TOWN OF
TABER

A - 4900 50 ST TABER, ALBERTA, CANADA T1G 1T1
TELEPHONE: (403) 223-5500 FAX: (403) 223-5530

AGENDA

A PUBLIC HEARING REGARDING THE BYLAWS OF THE TOWN OF TABER, IN THE PROVINCE OF ALBERTA, TO BE HELD IN THE COUNCIL CHAMBERS, ADMINISTRATION BUILDING, ON MONDAY, FEBRUARY 22, 2016 AT 5:00 PM., IMMEDIATELY FOLLOWING THE SUBDIVISION AUTHORITY MEETING AT 5:00 PM.

ITEM NO. 1. CALL TO ORDER

The Chair will explain the general procedure for the hearing, which may include:

i) Informing the public of the 10 minute time limit for a speaker that has been established.

ii) Informing that anyone speaking shall state their name for the record.

ITEM NO. 2. DEVELOPMENT PERMIT APPLICATION NO. 16-07

i) Explanation of Purpose of Development Permit Application No. 16-07.

ii) Presentation of Written or Oral Briefs **Against** the Development Permit Application No. 16-07.

iii) Presentation of Written or Oral Briefs **For** the Development Permit Application No. 16-07.

ITEM NO. 3. CLOSE OF MEETING

The Mayor shall declare the hearing closed and Council will deliberate the merits of the information and opinions provided at the Public Hearing.

Council Request for Decision

Meeting Date: February 22, 2016	
Subject: Development Permit Application 16-07 Public Hearing	
Recommendation:	That Council accepts the information heard at the Public Hearing for Development Permit application 16-07.
Background:	On January 25, 2016, Council passed a motion to hold a Public Hearing on February 22, 2016 for Development Permit Application 16-07. The Development Permit Application is to develop a composting materials handling facility in a Direct Control (DC-3) district. This use is considered permitted and it would be located on a portion of Block A1 Plan 7918AQ. Administration has received several items from Bio-Cycle Solutions for the Development Permit Application including the application, a site plan, operations plan, and geotechnical study all of which are attached. In accordance with the DC-3 district approval requirements, Administration advertised the Public Hearing and circulated it to any affected parties. There have been no public inquiries to Administration on the development permit application and Administration has not received any written submissions at the time of writing this.
Legislation / Authority:	Section 641 of the Municipal Government Act allows Council to regulate the development within a Direct Control district. Section 4 of Bylaw 11-2015 outlines the approval procedure for developments located in the DC-3 district.
Strategic Plan Alignment:	This aligns with the Strategic Plan's Family/Community Goal #4 by creating an opportunity to recycle compostable material within the Town of Taber boundaries.
Financial Implication:	The financial implication was the circulation of the development permit and the cost of advertising. The applicant has paid $1,000.00 in Development Permit fees as per Schedule B of Bylaw 18-2015.
Service Level / Staff Resource Implication:	The staff resource implication is the time required by staff to review the proposed development and prepare the advertisement and documents for Council and the Public Hearing.

Justification:	By accepting the information received from the Public Hearing, Council will be able to make a more informed decision on Development Permit Application 16-07.
Alternative(s):	Alternative #1: That Council does not accept the information heard at the Public Hearing for Development Permit Application 16-07.

Attachment(s):	Development Permit Application 16-07 Site Plan Operations Plan Geotechnical Report Proposed Development Pictures Public Hearing Advertisement Bylaw 11-2015

APPROVALS:	
Originated By:	Katie Tyo
Chief Administrative Officer (CAO) or Designate:	

Application For A Development Permit

FORM A
(OFFICE USE ONLY)

Planning Department
A4900-50 Street
Taber AB T1G 1T1
ph: (403) 223-5500
fx: (403) 223-5530
email: planning@taber.ca

Land Use District: DC-3 Roll Number: 8101641 Application Number 15-114

Date of Application: _____ Date Application Deemed Complete: _____

I hereby make application under the provisions of the Land Use Bylaw for a Development Permit in accordance with the plans and supporting information submitted herewith and which form part of this application.

New Construction: ☑ Addition: ☐ Renovation: ☐ Change of Use: ☐ Moved in Building: ☐
Discretionary Use: ☐ Waiver: ☐ Other: ☐ (explain: _____)

Applicant: Bio-Cycle Solutions Inc. Phone Res: 403-995-3288 Bus: _____
Address: Box 21 Okotoks, AB Cell: _____ Fax: _____
Postal Code: T1S 1A4

Registered Owner: Town of Taber Phone Res: _____ Bus: _____
Address: 4900A - 50th St. Cell: _____ Fax: _____
Taber, AB Postal Code: T1G 1T1

Legal Description of Property to be Developed: Lot: _____ Block: _____ Plan: NE 8-10-16
Municipal Address: A Portion of Block A/B1 Plan 7819AQ

Proposed Use of Site: *(describe in detail - attach additional information if necessary)*
- To operate a class II compost facility.
- Compost will consist of organic waste which will be hauled to facility from local customers, processed, then hauled away to end users of product

Existing Use of Site: Agriculture

If Development is Temporary, State for What Period _____

Adjacent to Highway: Yes: _____ No: X

Proposed Setback from Property Lines:

Front Yard: _____ Side Yards: 1 _____ 2 _____ Rear Yard: _____

Present Use of Adjacent Properties: Agricultural operations

	Existing	Proposed	N/A
Access:			
Provincial Highway # _____	[ ]	[ ]	[ ]
Municipal Road	[ ]	[ ]	[ ]
Internal Subdivision Road	[ ]	[ ]	[ ]
Undeveloped Road Allowance	[ ]	[ ]	[ ]
Private Road (i.e. Condominium)	[ ]	[ ]	[ ]
Other (specify) _____			
Services:			
Water Supply			
Municipally owned and operated piped water system	[ ]	[ ]	[ ]
Other (specify) _____			
Sewage Disposal			
Municipally owned and operated sanitary sewer system	[ ]	[ ]	[ ]
Other (specify) _____			
Storm Drainage			
Municipal Sewers	[ ]	[ ]	[ ]
Ditches	[ ]	[ ]	[ ]
Swales	[ ]	[ ]	[ ]

Additional Information (Based on Proposed Development)

2 Copies of Site Plan Attached?	[ ] yes	[ ] no
Drainage Plan/Elevations Included?	[ ] yes	[ ] no
Will you be applying for a Building Permit?	[ ] yes	[ ] no
Will you be applying for a Business License?	[ ] yes	[ ] no

Lot Width:	200 YDS	**Lot Depth:**	200 YDS
Lot Area:	10 ACRES	**New Construction Area (ft²)**	
Lot Coverage By New Construction (%):		**Total Site Coverage (%)**	
Number of Loading Spaces:		**Building Height:**	
Driveway Width:		**Landscaped Open Space (%):**	
Number of Units:		**No. Off Street Parking Spaces:**	

Estimated Commencement Date: _____ Estimated Completion Date: _____

Application Fee: _____ Construction Value $: _____

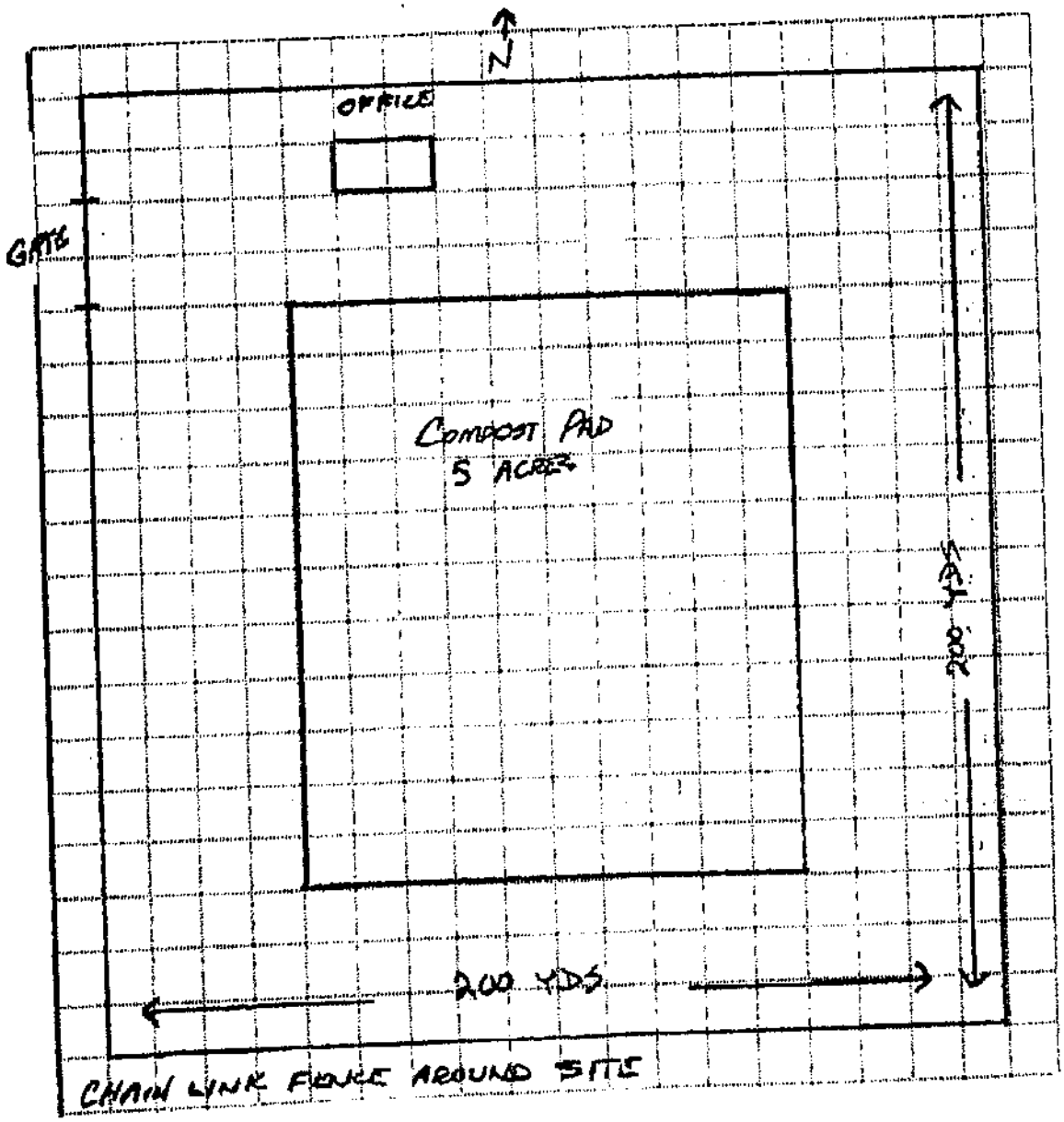
NOTE: THIS DEVELOPMENT PERMIT APPLICATION WILL NOT BE ACCEPTED UNLESS THE APPROPRIATE FEE IS SUBMITTED WITH THE APPLICATION.

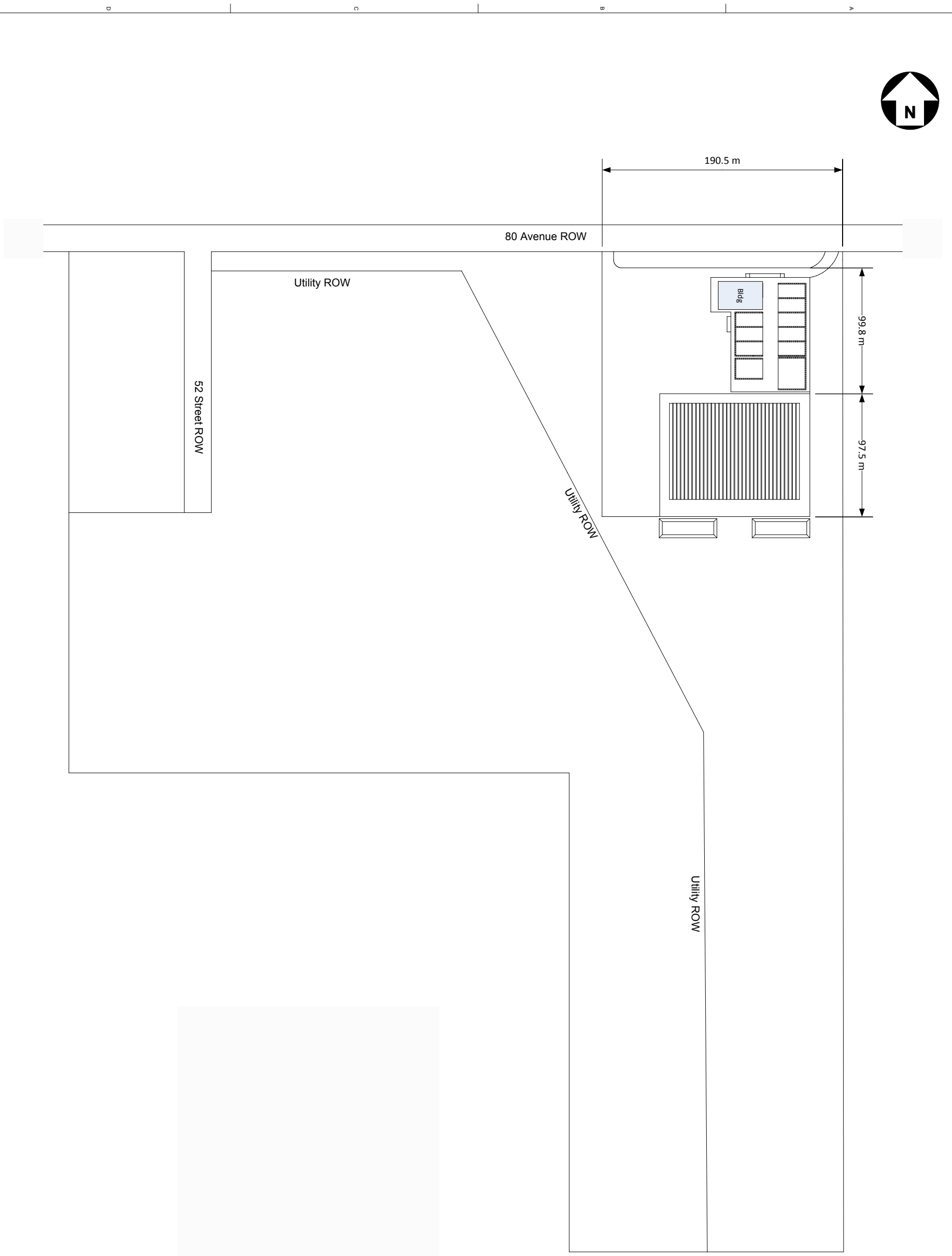
The personal information provided as part of this application is collected under Section 303 and 295 of the Municipal Government Act and in accordance with Section 32(c) of the Freedom of Information and Protection of Privacy Act. The information is required and will be used for issuing permits, Land Use Bylaw enforcement and property assessment purposes. The name of the permit holder and the nature of the permit are available to the public upon request. If you have any questions about the collection or use of the personal information provided, please contact the Town of Taber FOIP Coordinator at A4900 – 50th Street, Taber, Alberta T1G 1T1 or phone (403) 223-5500.

I swear/ affirm the information contained in this application is true to the best of my knowledge, and that no further progress will occur on the development until a decision on the permit has been rendered.

Signature of Applicant or Agent: _____ Print Name KIM OLSEN

Letter of Authorization from Registered Owner or Signature of Registered Owner (if different from Applicant): _____ Print Name


N
OFFICE
GATE
COMPOST PAD
5 ACRES
200 YDS.
200 YDS.
CHAIN LINK FENCE AROUND SITE



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$PWPATH

FILENAME:

PLOT DATE: $PLOTDATE

PLOT TIME: $PLOTTIME

CH2MHILL

Site Location Plan

Taber Composting Facilitiy

Taber, Alberta

Bio-Cycle Solutions

NO.	DATE	REVISION	BY	APVD

DSGN | DR | CHK | APVD

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

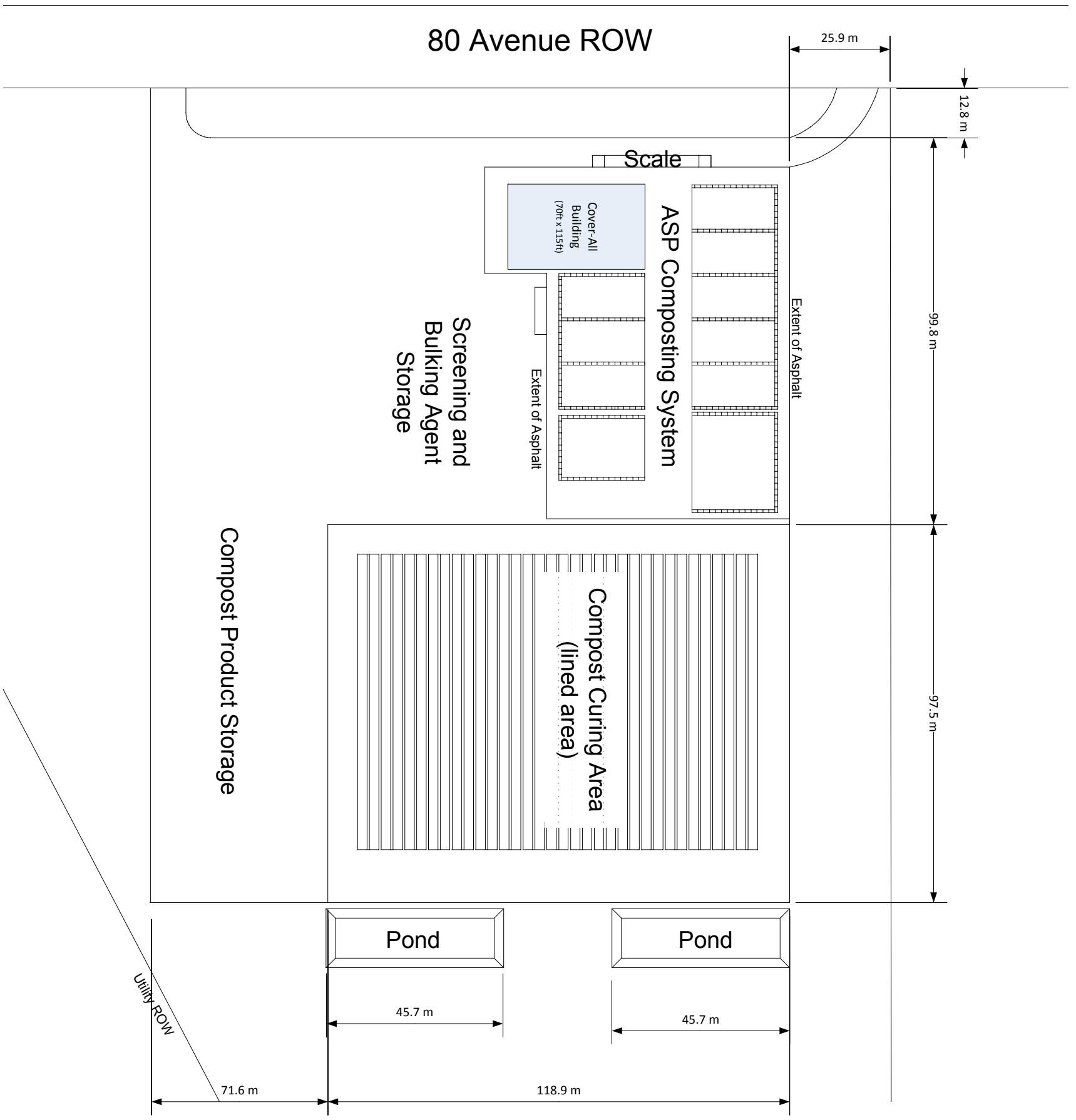
DATE FEB-3-2016

PROJ N/A

DWG S1

SHEET 1 of 1

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.



CH2MHILL

Site Layout Plan

Taber Composting Facilitiy

Taber, Alberta

Bio-Cycle Solutions

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE FEB-3-2016

PROJ N/A

DWG S2

SHEET 1 of 1

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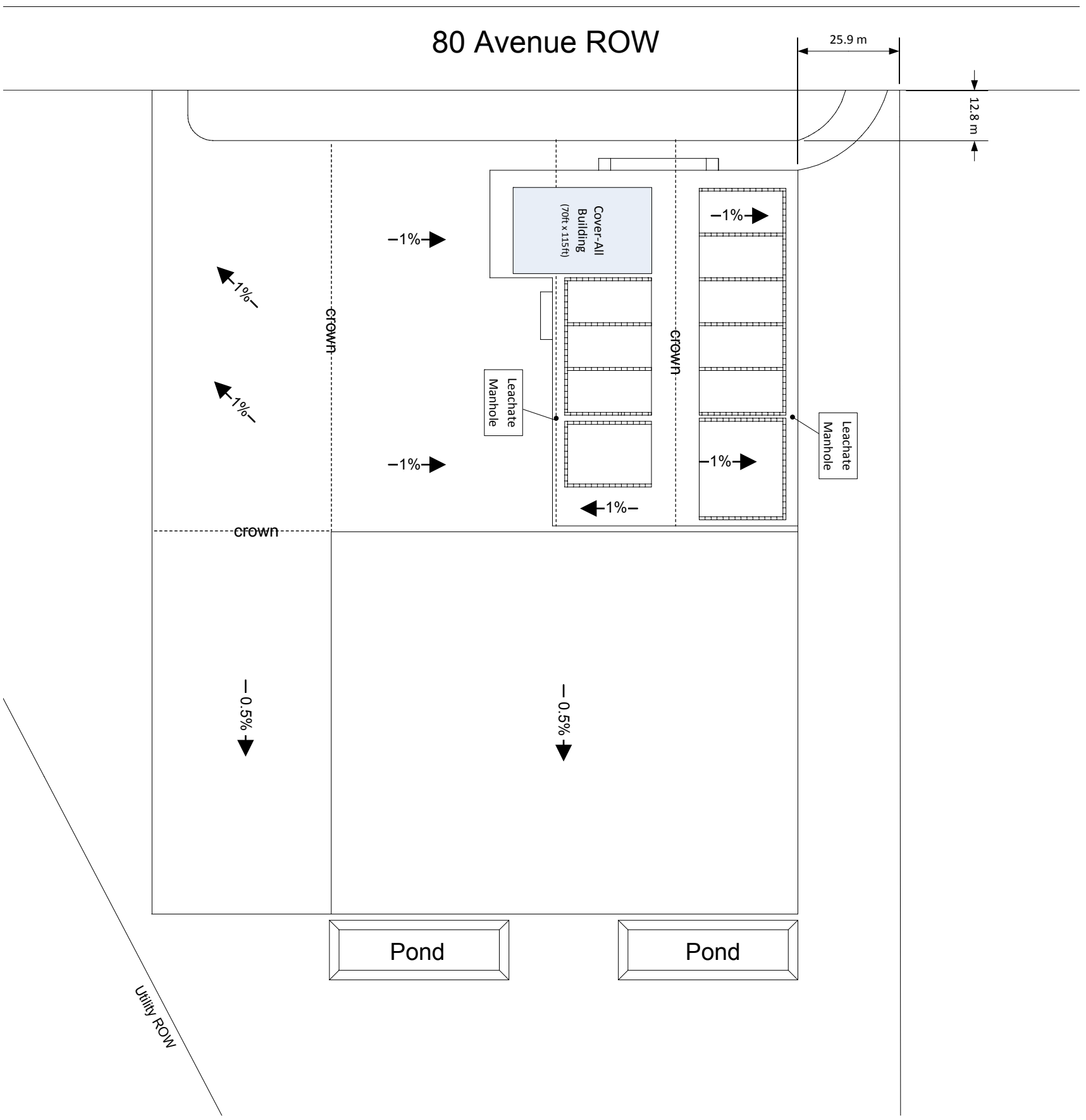

CH2MHILL

Site Drainage Plan

Taber Composting Facilitiy

Taber, Alberta

Bio-Cycle Solutions

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD

VERIFY SCALE

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DATE	FEB-3-2016
PROJ	N/A
DWG	S3
SHEET	1 of 1

Operation Plan (DRAFT)
Bio-Cycle Solutions Inc. Compost Facility
Taber, Alberta

Alberta Environment Registration #

November 2015

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   b. *Alberta Compost Facility Standards*
   c. *Compost Quality Guidelines (CCME*

1. Description of Compost Facility

The compost facility is located at NE 8-10-16-W4 in the Town of Taber at the corner of 80th ave and Hwy 36 just north of Taber. It is a class 2 facility (less than 20,000 tonnes of feedstock accepted and 12,000 tonnes of finished compost produced.) and operates on approximately 10 acres of land. Feedstocks to be received for composting are biosolids (dewatered processed sludge) food waste from grocers, grass clippings and yard waste, animal manures (not including deadstock), woodchips and drywall. The pad will utilize aerated static piles as a composting method.

2. Composting Pad Design

The compost pad is a rectangular clay lined pad covering approximately 5 acres. The pad will utilize existing concreate and asphalt crush from the transfer station to assist in creating the required roadway network and pad liner. The pad has a minimum grade of 2% towards the leachate pond. The leachate pond is located on the North side of the pad with leachate collected to be utilized during the summer months in the composting process. A berm will be constructed around the whole facility to control runoff, dust and litter. A wind fence will be built at the base of the berm to collect waste debris (example, plastic garbage bags from organic waste). Trees will be planted on the top of the berm to enhance odor control. Access to the site is from 80th ave. The site will utilize an aerated static pile composting method.

3. Operations Plan

3a. Access and Security to Pad

Hours of operation are established by the Town within the general limitations specified by the Development Permit issued by the Town of Taber and be revised from time to time at the Town's discretion. Proposed hours of operation will be:

Hours: Monday to Friday 8:30 a.m. to 4:00 p.m.
Saturday, Sunday and Statutory Holidays CLOSED

There is a locked gate at the entrance to the pad where there will be listed:

- Any waste restrictions
- Phone numbers for: person responsible for pad, local fire department, local police department, Alberta Environmental Protection, Pollution Emergency Response team.
- Signage directing traffic to proceed to the proper tip area

3b. Feed Stock Acceptance Procedures

On arriving at the site, each vehicle carrying waste or recyclable material will stop to be weighed and for the driver to declare the waste type and source. The Scale Operator enters this data along with the hauler and vehicle identification information into the computerized scale management system. A processing ticket detailing this information may be provided to the driver.

At weigh-in, the driver is asked to confirm that the load does not contain any hazardous or restricted waste or other waste not accepted at this landfill. Spot checks of loads will be performed and physical inspection of any questionable loads is done when necessary. Contents of closed vehicles (i.e., compactor / collection trucks) are inspected by the Equipment Operator at the working face. Depending on the type of waste, the driver will be directed to the appropriate area of the landfill. All unacceptable wastes are to be turned away.

Prior to leaving the site, each vehicle passes over the scale to be weighed again. The Scale Operator keys in the vehicle identification and the computerized systems recalls weigh-in data, generates the report and receipt.

A summary of weigh scale procedures is as follows:

- At the start of each day the scale is zeroed to ensure that it is functioning properly and giving true readings.
- Stop all waste haul vehicles on the weigh scale platform.
- Weigh the load.
- Ask the driver for the required documentation and/or origin and type of waste and record the information provided.
- Issue processing ticket to driver, if/when required.
- Inspect load if necessary.
- Instruct the driver where to deposit the load and to return to the weigh scale when finished.
- When the vehicle returns to the weigh scale, record the tare (empty weight of the vehicle and generate the report and receipt.

Before feedstocks, example, bio-solids, are allowed at the compost pad from a certain town, it will have been tested and made sure it meets regulations. The acceptance may depend on lab testing to ensure there are no contaminants (eg. metal concentration). Once the regulations are met the bio-solids will be able to be received at the pad.

Trucks will be weighed in and out according to the above procedures. During unloading, if the feedstock is considered unacceptable, the driver will be asked to stop unloading. If an unacceptable material has been unloaded, the material will be reloaded onto the truck and the waste company is responsible for its disposal. Unacceptable material will then be transferred at the existing waste transfer site.

3c. Compost Processing

Once trucks are weighed in they will be directed to the appropriate receiving area. Any products that won't compost will be removed manually and disposed of in waste management bins. Depending on the products being delivered, a recipe has to be made to ensure the carbon nitrogen (CN) ratios are correct. Once it has been determined that the CN ratios are correct, feed stocks will be thoroughly mixed and formed into aerated static piles using a wheel loader. Piping at the bottom of the piles will supply adequate oxygen and avoid anerobic conditions. Ambient air will be forced into the piles with aeration fans set up at the site. Piles will be identified by a numbering system and monitored accordingly.

Once the piles are active, moisture, temperatures, and oxygen levels will be monitored.

Target levels for moisture are between 55-60%. If there is not enough moisture, water from town lagoons or leachate water from the collection pond will be added.

Temperature target is 55C to 65C. This target temperature will be maintained for 15 days and compost will be active in the piles for a period of 4 to 5 weeks. Temperatures will be monitored by taking the temperature with a Reotemp probe throughout the piles. These temperatures will be recorded in the field-monitoring sheet. Once the piles are through the active process they will be screened through a trommel screen to reclaim the larger wood pieces. These pieces will be reintroduced into the active composting process.

Screened compost is then windrowed for final curing. Finished compost is then sampled and sent to a laboratory to be analyzed for stability, maturity, fertilizer values, and also to meet the guidelines of the CCME. In the event that the compost does not meet the guidelines of the CCME it will be sent to the landfill.

3d. Compost Pad Maintenance

Regular maintenance will include:

- Scrape and sweep between the windrows with a tractor sweeper to minimize dust and fire hazards.
- Spray pad with water using the water truck for dust control.
- Disc the land where the berm and the pad meet to prevent fire from escaping the pad.
- Pick garbage along the fence line surrounding the pad.
- Mow the grass on the berms.
- Inspect for and fill any potholes in the pad with clay.
- Inspect and maintain wheel loader
- Wash the wheel loader and all other equipment between handling finished and unfinished product.
- Blow down engines and exhaust systems with compressed air.
- Wash down scale and receiving area.
- Inspect and maintain leachate pump.
- Check and ensure groundwater wells are locked, secured, cleaned and replaced if necessary.
- Re-establish site grading periodically

3e. Odor Control

Odors will be controlled by taking a proactive approach:

- Products will be mixed into piles immediately after drop-off. (Piles will not sit longer than 24 hours.)
- Cover product with finished compost and drywall paper
- Maintain porosity by having sufficient oxygen levels (in the range of 10-15% with action being taken when below 5%).
- Ensure appropriate CN ratios.
- Aeration tubes on leachate pond to add oxygen to prevent it from becoming anaerobic.
- Front-end loader will be used to mix leachate that forms at the base of windrows or piles into the windrows or piles.
- Manage moisture levels in windrows.
- Do not overwater windrows.
- Maintain pad so there are no ruts to collect leachate.
- Wash down scale and receiving area.
- Be conscientious of neighbours' schedules and turn compost accordingly.
- Be ready to adapt schedules to changing weather conditions.
- Odor Conditions will be recorded
- If an odor complaint is received the details will be recorded

Contingency Plan:

- Source of odors will be identified by sense of smell.
- If the odor is in a windrow, test temperature, oxygen levels, and adjust by adding more amendments and turning windrows.
- If the odor is from the leachate at the base of the windrows, add finished compost or woodchip and mix in to absorb leachate.

3f. Nuisance Control

- A fence will be built at the base of the berm. This will collect garbage and litter that will be picked up and disposed of in the garbage bin. The fence will also prevent wildlife from entering.
- Birds will be deterred using drywall as a cover
- Windrows will be covered with straw or woodchips.
- Clean equipment regularly.
- Flies will be controlled by turning piles regularly to expose eggs to high temperatures to break the larvae cycle. If a problem persists, chemical will be applied.
- Control dust by dampening dry loads.

3g. Fire Prevention

- Every machine that is working in the compost pad will be equipped with a fire extinguisher.
- Train all staff on how to use fire extinguishers, operate the water truck, and how to respond to fires.
- It will be ensured that the water truck is always full and nearby. .
- Aisles between the rows of compost will be kept clear.
- Maintain aisles between rows to allow for equipment and fire fighter access.
- Moisture content in piles will be kept greater than 40%.
- Regularly blow down engines and exhaust systems with the compressed air.
- Moisture will be monitored in the piles to ensure it is maintained between 40 to 60%.
- When the temperatures in the rows are being checked, we will use our sense of smell to check for overheating.
- Visually monitor for steam or wet spots that may indicate a hotspot.
- Disc the land where the berm and the pad meet to prevent fire from escaping the pad

3h. Emergency Plan of Attack and Response

Emergency telephone numbers are as follows:

Emergency Contact Numbers Organization Telephone Number
Police (RCMP) – Emergency 911
403-223-8991
403-223-8991
Fire Department 911
Emergency Services (Ambulance) 911
Hospital 911
Town of Taber Engineering & Public Works Manager – Ramin Lahiji 403-223-5500 ext. 5463
Disaster Services 403-223-5500
Landfill Operator
ESRD, Emergency Response Centre 1-800-222-6514
Certified Compost Operator - Neil Wiens (403) 803-2549

If there is smoke the Taber Fire Department will be notified. Once the fire is located, the front-end loader will take the compost out that is burning and spread it out on the ground. Once the material is spread on the ground fire extinguishers, water from the water truck, or soil that is not compost will be used to put it out.

3i. Site Safety

The safety of the site operating personnel and the public is paramount at all times. Site personnel should not endanger themselves or others on the site. Personnel are obligated to report unsafe practices and are empowered to notify other personnel or site users acting in an unsafe manner. Emergency phone numbers (fire, ambulance and police) should be posted in

the scale house office. All accidents, injuries and nearmisses are to be reported to the site manager and the following steps taken:

- Investigate the incident immediately;
- Find the cause;
- Make a complete accident report. Note: All lost-time accidents must be reported to WCB within 72 hours;
- Take immediate measures to correct the cause and prevent its reoccurrence; and
- Have a safety meeting with employees as soon as possible after the incident.

The Landfill Safety Plan is intended to provide guidance and instructions for operating personnel at the Regional Landfill on safety-related matters. The plan is intended to aid personnel in identifying potentially dangerous situations and taking appropriate action

3j Record Keeping

- Type and volume of feedstocks received and processed in the calendar year
- Amount of compost produced, stored and shipped from the compost facility in calendar year
- Operating temperatures of composting process
- Surface water monitoring data
- Ground water monitoring data
- Analysis of the compost
- Machinery maintenance
- Piles, temperature and moisture readings
- Date, type, origin, weight, and the row material is allocated to
- Complaints received and action taken
- Nuisance issues and action taken
- A copy of the registration for the compost facility will be kept in the office.
- A current version of the design and the operational plans for the compost facility will be kept in the office.
- Records will be stored in a filing cabinet in the office for 8 years.

3k. Annual Report

The annual report for Alberta environment done every year by March 31st will contain:

- Any changes in persons responsible.
- Any changes made to the operations plan.
- Types and quantities of feedstocks and amendments processed at the compost pad.
- Amount of compost permanently removed from the facility or used on site.
- Records demonstrating pathogen reduction.
- Compost quality records including: a-pathogen analysis b-sharp foreign matter c-trace elements analysis.
- Process water monitoring
- Graphical presentation of yearly groundwater monitor records
- Quality and quantity of process water removed from facility

- Quality and quantity of sediments removed from facility for land application or disposal
- Any remedial actions taken
- Summary of non-compliance issues
- Summary of nuisance management issues
- Summary of complaints received and action that was taken

4. Groundwater Monitoring

There is five groundwater-monitoring wells located at the compost pad. The wells will be tested annually to ensure they meet the standards of table 1 – Performance Standards for Composting Facilities section 8 *Monitoring* of the Regulations of Composting Facilities in Alberta. The records will be kept on file. Water wells will be capped and locked at all times as well as cleaned and replaced if necessary. The depth of the storm pond will be monitored, and there will also be monitoring for erosion. It will be ensured the ditches are clear of debris and not blocked. Prior to releasing, the storm water will be tested. Liquid from the pond can be put on windrows with the water truck. If the liquid meets land application regulations, it may be applied to the land. If it does not meet regulations, EPCOR will dispose of it.

5. Neil Wiens

Neil Wiens (certificate # A1001) is the owner of Bio-Cycle and is a certified compost facility operator
His duties will include:

- Visit the facility on a regular basis.
- Records of temperatures, oxygen levels, maintenance, and operations will be tracked

6. Ownership

The Facility is operated by Bio-Cycle Solutions Ltd which is a limited corporation owned by Bio-Cycle Nutrient Solutions Ltd. and Envirocan Ltd.

TETRA TECH EBA

GEOTECHNICAL EVALUATION
COMPOST SITE RELOCATION
EUREKA SUBDIVISION PHASES 3 & 4
TABER, ALBERTA

PRESENTED TO
Town of Taber

AUGUST 2015
ISSUED FOR USE
FILE: L12103916-01

CONSULTING ENGINEERS & SCIENTISTS · www.eba.ca

Tetra Tech EBA Inc.
442 - 10 Street N.
Lethbridge, AB T1H 2C7 CANADA
Tel 403.329.9009 Fax 403.328.8817

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Appendix A Geotechnical Report - General Conditions
Appendix B Borehole Logs
Appendix C Recommended General Design and Construction Guidelines

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Town of Taber and their agents. Tetra Tech EBA Inc. (Tetra Tech EBA) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Town of Taber, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are provided in Appendix A of this report.

1.0 INTRODUCTION

This report presents the results of a geotechnical evaluation conducted by Tetra Tech EBA Inc. (Tetra Tech EBA) for the proposed compost site relocation for the Eureka Industrial Subdivision (Phases 3 & 4), located in Taber, Alberta. The legal description of site is NW & NE ¼ of 8-10-16 W4M in Taber, Alberta.

The scope of work for the geotechnical evaluation was described in a proposal issued to Mr. Doug Mickey, of MPE Engineering Ltd. (MPE), on June 4, 2015 (Tetra Tech EBA reference no. PL12103916-01). The objective was to determine the general subsurface conditions for the proposed development and to develop recommendations for the geotechnical aspects of design and construction for the project.

Authorization to proceed with the evaluation was provided by Mr. Gary Scherer, of the Town of Taber (Town), through a signed Services Agreement between Tetra Tech EBA and the Town.

2.0 PROJECT DETAILS AND SCOPE OF WORK

Based on the information provided by MPE, it is understood that the proposed development involves the construction of a stormwater detention facility (dry pond) and a composting pad with a leachate retention facility, with a total development area of approximately 8.0 hectares. The project also includes the construction of underground utilities and a site gravel pavement covered road grid system.

The scope of work for this evaluation comprised the installation of eight (8) boreholes, a laboratory program to assist in classification of the subsurface soils, and a report providing the following design and construction recommendations:

- Recommendations for site grading.
- Recommendations for engineered liner systems, as appropriate for the facility.
- Recommendations for installation of trenched and trenchless below-grade utilities.
- Recommendations for special considerations if fill is encountered.
- Recommendations for mitigation for high water table.
- Recommendations for construction of subgrade, backfill materials, and compaction.
- Recommendations for industrial gravel pavement covered roadway design.
- Recommendations for concrete type for structured elements in contact with soil.
- Recommendations for frost susceptibility of the soils.

3.0 GEOTECHNICAL FIELD AND LABORATORY WORK

The fieldwork for this evaluation was carried out on June 18 and 25, 2015, using a truck-mounted drill rig, contracted from Chilako Drilling Services Ltd. of Coaldale, Alberta. The rig was equipped with 150 mm diameter solid stem continuous flight augers. Tetra Tech EBA's field representative was Mr. Stuart Smith.

Eight (8) boreholes (referenced as 15BH001 through 15BH008) were drilled across the site, to depths ranging between 6.6 m and 9.6 m below ground surface. The approximate boreholes locations are shown on Figure 1.

From the boreholes, disturbed grab samples were obtained at approximate 600 mm intervals. In addition, Standard Penetration Tests (SPTs) were generally performed at depth intervals of 1.5 m in all the boreholes. All soil samples were visually classified in the field and the individual soil strata and the interfaces between them were noted. The borehole logs are presented in Appendix B. An explanation of the terms and symbols used on the borehole logs is also included in Appendix B.

Slotted 25 mm diameter PVC standpipes were installed in the boreholes to monitor groundwater levels. Auger cuttings were backfilled around the standpipes and they were sealed at ground surface with bentonite chips.

Classification tests, including natural moisture content, soluble sulphate content, and Atterberg Limits were performed in a laboratory on samples collected from the boreholes to aid in the determination of engineering properties. The results of the laboratory tests are presented on the borehole logs.

4.0 SITE AND SOIL CONDITIONS

4.1 Site Condition

The site is located in northeast Taber, bounded by Highway 36 to the east, by 52 Street to the west, by 80 Avenue to the north, and by 72 Avenue to the south. The site is relatively flat, with sporadic low-lying areas. Site drainage appeared to be towards low-lying areas and drainage ditches of the adjacent roadways.

Based on Tetra Tech EBA's understanding of the property's history, taken from an aerial photograph review between the 1950s to the present day, it appears that the site has been solely used as farm land since 1950, with the sporadic low-lying areas noted during the initial field reconnaissance also present in subsequent aerial photography reviewed. A large-sized low-lying area with seasonal water was evident and located in the northeast corner of the property. A linear feature (likely due to an underground storm utility trench consolidating) was noted running from the southeast to the northwest across the west portion of the site.

4.2 Soil Stratigraphy

The general subsurface stratigraphy comprised surficial topsoil, underlain by clay fill and sand fill layers, in turn underlain by a sand deposit and a clay till deposit in descending order. The following sections provide a summary of the stratigraphic units encountered at the project site at the specific borehole locations. A more detailed description is provided on the borehole logs provided in Appendix B.

4.2.1 Topsoil

A surficial layer of topsoil was encountered with thicknesses generally ranging between 200 mm and 400 mm. Due to previous grading activities of the site (agricultural practices) and depositional processes (i.e., wind), the topsoil layer is expected to vary in thickness.

4.2.2 Clay Fill

Clay fill was encountered at some borehole locations, extending to depths ranging between 1.0 m and 1.7 m below ground surface. The clay fill was generally described as silty, some sand to sandy, trace to no gravel, moist, firm to stiff, low to medium plastic, and brown or dark brown with oxide specks and organics. Moisture contents taken from clay fill samples ranged between 13% and 20%.

4.2.3 Sand Fill

Sand fill was encountered at some borehole locations, generally extending to depths ranging between 1.0 m and 1.3 m below ground surface. The sand fill was described silty, trace clay, fine grained, moist, loose, and dark brown. Moisture contents taken from sand fill samples ranged between 6% and 22%.

4.2.4 Sand

Sand was extensively encountered across the site (occasionally discontinuous), with variable thickness, extending to depths ranging between 2.3 m and over 9.6 m. The sand was described as silty, trace clay, fine to medium grained, moist to saturated, loose to compact (occasionally dense), poor to well graded, and light brown to grey. Moisture contents taken from sand samples ranged between 3% and 28%.

4.2.5 Clay Till

Clay till was generally encountered below the fill or sand layers, extending to the maximum borehole termination depths. The clay till was generally described as silty, some sand, trace gravel, medium plastic, moist to very moist, frim to very stiff, and brown to grey with coal and oxide specks. Sand pockets, silt lenses, and high plastic clay inclusions were also noted within the clay till. Moisture contents taken from clay till samples ranged between 18% and 23%. Atterberg Limits testing conducted on clay till samples indicated Plastic Limits of 11% and 12%; and Liquid Limits of 38% and 39%; indicative of medium plasticity.

4.3 Groundwater Conditions

At the time of drilling, seepage and sloughing was encountered at most borehole locations. The groundwater levels were measured on June 29, 2015. Table A summarizes the groundwater monitoring data collected to date.

Table A: Groundwater Monitoring Data – June 29, 2015

Borehole Number	Depth of Standpipe (m)	Geodetic Borehole Elevation at Ground Surface (m)	Depth of Seepage (m)	Depth of Sloughing Upon Completion (m)	Depth to Groundwater (m)	Elevation of Groundwater (m)
15BH001	5.5	804.82	1.2	1.2	1.40	803.42
15BH002	7.6	805.06	1.3	2.4	1.80	803.26
15BH003	6.1	805.64	1.9	NE	2.30	803.34
15BH004	6.1	806.12	2.0	2.3	2.20	803.92
15BH005	5.5	804.99	1.3	2.0	1.60	803.39
15BH006	5.5	806.19	1.7	2.0	1.60	804.59
15BH007	5.5	805.15	2.0	2.0	1.82	803.33
15BH008	4.6	806.09	NE	4.6	2.80	803.29

NE = Not Encountered

The groundwater is considered to be an unconfined surface aquifer, perched within the extensive surficial sand layers, and may fluctuate seasonally and in response to climatic conditions. Further comments regarding groundwater issues are provided in subsequent sections.

5.0 GEOTECHNICAL RECOMMENDATIONS

The recommendations that follow offer varying options intended to aid in the development of project concepts and specifications. The recommendations are provided on the understanding and condition that Tetra Tech EBA will be retained to review the relevant aspects of the final design (drawings and specifications) and to conduct such field reviews as are necessary to ensure compliance with the Lethbridge Design Standards (2014), this report, and the final plans and specifications. Tetra Tech EBA accepts no liability for any use of this report in the event that Tetra Tech EBA is not retained to provide these review services.

Specific recommendations that apply to this project are provided for site development, compost and storm management facilities, pavement structures, and deep underground utilities.

5.1 General Site Development

5.1.1 Groundwater Issues

In accordance with the groundwater monitoring conducted on June 29, 2015, the groundwater levels are shallow in most areas, varying between approximately 1.4 m to 2.8 m below ground surface. The above-noted groundwater levels are considered to be an unconfined surficial groundwater table within relatively high permeable sand layers. The monitored groundwater regime is expected to cause construction difficulties and short-term drainage requirements. The drainage requirements may include significant dewatering in order to construct the proposed facility elements. A detailed dewatering plan is recommended to be implemented by experienced contractors prior to construction.

5.1.2 Site Grading

The relatively shallow groundwater levels should be considered and deep excavations should generally be avoided as far as practical. Borrow from the dry pond and leachate retention facility areas is recommended for use as engineered fill to raise low-lying areas, the roadway footprints, and other facility areas, should this be a consideration in the design of the final site grades.

Surface runoff water should be drained away from the compost site as quickly as possible after construction. The finished grade should be laid out so surface waters are drained away from the proposed compost site and other facilities by the shortest route. General landscaped areas should have grades of no less than 2% to minimize ponding.

5.1.3 Backfill Materials

The existing site soils comprising predominantly sand, with some areas of medium plastic clay soils are suitable as ‘landscape fill’ materials and ‘general engineered fill’ materials, as defined in Appendix C. Any silt, very fine-grained silty sands, and clays with low Plasticity Index (PI) < 12 should not be used as general engineered fill at depths of 2.1 m below grade, due to their high frost susceptibility.

If the sand soils are to be used for site grading as general engineered fill, below paved areas, it should be covered with a layer of general engineered clay fill with a minimum thickness of 600 mm for surface containment of the sand soils.

The medium plastic clay till soils are generally suitable as compacted engineered fill materials to construct the composting pad and leachate engineered liners. When compacted to 98% of Standard Proctor Density (SPD) with moisture within 2% or 3% of Optimum Moisture Content (OMC), the clay till soils generally have low hydraulic conductivity which is generally below 1E-9 m/s, a typical standard requirement for engineered clay liner materials.

Based on the soil findings during the field investigation, on-site clay till may not be of sufficient quantity unless a dedicated borrow source is planned. An alternative would be to import suitable clay materials for the engineered fill materials for the installation of the composting pad or leachate retention liners. Due to the variable soil conditions, hydraulic conductivity testing should be conducted during the construction stage to ensure backfill materials meet the design-specific criteria as engineered clay fill for use in constructing an engineered clay liner.

The near surface soils appear to be variable in moisture content across the site; and therefore, moisture conditioning will be required for proper backfill placement. The earthwork contractor should make their own estimate of the requirements for moisture conditioning to the recommended standards, and should consider such factors as weather and construction procedures.

Further recommendations regarding backfill materials and compaction are contained in Appendix C

5.2 Construction Excavations

Excavations should be carried out in accordance with the Alberta Occupational Health and Safety Regulations. Due to the extensive sand to be expected across the site, it is recommended to make the trenches as shallow as is feasible. The following recommendations notwithstanding, the responsibility of trench and all excavation cutslopes resides with the Contractor, who should take into consideration site-specific conditions concerning variable soil stratigraphy and groundwater. All excavations should be reviewed by a geotechnical engineer prior to personnel working within the base of the excavation.

As excavation proceeds, consideration should be given to separation of the varying soil materials encountered, as far as practical and where economically viable. For example, any sand soils encountered should be stockpiled separately and only used where no other clay materials are available.

Excavations which are to be deeper than 1.5 m should have the sides shored and braced or the sideslopes should be cut back not steeper than 1.0H:1.0V, above the groundwater table. Where excavations are open for longer than one month, or within extensive sand soils, the sideslopes will have to be cut back even shallower than 1.0H:1.0V, to be assessed based on site conditions. Excavations in saturated sand should be reviewed by qualified experienced personnel, with a dewatering plan to be developed by the Contractor. Varying amount of groundwater seepage will occur at various depths across the site; therefore, dewatering of excavations will be necessary. It is recommended that the dewatering requirements be reviewed by a dewatering specialist.

Spill piles or temporary surcharge loads should not be allowed within a distance equal to the depth of the excavation from an unsupported excavation face while mobile equipment should be kept back at least 3.0 m. All excavations should be checked regularly for signs of sloughing, especially after rainfall periods. Small earth falls from the sideslopes are a potential danger to workers and must be guarded against. Further recommendations regarding construction excavations are contained in Appendix C.

5.3 Trench Backfill and Compaction

Trenches must be backfilled in such a way as to reduce the potential differential settlement and/or frost heave movements. A minimum compaction level of 95% of SPD is recommended for backfill within the pipe zone of the trench (to 300 mm above the top of pipe). For the remainder of the trench backfill, a minimum compaction standard of 98% of SPD should be utilized in all areas. The compacted thickness of each lift of backfill shall not exceed 250 mm. Moisture conditioning to minus 1% of optimum and 2% over OMC of the soils should be specified for general trench backfill. During placement of the backfill materials it is recommended that ‘notching’ of the excavation sidewalls every 1 m in height (1.0H:1.0V) occur to develop a bond between the native soils and backfill materials, resulting in less potential for long-term settlement or consolidation.

It should be noted that the ultimate performance of the trench backfill is directly related to the uniformity of the backfill compaction. In order to achieve the uniformity, the lift thickness and compaction criteria should be strictly enforced. General recommendations regarding backfill materials and compaction are contained in Appendix C.

For frost protection, pipes buried with less than 2.0 m of soil cover (above top of pipe) should be protected with insulation to avoid frost damage or breakage of the pipes. Rigid insulation placed under areas subject to vehicular wheel loadings should be provided with a minimum thickness of 600 mm of compacted granular base.

5.4 Compost Facility

5.4.1 Site Drainage

The accumulation of water from sources outside of the composting facility and/or general surface run-on water should be minimized. Constructing vegetated earthen berms around the compost site is recommended to avoid water run-on. Runoff water from the compost surface should be controlled and directed towards a leachate retention facility. A minimum of 2% slope of the composting pad towards leachate collect system is recommended to avoid ponding.

5.4.2 Composting Pad

The composting pad should be constructed with an adequate subgrade surface to tolerate the movement of heavy machinery during operation of the compost facility. The subgrade should also be relatively impermeable to leachate to prevent groundwater contamination. The composting pad should be constructed with a minimum of 0.5 m of clayey materials (measured perpendicular to the liner surface) which have a permeability less than 1E-9 m/s or an alternative material that provides equivalent protection. As discussed in Section 5.1.3, clay till with medium plasticity is recommended for use as engineered backfill materials for constructing the composting pad but the borrow source volume available is limited. Due to the potential lack of sufficient quantities of clay fill materials for suitable borrow materials, a concrete and asphalt composting pad may be considered, which would provide an excellent barrier for groundwater contamination and would provide the necessary support for heavy equipment and permit site activity under wet conditions. However, this option may not be economically viable compared to an engineered clay subgrade floor. A cost comparison may be required dependent on the proposed location of the compost facility in regard to the subsurface soil conditions and groundwater table.

5.4.3 Leachate Retention Facility

The engineered clay liner system for the leachate retention lagoon must be constructed with a minimum thickness of 1.0 m (measured perpendicular to the liner surface) with clay soils having a hydraulic conductivity of 1E-9 m/s or less. It is recommended that a preliminary thickness for the clay liner be 1.0 m along the base of the lagoon and 1.2 m along the sidewalls up to design operation water elevation (minimum recommended).

Due to the limited borrow materials in this areas, alternative materials that provide equivalent protection (synthetic materials) may be considered for this development. The liner system must have a separation of at least of 1.0 m between the seasonal high water table and the bottom the liner.

Once the operational water level elevation of the leachate lagoon is designed, it is recommended that the proposed interior sideslopes be between 5.0H:1.0V to 7.0H:1.0V for the pond in the active storage zone and 4.0H:1.0V to 5.0H:1.0V for above the active storage zone. The maximum exterior sideslopes should be 3.0H:1.0V.

5.4.4 Base Preparation

Following stripping of any organic materials within the development area, any soft or saturated clay soils encountered at design base elevation should be removed and replaced with general engineered fill. The subgrade below the composting pad or liner should be relatively level to control liner thickness and proof-rolled to provide a good base for compacting the first liner lift to the specific density. Any soft pockets that would prevent sufficient compaction of the pad or liner must be subexcavated and replaced with suitable compacted fill. In lieu of satisfying the compaction requirements, a geotextile fabric (such as Armtec 200) may be required on, or about, the elevation of any encountered soft subgrade, although this is not anticipated for the current site conditions.

5.4.5 Remoulded Clay Liner

Careful site observation and testing will be required to avoid incorporating low or non-plastic materials into the liner. It is recommended that materials with a Liquid Limit of less than 30% not be incorporated into the liner. However, low plastic clays, silts, or sands not meeting liner requirements may be used in the top areas of the embankments above the highest water level or outside the liner zones.

Subsequent to the preparation of the composting pad base and/or lagoon floor, the clay soils (local or imported borrow material) should be moisture conditioned to between 0% and +3% of OMC. Each lift should then be compacted to a minimum of 98% of SPD in lifts of maximum 150 mm compacted thickness to a total placed liner thickness of 1.0 m for the base, as recommended above.

A maximum "clod" size of 100 mm during moisture conditioning (prior to compaction) will produce relatively uniform moisture content throughout the soil matrix and a relatively homogenous compacted soil structure. The size of the "clods" can be controlled with agricultural equipment such as a disk. As far as practical, the liner should be built up in a uniform fashion over the containment basin area, in order to avoid sections of “butted fill” where seepage paths may develop. Compaction should be carried out utilizing "kneading" type compaction equipment such as vibratory padfoot or sheepsfoot type compactors. Completed liner areas should have the surface smoothed by a vibratory smooth drum roller.

If a lift of liner soil is allowed to become dry and desiccated prior to the placement of the next lift, the exposed surface should be scarified, moisture conditioned, and compacted to meet the design specifications. Prior to lagoon filling and during maintenance periods when the lagoon is empty, the lagoon bottom should be prevented from drying out beyond 0.2 m as accounted for in the design liner thickness.

5.5 Stormwater Dry Pond Development

Based on Tetra Tech EBA’s understanding of a typical stormwater management facility design, a dry pond typically has a base elevation of approximately 2 m to 3 m below the final surrounding ground surface. The pond should be kept as shallow as possible to avoid having the invert of the pond intersect the groundwater table. A minimum separation of 1 m is recommended. It is recommended that the maximum interior sideslopes for a dry pond be 4.0H:1.0V to 5.0H:1.0V, with a minimum slope in the bottom of the pond of 1% (2% is preferred). The maximum exterior sideslopes should be no greater than 3.0H:1.0V.

The dry pond should be located in the middle areas (adjacent to 15BH002, 15BH003, and 15BH008) where the primary source of clay borrow materials will be expected. This will allow additional clay borrow for improved fill placement and compaction, and will reduce the groundwater issues expected.

Due to the shallow groundwater table which is highly likely hydraulically connected, the other areas (west and east portions adjacent to 15BH001, 15BH004, 15BH005, and 15BH007) may not be a suitable site for dry pond development. There will be high risk that the dry pond may have a permanent wet pond bottom as well as instability of the pond sideslopes.

Within the dry pond area, dewatering of the sand soils will be required to facilitate excavation below the groundwater table. Following completion of the dry pond excavation and shaping, the surface of the dry pond should be uniformly moisture conditioned to between ± 2% of OMC and compacted to a minimum of 95% of SPD. Where sand soils are encountered, a smooth drum roller is recommended for a smooth and even surface. Some rip-rap or other means of bank stabilization may be required in slope areas where the subgrade materials are below the general water table and subject to erosion.

5.6 Pavement Structures

5.6.1 Subgrade Preparation

Within all paved areas, the upper 300 mm of native soils or prepared general engineered fill subgrade should be scarified and uniformly moisture conditioned to between minus 1% of optimum and 2% over OMC for clay soils or to within 2% of OMC for sand soils. The subgrade should be uniformly compacted to a minimum of 98% of SPD for the paved areas.

In consideration of the shallow groundwater levels, it is recommended to establish the road embankment height as high as feasible to bridge over the wet subgrade conditions and to promote improved drainage of the roadway structures. Edge drain systems (either drainage ditches or a subdrain system) are recommended to be installed along the proposed alignment. Backfill to raise these areas should be engineered fill compacted with the standards discussed above.

As noted, if it is not possible to achieve a stable roadway embankment with sand fill materials, it may be necessary to consider a cap layer of general engineered clay fill, with a minimum thickness of 600 mm, immediately under the road structures. The subgrade should be prepared and graded to allow drainage to the shoulders/curbs and/or ditches. Proof-rolling of the prepared surface is recommended to identify localized soft areas and for an indication of overall subgrade support characteristics.

In consideration of the near surface saturated sand subgrade conditions expected during development, an alternative to the above-noted preparation may include a subcut below design subgrade elevation. The depth of subcut must be field determined but may vary between approximately 300 mm and 600 mm. The subcut subgrade should be protected from disturbance and rutting and should then be covered with a medium weight geotextile. The subcut depth should be backfilled with selected materials such as pit run gravel. This should be a field determination at the time of development by experienced personnel.

Depending on the construction scheduling for placement of the granular sub-base and base layers, and the asphalt concrete pavement surface, further subgrade preparation may be required if the placed subgrade materials dry out or weather. This should be determined prior to the placement of the pavement structure. Should the subgrade materials be shown to deteriorate from construction completion, a minimum 300 mm of subgrade preparation is recommended prior to pavement structure placement.

It is recommended to include a contingency for woven geotextile, should localized areas of subgrade instability be encountered. Use of a woven geotextile should not be considered as an alternate for subgrade preparation as recommended, but an alternative, should subgrade instability exist after subgrade preparation. The woven geotextile should have a minimum grab tensile strength of 890 N.

The subgrade should be prepared and graded to allow drainage towards stormwater facilities. It is imperative that positive surface drainage be provided to prevent ponding of water within the pavement structure and subsequent softening and loss of strength of the subgrade materials. Surrounding landscaping should be such that runoff water is prevented from ponding beside paved areas in order to avoid softening and premature failure of the pavement surface.

5.6.2 Gravel Pavement

It is assumed that the gravel pavement may be exposed to heavy-duty construction traffic, as well as relatively light-duty maintenance traffic over the life of the project. Using the subgrade preparation procedures and the following minimum gravel pavement is recommended. Both gravel materials should be compacted to 100% of SPD.

- 100 mm of crushed gravel or base gravel (25 mm minus) over
- 200 mm of pit run gravel or sub-base gravel over prepared clay subgrade (250 mm is recommended if reuse of the existing gravel is considered)

It should be noted that this gravel surface requires periodic maintenance. For this reason, a surficial layer of finer graded crushed gravel is suggested as the preferred option. If pit run gravel were to be considered as an alternative as the surfacing layer, it will undoubtedly be very coarse, with a significant portion of rounded cobbles, making periodic blading difficult and so is not recommended for this reason. Should rutting occur in the future, it is recommended to fill the ruts with crushed granular material and compact, rather than simply use a grader, to level the high areas. It will be much easier to place and compact the crushed gravel and then blade smooth as part of the long-term maintenance program.

It is imperative that positive surface drainage of gravel pavement be established to prevent ponding of water. Recommended minimum grades of 2% should be used in gravel surfaced areas. Surrounding landscaping should be such that runoff water is prevented from ponding beside gravelled areas.

5.7 Below-Grade Structure

The following parameters may be adopted for the design of the below-grade structures. The earth pressure distribution should be triangular, utilizing the appropriate lateral earth pressure coefficients. The parameters provided in Table B may also be utilized for design purposes.

Table B: Soil Property Parameters

Soil Unit	Wet Unit Weight γ_w (kN/m^3)	Cohesion (kPa)	Internal Angle of Friction Ø'	Active Pressure K_a	At-Rest Pressure K_o	Passive Pressure K_p
Native clay till	18	3	26°	0.39	0.50	2.5
Native sand	20	0	30°	0.33	0.50	3.0
Compacted clay fill	19	0	26°	0.39	0.50	2.5
Compacted granular fill *	21	0	33°	0.30	0.45	3.4

*Silt, very fine-grained sand, clayey silt or silty clay with PI < 12 is not allowed to be used as backfill material for below-grade structures within 2.1 m below grade.

It should be noted that the earth pressure coefficients presented above have not been factored. A resistance factor of 0.5 should be considered for lateral resistance in the design. Where water pressure is taken into account, the effective unit weight (bulk unit weight less unit weight of water) of the soil should be used below the assumed groundwater table.

5.8 Concrete Type

For this development, based on test results conducted on soil samples retrieved from the boreholes, Tetra Tech EBA's local experience, and the Canadian Standards Association (CSA) A23.2-14, the recommended concrete exposure classification for general usage (where concrete is in contact with soil or groundwater) should be Class S-2 (CSA A23.1-14). For this exposure classification, alternatives include the usage of Type HS (Sulphate Resistant) Portland cement, or blends of cement and supplementary cementing materials, conforming to Type MSb and/or Type HSb cements (CSA A3001-03).

For all cement exposed to soil and/or groundwater (e.g., including all building foundation concrete, all below-grade concrete, and surface works concrete), a maximum water/cementing materials (W/CM) ratio 0.45 is recommended. Based on Tetra Tech EBA's experience with Alberta aggregates, a W/CM ratio of 0.45 normally corresponds to a 56-day compressive strength of 32 MPa.

Air entrainment of 4% to 7% volume is recommended for all concrete exposed to freezing temperatures, native soils, and/or groundwater. This should be increased to 5% to 8% for exterior flatwork.

5.9 Frost Protection

For protection against frost action, perimeter footings in heated structures should be extended to such depths as to provide a minimum soil cover of 1.4 m. Isolated or exterior footings in unheated structures should have a minimum soil cover of 2.1 m unless provided with equivalent insulation.

Pipes buried with less than 2.1 m of soil cover should be protected with insulation to avoid frost effects that might cause damage to or breakage of the pipes. Rigid insulation placed under areas subject to vehicular wheel loadings should be provided with a minimum thickness of 600 mm of compacted granular base.

6.0 DESIGN AND CONSTRUCTION GUIDELINES

General design and construction guidelines are provided in Appendix C, under the following supplemental headings:

- Construction Excavations
- Backfill Materials and Compaction

These guidelines are intended to present standards of good practice. Although supplemental to the main text of this report, they should be interpreted as part of the report. Design recommendations presented herein are based on the premise that these guidelines will be followed. The design and construction guidelines are not intended to represent detailed specifications for the works although they may prove useful in the preparation of such specifications. In the event of any discrepancy between the main text of this report and Appendix C, the main text should govern.

7.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech EBA Inc.

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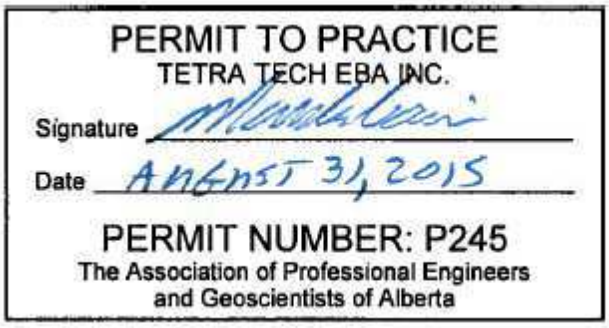


FIGURES

Figure 1 Borehole Location Plan

C:\Riverbend\Drafting\L121\L12103916\L12103916-01 Figure 1.dwg [FIGURE 1] August 30, 2015 - 5:40:08 pm (BY: HUGHES, LEANNE)

LEGEND

● BOREHOLE LOCATION

0 5m

Scale: 1:100 @ 8.5"x11"

CLIENT

Town of Taber

EUREKA COMPOST FACILITY GEOTECHNICAL EVALUATION

BOREHOLE LOCATION PLAN

TETRA TECH EBA

PROJECT NO.	DWN	CKD	REV
L12103916-01	LCH	SS	0

OFFICE: LETHBRIDGE

DATE: August 2015

Figure 1

APPENDIX A
GEOTECHNICAL REPORT - GENERAL CONDITIONS

GENERAL CONDITIONS

GEOTECHNICAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of Tetra Tech EBA’s Client. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Tetra Tech EBA’s Client unless otherwise authorized in writing by Tetra Tech EBA. Any unauthorized use of the report is at the sole risk of the user.

2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Tetra Tech EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of Tetra Tech EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Tetra Tech EBA. Tetra Tech EBA’s instruments of professional service will be used only and exactly as submitted by Tetra Tech EBA.

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, Tetra Tech EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. Tetra Tech EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of testholes and/or soil/rock exposures. Stratigraphy is known only at the locations of the testhole or exposure. Actual geology and stratigraphy between testholes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. Tetra Tech EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

10.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

11.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

12.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

13.0 SAMPLES

Tetra Tech EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

14.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

During the performance of the work and the preparation of the report, Tetra Tech EBA may rely on information provided by persons other than the Client. While Tetra Tech EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, Tetra Tech EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX B
BOREHOLE LOGS

TERMS USED ON BOREHOLE LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on 0.075mm sieve): Includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as inferred from laboratory or in situ tests.

DESCRIPTIVE TERM	RELATIVE DENSITY	N (blows per 0.3m)
Very Loose	0 TO 20%	0 to 4
Loose	20 TO 40%	4 to 10
Compact	40 TO 75%	10 to 30
Dense	75 TO 90%	30 to 50
Very Dense	90 TO 100%	greater than 50

The number of blows, N, on a 51mm O.D. split spoon sampler of a 63.5kg weight falling 0.76m, required to drive the sampler a distance of 0.3m from 0.15m to 0.45m.

FINE GRAINED SOILS (major portion passing 0.075mm sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as estimated from laboratory or in situ tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (KPA)
Very Soft	Less than 25
Soft	25 to 50
Firm	50 to 100
Stiff	100 to 200
Very Stiff	200 to 400
Hard	Greater than 400

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil.

GENERAL DESCRIPTIVE TERMS

Slickensided - having inclined planes of weakness that are slick and glossy in appearance.
Fissured - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated - composed of thin layers of varying colour and texture.
Interbedded - composed of alternate layers of different soil types.
Calcareous - containing appreciable quantities of calcium carbonate.;
Well graded - having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly graded - predominantly of one grain size, or having a range of sizes with some intermediate size missing.

MODIFIED UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION
COARSE-GRAINED SOILS More than 50% retained on 75 µm sieve*	GRAVELS 50% or more of coarse fraction retained on 4.75 mm sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes 4.75 mm sieve	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (by behavior) 50% or more passes 75 µm sieve*	SILTS Liquid limit <50		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands of slight plasticity
	SILTS Liquid limit >50		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit <30		CL	Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit 30-50		CI	Inorganic clays of medium plasticity, silty clays
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit >50		CH	Inorganic clays of high plasticity, fat clays
	ORGANIC SILTS AND CLAYS Liquid limit <50		OL	Organic silts and organic silty clays of low plasticity
	ORGANIC SILTS AND CLAYS Liquid limit >50		OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA

Classification on basis of percentage of fines

Less than 5% Pass 75 µm sieve — GW, GP, SW, SP

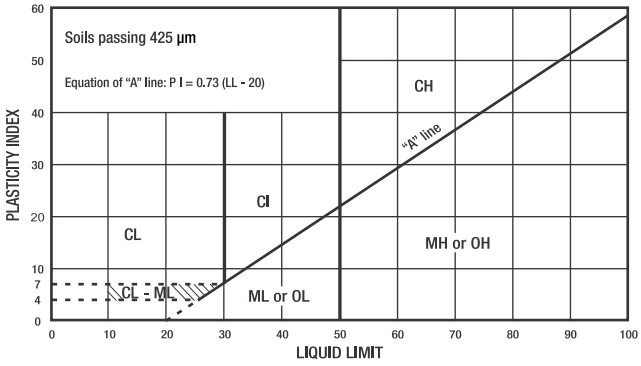
More than 12% Pass 75 µm sieve — GM, GC, SM, SC

5% to 12% Pass 75 µm sieve — Borderline Classification requiring use of dual symbols

$C_U = D_{60} / D_{10}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3		
Not meeting both criteria for GW		
Atterberg limits plot below "A" line or plasticity index less than 4		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
Atterberg limits plot above "A" line or plasticity index greater than 7		
$C_U = D_{60}/D_{10}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3		
Not meeting both criteria for SW		
Atterberg limits plot below "A" line or plasticity index less than 4		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
Atterberg limits plot above "A" line or plasticity index greater than 7		

For classification of fine-grained soils and fine fraction of coarse-grained soils.

PLASTICITY CHART



*Based on the material passing the 75 mm sieve
Reference: ASTM Designation D2487, for identification procedure see D2488. USC as modified by PFRA

SOIL COMPONENTS

FRACTION	SIEVE SIZE PASSING	SIEVE SIZE RETAINED	DEFINING RANGES OF PERCENTAGE BY MASS OF MINOR COMPONENTS PERCENTAGE	DESCRIPTOR
GRAVEL				
coarse	75 mm	19 mm	>35 %	"and"
fine	19 mm	4.75 mm	21 to 35 %	"y-adjective"
SAND				
coarse	4.75 mm	2.00 mm	10 to 20 %	"some"
medium	2.00 mm	425 µm		
fine	425 µm	75 µm	>0 to 10 %	"trace"
SILT (non plastic) or CLAY (plastic)	75 µm		as above but by behavior	

OVERSIZE MATERIAL

Rounded or subrounded

COBBLES	75 mm to 300 mm
BOULDERS	> 300 mm

Not rounded

ROCK FRAGMENTS	>75 mm
ROCKS	> 0.76 cubic metre in volume

Tt_Modified Unified Soil Classification.cdr

TETRA TECH

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH001
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518540, E - 418188	ELEVATION: 804.824 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT	Elevation (m)
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics					
	SAND (FILL) - silty, trace clay, fine grained, well graded, moist, loose, dark brown, roots, organics		B1		16.4	804.0
1	... 50 mm gravel layer		B2		21.3	
	SAND - silty, trace clay, fine grained, well graded, wet, loose, light brown, trace free water		D1	9		803.0
2	... poorly graded		B3		24.3	
	... free water, very loose to loose, grey		B4		27.1	
3			D2	4		802.0
	... brown with black staining		B5			801.0
4			B6		26.1	
	... silty, trace clay, fine grained, well graded, loose		D3	6		800.0
5			B7			
			B8		23.8	799.0
6			D4	10		
			B9			798.0
7			B10		19.9	
	CLAY - silty, some sand, trace gravel, very moist, stiff, medium plastic, grey, coal specks, silt pockets		D5	11		797.0
8	SAND - silty, trace clay, fine grained, well graded, free water, compact, grey		B11			
			B12		33.5	796.0
9			D6	12		
	End of Borehole @ 9.6 m					795.0
10	Seepage from 1.2 m, Sloughing to 1.2 m Slotted 25 mm PVC Standpipe Installed to 5.5 m Indicated Water Level Measured on June 29, 2015					
						794.0
11						
12						793.0

6/29/2015

PLASTIC — M.C. — LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 9.6 m
REVIEWED BY: JZ	COMPLETE: 6/25/2015
DRAWING NO: B1	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH002
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518550, E - 418020	ELEVATION: 805.063 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT	Elevation (m)
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics					805.0
	CLAY (FILL) - silty, sandy, moist, firm, low plastic, light brownish grey, roots, organics		B1		15.5	
1			B2		13.7	804.0
	SAND - trace silt, trace gravel, fine to medium grained, well graded, wet, compact, brown, trace free water		D1	11		
2			B3		21	803.0
	... trace medium plastic clay inclusions to 25 mm					
	CLAY - silty, some sand, trace gravel, moist to very moist, stiff to very stiff, medium plastic, brown with grey mottling, coal and oxide specks, trace silt pockets		B4		20.9	
3			D2	15		802.0
			B5			
4						801.0
	... sand pockets to 25 mm		B6		20.9	
			D3	11		
5			B7			800.0
			B8		22.2	
6						799.0
			D4	13		
			B9			
7						798.0
			B10		20.7	
			D5	11		
8			B11			797.0
	SAND - trace silt, fine to medium grained, well graded, free water, compact, grey		B12		19.6	
9						796.0
			D6	13		
	End of Borehole @ 9.6 m					
10	Seepage from 1.3 m, Sloughing to 2.4 m Upon Completion Slotted 25 mm PVC Standpipe Installed to 7.6 m Indicated Water Level Measured on June 29, 2015					795.0
11						794.0
12						

PLASTIC | M.C. | LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

6/29/2015

6/29/2015

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 9.6 m
REVIEWED BY: JZ	COMPLETE: 6/25/2015
DRAWING NO: B2	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH003
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518662, E - 418098	ELEVATION: 805.644 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT	Elevation (m)
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics					
	CLAY (FILL) - silty, sandy, trace gravel, moist, stiff, low plastic, light brownish grey, trace oxide specks		B1		19.5	805.0
1	SAND - silty, trace clay, fine grained, well graded, moist to very moist		B2		12.5	
			D1	6		804.0
2	... trace silt, medium grained, well graded, free water		B3		16.9	
	CLAY (TILL) - silty, some sand, trace gravel, very moist, firm, medium plastic, brown with grey mottling, coal and oxide staining, small silt and sand pockets, sand lenses to 10 mm		B4		21.2	
3			D2	7		803.0
	... silt lenses to 30 mm		B5			802.0
4	... moist to very moist, stiff, dark grey		B6		19.1	
			D3	14		801.0
5			B7			
			B8		18.1	800.0
6	... firm to stiff		D4	8		
	End of Borehole @ 6.6 m					799.0
7	Seepage from 1.9 m, No Slough Upon Completion Slotted 25 mm PVC Standpipe Installed to 6.1 m Indicated Water Level Measured on June 29, 2015					798.0
8						797.0
9						796.0
10						

PLASTIC M.C. LIQUID (20 40 60 80)

STANDARD PENETRATION (N) ■ (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) ◆ (50 100 150 200)

POCKET PEN. (kPa) ▲ (100 200 300 400)

6/29/2015

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 6.6 m
REVIEWED BY: JZ	COMPLETE: 6/18/2015
DRAWING NO: B3	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH004
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518468, E -418098	ELEVATION: 806.121 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics				
	CLAY (FILL) - silty, sandy, moist, stiff, low plastic, dark brown, organic staining, roots		B1		13.8
1	SAND - trace silt, fine to medium grained, poorly graded, very moist, loose to compact, brown		B2		3.8
			D1	10	
2	... free water, compact, grey		B3		18.8
	6/29/2015		B4		21.7
3			D2	14	
			B5		
4			B6		26.2
	... loose to compact		D3	10	
5			B7		
			B8		22.9
6	... dense		D4	32	
	End of Borehole @ 6.6 m				
7	Seepage from 2.0 m, Sloughing to 2.3 m Upon Completion Slotted PVC Standpipe Installed to 6.1 m Indicated Water Level Measured on June 29, 2015				
8					
9					
10					

PLASTIC M.C. LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

Elevation (m): 806.0, 805.0, 804.0, 803.0, 802.0, 801.0, 800.0, 799.0, 798.0, 797.0

6/29/2015

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 6.6 m
REVIEWED BY: JZ	COMPLETE: 6/18/2015
DRAWING NO: B4	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH005
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518647, E - 418299	ELEVATION: 804.986 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT	Elevation (m)
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics					
	SAND (FILL) - silty, trace clay, fine grained, well graded, moist, loose, dark brown, roots, organics		B1		22.3	
1	... light brownish grey, organic staining, trace medium plastic clay inclusions to 25 mm		B2		14.9	804.0
	SAND - trace silt, fine to medium grained, poorly graded, compact, free water, brown		D1	12		
2	... trace silt pockets to 15 mm		B3		22.6	803.0
			B4		20.8	
3			D2	22		802.0
	... fine grained, poorly graded, loose		B5			
4			B6		20.8	801.0
			D3	8		
5	... silty, well graded, grey		B7			800.0
			B8		21	
6			D4	7		799.0
	End of Borehole @ 6.6 m					
7	Seepage from 1.3 m, Sloughing to 2.0 m Upon Completion Slotted 25 mm PVC Standpipe Installed to 5.5 m Indicated Water Level Measured on June 29, 2015					798.0
8						797.0
9						796.0
10						795.0

PLASTIC — M.C. — LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

6/29/2015

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 6.6 m
REVIEWED BY: JZ	COMPLETE: 6/25/2015
DRAWING NO: B5	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH006
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518465, E - 418301	ELEVATION: 806.187 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics				
	SAND (FILL) - silty, trace clay, fine grained, well graded, moist, loose, dark brown, roots, organics		B1		9.9
1	CLAY (FILL) - silty, some sand to sandy, very moist, firm, low to medium plastic, light brownish grey, organic staining		B2		20.1
			D1	12	
2	SAND - trace silt, fine grained, well graded, free water, compact, grey		B3		19.5
	... poorly graded, brown		B4		21.7
3			D2	11	
	... silty, trace clay, well graded, loose, grey with black staining		B5		
4			B6		24.5
			D3	9	
5			B7		
			B8		28.9
6	CLAY (TILL) - silty, some sand, trace gravel, very moist, stiff, medium plastic, grey, coal specks, small silt and sand pockets		D4	12	
	End of Borehole @ 6.6 m				
7	Seepage from 1.7 m, Sloughing to 2.0 m Slotted 25 mm PVC Standpipe Installed to 5.5 m Indicated Water Level Measured on June 29, 2015				
8					
9					
10					

PLASTIC — M.C. — LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

6/29/2015

Elevation (m): 806.0, 805.0, 804.0, 803.0, 802.0, 801.0, 800.0, 799.0, 798.0, 797.0

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 6.6 m
REVIEWED BY: JZ	COMPLETE: 6/25/2015
DRAWING NO: B6	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH007
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518637, E - 417940	ELEVATION: 805.153 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT	Elevation (m)
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics					805.0
	SAND - silty, trace clay, fine grained, well graded, moist, loose, brown		B1		12.9	
1			B2		11.4	804.0
			D1	9		
2	... trace silt, fine to medium grained, well graded, free water, compact, brown		B3		25.8	803.0
			B4		20.5	
3			D2	12		802.0
			B5			
4			B6		22	801.0
			D3	15		
5			B7			800.0
			B8		27.5	
6			D4	22		799.0
	End of Borehole @ 6.6 m					
7	Seepage from 2.0 m, Sloughing to 2.0 m Slotted 25 mm PVC Standpipe Installed to 5.5 m Indicated Water Level Measured on June 29, 2015					798.0
8						797.0
9						796.0
10						

PLASTIC — M.C. — LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

6/29/2015

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 6.6 m
REVIEWED BY: JZ	COMPLETE: 6/25/2015
DRAWING NO: B7	Page 1 of 1

PROJECT: EUREKA COMPOST FACILITY	CLIENT: TOWN OF TABER c/o MPE ENGINEERING	BOREHOLE NO: 15BH008
LOCATION: NW & NE 8-10-16-W4	DRILL METHOD: 150mm SOLID STEM AUGER	PROJECT: L12103916-01
CITY: TABER, AB	N - 5518467, E - 417937	ELEVATION: 806.087 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	SPT (N)	MOISTURE CONTENT	Elevation (m)
0	TOPSOIL - clay, sandy, silty, moist, dark brown, roots, organics					806.0
	SAND (FILL) - silty, trace clay, fine grained, well graded, moist, loose, dark brown, roots, organics		B1		11.2	
1	... trace gravel, medium grained, well graded, very moist, coal and oxide staining		B2		6.5	805.0
	CLAY (TILL) - silty, some sand, trace grave, moist, stiff, medium plastic, brown with grey mottling, coal specks, oxide staining, trace silt and sand pockets		D1	13		
2			B3		19.1	804.0
			B4		19.9	
3	6/29/2015		D2	13		803.0 6/29/2015
	... dark grey with brown mottling		B5			
4			B6		19.4	802.0
	... trace coal fragments		D3	12		
5			B7			801.0
	... very stiff		B8		18.2	
6			D4	17		800.0
	End of Borehole @ 6.6 m					
7	No Seepage, Sloughing to 4.6 m Upon Completion Slotted 25 mm PVC Standpipe Installed to 4.6 m Indicated Water Level Measured on June 29, 2015					799.0
8						798.0
9						797.0
10						

PLASTIC — M.C. — LIQUID (20 40 60 80)

STANDARD PENETRATION (N) (20 40 60 80)

UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200)

POCKET PEN. (kPa) (100 200 300 400)

TETRA TECH EBA

LOGGED BY: SS	COMPLETION DEPTH: 6.6 m
REVIEWED BY: JZ	COMPLETE: 6/25/2015
DRAWING NO: B8	Page 1 of 1

APPENDIX C

RECOMMENDED GENERAL DESIGN AND CONSTRUCTION GUIDELINES

CONSTRUCTION EXCAVATIONS

Construction should be in accordance with good practice and comply with the requirements of the responsible regulatory agencies.

All excavations greater than 1.5 m deep should be sloped or shored for worker protection.

Shallow excavations up to about 3 m depth may use temporary sideslopes of 1H:1V. A flatter slope of 2H:1V should be used if groundwater is encountered. Localized sloughing can be expected from these slopes.

Deep excavations or trenches may require temporary support if space limitations or economic considerations preclude the use of sloped excavations.

For excavations greater than 3 m depth, temporary support should be designed by a qualified geotechnical engineer. The design and proposed installation and construction procedures should be submitted to Tetra Tech EBA for review.

The construction of a temporary support system should be monitored. Detailed records should be taken of installation methods, materials, in situ conditions and the movement of the system. If anchors are used, they should be load tested. Tetra Tech EBA can provide further information on monitoring and testing procedures if required.

Attention should be paid to structures or buried service lines close to the excavation. For structures, a general guideline is that if a line projected down, at 45 degrees from the horizontal from the base of foundations of adjacent structures intersects the extent of the proposed excavation, these structures may require underpinning or special shoring techniques to avoid damaging earth movements. The need for any underpinning or special shoring techniques and the scope of monitoring required can be determined when details of the service ducts and vaults, foundation configuration of existing buildings and final design excavation levels are known.

No surface surcharges should be placed closer to the edge of the excavation than a distance equal to the depth of the excavation, unless the excavation support system has been designed to accommodate such surcharge.

BACKFILL MATERIALS AND COMPACTION (GENERAL)

1.0 DEFINITIONS

"Landscape fill" is typically used in areas such as berms and grassed areas where settlement of the fill and noticeable surface subsidence can be tolerated. "Landscape fill" may comprise soils without regard to engineering quality.

"General engineered fill" is typically used in areas where a moderate potential for subgrade movement is tolerable, such as asphalt (i.e., flexible) pavement areas. "General engineered fill" should comprise clean, granular or clay soils.

"Select engineered fill" is typically used below slabs-on-grade or where high volumetric stability is desired, such as within the footprint of a building. "Select engineered fill" should comprise clean, well-graded granular soils or inorganic low to medium plastic clay soils.

"Structural engineered fill" is used for supporting structural loads in conjunction with shallow foundations. "Structural engineered fill" should comprise clean, well-graded granular soils.

"Lean-mix concrete" is typically used to protect a subgrade from weather effects including excessive drying or wetting. "Lean-mix concrete" can also be used to provide a stable working platform over weak subgrades. "Lean-mix concrete" should be low strength concrete having a minimum 28-day compressive strength of 3.5 MPa.

Standard Proctor Density (SPD) as used herein means Standard Proctor Maximum Dry Density (ASTM Test Method D698). Optimum moisture content is defined in ASTM Test Method D698.

2.0 GENERAL BACKFILL AND COMPACTION RECOMMENDATIONS

Exterior backfill adjacent to abutment walls, basement walls, grade beams, pile caps and above footings, and below highway, street, or parking lot pavement sections should comprise "general engineered fill" materials as defined above.

Exterior backfill adjacent to footings, foundation walls, grade beams and pile caps and within 600 mm of final grade should comprise inorganic, cohesive "general engineered fill". Such backfill should provide a relatively impervious surficial zone to reduce seepage into the subsoil against the structure.

Backfill should not be placed against a foundation structure until the structure has sufficient strength to withstand the earth pressures resulting from placement and compaction. During compaction, careful observation of the foundation wall for deflection should be carried out continuously. Where deflections are apparent, the compactive effort should be reduced accordingly.

In order to reduce potential compaction induced stresses, only hand-held compaction equipment should be used in the compaction of fill within 1 m of retaining walls or basement walls. If compacted fill is to be placed on both sides of the wall, they should be filled together so that the level on either side is within 0.5 m of each other.

All lumps of materials should be broken down during placement. Backfill materials should not be placed in a frozen state, or placed on a frozen subgrade.

Where the maximum-sized particles in any backfill material exceed 50 percent of the minimum dimension of the cross-section to be backfilled (e.g., lift thickness), such particles should be removed and placed at other more suitable locations on site or screened off prior to delivery to site.

Bonding should be provided between backfill lifts. For fine-grained materials the previous lift should be scarified to the base of the desiccated layer, moisture-conditioned, and recompacted and bonded thoroughly to the succeeding lift. For granular materials, the surface of the previous lift should be scarified to about a 75 mm depth followed by proper moisture-conditioning and recompaction.

3.0 COMPACTION AND MOISTURE CONDITIONING

“Landscape fill” material should be placed in compacted lifts not exceeding 300 mm and compacted to a density of not less than 90 percent of SPD unless a higher percentage is specified by the jurisdiction.

“General engineered fill” and “select engineered fill” materials should be placed in layers of 150 mm compacted thickness and should be compacted to not less than 98 percent of SPD. Note that the contract may specify higher compaction levels within 300 mm of the design elevation. Cohesive materials placed as “general engineered fill” or “select engineered fill” should be compacted at 0 to 2 percent above the optimum moisture content. Note that there are some silty soils which can become quite unstable when compacted above optimum moisture content. Granular materials placed as “general engineered fill” or “select engineered fill” should be compacted at slightly below (0 to 2%) the optimum moisture content.

“Structural engineered fill” material should be placed in compacted lifts not exceeding 150 mm in thickness and compacted to not less than 100 percent of SPD at slightly below (0 to 2%) the optimum moisture content.

4.0 “GENERAL ENGINEERED FILL”

Low to medium plastic clay is considered acceptable for use as “general engineered fill,” assuming this material is inorganic and free of deleterious materials.

Materials meeting the specifications for “select engineered fill” or “structural engineered fill” as described below would also be acceptable for use as “general engineered fill.”

5.0 “SELECT ENGINEERED FILL”

Low to medium plastic clay with the following range of plasticity properties is generally considered suitable for use as “select engineered fill”:

Liquid Limit	= 20 to 40%
Plastic Limit	= 10 to 20%
Plasticity Index	= 10 to 30%

Test results should be considered on a case-by-case basis.

“Pit-run gravel” and “fill sand” are generally considered acceptable for use as “select engineered fill.” See exact project or jurisdiction for specifications.

The “pit-run gravel” should be free of any form of coating and any gravel or sand containing clay, loam or other deleterious materials should be rejected. No material oversize of the specified maximum sieve size should be tolerated. This material would typically haves a fines content of less than 10%.

The materials above are also suitable for use as “general engineered fill.”

6.0 "STRUCTURAL ENGINEERED FILL"

Crushed gravel used as "structural engineered fill" should be hard, clean, well graded, crushed aggregate, free of organics, coal, clay lumps, coatings of clay, silt, and other deleterious materials. The aggregates should conform to the requirement when tested in accordance with ASTM C136 and C117. See exact project or jurisdiction for specifications. This material would typically haves a fines content of less than 10%.

In addition to the above, further specification criteria identified below should be met:

"Structural Engineered Fill" – Additional Material Properties

Material Type	Percentage of Material Retained on 5 mm Sieve having Two or More Fractured Faces	Plasticity Index (<400 μm)	L.A. Abrasion Loss (percent Mass)
Various sized Crushed Gravels	See exact project or jurisdiction for specifications	See exact project or jurisdiction for specifications	See exact project or jurisdiction for specifications

Materials that meet the grading limits and material property criteria are also suitable for use as "select engineered fill."

7.0 DRAINAGE MATERIALS

"Coarse gravel" for drainage or weeping tile bedding should be free draining. Clean, free-draining gravel or crushed rock generally containing no more than 5 percent fine-grained soil (particles passing No. 200 sieve) based on the fraction passing the 3/4-inch sieve. Or material with sand equivalent of at least 30.

"Coarse sand" for drainage should conform to the following grading limits:

"Coarse Sand" Drainage Material – Percent Passing by Weight

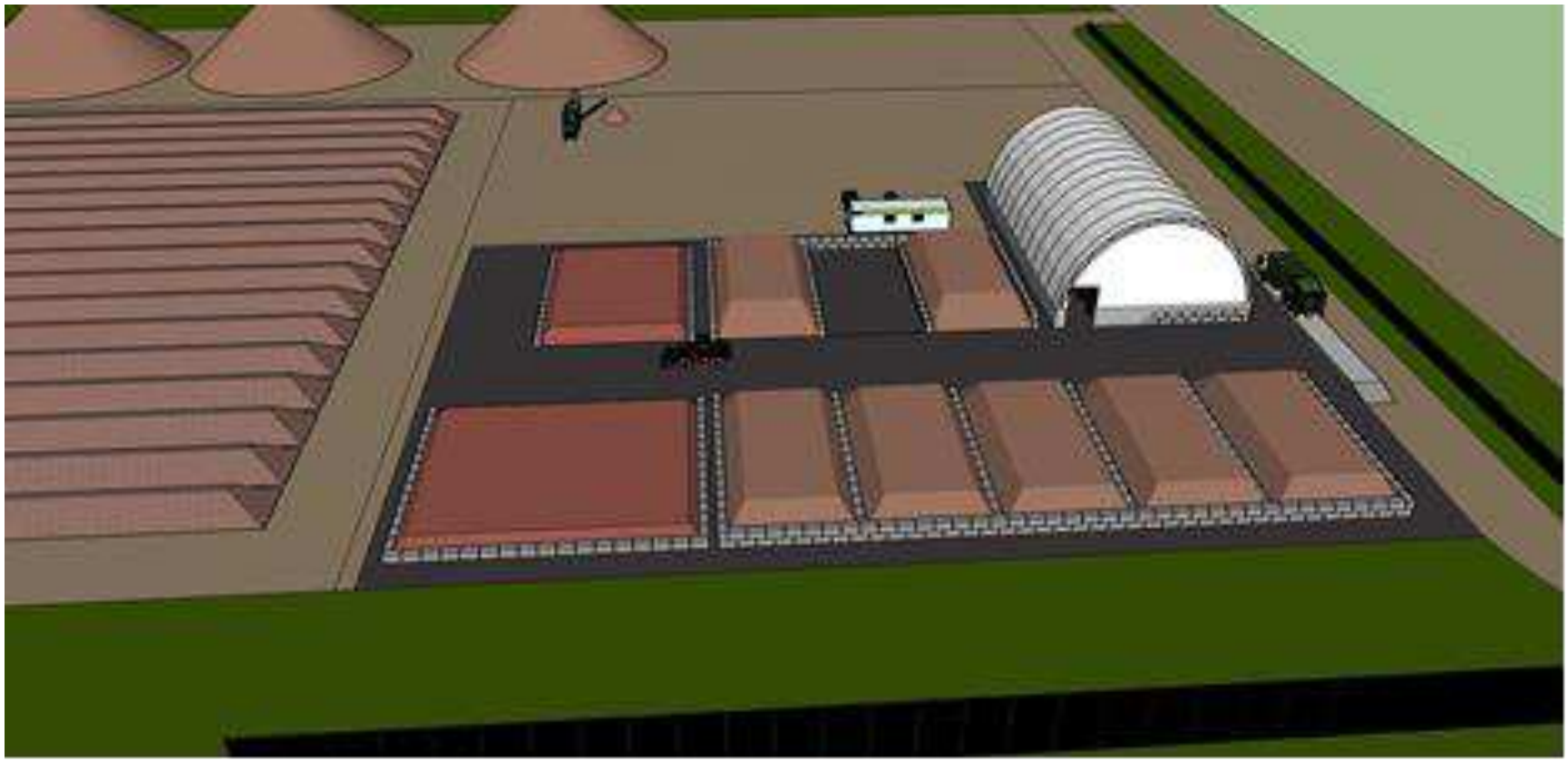
Sieve Size	Coarse Sand*
10 mm	100
5 mm	95 – 100
2.5 mm	80 – 100
1.25 mm	50 – 90
630 μm	25 – 65
315 μm	10 – 35
160 μm	2 – 10
80 μm	0 – 3

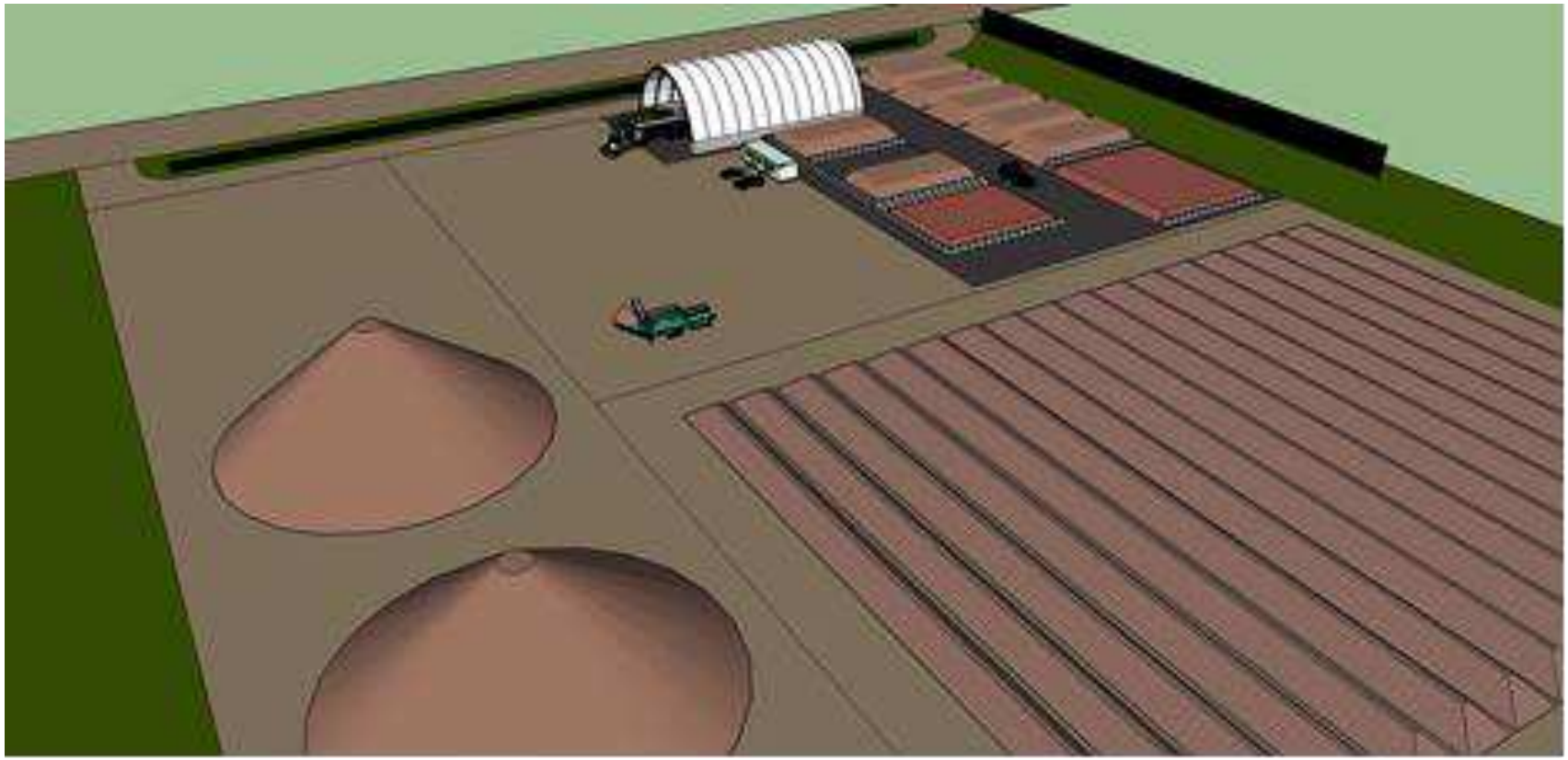
* From CSA A23.1-09, Table 10, "Grading Limits for Fine Aggregate", Class FA1

Note that the "coarse sand" above is also suitable for use as pipe bedding material. See exact project or jurisdiction for specifications.

8.0 BEDDING MATERIALS

The "Coarse Sand "gradation presented above in Section 7.0 is suitable for use as pipe bedding and as backfill within the pipe embedment zone, however see exact project or jurisdiction for specifications.





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mition of Taber and
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for the Arts project; to
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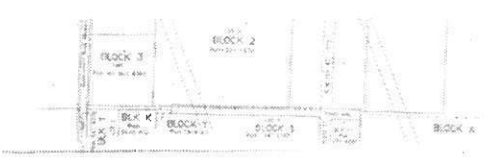
town under its previ-
se, police station, and
f $73,000. Coun.(s) Jack
ed in opposition.



PROPERTY DESCRIPTION N ½ SEC 8 TWP 10 RNG 16 W4M	OWNER (Agent)/PROPOSAL
SUBDIVISION APPLICATION **TT-16-0-002** **PLAN 7819AQ, BLOCK A1/B1**	Brown Okamura and Associates Ltd. proposes as follows: An application intended to subdivide the subject property (10 HA) into 1 industrial and 2 urban reserve lots.

Any adjacent land owner may comment on the above application by ensuring that the Department of Planning and Economic Development receives a written submission prior to February 18, 2016. Any submissions received will be considered by the Subdivision and Development Authority prior to making a decision on the noted application.

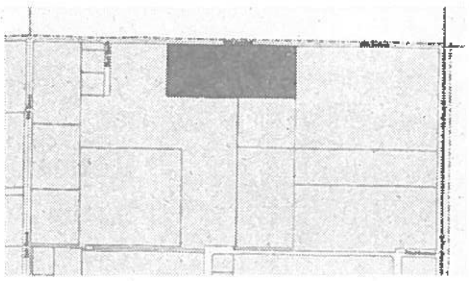
Any inquiries on any matter contained within this Notice may be made to the Department of Planning and Economic Development at the Town of Taber, 4900A – 50 Street, Taber, T1G 1T1, Phone 403-223-5500 ext. 5527.

Public Hearing • Town of Taber
Development Permit Application 16-07

Take notice that the Town of Taber has received a Development Permit application for a composting materials handling facility located in a Direct Control (DC-3) district. The development is considered a permitted use in this district. The proposed development will be located on a portion of 5190 – 80th AVENUE; BLOCK A1 PLAN 7819AQ and a portion of BLOCK B1 PLAN 7819AQ.

In accordance with Section 4(a) of Bylaw 11-2015, the Town of Taber will be holding a public hearing and discussion for the proposed development on Monday, February 22, 2016 at 5:00PM in the Town Council Chambers, Administration Building, A4900 – 50th Street, Taber, Alberta.

A portion of 5190 – 80th AVENUE; BLOCK A1 PLAN 7819AQ and a portion of BLOCK B1 PLAN 7819AQ; indicated in the sketch below:



If you are unable to attend the public hearing but would like to submit your comments/concerns in writing, please submit them to the Town Office no later than noon on Monday, February 22, 2016.

Any questions regarding the proposed development can be directed to:

Katie Tyo

Planner/Economic Development Officer

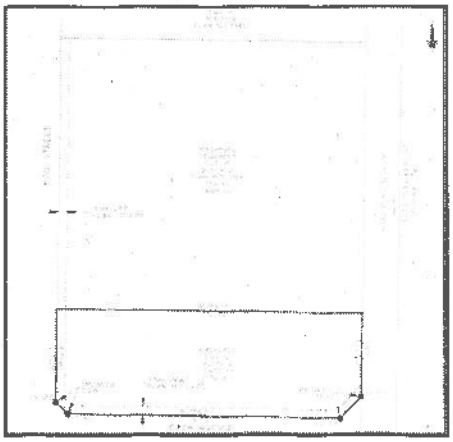
Town of Taber

A - 4900 50 St., Taber, AB T1G 1T1

Phone: 403-223-5500 ext. 5527

THE TOWN OF TABER HEREBY GIVES NOTICE

PURSUANT TO SECTION 653(4) OF THE MUNICIPAL GOVERNMENT ACT, THAT THE FOLLOWING SUBDIVISION APPLICATION IN THE TOWN OF TABER HAS BEEN RECEIVED



PROPERTY DESCRIPTION SE ¼ SEC 8 TWP 10 RNG 16 W4M	OWNER (Agent)/PROPOSAL
SUBDIVISION APPLICATION **TT-16-0-003** **PLAN 071 2104, BLOCK 2, LOT 10**	Halma Thompson Land Surveys Ltd. proposes as follows: An application intended to subdivide the subject property (2.18HA) into 2 industrial lots.

Any adjacent land owner may comment on the above application by ensuring that the Department of Planning and Economic Development receives a written submission prior to February 25, 2016. Any submissions received will be considered by the Subdivision and Development Authority prior to making a decision on the noted application.

Any inquiries on any matter contained within this Notice may be made to the Department of Planning and Economic Development at the Town of Taber, 4900A – 50 Street, Taber, T1G 1T1, Phone 403-223-5500 ext. 5527.

A - 4900 50 St. Taber, T1G 1T1
Phone 403-223-5500 • Fax 403-223-5530
email: town@taber.ca • website: www.taber.ca • Keeping Our Community Informed

TOWN OF TABER
BYLAW NO. 11-2015

A BYLAW FOR THE PURPOSE OF AMENDING THE TOWN OF TABER LAND USE BYLAW IN ACCORDANCE WITH THE MUNICIPAL GOVERNMENT ACT, CHAPTER M-26, REVISED STATUTES OF ALBERTA 2000, AS AMENDED

WHEREAS the Town of Taber adopted Land Use Bylaw No. 4-2006;

AND WHEREAS Council, having adopted a Municipal Development Plan, in accordance with Section 641 of the Municipal Government Act, may exercise particular control over the use and development of land or buildings within an area of the Town and may designate that area as a direct control district in its land use bylaw;

AND WHEREAS Council wishes to amend Land Use Bylaw No. 4-2006 to allow for the possible development of a Municipal Solid Waste Management facility at the northern corner of the junction of NW-8-10-16-W4M and NE-8-10-16-W4M;

AND WHEREAS Council believes that the best way to allow for this development possibility while also allowing flexibility in approving and regulatory such facility and incorporating public comment is to create a Direct Control District;

AND WHEREAS the subject land is currently designated Urban Reserve – Industrial (UR-M) District through the Town's Land Use Bylaw No. 4-2006;

AND WHEREAS Council, having advertised the public hearing in the newspaper in accordance with Section 606 of the Municipal Government Act and having considered at a public hearing the concerns of persons claiming to be affected by this bylaw amendment application, believes that the amendment of the Land Use Bylaw 4-2006 should be allowed in order to achieve the orderly, economical and beneficial use of land in the Town of Taber;

NOW THEREFORE, the Council of the Town of Taber in the Province of Alberta, duly assembled in Council, hereby amends No. Bylaw 4-2006 as follows:

1. A new Section 31: Direct Control (DC-3) District, as per attached "Schedule A", is added after the current Section 30.
2. The Land Use Map contained in Land Use Bylaw No. 4-2006 is amended by the re-districting of:

   A PORTION OF CIVIC ADDRESS 5190 – 80th AVENUE
   BLOCK A1
   PLAN 7819AQ
   EXCEPTING THEREOUT ALL MINES AND MINERALS
   COMPRISING THE EASTERNLY 278 METRES LYING IN THE NORTHERNLY 200 METRES IN THE NORTH WEST QUARTER OF SECTION 8-10-16-W4M

CONTAINING 5.56 HECTARES MORE OR LESS

and

A PORTION OF
BLOCK B1
PLAN 7819AQ
EXCEPTING THEREOUT ALL MINES AND MINERALS
COMPRISING THE WESTERNLY 222 METRES LYING IN THE NORTHERNLY 200 METRES IN THE NORTH EAST QUARTER OF SECTION 8-10-16-W4M
CONTAINING 4.44 HECTARES MORE OR LESS

as identified in the attached figure, "Schedule B", from Urban Reserve Industrial (UR-M) to Direct Control (DC-3).

3. The remainder of Bylaw 4-2006 is not amended by this Bylaw 11-2015 and remains in full force and effect.
4. It is the intention of the Town Council that each separate provision of this Bylaw shall be deemed independent of all other provisions herein and it is further the intention of the Town Council that if any provision of the Bylaw be declared invalid, all other provisions thereof shall remain valid and enforceable.

RES. 255/2015 **READ** a first time this 25th day of May, 2015.
RES. 280/2015 **AMENDING** Bylaw 11-2015 this 8th day of June, 2015.
RES. 307/2015 **READ** a second time this 22nd day of June, 2015.
RES. 308/2015 **READ** a third time this 22nd day of June, 2015.

Mayor

Chief Administrative Officer

"SCHEDULE A"

SECTION 31: Direct Control (DC-3) DISTRICT

1. Purpose

The purpose of this District is to permit and regulate a Municipal Solid Waste (MSW) handling operations, and other similar uses as well as uses allowed on the adjoining Urban Reserve – Industrial (UR-M) district, in the northeast corner of NW-8-10-16-W4M and the northwest corner of NE-8-10-16-W4M.

2. Uses

No person shall use any lot or erect, alter or use any building or structure for any purpose except one or more of the following:

Permitted Uses

(a) Existing Agricultural Operations
(b) Accessory Buildings, Structure, or Use
(c) Sign
(d) Stripping of Topsoil
(e) Sod Farming

Discretionary Use

(a) Public Uses
(b) Utilities
(c) Dugouts
(d) Kennel
(e) Compostable Materials Handling Facility
(f) Recycling Depot
(g) Storage, Outdoor

3. District Requirements

In addition to the General Land Use Provisions contained in Section 3, the following regulations shall apply to every development in this district.

Minimum Lot Area:	4 hectares
Maximum Lot Density:	As Council deems necessary
Minimum Front Yard:	As Council deems necessary
Minimum Rear Yard:	As Council deems necessary
Minimum Side Yard:	As Council deems necessary
Maximum Height:	As Council deems necessary
Minimum Landscaped Area:	As Council deems necessary
Signage:	As Council deems necessary

SECTION 31: Direct Control (DC-3) DISTRICT

4. Approval Procedures

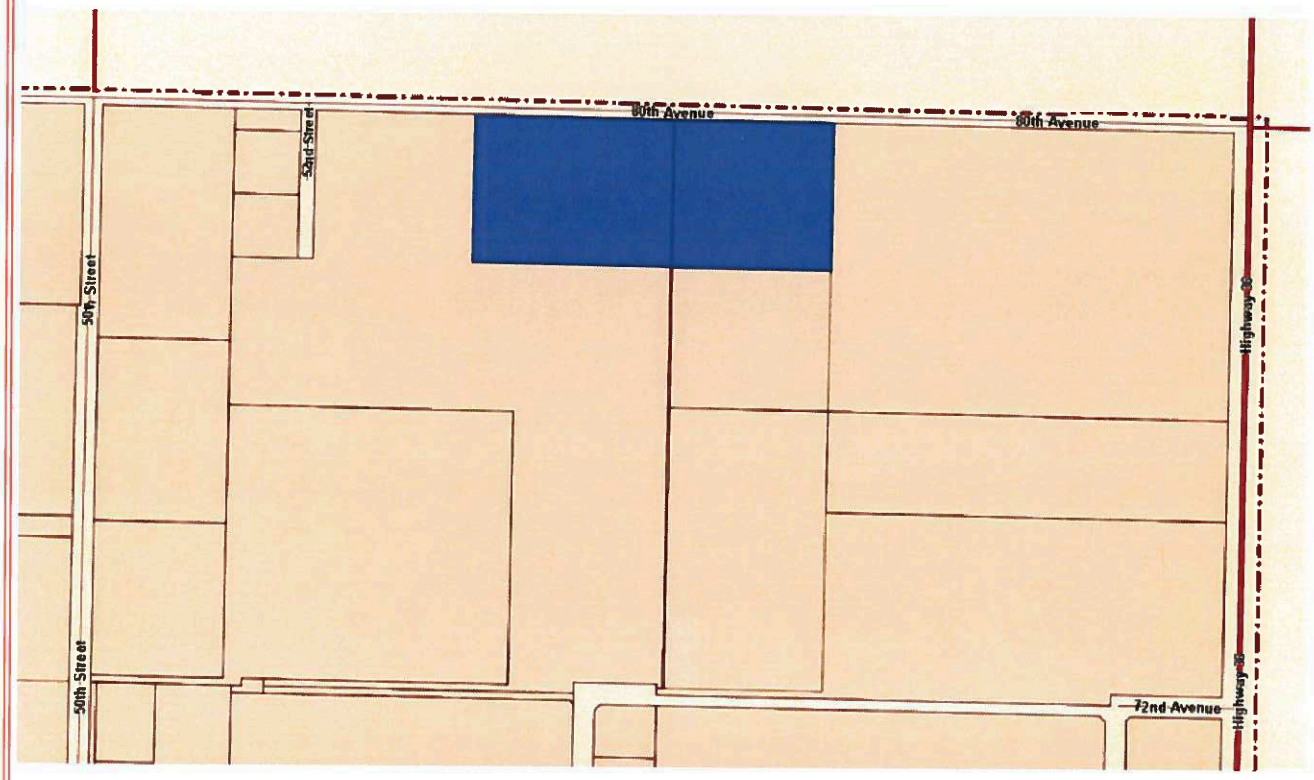
(a) Before Council considers an application for a use in the Direct Control district, Council shall:
   (i) Cause notice to be issued by the Development Officer in accordance with the notification procedures of Section 2 of this by-law to all those located within 100 metres of the boundaries of the property subject to the application;
   (ii) Hold a Public Hearing, and said Public Hearing shall be advertised in at least 1 edition of a newspaper circulating in the area and the Public Hearing shall be conducted in accordance with municipal public hearing procedures; and
   (iii) At the Public Hearing, hear any persons that claim to be affected by the decision on the application.

(b) Council may then approve the application with or without conditions, or refuse the application.

(c) Council hereby delegates to the Development Officer decision-making authority for all permitted uses listed for this district, including district requirements.

(d) All facilities constructed must meet the requirements of the Alberta Building Code and any other provisions under the Alberta Safety Codes Act at the time of development.

"SCHEDULE B"



Subject portion of 5190 – 80th AVENUE; BLOCK A1 PLAN 7819AQ and a portion of BLOCK B1 PLAN 7819AQ
From: Urban Reserve Industrial (UR-M)
To: Direct Control (DC-3)