

ALBERTA ENVIRONMENTAL APPEALS BOARD

Report and Recommendations

Date of Report and Recommendations – October 3, 2013

IN THE MATTER OF sections 91, 92, 94, 95, and 99 of the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12, and section 115 of the *Water Act*, R.S.A. 2000, c. W-3;

-and-

IN THE MATTER OF appeals filed by Gull Lake Water Quality Management Society, Chris Simard, and Rich Thul with respect to *Water Act* Approval No. 00292313-00-00 and *Water Act* Licence Nos. 00293413-00-00 and 00293311-00-00 issued to Delta Land Co. Inc. by the Director, Central Region, Operations Division, Alberta Environment and Sustainable Resource Development.

Cite as: *Gull Lake Water Quality Management Society et al. v. Director, Central Region, Operations Division, Alberta Environment and Sustainable Resource Development, re: Delta Land Co. Inc.* (03 October 2013), Appeal Nos. 12-019-021, 023-025, and 027-029-R (A.E.A.B.).

BEFORE:

Mr. Alex MacWilliam, Panel Chair;
Dr. Dan Johnson, Board Member; and
Dr. Nick Tywoniuk, Board Member.

BOARD STAFF:

Mr. Gilbert Van Nes, General Counsel and
Settlement Officer; Ms. Valerie Myrmo,
Registrar of Appeals; and Ms. Marian Fluker,
Associate Counsel.

SUBMISSIONS BY:

Appellants: Gull Lake Water Quality Management Society,
Mr. Chris Simard, and Mr. Rich Thul,
represented by Mr. Chris Simard.

Approval Holder: Delta Land Co. Inc., represented by Mr. Bud
MacDonald, Q.C., MacDonald Hanley.

Director: Mr. Todd Aasen, Director, Central Region,
Operations Division, Alberta Environment and
Sustainable Resource Development,
represented by Ms. Erika Gerlock and Ms.
Jodie Hierlmeier, Alberta Justice and Solicitor
General.

Witnesses:

Appellants: Mr. Craig MacLeod, Gull Lake Water Quality
Management Society; Mr. Roger Clissold,
HCL Hydrogeological Consultants Ltd.; Mr.
Mark Ruault, Allnorth; and Ms. Julia Frohlich,
TERA Environmental Consultants.

Approval Holder: Mr. Lance Dzaman, Delta Land Co. Inc.; Mr.
Bobby Bedingfield, Golder Associates; Mr.
Mark Polet, Klohn Crippen Berger Ltd.; Mr.
Christian Nageli, Stantec Consulting Ltd.; Mr.
Mike Richards, Richards Consulting and
Associates Ltd.; and Mr. Garnet Bailey, Water
Shield.

EXECUTIVE SUMMARY

Alberta Environment and Sustainable Resource Development (AESRD) issued an Approval to Delta Land Co. Inc. (Delta) under the *Water Act* for the construction and maintenance of a marina, beach, and fisheries enhancement works. The marina includes an inland marina in the uplands and a channel connecting the inland marina to Gull Lake. AESRD also issued two water Licences under the *Water Act* to Delta to operate a works and divert water for the purpose of a recreational vehicle resort and irrigation of a golf course at Gull Lake in Lacombe County.

The Gull Lake Water Quality Management Society, Chris Simard, and Rich Thul appealed the issuance of the Approval and Licences and requested a stay.

The Board held a hearing on May 14 and 15, 2013, to hear evidence and arguments on these issues:

1. What are the environmental impacts of the construction and operation of the marina?
2. Will there be unacceptable increases in sediments or erosion as a result of the construction and operation of the marina?
3. Can the aquifer sustain the volume of water allocated?
4. Will drawing water from Well A negatively impact Gull Lake?
5. What will be the impacts on Gull Lake, if any, on using water from Wells B and C?

The Board believes that lake front property that is useable for recreational purposes is a limited resource in Alberta and must be carefully managed. In the circumstances of this case, the marina is being developed in what is likely the most environmentally sensitive area of the lake, and this fact must be taken into account in allowing this development to proceed.

After reviewing and analyzing the record, submissions, and evidence, the Board found there will be environmental impacts resulting from the construction and operation of the marina, including the channel and beach. Although the Board understands most of these impacts will be mitigated by measures that will be taken to minimize erosion and sedimentation, the Board determined the amount of disturbed shoreline resulting from the construction of the channel and beach is more than the amount suggested by Delta and AESRD given the 600 metre berm that will be constructed along the shoreline between the marina and Gull Lake. Therefore, the Board

recommended the Approval be varied to include a condition requiring Delta to provide a revised assessment of the impacts of the development taking into consideration the impacts the berm will have on surface water flows in the area.

The Board also recommended the Approval be amended to include a condition that Delta must retain a licensed surveyor to complete a bathymetric survey of the area of Gull Lake in which the channel will be located and into which it will extend.

Further, the Board recommended the Approval be varied to include a condition requiring Delta to collect baseline data and then submit a plan to AESRD to monitor for any negative impacts to the fisheries, wildlife, vegetation, and soils resulting from the development and any impacts that are identified.

No work should be done on the bed, bank, or shore until the work pursuant to the Board's recommendations, has been approved by AESRD and implemented.

Based on the record, submissions, and evidence, the Board determined that, even though the evidence supported the existence of a hydraulic connection between Well A and Gull Lake, there will be no significant impact to the lake given the amount of water allowed to be withdrawn under the Licence and the sustainable yield of the aquifer from which it is drawn. If Delta requires additional water to sustain this part of the development or any further development, Delta will be required to apply to AESRD for another licence.

The Board found using the water from Wells B and C will not impact Gull Lake. The Board found the evidence did not support the existence of a hydraulic connection between Wells B and C and the lake. Any water used from Wells B and C will be treated to AESRD standards and, therefore, should not be a concern if released into the environment.

Finally, the Board recommended the Licences be amended to correct a clerical error regarding the maximum pump intake depths of the wells.

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I. INTRODUCTION

[1] This is the report and recommendations prepared by the Environmental Appeals Board (the “Board”) with respect to the Sandy Point Resort on Gull Lake in the County of Lacombe. The resort includes a recreational vehicle (“RV”) resort that will have 1,123 RV lots at full build out, an 18-hole golf course, a clubhouse, walking trails, other recreational amenities, and a marina with up to 468 boat slips. The proposed development is to be built in stages with the first stage including 68 RV lots and 156 boat slips in the marina. Full build out could take 25 to 30 years.

[2] Alberta Environment and Sustainable Resource Development (“AESRD”) issued an Approval under the *Water Act*, R.S.A. 2000, c. W-3, for the construction and maintenance of a marina (consisting of an inland marina in the uplands and a channel connecting the inland marina to the lake). AESRD also issued two water Licences to provide potable water for the resort and irrigation water for the golf course.

[3] The Gull Lake Water Quality Management Society (the “Society”), Mr. Chris Simard, and Mr. Rich Thul (collectively, the “Appellants”) appealed the issuance of the Licences and Approval. Mr. Simard and Mr. Thul own properties on the lake near the proposed development, and the Society represents a group of stakeholders, the majority of whom own properties on the lake. The Appellants have concerns with the size of the resort and its impacts on the lake.

[4] The Board believes that lake front property that is useable for recreational purposes is a limited resource in Alberta and must be carefully managed. In the circumstances of this case, the marina is being developed in what is likely the most environmentally sensitive area of the lake, and this fact must be taken into account in allowing this development to proceed.

[5] Having considered all of the evidence and arguments before the Board at the hearing, the Board determined there will be environmental impacts resulting from the construction and operation of the inland marina and channel connecting the inland marina to the lake that have not been properly addressed. Therefore, based on the Board’s review and analysis of the evidence and for the reasons that follow, the Board recommends the Approval and water Licences be varied.

II. BACKGROUND

[6] On August 3, 2012, the Director, Central Region, Operations Division, Alberta Environment and Sustainable Resource Development (the “Director”) issued Approval No. 00292313-00-00 (the “Approval”) to Delta Land Co. Inc. (the “Approval Holder” or “Delta”) under the *Water Act* for the construction and maintenance of a marina, a beach, and a fisheries enhancement works. The Director also issued two licences (collectively, the “Licences”) under the *Water Act* to Delta to operate a works and divert water for the purpose of supplying water to the RV resort and for irrigation of a golf course. Licence No. 0293311-00-00 allows the Approval Holder to divert up to 23,554 m³ of water annually from the well identified as ID 341923 (“Well A”). Licence No. 00293413-00-00 permits the Approval Holder to divert up to 38,725 m³ of water annually from the wells identified as well ID 941922 (“Well B”) and ID 341921 (“Well C”) at NE 01-41-01-W5M.¹

[7] Between September 10 and 14, 2012, the Board received Notices of Appeal from the Appellants appealing the Approval and Licences.

[8] On September 18, 2012, the Board wrote to the Appellants, Approval Holder, and the Director (collectively the “Parties”) acknowledging receipt of the Notices of Appeal and notifying the Approval Holder and Director of the appeals.

[9] On October 23, 2012, the Board notified the Parties that, after consultation with the Parties, a mediation meeting would be held on December 4, 2012. On November 14, 2012, the Director requested an adjournment of the mediation meeting due to delays in preparing the Director’s record. The Board granted the request.

[10] On December 14, 2012, the Board notified the Parties that based on the dates provided by the Parties; the mediation meeting was rescheduled to April 16, 2013.

[11] On December 13, 2013, the Board received a request for a stay from Mr. Thul and the Society. The Appellants were asked to provide a response to the stay questions.² On December 19, 2012, the Board received the response to the stay questions from the Appellants.

¹ Well A, Well B, and Well C are collectively referred to as the “Wells”.

² Mr. Thul and the Society were asked to respond to the following questions:

1. What are the serious concerns of the Appellants that should be heard by the Board?

[12] On December 20, 2012, the Board granted a temporary stay pending receiving submissions from all of the Parties. Under the temporary stay, the Approval Holder was prohibited from conducting any work or activities on the bed, bank, and shore and in the waters of Gull Lake, including but not limited to: (1) the building of a boat launch in the lake; (2) the excavation of the channel; (3) the stripping of the shoreline to create a beach; and (4) no materials of any kind were to be placed on the bed, bank, or shore of the lake. The Board requested the Approval Holder and Director respond to the stay questions.

[13] On January 9 and 11, 2012, the Board received comments from the Director and Approval Holder, respectively, regarding the stay application and the directly affected status of the Appellants. The Appellants did not provide a rebuttal submission.

[14] The Board received the Director's record (the "Record") on January 9, 2013. A copy was provided to the Appellants and Approval Holder.

[15] On January 22, 2013, the Board asked the Appellants to provide additional information on how the Appellants are directly affected. The Appellants provided their supplemental submission on January 24, 2013. The Director and Approval Holder responded on January 25 and 28, 2013, respectively.

[16] Since a temporary stay was in place, the April 16, 2013 mediation meeting was held via telephone on January 24 and 25, 2013. No resolution was reached.

[17] The Board notified the Parties on January 31, 2013, that the stay would remain in place under the same conditions specified on December 20, 2012. In this letter, the Board also notified the Parties that the Appellants are directly affected.

[18] The hearing of the appeals was set for February 25, 2013.

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2. Would the Appellants suffer irreparable harm if the stay is refused?
 3. Would the Appellants suffer greater harm if the stay was refused pending a decision of the Board, than Delta Land would suffer from the granting of a stay?
 4. Would the overall public interest warrant a stay?
 5. Are the Appellants directly affected by the Approvals and Licences? This question is asked because the Board can only grant a stay where it is requested by someone who is directly affected.

[19] On February 4, 2013, the Board asked the Parties to provide comments regarding the issues the Board identified as being within the Board's jurisdiction and those issues that were not properly before the Board. Comments were received from the Parties on February 6 and 7, 2013.

[20] The Board published the Notice of Hearing in the Lacombe Globe, Red Deer Advocate, and Central Alberta Life. The Board also provided a copy of the Notice of Hearing to the Summer Village of Gull Lake and Lacombe County to place on their public bulletin board or website, and it was placed on the Government of Alberta and Board websites. The Board did not receive any intervenor requests.

[21] On February 7, 2013, the Approval Holder requested the Board hear arguments on lifting the stay.

[22] In response to the request, on February 8, 2013, the Board notified the Parties the hearing set for February 25, 2013, would not be a hearing on the merits. The Board was concerned some of the Parties may not have sufficient time to prepare full and proper submissions on all of the issues in time for the hearing. Instead, the Board set a preliminary motions hearing to hear submissions on the issues for the hearing on the merits and to address the Approval Holder's application to lift the stay.

[23] On February 21, 2013, the Board notified the Parties the hearing on the merits would be held on May 14 and 15, 2013.

[24] The Board held a preliminary motions hearing on February 25, 2013, to hear evidence and arguments on whether the stay should be lifted and what issues should be considered for the hearing on the merits.

[25] The Board notified the Parties on March 5, 2013, that the application to lift the stay was dismissed with reasons to follow, and that the stay would remain in place until the Minister issued her order in this matter or the Board ordered otherwise. The reasons were provided to the Parties on March 28, 2013.³

³ See: Stay and Issues Decision: *Gull Lake Water Quality Management Society et al. v. Director, Central Region, Operations Division, Alberta Environment and Sustainable Resource Development*, re: *Delta Land Co. Inc.* (28 March 2013), Appeal Nos. 12-019-030-ID2 (A.E.A.B.).

[26] The Board notified the Parties that the issues for the hearing on the merits would be:

1. What are the environmental impacts of the construction and operation of the marina?
2. Will there be unacceptable increases in sediments or erosion as a result of the construction and operation of the marina?
3. Can the aquifer sustain the volume of water allocated?
4. Will drawing water from Well A negatively impact Gull Lake?
5. What will be the impacts on Gull Lake, if any, on using water from Wells B and C?

[27] The Board received submissions on the issues from the Parties between April 19 and May 3, 2013.

[28] The substantive hearing was held on May 14 and 15, 2013, in Edmonton.

III. IMPACTS OF MARINA

A. Submissions

1. Appellants

[29] The Appellants submitted the Board must consider the cumulative effects of the Licences and Approval, and if the Approval and Licences are not reversed, there will be serious risk of damage to Gull Lake and the surrounding environment. The Appellants explained they are not opposed to future development on Gull Lake, but the development must be proven, in advance, to be sustainable and not detrimental to Gull Lake and the surrounding environment.

[30] The Appellants argued the Approval Holder failed to provide sufficient information to the Director to justify the issuance of the Approval and Licences, and therefore, the Approval and Licences should be revoked. The Appellants said the Approval Holder could reapply with the proper supporting evidence. The Appellants explained their appeals are supported by three of the four municipalities that border Gull Lake, specifically the Summer Village of Parkland Beach, the Summer Village of Gull Lake, and Ponoka County.

[31] The Appellants explained there are approximately 2,300 residential dwelling units around Gull Lake. The Appellants said the development will add 1,125 RV units, increasing the number of dwellings around Gull Lake by 50 percent, and will increase the number of boat spaces in marinas on the lake by 100 percent. The development will be the largest and most dense residential development on Gull Lake.

[32] The Appellants said the development is proposed for an area of Gull Lake that has been determined to be environmentally sensitive and deserving of protection. The area was designated as "Restricted Shoreline" in the Gull Lake Management Plan 2000 Update which corresponded to the designation of "Critical Fish and Waterfowl Habitats" in the 1979 Gull Lake Management Plan and "Critical Waterfowl Area" in the 2010 Gull Lake Integrated Development Plan ("IDP").⁴

[33] The Appellants listed the potential impacts of the marina on Gull Lake, including:

1. increased sedimentation and nutrient inflow by the reduction of the natural accreted land buffer around the lake;
2. removal of riparian and aquatic vegetation from the existing buffer; and
3. a substantial increase in boat traffic.

[34] The Appellants said these impacts could move the lake towards eutrophication which can cause fish kills and limit recreation. The Appellants explained removal of riparian vegetation allows nutrient rich runoff from agriculture, yards, and golf courses to reach the lake, and removal of aquatic vegetation reduces nutrient removal and habitat for organisms that feed on algae. The Appellants said increased boat traffic stirs up bottom sediments rich in nutrients and increases turbidity, which favours algae growth.

[35] The Appellants explained the accreted land that rings the lake provides a buffer for preventing nutrient runoff into the lake. The Appellants said the construction of the inland marina and channel will degrade the ability of the buffer to protect the lake in this sensitive area. The Appellants noted the IDP found the accreted land is attractive for waterfowl and wildlife and is a vital part of the lake environment.

⁴ See: Gull Lake Management Plan 2000 Update in Appellants' submission, dated April 19, 2013, at Tab 2; Gull Lake Management Plan in Appellants' submission, dated April 19, 2013, at Tab 1; and IDP in Director's Record at Tab 237.

[36] The Appellants argued the accreted lands should have been considered by the Director in issuing the Approval and Licences.

[37] The Appellants stated the construction, maintenance, and use of the marina may cause considerable loss of and disturbance to fish and wildlife habitat. The Appellants said the biological diversity, habitat use, and mitigation measures of the site needed to be considered.

[38] The Appellants explained Gull Lake has a uniquely biodiverse ecosystem because it is located within the boreal forest and parkland natural regions and within two bird conservation regions, the prairie pothole and boreal taiga plains. The Appellants stated the development is located in a critical fish spawning area, a critical waterfowl area, pelican loafing area, continuous emergent vegetation bands, and upland wildlife habitat. The Appellants noted the area was designated a Restricted Development and Activity Area to protect spawning sites for fish species.

[39] The Appellants said the use of the habitats is largely unknown due to the limited availability of current data. The Appellants stated that, based on the available data, the marina will negatively impact biological diversity, habitat use, and wildlife migration by causing the loss of and disturbance to the use of fish and wildlife habitat.

[40] The Appellants recommended a wildlife study be completed and a more current survey for birds be completed during the April to July 15 period to determine the presence and absence of shorebirds, waterfowl, and species at risk. They stated these studies are necessary to determine the impact of the marina prior to any construction and certainly before the inland marina is connected to the lake and used.

[41] The Appellants stated Gull Lake is subject to significant water level fluctuations, and noted that between 1977 and 2012, water levels were near the all time low level (898.45 metres above sea level) 10 times. The Appellants noted the inland marina and the centre of the channel will be at a depth of 897.54 metres above sea level. The Appellants said the water level in other marinas around Gull Lake is generally one metre deeper. The Appellants stated that if the lake level falls to 2003 to 2006 levels, there would be less than one metre of water in the inland marina and the centre of the channel, which is barely enough to allow passage of certain boats. The Appellants argued the design of the inland marina and channel did not account for

periodic low water levels in the lake or the high likelihood of several millimeters of silting per year. The Appellants stated the inland marina and channel would need far more frequent dredging than the Approval Holder proposes and may be unusable in certain years.

[42] The Appellants stated that if the water level falls to 2003 and 2006 levels, it will be difficult for two medium size boats to pass each other in the channel. The Appellants said the propellers of two passing boats would likely contact the channel bottom, causing sediment to be stirred up and probably cause physical damage.

[43] The Appellants noted that, even though the channel drawings call for the channel to be 165 metres long, no bathymetric drawing was provided which shows the actual channel design with width, depth, and end point in the lake. The Appellants said a proper drawing is required to determine if the channel design can be revised to take into account water levels, but that would require more than deepening the channel since any deepening would result in substantial widening which will impact fish and wildlife habitat.

[44] The Appellants noted the Director is expressly authorized to consider cumulative effects. The Appellants submitted it is important the Approval and Licences be considered in the context of their cumulative effects on the environment, Gull Lake, and local residents, including those in the development. The Appellants said the Director did not take such a broad, contextual approach.

[45] The Appellants argued the Approval should be reversed for the following reasons:

1. it is not known whether the inland marina and channel can be used on a sustainable basis; and
2. the impact of the inland marina and channel and consequent increased boat usage in that area on wildlife, the lakebed, and lake chemistry.

[46] The Appellants stated the Director only considered the narrow, technical application requirements in isolation of the cumulative effects. This approach does not serve the public interest and is not environmentally sound.

[47] The Appellants submitted that, on the basis of the precautionary principle, it is necessary to consider the impact and sustainability of the development at full build out. The Appellants argued there was no evidence the precautionary principle approach was followed in

granting the Approval and Licences. The Appellants argued that, if the development is allowed to proceed, irreversible damage may result, and if the available water supply is insufficient, needless damage to the ecosystem will have occurred.

[48] The Appellants requested the Board recommend the Approval be reversed, and any reapplication made by the Approval Holder for similar approvals must include specific studies, data, and evidence to allow cumulative effects be considered, including the impact and sustainability of the development at full build out.

2. Approval Holder

[49] The Approval Holder explained it worked with all required regulatory agencies for four years and modified the design of the development to ensure the final plan met or exceeded the regulations governing development at Gull Lake. The Approval Holder stated that, if the Director was not satisfied with the technical data submitted, he would not have issued the Approval and Licences.

[50] The Approval Holder noted Ponoka County passed a resolution at its April 23, 2013 meeting confirming it was taking no position in the appeals.

[51] The Approval Holder stated Lacombe County addressed the issue of density of the RV resort during the rezoning process, and it noted the majority of the owners will use the lots for seasonal purposes, not as permanent dwellings.

[52] The Approval Holder said the development is exempt from meeting all of the criteria in the 2010 IDP because it had already received first reading in the rezoning process before the IDP was implemented, but it is subject to the guidelines set out in the 2000 Gull Lake Management Plan.

[53] The Approval Holder stated that while various management plans created over the years categorized areas of the lake as "Restricted Shoreline" or "Critical Fish and Waterfowl Habitats," it was unaware of any legislation containing such designations. The Approval Holder said it held countless meetings with representatives of all governing agencies regarding the marina and beach, and as a result, the project evolved from two marinas with two or three entrance channels to the lake to a smaller marina with one entrance, thereby minimizing

shoreline destruction. The Approval Holder said the marina is located in an area with the least amount of impact on the lake, and the beach (241 metres wide) and the channel (30 metres wide) are the only disruptions on the 4,600-metre shoreline bordering Sandy Point. The remaining 4,300 metres of shoreline will be retained as an environmental reserve and will include a large section of sedge meadow and known pelican loafing areas.

[54] The Approval Holder stated 90 percent of the existing vegetated shoreline adjacent to the development will be maintained in its natural state in order to limit sediment and nutrients entering the lake. In addition, the RV lots and golf course will be located above the 1:100 year flood level. The Approval Holder said appropriate sedimentation and erosion control measures will be used during construction activities to prevent negative impacts.

[55] The Approval Holder explained the Federal Department of Fisheries and Oceans (the "DFO") authorization pursuant to the *Fisheries Act*, R.S.C. 1985, c. F-14, addressed the compensation for the harmful alteration, disruption, or destruction ("HADD") of fish habitat.

[56] The Approval Holder said the requirement for an additional boat use survey for Phase 3 of the inland marina will be used to evaluate the boat use capacity that is sustainable on Gull Lake.

[57] The Approval Holder explained a storm water management plan has been designed and approved by the Director that will control and condition the water flow entering Gull Lake to make sure it meets or exceeds AESRD specifications.

[58] The Approval Holder stated the development of the marina was evaluated through the DFO regulatory review process, and the construction, operation, and maintenance of the marina was deemed not to be a HADD due to the mitigation and design features incorporated into the marina. The Approval Holder acknowledged the construction of the channel and beach was deemed to be a disruption to fish habitat, but the disruption will be compensated for as required under the DFO authorization.

[59] The Approval Holder said the shoreline of the development is located in a restricted activity area, and as a result, it obtained approvals under the *Public Lands Act*, R.S.A. 2000, c. P-40 and *Water Act* to modify the shoreline and remove aquatic vegetation. The

Approval Holder said it worked with AESRD to ensure the aquatic and riparian footprint of the development was environmentally responsible and sustainable.

[60] The Approval Holder explained the channel from the inland marina to the lake was based on a geodetic elevation of 895.50, and based on that lake elevation, a minimum water depth of 1.20 metres was obtained, which is sufficient to provide safe passage for two standard size vessels. The Approval Holder stated the target water elevation used was 898.80, because it represented the most significant average lake elevation. Although the drawings provided with the application indicated the base of the marina and inlet were to be constructed to geodetic 897.54, the Approval requires the inland marina and channel be excavated to 897.30.

[61] The Approval Holder stated the environmental reserve will lessen the negative impacts of the marina. The Approval Holder stated a vegetated riparian buffer between the lake and the development will be maintained to limit migration of sediment and nutrients into the lake. Further, a 30-metre wide riparian buffer will be maintained on the shoreline except at the beach and the channel. The Approval Holder stated the remaining 4,230 metres of shoreline will be maintained in a natural state and will be designated an environmental reserve with a prohibition on the use of motorized vehicles. The Approval Holder stated the appropriate sediment and erosion control measures will be used during construction to prevent mobilization of sediment.

[62] The Approval Holder explained that, prior to the commencement of the third phase of the marina construction, Lacombe County requires an additional boat use survey be performed as well as an additional environmental study to ensure the lake can support the additional boats.

[63] The Approval Holder explained the fish habitat compensation under the DFO authorization involves the installation and year round operation of an aeration system in the inland marina and the planting of aquatic vegetation on a submerged ledge within the channel and inland marina. The vegetation is to offset the removal of aquatic vegetation during construction and operation of the inland marina, access channel, and beach. The Approval Holder noted the DFO authorization outlines the monitoring and reporting of the fish habitat compensation that is required.

[64] The Approval Holder acknowledged the possibility of overland runoff entering the lake as a potential environmental impact. The Approval Holder said a storm water management plan had been designed and approved, and the plan includes facilities to redirect water flow from entering the lake, thus reducing the potential for overland flow to deposit sediment and nutrients into the lake. The Approval Holder explained the vegetation buffer surrounding the development will reduce the potential for runoff from the development entering the lake and causing adverse impacts. The Approval Holder stated sediment and erosion control measures will be in place to mitigate the potential for sediment migrating into the lake.

[65] The Approval Holder explained the channel will facilitate the movement of boats from the inland marina to the deeper areas of the lake, thereby diminishing the disturbance to the surrounding lakebed. The Approval Holder said the boundaries of the channel will be marked to ensure boat traffic uses the constructed channel.

[66] The Approval Holder explained the inland marina will be excavated where there was no fish habitat and it will add useable fish habitat after it is completed. The Approval Holder said the inland marina will only be constructed under dry conditions (i.e. in the winter) and will be connected to the lake after it is completed and stabilized. The Approval Holder stated the design of the inland marina and the sequence of construction will reduce the amount of sediment deposition and disturbance to fish habitat in the lake after the inland marina is connected to the lake.

[67] The Approval Holder explained the disruption that will occur during excavation of the channel will be temporary, and after construction, the channel will be useable, deep-water fish habitat in an otherwise shallow bay. The Approval Holder stated the addition of deep-water fish habitat may increase the productive capacity and biological diversity of the localized aquatic area.

[68] The Approval Holder explained that, during construction of the ingress/egress channel, mitigation measures will be used to reduce the disturbance to fish and fish habitat, including:

1. the channel will be constructed in winter under frozen conditions to reduce the potential of mobilization of sediment outside the work area;

2. a turbidity curtain will be installed prior to excavation to isolate the in-water construction area; and
3. a turbidity monitoring program will allow for adjustments in construction or containment techniques to mitigate a potential release of sediment.

[69] The Approval Holder said the channel is located where open water fish spawning is unlikely to occur, and species-specific mitigation strategies have been implemented. The Approval Holder stated that fish eggs would not be expected in the area of the excavation during winter.

[70] The Approval Holder stated the inland marina was designed to limit the aquatic footprint and prevent HADD to fish habitat, and the channel will confine boat traffic and the associated disturbance to the constructed channel, alleviating disturbance to adjacent aquatic habitat and lakebed.

3. Director

[71] The Director acknowledged there will be some environmental impacts from the development of the inland marina, beach, channel, and fisheries enhancement. He believed the impacts could be mitigated through land use zoning, restrictions on development, protection offered by Crown owned lands, terms and conditions of the Approval and DFO authorization, and other legislative mechanisms.

[72] The Director was satisfied any increases in sedimentation or erosion could be prevented or minimized given the location of the inland marina and channel, retaining most of the undeveloped shoreline, and through the terms and conditions of the Approval and the DFO authorization.

[73] The Director noted the changes in the project resulted from the AESRD regulatory review and approval process, public input, and other regulatory processes with Lacombe County, Transport Canada, and DFO.

[74] The Director noted the Approval allows for:

1. one inland marina with 525 boat slips adjacent to the southeast facing shoreline of the Approval Holder's property;

2. one 30 metre wide by 165 metre long inlet channel from the inland marina to Gull Lake and crossing over the bed and shore of the southeast facing shoreline; and
3. one public beach, 240 metres long by 75 metres wide.

[75] The Director explained he considered the reports provided by the Approval Holder that identified the anticipated environmental impacts and the proposed mitigation measures. The Director noted the reports indicated the potential impacts would be to the shoreline of Gull Lake, the sedge meadow habitat, fish habitat in the lake, soil erosion and compaction, loss of fish and bird habitat, increased sedimentation to the lake, and contaminants entering the lake from equipment during construction or from boats using the marina.

[76] The Director believed the following measures would adequately mitigate the impacts:

1. protection provided by the environmental reserve, municipal reserve, and Crown lands for sensitive vegetation, birds, wildlife, and fish;
2. requirements of the Approval and DFO authorization to prevent and reduce impacts to fish and fish habitat, including habitat compensation required by DFO; and
3. conditions in the Approval and provincial legislation that protect water quality.

[77] The Director said the inland marina is entirely located off the bed and shore of Gull Lake except for the inlet channel that cuts across the shoreline and a berm separating the Approval Holder's lands and the shoreline area. The Director noted Lacombe County required a 30 metre vegetated buffer as environmental reserve along the shoreline adjacent to the Approval Holder's property. The Director stated that, pursuant to sections 664 and 671 of the *Municipal Government Act*, R.S.A. 2000, c. M-26, Lacombe County has the authority to create the environmental reserve, and the environmental reserve must remain in its natural state.⁵

⁵ Section 664 of the *Municipal Government Act* states:

- “(1) Subject to section 663, a subdivision authority may require the owner of a parcel of land that is the subject of a proposed subdivision to provide part of that parcel of land as environmental reserve if it consists of ...
- (c) a strip of land, not less than 6 metres in width, abutting the bed and shore of any lake, river, stream or other body of water for the purpose of

[78] The Director said the most representative portion of sedge meadow habitat will be contained in the environmental reserve along with large portions of sedge meadow elsewhere along the shoreline. The Director said the environmental reserve will have no development except for walking trails, which will: (1) prevent erosion and compaction; (2) reduce sedimentation to the lake; (3) maintain habitat for fish, waterfowl, and shorebirds; and (4) maintain emergent aquatic vegetation along the shoreline for fish and birds.

[79] The Director explained the public beach, created under sections 666 and 671 of the *Municipal Government Act*, is on municipal reserve lands and is to be used for public recreational purposes.⁶

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- (i) preventing pollution, or
 - (ii) providing public access to and beside the bed and shore.
- (2) If the owner of a parcel of land that is the subject of a proposed subdivision and the municipality agree that any or all of the land that is to be taken as environmental reserve is instead to be the subject of an environmental reserve easement for the protection and enhancement of the environment, an easement may be registered against the land in favour of the municipality at a land titles office.
- (3) The environmental reserve easement
- (a) must identify which part of the parcel of land the easement applies to,
 - (b) must require that land that is subject to the easement remain in a natural state as if it were owned by the municipality, whether or not the municipality has an interest in land that would be benefitted by the easement,
 - (c) runs with the land on any disposition of the land,
 - (d) constitutes an interest in land in the municipality, and
 - (e) may be enforced by the municipality.”

Section 671 of the *Municipal Government Act* provides:

- “(1) Subject to section 676(1), environmental reserve must be left in its natural state or be used as a public park.”

⁶ Section 666 of the *Municipal Government Act* states:

- “(1) Subject to section 663, a subdivision authority may require the owner of a parcel of land that is the subject of a proposed subdivision
- (a) to provide part of that parcel of land as municipal reserve, school reserve or municipal and school reserve,
 - (b) to provide money in place of municipal reserve, school reserve or municipal and school reserve, or
 - (c) to provide any combination of land or money referred to in clauses (a) and (b).”

Section 671(2) of the *Municipal Government Act* provides:

- “(2) Municipal reserve, school reserve or municipal and school reserve may be used by a municipality or school board or by them jointly only for any or all of the following purposes:
- (a) a public park;

[80] The Director said there are two parcels of Crown land adjacent to the environmental reserve, Sandy Point and an unnamed peninsula south of Sandy Point. The Director explained the main pelican loafing area is on the rocky shoreline of Sandy Point. The Director noted that no development is permitted on the Crown lands without authorization under the *Public Lands Act*, R.S.A. 2000, c. P-40.

[81] The Director noted the fish habitat assessment identified the primary impacts of the marina on fish habitat would be from the release of sediments and toxic substances and from the removal of fish habitat by the construction and development of the inland marina, channel, and beach. The Director considered the fisheries impacts would be restricted to an area of 30 metres by 165 metres during construction of the channel, and the majority of the fish impacts would be concentrated closer to the shoreline.

[82] The Director said the total area of shoreline disturbed by the 30-metre wide channel and 240-metre beach is approximately six percent of the total shoreline in the area.

[83] The Director stated the AESRD fisheries biologist had no specific concerns with the project but recommended the Director add the standard terms and conditions to the Approval that would protect fisheries habitat and restrict the activity period for in-water work to periods when fish were not spawning. The Director was aware the Approval Holder was required to obtain an authorization from DFO, which would include its own terms and conditions. DFO has the primary jurisdiction over fish and fish habitat under the *Fisheries Act*. The Director noted the various terms and conditions in the Approval that would protect or mitigate anticipated environmental impacts to fish and fish habitat, and he was satisfied the conditions in the DFO authorization would minimize and compensate for any impacts to fish habitat. The Director noted that where impacts to fish and fish habitat cannot be mitigated to meet the “no net loss,” DFO requires compensation, including the construction of a submerged aquatic shelf habitat, installation of aquatic vegetation plugs throughout the submerged aquatic shelf and side slopes, and installation and operation of an aeration system.

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- (b) a public recreation area;
 - (c) school board purposes;
 - (d) to separate areas of land that are used for different purposes....”

[84] The Director believed the conditions in the Approval and DFO authorization are complimentary to one another and provide adequate protection for fish and fish habitat, and any potential adverse effects from the inland marina, channel, and beach were adequately mitigated through the various regulatory requirements.

[85] The Director noted the environmental review report provided by Ecomark on behalf of the Approval Holder detailed the impacts the inland marina would have to the sedge meadows and shoreline, including the removal of valuable nesting and feeding habitat for birds. The AESRD wildlife biologist reviewed the application and recommended that updated bird surveys be conducted. The Director explained that, in response to his requests for additional information, the Approval Holder submitted a further report to address the concerns. The Director accepted the supplemental wildlife report and found the deficiency noted by the AESRD wildlife biologist was satisfied. The Director also explained that he was satisfied that the combination of the environmental reserve, the land use zoning, and restrictions on the environmental reserve, municipal reserve, and Crown lands, would adequately mitigate any impacts to wildlife.

[86] The Director explained he included terms and conditions in the Approval to protect the water quality of Gull Lake from contaminants being released by activities at the marina or spills from boats. The Director explained that any spills into the lake or inland marina would be dealt with under EPEA or the *Fisheries Act*. The Director noted the Approval Holder indicated various rules for the marina that would reduce impacts from boats, including no wake zones and speed limits.

[87] The Director acknowledged there would be environmental impacts from the inland marina, channel, and beach, but he believed the impacts could be mitigated through land use zoning and development restrictions, Crown ownership of adjacent lands, terms and conditions of the Approval and DFO authorization, and other legislative and regulatory controls regarding protection of water quality.

[88] The Director acknowledged erosion and sedimentation may occur as a result of the construction and operation of the marina thereby impacting fish and fish habitat. The Director believed any increases in sediments or erosion from construction and operation of the

marina will be adequately mitigated by: (1) location and design of the inland marina; (2) design of the channel and dredging frequency; (3) construction methods and post-construction revegetation; and (4) terms and conditions of the Approval and DFO authorization.

[89] The Director said the marina: (1) does not disturb any of the bed or shore except for the 30-metre wide channel; and (2) is protected from the prevailing northwest winds and wave action. The Director added the sites selected for shoreline disturbances were away from the highly erodible sandy areas south of Sandy Point.

[90] The Director stated the environmental reserve would provide a vegetated buffer that protects the majority of the shoreline adjacent to the Approval Holder's property. The environmental reserve will protect against soil compaction and erosion on the shoreline and sedimentation entering the lake.

[91] The Director explained the channel design is for dredging at a geodetic elevation of 897.30 metres, which is within a reasonable range for other inland marinas at Gull Lake. The Director said that redredging the channel approximately every five years is also reasonable.

[92] The Director explained he considered the information obtained from the Water Survey of Canada for Gull Lake, which indicated the average monthly low water level at Gull Lake is an elevation of 898.5 metres. The Director said that, based on the proposed inlet channel design depth of 897.30 metres, there would be approximately 1.2 metres depth of water for boat passage if the average monthly low water level is reached.

[93] The Director believed the channel depth elevation combined with the proposed operating rules for the marina, such as the no-wake zone and low speed limits, would reduce the potential for resuspension of sediments from the operation of the boats and, therefore, the channel depth was sufficient to prevent erosion and sedimentation.

[94] The Director explained he did not review the channel design to assess the adequacy of the width for boat traffic, because that is not within his jurisdiction under the *Water Act*.

[95] The Director did not agree with the Appellants' argument that an updated bathymetric survey was required, because a site-specific survey was used by the Approval Holder to determine the impact of the channel.

[96] The Director said the Approval Holder developed an erosion and sediment control plan for the construction of the marina and channel. The plan included:

1. silt fencing to control silt movement around the construction site;
2. silt fencing around stockpiles;
3. excess silt in fences would be cleaned out;
4. rip rap would be cleaned prior to placement;
5. discharge water from the construction site would be directed away from the lake and into contained areas to dissipate energy before flowing back toward the lake.

[97] The Director noted there are terms and conditions in the Approval that address erosion and sedimentation. The Director said the DFO authorization requires dredging of the channel be done during frozen ground conditions, thereby reducing the amount of sedimentation that would be released during construction. The Director explained silt curtains and other measures will be used to ensure impacts are prevented or minimized.

4. Rebuttal Submissions

[98] The Appellants argued the approach taken by the Director in issuing the Approval and Licences was extremely technical and narrow and does not properly take into account cumulative effects and the precautionary principle. The Appellants said the narrow approach is inappropriate in this case and contrary to the public interest, because the environmental issues are inextricably intertwined. The Appellants stated it is impossible to consider the risk of sedimentation and erosion without considering runoff into the lake, destruction of riparian wetlands, and the marina design. The Appellants recognized the issues of water treatment and the wastewater treatment plant are not before the Board, but they argued some evidence on those matters is necessary for context and to determine the cumulative impacts of the Licences. The Appellants said focusing only on whether the aquifer can sustain the volume of water authorized without considering the quality of water would be irresponsible.

[99] The Appellants submitted the corrections, amendments, and additions to the Record demonstrated that, at the time the Approval and Licences were issued, the Approval Holder had provided insufficient information, and the Director did not have an adequate basis on

which to grant the Approval and Licences. The Appellants said there is still insufficient information to allow the Approval and Licences to stand.

[100] The Appellants noted the Director admitted the construction and operation of the marina will detrimentally impact the environment, but he was satisfied because of the mitigating factors.

[101] The Appellants said the environmental reserve was depicted as a narrow 30-metre strip of land between the inland marina and the lake, widening at the south end of the development southwest of the marina, but along the majority of its length the Approval Holder will be constructing a 1.8-metre high berm. The Appellants said the berm will cut off the lake from the contiguous, flat riparian area adjoining the lake. The Appellants stated there will be a decreased capacity of the riparian land to filter surface runoff into the lake. They noted it is not possible to restore riparian vegetation on top of a berm, and the land behind the berm will no longer be a wetland.

[102] The Appellants noted the berm will be built on the lake ward side of the marina and on the landside of the inland marina, but no drawings or plans were provided by the Approval Holder that indicated the extent of the berm. The Appellants stated that much of the riparian accrued land will be covered with up to two metres of fill, but it is not clear which areas will be covered.

[103] The Appellants argued that, given that environmental reserve lands are to be left in their natural state, by constructing the berm the Approval Holder is contravening the *Municipal Government Act*.

[104] The Appellants noted the Record shows the Approval Holder failed to comply with the Director's request for wildlife studies, and rather than forcing the Approval Holder to comply, the Director granted the Approval in the absence of the evidence his specialist said was necessary. The Appellants referred to a letter provided to the Director by the Approval Holder in response to the Director's request for a new bird survey. The letter, dated January 2, 2012, stated:

“Under the Migratory Birds Convention Act, nests containing young cannot be disturbed and the construction plans reflect that. In addition, the Environmental Reserve areas protect the most critical waterfowl and water bird habitat.”

[105] The Appellants argued it was inconceivable how the Director could have concluded that two sentences in a letter constituted the updated bird survey required by the AESRD wildlife biologist.

[106] The Appellants noted the southern portion of the shoreline where the inland marina and channel are to be located provides high quality spawning habitat for fish species, and the area may support more species than the northern area.

[107] The Appellants said the exact location of the pelican loafing area cannot be determined without the updated bird study that the Director requested but was not provided by the Approval Holder. The Appellants stated:

1. the area has been used by a variety of sensitive bird species;
2. many of the bird species in the area are less resilient to the effects of habitat removal, excessive noise, or direct interruption of nesting activities;
3. the area will no longer be a pelican loafing area;
4. tree clearing has not been selective as “promised” by the Approval Holder but appears to be more like clear cutting; and
5. the development poses risks to wildlife and wildlife habitat that has not been addressed.

[108] The Appellants stated the compensation for disturbing fish habitat is not sufficient, there is no long term monitoring in place, and the studies completed by the Approval Holder did not adequately assess the likelihood that fish spawning takes place in the area where the channel will be constructed.

[109] The Appellants said there is no evidence the Approval Holder provided the data regarding sedimentation despite the Director’s staff identifying this as a problem. The Appellants noted the Director warned the Approval Holder that the information was required in order to continue processing the applications, and even though the Approval Holder replied with a single paragraph in a letter dated December 21, 2011, it appeared the Director was satisfied and the Approval was issued.⁷

⁷ See: Director’s Record at Tab 48, page ABJ000408, in a letter sent on behalf of the Approval Holder to the Director:

[110] The Appellants submitted the Approval Holder failed to prove the inland marina, channel, and berm would not have detrimental impacts due to sedimentation and erosion, but the replacement of flat riparian terrain with a 1.8 metre berm will create negative impacts including:

1. erosion of the berm will be greater than from a flat wetland;
2. local erosion and deposition patterns will be altered;
3. vegetation on the berm cannot be riparian vegetation as existed pre-construction; and
4. wildlife will no longer inhabit the area.

[111] The Appellants argued the Approval was issued without knowing the long-term impacts of the development on sedimentation and erosion. The Appellants said it appeared the Director only considered channel depth and dredging and the fact the marina is located in a bay when assessing sedimentation and erosion.

[112] The Appellants noted the Director explained he relied on the Environmental Construction Operations (ECO) Plan to ensure sedimentation would not increase during construction of the marina. The Appellants said the ECO Plan was prepared on December 27, 2012, long after the Approval was issued. Therefore, it could not have been relied on by the Director when he issued the Approval in August 2012.

[113] The Appellants noted the Approval does not specify a required depth for the channel, only that it is to be constructed according to specific plans and reports. The Appellants said there are varying depths for the marina and channel on the drawings. However, based on the view that a reasonable low water level for Gull Lake is 898.5 metres, there would only be between 0.75 and 1.2 metres of water between the lakebed and water surface depending on whether the channel depth is 897.75 metres or 897.3 metres. The Appellants said this would not be deep enough for modern boats and would likely result in lake bed disturbance.

“The new marina inlet and lake shore berm has [*sic*] been equipped with 152 mm minus rip material which is to be under [*sic*] lain with a HDPE 20 mil poly liner material in all situations. The completion of this detail and requiring the developer to aggressively vegetate the southern lakeshore berm area with plant life will substantially reduce the potential for new lakeshore erosion. Based on a preliminary lake inlet survey it has been concluded that the proposed inlet and marina berm development will not adversely affect deposition patterns of the lake bottom material near to it.”

[114] The Appellants noted the Approval Holder did not provide any evidence to support the statement that the channel will be 139 metres long, and no bathymetric drawing of the area around the channel was ever provided. According to the Appellants, the channel will have to extend approximately 288 metres into the lake, assuming a channel depth of 897.5 metres, and a channel with a depth of 897.3 metres would have to be even longer.

[115] The Appellants submitted the Approval was issued without the Director knowing the full impacts of the inland marina and channel on erosion, sedimentation, and the lakebed.

B. The Board's Analysis

1. Marina Design and Shoreline Development

[116] In its submission and during its evidence, the Approval Holder explained how the project has changed from its initial conception to what was actually approved. The fact the Approval Holder reduced the size of its development from 2,981 lots, two inland marinas with five channels to the lake, and a large public beach to 1,125 lots with a single, 468-slip inland marina and only one channel demonstrates mitigation measures were developed for the project to which the Approval and Licences apply. The changes were made as a result of consultation with DFO, AESRD, local municipalities, and the public.

[117] The Approval Holder and Director stated that only six percent of the shoreline along the development will be impacted. This value was calculated by using the width of the channel (30 metres) and the width of the beach (241 metres) and comparing it to the full length of the shoreline in the area. However, in looking at the design of the project, there is more shoreline that will be impacted. The Approval Holder and Director stated the environmental reserve that protects the shoreline is a significant mitigating feature of the project. The marina berm is being constructed between the inland marina and the environmental reserve. Currently the marina berm is 600 metres long. Although the argument was raised that the berm is not built on the environmental reserve and, therefore, it will not impact the reserve, the Board questions as to whether that is an accurate reflection of the true disturbance of the shoreline. There is a second berm on the west side of the marina, which the Director referred to as the storm water berm. This berm has a series of eight-inch culverts running through it to allow water to flow

from the storm water pond to the environmental reserve. Both of these berms will alter the flow of the water through the environmental reserve and could impact the vegetation that currently exists. Although the Director stated the moisture for the vegetation comes from the subsurface, surface water flows also impact the growth and establishment of plant communities. There were also areas of aspen along the storm water berm indicating areas with less subsurface moisture and areas that rely on surface moisture.

[118] The Board recognizes the storm water berm is not part of the Approval or Licences under appeal. It is a part of the storm water management plan that operates under a Registration. However, as stated, the environmental reserve is a significant mitigation feature of the project and this berm will impact the vegetation on either side of it, including the environmental reserve. It is holding back water, thereby impacting vegetation on the storage side, and there is a strong likelihood the vegetation in the environmental reserve will be impacted due to changes in surface water flows. When you take the full length of the storm water berm into account as well as the beach area, the Board has concluded the amount of shoreline that is actually disturbed is closer to 20 percent of the total project shoreline.

[119] The extent of the disturbance of the shoreline is a significant concern for the Board, because lake front property that is useable for recreational purposes is a limited resource in Alberta and must be carefully managed. In the circumstances of this case, the marina is being developed in what is likely the most environmentally sensitive area of the lake, and this fact must be taken into account in allowing this development to proceed.⁸

2. Reassessment of Impacts

[120] In his evidence, the Director explained he looked at the total area of shoreline that was disturbed and considered six percent as a relatively small disturbance, but if the percentage was closer to 10 percent, there might be more of an issue. Since adding the storm water berm to the calculation raised the total impacted shoreline to almost 20 percent, the Board believes the Approval Holder should reassess the impacts of its development on the shoreline and

⁸ See: Gull Lake Management Plan 2000 Update in Appellants' submission, dated April 19, 2013, at Tab 2; Gull Lake Management Plan in Appellants' submission, dated April 19, 2013, at Tab 1; and IDP in Director's Record at Tab 237.

environmental reserve before it proceeds with the development. After a report is provided to the Director on the impacts, the Director should reassess the appropriateness of the design and the required terms and conditions in the Approval. If there are any unanticipated impacts, the Director has the authority to amend the Approval pursuant to section 42(1) of the *Water Act*.⁹

3. Upland Technical Reports

[121] The plans of the development have changed a number of times since the technical reports were prepared. Although the Director found the information that he had before him at the time he made his decision regarding the Approval and Licences was adequate, the Board considers current data as the more reliable source for basing a decision. Therefore, before any further expansion of the development occurs, the Board strongly encourages the Director to require the Approval Holder to collect up-to-date data and prepare technical reports that reflect the site that exists at the time any application is submitted.

4. Bathymetric Study

[122] In response to the undertaking given by the Approval Holder during the hearing to produce survey data compiled by Bemoco Land Surveying Ltd. ("Bemoco"), the Approval Holder provided only limited information. Its explanation for doing so was that Bemoco had only provided it with the drawing and had not included the supporting data. In his submission, the Director relied on the site-specific survey and did not request an updated bathymetric survey. Given the reliance of the Director on the information provided by the Approval Holder to determine the impacts to Gull Lake, the Board considers it prudent to obtain accurate data regarding the water levels at Gull Lake given the channel will be constructed in an area that has been identified as sensitive. Therefore, the Board recommends the Approval be amended to include a condition that the Approval Holder must retain a licensed surveyor to complete a

⁹ Section 42(1)(a)(vi) of the *Water Act* provides:

"The Director may amend an approval on the Director's own initiative without the consent of the approval holder...

(vi) to amend a term or condition if, in the opinion of the Director, a significant adverse effect on the aquatic environment, human health or public safety that was not reasonably foreseeable at the time the approval was issued occurred, occurs or may occur...."

bathymetric survey of the area of Gull Lake where the channel will be located and the extension of the channel into Gull Lake proper. No work should be undertaken on the channel until the bathymetric survey is completed, submitted to the Director, and the Director gives his authorization that the work can begin. The Director must review the bathymetric survey to determine if there needs to be changes made to the design of the channel and take the appropriate steps if such changes are needed. Again, the Director has the authority to address any unanticipated impacts by amending the Approval pursuant to section 92(1) of the *Water Act*. In addition, the information should also be provided to the Department of Fisheries and Oceans, given any changes to the channel may result in the fish habitat compensation requirements.

5. Monitoring Program

[123] The development will be the largest along Gull Lake and will increase the number of users of the lake significantly, particularly at full build out. Although no immediate impacts may be observed, as the development is built out, the potential for greater environmental impacts increases. Therefore, the Board considers it vital that continuing monitoring takes place to identify and deal with any adverse environmental impacts to the bed, bank, and shore of Gull Lake that may arise as a result of the development. Again, this is based in part on the Board's belief that lake front property that is useable for recreational purposes is a limited resource in Alberta and must be carefully managed. Further, in the circumstances of this case, the marina is being developed in what is likely the most sensitive area of the lake, and this must be taken into account in allowing this development to proceed.

[124] All of the Parties agreed there will be impacts on the bed, bank, and shore of Gull Lake as a result of the construction of the development. The Parties disagreed as to the extent of the impacts on fish species, vegetation, wildlife, and soils on the bed, bank, and shore of the lake adjacent to the development.

[125] The Approval Holder described the steps it intends to take to mitigate potential and actual impacts that will occur as a result of the development. In reviewing the intended mitigation measures, the Board has concerns with the effectiveness of the mitigation measures proposed by the Approval Holder. One of the concerns is the underestimation of the extent of the impacts the development will have on the shoreline and environmental reserve. The

Approval Holder and Director considered only the width of the channel and the beach as the areas with any significant impact on the shoreline. However, there is a 600-metre berm that is being constructed as part of the project, resulting in a shoreline disturbance of approximately 20 percent of the project shoreline area as opposed to the six percent contemplated by the Director and Approval Holder.

[126] Although the Approval Holder and Director stated the berm will not impact the environmental reserve or water flows to the lake, the Board is concerned as to the potential for such impacts. Given the Approval Holder and Director are relying on the environmental reserve to be the main mitigation measure, it is vital the environmental reserve is maintained in its current natural state. If the berm or any other activity undertaken as part of the development negatively impacts the environmental reserve, its mitigation capacity will be diminished.

[127] For the environmental reserve to be effective, it must remain in its natural state. In the Board's view, this area needs to be monitored continuously to ensure the environmental reserve is protected. The Approval Holder must take the necessary steps to protect the environmental reserve considering the reliance placed by the Approval Holder and Director on the environmental reserve to mitigate negative impacts resulting from the development.

[128] The Board believes it is important the Director is provided with the necessary information to ensure the environmental reserve is protected and the mitigation measures are effective.

[129] In order to understand, identify, and mitigate any negative impacts resulting from the development, the Board recommends the Approval be varied to include a condition requiring the Approval Holder to prepare a monitoring and mitigation plan to submit to the Director for his approval. In order to provide a meaningful monitoring and mitigation plan, the Approval Holder must retain qualified, independent experts, including a limnologist and a biologist, to conduct a baseline study to determine the species most vulnerable to disturbances and the species most reflective of changing conditions (the "key species"). After the key species have been identified and based on the experts' advice, the Approval Holder must submit a monitoring and mitigation plan to the Director for his approval. The monitoring and mitigation plan needs to have criteria

developed based on current scientific research and data. This plan should include, at a minimum:

1. collect baseline on the species currently growing on or using the bed, bank, and shore of the development, including fish species and bird species;
2. identify the species to be monitored and explain why the specific species were chosen;
3. design a plan to assess the changes in the key species;
4. develop a protocol to measure the health of the key species;
5. determine what type or degree of change would be unacceptable (the "threshold levels"), taking into consideration the individual species and the impacts on the species identified collectively; and
6. when an unacceptable change occurs, an explanation of the plan to respond to any adverse changes.

[130] The Director has the discretion to include additional parameters that should be assessed on a routine basis to enable the Approval Holder and Director to identify adverse impacts at an early stage before the impacts are felt more broadly on Gull Lake.

[131] The Parties acknowledged there are currently impacts on the lake due to existing developments. The development proposed by the Appellants will add additional impacts to the lake. However, the Board will recommend the area that should be included in the environmental studies is to be limited to the bed, bank, and shore over the full length of the development. Impacts to the lake, including impacts on fish species, should include the area that will be altered as the result of the construction of the channel from the marina into the lake. The full extent of this area will be determined after the completion of the bathymetric study and an accurate determination of the full length of the channel that will be needed for the safe passage of the boats into the lake. The extent of the area to be included in the development of the plan is to be approved by the Director.

[132] The baseline data must be collected before the channel and upland marina become operational. This baseline data will provide the basis from which a determination can be made as to whether the development is causing an impact in this sensitive area. All studies, including the baseline data collection and annual assessments, must be conducted during ice-free periods.

[133] The predetermined threshold levels for impacts of the development on wildlife, vegetation, soils, or fisheries must be based on current studies that have been conducted by independent researchers. If such threshold levels are detected during monitoring, the Approval Holder will be required to implement a response plan to mitigate the impacts to the environment. The monitoring program must outline how the response plan will be developed and implemented. If the threshold levels are reached, the Approval Holder must provide a detailed response plan to the Director for his approval, and once approved, the response plan must be implemented. The Director must approve the monitoring and mitigation plan and the Approval Holder must implement the monitoring and mitigation plan before the Approval Holder can conduct any further work under the Approval in the bed, bank, and shore of Gull Lake. Since the development will be constructed in stages over a period of time, the monitoring and mitigation plan should remain in place for at least 10 years after full build out has occurred or until such later time that the Director deems it is no longer necessary. The data collected from the assessments and an analysis of the results will be included in an annual report to be submitted to the Director. All annual reports, and any information provided to the Director pursuant to the Approval, must also be publicly available on the internet or at the closest public library to the development, preferably both.

6. Sedimentation

[134] The Approval Holder stated it will be posting speed limit signs for the marina and channel in order to minimize the churning of sediments. In addition to the speed of the boats, water levels can impact the disturbance of the channel and marina bottom. Although it is assumed boaters will know when lake levels are too low to use the channel and marina, there may be some who might challenge the limits. The Board strongly advises the Approval Holder to monitor boaters and take the necessary steps to minimize disturbances, including closing the channel when water levels dictate.

7. Deficiency Process

[135] During the approval process, various technical staff within AESRD reviewed the application to determine the potential impacts and if proposed mitigation measures were

adequate. In two instances, the Approval Holder was instructed to provide further information. The letter outlining the deficient information clearly stated that if the information was not provided, the application would not be processed further. The Approval Holder did not provide the detailed information requested. In his evidence, the Director stated there was a “push back” from the Approval Holder in response to the request to provide the information. There was nothing in the Director’s Record to explain why the Approval Holder refused to provide the information and no explanation was provided in the Approval Holder’s evidence. In closing argument, counsel for the Approval Holder explained it was probably due to the expense the Approval Holder had invested in the 2008 studies and the Approval Holder did not consider it necessary to expend more money. However, if the information is required to give the Director a greater level of confidence that all environmental impacts from a project have been identified and the appropriate mitigation measures proposed, it should be provided. Obtaining such information allows for the development of better approvals and other authorizations.

8. Habitat Compensation

[136] The Appellants expressed concern regarding the amount of compensation that has been undertaken by the Approval Holder for disturbing fish habitat. The level of compensation is determined by DFO under the *Fisheries Act*, not the Director, and therefore, the Board can make no assessment on whether the compensation is sufficient.

IV. AQUIFER SUSTAINABILITY

A. Submissions

1. Appellants

[137] The Appellants stated the evidence provided by the Approval Holder on the productive capacity of the Wells and the water requirements for the development was inconsistent and did not adequately or realistically establish the true water demands for the development.

[138] The Appellants noted Well A was licensed at a rate of 180 m³/day, and it is the only well of the three that produces water suitable for its stated purpose. The Appellants said Well A will be relied on exclusively to produce the water required by the development.

[139] The Appellants said RV lots are not comparable to campgrounds, because many units become permanent and have dishwashers, washing machines, and lawns that create a water demand more like permanent cottages. The Appellants predicted some residents will live there year round.

[140] The Appellants compared the proposed development with the Raymond Shores development on Gull Lake, which has 250 RV lots. The Appellants said the Raymond Shores development had peak water usage of 160 m³/day. The Appellants stated that, using that rate, the 575 RV units in Phase 1 of the proposed development, would require approximately 368 m³/day, double the maximum available from Well A. The Appellants suggested a less conservative calculation of demand might be 230 m³/day and a peak demand of 460 m³/day.

[141] The Appellants said the Approval Holder was aware of the lack of adequate supply since it requested "creative thinking" from the Director.

2. Approval Holder

[142] The Approval Holder explained it calculated its water demand on historical data from Glennifer Lake Resort, which also offers 700 RV lots, a clubhouse, and a swimming pool. The Director agreed it would provide a reasonable estimate for the development. At Glennifer Lake, the average consumption of water per lot was 63.51 m³/year with a peak daily volume of 1.06 m³/lot and an average daily consumption on a per lot basis of 0.174 m³/day. The Approval Holder said Well A could cover the required amount of water for the first 10 years of development, but it may become necessary to use Well C on peak days starting at approximately year seven.

[143] The Approval Holder said Well C is capable of producing water suitable for its stated purpose when treated with a slightly more complex process than what will be used for Well A. The Approval Holder confirmed all well water will be treated in an approved, professionally engineered water treatment plant.

[144] The Approval Holder stated Well A could meet the water demands of the development for the first 10 years of development, although it may become necessary to use Well C during peak days from approximately year seven. The Approval Holder confirmed the golf course will be irrigated with treated wastewater.

[145] The Approval Holder stated that, based on a review of available information on similar resorts, only a small percentage of RV lots have extended occupancy from April to November, and normally the lots are not occupied from December to March.

[146] The Approval Holder noted the sustainable yield for a 20-year period is 65,919 m³/year for Well A and 373,223 m³/year for Well C. Well A is licenced for 23,554 m³/year, or 35 percent of the annual sustainable yield, and Well C is licenced for 38,725 m³/year, or 10.4 percent of its annual sustainable yield.

[147] The Approval Holder said there is no clear evidence from hydrogeological data, the pumping test, and analytical data to demonstrate the upper and lower aquifers are connected to Gull Lake.

[148] The Approval Holder stated the pumping tests and analytical data did not show evidence of barrier or recharge boundaries or changes to water quality parameters over the testing period. According to the Approval Holder, there was no evidence of a direct hydraulic connection between the wells and the lake found during testing.

[149] The Approval Holder said there is no evidence of continuity of the upper sandstone aquifer system and of a hydraulic connection with the lake bottom.

3. Director

[150] The Director stated the Approval Holder was allocated 62,279 m³/year under two Licences and only 23,554 m³/year will come from Well A. According to the Director, Well A, completed in a shallow aquifer, can sustain 23,554 m³/year, and the deeper aquifer of Wells B and C can sustain a yield of 38,735 m³/year. The Director said the combination of the shallow and deep aquifers can sustain the Approval Holder's allocation of water.

[151] The Director confirmed that, if the Approval Holder uses its total allocation of water, the water must come from a combination of all three Wells, or the Approval Holder must apply for another licence.

[152] The Director explained an allocation of water includes the volume, rate, and timing of the diversion of water. The Director stated the Approval Holder must comply with the maximum daily and annual diversion rates in its Licences. The Director said the Licences and the *Water Act* provide regulatory measures and compliance tools to ensure the Approval Holder does not exceed its licensed allocation.

[153] The Director explained that, in deciding whether to issue a licence under the *Water Act*, he may consider the existing, potential, or cumulative effects on the aquatic environment; hydraulic, hydrological, and hydrogeological effects; and effects on household users, other licensees, and traditional agricultural users. The Director may also consider any other relevant matters. In addition, in groundwater applications, the Director considers whether the aquifer can sustain the requested withdrawal rate of water by using the method outlined in the AESRD Guide to Groundwater Authorization.

[154] The Director explained Q20 is the key piece of information used to determine if an aquifer can sustain the requested withdrawal rate. The Director stated:

“Q20 is the maximum sustainable daily pumping rate for a well (m³/day) if pumped over a 20 year period. ‘Sustainable’ means that pumping from that well at its Q20 for 365 days a year over a 20 year period will not lower the water below the top of the confined aquifer.”¹⁰

[155] The Director explained the aquifer is tested, the parameters determined, the results interpreted, and then a written groundwater evaluation report is provided by the Approval Holder. The report is then reviewed by an AESRD hydrogeologist.

[156] The Director stated Q20 is a conservative estimate, because it does not account for mitigating factors such as recharge or inter-aquifer water transfers, and it includes a safety factor that translates to only allowing 70 percent of the available drawdown of a well instead of

¹⁰ Director’s submission, dated April 26, 2013, at paragraph 87.

the full drawdown. The Director said the consultant for the Approval Holder calculated the Q20 for the wells as follows:

Well A - 180.6 m³/day or 65,919 m³/year;

Well B - 307.8 m³/day or 112,347 m³/year; and

Well C - 576.3 m³/day or 210,350 m³/year.

[157] The Director noted the Approval Holder requested less than the Q20 for Well A. The Director explained he set the maximum daily pumping rate at its Q20 (180.6 m³/day), but set the maximum annual diversion at 23,554 m³/year, the allocation recommended by the Approval Holder's consultant. The Director explained the Approval Holder can only pump Well A at 180.6 m³/day for about 130 days per year, approximately the length of the summer tourist season, before it reaches its maximum annual diversion.

[158] The Director stated that if the Approval Holder wants to pump more than 23,554 m³/year or wants to pump Well A harder than 180.6 m³/day, then the Approval Holder would have to use water from Wells B or C or apply for a new licence. The Director stated that, based on the Q20 values, Wells B or C could easily accommodate the remaining 38,735 m³/year requested by the Approval Holder without lowering the water below the top of the deeper confined aquifer.

[159] The Director stated all three wells showed a quick leveling of the drawdown and a quick recovery, indicating the aquifers are readily recharged and can sustain the pumping rate, given the pumping conditions.

[160] The Director explained that an applicant for a water licence must justify the requested amount, and the Director assesses whether the request is reasonable. The Director explained he estimated the Approval Holder's water usage to be 461 litres/unit/day at the full build out of 1,125 units. He said he compared this rate to established estimates for wastewater generation, and found an established RV park generates 180 litres/unit/day. The Director assumed a 1:1 comparison of wastewater to determine water use, so an RV park would use 180 litres/unit/day of water. The Director considered 180 litres/unit/day was too low for the recreational residential development. The Director considered the amount requested by the Approval Holder was reasonable but at the high end of what would be needed at full build out, so

the Director included the “claw back” clause in the Licences allowing the Director to reduce the water allocation in 10 years if the Approval Holder has overestimated the amount of water it required. The Director stated that if the Approval Holder underestimated its water use, it would have to apply for a new licence and justify the amount of water it requests.

[161] The Director noted conditions in the Licences that safeguard the aquifers from being overdrawn including:

1. The wells must be equipped with meters to cumulatively measure the quantity of water diverted.
2. Measuring the water level pre and post tourist season and the long-term tracking of the non-pumping water level of the wells will provide information on the status and recovery of the aquifer. (A drawdown of 20 percent of the available head would signal the aquifer may be depleting.)
3. Requiring the Approval Holder notify the Director if it uses more than 10 percent of its maximum annual diversion between September 16 and May 14, and if more than 10 percent is used in the off season, the Director would closely review the annual water use reports and recommend the Approval Holder reassess its water need and use of its allocation.
4. monitoring data for water quantity and quality are reported electronically to AESRD.
5. pump intakes will be placed at a depth equal to two-thirds of the available well drawdown.

[162] The Director explained that, due to a clerical error, the pump intakes were set at incorrect depths in Table 3.1 of the Licences, but the error will be corrected before the Approval Holder starts using the wells. The Director listed the corrections as:

Maximum Pump Intake Depth

Well A - 17.2 mbg;

Well B - 24.1 mbg; and

Well C - 23.4 mbg.

4. Rebuttal Submissions

[163] The Appellants stated that, given Wells B and C will have to be used, the water quality of these wells must be considered even though the Director wants the Board to simply look at whether the aquifers can sustain the quantities of water included in the Licences.

[164] The Appellants stated the water requirements for the development will exceed the aggregate volumes of the Licences.

[165] The Appellants said there are deficiencies in the evidence, particularly as it relates to the irrigation of the golf course and the expected volume of wastewater available for irrigation.

[166] The Appellants submitted that, based on the evidence provided by the Approval Holder and Director, it is impossible to determine whether the Licences will sustain the development's use of water.

B. The Board's Analysis

[167] Although the Appellants expressed concern that Well A will not be able to provide all of the water for the development, Well A is not the only source of water licensed. Well C will also be used as a supplemental source of water for the development, and Well B will be used for monitoring but can also be used for as a source of water for the development once properly treated to AESRD standards.

[168] Based on the pump test data provided, and given no evidence was presented to question the interpretation of the data, the Well A aquifer can sustain a pumping rate of 180.6 m³/day or 65,919 m³/year. The Licence allows for the maximum daily pump rate, but the annual withdrawal amount is limited in the Licence to 23,554 m³/year, or approximately 36 percent of the Q20 value for the aquifer. Therefore, the Board finds the upper aquifer into which Well A is completed can sustain the rate and volume of water withdrawal allowed under the Licences.

[169] The Q20 values for Well B were determined to be 307.8 m³/day or 112,347 m³/year, and the Q20 value for Well C was 576.3 m³/day or 210,350 m³/year. Both of these wells are completed in a deeper aquifer. Although Well B is included in the Licence and has a daily maximum diversion rate of 307.8 m³/day, Well B does not have an annual diversion rate because Well B is to be used as a monitoring well at this time. If Well B is used in the future, the Director will set an annual diversion rate that can be sustained by the aquifer.

[170] Well C will be used as the supplementary water source for the development. It has been licensed for 576.3 m³/day or 38,725 m³/year. Again, as in Well A, the daily diversion

rate has been set at the Q20 value for Well C. However, the annual diversion rate for Well C is 18 percent of the annual Q20 value. This indicates the annual water diversion rates allowed for under the Licences can be sustained.

[171] If the Approval Holder finds it needs more water to sustain full build out of the development, it will have to apply for an additional licence, and the process to obtain the licence would include public notice and the opportunity for those who are directly affected to submit Statements of Concern and Notices of Appeal. Other than correcting the clerical errors identified by the Director, the Board sees no need to make recommendations regarding the licenced volumes of water.

V. IMPACTS OF WELLS ON GULL LAKE

A. Submissions

1. Appellants

[172] The Appellants explained Well A is completed in the upper aquifer and Wells B and C are completed in the lower aquifer. The Appellants argued the evidence clearly suggests a hydraulic relationship between these aquifers and Gull Lake. The Appellants noted the Director was made aware of the hydraulic connection by the AESRD hydrogeologist.

[173] The Appellants stated that in a study detailing the aquifers underlying Ponoka and Lacombe County, it was determined that any well completed above mean sea level ("AMSL") elevation of 873 metres will flow directly into Gull Lake. The Appellants noted Well A is completed at 880 metres AMSL. The Appellants argued the evidence of connectivity was not satisfactorily addressed or accounted for when the Licences were issued.

[174] The Appellants stated that drawing water from aquifers that feed the lake and support water levels is a concern. They explained that, historically, lake level has been in a decline. Since the late 1970s, the provincial government has pumped water from the Blindman River into Gull Lake. The Appellants said in dry years, sufficient water is not available in the Blindman River to pump to Gull Lake because instream flow in the Blindman River need to be met first. The Appellants stated significant withdrawals from the basin should be avoided.

[175] The Appellants explained most of the existing residential development around Gull Lake uses individual water wells and discharges waste below ground level, away from the effects of evapotranspiration.¹¹ The Appellants argued the Approval Holder's plan to use wastewater to irrigate the golf course would lead to increased loss of water from the watershed. The Appellants explained they have not been provided with any specific plan as to the wastewater treatment, but they suspected the plan would have the poor quality water from the wells treated and the waste stream trucked away.

[176] The Appellants stated Wells B and C are unsuitable for irrigation and drinking due to elevated levels of sodium, sulfate, and total dissolved solids, and the Approval Holder did not provide a concrete plan as to how it would treat the poor quality well water to acceptable standards. The Appellants said using water from Wells B and C if untreated would be detrimental to the environment, because the salinity will degrade soils if it is used for irrigation and water from Wells B and C would negatively impact the quality of Gull Lake if it makes its way back into the lake.

[177] The Appellants said that, given the very poor quality of water from Wells B and C, treatment options are limited, very expensive, would require additional water input, and would produce a very highly concentrated and saline wastewater stream.

[178] The Appellants argued the Licences should be reversed for the following reasons:

1. Well A, the only well with reasonably good water, has insufficient capacity to supply even Phase 1 of the development;
2. if Well A is insufficient, Wells B and C would have to be used but the water from these wells is unusable without expensive treatment;
3. no specific plan for water treatment has been put forward so it is impossible to determine:
 - a. whether water from Wells B and C will ever be used;
 - b. if water from the wells will be used to irrigate the golf course;
 - c. the impacts on vegetation, the environment, and the lake without knowing the specification to which the water will be treated;

¹¹ "Evapotranspiration" is defined as: "loss of water from the soil both by evaporation and by transpiration from the plants growing thereon."

See: <<http://www.merriam-webster.com/dictionary/evapotranspiration>>.

- d. what quantities of input water will be needed to produce sufficient clean output quantities although it is certain input quantity will be greater than output quantity;
 - e. whether the wells can provide the required input quantity;
 - f. the specifications or quantity of the treated wastewater stream which will result, or whether there is a sustainable plan to dispose of this waste stream; and
 - g. whether the wells can supply the quantities of usable water required by the development at full build out sustainably; and
4. the aquifer the wells are completed in appear to be connected to Gull Lake, but the Approval Holder submitted no hydrogeological study so it is impossible to know whether use of water from the wells will lower water levels in the lake, thereby requiring additional pumping.

[179] The Appellants requested the Board recommend the Licences be reversed, and any reapplication made by the Approval Holder for similar licences must include specific studies, data, and evidence that would allow cumulative effects be considered including the impact and sustainability of the development at full build out.

2. Approval Holder

[180] The Approval Holder explained Well C is capable of producing water suitable for its stated purpose when treated with a procedure only slightly more complex than the chlorination treatment proposed for Well A. The Approval Holder stated the sodium absorption ratio ("SAR") in Well C will be treated to reach acceptable levels. The Approval Holder said all three wells are capable of producing usable water.

[181] The Approval Holder said it will use a professionally engineered water treatment plant to provide potable water that meets required standards. The Approval Holder explained the approved water treatment system:

1. can expand to meet all possible future requirements;
2. does not require additional water input;
3. does not consume more water than it produces;
4. does not produce a highly concentrated waste stream;

5. will be a simplified calcification process along with mixing of water from Well A and Well C;
6. will reduce SAR in Well C from 46 to less than 8, which is considered safe for irrigation purposes;
7. will lower the pH of the water from 8.69 to 7.5; and
8. will lower overall sodium and total dissolved solids.

[182] The Approval Holder explained the wastewater disposal plan includes a short-term storage and trucking solution and a later expansion to a full waste treatment system that meets all necessary regulatory and quality requirements. The water from the wastewater treatment system can be used to irrigate the golf course.

[183] The Approval Holder explained the catchment area for Gull Lake is approximately 441 hectares. The average grade of the land within the catchment area ranges between 1 and 8 percent, so during spring runoff conditions and high rainfall events, the catchment area has the ability to direct a significant quantity of unconditioned and sediment bearing water directly into Gull Lake. The Approval Holder said the existing storm flow entering Gull Lake is released in an uncontrolled fashion with minimal chance to remove contaminants.

[184] The Approval Holder stated the proposed storm water management system was designed to control and condition the water flow entering Gull Lake. The Approval Holder explained the proposed system contains a series of settlement ponds and check dams to reduce flow velocity on the upslope portion of land, and there would be a settlement pond area approximately 100 to 200 metres prior to the shoreline. The Approval Holder said the storm flow from the development is routed to the final settlement pond where the velocity is reduced below 0.04 m/second, allowing sediment to fall out to the pond base. The Approval Holder stated the storm management design will control the flow rate into Gull Lake with water suitable to meet or exceed AESRD specifications.

3. Director

[185] The Director stated he assumed there was some connectivity between Well A and Gull Lake, but he was satisfied that using Well A would not negatively impact the lake's water

level due to decreased levels in evapotranspiration. The Director stated he assumed no connectivity between Wells B and C and the lake and, therefore, there would be no impact to the lake by using these wells. The Director was satisfied the extent of connectivity was minimal because Wells B and C were completed in a different, deeper aquifer than Well A.

[186] The Director noted the Approval Holder's consultant concluded there was no evidence of a hydraulic connection between Gull Lake and the groundwater in Well A based on geochemical properties such as pH and electrical conductivity. The Director did not believe the geochemical analysis conclusively indicated no connectivity. The Director explained that, in order for the geochemical analysis to be conclusive, the pump test must be conducted long enough for the water to travel from the lake to the well, and the mixing and dilution of lake water and groundwater needs to be taken into account. The Director said the pump test completed by Stantec did not conclusively prove or disprove connectivity.

[187] The Director stated there was some connectivity between the lake and Well A, but the extent to which water travels from the lake to the well depends on the permeability of the sediment and bedrock layers, the head gradient induced by pumping the well, and the capture zone of the well. The Director explained the static water level in Well A is slightly higher than the lake level creating a gradient causing groundwater to flow towards the lake, and when the well is pumped, the gradient would gradually reverse causing water to flow from the lake to the well.

[188] The Director stated he assumed there was some connectivity between Gull Lake and Well A when he considered the application but he concluded that using Well A would not negatively impact the water level in Gull Lake.

[189] The Director explained AESRD created the Gull Lake Guidelines in 1994, which restricted issuing licences for diverting surface water in the Gull Lake Basin. The restriction was due to the fact the lake requires the Province to replace water by pumping water from the Blindman River at a cost to the public. The Director noted the Gull Lake Guidelines address surface water but not hydraulically connected groundwater *per se*, but the Director considered the intent of these guidelines when reviewing the Approval Holder's application. The Director

said the intent of the guidelines is to ensure there is no decline in lake levels due to licensed withdrawals.

[190] The Director explained he considered the requested amount of 62,279 m³/year, the allocation from Well A, and balanced it with the estimates of increased runoff into Gull Lake due to changes in evapotranspiration created by the development project. The Director estimated that Phase 1 of the project would increase runoff into Gull Lake by 104,932 m³ given that hardscapes in the RV park will absorb less water than plants. The Director explained this calculation is conservative, because it only considered changes in evapotranspiration and did not consider changes in infiltration or water storage. The Director said that, even assuming 100 percent hydraulic connectivity between the lake and Well A, there would be a net increase of water into Gull Lake.

[191] Further, the Director believed any wastewater removed from the system would be made up for by the runoff created by the development.

[192] Finally, the Director stated he was satisfied there would be no decline in the water level in Gull Lake from using Well A.

[193] With respect to Wells B and C, the Director said the Appellants' two main concerns regarding Wells B and C are the suitability of the water for drinking and irrigation and the expense and difficulty of treating the water for use. The Director submitted these concerns should not be considered by the Board. The Director noted the Approval Holder was issued registrations for the construction of a waterworks system and a wastewater system.

[194] The Director said the geochemical analysis completed by Stantec was not conclusive on the connectivity of Wells B and C to the lake. The Director believed that, even though there is likely some connectivity, he was satisfied the extent of the connectivity is minimal, because Wells B and C are completed in a different, deeper aquifer than Well A and there is at least one layer of low permeability between the deeper aquifer and the bottom of the lake.

[195] The Director concluded by stating that drawing water from Wells B and C will not negatively impact the lake.

4. Rebuttal Submissions

[196] The Appellants noted the different positions taken by the Director and the Approval Holder regarding the hydraulic connectivity of Well A and the lake.

[197] The Appellants argued the Director's evapotranspiration and runoff argument is incorrect for hydrogeological reasons. The Appellants listed a number of issues that were not considered in making the Director's argument, including:

1. no provision was made for water consumption;
2. the Approval Holder will be removing 62,279 m³/year, which would otherwise flow into the lake;
3. it is unknown what water will be used to irrigate the golf course;
4. substantially increasing runoff into the lake will have the following effects:
 - i. surface runoff will not be filtered like groundwater and could contain contaminants such as fertilizer, chemicals, and petroleum products;
 - ii. surface runoff will not be filtered or modified to the extent it would have been previously because of the removal of large portions of the riparian wetland; and
5. the argument that the volume of surface water flowing into Gull Lake will increase greatly seems at odds with AESRD's own guideline requiring post-development flow to be equal or less than predevelopment flow, and when it was determined this requirement was met, "flow rates" were addressed not "flow."

[198] The Appellants argued the diversion of groundwater is outside the Gull Lake Guidelines given the guidelines state that applications for licences for the diversion of surface water will not be considered. The Appellants stated that, hydrogeologically, if a groundwater source is connected to the lake, it does not matter whether it is taken directly from the lake or removed before it reaches the lake, the effect is still a net removal from the lake. The Appellants submitted the Licences contravene the purpose of the Gull Lake Guidelines, even if the Licences do not deal with surface water.

[199] The Appellants said the diversion of water will upset the water balance in Gull Lake given that, in most years, the diversion of water from the Blindman River is insufficient to keep water levels in Gull Lake at their optimum.

[200] The Appellants argued there was insufficient information to assess the water treatment method being proposed by the Approval Holder to treat Wells B and C and the consequences of that treatment.

[201] The Appellants expressed concern that:

1. the sodium adsorption ratio in Well C will be reduced to 8 since AESRD's standards stipulate that a value of 4 to 8 is possibly safe and a value of 9 or greater is hazardous;
2. they are unaware of any plant that reduces SAR in the manner suggested by the Approval Holder;
3. a report from a professional agrologist needs to be provided to properly assess what SAR is safe for irrigation; and
4. the source and volume of water required for irrigating the golf course are unknown.

[202] The Appellants submitted there was insufficient evidence before the Director, and now before the Board, to establish whether the use of the poor quality water from Wells B and C will have a detrimental effect on the environment.

B. The Board's Analysis

[203] The Appellants argued the connectivity of the wells was not adequately addressed by the Director. With respect, the Board does not agree. It is clear the Director looked at whether any or all of the wells could be hydraulically connected to Gull Lake. In fact, the Director explained that he assumed there was a connection between Well A and Gull Lake when he assessed the Licence application for Well A.

[204] The evidence presented by the Parties was conflicting. The Approval Holder argued no connection exists between Wells A, B, and C and the lake. The Appellants argued there is likely a connection between Well A and Gull Lake, and if there is a connection between Wells B and C and the lake, the connection is weak but water would flow slowly between the deeper aquifer and the lake. The Director believed there was a strong likelihood of a connection

between Well A and Gull Lake given the wells proximity to the lake and that it was surrounded on three sides by the lake. However, the Director did not believe there was a connection between Wells B and C and the lake.

[205] The Director explained he assessed the impacts of Well A on the lake assuming there was a direct connection. This was a conservative and prudent approach to the issue. Based on the Director's calculations using this conservative approach, the licensed water for Well A accounts for only 34 percent of the available water in the aquifer annually. The Director also believed any loss from the lake as a result of water being pumped from Well A would be compensated through reduced evapotranspiration resulting from the development. This indicates there will be little to no impact on the water levels in the lake.

[206] Water levels in Gull Lake are monitored regularly. If there are changes in the lake levels as the development proceeds, the Director will have to determine whether the changes are a result of the development and if so he will need to take the appropriate steps to ensure Gull Lake is not impacted.

[207] Wells B and C are completed in a deeper aquifer below the level of the lakebed. Although it is conceivable there is a connection between these deeper wells and Gull Lake, the likelihood is less, and no evidence from measured data was provided to demonstrate there is a connection. Without more data to demonstrate the connection exists, the Board considers the approach taken by the Director, that is to treat Well A, the shallow aquifer, as connected to the lake, and the deeper aquifer wells, Wells B and C as not being connected to Gull Lake as a reasonable approach.

[208] Based on the evidence provided by the Appellants' consultant and the Director, the Board considers it more likely than not there is a hydraulic connection between Well A and the lake. The Approval Holder's consultant, although stating there is no hydraulic connection, carefully included the proviso that no indicators of a connection were exhibited during testing. The Director believed pumping for a longer period of time may have shown the connection between Well A and the lake.

[209] Given the various points of view, the Board considers the approach taken by the Director to assume a connection was the correct approach. It provided a degree of conservatism

to the Director's decision to issue the Licences. The Board accepts this approach, given no evidence was provided that demonstrated absolute certainty that no connection existed.

[210] Even though the Board considers it likely Well A is hydraulically connected to Gull Lake, the Board does not believe Gull Lake will be impacted by pumping 23,554 m³/year of water annually from Well A. Pump tests demonstrated the aquifer from which Well A will pump water can sustain the pumping rate and volume as licensed without drawing water from the lake. This indicates there will be no impact on water levels in the lake from the Approval Holder using Well A for the licensed volume.

[211] In his submission, the Director noted an error in the Licences regarding the pump intake depths of the wells. The Director said the pump intakes are to be placed at a depth equal to two-thirds of the available drawdown, but the incorrect depths were noted in Table 3.1 of the Licences. The Director said the depths will be corrected in the Licences prior to the Approval Holder being permitted to use the wells. In order to ensure these corrections are included in the amended Licences, the Board recommends Table 3.1 of the Licences be amended to indicate the following maximum pump intake depths:

1. Licence 00293311-00-00: Well A Maximum Pump Intake Depth
17.2 mbg;
2. Licence 00293413-00-00: Well B Maximum Pump Intake Depth
24.1 mbg; and
3. Licence 00293413-00-00: Well C Maximum Pump Intake Depth
23.4 mbg.

VI. SUMMARY

[212] The Board recommends the Approval be amended to include a condition that the Approval Holder must retain a licensed surveyor to complete a bathymetric survey of the area of Gull Lake where the channel will be located and the extension of the channel into Gull Lake proper. No work should be completed on the channel until the bathymetric survey is completed, submitted to the Director, and the Director approves the survey as being adequate. The Director must review the bathymetric survey to determine if there needs to be changes made to the design of the channel and take the appropriate steps if such changes are needed.

[213] Given the potential impacts of the 600 metre berm that will be constructed along the shoreline, the Board recommends the Approval be varied to include a condition requiring Delta to provide an assessment, by independent consultants with demonstrated limnological and wildlife expertise, of the impacts of the development taking into consideration the impacts the berm will have on surface water flows in the area and its impact on soils, vegetation, wildlife, and fisheries.

[214] The mitigation measures proposed by the Approval Holder need to be monitored to ensure they are effective given the area where the development is being constructed has been identified as a sensitive area. Therefore, the Board recommends the Approval be varied to include a condition requiring the Approval Holder to collect baseline data and submit a monitoring and mitigation plan for the Director's approval to ensure there are no negative impacts resulting from the development to the fisheries, wildlife, vegetation, and soils on the bed, bank, and shore of Gull Lake adjacent to the development. The plan must include appropriate threshold levels and response plans if the threshold levels are reached. Once the monitoring and mitigation plan has been approved by the Director, the Approval Holder must implement the plan and provide an annual report to the Director that includes the data collected through the plan and a discussion of the results. No work may be done on the bed, bank, and shore until the Director approves the monitoring and mitigation plan and the baseline data are collected. The baseline data collection and monitoring and mitigation plan will be limited to the bed, bank, and shore of the development and the area of Gull Lake that will be disturbed to construct the channel between the marina and lake and the area where the channel extends out into the lake as determined by the bathymetric survey.

[215] The Board recommends Table 3.1 of the Licences be amended to indicate the following maximum pump intake depths:

1. Licence 00293311-00-00: Well A Maximum Pump Intake Depth
17.2 mbg;
2. Licence 00293413-00-00: Well B Maximum Pump Intake Depth
24.1 mbg; and
3. Licence 00293413-00-00: Well C Maximum Pump Intake Depth
23.4 mbg.

This recommendation corrects a clerical error identified in the Licences by the Director at the hearing.

VII. RECOMMENDATIONS

[216] The Board recommends the Approval and Licences be varied.

[217] The Board recommends the Approval be varied to include:

1. a condition that the Approval Holder must retain a licensed surveyor to complete a bathymetric survey of the area of Gull Lake where the channel will be located and the extension of the channel into Gull Lake;
2. a condition requiring the Approval Holder to provide an assessment of the impacts of the development taking into consideration the impacts the berm will have on surface water flows in the area and the impact on the environment in the area; and
3. a condition requiring the Approval Holder to collect baseline data and submit a monitoring and mitigation plan to the Director for his approval to monitor any negative impacts to the fisheries, wildlife, vegetation, and soils on the bed, bank, and shore of Gull Lake for the length of the development and the area of Gull Lake that will be disturbed by the construction of the channel based on the bathymetric study, as a result of the development, and to implement the plan prior to the Approval Holder undertaking any further construction on the bed, bank, and shore of the lake.

[218] The Board recommends Table 3.1 of the Licences be varied to correct a clerical error to indicate the following correct maximum pump intake depths:

1. Licence 00293311-00-00: Well A Maximum Pump Intake Depth
17.2 mbg;
2. Licence 00293413-00-00: Well B Maximum Pump Intake Depth
24.1 mbg; and
3. Licence 00293413-00-00: Well C Maximum Pump Intake Depth
23.4 mbg.

[219] With respect to the stay, if the Minister accepts the Board's recommendations, the Board recommends the Minister lift the stay.

[220] With respect to sections 100(2) and 103 of EPEA, the Board recommends that copies of this Report and Recommendations, and the decision of the Minister, be sent to the following:

1. Mr. Chris Simard;
2. Mr. Rich Thul;
3. Mr. Craig MacLeod, on behalf of the Gull Lake Water Quality Management Society;
4. Mr. Bud MacDonald, Q.C., MacDonald Hanley, on behalf of Delta Land Company Ltd; and
5. Ms. Erika Gerlock, Alberta Justice and Solicitor General, on behalf of the Director, Central Region, Operations Division, Alberta Environment and Sustainable Resource Development.

VIII. COSTS

[221] The Approval Holder reserved its right to submit a final costs application. The Board requests that an application for costs be provided to the Board within two weeks of the date of the Minister's Order with respect to this Report and Recommendations. The Board will then provide the Parties with information regarding the submission process should a costs application be made.

Dated on October 3, 2013, at Edmonton, Alberta.

-original signed--

Alex MacWilliam
Panel Chair

-original signed--

Dan Johnson
Board Member

-original signed--

Nick Tywoniuk
Board Member



ALBERTA

ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT

*Office of the Minister
MLA, Drayton Valley-Devon*

Ministerial Order 73/2013

*Environmental Protection and Enhancement Act,
R.S.A. 2000, c. E-12.*

Water Act, R.S.A. 2000, c. W-3.

Order Respecting Environmental Appeals Board Appeal Nos. 12-019-021, 023-025, and 027-029

I, Diana McQueen, Minister of Environment and Sustainable Resource Development, pursuant to section 100 of the *Environmental Protection and Enhancement Act*, make the order in the attached Appendix, being an Order Respecting Environmental Appeals Board Appeal Nos. 12-019-021, 023-025, and 027-029.

Dated at the City of Edmonton, in the Province of Alberta, this 2 day of December, 2013.

Diana McQueen
Minister

Appendix

Order Respecting Environmental Appeals Board Appeal Nos. 12-019-021, 023-025, and 027-029

With respect to the decisions of the Director, Central Region, Operations Division, Alberta Environment and Sustainable Resource Development (the “Director”), to issue Approval No. 00292313-00-00 (the “Approval”), Licence No. 00293311-00-00 (“Well A Licence”), and Licence No. 00293413-00-00 (“Wells B and C Licence”) (collectively the “Licences”) to Delta Land Co. Inc. (the “Approval Holder”) under the *Water Act*, R.S.A. 2000, c. W-3, I, Diana McQueen, Minister of Environment and Sustainable Resource Development, order that the decisions of the Director to issue the Approval and Licences be varied as follows:

1. The Approval is amended by repealing conditions 1.1(c), (d), and (e) and replacing it as follow:
 - “(c) “Maintenance” means the routine repair, upkeep and preservation of the activity authorized under this Approval;
 - (d) “Project” means the work authorized under this Approval, including but not limited to the inland marina, the channel connecting the inland marina to Gull Lake, the extension of the channel into Gull Lake, the clearing and any improvements along the bank and shore of Gull Lake, and the berms being constructed between Gull Lake and the upland area;
 - (e) “Regulations” means the regulations, as amended, enacted under the authority of the Act;
 - (f) “wildlife” includes, but is not limited to, birds; and
 - (g) “AESRD” means Alberta Environment and Sustainable Resource Development.”
2. Condition 3.5 of the Approval is amended by repealing the phrase “in the approval” and replacing it with the phrase “in the Approval.”
3. The Approval is amended by adding the following immediately after condition 5.0:

“REASSESSMENT OF IMPACTS

- 6.0 The Approval Holder shall conduct a study (the “Shoreline Study”) of the changes in surface water flows caused by all of the berms that are being constructed as part of the Project and the impacts that the changes in surface water flows are having on:

- (a) soils,
- (b) vegetation,
- (c) wildlife, and
- (d) fish.

- 6.1 The Shoreline Study shall be limited to impacts in:
- (a) the environmental reserve associated with the Project; and
 - (b) the bank and shore of Gull Lake adjacent to the Project.
- 6.2 The Shoreline Study shall be conducted by independent consultants, acceptable to the Director, with demonstrated expertise in limnology and wildlife biology.
- 6.3 Prior to conducting the Shoreline Study, the Approval Holder shall submit a proposed study plan (the “Shoreline Study Plan”) to the Director for his review and approval, and the Approval Holder shall make any changes to the Shoreline Study Plan that are requested, in writing, by the Director.
- 6.4 The Approval Holder shall not carry out the Shoreline Study until the Director advises, in writing, that he has reviewed and approved the Shoreline Study Plan.
- 6.5 The Shoreline Study Plan shall be prepared by independent consultants, acceptable to the Director, with demonstrated expertise in limnology and wildlife biology.
- 6.6 The Approval Holder shall submit the results of the Shoreline Study to the Director for his review and approval, and the Approval Holder shall make any changes to the Shoreline Study that are requested, in writing, by the Director.
- 6.7 The Approval Holder is prohibited from doing any work authorized under the Approval that impacts the bed, bank, or shore of Gull Lake until the Director has advised, in writing, that he has reviewed and approved the results of the Shoreline Study.

BATHYMETRIC STUDY

- 7.0 The Approval Holder shall retain an Alberta Land Surveyor registered pursuant to the *Land Surveyors Act*, R.S.A. 2000, c. L-3, to conduct a bathymetric survey (the “Channel Survey”) of:
- (a) the proposed channel connecting the inland marina to Gull Lake; and
 - (b) the extension of the channel into Gull Lake to the point where the bed of the lake no longer impacts boat traffic into and out of the channel.

- 7.1 The Approval Holder shall submit the Channel Survey to the Director for review.
- 7.2 The Approval Holder is prohibited from constructing the channel connecting the inland marina to Gull Lake until the Director has advised, in writing, that he has reviewed the Channel Survey.
- 7.3 Within 10 days of being advised by the Director that he has completed his review of the Channel Survey, the Approval Holder shall file the Channel Survey with the Department of Fisheries and Oceans, and provide the Director with written confirmation that this has been done.

MONITORING AND MITIGATION OF IMPACTS

- 8.0 The Approval Holder shall develop a monitoring program (the “Monitoring Program”) to monitor:
 - (a) the impacts of the Project on
 - (i) wildlife,
 - (ii) vegetation,
 - (iii) soils, and
 - (iv) fish,on the bed, bank, and shore of Gull Lake adjacent to the Project;
 - (b) the impacts of the Project on the natural state of the environmental reserve associated with the Project; and
 - (c) the effectiveness of the mitigation measures that have been implemented with respect to the Project.
- 8.1 The Monitoring Program shall be limited to the bed, bank, and shore of Gull Lake:
 - (a) for the entire length of the Project, extending out into the area of Gull Lake for the same distance that is determined will be disturbed by the construction of the channel based on the Channel Study; and
 - (b) the environmental reserve associated with the Project.
- 8.2 The Approval Holder shall carry out the Monitoring Program for a minimum of 10 years after all stages of the Project have been built or until such a later date as specified in writing by the Director.

8.3 The Monitoring Program shall include:

- (a) the collection of baseline data during an ice free period;
- (b) a timeline for collecting baseline data;
- (c) details of the information that will be included in a report on the baseline data that will be collected (the “Baseline Data Report”);
- (d) the deadline for filing the Baseline Data Report;
- (e) the annual collection of data during an ice free period;
- (f) a timeline for the annual collection of data;
- (g) details of the information that will be included in the reports on the annual data that has been collected (the “Annual Reports”);
- (h) the deadline for the filing of the Annual Reports;
- (i) the identification of key species (the “Key Species”) of wildlife, vegetation, and fish that are most vulnerable to disturbance and most reflective of changing conditions;
- (j) threshold levels for changes in wildlife, vegetation, soils, or fish that will require the development and implementation of a response plan (the “Response Plan”) to mitigate the changes; and
- (k) a description of how the Response Plan will be developed, what information will be included in the Response Plan, how the timeline for implementing the Response Plan will be developed, and how the reporting deadlines for the Response Plan will be developed.

8.4 The identification of Key Species shall:

- (a) be based on current scientific data and research;
- (b) collect baseline information on the species currently growing on or using the bed, bank, or shore of Gull Lake adjacent to the Project and in the environmental reserve associated with the Project;
- (c) identify the species to be monitored and explain why these specific species were chosen;
- (d) design a plan to assess the changes in the Key Species;
- (e) develop a protocol to measure the health of the Key Species;
- (f) determine what type or degree of change would be unacceptable, taking into consideration the individual species and the impacts on the species collectively; and
- (g) if unacceptable change occurs, an explanation of the plan to respond to the change.

8.5 The Monitoring Program shall be developed and carried out by independent consultants, acceptable to the Director, with demonstrated expertise in limnology and wildlife biology.

- 8.6 The Approval Holder shall submit the Monitoring Program to the Director for review on a date specified, in writing, by the Director.
- 8.7 The Approval Holder shall correct any deficiencies in the Monitoring Program identified, in writing, by the Director within the time limit specified by the Director.
- 8.8 Once the Director has confirmed, in writing, that the Monitoring Program is satisfactory, the Approval Holder shall implement the Monitoring Program.
- 8.9 The Approval Holder shall not conduct any work under this Approval in the bed, bank, and shore of Gull Lake until:
 - (a) the Director has confirmed in writing that the Monitoring Program is satisfactory;
 - (b) the baseline data has been collected pursuant to the Monitoring Program; and
 - (c) the Director has confirmed in writing that the Baseline Data Report is satisfactory.
- 8.10 Where the Monitoring Program or an Annual Report indicates that a threshold level has been reached or exceeded, the Approval Holder shall develop a Response Plan and provide it to the Director within 30 days.
- 8.11 The Approval Holder shall correct any deficiencies in the Response Plan that are identified, in writing, by the Director within the time limit identified by the Director.
- 8.12 Once the Director has confirmed, in writing, that the Response Plan is satisfactory, the Approval Holder shall implement the Response Plan to the satisfaction of the Director.
- 8.13 Upon receiving notice in writing from the Director, the Approval Holder shall provide the Director with an updated Monitoring Program by the date specified in the notice.”
4. TABLE 3-1 of the Well A Licence is amended under the heading “MAXIMUM PUMP INTAKE DEPTH” by repealing the number “20.3” and replacing it with “17.2”.
5. TABLE 3-1 of the Wells B and C Licence is amended under the heading “MAXIMUM PUMP INTAKE DEPTH” by repealing the number “32.2” and replacing it with “23.4”.
6. TABLE 3-1 of the Wells B and C Licence is amended under the heading “MAXIMUM PUMP INTAKE DEPTH” by repealing the number “32.5” and replacing it with “24.1”.