

DEEP BAY IMPROVEMENT DISTRICT

ANNUAL WATER SYSTEM REPORT 2012

1 Introduction

This annual report describes the Deep Bay Improvement District (DBID) water system and summarizes the water quality and production data from January 1, 2012 - December 31, 2012. This report also includes a summary of: inquiries and complaints; completed and proposed maintenance activities; and the Emergency Response Plan.

The DBID operates under a permit issued by the Vancouver Island Health Authority (VIHA).

2 Deep Bay Improvement District

The Deep Bay Improvement District was incorporated in 1972 (originally as the Deep Bay Waterworks District). The water source comes from 7 groundwater wells. Water supply is stored in an above ground concrete reservoir and is not treated. The DBID supplies water to 600 metered services.

District contacts are: Leslie Carter, Administrator 250-757-9312
 Don Buchner, Operator 250-951-8757

2.1 Groundwater Wells

Water supply for the DBID system is provided by seven wells that are located north and south of the Island Highway for a distance of 700 meters on either side of Gainsberg Road. Water from these wells is pumped directly into the distribution system.

DBID Well Data:

Well Name	Well Depth	Capacity	Treated/ Untreated	Year Drilled
#1	15.9 m (52 ft)	4.8 l/s (65 IGPM)	Untreated	1973
#2	11.6 m (38 ft)	3.0 l/s (40 IGPM)	Untreated	1973
#3	16.4 m (53.7 ft)	5.7 l/s (75 IGPM)	Untreated	1969
#4	19.3 m (63.5 ft)	5.3 l/s (70 IGPM)	Untreated	1977
#5	21.5 m (70.5 ft)	10.0 l/s (130 IGPM)	Untreated	1985
#6	23.2 m (76 ft)	9.0 l/s (120 IGPM)	Untreated	1990
#7	26.1 m (85.6 ft)	Not in production	Untreated	1996
#8	23 m (75.4 ft)	11.0 l/s (145 IGPM)	Untreated	1997

2.2 Reservoirs

Water storage for the DBID system is provided by an above ground concrete reservoir located on the hillside south of the Island Highway. This structure was built in 1975 and provides 545 cubic meters (120,000 Imperial Gallons) of storage. This reservoir is divided in half by a vertical wall and both sides can operate independently.

2.3 Distribution System

The DBID water distribution system serves an area of approximately 5 square kilometers. The system has been constructed over a period of more than 40 years. The original lines were built before the District was established in 1972. Approximately 80% of the system was constructed using Asbestos Cement (AC) pipe and the remainder is Polyvinyl Chloride (PVC) pipe. The system has 57 fire hydrants.

3 Water Sampling and Testing Program

Bacteriological monitoring is carried out semi-monthly throughout the distribution system. There are 4 sample sites, as identified by VIHA. Each site is sampled on a monthly basis and samples are delivered to the Parksville Health Unit where they are sent on for testing.

Positive Results: none

Date	Total coliform	E. Coli	Reason	Corrective Action

Adverse Results: none

Date	Total coliform	E. Coli	Reason	Corrective Action

Attached to this report are the full test results from bacteriological monitoring for 2012. These results can also be viewed at:

http://www.healthspace.ca/Clients/VIHA/VIHA_Website.nsf/Water-Samples-Frameset?OpenPage

In fall 2012, DBID undertook additional chemical analysis on all production wells and the reservoir. These samples were taken to North Island Labs for testing. All of the well samples were within the chemical parameters listed in *The Guidelines for Canadian Drinking Water Quality*, but the sample from the reservoir had readings for E. Coli and Total Coliform. Additional samples were taken from the reservoir and from the system and in coordination with our VIHA Health Officer, the reservoir was chlorinated and flushed as a precaution.

DBID is working on upgrading the sampling site at the reservoir to ensure that water samples are not contaminated at the time of sampling. The results of the chemical analysis are available for viewing at the DBID office and are posted on the website at www.dbid.ca under "Water Quality Reports".

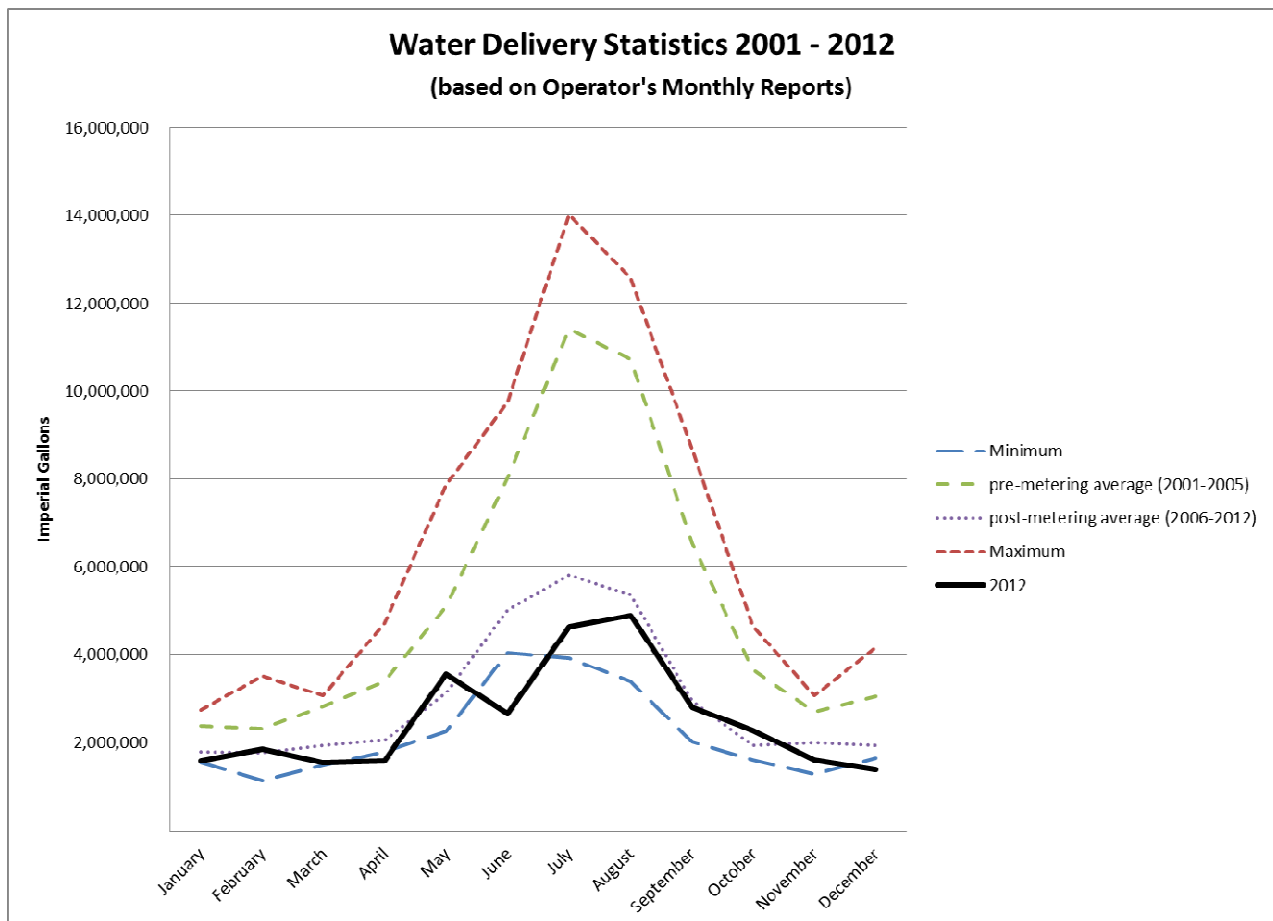
4 Water Quality Inquiries and Complaints

Over the course of the year, there was one inquiry regarding water discoloration. The DBID operator did some additional flushing to ensure the system was clear.

5 Groundwater Production and Consumption

A water audit was conducted in 2012 comparing the amount of water pumped at the wells vs. the amount of water delivered through the water meters. The average difference was 13%. This difference is accounted for by water used for flushing (hydrants and reservoir), water used for fire protection purposes, and undetected water loss in the system. Typical loss in a water system is 10-15%. This audit will continue on a quarterly basis to monitor for any unusual water loss.

The following graph shows the monthly water delivery figures from the DBID wells. 2012 was slightly below average in comparison to the years since the installation of meters (2006). This can probably be attributed to both the wetter and cooler than average weather in 2012 and the continuing efforts of many DBID rate payers to use our water resource wisely.



The table below shows the **percentage of users who met specified consumption figures** for 2012. For example: in the 1st quarter, January - March 2012, 69% of users consumed between 1 - 40 cubic meters.

Cubic Meters	Jan - Mar 2012	Apr - Jun 2012	Jul - Sep 2012	Oct - Dec 2012	2012 Overall
0	12%	4%	2%	6%	6%
1 - 40	69%	52%	32%	68%	55%
41 - 75	14%	28%	27%	21%	23%
76 - 100	3%	7%	13%	2%	6%
Over 100	2%	9%	26%	3%	10%
Average Consumption	32.88 m3	48.93 m3	89.97 m3	38.54 m3	

6 Maintenance Program

Production wells and the reservoir are inspected on a weekly basis to reduce or eliminate the risk of contamination and system failure. All meters have dual check valves that are tested annually to prevent backflow into the system. Isolation valves are exercised bi-annually. Air valves are inspected annually. Flushing program includes: flushing dead ends regularly, particularly during periods of low demand. Fire hydrants are serviced annually.

7 Water System Projects

7.1 2012 Completed Studies & Projects

- Major repairs to exterior of reservoir (\$11,650)
- Replaced section of main on Maple Guard Drive in conjunction with Ministry of Transportation and Infrastructure (MOTI) replacement of a major culvert. (30 m. of 6" AC pipe replaced with 6" PVC). DBID paid for labour (\$4434) and MOTI supplied all materials (approximately \$1334).

7.2 2013 Proposed Projects & Upgrades

- Upgrade well monitoring capability (installation of remote well and reservoir operating and monitoring capability)
- Upgrade reservoir sampling point

8 Emergency Response Plan

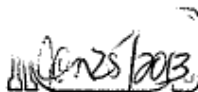
The Emergency Response Plan (ERP) was reviewed and updated in 2012. The DBID ERP includes:

- Emergency Phone Contact Lists
 - Personnel,
 - Government Agencies,
 - Contractors/Repair Services,
 - Technical Resources,
 - Parts Supply,
 - Bulk Water Suppliers, and
 - Media Contacts.
- Emergency Procedures
 - Unsafe Water Guidelines (Contamination of Well Space/s),
 - Loss of Source, Water Shortage, Broken Water Main, Pump Failure, Power Failures,
 - Flooding, Backflow or Back Siphonage,
 - Earthquake, and
 - Fire.
- Maps of System & Electrical Schematics

9 Report Distribution

Residents are notified by direct mail-out in the Pipeline Newsletter each year regarding the availability of this report. Annual Water System reports are available from the DBID office and on the website at www.dbid.ca under "Water Quality Reports". Copies will be mailed upon request. There is no charge for a copy of this report

A copy of this report is submitted to VIHA.



Water Sample Range Report

Vancouver Island Health Authority
Central Island

Facility Name: DEEP BAY IMPROVEMENT DISTRICT
Facility Type: DWT
Date Range: Jan 1 2012 to Dec 31 2012
Date Created: Jan 15 2013

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>SAMPLE STATION,</u>				
<u>4503 Maple Guard</u>				
<u>Drv., Deep Bay BC,</u>				
<u>4503 Maple Guard</u>				
<u>Drive, Deep Bay,</u>				
<u>Dist. site, Monthly</u>				
	18/01/2012	L1	L1	
	22/02/2012	L1	L1	
	27/03/2012	L1	L1	
	12/04/2012	L1	L1	
	15/05/2012	L1	L1	
	20/06/2012	L1	L1	
	16/07/2012	L1	L1	
	20/08/2012	L1	L1	
	25/09/2012	L1	L1	
	23/10/2012	L1	L1	
	31/10/2012	L1	L1	
	11/12/2012	<u>L1</u>	<u>L1</u>	
	Total Positive:	0	0	0
<u>Deep Bay Drive,</u>				
<u>Deep Bay BC, Deep</u>				
<u>Bay Drive, Deep</u>				
<u>Bay, Dist. site,</u>				
<u>Monthly</u>				
	31/01/2012	L1	L1	
	08/02/2012	L1	L1	
	19/03/2012	L1	L1	
	25/04/2012	L1	L1	
	02/05/2012	L1	L1	
	05/06/2012	L1	L1	
	03/07/2012	T		
	04/09/2012	L1	L1	
	01/10/2012	<u>L1</u>	<u>L1</u>	
	Total Positive:	0	0	0
<u>Deep Bay WWD,</u>				
<u>Deep Bay BC, 4647</u>				
<u>Thompson Clarke</u>				
<u>Drive, East, Deep</u>				
<u>Bay, Dist. site,</u>				
<u>Monthly</u>				
	18/01/2012	L1	L1	
	22/02/2012	L1	L1	
	27/03/2012	L1	L1	
	12/04/2012	L1	L1	
	15/05/2012	L1	L1	
		L1	L1	

20/06/2012			
16/07/2012	L1	L1	
20/08/2012	L1	L1	
25/09/2012	L1	L1	
23/10/2012	L1	L1	
31/10/2012	L1	L1	
06/11/2012	L1	L1	
11/12/2012	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

Deep Bay Fire Hall,
Deep Bay BC, Deep
Bay Fire Hall, Deep
Bay, Dist. site,
Monthly

31/01/2012	L1	L1	
08/02/2012	L1	L1	
19/03/2012	L1	L1	
25/04/2012	L1	L1	
02/05/2012	L1	L1	
05/06/2012	L1	L1	
03/07/2012	T		
04/09/2012	L1	L1	
01/10/2012	L1	L1	
31/10/2012	L1	L1	
06/11/2012	<u>L1</u>	<u>L1</u>	
Total Positive:	0	0	0

Island Highway &
Gainsburg,
AUDIT-Deep Bay
Water Works, Dist.
site, Annually

Result Values: E - estimated L - less than G - greater than

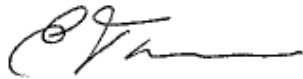
Interpreting Sample Reports

In VIHA, the results of drinking water sampling are reported using the following coding system:

- L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present
- OG Overgrown - Meaning: Too many background bacteria to give an accurate count
- EST Estimated Count
- and
- A Sample not tested; Too long in transit
- C Sample leaked/broken in transit
- D Sample not tested; No collection date given
- T Sample submitted unsatisfactory. Exceeded 30 hours holding time, please resample.
- NS No sample received with requisition

Samples that contain total coliform:	0	0.00% of total
Samples that contain e. coli:	0	0.00% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of positive samples in last 30 days:	0/2	
Total number of samples:	45	

Comments:



Environmental Health Officer

Jan 16 2013

FOR FURTHER INFORMATION PLEASE CALL: Thomson, Elizabeth (250) 947-8222 Parksville

Operator

Deep Bay Improvement District
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Bowser, BC
V0R 1G0

(250) 757-9312

