



## **REQUEST FOR QUOTATIONS**

**Title:** **RIPARIAN WATERING SERVICES**

**Reference No.:** 1220-040-2016-021

**FOR THE SUPPLY OF GOODS AND/OR SERVICES**

(General Services)

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## REQUEST FOR QUOTATIONS

### 1. INTRODUCTION

The City of Surrey (the "City") invites contractors to provide a quotation on the form attached as Schedule B to Attachment 1 (the "Quotation") for the supply of the goods (if any) and/or services described in Schedule A to Attachment 1 (the "Goods and/or Services"). The description of the Goods and/or Services sets out the minimum requirements of the City. A person that submits a Quotation (the "Contractor") should prepare a Quotation that meets the minimum requirements, and may as it may choose, in addition, also include goods, services or terms that exceed the minimum requirements.

### 2. ADDRESS FOR DELIVERY

A Quotation should be labelled with the Contractor's name, RFQ title and number. A Quotation should be submitted in the form attached to this RFQ as Schedule B – Quotation.

The Contractor may submit a Quotation either by email or in a hard copy, as follows:

#### (a) Email

If the Contractor chooses to submit by email, the Contractor should submit the Quotation electronically in a single pdf file to the City by email at: [purchasing@surrey.ca](mailto:purchasing@surrey.ca)

PDF emailed Quotations are preferred and the City will confirm receipt of emails. Note that the maximum file size the City can receive is 10Mb. If sending large email attachments, Contractors should phone to confirm receipt. A Contractor bears all risk that the City's equipment functions properly so that the City receives the Quotation.

#### (b) Hard Copy

If the Contractor chooses NOT to submit by email, the Contractor should submit one original unbound Quotation and one (1) copy (two (2) in total) which should be delivered to the City at the office of:

Name: Richard D. Oppelt, Purchasing Manager  
at the following location:

Address: Surrey City Hall  
Finance & Technology Department – Purchasing Section  
Reception Counter, 5<sup>th</sup> Floor West  
13450 – 104 Avenue, Surrey, B.C., Canada, V3T 1V8

### 3. DATE

The City would prefer to receive Quotations on or before **April 6, 2016**. The City's office hours are 8:30 a.m. to 4:00 p.m., Monday to Friday, except statutory holidays.

#### **4. INQUIRIES**

All inquiries related to this RFQ should be directed in writing to the person named below (the “**City Representative**”). Information obtained from any person or source other than the City Representative may not be relied upon.

Name: Richard D. Oppelt, Purchasing Manager  
E-mail: [purchasing@surrey.ca](mailto:purchasing@surrey.ca)  
Reference: 1220-040-2016-021

#### **5. ADDENDA**

If the City determines that an amendment is required to this RFQ, the City's Representative will issue a written addendum by posting it on the BC Bid Website at [www.bcbid.gov.bc.ca](http://www.bcbid.gov.bc.ca) (the “BC Bid Website”) and the City Website at [www.surrey.ca](http://www.surrey.ca) (the “City Website”) that will form a part of this RFQ. It is the responsibility of Contractor to check the BC Bid Website and the City Website for addenda. The only way this RFQ may be added to, or amended in any way, is by a formal written addendum. No other communication, whether written or oral, from any person will affect or modify the terms of this RFQ or may be relied upon by any Contractor. By delivery of a Quotation, the Contractor is deemed to have received, accepted and understood the entire RFQ, including any and all addenda.

#### **6. NO CONTRACT**

This RFQ is simply an invitation for quotations (including prices and terms) for the convenience of all parties. It is not a tender and no obligations of any kind will arise from this RFQ or the submission of Quotations. The City may negotiate changes to any terms of a Quotation, including terms in Attachment 1 and Schedules A and B and including prices, and may negotiate with one or more Contractors or may at any time invite or permit the submission of quotations (including prices and terms) from other parties who have not submitted Quotations.

#### **7. ACCEPTANCE**

A Quotation will be an offer to the City which the City may accept at any time by signing the copy of the Quotation and delivering it to the Contractor. A Quotation is not accepted by the City unless and until both the authorized signatory and the purchasing representative have signed on behalf of the City. Delivery of the signed Quotation by the City may be by fax or pdf email.

#### **8. CONTRACTOR'S EXPENSES**

Contractors are solely responsible for their own expenses in preparing and submitting Quotations, and for any meetings, negotiations or discussions with the City or its representatives and consultants, relating to or arising from the RFQ. The City will not be liable to any Contractor for any claims, whether for costs, expenses, losses or damages, or loss of anticipated profits, incurred by the Contractor in preparing and submitting a Quotation, or participating in negotiations for a contract, or other activity related to or arising out of this RFQ.

## **9. CONTRACTOR'S QUALIFICATIONS**

By submitting a Quotation, a Contractor represents that it has the expertise, qualifications, resources, and relevant experience to supply the Goods and/or Services.

## **10. CONFLICT OF INTEREST**

A Contractor must disclose in its Quotation any actual or potential conflicts of interest and existing business relationships it may have with the City, its elected or appointed officials or employees. The City may rely on such disclosure.

## **11. SOLICITATION OF COUNCIL MEMBERS, CITY STAFF AND CITY CONSULTANTS**

Contractors and their agents will not contact any member of the City Council, City staff or City consultants with respect to this RFQ, other than the contact person named in Section 4, at any time prior to the award of a contract or the cancellation of this RFQ.

## **12. CONFIDENTIALITY**

All Quotations become the property of the City and will not be returned to the Contractor. All Quotations will be held in confidence by the City unless otherwise required by law. Contractors should be aware the City is a "public body" defined by and subject to the *Freedom of Information and Protection of Privacy Act* of British Columbia.

## **13. SIGNATURE**

The legal name of the person or firm submitting the Quotation should be inserted in the Quotation. The Quotation should be signed by a person authorized to sign on behalf of the Contractor and include the following:

- (a) If the Contractor is a corporation then the full name of the corporation should be included, together with the names of authorized signatories. The Quotation should be executed by all of the authorized signatories or by one or more of them provided that a copy of the corporate resolution authorizing those persons to execute the Quotation on behalf of the corporation is submitted;
- (b) If the Contractor is a partnership or joint venture then the name of the partnership or joint venture and the name of each partner or joint venturer should be included, and each partner or joint venturer should sign personally (or, if one or more person(s) have signing authority for the partnership or joint venture, the partnership or joint venture should provide evidence to the satisfaction of the City that the person(s) signing have signing authority for the partnership or joint venture). If a partner or joint venturer is a corporation then such corporation should sign as indicated in subsection (a) above; or
- (c) If the Contractor is an individual, including a sole proprietorship, the name of the individual should be included.

#### **14. MULTIPLE CONTRACTORS**

The City reserves the right and discretion to divide up the Goods and/or Services, either by scope, geographic area, or other basis as the City may decide, and to select one or more Contractors to enter into discussions with the City for one or more Contracts to perform a portion or portions of the Goods and/or Services. If the City exercises its discretion to divide up the Goods and/or Services, the City will do so reasonably having regard for the RFQ and the basis of Quotations.

In addition to any other provision of this RFQ, Quotations may be evaluated on the basis of advantages and disadvantages to the City that might result or be achieved from the City dividing up the Goods and/or Services and entering into one or more Contracts with one or more Contractors.

**ATTACHMENT 1**



**DRAFT QUOTATION AGREEMENT**

**Title:** **RIPARIAN WATERING SERVICES**

**Reference No.:** 1220-040-2016-021

**FOR THE SUPPLY OF GOODS AND/OR SERVICES**

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## DRAFT QUOTATION AGREEMENT

Reference RFQ Title: **RIPARIAN MAINTENANCE SERVICES**

**THIS AGREEMENT** dated for reference this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_.

AGREEMENT NO. 1220-040-2016-021

**BETWEEN:**            **CITY OF SURREY**  
13450 - 104 Avenue  
Surrey, B.C., Canada, V3T 1V8  
(the "**City**")

**AND:**

\_\_\_\_\_  
*(Insert Full Legal Name and Address of Contractor)*

(the "**Contractor**")

**WHEREAS** the City wishes to engage the Contractor to provide Goods and/or Services and the Contractor agrees to provide Goods and/or Services.

**THEREFORE** in consideration of the payment of one (\$1.00) dollar and other good and valuable consideration paid by each of the parties to the other (the receipt and sufficiency of which is hereby acknowledged) the City and the Contractor agree as follows:

### 1. DEFINITIONS AND INTERPRETATION

#### 1.1 In these General Terms and Conditions:

- (a) "Agreement" means this agreement and all schedules attached hereto;
- (b) "City" means the City of Surrey;
- (c) "Contractor" means a contractor whose Quotation has been accepted by the City and who is providing the Goods and/or Services under this Agreement;
- (d) "Disbursements" means the actual out-of-pocket costs and expenses as identified in Section B-2, which the Contractor incurs in providing the Goods and/or Services;
- (e) "Fees" means the price set out in Section B-2 for the provision of the Goods and/or Services, unless otherwise agreed by the parties in writing, and includes all taxes;
- (f) "Goods" means the equipment or materials (if any) as described generally in Schedule A, to Attachment 1, including anything and everything required to be done for the fulfilment and completion of this Agreement;
- (g) "Indemnities" has the meaning described in Section 11.2;
- (h) "RFQ" means the Request for Quotations;
- (i) "Services" means the services as described generally in Schedule A, to Attachment 1 including anything and everything required to be done for the fulfilment and completion of this Agreement; and
- (j) "Term" has the meaning described in Section 3.1.

- 1.2 This Agreement may be modified only by express and specific written agreement. In the event of a conflict between the provisions of any documents listed below, then the documents shall govern and take precedence in the following order:
- (a) this Agreement;
  - (b) Addenda (if any);
  - (c) the RFQ; and
  - (d) other terms, if any, that are agreed to by the parties in writing.
- 1.3 The following attached Schedules are a part of this Agreement:

Schedule A – Specifications of Goods & Scope of Services;  
Schedule A-1 – List of Sites and Maps; and  
Schedule B – Quotation.

## **2. GOODS AND/OR SERVICES**

- 2.1 The Contractor covenants and agrees with the City to provide the Goods and/or Services in accordance with this Agreement. The Goods and/or Services provided will meet the specifications and scope set out in Schedule A, to Attachment 1, and as described in Schedule B, to Attachment 1.
- 2.2 The City may from time to time, by written notice to the Contractor, make changes in the specifications of Goods and scope of Services. The Fees will be increased or decreased by written agreement of the City and the Contractor according to the rates set out in Schedule B, to Attachment 1.
- 2.3 The Contractor will, if required in writing by the City, provide additional goods or services. The terms of this Agreement will apply to any additional goods or services, and the fees for additional goods or services will generally correspond to the fees as described in Schedule B, to Attachment 1. The Contractor will not provide any additional goods or services in excess of the specification of Goods and scope of Services requested in writing by the City.
- 2.4 The Contractor will perform the Services with that degree of care, skill and diligence normally provided by a qualified and experienced practitioner performing services similar to the Services, and on the understanding that the City is relying on the Contractor's experience and expertise. The Contractor represents that it has the expertise, qualifications, resources, and relevant experience to supply the Goods and/or Services.
- 2.5 The Contractor will deliver the Goods free and clear of all liens and encumbrances in the manner and to the destination stipulated. In the event of the Contractor's failure to meet this condition, the Contractor will, on written notice from the City, forthwith return all monies paid by the City on account of the Goods and in addition the City may by written notice terminate this Agreement without liability, and in such event, in addition to the above, the Contractor will be liable for any and all expenses or losses incurred by the City resulting from such failure.

## **3. TERM**

- 3.1 The Contractor will provide the Goods and/or Services for the period commencing on May 1, 2016 and terminating on April 30, 2017 (the "Term").



- 3.2 The City may at any time prior to 30 days before the end of the Term, by written notice to the Contractor, extend the Term for a period of time not to exceed two (2) additional one (1) year terms. If the City elects to extend the Term, the provisions of this Agreement will remain in force, including the Fees, except where amended in writing by the parties.

#### **4. TIME**

- 4.1 Time is of the essence.

#### **5. FEES AND DISBURSEMENTS**

- 5.1 The City will pay the Fees and Disbursements to the Contractor in accordance with this Agreement. Payment by the City of the Fees and Disbursements will be full payment for the Goods and Services and the Contractor will not be entitled to receive any additional payment from the City.
- 5.2 For greater certainty, costs of general management, non-technical supporting services and general overhead are deemed to be covered by the Fees and will not be subject to additional payment by the City. The Fees shall also include without limitation all costs of boxing, packing, crating, and loading and unloading the Goods at the prescribed destinations.

#### **6. PAYMENT**

- 6.1 Subject to any contrary provisions set out in Schedule B, to Attachment 1, the Contractor will submit a monthly invoice to the City requesting payment of the portion of the Fees relating to the Goods and/or Services provided in the previous month. Invoices must include the Contractor's name, address and telephone number, the City's purchase order number, the Contractor's invoice number, the names, charge-out rates and number of hours worked in the previous month of all employees of the Contractor that have performed Services during the previous month; the total budget for the Goods and/or Services and the amount of the budget expended to the date of the invoice; taxes (if any); and grand total of the invoice. The Contractor will provide the City copies of the packing slips and landscape supply company receipts as back-up to the invoice. The Contractor will on request of the City provide receipts and invoices for any additional disbursement items claimed on the invoices. In a spreadsheet format, the Contractor will also append copies of the daily field logs of the Crew to identify the dates, locations and the amount of time spent per location for each of the sites within the time period being invoiced for.
- 6.2 If the City reasonably determines that any portion of an invoice is not payable, then the City will so advise the Contractor.
- 6.3 The City will pay the portion of an invoice which the City determines is payable within 30 days of the receipt of the Invoice, except the City may hold back from payments 10% of the amount the City determines is payable to the Contractor until such time as the Contractor provides its final report to the City; and
- 6.4 If the Contractor offers the City a cash discount for early payment, then the City may, at the City's sole discretion, pay the portion of an Invoice which the City determines is payable at any time after receipt of the Invoice.

Invoices will be submitted by the Contractor by mail to:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 6.5 Unless otherwise provided, all dollar amounts referred to in this Agreement are in lawful money of Canada.
- 6.6 If the Contractor is a non-resident of Canada and does not provide to the City a waiver of regulation letter, the City will withhold and remit to the appropriate governmental authority the greater of:
- (a) 15% of each payment due to the Contractor; or
  - (b) the amount required under applicable tax legislation.

## **7. USE OF WORK PRODUCT**

- 7.1 The Contractor hereby sells, assigns and transfers to the City the right, title and interest required for the City to use and receive the benefit of all the reports, drawings, plans, designs, models, specifications, computer software, concepts, products, designs or processes or other such work product produced by or resulting from the Services rendered by the Contractor. This section does not give the City the right to sell any such work product to any third party and the City may sell the work product only with the prior approval of the Contractor. The Contractor may retain copies of the work product.

## **8. PERSONNEL AND SUBCONTRACTORS**

- 8.1 The Contractor will provide only personnel who have the qualifications, experience and capabilities to provide the Goods and perform the Services.
- 8.2 The Contractor will provide the Goods and/or Services using the personnel and sub-contractors as may be listed in the Quotation, and the Contractor will not remove any such listed personnel or sub-contractors from the Services without the prior written approval of the City.
- 8.3 If the City reasonably objects to the performance, qualifications, experience or suitability of any of the Contractor's personnel or sub-contractors then the Contractor will, on written request from the City, replace such personnel or sub-contractors.
- 8.4 Except as provided for in Section 8.2, the Contractor will not engage any personnel or sub-contractors, or sub-contract or assign its obligations under this Agreement, in whole or in part, without the prior written approval of the City.
- 8.5 The Contractor will preserve and protect the rights of the City with respect to any Services performed under sub-contract and incorporate the conditions of this Agreement into all sub-contracts as necessary to preserve the rights of the City under this Agreement. The Contractor will be as fully responsible to the City for acts and omissions of sub-contractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the Contractor.

## **9. LIMITED AUTHORITY**

- 9.1 The Contractor is not and this Agreement does not render the Contractor an agent or employee of the City, and without limiting the above, the Contractor does not have authority to enter into any contract or reach any agreement on behalf of the City, except for the limited purposes as may be expressly set out in this Agreement, or as necessary in order to provide the Goods and/or Services. The Contractor will make such lack of authority clear to all persons with whom the Contractor deals in the course of providing the Goods and/or Services. Every vehicle used by the Contractor in the course of providing the Goods and/or Services shall identify the Contractor by name and telephone number.
- 9.2 The Contractor is an independent contractor. This Agreement does not create the relationship of employer and employee, a partnership, or a joint venture. The City will not control or direct the details, means or process by which the Contractor performs the Services. The Contractor will determine the number of days and hours of work required to properly and completely perform the Services. The Contractor is primarily responsible for performance of the Goods and/or Services and may not delegate or assign any Services to any other person except as provided for in section 8.4. The Contractor will be solely liable for the wages, fringe benefits, work schedules and work conditions of any partners, employees or sub-contractors.

## **10. CONFIDENTIALITY AND DISCLOSURE OF INFORMATION**

- 10.1 Except as provided for by law or otherwise by this Agreement, the Contractor will keep strictly confidential any information supplied to, obtained by, or which comes to the knowledge of the Contractor as a result of the provision of the Goods or performance of the Services and this Agreement, and will not, without the prior express written consent of the City, publish, release, disclose or permit to be disclosed any such information to any person or corporation, either before, during or after termination of this Agreement, except as reasonably required to complete the Goods and/or Services.
- 10.2 The Contractor acknowledges that the City is subject to the *Freedom of Information and Protection of Privacy Act* of British Columbia and agrees to any disclosure of information by the City required by law.
- 10.3 The Contractor agrees to return to the City all of the City's property at the completion of this Agreement, including any and all copies or originals of reports provided by the City.

## **11. WARRANTIES**

- 11.1 The Contractor warrants that the Goods shall be free from defects in design, materials, workmanship and title, shall conform in all respects to the terms of this Agreement, shall be fit and suitable and perform satisfactorily for the purposes and under the conditions made known to the Contractor by the City or which were reasonably inferable. The Goods shall be at least equal to the higher of national standards or codes (such as, by way of illustration, CSA or ASTM), or standards and codes customarily applicable at the place where the City will use the Goods. The Goods shall be of the best quality, if no quality is specified. This general warranty is independent of and without prejudice to any specific warranty or service guarantee offered by the Contractor or third party manufacturer or supplier of the Goods in connection with the purpose for which the Goods were purchased. The Contractor shall assign to the City any warranty or service guarantee

offered by a third party manufacturer or supplier of the Goods. Notwithstanding this assignment, if at any time up to one year from the date of delivery or installation (if applicable) the City determines the Goods or any part do not conform to these warranties, the City shall notify the Contractor within a reasonable time after such discovery, and the Contractor shall then promptly correct such nonconformity at the Contractor's expense. Goods used to correct a nonconformity shall be similarly warranted for one year from the date of installation. The Contractor's liability shall extend to all liabilities, losses, damages, claims and expenses incurred by the City caused by any breach of any of the above warranties.

- 11.2 The Contractor warrants and guarantees that Goods and/or Services delivered under this Agreement do not infringe any valid patent, copyright or trademark, foreign or domestic, owned or controlled by any other corporation, firm or person, and agrees to indemnify and save harmless the City and all of its elected and appointed officials, officers, employees, servants, representatives and agents (collectively the "Indemnitees"), from and against any and all claims, demands, causes of action, suits, losses, damages and costs, liabilities, expenses and judgments (including all actual legal costs) by reason of any claim, action or litigation arising out of any alleged or actual infringement of any patent, copyright or trademark, foreign or domestic, relating to the Goods and/or Services supplied under this Agreement.

## **12. INSURANCE AND DAMAGES**

- 12.1 The Contractor will indemnify and save harmless the Indemnitees from and against all claims, demands, causes of action, suits, losses, damages and costs, liabilities, expenses and judgments (including all actual legal costs) for damage to or destruction or loss of property, including loss of use, and injury to or death of any person or persons which any of the Indemnitees incur, suffer or are put to arising out of or in connection with any failure, breach or non-performance by the Contractor of any obligation of this Agreement, or any wrongful or negligent act or omission of the Contractor or any employee or agent of the Contractor.
- 12.2 The indemnities described in Sections 11.2, 12.1 and 18.3 will survive the termination or completion of this Agreement and, notwithstanding such termination or completion, will continue in full force and effect for the benefit of the Indemnitees.
- 12.3 The Contractor will, without limiting its obligations or liabilities and at its own expense, provide and maintain throughout this Agreement the following insurances in forms and amounts acceptable to the City from insurers licensed to conduct business in Canada:
- (a) commercial general liability insurance on an occurrence basis, in an amount not less than five million (\$5,000,000) dollars inclusive per occurrence against death, bodily injury and property damage arising directly or indirectly out of the work or operations of the Contractor, its employees and agents. The insurance will include cross liability and severability of interests such that the coverage shall apply in the same manner and to the same extent as though a separate policy had been issued to each insured. The insurance will include, but not be limited to: premises and operators liability, broad form products and completed operations, owners and contractors protective liability, blanket contractual, employees as additional insureds, broad form property damage, non-owned automobile, contingent

employers liability, broad form loss of use, personal injury, and incidental medical malpractice. The City will be added as additional insured;

- (b) automobile liability insurance on all vehicles owned, operated or licensed in the name of the Contractor in an amount not less than three million (\$3,000,000) dollars per occurrence for bodily injury, death and damage to property; and
- (c) contractors' equipment insurance in an all risks form covering construction machinery and equipment used for the performance of the Services.

12.4 The Contractor will provide the City with evidence of the required insurance prior to the commencement of this Agreement. Such evidence will be in the form of a completed certificate of insurance acceptable to the City. The Contractor will, on request from the City, provide certified copies of all of the Contractor's insurance policies providing coverage relating to the Services, including without limitation any professional liability insurance policies. All required insurance will be endorsed to provide the City with thirty (30) days advance written notice of cancellation or material change restricting coverage. To the extent the City has an insurable interest, the builder's risk policy will have the City as first loss payee. The Contractor will be responsible for deductible amounts under the insurance policies. All of the Contractor's insurance policies will be primary and not require the sharing of any loss by the City or any insurer of the City.

12.5 The Contractor acknowledges that any requirement by the City as to the amount of coverage under any policy of insurance will not constitute a representation by the City that the amount required is adequate and the Contractor acknowledges and agrees that the Contractor is solely responsible for obtaining and maintaining policies of insurance in adequate amounts. The insurance policy coverage limits shall not be construed as relieving the Contractor from responsibility for any amounts which may exceed these limits, for which the Contractor may be legally liable.

12.6 The Contractor shall place and maintain, or cause any of its sub-contractors to place and maintain, such other insurance or amendments to the foregoing policies as the City may reasonably direct.

12.7 The Contractor hereby waives all rights of recourse against the City for loss or damage to the Contractor's property.

### **13. CITY RESPONSIBILITIES**

13.1 The City will, in co-operation with the Contractor, make efforts to make available to the Contractor information, surveys, and reports which the City has in its files and records that relate to the Goods and/or Services. The Contractor will review any such material upon which the Contractor intends to rely and take reasonable steps to determine if that information is complete or accurate. The Contractor will assume all risks that the information is complete and accurate and the Contractor will advise the City in writing if in the Contractor's judgment the information is deficient or unreliable and undertake such new surveys and investigations as are necessary.

13.2 The City will in a timely manner make all decisions required under this Agreement, examine documents submitted by the Contractor and respond to all requests for approval made by the Contractor pursuant to this Agreement.

- 13.3 If the City observes or otherwise becomes aware of any fault or defect in the delivery of Goods or the provision of Services, it may notify the Contractor, but nothing in this Agreement will be interpreted as giving the City the obligation to inspect or review the Contractor's performance with regards to delivering Goods or the performance of the Services.

#### **14. DEFICIENCIES**

- 14.1 The City shall have a reasonable time to inspect and to accept the Goods and/or Services. The City may reject any Goods or Services not in accordance with this Agreement, whether due to damage resulting from improper packing, loading, unloading or otherwise. The City shall notify the Contractor of rejection of the Goods whereupon the Goods will be held subject to the disposition by the Contractor. Any costs or expenses incurred by the City as a result of the rejection of the Goods or Services are, immediately upon written demand by the City, payable by the Contractor, and may be set off against any payments owing by the City to the Contractor.
- 14.2 The City may hold back from payments otherwise due to the Contractor up to 150% of a reasonable estimate, as determined by the City, on account of deficient or defective Goods or Services. This holdback may be held, without interest, until replacement Goods are received or such deficiency or defect is remedied.

#### **15. DEFAULT AND TERMINATION**

- 15.1 In the event the Contractor does not deliver the Goods or perform the Services by the date specified in this Agreement, then:
- (a) the City reserves the right to terminate this Agreement, in whole or in part, and in the event of such termination no payment will be owing by the City on account of this Agreement and the Contractor will be liable for any and all expenses or loss resulting from such failure or delay and will return all monies paid by the City; or
  - (b) if the City does not terminate this Agreement for late delivery or performance, the City may deduct and setoff from any payments owing to the Contractor all additional costs the City reasonably incurs on account of the late delivery or performance.
- 15.2 The City may by written notice at any time cancel this Agreement with respect to Goods which, as of the date of cancellation, have not been shipped.
- 15.3 The City may at any time and for any reason by written notice to the Contractor terminate this Agreement before the completion of all the Goods and/or Services, such notice to be determined by the City at its sole discretion. Upon receipt of such notice, the Contractor will perform no further Goods and/or Services other than the work which is reasonably required to complete the Goods and/or Services. Despite any other provision of this Agreement, if the City terminates this Agreement before the completion of all the Goods and/or Services, the City will pay to the Contractor all amounts owing under this Agreement for Goods and/or Services provided by the Contractor up to and including the date of termination, plus reasonable termination costs in the amount as determined by the City in its sole discretion. Upon payment of such amounts no other or additional payment will be owed by the City to the Contractor, and, for certainty, no amount will be owing on account of lost profits relating to the portion of the Goods and/or Services not performed or other profit opportunities.



- 15.4 The City may terminate this Agreement for cause as follows:
- (a) If the Contractor is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of its insolvency, or if a receiver is appointed because of its insolvency, the City may, without prejudice to any other right or remedy the City may have, terminate this Agreement by giving the Contractor or receiver or trustee in bankruptcy written notice; or
  - (b) If the Contractor is in breach of any term or condition of this Agreement, and such breach is not remedied to the reasonable satisfaction of the City within 5 days after delivery of written notice from the City to the Contractor, then the City may, without prejudice to any other right or remedy the City may have, terminate this Agreement by giving the Contractor further written notice.
- 15.5 If the City terminates this Agreement as provided by Section 15.4 then the City may:
- (a) enter into contracts, as it in its sole discretion sees fit, with other persons to complete the Goods and/or Services;
  - (b) withhold payment of any amount owing to the Contractor under this Agreement for the performance of the Goods and/or Services;
  - (c) set-off the total cost of completing the Goods and/or Services incurred by the City against any amounts owing to the Contractor under this Agreement, and at the completion of the Goods and/or Services pay to the Contractor any balance remaining; and
  - (d) if the total cost to complete the Goods and/or Services exceeds the amount owing to the Contractor, charge the Contractor the balance, which amount the Contractor will forthwith pay.

## **16. CURING DEFAULTS**

- 16.1 If the Contractor is in default of any of its obligations under this Agreement, then the City may without terminating this Agreement, upon 5 days written notice to the Contractor, remedy the default and set-off all costs and expenses of such remedy against any amounts owing to the Contractor. Nothing in this Agreement will be interpreted or construed to mean that the City has any duty or obligation to remedy any default of the Contractor.

## **17. DISPUTE RESOLUTION**

- 17.1 The parties will make reasonable efforts to resolve any dispute, claim, or controversy arising out of this Agreement or related to this Agreement ("Dispute") using the dispute resolution procedures set out in this section.
- 17.2 Negotiation: The parties will make reasonable efforts to resolve any Dispute by amicable negotiations and will provide frank, candid and timely disclosure of all relevant facts, information and documents to facilitate negotiations.
- 17.3 Mediation: If all or any portion of a Dispute cannot be resolved by good faith negotiations within 30 days, either party may by notice to the other party refer the matter to mediation. Within 7 days of delivery of the notice, the parties will mutually appoint a mediator. If the parties fail to agree on the appointment of the mediator, then either party may apply to the British Columbia International Commercial Arbitration Centre for appointment of a mediator. The parties will continue to negotiate in good faith to resolve the Dispute with the assistance of the mediator. The place of mediation will be Surrey, British Columbia.

Each party will equally bear the costs of the mediator and other out-of-pocket costs, and each party will bear its own costs of participating in the mediation.

- 17.4 Litigation: If within 90 days of the request for mediation the Dispute is not settled, or if the mediator advises that there is no reasonable possibility of the parties reaching a negotiated resolution, then either party may without further notice commence litigation.

## **18. WCB AND OCCUPATIONAL HEALTH AND SAFETY**

- 18.1 The Contractor agrees that it shall, at its own expense, procure and carry, or cause to be procured, carried and paid for, full Workers' Compensation Board coverage for itself and all workers, employees, servants and others engaged in or upon any work or service which is the subject of this Agreement. The Contractor agrees that the City has the unfettered right to set off the amount of the unpaid premiums and assessments for the Workers' Compensation Board coverage against any monies owing by the City to the Contractor. The City shall have the right to withhold payment under this Agreement until the Workers' Compensation Board premiums, assessments or penalties in respect of the work done or service performed in fulfilling this Agreement have been paid in full.
- 18.2 The Contractor shall provide the City with the Contractor's Workers' Compensation Board registration number and a letter from the Workers' Compensation Board confirming that the Contractor is registered in good standing with the Workers' Compensation Board and that all assessments have been paid to the date thereof prior to the City having any obligations to pay monies under this Agreement.
- 18.3 Without limiting the generality of any other indemnities granted by the Contractor in this Agreement, the Contractor shall indemnify and hold harmless the City, its elected and appointed officials, employees and agents, from all manner of claims, demands, costs, losses, penalties and proceedings (including all actual legal costs) arising out of or in any way related to unpaid Workers' Compensation Board assessments owing from any person or corporation engaged in the performance of this Agreement or arising out of or in any way related to the failure to observe safety rules, regulations and practices of the Workers' Compensation Board, including penalties levied by the Workers' Compensation Board.
- 18.4 The Contractor agrees that it is the "prime contractor" for the work as defined in the *Workers' Compensation Act*, R.S.B.C. 1996, c. 492 as amended and will ensure compliance with the *Workers Compensation Act* and Regulations in respect of the workplace. Without limiting its responsibilities under the legislation, the Contractor will coordinate the activities of employers, workers and other persons at the workplace relating to occupational health and safety. The Contractor shall have a safety program acceptable to the Workers' Compensation Board, shall provide first aid services, and shall ensure that all Workers' Compensation Board safety rules and regulations are observed during the performance of this Agreement, not only by the Contractor, but by all sub-contractors, workers, material personnel and others engaged by the Contractor in the performance of this Agreement. The prime contractor shall appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the workplace. Prior to commencement of Construction, the Contractor shall complete and file a "Construction Notice of Project" with the Workers' Compensation Board and shall provide a copy of the same to the City confirming that the Contractor shall be the prime contractor responsible for coordination of safety and health under Part 3 of the *Workers' Compensation Act* and Part 20 of the WCB Occupational Health and Safety Regulations. That person will be the



person so identified in this Agreement, and the Contractor will advise the City immediately in writing if the name or contact number of the qualified coordinator changes.

- 18.5 The Contractor will ensure compliance with and conform to all health and safety laws, by-laws or regulations of the Province of British Columbia, including without limitation any regulations requiring installation or adoption of safety devices or appliances.
- 18.6 The Contractor shall fulfill all its duties, obligations, and responsibilities in such a manner that it ensures the safety of the public and in accordance with the safety regulations of the Workers' Compensation Board and shall install signs and barriers as required to ensure the safety of the public and of its employees in the use of the City facilities.
- 18.7 The Contractor understands and undertakes to comply with all the WCB Occupational Health and Safety Regulations for hazardous materials and substances, and in particular with the "Workplace Hazardous Materials Information System (WHMIS)" Regulations. All "Material Safety Data Sheets (MSDS)" shall be shipped along with the Goods, materials, products and any future MSDS updates will be forwarded.

## **19. BUSINESS LICENSE**

- 19.1 The Contractor will obtain and maintain throughout the term of this Agreement a valid City of Surrey business license.

## **20. GENERAL PROVISIONS FOR GOODS**

- 20.1 Documentation for shipments of Goods from outside Canada shall be provided by a Contractor by airmail and shall include all documents as required by law or customary practice. All packages shall be marked as follows:

"Upon arrival, please contact customs broker:  
Livingston International Inc.  
Telephone: +1-604-685-3555  
Fax: +1-604-605-8231  
Email: cst19@livingstonintl.com"

- 20.2 If this Agreement pertains to the fabrication, assembly or other processing of the Goods, representatives of the City shall be permitted free access at all reasonable times for the purpose of inspection, testing or obtaining information as to the progress of the fabrication, assembly or processing.
- 20.3 The City may require that shop drawings be submitted by the Contractor for review prior to the delivery of the Goods. The City may require that a qualified registered professional engineer stamp and approve a shop drawing prior to submission. Any review of shop drawings by the City will not relieve the Contractor from its obligation to deliver Goods in full compliance with all requirements of this Agreement.

## **21. COMPLIANCE**

- 21.1 The Contractor will provide the Services in full compliance with all applicable laws, building codes and regulations.

- 21.2 The Contractor will, as a qualified and experienced practitioner, interpret applicable codes, laws and regulations applicable to the performance of the Services. If an authority having jurisdiction imposes an interpretation which the Contractor could not reasonably have verified or foreseen prior to entering into this Agreement, then the City will pay the additional costs, if any, of making alterations so as to conform to the required interpretation.

## **22. JURISDICTION OF COUNCIL AND NON-APPROPRIATION**

- 22.1 Nothing in this Agreement limits or abrogates, or will be deemed to limit or abrogate, the jurisdiction of the Council of the City in the exercise of its powers, rights or obligations under any public or private statute, regulation or by-law or other enactment.
- 22.2 The Contractor recognizes and agrees that the City cannot make financial commitments beyond the City's current fiscal year. The City will annually make bonafide requests for appropriation of sufficient funds to cover all payments covered by this Agreement. If City Council does not appropriate funds, or appropriates insufficient funds, the City will notify the Contractor of its intention to terminate or reduce the services so affected within 30 days after the non-appropriation becomes final. Such termination shall take effect 30 days from the date of notification, shall not constitute an event of default and shall relieve the City, its officers and employees, from any responsibility or liability for the payment of any further amounts under this Agreement.

## **23. WAIVER**

- 23.1 Any failure of the City at any time or from time to time to enforce or require the strict keeping or performance of any of the terms and conditions contained in this Agreement shall not constitute a waiver of the terms and conditions and shall not affect or impair the terms or conditions in any way or the City's right at any time to avail itself of any remedies as the City may have for any breach of the terms and conditions.

## **24. APPLICABLE LAW**

- 24.1 This Agreement shall be governed by and construed in accordance with the laws of the Province of British Columbia. The City and the Contractor accept the jurisdiction of the courts of British Columbia and agree that any action under this Agreement shall be brought in such courts.

## **25. NOTICES**

- 25.1 Any notice, report or other document that either party may be required or may wish to give to the other must be in writing, unless otherwise expressly provided for, and will be deemed to be validly given to and received by the addressee:
- (a) by hand, on delivery;
  - (b) by facsimile, on transmission; or
  - (c) by mail, five calendar days after posting.
- 25.2 The addresses for delivery will be as shown in the Quotation. In addition, the City may give notice to the Contractor by email at the Contractor's email address as shown in the

Quotation, which email will be deemed to be validly given and received by the Contractor on transmission. The Contractor may not give notice to the City by email.

## **26. MERGER AND SURVIVAL**

- 26.1 The representations, agreements, covenants and obligations set out in this Agreement shall survive the delivery of the Goods and performance of the Services and payment of the Fees and Disbursements.

## **27. ENTIRE AGREEMENT**

- 27.1 This Agreement, including the Schedules and any other documents expressly included by reference in this Agreement, contains the entire agreement of the parties regarding the provision of the Goods and/or Services, and no understandings or agreements, oral or otherwise, exist between the parties except as expressly set out in this Agreement. This Agreement supersedes and cancels all previous agreements between the parties relating to the Goods and/or Services.
- 27.2 In the event that the Contractor issues an invoice, packing slip, sales receipt, or any like document to the City, the City accepts the document on the express condition that any terms and conditions in it which constitute terms and conditions which are in addition to or which establish conflicting terms and conditions to those set out in this Agreement are expressly rejected by the City.

## **28. SIGNATURE**

- 28.1 This Agreement shall be signed by a person authorized to sign on behalf of the Contractor.
- 28.2 This Agreement may be executed in or one or more counterparts all of which when taken together will constitute one and the same Agreement, and one or more of the counterparts may be delivered by fax transmission or as a PDF file.

## **29. FUEL EMISSIONS DATA**

- 29.1 As of January 1, 2013, the City requires contractors to report the quantity of fuel used to operate vehicles, equipment and machinery as part of the delivery of operating (non-capital) services defined as "Traditional Services" in the Carbon Neutral Workbook.v2 as part of the BC Climate Action Charter. Typical data to be submitted would include the following for each calendar year:
- Type of vehicle/vehicle class used to deliver the contracted services;
  - Type of fuel consumed by each vehicle class; and
  - Litres of fossil fuels consumed in relation to the service delivered under the contract.
- 29.2 Fuel consumption associated with the provision of these services must be provided to the City within thirty (30) days of the end of the calendar year or the termination of the contract, whichever is earlier. An excel-based Fuel Use Reporting template will be provided by the City. The most current version of the workbook is located on the Climate Action Toolkit website for your reference at <http://toolkit.bc.ca/carbon-neutral-government>

### 30. NON ROAD DIESEL ENGINE EMISSION REGULATION

- 30.1 If you **own, operate, or hire** diesel powered equipment, Metro Vancouver's Non-Road Diesel Engine Emissions Regulation Bylaw No 1161, 2012 (the Bylaw) may impact your business. The Bylaw came into force on January 1, 2012 and requires owners or operators to register and label Tier 0 and Tier 1 non-road diesel engines that are 25 horsepower (19kW) or greater in order to operate within Metro Vancouver. Tier 0 engines must have **90 days** of registration purchased by **December 31, 2014** or the engine(s) will be **prohibited from ever operating** in Metro Vancouver. To be fully registered an owner/operator must:
- provide required information (machine/engine/company details),
  - pay fees, and
  - label machines with Metro Vancouver issued registration number.
- 30.2 Other important information:
- Non-road Tier 1 engines must be registered and pay fees to operate,
  - Failure to comply with the Bylaw may result in fines up to \$200,000, and
  - 80% of fees paid into the program can be recovered.
- 30.3 The City may, at its discretion, give preference to equipment that meets higher emission standards.
- 30.4 Contact Metro Vancouver staff at 604-451-6655, visit [www.metrovancouver.org/nonroaddiesel](http://www.metrovancouver.org/nonroaddiesel) or email [nonroaddiesel@metrovancouver.org](mailto:nonroaddiesel@metrovancouver.org) for more information about the Bylaw, the rebate program, and for assistance with the registration process.

**31. ENUREMENT**

31.1 This Agreement shall enure to the benefit of and be binding upon the respective successors and permitted assigns of the City and the Contractor.

**IN WITNESS WHEREOF** the parties hereto have executed this Agreement on the day and year first above written.

**CITY OF SURREY**

by its authorized signatory:

\_\_\_\_\_  
(Signature of Authorized Signatory)

\_\_\_\_\_  
(Print Name and Position of Authorized Signatory)

**CONTRACTOR**

by its authorized signatories:

\_\_\_\_\_  
(Legal Name of Contractor)

\_\_\_\_\_  
(Signature of Authorized Signatory)

\_\_\_\_\_  
(Signature of Authorized Signatory)

\_\_\_\_\_  
(Print Name and Position of Authorized Signatory)

\_\_\_\_\_  
(Print Name and Position of Authorized Signatory)

## **SCHEDULE A SPECIFICATIONS OF GOODS AND SCOPE OF SERVICES**

### **1. PURPOSE**

- 1.1 The City invites Quotations from experienced and qualified Contractors for the provision of everything required including all skilled labour, tools, materials, equipment to carry out designated work associated with watering plant stock in riparian areas. Specifically, the work will include minor watering of City-wide sites as directed by the City and season-long watering of Campbell Heights restoration area.

### **2. SCOPE OF SERVICES**

#### **2.1 General Information**

- 2.1.1 The annual work program of sites under the Agreement will be provided by the City at the commencement of the Term and the Contractor will be required to develop a calendar of work to be scheduled throughout the Term. For 2016, the list of sites and Maps is provided in Schedule A-1.
- 2.1.2 The work must be done in accordance with:
- (a) British Columbia Landscape and Nursery Association Standards;
  - (b) Riparian Ecosystems;
  - (c) Individual site prescriptions developed annually by the City's contracted environmental consultant overseeing riparian areas maintenance programs (if applicable); and
  - (d) Site photo protocol guidelines.

#### **2.2 Methodology**

Services to be performed by the Contractor should include but are not limited to the following:

##### **2.2.1 General**

- (a) At all sites where Services are being provided, the Contractor will take date-stamped digital photo documentation of each site being watered during each work day with a maximum of two (2) photos per site per day. The photos should clearly depict examples of the watering being undertaken at the site. The photos will be uploaded onto an external hard-drive, provided by the City, and filed adequately by site ID #, and date (DD/MM/YY) (e.g. LTM7-140616).
- (b) The Contractor's program manager is responsible to train each of the its crew on the extent of all site works at each location at the start of the work program to ensure that no habitat polygon areas are missed and that the boundaries of work are well defined. The Contractor's program manager should confirm the proper information is being followed throughout the Term.

##### **2.2.2 Watering City-wide Sites**

- (a) The Contractor is to apply water via a tank and a hose, or a backpack watering device, to plants within defined riparian habitat polygons. The water is to be

applied in a method that ensures that the water penetrates the root zone of the plants and avoids run-off.

- (b) Access to the sites is variable with some sites being at roadside locations, while other sites will require crews to bring water to the plant stock.
- (c) The City will arrange the Contractor to have access to City fire hydrants to fill watering tanks for performing the Services.

#### 2.2.2 Watering Campbell Heights Restoration Area

- (a) The Contractor is to apply water via a tank and a hose to plants within defined riparian habitat polygons. The water is to be applied in a method that ensures that the water penetrates the root zone of the plants and avoids run-off.
- (b) The Contractor should establish a dedicated crew for the Campbell Heights Restoration Area as the watering requirements for this site is extensive with numerous polygons to water in a habitat area with porous, gravel/sand substrates that does not retain water readily. An on-site meeting with the Contractor's crew and City staff should occur before the start of the watering season to ensure that all crew understand the polygon areas to be watered.
- (c) Innovations to increase root zone moisture retention are encouraged in the proposal (e.g. ZEBA ®, etc.) and should be defined as a separate line item in the cost proposal table.
- (d) The City will arrange the Contractor to have access to City fire hydrants to fill watering tanks for performing the Services.
- (e) Access to the Campbell Heights Restoration Area is available on weekdays from 7:30am to 3:00pm.

### 3. SCHEDULE OF WORK AND HOURS OF OPERATION

- 3.1 The Contractor is to complete the scheduled watering program, weather dependent, approximately between May 1<sup>st</sup> and October 1<sup>st</sup>. Watering will be dependent upon the weather and the Contractor will be expected to start-up and shut down within two (2) days' notice from the City. For the proposal cost estimate, the Contractor should assume that watering will occur as required for each site between May 1<sup>st</sup> and October 1<sup>st</sup> without weather interruptions.
- 3.2 The general hours of operations will be 7:30 a.m. to 5:00 p.m. Days of operation will be Monday through Friday. No work will be performed on weekends or statutory holidays, except as otherwise agreed to in writing by the City.
- 3.3 In addition, the Contractor will contact the City's Environment Section of the Engineering Department via email to review the upcoming week's work plan, to receive special instructions on sites and to discuss any problems encountered on the job. It is anticipated that a monthly in-person meeting with the Contractor's program manager will be required to discuss the work program and ensure that the crew is meeting the requirements.

#### **4. EQUIPMENT**

- 4.1 The Contractor shall supply all necessary equipment. All equipment should be road worthy and suitable for working on City streets and within parks. The Contractor shall affix a City Surrey Contractor sign to each side of their vehicle(s), to be provided by the City.

#### **5. CREW REQUIREMENTS**

- 5.1 The Contractor shall review the package of sites in the work plan and supply the crew needed to satisfy all the services required. Additional sites may be added to the work program during the Term.
- 5.2 The Contractor is to ensure that all persons providing Services on City premises are clearly identified as a representative of the Contractor . All Contractor employees will wear high visibility vests and an identification badge while doing the work. High visibility vests and identification badges are to be provided by the Contractor.

#### **6. PREFERRED QUALIFICATIONS**

- 6.1 The Contractor should be experienced in vegetation management and have experience in managing riparian vegetation. The Contractor's management approach must be consistent with applicable local, provincial and federal regulatory requirements.
- 6.2 Contractor's crews should be able to demonstrate the following skills, and may be required to undertake a written test, administered by the City:
- (a) Strong skills in reading and understanding drawings and maps;
  - (b) Understanding of B.C. Landscape Standards for natural area maintenance; and
  - (c) Strong knowledge of native and invasive plant identification.
- 6.3 Contractor crew leads should meet the following preferred qualification and be able to provide documentation to the City upon request:
- (a) Completion of grade 12, supplemented by successful completion of five additional relevant courses from an approved post-secondary education institution in any of the following course areas:
    - i. Biology
    - ii. Urban land management
    - iii. Ecology
    - iv. Conservation
    - v. Wildlife management
    - vi. Fisheries resource management
  - (b) Plus a minimum of two (2) years of recent experience in the management of natural areas.

OR

- (c) Completion of Grade 12 and a Technical Certificate Program (one year full-time) from an approved post-secondary institution, supplemented by six (6) months of recent experience in the management of natural areas.



OR

- (d) Completion of a diploma program from an approved post-secondary institution, with a minimum of six (6) months recent experience in the management of natural areas.

**- END OF PAGE -**

## SCHEDULE A-1 - LIST OF SITES AND MAPS

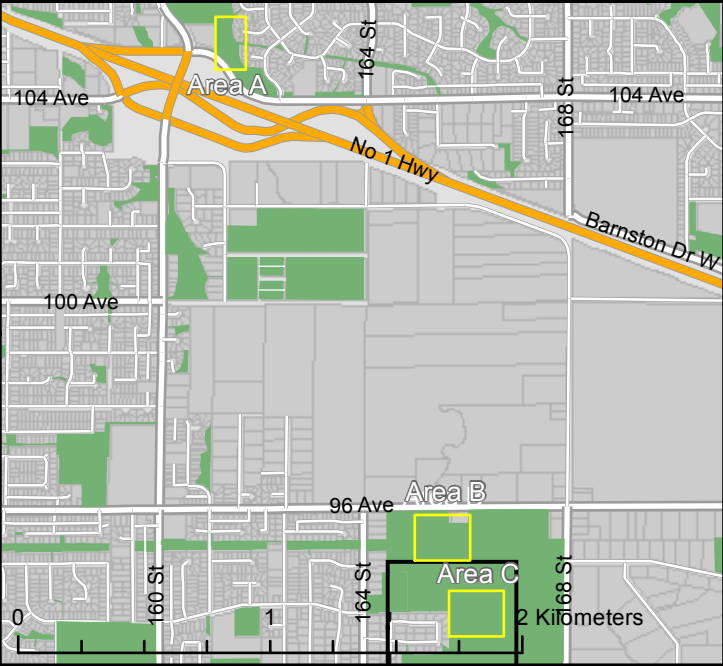
### Riparian Watering Services - Contractor List of Sites for 2016

					Estimates of new plant stock to be watered by age			
Site ID	Water course / site location	Location	Site access	Frequency of watering required	to be installed in 2016 (fall installation unless stated otherwise)	installed in 2015	installed in 2014	Notes
City-wide Sites								
LTM3	Serpentine River: 156 Street and Highway 1 underpass	Area A: Fraser Heights Park (160 Street and 105 Avenue alignment); Area C: Bothwell Park (93A Avenue and 165 Street)	From end of 93A Avenue, walk along trail (north) to planting area	2x per week	yes	601 shrubs / 50 trees	35 trees	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM4	North Creek	North Creek pedestrian bridge (68 Avenue and 180 Street)	Cul-de-sac parking on 68 Avenue and 180 Street or 69 Avenue and 181 Street	2x per week	yes	Recommend: Himalayan blackberry removal and debris removal. Potential for no dumping signs. Pathways leading into the top banks may need to be sealed on the far west end. Also follow Enkon recommendations	32 shrubs / 12 trees	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM5	Serpentine River	96 Avenue widening - 160 to 168 Street	Park at Tynehead Hatchery	2x per week	yes - in fall for Areas A & B, and 300 plugs around pond area	16 trees / 650 shrubs in Area C	50 willow stakes / 4 cedar plugs around Pond Area	Water new plant stock as identified in this table
LTM7	Fraser River	Fraser River Flood Protection Works	Areas A-C: Brownsville Bar Park: 11940 Old Yale Road, Area D: Tannery Park: 10761 Dyke Road	2x per week	yes	1300 shrubs / 4 trees in Area C	installed 30 plants site A1; installed 100 shrubs and 75 trees in area D	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map for areas B - D, as well as additional planting area shown in map details
LTM9	Nicomekl River dyke upgrade	Nicomekl River dyke - north of Highway 99	Enter at the end of the cul-de-sac at 35 Avenue, drive down dirt road to the river	3x per week	yes	178 shrubs / 12 trees	35 trees / 15 shrubs	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM10	Eugene Creek	Near 12191 Colebrook Road: Eugene Creek diversion phase (located south of Colebrook Rd)	Gate near the train tracks south of Colebrook Road	3x per week	no	264 shrubs in areas A & B	50 shrubs Area B	Water all establishing trees and shrubs as identified in Areas A and B requiring water shown on AVENZA map
LTM11	Trouton Pit	128 Street and 110 Avenue	Off of 110 Avenue, park in the Home Depot and walk across the street	2x per week	yes	158 shrubs, 4000 alder plugs	27 trees on the south east corner of pond upstream of fish ladder	Water new plant stock as identified in this table
LTM13	Little campbell River Tributary	38 Peace Park Drive	Park on 0A Avenue	1x per week	yes	-	Newly installed site of 375 shrubs	Water new plant stock as identified in this table
LTM14	trib to Serpentine River	Fraser Hwy Widening LTM site: north side of Fraser Hwy between 170 Street and 176 Street	There is a small gap in the concrete roadside barrier on north side of Fraser Hwy just wide enough to park one truck. Busy road access - use extreme caution	3x per week	no	408 shrubs / 41 trees	Newly installed site of 630 shrubs / 13 trees	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM15	mouth to Nicomekl river	Maple Pump Station LTM site: park at intersection of Gilley Street and Dunsmuir Street	From the road walk NE into habitat zone. Compensation area will be immediately on your left. Additional mitigation planting area located closer to access for Dunsmuir gardens at pump station. Can drive vehicle in to site using access from either Blackie spit parking lot or off of Crescent road. ABUS and Parks C key required.	2x per week		19 shrubs additional mitigation area / ~ 20 trees / 250 shrubs in compensation area	Newly installed site of 10 conifers / 46 trees / 1266 shrubs	Water all plants in compensation area and the additional mitigation area (19 shrubs) as shown in details.
LTM16	trib to Fraser River	Musqueam Drive at 12100 and 12200 blocks	roadside ditch on Musqueam Drive	2x per week	Yes	-	newly installed site with 30 trees / 850 shrubs	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map

LTM18	Cougar Creek and Tributary	70 and 122	roadside habitats	2x per week	no	Have not received final planting plan; estimate 600 shrubs and 50 trees	-	Water all establishing trees and shrubs within polygon boundaries shown in planting plan
LTM19	trib to Serpentine River	Colebrook at 131	roadside habitats along new Colebrook road west of King George HWY. Nside of road.	1x per week regular schedule; 2x per week during hot weather	no	Large site of ~35,000 plants along 1.5 Km	-	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM20	trib to Serpentine River	RBRC at 152	Roadside habitats immediately E of 152 and S of Colebrook Road	2x per week	no	newly installed site 690 shrubs / 255 trees	-	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM21	Cumming Creek - trib to Nicomekl River	189a and 52 ave.	roadside habitats around intersection of 189a St. and 52 ave.	2x per week	no	1092 trees / 777 shrubs / 171 stakes	-	Water all establishing trees and shrubs within polygon boundaries shown in planting plan
LTM22	Anderson Creek	anderson creek bridge	Roadside habitats on King George Blvd around 33 avenue	2x per week	yes - Spring installation	plantings to be installed in the Spring as per COS plan (estimate 200 shrubs / 20 trees)	-	Water all establishing trees and shrubs on establishing slopes adjacent to bridge (3 banks) shown in details. Detailed plant list to be provided at start of contract.
LTM23	Trib to cloverdale canal	south cloverdale ditch	From 168 Street heading south take Mound Farm Park access Road - 1st right S of 2nd set of railway tracks S of Hwy10	2x per week	no	605 trees / 1600 shrubs	-	Water all establishing trees and shrubs within polygon boundaries shown in planting plan
LTM26		Jason's drainage package	Location A = Fraser Glen Pond ; Location B= ; Location C =	2x per week	yes - Location C spring installation	Location A = 91 Shrubs; Location B = 118 shrubs; Location C = (to be planted this spring 12 trees / 434 shrubs)	-	Water all establishing trees and shrubs within polygon boundaries shown in planting plan
LTM27	Hjorth Creek and Carlson Creek	Tindi's drainage pacakage	Location A = Hjorth Creek at 102 Avenue ; Location B = Carlson Creek at 14th Ave. E of King George Blvd.	2x per week	no	-	Hjorth Creek location = 2 trees / 40 shrubs; Carlson Creek Location = 8 trees / ~40 plugs and stakes in MSE wall	Water all establishing trees and shrubs within polygon boundaries shown on AVENZA map
LTM30	trib to Nicomekl River	Crescent Road Sink hole	12911 Crescent Road	1x per week	no	2 trees / 192 shrubs	-	Water all establishing trees and shrubs within polygon boundaries shown in planting plan
G16	Cougar Creek	122 Street from 72 Avenue to 70 Avenue	60A and 60 B greenbelts on 122 Street. Parking and bathrooms at Kabaddi Park.	2x per week	no	540 shrubs and 60 trees.	-	Water all establishing trees and shrubs within polygon boundaries shown in student (SHaRP) report
REV 5	3 sites: Unnamed Creek (2) / Quibble Creek (1)	152 street arterial sidewalk improvements	Site A: Relocated plants from trail to around the detention pond at the end of 80th avenue	2x per week	no	Site A: ~10 Trees around detention pond	-	Water all establishing trees within polygon boundary shown in student (SHaRP) report
REV11	Robson Creek	Robson Park (100 Avenue and 126 Street)	Robson Park parking lot on 100 Avenue	2x per week	yes	~ 20 trees and ~40 shrubs. Dispersed around the riparian areas in the park	-	Water all establishing trees and shrubs within polygon boundaries shown in student (SHaRP) report
REV 26	Healy Creek	Queen Mary Park: 8972 Queen Mary Boulevard	with Parks bollard key a vehicle can be drive straight to site	1x per week	no	-	151 shrubs	Water all establishing shrubs within polygon boundary shown in student (SHaRP) report
REV 32	Patullo Channel	11180 Scott Road		2x per week	yes	250 shrubs / 48 Trees	32 shrubs	Water all establishing trees and shrubs within polygon boundaries shown in student (SHaRP) report
<b>Campbell Heights Restoration Area</b>								
LTM2	Little Campbell River and Tributaries	Campbell Heights Industrial Lands 192 Street and 20 Avenue to 26 Avenue	Southside access driving east on 28 Avenue and 192 Street; Park at end of 24 or 22 Avenue	2x per week	yes	-	350 conifer trees	New plant stock and various older establishing plant pockets to be watered along 1 kilometre stretch of channel. Estimate requiring watering services for ~6000 plants. Onsite meeting with City staff required to establish watering parameters



Location Map



Maintenance Summary

Summer:

- 1. Invasive species treatments are summarized in Table 2.
- 2. Watering treatment is summarized in Table 3.

Fall:

- 1. Plant as per planting prescription in the Year 7 monitoring and maintenance report.
- 2. Invasive species treatments are summarized in Table 2.
- 3. Watering treatment is summarized in Table 3.



Table 1 - Stocking table

Follow planting prescription from Year 7 monitoring and maintenance report.


Table 2 – Invasive species maintenance summary

Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Area C	Evergreen blackberry	165	Medium	2-4m	Remove roots and shoots monthly during growing season (April 1 – October 15).
	Evergreen blackberry	542	Recently removed	-	Continue to remove roots and shoots monthly during growing season (April 1 – October 15).
	Reed canarygrass	322	High	-	No treatment.
Total		1,029			

Table 3 – Watering prescription summary

Location	Watering Prescription	# of Plants (estimate)
2015 plantings	Soak 2015 plants initially after planting and then water twice weekly during dry weather periods until fall rains begin.	634
Total		634

Legend

 Approximate restoration area

LTM3 Map Details

156th Street Underpass  
Location Map

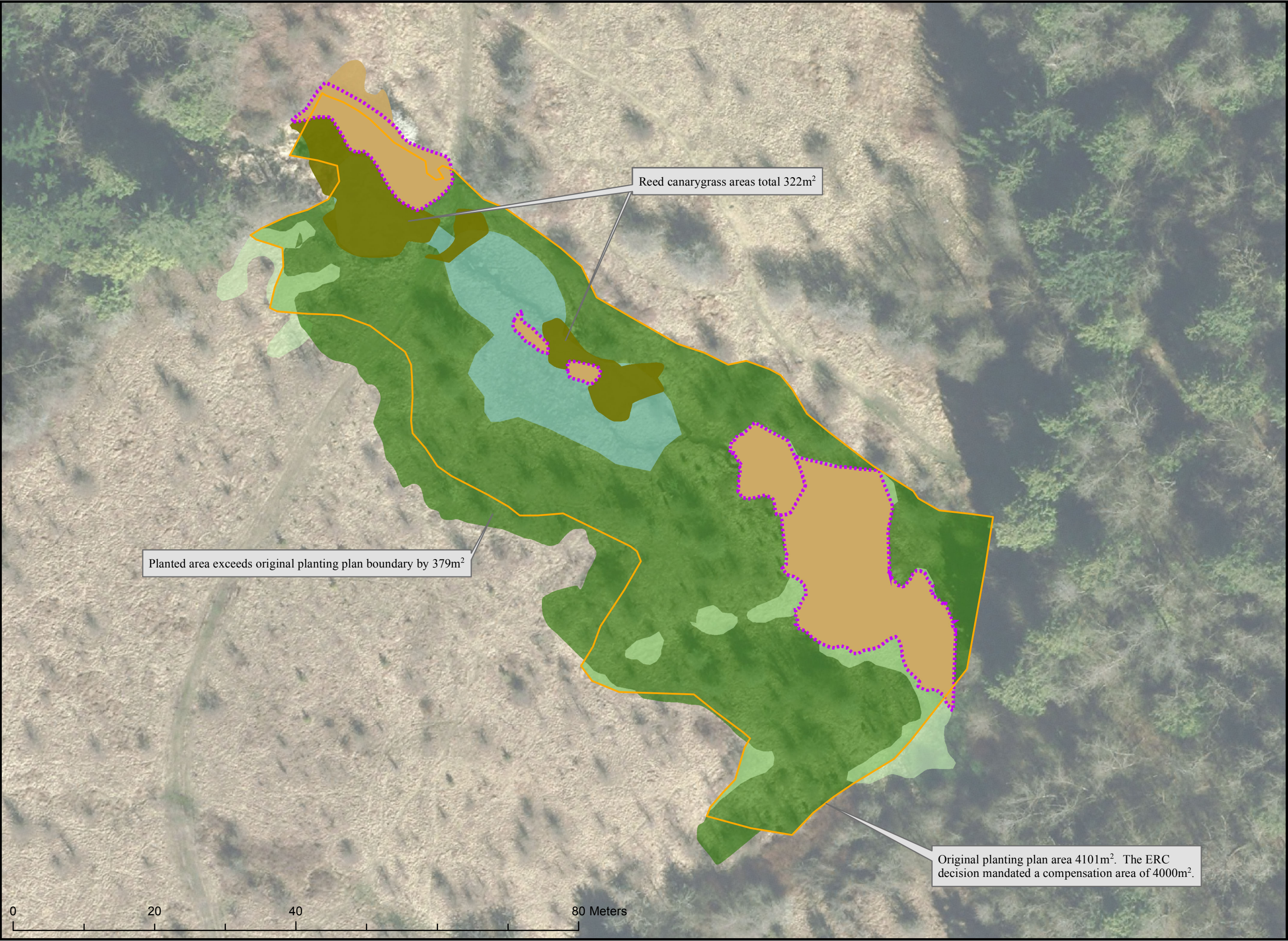
City of Surrey

Figure 1

Map Created:  
August 2015  
Projection:  
NAD 83, UTM Zone 10







**156th Street Underpass  
Area C  
Monitoring and  
Maintenance  
2015 Results**

City of Surrey

**Legend**

Original planting plan  
boundary

Wetland

**2015 Monitoring**

Survivorship (%)

0

100%

Invasive species

Evergreen blackberry

Reed canary grass

**2015 Maintenance**

Blackberry removal



1:500

**Figure 2**

Date:  
September 2015  
Projection:  
NAD 83, UTM Zone 10



LTM3 Map Details



Location Map



Maintenance Summary

Summer:

- 1. Invasive species treatments are summarized in Table 2.
- 2. Watering requirements are summarized in Table 3.

Fall:

- 1. Plant shrubs as prescribed in the 2014 monitoring and maintenance report. Plant additional shrubs as displayed in Figure 2.
- 2. Invasive species treatments are summarized in Table 2.
- 3. Watering requirements are summarized in Table 3.




Table 1 – Stocking table for alternative 190m <sup>2</sup> restoration area			
In addition to the shrubs prescribed in the 2014 report plant the following:			
Common Name	Scientific Name	Count	Size
Western redcedar	<i>Thuja plicata</i>	4	2.5m tall B+B
Salmonberry	<i>Rubus spectabilis</i>	7	#2 pot

Table 2 – Invasive species maintenance summary					
Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
-	Himalayan blackberry	70	Low	0-0.3m	Remove roots and shoots monthly during growing season (April 1 – October 15).
South-east of the pedestrian bridge	Himalayan blackberry	10	Low	1-2m	Remove roots and shoots monthly during growing season (April 1 – October 15).
Total		80			

Table 3 – Watering prescription summary		
Location	Watering Prescription	# of Plants (estimate)
2014 plantings	No watering prescribed	-
2015 plantings	Soak initial plantings and water plants two times a week thereafter during dry weather periods June 1 to October 1.	12 trees; 31 shrubs
Total		35

Legend

 Restoration area

North Creek Pedestrian  
Bridge Location Map

City of Surrey

Figure 1

Map Created:  
October 2015  
Projection:  
NAD 83, UTM Zone 10







Plant (at 1m spacings):  
7 pot size #2 *Rubus spectabilis*  
1 *Thuja plicata*, min 2m tall

Replacement planting:  
1 *Thuja plicata*, min 2m tall

Replacement planting:  
2 *Thuja plicata*, min 2m tall

North Creek Pedestrian  
Bridge Compensation Area  
Monitoring and  
Maintenance  
2015 Results

City of Surrey

Legend

Restoration area

2015 Monitoring Results

Survivorship (%)

0

100

2014 Maintenance

2014 planting area

2015 Maintenance

2015 planting area

Tree planting

Western redcedar (Tp)

Invasive Removal

Blackberry removal



1:450

Figure 2

Date:  
October 2015  
Projection:  
NAD 83, UTM Zone 10



Location Map



Maintenance Summary

- Summer:**
1. Invasive species treatments are summarized in Table 2.
- Fall:**
1. Plant as per stocking table and areas delineated in Figure 2
  2. Assess Himalayan blackberry removal areas following removal to ensure native shrubs are stocked at minimum 1m spacing and native trees are stocked at minimum 4m spacing. Contact ENKON for species selection.
  3. Invasive species treatments are summarized in Table 2.
  4. Watering requirements are summarized in Table 3.

Table 1 - Stocking table

Common Name	Scientific Name	Count	Size
Sitka willow	<i>Salix sitchensis</i>	300	Plugs
Indian plum	<i>Oemleria cerasiformis</i>	125	#2 pot
Oceanspray	<i>Holodiscus discolor</i>	125	#2 pot
Red flowering currant	<i>Ribes sanguineum</i>	100	#2 pot
Western redcedar	<i>Thuja plicata</i>	12	#5 pot

**Note:** Additional plants may be necessary following blackberry removal. Native shrubs to be stocked at minimum 1m spacing and native trees to be stocked at minimum 4m spacing. Contact ENKON for species selection.

Table 2 – Invasive species maintenance summary

Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Area A, B and Pond Area	Himalayan blackberry	1,053	High	2-4m	Remove roots and shoots monthly during growing season (April 1 – October 15).
Area B, C and Pond Area	Himalayan blackberry	379	Medium	1-3m	Remove roots and shoots monthly during growing season (April 1 – October 15).
Total		1,432			

Table 3 – Watering prescription summary

Location	Watering Prescription	# of Plants (estimate)
2015 plantings	Soak initial planting s and water plants two times a week thereafter during dry weather periods June 1 to October 1. Watering is not likely to be necessary surrounding pond area due to moisture receiving location.	12 #5 pot trees; 350 #2 pot shrubs; 300 willow plugs

Legend

- Approximate restoration area
- Water quality monitoring locations
- Fish sampling locations

LTM 5 Map Details

96 Avenue Widening 160-168 Street Aquatic Monitoring and Location Map

City of Surrey

Figure 1

Map Created:  
June 2015  
Projection:  
NAD 83, UTM Zone 10






**96 Ave. Widening,  
160 - 168 St.  
Monitoring and  
Maintenance Results,  
2015**

City of Surrey


**Legend**

 Restoration area boundary

**2015 Monitoring Results**

**Invasive Species**


 Himalayan blackberry


 Japanese knotweed

**Plant Survivorship (%)**

 100

**2015 Maintenance Prescription**

 Plant shrubs

 Remove blackberry



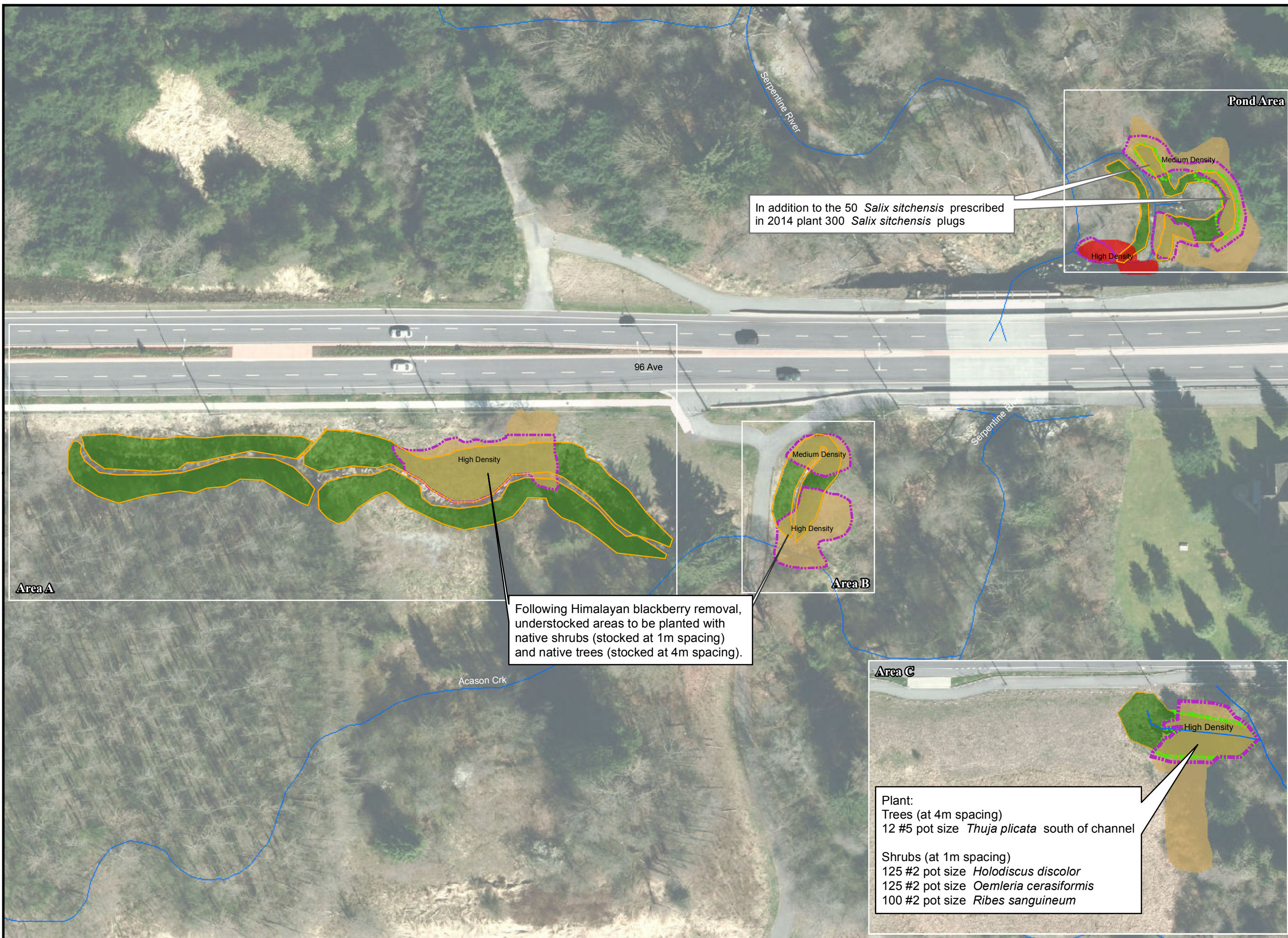
**1:800**

**Figure 2**

Date:  
August 2015  
Projection:  
NAD 83, UTM Zone 10



**LTM5 Map Details**







### Maintenance Summary

**Summer:**

1. Invasive species treatments are summarized in Table 2.
2. Watering requirements are summarized in Table 3.

**Fall:**

1. Invasive species treatments are summarized in Table 2.
2. Planting as per the FRFP Area C 2015 Planting Area Expansion developed by ENKON.
3. Watering prescriptions are summarized in Table 3.

**Table 1 - Stocking table**

Additional 400m<sup>2</sup> of planting area was identified in Area C and is to be planted as per the FRFP Area C 2015 Planting Area Expansion (Appendix B).


**Table 2 – Invasive species maintenance summary**

Location	Species	Area (m <sup>2</sup> )	Cane length	Prescription
Area A	Himalayan blackberry	164	Stems recently brushed	Remove roots and shoots monthly during growing season (April 1 – October 15).
Area B	Himalayan blackberry	103	Stems recently brushed	Remove roots and shoots monthly during growing season (April 1 – October 15).
Area C	Himalayan blackberry	162	Stems recently brushed	Remove roots and shoots monthly during growing season (April 1 – October 15).
	Himalayan blackberry	408	2-4m	Remove roots and shoots monthly during growing season (April 1 – October 15).
Area D	Himalayan blackberry	468	Stems recently brushed	Remove roots and shoots monthly during growing season (April 1 – October 15).
Total		1,039		

**Table 3 – Watering prescription summary**

Location	Watering Prescription	# of Plants (estimate)
Area A	None	0
Area B	Water plants in traffic areas twice a week during dry weather periods from May 1 to October 1.	100
Area C	It is expected that 400 plants will be installed in Area C in the fall of 2015. These plants should be soaked in after planting and then watered twice weekly during dry weather periods until fall rains begin.	400
Area D	Water plants in high traffic areas twice a week during dry weather periods May 1 to October 1.	100
Total		600

### Legend

 Approximate restoration area

**Fraser River Flood Protection  
Location Map**

City of Surrey

**Figure 1**

Map Created:  
August 2015  
Projection:  
NAD 83, UTM Zone 10



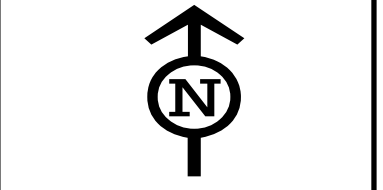




**FRFP Areas A, B, C, and D  
Compensation Area  
Monitoring and  
Maintenance  
2015 Results**

City of Surrey

- Legend**
- Restoration area
  - 2015 Monitoring Results**
  - Survivorship (%)
    - 100
    - 0
  - 2015 Maintenance**
  - Blackberry removal
  - Area to be planted fall 2015



**1:1,000**

**Figure 2**

Date:  
August 2015  
Projection:  
NAD 83, UTM Zone 10



Prepared by:

**ENKON**

Environmental Ltd.

**LTM7 Map Details**



**Location Map**

Nicomekl River

Winter Cr

147A St

No 99 Hwy

149A St

35 Ave

34B Ave

150 St

150A St

34A Ave

34 Ave

148A St

34A Ave

Croydon Dr

Park on 150th Street.  
Access to site is  
along forested trail.

P

0 50 100 200 Meters

0 1 2 Kilometers

136 St

140 St

144 St

148 St

152 St

156B St

156A St

28 Ave

32 Ave

40 Ave

Elgin Rd

Crescent Rd

King George Blvd

Croydon Dr





**Nicomekl Dyke Upgrade  
Compensation Area  
Monitoring and  
Maintenance  
2015 Results**

City of Surrey  
Legend

Restoration area  
boundary

**2014 Maintenance  
Prescription**

2014 recommended  
planting boundary

**2015 Monitoring Results**

2015 planted area  
boundary

Survivorship (%)

100% stocked

Invasive species

Himalayan blackberry

**2015 Maintenance  
Prescription**

Blackberry removal



1:400

**Figure 2**

Map created:  
October 2015  
Projection:  
NAD 83, UTM Zone 10



Prepared by:  
**ENKON**  
Environmental Ltd.

LTM9 Map Details



Location Map



Maintenance Summary

- Summer:**
1. Invasive species treatments are summarized in Table 2.
  2. Watering requirements are summarized in Table 3.
- Fall:**
1. Invasive species treatments are summarized in Table 2.
  2. Plant as per planting prescription provided in the Year 5 monitoring and maintenance report.
  4. Watering requirements are summarized in Table 3.

Table 1 – Stocking table
Follow planting prescription provided in the Year 5 monitoring and maintenance report.

Table 2 – Invasive species maintenance summary					
Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Treatment A	Himalayan blackberry	200	Recently brushed	0-0.3m	Remove roots and shoots monthly during growing season (Apr.1 – Oct.15).
Treatment A	Himalayan blackberry	28	Medium	0.4-4m	Remove roots and shoots monthly during growing season (Apr.1 – Oct.15).
Treatment A	evergreen blackberry	37	Medium	0.4-4m	Remove roots and shoots monthly during growing season (Apr.1 – Oct.15).
Treatments A and B	reed canarygrass	~	Variable		No treatment
Total		265			

Table 3 – Watering prescription summary		
Location	Watering Prescription	# of Plants (estimate)
2014 plantings	Water plants three times a week during dry weather periods May 1 <sup>st</sup> to October 1 <sup>st</sup> .	50
2015 plantings	Soak initial plantings and water plants three times a week thereafter during dry weather periods May 1 <sup>st</sup> to October 1 <sup>st</sup> .	264
Total		314

Legend

- ✕ Beaver dam locations
- ▲ Water quality monitoring locations
- Fish sampling locations
- 🟡 Restoration area

Eugene Creek Location and Aquatic Monitoring Map	Map Created: September 2015 Projection: NAD 83, UTM Zone 10	
City of Surrey		
Figure 1		





# Eugene Creek Treatment A and B Habitat Compensation Area Monitoring and Maintenance 2015 Results

City of Surrey

- Legend**
- Restoration area boundary
  - 2014 planting prescription

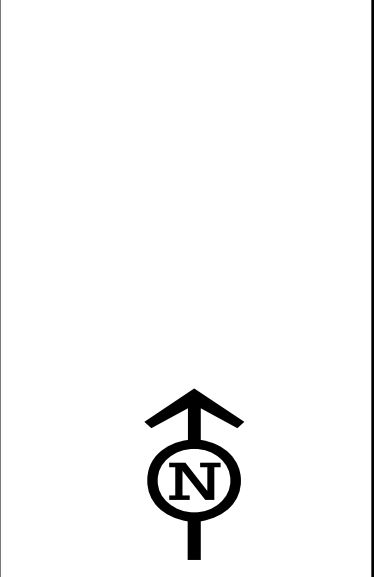
**2015 Monitoring Results**

- 100% stocked

**2015 Maintenance**

Invasive Removal

- Blackberry removal



1:1,000

**Figure 2**

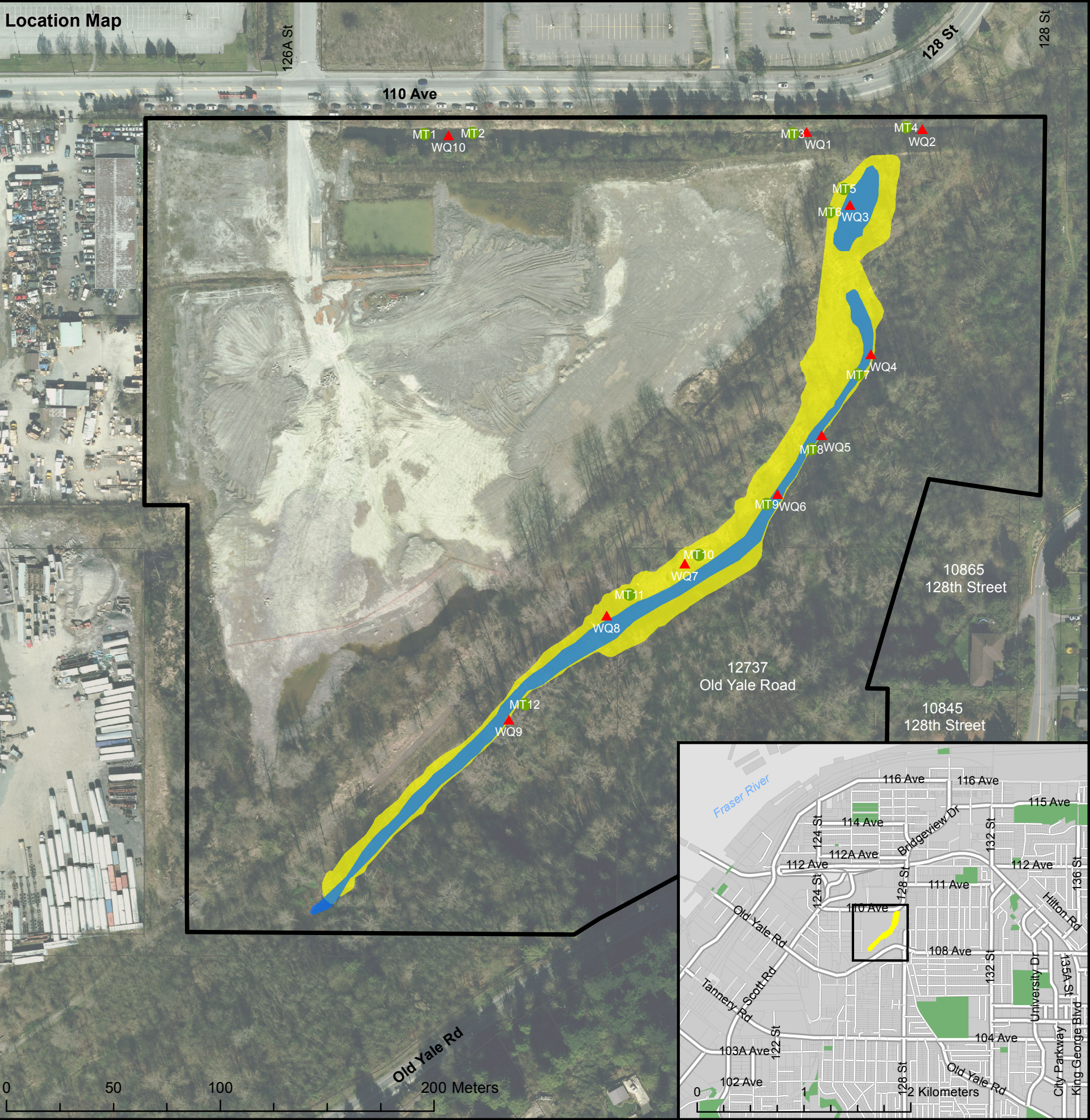
Map Created:  
September 2015  
Projection:  
NAD 83, UTM Zone 10

Prepared by:  
**ENKON**  
Environmental Ltd.

LTM10 Map Details



Location Map



Maintenance Summary

- Summer:**
1. Invasive species treatments are summarized in Table 2.
  2. Watering requirements are summarized in Table 3.
- Fall:**
1. Invasive species treatments are summarized in Table 2.
  2. Replace 11 dead Western redcedar east of the constructed pond. Continue to plant as per ENKON's Trouton Pit Restoration Riparian Plan.
  3. Watering requirements are summarized in Table 3.

Table 1 – Stocking table			
Common Name	Scientific Name	Count	Size
Western Redcedar	<i>Thuja plicata</i>	11	#5 pot
Continue to plant as per ENKON's Trouton Pit Riparian Restoration Plan.			

Table 2 – Invasive species maintenance summary					
Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Compensation Area	Himalayan blackberry	147	High	2-4m	Remove roots and shoots monthly during growing season (April 1 – October 15).
	Himalayan blackberry	142	Medium	1-3m	Remove roots and shoots monthly during growing season (April 1 – October 15).
	Himalayan blackberry	909	Low	0.3-2m	Remove roots and shoots monthly during growing season (April 1 – October 15).
	Japanese knotweed	343	High	1-3m tall	Remove with herbicide application.
	Morning glory	7	Medium		Removal carefully by hand.
Total		777			

Table 3 – Watering prescription summary	
Location	Watering Prescription
All plantings	Water all plants as necessary to maintain plant vigor.
2016 plantings	When planted, riparian plantings to be soaked in thoroughly and watered two times weekly during dry weather periods from May 1 <sup>st</sup> to October 1 <sup>st</sup> .

Legend

- Fish Sampling Locations
- WQ Monitoring Locations
- Site Boundary
- High water mark
- Restoration area
- Property Boundary

**Trouton Pit Location and Aquatic Monitoring Map**

City of Surrey

**Figure 1**

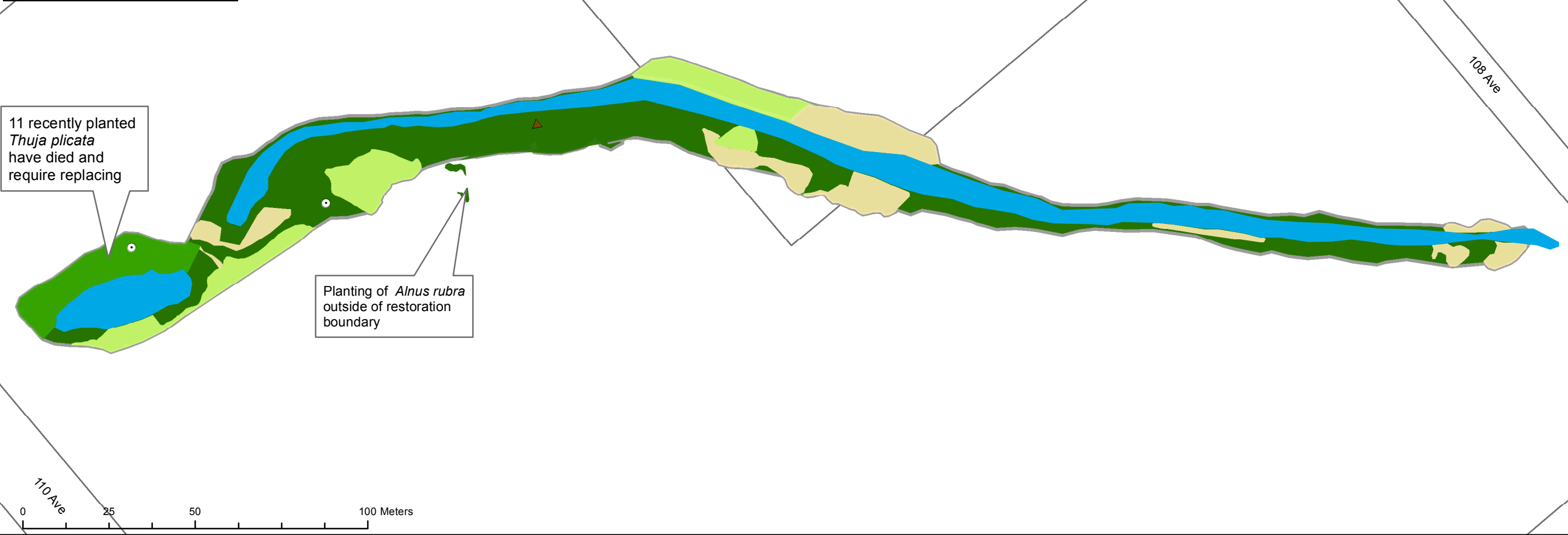
Map Created:  
December 2015

Projection:  
NAD 83, UTM Zone 10

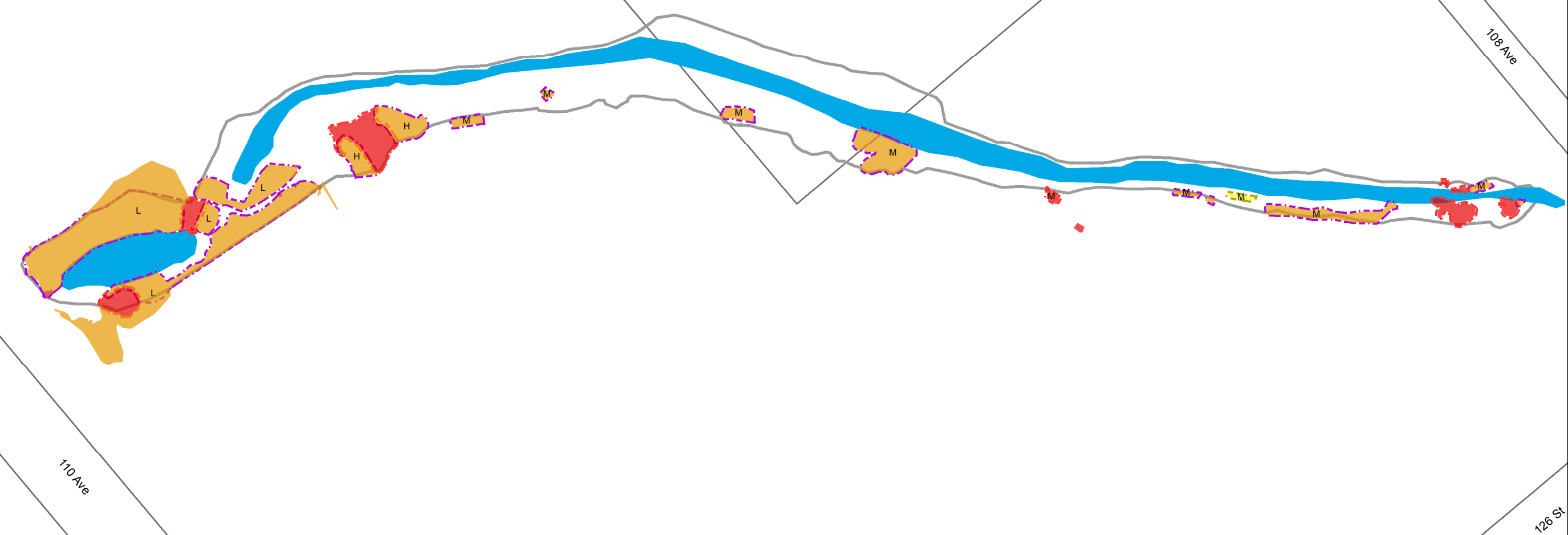
Prepared by:  
**ENKON**  
Environmental Ltd.



**Estimated Percent Stocked**



**Invasive Species**



**Trouton Pit  
Compensation Area  
Monitoring and  
Maintenance  
2015 Results**

City of Surrey

**Legend**

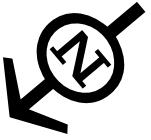
- Restoration boundary
- Watercourse
- 2015 Monitoring**
- Stocking (%)
  - 0-25
  - 26-50
  - 51-75
  - 76-100
- Garbage
- Density plot centre

**Invasive species**

- Himalayan blackberry
- Japanese knotweed
- Morning glory

**2015 Maintenance  
Prescription**

- Invasive Removal
  - Blackberry removal
  - Knotweed removal
  - Morning glory removal



1:1,250

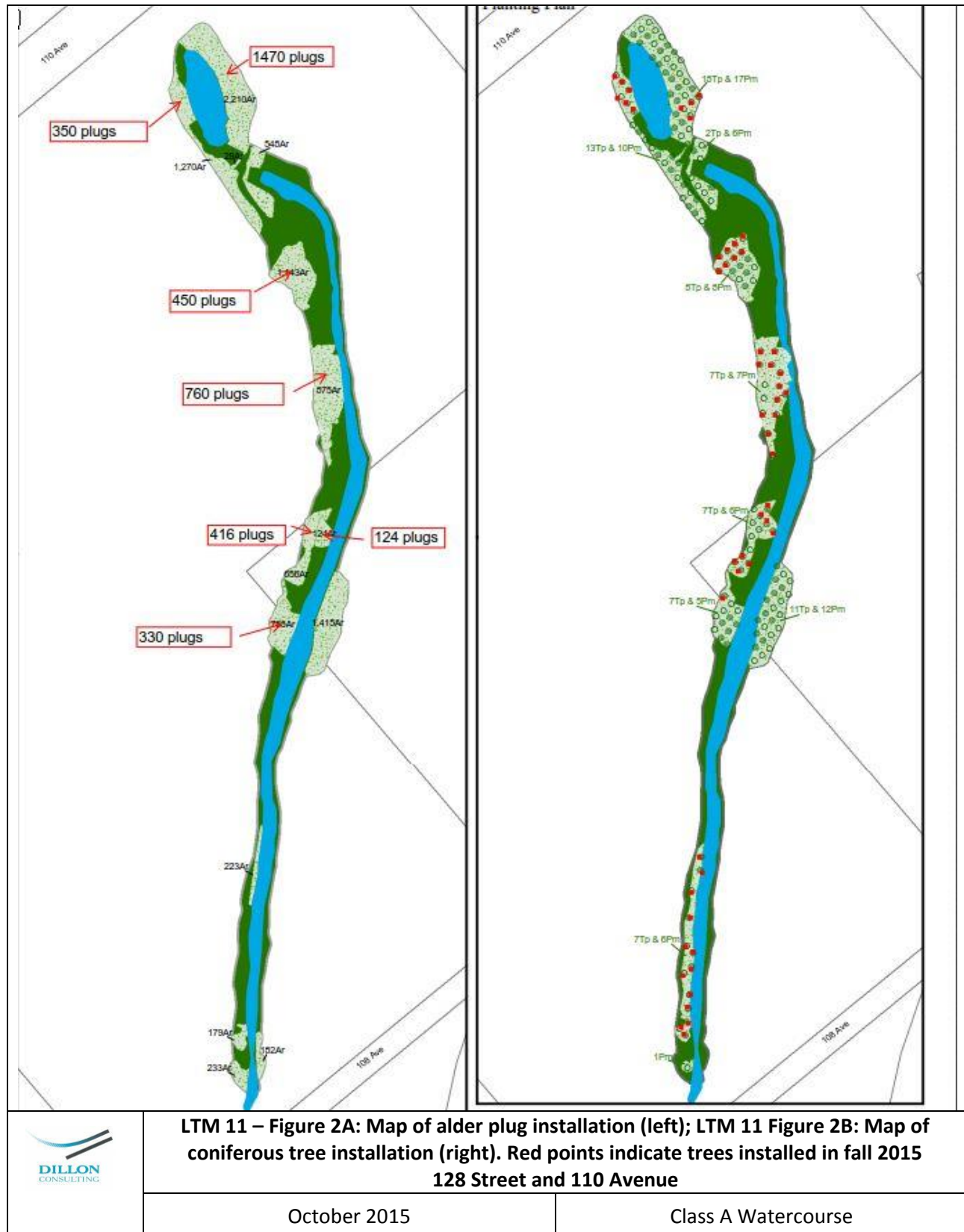
**Figure 2**

Map created:  
November 2015  
Projection:  
NAD 83, UTM Zone 10



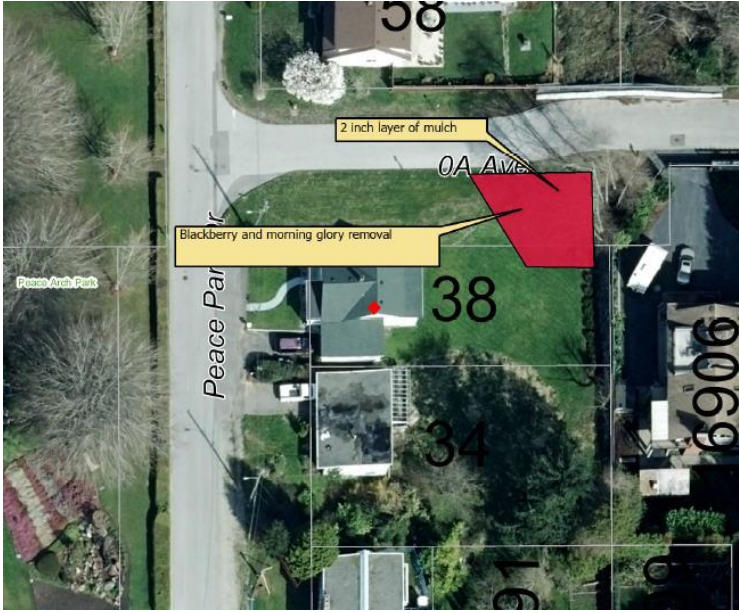


LTM11 Map Details

## 4.0 SITE MAP



### 1.0 SITE SUMMARY

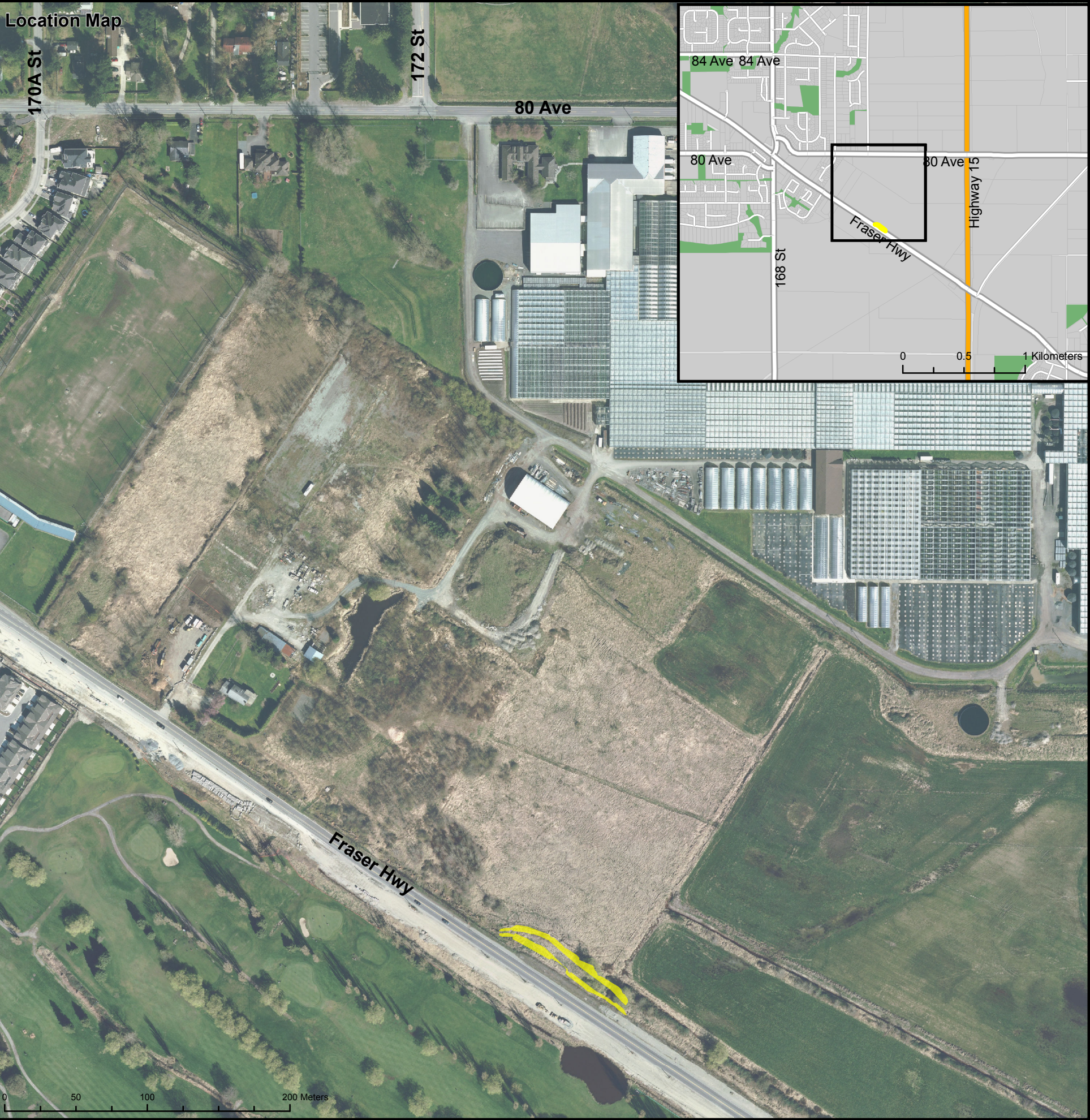
<b>Site Reference No.</b>	LTM 13	<b>Date(s) of Works</b>	June 19; July 13; August 17, 2015
<b>Watercourse</b>	Little Campbell River Tributary	<b>Class</b>	Class B
<b>Site Location</b>	38 Peace Park Drive		
<b>Site Access</b>	Park on OA Avenue	<b>Land Owner</b>	City of Surrey
<b>Proposed Activities</b>	Invasive plant removal and mulching to prevent invasive regrowth		
<b>Completed Activities</b>	Invasive removal and mulch install		
<b>Future Recommendations</b>	Continue with invasive removal		

	
	<b>Before</b>
	
<b>LTM 13</b>	<b>After</b>

### LTM13 Map Details



Location Map



Maintenance Summary

Summer:

- 1. Invasive species treatments are summarized in Table 2.
- 2. Watering requirements are summarized in Table 3.

Fall:

- 1. Plant shrubs at 1 metre spacings as necessary to meet the target density of one plant per square metre. Shrubs and trees to be planted as displayed in Figure 2.
- 2. Invasive species treatments are summarized in Table 2.
- 3. Watering requirements are summarized in Table 3.



Table 1 – Stocking table

Common Name	Scientific Name	Count	Size
Thimbleberry	<i>Rubus parviflorus</i>	50	#2 pot
Salmonberry	<i>Rubus spectabilis</i>	50	#2 pot
Pacific ninebark	<i>Physocarpus capitatus</i>	198	#2 pot
Sitka willow	<i>Salix sitchensis</i>	100	#2 pot
Black cottonwood	<i>Populus trichocarpa</i>	14	#2 pot
Sitka spruce	<i>Picea sitchensis</i>	7	#5 pot
Western redcedar	<i>Thuja plicata</i>	7	Minimum 2m tall


Table 2 – Invasive species maintenance summary

Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
-	Himalayan blackberry	252	High	>4m	Remove roots and shoots monthly during growing season (April 1 – October 15).
-	reed canarygrass	~	Variable		No treatment
Total		154			

Table 3 – Watering prescription summary

Location	Watering Prescription	# of Plants (estimate)
	Soak initial plantings and water three times per week thereafter during dry weather periods between May 1 and October 1.	28 #5 pot trees; 398 #2 pot shrubs

Legend

 Approximate restoration area

LTM14 Map Details

Fraser Highway Widening  
Location Map

City of Surrey

Figure 1

Map Created:  
September 2015  
Projection:  
NAD 83, UTM Zone 10







Fraser Highway Widening  
Monitoring and  
Maintenance  
2015 Results

City of Surrey

Legend

2015 Maintenance

Blackberry removal

Planting prescription

Restoration area

2015 Monitoring Results

Survivorship (%)

100

Notes:

- Plant trees at raised locations
- Plant willow adjacent to watercourse

1:400

Figure 2

Date:  
September 2015  
Projection:  
NAD 83, UTM Zone 10



LTM14 Map Details





**Maintenance Summary**



- Summer:**
1. Invasive species treatments are summarized in Table 2.
  2. Watering requirements are summarized in Table 3.
- Fall:**
1. Invasive species treatments are summarized in Table 2.
  2. Plant as per the 2014 maintenance report recommendations.
  3. Water treatment is summarized in Table 3.



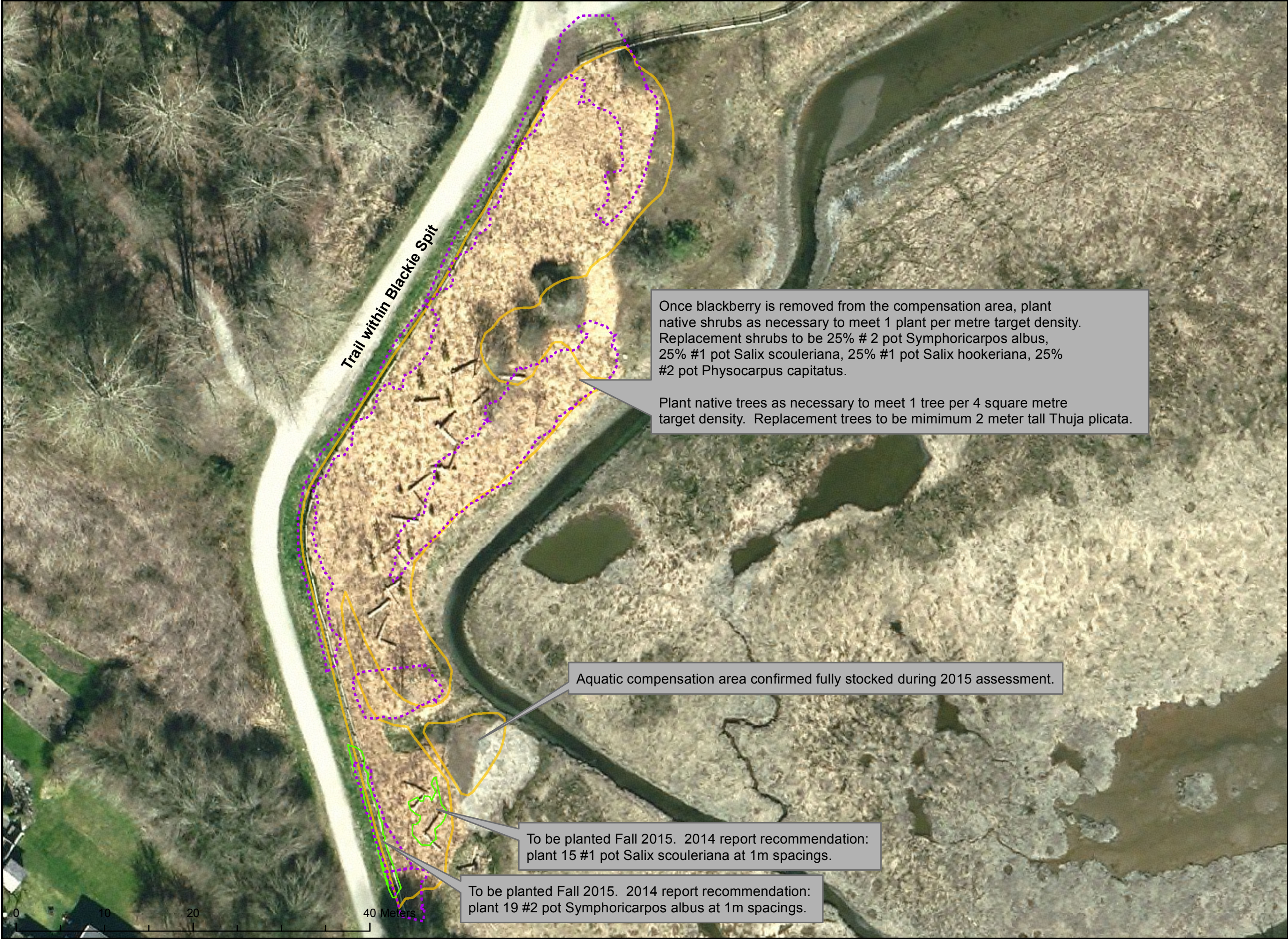
<b>Table 1 – Stocking table</b>
Plant as per the 2014 maintenance report recommendations. Planting in the salt marsh portion is not necessary at this time.

Table 2 – Invasive species maintenance summary					
Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Maintenance Area	Himalayan blackberry	227	Medium	1-3m	Remove roots and shoots monthly during growing season (April 1 – October 15).
	Himalayan blackberry	307	Low	0.3-1m	Remove roots and shoots monthly during growing season (April 1 – October 15).
Total		534			

Table 3 – Watering prescription summary	
Location	Watering Prescription
Mitigation area	All plants in the alternative mitigation planting area to be watered twice per week during dry weather periods (May 1 – October 1).
Total	

<b>Legend</b>  Approximate restoration area		<b>LTM15 Map Details</b>			
<b>Maple Pump Station Location Map</b>		Map Created: December 2015 Projection: NAD 83, UTM Zone 10			
City of Surrey					
<b>Figure 1</b>					





**Maple Pump Station  
Compensation Area  
Monitoring and  
Maintenance  
2015 Results**

City of Surrey

**Legend**

- Restoration area
- Invasive Removal**
  - Himalayan blackberry removal
- 2014 Maintenance Prescription**
  - Planting area

Once blackberry is removed from the compensation area, plant native shrubs as necessary to meet 1 plant per metre target density. Replacement shrubs to be 25% # 2 pot Symphoricarpos albus, 25% #1 pot Salix scouleriana, 25% #1 pot Salix hookeriana, 25% #2 pot Physocarpus capitatus.

Plant native trees as necessary to meet 1 tree per 4 square metre target density. Replacement trees to be minimum 2 meter tall Thuja plicata.

Aquatic compensation area confirmed fully stocked during 2015 assessment.

To be planted Fall 2015. 2014 report recommendation: plant 15 #1 pot Salix scouleriana at 1m spacings.


To be planted Fall 2015. 2014 report recommendation: plant 19 #2 pot Symphoricarpos albus at 1m spacings.



**1:400**

**Figure 2**

Map Created:  
September 15, 2015  
Projection:  
NAD 83, UTM Zone 10



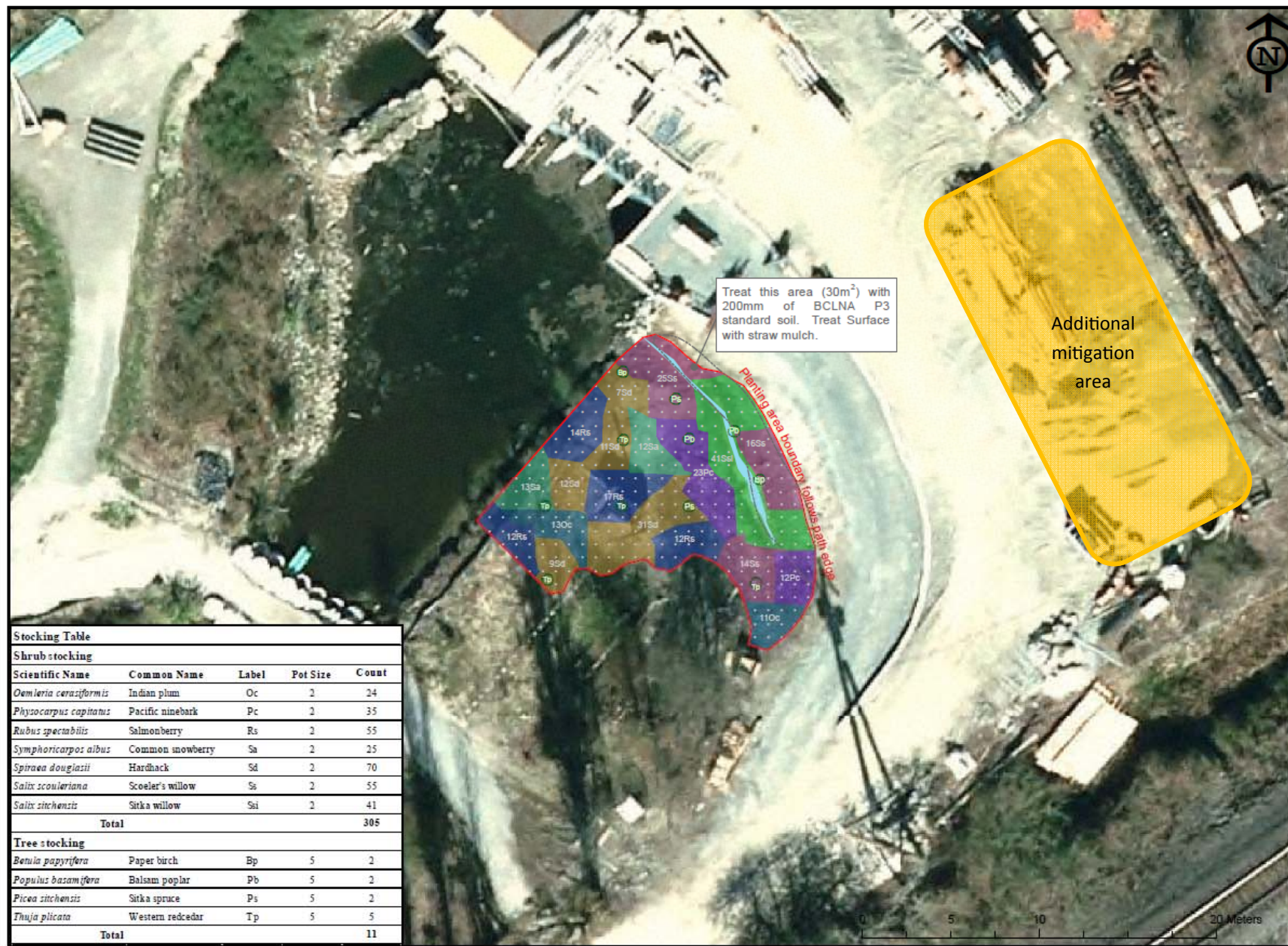
Prepared by:

**ENKON**

Environmental Ltd.

**LTM15 Map Details**





Stocking Table				
Shrub stocking				
Scientific Name	Common Name	Label	Pot Size	Count
<i>Oemleria cerasiformis</i>	Indian plum	Oc	2	24
<i>Physocarpus capitatus</i>	Pacific ninebark	Pc	2	35
<i>Rubus spectabilis</i>	Salmonberry	Rs	2	55
<i>Symphoricarpos albus</i>	Common snowberry	Sa	2	25
<i>Spiraea douglasii</i>	Hardhack	Sd	2	70
<i>Salix scouleriana</i>	Scouler's willow	Ss	2	55
<i>Salix sitchensis</i>	Sitka willow	Ssi	2	41
Total				305
Tree stocking				
<i>Betula papyrifera</i>	Paper birch	Bp	5	2
<i>Populus balsamifera</i>	Balsam poplar	Pb	5	2
<i>Picea sitchensis</i>	Sitka spruce	Ps	5	2
<i>Thuja plicata</i>	Western redcedar	Tp	5	5
Total				11

## Maple Pump Station Mitigation Planting Area City of Surrey

### Legend

- Planting area
- 0.75m shrub planting grid
- Tree planting point
- Swale

### Shrub species

- Oemleria cerasiformis* (Oc)
- Physocarpus capitatus* (Pc)
- Rubus spectabilis* (Rs)
- Symphoricarpos albus* (Sa)
- Spiraea douglasii* (Sd)
- Salix scouleriana* (Ss)
- Salix sitchensis* (Ssi)

### Invasive Removal

Remove all Himalayan blackberry (*Rubus armeniacus*) roots and shoots from the planting area.

1:200

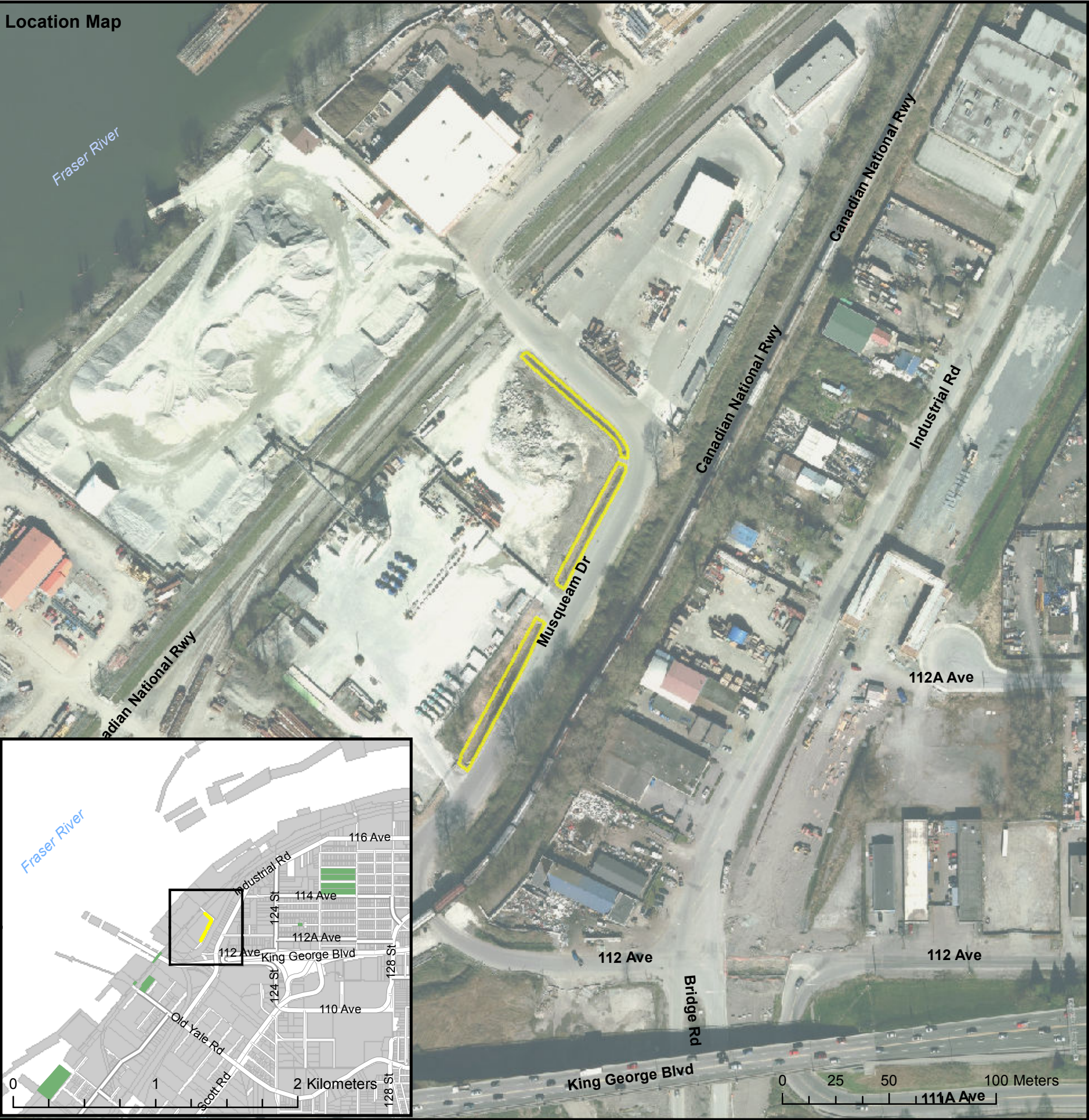
Figure 1

Map Created:  
May 2015  
Projection:  
NAD 83, UTM Zone 10





Location Map



Maintenance Summary

Summer:

1. Invasive species treatments are summarized in Table 2.
2. Watering requirements are summarized in Table 3.

Fall:

1. Plant as per planting prescription in Year 2 monitoring and maintenance report (Appendix C).
2. Invasive species treatments are summarized in Table 2.
3. Watering requirements are summarized in Table 3.



Table 1 – Stocking table for grassy area

Follow planting prescription from Year 2 monitoring and maintenance report (Appendix C).

Table 2 – Invasive treatment summary

Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Area A and B	blackberry	241	Medium	0.1 to 3.0m	Remove roots and shoots monthly during growing season (April 1-October 15).
	reed	404	Medium	-	No treatment
	canarygrass				
	morning glory	21	High	-	Remove roots and shoots monthly during growing season (April 1-October 15).
Total		574			

Table 3 – Watering prescription summary

Location	Watering Prescription	# of plants (estimate)
Area A and B	Water plants two times a week during dry weather periods (May 1 to October 1)	1,381

Legend

 Restoration area

Musqueam Drive  
2015 Maintenance Site Map

City of Surrey

Figure 1

Map Created:  
August 2015  
Projection:  
NAD 83, UTM Zone 10







Musqueam Drive  
Compensation Area  
Monitoring and  
Maintenance  
2015 Results

City of Surrey

Legend

Restoration area  
boundary

2015 Monitoring  
Results

Survivorship (%)

0  
 100

2015 Maintenance

Invasive Removal

Morning glory removal  
 Blackberry removal



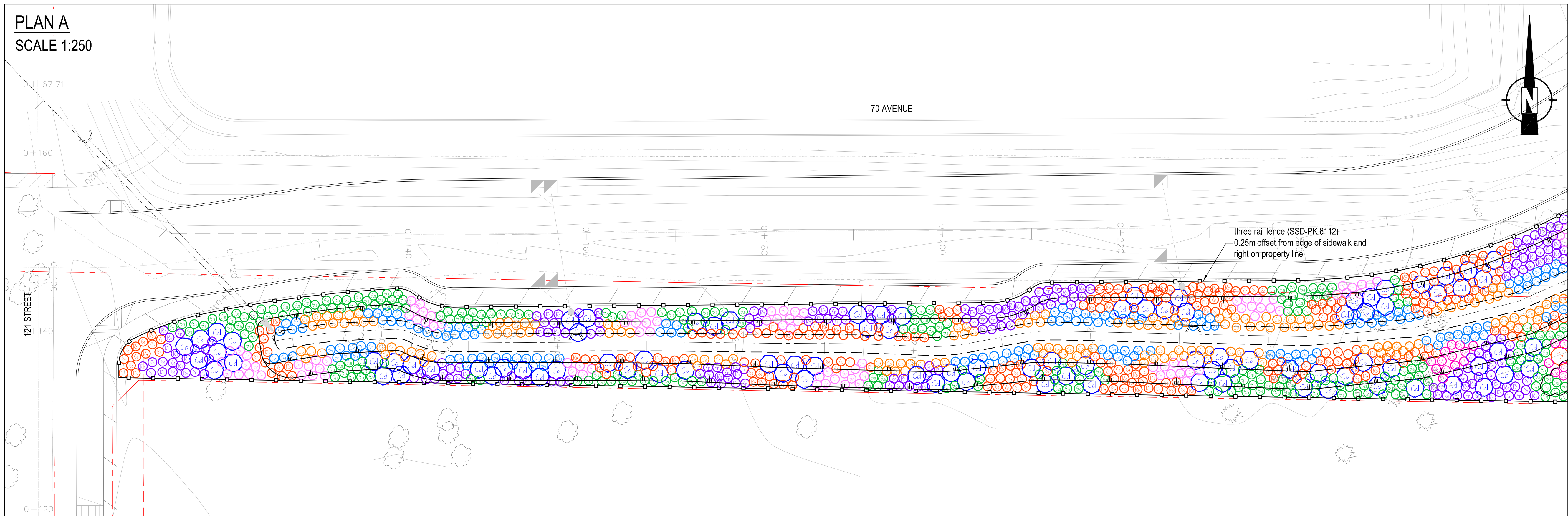
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Figure 2

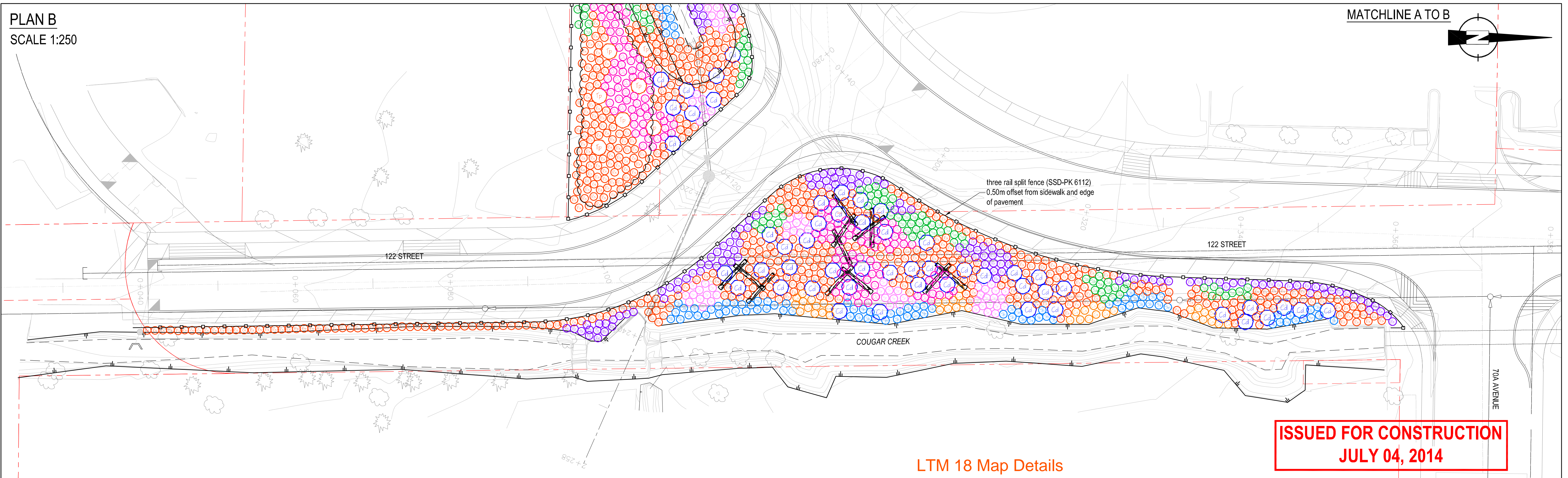
Map created:  
August 2015  
Projection:  
NAD 83, UTM Zone 10



PLAN A  
SCALE 1:250



PLAN B  
SCALE 1:250

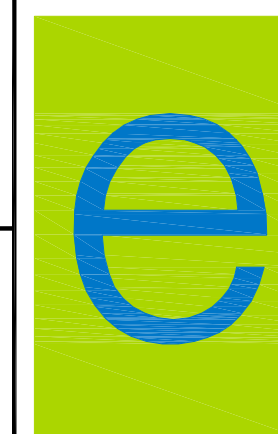


LTM 18 Map Details

ISSUED FOR CONSTRUCTION  
JULY 04, 2014

CITY OF SURREY

70 AVENUE CONNECTOR  
Surrey, BC



envirowest consultants inc.

Suite 101 - 1515 Broadway Street  
Port Coquitlam, British Columbia  
Canada V3C 6M2  
office: 604-944-0502  
facsimile: 604-944-0507

[www.envirowest.ca](http://www.envirowest.ca)

LANDSCAPE PLAN

DESIGN: RWS	DRAWN: CEV	CHECKED:	REVISION: 01	REVISION DATE: October 09, 2013
SCALE: As Shown			DRAWING NUMBER: 111-323-01	
DATE: December 05, 2012				SHEET 1 OF 2

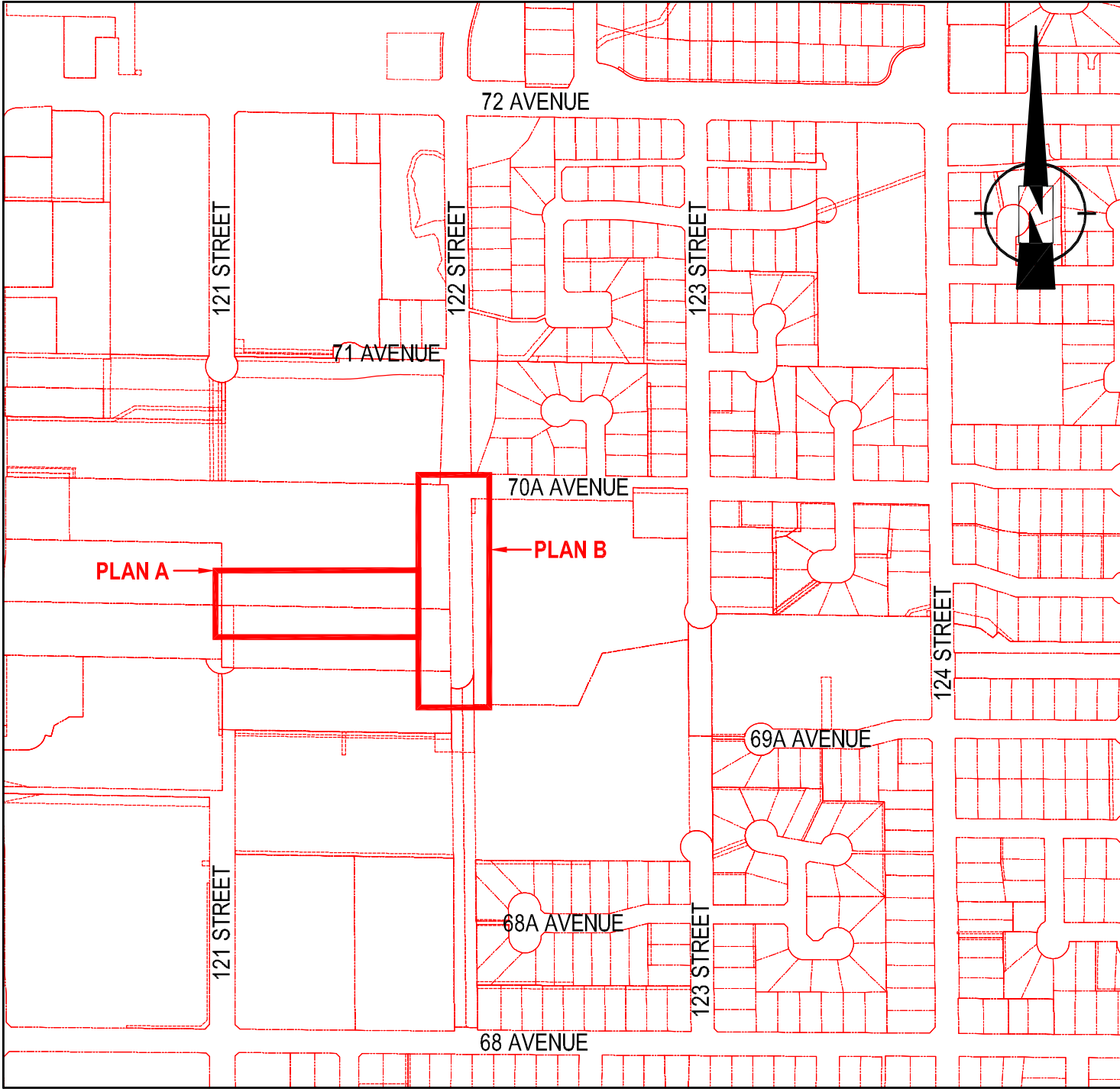
REFERENCE DRAWINGS

1. Email: ACAD-11-228-02-KEY PLAN(out 2013-sep-23).dwg. Received September 30, 2013; Aplin and Martin Consultants Ltd.
2. Drawing No. 11-228-02. Sheet No. 02. "Key Plan". January 2012. Aplin and Martin Consultants Ltd.
3. 2011 Legal Base From City of Surrey.

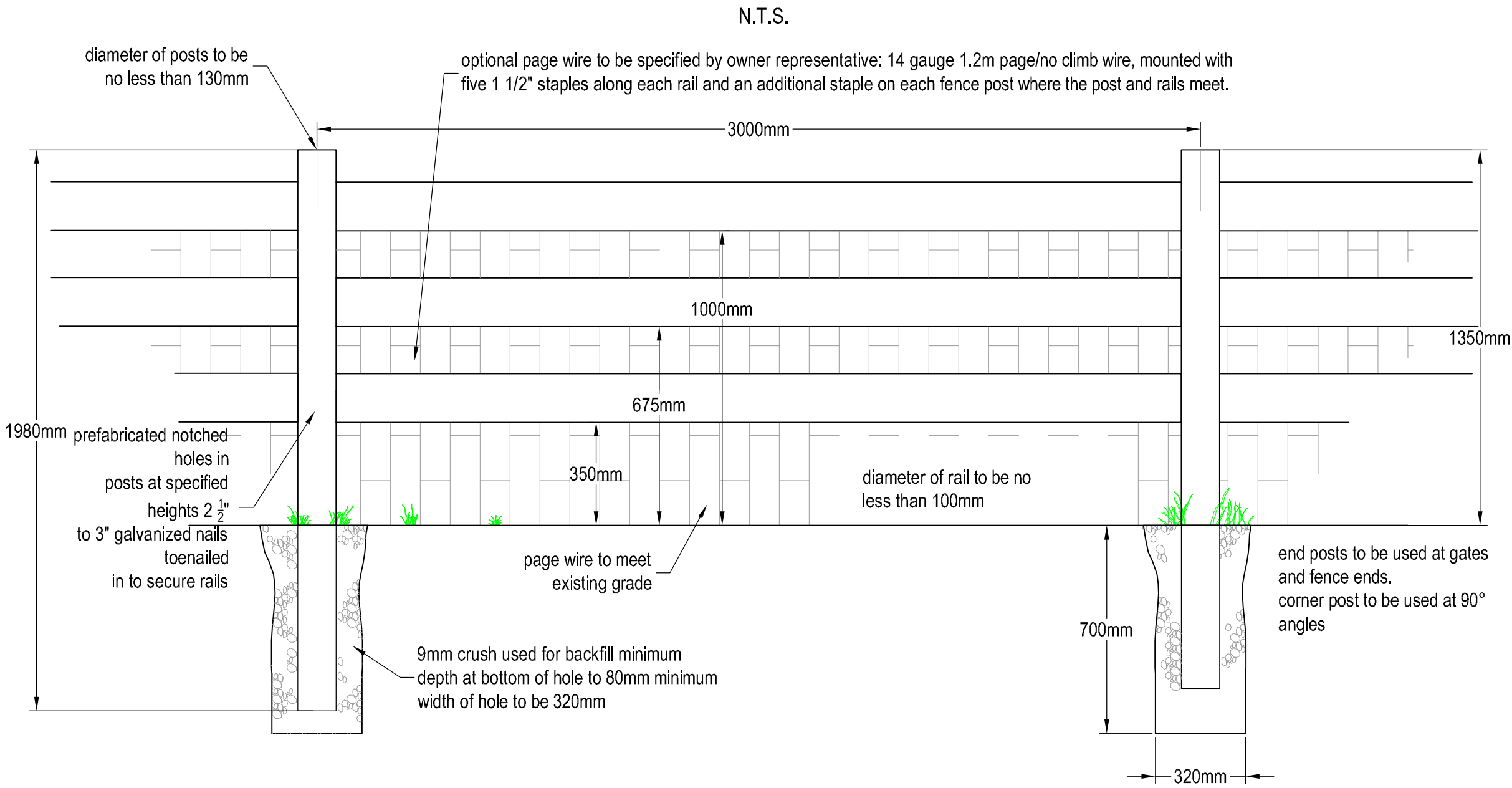


LOCATION

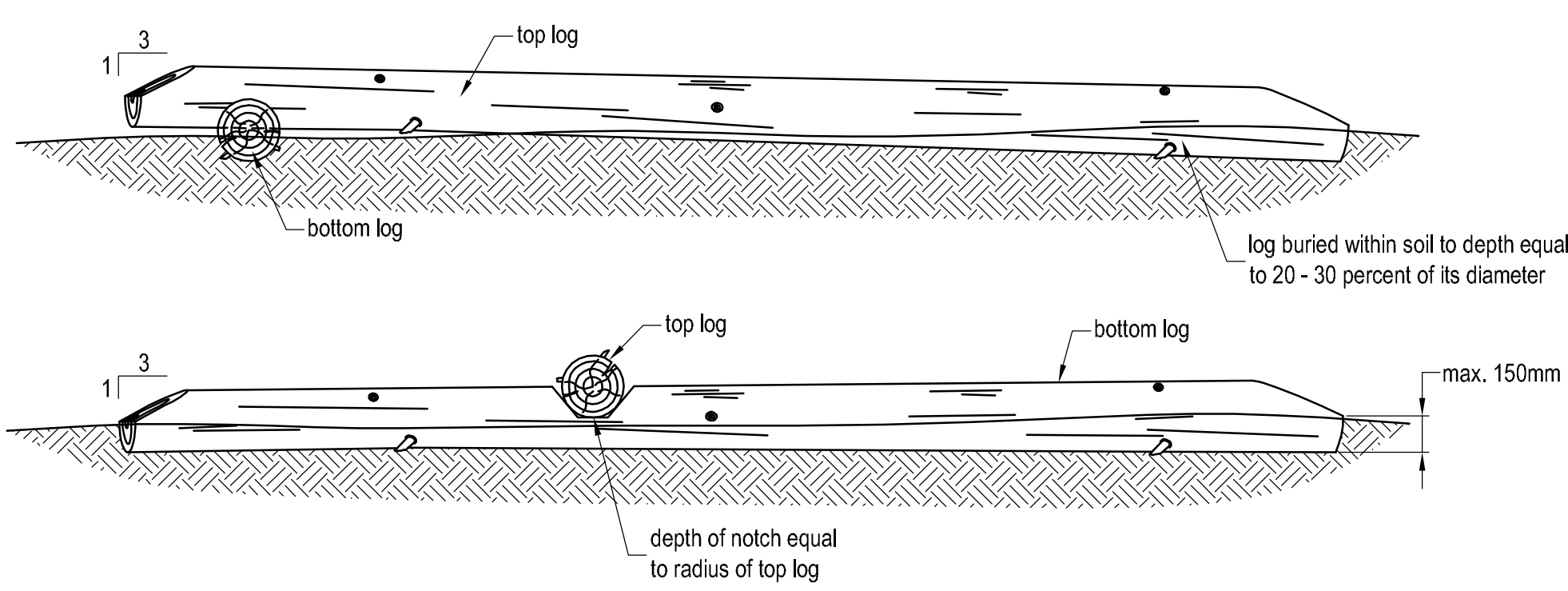
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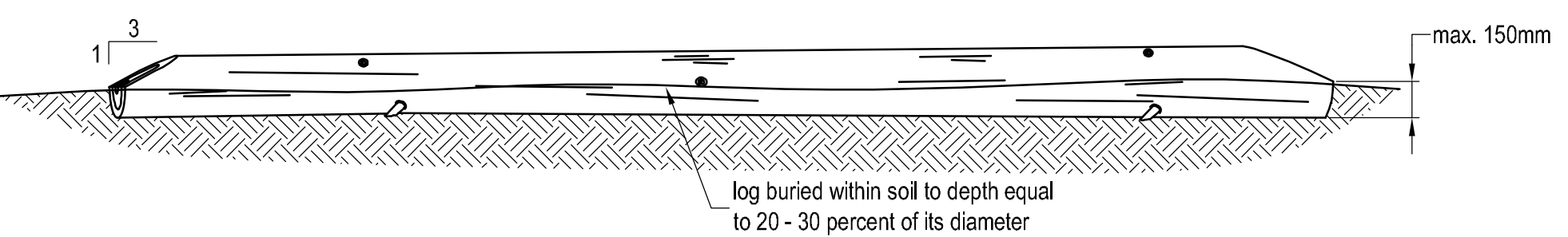
CITY OF SURREY  
THREE RAIL SPLIT FENCE DETAIL



LOG ON LOG DETAIL  
N.T.S.



LOG ON GROUND DETAIL  
N.T.S.



PLANT SPECIES LIST AND SPECIFICATIONS

SYMBOL	COMMON NAME	LATIN NAME	70 AVENUE	122 STREET	COMMENTS
	western redcedar	<i>Thuja plicata</i>	8	00	2.5m B&B; densely branched; well established
	black hawthorn	<i>Crataegus douglasii</i>	102	44	2.0m B&B; densely branched; well established
	red elderberry	<i>Sambucus racemosa</i>	112	48	no. 3 pot; densely branched; well established
	Hooker's willow	<i>Salix hookeriana</i>	157	82	no. 2 pot; densely branched; well established
	Indian plum	<i>Osmaronia cerasiformis</i>	87	69	no. 2 pot; densely branched; well established
	Nootka rose	<i>Rosa nutkana</i>	204	122	no. 2 pot; multi-stemmed; densely branched; well established
	red-osier dogwood	<i>Cornus stolonifera</i>	157	42	no. 2 pot; densely branched; well established
	salmonberry	<i>Rubus spectabilis</i>	464	360	no. 2 pot; multi-stemmed; densely branched; well established
	snowberry	<i>Symphoricarpos albus</i>	263	66	no. 2 pot; densely branched; well established
	woody debris	Min. 40% composition of the following: <i>Alnus rubra</i> <i>Pseudotsuga menziesii</i>	00	12	3.0m - 5.0m in length; 300mm Ø to 450mm Ø

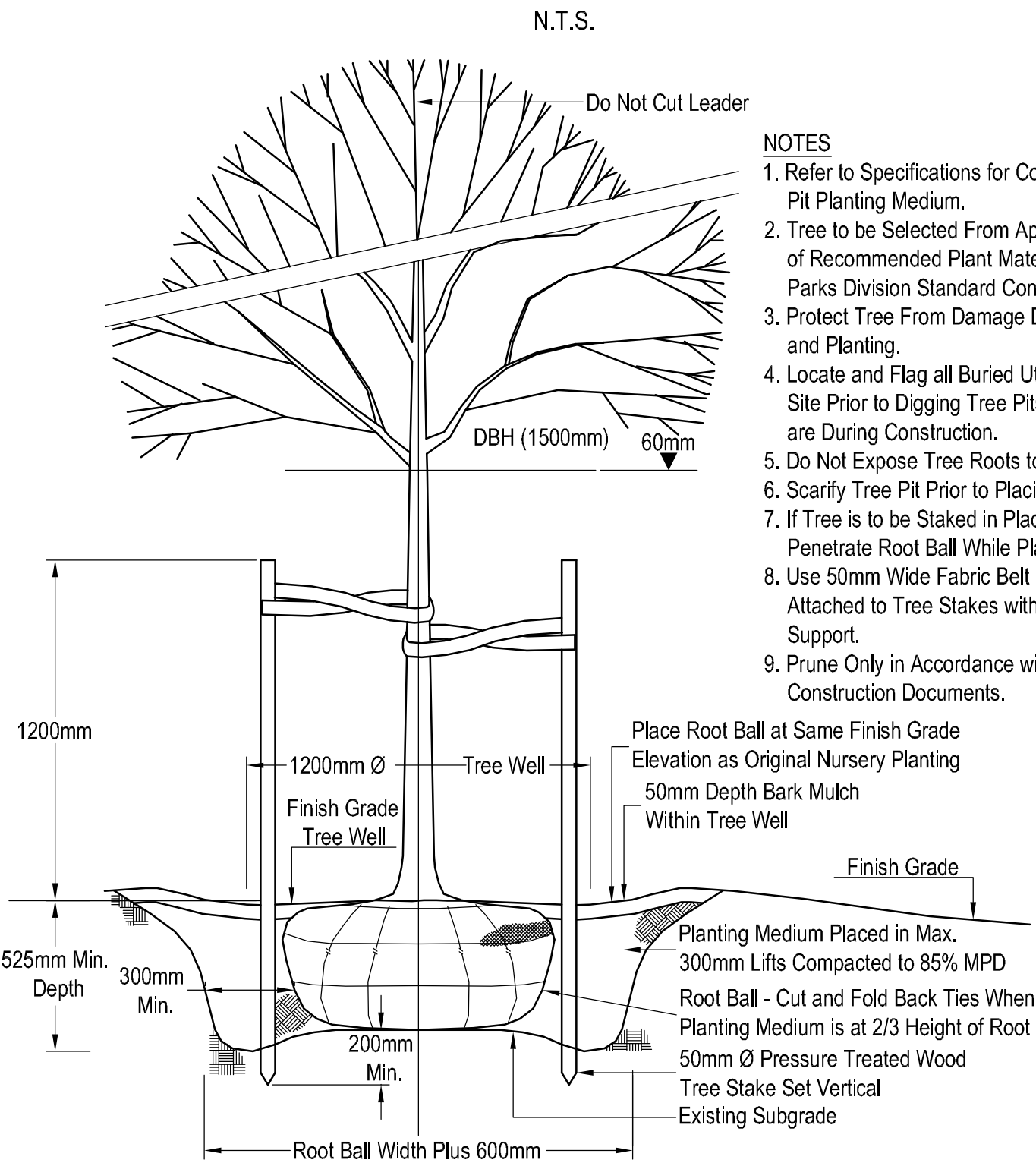
GENERAL LANDSCAPE SPECIFICATIONS

- Plant material and the planting of such material are to be in accordance with the British Columbia Landscape Standard (seventh edition) jointly published by the British Columbia Society of Landscape Architects and the British Columbia Landscape Nursery Association.
- All works are to be conducted in accordance with the sediment control provisions of the "Land Development Guidelines for the Protection of Aquatic Habitat" jointly published by BC Ministry of Environment and Fisheries and Oceans Canada.
- All plant material is to be inspected and approved by Envirowest prior to installation.
- Growing medium is to be free of any subsoils, roots, noxious grass, weeds, toxic materials, stone over 30 mm diameter, foreign objects, and possess an acidity range (pH) of 5.5 to 7.5. Growing medium is to be inspected by Envirowest prior to placement.
- All blackberry (*Rubus discolor* and *R. laciniatus*) to be cleared and grubbed from project site.
- All debris and/or excess material from landscape operations are to be collected and disposed offsite in accordance with all regulatory requirements.
- Disturbed areas to be seeded with red fescue (*Festuca rubra*) augmented with fireweed (*Epiobium angustifolium*) and goldenrod (*Solidago canadensis*) seed; percentage composition and application rate of final seed mix to be determined by Envirowest.
- All western redcedar (*Thuja plicata*) must be of native stock; any cultivars, such as *T. plicata* var. *excelsa*, are not to be planted.
- The contractor is to provide three (3) years of plant maintenance. Plant maintenance is to include watering, selective pruning and clearing of blackberry. Species survivorship is to equal one-hundred (100) percent three (3) years from planting. Replacement of dead stock may be required to fulfill this specification. Replacement stock is also subject to one-hundred (100) percent survivorship three (3) years from planting.

REFERENCE DRAWINGS

- Email: ACAD-11-228-02-KEY PLAN(out 2013-sep-23).dwg. Received September 30, 2013; Aplin and Martin Consultants Ltd.
- Drawing No. 11-228-02. Sheet No. 02. "Key Plan". January 2012. Aplin and Martin Consultants Ltd.
- 2011 Legal Base From City of Surrey.

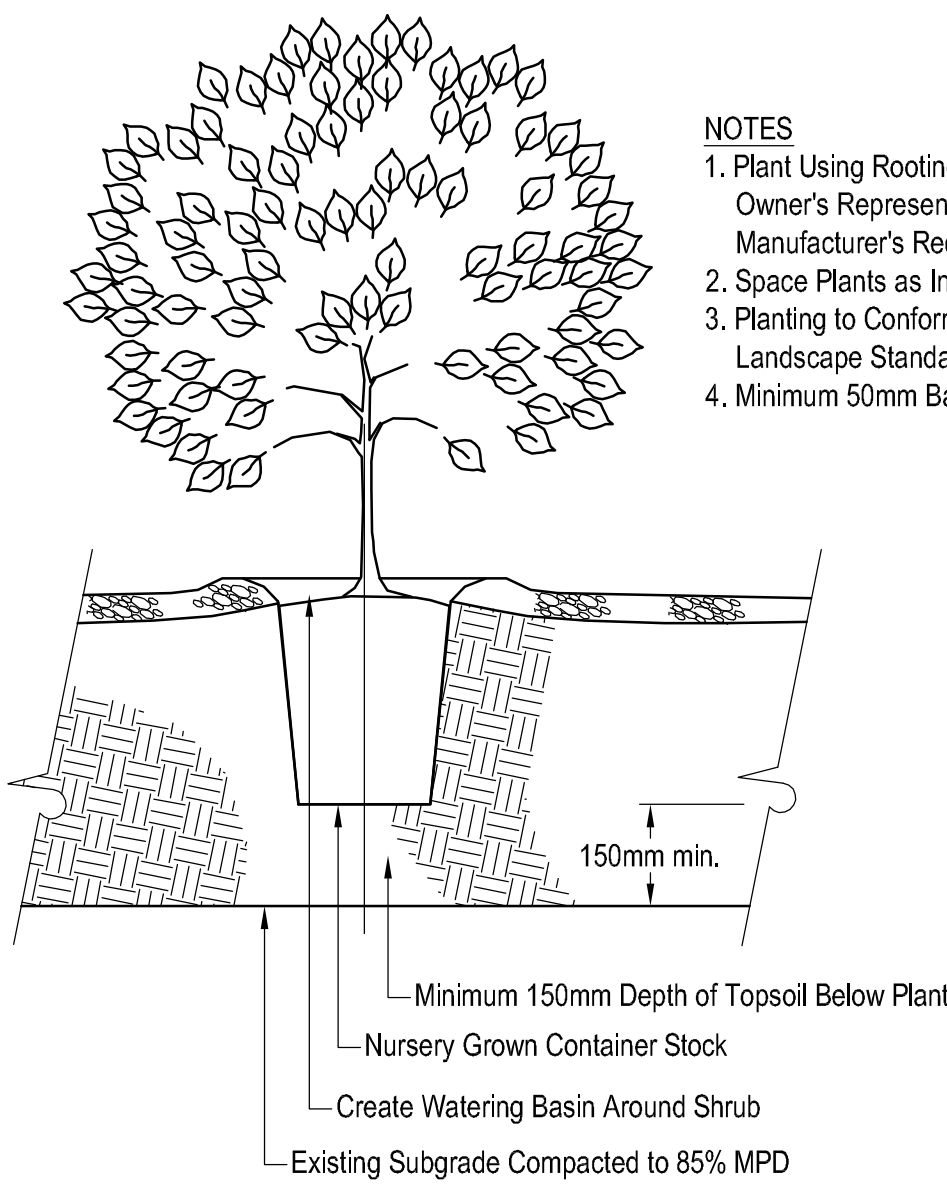
CITY OF SURREY  
TREE PLANTING DETAIL



NOTES

- Refer to Specifications for Composition of Tree Pit Planting Medium.
- Tree to be Selected From Appendix A List of Recommended Plant Material City of Surrey Parks Division Standard Construction Documents.
- Protect Tree From Damage During Transportation and Planting.
- Locate and Flag all Buried Utilities in Tree Planting Site Prior to Digging Tree Pits - Ensure That Utilities are During Construction.
- Do Not Expose Tree Roots to Direct sun or Frost.
- Scarify Tree Pit Prior to Placing Tree.
- If Tree is to be Staked in Place do not Damage or Penetrate Root Ball While Placing Tree Stakes.
- Use 50mm Wide Fabric Belt in Figure 8 Pattern Attached to Tree Stakes with Shingle Nails for Tree Support.
- Prune Only in Accordance with Standard Construction Documents.

CITY OF SURREY  
SHRUB PLANTING DETAIL  
N.T.S.



NOTES

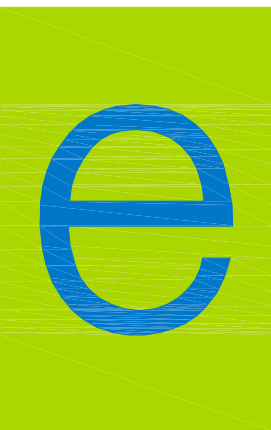
- Plant Using Rooting Powder Approved by Owner's Representative According to Manufacturer's Recommendations.
- Space Plants as Indicated in Planting Plan.
- Planting to Conform to BCSLA/BCNTA Landscape Standard - Current Edition.
- Minimum 50mm Bark Mulch Settled Depth.

LTM 18 Map Details

ISSUED FOR CONSTRUCTION  
JULY 04, 2014

CITY OF SURREY

70 AVENUE CONNECTOR  
Surrey, BC



envirowest consultants inc.

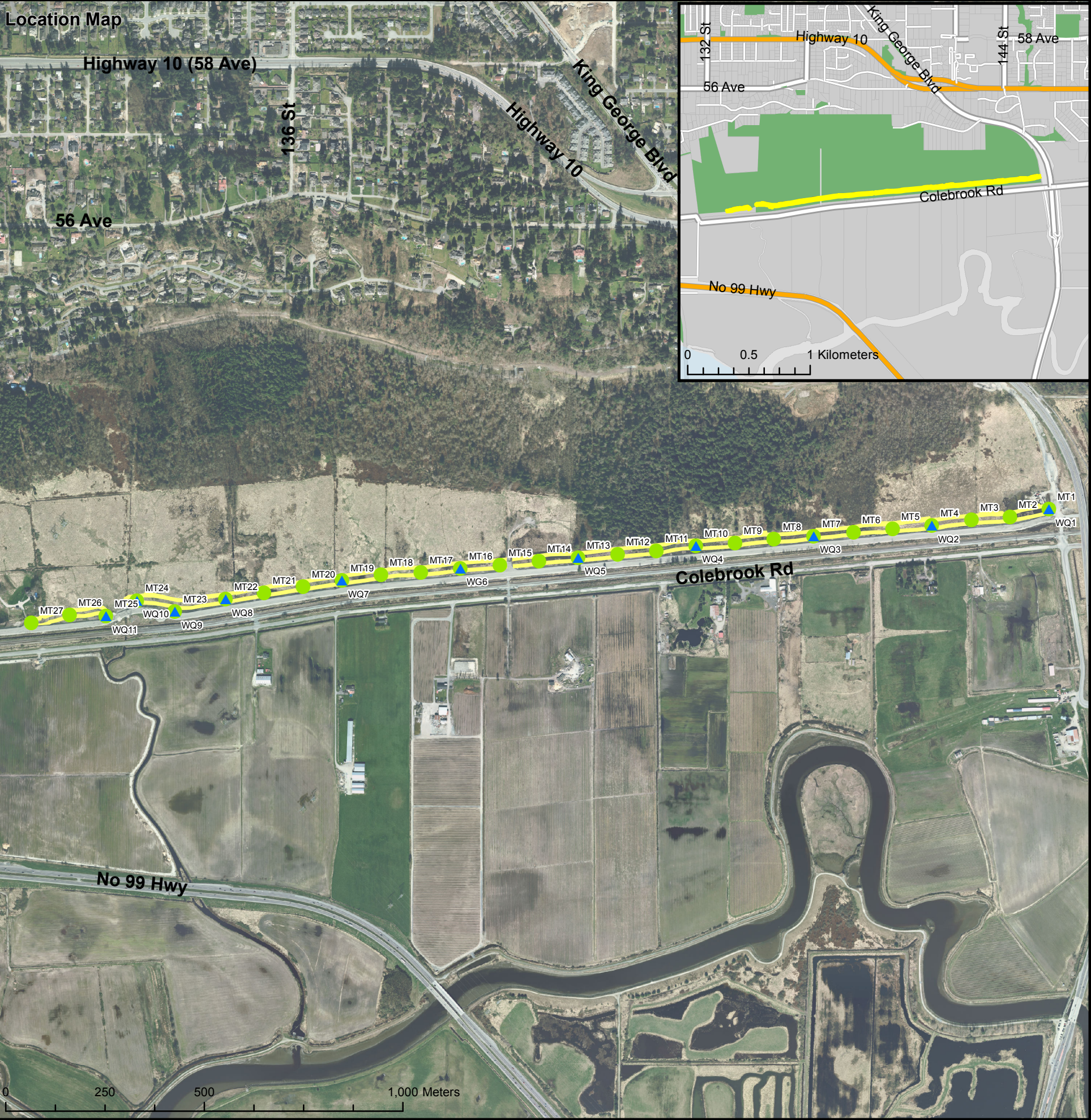
Suite 101 - 1515 Broadway Street  
Port Coquitlam, British Columbia  
Canada V3C 6M2  
office: 604-944-0502  
facsimile: 604-944-0507

www.envirowest.ca

LANDSCAPE PLAN DETAILS AND  
SPECIFICATIONS

DESIGN: RWS	DRAWN: CEV	CHECKED:	REVISION: 01	REVISION DATE: October 09, 2013
SCALE: As Shown			DRAWING NUMBER: 111-323-02	
DATE: December 05, 2012				SHEET 2 OF 2





**Maintenance Summary**

**Summer and Fall:**

1. ENKON to develop a plan for 2016 maintenance activities including planting and invasive removal in early 2016.
2. Watering prescription is summarized on Table 1.

**Table 1 – Watering prescription summary**

All 2016 plantings will require watering twice weekly during dry weather periods. Water existing planted stock as necessary to maintain health and vigor. Areas on drier sites such as the tree islands and the south riparian margin will benefit from watering during dry weather periods.

**Legend**

- ▲ WQ Monitoring Locations
- Fish Sampling Locations
- ✂ Restoration area boundary



LTM19 Map Details

**Colbrook Road  
Location Map**

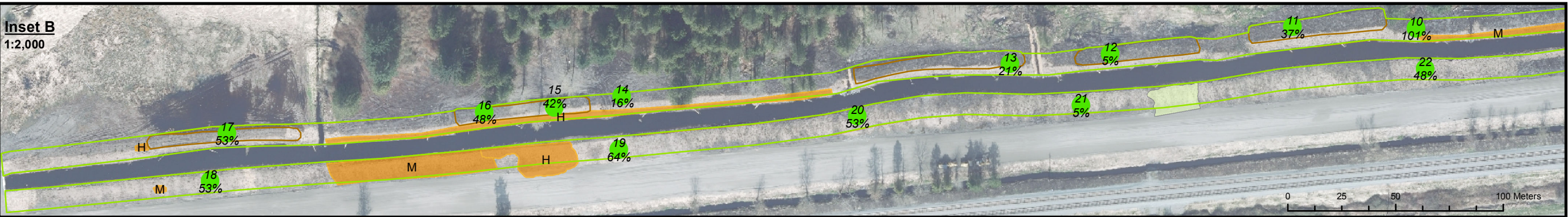
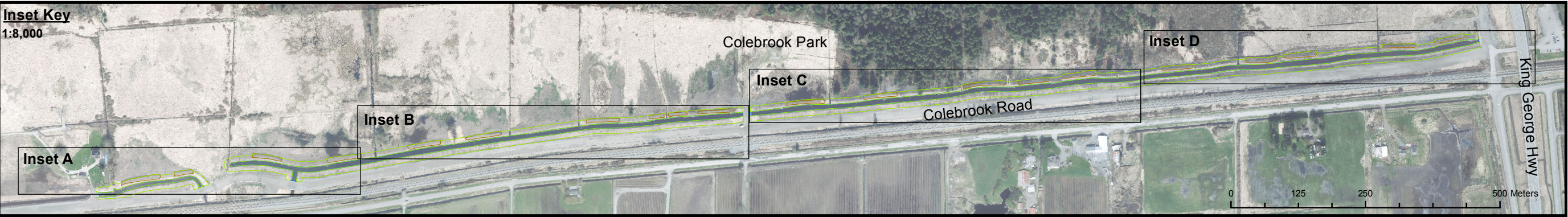
City of Surrey

**Figure 1**

Map Created:  
December 2015  
Projection:  
NAD 83, UTM Zone 10







# Colebrook Road Monitoring and Maintenance 2015 Results

City of Surrey

- Legend**
- Restoration area boundary
  - Tree islands
- 2015 Monitoring Results**
- Density plot survivorship (# = plot number; % = % survivorship)
  - Unplanted area
- Invasive Species**
- Himalayan blackberry
- Note: Density labeled  
H = High  
M = Medium  
L = Low

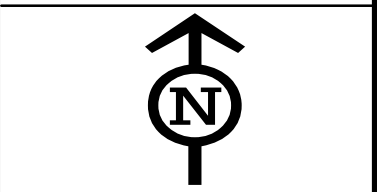


Figure 2

Date:  
December 2015  
Projection:  
NAD 83, UTM Zone 10



LTM19 Map Details



Location Map



Maintenance Summary

Summer:

- 1. Invasive species treatments are summarized in Table 2.
- 2. Watering requirements are summarized in Table 3.

Fall:

- 1. Plant shrubs as specified in Table 1 and in locations displayed on Figure 2. Shrubs to be planted at 1m spacing, willow plugs to be installed at 0.5m spacing, and trees to be installed at 4m spacing.
- 2. Invasive species treatments are summarized in Table 2.
- 3. Watering requirements are summarized in Table 3.



Table 1 – Stocking table

Restoration Area 1				
Common Name	Scientific Name	Label	Count	Size
Pacific ninebark	<i>Physocarpus capitatus</i>	Pc	16	#2 pot
Salmonberry	<i>Rubus spectabilis</i>	Rs	16	#2 pot
Hardhack	<i>Spiraea douglasii</i>	Sd	16	#2 pot
Sitka willow	<i>Salix sitchensis</i>	Ss	96	plugs
Restoration Area 2				
Black twinberry	<i>Lonicera involucrata</i>	Li	241	#2 pot
Pacific ninebark	<i>Physocarpus capitatus</i>	Pc	241	#2 pot
Hookers' willow	<i>Salix hookeriana</i>	Sh	241	#1 pot
Schouler's willow	<i>Salix scouleriana</i>	Ssc	241	#1 pot
Black cottonwood	<i>Populus trichocarpa</i>	Pt	15	#5 pot
Sitka spruce	<i>Picea sitchensis</i>	Ps	15	#5 pot
Sitka willow	<i>Salix sitchensis</i>	Ss	200	plugs

Table 2 – Invasive species maintenance summary

Location	Species	Area (m <sup>2</sup> )	Density	Cane length	Prescription
Restoration Area 1	Himalayan blackberry	11	Medium	1-3m	Remove roots and shoots monthly during growing season (April 1 – October 15).
Restoration Area 1	Japanese knotweed	10	Medium	1-2m	Remove with herbicide application.
Total		21			

Table 3 – Watering prescription summary

Location	Watering Prescription	# of Plants (estimate)
2015 plantings	Soak initial plantings and water plants two times a week thereafter during dry weather periods June 1 to October 1.	30 trees; 1,012 shrubs
Total		1,042

Legend

- ▲ WQ Monitoring Location
- 📍 Restoration area

LTM20 Map Details

RBRC Location and Aquatic Monitoring Map

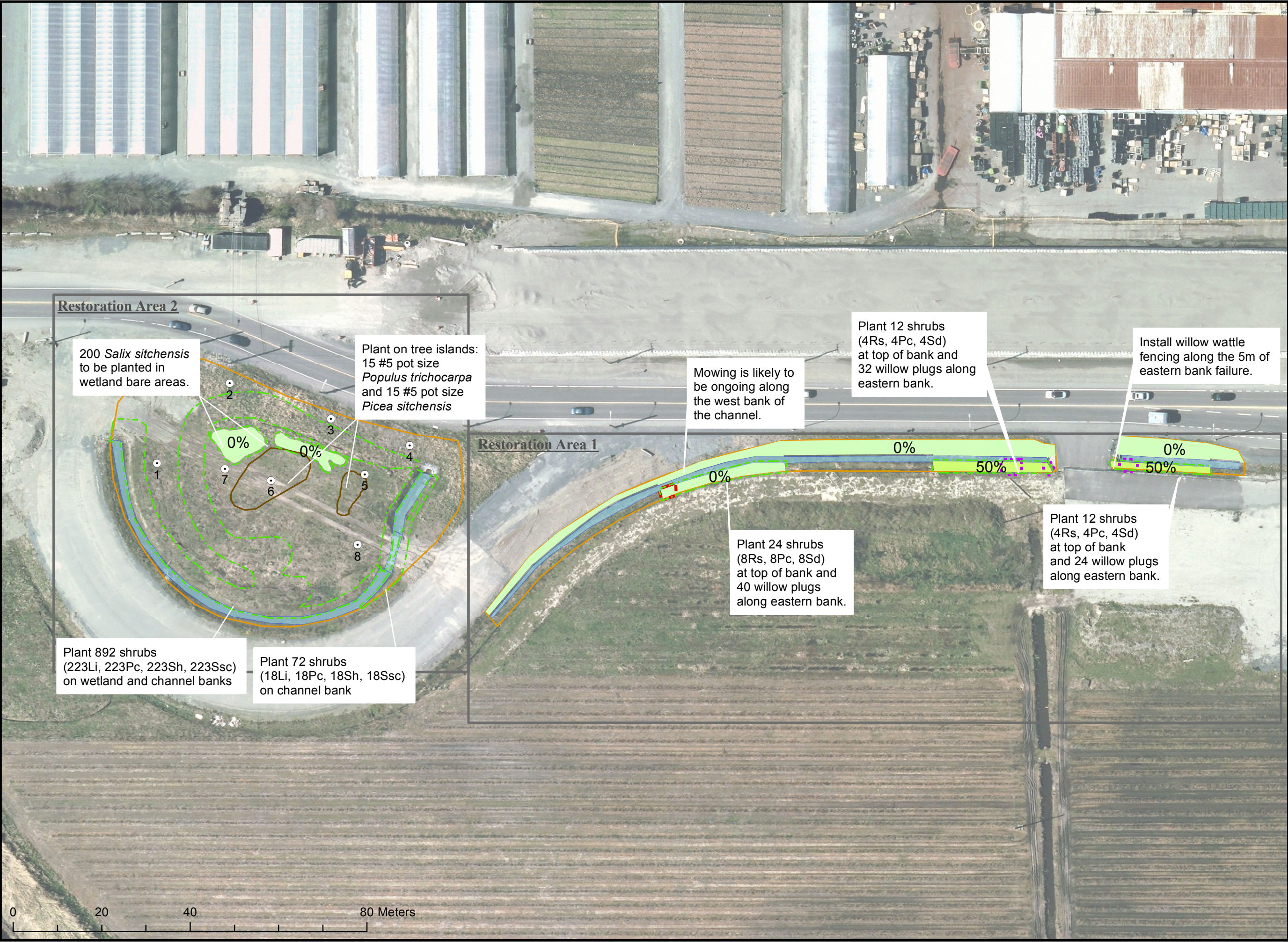
City of Surrey

Figure 1

Map Created:  
December 2015  
Projection:  
NAD 83, UTM Zone 10







**RBRC  
Monitoring and  
Maintenance  
2015 Results**

City of Surrey

**Legend**

- Restoration area boundary
- Tree island
- High water mark

**2015 Monitoring  
Results**

Survivorship (%)

- 0
- 50
- Density plot centre

**2015 Maintenance**

Invasive Removal

- Knotweed removal
- Blackberry removal
- Prescribed planting area



1:800

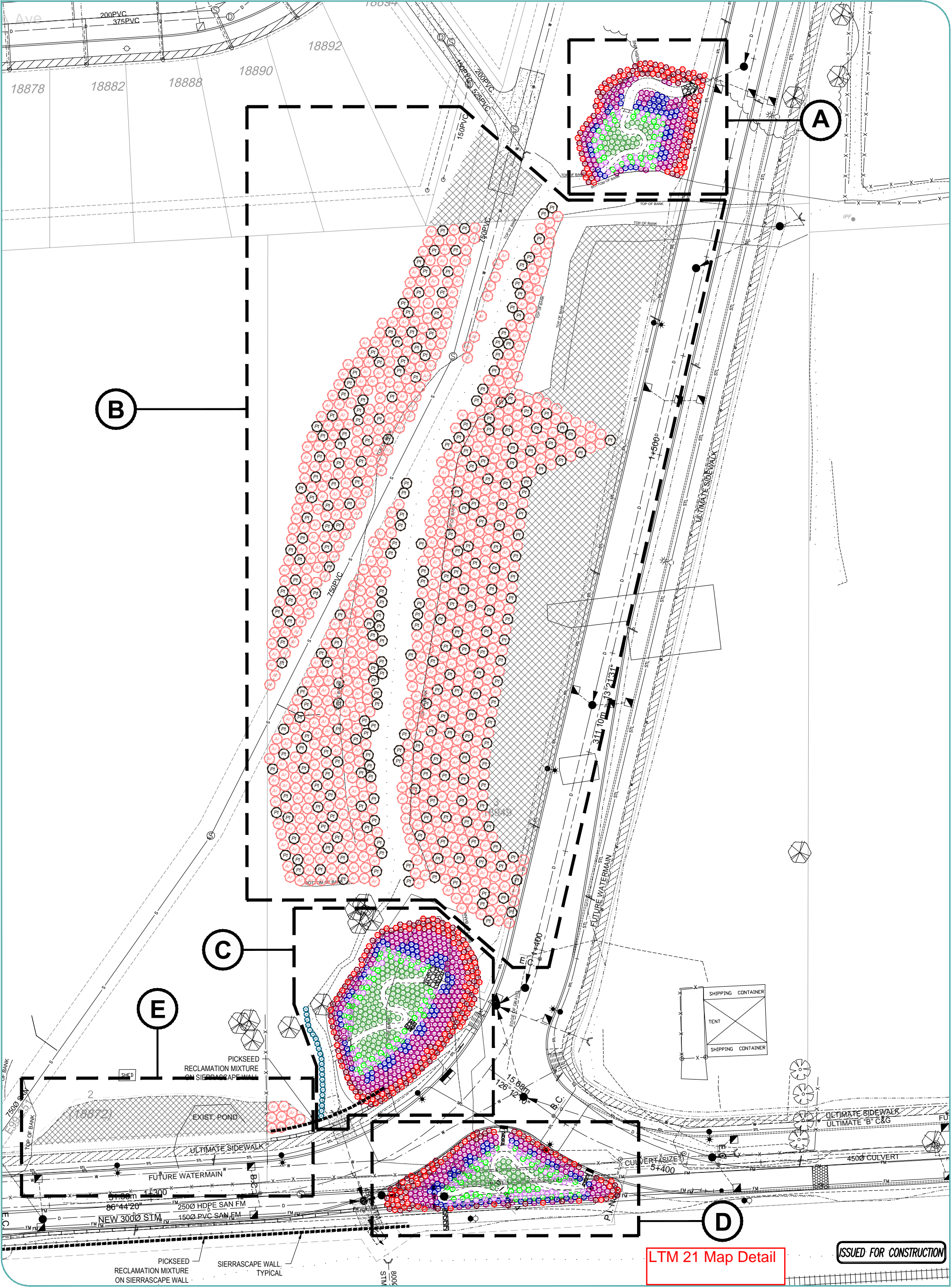
**Figure 2**

Date:  
December 2015  
Projection:  
NAD 83, UTM Zone 10



LTM20 Map Details





City of Surrey  
Widening 52 Ave Surrey

52 Ave Revegetation Plan  
FIGURE 1



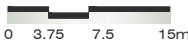
PLANTING SCHEDULE					
SYMBOL	NAME	LATIN NAME	QUANTITY	SIZE	COMMENTS
Ar	RED ALDER	<i>Alnus rubra</i>	820	No 2 Pot	Interperse throughout planting area
Pt	BLACK COTTONWOOD	<i>Populus trichocarpa</i>	272	No 2 Pot	Cottonwood to have greater density on lower slope of creek channel
Sh	HOOKE'S WILLOW	<i>Salix hookeriana</i>	171	Stakes; each 1m long	Plant on lower slope of ponds
Sd	HARDHACK	<i>Spiraea douglasii</i>	396	No 2 Pot	Plant on low to mid-slope of ponds
Rp	THIMBLEBERRY	<i>Rubus parviflorus</i>	197	No 2 Pot	Plant on top of slope of ponds
Ro	BALDIP ROSE	<i>Rosa gymnocarpa</i>	184	No 2 Pot	Plant on top of slope ponds
Ty	CATTAIL	<i>Typha latifolia</i>	202	30cm Tuber	Plant on invert of ponds; density of 1 plant per m <sup>2</sup>
Sc	SMALL-FLOWERED BULRUSH	<i>Scirpus microcarpus</i>	127	No 1 Pot	Plant at water level of ponds
Je	COMMON RUSH	<i>Juncus effusus</i>	124	No 1 Pot	Plant at water level of ponds
Je	COMMON RUSH	<i>Juncus effusus</i>	22	No 1 Pot	1 plant per linear meter
	PICKSEED RECLAMATION MIXTURE *	n/a	7176m <sup>2</sup>		Planting not required. Use Pickseed Reclamation Mixture on Sierrascape walls and other areas if disturbed.

\* NOTE: ALSO APPLY PICKSEED RECLAMATION MIXTURE WITHIN REVEGETATION AREAS AS REQUIRED (EXCLUDING POND INVERTS)

MAP/DRAWING INFORMATION  
Base drawing provided by Web Engineering Ltd.

CREATED BY: MZO  
CHECKED BY: NRG  
DESIGNED BY: NRG

File Location:  
g:\cad\103459 widening 52 ave surrey ph1 esa\52nd ave widening\_planting plan\_issued for construction.dwg May, 21, 2014 7:54 AM



SCALE 1:700

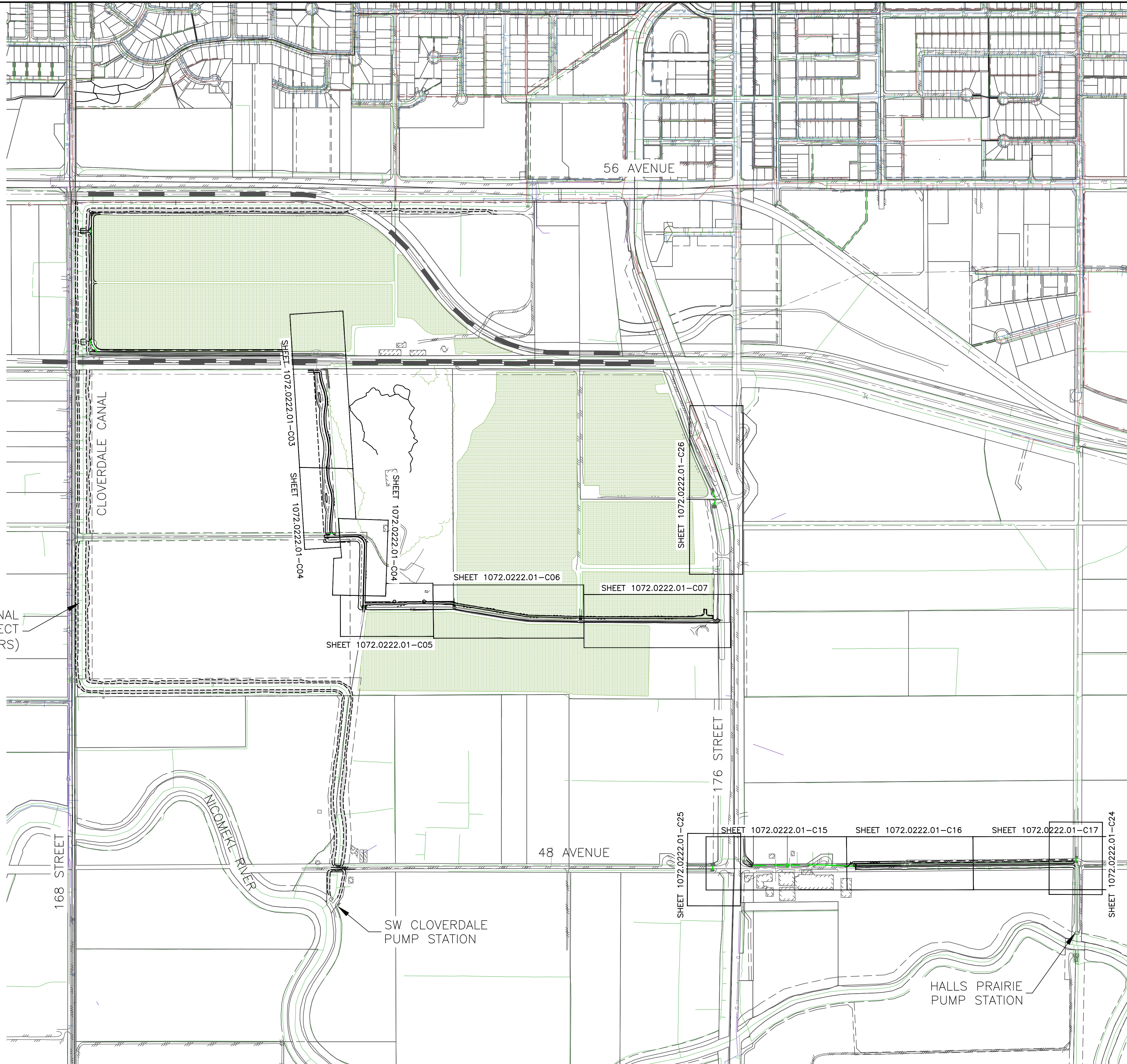


PROJECT #: 10-3459 STATUS: FINAL DATE: MARCH 2014


















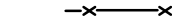



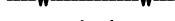

















**LEGEND:**

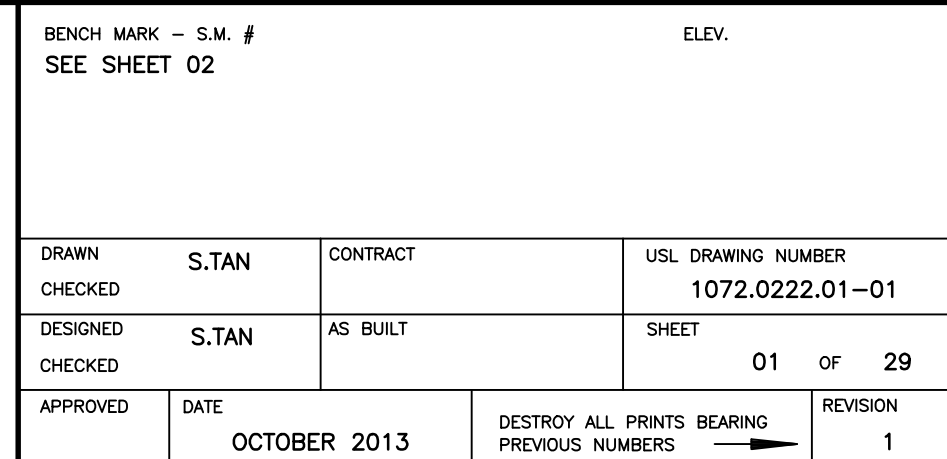
			GAS MAIN
			TEL. & HYDRO U/F
			FENCE
			CULVERT
			SURVEY MONUMENT
			TREE
			IRON PIN FOUND
			
			
			
			

ALL DIMENSIONS ARE IN METRES							
ALL PIPE SIZES ARE IN MILLIMETRES							
REVISIONS	DESCRIPTION				BY	DATE	APPROVED
8	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
1	ISSUED FOR TENDER				ST	2014/12/12	VM

SEAL:



2015-03-27

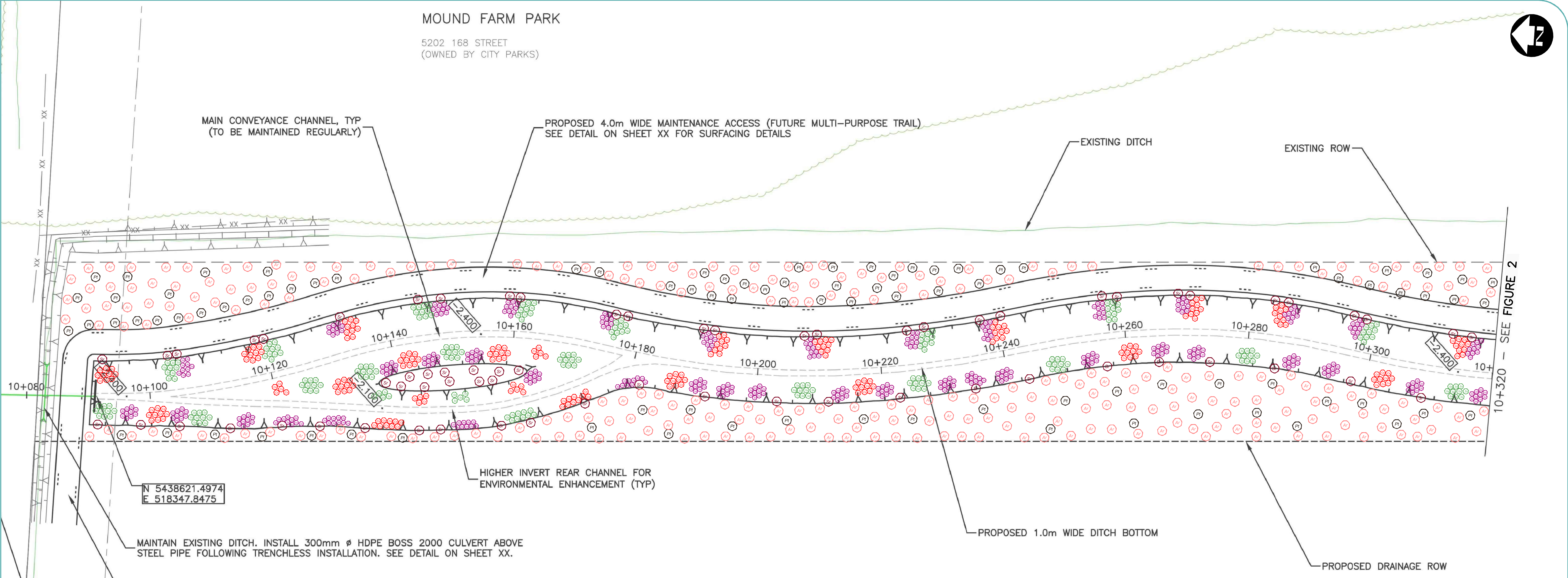


TITLE:	<b>KEY PLAN</b> SOUTH CLOVERDALE DITCH 168 STREET to 180 STREET
CLIENT:	CITY OF SURREY 14245 - 56th Avenue SURREY, B.C.

THE CITY OF SURREY	
TITLE: KEY PLAN	
SCALE: HOR. 1:5000 VER. ----	SURREY PROJECT NO. 4812-402-21
CHECKED: P.W. P.U.	SURREY DRAWING NO.

ISSUED FOR  
TENDER  
DECEMBER 12, 2014  
**URBAN**  
systems





SPECIFICATIONS:

1. SOIL IS TO BE GRUBBED FROM THE SITE TO REMOVE HIMALAYAN BLACKBERRY ROOTBALLS. DISPOSE OF SOIL TO AN APPROVED OFFSITE LOCATION.
2. NEW AMENDMENT TOPSOIL CERTIFIED FREE OF WEEDS AND OTHER NOXIOUS SPECIES IS TO BE IMPORTED AND PLACED TO A MINIMUM DEPTH OF 30 CM OVER ALL PLANTING AREAS.
3. ANY PROPOSED SUBSTITUTIONS IN SPECIES/SIZES OR FIELD FITTING IS TO BE DISCUSSED WITH CITY'S REPRESENTATIVES PRIOR TO APPROVAL/INSTALLATION.
4. HYDROSEED TO BE APPLIED TO ALL SLOPES AND EXPOSED AREAS. HYDROSEED MIXTURE TO BE PICKSEED MEADOW MIXTURE OR APPROVED EQUIVALENT. ALL HYDROSEED ON FLAT OR LOW SLOPE AREAS IS TO BE COVERED WITH A 100-150 MM LAYER OF STRAW. HYDROSEED ON HIGHER SLOPED AREAS IS TO BE COVERED WITH NILEX S75 SINGLE NET STRAW BLANKET OR APPROVED EQUIVALENT. THE BLANKET MUST BE INSTALLED PROPERLY (FLUSH WITH THE GROUND) SUCH THAT THERE ARE NO VOIDS UNDERNEATH. THE NET MAY BE CUT TO ACCOMMODATE PLANTING AS REQUIRED.
5. CONTRACTOR IS REQUIRED TO PROVIDE 1 YEAR MAINTENANCE (WATERING, PRUNING, AND REMOVAL OF WEEDS/INVASIVE SPECIES). HIMALAYAN BLACKBERRY IS TO BE SPECIFICALLY TARGETED FOR REMOVAL AND DISPOSAL AT AN APPROVED OFFSITE LOCATION.
6. IF SURVIVAL IS UNDER 80%, CONTRACTOR IS TO REPLACE DEAD STOCK TO 100% OF ORIGINAL NUMBERS.

COMMENTS AND RECOMMENDATIONS

1. THE PRESENCE OF INVASIVE HIMALAYAN BLACKBERRY IN THE IMMEDIATE VICINITY HAS A SIGNIFICANT POTENTIAL TO ESTABLISH INTO THE NEW PLANTING AREA. ONGOING MAINTENANCE IS RECOMMENDED TO REDUCE THE POTENTIAL FOR BLACKBERRY TO RE-ESTABLISH. MAINTENANCE IS RECOMMENDED FOR A 5-YEAR PERIOD OR UNTIL SUCH TIME THAT THE CITY OF SURREY IS SATISFIED THAT PLANTING IS SUFFICIENTLY ESTABLISHED SUCH THAT MAINTENANCE IS NO LONGER REQUIRED.
2. RECOMMENDED VEGETATION SPECIES WERE DETERMINED THROUGH THE APPLICATION OF THE CITY OF SURREY'S "HABITAT RESTORATION PRESCRIPTIONS", SPECIFICALLY A MODIFIED VERSION OF PRIMARY SUCCESSIONAL PATHWAY RT13, WHICH SUGGESTS SUPPLEMENTARY BIODIVERSITY ENHANCEMENT PLANTING IN YEARS 7-10 AFTER INITIAL PLANTING. IT IS RECOMMENDED THAT ANNUAL ASSESSMENTS BE INITIATED IN YEAR 7 TO CONFIRM THAT THE SUPPLEMENTARY PLANTING IS WARRANTED BASED ON EXISTING SITE CONDITIONS AT THE TIME.

LTM 23 Map Details

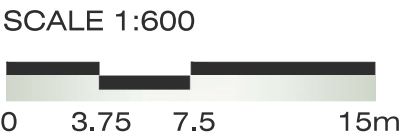
NOT TO SCALE

CITY OF SURREY  
Cloverdale Canal Upgrade

Mound Farm Park Revegetation  
Design  
FIGURE 1

SHEET 28 OF 29

PLANTING SCHEDULE							
SYMBOL	NAME	LATIN NAME	QUANTITY ON SHEET	TOTAL QUANTITY	SIZE	DENSITY	COMMENTS
Ar	RED ALDER	<i>Alnus rubra</i>	262	425	No 3 Pot	1500 / ha (~2.5m Centre-to-centre spacing )	East of proposed trail and west of west top-of-bank
Pt	BLACK COTTONWOOD	<i>Populus trichocarpa</i>	90	180	No 3 Pot	1500 / ha (~2.5m Centre-to-centre spacing )	East of proposed trail and west of west top-of-bank
Sd	HARDHACK	<i>Spirea douglasii</i>	400	680	No 2 Pot	2500 / ha (cluster 5-10 )	Above -0.9m geodetic on banks and near top-of-bank
Sr	RED ELDERBERRY	<i>Sambucus racemosa</i>	67	135	No 2 Pot	Scattered	All at or beyond top-of-bank
Cs	RED-OSER DOGWOOD	<i>Cornus stolonifera</i>	210	390	No 2 Pot	2500 / ha (cluster 5-10 )	At or below -0.9m geodetic on banks and sides of planting islands (min - 1.05m geodetic)
Ss	SITKA WILLOW	<i>Salix siitchensis</i>	210	395	Stakes	2500 / ha (cluster 5-10 )	At or below -0.9m geodetic on banks and sides of planting islands (min - 1.05m geodetic)



CREATED BY: MZO  
CHECKED BY: NRG  
DESIGNED BY: NRG

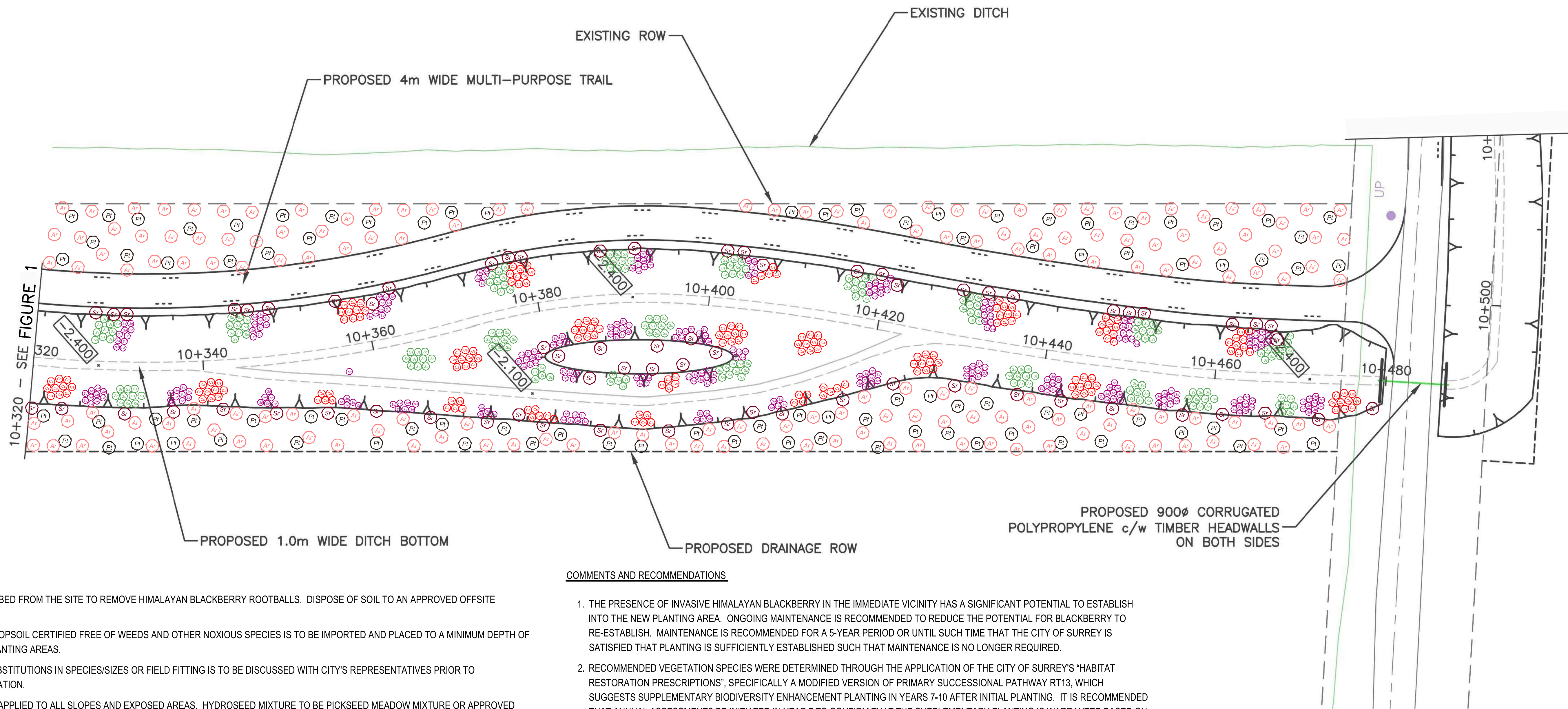
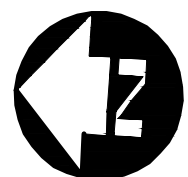
MAP/DRAWING INFORMATION  
Base drawing from Urban Systems Ltd.

File Location:  
g:\cad\148914\figures\revegetation design.dwg  
March, 24, 2015 4:26 PM

PROJECT #: 14-8914 STATUS: FINAL DATE: MARCH 2015



MOUND FARM PARK



SPECIFICATIONS:

1. SOIL IS TO BE GRUBBED FROM THE SITE TO REMOVE HIMALAYAN BLACKBERRY ROOTBALLS. DISPOSE OF SOIL TO AN APPROVED OFFSITE LOCATION.
2. NEW AMENDMENT TOPSOIL CERTIFIED FREE OF WEEDS AND OTHER NOXIOUS SPECIES IS TO BE IMPORTED AND PLACED TO A MINIMUM DEPTH OF 30 CM OVER ALL PLANTING AREAS.
3. ANY PROPOSED SUBSTITUTIONS IN SPECIES/SIZES OR FIELD FITTING IS TO BE DISCUSSED WITH CITY'S REPRESENTATIVES PRIOR TO APPROVAL/INSTALLATION.
4. HYDROSEED TO BE APPLIED TO ALL SLOPES AND EXPOSED AREAS. HYDROSEED MIXTURE TO BE PICKSEED MEADOW MIXTURE OR APPROVED EQUIVALENT. ALL HYDROSEED ON FLAT OR LOW SLOPE AREAS IS TO BE COVERED WITH A 100-150 MM LAYER OF STRAW. HYDROSEED ON HIGHER SLOPED AREAS IS TO BE COVERED WITH NILEX S75 SINGLE NET STRAW BLANKET OR APPROVED EQUIVALENT. THE BLANKET MUST BE INSTALLED PROPERLY (FLUSH WITH THE GROUND) SUCH THAT THERE ARE NO VOIDS UNDERNEATH. THE NET MAY BE CUT TO ACCOMMODATE PLANTING AS REQUIRED.
5. CONTRACTOR IS REQUIRED TO PROVIDE 1 YEAR MAINTENANCE (WATERING, PRUNING, AND REMOVAL OF WEEDS/INVASIVE SPECIES). HIMALAYAN BLACKBERRY IS TO BE SPECIFICALLY TARGETED FOR REMOVAL AND DISPOSAL AT AN APPROVED OFFSITE LOCATION.
6. IF SURVIVAL IS UNDER 80%, CONTRACTOR IS TO REPLACE DEAD STOCK TO 100% OF ORIGINAL NUMBERS.

COMMENTS AND RECOMMENDATIONS

1. THE PRESENCE OF INVASIVE HIMALAYAN BLACKBERRY IN THE IMMEDIATE VICINITY HAS A SIGNIFICANT POTENTIAL TO ESTABLISH INTO THE NEW PLANTING AREA. ONGOING MAINTENANCE IS RECOMMENDED TO REDUCE THE POTENTIAL FOR BLACKBERRY TO RE-ESTABLISH. MAINTENANCE IS RECOMMENDED FOR A 5-YEAR PERIOD OR UNTIL SUCH TIME THAT THE CITY OF SURREY IS SATISFIED THAT PLANTING IS SUFFICIENTLY ESTABLISHED SUCH THAT MAINTENANCE IS NO LONGER REQUIRED.
2. RECOMMENDED VEGETATION SPECIES WERE DETERMINED THROUGH THE APPLICATION OF THE CITY OF SURREY'S "HABITAT RESTORATION PRESCRIPTIONS", SPECIFICALLY A MODIFIED VERSION OF PRIMARY SUCCESSIONAL PATHWAY RT13, WHICH SUGGESTS SUPPLEMENTARY BIODIVERSITY ENHANCEMENT PLANTING IN YEARS 7-10 AFTER INITIAL PLANTING. IT IS RECOMMENDED THAT ANNUAL ASSESSMENTS BE INITIATED IN YEAR 7 TO CONFIRM THAT THE SUPPLEMENTARY PLANTING IS WARRANTED BASED ON EXISTING SITE CONDITIONS AT THE TIME.

LTM 23 Map Details

NOT TO SCALE

CITY OF SURREY  
Cloverdale Canal Upgrade

Mound Farm Park Revegetation  
Design  
FIGURE 2

SHEET 29 OF 29

PLANTING SCHEDULE							
SYMBOL	NAME	LATIN NAME	QUANTITY ON SHEET	TOTAL QUANTITY	SIZE	DENSITY	COMMENTS
Ar	RED ALDER	<i>Alnus rubra</i>	163	425	No 3 Pot	1500 / ha (~2.5m Centre-to-centre spacing)	East of proposed trail and west of west top-of-bank
Pt	BLACK COTTONWOOD	<i>Populus trichocarpa</i>	90	180	No 3 Pot	1500 / ha (~2.5m Centre-to-centre spacing)	East of proposed trail and west of west top-of-bank
Sd	HARDHACK	<i>Spirea douglasii</i>	280	680	No 2 Pot	2500 / ha (cluster 5-10)	Above -0.9m geodetic on banks and near top-of-bank
Sr	RED ELDERBERRY	<i>Sambucus racemosa</i>	68	135	No 2 Pot	Scattered	All at or beyond top-of-bank
Cs	RED-OSER DOGWOOD	<i>Cornus stolonifera</i>	180	390	No 2 Pot	2500 / ha (cluster 5-10)	At or below -0.9m geodetic on banks and sides of planting islands (min - 1.05m geodetic)
Ss	SITKA WILLOW	<i>Salix sitchensis</i>	185	395	Stakes	2500 / ha (cluster 5-10)	At or below -0.9m geodetic on banks and sides of planting islands (min - 1.05m geodetic)



SCALE 1:500  
0 2.5 5 10m

CREATED BY: MZO  
CHECKED BY: NRG  
DESIGNED BY: NRG

MAP/DRAWING INFORMATION  
Base drawing from Urban Systems Ltd.

File Location:  
g:\cad\148914\figures\revegetation design.dwg  
March, 24, 2015 4:25 PM

PROJECT #: 14-8914

STATUS: FINAL

DATE: MARCH 2015



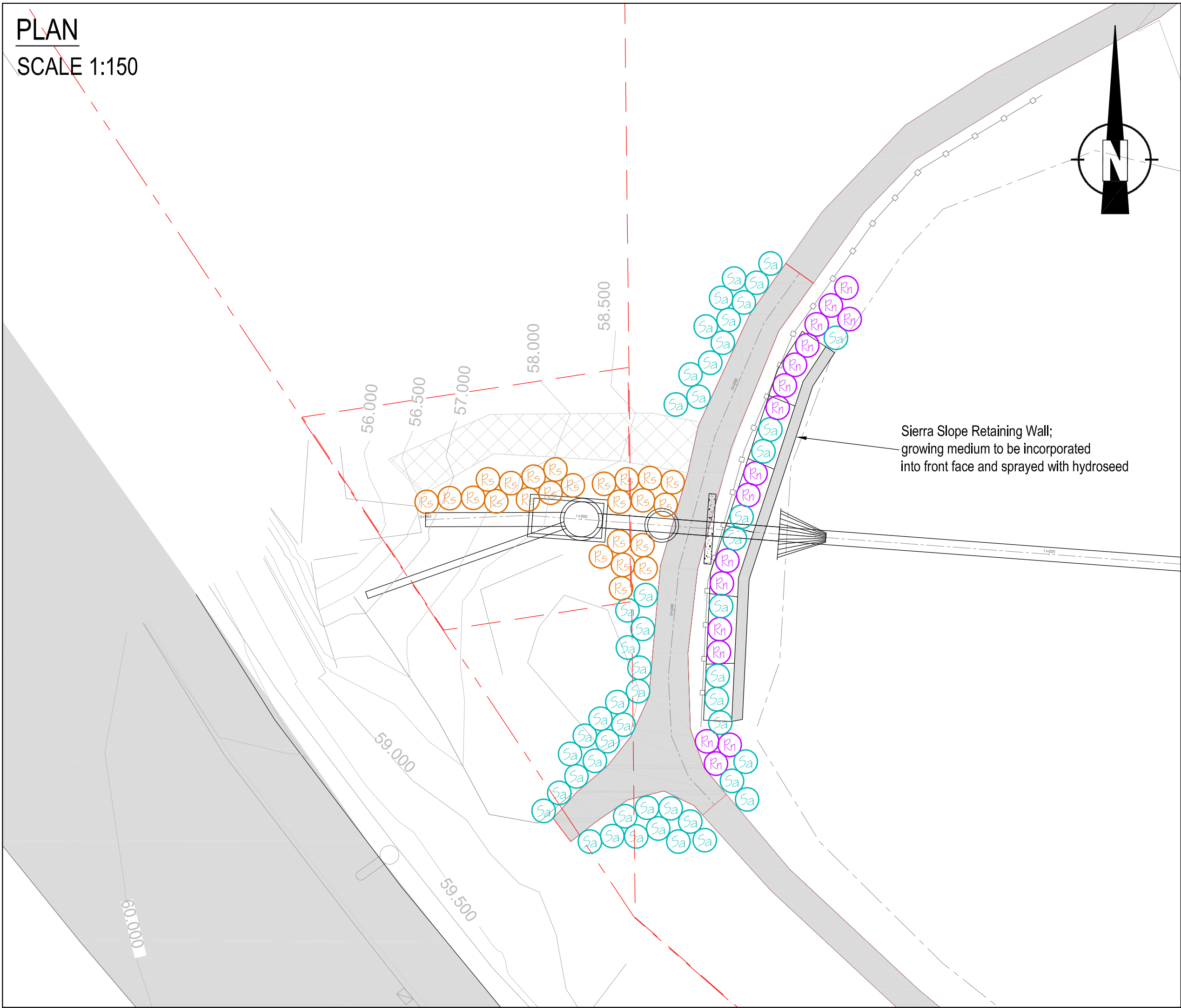


PLANT SPECIES LIST AND SPECIFICATIONS

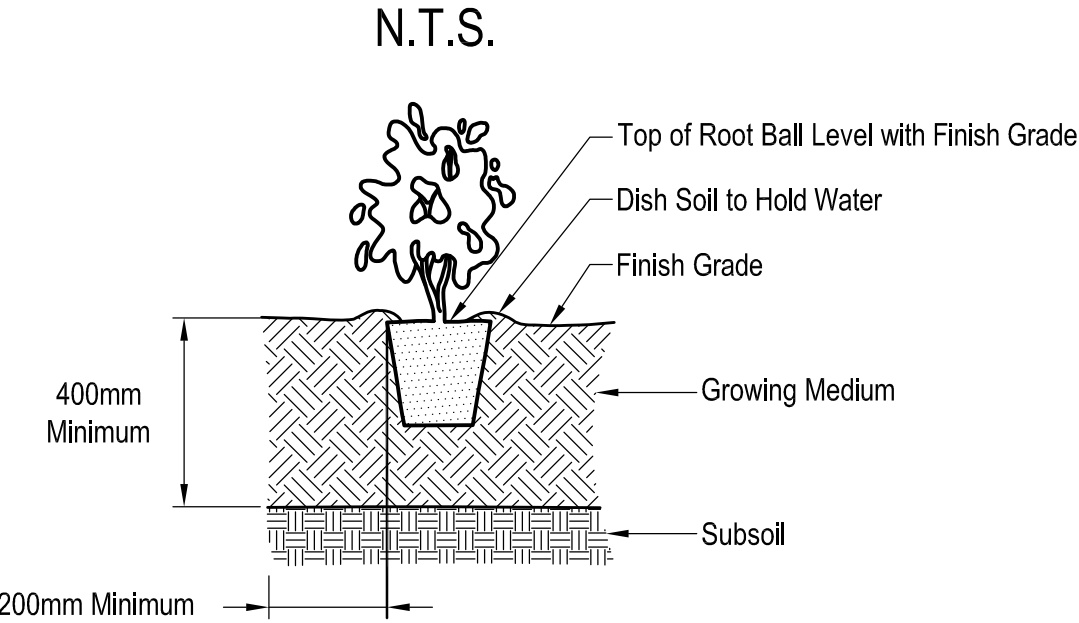
SYMBOL	COMMON NAME	LATIN NAME	NUMBER	COMMENTS
	salmonberry	<i>Rubus spectabilis</i>	24	no. 2 pot; multi-stemmed; densely branched; well established
	Nootka rose	<i>Rosa nutkana</i>	17	no. 2 pot; multi-stemmed; densely branched; well established
	snowberry	<i>Symphoricarpos albus</i>	50	no. 2 pot; densely branched; well established

GENERAL LANDSCAPE SPECIFICATIONS

- Plant material and the planting of such material are to be in accordance with the British Columbia Landscape Standard (seventh edition) jointly published by the British Columbia Society of Landscape Architects and the British Columbia Landscape Nursery Association.
- All works are to be conducted in accordance with the sediment control provisions of the "Land Development Guidelines for the Protection of Aquatic Habitat" jointly published by BC Ministry of Environment and Fisheries and Oceans Canada.
- Works is to be inspected by a qualified Environmental Professional.
- Work is to conform to the City of Surrey Parks Standard Construction Documents (2011) available at [http://www.surrey.ca/files/City\\_of\\_Surrey\\_Spec\\_2011.pdf](http://www.surrey.ca/files/City_of_Surrey_Spec_2011.pdf).
- All plant material is to be inspected and approved by Envirowest prior to installation.
- Growing medium is to be free of any subsoils, roots, noxious grass, weeds, toxic materials, stone over 30 mm diameter, foreign objects, and possess an acidity range (pH) of 5.5 to 7.5. Growing medium is to be inspected by Envirowest prior to placement.
- All blackberry (*Rubus discolor* and *R. laciniatus*) to be cleared and grubbed from project site.
- All debris and/or excess material from landscape operations are to be collected and disposed offsite in accordance with all regulatory requirements.
- Disturbed areas to be seeded with specified seed mixture (see detail).
- All invasive plant species must be removed off-site. The site must be free of invasive plant species at end of maintenance term. Invasive plant species include but are not limited to Himalayan blackberry (*Rubus discolor*), evergreen blackberry (*R. laciniatus*), Scotch broom (*Cytisus scoparius*), English Ivy (*Hedera helix*), morning glory (*Convolvulus arvensis*), and, deadnettle (*Lamium* spp.).
- 150mm of imported topsoil to COS standards to be tilled into native soil throughout the area of disturbance / replanting where augmentation only is required. All areas lacking suitable planting medium shall have 400mm of imported top soil installed.
- City of Surrey Parks Development Inspector to be contacted for onsite preconstruction meeting and upon completion of the construction of the works at (604) 501 5166.
- The contractor is to provide one (1) year of plant maintenance. Plant maintenance is to include watering, selective pruning and clearing of blackberry. Species survivorship is to equal one-hundred (100) percent one (1) year from planting. Replacement of dead stock may be required to fulfill this specification. Replacement stock is also subject survivorship one (1) year from planting.



TYPICAL CONTAINER SHRUB AND  
No. 2 POT TREE PLANTING DETAIL



NOTE:  
The contractor will be required to complete a pre-construction site meeting with the City of Surrey and representatives to identify the allowable construction limits and trees requiring removal and/or protection.

LTM 26 Map Details - Location A

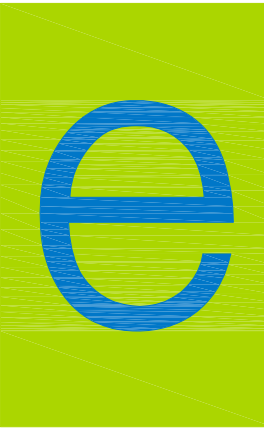
RECLAMATION MIX		
Seed Type	% by Seed Weight	% by Seed Count
Tall Fescue	20	10.5
Italian Ryegrass	20	10.5
Perennial Ryegrass	10	6
Creeping Red Fescue	10	14.5
Orchardgrass	6	9
Timothy	3	9
Red Top	1	11.5
S.C. Red Clover	20	13
Alsike Clover	10	16

REFERENCE DRAWINGS

- Email: Site 6.dwg. Received May 15, 2015; AECOM.
- Email: Site 6.dwg. Received March 12, 2015; AECOM.
- 2013 Ortho Photograph From City of Surrey.

CITY OF SURREY

MINOR DRAINAGE WORKS  
114 AVENUE CHANNEL STABILIZATION



envirowest consultants inc.

Suite 101 - 1515 Broadway Street  
Port Coquitlam, British Columbia  
Canada V3C 6M2  
office: 604-944-0502  
facsimile: 604-944-0507

[www.envirowest.ca](http://www.envirowest.ca)

RIPARIAN PLANTINGS

DESIGN: RWS	DRAWN: SDJ/CEV	CHECKED:	REVISION: 03	REVISION DATE: June 01, 2015
SCALE: As Shown			DRAWING NUMBER: 111-337-02	
DATE: March 24, 2015				





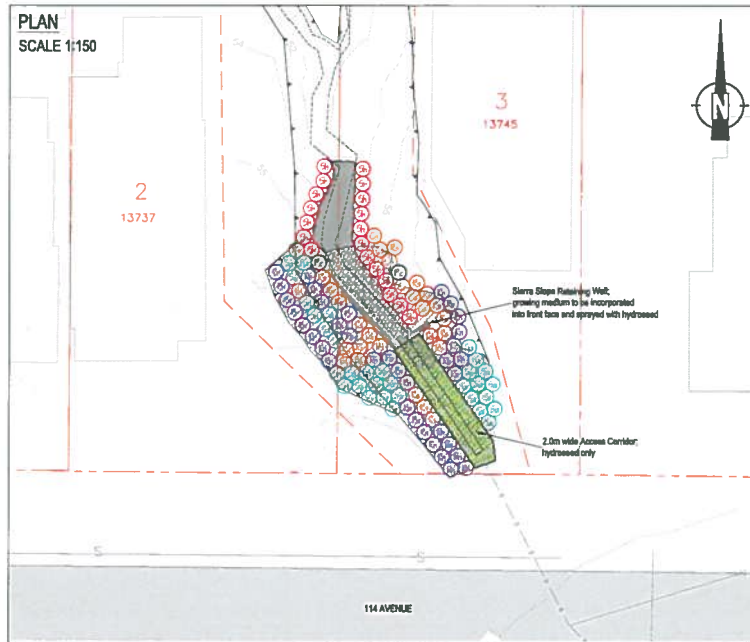
#### PLANT SPECIES LIST AND SPECIFICATIONS

SYMBOL	COMMON NAME	LATIN NAME	NUMBER	COMMENTS
(H)	Hickory's willow	<i>Salix hesleriana</i>	19	no. 2 pot, densely branched, well established
(R)	red-oak dogwood	<i>Cornus stolonifera</i>	6	no. 2 pot, densely branched, well established
(P)	Pacific huckleberry	<i>Phyocarpus capillatus</i>	2	no. 2 pot, densely branched, well established
(S)	siberianberry	<i>Rubus spectabilis</i>	23	no. 2 pot, multi-stemmed, densely branched, well established
(H)	Huckle rose	<i>Rosa rubra</i>	36	no. 2 pot, multi-stemmed, densely branched, well established
(A)	arbutus	<i>Symphoricarpos albus</i>	32	no. 2 pot, densely branched, well established

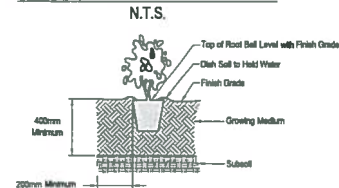
Hydrated Only

#### GENERAL LANDSCAPE SPECIFICATIONS

- Plant material and the planting of such material are to be in accordance with the British Columbia Landscape Standard (seventh edition) jointly published by the British Columbia Society of Landscape Architects and the British Columbia Landscape Nursery Association.
- All works are to be conducted in accordance with the sediment control provisions of the "Land Development Guidelines for the Protection of Aquatic Habitat" jointly published by BC Ministry of Environment and Fisheries and Oceans Canada.
- Works are to be inspected by a qualified Environmental Professional.
- Work is to conform to the City of Surrey Parks Standard Construction Documents (2011) available at [http://www.surrey.ca/files/City\\_of\\_Surrey\\_Spec\\_2011.pdf](http://www.surrey.ca/files/City_of_Surrey_Spec_2011.pdf).
- All plant material is to be inspected and approved by Envirowest prior to installation.
- Growing medium is to be free of any subsoils, roots, noxious grass, weeds, toxic materials, stones over 30 mm diameter, foreign objects, and possess an acidity range (pH) of 5.5 to 7.5. Growing medium is to be inspected by Envirowest prior to placement.
- All blackberry (*Rubus discolor* and *R. technicus*) is to be cleared and grubbed from project site.
- All debris and/or excess material from landscape operations are to be collected and disposed offsite in accordance with all regulatory requirements.
- Disturbed areas to be seeded with specified seed mixture (see detail).
- All invasive plant species must be removed off-site. The site must be free of invasive plant species at end of maintenance term. Invasive plant species include but are not limited to Himalayan blackberry (*Rubus discolor*), evergreen blackberry (*R. technicus*), Scotch broom (*Cytisus scoparius*), English ivy (*Hedera helix*), morning glory (*Convolvulus arvensis*), and deadnettle (*Lamium* spp.).
- 150mm of imported topsoil to COS standards to be filled into native soil throughout the area of disturbance / replanting where augmentation only is required. All areas lacking suitable planting medium shall have 400mm of imported top soil installed.
- City of Surrey Parks Development Inspector to be contacted for on-site preconstruction meeting and upon completion of the construction of the works at (804) 501 5166.
- The contractor is to provide one (1) year of plant maintenance. Plant maintenance is to include watering, selective pruning and clearing of blackberry. Species survivorship is to equal one-hundred (100) percent one (1) year from planting. Replacement of dead stock may be required to fulfill this specification. Replacement stock is also subject survivorship one (1) year from planting.



#### TYPICAL CONTAINER SHRUB AND No. 2 POT TREE PLANTING DETAIL



**LTM 26 Location B**

**NOTE:**  
The contractor will be required to complete a pre-construction site meeting with the City of Surrey and representatives to identify the allowable construction limits and trees requiring removal and/or protection.

**100% DESIGN SUBMISSION 2015-05-21**

RECLAMATION MIX		
Seed Type	% by Seed Weight	% by Seed Count
Tall Fescue	20	10.5
Italian Ryegrass	20	10.5
Perennial Ryegrass	10	6
Creeping Red Fescue	10	14.5
Orchardgrass	8	9
Timothy	3	9
Red Top	1	11.5
S.C. Red Clover	20	13
Alaska Clover	10	16

#### REFERENCE DRAWINGS

- Email Site 3.dwg, Received March 12, 2015; AECOM.
- 2013 Ortho Photograph From City of Surrey.

CITY OF SURREY

MINOR DRAINAGE WORKS  
114 AVENUE CHANNEL STABILIZATION



**envirowest consultants inc.**

Suite 101 - 1515 Broadway Street  
Port Coquitlam, British Columbia  
Canada V3C 5M2  
office: 804-944-0502  
facsimile: 604-944-0507  
[www.envirowest.ca](http://www.envirowest.ca)

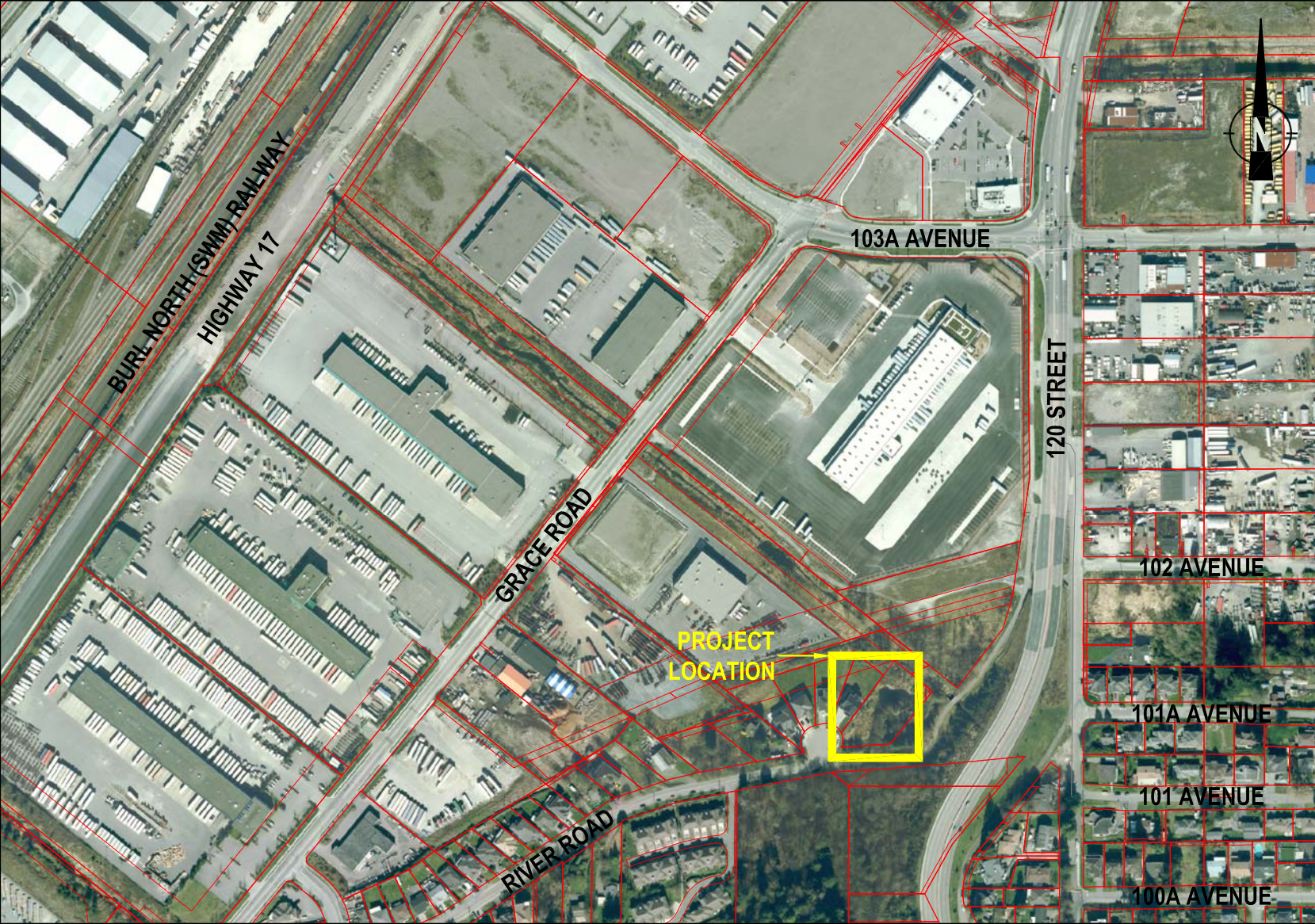
RIPARIAN PLANTINGS

DESIGN RWS	DRAWN SDJ	CHECKED	REVISION: 02 REVISION DATE: May 21, 2015
SCALE: As Shown	DRAWING NUMBER: 111-337-01		
DATE: March 24, 2015			



LOCATION

SCALE 1:5000



PLANT SPECIES LIST AND SPECIFICATIONS

SYMBOL	COMMON NAME	LATIN NAME	NUMBER	COMMENTS
	Sitka spruce	<i>Picea sitchensis</i>	7	2.0m container grown (min. no. 7 pot); densely branched; well established
	western redcedar	<i>Thuja plicata</i>	5	2.0m container grown (min. no. 7 pot); densely branched; well established
	black twinberry	<i>Lonicera involucrata</i>	31	no. 2 pot; densely branched; well established
	cascara	<i>Rhamnus purshiana</i>	8	no. 2 pot; densely branched; well established
	Indian plum	<i>Osmaronia cerasiformis</i>	23	no. 2 pot; densely branched; well established
	Nootka rose	<i>Rosa nutkana</i>	46	no. 2 pot; multi-stemmed; densely branched; well established
	Pacific ninebark	<i>Physocarpus capitatus</i>	68	no. 2 pot; densely branched; well established
	Pacific ninebark	<i>Physocarpus capitatus</i>	19	no. 1 pot; densely branched; well established
	salmonberry	<i>Rubus spectabilis</i>	103	no. 2 pot; multi-stemmed; densely branched; well established
	snowberry	<i>Symphoricarpos albus</i>	92	no. 2 pot; densely branched; well established
	thimbleberry	<i>Rubus parviflorus</i>	44	no. 2 pot; multi-stemmed; densely branched; well established

GENERAL LANDSCAPE SPECIFICATIONS

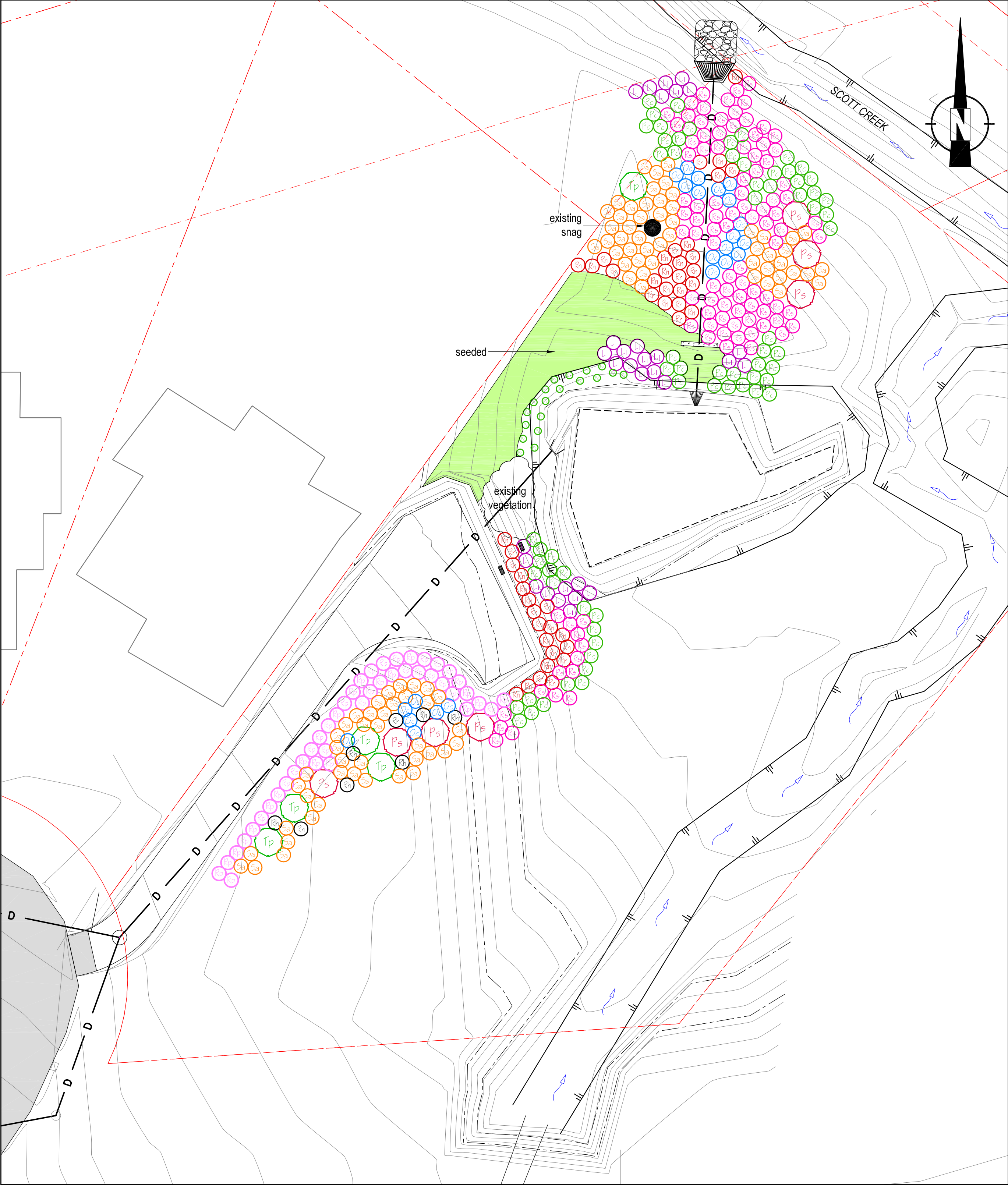
- Plant material and the planting of such material are to be in accordance with the current British Columbia Landscape Standard jointly published by the British Columbia Society of Landscape Architects and the British Columbia Landscape Nursery Association.
- All works are to be conducted in accordance with the Standards and Best Practices for Instream Works (March 2004) prepared by the Province of British Columbia.
- Works is to be inspected by a qualified Environmental Professional.
- Work is to conform to the City of Surrey Parks Standard Construction Documents (2011) available at [http://www.surrey.ca/files/City\\_of\\_Surrey\\_Spec\\_2011.pdf](http://www.surrey.ca/files/City_of_Surrey_Spec_2011.pdf).
- All plant material is to be inspected and approved by Envirowest and/or City of Surrey prior to installation.
- Growing medium is to be free of any subsoils, roots, noxious grass, weeds, toxic materials, stone over 30 mm diameter, foreign objects, and possess an acidity range (pH) of 5.5 to 7.5. Growing medium is to be inspected by Envirowest prior to placement.
- All debris and/or excess material from landscape operations are to be collected and disposed offsite in accordance with all regulatory requirements.
- Disturbed areas to be seeded with specified seed mixture (see detail).
- City of Surrey Parks Development Inspector to be contacted for onsite preconstruction meeting and upon completion of the construction of the works at (604) 501 5166.
- The contractor is to provide one (1) year of plant maintenance. Plant maintenance is to include watering, selective pruning and clearing of blackberry. Species survivorship is to equal one-hundred (100) percent one (1) year from planting. Replacement of dead stock may be required to fulfill this specification. Replacement stock is also subject survivorship one (1) year from planting.

REFERENCE DRAWINGS

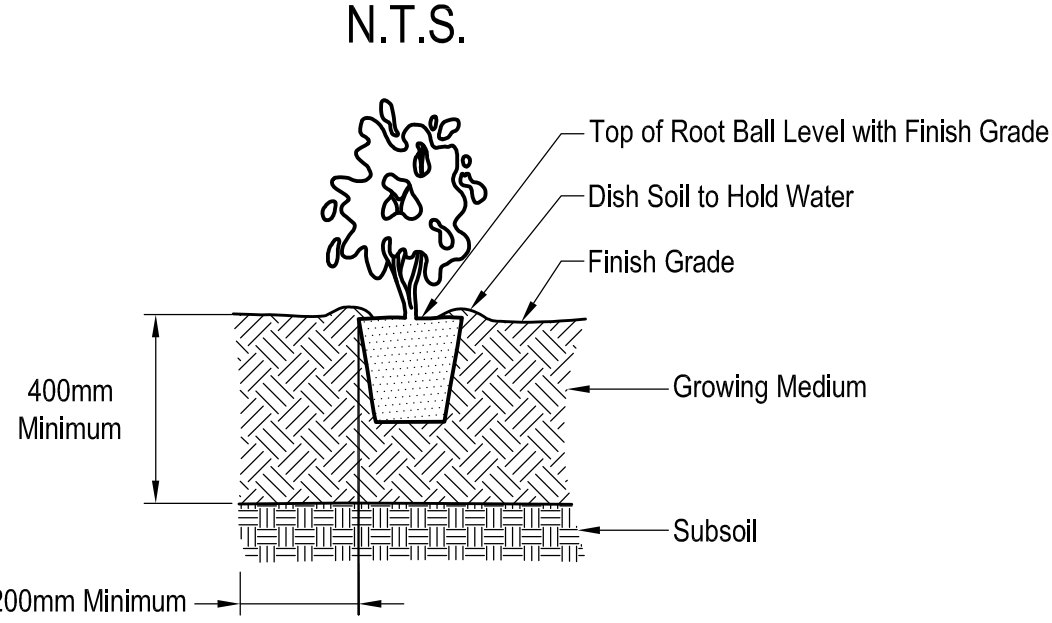
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- Email: Site 4.dwg. Received May 15, 2015; AECOM.
- Email: -001-S4-002 - Plan-Details.dwg. Received May 05, 2015; AECOM.
- 2013 Ortho Photograph From City of Surrey.

PLAN

SCALE 1:200

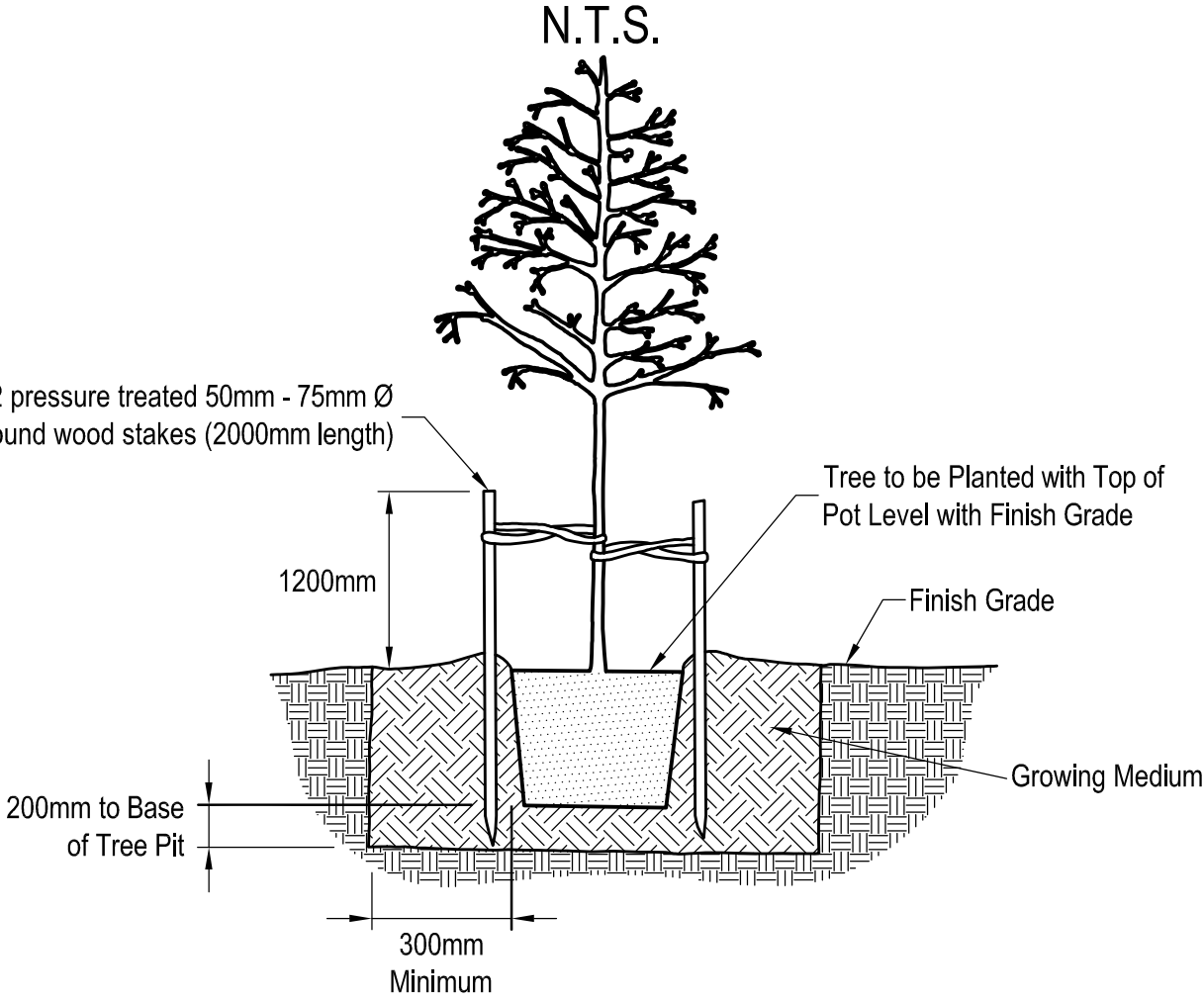


TYPICAL CONTAINER SHRUB AND No. 1 AND 2 POT TREE PLANTING DETAIL



RECLAMATION MIX		
Seed Type	% by Seed Weight	% by Seed Count
Tall Fescue	20	10.5
Italian Ryegrass	20	10.5
Perennial Ryegrass	10	6
Creeping Red Fescue	10	14.5
Orchardgrass	6	9
Timothy	3	9
Red Top	1	11.5
S.C. Red Clover	20	13
Alsike Clover	10	16

TYPICAL TREE PLANTING DETAIL

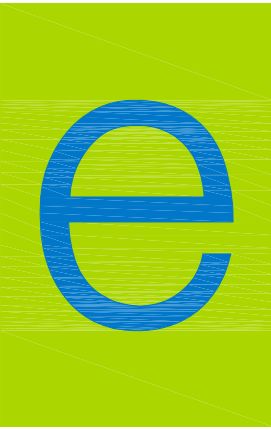


LTM 26 Map Details - Location C

NOTE:  
The contractor will be required to complete a pre-construction site meeting with the City of Surrey and representatives to identify the allowable construction limits and trees requiring removal and/or protection.

CITY OF SURREY

MINOR DRAINAGE WORKS  
Surrey, BC



envirowest consultants inc.

Suite 101 - 1515 Broadway Street  
Port Coquitlam, British Columbia  
Canada V3C 6M2  
office: 604-944-0502  
facsimile: 604-944-0507

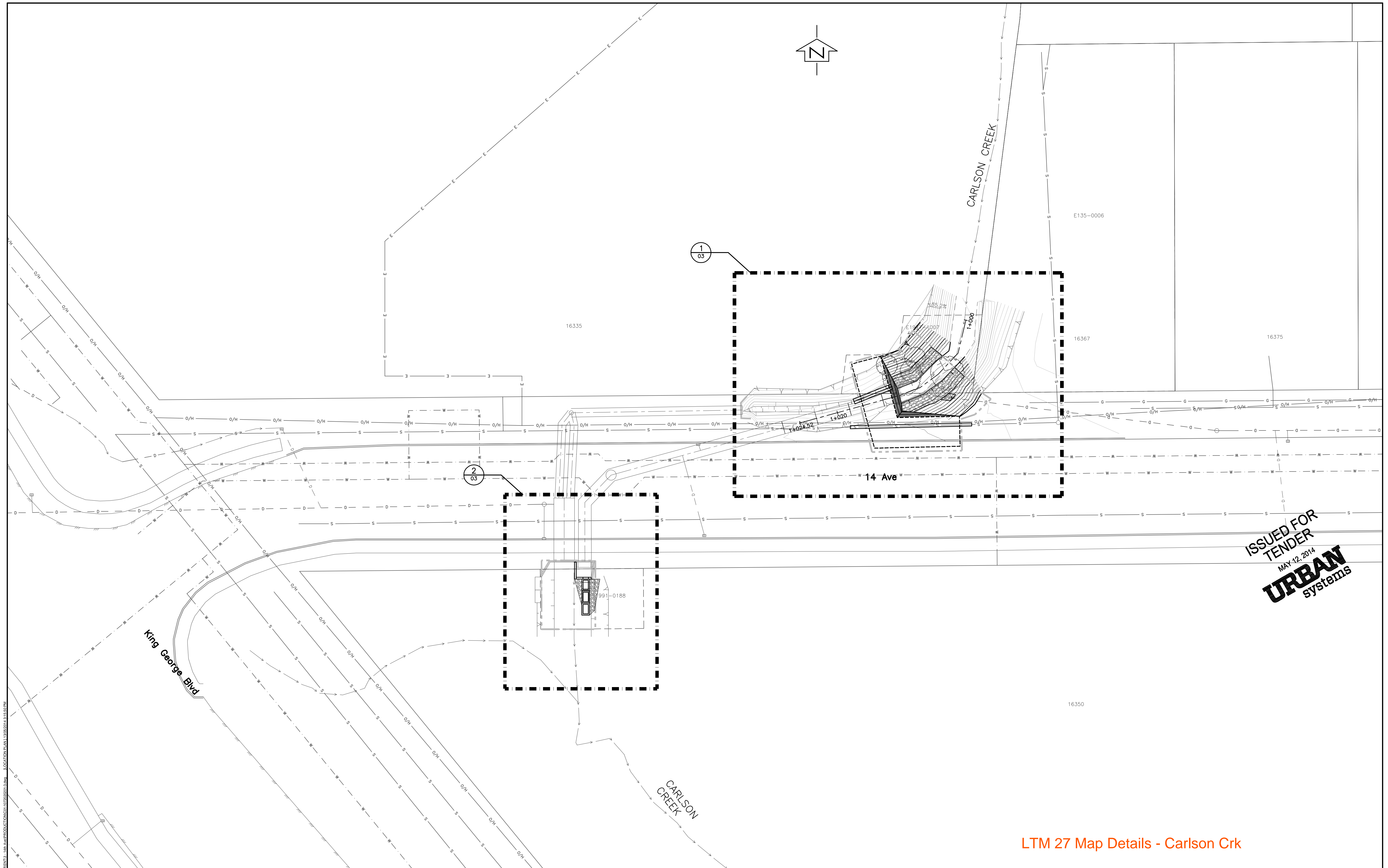
[www.envirowest.ca](http://www.envirowest.ca)

CITY OF SURREY PROJECT NO. 4814-911

DRAFT  
RIPARIAN PLANTINGS

DESIGN: RWS	DRAWN: CEV	CHECKED:	REVISION: 03	REVISION DATE: September 17, 2015
SCALE: As Shown	DRAWING NUMBER: 111-337-03			
DATE: May 05, 2015				





ISSUED FOR  
TENDER  
MAY 12 2014  
**URBAN**  
systems

LTM 27 Map Details - Carlson Crk

**LEGEND**

EX. WATER MAIN  
EX. SANITARY SEWER  
EX. STORM SEWER  
PR. WATER MAIN  
PR. SANITARY SEWER  
PR. STORM SEWER  
RIP RAP  
BOTTOM OF SLOPE  
TOP OF SLOPE  
FENCE  
SWALE  
UNDERGROUND UTILITY  
BUILDING

**SANITARY**  
MANHOLE  
FLOW ARROW  
**WATER**  
HYDRANT  
LINE VALVE  
CURB STOP  
METER PIT  
**UTILITIES**  
LAMP STANDARD  
GAS VALVE  
ELEC BOX  
TEL BOX  
CABLE BOX

**STORM**  
CB CATCH BASIN (TOP)  
MANHOLE  
FLOW ARROW  
**GRADING**  
PROPOSED ELEVATION  
EXISTING ELEVATION  
EXISTING CONTOURS  
DIRECTION OF DRAINAGE  
MAJOR DRAINAGE FLOW

ALL DIMENSIONS ARE IN METRES  
ALL PIPE SIZES ARE IN MILLIMETRES

REVISIONS	DESCRIPTION	BY	DATE	APPROVED
8	#	#	#	#
7	-	-	-	-
6	-	-	-	-
5	-	-	-	-
4	-	-	-	-
3	-	-	-	-
2	-	-	-	-
1	ISSUED FOR TENDER	S.T.	2014/05/12	G.S.

SEAL:

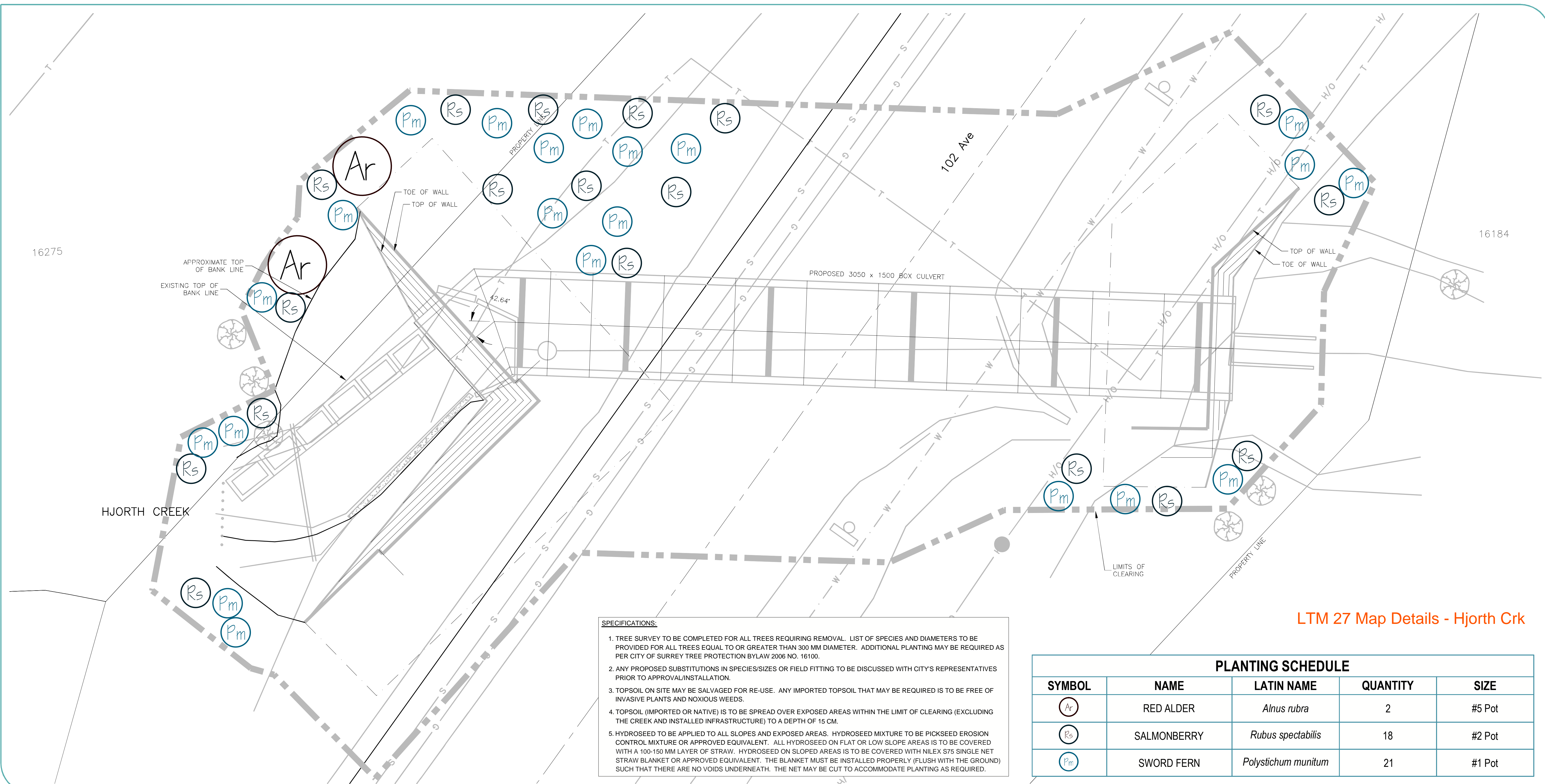
**URBAN**  
systems

CITY OF SURREY  
the future lives here.  
ENGINEERING DEPARTMENT




BENCH MARK - S.M. #		ELEV.	
DRAWN	S.T.	CONTRACT	USL DRAWING NUMBER
CHECKED	S.T.	AS BUILT	C01-01-1072.0202.01
DESIGNED	S.T.		SHEET 02 OF 11
CHECKED	S.T.		
APPROVED	DATE	DESTROY ALL PRINTS BEARING PREVIOUS NUMBERS	REVISION
	14-04-19		

TITLE: 2014 IN-STREAM IMPROVEMENTS M.S. 4814-002-11 14TH AVENUE CULVERT WORKS		THE CITY OF SURREY	
CLIENT: CITY OF SURREY 13450 - 104 Avenue SURREY, B.C.		TITLE: LOCATION PLAN	
SCALE: HOR. 1:200 VER. N/A		SURREY PROJECT NO. 4812-055	
CHECKED: P.W. P.U.		SURREY DRAWING NO.	





### LTM 27 Map Details - Hjorth Crk

Planting Schedule				
Symbol	Name	Latin Name	Quantity	Size
	Red Alder	<i>Alnus rubra</i>	2	#5 Pot
	Salmonberry	<i>Rubus spectabilis</i>	18	#2 Pot
	Sword Fern	<i>Polystichum munitum</i>	21	#1 Pot

**Urban Systems Limited**  
D55/12 Drainage Project, City of Surrey  
Hjorth Creek

## PLANTING PLAN

### FIGURE 2

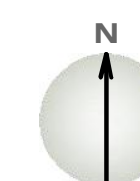


MAP/DRAWING INFORMATION  
Original drawing from Urban Systems Ltd.

CREATED BY: MZO  
CHECKED BY: NRG  
DESIGNED BY: NRG



SCALE 1:400



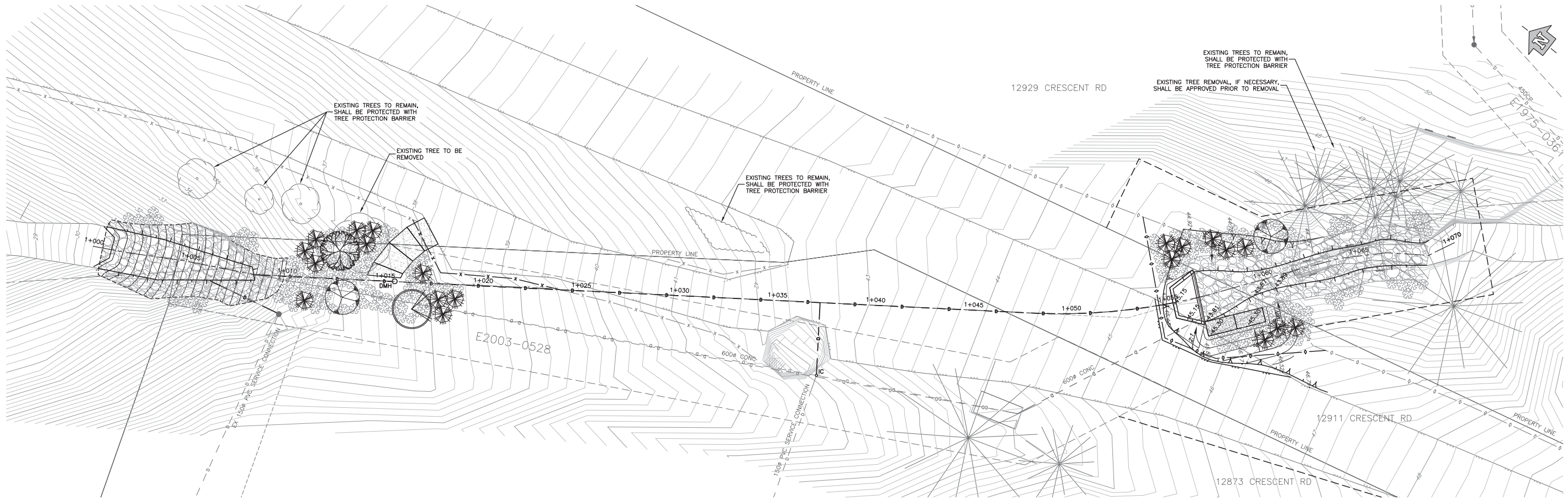
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July, 17, 2013 2:55 PM

PROJECT #: 13-7241

STATUS: FINAL

DATE: JULY 2013





LANDSCAPE NOTES

A. GENERAL NOTES

1. LANDSCAPE INSTALLATION SHALL BE PERFORMED BY A QUALIFIED LANDSCAPE CONTRACTOR WITH EXPERIENCE IN RESTORATION PLANTING.
2. ALL WORK TO COMPLY WITH MASTER MUNICIPAL SPECIFICATIONS, BC LANDSCAPE STANDARD, & CITY OF SURREY SUPPLEMENTAL SPECIFICATIONS.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE WRITTEN SPECIFICATIONS, DRAWINGS, AND OTHER DETAILS AS ISSUED FOR THIS PROJECT.
4. ANY AMBIGUITY IN THIS DRAWING OR ACCOMPANYING DETAILS OR ANY DISCREPANCIES FOUND BETWEEN THE EXISTING SITE AND THE DRAWINGS ARE TO BE REPORTED TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION PRIOR TO WORK. THE CONTRACTOR SHALL NOT PROCEED WITHOUT A CLEAR UNDERSTANDING OF THE WORK.
5. THE LIMITS OF THE WORK ARE TO BE CLEARLY UNDERSTOOD BY THE CONTRACTOR PRIOR TO ANY WORK TAKING PLACE ON SITE. THE CONTRACTOR IS TO CONTACT THE OWNER'S REPRESENTATIVE FOR CLARIFICATION IF REQUIRED.
6. ALL ANCILLARY WORK NORMALLY ASSOCIATED WITH THE TYPE OF CONSTRUCTION INDICATED ON THE CONTRACT DRAWINGS AND DOCUMENTS SHALL BE DEEMED TO BE PART OF THE CONTRACT.
7. THE CONTRACTOR IS RESPONSIBLE, PRIOR TO THE START OF CONSTRUCTION, TO COORDINATE WITH LOCAL UTILITY CORPORATIONS TO LOCATE, OR ARRANGE THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF WORK.
8. THE CONTRACTOR IS RESPONSIBLE FOR THE HOARDING AND PROTECTION OF ALL RETAINED ELEMENTS WITHIN THE LIMITS OF WORK; INCLUDING BUT NOT LIMITED TO: EXISTING CURBS, CONCRETE, ASPHALT, GRANULAR OR OTHER SURFACES, FENCES AND VEGETATION, INCLUDING TREES, SHRUBS, GRASSES AND GROUNDCOVERS WITHIN, OR ADJACENT TO, THE LIMITS OF CONSTRUCTION.
9. TREE PROTECTION BARRIERS SHALL BE INSTALLED ACCORDING TO THE CITY OF SURREY TREE PROTECTION BYLAW, 2006 NO. 16100.
10. IF EQUIPMENT NEEDS TO BE IN THE CRITICAL ROOT ZONE OF A TREE, MULCH OR PLYWOOD MUST BE INSTALLED TO MINIMIZE IMPACTS TO THE TREE(S). THIS WORK SHALL BE SUPERVISED AND MONITORED BY A CERTIFIED ARBORIST.
11. IF TREES NOT IDENTIFIED FOR REMOVAL ON THE LANDSCAPE PLAN MUST BE REMOVED, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO REMOVAL. REMOVED TREES SHALL BE REPLACED AT A RATIO OF 2:1. PLACEMENT MUST BE CONFIRMED BY OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE HAULING OF ALL EXCESS MATERIALS OFF THE SITE.
13. THE CONTRACTOR IS RESPONSIBLE FOR GENERAL SITE CLEAN UP.
14. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LANDSCAPED AND NATURAL AREAS AND MUST MAKE ALL NECESSARY RESTORATIONS AND REPAIRS.

B. PERMITS, STANDARDS AND TESTING

1. SOIL TESTING IS REQUIRED ON EACH TYPE OF TOPSOIL & GROWING MEDIUM SPECIFIED FOR USE ON THE PROJECT. THE CONTRACTOR SHALL PROVIDE A SOIL TEXTURE AND NUTRIENT ANALYSIS FROM A QUALIFIED TESTING AGENCY, TO BE SUBMITTED TO THE CONSULTANT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION OF SAID MATERIAL.

C. LAYOUT

1. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE FOR FURTHER DIRECTION.
3. ON-SITE LAYOUT IS TO BE CONFIRMED BY THE OWNER'S REPRESENTATIVE PRIOR TO THE START OF CONSTRUCTION.






D. MATERIALS

1. THE CONTRACTOR SHALL SUPPLY ALL MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE DRAWINGS. ANY DISCREPANCIES IN QUANTITIES SHALL BE REPORTED TO THE CONSULTANT FOR DIRECTION.
2. NO SUBSTITUTIONS OF MATERIALS, PRODUCTS, OR QUANTITIES SHALL BE PERMITTED WITHOUT PRIOR CONSENT OF THE OWNER'S REPRESENTATIVE.

E. PLANTING




























1. ALL PLANT MATERIAL SHALL BE NURSERY GROWN STOCK; LOCALLY HARDENED AND ACCLIMATIZED UNLESS APPROVED OTHERWISE, AND SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE CANADIAN NURSERY TRADES ASSOCIATION FOR SIZE, HEIGHT, SPREAD, GRADING, QUALITY, AND METHOD OF CULTIVATION.
2. GROWING MEDIUM FOR ALL PLANTING AREAS, INCLUDING TREE PITS AND TRENCHES, SHALL MEET THE BC LANDSCAPE STANDARD SPECIFICATIONS FOR TYPE 3P.
3. EXISTING TOPSOIL CAN BE USED IF IT MEETS OR IS AMENDED TO MEET THE SPECIFICATIONS FOR THE GROWING MEDIUM.
4. ALL PLANTING AREAS SHALL HAVE A MINIMUM TOPSOIL/GROWING MEDIUM DEPTH OF 300mm UNLESS NOTED OTHERWISE.
5. ALL TREE PITS SHALL HAVE A MINIMUM TOPSOIL/GROWING MEDIUM DEPTH OF 800mm UNLESS NOTED OTHERWISE.
6. ALL PLANTING BEDS AND TREE WELLS SHALL RECEIVE 75mm DEPTH BARK MULCH UNLESS NOTED OTHERWISE.
7. BARK MULCH SHALL BE 50mm MINUS DOUGLAS FIR OR HEMLOCK BARK CHIPS AND FINES, AND FREE FROM ALL SOIL, STONES, ROOTS OR OTHER EXTRANEOUS MATTER.
8. WHERE IRRIGATION IS NOT SPECIFIED AS PART OF THE CONTRACT; AND UNLESS INDICATED OTHERWISE IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROVIDE SUPPLEMENTAL WATER (HAND WATER, TRUCK WATER OR TEMPORARY IRRIGATION SYSTEM) AS PART OF ESTABLISHMENT MAINTENANCE.
9. ESTABLISHMENT MAINTENANCE; AS PER THE BC LANDSCAPE STANDARD, SHALL BE PERFORMED UNTIL CONDITIONS OF ACCEPTANCE HAVE BEEN MET FOR ALL LANDSCAPE AREAS, INCLUDING: TREES, SHRUBS, GROUNDCOVERS, AND NATURALIZED AREAS.
10. A GUARANTEE PERIOD OF ONE YEAR FOR ALL PLANT MATERIAL, AS PER THE BC LANDSCAPE STANDARD; SHALL NOT BEGIN UNTIL CONDITIONS OF ACCEPTANCE HAVE BEEN MET FOR ALL LANDSCAPE AREAS, INCLUDING: TREES, SHRUBS, GROUNDCOVERS, AND NATURALIZED AREAS.
11. GUARANTEE INCLUDES REPLACING ALL PLANTS DETERMINED BY THE OWNER'S REPRESENTATIVE TO BE DEAD OR FAILING AT THE END OF THE ESTABLISHMENT MAINTENANCE PERIOD. REPLACEMENTS TO BE MADE AT THE NEXT APPROPRIATE SEASON, AND CONDITIONS OF GUARANTEE WILL APPLY TO ALL REPLACEMENT PLANTS FOR ONE FULL YEAR.
12. REFER TO THE BC LANDSCAPE STANDARD FOR MAINTENANCE REQUIREMENTS BEYOND ESTABLISHMENT.
13. ALL TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR BETWEEN 12 AND 18 MONTHS AFTER THE INSTALLATION OF THE TREES. NO ADDITIONAL PAYMENT WILL BE MADE FOR STAKE REMOVAL.

PLANT SCHEDULE


TREES	COMMON NAME	BOTANICAL NAME	CONTAINER	CAL. (MM)	QTY
	VINE MAPLE	ACER CIRCINATUM	B&B	60 MULTI-STEM	1
	RED ALDER	ALNUS RUBRA	B&B	60	1
SHRUBS	COMMON NAME	BOTANICAL NAME	CONTAINER	SPACING (M)	QTY
	WESTERN SWORD FERN	POLYSTICHUM MUNITUM	#1	0.50	170
	SALMONBERRY	RUBUS SPECTABILIS	#1	1.00	20
	RED ELDERBERRY	SAMBUCUS RACEMOSA	#2	1.75	2


LTM 30 Map Details

Issued for  
DESIGN REVIEW  
JUNE 15, 2015  
urbansystems.ca

LEGEND:	EXISTING	PROPOSED
		
		
		
		
		
		
		
		
		

REVISIONS	DESCRIPTION	BY	DATE	APPROVED
5				
4				
3				
2	ISSUED FOR DETAILED DESIGN	BM	2015-06-15	CB
1	ISSUED FOR DISCUSSION	BM	2015-05-27	-

SEAL:



ENGINEERING DEPARTMENT

BENCH MARK - S.M. # MONUMENT 84H0605 (GCM 451906)	ELEV. 54.199m
DRAWN CHECKED DESIGNED CHECKED	BM CONTRACT AS BUILT AS-BUILT
USL DRAWING NUMBER 1072022601-L01	SHEET 4 OF 4
APPROVED CB	DATE 2015-06-15
DESTROY ALL PRINTS BEARING PREVIOUS NUMBERS	REVISION 2




PROJECT: CRESCENT ROAD CULVERT UPGRADE
CLIENT: CITY OF SURREY 13450 - 104th Avenue SURREY, B.C.

THE CITY OF SURREY
TITLE: LANDSCAPE PLAN
SCALE: HOR. 1:100 VER.
CHECKED: P.W. P.U.
SURREY PROJECT NO. SRY-PROJ
SURREY DRAWING NO. SRY-DWG



### 1.0 SITE SUMMARY

<b>Site Reference No.</b>	G 16	<b>Date(s) of Works</b>	August 4 and 5 2015
<b>Watercourse</b>	Cougar Creek	<b>Class</b>	Class A
<b>Site Location</b>	122 Street from 70 -72 Avenue		
<b>Site Access</b>	60 A and 60 B greenbelts on 122 Street. Parking along the street.	<b>Land Owner</b>	City of Surrey
<b>Proposed Activities</b>	Invasive plant removal: <i>Rubus discolorus</i> and <i>Hedera helix</i>		
<b>Completed Activities</b>	<i>Rubus discolorus</i> and <i>Hedera helix</i> removal; anthropogenic debris removal; Straw install		
<b>Future Recommendations</b>	Finish Phase 1 removal and continue with Phase 2 of removal plan		

	
	<b>Before</b>
	
<b>G 16</b>	<b>After</b>

### G 16 Map Details



**REV 5**

**15280 80 Avenue**

November 2015	Class A Watercourse
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## REV5 Map Details



## 2.0 PROPOSED RESTORATION WORKS

<b>Team/Team Leaders</b>	<b>JP – Fall SHaRP</b>			
<b>Proposed Works</b>	Install 10 native trees along retention pond.			
	<b>Species Name</b>	<b>Common Name</b>	<b>Quantity</b>	<b>Pot Size</b>
	<b>Trees</b>			
	<i>Picea sitchensis</i>	Sitka spruce	5	5
	<i>Thuja plicata</i>	Western redcedar	5	5
	<b>Total trees</b>		<b>10</b>	
<b>Justification For Works</b>	Planting native trees will help increase biodiversity of the natural ecosystem and increase ecosystem health.			


## 3.0 COMPLETED RESTORATION WORKS

<b>Summary of Completed Works</b>	<b>Date(s) of Completed Works</b>	November 29, 2015
	Installed 10 native trees along retention pond.	
<b>Summary of Future Works</b>	N/A	
<b>Mitigation Plan</b>	Standard mitigation measures were implemented to control sediment and minimize impacts to surrounding vegetation (see Best Management Practices).	
<b>Fish Salvage</b>	N/A	
<b>Additional Comments</b>	N/A	



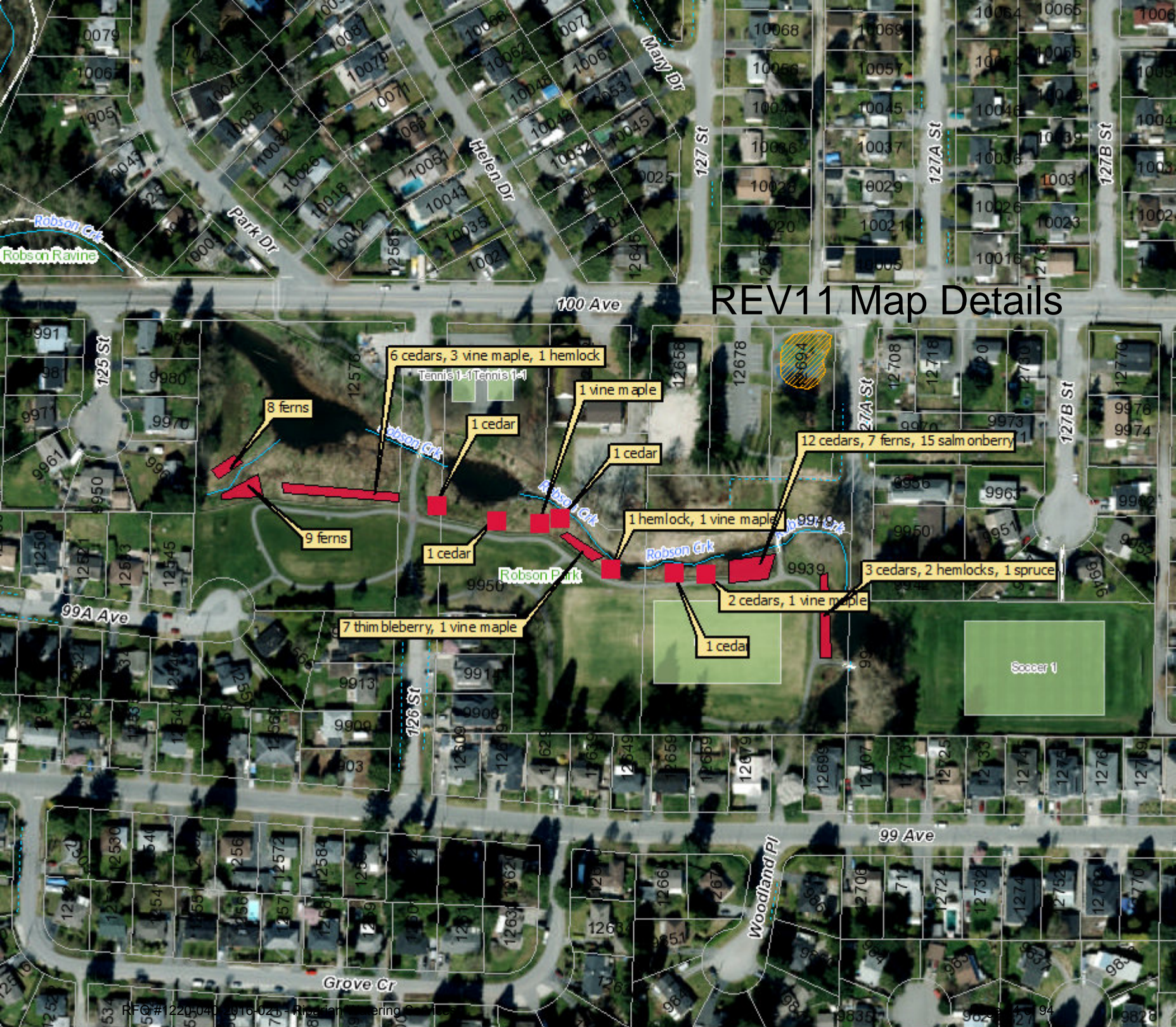
## 4.0 SITE MAP



	<b>REV 11</b>	
	Robson Park, 12678 100 Ave	
	August, 2015	Class A Watercourse

## REV11 Map Details





REV11 Map Details



## 3.0 COMPLETED RESTORATION WORKS



Summary of Completed Works	Date(s) of Completed Works	June 16, 2015; July 7, 23, 31; August 4 2015																																																		
	Invasive species removal: 2 truck loads <ul style="list-style-type: none"><li><i>Rubus discolorus</i></li></ul>																																																			
	Successional alder thinning: 466 m <sup>2</sup> 1 truck load of mulch installed 32 beaver fences installed around conifers																																																			
	Native plant install:																																																			
	<table><thead><tr><th>Species Name</th><th>Common Name</th><th>Quantity</th><th>Pot Size</th></tr></thead><tbody><tr><td colspan="4">Shrubs</td></tr><tr><td><i>Rubus spectabilis</i></td><td>Salmonberry</td><td>15</td><td>2</td></tr><tr><td><i>Gaultheria shallon</i></td><td>Sword ferns</td><td>17</td><td>2</td></tr><tr><td><i>Blechnum spicant</i></td><td></td><td></td><td>2</td></tr><tr><td><i>Acer circinatum</i></td><td>Vine maple</td><td>10</td><td>5</td></tr><tr><td colspan="2">Total shrubs</td><td>190</td><td></td></tr><tr><td colspan="4">Trees</td></tr><tr><td><i>Thuja plicata</i></td><td>Western Red Cedar</td><td>10</td><td>5</td></tr><tr><td><i>Tsuga heterophylla</i></td><td>Western hemlock</td><td>5</td><td>5</td></tr><tr><td><i>Picea sitchensis</i></td><td>Sikta spruce</td><td>1</td><td>5</td></tr><tr><td colspan="2">Total trees</td><td>10</td><td></td></tr></tbody></table>				Species Name	Common Name	Quantity	Pot Size	Shrubs				<i>Rubus spectabilis</i>	Salmonberry	15	2	<i>Gaultheria shallon</i>	Sword ferns	17	2	<i>Blechnum spicant</i>			2	<i>Acer circinatum</i>	Vine maple	10	5	Total shrubs		190		Trees				<i>Thuja plicata</i>	Western Red Cedar	10	5	<i>Tsuga heterophylla</i>	Western hemlock	5	5	<i>Picea sitchensis</i>	Sikta spruce	1	5	Total trees		10	
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Summary of Future Works	Continue with invasive plant removal, successional alder thinning, confier install and native plant install																																																			
	Planting maintenance to remove any regrowth of invasives within planting areas																																																			
Mitigation Plan	Standard mitigation measures were implemented to control sediment and minimize impacts to surrounding vegetation (see Best Management Practices).																																																			
Fish Salvage	N/A																																																			
Additional Comments																																																				

## REV11 Map Details



### 1.0 SITE SUMMARY

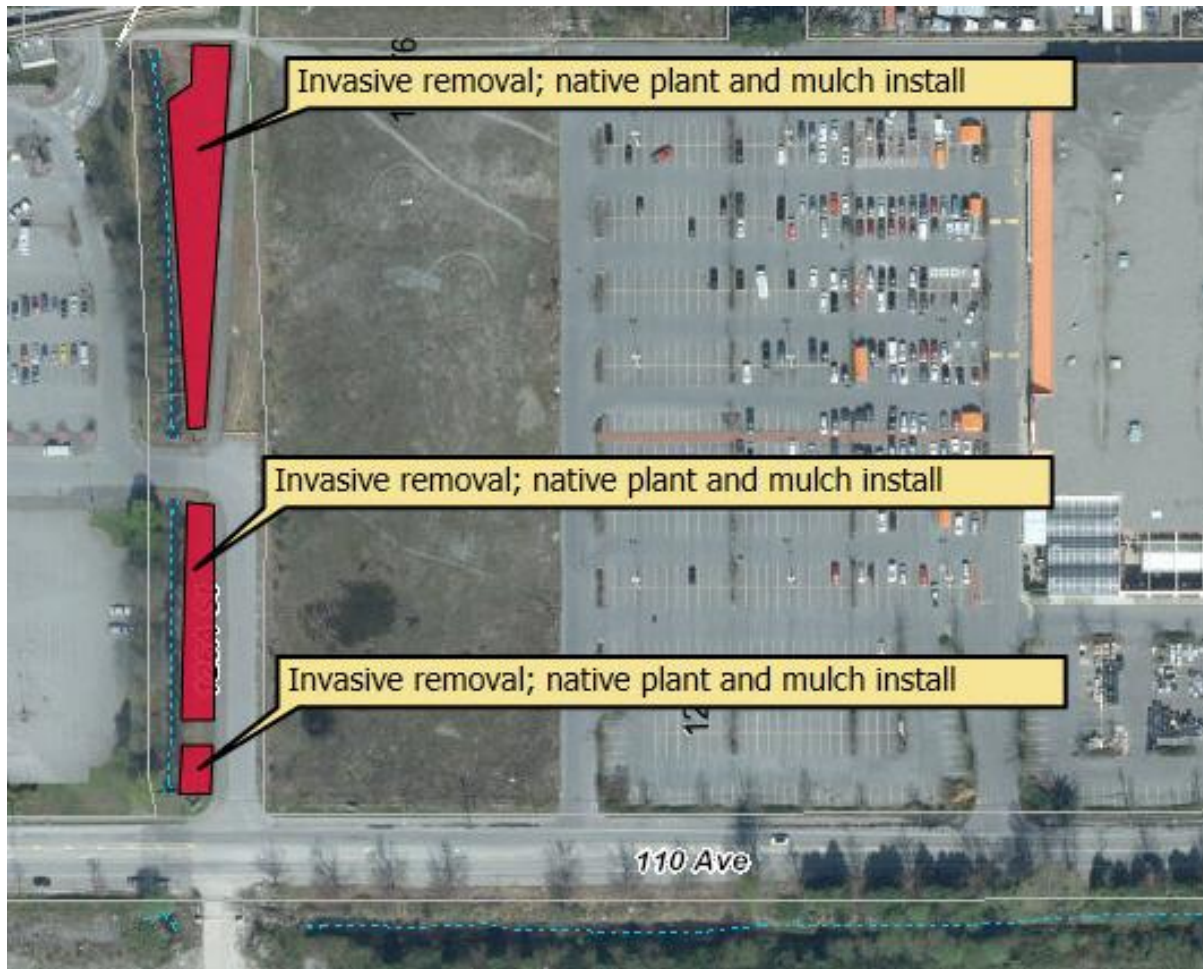
<b>Site Reference No.</b>	REV 26	<b>Date(s) of Works</b>	May 18; July 6, 2015
<b>Watercourse</b>	Healy Creek	<b>Class</b>	A
<b>Site Location</b>	8972 Queen Mary Boulevard		
<b>Site Access</b>	Park on Queen Mary Boulevard and walk into park	<b>Land Owner</b>	City of Surrey
<b>Proposed Activities</b>	<ul style="list-style-type: none"> <li>- Removal of invasives</li> <li>- Densification of plantings</li> </ul>		
<b>Completed Activities</b>	Plantings assessed and morning glory removal from planting		
<b>Future Recommendations</b>	Continue with removal of morning glory and densification of plants		

	
	<p style="text-align: center;"><b>Before</b></p> 
<b>REV 26</b>	<b>After</b>

### REV26 Map Details



## 4.0 SITE MAP



**REV 32**  
11180 Scott Road

July, 2015

Class A Watercourse

## REV32 Map Details



## 3.0 COMPLETED RESTORATION WORKS

Summary of Completed Works	Date(s) of Completed Works	July 8, 9, 10, 13, 14, 20, 21, 22, 23 2015																																																																						
	Invasive plant removal: <i>Rubus discolor</i> , <i>Tanacetum vulgare</i> , <i>Cytisus scopariu</i> <ul style="list-style-type: none"><li>26 truck loads of invasives removed</li></ul> Mulch install to planting areas – 175m <sup>3</sup> Erosion control – 16 straw bales																																																																							
	Anthropogenic debris removal: 1 truckload																																																																							
	Native planting:																																																																							
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Total trees		39																																																																						
Summary of Future Works	Continue with <i>Rubus discolorus</i> removal – areas in both south and north section were left due to presence of birds nests. Planting maintenance to remove regrowth of blackberry must be performed																																																																							
Mitigation Plan	Standard mitigation measures were implemented to control sediment and minimize impacts to surrounding vegetation (see Best Management Practices). In stream debris would need to be done in the fish window (August)																																																																							
Fish Salvage	N/A																																																																							
Additional Comments																																																																								

## REV32 Map Details



### 1.0 SITE SUMMARY

<b>Site Reference No.</b>	REV 32	<b>Date(s) of Works</b>	September 15, 2015 November 28, 2015
<b>Watercourse</b>	Pattulo Channel	<b>Class</b>	A
<b>Site Location</b>	11180 Scott Road		
<b>Site Access</b>	Park in in the Scott Road Skytrain station day parking lot – Lot A.	<b>Land Owner</b>	City of Surrey
<b>Proposed Activities</b>	Remove invasive plants and install native plant species.		
<b>Completed Activities</b>	Removed invasive plants and densified the native plant population		
<b>Future Recommendations</b>	Continue with invasive removal and native plant densification.		



REV 32 – Site Map



Photo 1: Planting area before proposed works



Photo 2: Planting area after proposed works

### REV32 Map Details



Campbell Heights Riparian Restoration Plan

Background

In 2007, the City of Surrey (City) in partnership with various private developers undertook works to develop a former gravel pit into a light industrial business park (Campbell Heights Industrial Business Park); the site is generally bounded by 20 and 28 Avenues and 190 and 194 Streets in Surrey. The construction of fish habitat, wetlands and bio-ponds was undertaken in association with the development in an effort to enhance the Campbell Heights area and as a component of a comprehensive stormwater management plan for the park. A detention pond was constructed for stormwater management purposes. Construction of fish habitat was also required to compensate for the destruction of minor watercourses, ponds, and wetlands (all tributaries to the Little Campbell River).

Over the duration of the monitoring program and continuing forward into the future, the City has designated significant staff, resources and monies to the improvement of the total habitat area. An ongoing assessment of the total habitat area is conducted regularly, to ascertain the requirements needed to address deficiencies related to the overall effectiveness of the habitat program. The City’s Salmon Habitat Restoration Program (SHaRP) and various contractors are continually undertaking recommended habitat improvement tasks, such as invasive plant removal, native plant installation, construction activities, watering, etc., which are gradually addressing weaker areas of the site and providing viable habitat features.

The following restoration plan provides a plan for completion of restoration activities as well as a framework for measuring progress towards restoration goals and objectives. It is estimated that restoration plantings will be completed by 2020 and monitoring and maintenance activities completed by 2025.

Restoration Goal

Establish a native riparian plant community such that it is free of competition from invasive species. The desired future condition is a Coastal Douglas-fir forest with plant assemblages typical of moderately dry to fresh nutrient poor growing sites in the moist maritime subzone of the Coastal Douglas-fir biogeoclimatic zone.

Restoration efforts have been ongoing for 8 years with restoration complete in 52% of the restoration area which is approximately 109,000m<sup>2</sup> (Page 1). Areas where restoration remains incomplete are sites where past efforts to establish riparian plants have failed. These areas have very challenging growing conditions due to previous use as a gravel pit. Soils in these areas are a gravely-sand with no organic soil horizon. Restoration of these areas will require use of ecological succession processes and an adaptive management approach.

Restoration Objectives

Forest Cover - establish native trees at an average of 4 meter spacings such that they will provide a shaded understory environment within 20 years.

Native Riparian Understory Plants – establish a native understory plant community (ie. shrubs, herbs, grasses, or ferns) typical of moderately dry to fresh nutrient poor growing sites in the moist maritime subzone of the Coastal Douglas-fir biogeoclimatic zone. Portions of the restoration area with very poor growing conditions are not likely to support a shrub layer within the 5 year plan period. Natural recruitment will establish a shrub understory in these areas over time.

Invasive Plants – remove all non-native plant species from the restoration area which have the potential to out-compete native trees and shrubs for growing space.

Restoration Strategies

Ecological Succession Approach

- 1. Establish trees first to create beneficial micro-sites for shrub establishment.
- 2. Prioritize forest canopy closure and attendant shaded understory conditions. A shaded understory will improve growing conditions for native shrubs and herbs as well as inhibit the establishment of existing shade intolerant invasive species on site (Himalayan blackberry, Japanese knotweed, scotch broom, and common tansy).
- 3. Shrub establishment will proceed in a phased approach where planting areas are located in shaded microsites provided by tree development.
- 4. The riparian area is unlikely to host a well developed shrub layer until natural pedogenic processes have amended the soil through leaf litter inputs. Very poor growing sites will be planted with trees only and shrubs allowed to seed in naturally from adjacent planted areas when future soil conditions are appropriate.

Adaptive Management

- 1. Measure progress by an annual monitoring inspection which summarize recent restoration work as well as provides completion metrics such as the proportion of the restoration area where restoration is complete and % completion by restoration zone.
- 2. Select shrub species to be planted annually based on monitoring results. Observations of tree and shrub species performance for specific growing sites will be incorporated into planting prescriptions for future years.
- 3. Tree and shrub planting are likely to require combinations of initial soil amendment and ongoing fertilization and watering.
- 4. Restoration planting will proceed as fast as site conditions and plant performance permits.

Planting Plan

Tree Planting Plan

Trees which are well adapted to mineral soils and summer drought conditions in the Coastal Douglas-fir biogeoclimatic zone and moist maritime subzone are prescribed for all areas not fully stocked to the 4 meter tree spacing objective. A tree planting plan and stocking table is provided on page 3. Each year, a specific area of the tree planting plan will be planted. An annual monitoring report will assess progress by restoration zone (eg. BLK 2500 is 65% complete, BLK 2300 is 75% complete).

Understory Planting Plan

An adaptive management approach will be used to establish a native riparian understory in the restoration area. Experimental plots will be used to measure survivorship for selected understory plant and site preparation combinations. Experiment results will be used to inform annual planting plans. Candidate shrub species include *Holodiscus discolor*, *Mahonia nervosa*, *Rosa gymnocarpa*, *Symphoricarpos alba*, *Ribes sanguineum*, and *Dryas drummondii*.

Invasive Species Management

Efforts to limit the extent of Himalayan blackberry (*Rubus armeniacus*), Scotch broom (*Cytisus scoparius*), and Japanese knotweed (*Fallopia japonica*) in the restoration area have been moderately successful to date. Himalayan blackberry and Scotch broom have nearly been eliminated from the southern half of the restoration area (i.e. south of 24<sup>th</sup> Avenue). North of 24<sup>th</sup> Avenue, Scotch broom is present in many parts of the restoration area, whereas, blackberry is found only in isolated clusters. A 261m<sup>2</sup> area of Japanese knotweed is also present in the north-eastern corner of the restoration area. Common tansy (*Tanacetum vulgare*) is established to varying densities throughout the non-forested portions of the restoration area. The presence of Scotch broom, Himalayan blackberry, and Japanese knotweed is summarized by restoration zone on page 4.

Each year a specific restoration zone will be targeted for invasive species removal. All Japanese knotweed, and Scotch broom will be removed from the targeted restoration zone. The following year, an adjacent restoration zone will be targeted and previously treated zones be subject to maintenance invasive species removal only. Invasive species removal methods will be consistent with current methods and will include cutting of emergent broom as well as herbicide application to Himalayan blackberry, Japanese knotweed, and common tansy.





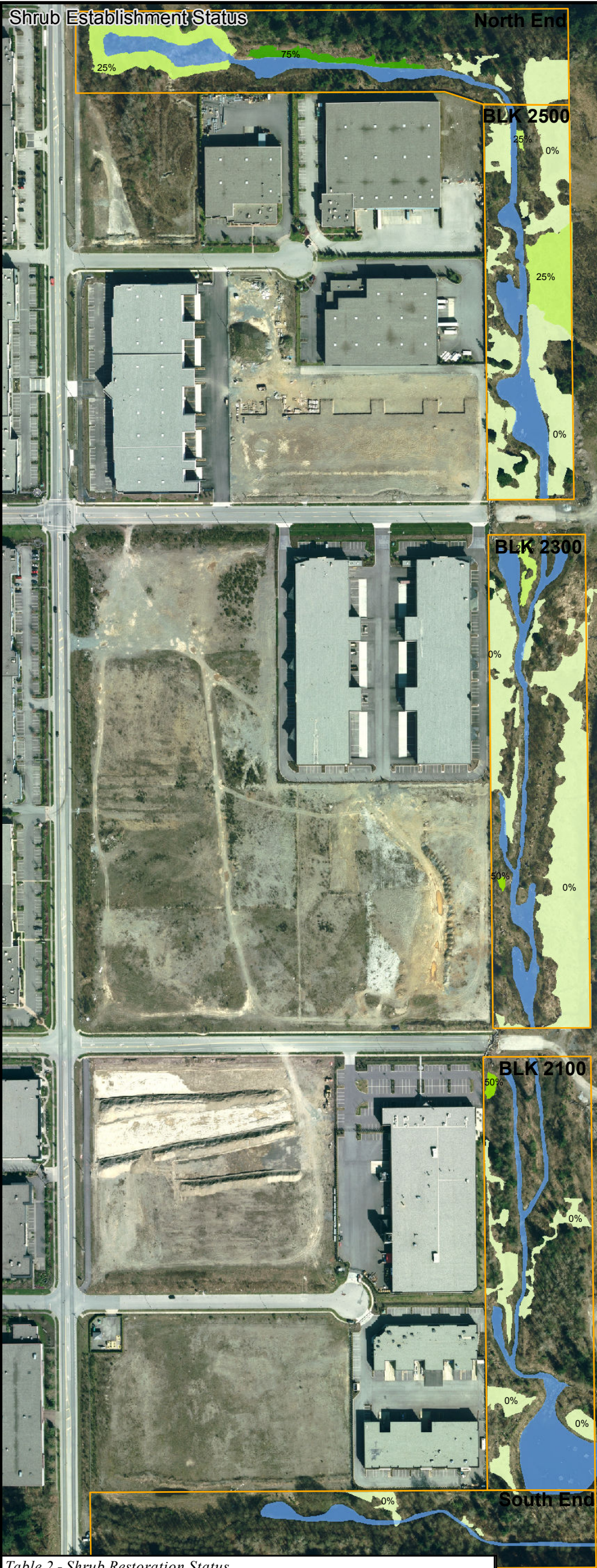


Table 2 - Shrub Restoration Status

Restoration Zone	Total area to be restored (m <sup>2</sup> )	Area of restoration completed (m <sup>2</sup> )	Percentage of restoration completed
North End	21,953	17,046	78%
BLK 2500	16,720	6,297	38%
BLK 2300	25,201	11,546	46%
BLK 2100	23,035	20,056	87%
South End	22,007	21,606	98%

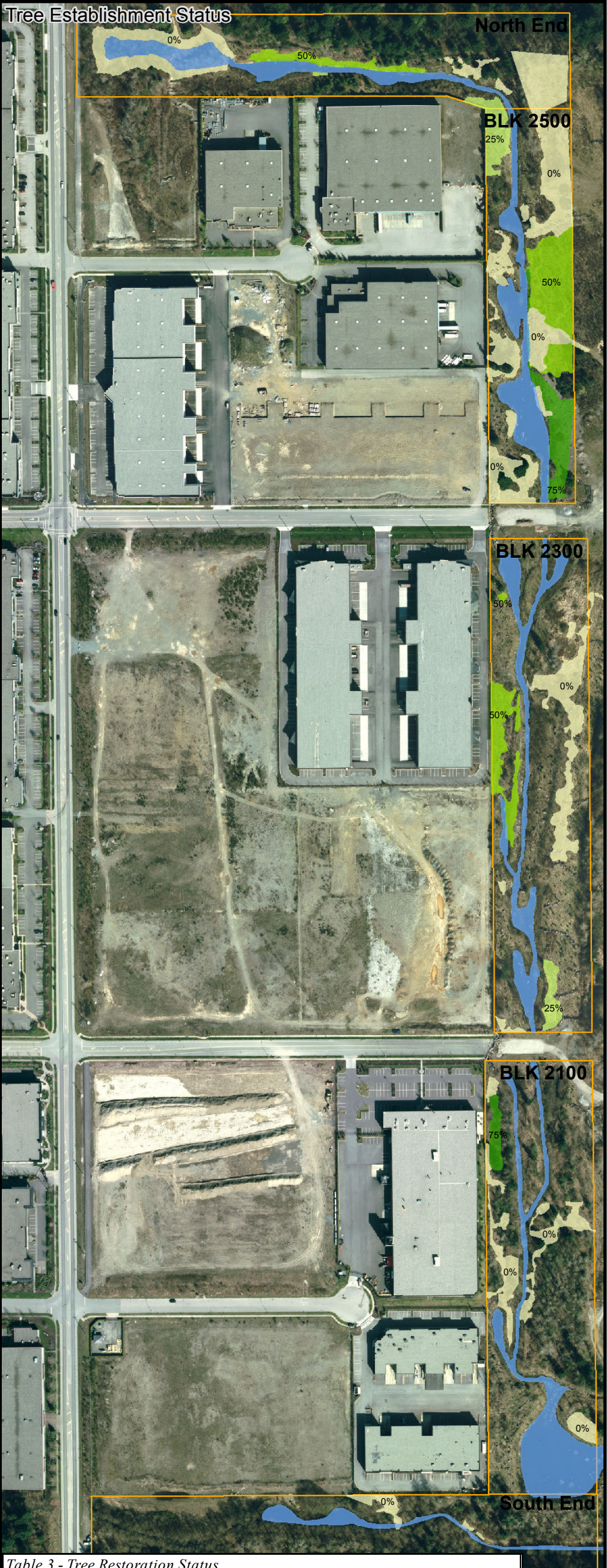


Table 3 - Tree Restoration Status

Restoration Zone	Total area to be restored (m <sup>2</sup> )	Area of restoration completed (m <sup>2</sup> )	Percentage of restoration completed
North End	21,953	17,184	78%
BLK 2500	16,720	5,309	32%
BLK 2300	25,201	20,701	82%
BLK 2100	23,035	20,205	88%
South End	22,007	21,605	98%

**Fall 2014 Monitoring Results**

Estimated percent stocked

- 0%
- 25%
- 50%
- 75%

Restoration area boundary

Watercourse

**LTM2 Map Details**

Please note areas not delineated within the restoration boundary above are 100% vegetated with planted stock or pre-existing native vegetation

North arrow

1:3,500

**Campbell Heights Restoration Plan**

City of Surrey

**Page 2**

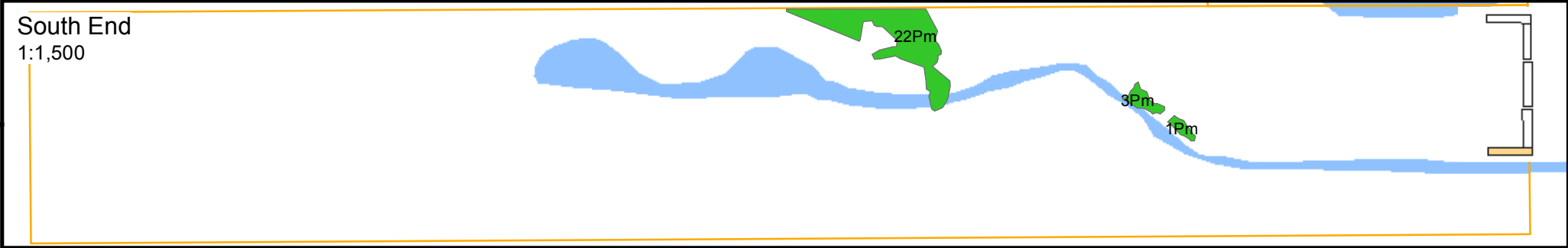
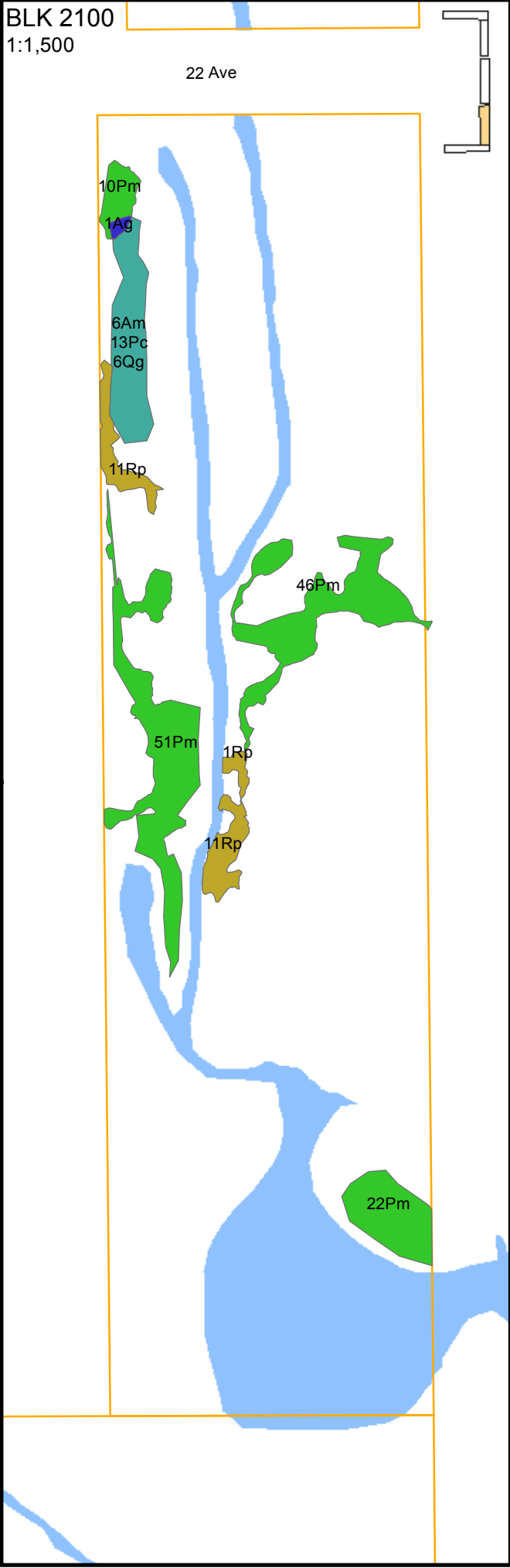
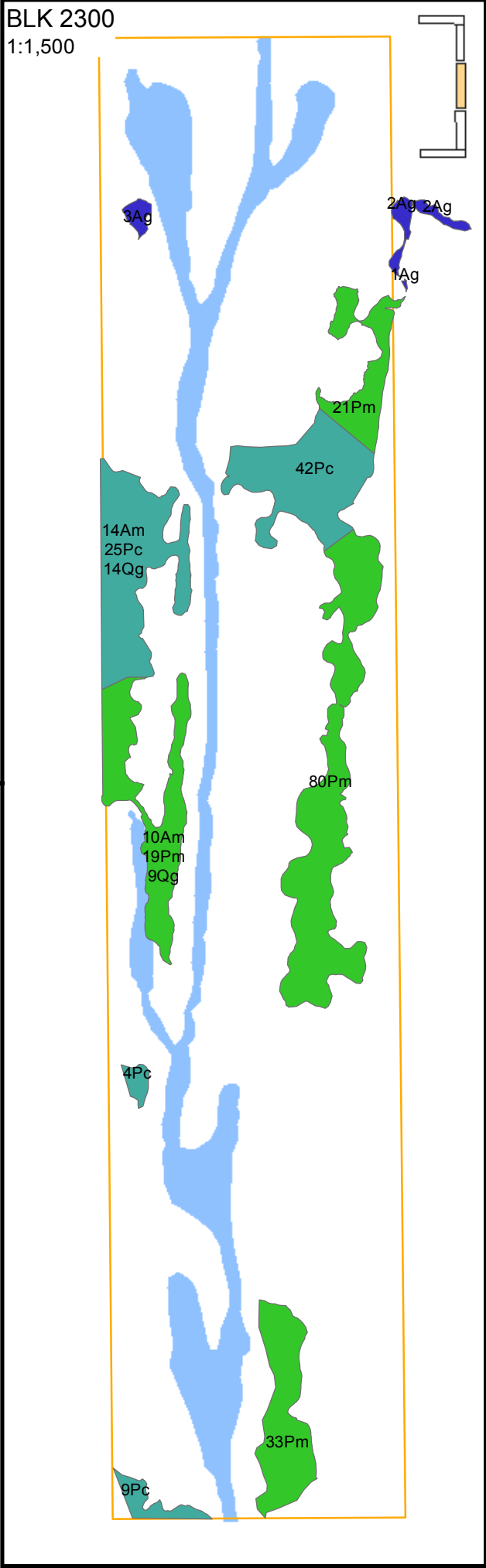
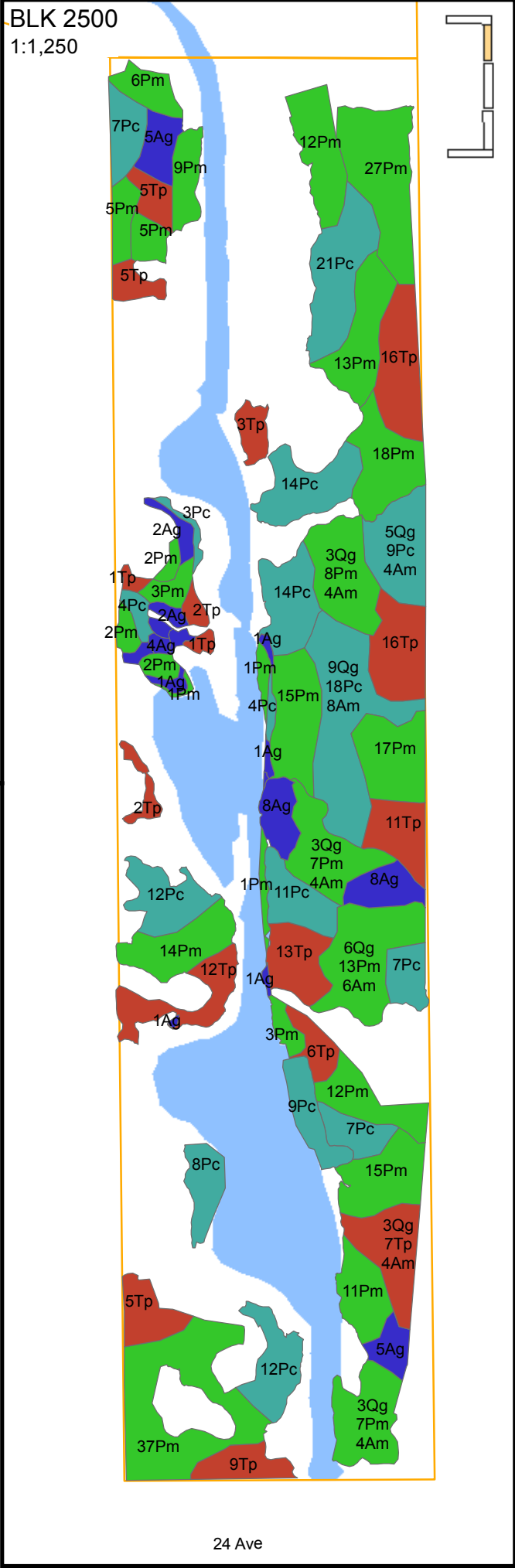
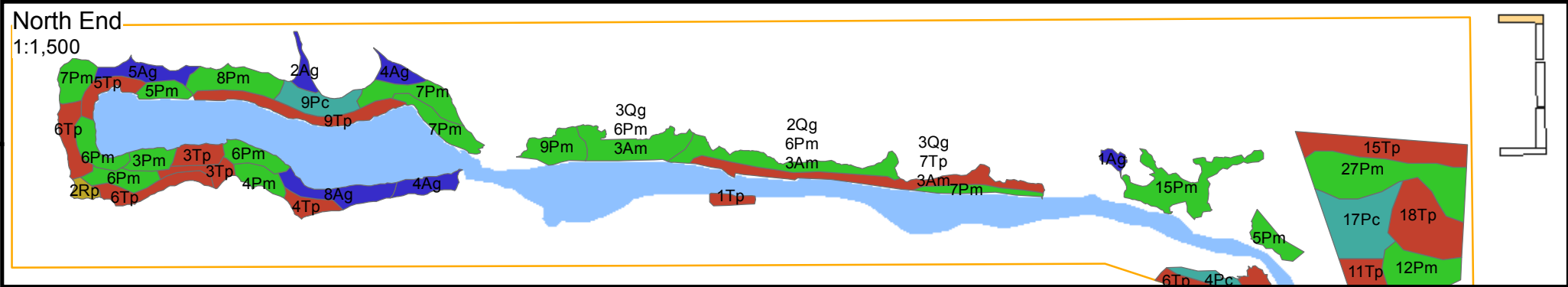
Prepared by: **ENKON** Environmental Ltd.












Map Created: May 1, 2015

Projection: NAD 83, Zone 10N

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<b>Planting Plan</b>		<b>Table 4 - Tree Stocking Table</b>							City of Surrey	<b>Campbell Heights Restoration Plan Tree Planting Plan</b>	
<b>Tree species</b>		<b>Scientific Name</b>	<b>Common Name</b>	<b>Label</b>	<b>North End</b>	<b>BLK 2500</b>	<b>BLK 2300</b>	<b>BLK 2100</b>	<b>South End</b>	<b>Total Count</b>	 Prepared by: <b>ENKON</b> Environmental Ltd.
	Abies grandis	Abies grandis	Grand fir	Ag	24	40	8	1	0	73	
	Pinus contorta	Pinus contorta	Shore pine	Pc	30	160	80	13	0	283	 Prepared by: <b>ENKON</b> Environmental Ltd.
	Pseudotsuga menziesii	Pseudotsuga menziesii	Douglas fir	Pm	146	266	153	129	26	720	
	Rhamnus purshiana	Rhamnus purshiana	Cascara	Rp	2	0	0	23	0	25	 Prepared by: <b>ENKON</b> Environmental Ltd.
	Thuja plicata	Thuja plicata	Western redcedar	Tp	100	114	0	0	0	214	
	Watercourse				319	646	278	178	26	1,447	 Prepared by: <b>ENKON</b> Environmental Ltd.
	Restoration area boundary										

**LTM2 Map Details**

RFQ #1220-040-2010-021 - Riparian Watering Services

Page 3

Map Created: April 2015  
Revision 1: June 6, 2015  
Projection:  
NAD 83, Zone 10N  
Page 62 of 94





Fall 2014 Monitoring Results

InvasiveSpecies

Scotch broom

Himalayan blackberry

Japanese knotweed

Watercourse

Restoration area boundary

LTM2 Map Details

Table 5 - Area of Invasive Species

Restoration Zone	Invasive Species (m²)
North End	751
BLK 2500	8,712
BLK 2300	173
BLK 2100	1,387
South End	179

Campbell Heights Restoration Plan Invasive Species Management

City of Surrey

Page 4

Prepared by: ENKON Environmental Ltd.

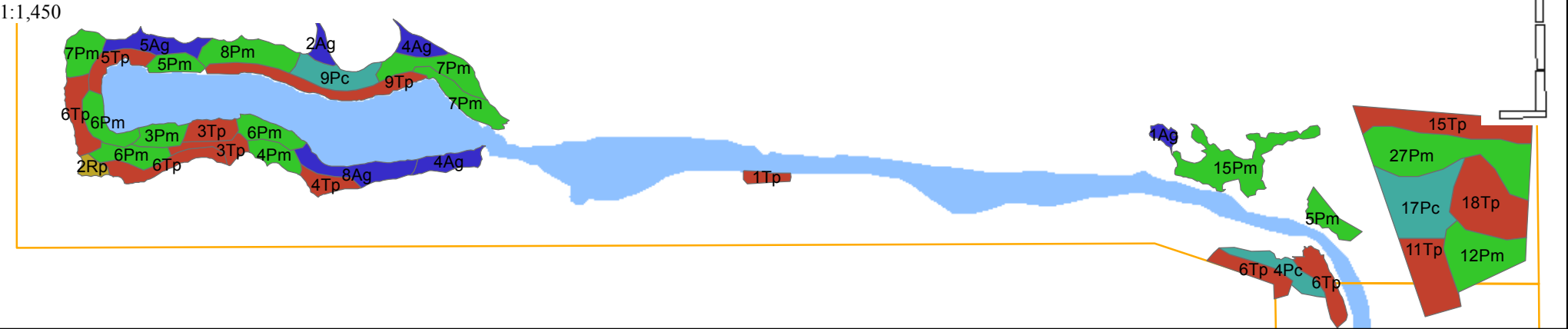
Map Created: April 2015  
Projection: NAD 83, Zone 10N

RFP #1220-040-2016-021 - Riparian Watering Services

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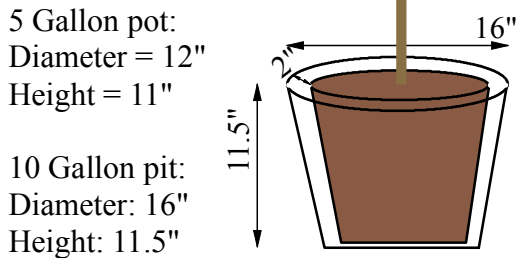
Tree Planting Plan - North End



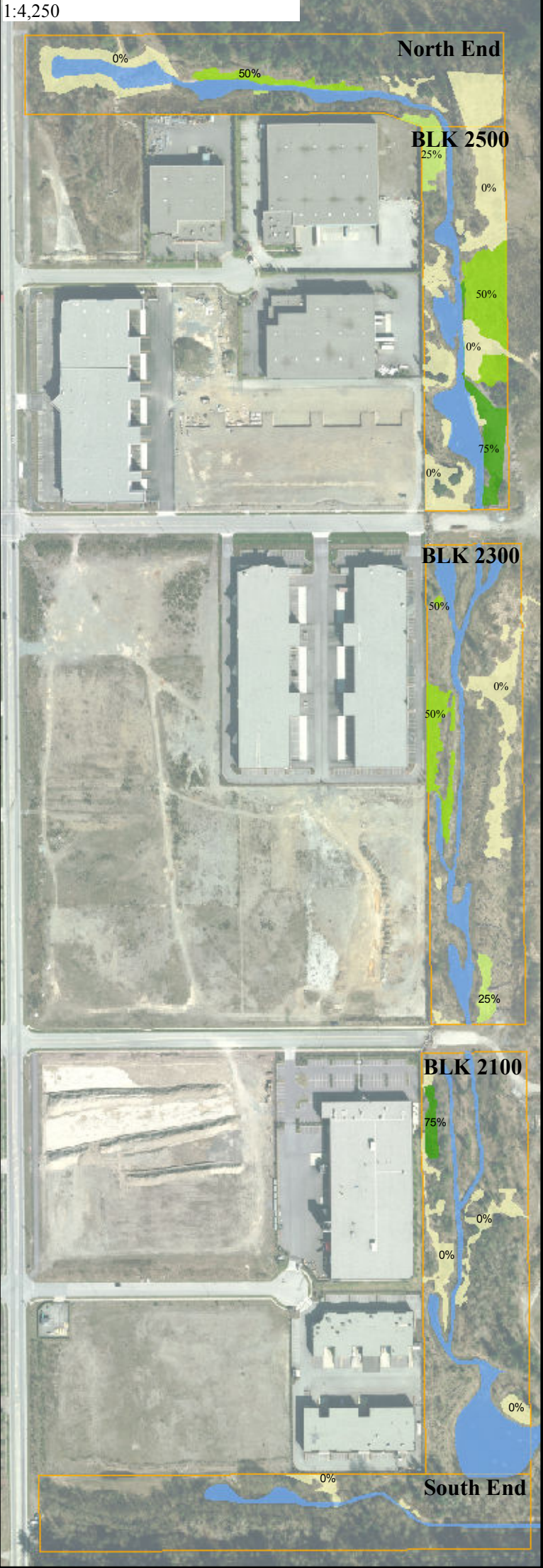
Specification and Notes:

- 1.) Year 1 tree planting is limited to the North End and BLK 2500 planting areas. Trees to be planted within areas where the existing tree establishment status is between 0% and 25%.
- 2.) Trees to be pocket planted. Garden mix top soil (BCLNA P1 Standard) to be used for pocket planting soil augmentation. See Pocket Planting Detail for pocket planting specifications.
- 3.) All planted stock shall be guaranteed nursery stock. Stock shall be inspected and approved by ENKON prior to installation.
- 4.) Packing slips shall be retained and provided to ENKON to assess compliance with the planting plan.
- 5.) Planted stock spacing shall be adjusted to accomodate existing vegetation or coarse woody debris structures (i.e. tree and native shrub retention).
- 6.) All works shall be conducted in accordance with sediment control porivisions of the "Land Development Guidelines for the Protection of Aquatic Habitat" (DFO/MoE).
- 7.) Planted stock shall be inspected by the Owner or Owner's Representative to the end of the warranty period to assess requirements for watering and maintenance/weeding of non-native invasive plant species.
- 8.) Trees to be staked in accordance with BCLNA standard.

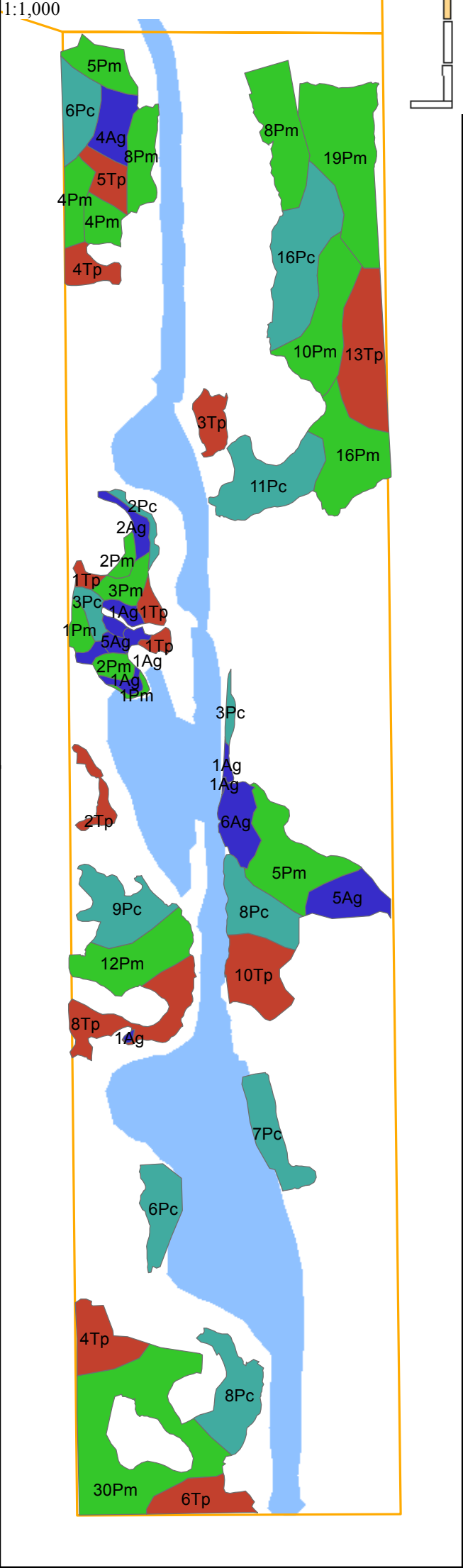
Pocket Planting Detail:



Tree Establishment Status



Tree Planting Plan - BLK 2500



**Legend**

Restoration area boundary

Watercourse

**Tree species**

- Abies grandis (Ag)
- Pinus contorta (Pc)
- Pseudotsuga menziesii
- Rhamnus purshiana
- Thuja plicata

**Estimated percent stocked**

- 0%
- 25%
- 50%
- 75%

**LTM2 Map Details**

Table 4 - Tree Stocking Table

Scientific Name	Common Name	Label	Pot Size	North End Count	BLK 2500 Count	Total Count
<i>Abies grandis</i>	Grand fir	Ag	#5	17	27	44
<i>Pinus contorta</i>	Shore pine	Pc	#5	25	79	104
<i>Pseudotsuga menziesii</i>	Douglas fir	Pm	#3	91	130	221
<i>Rhamnus purshiana</i>	Cascara	Rp	#5	2	0	2
<i>Thuja plicata</i>	Western redcedar	Tp	#5	71	58	129
Total				206	294	500

City of Surrey

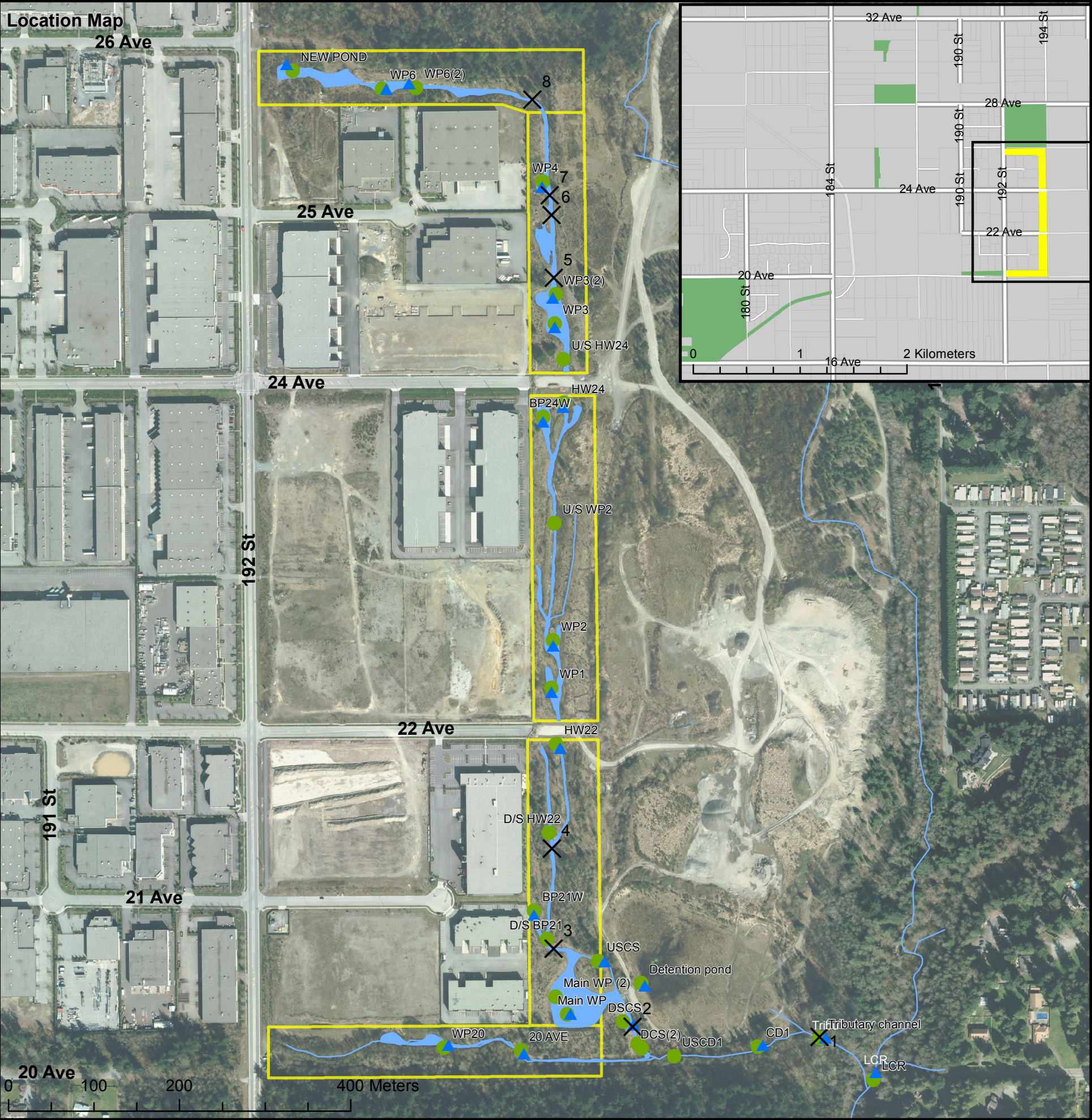
**Figure 1**

**Campbell Heights Year 1 Restoration Tree Planting Plan**

Prepared by: **ENKON** Environmental Ltd.

Map Created: June 9, 2015  
Projection: NAD 83, Zone 10N  
Page 84 of 94





**Maintenance Summary**

**Summer and Fall:**

1. Watering requirements are summarized in Table 1.
2. 2016 maintenance will be in accordance with the 5 year restoration plan. A 2016 maintenance plan will be developed in early 2016.

**Table 1 – Watering prescription summary**

Watering Prescription
All stock planted in 2016 to be watered twice weekly during dry weather periods from May 1 <sup>st</sup> to October 1 <sup>st</sup> .

**Legend**

- ✕ Beaver Dams
- ▲ WQ Monitoring Locations
- Fish Sampling Locations
- ⬮ High water mark
- ⬮ Approximate restoration area



LTM2 Map Details

**Campbell Heights Location and Aquatic Monitoring Map**

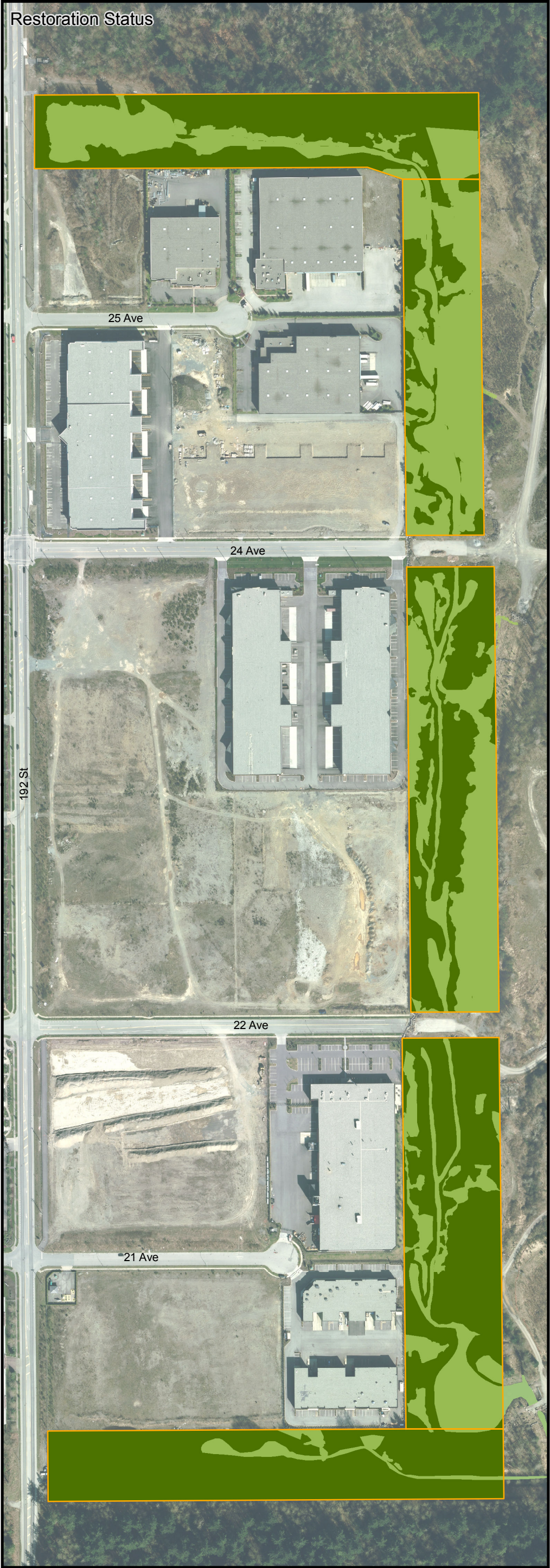
City of Surrey

**Figure 1**

Map Created:  
December 2015  
Projection:  
NAD 83, UTM Zone 10







<p>Legend</p> <ul style="list-style-type: none"><li>Himalayan blackberry</li><li>Japanese knotweed</li><li>Scotch broom</li><li>Restoration area boundary</li></ul> <p>Restoration complete</p> <p>Restoration incomplete</p> <p>Watercourse</p> <p>LTM2 Map Details</p>		<p><b>Campbell Heights 2015 Monitoring Results</b></p>	<p>Prepared by: <b>ENKON</b> Environmental Ltd.</p>	
		<p>City of Surrey</p>		<p>Map Created: December 2015</p>
	<p>1:3,500</p>	<p><b>Figure 2</b></p>		<p>Projection: NAD 83, Zone 10N</p>

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Shrub Establishment Status



Tree Establishment Status



Legend

Estimated percent stocked

- 0%
- 25%
- 50%
- 75%

Tree mortality (count labeled)

Restoration area boundary

Watercourse

LTM2 Map Details

Please note areas not delineated within the restoration boundary above are 100% vegetated with planted stock or pre-existing native vegetation



1:3,500

Campbell Heights  
2015 Monitoring  
Results

City of Surrey

Figure 3



Map Created:  
December 2015  
Projection:  
NAD 83, Zone 10N  
Page 87 of 94





## SCHEDULE B - QUOTATION

RFQ Title: **RIPARIAN WATERING SERVICES**

RFQ No: 1220-040-2016-021

### CONTRACTOR

Legal Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

### CITY OF SURREY

City Representative: Richard D. Oppelt, Purchasing Manager

Address: Surrey City Hall  
Finance & Technology Department – Purchasing Section  
Reception Counter – 5<sup>th</sup> Floor West  
13450 - 104 Avenue, Surrey, B.C., Canada, V3T 1V8

E-mail for PDF Files: [purchasing@surrey.ca](mailto:purchasing@surrey.ca)

1. If this Quotation is accepted by the City, a contract will be created as described in:
  - (a) the Agreement;
  - (b) the RFQ; and
  - (c) other terms, if any, that are agreed to by the parties in writing.
2. Capitalized terms used and not defined in this Quotation will have the meanings given to them in the Agreement and RFQ. Except as specifically modified by this Quotation, all terms, conditions, representations, warranties and covenants as set out in the Agreement and RFQ will remain in full force and effect.



3. I/We have reviewed the RFQ Attachment 1 – Draft Agreement. If requested by the City, I/we would be prepared to enter into that Agreement, amended by the following departures (list, if any):

**Section**

**Requested Departure(s) / Alternative(s)**

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4. The City requires that the successful Contractor have the following in place **before providing the Goods and/or Services**:

- (a) Workers' Compensation Board coverage in good standing and further, if an "Owner Operator" is involved, personal operator protection (P.O.P.) will be provided,  
Workers' Compensation Registration Number \_\_\_\_\_;
- (b) Prime Contractor qualified coordinator is Name: \_\_\_\_\_  
and Contact Number: \_\_\_\_\_;
- (c) Insurance coverage for the amounts required in the proposed Agreement as a minimum, naming the City as additional insured and generally in compliance with the City's sample insurance certificate form available on the City's Website [Standard Certificate of Insurance](#);
- (d) City of Surrey or Intermunicipal Business License: Number \_\_\_\_\_;
- (e) If the Contractor's Goods and/or Services are subject to GST, the Contractor's GST Number is \_\_\_\_\_; and
- (f) If the Contractor is a company, the company name indicated above is registered with the Registrar of Companies in the Province of British Columbia, Canada, Incorporation Number \_\_\_\_\_.

As of the date of this Quotation, we advise that we have the ability to meet all of the above requirements **except as follows** (list, if any):

**Requested Departure(s) / Alternative(s)**

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5. The Contractor acknowledges that the departures it has requested in Sections 3 and 4 of this Quotation will not form part of the Agreement unless and until the City agrees to them in writing by initialing or otherwise specifically consenting in writing to be bound by any of them.



SECTION B-1

**Changes and Additions to Specifications:**

6. In addition to the warranties provided in the Agreement, this Quotation includes the following warranties:

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7. I/We have reviewed the RFQ Attachment 1, Schedule A – Specifications of Goods and Scope of Services, to Attachment 1. If requested by the City, I/we would be prepared to meet those requirements, amended by the following departures and additions (list, if any):

**Requested Departure(s) / Alternative(s) / Addition(s)**

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## SECTION B-2

### Fees and Payments:

8. The Contractor offers to supply to the City of Surrey the Goods and/or Services for the prices plus applicable taxes as follows:

<b>F.O.B.</b> Destination, Freight Prepaid		<b>Payment Terms:</b> A cash discount of ____% will be allowed if invoices are paid within ____ days, or the ____ day of the month following, or net 30 days, on a best effort basis.				<b>Ship Via:</b>
The Contractor will provide all labour, plant, materials, tools and equipment necessary for vegetation maintenance in riparian areas.						
<b>Site ID</b>	<b>Fee per Watering Service (One Day) (a)</b>	<b>Frequency of Watering (Days) (b)</b>	<b>Sub-Total for Watering Services (a x b)</b>	<b>Site Materials/ Disbursement Estimate (c)</b>	<b>Total Annual Site Cost ((a x b) + c)</b>	<b>Additional Fee per Watering Service (One Day)</b>
LTM3	\$	52	\$	\$	\$	
LTM4	\$	52	\$	\$	\$	
LTM5	\$	52	\$	\$	\$	
LTM7	\$	52	\$	\$	\$	
LTM9	\$	78	\$	\$	\$	
LTM10	\$	78	\$	\$	\$	
LTM11	\$	52	\$	\$	\$	
LTM13	\$	26	\$	\$	\$	
LTM14	\$	78	\$	\$	\$	
LTM15	\$	52	\$	\$	\$	
LTM16	\$	52	\$	\$	\$	
LTM18	\$	52	\$	\$	\$	
LTM19	\$	39	\$	\$	\$	
LTM20	\$	52	\$	\$	\$	
LTM21	\$	52	\$	\$	\$	
LTM22	\$	52	\$	\$	\$	
LTM23	\$	52	\$	\$	\$	
LTM26	\$	52	\$	\$	\$	
LTM27	\$	52	\$	\$	\$	
LTM30	\$	26	\$	\$	\$	
G16	\$	52	\$	\$	\$	



<b>REV 5</b>	\$	52	\$	\$	\$	
<b>REV11</b>	\$	52	\$	\$	\$	
<b>REV 26</b>	\$	26	\$	\$	\$	
<b>REV 32</b>	\$	52	\$	\$	\$	
<b>LTM2</b>	\$	52	\$	\$	\$	
<b>Note:</b> Overheads, General Conditions and Profit are to be included in the above amounts. GST is not to be included in the hourly rate and will be extra. Site Material / Disbursement estimate should include any additional materials required for the site (e.g. backpack watering, hoses, etc.) and mileage estimates.						
CURRENCY: Canadian				Subtotal:	\$	
				GST 5%:	\$	
				<b>TOTAL QUOTATION PRICE:</b>	\$	

### SECTION B-3

#### Time Schedule:

9. Contractors should provide an estimated schedule, with major item descriptions and times indicating a commitment to provide the Goods and perform the Services within the time specified (use the spaces provided and/or attach additional pages, if necessary).

MILESTONE DATES \_\_\_\_\_

ACTIVITY	SCHEDULE									
	1	2	3	4	5	6	7	8	9	10

**SAMPLE**



#### SECTION B-4

##### **Key Personnel & Sub-Contractors:**

10. Contractor should provide information on the background and experience of all key personnel proposed to provide the Goods and/or Services (use the spaces provided and/or attach additional pages, if necessary):

##### **Key Personnel**

Name: \_\_\_\_\_  
Experience: \_\_\_\_\_  
Dates: \_\_\_\_\_  
Project Name: \_\_\_\_\_  
Responsibility: \_\_\_\_\_

11. Contractor should provide the following information on the background and experience of all sub-contractors and material suppliers proposed to undertake a portion of the Goods and/or Services (use the spaces provided and/or attach additional pages, if necessary):

<i>Description Of Goods &amp; Services</i>	<i>Sub-Contractors &amp; Material Suppliers Names</i>	<i>Years Of Working With Contractor</i>	<i>Telephone Number And Email</i>

#### SECTION B-5

##### **Experience and References:**

12. Contractor's relevant experience and qualifications in delivering Goods and/or Services similar to those required by the Agreement (use the spaces provided and/or attach additional pages, if necessary):

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13. Contractor's relevant references (name and telephone number) (use the spaces provided and/or attach additional pages, if necessary). The City's preference is to have a minimum of three references. Previous clients of the Contractor may be contacted at the City's discretion.

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14. Contractor to describe their sustainability initiatives relating to the environmental impacts. The environmental attributes (green) of their Goods and/or Services. Anticipated objectives (e.g. carbon neutral by 2015). Information pertaining to their environmental policies, programs and practices. Confirm that the Contractor complies with any applicable objective.

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**Metro Vancouver's Non-Road Diesel Engine Emissions Regulation By-law:**

15. Contractor should confirm they are in compliance with By-law (if applicable):

☐ Applicable as follows   ☐ Not applicable to this project

No.	Equipment Description	Engine Tier Designation	Engine Registration Number as Issued by Metro Vancouver
1		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
2		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
3		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
4		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
5		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	

16. I/We the undersigned duly authorized representatives of the Contractor, having received and carefully reviewed the RFQ and the Agreement, submit this Quotation in response to the RFQ.

**This Quotation** is offered by the Contractor this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_.

**CONTRACTOR**

**I/We have the authority to bind the Contractor**

\_\_\_\_\_  
(Legal Name of Contractor)

\_\_\_\_\_  
(Signature of Authorized Signatory)

\_\_\_\_\_  
(Signature of Authorized Signatory)

\_\_\_\_\_  
(Print Name and Position of Authorized Signatory)

\_\_\_\_\_  
(Print Name and Position of Authorized Signatory)