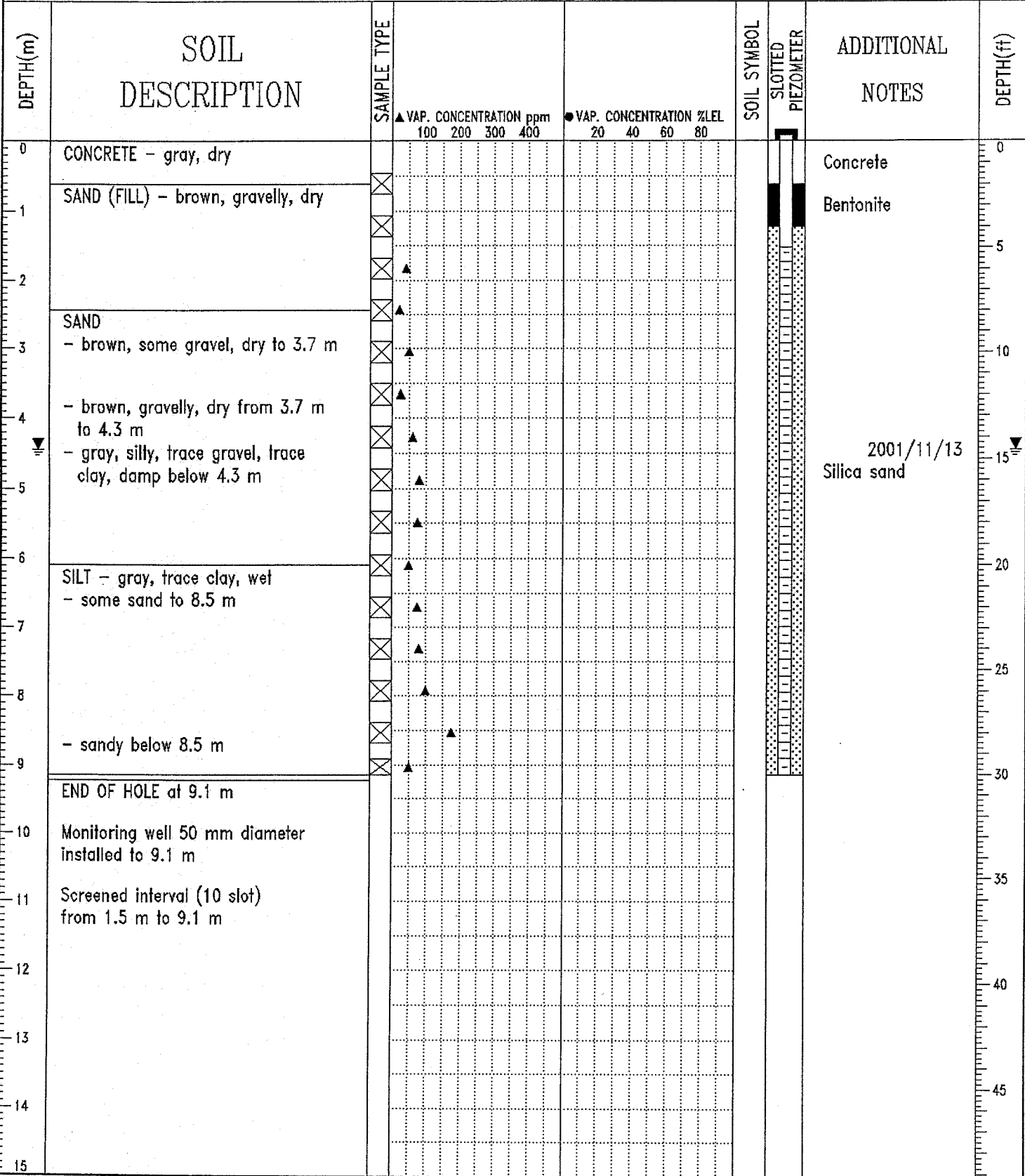


PROJECT: FORMER GOLDSTREAM SHELL	Location No: C09449	TPC: 66.37 m	BOREHOLE NO: BH3
LOCATION: LANGFORD, BRITISH COLUMBIA		GRADE: 66.46 m	JOB NO: 10-6231
CLIENT: SHELL CANADA PRODUCTS		COMPLETION DATE: 01/10/10	DRILL: AUGER
SAMPLE TYPE	<input type="checkbox"/> OTHER	<input checked="" type="checkbox"/> SHELBY	<input checked="" type="checkbox"/> SPLIT SPOON
BACKFILL TYPE	<input type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH
		<input type="checkbox"/> CORE	<input type="checkbox"/> DISTURBED
		<input type="checkbox"/> GROUT	<input type="checkbox"/> NO RECOVERY
		<input checked="" type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND



O'Connor Associates
Langley, B.C.

LOGGED BY: KOM
REVIEWED BY: SAB
DRAWING NO: A-3

GROUNDWATER TRAVEL TIME CALCULATIONS
Former Goldstream Shell, Langford, B.C.
10-6231 (location No. C09449)

Hydraulic Conductivity At

BH3	9.48E-07 m/sec
BH10	4.34E-06 m/sec
BH20	9.31E-07 m/sec

Highest Hydraulic Conductivity

4.34E-06 m/sec

Average Gradient

2001-11-13

0.1400 m/m

Effective Porosity

25 %

Darcy Velocity

$$\begin{aligned}
 &= \text{Hydraulic Conductivity} * \text{Gradient} \\
 &= 4.34\text{E-}06 * 0.1400 \\
 &= 6.076\text{E-}07 \text{ m/sec} \\
 &= 19.161 \text{ m/yr}
 \end{aligned}$$

Linear Velocity

$$\begin{aligned}
 &= \text{Darcy Velocity/Porosity} \\
 &= 19.161 / 0.25 \\
 &= 76.645 \text{ m/yr}
 \end{aligned}$$

Distance Travel in Time Frame of

50 Years

Distance (50 years)

$$\begin{aligned}
 &= \text{Effective Velocity} * \text{Time Frame} \\
 &= 76.645 * 50 \\
 &= 3832.25 \text{ m}
 \end{aligned}$$

Distance Travel in Time Frame of

100 Years

Distance (100 years)

$$\begin{aligned}
 &= \text{Effective Velocity} * \text{Time Frame} \\
 &= 76.645 * 100 \\
 &= 7664.51 \text{ m}
 \end{aligned}$$

Note:

The calculations are based on highest hydraulic conductivity determined by bail tests conducted at BH3, BH10 and BH20, the average gradient from the native undeveloped portion of the site and an estimated value for effective porosity.