

Bevan McKenzie

From: Mellish, Charles <Charles.Mellish@stantec.com>
Sent: Tuesday, 18 December 2018 10:11 a.m.
To: Bevan McKenzie
Subject: RE: Riverton Water

Morning Bevan,
Apologies for nit replying yesterday, it's a bit hectic this week, but we are getting there.

I see that the 80mg/L dose produced an LSI of zero, it will be good to check at some stage how the stability responds to lime. If the elements are scaling, is the corrosion not occurring as you observed last week?

It may be best to summarise the results and tests we have done to date and put notes against the results to see the trends. I am going to be on site this morning, but will give you a call later today to discuss.

Regards
Charles

Charles Mellish
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-----Original Message-----

From: Bevan McKenzie <bevan.mckenzie@southlanddc.govt.nz>
Sent: Monday, 17 December 2018 11:21 AM
To: Mellish, Charles <Charles.Mellish@stantec.com>
Subject: Riverton Water

Hi Charles

We have done the test at the site 60g soda ash and 50 ml of Citric acid into 1 cubic meter of water. Run the water constantly through an electric jug for 24 hrs (jug heating all the time) We are still getting scale build up on the element. This new scale is more white and harder to remove from the element.

We currently as of this morning running another test with with 40 g soda ash and 30 mls citric acid. See what happens tomorrow.

Any thoughts what we should try next.
Regards
Bevan

Sent from my iPhone

[cid:image638770.GIF@51f29643.44a4a864]<http://www.southlanddc.govt.nz> Bevan McKenzie Project and Programme Manager Southland District Council PO Box 903 Invercargill 9840
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www.southlanddc.govt.nz
M: 027 471 9903

Begin forwarded message:

From: Adrian Cocker <Adrian.Cocker@icc.govt.nz<mailto:Adrian.Cocker@icc.govt.nz>>
Date: 14 December 2018 at 5:26:32 PM NZDT
To: Bevan McKenzie
<bevan.mckenzie@southlanddc.govt.nz<mailto:bevan.mckenzie@southlanddc.govt.nz>>
Subject: Bevan SDC (A2475758)

Adrian Cocker has sent you a copy of "Bevan SDC" (A2475758) v0.1 from Objective.

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Riverton Water Supply

Sample	pH	Adjusted pH	Alkalinity	LSI	Grams of Soda Ash to add to 1000L	ml of Citric Acid to add to 1000L to correct to pH 8
Riverton Supply	7.36	-	81 mg/l	-0.9	-	-
20mg/l of Soda Ash	8.60	8.00	98 mg/l	-0.2	20g	10 ml
40mg/l of Soda Ash	8.99	8.00	115 mg/l	-0.1	40g	30 ml
60mg/l of Soda Ash	9.14	8.00	131 mg/l	-0.1	60g	50 ml
80mg/l of Soda Ash	9.30	8.00	150 mg/l	0	80g	65 ml

ICC Lab tests to determine dose rates in "off line" tests.

Trialed off-line for 20, 40, 60 mg/l Soda Ash & Citric Acid.

These tests increased the level of scaling of iron elements. Also trialed line same result, increased scaling.

Bevan McKenzie

From: Mellish, Charles <Charles.Mellish@stantec.com>
Sent: Friday, 14 December 2018 12:28 p.m.
To: Bevan McKenzie
Subject: RE: Riverton water (A2473987) lab Tests results down on warm water 20, 40 and 60 Degree C

Hi bevan,

Dosing citric will add alkalinity but as a dose range from 20 to 80mg/L is being tested, the impact will reflect the addition and one may need to use one of the higher doses.

Regards
Charles

From: Bevan McKenzie <bevan.mckenzie@southlanddc.govt.nz>
Sent: Friday, 14 December 2018 8:57 AM
To: Mellish, Charles <Charles.Mellish@stantec.com>
Subject: RE: Riverton water (A2473987) lab Tests results down on warm water 20, 40 and 60 Degree C

Thanks Charles

I am going to set up the trail at the plant today and was going to soda ash and citric Acid (as citric is on site) instead of HCL will this alter the results?

The citric acid strength is 625 g/L

Regards
Bevan



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From: Mellish, Charles [<mailto:Charles.Mellish@stantec.com>]
Sent: Friday, 14 December 2018 10:06 a.m.
To: Bevan McKenzie
Subject: RE: Riverton water (A2473987) lab Tests results down on warm water 20, 40 and 60 Degree C

Morning Bevan,

I have attached the file that includes all the data and checks of the water stability for reference. It may be advisable to use a few soda ash doses to check the response and final alkalinity. Dose ranges from 20, 40, 60 and 80mg/L should be done to calculate a range of LSI values. My calcs only have precipitation potential but this reflects the lack of stability and the LSI calculated by the lab showed similar unstable water.

You could take some of the stabilised water and boil a jug of the water to check improvement in the corrosion.

The lab results you sent show that as the temperature increases, alkalinity and Calcium hardness remained constant, highlighting the theory that deposition is triggered by the pH change. The bigger issue though is the corrosion of the metal in the network and stabilising the water is the most important outcome to achieve.

At a later stage the lab should also check the response of lime rather than soda ash.

Regards
Charles

Charles Mellish

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-----Original Message-----

From: Bevan McKenzie <bevan.mckenzie@southlanddc.govt.nz>

Sent: Thursday, 13 December 2018 4:06 PM

To: Mellish, Charles <Charles.Mellish@stantec.com>

Subject: Riverton water (A2473987) lab Tests results down on warm water 20, 40 and 60 Degree C

Hi Charles

Lab test results attached for the test results on warm water 40 and 60 degree centigrade. As discussed Note no additional chemicals were added to the water this was from a 20 litre sample of water going into town taken at the plant.

I thought maybe now do a lab test on water with soda ash and citric acid added and then do a small scale field test to see if scaling / pitting is reduced on the elements

Can you suggest the best chemical concentrations to try?

Thanks
Bevan

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-----Original Message-----

From: Adrian Cocker [mailto:Adrian.Cocker@icc.govt.nz]

Sent: Thursday, 13 December 2018 5:38 p.m.

To: Bevan McKenzie
Subject: Riverton water (A2473987)

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