

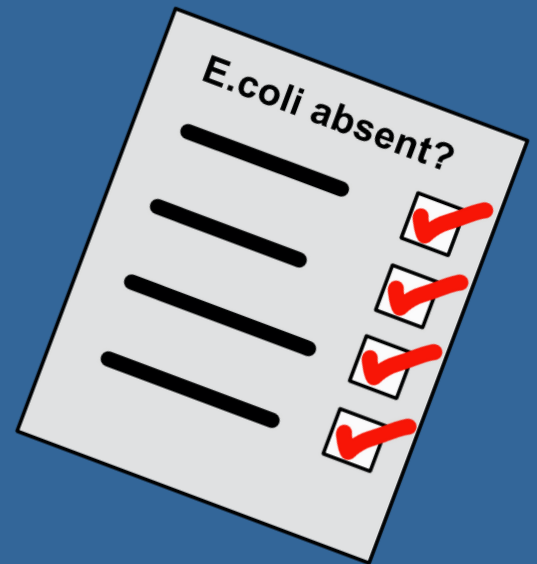
WHAT ACTUALLY HAPPENED AT *HAVELOCK NORTH?*

*IN AUGUST
2016?*

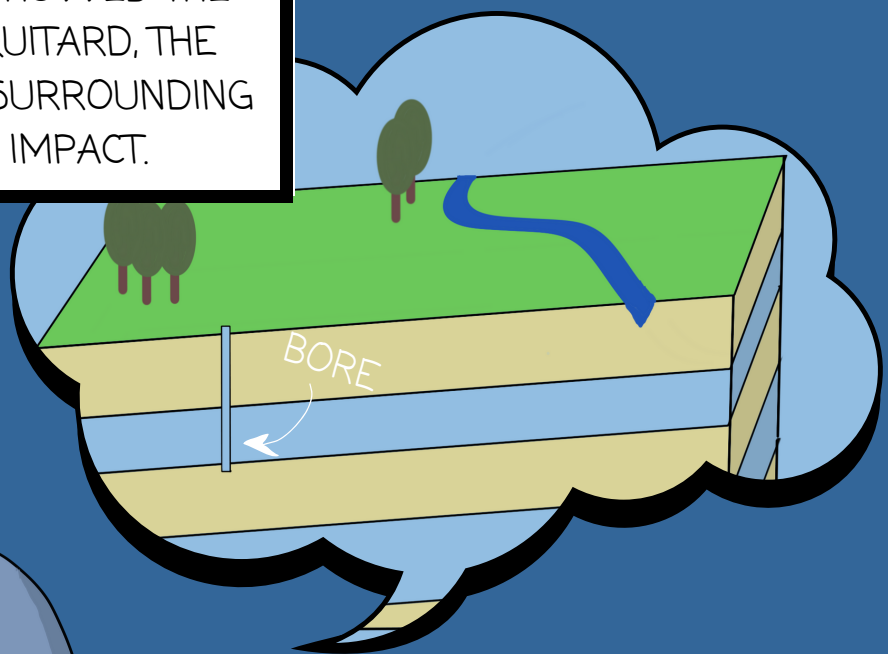
TIMELINE OF THE INCIDENT

HASTINGS DISTRICT COUNCIL WAS HAPPILY SUPPLYING WATER TO HAVELOCK NORTH.

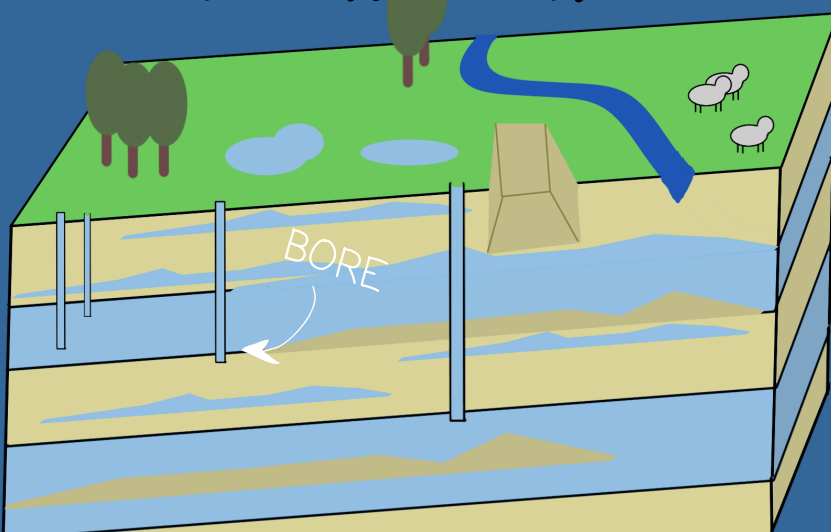
HASTINGS DC HAD AN APPROVED WATER SAFETY PLAN, AND A TYPICAL COMPLIANCE HISTORY.



PREVIOUS INVESTIGATIONS SHOWED THE AQUIFER HAD AN INTACT AQUITARD, THE WATER AGE WAS OLD, AND SURROUNDING LANDUSE HAD MINIMAL IMPACT.



BUT IN REALITY...



THE AQUITARD WAS DAMAGED, THERE WERE MANY OLD DISUSED BORES, PONDING OF RUNOFF FROM SHEEP PADDOCKS, AND THE AQUIFER WAS NOT HOMOGENEOUS.

2016

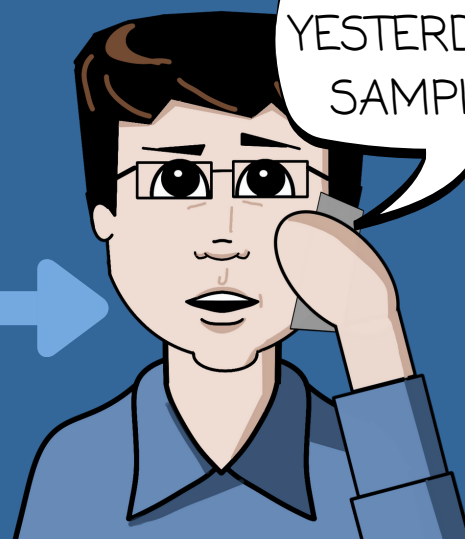
August

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

TH

HASTINGS
DISTRICT
COUNCIL

ABOUT
YESTERDAY'S
SAMPLE...



12:00PM

THE DISTRICT HEALTH BOARD NOTICED LOTS OF GASTRO CASES SO TOLD THE MINISTRY OF HEALTH. THEN AT 2PM, THE DHB HELD AN EMERGENCY MEETING.

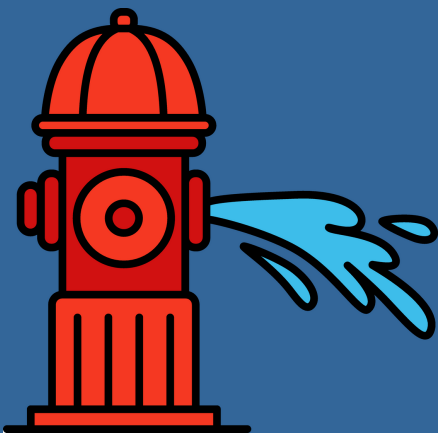


AT HASTINGS DC...

STAFF ORDERED ENUMERATED SAMPLING OF THE BORES AND RETICULATION IMMEDIATELY, AND INFORMED THE DHB.



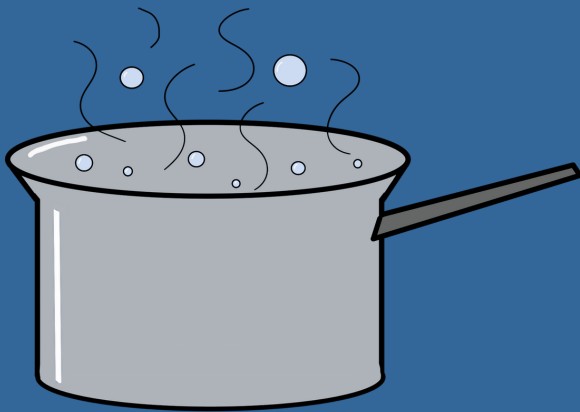
5:00PM



EMERGENCY CHLORINATION STARTED, AND THE ENTIRE HAVELOCK NORTH RETICULATION SYSTEM WAS FLUSHED BY MIDNIGHT.

6:40PM

A BOIL WATER NOTICE WAS RELEASED
TO MEDIA AND SOCIAL MEDIA



THE NEXT DAY...

THE DHB ACTIVATED THE
EMERGENCY OPERATION CENTRE



AND...



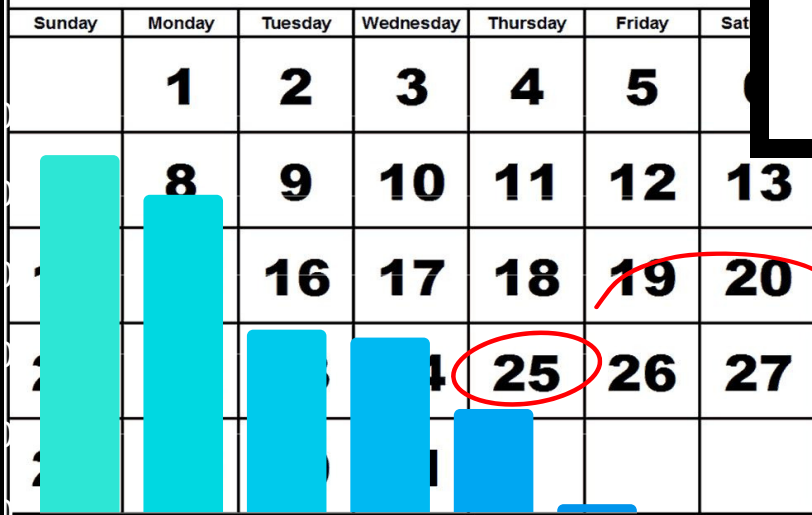
ENUMERATED RESULTS FROM YESTERDAY'S
SAMPLES WERE HIGH... ESTABLISHING THE
LINK BETWEEN THE ILLNESS OUTBREAK
AND THE DRINKING WATER

THE NEXT WEEK...

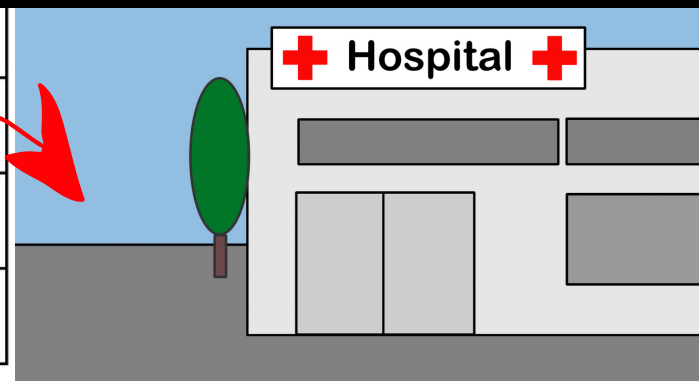


**CAMPYLOBACTER
WAS IDENTIFIED AS THE
PATHOGEN.**

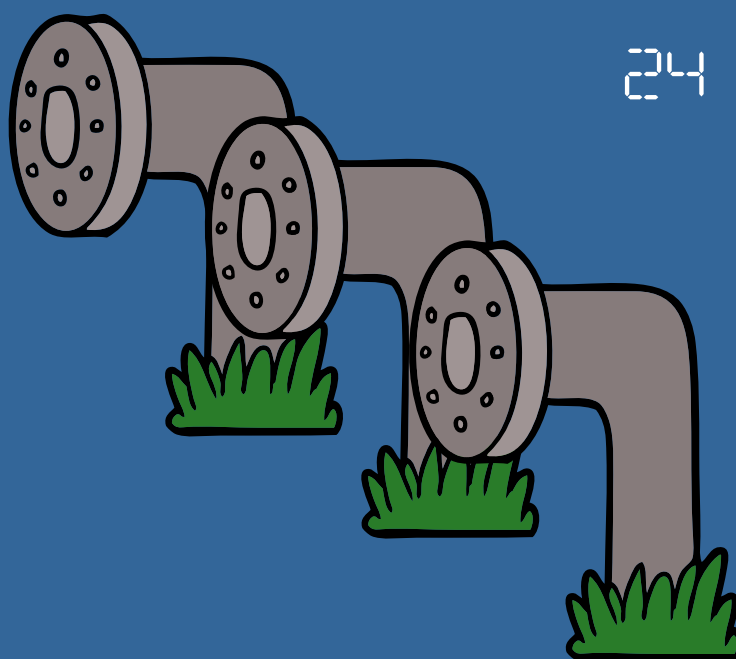
2016 AUGUS



THERE WAS A BIG REDUCTION IN GASTROENTERITIS CASES, AND BY 25 AUGUST NO NEW CASES WERE REPORTED.



THE OFFENDING BORES WERE DEACTIVATED, AND HAVELOCK NORTH WAS SUPPLIED SOLELY FROM THE HASTINGS SUPPLY, WHICH WAS UNDER EMERGENCY CHLORINATION.



24 AUGUST

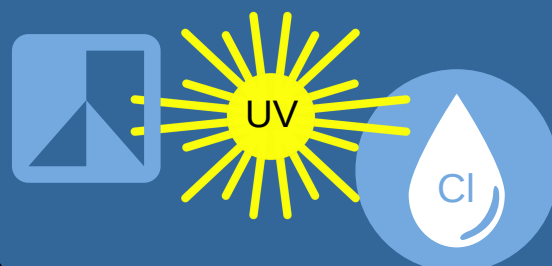
AND IN THE FOLLOWING MONTHS...

3 SEPTEMBER



THE BOIL WATER NOTICE WAS LIFTED.

ONE BORE WAS REACTIVATED WITH FILTRATION, UV TREATMENT AND CHLORINATION .



7 MARCH

THE INCIDENT IS ESTIMATED TO HAVE CAUSED...



*(contributed to)
4 Deaths*



*5,500 Gastro
cases*



*45 Hospital
visits*



*\$21M Economic
costs to society*

STAGE 1 RELEASED

MAY 2017

STAGE 2 RELEASED

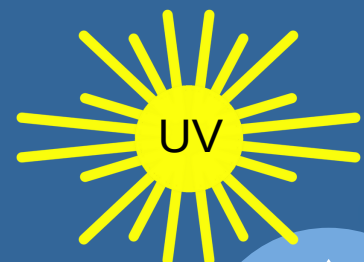
**DECEMBER
2017**



THE GOVERNMENT CONDUCTED A TWO STAGE INQUIRY INTO THE INCIDENT, WITH INTERNATIONAL EXPERT WITNESSES.

THE FINDINGS WERE DETAILED AND MADE 51 RECOMMENDATIONS, WITH LASTING REPERCUSSIONS FOR THE WATER SUPPLY INDUSTRY IN NEW ZEALAND.

**HASTINGS DC CONTINUES
TO INSTALL PERMANENT
CHLORINATION AND UV
TREATMENT ACROSS
ALL ITS SYSTEMS.**



SO NOW THE QUESTION IS...

***WILL ANOTHER
HAVELOCK NORTH
INCIDENT
HAPPEN?***

MAKE SURE IT'S NOT YOUR SYSTEM



THE
QUESTIONING
ENGINEER

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