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This Agreement made at Calgary, Alberta, effective this 24th day of April, 2007.

RESTRICTIVE COVENANT
("Agreement")

Pursuant to the *Land Titles Act*, R.S.A. 2000, Ch. L-4 and the
Municipal Government Act, S.A. 1994, Ch. M26.1

BY:

REMINGTON DEVELOPMENT CORPORATION, a Corporation with offices in the City of Calgary in the Province of Alberta

(the "Developer")

1.00 RECITALS

1.01 The recitals of this Agreement form part of the Agreement and may be referenced and relied upon in the determination of the meaning of this Agreement.

1.02 The Developer owns lands in Calgary, Alberta, outlined in Schedule "A" (the "Lands"), herein being both the dominant tenement and the servient tenement.

1.03 The Developer wishes to grant a Development and Restrictive Covenant over the Lands.

1.04 The intent of this Agreement is to ensure the Lands are developed and maintained strictly in accordance with the Methane Management Plan, Quarry Park Development, set out in Schedule "B" to this Agreement (the "Report") and to ensure that any prospective purchaser of the Lands has notice that the Lands are potentially methane impacted and that the Developer or any future owner of the Lands does not have any legal recourse to the City of Calgary (the "City") for any methane related issues regarding the Developer's Lands, or future Developer's Lands whether or not the methane on the Developer's Lands or future Developer's Lands is there as a result of migration of methane from City owned lands.

1.05 In the event that the Lands are subdivided in the future, whether by way of subdivision plan or otherwise, then in that event the term "Lands" as used in this Agreement will be interpreted as applying to all, one or some of the lots created from subdivision of the Lands.

IN CONSIDERATION OF THE COVENANTS AND CONDITIONS, the sufficiency and receipt of which is acknowledged, THE DEVELOPER AGREE AS FOLLOWS:

2.00 RESTRICTIVE COVENANT

2.01 The Developer will not develop the Lands without considering and complying with the Report.

2.02 The Developer acknowledges that the covenants contained in 2.01 are intended to burden and benefit the Lands and as such are covenants annexed to and running with the Lands.

2.03 The provisions of this section of this Agreement will only be actionable against the Developer in the event that the owner was, at the time of the alleged breach occurring, the registered Developer of the Lands. In the event this is not the case, then this provision of this Agreement will constitute an absolute defense to the Developer against such claim and may be plead as such.

3.00 MISCELLANEOUS PROVISIONS

3.01 LIABILITY AND INDEMNITY OF CITY

3.02 The Developer and all future owners of the Lands indemnify and save harmless the City from damage and expense sustained by the City, its servants, agents, and employees, from and against all losses, claims, demands, actions, payments, suits, recoveries, and judgments of every nature and description whatsoever brought or recovered against the City by reason of any act or omission of the Developer, its employees, contractors, engineers or agents and future owners of the Lands, in respect of and related to the existence of methane or methane migration.

3.03 The provisions of this section of this Agreement will only be actionable against the Developer in the event that the Developer was, at the time of the alleged breach occurring, the registered owner of the Lands. In the event that is not the case, then this provision of this Agreement will constitute an absolute defense to the Developer and may be plead as such.

3.04 BINDING ON SUCCESSORS

The provisions of this Agreement are binding upon the Developer and its successors in title, administrators and assigns.

3.05 SEVERANCE

If any provision of this Agreement or the application of the Agreement, or any portion of it, to any person is held by a Court having jurisdiction to be invalid or unenforceable, the remainder of this Agreement will not be affected thereby, and will retain its validity and enforceability.

3.06 JURISDICTION

The Court of Queen's Bench of Alberta will have the exclusive jurisdiction to determine all disputes and matters arising under this Agreement.

3.07 NOTICES

Any effective notice required to be given under this Agreement must be served on the Parties at the address noted below. The receipt of a notice will be deemed effective on the day it is received, if delivered personally or by fax at the address or fax number indicated below. If mailed, whether by ordinary or special mail, the notice will be deemed received on the fifth business day after it is posted.

The addresses for service are:

TO THE DEVELOPER:
Remington Development Corporation
200, 30 Glendeer Circle SE
Calgary, Alberta T2H 2Z7
Attention: Mr. Randall MacFarlane
Fax Number: 403-255-7530

TO THE CITY:
CITY OF CALGARY

Law Department
12th Floor, 800 Macleod Trail SE
Calgary, Alberta
Attention: Ms Glenda Cole
Fax Number: 403-268-4634

3.08 TERM

This Agreement will apply to the development of the Lands and future operation of the Lands. This Agreement is not intended to be registered against lands that are not methane impacted. In the event the Developer decides or a future owner can show to the satisfaction of the Developer that the Lands are not methane impacted, the Developer will, within a reasonable time of receipt of a request from the owner to do so, prepare and forward to the owner a registerable discharge of this Agreement from title to those lands.

3.09 ASSIGNMENT AND ASSUMPTION

This Agreement may be assigned by the Developer and assumed by future owners of the Lands. The City is not required to consent to such assignment or assumption. On the condition that the assignee or assuming party executes an assumption agreement in a form whereby the assignee agrees to assume and be bound by the terms and conditions of this Agreement the Developer shall be relieved of all responsibility in relation to this Agreement.

4.00 EXECUTION

4.01 The Agreement has been executed under seal and contains the signature of the proper officer of the Developer.

REMINGTON DEVELOPMENT CORPORATION

Per: _____

SCHEDULE A

FIRST

LOT 1, BLOCK 1
LOT 1, BLOCK 2
LOTS 1 AND 3, BLOCK 3
LOTS 1 AND 4, BLOCK 4

ALL IN PLAN 0712810

SECOND

MERIDIAN 5 RANGE 1 TOWNSHIP 23
SECTION 13
QUARTER NORTH EAST
CONTAINING 67.0 HECTARES (165.5 ACRES) MORE OR LESS

EXCEPTING THEREOUT:

PLAN NUMBER	HECTARES	ACRES
SUBDIVISION 188 LK	10.1	25.0
SUBDIVISION 0712810	31.385	77.55

EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

THIRD

MERIDIAN 5 RANGE 1 TOWNSHIP 23
SECTION 13
THAT PORTION OF THE NORTH WEST QUARTER
LYING TO THE EAST OF THE BOW RIVER AS SHOWN
ON THE TOWNSHIP PLAN APPROVED AT OTTAWA
28 MARCH 1888
CONTAINING 44.5 HECTARES (110.0 ACRES) MORE OR LESS
EXCEPTING THEREOUT:

PLAN NUMBER	HECTARES	ACRES
SUBDIVISION 0712810	14.797	36.56

EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

SCHEDULE A CONTINUED

FOURTH

MERIDIAN 5 RANGE 1 TOWNSHIP 23
SECTION 13
THAT PORTION OF THE SOUTH WEST QUARTER
LYING TO THE EAST OF THE BOW RIVER AS SHOWN
ON TOWNSHIP PLAN APPROVED AT OTTAWA 28 MARCH 1888
CONTAINING 46.5 HECTARES (115.0 ACRES) MORE OR LESS

EXCEPTING THEREOUT:

(A) PLAN NUMBER	HECTARES	ACRES
STREET 8311145	3.80	9.39

(B) THAT PORTION WHICH LIES TO THE EAST OF THE BOW RIVER AND TO THE SOUTH OF PLAN 8311145
CONTAINING 4.69 HECTARES (11.59 ACRES) MORE OR LESS

(C) PLAN NUMBER	HECTARES	ACRES
SUBDIVISION 9712029	5.087	12.57
SUBDIVISION 9812212	3.875	9.575
SUBDIVISION 9910446	0.637	1.576
SUBDIVISION 9912194	2.213	5.468
SUBDIVISION 9913500	0.472	1.17

EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

SCHEDULE "B"

Iridium Consulting Inc. report "Methane Management Plan, Quarry Park Development, Calgary, AB" prepared for Remington Development Corporation, Report dated July 14, 2006.

METHANE MANAGEMENT PLAN, QUARRY PARK DEVELOPMENT, CALGARY, AB

2275-98TH AVENUE SE
CALGARY, ALBERTA

PREPARED FOR:

REMINGTON DEVELOPMENT CORPORATION

PREPARED BY:

IRIDIUM CONSULTING INC.

14 JULY 2006

DISTRIBUTION:

Remington Development Corporation (4 copies)
City of Calgary (2 copies)
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EXECUTIVE SUMMARY

Remington Development Corporation (Remington) has begun the planning stages of a Brownfield development for the former Lafarge Canada Inc. (Lafarge) gravel pit in southeast Calgary which will include commercial, industrial, and residential land use elements. Lafarge dewatered the gravel deposits in the western part of the site in the early- to mid-1990s, and then backfilled and compacted the excavation(s) with fine-grained material containing elevated levels of organic carbon (i.e., Engineered Fill). Biodegradation of the organic carbon under saturated, anaerobic conditions has resulted in the production of methane gas.

In order to proceed with their proposed Quarry Park land development, Remington must mitigate and/or manage the methane gas generated by the Engineered Fill. This Methane Management Plan provides discussion and technical detail regarding the steps that will be necessary to mitigate and/or manage methane gas at Remington's proposed Quarry Park development. The components of the Methane Management Plan discussed in this document include:

- Excavation of Engineered Fill;
- Installation of a Permeable Trench;
- Utility Infrastructure Isolation;
- Building Methane Management; and,
- Methane Monitoring Program.

Remington will excavate all Engineered Fill underlying the proposed residential land use area. A Permeable Trench will be installed at the edge of the residential land use area to mitigate methane migration from the adjacent commercial land use area. Engineered Fill will be left in place in the commercial/industrial land use area, and potential methane migration into overlying buildings will be managed.

Methane action levels have been developed based on discussions with the Calgary Health Region and consideration of the Calgary Health Region Draft Methane Policy (CHR 2005; dated April 2005). The site-specific methane action levels will be 5,000 ppm (parts per million) methane in the Permeable Trench or the residential sentinel wells. It is important to emphasize that action levels for the Permeable Trench and residential sentinel wells are site-specific and not generic guidelines. Indoor air methane action levels for commercial and/or industrial buildings will be 500 ppm for mitigation via the HVAC system and 5,000 ppm for building evacuation.

Methane management will be presented on a building-by-building basis and will take into account variables such as vertical and horizontal methane concentration and pressure, relative effectiveness of different methane mitigation systems, soil properties, hydrogeology, etc. The utility infrastructure underlying 18th Street will be isolated at its north and south terminations to ensure that methane gas does not migrate into adjacent residential communities.

A monitoring program has been developed that will include: (1) indoor and sub-slab methane measurements for commercial and/or industrial buildings (where applicable); (2) groundwater levels, relative pressure, and soil gas (methane, carbon dioxide, and oxygen) measurements at three locations in the Engineered Fill; (3) groundwater levels and methane measurements at nine locations in the Permeable Trench; and (4) groundwater levels and methane measurements at nine residential sentinel wells.

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1.0 INTRODUCTION

1.1 Background

Remington Development Corporation (Remington) is in the process of redeveloping the former Lafarge Canada Inc. (Lafarge) property located at 2275 98th Avenue SE, Calgary, AB (herein called the Subject Property), which is approximately 100 ha in size and has historically been used as a gravel pit. Lafarge began mining aggregate material in 1962. In the early- to mid-1990s, Lafarge dewatered the gravel deposits overlying bedrock in the western part of the Subject Property (EBA, 2000). Following extraction of the gravels, the excavation(s) were backfilled and compacted with material know as the "Engineered Fill" (Figure 1-1). Subsurface monitoring by a number of environmental consultants has shown that the Engineered Fill is a source of methane contained at a low relative pressure.

Methane (CH_4) is an odorless and colorless, flammable gas that is lighter than air. Methane can be an asphyxiant[1] but would have to reach concentrations approaching the upper explosive limits (CHR, 2005). The upper explosive limit for methane is 15% gas or 150,000 ppm (parts per million). For this reason, the primary concern with methane is the potential for indoor explosion. Health effects will not occur if methane is managed for explosion hazards. For the Quarry Park development, indoor air methane concentrations in commercial/industrial building will be managed at in the 500-5,000 ppm range. In the proposed residential area, methane will be managed at less than 5,000 ppm in subsurface soils.

This document is the Quarry Park Methane Management Plan that outlines the steps that will be taken by Remington to mitigate and/or manage subsurface methane gas. In discussions with the City of Calgary, Alberta Environment and Calgary Health Region, it was decided to issue the Methane Management Plan as an "Interim Final" in June 2006, and then as the "Final" plan in summer 2008. The Final Methane Management Plan would incorporate monitoring data and other measurements to be collected as part of the pilot testing and monitoring program which will be undertaken subsequent to the installation of the Permeable Trench. The Final plan will be developed in consultation with and reviewed to the satisfaction of the City of Calgary, Alberta Environment, Calgary Health Region (CHR), and possibly other stakeholders. Initiation of the residential development application process will not occur until such time as the Final Methane Management Plan is reviewed to the satisfaction of the City of Calgary and to all stakeholders.

1.2 Engineered Fill

The Engineered Fill was constructed from 1997-2000 and consists of approximately 1.8 million cubic metres[2] of fine-grained material containing elevated levels of organic carbon.

[1] An asphyxiant creates an oxygen deficient environment by displacing air (CHR, 2005).
[2] This volume estimate was determined by Cirrus using historic aerial photographs and borehole logs.

Groundwater headspace and soil vapour monitoring since approximately 2000 (EBA, 2000, 2002, 2004; AMEC, 2002; Golder, 2003; Cirrus, 2006a-g) has shown that the Engineered Fill has been generating methane gas.

The approximate extent and thickness of the Engineered Fill is illustrated in Figure 1-1. The main part of the Engineered Fill generally ranges in thickness from 1-6 m and extends approximately 1,100 m across the Subject Property. The center part of the main Engineered Fill is up to 12 m thick. There are two thinner and smaller areas of Engineered Fill. One extends northward from the main body, while the other is an isolated mass in the southwestern part of the Subject Property.

Four main lines of evidence suggest that the methane gas is derived from the biodegradation of organic carbon contained in the Engineered Fill under saturated, anaerobic conditions. First, the organic carbon content of the material is approximately 3-10 weight % (as measured by loss-on-ignition; EBA, 2002), which is sufficient to generate methane under appropriate conditions. Second, redox conditions at mid-deep levels are generally reducing and consistent with anaerobic conditions (Cirrus, 2005). Thirdly, carbon isotopic measurements of dissolved methane in groundwater and soil gas samples are consistent with methyl fermentation of organic carbon (Golder, 2003). Lastly, there is a correlation between the areas of thickness of Engineered Fill and elevated methane in soil gas and groundwater headspace (Figure 1-1 and EBA, 2002, 2004; Cirrus, 2006f).

The main issue that must be addressed prior to land redevelopment is the presence of elevated methane gas in the subsurface from the degradation of organic carbon from the Engineered Fill (Golder, 2003). The purpose of this Methane Management Plan is to address all potential issues related to methane gas such that land redevelopment can proceed in a manner that is safe and protective of human health.

1.3 Proposed Land Use Zoning

Land use zoning for the proposed Quarry Park Development is shown in Figure 1-2. The main components of the proposed development include: (1) a commercial/industrial zoned area transected by the north-south extension of 18th Street; (2) a residential zoned area lying west of the commercial/industrial zoned area and east of a greenbelt; and (3) a 150 to 200 m wide greenbelt located adjacent to the Bow River. The greenbelt area is proposed to remain an environmental reserve (parkland).

1.4 Proposed Development Schedule

2006

- Spring Commence major stripping and grading activities

- Summer Approval of Land Use and Outline Plan
- Summer Implement Interim Final Methane Management Plan
- Summer Initiate construction of Permeable Trench
- Fall Initiate 18th Street construction
- Fall Initiate construction of suburban office
- Fall Initiate construction of commercial/light industrial areas

2007

- Spring Initiate 24th Street construction
- Summer Complete construction of Permeable Trench
- Fall Complete 18th Street construction
- Fall Complete pilot testing of Permeable Trench
- Fall Submit groundwater diversion application (as required) with AENV

2008

- Spring Complete 24th Street construction
- Summer Occupancy of suburban office and commercial/light industrial areas
- Summer Issue Final Methane Management Plan
- Summer Lafarge lease expires (June)
- Winter Lafarge lease expires (December)

2009

- Winter Initiate residential construction and infrastructure
- Spring Decommission Lafarge bridge

1.5 Methane Delineation

Methane monitoring at the Subject Property has been undertaken by a number of consultants (e.g., EBA, 2000, 2004; AMEC, 2002; Golder, 2003; Cirrus, 2005, 2006a-g). With the exception of EBA and Cirrus, the monitoring focused on methane that evolved from groundwater headspace. Between 2001 to 2003, EBA installed 38 soil vapour wells in the main part of the Engineered Fill and showed that the fill is generating methane gas. Cirrus added an additional 37 wells in 2005, primarily in areas outside of the main Engineered Fill and began a monthly monitoring program (Cirrus, 2006a,b).

The Cirrus monthly monitoring program consists of the simultaneous measurement of soil gas (CH_4, CO_2, and O_2) and pressure using a CES-SVA portable gas sampler at selected A, B, and C-series wells (i.e., shallow to deep wells, respectively). Details of the program including installations, analytical methods, sampling methodology, and results can be found in Cirrus

(2006a). For delineation purposes, subsurface soil vapour and/or headspace methane concentrations have been reported as (Figure 1-1):

- No Action (<5,000 ppm[3]);
- Investigation (5,000 – 50,000 ppm); and,
- Action (>50,000 ppm);

The rationale for these action levels follows from discussions with the CHR and consideration of the Calgary Health Region Draft Methane Policy (CHR, 2005; dated April, 2005). The CHR (2005) Draft Methane Policy outlines four levels of investigation/action based on methane concentration and pressure for a proposed new development. The CHR (2005) investigation /action levels assume concentrations immediately below a building foundation or slab, and not necessarily at depth.

It is important to emphasize that the action levels proposed for the Quarry Park Methane Management Plan are site-specific values and not generic guidelines as per CHR (2005). As shown in the bullets immediately above, three actions levels have been adopted for delineation purposes at Quarry Park. Simplification to three, site-specific action levels was based on:

- Engineered Fill underlying Residential land will be excavated and replaced with clean fill;
- with the exception of one well nest at Quarry Park[4], pressures are less than 0.5 psi (pounds per square inch);
- Engineered Fill has a low vapour permeability relative to typical fine-grained material; and,
- methane mitigation will be undertaken in situations where the potential for elevated methane levels in shallow material could occur.

Soil gas (CH_4, CO_2, and O_2) concentrations can be expressed as peak or steady-state values. A peak value represents a single measurement, commonly taken at the beginning of a sampling event. A steady-state concentration is one that does not change over a period of time. Thus, steady-state is a function of relative concentration change and time. For soil gas measurements collected in Cirrus (2006, a-f), steady-state reflects little change in concentration over periods of tens of minutes. In terms of long-term monitoring (tens of years), steady-state would be demonstrated on a relatively flat concentration vs. time diagram.

The highest steady-state methane concentration[5] for wells measured from November 2005 to May 2006 by Cirrus are shown in Figure 1-1. The highest methane concentrations generally

[3] ppm = parts per million.
[4] The well nest is 14, which is located in the commercially-zoned area and will be where a landscaped pond will be located.

occur where the Engineered Fill is at least 7 m thick. With respect to proposed land use (Figure 1-2), the highest methane concentrations generally coincide with the commercial/industrial area. Parts of the proposed residential zoned area are currently underlain by Engineered Fill and include areas with methane concentrations in the Investigation and Action levels.

A map illustrating the highest relative pressure measurements from November 2005-May 2006 is shown in Figure 1-3. With the exception of well nest 14, all relative pressure measurements were less than 0.5 psi. Thus, based only on low methane gas pressure, no action would be required across the entire Subject Property (the one exception being well nest 14) in accordance with the pressure action component of CHR (2005). However, due to the presence of methane gas from the degradation of organic carbon in the Engineered Fill (Golder, 2003), a Methane Management Plan was developed to ensure that land redevelopment can proceed in a manner that is safe and protective of human health.

1.6 Quarry Park Methane Management Plan

The Methane Management Plan outlines the steps that will be taken by Remington to mitigate and/or manage subsurface methane gas at the Quarry Park development. In discussions with the City of Calgary, Alberta Environment and Calgary Health Region, it was decided to issue the Quarry Park Methane Management Plan as an "Interim Final" in June 2006, and then as the "Final" plan in summer 2008. The Final Methane Management Plan would incorporate monitoring data and other measurements collected as part of the pilot testing and monitoring programs which will be undertaken subsequent to the installation of the Permeable Trench. The Final plan will be developed in consultation with and reviewed to the satisfaction of the City of Calgary, Alberta Environment, Calgary Health Region, and possibly other stakeholders.

Remington is proposing to redevelop the former Lafarge gravel pit by excavating approximately 520,000 m^3 of Engineered Fill in the residential area, and leaving Engineered Fill in place in the commercial/industrial zoned areas. Methane in soil gas underlying the buildings in the commercial/industrial buildings would be managed. A Permeable Trench will be installed at the edge of the commercial/industrial zoned areas to ensure that methane does not migrate[6] into the residential area. The utility infrastructure underlying 18th Street will be isolated at its north and south terminations to ensure that methane gas does not migrate into these residential communities.

[5] The steady state methane concentration was determined by measuring methane for a period of time and taking the concentration at which little change occurred.
[6] Migrate in the soil gas or dissolved (in groundwater) gas phase.

A Request for Proposal was distributed among selected environmental consultants to retain experienced, qualified engineers to assist Remington with the mitigation and management components of the Methane Management Plan (Iridium, 2006).

The main steps of the Methane Management Plan, which comprise the following sections of this report, are highlighted below:

Section 3.0 - Excavation of Engineered Fill. Remington will excavate approximately 520,000 m^3 of material that currently underlies the residentially zoned part of the proposed development. Cirrus will conduct confirmatory sampling to ensure that the backfilled material is clean and that no Engineered Fill remains.

Section 4.0 - Installation of a Permeable Trench. WorleyParsons Komex has been retained to design and to supervise the installation of the Permeable Trench. The Permeable Trench has been designed to function in a passive mode but has the ability for gravity drainage, mechanical lifting of groundwater and air sparging as contingency measures.

Section 5.0 - Infrastructure Isolation. A large utility corridor will underlie 18th Street and possibly other areas of the Subject Property. WorleyParsons Komex has been retained to design the infrastructure isolation systems.

Section 6.0 - Methane Monitoring. Methane gas will be monitored in four locations: (1) below and within buildings constructed over Engineered Fill; (2) at selected well nests installed in the Engineered Fill post-development; (3) within the Permeable Trench including methane dissolved in groundwater and in the unsaturated zone; and (4) in soil gas and groundwater in the residential sentinel wells[7].

AMEC was retained to design passive and contingent methane control systems and to advise on in-building methane monitoring systems. Methane monitoring systems will be designed on a building-by-building basis. Some commercial and industrial buildings will have passive venting systems installed. Where required, commercial and industrial buildings built above the Engineered Fill will be constructed with contingent active construction elements and in-building methane monitoring systems. Iridium designed the monitoring program in consultation with Remington's consultants, the City of Calgary, Alberta Environment, and Calgary Health Region.

[7] See Figure 6-1 for the location of the residential sentinel wells.

1.7 Responsible Parties

Responsible parties and their roles in implementing the Quarry Park Methane Management Plan include:

Remington Development Corporation (and it's consultants) will be responsible for:

- remediation of the Subject Property including excavation of Engineered Fill, and installation of the Permeable Trench and utility infrastructure isolation systems (see Sections 4.0 and 5.0 for a description of these systems);
- design and construction of methane mitigation systems on a building-by-building basis in commercial and industrial areas of the site;
- monitoring of the Permeable Trench performance and downgradient sentinel wells until such time as the Land Association (i.e., a to-be-incorporated company) assumes responsibility;
- obtaining a license from Alberta Environment for groundwater diversion (as required) from the Permeable Trench;
- monitoring of sub-building and indoor air methane concentrations within commercial /industrial areas of the Subject Property until such time as the building owners assume responsibility;
- working with regulatory agencies to produce a Final Methane Management Plan;
- registering a Restrictive Covenant on all methane impacted land releasing the City of Calgary from any methane-related responsibly;
- registering an Encumbrance on all commercial/industrial and residential land outlining the Land Association's responsibilities and charges;
- releasing and indemnifying the City of Calgary for any methane-related issues at Quarry Park;
- ensuring that a qualified environmental consultant is retained and is responsible for administration of the Methane Management Plan and ongoing monitoring of mitigation systems;
- ensuring third party utilities are aware of the Methane Management Plan and the locations of the mitigation systems;
- notifying tenants and potential tenants of Methane Management Plan;
- ensuring subsequent purchasers are aware of the Methane Management Plan, and their risks and responsibilities; and,
- entering into a Special Development Agreement with the City of Calgary to address specifics of the implementation of the Methane Management Plan including, but not limited to the above, to the satisfaction of the City.

The Land Association will be responsible for:

- collecting funds from commercial/industrial and residential land owners (the residential contribution will be on a per door basis for residential approved land use density, and the commercial/industrial will be on a per square foot, pro-rated allocation);
- maintenance, operation, and monitoring of the Permeable Trench and monitoring of residential sentinel wells until the City of Calgary and Calgary Health Region agree that monitoring is no longer required;
- ensuring that a qualified environmental consultant is retained and is responsible for administration of the Methane Management Plan and ongoing monitoring of mitigation systems;
- ensuring third party utilities are aware of the Methane Management Plan and the locations of the mitigation systems;
- notifying tenants and potential tenants of Methane Management Plan; and,
- ensuring subsequent purchasers are aware of the Methane Management Plan, and their risks and responsibilities.

The building owners will be responsible for:

- monitoring of sub-building and indoor air methane concentrations in commercial/ industrial areas of the Subject Property.

The City of Calgary will be responsible for:

- ensuring that protocols for gas monitoring before entering confined spaces are strictly followed by City staff and contractors working on City infrastructure within the Subject Property; and,
- ensuring that City staff and contractors working on City infrastructure within the Subject Property are made aware of the location(s) of subsurface infrastructure(s).

2.0 EXCAVATION OF ENGINEERED FILL

2.1 Residential Area

2.1.1 Estimated Extent and Volume

The estimated extents of Engineered Fill in the residential land use area are indicated in Figure 2-1. Three distinct areas of Engineered Fill have been identified as Excavation 1, Excavation 2, and Excavation 3 (Figure 2-1).

The extents of Engineered Fill have been estimated based on the following information:

- Historical Aerial Photographs (1999 – 2004) provided by Lafarge;
- Cirrus Phase II ESA Borehole Logs (Cirrus, 2005);
- EBA Borehole Logs (EBA, 2000, 2002); and,
- Soil Gas Monitoring Well Installation Borehole Logs (Cirrus, 2006a).

The volume of Engineered Fill to be excavated was estimated using "cut and fill" calculations (Figure 2-2). The depth of Engineered Fill in the three Excavations was determined from borehole logs compiled from Cirrus (2005, 2006a) and EBA (2000, 2002). The vertical extent of the Engineered Fill was assumed to be the fill/bedrock interface at all borehole locations.

The approximate volume of Engineered Fill to be excavated from the residential land use area is:

Excavation	Volume (m^3)
1	210,000
2	200,000
3	110,000
Total	**520,000**

2.1.2 Excavation and Backfilling

Remington will excavate Engineered Fill as identified in Figures 2-2. The aerial extents of the Engineered Fill (as identified in Figure 2-1) will be surveyed and marked in the field by an accredited surveyor prior to excavation. It is anticipated that excavations 1, 2, and 3 will extend to the fill/bedrock interface.

Engineered Fill that is excavated from the residential land use area will be relocated to the commercial and/or industrial land use areas and used as near surface fill (above the water table) to minimize the potential for further methane generation due to anaerobic conditions.

The excavated areas will be backfilled to grade as required with imported fill and compacted to the appropriate Proctor density. Representative samples of imported fill will be analyzed to ensure that the material meets appropriate land use soil quality guidelines. The analytical schedule will consist of metals, BTEX, and F1-F4 hydrocarbons.

2.1.3 Confirmatory Program

The excavations will have finished extents that contain an interface with non-methane generating imported material and/or native material. At the completion of excavation, these interfaces will be visually inspected for indications of organic matter and/or debris to ensure the extents of the Engineered Fill have been reached. Additional material will be removed in any area that is suspected of containing organic matter and/or debris.

Once visual inspection indicates that the extents of the Engineered Fill have been reached, confirmatory soil samples will be collected and analyzed for Total Organic Carbon content[8]. Visual inspection results, photo documentation, confirmatory soil sampling results and sample locations will be included in a report to be provided to the City of Calgary, Alberta Environment, and the Calgary Health Region.

2.2 Commercial/Industrial Area

Remington does not anticipate excavating Engineered Fill underlying the proposed commercial/industrial areas, with the exception of water features, utility corridors, and building foundations. The extent of Engineered Fill underlying the proposed Commercial/Industrial area is shown in Figure 2-3. The highest steady state methane concentrations for the period Nov. 05 to May 06 are illustrated in Figure 1-1. Roads which will be underlain by Engineered Fill are illustrated in Figure 2-3.

There are two main parts of the proposed Commercial/Industrial area where methane concentrations above 50,000 ppm have been measured. The first coincides with the 18th Street right-of-way (compare Figures 1-1 and 2-3). The second is the water feature (i.e., pond) to be created in the center of the Commercial/Industrial area (Figure 2-3). This will be a shallow, "hot spot" excavation.

3.0 PERMEABLE TRENCH

3.1 General

A plan view illustrating the proposed location of the Permeable Trench (hereafter called the "Trench") is shown in Figure 3-1. The Trench will be installed in a landscaped area located between the commercial and residential land use areas, and inside of the internal access loop road.

An application to divert water under the Water Act has been submitted to Alberta Environment and will be held for processing pending water quality and discharge volume data obtained during pilot testing of the Trench.

3.1.1 Selection

The objective of the Trench will be to mitigate the lateral migration of methane, from the Engineered Fill left in place in the commercial/industrial land use areas, into the area of proposed residential development. Methane has the potential to migrate into the residential development within the unsaturated soil zone and as dissolved methane within the groundwater.

[8] Carbon analyses will be conducted using a Leco Carbon Analyzer calibrated against approximate ring standards. The Leco Carbon Analyzer measures evolved CO_2 and does not suffer from uncertainties in mass gain or mass loss using the standard loss on ignition test.

A number of barrier options were evaluated prior to selecting the preferred option. The Trench was selected as the preferred option for the following reasons:

- the Trench can be designed to mitigate methane migration for both soil vapour and groundwater;
- the Trench can be designed to remove and/or re-direct groundwater flow, as opposed to impeding groundwater flow; and,
- construction materials (i.e., gravels) are readily available on the Subject Property.

3.1.2 Summary

In previous versions of the Management Plan, the design of the Trench involved continuous draw-down and pumping of groundwater from the Trench. In meetings with Alberta Environment, a few items were discussed regarding continuous pumping. The items are as follows:

- continuous pumping of groundwater may not be necessary if the Trench can meet performance objectives in a more passive mode (such as gravity draining water from the Trench);
- maintenance of an actively pumping system will be more difficult and expensive over the long term; and,
- active pumping of groundwater should be built into the design as a contingency measure.

Based on the above items, the Trench design was modified, as discussed below.

The Trench has been designed to function in one of three ways:

1. Fully passive mode - operation in the fully passive mode will include venting to atmosphere any methane that migrates laterally through the unsaturated zone and fluxes off the groundwater surface, and allowing water to flow uninhibited horizontally across the Trench.
2. Gravity drainage passive mode - operation in the gravity drainage passive mode will include venting to atmosphere any methane that migrates laterally through the unsaturated zone and passively draining groundwater that is collected within the Trench to a discharge point.
3. Active mode - operation in the active mode will include mechanical recovery and/or air sparging of groundwater, as well as mechanical air sparging of soil vapours that accumulate in the Trench. Mechanical groundwater recovery and air sparging would only be used if operation in passive modes did not meet performance objectives (see Section 6.3 for performance objectives).

The general design of the Trench is illustrated in Figures 3-2 to 3-6. The design of the manhole housing the groundwater pumps is shown in Figure 3-7.

3.1.3 Design Basis

Hydrogeological and geological information from the following documents was used to design the Trench:

- Phase II Environmental Site Assessment, Proposed Quarry Park Development (Cirrus, 2005);
- Soil Gas Monitoring, Proposed Quarry Park Development (Cirrus, 2006a); and,
- Request for Proposal, Design and Install a Subsurface Methane Gas Migration Exposure Barrier and a Utility Infrastructure Isolation System (Iridium, 2006).

The following design criteria were assumed to estimate the volume of groundwater anticipated to drain to the Trench:

- average groundwater elevation and gradient equal to the post-development ground surface gradient, less one metre;
- average hydraulic conductivity of the fill (engineered or recent) of 1×10^{-7} m/sec; and,
- groundwater infiltration rate equal to 50 mm/year.

The following additional criteria were used to estimate the rate of methane migration into the Trench:

- methane migration rate by diffusion through the engineered or recent fill equal to 0.5 m/day; and,
- average matrix permeability of 10^{-9} cm^2 (CCME value for fine-grained soil).

3.2 Design Features

3.2.1 General

Illustrations of the Trench design are provided in Figures 3-2 to 3-9, and include the following features:

- high permeability core;
- filter layer to prevent clogging of the higher permeability core;
- lower groundwater collection and air sparging header;
- upper gas collection header;
- passive vents for release of methane gas;

- independent monitoring wells;
- passive discharge system for groundwater; and,
- pump assisted discharge system for removal of groundwater.

Each of these design features is described in the underlying text.

3.2.2 High Permeability Core

The high permeability core will comprise a clean layer of sub-rounded gravel screened to remove sizes over 75 mm diameter and under 20 mm diameter to establish a zone several orders of magnitude more permeable than the surrounding fill. The gravel zone will be constructed from above the top of the bedrock surface upwards to the ground surface, to form a continuous interception barrier. The gravel for constructing the high permeability core is available at the Subject Property, but will need to be screened to comply with the gradient specifications. This gravel is rounded, hard, durable river gravel.

The Trench will be hydraulically isolated from surface water features in the area by maintaining a minimum 5 m setback from these facilities and ensuring that fill material separating the surface water courses consists of low permeability clay till. Hydraulic isolation of the Trench at the Trench / water conveyance channel intersection is illustrated in Figure 3-8.

3.2.3 Filter Layer

The filter layer will consist of a durable, permeable, non-woven polyethylene fabric. This fabric, which is permeable to air and water, will serve to filter fines that could otherwise enter and potentially clog the Trench. High durability fabric is required to maintain integrity during installations involving coarse gravel. A Layfield Plastics, LP 1001 non-woven, polyethylene geotextile, or equivalent, has been specified for this application.

3.2.4 Gas and Water Collection Headers

The upper lateral gas collection header will allow for the free flow of methane within the Trench. It has also been designed to allow for air sparging of the unsaturated zone in the event that passive methane gas removal is not as effective as is presently expected. A 100 mm diameter, Big-O perforated permeable polyethylene pipe has been specified for this application.

The lower groundwater collection and air sparging header consists of a permeable collection pipe that will allow for the free flow of groundwater intercepted by the Trench, as well as the capability to sparge groundwater. Valves will be installed at set intervals along the piping to allow for isolation of specified areas for sparging. The header will be sized to transmit the total groundwater flow into the development area, as well as the water infiltrating the surface of the

development area. A 100 mm diameter, Big-O perforated permeable polyethylene pipe has been specified for this application.

3.2.5 Passive Vents

Passive vents will connect the subsurface barrier with the atmosphere. The vents will be knuckled to prevent water infiltration and can be oriented to encourage and maximize ventilation of the barrier layer during a variety of atmospheric conditions. The vents will be equipped with valves to enable efficient circulation of air in the event that sparging is required. 100 mm diameter, Schedule 40 stainless steel pipe has been specified for the passive vents. The vents will be installed at 90° angles in a sequential manner (i.e., every vent at 90° to the previous vent) to encourage air movement within the Trench during windy conditions. The vents will be maintained open during the passive mode of operation. Vent ends will be connected to a section of horizontal perforated HDPE piping, to further encourage passive venting of the Trench along it's entire length (Figure 3-9).

3.2.6 Monitoring Wells

Monitoring wells will be installed into the gravel at set intervals along the Trench. A schematic cross-section of a monitoring well is shown in Figure 3-9. The purpose of the monitoring wells will be to allow measurement of water levels, as well as concentrations of methane in the saturated and unsaturated zones of the Trench. These monitoring wells will also be used to identify any specific areas with higher concentrations of dissolved methane that may require air sparging.

3.2.7 Passive Discharge System for Groundwater Removal

The passive discharge system will direct groundwater collected within the Trench to a discharge point at approximately the elevation of the Bow River. This system will maintain only a slightly depressed groundwater level but will still allow for unsaturated conditions in the upper portions of the Trench. It is anticipated that operation of the Trench in the passive recovery mode will enable methane performance criteria to be met; however, in the case where further groundwater removal is required, the Trench can be operated in active or pump assisted mode.

The discharge system will include a passive flow meter and totalizer to monitor the flow and discharge volumes of the system. The discharge point will be located at the west and downgradient end of the development and the water will subsequently drain into the Bow River.

3.2.8 Pump Assisted Discharge System for Groundwater Removal

Pump assisted discharge will enable the water level to be maintained near the bottom of the Trench. This system will only be operated if methane concentrations are not meeting

performance criteria during passive discharge operation. Water will be collected in a conventional sealed concrete manhole, mechanically lifted to an open water conveyance channel and subsequently discharged in the Bow River. Passive vents will be included in the manhole design, though vapour (methane) monitoring is also required as a health and safety precaution. Water will be lifted by an electric submersible pump actuated using explosion proof level controls. Pumping redundancy is included to account for potential mechanical failure of a single pump.

The lifting system will include a passive flow meter and totalizer to monitor the flow and effectiveness of the pumping system. The discharge point will be located at the west and downgradient end of the development.

3.3 Pilot Testing of the Trench

Once construction of the Trench system is complete, pilot testing of the Trench will commence. The following information will be gathered during pilot testing:

- water levels within the Trench (and in the downgradient sentinel wells);
- concentrations of dissolved methane and methane gas within the Trench (and in the downgradient sentinel wells);
- volume of water influx into the Trench;
- estimated volume of water that will be discharged during operation; and,
- concentration of other dissolved parameters in water that will be discharged during operation.

This information will be used to assess Trench performance and to determine if the Trench should begin operation in passive or active modes. Information will also be used to support the Water Act Application to Divert water. It is noted that considerable time may be required before groundwater levels recover to their post-development equilibrium levels and the effectiveness of the Trench can be evaluated.

3.4 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) procedures will be included in the construction specifications to ensure that implementation occurs in a manner consistent with design assumptions. The following programs will be implemented during construction and testing of the Trench.

<u>General</u>

- Construction in accordance with specification and design drawings.

- Field supervision of construction by a qualified professional or certified technician.
- Regular reporting of construction progress and conformance with design.

Gravel

- Grain size distribution, hardness, and durability.

Geotextiles, Equipment, and Piping

- Review of mill certificates and product specifications prior to use.
- Review and implementation in accordance with manufacturers' instructions.
- Visual inspection to ensure continuity and competence of delivered materials.

4.0 UTILITY INFRASTRUCTIVE ISOLATION

4.1 Background

Engineered Fill will underlie nearly all of 18th Street through the proposed Quarry Park development (Figure 1-1). As a result, there is the potential for methane gas generated in the Engineered Fill to migrate laterally along the utility corridor and into residential communities north and south of Quarry Park. To mitigate this possibility, the utility corridor at the north and south ends of 18th Street have been designed to prevent migration of methane gas (see locations in Figure 3-1).

4.2 Description

A drawing illustrating the utility corridor design at the south and north ends of 18th Street is provided in Figure 4-1. The design consists of a 1.5 m thick clay plug across the entire utility corridor adjacent to a residential community. The clay plug will serve to prevent longitudinal migration of methane along the pipeline. Construction will be undertaken in a manner to establish a continuous plug over the entire cross-section, and to develop a contact seal with the individual utilities.

The plug will be constructed using native soils containing a minimum 15% clay size by dry weight, that is moisture conditioned to within 2% of the optimum moisture content as measured using the Standard Proctor test, and compacted to a minimum 98% of the Standard Proctor Density. Hydrated bentonite clay will be included in seal areas where contact using conventional compaction cannot be assured. Utilities will also intersect the Trench at two locations. Figure 4-2 illustrates the details of these intersections.

4.3 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) procedures will be included in the construction specifications to ensure that implementation occurs in a manner consistent with design assumptions. The following QA/QC program will be implemented during construction of the Trench and the infrastructure isolation barriers.

General

- Construction in accordance with specification and design drawings.
- Field supervision of construction by a qualified professional or certified technician.
- Regular reporting of construction progress and conformance with design.

Clay Soil Construction

- Visual inspection and source QA/QC testing including grain size distribution, Atterberg limits, standard Proctor test, and compacted permeability.
- Field testing including density, moisture content, and field-measured permeability.

Equipment and Piping

- Review of mill certificates and product specifications prior to use.
- Review and implementation in accordance with manufacturers' instructions.
- Visual inspection to ensure continuity and competence of delivered materials.

5.0 BUILDING METHANE MANAGEMENT

5.1 Background

Methane management in building is relevant only to some commercial and industrial buildings because the Trench will mitigate migration of methane into the residentially zoned area. Some commercial and industrial buildings at the Subject Property may be fitted with a methane management system. Industrial buildings located in the eastern part of the Subject Property will be underlain by native material that does not generate methane and may not be constructed with methane management systems. Methane management systems will be considered on a building-by-building basis as part of the Development Permit process.

In commercial and industrial areas underlain by Engineered Fill, the primary objective of the methane management systems will be to reduce the potential for methane gases to accumulate in the buildings to potentially harmful levels. The building design(s) for methane management will be building-specific and take into account variables such as vertical and horizontal methane concentration and pressure, relative effectiveness of different methane mitigation systems, soil properties, hydrogeology, etc.

5.2 System Principles

Diagrams illustrating the system principles discussed below are provided in Figures 5-1 and 5-2. The following sections provide general details regarding the proposed construction systems for the building's passive methane management systems, including some typical completion details for various physical components of the methane management systems.

Contingent measures and conditions regarding activation of the passive venting systems are also provided. In addition, automated and manual monitoring requirements related to short-term and long-term monitoring from within the building envelope are included. Finally, a recommended emergency response plan is included for buildings completed with automated monitoring systems requirements. The drawings provided are specific for slab-on-grade buildings; however some of the proposed buildings may include basements, parkades, or other subsurface building elements, and consequently details regarding these elements are only discussed where applicable.

5.3 Gas Barriers and Passive Venting System

5.3.1 Passive Construction Elements

The methane management systems would be installed in concert with the construction of the buildings. In principle, in order to reduce the likelihood for infiltration into the buildings and its inhabitants from the subsurface methane, the system will involve provision of a gas impermeable membrane barrier and preferable alternative venting outside the building envelope to prevent infiltration of methane into the building.

For the slab-on-grade buildings, the methane management measures will involve providing a preferential alternative pathway for subsurface methane to travel beneath the building slab and venting to the atmosphere (Figure 5-1). Methane is less dense than air and will rise along the path of least resistance. Thus, the installation of an impermeable membrane barrier, which will be underlain by gravel with a methane collection system, will mitigate the collection of methane accumulating beneath the slab and infiltrating into the building.

A typical layout design for the gas barrier and passive venting system for a large building is shown in Figure 5-1. Details regarding the various components of the system are shown in Figure 5-2. The principal components of the gas barrier and passive venting system for the proposed slab on grade buildings include:

- porous granular sub-base (washed rock);
- vapour extraction piping, including perforated PVC collector pipes, solid PVC header pipes;
- sub-slab membrane barrier;
- geotextile;
- ventilation riser(s) extending above the roofline topped with wind-driven turbine(s); and,
- in building combustible gas monitoring sensors.

The key design difference between large and small buildings would be in the frequency and sizing of the horizontal and vertical piping. The recommended piping sizes and spacings, provided in the details of the figures, are primarily dependent on the building size.

A series of slotted pipes embedded into a washed rock layer will be spaced across the building footprint. The piping network will be (or could be) connected to a common header, which is subsequently connected to a solid vertical riser located either inside or outside the building. The riser will then extend above the roofline where it will allow the methane to vent. The exhaust from the riser pipe should be placed downwind and separated sufficiently from the air intakes for the building to prevent introduction of the emissions into the building.

An impermeable PVC liner shall be placed above the washed rock layer in such a manner that prevents methane migration into the building interior. This involves the proper sealing of the liner to all penetrations (e.g., interior piles, utility lines) and to the perimeter of the building. Where multiple liner elements are required, the layers will be overlapped and properly solvent welded. All seals (e.g., grout) should be constructed of hydrocarbon resistant materials. The liner should be installed in accordance with the manufacturer's recommendations. A non-woven geotextile shall be installed on both sides of the PVC liner in order to protect it from puncturing upon contact with the underlying washed rock, any overlying backfill material, or the building slab itself.

If the building design includes a subsurface element, such as a parkade or basement, the perimeter foundation walls will also be isolated from the surrounding soils. This will be achieved through the use of a synthetic liner, or an appropriately applied spray-on liner located outside the building footprint. A vented washed rock layer will also be installed on the exterior side of the liner to ventilate any lateral methane migration. In both cases, a heightened degree of care will be employed during the backfilling as the potential for tearing of the liners is higher in a

vertical application. In some cases, a liner system which underlies the entire building structure, with no direct attachment to the building may be appropriate when vertical construction practices are deemed too problematic or if post-construction activities are anticipated (e.g., tenant specific sub-slab excavations) which may jeopardize the integrity of the liner. Graphical examples of these types of liner installations are not included, as part of this document. As part of the construction plans, the graphical details would be completed for each individual building.

Typically, a passive venting system, if appropriately designed and installed, will allow for some level of ventilation of gas accumulations without the aid of powered fans. However, wind turbines are recommended to provide some additional draw from the risers and also to protect against entry of foreign objects or precipitation into the venting system.

It is assumed that the groundwater table will not intercept any of the ventilation layers. Given such consideration, a de-watering system for the venting system is not believed to be necessary.

A cleanout shall be provided for each of the perforated collection and solid header pipes installed beneath the buildings. Clean-outs will not be required for buildings in areas in which temporal/spatial subsurface monitoring has established that potentially problematic vapour accumulations are not occurring (e.g. single family residential). The number of cleanouts will be dependent on the building design. However, it is anticipated that each collection and header pipe will require a cleanout. These cleanouts shall be accessible from ground level and be encased in a tamper-proof enclosure. The contractor must verify the location of the cleanouts with the design team and the building owners prior to and after completion of construction. This will ensure that these areas will not be obstructed after occupancy (i.e., not located under racks or other obstructions) and that access to the cleanouts can be obtained. The cleanouts can be used in the event that it is suspected that the flow rate in the ventilation system has decreased significantly due to some sort of blockage.

5.3.2 Contingent Active Construction Elements

It is proposed that the systems will operate passively initially and will only be operated actively if problematic vapour issues are identified at some time following construction. Problematic vapour issues would be considered present if threshold values for in-building methane concentrations exceeded 500 ppm. This action level has been adopted from Table 3 in the CHR (2005) Draft Methane Policy.

Any in-building measurements of 500 ppm or greater will trigger activation of the venting system. Activation will consist of the addition of electrically powered fans to the risers to create a lower pressure zone and/or increase in air flow beneath the floor slab. The electrically powered fans will be turned-off once indoor air measurement return to ambient values.

6.0 METHANE MONITORING PROGRAM

The proposed locations of Engineered Fill, Trench, and residential sentinel monitoring wells are shown in Figure 6-1. Instrumental and sampling methodology for the monitoring wells will follow Cirrus (2006a). The methane monitoring program will consist of the following four components:

Buildings (Sub-Slab and Indoor Air)

- sub-slab methane measurements beneath certain buildings constructed on Engineered Fill in commercial/industrial area(s) where high methane concentrations are anticipated; and,
- methane monitoring of indoor air methane concentrations within certain buildings constructed on Engineered Fill in commercial/industrial area(s).

Engineered Fill

- monitoring of groundwater levels, relative pressure, and headspace gas concentrations (methane, carbon dioxide, and oxygen).

Permeable Trench

- monitoring of groundwater levels, dissolved methane, and headspace methane concentrations.

Residential Sentinel Wells

- monitoring of groundwater levels, dissolved methane, and headspace methane concentrations.

The overall monitoring schedule and the contingency plan for the residential sentinel wells will be developed based on the results of the additional monitoring that will be undertaken during 2006-2008. The Monitoring schedule and contingency plans will be presented in the Final Methane Management Plan. Initiation of the residential development application process will not occur until such time as the Final Methane Management Plan is reviewed to the satisfaction of the City of Calgary and to all stakeholders.

6.1 Building Monitoring

The building monitoring program applies only to certain building located in the commercial/ industrial area(s).

6.1.1 Sub-Slab Methane Monitoring

Sub-slab and venting system monitoring will be conducted manually using instrumental and sampling methodology in Cirrus (2006a). The number of monitoring ports will be dependent on the size of the building and the number of horizontal runs. The contractor must verify the location of the monitoring ports with the building owners prior to and after completion of the construction. This will ensure that these areas will not be obstructed after occupancy (i.e., not located under racks or other obstructions) and that access to the monitoring ports can be obtained. Sub-slab and venting system monitoring of the vapour concentrations should be conducted, at a minimum, semi-annually. The frequency of monitoring may be revised over time, particularly if it is demonstrated that the methane concentrations beneath the building are low.

6.1.2 Indoor Air Methane Measurements

For building interiors and confined spaces, methane monitors will be installed at specific locations in the buildings. The number and location of the methane monitors will be dependent on a number of factors, such as the number of building tenants and the space occupied by each tenant. The monitors will be situated inside the building at ceiling heights with locations focused on confined areas within the building or areas with ignition potential (e.g., furnace and electrical rooms).

The rack/controllers for the building monitoring system shall be located in a centralized station, and both a visual and audible alarm system must be in place for each tenant space. The alarm will be at the entrance to the tenant space in order to provide an early warning for individuals entering the space. The monitors should be set on a "latching alarm" system that requires manual deactivation of any alarm triggers that may occur. The monitors shall be set to alarm at 500 ppm).

6.1.3 Building Alarm Emergency Response Plan

The following describes the contingency plan that will be implemented in the unlikely event that methane gas infiltrates into the building and reaches unacceptable concentrations. A two-level response will be adopted depending on whether the methane concentrations exceed either 500 ppm or 5,000 ppm. When the 500 ppm alarm is triggered on any of the methane monitors, evacuation of the building will be considered unnecessary. Should this alarm occur, both an automated and manual response will be initiated. The automated response will be the activation of the building's HVAC system. The building manager will then reset the alarm and confirm that the alarm is not persisting. If the alarm condition is not persistent or is intermittent, then a qualified mechanical contractor and/or air quality consultant will be contracted to identify the source of the problem and evaluate the air quality in the building. This investigation will

include identifying other gases that may be contributing to the indoor air quality to the degree that accumulations may be triggering the alarm conditions.

In the event that the 5,000 ppm alarm is triggered, the City of Calgary's Emergency Services should be contacted, provided a system malfunction is not occurring. Evacuation of the building will be initiated if advised by the City of Calgary's Emergency Services. If an evacuation order has been issued, the building will only be re-entered by trained personnel equipped with appropriate safety gear, or as instructed by City of Calgary's Emergency Services. In this situation, a minimum 24-hour period of high frequency (i.e., hourly) monitoring of methane concentrations should be conducted to ensure the ventilation system is efficient in evacuating excess methane. This monitoring should be performed by a qualified third party contractor.

The building should be re-entered by the general public only when the methane concentrations have decreased to below 500 ppm and demonstrate a clear decreasing trend suggesting a gradual return to steady-state normal background concentrations.

All monitoring activities including alarm calls, gas concentrations and any third party activity should be reported to the Calgary Health Region and/or the City of Calgary in the form of an annual report, prepared by a qualified consultant familiar with site conditions and management objectives of the systems.

6.2 Engineered Fill Monitoring

Three monitoring well nests are proposed to measure long-term pressure and soil gas in the Engineered Fill. Well locations are shown in Figure 6-1. Construction details for the nests are illustrated in Figure 6-2. The three locations have been selected to coincide with wells that have been monitored since 2000-2001. The wells will be installed after construction has been completed and may or may not coincide exactly with the locations shown in Figure 6-1.

Wells will be installed in nested pairs at each monitoring point. The upper, A-series monitoring well is intended to collect peak[9] soil gas (methane, carbon dioxide, and oxygen) in the unsaturated zone. The lower, B-series monitoring well will be installed to intersect the water table and is intended to collect peak headspace gases and dissolved methane in groundwater samples.

6.3 Permeable Trench Monitoring

Nine monitoring well nests are proposed to measure methane in the Trench. Well locations are shown in Figure 6-1. A cross-section of a monitoring well installation in the Trench is shown in Figure 3-9. Construction details for the two-level well nests will be similar to those which will be

[9] Peak refers to the first measurement recorded, in contrast to a steady-state measurement (see Cirrus, 2006a-f).

installed in the Engineered Fill and residential array (Figure 6-2). The methane monitoring program is designed to measure the effectiveness of the Trench.

When the Trench becomes operational, the wells will be monitored for groundwater levels and methane concentrations. The upper, A-series monitoring wells are intended to collect peak methane in the unsaturated zone. The lower, B-series monitoring wells will be installed to intersect the water table and are intended to collect peak headspace methane and dissolved methane in groundwater samples.

The compliance point for methane management will be the Trench. The trigger level for action will be >5,000 ppm methane in the unsaturated zone (A-series well) and/or headspace (B-series well). If one or more monitoring well(s) exceeds this level, the following steps shall be taken:

- the well(s) will be shut in and allowed to equilibrate for one week and then remeasured; and,
- if the well(s) returns a methane concentration above 5,000 ppm, the Trench will be checked to verify that it is operating properly and active modes will be initialized to meet the 5,000 ppm methane compliance level.

6.4 Residential Sentinel Well Monitoring

Nine monitoring well nests are proposed for the residential sentinel wells. Well locations are shown in Figure 6-1. Construction details for the two-level well nests are illustrated in Figure 6-2. The wells will be located in the residential area, across the "ring road" and approximately 15 m from the Trench wells (Figure 6-1). The monitoring program is designed to confirm the effectiveness of the Trench.

Wells will be installed in nested pairs at each monitoring point. The upper, A-series monitoring well is intended to collect peak methane in the unsaturated zone. The lower, B-series monitoring well will be installed to intersect the water table and is intended to collect peak headspace methane and dissolved methane in groundwater samples.

7.0 CLOSURE

This Methane Management Plan was produced by Iridium Consulting Inc. (Iridium) for Remington Development Corporation (Remington) by compiling technical contributions from three (3) environmental consultants. The consultants and their report sections include: Cirrus Environmental Services Inc. (Sections 2.0, 6.2, and 6.4), WorleyParsons Komex (Sections 3.0, 4.0, and 6.3), and AMEC (Sections 5.0 and 6.1). The three (3) environmental consultants were retained by Remington. Iridium and the other consultants do not accept any responsibility for this Methane Management Plan for any purpose other than intended or to any third party.

Iridium exercised reasonable skill, care, and diligence in compiling technical contributions from the three (3) environmental consultants. Iridium is not responsible for the technical contributions provided by the three (3) environmental consultants. The information was assumed to be accurate but cannot be guaranteed.

AMEC Earth & Environmental
APEGGA Permit to Practice P4546

_____
Randy Pennell, P.Eng.

Cirrus Environment Services Inc.
APEGGA Permit to Practice P8317

_____
William N. Hasegawa, P.Eng.

WorleyParson Komex
APEGGA Permit to Practice P2306

_____
Gordon Johnson, M.Sc., P.Eng.

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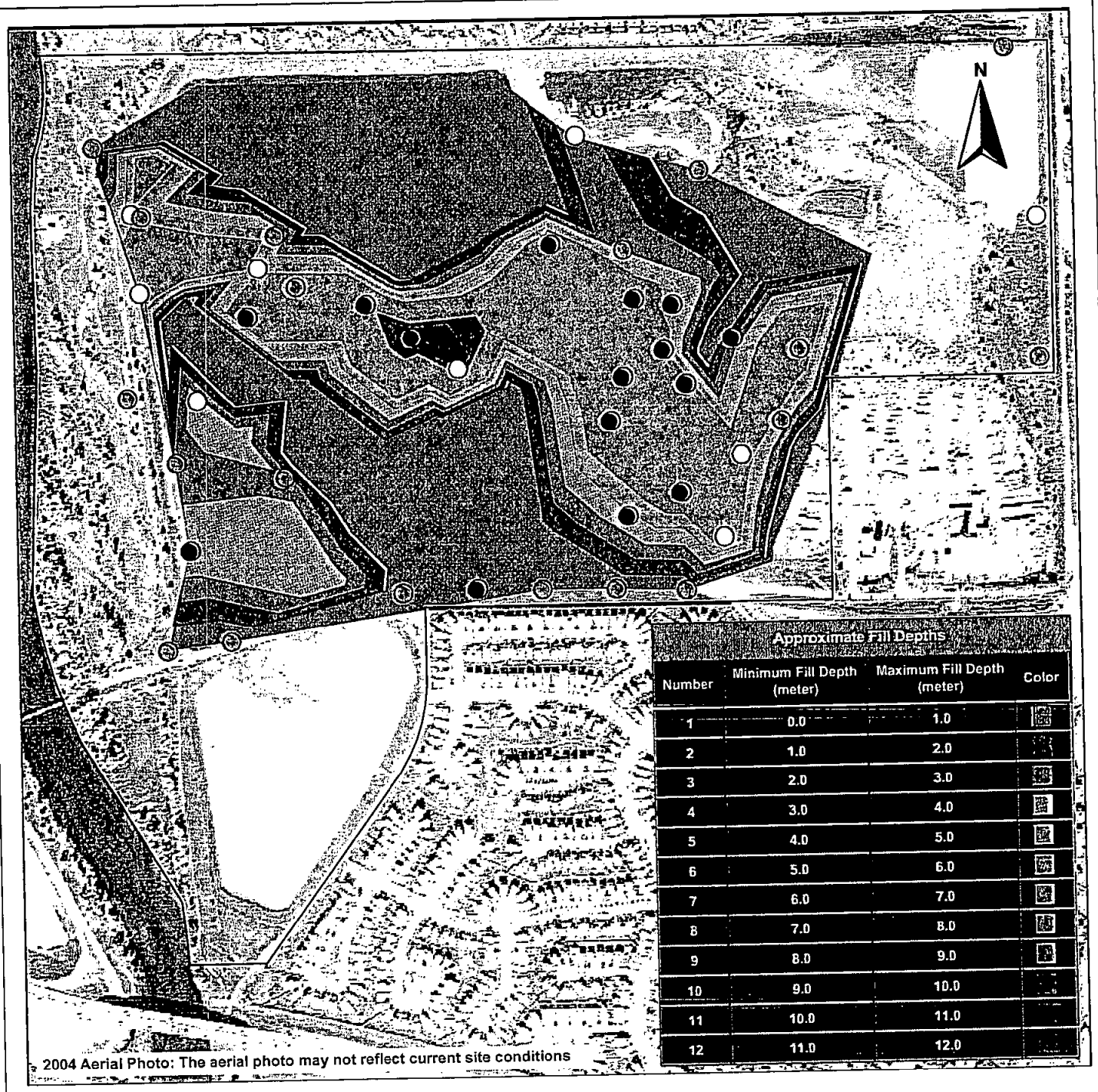
FIGURES



Approximate Fill Depths			
Number	Minimum Fill Depth (meter)	Maximum Fill Depth (meter)	Color
1	0.0	1.0	
2	1.0	2.0	
3	2.0	3.0	
4	3.0	4.0	
5	4.0	5.0	
6	5.0	6.0	
7	6.0	7.0	
8	7.0	8.0	
9	8.0	9.0	
10	9.0	10.0	
11	10.0	11.0	
12	11.0	12.0	

LEGEND

——— Subject Property boundary

Subsurface Methane Measurements

- Action (>50,000 ppm)
- Investigation (5,000 - 50,000 ppm)
- No Action (<5,000 ppm)

NOTES

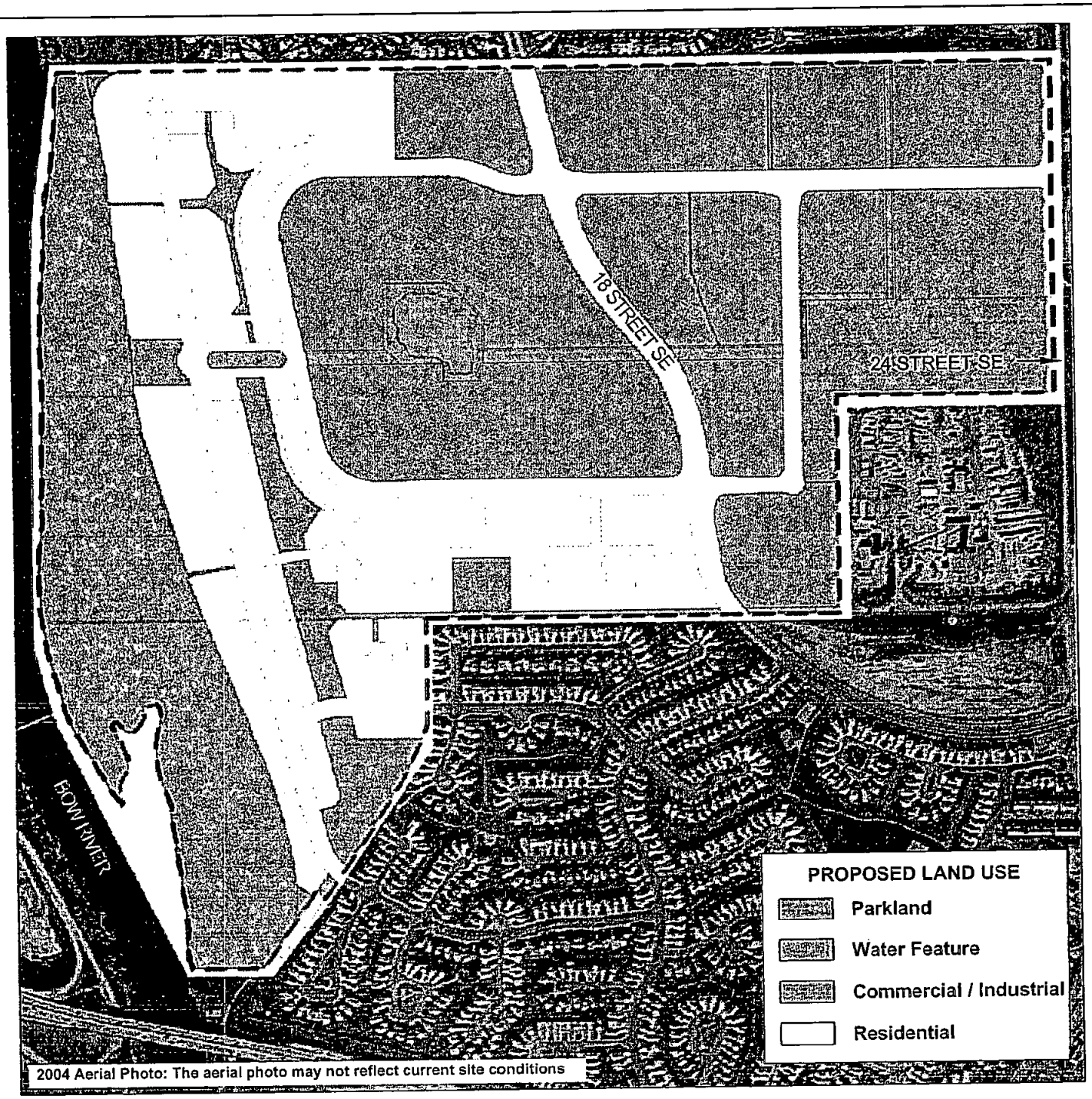
- Approximate extents and depths of Engineered Fill were interpreted from aerial photos and borehole logs
- The approximate volume of Engineerd Fill is 1,800,000 m³
- Methane concentrations shown are the highest steady state measurements taken by Cirrus from the period Nov 2005 to May 2006
- ppm = parts per million

1 : 8000 0 40 80 120 160 200m

APPROXIMATE EXTENT AND THICKNESS OF ENGINEERED FILL

Figure 1-1

CIRRUS ENVIRONMENTAL SERVICES INC.				Quarry Park 2275 - 98 Avenue SE Calgary, Alberta	DO NOT COPY
Drawn DJK	Date 7 JUN 06	Scale (approx.) 1:8000	Project 359-0905-6		



NOTES

- Proposed land use zoning for the Quarry Park Development was reproduced from an IBI Group drawing dated 28 Nov 2005 (Updated, 24 Feb 2006)

N

1 : 8000 0 40 80 120 160 200m

PROPOSED LAND USE ZONING

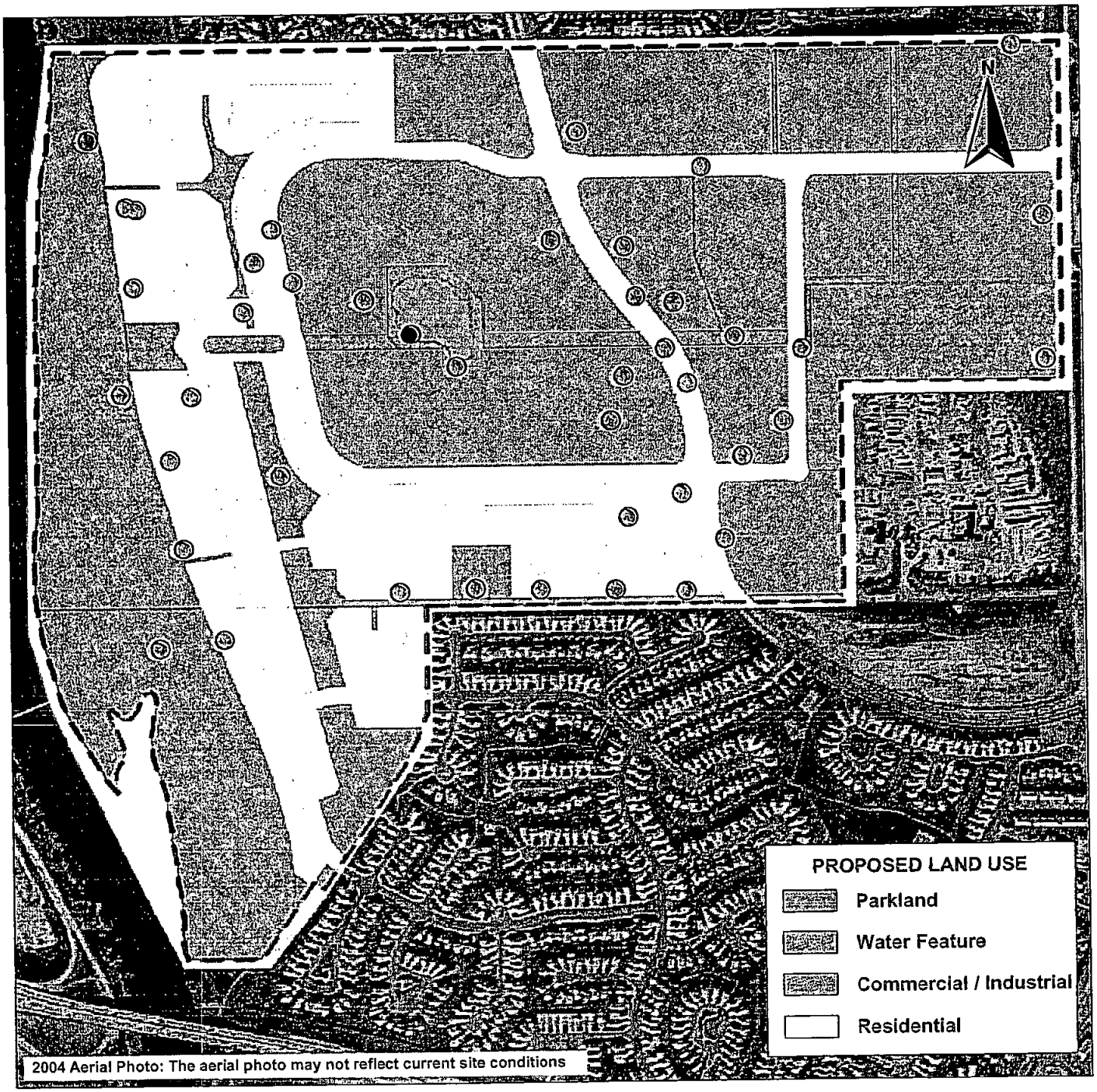
Figure 1-2

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06	1:8000	359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta

DO NOT COPY



LEGEND

Relative Pressure Measurements

- Action (>1.0 psi)
- Investigation (0.5 - 1.0 psi)
- No Action (<0.5 psi)

NOTES

- Proposed land use zoning for the Quarry Park Development was reproduced from an IBI Group drawing dated 28 Nov 2005 (Updated, 24 Feb 2006)
- Relative pressure measurements shown are the highest measurements taken by Cirrus from the period Nov 2005 to May 2006
- psi = pounds per square inch

1 : 8000 0 40 80 120 160 200m

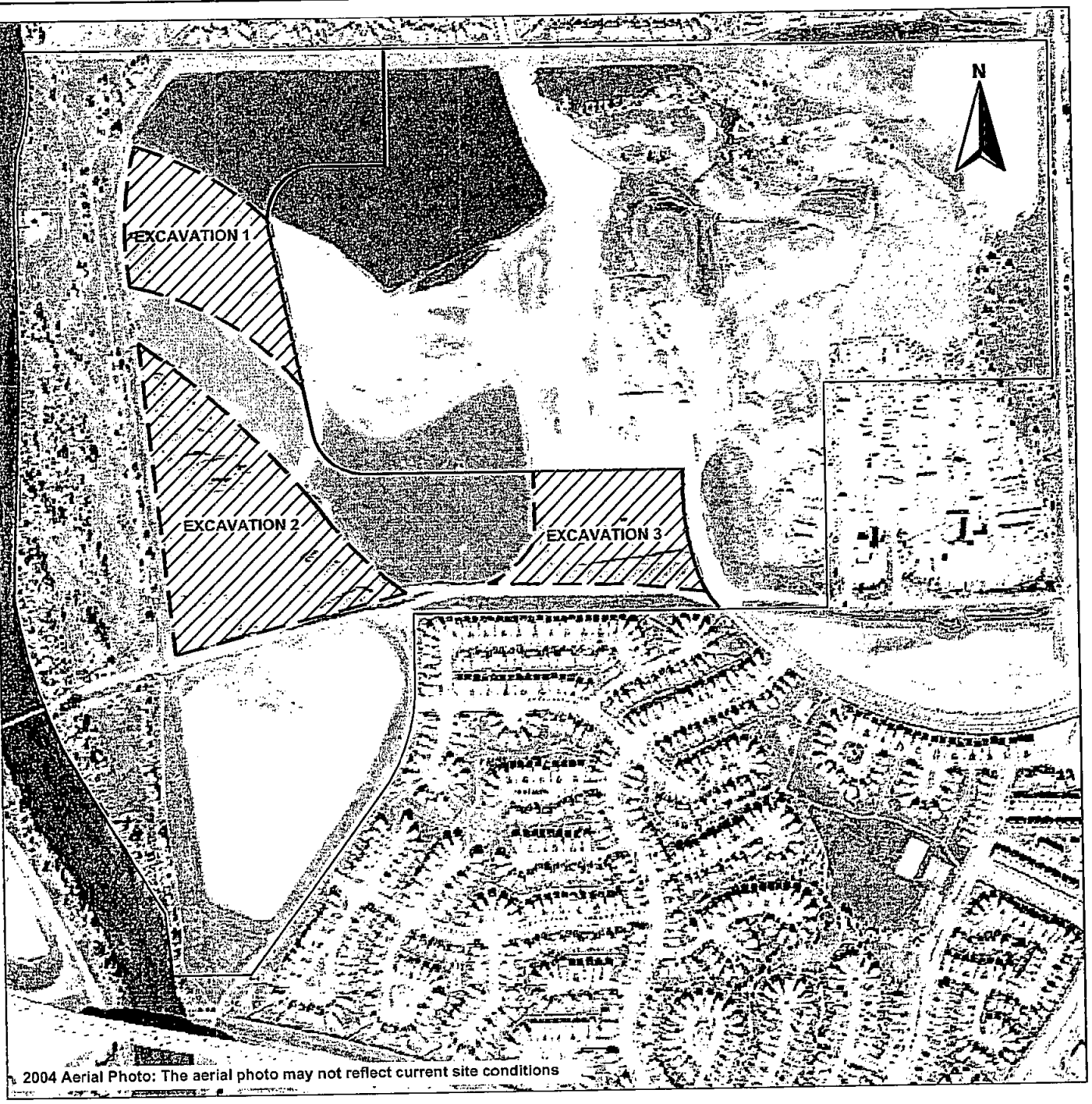
HIGHEST RELATIVE PRESSURE MEASUREMENTS

Figure 1-3

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06	1:8000	359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta



LEGEND

——— - Subject Property boundary

— — - Approximate extents of Engineered Fill

——— - Proposed location of Permeable Trench

1 : 8000 0 40 80 120 160 200m

EXTENT OF FILL IN RESIDENTIAL LAND USE AREA

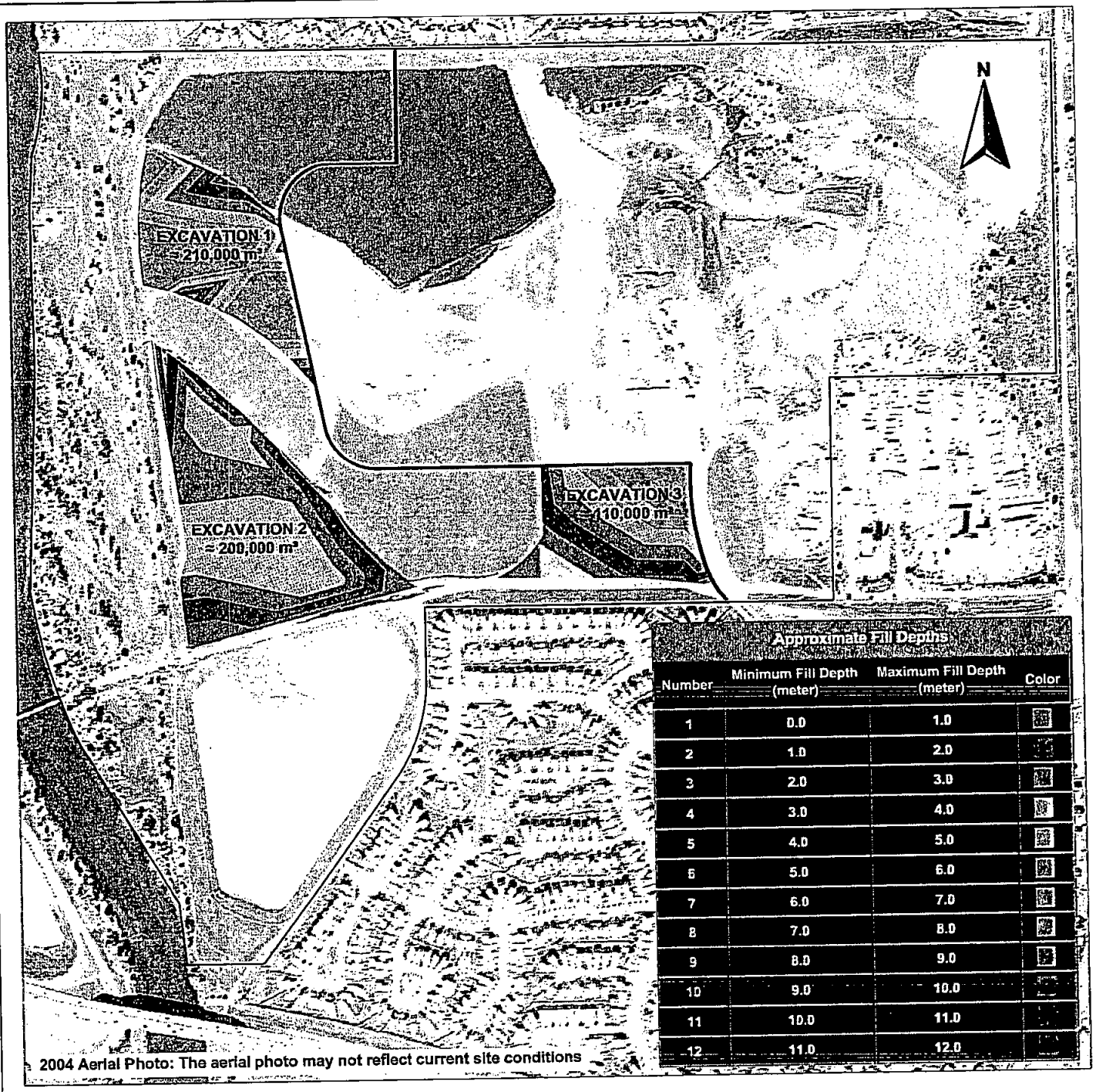
Figure 2-1

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06	1:8000	359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta

DO NOT COPY



Approximate Fill Depths			
Number	Minimum Fill Depth (meter)	Maximum Fill Depth (meter)	Color
1	0.0	1.0	
2	1.0	2.0	
3	2.0	3.0	
4	3.0	4.0	
5	4.0	5.0	
6	5.0	6.0	
7	6.0	7.0	
8	7.0	8.0	
9	8.0	9.0	
10	9.0	10.0	
11	10.0	11.0	
12	11.0	12.0	

LEGEND

——— - Subject Property boundary

——— - Proposed location of Permeable Trench

NOTES

- Approximate extents and depths of Engineered Fill were interpreted from aerial photos and borehole logs

1 : 8000 0 40 80 120 160 200m

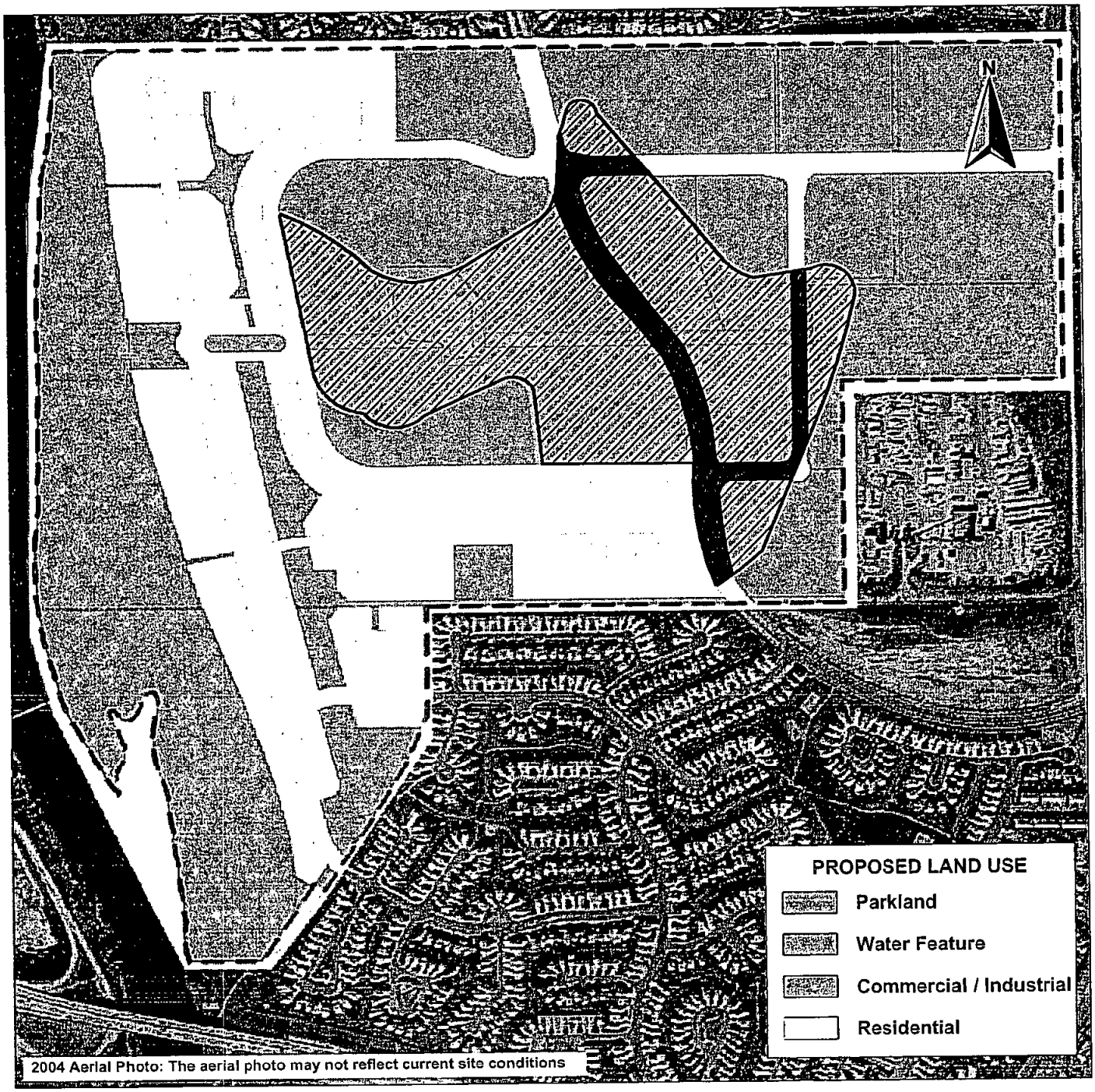
VOLUME OF FILL IN RESIDENTIAL LAND USE AREA

Figure 2-2

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06	1:8000	359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta



LEGEND

- Approximate extent of Engineered Fill in the commercial/industrial land use area
- Approximate location of road sections to be underlain by Engineered Fill

NOTES

- Proposed land use zoning for the Quarry Park Development was reproduced from an IBI Group drawing dated 28 Nov 2005 (Updated, 24 Feb 2006)

1 : 8000 0 40 80 120 160 200m

ROADS TO BE UNDERLAIN BY ENGINEERED FILL

Figure 2-3

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06	1:8000	359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta

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PRELIMINARY
NOT FOR
CONSTRUCTION

LEGEND:

- EDGE OF WATER
- 0.5m CONTOUR
- APPROXIMATE TRENCH ALIGNMENT
- UTILITY CORRIDOR
- 1+400 ALIGNMENT STATIONS
- DEVELOPMENT ROADS
- DEVELOPMENT WATER CONVEYANCE CHANNEL
- GSP-8 APPROXIMATE PIEZOMETER LOCATION
- MANHOLE LOCATION
- DEVELOPMENT DESIGN GRADE
- DEPTH (existing grade vs. Development grade)

0 50 100 150 200 250m

SCALE 1 : 5,000

DRAWING SOURCE:
IBMYN Surveys inc.
Remington Development Corporation
LaFarge South Pit
LEGALLYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier
and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

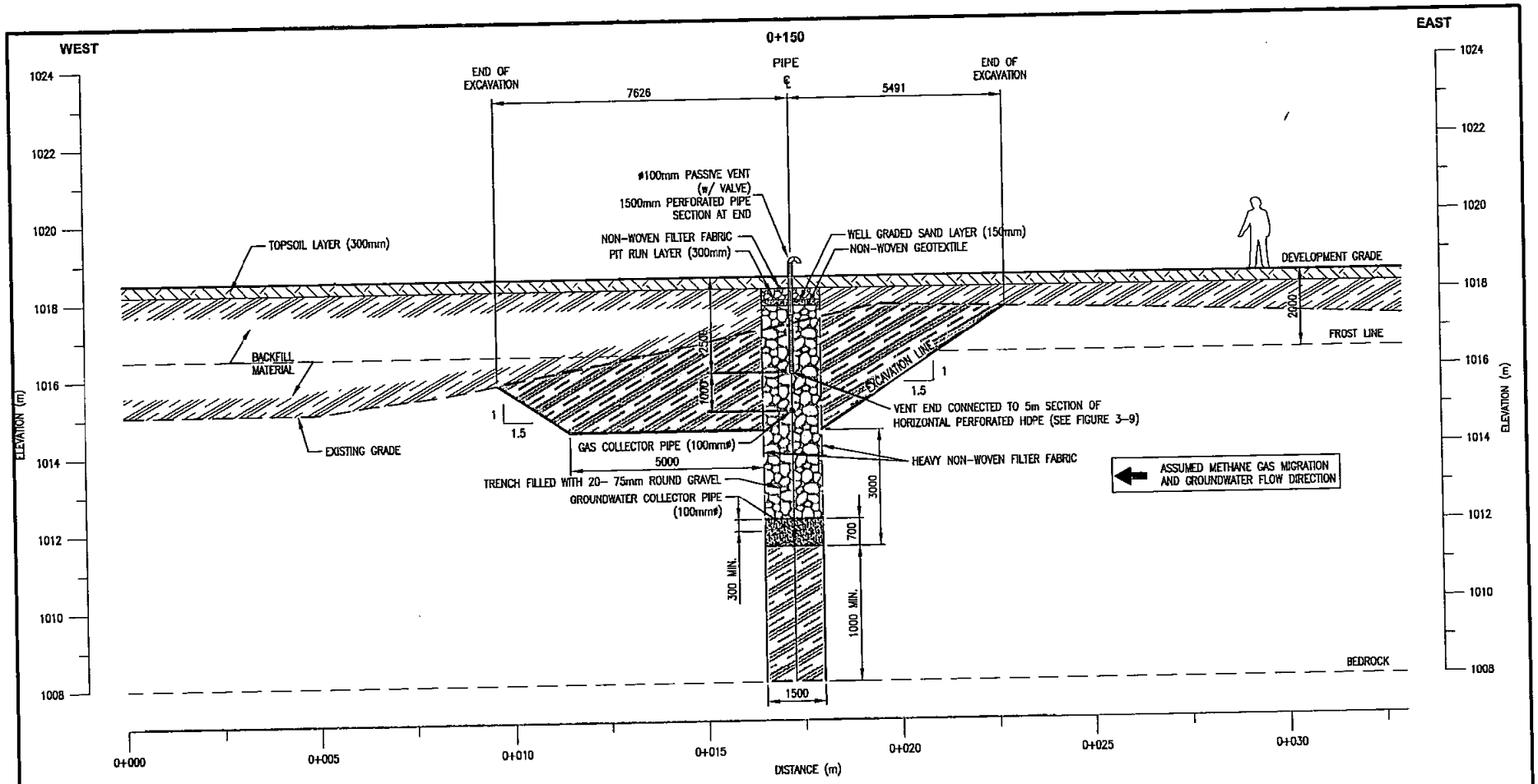
SITE PLAN ON EXISTING GRADE SHOWING LOCATION OF TRENCH AND UTILITY CORRIDOR ISOLATIONS

DRAWN BY:	EDITED BY:	DATE:
–	D.H.	Mar.25/08

APPROVED:

FIGURE: 3-1

J:\C63730000\C63730000 Base.dwg



LEGEND:

- EXCAVATION AREA
- BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY NOT FOR CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys Inc.
Remington Development Corporation
LaFarge South Pit
LEGAL_YR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

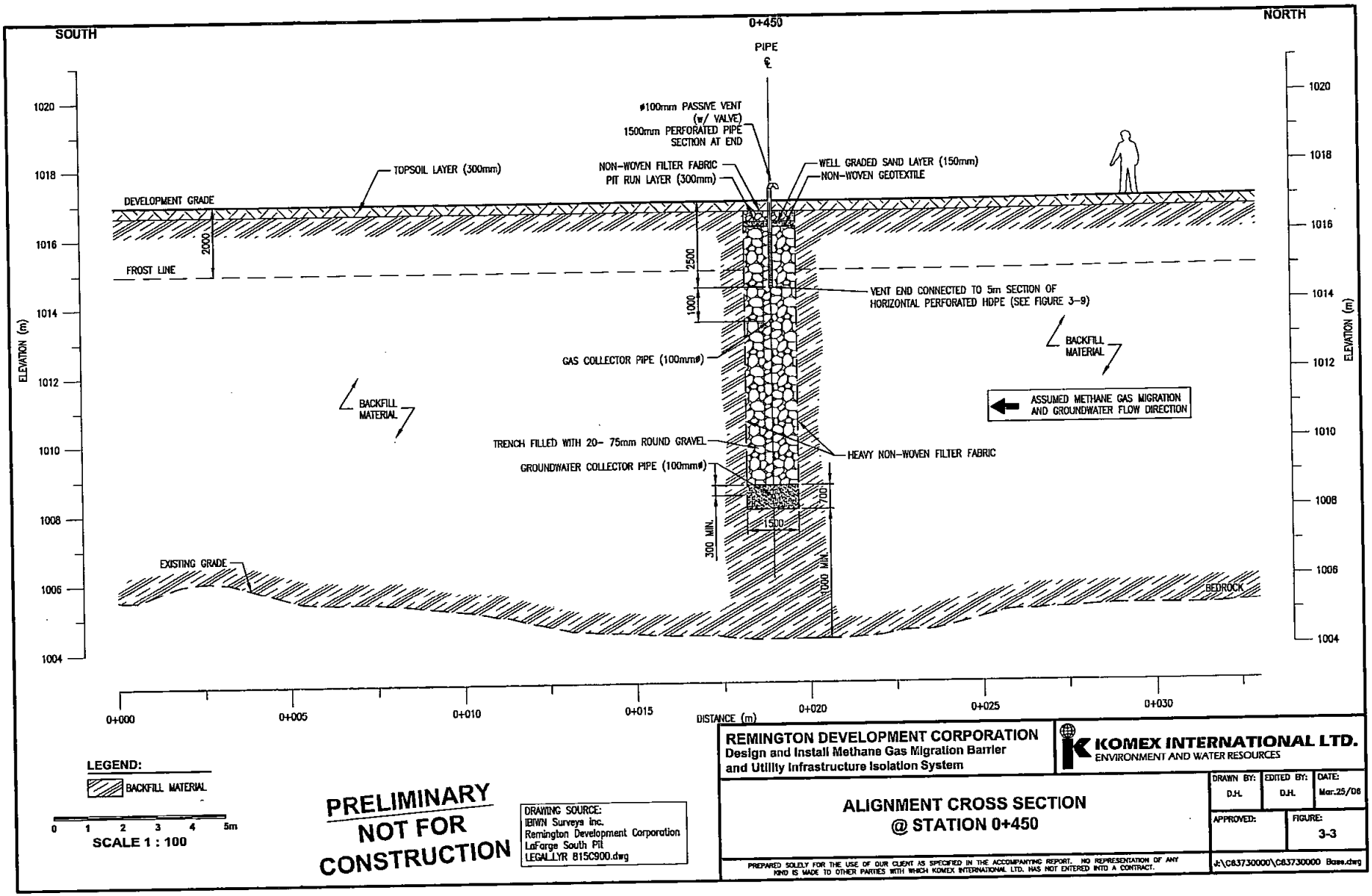
ALIGNMENT CROSS SECTION @ STATION 0+150

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/06

APPROVED:

FIGURE: 3-2

J:\C83730000\C83730000 Base.dwg



LEGEND:

BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY
NOT FOR
CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys Inc.
Remington Development Corporation
LaForge South Pit
LEGALLYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier
and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

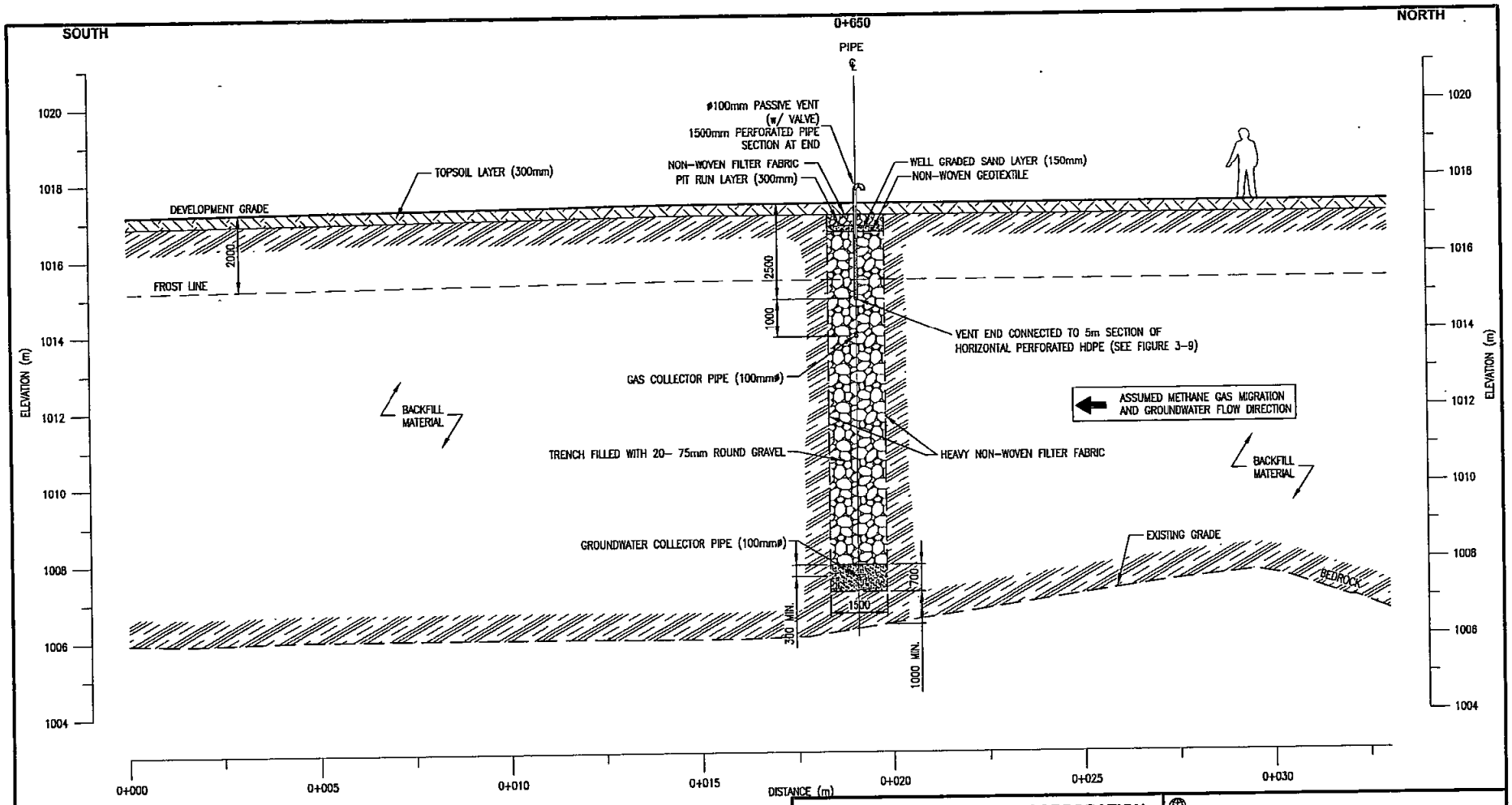
ALIGNMENT CROSS SECTION @ STATION 0+450

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/08

APPROVED:

FIGURE: 3-3

J:\C83730000\C83730000 Base.dwg



LEGEND:

BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY NOT FOR CONSTRUCTION

DRAWING SOURCE:
IBIWN Surveys Inc.
Remington Development Corporation
LaForge South Pit
LEGALLYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

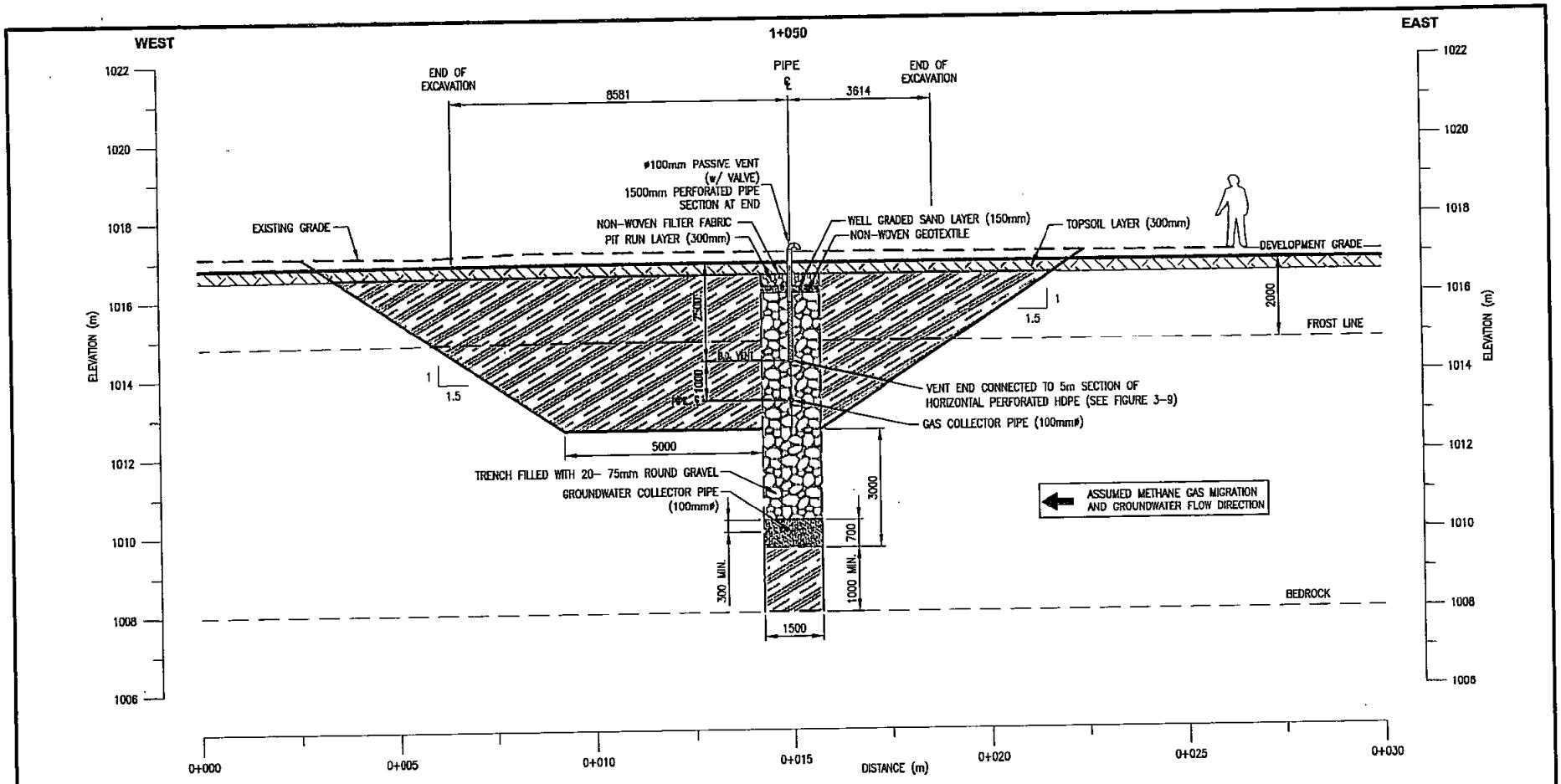
ALIGNMENT CROSS SECTION @ STATION 0+650

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/06

APPROVED:

FIGURE: 3-4

J:\C63730000\C63730000 Base.dwg



LEGEND:

EXCAVATION AREA

BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY NOT FOR CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys inc.
Remington Development Corporation
LaFarge South Pit
LEGAL_YR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

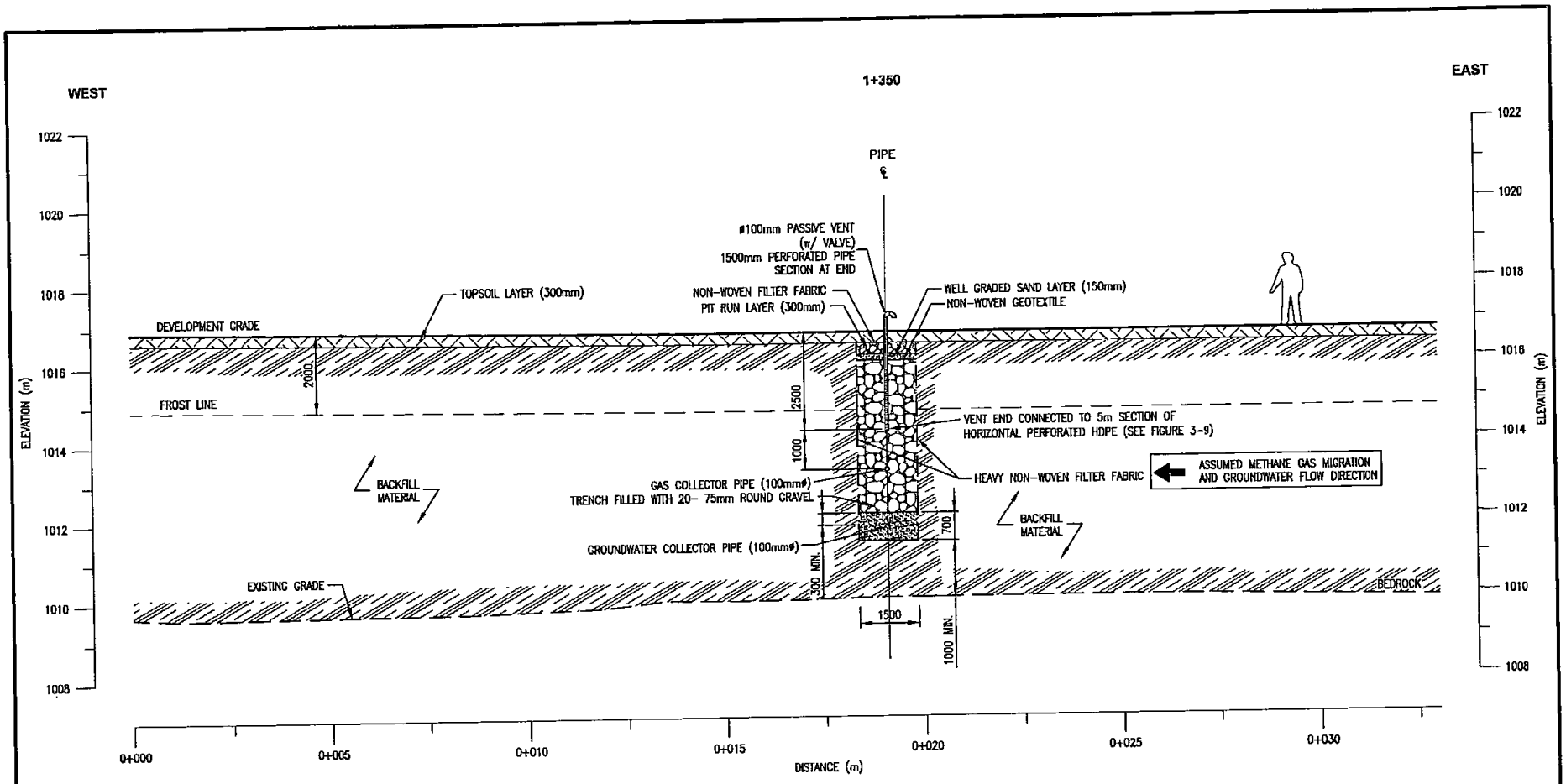
ALIGNMENT CROSS SECTION @ STATION 1+050

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/06

APPROVED:

FIGURE: 3-5

J:\C83730000\C83730000 Base.dwg



LEGEND:

BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY
NOT FOR
CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys Inc.
Remington Development Corporation
LaFarge South Pit
LEGAL.LYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
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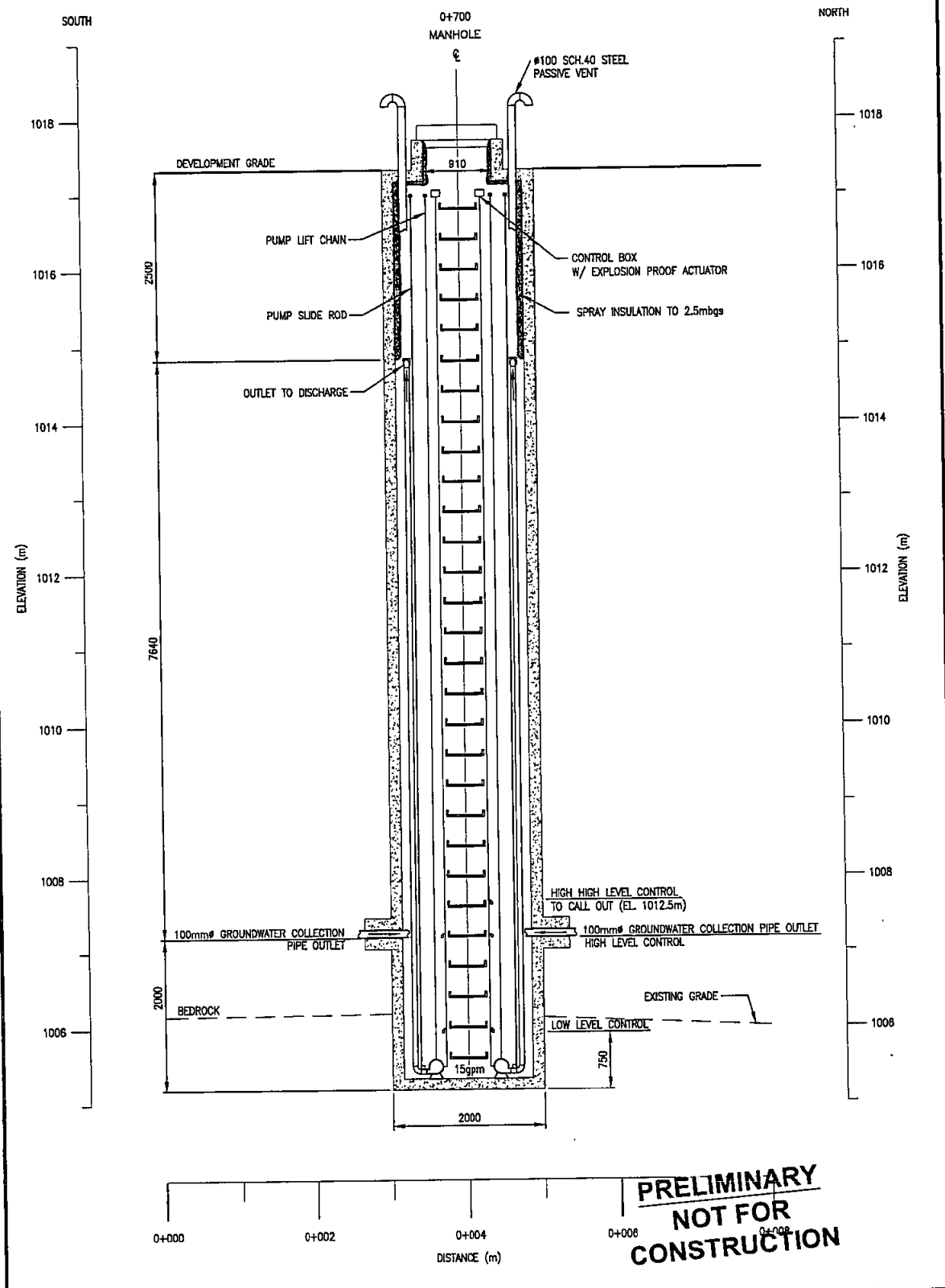
ALIGNMENT CROSS SECTION @ STATION 1+350

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/08

APPROVED:

FIGURE: 3-6

J:\C83730000\C83730000 Base.dwg



PRELIMINARY
NOT FOR
CONSTRUCTION

0 1 2m

SCALE 1 : 50

DRAWING SOURCE:
IBIWN Surveys inc.
Remington Development Corporation
LaFarge South Pit
LEGAL.LYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
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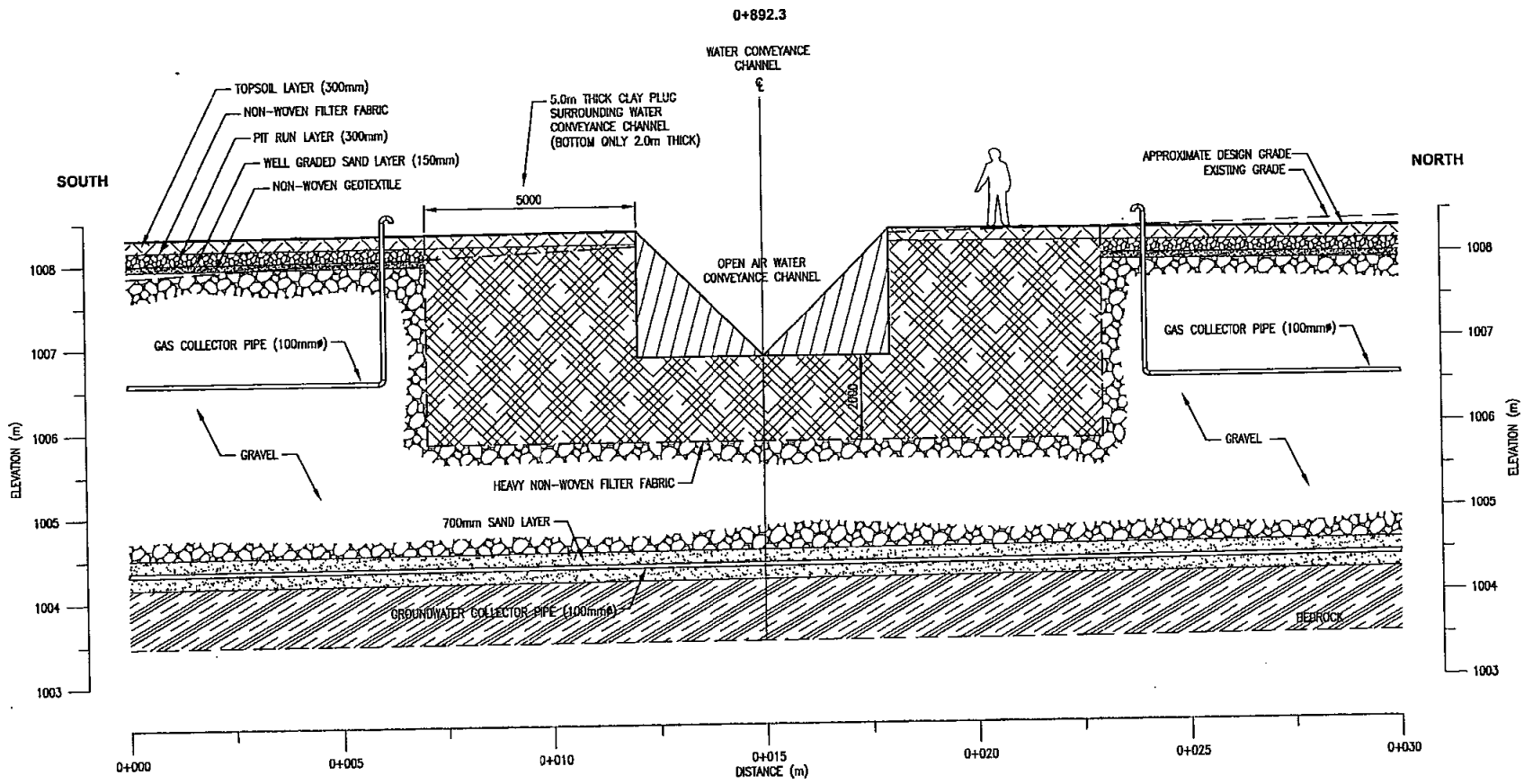
MANHOLE CROSS SECTION @ STATION 0+700

DRAWN BY:	EDITED BY:	DATE:
C.M.	C.M.	Mar.25/06

APPROVED:	FIGURE:
	3-7

J:\C63730000\C63730000 Base.dwg



LEGEND:

BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY NOT FOR CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys inc.
Remington Development Corporation
LaFarge South Pit
LEGAL_YR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

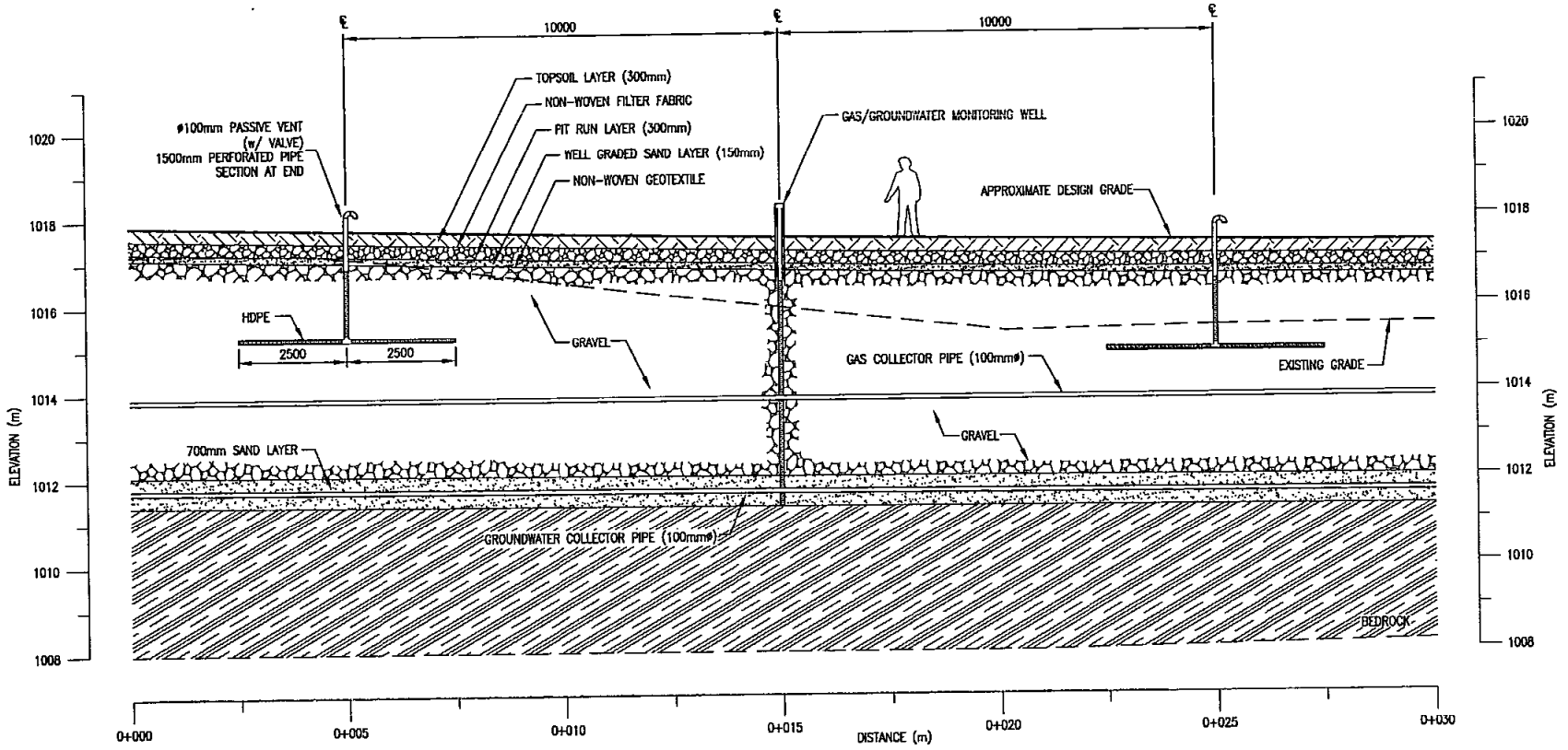
TRENCH/WATER CONVEYANCE CHANNEL INTERSECTION @ STATION 0+892.3

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/08

APPROVED:

FIGURE: 3-8

J:\C83730000\C83730000 Base.dwg



LEGEND:

BACKFILL MATERIAL

0 1 2 3 4 5m

SCALE 1 : 100

PRELIMINARY NOT FOR CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys Inc.
Remington Development Corporation
LaFarge South Pit
LEGAL_LYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

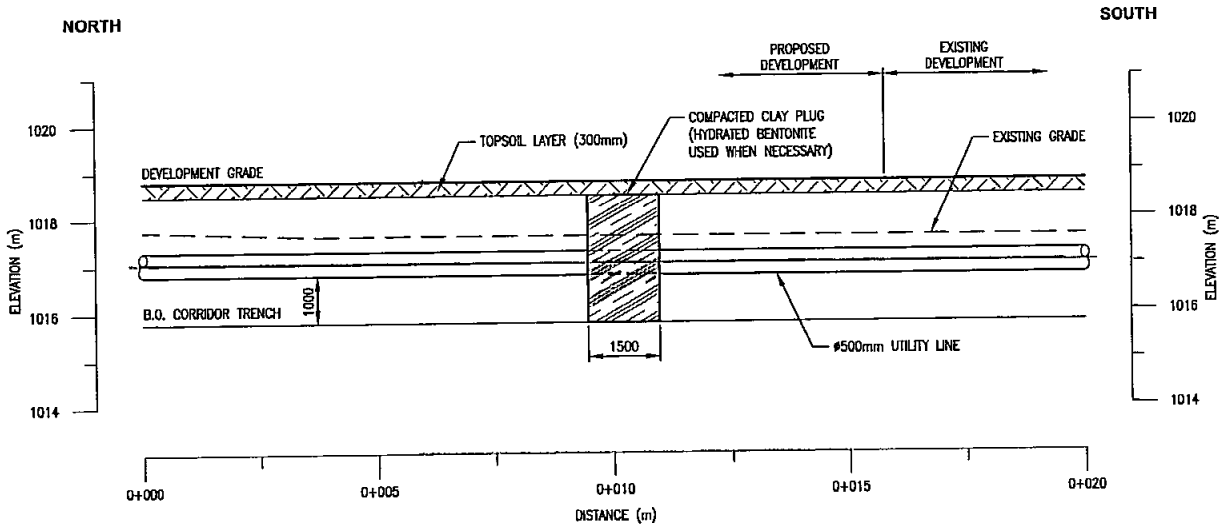
TYPICAL TRENCH GAS/ GROUNDWATER MONITORING WELL

DRAWN BY:	EDITED BY:	DATE:
D.H.	D.H.	Mar.25/08

APPROVED:

FIGURE: 3-9

J:\C83730000\C83730000 Base.dwg



NOTE:
SECTION SHOWN FOR UTILITY CORRIDOR SOUTH END.
NORTH END TO BE A MIRROR OF THE SOUTH.

0 1 2 3 4 5m
SCALE 1 : 100

PRELIMINARY
NOT FOR CONSTRUCTION

DRAWING SOURCE:
IBIWN Surveys inc.
Remington Development Corporation
LaFarge South Pit
LEGAL.LYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

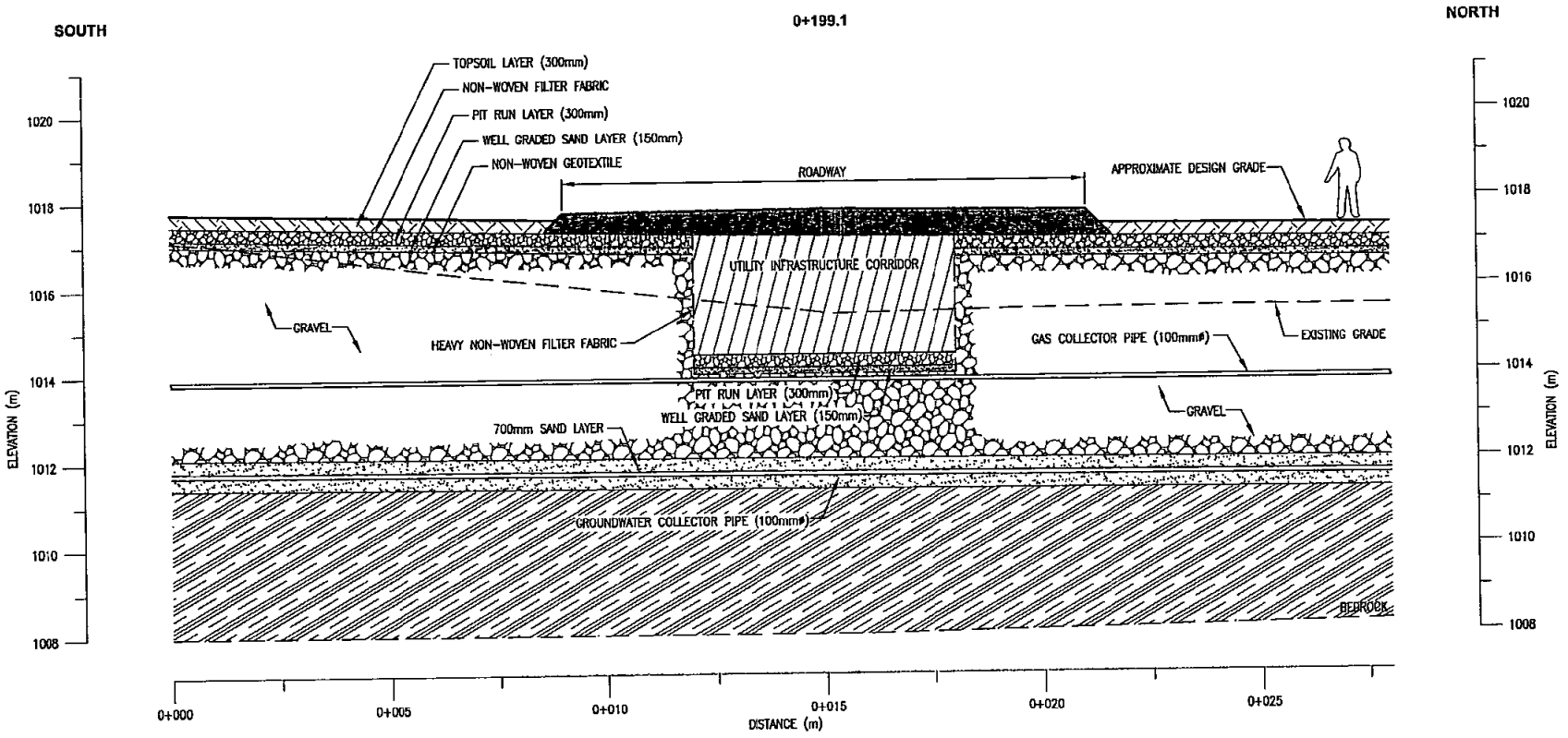
UTILITY CROSS SECTION SOUTH/NORTH ENDS OF 18th STREET

DRAWN BY:	EDITED BY:	DATE:
C.D.M.	D.H.	Mar.25/08

APPROVED:

FIGURE: 4-1

J:\C63730000\C63730000 Base.dwg



NOTE:
SECTION SHOWN FOR UTILITY CORRIDOR INTERSECTION @ STATION 0+199.1.

0 1 2 3 4 5m
SCALE 1 : 100

PRELIMINARY
NOT FOR
CONSTRUCTION

DRAWING SOURCE:
IBWN Surveys Inc.
Remington Development Corporation
LaFarge South Pit
LEGAL.LYR 815C900.dwg

REMINGTON DEVELOPMENT CORPORATION
Design and Install Methane Gas Migration Barrier
and Utility Infrastructure Isolation System

KOMEX INTERNATIONAL LTD.
ENVIRONMENT AND WATER RESOURCES

TRENCH/UTILITY CORRIDOR INTERSECTION @ STATION 0+199.1 AND 1+310.9

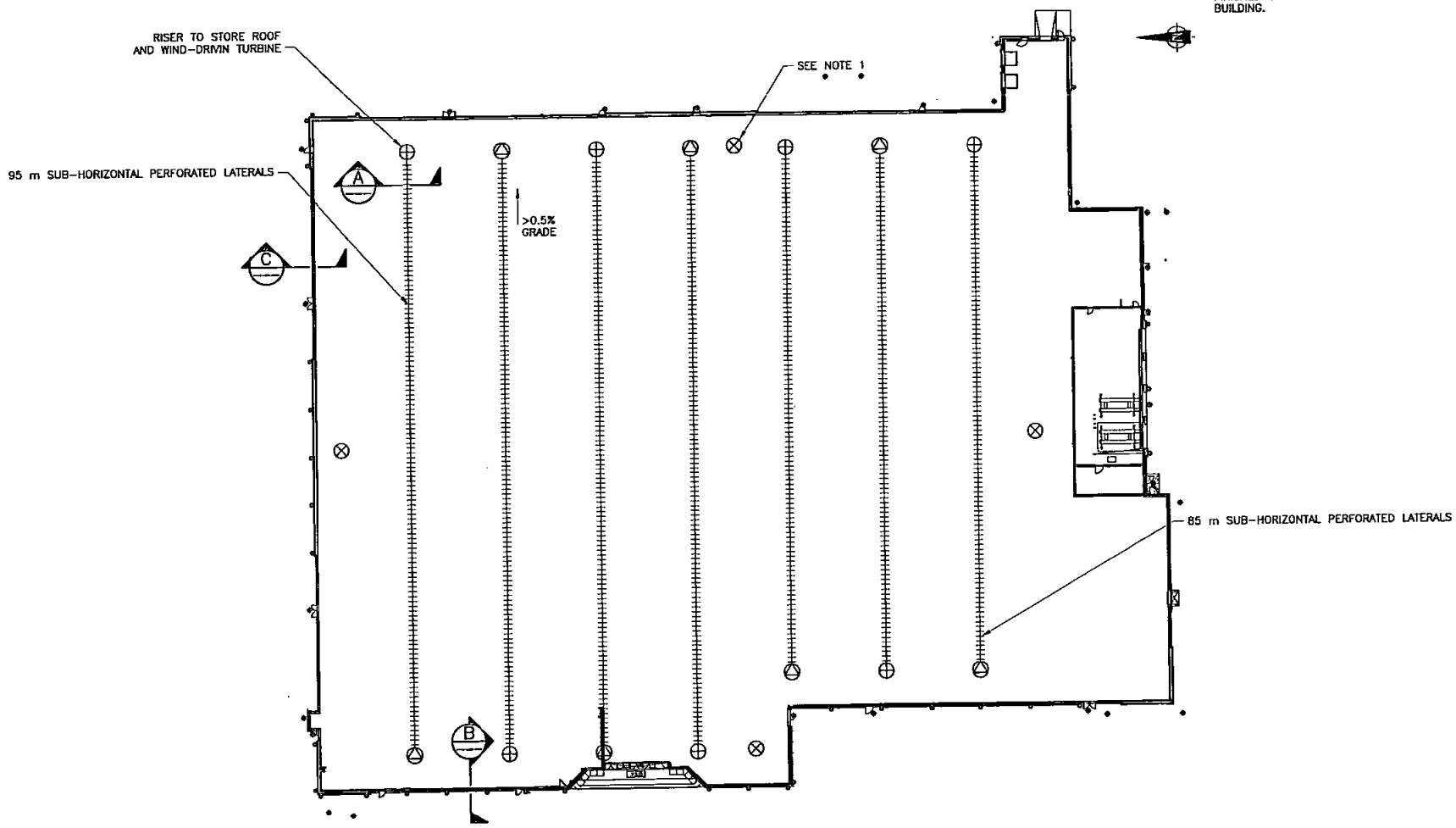
DRAWN BY:	EDITED BY:	DATE:
C.D.M.	D.H.	Mar.25/08

APPROVED:

FIGURE: 4-2

J:\C83730000\C83730000 Base.dwg

NOTE:
1. PROVIDE MONITORING PORTS NEAR CENTER OF EACH INSIDE BUILDING WALL APPROXIMATELY 1 m ABOVE FINISHED GRADE AND GREATER THAN 5 m INTO BUILDING.



LEGEND

- CLEANOUT (SEE DETAIL 2)
- RISER PIPE TO ROOT
- MONITORING PORT (SEE DETAIL 4)
- HORIZONTAL PERFORATED LATERAL DRAIN (100 mm SLOTTED SCH. 80 PVC)
- SOLID 100 mm PVC HEADER

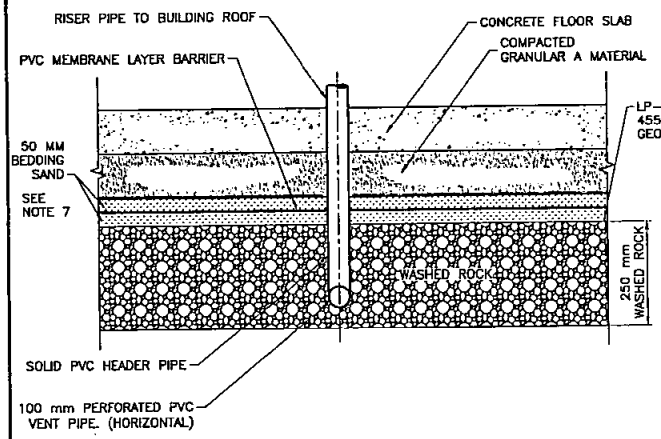
amec Earth & Environmental

CLIENT: REMINGTON DEVELOPMENT CORP.

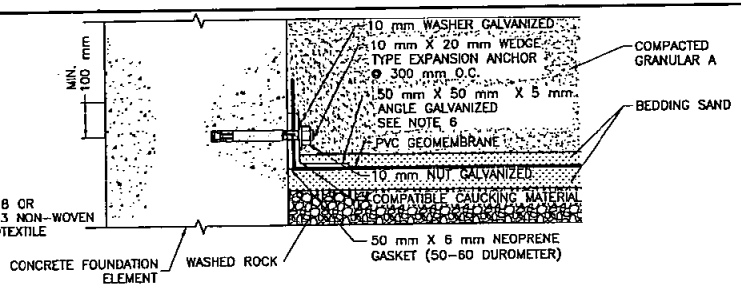
PROJECT: METHANE MANAGEMENT PLAN QUARRY PARK DEVELOPMENT

TITLE: TYPICAL GENERAL ARRANGEMENT PASSIVE VAPOUR MANAGEMENT SYSTEM -LARGE BUILDING LAYOUT

DATE:	JOB No.:	CAD FILE:	FIGURE No.:	REV.
MARCH 2006	CE03437	03437M01.dwg	FIGURE 5.1	A



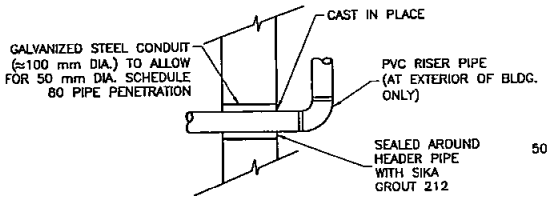
A SECTION – TYPICAL HEADER TIE-IN TO LATERAL
N.T.S.



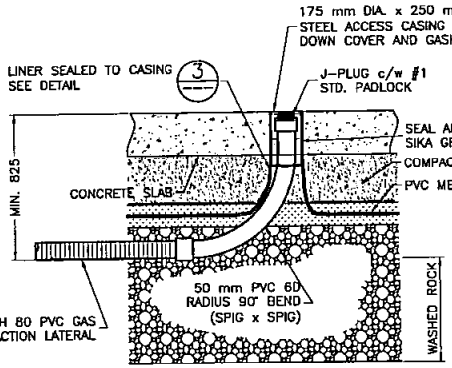
C SECTION – PVC GEOMEMBRANE WALL CONNECTION
N.T.S.

NOTES:

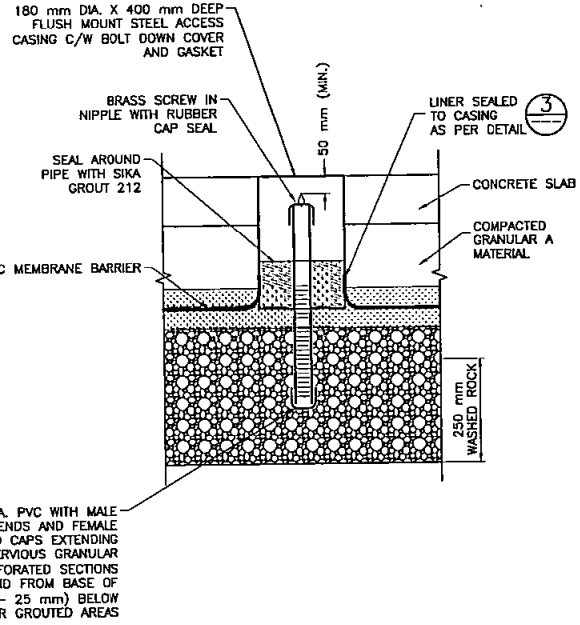
1. COMPACTED BASE MATERIAL UNDERLYING MEMBRANE SHALL HAVE SUITABLE GRADATION TO AVOID DAMAGING MEMBRANE.
2. CLEAN-OUT REQUIRED FOR ACCESS TO END OF GAS EXTRACTION LATERALS.
3. ALL PENETRATIONS THROUGH FLOOR SLAB SHALL BE SEALED TO MAINTAIN AIR TIGHT INTEGRITY OF THE MEMBRANE BARRIER.
4. ALL VAPOUR MANAGEMENT SYSTEM PIPE FITTINGS TO BE PVC SCHEDULE 80 UNLESS NOTED OTHERWISE.
5. MITRE ANGLE TO SUIT PLACEMENT IN RIGHT ANGLE CORNERS.
6. BEDDING SAND PROTECTIVE LAYERS MAY BE REPLACED WITH LP-8 OR 4553 NON-WOVEN GEOTEXTILE.



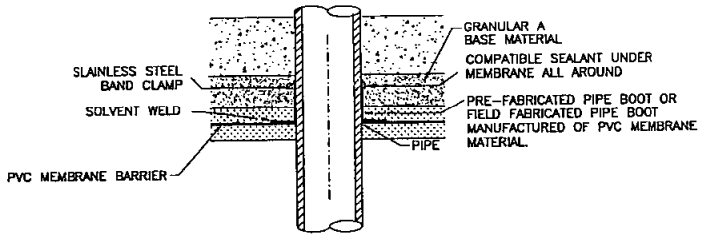
B SECTION – TYPICAL WALL PENETRATION
N.T.S.



2 DETAIL – CLEANOUT
N.T.S.



4 DETAIL – MONITORING PORT
N.T.S.



3 DETAIL – TYPICAL MEMBRANE PIPE PENETRATION
N.T.S.

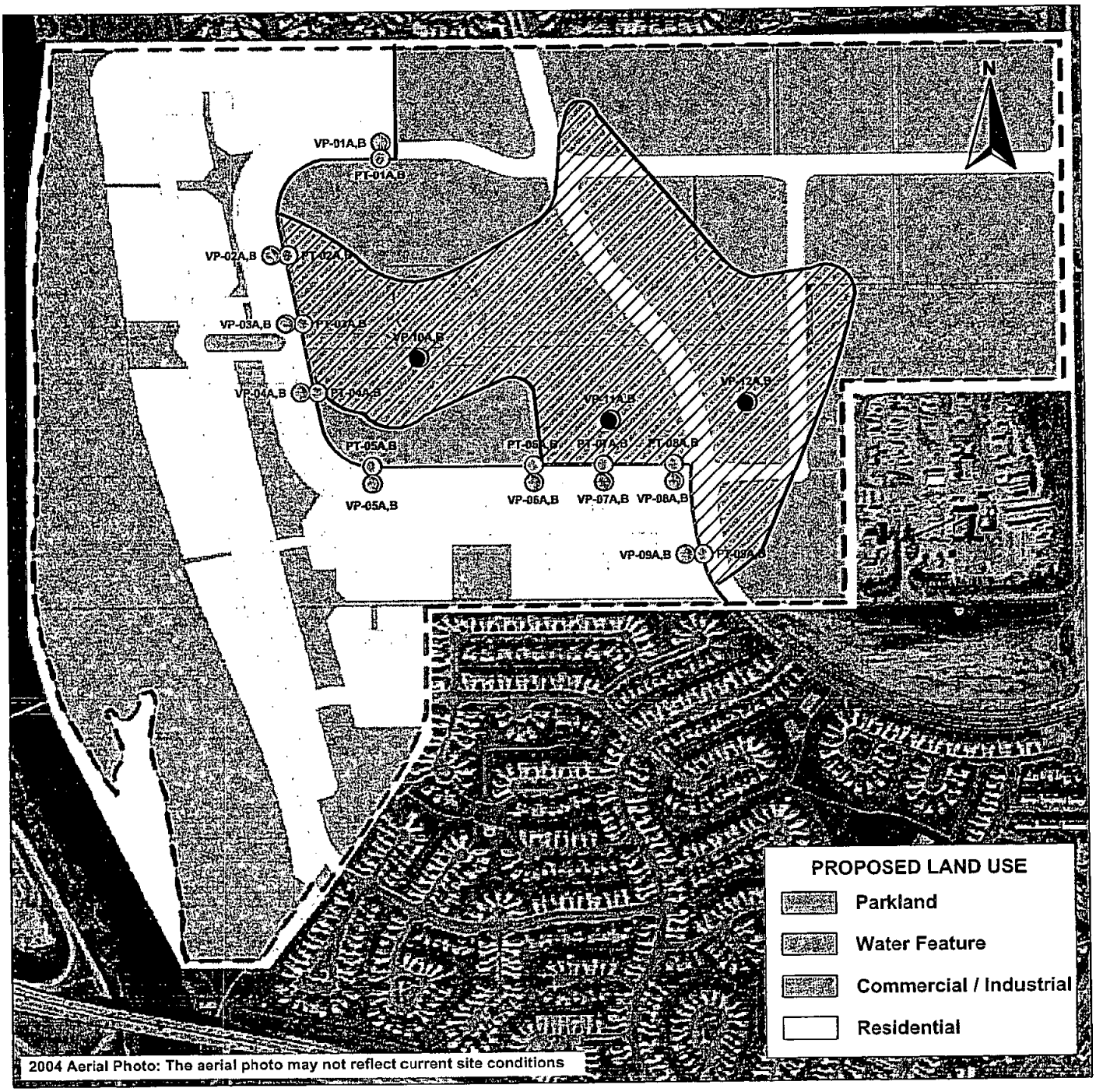
amec Earth & Environmental

CLIENT: REMINGTON DEVELOPMENT CORP.

PROJECT: METHANE MANAGEMENT PLAN QUARRY PARK DEVELOPMENT

TITLE: TYPICAL PASSIVE VAPOUR MANAGEMENT SYSTEM SECTIONS AND DETAILS -LARGE AND SMALL BUILDINGS

DATE:	JOB No.:	CAD FILE:	FIGURE No.:	REV.
MARCH 2006	CE03437	03437M02.dwg	FIGURE 5.2	A



LEGEND

- Approximate extent of Engineered Fill in the commercial/industrial land use area
- Proposed location of Permeable Trench

Proposed Methane Monitoring Wells

- Engineered Fill
- Permeable Trench
- Residential Sentinel

NOTES

- Proposed land use zoning for the Quarry Park Development was reproduced from an IBI Group drawing dated 28 Nov 2005 (Updated, 24 Feb 2006)
- The proposed methane monitoring wells would be installed after the installation of the Permeable Trench

1 : 8000 0 40 80 120 160 200m

PROPOSED METHANE MONITORING WELLS

Figure 6-1

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06	1:8000	359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta

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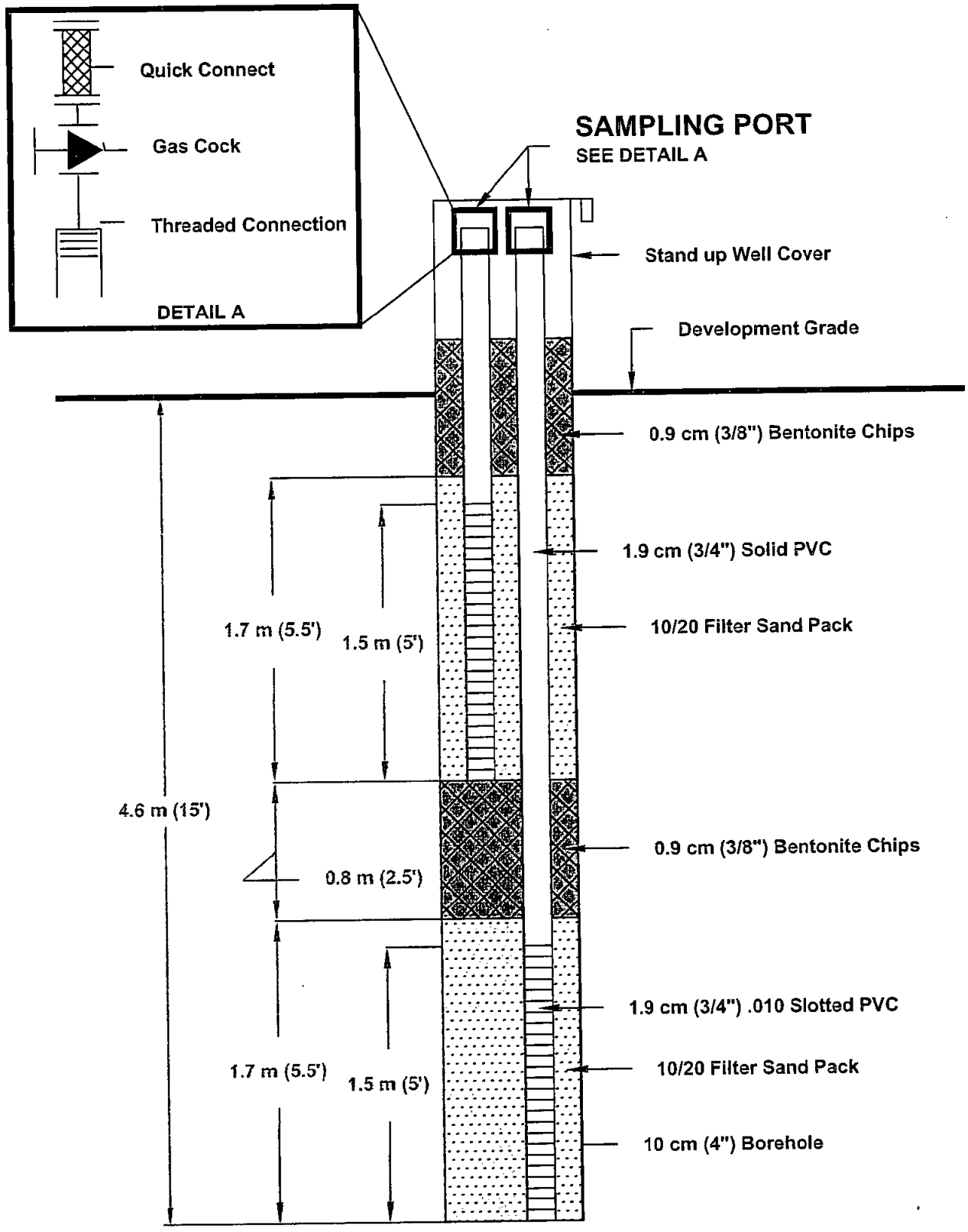

METHANE MONITORING WELL NEST CONSTRUCTION

Figure 6-2

CIRRUS ENVIRONMENTAL SERVICES INC.

Drawn	Date	Scale (approx.)	Project
DJK	7 JUN 06		359-0905-6

Quarry Park
2275 - 98 Avenue SE
Calgary, Alberta

DO NOT COPY

APPENDIX I

Environmental Health
1509 Centre Street SW
Calgary, Alberta Canada T2G 2E6
Facsimile: (403) 943-8056

calgary health region

July 14, 2006

Mr. Paul Leong – Team Leader
Utilities and Environmental Protection
Environmental Management
The City of Calgary
P.O. Box 2100 Station M
Calgary, Alberta T2P 2M5
Via facsimile: 403-268-1529

Dear Mr. Leong:

Re: Quarry Park Methane Management Plan (Interim Final 14 July 06)

Thank you for providing an opportunity for the Calgary Health Region (CHR) to review the above referenced Iridium report entitled, "*Quarry Park Methane Management Plan (Interim Final, 14 July 06*).

Based on the information provided in the report, the CHR has no further comments on the proposed "*interim*" methane management plan. The CHR looks forward to receiving and reviewing the updated/revised "*Quarry Park Methane Management Plan*" as it becomes available in the future.

In the meantime, please do not hesitate to contact the undersigned at 403-943-8047.

Sincerely,

David Lee
Environmental Health Advisor, Risk Assessment and Management

C: Mr. Jim Sevigny, Iridium Consulting Inc.; via facsimile 1-250-352-3386
Dr. Timothy Lambert, Calgary Health Region
Mr. Dennis Stefani, Calgary Health Region

Alberta Environment

Approvals
2938 11 Street NE
Calgary Alberta, Canada T2E 7L7
Tel: 403/297-7605 Fax: 403/297-2749
Web: www.environment.gov.ab.ca

14 July 2006

Our Ref: C004-000140

Mr. Paul Leong
P.O Box 2100, Stn M, #8020
Calgary, AB
T2P 2M5

Dear Mr. Leong

Re: Remington Development Corporation, Quarry Park Development, 2275 – 98th Avenue SE, Calgary, Methane Management Plant.

AENV has been asked to comment on the permeable (groundwater) trench proposed as a remediation-groundwater interception component in the methane management plan.

We agree with the trench design and testing as proposed, and have no objections to the continued phased development of the site.

The opinion provided in this letter is based on a review of the remediation process and objectives presented in this plan. This letter is not intended to absolve any party from the potential for future liability for remediating this site in situations where either the land use may change or additional concerns arise from the contaminants remaining on or off-site.

If you have any questions or wish to discuss this letter please call John Horgan at 403 297-5919.

Sincerely

John Horgan

John Horgan, MSc., PGeol.
Hydrogeologist, Southern Region

cc: Jim Sevigny, Iridium Consulting Inc., 812 Victoria Street, Nelson, BC, V1L 4L5

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