ICDC property along the fence line. (BNSF, they note, presented no evidence that the fence acted as a barrier to fuel migration.) BNSF's consultants, they further note, reported free product in this well for nearly 20 years after the collision, and 1995 test results showed diesel-range carbons in samples from that well. Also, the 2007 Torkelson analysis concluded that the samples from MW-14 matched those from MW-25 in the warehouse, except for slight differences likely attributed to weathering. Plaintiffs reason that, the fuel under the warehouse was the same as the fuel on BNSF property immediately adjacent to the ICDC property. They maintain that, because the BNSF property drains toward their property, the only conclusion supported by the evidence (and common sense) is that the fuel under the warehouse came from BNSF property. Further, the collision was the only source of that fuel. Plaintiffs assert that BNSF offered no evidence of another fuel release that could have led to the levels of contamination on the site.

¶ 177 BNSF responds that the forensic evidence supported the trial court's determination that plaintiffs failed to prove that the contamination on their property (and it was undisputed that there was petroleum contamination on their property) came from the BNSF accident. It argues that plaintiffs could not sustain their burden, in large part, because the court correctly found Uhler's testimony more reliable and compelling than Schmidt's testimony.

¶ 178 We conclude that the trial court's determination that plaintiffs failed to prove that fuel from the 1993 collision migrated onto and is present on ICDC's property was not against the

manifest weight of the evidence. The court's assessment of the evidence, most significantly the forensic chemistry testimony, which we discuss in detail below, was not unreasonable. It is true, as plaintiffs note, that less than about 10% of the fuel spilled from the collision was ultimately recovered by the initial cleanup and subsequent remediation activities (which, according to Hinchee, BNSF's remediation expert, was "a pretty significant percent compared to what people usually recover"), and it is reasonable to question where the remaining fuel went. However, it was plaintiffs' burden to show that the fuel from the collision migrated onto their property, which they failed to do. Radian, BNSF's first consultant, did not confirm this issue in plaintiffs' favor. Radian installed monitoring wells, including four south of the tracks, reported surface stains on the native soil surface to the south of the tracks, and runoff in that area wherein an "iridescent sheen was visible on the soil." It also documented TPH, which is an indicator of petroleum contamination, but not necessarily of diesel fuel contamination, in wells south of the tracks and adjacent to, but not on, ICDC property. It also reported strong diesel odors at MW-1, adjacent to ICDC property, but it did not confirm the presence of diesel there. Retec, the next consultant BNSF hired, installed additional monitoring wells and reported that it measured free product and TPH in several wells and detected strong diesel odor at MW-14 (located on BNSF property at the fence). Retec also reported that "groundwater and floating diesel fuel is moving south of the spill area and *possibly* off [BNSF] property." (Emphasis added.) A 1996 Paragon report stated that samples from the fence area included carbon ranges for diesel fuel and heavier oils. In 1997, Interpoll analyzed samples from ICDC's property and reported that they contained hydrocarbons with a "chromatographic pattern *** of fuel oil #2 and a heavier grade." Although the presence of fuel oil #2, which has the same carbon range as diesel, may have indicated the

potential presence of diesel, it did not confirm the next step in the analysis, specifically, that the fuel oil #2 was diesel from the 1993 collision.

¶ 179 Subsequent consultants' reports and testing were not supportive of plaintiffs' migration argument. In 2000, following excavations at ICDC property, diesel fuel odors were apparently detected. EMR, BNSF's next consultant, coordinated disposal of the soil and checked the wells. However, testing showed PNA analytes and diesel-range organics, which are not necessarily diesel fuel, and EMR recommended disposal of the soil. EMR also installed test pits on BNSF and ICDC property to collect additional soil samples and also collected groundwater samples. Critically, Friedman & Bruya's testing concluded that the samples were "substantially degraded" and that the "fuels represent *two or more manufacturing batches of product*, which indicates a series of fuel releases or, possibly, an ongoing release." (Emphasis added.)

¶ 180 As plaintiffs note, in an October 2002 report to the IEPA, EMR reported that the zone of contamination from the 1993 included the ICDC property and further reported that "visual evidence of floating petroleum product in five monitoring wells located on and off Site [*i.e.*, ICDC property], and three test pits, indicated there are also groundwater impacts that are migrative off Site [*i.e.*, onto plaintiffs' property]." In a 2003 report to IEPA, EMR reported that "[t]he zone of contamination is isolated to the northern portion of the Subject Site [*i.e.*, ICDC's property], within and to the north of the Northern warehouse." However, EMR never confirmed the nature of the contamination on ICDC property was diesel from the collision. It also reported that, free product, which is not necessarily diesel fuel, was observed in four soil borings on plaintiffs' property. Similarly, in 2005, EMR reported that free product was found in MW-14 (adjacent to ICDC property) and MW-25 and MW-29 (both under the warehouse). Torkelson's 2007 testing of MW-25 concluded that it included the range typical for a middle distillate, but

extended beyond where that normal range ends. The sample "could be [ ] extremely weathered heavy fuel oil such as #4 fuel oil" and the sample was "extremely weathered, which is primarily degradation." It estimated the age of MW-25 to be "19 +/-2 years." But Torkelson did not confirm the presence of diesel fuel on plaintiffs' property. EMR again reported in 2008 that the contamination included the area "within and to the north of the northernmost warehouse" on ICDC property" and it conducted remediation work, two-phase extraction, at the site. However it did not confirm the nature of the contamination on plaintiffs' property. Indeed, a Friedman & Bruya report attached to TRC and Weaver Consultant's 2014 report, concluded that MW-29 (under the warehouse) contained "a high boiling point petroleum product such [as] #4 Fuel Oil and a lower boiling point product that is consistent with it being a middle distillate" whose "maximum level was determined to be 3.5% of the total material present at MW-29." It could not identify the lower boiling material.

¶ 181 Turning to the hydrogeology testimony, Weaver, BNSF's hydrogeology expert, testified about his review of the Sanborn maps, which depicted various structures and machinery that required fuel to operate or stored fuel, although some were located at the southern end of ICDC property. The history of the ICDC site included over 100 years of industrial activity, which, it was undisputed, was a *potential* source of petroleum contamination. He also visited the property in 2012 and reported that machines in the warehouse leaked. NewFields, a laboratory he utilized, did *not* identify any diesel fuel on ICDC property, and it concluded that the site-specific TPH soil attenuation level of 18,750 was exceeded only at LC-50. NewFields identified that product at LC-50 as heavy fuel oil, and Weaver's proposed remediation strategy was a hotspot removal at that location.

¶ 182 Weaver also opined that the contamination on ICDC property did not result from the 1993 collision and the contamination on plaintiffs' property resulted from several sources over an extended timeframe. He believed that there was no significant lateral migration of hydrocarbons in the silty clay at the site. "You have multiple releases that just soak down on top of the clay." Addressing other consultants' conductivity calculations, Weaver testified that they were essentially only pulling water out of the seams in the clay, which does not "at all" give a reading that incorporates the conductivity through the silty clay. He also reviewed the cross-sections that were prepared in this case and testified that no pathway was identified for migration of diesel fuel from the point of release to a point under the warehouse. There would not be significant lateral migration through the silty clay. Another factor he considered in forming his ultimate opinion that no diesel migrated to ICDC property after the 1993 collision was that the depth of contamination on the site was limited to the top 10 feet. In contrast, Banaszak, plaintiffs' hydrogeology expert, opined that fuel from the collision migrated onto ICDC property. He also testified that coarser material absorbs more fluid, including oil, than finer grain material, that two extreme floods likely moved the diesel onto plaintiffs' property, and that the presence of free product, which, we note, is not necessarily diesel fuel, in the borings, monitoring wells, and test pits was consistent with the pathways of the slope of the water table. Banaszak relied on the presence of cracks and fractures in the clay, which acted as conduits for the flow of fluid. He opined that the presence of contamination under the warehouse reflected that it came horizontally into the area and not vertically from the warehouse. (Banaszak also noted the red tint in the contamination, which we address below.) The trial court did made no finding as to whether Weaver or Banaszak was more credible, but did determine that the evidence showed that

no direct evidence of a pathway from the diesel release location to the contaminated areas under the warehouse. This finding was not unreasonable, as neither expert identified such a pathway.

¶ 183 St. John, another hydrogeology expert for ICDC, prepared a cross-section of the site, opining that the groundwater table sloped from the tracks to ICDC property and that the coarse-grained materials in the clay and fractures therein were "the transport pathways for water and hydrocarbon laterally through the clay to move from point A to point B." He also concluded that the free product he observed coming out of the north wall of the sewer excavation was diesel fuel. However, he did not base this opinion on forensic testing, but on the fact that thousands of gallons of diesel were still not accounted for, as well as his general pathway theory. It was not unreasonable for the trial court to discount his opinions. Like Banaszak, St. John also found it significant that there was "no surficial soil contamination" and that the contamination appeared only once "you got down to the water table." St. John also found significant the fact that the groundwater and hydrocarbon was seeping in only from the north side of the sewer excavation and the south side was dry. But, again, he did not conduct any forensic chemistry testing of the contamination on plaintiffs' property. He also relied on the presence of red dye in the free product.

¶ 184 We find additional support for our conclusion in the forensic chemistry evidence, which we address more fully below. Uhler, BNSF's forensic chemistry expert, concluded that samples from ICDC property contained heavy fuel oils and only "a few drops of diesel fuel," but there was no similarity in the molecular chemistry of that diesel and the diesel found on the right of way. He utilized newer measurement tools and methods, including mass spectrometer analyses of PAHs, which are markers for particular petroleum products. Further, he testified that middle distillates (which are intermediate products that are prepared at a refinery for many uses,

including dilution of heavy fuel oils, but not for sale as middle distillate fuel proper) will be in things like heavy fuel oils, but not diesel. In contrast, Schmidt, whose testimony we address more fully below, disagreed with Uhler's conclusions. He opined that the diesel from the collision migrated down-gradient to ICDC property under the warehouse and further opined that the ICDC contamination was not primarily heavy oil, as Uhler concluded, but was *mostly diesel fuel*. Schmidt relied on: the age-dating evidence that pointed to the time of the 1993 accident; the presence of heavier carbons in samples from both properties could have come from broadened diesel fuel; Torkelson's conclusion that samples from BNSF's property adjacent to the fence were "extremely weathered middle distillate such as diesel fuel or fuel oil"; findings that the sewer excavation samples contained a highly degraded middle distillate fuel oil; and the presence of red dye in the sewer samples. We cannot conclude that the trial court's finding that plaintiffs' witnesses were unpersuasive was unreasonable. Schmidt, plaintiffs' forensic chemistry expert, disagreed with Uhler's conclusions, but he also, as the trial court noted, did not use the same methods or rely on the same information. Schmidt compiled a PNA plot that listed the 16 primary PAHs, but conceded that the prevalent practice among geochemists who are doing petroleum fingerprinting is to use a much larger range of PAHs—40 to 60 PAHs—in analyzing sample results. Furthermore, Schmidt prepared an interpretive chromatogram map on which he identified specific petroleum products associated with individual samples, but did not identify on the map (only in his testimony) any samples from ICDC property that contained #2 diesel fuel.

¶ 185 In sum, we uphold the trial court's finding that plaintiffs failed to establish that the contamination on their property resulted from the migration onto their property of diesel from the 1993 collision.

¶ 186 Having addressed plaintiffs' general argument concerning diesel migration, we turn next to address several specific criticisms they raise concerning the trial court's findings. First, they argue that the court improperly treated circumstantial evidence as no evidence. Second, they contend that the trial court relied on unsupported speculation concerning alleged alternative sources of contamination. Finally, they maintain that the court misinterpreted the forensic chemistry evidence.

¶ 187 1. Treatment of Circumstantial Evidence as No Evidence

¶ 188 Plaintiffs first assert that the trial court improperly treated circumstantial evidence as *no* evidence. Specifically, they point to the following allegedly-erroneous findings: (1) the finding that ICDC presented no evidence that any petroleum product other than diesel fuel was released in the collision and no evidence that the locomotives carried any fuel other than #2 diesel fuel; (2) that ICDC presented no evidence of the environmental condition of the property prior to the 1993 accident; (3) the finding that ICDC presented no testimony that odor is an acceptable method for identifying a particular petroleum product for environmental investigation purposes; (4) that neither Banaszak (plaintiffs' hydrogeology expert) nor Weaver (BNSF's hydrogeology expert) identified a specific sub-surface pathway from the area of the 1993 release (or anywhere on the right of way) to any location of petroleum contamination on plaintiffs' property; relied on the purported absence of direct evidence showing a pathway to find that ICDC failed to prove the contamination migrated to its property; and overlooked evidence of hydraulic conductivity.

¶ 189 Circumstantial evidence is the proof of certain facts or circumstances from which the jury may infer other connected facts that usually and reasonably follow in common experience. *Hartness v. Ruzich*, 155 Ill. App. 3d 878, 882 (1987). It may be used to contradict direct evidence and may be accepted by the factfinder over direct evidence. See *Lee v. Grand Trunk*

*Western R.R. Co.*, 143 Ill. App. 3d 500, 512 (1986). "[T]he use of circumstantial evidence is not limited to those instances in which the circumstances support only one logical conclusion. Instead, circumstantial evidence will suffice whenever an inference may reasonably be drawn therefrom[.]" *Mort v. Walter*, 98 Ill. 2d 391, 396 (1983).

¶ 190 (a) Only Diesel Was Released in the Collision

¶ 191 Plaintiffs take issue with the trial court's finding that they presented no evidence that any petroleum product other than diesel fuel was released in the collision and that the collision did not result in the release of any other petroleum products. Plaintiffs assert that the evidence established that the locomotives each contained a reserve tank carrying 240 gallons of a heavier lubricating oil and note that BNSF's reports from the wreck are silent as to whether the tanks carrying this heavier oil survived the wreck. They also contend that the 2014 testing conducted by BNSF's consultants showed both heavy oil and #4 fuel oil on BNSF's property in the same areas south of the center of the tracks where Radian had depicted large areas of staining from fuel in 1993. The evidence, plaintiffs argue, further confirmed that BNSF never conducted any testing on the spilled fuel at the time of the wreck to determine what type of fuel it was. They reason that, absent evidence of another release on BNSF property that would have accounted for the heavier oils, it is only reasonable to conclude that this oil came from the wreck.

¶ 192 BNSF responds that plaintiffs' argument is based on a negative inference: the locomotives carried 240 gallons of lubricating oil and the accident reports are silent as to whether the lubricating oil tanks survived the accident. However, it notes that Jeffries, BNSF's environmental manager, who was on site within hours of the collision, testified that there was no release of lubricating oil. Likewise, BNSF notes, Schmidt could not identify any evidence that the locomotives' lubricating oil was released in the accident. Specifically, when asked if he was

aware of any evidence, other than his interpretation of the chromatograms of various samples, that anything other than diesel fuel was released in the collision, he replied, "I do not know that." Finally, BNSF points to Uhler's testimony. When asked if, in his experience, the oil used by locomotives to lubricate moving parts is the type of oil he discovered and reported on the rail site, he replied, "No."

¶ 193 We conclude that the trial court's finding was not against the manifest weight of the evidence. The trial court found that any testimony or argument that a petroleum product other than diesel was released in the collision was speculative. This finding was not unreasonable. Jeffries, the only witness who was present soon after the collision, testified that he observed only diesel fuel at the site. As BNSF points out, Schmidt was unaware of anything other than diesel fuel was released in the collision and Uhler testified that the oil used by locomotives to lubricate moving parts is *not* the type of oil he discovered and reported on the rail site. Plaintiffs' argument that the presence on BNSF property, a property that has contained railroad tracks for over 100 years, of lubricating oil at the area where Radian depicted staining following the collision is too remote and speculative to infer that the source of that oil can only be the 1993 collision. Their argument fails.

¶ 194 (b) Pre-1993 Environmental Condition of ICDC Property

¶ 195 Next, plaintiffs note that the court found that ICDC presented no evidence of the environmental condition of their property prior to the 1993 accident. This was erroneous, they urge, because Ron Hill, Jr., and Ron Hill, Sr., both testified that, other than the 1993 spill, they were not aware of any releases of fuel on the property since Hill, Sr., purchased it in 1981 and Hill, Jr., testified that he did not experience any diesel odors on the property prior to 1993. Conceding that there was no formal environmental investigation, plaintiffs nevertheless argue

that this testimony was evidence of the environmental condition of the property before the wreck.

¶ 196 BNSF responds that the trial court's finding was consistent with the testimony from Hill, Sr., and Cherif that there was no environmental investigation conducted prior to their purchases of the property in 1981 and 2004, respectively. It also contends that anecdotal testimony from the owners that they were not *aware* of petroleum contamination or any diesel odors prior to 1993 does not contradict the court's finding that there was an absence of evidence of the pre-1993 environmental condition of the property (particularly in light of the forensic and historical evidence). BNSF argues that the trial court did not err in finding that plaintiffs' failed to carry their burden to prove that the environmental "damage" to their property was caused by BNSF.

¶ 197 We agree with BNSF that the trial court's findings were not against the manifest weight of the evidence. In light of the long history of industrial activity on the ICDC site, absent an environmental analysis, the Hills and Cherif could not reliably speak to pre-1981 activities (at best) on the site that could have had environmental impacts. The trial court's determination was reasonable.

¶ 198 (c) Diesel Odor Evidence

¶ 199 Plaintiffs next take issue with the trial court's finding that ICDC presented no testimony that odor is an acceptable method for identifying a particular petroleum product for environmental investigation purposes. They contend that there was such evidence in the record. Specifically, Weaver testified that odor is something that he would consider in identifying a product, and soil boring logs completed by BNSF's consultants repeatedly reported "diesel odors" or "strong diesel odors," demonstrating that experts identify products from odors. Plaintiffs further argue that, if such odors were meaningless as the trial court found, there would

be no reason for BNSF's own consultants to have noted them. Rather, they urge, the odors are clear evidence that diesel fuel from the wreck had migrated onto ICDC's property.

¶ 200 BNSF responds that no environmental professional testified that subjective descriptions of odors are a reliable method for differentiating between petroleum products. Weaver did not, they argue, validate use of subjective odor descriptions for product differentiation under the circumstances of this case, as plaintiffs suggest. Rather, when asked if, in identifying whether there was diesel in a boring, he would rely on someone else's notation on a soil boring log that there was a diesel odor, he replied, "I would consider it, but certainly if you had more specific quantitative testing I would rely on that more. I mean, you look at all the information and try to draw a picture of the site." BNSF also notes that none of the consultants who made the boring log odor notations testified at trial. Further, plaintiffs' principals testified that they observed soils that were "diesel smelling" or "smelled like diesel," but offered no explanation why they could distinguish between the odor of weathered diesel fuel in a sample and weathered heavy fuel oil. St. John, one of plaintiffs' environmental consultants, testified that "[t]here was significant hydrocarbon smell" at one of his site inspections. BNSF argues that the trial court's finding that the boring log notations were entitled to little or no weight is supported by the record.

¶ 201 We conclude that the trial court's findings were not erroneous. The court found that any anecdotal references to odors in the boring logs as being diesel odors was speculative and unreliable as evidence of the *particular* petroleum product that may have been present in the sample. It also found that ICDC presented no testimony that odor is an acceptable method for identifying a particular product for environmental investigation purposes. These findings were not unreasonable. The consultants' references to diesel odors do not reflect that any such

notations were confirmed by laboratory analyses that diesel was, indeed, present. And, as BNSF notes, none of those consultants testified at trial. Similarly, Weaver, BNSF's hydrogeology expert, testified as to his preference for quantitative testing over anecdotal evidence. The trial court correctly placed no weight on the diesel odor evidence. This is especially so in light of the fact that there was forensic chemistry evidence presented at trial, which necessarily, and reasonably, carries more weight.

¶ 202 (d) Identification of Sub-Surface Pathway

¶ 203 Plaintiffs argue next that the trial court incorrectly found that neither Banaszak nor Weaver identified a specific sub-surface pathway from the area of the 1993 release (or anywhere on the right of way) to any location where petroleum contamination is located on ICDC's property and then relied on the purported "absence of direct evidence showing a pathway" to find that ICDC failed to prove the contamination had migrated to its property. Plaintiffs note that direct evidence is not required because negligence, for example, may be established using either direct or circumstantial evidence. See *Mort v. Walter*, 98 Ill. 2d 391, 396 (1983). Plaintiffs further assert that, even if direct evidence is required, they presented direct evidence of pathways from the wreck site to their property. Specifically, Banascak discussed the contamination at various borings and described how they showed a pathway from the wreck site to the warehouse. He also explained that the depths of contamination showed that the fuel on ICDC property had moved laterally rather than from the top down. Similarly, Weaver reviewed a pathway from one of his cross-sections, which showed contamination in every soil boring from the wreck site to the warehouse, with depths of contamination deeper than the warehouse wall. Also, he conceded, according to plaintiffs, that the warehouse wall would not have stopped the fuel's migration.

¶ 204 Plaintiffs also note that Weaver's testimony that clay would have hindered fuel migration was contradicted by the undisputed evidence in BNSF's own boring logs, which repeatedly reported fractures in the clay containing free product. Thus, fuel was moving through the cracks in the clay to the ICDC property. Weaver, they claim, conceded that, though it would hinder migration, the clay would not stop it.

¶ 205 Plaintiffs also argue that the trial court ignored the evidence of hydraulic conductivity, *i.e.*, the rate liquids move through the sub-surface, which establishes the likelihood that fuel moved from BNSF's to ICDC's property. They point to the facts that, in 1995, Retec calculated the hydraulic conductivity at the site to be about 10 feet per day in areas on BNSF's property, and, in 2009, EMR calculated it to be about 1.5 feet per day (or 530 feet per year). Further Banaszak concurred with their calculations. Given that the center of the tracks is about 60 feet away from ICDC property, this evidence, plaintiffs urge, demonstrated that the sub-surface conditions would have allowed fuel from the wreck to migrate onto ICDC property either immediately after or within months of the spill. The only contrary evidence, they note, was Weaver's testimony that the "typical" hydraulic conductivity for silty clay was 10 times $10^{-5}$ (or one foot per year), but he conceded that his calculations were not based on any tests at the site but rather on the standard conductivity for the least permeable material in the sub-surface—silty clay. However, plaintiffs note, the sub-surface included coarser materials, such as gravel and that clay contained fractures where free product was observed. Thus, Retec's and EMR's calculations and Banascak's testimony concurring with their conclusions were the only evidence of the hydraulic conductivity based on the *actual site conditions*. This evidence, plaintiffs argue, further supported ICDC's position that there were pathways in the sub-surface for fuel from the wreck to migrate onto its property. Most important, according to plaintiffs, is that the evidence

showed fuel on BNSF property immediately adjacent to ICDC property and fuel on ICDC property. The trial court, they maintain, effectively found that the fuel was not where the evidence showed it was because the court did not comprehend how it got there.

¶ 206 BNSF responds that the trial court's finding that neither Banaszak nor Weaver identified a specific subsurface pathway is consistent with the testimony and there was no contrary testimony. Weaver, it notes, described the process of trying to establish a pathway, stating that no one had identified a pathway for migration of free-phase diesel fuel from the point of release to a point underneath the warehouse. This was only one consideration, he noted, in addition to the nature of the distributions, contaminants, and other factors, but he concluded there was no significant pathway. BNSF contends that Banaszak testified similarly, stating that there was no complete pathway. Also, BNSF notes that Banaszak acknowledged that he had not done a specific study of the orientation or direction of the pathways. Weaver also described the limited migration potential through the fractures in the clay, testifying that "it is a very tortuous path because the cracks aren't lined up in straight lines" and oil gets "stuck in the cracks and does not tend to migrate laterally in these cracks very far at all."

¶ 207 BNSF argues that it was for the trial court to decide whether to give more weight to Banaszak's testimony about hydraulic conductivity testing at two locations on the property than to Weaver's calculation of a hydraulic conductivity factor for the entire site. Further, it asserts that the calculations would be meaningful, if at all, only if there was a pathway from the right of way to ICDC property.

¶ 208 We find no error with the trial court's determination that plaintiffs failed to present direct evidence of a pathway from the location of the diesel release to the locations on their property where petroleum contamination is present. The court accurately summarized the relevant

testimony, specifically, from Banaszak and Weaver, and reasonably concluded that the experts failed to identify such a pathway. Weaver, BNSF's hydrogeology expert, calculated the hydraulic conductivity at the site to be about one foot per year and explained that this greatly varied from Retec and Radian's calculations (which were 350 and 602 times faster, respectively) because they measured in the fill, not the silty clay, which is the least permeable material and slows down the flow. He acknowledged that he used a "typical value" for silty clay and did not conduct his own tests, which have limitations because they draw water from the coarse seams and not the clay. He based his conclusion that there was no pathway from the release point to the warehouse on his review of the cross-sections, and the depth of contamination at the site. Weaver also noted that there would not be significant lateral migration through the clay. In contrast, Banaszak, plaintiffs' hydrogeology expert, opined that the fuel travelled "fairly rapidly" through the ballast, which is coarse stone and, thus, absorbs more fluid than finer-grained material. It then travelled on top of the groundwater table and to the south end of the BNSF property. This was aided by the slope of the site. He also explained that fractures and cracks in the clay acted as conduits for the fluid and that the warehouse wall would not have stopped the fuel's migration because it was not deep enough. However, Banaszak did not identify a specific pathway. He acknowledged that he did not perform an orientation study of the fractures or of the sands and gravels; rather, he testified that there were *multiple* pathways based on his analysis of the contamination at various borings. Based on the foregoing, the trial court's finding was not against the manifest weight of the evidence.

¶ 209 2. Alternative Sources of Contamination/Historical Use of ICDC Property

¶ 210 Next, plaintiffs challenge the trial court's rulings allowing evidence of the historical use of the ICDC property, arguing that the trial court improperly relied on speculation concerning

alternative sources of contamination on and around the property. ICDC had moved *in limine* to bar such evidence, but the court denied the motion. At trial, several witnesses, including Banaszak, Weaver, and Hinchee, testified concerning historical petroleum use on ICDC property.

¶ 211 The admission of evidence, including a decision on a motion *in lim*ine, is within the trial court's discretion, and a reviewing court will not reverse the trial court absent an abuse of that discretion. *Colella v. JMS Trucking Co. of Illinois, Inc.*, 403 Ill. App. 3d 82, 90, 92-93 (2010). An abuse of discretion occurs when no reasonable person would take the view adopted by the trial court. *Id.* at 90.

¶ 212 Plaintiffs argue that BNSF's witnesses speculated about alternative sources of contamination on and around ICDC property, but offered no evidence of releases from any of those proposed sources or presented any evidence that petroleum from those sources migrated to the areas where contamination was observed on ICDC property. The trial court, they note, acknowledged that the evidence about the historical industrial use of ICDC property was *not* probative that there was a spill or release at some point other than the 1993 collision. However, it not only allowed such non-probative evidence to "counterbalance" ICDC's "speculative theories" (at one point in its decision), but also relied on the evidence (elsewhere in its decision) to find that ICDC did not meet its burden of proof. Plaintiffs also argue that the court misinterpreted Banaszak's testimony, finding that he testified that "it was reasonable to assume that there had been petroleum releases on plaintiffs' property prior to the 1993 locomotive accident." Plaintiffs argue that Banaszak only acknowledged that he "considered" in his "assumptions the likelihood that sometime before 1993 there had been some releases of petroleum products on the ICDC property." Considering, in plaintiffs' view, is not confirming.

The court, they argue, abused its discretion in admitting and relying on unsubstantiated and hypothetical causes of contamination on their property, and the error substantially prejudiced them because the court relied on it to both "counterbalance" ICDC's own evidence and to conclude that ICDC did not meet its burden of proof on the migration issue.

¶ 213 To provide the full context of the court's decision, we note that the trial court found that the evidence about the historical use of plaintiffs' property was "not probative that there was a release or spill at some point other than the 1993 train accident, [but] it is just as relevant as the speculative testimony by plaintiffs' witnesses that the heavier fuel oils 'could' have come from the 240 gallon oil tanks on the 3 locomotives. Rather than finding that releases prior to 1993 were more likely than not, this evidence serves to counterbalance the speculative theories plaintiffs have asserted, and the result is that plaintiff[s] ha[ve] not proved [their] case as to liability (including breach and proximate cause) by a preponderance of the evidence." However, in the portion of its decision addressing the pathway/migration evidence, the trial court found that it was not necessary for it to decide whether Banaszak's or Weaver's opinion was more persuasive because, the totality of the evidence showed that plaintiffs failed to establish that any diesel fuel migrated onto, and is present on, their property. It noted that it based its decision on, among other things, four considerations, one of which was "the evidence of historic use of petroleum products on plaintiff's property." (The others were the forensic chemistry evidence, the wide distribution of contamination on ICDC property, and the absence of direct evidence of a pathway from the diesel fuel release location to contamination areas on ICDC property.)

¶ 214 BNSF responds that the trial court properly admitted the evidence of historical petroleum use on ICDC property. During its cross-examination of Banaszak, BNSF laid a foundation for the historical evidence. Banaszak agreed that, when conducting an investigation into an older

site such as ICDC, it would not be reasonable to fail to inquire into the materials historically used on the property, especially when those materials are the same or similar to those currently found on the property.

¶ 215 Banaszak discussed another project, BNSF notes, in Chicago's Pilsen community, where he utilized historical maps that showed there had been tanks on that property that held coal tar. Although he was unable to identify a specific release of coal tar from the tanks, the tanks' presence was pertinent to his investigation of the contamination on that property. Similarly, the types of materials stored and used on ICDC property were important to his investigation of contamination thereon. This was important, in Banaszak's opinion, regardless of whether he could pinpoint a specific release of petroleum on a particular day. (At this point during his testimony, the trial court again overruled plaintiffs' objection to evidence of historical petroleum use on ICDC property.) Banaszak continued, testifying that the historical records reflected that the property housed a 10,000-gallon diesel fuel storage tank and a 15,000-gallon hydraulic oil storage tank. Their presence was a factor he reasonably considered in his investigation. Based on his consideration of the record, he included in his assumptions the likelihood that sometime before 1993 there had been some releases of petroleum products on ICDC property ("I did consider that" and, after BNSF's counsel began a new topic of cross-examination, Banaszak volunteered, "We assumed that.") Thus, in BNSF's view, Banaszak not only considered the possibility of prior releases, but he also assumed they had occurred based on his consideration of the record. It also points to his deposition testimony (which was presented to the court in opposition to plaintiffs' motion *in limine*) that "by implication we understood that the history of the site that there were releases most likely and logically that were on the site at a period

particularly much before the ’93 release on the BNSF tracks.” BNSF further notes that other witnesses supported Banaszak’s testimony, including Weaver and Hinchee.

¶ 216 BNSF further argues that the physical evidence supported the experts’ opinions about the likelihood of earlier petroleum releases on ICDC property. Specifically, it points to: (1) forensic testing, which, it argues, showed that petroleum contamination on ICDC property is from heavy fuel products unrelated to the 1993 accident; and (2) observed/photographed evidence of the property, showing oil drums, oil spots, bags, and bags of oil absorbent, below-floor wash pits with petroleum sheen, and pools of what appeared to be petroleum products. It also points to an environmental investigation textbook that plaintiffs had cited in their motion *in limine* (and which BNSF cited to the court in opposition to the motion *in limine*) entitled Introduction to Environmental Forensics (2nd Ed. 2007), by Brian L. Murphy and Robert D. Morrison, which states that a site’s history may provide information about the origins of environmental problems thereon and identifies the types of information, such as topographic maps, aerial photographs, and fire insurance maps) upon which Banaszak and Weaver relied.[2] Finally, BNSF notes that State regulations require a comprehensive site investigation, including “a chronological summary of the historic uses of the remediation site[.]” 35 Ill. Adm. Code § 740.425 (2019). Thus, examination of the history of ICDC property and drawing conclusions concerning the likelihood of historical petroleum releases does not, BNSF argues, constitute speculation, but is a necessary and required component of any competent environmental contamination investigation. The trial court, in BNSF’s view, did not abuse its discretion in allowing the evidence, nor did it make a speculative finding about any particular prior release on ICDC property. It weighed the evidence

[2] It further notes that Uhler wrote the chapter therein on chemical fingerprinting methods.

of the property's historical use, along with evidence about potential sources of contamination on the property, and found that plaintiffs did not prove liability.

¶ 217 We conclude that the admission of evidence concerning the historical use of the ICDC property did not constitute an abuse of discretion. The evidence was not speculative. Several experts considered it as part of their analyses and the environmental investigation textbook BNSF cited states that a site's history is a relevant consideration. Banaszak and Weaver relied on this text. Further, Banaszak testified that he considered the likelihood that there had been releases of petroleum products on ICDC property sometime before 1993, and, as BNSF notes, after the court overruled an objection, testified, "We assumed that." Likewise, Weaver stated in his 2015 report, "[b]ased on the industrial use of the ICDC Property for over 120 years, the active use of petroleum products, and the practices observed during the site visit, it is likely that releases of petroleum have occurred through the history of industrial operations on the Property. As a result, the distribution of impacts beneath the ICDC building is consistent with multiple spills over a long period of time." Similarly, Hinchee, BNSF's remediation expert, reviewed the historical use of the ICDC site and testified that he has never seen an older site like ICDC "without hydrocarbon in soil and groundwater[.] *** I don't think they exist." Hinchee supported his assertion by pointing to Bruya's 2002 report, which concluded that there had been multiple releases over the years. Further, as BNSF notes, State regulations require that a site investigation report for a comprehensive site investigation include, in a chapter on site characterization, the site history, including "a chronological summary of the historic uses of the remediation site." 35 Ill. Adm. Code § 740.425 (2019).

¶ 218 Finally, we note that the trial court did not make a finding concerning any specific release at plaintiffs' property, as there was no evidence supporting such a finding. Instead, the court

reasonably found the evidence of historical use relevant and noted that it was a factor in its determination that plaintiffs failed to prove migration. The admission of the historical use evidence did not constitute an abuse of discretion.

¶ 219 3. Interpretation of Forensic Chemistry Evidence

¶ 220 Next, ICDC argues that the trial court misinterpreted the forensic evidence concerning the presence of higher carbon ranges in samples, red dye, and age-dating to discredit Schmidt's testimony. For the following reasons, we disagree.

¶ 221 Plaintiffs note that Schmidt opined that the broadened diesel fuel (diesel with heavier-end petroleum) could account for the higher carbons. However, the trial court rejected Schmidt's opinion, finding that his conclusion that "samples from plaintiffs' property reflect diesel fuel" was "speculative and unpersuasive." Plaintiffs argue that, even if the court was not persuaded by the broadened-diesel theory, such a finding does not contradict Schmidt's opinion that diesel fuel was present on ICDC's property. Rather, they assert, his conclusions are consistent with: (1) a 1997 Interpoll Laboratories analysis (for Retec), finding that samples from ICDC property contained fuel oil #2 (or diesel fuel #2) and a heavier grade; (2) a 2000 EMR analysis (for BNSF), finding that samples from the warehouse excavation contained diesel-range organics; and (3) a 2014 Pace Laboratory analysis, finding diesel-range (C10-C28) and heavier-range TPH compounds in samples from several areas in the warehouse, as well as areas on BNSF property. The trial court, plaintiffs argue, ignored this evidence.

¶ 222 Further, plaintiffs argue that, after having improperly discounted Schmidt's testimony based on its misinterpretation of the evidence, the trial court's finding that the fuel from the wreck did not migrate onto ICDC property ultimately rested on Uhler's testimony that samples from ICDC property did not contain diesel fuel, but this testimony, they urge, was unreliable.

Uhler's testimony, plaintiffs argue, was directly contradicted by earlier analyses performed by Interpoll and EMR (all hired by BNSF), which the court never referenced. Further, Uhler's analysis only determined that "dominant petroleum signature" of the samples. This did not foreclose the additional presence of diesel fuel. Also, plaintiffs note, the samples he analyzed were nearly 29 years old and weathered, including samples from MW-14 (adjacent to ICDC property), which was subject to enhanced remediation efforts. A combination of diesel fuel and a heavier fuel oil starts to look more like the heavier oil, even though the diesel fuel is still present. (Uhler testified that, as the mixture of diesel and a heavier oil degrades, the predominance would be a heavier fuel oil.) Plaintiffs note that Uhler's analysis only addressed the compounds *currently* present in the samples when he received them and that he did not consider BNSF's prior consultants' reports or data or the remediation activities at MW-14 and MW-25 that occurred prior to the 2014 UVOST testing and sample collection. Nor did he consider that the release occurred nearly 20 years earlier and the impact that could have had on the compounds in the samples. Plaintiffs maintain that, because his analysis was limited to the *current* state of the compounds, Uhler's opinions do not contradict the extensive evidence in the record, including Schmidt's testimony and the reports from BNSF's consultants, that fuel from the wreck migrated to ICDC property and that contamination includes mixtures of diesel fuel and heavier oils from BNSF's property. They also maintain that Uhler ignored the 2014 testing done by Pace (a BNSF-hired laboratory), which showed diesel-range organics in samples from ICDC property. These test results, they note, were submitted to IEPA in the 2014 site investigation report. Uhler's opinions, they assert, are therefore contradicted by BNSF's own documents. Thus, the trial court erred in relying on Uhler's testimony to find that diesel fuel was not present on ICDC property.

¶ 223 In response, BNSF notes that both experts agreed on the basics of forensic fingerprinting of petroleum, including that gas chromatography is a method to help differentiate between specific petroleum products in samples, the carbon ranges of diesel and other fuels, and that heavy fuel oil and gas oil are industrial burner fuels and not locomotive fuels. Their testimony concerning the effects of weathering was also consistent that weathering does not create heavy carbons that were not present in the original product or sample. Both experts also used gas chromatography to identify petroleum products in samples from BNSF's right of way and ICDC property. However, BNSF further notes, Uhler used *additional* forensic tools and procedures, including some he had developed while working on the Exxon Valdez and Deep Water Horizon oil spills. Specifically, he used PNA analysis and ratios and molecular chemical fingerprinting to identify the products. He also reviewed laboratory work related to samples obtained in 2007 and 2011. Schmidt, BNSF argues, used a limited number of PNA plots, even though standard practice is to use a much broader set, and his PNA and isoprenoid plots were not diagnostic for the type of petroleum product from which the samples came. BNSF also notes that Uhler testified that he found *no* samples containing diesel fuel on plaintiff's property, with one non-material exception ("a few drops of diesel"). The trace amount, he testified, could not be observed by gas chromatography, but only through his more sophisticated molecular analysis. He further testified that the sample was *genetically distinct* from any of the diesel samples from BNSF's right of way. Uhler, BNSF notes, also testified that the petroleum contamination in samples from ICDC property consisted primarily of heavy fuel oil and gas oil, a conclusion that was based on gas chromatography showing heavy carbons *beyond* the boiling range of diesel fuel and on biomarkers and other molecular indicators. He opined that, based on genetic markers, the heavy fuel oil and gas oil contamination on ICDC property was the result of many *separate*

releases. Schmidt, BNSF notes, used gas chromatography and prepared an interpretive chromatogram map on which he identified specific petroleum products associated with individual samples. He did not, it further notes, identify on that map any samples from ICDC property as containing #2 diesel fuel. In BNSF's view, the trial court weighed this evidence and found Uhler's opinions more reliable and persuasive than Schmidt's opinions on the subjects of forensic chemistry, fingerprinting, and identification of petroleum products. It based its findings, BNSF notes, on: Uhler's use of more modern and comprehensive techniques and technologies and his direct involvement in the development of such; Schmidt's use of older and more limited techniques and technologies; Schmidt's reliance on certain speculative theories and assumptions; its findings concerning the comparative scope, thoroughness, and scientific bases for the experts' reports; and the court's observation and assessment of each expert's testimony. BNSF argues that it is not this court's function to re-weigh the testimony, and, even if we do, there is no support in the record for plaintiffs' argument that the only reasonable conclusion is that diesel fuel migrated from BNSF property onto its own after the collision.

¶ 224 Plaintiffs reply that Uhler's opinions are much more constrained that BNSF suggests. He did not, they assert, clearly testify that the contamination on ICDC property did not originate from the 1993 collision. He never had a sample of the fuel released from the wreck to compare with the samples he was analyzing. Uhler, according to plaintiffs, only concluded that diesel was not the "dominant petroleum signature" in samples from ICDC property, which were collected about two decades after the wreck. Based on the limited scope of his assignment from BNSF, Uhler's analysis, plaintiffs argue, only considered what he observed in the samples when he received them. He did not consider the historical activities or the history of free product at the property line. Nor did he know about the conditions at the site when the samples were taken or

consider the volume of the spill, groundwater flow, or topography. Also, Uhler was not aware of the remediation activities at MW-14 and MW-25 prior to the 2014 UVOST testing and sample collection. He observed that "virtually all of the petroleum residues found at the Site have undergone significant weathering—principally biodegradation." Weathering, he stated, could impact the "predominance" of the products in a sample. Plaintiffs also note that Schmidt testified that, over time, the volatile organic compounds that distinguish diesel fuel could be reduced. In 2007, several years before Uhler's analysis, Torkelson (a BNSF-hired laboratory), plaintiffs note, had difficulty identifying the products in samples due to weathering, which, in plaintiffs' view, further confirms that weathering impacts product identification.

¶ 225 We conclude that the trial court's resolution of the forensic chemistry evidence, which was the most critical evidence in this case, was not against the manifest weight of the evidence. Schmidt's primary theory was that the contamination on ICDC property consisted of broadened diesel fuel, the source of which was the 1993 collision, and he disagreed with Uhler's opinion that it was mostly heavy fuel oil. Schmidt's broadened-diesel theory attempted to account for the presence in the samples from the properties of heavier carbons beyond the normal diesel range, as some of the earlier BNSF consultants had noted. (Broadened diesel consists of diesel and higher-boiling components.) He testified that the sewer excavation samples collected in 2013 contained a highly degraded middle distillate diesel fuel. (He explained that middle distillate fuel is primarily diesel.) However, in his written report, he stated that the sewer excavation samples contained broadened diesel fuel. Schmidt also testified that the gas chromatograms showed that the sewer excavation samples contained compounds in the diesel boiling range, from which he concluded that the samples contained primarily diesel fuel.

¶ 226 The trial court found Uhler's opinions more reliable, compelling, and persuasive than Schmidt's opinions, and we conclude that the court's findings were not against the manifest weight of the evidence. The court specified that it based its finding on Uhler's use of more modern and comprehensive techniques and technologies and his direct involvement in the development of such; plaintiffs' failure to undermine Uhler's knowledge, techniques, or conclusions; and certain failings or limitations in Schmidt's testimony. We cannot conclude that this assessment was unreasonable.

¶ 227 Uhler worked on the development of new genetic tools to identify petroleum products following the Exxon Valdez spill and performed petroleum fingerprinting analysis on Gulf samples following the Deep Water Horizon spill. He testified about the ability of a mass spectrometer to measure PAHs and other chemicals in order to "unambiguously identify the molecular structure" of petroleum products. He explained that diesel fuel does not contain any higher-boiling PAHs. Reviewing the PAH distribution of samples from MW-29 (on ICDC property) and MW-14 (on BNSF property), he opined that they revealed heavy fuel oil. These samples also contained 2-MA, which does not occur in diesel fuel and is a marker for heavy fuel oil. He testified that the gas chromatograms showed a lot of variability, which meant that the heavy fuel oils were variably sourced. Based on his review of the gas chromatograms, Uhler opined that the samples from the sewer excavation on ICDC property contained heavy fuel oils. Also, the 2014 UVOST logs, chromatograms, and PAH distribution figures showed heavy fuel oil at LC-34 and LC-50 on ICDC property. He also explained that two samples on ICDC property (from GB-02) contained only "a few drops of diesel fuel" that had no similarity, in terms of molecular chemistry, as those found on the right of way. (This was the only diesel he identified on ICDC property.) Uhler also addressed Schmidt's broadened-diesel-fuel theory,

testifying that he disagreed that this fuel was present; instead, he identified the material as heavy fuel oil. He criticized Schmidt's reliance on an article and technical report addressing the broadened diesel fuel, stating that, from a forensic chemistry standpoint, broadened diesel fuel would be indistinguishable from #2 diesel fuel. He also critiqued Schmidt's and other consultants' age dating of samples, stating that the analyses were not reliable and noting that he and others had authored papers criticizing the methodology, which theorized that petroleum in the environment degrades in a predictable manner. Given the foregoing evidence, we believe that the trial court's resolution of the forensic evidence in Uhler's favor was reasonable. Further, we disagree with plaintiffs that Uhler's analysis only determined the *dominant* petroleum signature, where, again, he *clearly* explained that the *only* diesel fuel he found on ICDC property amounted to a few drops that were *chemically distinct* from that on BNSF's property. We also reject plaintiffs' argument that Uhler's testimony was undercut by his examination of new samples from the site and the fact that he did not consider prior consultants' reports or data. Uhler testified that the fact that some of the samples he analyzed had been in storage for a number of years would not significantly affect his results so as to change the overall character of the residual fuel products. He also explained that the bioremediation that may have taken place around MW-14 would not have impacted his results, and he noted that bioremediation accelerates degradation but does not create heavy-end carbons that were not there before.

¶ 228 As to plaintiffs' argument that Uhler's conclusions were contradicted by notes and analysis in various laboratory reports submitted to IEPA over the years, this argument fails because plaintiffs offered no evidence showing that the consultants' findings were based on the same type of forensic fingerprinting investigation that Uhler conducted. Addressing the conclusion by St. John's laboratory that the TPH they analyzed showed diesel fuel within the

range of C12 to C22, Uhler stated that "they didn't identify diesel fuel. They identified the operational range of TPHD, which is the diesel range, it is not diesel fuel, it is a mistake that is often made when people interpret TPH data." Similarly, Schmidt acknowledged that isoprenoids that occur in the diesel range do not reflect whether the materials are diesel or not; it merely denotes that it is a material included in the diesel range, and it could extend beyond the diesel range, such as heavy fuel oil. We further note that plaintiffs did not call any of the BNSF consultants to testify at trial to be questioned about the forensic chemistry evidence. Also, as BNSF notes, none of the consultants expressed the conclusion that diesel fuel had migrated onto ICDC property; that was the issue they were still investigating.

¶ 229 Plaintiffs argue that, contrary to BNSF's claim, there was also evidence that samples from both properties included *mixtures* of products. First, Schmidt testified that samples containing a hydrocarbon range of C8 to C36 "could be diesel fuel" with "perhaps" "some heavier end material on it." (This is a reference to his interpretation of Paragon's report concerning samples collected in 1996.) At his deposition, he also stated that a chromatogram of a sample from ICDC property "could possibly be a combination of two materials." Schmidt also testified that the lubricating oils stored on locomotives could be source of the heavier oils observed in samples. Second, plaintiffs note that the laboratory reports and analyses comport with Schmidt's theory. Paragon's 1996 analysis of samples from BNSF' property reported that they contained "[a]ny combination of diesel and other hydrocarbons with the range of C8-C36 qualified as diesel." Interpoll's 1997 analysis concluded that ICDC samples "quantifies as fuel oil #2" and "the chromatographic pattern matched that of fuel oil #2 and a heavier grade." Also, Bruya, described his 2011 and 2012 analysis of samples from MW-29 (under the ICDC warehouse) as a "complex mixture" with "high boiling" and "lower boiling" products. Thus,

plaintiffs conclude, viewed in the appropriate context of the undisputed facts, the only reasonable conclusion is that a mixture of diesel and heavier oils migrated from BNSF to ICDC property. BNSF responds that no witness testified that the contamination on their property could be a mixture of diesel fuel and heavier products that have been disguised as heavy fuel oil by operation of weathering and bioremediation. Rather, Schmidt testified that it was an experimental fuel—broadened diesel. Further, BNSF notes that no witness testified that weathering or bioremediation makes a diesel/heavy fuel oil mix look chromatographically like pure heavy fuel oil, and no witness testified that the gas chromatography results were inconsistent with Uhler's conclusions. Even if they had, BNSF argues, the trial court's resolution of such a conflict in the evidence and the totality of the evidence support affirming the court's judgment that plaintiffs failed to prove migration. We reject plaintiffs' characterization of Schmidt's testing as reflecting that the chromatogram showed a sample from ICDC property was a combination of two materials. In fact, when further questioned at his deposition, Schmidt added that he could *not* say that it was more probable than not that it was a combination of materials. Furthermore, his testimony that the lubricating oils stored on locomotives could be source of the heavier oils observed in samples could be reasonably viewed as speculative, given the lack of evidence of any spill of such oils following the collision. We also believe that the evidence reasonably showed that the presence of "middle distillates" in heavy fuel oil samples did not prove there was a mixture of locomotive diesel fuel and a non-diesel product on plaintiffs' property. Schmidt testified that refineries add a middle distillate when manufacturing heavy fuel oils (in order to improve viscosity), but do not market the product as a locomotive fuel, because it cannot run in a diesel engine. Likewise, Uhler testified that heavy fuel oils are

blended with crude middle distillates to help improve viscosity, but the middle distillates are not diesel fuel.

¶ 230 As to the red dye, plaintiffs argue that the trial court erred in finding that, because the evidence showed that red dye was first required by the IRS in off-road diesel fuels in 1994, such dyes could not have been used in the industry before that year. Plaintiffs point to Schmidt's testimony, which they assert was unrebutted by BNSF's experts, that such dyes were used going back to the 1950s. Also, they contend that, contrary to the court's finding, Banascak never "confirmed that off-road diesel was not dyed red until at least a year after the locomotive accident." Plaintiffs maintain that he only testified about the regulations he reviewed, which indicated that red dye was not *required* prior to 1994. Plaintiffs argue that, by misinterpreting the evidence to conclude that red dye was *not* used before 1994, the trial court improperly found that the presence of a red dye in the fuel ruled out the 1993 wreck as a source for that contamination. BNSF responds that Schmidt's testimony was confusing/contradictory. He testified that he observed red dye in some samples, but also that he never established that the red tint was dye and that he did not identify red dye in the samples. Schmidt also claimed that off-road diesel had been dyed red for tax purposes since the 1950s, but relied on unidentified manuals he used when he worked at Amoco (1961 to 1991). He did not reference or include those materials in his report or provide them to plaintiffs' counsel or produce them for the trial court. Banaszack, BNSF notes, confirmed that off-road diesel was not required to be dyed red until at least one year after the collision, and Schmidt's theory was premised on the dye being legally required, not on a supposed 40-year practice of dyeing without any government mandate. Also, BNSF argues that the trial court did *not* find, as plaintiffs suggest, that the presence of red dye in the fuel ruled out the 1993 collision as a source for that contamination. It notes that the

trial court did not conclude one way or the other whether the samples contained red dye. It merely found that Schmidt's assertion that the dye indicated diesel fuel was flawed and undercut his opinions. We conclude that the trial court reasonably discounted this evidence as speculative. It is true, as plaintiffs note, that Schmidt's testimony that diesel fuel has been dyed red since the 1950s was unrebutted, but the trial court did not have to accept that testimony in the absence of any evidence that confirmed that BNSF used, or had to use, red-dyed diesel at the time of the collision.

¶ 231 Next, plaintiffs address the age-dating evidence, arguing that the trial court misinterpreted it. Schmidt, they note, testified that he agreed with Torkelson's (BNSF's laboratory) age-dating analysis, which placed samples at 17 +/- 2 years old at the time of testing (*i.e.*, about 1993). The court, they assert, overlooked this corroborating evidence and found that Schmidt's analysis was speculative and unpersuasive. It also relied on a misinterpretation of Banaszak's testimony to support its finding, whereas Banaszak actually testified that the age-dating was "indicative of a release *** from the train wreck." BNSF responds that Schmidt's age-dating testimony was speculative. It notes that Uhler criticized Schmidt's methodologies as unreliable and that he and others have authored papers criticizing the methodology. Also, petroleum, Uhler testified, does not degrade in a predictable manner; several relevant factors vary over time at any given site. BNSF also points out that even Schmidt's testimony demonstrated the speculative nature of his technique. The difference between his shallow sample (garden experiment) curve and deep sample curve can result in a difference from an age dating of 2 years to 20 years. The court's assessment of the testimony, BNSF suggests, is supported by and consistent with the totality of the evidence. Further, BNSF argues that, even if the age dating analysis had some validity, the age of contamination would not make it more

likely than not that the contamination came from the 1993 diesel release, particularly in light of the forensic and other persuasive evidence showing that the contamination on ICDC property was not diesel fuel and did not migrate from BNSF property. We conclude that the trial court's findings concerning the age-dating evidence were not against the manifest weight of the evidence. The court reasonably resolved this evidence in Uhler's favor. He criticized Schmidt's testimony that the ICDC contamination dated to about the time of the collision. Uhler explained that the research upon which Schmidt relied, which was limited in scope and theorized that released petroleum degrades in a predictable manner, was not reliable and that he and other researchers had written papers criticizing it. His testimony explained why he disagreed with Schmidt's sources, most specifically that the samples were under a paved surface that was unlike the situation at plaintiffs' property, which had "water flows," and we find nothing inherently unreliable or incredible about his explanation for his conclusions.

¶ 232 Addressing plaintiffs' note in their statement of facts that BNSF's internal documents stated that the contamination migrated to ICDC property, BNSF contends that this is not the case. Its internal CARDS documents, it maintains, were merely an overview of the status and history of the project, as Jeffries (BNSF's manager of environmental engineering) testified, and, as he further testified, that investigation and remediation decisions were not based on those summaries. BNSF also points out that the CARDS documents listed plaintiffs as "Potentially Responsible Parties," which meant a party that may be causally responsible for the contamination. BNSF argues that the trial court was fully justified in rejecting the CARDS documents as persuasive evidence that diesel fuel migrated onto ICDC property. We reject the implication in plaintiffs' brief that the CARDS documents stated that the contamination migrated to their property. As was elicited during Banaszak's testimony, the database printouts showed

that ICDC itself was listed therein as a potentially causally-responsible party for the contamination that was being investigated. The trial court did not err in placing little or no weight on this evidence.

¶ 233 In summary, the trial court did not err in assessing the forensic chemistry evidence.

¶ 234 III. CONCLUSION

¶ 235 For the reasons stated, the judgment of the circuit court of Kane County is affirmed.

¶ 236 Affirmed.