

FORM 1

Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Riparian Areas Regulation: Assessment Report

Please refer to submission instructions and assessment report guidelines when completing this report.

Date

I. Primary QEP Information

| | | | |
|----------------|---|-------------|---|
| First Name | <input type="text" value="Jeremy"/> | Middle Name | <input type="text" value="Brian"/> |
| Last Name | <input type="text" value="Ayotte"/> | | |
| Designation | <input type="text" value="RP Bio"/> | Company | <input type="text" value="High Country"/> |
| Registration # | <input type="text" value="1692"/> | Email | <input type="text"/> |
| Address | <input type="text" value="180 Larch Hills RR#3"/> | | |
| City | <input type="text" value="Salmon Arm"/> | Postal/Zip | <input type="text" value="V1E 2Y4"/> |
| | | | Phone # <input type="text" value="250-804-3513"/> |
| Prov/state | <input type="text" value="BC"/> | Country | <input type="text" value="Canada"/> |

II. Secondary QEP Information (use Form 2 for other QEPs)

| | | | |
|----------------|----------------------|-------------|------------------------------|
| First Name | <input type="text"/> | Middle Name | <input type="text"/> |
| Last Name | <input type="text"/> | | |
| Designation | <input type="text"/> | Company | <input type="text"/> |
| Registration # | <input type="text"/> | Email | <input type="text"/> |
| Address | <input type="text"/> | | |
| City | <input type="text"/> | Postal | <input type="text"/> |
| | | | Phone # <input type="text"/> |
| Prov/state | <input type="text"/> | Country | <input type="text"/> |

III. Developer Information

| | | | |
|------------|---|-------------|---|
| First Name | <input type="text" value="Bill"/> | Middle Name | <input type="text"/> |
| Last Name | <input type="text" value="LeClair"/> | | |
| Company | <input type="text"/> | | |
| Phone # | <input type="text" value="604-649-7961"/> | Email | <input type="text" value="bill@leclairholdings.com"/> |
| Address | <input type="text" value="1864 Walnut Crescent"/> | | |
| City | <input type="text" value="Coquitlam"/> | Postal/Zip | <input type="text" value="V3J 7T1"/> |
| Prov/state | <input type="text" value="BC"/> | Country | <input type="text" value="Canada"/> |

IV. Development Information

| | | | |
|--------------------------|--|-----------------------|---|
| Development Type | <input type="text" value="Single Family Residential"/> | | |
| Area of Development (ha) | <input type="text" value="0.02"/> | Riparian Length (m) | <input type="text" value="61"/> |
| Lot Area (ha) | <input type="text" value="0.18"/> | Nature of Development | <input type="text" value="Reconstruction"/> |
| Proposed Start Date | <input type="text" value="Sept 2012"/> | Proposed End Date | <input type="text" value="October 2013"/> |

V. Location of Proposed Development

| | | | |
|----------------------------------|---|---------------------------------|--|
| Street Address (or nearest town) | <input type="text" value="1585 Blind Bay Road"/> | | |
| Local Government | <input type="text" value="Columbia Shuswap Regional District"/> | City | <input type="text"/> |
| Stream Name | <input type="text" value="Shuswap Lake"/> | | |
| Legal Description (PID) | <input type="text" value="003-997-324"/> | Region | <input type="text" value="Thompson"/> |
| Stream/River Type | <input type="text" value="Lake"/> | DFO Area | <input type="text" value="BC Interior"/> |
| Watershed Code | <input type="text" value="128"/> | | |
| Latitude | <input type="text" value="50"/> | <input type="text" value="52"/> | <input type="text" value="48"/> |
| Longitude | <input type="text" value="119"/> | <input type="text" value="26"/> | <input type="text" value="50"/> |

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed. Insert that form immediately after this page.

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4. Measures to Protect and Maintain the SPEA
(detailed methodology only).

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- 5. Encroachment
- 6. Sediment and Erosion Control.....
- 7. Floodplain.....
- 8. Stormwater Management.....

5. Environmental Monitoring

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Section 1. Description of Fisheries Resources Values and a Description of the Development proposal

(Provide as a minimum: Species present, type of fish habitat present, description of current riparian vegetation condition, connectivity to downstream habitats, nature of development, specific activities proposed, timelines)

Proposed Development

The proposal to renovate 3 existing structures on this Shuswap Lake lot has triggered this riparian assessment. The existing house, cabin, and boathouse are entirely within the 30 m streamside protection and enhancement area (the SPEA is measured 30 m from the high water mark of Shuswap Lake – 348.7 m).

Renovations to the cabin and boathouse on the west side of the property will not expand the footprints of these structures beyond existing. The floor of the boat house (constructed in 1960) and a section of failing concrete/rock retaining wall (1 m high by 8 m long), which are both above the high water mark of Shuswap Lake, have been recently repaired with new concrete. An existing rail system to launch boats from the boathouse has been removed and will not be replaced. This rusting structure extended far down the beach below the high water mark.

The renovation to the main house will remain on the existing foundation. A 20 m² deck will be removed on the lakeside of the house, and a covered veranda entry will be added along the driveway side of the house. The difference between the removal and addition will add 8 m² to the renovated house. This small encroachment into the SPEA does not decrease the distance between the existing house and the lake, in fact with the removal of the lakeside deck, the closest corner of the house is 2.5 m further from the lake than the existing.

However, given this slight encroachment into the SPEA and following the Protocol for management of Riparian Areas Regulation variances (Draft 7C, Jan 21, 2009), the property owners will mitigate the 8 m² encroachment at a 1:1 ration by re-establishing riparian vegetation on 8 m² of the lot where native vegetation had been previously cleared. The current owners will likely extend this replanting commitment to return a larger area of their shoreline lot to naturally functioning riparian habitat. Zonally appropriate tree/shrub species will be planted in the spring or fall and managed to maintain 90% survival. Typical planting density is 1 stem per square meter, nursery staff should be consulted on appropriate species mix and plant size and age.

The most significant improvement to this property as a consequence of this development will be the septic system upgrade from the existing non-conforming system that is within the SPEA (within 30 m from the lake). The current proposal will pump effluent ~150 m upslope under the Blind Bay Rd onto an adjacent lot owned by the LeClairs (see attached engineering documents).

The current property owners have been careful to maintain existing mature trees adjacent to structures on this lot.

There are 2 large Douglas fir trees that have been assessed as danger trees by a danger tree assessor. The stumps of these trees will remain as high as possible to maintain some wildlife habitat value while reducing the risk to life and property. A report provided by the danger tree assessor (Yves Cusson) will be appended to this riparian assessment filing number once completed. To compensate for the removal of these large diameter trees, new trees will be planted within the SPEA at a 3:1 ratio. Consequently 6 trees will be planted and follow standard riparian replanting criteria (e.g., 2 yr old certified nursery stock, 90% survival). The details of the

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replanting plan have yet to be finalized, a post-construction report must document compliance with this commitment.

If the protective measures provided in this report are followed during re-construction of the house, there will be no harmful alteration, disruption or destruction to fish habitat.

Specific measures provided in this report will protect the rooting zone of trees within the SPEA that is within the lakeshore SPEA, and ensure that there will be no negative consequences to riparian fish habitat as a result of the re-development on this site.

Fisheries Resource Values

Shuswap Lake is part of the Fraser River Basin and supports populations of Sockeye Salmon (*Oncorhynchus nerka*), Coho Salmon (*Oncorhynchus Kisutch*), Kokanee (*Oncorhynchus nerka nerka*), Lake Trout (*Salvelinus namaycush*), Lake Whitefish (*Coregonus clupeaformis*), Mountain Whitefish (*Prosopium williamsoni*), Rainbow Trout (*Oncorhynchus mykiss*), Longnose Sucker (*Catostomus catostomus*), and Burbot (*Lota lota*).

According to the Shuswap Watershed Atlas and the Foreshore Inventory Mapping process, this shoreline of Shuswap Lake shoreline is rated as providing "Moderate" aquatic habitat (AHI), "High Value" fish rearing habitat, and known Char shore spawning sites.

Although there are several buildings within the sensitive SPEA on this lot, the remaining vegetation has been lightly managed with several large Douglas fir and Western red cedar trees and native shrub areas allowed to thrive between the houses and the beach. The size and age of these trees are relatively rare along this well-developed stretch of Shuswap lake shoreline. As such these trees provide important wildlife habitat for a variety of species.

This riparian vegetation is also important to maintain shoreline stability and provide shade and nutrients to fish habitat in the shallow water off-shore.

2. Results of Detailed Riparian Assessment

Refer to Chapter 3 of Assessment Methodology

Date:

Description of Water bodies involved (number, type)

Stream

Wetland

Lake

Ditch

Number of reaches

Reach #

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

| | Channel Width(m) | Gradient (%) |
|-----------------------------|----------------------------------|----------------------------------|
| starting point upstream | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> |
| downstream | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> |
| Total: minus high /low mean | <input type="text" value="NA"/> | <input type="text" value="NA"/> |
| | <input type="text" value="R/P"/> | <input type="text" value="S/P"/> |
| Channel Type | <input type="text"/> | <input type="text"/> |

I, Jeremy Ayotte R.P.Bio, hereby certify that:
 a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
 b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Bill LeClair ;
 c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
 d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Site Potential Vegetation Type (SPVT)

| | Yes | No | |
|---------------|--|-------------------------------------|---|
| SPVT Polygons | <input type="text"/> | <input checked="" type="checkbox"/> | Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes |
| | I, <u>Jeremy Ayotte R.P.Bio</u> , hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u> ; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation. | | |
| Polygon No: | <input type="text"/> | | Method employed if other than TR |
| | LC | SH | TR |
| SPVT Type | <input type="text"/> | <input type="text"/> | <input checked="" type="checkbox"/> |
| Polygon No: | <input type="text"/> | | Method empl yed if other than TR |
| | LC | H | TR |
| SPVT Type | <input type="text"/> | <input type="text"/> | <input type="text"/> |

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Polygon No:
 SPVT Type:

Method employed if other than TR

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No: 1 If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m) 15

Litter fall and insect drop ZOS (m) 15

Shade ZOS (m) max 30 South bank Yes X No

Ditch Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)

Ditch Fish Bearing Yes No If non-fish bearing insert no fish bearing status report

SPEA maximum 30 (For ditch use table3-7)

Segment No: If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m)

Litter fall and insect drop ZOS (m)

Shade ZOS (m) max South bank Yes No

SPEA maximum (For ditch use table3-7)

Segment No: If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

LWD, Bank and Channel Stability ZOS (m)

Litter fall and insect drop ZOS (m)

Shade ZOS (m) max South bank Yes No

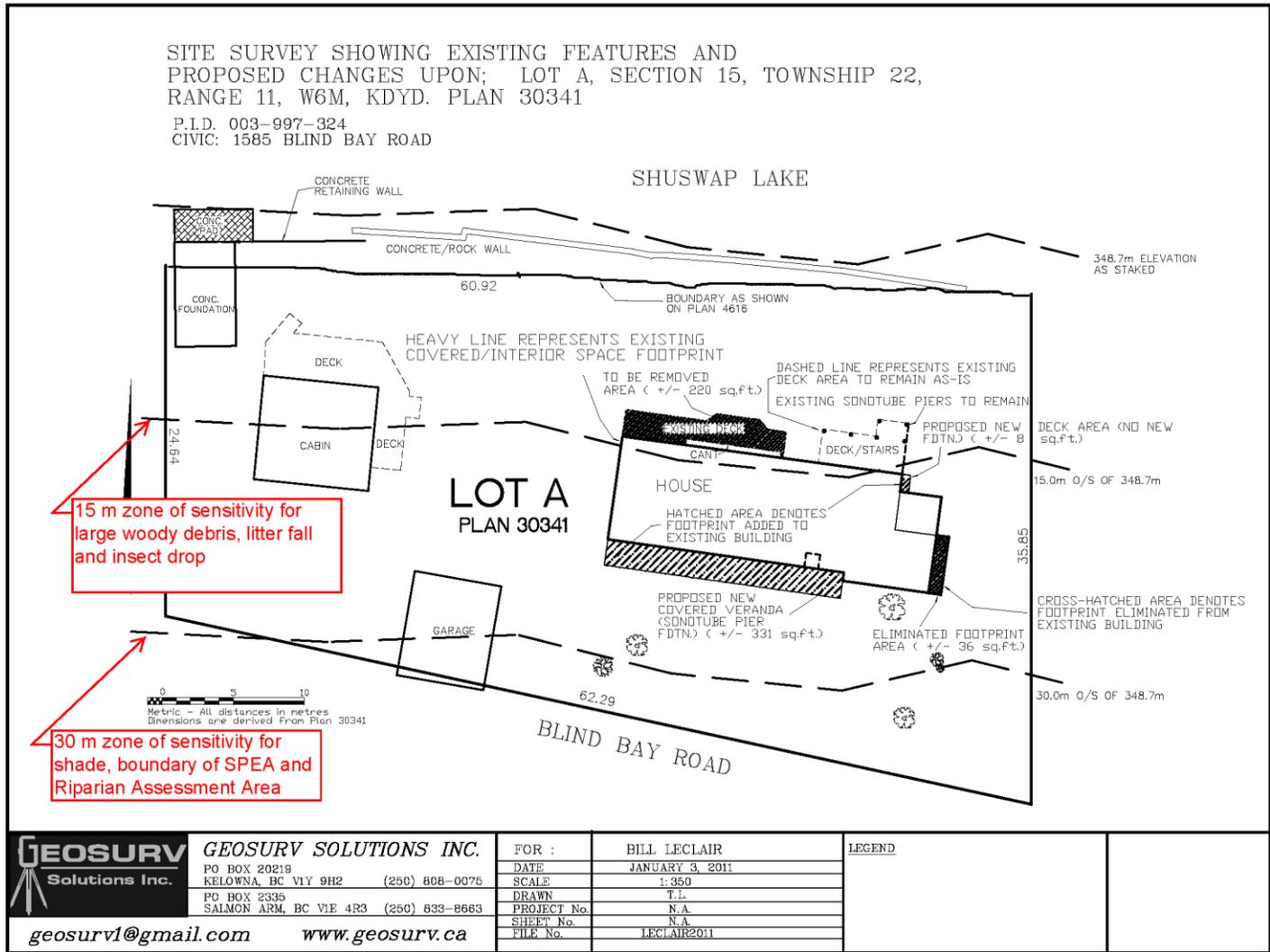
SPEA maximum (For ditch use table3-7)

I, Jeremy Ayotte R.P.Bio., hereby certify that:
 a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
 b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Bill LeClair;
 c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
 d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Comments

The SPEA for this Shuswap Lake shore property is 30 m, measured from the high water mark of Shuswap Lake (348.7 m). The SPEA was determined by the boundary of the zone of sensitivity for shade.

Section 3. Site Plan



Section 4. Measures to Protect and Maintain the SPEA

This section is required for detailed assessments. Attach text or document files, as need, for each element discussed in chapter 1.1.3 of Assessment Methodology. It is suggested that documents be converted to PDF before inserting into the assessment report. Use your "return" button on your keyboard after each line. You must address and sign off each measure. If a specific measure is not being recommended a justification must be provided.

| | |
|---|--|
| <p>1. Danger Trees</p> | <p>There are 2 danger trees within the SPEA that require removal near the building location. A certified danger tree assessor (Yves Cusson) has been onsite and will prepare a report that will be appended to this riparian assessment. One large diameter Douglas fir tree has been affected by Douglas fir bark beetle, the other is leaning over the house and poses a danger to life and property. Both stumps will be left as high as possible (~ 6 m) for wildlife value. Remaining trees (especially cedar) will be irrigated with an automated irrigation system that will be installed during renovation of the existing house.</p> <p>Debris from any trees within the SPEA requiring removal must remain to decay on the forest floor.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>f) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> <p>g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>2. Windthrow</p> | <p>Windthrow is an issue where new developments remove part of an existing forest, leaving the remaining trees exposed to high velocity winds. Given that the building site development is on previously cleared land and that there are no requirements for any tree removal, there are no expected windthrow issues that demand mitigation efforts.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>3. Slope Stability</p> | <p>Slope stability issues are a major area of concern in many riparian assessments, especially where a stream or lake is confined by a ravine. None of the slope instability indicators suggested in RAR assessment methods were found along this low-slope shoreline property. Protection and enhancement of existing mature vegetation below and along the top of lakeshore banks will contribute to the maintaining stability of the slope.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> | |

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| <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>4. Protection of Trees</p> | <p>The most likely impact to existing trees will be during demolition and re-construction of the new house. If any trees require removal as a consequence of this development, a record of the number and diameter (diameter at breast height – dbh) of any trees removed as a consequence of this reconstruction project must be kept and the DFO tree replacement criteria for the Salmon Arm subunit must be followed upon completion of construction. A post-development report by a QEP will document this requirement.</p> <p>Construction activities must avoid soil compaction and mechanical damage to the growth and function of tree roots throughout the SPEA, especially on the shoreward side of the house where trees provide important shade and nutrient inputs to fish habitat. There will be no changes of grade within the SPEA that could adversely impact riparian vegetation within the SPEA (e.g., changes in grade may change surface water flow, which may adversely affect the available water for SPEA trees). The rooting zone of trees within the SPEA must be protected from changes of grade outside of the SPEA. As a rule of thumb the rooting zone can be estimated by the drip line of the tree’s canopy. A no-disturbance zone that clearly marks the SPEA and the rooting zone of trees near the SPEA boundary must be established and these protective measures communicated to the building contractors and machine operators.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>5. Encroachment</p> | <p>This development will result in an encroachment within the 30 m SPEA by 8 m² (construction of covered veranda entry on road-side of house). To mitigate for this encroachment, property owners will re-establish native vegetation within a previously cleared 8 m² area of the SPEA. Re-establishing native vegetation near the high water mark will provide the most direct benefit to fish habitat given that this area has high-value rearing habitat and known Char shore spawning sites. Re-established vegetation must maintain 90% survival. A post-development report must provide details on this mitigation effort.</p> <p>The Riparian Area Regulation strongly supports permanent fencing of SPEAs. Certain aesthetic choices in fencing (e.g., split rail) can serve to protect these areas against encroachment and disturbance while minimizing the visual impact. The current owners plan to fence the road side of</p> |

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| | <p>this lot and sides to control encroachment and for the safety of children and pets.</p> <p>The importance of maintaining the SPEA as a no-disturbance zone must be communicated to building contractors, machine operators, as well as those living on this property. Clearly marking the SPEA boundary (30 m from Shuswap Lake), prior to any excavation or machine work will help ensure that the SPEA outside building footprints will remain undisturbed.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>6. Sediment and Erosion Control</p> | <p>Any stockpiled or excavated material during construction must be stored outside the riparian assessment area (30 m from high water) to minimize sediment and erosion from entering the SPEA. Piles of excavated material must be covered with a tarp if left for multiple days. Concrete wash water from concrete equipment must be kept out of the SPEA and riparian assessment area. Concrete trucks should be forced to wash out off the subject property. Treated lumber must not be cut within the SPEA. Refuelling of equipment must not occur within the Riparian Assessment Area (30 m from HWM). These measures must be communicated to building contractors and machine operators.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>7. Stormwater Management</p> | <p>The re-construction of a main house on this lot will include construction of a covered verandah on the road-side of the house. This will slightly increase (+8 m²) the impervious ground coverage within the SPEA. Runoff from the eaves troughs and perimeter foundation drainage must be allowed to infiltrate the soil above the high water mark to filter out any deleterious substance that may be suspended in the stormwater. The vegetation in the SPEA must not be compromised by changes in stormwater runoff.</p> |
| <p>I, <u>Jeremy Ayotte R.P.Bio</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> | |
| <p>8. Floodplain Concerns (highly</p> | <p>The existing house is elevated above the Shuswap Lake</p> |

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|---|---|
| mobile channel) | floodplain concerns (351 m elevation is the CSRD's requirement for the building envelope requirement). There are no identifiable floodplain issues with this development. |
| <p>I, <u>Jeremy Ayotte</u>, hereby certify that:</p> <ul style="list-style-type: none">a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Bill LeClair</u> ;c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation | |

Section 5. Environmental Monitoring

Attach text or document files explaining the monitoring regimen Use your "return" button on your keyboard after each line. It is suggested that all document be converted to PDF *before* inserting into the PDF version of the assessment report. Include actions required, monitoring schedule, communications plan, and requirement for a post development report.

The QEP (Jeremy Ayotte RPBio) has been on site to assess the SPEA setbacks and discuss prescriptive measures required during construction with the property owners (October 12, 2011). The Riparian Areas Regulation (RAR) requires that a post construction report must be written and submitted to the RAR notifications system following construction of the new building on this lot.

Actions Required by the Developer

Communicate and ensure strict compliance with the protective measures outlined in this report with the building contractor and machine operators. The SPEA boundary will need to be clearly marked out prior to construction and excavation for the new house. The measures provided in this report specifically protect those trees near the edge of the Shuswap Lake SPEA during construction. Marking the SPEA boundary and avoiding the rooting zone of these trees during excavation and construction are the responsibility of the property owner and will ensure adequate protection to the integrity of the SPEA. Any trees that require removal as a consequence of this reconstruction project must be documented (number and diameter at breast height) so that the DFO tree replacement criteria for the Salmon Arm subunit can be followed.

Consult with nursery staff on zonally appropriate plant species, planting density and plant age/size to complete mitigation commitment to re-establish native vegetation within 28 m² of SPEA. Re-established plantings must achieve 90% survival over the first 5 years. A post-construction report must provide details on this mitigation effort.

Site Visits and Monitoring Schedule

1. Initial site visit and assessment.
2. Meetings will be scheduled between the QEP and landowners as issues arise
3. Post construction site visit to assess and report on compliance with protective measures

Section 6. Photos

Photo 1. View of the existing house on the subject property near Blind Bay on Shuswap Lake. This development proposal involves rebuilding the main house on the existing foundation. Note the large riparian trees and shrubs maintained adjacent to the buildings on the property.



Photo 2. The cabin (grey) and section of repaired retaining wall and boathouse on right side of photo (see site plan).

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Photo 3. A failing section of rock/concrete retaining wall in front of the cabin and a disintegrating boathouse floor were recently replaced with new concrete. Both the retaining wall and boathouse are above the high water mark of Shuswap Lake (348.7 m).



Photo 4. A failing section of retaining wall (1.1 m high by 8.2 m long) was replaced with concrete and stepped ~0.4 m further back from the high water mark of Shuswap Lake.

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Photo 5. Allowing willow and other shrubs to establish in the lower riparian cobble beach area provides important rearing habitat for salmon and char fish species. This Shuswap Lake shoreline provides high value rearing habitat and has known char shore spawning sites. Mitigating for this development should consider re-establishing native vegetation in similar areas adjacent to the high water mark.

Section 7. Professional Opinion**Assessment Report Professional Opinion on the Development Proposal's riparian area.**Date 1. I Jeremy Ayotte

Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)

hereby certify that:

- a) I am a qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- b) I am qualified to carry out the assessment of the proposal made by the developer Bill LeClair, which proposal is described in section 3 of this Assessment Report (the "development proposal");
- c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
- d) In carrying out my/our assessment of the development proposal, I have/We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

- a) if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, **OR**

(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)

- b) if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

[NOTE: "qualified environmental professional" means an applied scientist or technologist, acting alone or together with another qualified environmental professional, if

(a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association,

(b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal, and

(c) the individual is acting within that individual's area of expertise.]

Submission Instructions

Riparian Areas Regulation – Qualified Environmental Professional – Assessment Report RAR-QEP-AR

Forms you will need to complete are

- Form 1 which has the database information, the description of the fisheries resources, development site plan, measures to protect and maintain the SPEA, and environmental monitoring.
- Form 2, if more QEPs are part of the project team.
- Either Form 3 the detailed assessment form(s) or Form 4 simple assessment form(s) which is for the results of the riparian assessment (SPEA width). Use enough copies of the form to complete the assessment of the site.
- Form 5 is the photo form(s). Duplicate for additional photos.

NB: See the Guidelines and the Assessment Methods for detailed instructions on the information required for completing the Assessment Report.

A complete Riparian Assessment Report based on the template forms must be converted to a *single* Portable Document Format PDF file prior to uploading onto the Notification System.

The Assessment Report must be complete, by submitting the information specified, and posted to provide notification to the local government, Ministry of Water, Land and Air Protection and the Department of Fisheries and Oceans Canada.

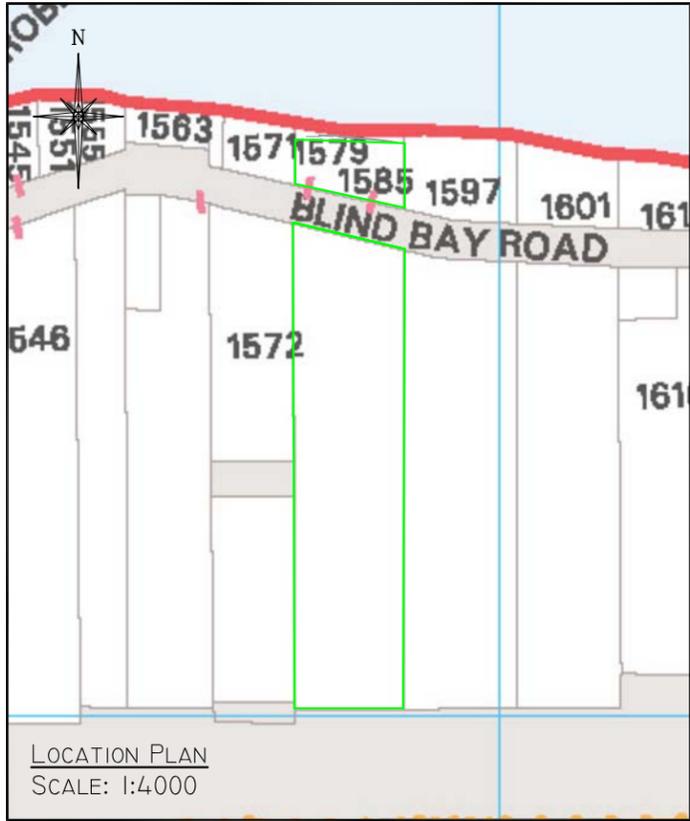
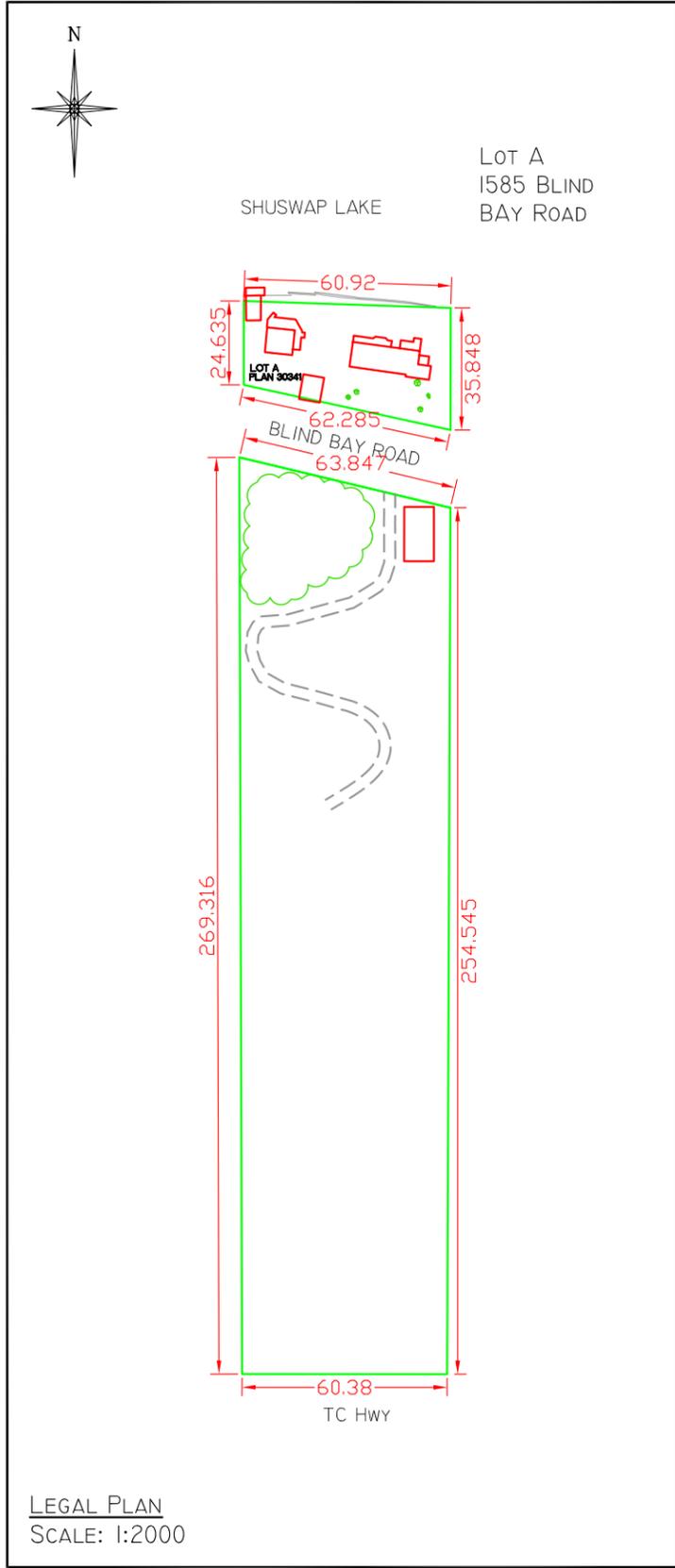
Tips for working with MS Word Template Forms

Using the forms

- Before beginning, print a hard copy of the form and the guidance files for reference
- Open the template
- Enter data into the shaded fields on the form
- Use TAB to move from one field to another; SHIFT-TAB to go in reverse
- Text and digital photos may be inserted from other applications
- The amount of text that can be entered in each box is limited and cannot be changed by the user; boxes with date information, for example, require input like: yyyy-mm-dd.

Saving the completed form

- Assign name to the completed form
- Save a word document (*.doc file)
- Do not overwrite the Template (*.dot file) with your completed form
- If you do overwrite the template, you can download a new copy from this web site



| BILL OF MATERIALS* | | |
|---|-----------------|-------------|
| DESCRIPTION | MODEL | QTY |
| 1 Leko Precast Ltd. 1200IGal Precast Septic tank | S0205 | 1 |
| 2 Leko Precast Ltd. 1200IGal Precast Septic Pump Out Tank | S0205M | 1 |
| 3 Infiltrators | Quick4 E.Q. 36 | 160 |
| 4 Infiltrator Posilock End Caps - 6 in. Invert | Quick4 E.Q. 36 | 16 |
| 5 Infiltrator Pipe Hangers - Polypropylene | 15" | 168 |
| 6 Orifice Sheilds | Poly-Loc | 8 |
| 7 38mm (1.5") Ø PVC Pipe - Laterals (drilled) | SCHD 40 | 207m (680') |
| 8 38mm (1.5") Ø PVC Pipe - Distribution | SCHD 40 | 55m (180') |
| 9 38mm (1.5") Ø PVC Couplings | SCHD 40 | 5 |
| 10 38mm (1.5") Ø PVC End Caps - Fipt | SCHD 40 | 9 |
| 11 38mm (1.5") Ø PVC 45° Elbows - soc. xsoc. (or 1/2 # Sweeps) | SCHD 40 | 16 |
| 12 38mm (1.5") Ø PVC Ball Valve - soc. xsoc. | SCHD 40 | 8 |
| 13 38mm (1.5") Ø PVC 90° Elbow - soc. xsoc. | SCHD 40 | 4 |
| 14 38mm (1.5") Ø PVC 45° Elbow - soc. xsoc. | SCHD 40 | 16 |
| 15 38mm (1.5") Ø PVC Male Adaptor - soc. x thread | SCHD 40 | 8 |
| 16 38mm (1.5") Ø PVC Union - fipt x fipt | SCHD 40 | 4 |
| 17 38mm (1.5") Ø x75mm TOE Nipple | SCHD 80 | 16 |
| 18 50mm (2") to 38mm (1.5") Ø PVC Reducer Bushing - spigot xsoc. | SCHD 40 | 12 |
| 19 50mm (2") to 38mm (1.5") Ø PVC Reducer Bushing - spigot x fipt | SCHD 40 | 1 |
| 20 50mm (2") Ø PVC Tee - soc. xsoc. xsoc. | SCHD 40 | 4 |
| 21 50mm (2") Ø PVC Pipe | SCHD 40 | 30m (100') |
| 22 50mm (2") Ø PVC 90° Coupling - soc. xsoc. | SCHD 40 | 4 |
| 23 50mm (2") Ø PVC 90° Elbow - soc. xsoc. | SCHD 40 | 3 |
| 24 50mm (2") Ø PVC Ball Valve - soc. xsoc. | SCHD 40 | 1 |
| 25 50mm (2") Ø PVC Union - soc. xsoc. | SCHD 40 | 2 |
| 26 50mm (2") Ø PVC Swing Check Valve - soc. x soc. | SCHD 40 | 1 |
| 27 50mm (2") Ø x75mm TOE PVC Nipple | SCHD 80 | 2 |
| 28 50mm (2") Ø HDPE x 2" Mipt Compression Fitting | SCHD 40 | 1 |
| 29 50mm (2") Ø PVC Male Adaptor - soc. x mipt | SCHD 40 | 3 |
| 30 100mm (4") Ø PVC Wye - soc. xsoc. X soc. (Clean out) | CSA Sewer Grade | 5 |
| 31 100mm (4") Ø PVC Screw Cap Assembly - spigot | CSA Sewer Grade | 19 |
| 32 100mm (4") Ø PVC Pipe | CSA Sewer Grade | 61m (200') |
| 33 Pump - Myers | P102 | 1 |
| 34 Aquaworx Simplex Pump Control Panel | S01 | 1 |
| 35 Transducer with cord long enough to reach Control Panel (shouldn't be spliced) | TRN-XX | 1 |
| 36 Valve Boxes - Irrigation Valve Boxes | 6" Round | 8 |
| 37 Valve Boxes - Irrigation Valve Boxes | 12" x 18" | 0 |
| 38 Effluent-filter Assembly (Tuf-Tite) | 1/16" | 1 |
| 39 Hydro-Tek indexing valve | 6604 | 1 |
| 40 Tuf-Tite risers for indexing valve | 24" x 12" tall | 2 |
| 41 Tuf-Tite lid indexing valve | 24" | 1 |
| 42 Tuf-Tite risers for Septic Tanks | 20" x 12" tall | 3 |
| 43 Tuf-Tite riser for Pump Chanber | 24" x 12" tall | 2 |
| 44 50mm HDPE | SDR 17 | 150m (500') |
| * Materials List is a guide only. Actual material amounts may vary | | |

SEWAGE DISPOSAL SYSTEM FOR:
LOT A, PLAN KAP30341, SECTION 15,
TOWNSHIP 22, RANGE 11, W6M, KDYD
FOLIO:
23 789 09696.000

- GENERAL NOTES:
1. THE SEPTIC TANK SHALL BE LOCATED TO PROVIDE A MIN. OF 2 % FALL FOR ALL GRAVITY SEWER DRAINS.
 2. ROOF DRAINAGE SHALL BE DIVERTED AWAY FROM TREATMENT SYSTEM AND THE DISPOSAL AREA.
 3. THE DISPOSAL AREA SHALL BE COVERED TO PROVIDE SURFACE DRAINAGE AND BE PROPERLY SEEDED OR SODDED TO PREVENT EROSION, AND PROPERLY MAINTAINED. HERBACEOUS PLANTS SUCH AS WILDFLOWERS AND GRASSES ARE GOOD CHOICES FOR PLANTING. GRASSES ARE ESPECIALLY DESIRABLE DUE TO THEIR FIBROUS ROOT SYSTEMS WHICH HOLD THE SOIL IN PLACE.
 4. SHALLOW ROOTED SHRUBS SUCH AS CEDARS MAY BE PLANTED ON THE SIDE SLOPE OR AT THE TOE OF THE DISPOSAL AREA.
 5. EFFLUENT FILTER TO BE CLEANED EVERY SIX MONTHS.
 6. WATER CONDITIONER, WATER SOFTENER, HOT TUB, OR SWIMMING POOL DISCHARGE CANNOT BE FLUSHED INTO THE SEWAGE TREATMENT SYSTEM.
 7. EFFLUENT SAMPLES CAN BE TAKEN FROM THE FLOUT CHAMBER. SAMPLE TO BE ANALYZED FOR BOD₅, TSS, AMMONIA, PH, AND FECAL COLIFORM.
 8. THE ON-SITE WASTEWATER TREATMENT SYSTEM SHALL BE UNDER MAINTENANCE CONTRACT AND SERVICED SEMI-ANNUALLY. DOSE/EVENTS AND PREFORMED MAINTENANCE TO BE RECORDED IN MAINTENANCE REPORT.

- DESIGN CALCULATIONS:
- A. DESIGN FLOW = 3,000LPD (660IGPD) BASED ON 5+2 BEDROOMS.
 - B. RESIDENTIAL SEWAGE INFLUENT QUALITY :
BOD = 250 MG/L
TSS = 250 MG/L
FOG = 15 MG/L
 - C. DISPOSAL AREA CONSISTS OF 8 LATERALS EACH WITH 20 INFILTRATOR QUICK4 EQUALIZER 36 CHAMBERS AT 80' PLUS END CAPS, TOTALING 664'.
 - D. HYDRAULIC LOADING RATE = 25 L/M²/DAY



Jayne Franklin, P.Eng.
250.832.5919
DRAWING NO. II-033-01

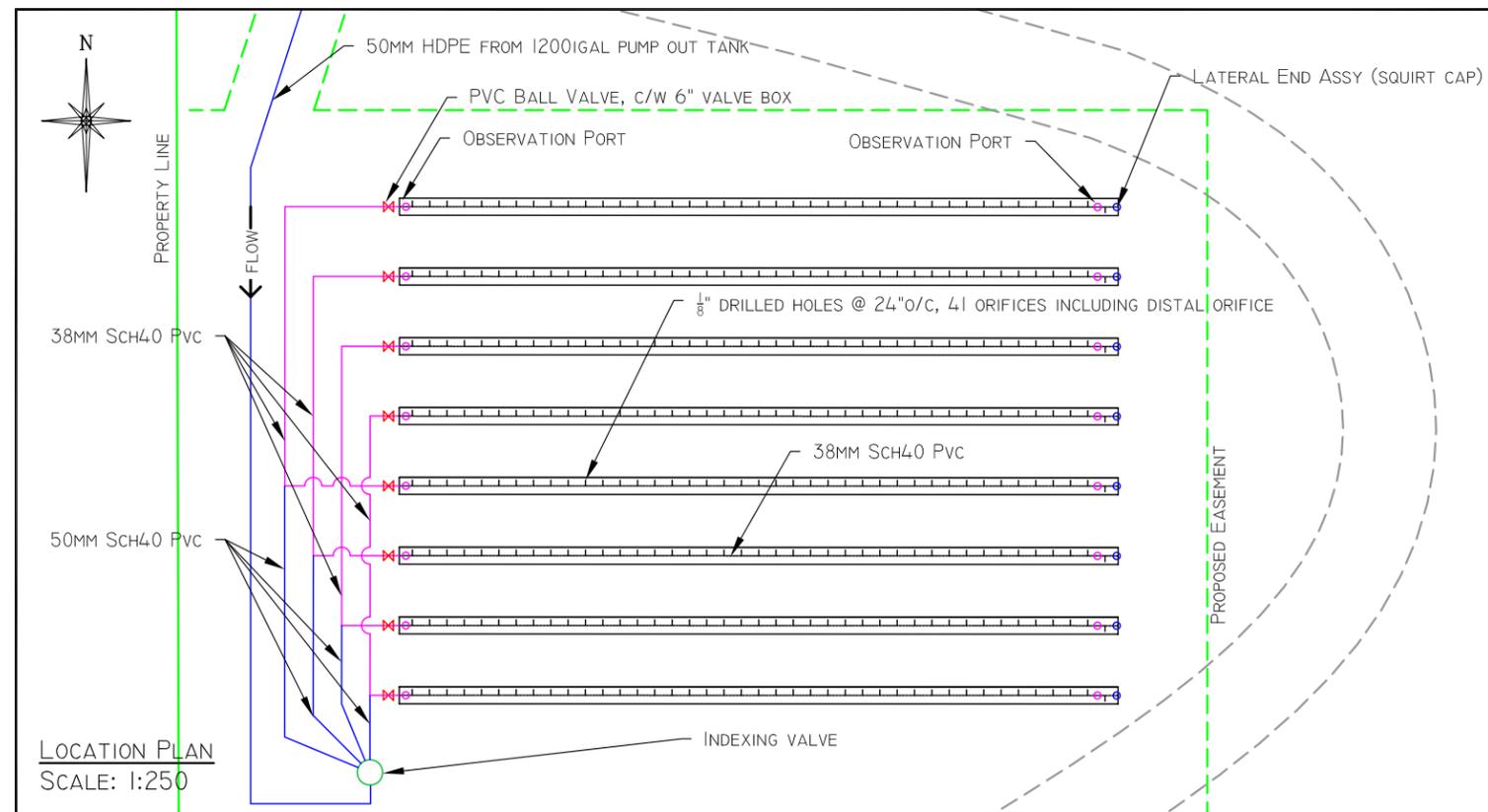
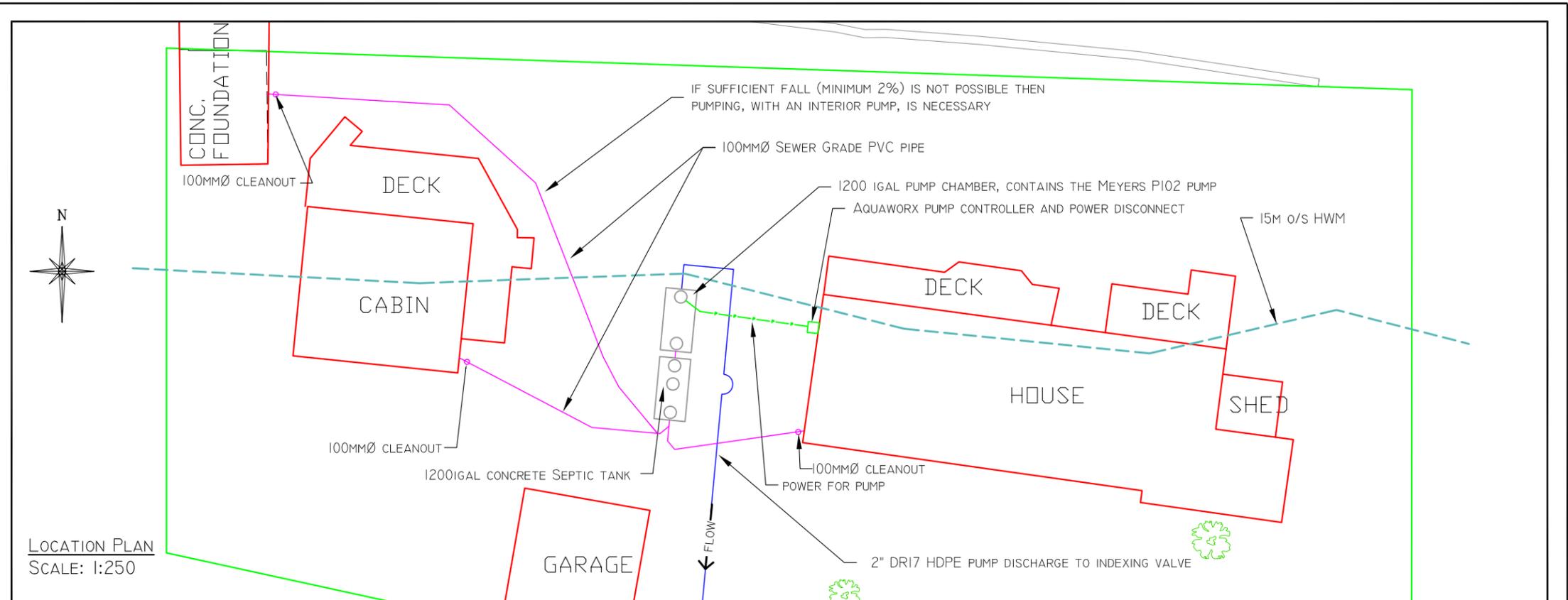
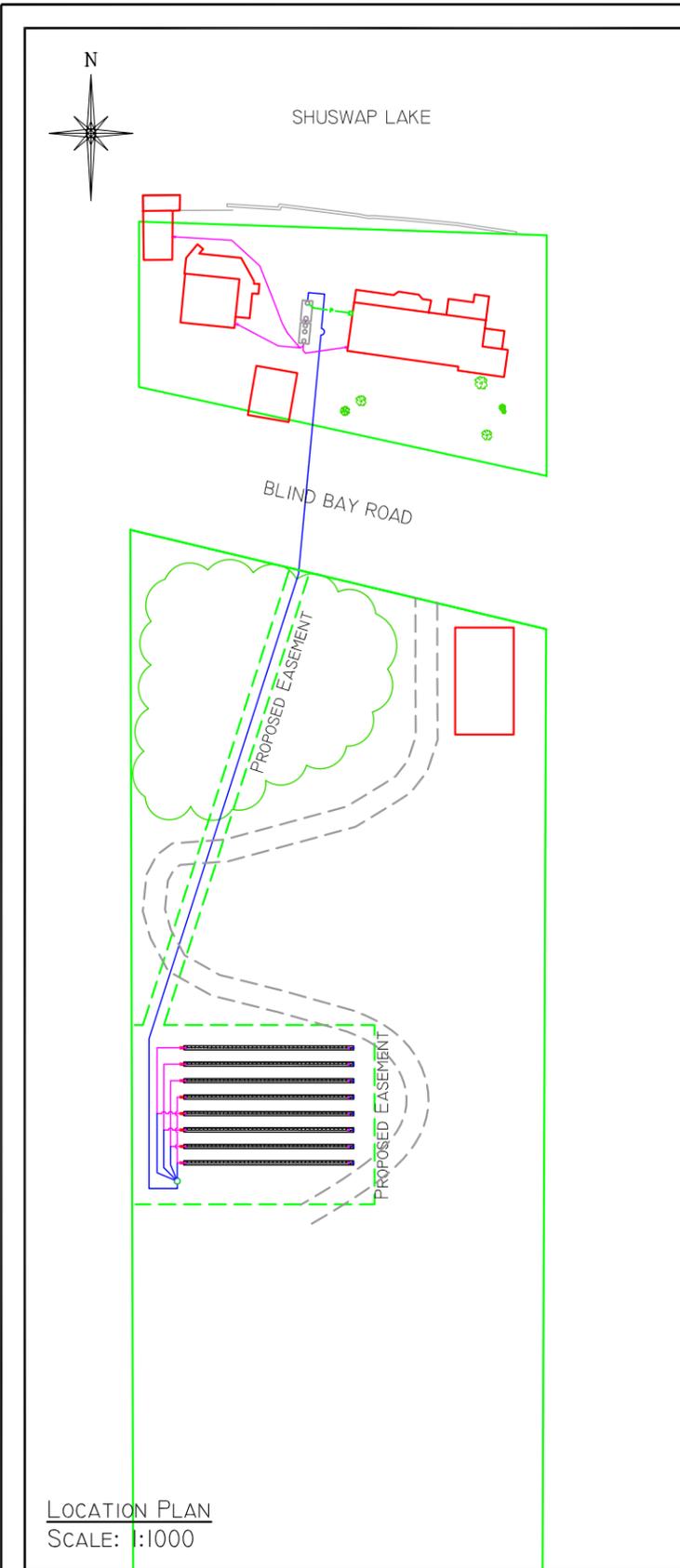
CLIENT: LECLAIR HOLDINGS
1864 WALNUT CRESCENT, COQUITLAM

PROJECT: II-033-S
SEWERAGE SYSTEM

TITLE: PLOT PLAN & GENERAL NOTES

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| Aquaworx Panel Settings* | | | | |
|--------------------------|---|---|----------------------------|-----------|
| Norm ON | = | 2 | minutes | 0 seconds |
| Norm OFF | = | 90 | minutes | 0 seconds |
| Veto ON | = | 2 | minutes | 0 seconds |
| Veto OFF | = | 45 | minutes | 0 seconds |
| High | = | 40 | inches from bottom of bell | |
| Veto Level | = | 28 | inches from bottom of bell | |
| Start | = | 6 | inches from bottom of bell | |
| S Warn | = | Do NOT Change | | |
| Z-bias | = | as marked on the transducer bell | | |
| Auto Clear | = | 1 (one) dose (set to "dose" through the Palm Pilot) | | |

*Settings to be confirmed after pump draw down test

CLIENT: LECLAIR HOLDINGS
1864 WALNUT CRESCENT, COQUITLAM

PROJECT: II-033-S
SEWERAGE SYSTEM

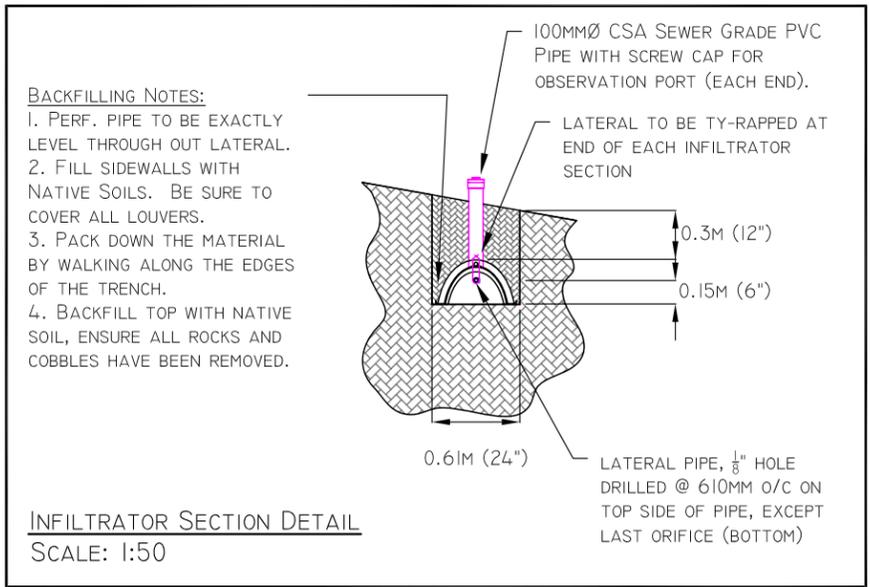
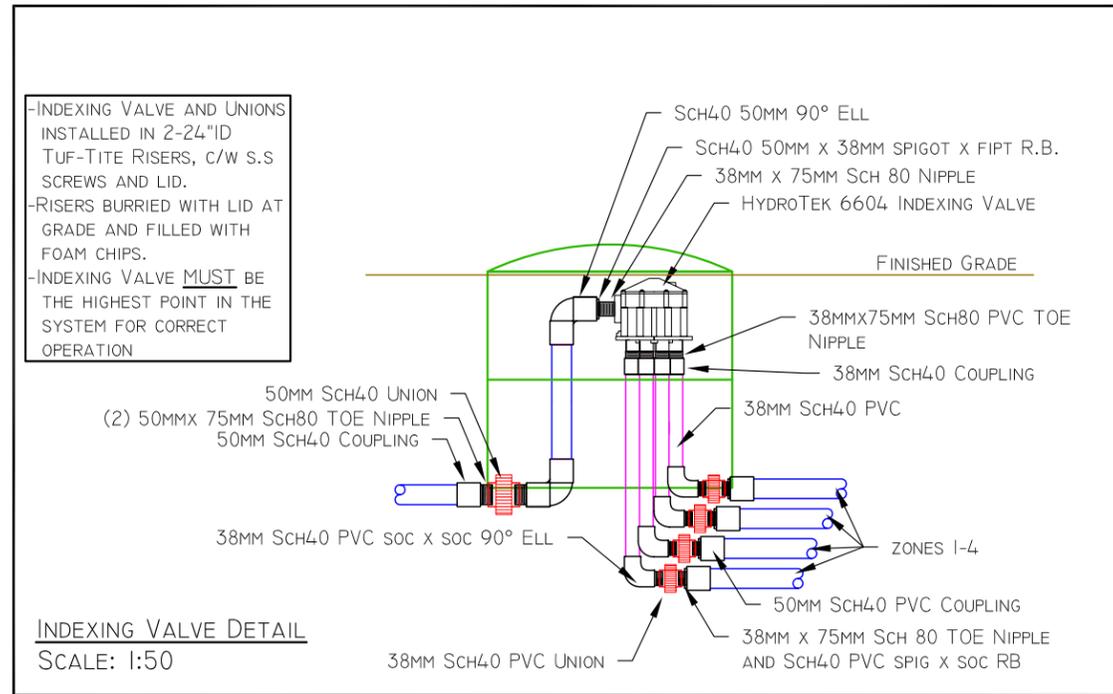
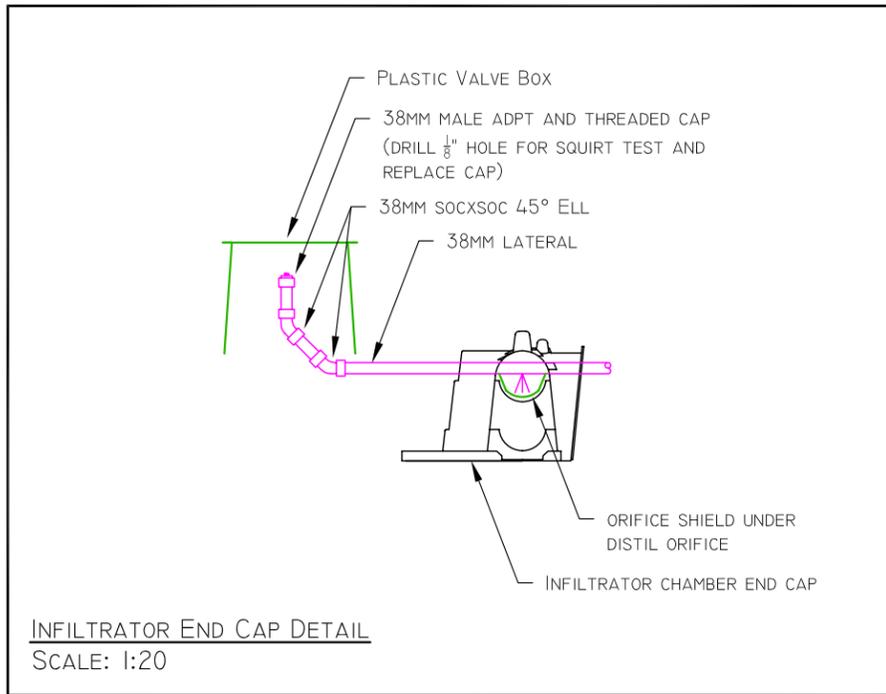
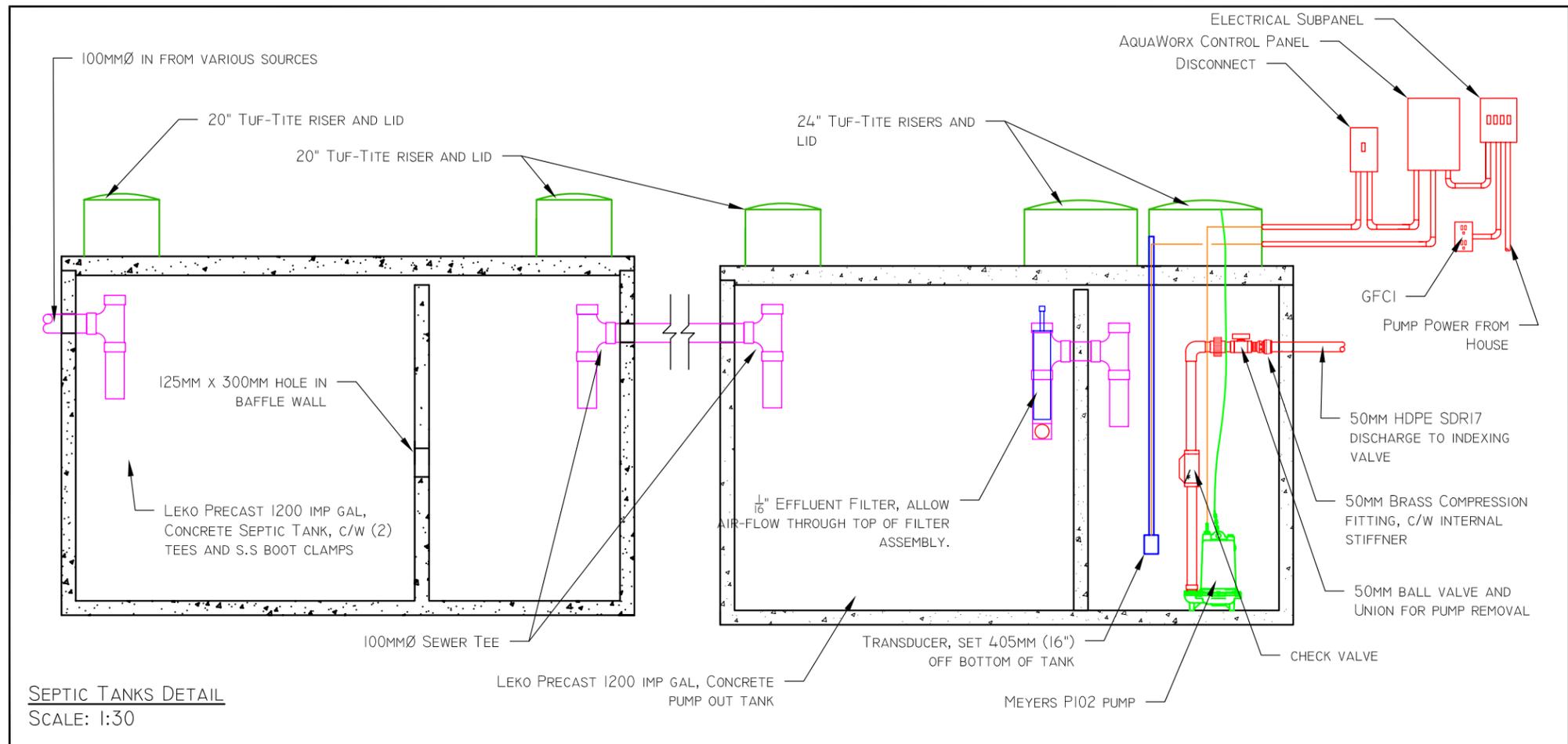
TITLE: SYSTEM LOCATION PLANS

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DRAWING NO. II-033-02



CLIENT: LECLAIR HOLDINGS
1864 WALNUT CRESCENT, COQUITLAM

PROJECT: 11-033-S
SEWERAGE SYSTEM

TITLE: DISPOSAL FIELD &
SEPTIC TANK DETAILS

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