

C A N A D A

PROVINCE OF PRINCE EDWARD ISLAND

IN THE PROVINCIAL COURT (CHARLOTTETOWN)

Case Number PIFC2015000936

BETWEEN:

HER MAJESTY THE QUEEN

INFORMANT

AND:

BROOKFIELD GARDENS INC.

ACCUSED

REASONS FOR JUDGMENT

December 11th, 2015 before Judge Nancy K. Orr

Jonathan Langlois-Sadubin

Counsel for the Public Prosecution Service of Canada

Robert I. S. MacGregor

Counsel for Brookfield Gardens Inc.

CHARGE:

[1] Brookfield Gardens Inc. is charged that it did between the 22nd day of July, 2014 and the 10th day of August, 2014 at or near Parcel 281386 in North Milton, located in Queens County, Province of Prince Edward Island, unlawfully deposited or permitted the deposit of a deleterious substance, namely, agricultural runoff containing pesticides in water frequented by fish, to wit North River or in any place under conditions where the deleterious substance may enter such water, contrary to s. 36(3) of the Fisheries Act, R.S.C. 1985, c. F-14, thereby committing an offence contrary to s. 40(2) of the Fisheries Act, R.S.C. 1985, c. F-14.

FACTS:

[2] A ten page agreed statement of facts was filed in this matter, setting out the background and investigation which gave rise to this charge. A binder, containing the agreed book of exhibits set out in sixty-five tabs was entered into evidence by consent. These documents provided the basis and details referenced in the agreed statement of facts. In addition, the Crown called two expert witnesses, Dr. Rob Jamieson and Paula Jackman, whose qualifications as such were consented to by the defence. The expert report of Dr. Rob Jamieson, entitled “Hydrological Analysis of Suspect Field 281386 for August 6, 2014-Rainfall event preceding the North River fish kill” was entered by consent.

[3] The defence called three witnesses, Travis Dykerman, Gerald Dykerman and Eddie Dykerman, all of whom were officers of the company and had varying involvement in the management of the company and its farming operations. Financial statements for the accused company for the fiscal years ending May 31, 2014 and May 31, 2015 were entered as exhibits by consent.

[4] At the outset, both counsel are to be commended for their approach to this case. Through their efforts and co-operation, a detailed statement of facts and supporting binder of exhibits was prepared and entered as exhibits by consent. This not only saved considerable court time and reduced the number of witnesses required to attend and testify at the trial to a very few, but it made it easier to follow the course of the investigation in a logical manner, as well as the many scientific measurements and analysis undertaken.

[5] The basic facts of this case are that Brookfield Gardens Inc. planted carrots in a field, parcel 281386, located near North Milton, P.E.I. in the spring of 2014. The field was approximately 28 acres in size, and for ease of reference will be called the Brookfield field or the carrot field. Brookfield Gardens Inc. did not own the field, but rather, it traded some of the land it owned or leased with the person who had farmed that field in previous years. Testimony at trial indicated that corn had been grown in the field the previous year. As part of its efforts at extending the crop rotation from three years to four years, Brookfield Gardens Inc. had needed additional land for that purpose, and so had obtained the use of this field to help effect that goal.

[6] On August 6th and August 7th, 2014, there was very heavy rain in the area of the Brookfield field. Measurements collected at a point 5.2 kilometers away from that field indicated that a total of 41mm of rain fell between August 6th at 6 p.m. and August 7th at 9 a.m.

[7] Rain monitoring data collected at another location, approximately 5.4 km north east of the field in question, indicated that 35.8 mm of rain fell between 5 p.m. on August 6th and 11 a.m. on August 7th, 2014.

[8] On August 9th, 2014, Environment Canada was notified of a possible fish kill in the North River, near North Milton, P. E. I. A total of 1155 dead fish, consisting of brook trout, rainbow trout, Atlantic salmon and sticklebacks, were collected in a 3.8 km section of the North River.

[9] As a result of the ensuing investigation, an information was sworn on July 29th, 2015, alleging Brookfield Gardens Inc. committed an offence contrary to section 36(3) of the **Fisheries Act**, R.S.C. 1985, c. F-14, as noted at the outset of this decision.

ISSUES:

[10] There are two issues in this case. First of all, has the Crown proven beyond a reasonable doubt that Brookfield Gardens Inc. unlawfully deposited or permitted the deposit of a deleterious substance, namely, agricultural runoff containing pesticides in water frequented by fish, to wit North River or in any place under conditions where the deleterious substance may enter such water? Secondly, if so proven, has the accused company established the defence of due diligence?

LAW:

[11] 36(3) of the **Fisheries Act**, R.S.C. 1985, c. F-14 provides:

36(3) Subject to subsection (4), no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.

[12] Section 34. (1) of the **Fisheries Act**, R.S.C. 1985, c. F-14 contains the applicable definitions and the relevant definition of “*deleterious substance*” provides:

(a) any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.

“deposit” means any discharging, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing;

“water frequented by fish” means Canadian fisheries waters.

[13] As this is a regulatory offence, the Supreme Court of Canada's decision in R. v. Sault Ste Marie 1978 CanLII 11 is applicable and therefore this is a strict liability offence. As a result, the Crown must prove the prohibited act beyond a reasonable doubt but does not need to prove negligence or wrongful intention. If the prohibited act is established, then the accused can avoid liability by establishing on a balance of probabilities that it took all reasonable care; in other words that it exercised due diligence.

[14] It must be noted that this matter was investigated as a result of dead fish being found in the North River after a heavy rainfall. However, the Crown does not have to prove that it was the actions of Brookfield Gardens Inc. that killed the fish. Rather, the Crown has only to prove that Brookfield Gardens Inc. deposited or permitted the deposit of a deleterious substance in waters frequented by fish.

ANALYSIS OF THE EVIDENCE AND APPLICATION OF THE LAW:

[15] Upon inspection of the Brookfield field on August 9th, 2014, investigators noticed a washout gully leading to the North River. Water samples were taken at various points in the gully. There was a puddle in the gully, 7.8 meters downhill from the carrot field. Analysis of the sample from that puddle indicated 67.7 µg/l of Chlorothalonil, 1.02 µg/l of Diazinon and 24.4 µg/l of Linuron.

[16] Analysis of samples taken from a larger puddle found in the gully, located further downhill from the Brookfield Field contained the following: 27.8 µg/l of Chlorothalonil, 1.76 µg/l of Diazinon, 9.94 µg/l of Linuron; 48hr (static) LC50: > 100% ; and 48hr EC50: 66.0%.

[17] Paula Jackson was qualified as an expert in toxicology and analytical chemistry, able to give opinion evidence as to the deleterious effects of pesticides on fish, pesticide toxicology and pesticide and agricultural runoff. She testified that she conducted toxicity tests on the samples from this larger puddle, and determined they were acutely toxic to the organisms tested.

[18] According to the agreed statement of facts, this puddle was draining into the North River and the analysis of samples from this flow of water indicated the following levels: 15.5 µg/l of Chlorothalonil; 0.79 µg/l of Diazinon; 7.66 µg/l of Linuron; 48hr (static) LC50 > 100%; and 48hr EC50 > 100%. A soil sample at the river bank where the flow of water from this puddle was discharging into the North River was analyzed and determined to contain 0.05 µg/g of Chlorothalonil and 0.07 µg/ of Linuron. Paula Jackson testified that she conducted toxicity tests on the water samples from this area, and determined they were not toxic to the organisms tested.

[19] Investigators observed a second washout gully leaving the Brookfield Field which ultimately drained into the North River. From a small puddle in the gulley a water sample was analyzed and determined to contain the following: 38.2 µg/l of Chlorothalonil; 1.58 µg/l of Diazinon; 23.6 µg/ of Linuron; and 0.07 µg/l of Simazine. None of the spray records filed in this matter indicate who had applied Simazine in that area.

[20] Analysis of a soil sample at the river bank where this gully was discharging into the North River provided the following results: 1.46 µg/g of Chlorothalonil; 0.07 µg/g of Diazinon; and 0.07 µg/g of Linuron. No toxicity tests were conducted in respect of these samples. Investigators observed a trail of bent grass, which was bent heading towards the North River.

[21] Sorghum sudan grass had been planted by Brookfield Gardens Inc. along the lower portion of the carrot field as part of the buffer zone. Analysis of a sample of Sorghum grass found approximately 6 meters from the North River indicated that Chlorothalonil, Diazinon and Linuron were all present but were not in quantifiable amounts.

[22] The only neighboring row crop field located within the fish kill area was a potato field located approximately 1 kilometre downstream of the Brookfield field. A fungicide containing Chlorothalonil, Echoe, was applied to the field on July 17, 2014 and July 22, 2014. A washout gully was observed at the lower end of that potato field but no puddles of stagnant water were present. Analysis of a foliage sample from the potato field indicated the presence of Chlorothalonil and Linuron, while a soil sample indicated 0.02 µg/g of Chlorothalonil and 0.03 µg/g of Linuron.

[23] Investigators examined the pesticide spray records for the various fields within the area and determined there were no row crops upstream of the Brookfield field. However, there was a soybean field which was sprayed with the herbicide Valtera. Between the Brookfield field and the potato field, there were four grain fields and the pesticide spray records revealed that none of these fields were applied with Chlorothalonil or Diazinon.

[24] The dead fish were analyzed and depending on the location where they were found, had between 0.3 to 1.0 µg/g of Diazinon.

[25] Paula Jackman testified that Diazinon can accumulate on the gills of a fish and in its tissues and can be detected. As to the effects on fish, she indicated that it can cause death and can affect growth or behaviour or development. She indicated that it could not be determined where it came from, only that it was there. She testified it was not possible to determine how long Diazinon had been in the system of a fish; again, only that it was there. As noted previously, Diazinon was found in varying quantities in the dead fish found in the North River on August 9th, 2014.

[26] Paula Jackman also testified that chlorothalonil reacts with glutathione in fish and prevents normal functioning in organisms, may cause death, different functioning problems, reduced number of eggs in females, problems with gill function, problems with success in egg hatching and young fish that do hatch have problems surviving normally. Ms Jackman testified that it is not possible to measure just for chlorothalonil, as it is necessary to analyze for the complex it forms with glutathione. She testified that it is very difficult to find and only immediately after fish die, as it cannot be found in decomposed fish. As the recovery percentage for finding it is very, very low, she indicated that it is not something that her lab even tries to look for any more.

[27] A necropsy was conducted at the Atlantic Veterinary College and indicated there was no evidence of disease in the fish. Six of the eight trout had a moderate to large amount of food in their stomach, indicating that death had been very acute. Due to the state of decomposition, it was difficult to estimate the time of death, but the pathologist indicated that eight of the nine fish would have been dead for 2-3 days, but probably not for much longer, since there was no fungal growth evident on the carcasses. He indicated that the ninth fish, although better preserved, could also have been dead for 2-3 days.

[28] Dr Rob Jamieson testified for the Crown as an expert, qualified to give opinion evidence in hydrological modeling, water quality modeling, water contaminant transport, soil erosion and pesticide concentrations and runoff. His expert report was entered as an exhibit in the trial by consent and was a hydrological analysis of the carrot field, estimating the amount of runoff, soil loss, and pesticide loss from that field during the August 6th and 7th rainfall event.

[29] Dr Jamieson explained the information he was provided and the basis of the conclusions he reached. He testified that the purpose of his report was to estimate the water that would have been transported from the field as surface run-off, the soil that would have been eroded from the field and the mass of pesticide that would have been transported with that soil erosion.

[30] In his report, at page 11, Dr. Jamieson came to the following conclusions:

“1. A significant rainfall event (30 -40 mm) was recorded at 2 climate stations located within 10 km of the suspect field on August 6-7, 2014. The rainfall event duration was approximately 16 hours and consisted of an intense period of rainfall near the start, followed by another moderately intense period of rainfall near the end of the storm. At the time of the rainfall event the soils at this location would have been relatively dry, as there was minimal rain recorded at nearby climate stations in the prior week. The soils would have possessed infiltration capacities large enough to prevent runoff during the initial portion of the storm. However, as the storm progressed, the surface soils would have become saturated and runoff was predicted to have started during the later part of the rainfall event. Peak runoff rates from Subarea 1 and Subarea 2 were, using minimum predictions, computed to be 15 and 20 L/s, respectively. It is possible that there were portions of the field where soil properties were such (e.g. due to compaction from field cultivation activities) that runoff could have been generated during earlier parts of the storm, but the modeling approach used in this report provides a field-averaged hydrologic response. In order to assess the hydrologic response of the field at a finer level of spatial resolution, actual field data for hydraulic conductivity and bulk density at that spatial resolution would be required.

2. Surface runoff on the field would have mobilized surface soil particles. The soils in the field are moderately to highly susceptible to erosion. It was predicted that the rainfall event would have generated approximately 2.5 Mg of soil loss from the entire site.

3. Chlorothalonil was applied on July 22, 2014 and August 4, 2014. The short time period between the second application and the rainfall event would have provided very little time for degradation of the chemical. The pesticide would have washed off the foliage of the crop onto the soil surface during the initial part of the storm, and then been transported with eroded soil particles during the later part of the storm. Concentrations in the dissolved phase in runoff leaving the field were predicted to have ranged from 0.11-0.14 mg/L. The total predicted mass of Chlorothalonil transported off the suspect site was, using minimum predictions, approximately 25g.

4. Diazinon was applied only once on July 22, 2014. Greater than 50% of the total chemical mass would have degraded prior to the August 6 rainfall event. However, it was predicted that the remaining chemical mass would have resulted in dissolved phase concentrations in surface runoff ranging from 0.03 - 0.04 mg/L. The total predicted mass of Diazinon transported off the suspect site was, using minimum predictions, approximately 6 g.”

[31] On cross-examination, Dr Jamieson confirmed that the quantitative analyses in his report represented estimates of the transport of water, soil and pesticide to the edge of the carrot field. He stated in his report:

“ ... Surface runoff, and associated sediments and pesticide, would then have to flow through the grassed and forested buffer zone before entering the North River. The ability of the buffer to trap and retain sediments and pesticides would depend on a number of factors including the width of the buffer, the slope, vegetation, and soil. Most importantly, the effectiveness of the buffer would depend on whether the surface runoff entered the buffer as shallow sheet flow, or as concentrated flow. If the surface runoff entered the buffer as concentrated flow, the trapping efficiency of the buffer would have been significantly reduced. Also, once runoff from the field entered the river and became diluted, a new equilibrium would establish between the dissolved and sorbed phases of each pesticide. This would result in more chemical mass shifting into the dissolved phase.”

[32] Dr. Jamieson testified that it was only at the end of the rain event that any run off occurred, somewhere around the 700 minute mark, or between 11 and 12 hours after the rain started, as there was not a lot of rain in the days and weeks prior to August 6th and 7th. He testified that as the soil was dry, it had a greater capacity to absorb rainfall, at least until the end of the rain storm.

[33] Two sets of rainfall data were provided to Dr. Jamieson by the investigators. The first included one minute rainfall collected at Environment Canada’s climate station, located at Harrington, P.E.I., approximately 5.4 kilometers north east of the Brookfield carrot field, which indicated that 35.8 mm of rain fell between 5 p.m. on August 6th and 11 a.m. on August 7th, 2014.

[34] The second was collected at the Charlottetown Airport, approximately 9 kilometers from the carrot field, and indicated that between 3 p.m. on August 6 and 9:00 a.m. on August 7th, 2014, 39.6

mm of rain fell. Of that amount, 16.1 mm of rain fell between 3 p.m. and 9 p.m. on August 6th, 2014; 6.3 mm of rain fell between 9 p.m. on August 6th and 3 a.m. on August 7th; and 16.2 mm fell between 3 a.m. and 9 a.m. on August 7th, with the rain ending at 11:46 a.m. on August 7th.

[35] A third set of data, collected 5.2 kilometers from the carrot field indicated that 41 mm of rain fell between 6 p.m. on August 6th and 9 a.m. on August 7th, 2014. Of that total amount, 24.1 mm of rain fell on August 6, 2014, with 8.6 mm of rain falling between 6 p.m. and 6:30 p.m. and 15mm of rain fell between 6:30 p.m. and 7 p.m.. On August 7, a total of 20.8mm of rain fell at that location, with 16.9mm of it falling between 3 a.m. and 9 a.m., of which 2 mm of rain fell between 6:30 a.m. and 7 a.m. and 7.1mm of rain fell between 7 a.m and 7:30 a.m. This later data was not provided to Dr Jamieson for his analysis.

[36] A review of this data clearly indicates that there were significant differences in the amount of rain recorded for the same time period, even within short distances of each other. In respect of the analyzes Dr Jamieson conducted in regards to this data, the chart on page 9 of his expert report is noteworthy. Although there was only 3.8 mm more rain recorded at the Charlottetown Airport than at the station in Harrington, the analysis indicated that the runoff volume using the Charlottetown Airport data was 300 cubic metres as opposed to 173 cubic metres if using the Harrington data, almost double. The peak runoff rate was calculated at 107 litres per second using the airport date, as opposed to 35 litres per second, using the Harrington data. Finally the soil loss was estimated at 6640 kilograms when using the airport data, as opposed to 2640 kilograms if using the Harrington weather station data.

[37] Those are significant differences, indeed, and Dr. Jamieson explained in his report and testimony that they were due to the total amount of rain recorded, as well as the nature and intensity of the rain. A comparison of the tables submitted as part of the exhibit book indicated significant differences in the amount of rain recorded at each station at various times. In other words, the rainfall was not even over the time period nor evenly recorded by various geographic points which were located within a 10 to 15 kilometre radius of each other.

[38] However, no specific weather data was recorded at the carrot field itself at the relevant times. At page 9 of his report, Dr. Jamieson states: *“Again, pesticide losses were greater using the Charlottetown Airport rainfall data, as pesticide transport is directly related to soil erosion.”*

[39] Dr. Jamieson testified that he assumed that the pesticide applied to the carrot field had been applied evenly. He did not consider any hills or valleys in the field and acknowledged that he had been provided with a map indicating the eastern end of the field had a higher elevation than the rest of the field. He was never at the field in question and only assessed the buffer zone from the photos provided. He indicated on direct examination that there were no conservation practices in effect in the field, and indicated that he was looking for strip farming or terracing. On cross-examination, he conceded that a buffer zone was a conservation practice but indicated that he considered a buffer zone to be an edge of field conservation practice as opposed to an in field practice. He indicated that a buffer zone trapped sediments after they left a field, as opposed to applying a measure within a

field to prevent sediment leaving the field. Dr Jamieson indicated that he did not consider what filtration effect the buffer zone in this matter had on the field.

[40] In this case, Travis Dykerman testified that the field had been farmed to its edge the previous year. He indicated that there had not been a proper buffer zone in place when Brookfield Gardens Inc. had started to farm this field. As a result, Gerald Dykerman had testified that he had stepped off a buffer zone at various points from the edge of the sediment bed of the North River to the end of the carrot rows. He testified that he had left a 25 metre buffer zone to the end of the carrot rows, as such is required for spraying pesticides by Section 38(1) of the **Regulations to the Pesticide Control Act**, R.S.P.E.I. 1988, Cap. P-4. The **Watercourse and Wetland Protection Regulations to the Environmental Protection Act**, R.S.P.E.I. 1988, Cap. E-9 require a 15 metre buffer zone be left between any agricultural crop and a watercourse or wetland boundary. That is not in addition to the buffer zone set out in the **Pesticides Control Act**, but overlaps and is subsumed with that buffer zone.

[41] The **Watercourse and Wetland Protection Regulations to the Environmental Protection Act** do not define how a buffer zone is to be constituted, just the size and what activities are prohibited in that area. In this case, Travis Dykerman testified that the 25 metre buffer zone between the river and the end of the carrot rows was comprised of a wooded area, then an area of sorghum grass that he had planted and a headland, which had been left for turning of the farm machinery. From the photographs of the area, the wooded area appears quite heavily vegetated in many places.

[42] Travis Dykerman and Gerald Dykerman were responsible for spraying the carrot field at various times prior to the rainfall event. They each confirmed the spray records provided, which indicated the following applications, namely:

- on June 3, 2014, Gesagard, a herbicide containing Prometryn (active ingredient);
- on July 8, 2014, Lorox, a herbicide containing Linuron (active ingredient);
- on July 22, 2014, Diazinon, an insecticide containing Diazinon (active ingredient) and Bravo, a fungicide containing Chlorothalonil (active ingredient);
- and again on August 4, 2014, Bravo.

[43] Eddie Dykerman testified that Diazinon was ordered on July 23, 2014 but what was used in the July 22nd application was the product which had been on hand from previous orders. The label on Diazinon was changed around that time. He testified that the buffer zone referred to on the old label was for an air blast sprayer only. The new label indicated a buffer zone for field sprayers, which was what Brookfield Gardens Inc. used.

[44] On the basis of a hypothetical posed to her, Ms Jackman, opined that if Chlorothalonil and Diazinon were applied to a field on July 22, 2014 and Chlorothalonil was applied in early August, with 35-40 mm of rain from August 6-7th; hydrology modeling indicated that 110-140 micrograms /litre of Chlorothalonil with a mass of 25 grams runoff estimated to leave that field and a sample of water found in the drainage gully containing 67 micrograms per litre of chlorothalonil was taken

2 days after the rain, from a location past the buffer zone on that field, with the drainage gully flowing into a body of water, that those concentration levels, on their own, were already toxic to rainbow trout and would have lethal and sub-lethal effects.

[45] If collected two days after the rainfall event, she opined that they were likely at the more diluted level as there would be some continual degradation, and it was probably lower than the last of the runoff which left the field. In relation to the CCME guidelines, which she had outlined were 0.18, as the measured value was 67 micrograms/litre, it was orders of magnitude higher than the guideline level and that would be considered harmful.

[46] She further expressed the opinion that if a drainage gully was flowing through the buffer zone, directly into a body of water, it would be considered a deleterious and harmful substance. She expressed the opinion that if the water is passing through a gully, it is not being treated by a buffer zone so likely to be almost no reduction in the pesticide concentration.

[47] For an opinion based on a hypothetical to be considered, the Crown must establish the factual basis upon which such an opinion is grounded. The question is whether or not the Crown has done that.

[48] Several days after a significant rainfall event, dead fish were found in the North River. An investigation occurred at that time to determine what may have lead to that. Since it was after the fact, investigators were challenged by not having been present during the rainfall to obtain samples or make observations at that time, and of course, that is because no one was aware of any actual issues at that time.

[49] Roughly two days after the rain event, samples were taken from the area and analyzed. The investigation was primarily limited to the area where the dead fish were located. Defence counsel submitted that the Brookfield field was suspected to be the source of the problem at an early time and that the investigation focused on it, without giving due consideration to other farms or sources of runoff in the area.

[50] The presence of Simazine in the small puddle of the second gully, as referenced previously, lends some credence to this assertion. I reviewed the sprayer records submitted but could not find any reference to Simazine being applied in the area investigated, and yet, it is in the puddle tested. Where did it come from?

[51] The maps of the area that are set out in the exhibit book show that there are what appears to be two branches of this river, which join to form one a short distance from the Brookfield field, and it is one as it passes the Brookfield field. It is unclear what further investigation was conducted with respect to the potato field located 1 km downstream of the Brookfield field, other than the soil and foliage samples collected and analyzed, showing the presence of chlorothalonil and linuron, as noted previously. Did this field have a proper buffer zone? While it was downstream from the Brookfield

field, what was the relevant elevation of it to the Brookfield field? There is no evidence on these points to answer those questions.

[52] There is no evidence before the court to establish the flow of the river during or after the rain event. Eddie Dykerman testified that he lives some distance away and on his way to work following the rain event of August 6th and 7th, 2014, he noticed that the brooks were quite swollen with excess water and some had very severe flooding situations.

[53] In her report to the investigators, Roseanne MacFarlane, a P.E.I. Provincial Biologist with the Department of Fish and Wildlife noted : *“It is strange that there were no fish larger than 10” collected. I am guessing that with the large moon tides, many bodies were moved out into the estuary. The water was extremely high on Sunday when we were there.”* Her report was dated Tuesday, August 12th, 2014, so that the reference to Sunday would have been to August 10th, three days after the rain event. There is no other evidence before the court to indicate the level of the North River during or after the rain event, other than the evidence of Eddie Dykerman that he noticed the river was quite elevated and the comment in Roseanne MacFarlane’s report.

[54] Two gullies were located near the edge of the carrot field and when followed through the woods, led to the North River. The photos at Tab 13 of the agreed book of exhibits are key in this matter. Photo #5 bears the description: *“Puddle to corner of carrot field (7.8m)”* and shows a person standing at the edge of the carrot field, holding a measuring tape. That photo shows that the gully does not start at the edge of the carrot rows, but rather there is an area, which is primarily bare soil and described by the defence witnesses as the headland, between the end of the carrot rows and the vegetation.

[55] The gully starts at the far edge of that soil where the vegetation is and photo #2 in that same tab shows that as well. Those photos show the area in question as heavily vegetated for the most part, and in some of the photos, it is difficult to determine where the gully is.

[56] It is difficult to determine elevation from those photos, but for example from photo #8, it appears that the carrot field is somewhat higher than the wooded area shown in that photo. Photo #11 shows a grade but there is no indication where that is- other than coordinates. Photo #14 for example appears to be a relatively flat area in the wooded area, while there is a slope in photo #16, described as *“Puddle draining into North River.”* No measurements were provided of the elevation of the various points between the carrot field and the North River.

[57] According to Paula Jackman, the second (Exhibit 3) puddle, located further downhill from the end of the carrot rows was acutely lethal in the toxicity tests she conducted. The puddle is described in the agreed statement of facts as draining into the North River, and is much closer to the North River than the first puddle. However, samples taken from the flow of water from this puddle were determined in her testing to not be toxic.

[58] I have extensively reviewed the book of exhibits entered in this case. From such an examination it is clear that at the time of the investigation on August 9th, 2014, there was no water running from the carrot field to the North River. What investigators did find was the first gully with two separate puddles in it. Those puddles were some distance apart, but there is no evidence of the elevations at which they were located, nor their elevation in relation to one another, nor their elevation in respect to the North River.

[59] The puddle closest to the North River while containing chemicals, was determined to be toxic. The flow of water from this puddle was determined not to be toxic. Did agricultural run-off run off the carrot field and into the North River? Did the North River rise sufficiently to flood one or both of the areas where the puddles were found on August 9th, 2014? Was there a combination of both events? Since the North River was determined to flow north to south and the primary investigation in this case centered on the area where the dead fish were located, did the various chemicals located in these samples originate from some source up river and be deposited in the puddles - or one of them- when the river levels rose? Did the North River rise sufficiently that chemicals located in these samples originated from some source down the river and were deposited in the puddles, or one of them, due to the unusually high level of the river?

[60] Dr Jamieson testified that he did not consider the ability of the buffer zone to filter out any soil or pesticides and indicated that without specific field information, he was unable to say what went into the North River from the field. From his evidence and his expert report, it is clear that these are calculations he could have made, if provided with the necessary field information.

[61] There was a buffer zone in place for the Brookfield field. Since Dr Jamieson was asked to provide an expert opinion on the quantity of chemicals that would have left that field, it is difficult to understand why he was not provided with the field information he needed to determine what portion, if any, of those chemicals passed through the buffer zone and into the North River. With that information in hand, there would be a direct link from the chemicals applied to the field, to the amount there at the time of the rain event, to the amount that would be at the edge of the carrot rows, to the amount that continued through the buffer zone and, if any, ended up in the North River, and the quantities of such.

[62] The evidence before me indicates the quantity of chemicals that are at the edge of the carrot field, but where did they go? Did some or all of them pass through the 25 metre buffer zone and enter the North River? If they did, what was their concentration when they did?

[63] In this case, the second (Exhibit 3) puddle analyzed by Ms Jackman was found to be acutely toxic, but the water sample taken from where that puddle flowed into the North River was not toxic.

[64] The hypothetical question posed to Ms Jackman concerned the puddle in the gully, located 7.8 metres downhill from the Brookfield field (sample 08950). The photos in respect of that sample indicate that puddle is in a thickly vegetated area. The gully in this matter is not an open roadway, a sea of mud or anything of that nature which would indicate any lack of resistance to water or other

substances flowing through it. Where the indicated gully is visible in the photos, the gully is well vegetated, with two places where puddles were found.

[65] Perhaps the photo does not do justice to it, but the photo in the exhibit book of the puddle in the gully that is 7.8 m from the field would not, without it being labeled as such, appear to be a puddle, as standing water is not easily noticeable. The second (Exhibit 3) puddle in that gully is, in contrast, much more open and identifiable, being a clear area in the midst of heavy vegetation.

[66] The investigators observed a trail of bent grass, which was bent heading towards the North River. Was that caused by the run off from the field, raised levels of the North River and its subsequent lowering, or a combination of both?

[67] The evidence in this case clearly established that pesticides were applied to the Brookfield field at various times. Dr Jamieson calculated the mass of pesticides that would have been transported to the edge of the carrot field as part of the agricultural run-off as a result of the rain event on August 6th and 7th, 2014, but he did not have the field information to determine the ability of the 25 meter buffer zone in place in this matter to filter out any soil or pesticides and he could not say what went into the North River from that field. Analysis of puddles indicated the presence of pesticides in quantities that would constitute deleterious substances.

[68] The question that I have struggled with for many hours is where did those substances come from. While there is a good likelihood that some or perhaps even all came off the Brookfield field, that is not the applicable test. This is a very serious matter, with significant consequences. I must be satisfied beyond a reasonable doubt that Brookfield Gardens Inc unlawfully deposited or permitted the deposit of a deleterious substance, namely, agricultural runoff containing pesticides in water frequented by fish, to wit the North River, or any place under conditions where the deleterious substance may enter such water.

[69] The questions I have just posed in respect of the issues in this matter are unresolved by the evidence before me. As a result, I am not satisfied beyond a reasonable doubt that Brookfield Gardens Inc. unlawfully deposited or permitted the deposit of a deleterious substance, namely agricultural runoff containing pesticides in water frequented by fish, to wit: the North River, or any place under conditions where the deleterious substance may enter such water.

[70] Although it is not necessary to do so, given my decision on the first issue, I will deal with the second issue, so that all of the issues before me will have been fully canvassed.

[71] As with the great majority of regulatory offences, this is a strict liability offence as defined in R. v. Sault Ste. Marie 1978 CanLII 11 (SCC):

“Offences in which there is no necessity for the prosecution to prove the existence of mens rea; the doing of the prohibited act prima facie imports the offence, leaving it open to the accused to avoid liability by proving that he took all reasonable care. This involves consideration of what a reasonable man would have done in the

circumstances. The defence will be available if the accused reasonably believed in a mistaken set of facts which, if true, would render the act or omission innocent, or if he took all reasonable steps to avoid the particular event. These offences may properly be called offences of strict liability.”

[72] Section 78.6 of the **Fisheries Act**, R.S.C. 1985, c. F-14 codifies the common law defence of due diligence as follows:

78.6 No person shall be convicted of an offence under this Act if the person establishes that the person

(a) exercised all due diligence to prevent the commission of the offence; or

(b) reasonably and honestly believed in the existence of facts that, if true, would render the person's conduct innocent.

[73] According to the **Interpretation Act**, R.S.C. 1985, c. I-21, “*person*” includes a corporation.

[74] A number of cases on the issue of due diligence have been filed by both counsel. I have had the opportunity to review those cases extensively, and have found them helpful as to the analysis to be conducted on this issue. However, each of those cases turned on the specific facts of that case, and as such, I do not see the need to refer to them further in this case.

[75] The question, then, is whether or not Brookfield Gardens Inc. “*exercised all due diligence*” or “*took all reasonable steps to avoid the particular event*”.

[76] The evidence on behalf of the defence established that Brookfield Gardens Inc is a family owned company. Travis, Gerald and Eddie Dykerman are all related to each other, and are owners, shareholders and directors in the company, with varying roles.

[77] Travis Dykerman, a part owner and director of the accused company testified he was directly involved in the farming operation and in fact, with the cultivation of the carrot field in question. As noted, this field was obtained on a one year trade with the farmer who had farmed it for the past number of years. The land was needed to extend the crop rotation from three years, as mandated by government legislation for a row crop, to the four years the company wanted to implement.

[78] Travis Dykerman testified he personally viewed the field before any planting, and drove around the field in his truck in November or December 2013. Lime was applied to the field in the fall of 2013 and the field was plowed in the spring of 2014. He indicated that the headlands were not plowed, but were left intact, and that the field was seeded with carrots on May 29th, 2014.

[79] He indicated that he knew there was a bit of a slope in places and tried to mitigate that by planting the rows in a certain fashion and by planting a buffer zone, since there was a brook on the lowest side of the property. To clarify, while Travis Dykerman referred to it as a brook, due to its size, which is confirmed by the various exhibits in this matter, it is in fact part of the North River, to which reference has previously been made. It is one and the same.

[80] The rows of carrots were planted with the slope grade. He testified that they run the rows down any slope so that water will run with the rows rather than breaching them. He was questioned on cross-examination on this point and indicated that if the rows were planted across the slope, water could blow out the row and take all of the soil with it. He noted that there was a sloped part to the field, but that it planes out in the centre and that was where the water would collect.

[81] No further maintenance was done on the field after planting but spraying was conducted at various intervals, in response to reports of insects or disease.

[82] Travis Dykerman testified that he did not notice any drainage issues prior to planting the crop. He was aware of one gully after planting, but that it did not look like anything substantial or out of the ordinary. He was not aware of the extent of it until after this rain event. At that time, he had to crawl through the trees and under the branches to determine the extent of the gully. This was through the woods and vegetation that formed part of the buffer zone. He indicated he found an old gully that had been established many years ago, with heavy debris in it, foliage growing, some tree roots and that it did not run clean. The photos of the area submitted as exhibits certainly support his characterization of the area.

[83] Gerald Dykerman testified that he stepped off the 25 metre buffer zone established for the carrot field and indicated that the end of the carrot rows were 25 metres or better from the edge of the sediment bed of the brook. Following the rain event, Travis Dykerman confirmed that buffer zone, using a tape measure.

[84] As there had not been a proper buffer zone in place the prior year, Travis Dykerman testified that sorghum sudan grass was planted between the headland and the wooded area. The headland was left to allow for the farm machinery to turn. This grass was planted on July 8th or 9th, 2014 and was chosen, he said, because it grows rapidly, produces a lot of plant material in a short time and had deep roots in contrast to other grasses. It was not planted until early July as it has no frost tolerance and would have to be re-seeded if planted too early.

[85] He testified the purpose of planting the sorghum grass was as part of the buffer zone, to capture any water coming out of the carrot field to prevent it from entering the brook. While he indicated it is possible to harvest it, he indicated Brookfield Gardens Inc used it as a soil builder and planted it strictly for the buffer zone. He indicated that it took about 45 to 60 minutes to plant approximately two acres of grass. In some places, he indicated the grassed part of the buffer zone was 48 feet wide, while in others it was 24 feet and in the circular part of the field it was approximately 100 feet. The different widths correlate to the varying widths of the wooded area along the brook.

[86] Travis Dykerman provided details about spraying pesticides in general and in particular on the carrot field. He and Gerald Dykerman were the persons responsible for the application of the pesticides for the company. He applied Diazinon to the carrot field on July 22nd and indicated that at that time, the product he used indicated a buffer zone only if using an air blast sprayer. Brookfield

Gardens Inc used a field sprayer. He testified that it was only after that date that the label on the product changed and as such, the Diazinon purchased on July 23rd, 2014 indicated a buffer zone for a field sprayer as well. He testified that there was no buffer zone requirement on the product he used on July 22nd for the field sprayer he used.

[87] Travis Dykerman was questioned as to his training and experience. He testified that he has been farming for 10 years full-time and 5 years part-time. He has been applying pesticides for 10 years and indicated the requirements to obtain and maintain a pesticide license. He had last attended the required course in February 2013. He indicated the nature of the training and the various considerations he must be cognizant of when working with and applying pesticides. He indicated that he was aware that the pesticides were very toxic. He testified that he does read the labels periodically but not every time he filled the sprayer.

[88] Travis Dykerman testified that on August 4th, 2014 he applied Bravo to the carrot field. On cross-examination he was asked if he had checked the weather before he had sprayed the field, and he responded that he had. He was asked why he had sprayed when there was a serious rainfall event two days later. It would be fair to say that Travis Dykerman testified in a calm and quiet manner throughout his testimony. However, his response in this regard was noteworthy in the tone and strength of his answer when he was adamant that he **had** checked the weather with Environment Canada, prior to spraying and that the significant rainfall which occurred on August 6th and 7th, 2014 had **not** been forecast.

[89] No evidence was called to contradict Mr Dykerman's testimony in this regard. In particular, during the summation, I questioned Crown counsel on that aspect. Since anyone can go to the Environment Canada website to see the weather forecast for the next number of hours or the next 14 days, thus indicating it is electronic data of some format, I inquired as to whether there was any material in the agreed book of exhibits regarding the forecast from August 4th, 2014. Whether obtainable or not, in any event, it was not part of the case presented in this matter. As such, Mr Dykerman's assertion that the significant rainfall event which we now know did occur on August 6th and 7th, 2014 was not forecast, his assertion is uncontradicted and not challenged.

[90] The three defence witnesses were questioned regarding conservation methods used by the company and available for use. In particular, they were all asked regarding the use of burns, terraces, strip cropping, waterways and tile drainage. They indicated that they did use a variety of conservation methods, including these methods on the land they owned or leased long-term.

[91] Gerald Dykerman indicated that some of these conservation methods require several years to implement. For example, he testified that a burn is a three year project, involving the development of it, grading with heavy equipment, and seeding, while strip cropping is done on a three year rotation. They are done in anticipated long term farming, and this field was intended to be used only for one year by Brookfield Gardens Inc. He testified that it is never feasible to do a burn on a short term lease. He indicated that he had been farming 35 years and that in the first 10 years of that, they did much of the work to implement many of these conservation methods on the land they used.

[92] The person who had farmed the field previously told investigators that he had never planted potatoes in the field but had grown grain in 2012 and corn in 2013. He also indicated that he had never noticed any problems with drains in the field.

[93] Gerald Dykerman testified that Brookfield Gardens Inc had a Environmental Farm Plan, where the company would assess all of its fields with the help of an environmentalist, to identify hazards on the land it owned, the farm buildings and the long term leases, and that such plans were usually reviewed every five years.

[94] He indicated that if the company had land for one year, they would assess it themselves. He indicated that buffer zones were a big part of the assessment, whether a long term or short term lease, as were wet zones where there are waterfowl.

[95] He indicated that Brookfield Gardens Inc was involved in the ALUS program, where land with too much slope or wetland was taken out of production in return for a nominal fee for rent.

[96] He also indicated the company worked with the Wheatley River watershed group, where the group was able to enter through the company's property to clean up brooks and streams in its area. He indicated that Brookfield Gardens Inc. works with the watershed group to identify which pieces of land should be taken out of production or change the use of, and that this is a voluntary program that Brookfield Gardens Inc. participates in.

[97] Gerald Dykerman testified that he and Travis Dykerman had inspected the property prior to farming it. He noticed that the buffer zone was not big enough for what they planned to grow. He indicated that a 25 metre buffer zone was required and how he established it for the carrots grown in the field. He indicated that he made frequent visits to the field after planting to see how the crop was doing and that he would get out of the truck to count the plants.

[98] Gerald Dykerman was the other person who applied pesticides to the carrot field. He testified that in June and July, 2014 he used the product purchased in 2013, and as such, there was no buffer zone for a field sprayer indicated on the Diazinon product he used at that time.

[99] Eddie Dykerman testified that he is a shareholder, director and Secretary-Treasurer of Brookfield Gardens Inc. He indicated his role in the company now is primarily in respect of financial matters. He is involved in major decisions regarding the company but the day to day operation is dealt with by Travis and Gerald.

[100] Eddie Dykerman testified that he was familiar with the carrot field in question although not personally involved in the planting or spraying of the field. He testified that the produce in the carrot field in question was intended for the fresh market, but the field had a lot of insect damage. As a result, it went for processing. He indicated that eventually a portion of the field was never harvested. He indicated that there is a very small margin from carrots for processing and since a portion of the crop was left in the field, Brookfield Gardens Inc. did not make any profit off this field.

[101] He indicated he was contacted by investigators about one week after the rain event, and he provided pesticide application records as requested.

[102] All three defence witnesses testified that they were well aware of and concerned by the issue of fish kills. When asked of any specific incidents, all referred to a past case in the West Prince area. Eddie Dykerman noted an additional reason for particular concern was that the company was attempting to develop brand recognition and did not want in any way to be associated with a fish kill.

[103] If it had been determined that agricultural runoff containing pesticides from the Brookfield field had reached the North River, then the question would be did Brookfield Gardens Inc. take all reasonable steps to avoid that particular event?

[104] The evidence indicates that Brookfield Gardens Inc. established a 25 metre buffer zone as required by the provincial legislation, as the previous buffer zone was not adequate. To do so, they planted sorghum sudan grass in the area beside a woods that bordered on the North River, which they referred to as the brook, given its size in that area. They testified as to the conservation measures they implemented in respect of that field and the reasons for the choices they made. Due to the fact this was an agreement to use the field for one year only, more extensive conservation steps, which would take three years to implement were not used. They complied with the training for applying pesticides and indicated the steps they took in such applications.

[105] From the report of Dr. Jamieson and his testimony in respect of this matter, it is clear that the application of the pesticide on August 4th, 2014 was a significant factor in the analysis that he conducted and the amount of pesticides that were available, as a result of that application, to be carried to the edge of the carrot field.

[106] As I have already noted, Travis Dykerman testified in respect of this matter that the rainfall event, which did in fact occur on August 6th and 7th, 2014 was not predicted and that he did in fact check with Environment Canada for the forecast, before he sprayed on August 4, 2014. His evidence is uncontradicted.

[107] I am satisfied from the evidence I have heard in this matter and the manner in which Travis Dykerman testified, that he was a credible witness and that his evidence is capable of being relied upon.

[108] Certainly, if there was evidence that spraying had occurred on August 4th, with a heavy rainfall warning being forecast for two days later, that would be a significant matter to consider here. It would not be reasonable, given the length of time that it takes for the pesticide to degrade and work themselves into the soil, to apply a pesticide a very short period of time prior to a predicted heavy rainfall event.

[109] However, in this case, the evidence of Mr Dykerman, which I accept, is that heavy rainfall event was not predicted and that he applied pesticides on August 4th, 2014, without any anticipation that there would be a heavy rainfall event two or three days later.

[110] The Directors of the Company, the three Dykermans who testified in respect of this matter, all indicated that this field was used to extend the crop rotation mandated by Provincial legislation, from 3 years for row crops to 4 years, and that they needed additional land to attain that goal. Certainly their efforts in that regard are noteworthy, as they are making efforts to go beyond what the Provincial legislation requires.

[111] Brookfield Gardens Inc. is not perfect. They acknowledged that. They inspected the field prior to planting it in carrots, but failed to realize that a portion of it had an elevation over 9%. Planting of row crops on such land is prohibited. Eddie Dykerman testified that they had slightly over the one hectare of the area that is permitted, and were charged and pled guilty to a violation of the provincial legislation. In addition, they failed to obtain a permit before they planted the sorghum grass as part of the buffer zone. Any such activity in a buffer zone, even to establish it, required a permit. They pleaded guilty to that offence. However, it should be noted, and as the matters proceeded before me, I am familiar with the cases, both of those charges arose out of the investigation in this same matter - they were not a separate incident. Guilty pleas were entered at an early appearance and fines were imposed as per the legislation.

[112] The standard for a defence of due diligence, however, is not perfection. While a laudable goal, the test is did Brookfield Gardens Inc. take all reasonable steps to avoid the particular event. Considering all of the evidence in this case, I am satisfied that Brookfield Gardens Inc. did in fact exercise due diligence and took all reasonable care in these circumstances to avoid depositing a deleterious substance in water frequented by fish.

[113] Had the Crown established the *actus res* in this matter, I would have acquitted the accused company on the basis of it establishing due diligence. However, since the Crown has not established the *actus res* in this matter, which is the first issue, as noted previously, I enter an acquittal on the basis that I am not satisfied beyond a reasonable doubt that Brookfield Gardens Inc. unlawfully deposited or permitted the deposit of a deleterious substance, namely agricultural runoff containing pesticides, in water frequented by fish, to wit the North River, or any place under conditions where the deleterious substance may enter such water.

[114] As a result, I enter an acquittal on this charge.

Dated at Charlottetown, Queens County, Prince Edward Island this 11th day of December, 2015.

Nancy K. Orr
Judge of the Provincial Court of
Prince Edward Island

