Appendix G:

Scour Overflow Event Sampling Protocol

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Log of Changes

Date of Change	Who Made the Change?	What was Changed?
09/05/-2016	Matt McGill-Brown	Document created.
25/05/2018	Joe Val Alipin	Added revised monitoring regime. Document reformatting.
09/08/2019	Peter Hancock	New program requirements. Have deleted old information (see old objective version of document for past context) relating to previous complex sampling regime. New regime much more simplified
20/08/2019	Peter Hancock	Review with Wolf. Minor amendments made and process agreed upon. Sent for review to Compliance and EH teams.
16/10/2019	Kathryn Sharman	Updated location info & photos.
18/10/2019	Peter Hancock	Clarify. First sample asap after opening. Other samples '5 days from valve closure' (not from opening). RC info included. Bacteria grades table added.
29/05/2020	4Sight Consulting Ltd	Introductory text amended.

Monitoring Requirements

The purpose of this document is to confirm monitoring and associated public health warning signage following an overflow event.

Currently wet weather wastewater overflows are a permitted activity under Rule 6.2.3(1) of the Tairawhiti Resource Management Plan until 1 July 2020, after which Council requires a resource consent for overflow discharges. The conditions of this permitted activity include:

- Regular monitoring of the impacts of the wastewater overflows on the water quality and environment of the receiving environment is undertaken and that the results of this monitoring are reported to the Consent Authority on an annual basis;
- Public notification is undertaken in accordance with a public notification protocol agreed in writing with the Consent Authority; and
- Signage must remain in place until faecal contamination testing indicates that recreational use and food gathering activities are within health guidelines.

The monitoring and advisory process below has been prepared to be in accordance with these requirements and will continue into Council's wastewater overflow consent, once granted.

Core components are:

- Sampling results inform when warning signage can be brought back in.
- First sample taken as soon as possible after scours are opened (including if they are still open), and then subsequent samplings 2-5 must occur daily from after the valves are closed. That is, Council must sample daily for a minimum of 5 days after a scour opening event (this will be longer if the valves are open for a number of days).
- Sampling is for swimming health parameters (bacteria) and water quality parameters.

The objective for E.coli and Enterococci is to inform when signage can be brought back in (i.e. when results show a return to below safe swimming guidelines of below 280 for Enterococci and/or 550 for E.coli).

	Enterococci cfu/100ml	E.Coli cfu/100ml
	Acceptable	
	<140	<260
	Caution	
	140-280	260-550
	Health risk	
	>280	>550

The practical reality of sampling, testing and signage is that Council is unlikely to be able to get the signs back in before the 5 day threshold due to:

- The delay time it takes from sampling, to analysis, to results receipt.

- The delay time from results receipt to informing the relevant team to bring the signage back in (when they are working during daylight hours).
- Background bacteria levels in the city streams are generally high after rain events so it is difficult to separate the wastewater bacteria signal from the background urban/farm runoff bacteria signal in the catchment.
- There are two swimming bacteria parameters being measured (E.coli and Enterococci) at four sites so if any one of the eight test results are over the bathing threshold then signage must remain out. This is a high threshold to attain.
- Contaminant dispersion modeling[1] and an assessment of previous monitoring[2] shows that effects are dispersed within 2 to 3 days. However, a period of 5 days provides a level of conservatism.

As such, despite consent wording, Environmental Health (EH) standard practice is to leave the signage out for 5 days after the scour valves are closed.

- Swimming health indicator parameters are E.coli and Enterococci.
- Water quality key parameters are Total Phosphorus and Ammonical Nitrogen[3].

Monitoring Frequency – Wastewater Overflows

Following the scour valves being opened, the first sample is to be taken as soon as possible (including when the scour valve is still open if timing permits), and then the 2-5 samples to occur daily for the next five days after closure, with dates and times of each sampling recorded. Testing and sample logistics are undertaken as per Environmental Monitoring usual water quality Standard Operating Procedure's (SOP).

Monitoring Parameters

Microbiological:

- E coli, enterococci from the bacto pottle.

Field:

- Ammonical N, Total Phosphorus from the green 100ml ammonia bottle.

Field multimeter measurements:

- Conductivity and salinity are to be measured in the field, but will also collect other meter parameters just because they are available and easy to do while there. Other parameters include DO%, DOmg/L, pH and water temp.

Trigger for Sampling

When advised of a scour overflow by the Environmental Health team OR the Wastewater Utilities Team. As per agreed Communication Plan protocol (Wastewater discharge notification Doc Ref: A766567).

[1] MetOcean, 2020. Scour Event Modelling: Poverty Bay
[2] 4Sight Consulting, 2020. Overflow Water Quality Assessment – River Monitoring Report
[3] Coast and Catchment, 2020. Ecological effects of wastewater overflows

Equipment List

- Sampling pole;
- Sampling bottles including spares (bacto and green ammonia bottle);
- Grabber reel and sampling rope;
- Gloves.

Method

1. Pre-organise a round of bottles so they are ready to go for an overflow event. Put somewhere in the annex/office where staff will have ready access to them. This bin is to contain five days worth of bottles. Each day/site will have bottle splits with one Chain Of Custody (COC) and bottle for bacteria and a separate COC/bottle for nutrients. This is so that we can get quicker turnaround bacto results from the lab (as nutrient results can take up to 10 working days).
2. Grab ziplock bag with appropriate bottles out of Scours chilllybin. Find a chillybin to use and put some fresh slicker pads in it.
3. Go out in the field and conduct sampling. Ensure acid filled bottle is not overfilled. Leave a headspace in the bacto pottle.
4. Upon return, if during the week, Environmental Monitoring (EM) team will sample and deliver to lab. If during the weekend, on-call staff (Drainwise?) team to take the sample and send to the lab. Protocols for sending to be advised by EM team. Weekend samples (and anything delivered after 4pm on Friday) to the lab require air freight and sample dropoff at the airport.
5. EM team will ensure results are processed in a timely manner and made available to the website.

Reporting

Bacto results are auto-archived into GDC Hilltop database and then automated up to Land Air Water Aotearoa (LAWA) as soon as they are made available from the laboratory (usually 30 hours after samples are received by the laboratory). Nutrient results data take longer to analyse and receive (results are made available to GDC after 10 working days). GDC then process and store this data into GDC's Hilltop database for future retrospective analysis and assessment as required.

Sampling Sites

Sites have been decided upon based on wastewater contaminant plume modelling (ie, the scour overflow plume will always be somewhere within these sites despite the tide).

Turanganui River at Gladstone Rd Bridge

Water Type	Brackish		
Requirements	Sampling Rope	**GPS Coordinates**	2037580E 5707995N
Road Address: Gladstone Rd			

Site Notes:

Park just before the bridge across esplanade and sample from the bridge.

May sample from the river bank as shown below if safe to do so.

Turanganui River at The Cut

Water Type	Saline		
Requirements	Sampling Pole Waders/Gumboots	**GPS Coordinates**	2036914E 5707555N
Road Address: Awapuni Road			

Site Notes:

Park in first car park at the cut. Walk down and sample off concrete ledge.

Waimata River at ANZAC Park

Water Type	Brackish		
Requirements	Sampling Pole	**GPS Coordinates**	2038028E 5708770N
Road Address: ANZAC Park			

Site Notes:

Turn left off Rutene Rd down Harris St just after the Four Square. Follow Harris St until it joins Score Road, enter the park past the toilets and park in Gisborne Rowing Club car park. Sample in front of first set of trees.

Taruheru River at Peel St Bridge

Water Type	Fresh		
Requirements	Sampling Rope	**GPS Coordinates**	2037523E 5708357N
Road Address: Peel St			

Site Notes:

Park in the carpark between the bridge and GDC building. Walk to the bridge and sample.