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RECEIVED
 AUG 11 2010
 PLANNING, HOUSING &
 COMMUNITY SERVICES

August 6, 2010

Ms. Laurel Gibson
 Principle Planner
 Regional Municipality of Waterloo
 150 Frederick Street, 8th Floor
 Kitchener, Ontario
 N2G 4J3

Dear Ms. Gibson:

**ZONE CHANGE APPLICATION 3/2009
 2167534 ONTARIO INC. (KUNTZ TOPSOIL, SAND AND GRAVEL LTD.)
 PROPOSED JIGS HOLLOW PIT
 PART LOT 3, CROOKS TRACT WGR, TOWNSHIP OF WOOLWICH**

Further to your letter of July 12, 2010, please find attached hereto our responses to the issues raised.

1. Surveying: The surveying (horizontal and vertical) of the monitoring wells have been completed. The locations of the wells are as noted on the Site Plans and the elevations are noted below:

Monitoring Well	Ground Surface Elevation (mASL)
MW-ARD-1	321.30
MW-ARD-2	320.41
MW-ARD-3	317.21

2. It is confirmed that the initial wells have been replaced. Information related to the new wells is attached.
3. The water level information for the wells is as follows:

Monitoring Elevation	December 09, 2009		July 6, 2010	
	Depth to Well	Elevation	Depth to Water	Elevation
MW-ARD-1	4.98	316.32	4.75	316.55
MW-ARD-2	5.05	315.36	5.14	315.27
MW-ARD-3	2.90	314.31	2.90	314.31

Ms. Laurel Gibson – August 6, 2010

Regarding the balance of the specific hydrogeological issues raised in your letter, (4-8), I would refer you to the August 5, 2010 letter from Mitz and Associates Inc. which is attached hereto.

At this time, we believe that all the hydrogeological issues have been addressed and if you should have any questions, please do not hesitate to call.

Yours truly

IBI GROUP

A handwritten signature in black ink, appearing to read "D. Sisco". The signature is fluid and cursive, with a large initial "D" and a long, sweeping underline.

David R. Sisco, BA, MCIP, RPP
Principal – Planning

DRS/ld
Encl.

cc: Ray Kuntz



Ministry of the Environment

Tag No. (Place Sticker and/or Engr. Below)

A083332

Regulation 903 Ontario Water Resources Act

09-0063-00 Well Record

Measurements recorded in: Metric Imperial

Page 1 of 1

First Name: Raymond Last Name / Organization: Kuntz E-mail Address: _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name): 136 Water St Municipality: St. Jacobs Province: ON Postal Code: N0R5A0 Telephone No. (inc. area code): 519 741 6179

Address of Well Location (Street Number/Name): Peel Street Township: Woolwich Lot: _____ Concession: _____

County/District/Municipality: _____ City/Town/Village: _____ Province: Ontario Postal Code: _____

UTM Coordinates: Zone: 18 Easting: 4160164823 Northing: 0972 Municipal Plan and Sublot Number: _____ Other: _____

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From To
dbrown	topsoil			0 1
brown	sand & gravel	cobbles & boulders	saturated	25 35
grey	silt fill	A0833	mud	35 40

Depth (m/ft) From To	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
0 35'	Bentonite chips	0.25 m ³

After test of well yield, hole was:	Draw Down	Recovery
<input type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify:	Time (min)	Water Level (m/ft)
<input type="checkbox"/> Pumping discontinued, give reason:	Static Level	Time (min)
Pump intake set at (m/ft)	1	1
Pumping rate (L/min / GPM)	2	
Duration of pumping	3	3
Final water level out of pump (m/ft)	4	4
Flowing pressure (kPa / GPM)	5	5
Recommended pump depth (m/ft)	10	10
Recommended pump rate (L/min / GPM)	15	15
Recommended pump rate (L/min / GPM)	20	20
Recommended pump rate (L/min / GPM)	25	25
Recommended pump rate (L/min / GPM)	30	30
Well production (L/min / GPM)	40	40
Abandoned?	60	60
<input type="checkbox"/> Yes <input type="checkbox"/> No	80	80

- Casing Top
- Rotary (Conventional)
- Rotary (Reverse)
- Boring
- Air percussion
- Other, specify: Aust
- Drilling
- Jetting
- Drilling
- Drilling
- Public
- Domestic
- Livestock
- Irrigation
- Industrial
- Commercial
- Municipal
- Test hole
- Cooling & Air Conditioning
- Not used
- Dewatering
- Monitoring
- Other, specify:

Inside Diameter (mm)	Open Hole OR Material (Corrosion, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (mm)	Depth (m/ft)		Other, specify
			From	To	
2"	plastic	sch 40	0	35'	<input type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned <input type="checkbox"/> Irradiation Supply <input type="checkbox"/> Abandoned From Water Quality <input type="checkbox"/> Abandoned other, specify: <input type="checkbox"/> Other, specify:

Water found at Depth (m/ft)	Kind of Water	Fresh	Unfiltered	Depth (m/ft)		Diameter (mm)
				From	To	
		<input type="checkbox"/>	<input type="checkbox"/>	0	40'	8.25"

Business Name of Well Contractor: Aardvark Drilling Inc. REG. Contractor's License No.: 72318

Business Address (Street Number/Name): 25 Lewis Rd, Guelph Municipality: Wellington

Province: ON Postal Code: N1H1E9 Business E-mail Address: _____

Business Telephone No. (inc. area code): 519 826 9640 Name of Well Technician (Last Name, First Name): Gies, Tom

Well Technician's License No.: 5141314 Signature of Technician and/or Contractor: _____ Date Submitted: 20090605

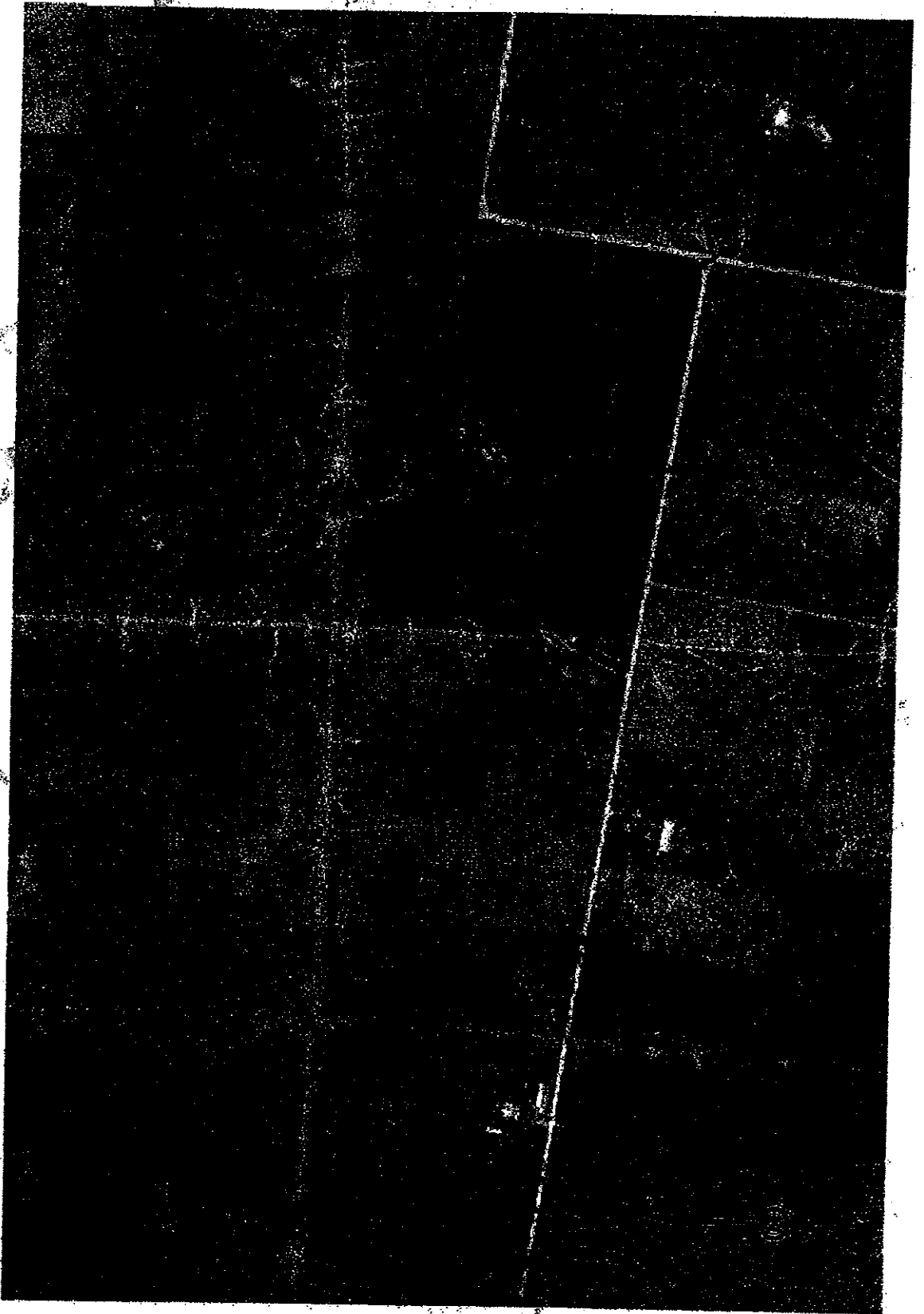
Please provide a map below following instructions on the back.

— see attached —

Well owner's Information: Yes No

Date Package Delivered: 2010 09 21

Date Work Completed: 2010 09 21



⊕ MW-MAI-3

313.45

Monitoring well

Water level measurement
(Jan 16, 2008)

314.0

Estimated water table
(MASL)

Proposed Permanent Monitoring Wells



Metres 0 200 400

Base Map: 2006 Aerial photography provided under license by
the Regional Municipality of Waterloo



Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below)

09-0062-00 Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: Metric Imperial

Page 1 of 1

A083337

First Name: Raymond Last Name / Organization: Kuntz E-mail Address: _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name): 136 Water St Municipality: St. Jacobs Province: ON Postal Code: N0B1A0S1 Telephone No. (inc. area code): 7416179

Address of Well Location (Street Number/Name): Pool Street Township: Woolwich Lot: _____ Concession: _____

County/District/Municipality: _____ City/Town/Village: West Montrose Woolwich Province: Ontario Postal Code: _____

UTM Coordinates: Zone: 17S Easting: 41124 Northing: 104822925 Municipal Plan and Sublot Number: _____ Other: _____

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From To
<u>dark brown</u>	<u>top soil</u>			<u>0 1</u>
<u>dark brown</u>	<u>sand</u>	<u>gravel, occ. cobbles</u>	<u>saturated, coarse</u>	<u>1 35</u>

Depth Set at (m/ft): From _____ To _____

Type of Sealant Used (Material and Type): Bentonite chips

Volume Placed (m³): 0.25

Cable Tool Diamond Public Commercial Not used
 Rotary (Conventional) Jetting Domestic Municipal Dewatering
 Rotary (Reverse) Driving Livestock Test Hole Monitoring
 Boring Digging Irrigation Cooling & Air Conditioning
 Air percussion Industrial
 Other, specify: Auger Other, specify: _____

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		<input type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____ <input type="checkbox"/> Other, specify _____
			From	To	
<u>2"</u>	<u>plastic</u>	<u>3/40</u>	<u>0</u>	<u>35'</u>	

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	Depth (m/ft) From To	Diameter (cm/in)
<u>0</u>	<u>40</u>	<u>8.25</u>	

Business Name of Well Contractor: Aardvark Drilling Inc. Well Contractor's Licence No.: 72318

Business Address (Street Number/Name): 25 Lewis Rd, Guelph Municipality: Wellington

Province: ON Postal Code: N1H1A9 Business E-mail Address: _____

Bus Telephone No. (inc. area code): 5199182693 Name of Well Technician (Last Name, First Name): GIES, Tim

Well Technician's Licence No.: 13434 Signature of Technician and/or Contractor: _____ Date Submitted: 20090810

After test of well yield, water was:
 Clear and sand free
 Other, specify: _____

If pumping discontinued, give reason: _____

Pump intake set at (m/ft): _____

Pumping rate (l/min / GPM): _____

Duration of pumping hrs + min: _____

Final water level end of pumping (m/ft): _____

If flowing give rate (l/min / GPM): _____

Recommended pump depth (m/ft): _____

Recommended pump rate (l/min / GPM): _____

Well production (l/min / GPM): _____

Disinfected? Yes No

Static Level	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
1				
2				
3				
4				
5				
10				
15				
20				
25				
30				
40				
50				
60				

Please provide a map below following instructions on the back.

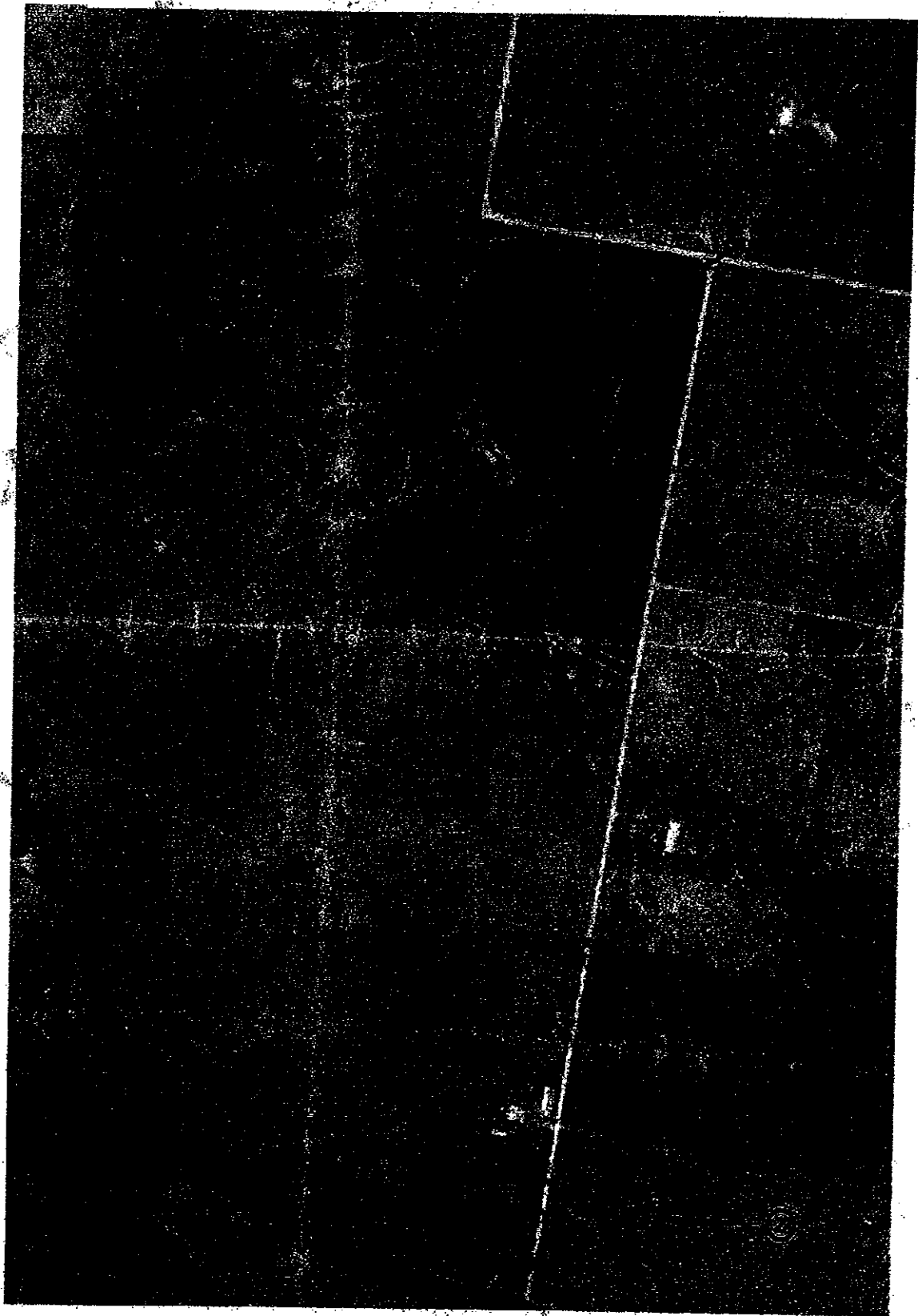
see attached

Comments: MW 103 indg.

Well owner's information package delivered: Yes No

Date Package Delivered: Y1Y1Y1M1M1D1D1

Date Work Completed: 20090810



⊕ MW-MAI-3

313.45

Monitoring well

Water level measurement
(Jan 16, 2008)

314.0

Interpolated water table
(MASL)

Proposed Permanent Monitoring Wells

⊕



Base Map: 2006 Aerial photogrammetry provided under license by the Regional Municipality of Waterloo

A063336

First Name: **Raymond** Last Name / Organization: **Kuntz** Email Address: _____
 Mailing Address (Street Number/Name): **136 Water St** Municipality: **St. Jacobs** Province: **ON** Postal Code: **N0B 2M0** Telephone No. (inc. area code): **519 741 6179**

Address of Well Location (Street Number/Name): _____ Township: **Woolwich** Lot: _____ Concession: _____
 County/District/Municipality: _____ City/Town/Village: _____ Province: **Ontario** Postal Code: _____
 UTM Coordinates: Zone: **18** Easting: **511149** Northing: **4823538** Municipal Plan and Sublot Number: _____ Other: _____

General Colour	Most Common Material	Other Materials	General Description	Depth (m/f)
dark brown	topsoil			0 1
brown	sand/gravel	cobbles, boulders	saturated	1 19
grey	silt/till	A0633	moist	19 25

Depth Set at (m/f)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)	After test of well yield, water was:	Draw Down	Recovery
0 18'	bentonite chips	0.17 m ³	<input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify _____	Time (min): _____ Water Level (m/f): _____	Time (min): _____ Water Level (m/f): _____

Cable Tool Diamond Public Commercial Not Used
 Rotary (Conventional) Jetting Domestic Municipal Dewatering
 Rotary (Reverse) Drilling Livestock Test Hole Monitoring
 Boring Digging Irrigation Cooling & Air Conditioning
 Air Permeation Industrial Other, specify _____
 Other, specify: **Auger**

Inside Diameter (mm)	Open Hole OR Material (Cemented, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (mm)	Depth (m/f)		Water Supply
			From	To	
2"	plastic	440	0	20'	<input checked="" type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned - Insufficient Supply <input type="checkbox"/> Abandoned - Poor Water Quality <input type="checkbox"/> Abandoned - other, specify _____ <input type="checkbox"/> Other, specify _____

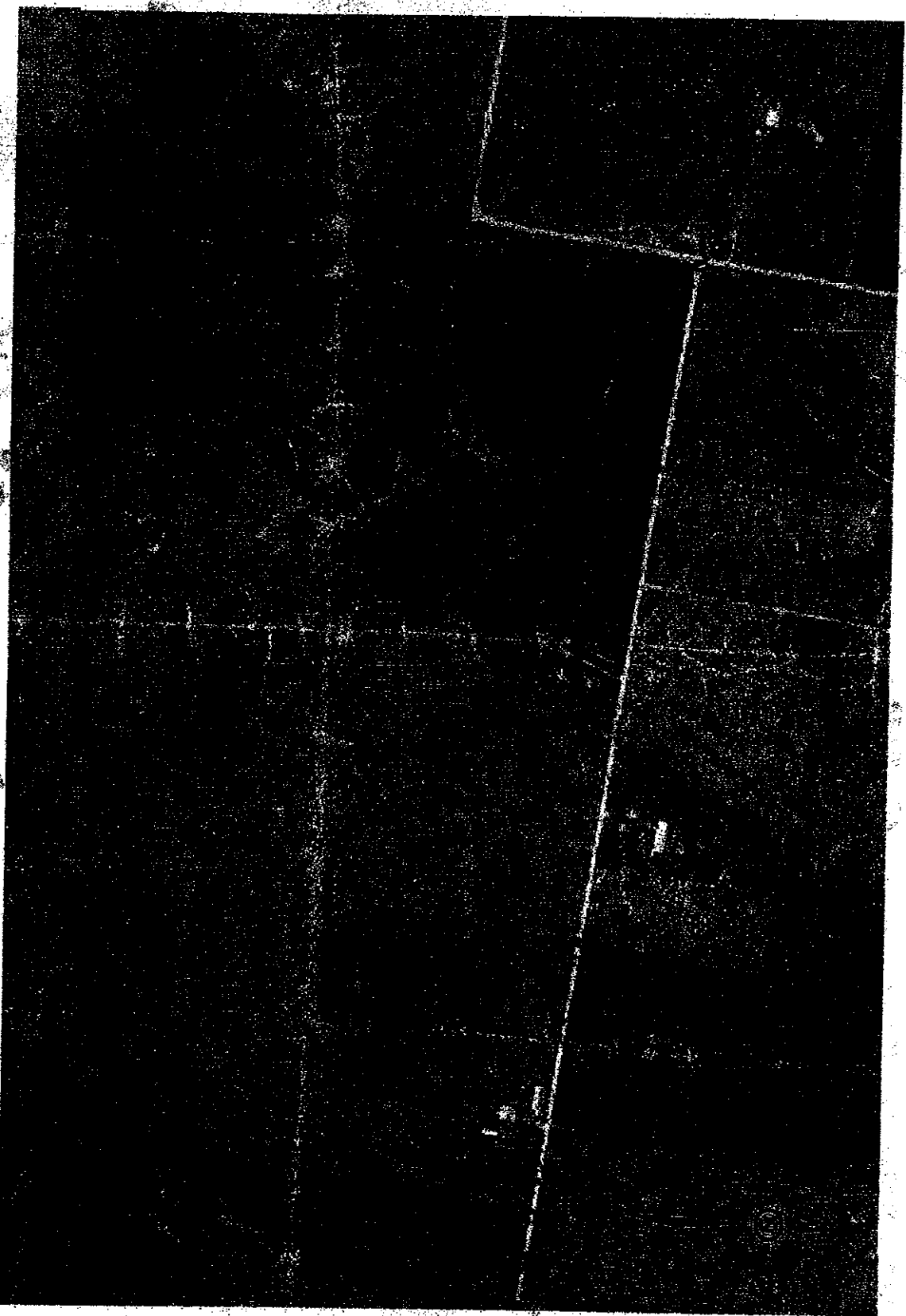
Outside Diameter (mm)	Material (Plastic, Cemented, Steel)	Slot No.	Depth (m/f)		Please provide a map below following instructions on the back.
			From	To	
2"	plastic	10	20'	25'	

Water found at Depth (m/f)	Kind of Water	Depth (m/f)	Diameter (mm)
0	Fresh <input type="checkbox"/> Untested <input type="checkbox"/>	0 25	8.25

Business Name of Well Contractor: **Aardvaak Drilling Inc** Well Contractor's License No.: **712318**
 Business Address (Street Number/Name): **25 Lewis Rd, Guelph** Municipality: **Wellington**
 Province: **ON** Postal Code: **N1H 1E9** Business E-mail Address: _____
 Comments: **MW 102 on dwg**

Well owner's Information: Date Package Delivered: **2009/09/14**
 Date Work Completed: **2009/09/14**
 Well Technician's License No.: **314314** Signature of Technician and/or Contractor: _____ Date Submitted: **2009/09/14**
 Date of Installation: _____

see attached



⊕ MW-MAI-3

313.45

Monitoring Well

Water level measurement
(Jan 16, 2008)

314.0

Unconsolidated water table
(MASL)

Proposed Permanent Monitoring Wells ⊕



Base Map: 2006 Aerial photography provided under license by the Regional Municipality of Waterloo



Mitz & Associates Inc.

379 Queen St. S
Kitchener, Ontario
N2G 1W6

519-573-4531 (phone)
519-745-7647 (fax)

August 5, 2010

Mr. David Sisco
The IBI Group Inc
650 Weber Street North
Waterloo, Ontario
N2V 2N2

**Subject: Response to the Region of Waterloo Comments
Proposed Jigs Hollow Pit
Woolwich Township, Ontario**

As requested, the writer has reviewed the review comments provided by Ms. Laurel Gibson of the Region's Planning Department in a letter dated July 12, 2010. The numbered points follow the notation used in the Region's correspondence.

Items 1 to 3: please refer to information provided under separate cover by the IBI Group.

Item 4.

No in-situ hydraulic conductivity data has been provided. WESA's previous comments related to wells installed within test pits. Presumably the replacement wells drilled in 2009 were not drilled within test pits and therefore in-situ testing should be possible, representative and should be conducted.

The writer carried out slug tests on the new wells in July 2010 to obtain a more representative estimate of in-situ hydraulic conductivity. As shown, the response was rapid in two of the wells and the resulting estimates are minimum values. Less permeable conditions were encountered in MW-ARD-1 where the screened interval overlapped the contact between the sand and gravel and the underlying till.

Location	Stratigraphy	Depth (m)	Hydraulic Conductivity (m/s)	Estimation Method
MW-ARD-1	Interface	10.0 -12.0	4×10^{-6}	Hvorslev
MW-ARD-2	Sand and gravel	10.0 -12.0	$> 10^{-4}$	Hvorslev
MW-ARD-3	Interface	5.5 -7.5	$> 10^{-4}$	Hvorslev

1 - partially screened within the till confining layer

Item 5. Re: Information on door-to-door survey

No information on a door-to-door survey of private wells in the vicinity of the proposed pit has been provided. MA has indicated that physical inspections have been conducted on the closest residents. This information has not been provided. It is not known how many residences are in the area and whether the monitoring of the three closest wells prior to beginning operations is sufficient.

"Nearby" wells in the hydrogeology report are those wells within approximately 1200 m from the site and include wells located on the east side of the Grand River. Most of these wells source the bedrock aquifer (refer to Figure 5 in the MA report). The number of nearby wells drops substantially if the search radius is dropped to 500 m. The following table provides a summary of these wells:

Well No.	Municipal Address	Distance	Direction	Elev.	Water found	Static Level	Test rate	Well Depth	Aquifer
65-02582	91 Peel St.	400 m	E	320	38.1	3.65	68.1	38.7	Br
	1041 Crooks								
65-07980	Tract Road	400 m	NW	330	17.9	4.87	45.4	18.0	Ob
65-03215	110 Peel St.	90 m	N	327	12.2	7.62	45.4	12.5	Ob
	1127 Jiggs								
65-03552	Hollow Road	370 m	SW	327	25.9	6.40	68.1	26.8	Ob
65-07795	110 Peel St.	90 m	N	326	25.9	3.04	68.1	25.9	Ob

As noted, four of the five closest wells source the overburden aquifer with two wells (65-07980 and 65-03215) being less than 20 m in depth. In addition, the subject property itself has a well that pre-dates the MOE's water well inventory.

I recommend that the proponent carry out chemical and bacteriological testing of the wells at 110 Peel Street and either 1127 Jiggs Hollow Road or the 125 Peel Street (the subject site) before beginning any operations at the site. All wells are located in the upgradient direction and my recommendation is based on proximity in the case of the two wells at 110 Peel. In addition to these two wells, I have recommended that either 1127 Jiggs Hollow Road or 125 Peel Street be monitored in order to provide a basis for interpretation should any claim of well interference be made.

The following wording is suggested for the site plan notes:

Water Levels

MONITORING OF WATER LEVELS SHALL BE UNDERTAKEN PRIOR TO EXTRACTION AND CONTINUED ON A QUARTERLY BASIS TO BETTER DEFINE THE GROUNDWATER TABLE ELEVATION ACROSS THE SITE AND TO ESTABLISH THE NORMAL RANGE OF SEASONAL FLUCTUATIONS IN GROUNDWATER ELEVATIONS. THIS MONITORING SHALL OCCUR AT MW-ARD-1, MW-ARD-2, MW-ARD-3 AS WELL AS THE DOMESTIC WELLS AT 110 PEEL STREET (PRIOR TO EXTRACTION ONLY) AND 125 PEEL STREET (QUARTERLY).

We have recommended that water level monitoring be carried out for the two domestic wells at 110 Peel Street only once prior to extraction in order to minimize the disturbance to these domestic wells and to minimize the risk of introducing contaminants. Monitoring of water levels at 125 Peel Street should be accomplished using an installed datalogger for the same reason.



Water Quality

GROUNDWATER SAMPLES SHALL BE OBTAINED FROM THE WELLS PRIOR TO EXTRACTION AND CONTINUED YEARLY AND ANALYZED FOR FAECAL COLIFORM BACTERIA, TOTAL COLIFORM BACTERIA AS WELL AS PH, TOTAL HARDNESS, CALCIUM, MAGNESIUM, IRON, MANGANESE, CHLORIDE, SULPHATE, NITRATE, CONDUCTIVITY, DISSOLVED SOLIDS AND PETROLEUM HYDROCARBON IN ACCORDANCE WITH THE REGION OF WATERLOO'S GUIDELINES. THIS MONITORING SHALL OCCUR AT MW-ARD-1, MW-ARD-2, MW-ARD-3 AS WELL AS THE DOMESTIC WELLS AT 110 AND 125 PEEL STREET. AN ANNUAL SUMMARY REPORT WILL BE SUBMITTED TO THE REGION'S MANAGER OF HYDROLOGY AND SOURCE WATER AND THE TOWNSHIP OF WOOLWICH'S DIRECTOR OF ENGINEERING AND PLANNING.

Item 6. Sampling for TPH

MA has indicated agreement to geochemical sampling twice a year but they have not specifically stated whether petroleum hydrocarbons will be included in this sampling as required by the Region's Guidelines.

Sampling for petroleum hydrocarbons will be included in the sampling as per the Region's guidelines as per the above note.

Item 8. Nearby Wells

The original MA report concluded that nearby wells are generally completed in deep confined aquifers. The reply from MA discusses confined conditions for the area. Are the "nearby" wells the same as the 3 closest wells referred to by MA in their reply? No detailed information on the wells in the immediate vicinity of the site has been provided. Are the closest wells to the property completed in the deep overburden or bedrock?

Please refer to Item 5 above. A total of 23 wells were considered "nearby" and the majority of these are completed in bedrock and deep confined overburden aquifers. The three closest wells are all completed within the overburden. One of the three closest wells (65-0321) sources shallow overburden although the depths and location of this well suggest that the aquifer, while shallow, may represent a confined system.

Additional Comments

a)

The IBI Operational Plan also states that recycled asphalt and concrete will be stored within 2.0 m of the established groundwater surface. Will the recycling area be predetermined so that excavation does not proceed to within 1.5 m of the groundwater surface or will soil material be added to the pit floor to raise the floor 0.5 m?

The writer suggests that 0.5 m of material be added to the pit floor in the area proposed for the storage of asphalt and concrete. This would allow the operator to achieve a suitable base throughout the



stockpile area and to improve segregation of materials (e.g. to minimize the amount of fines within a manufactured aggregate).

b)

The IBI Operational Plan presents differing refueling recommendations. Fuel would be stored near the site entrance and mobile equipment would refuel at that location. Semi portable equipment would be refueled by a fuel truck. However, the MA report recommends refueling on an impermeable pad. Presumably this pad is in reference to the fuel tank near the entrance but it is not known if any sort of pad has been designed or taken into consideration for the fuel storage area.

The use of an impermeable pad was recommended in the fuel fill area to prevent minor drips and overfills from contaminating soils and groundwater at the site. It is the writer's understanding that this is part of the IBI Operational plan for the site.

For pit-floor refueling of semi portable equipment, the operator may wish to use portable moulded plastic spillpads beneath the fuel tank during fuelling.

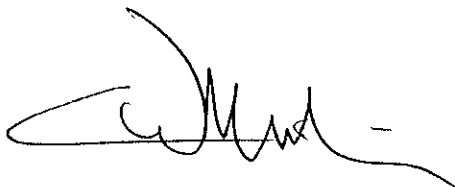
The following wording is suggested for the site plan:

BEST MANAGEMENT PRACTICES SHALL BE FOLLOWED THROUGHOUT THE AGGREGATE EXTRACTION OPERATIONS TO MINIMIZE THE RISK OF IMPACT TO GROUNDWATER DUE TO LEAKAGE OR SPILLAGE OF FUELS OR LUBRICANTS. FUEL STORAGE OR REFUELLING OPERATIONS OF PORTABLE EQUIPMENT ARE TO BE CARRIED OUT ON AN IMPERMEABLE PAD.

FUEL STORAGE: FUEL STORAGE SHALL BE LOCATED NEAR THE FRONT ENTRANCE/EXIT AND BE IN COMPLIANCE WITH PROVINCIAL LEGISLATION AND THE GASOLINE HANDLING ACT. SEMI PORTABLE EQUIPMENT USED ON SITE (I.E., CRUSHERS, SCREENERS, GENERATORS, ETC.) SHALL BE REFUELLED BY A FUEL TRUCK AND FOLLOW THE NECESSARY GASOLINE HANDLING ACT REQUIREMENTS. IT IS RECOMMENDED THAT THE OPERATOR USE MOULDED PLASTIC SPILL CONTAINMENT PADS BENEATH THE FUEL TANK DURING RE-FUELLING.

I trust that this brief letter adequately addresses the Region's comments. If you have any questions or comments regarding this document, please contact me at your convenience.

Yours very truly,



Charles W. Mitz, M.Eng., P.Geo.

