

Appendix D

Monitoring Program Stations No. ALT-8-9-10-11

Year: 2013

Description: Discharge from Tank Farm Secondary Containments ALT-8-9-10 & Landfarm Facility ALT-11.

Results:

The Department of National Defence (DND) intended to discharge water from the Fuel Tank Farm Secondary Containments at ALT-8 and ALT-9 in June 2013. At least 10 days notice was provided to the Inspector and Nunavut Water Board, the email chain is attached below.

Water samples from within the secondary containments of ALT-8-9-10 were collected in June 2013 and analyzed; analytical results are attached in Appendix E.

Two samples were taken at ALT-8 (sample identifications: ALT-8 and ALT-8.2) to better represent the freshet quality due to the large size of the Secondary Containment facility.

DND had no intentions to discharge any water from Fuel Tank Farm Secondary Containment at ALT-11.

In June 2013, analytical results (Appendix E) of the freshet in ALT-8-9-10 did not meet the Effluent Quality Limits (Part D, Item 11) for Lead. The lead concentrations for ALT-8-9-10 were 16.5, 18.8 and 7.0 ug/L, respectively. By July 2013, analytical results (Appendix F) for ALT-8-9-10 did not detect any lead concentrations (<1.0 ug/L).

To address the lead occurrences in water from June 2013, DND had obtained approval from the Inspector to utilize the Portable Oil/Water Filtration System (OWFS) to pump and treat the effluent water in July 2013. As per direction from the Inspector, DND collected additional samples of the treated effluent water from the OWFS at the beginning, intermediate, and end stages of treatment for laboratory confirmatory testing; the test results were submitted directly to the Inspector and NWB, and attached in Appendix H. The results in Appendix H did not detect the presence of lead (<0.5 ug/L) from the treated effluent from ALT-8-9-10

However to reduce the large volume of freshest from the secondary containment berms before the return of winter conditions by August 2013), DND obtained approval from the Inspector to conduct straight discharge releases (without the OWFS), and that laboratory confirmatory testing be taken to ensure no release of lead. The test results were submitted directly to the Inspector and NWB, and attached in Appendix I. The results in Appendix I did not detect the presence of lead (<0.5 ug/L) from the released effluent.

As directed by the Inspector during the July 2013 AANDC Inspection Visit, DND further investigate the source of the lead concentration at ALT-8-9-10 by collecting additional samples of the berm construction material (gravel) and fuel to determine a possible lead contribution source in water. The results of the laboratory testing were submitted to the Inspector and NWB, and attached in Appendix J (gravel) and Appendix K (fuel). The results from Appendix J indicated elevated lead concentrations that ranged from 11 to 20 ug/g. The gravel samples were collected from the berm material at ALT-8-9-10 and from two controlled locations at two different gravel stockpiles that were produced from the CFS Alert Gravel Quarry. The results from Appendix K indicated that the fuel, collected from two fuel tanks in CFS Alert, contained 2.00 to 2.38 parts per billion (ppb) concentrations of lead; a concentration that is unlikely to cause lead contamination in water to the extent observed in June 2013 even under the assumption of complete lead partitioning into water.

Given this investigation, DND identified that CFS Alert's elevated lead background in gravel (local rock) and possible human sampling errors may have contributed to the detection of lead above the Effluent Quality Limits in June 2013. Given the natural elevated lead background, future detection of lead in effluent water is possible at CFS Alert.

Notes (extra spaces removed):

From: Justin Hack [<mailto:Justin.Hack@aandc-aadnc.gc.ca>]
Sent: Monday, 2, December, 2013 16:15 PM
To: Tam A@CFB Trenton WENV@Trenton
Subject: Re: FW: 3BC-ALT1015 Alert Berm Water Discharge Notice (Follow Up)

Hi Andrew,

Thanks for sending this email chain through to me.

>>> <Andrew.Tam@forces.gc.ca> 10/29/2013 1:24 PM >>>

Hi Justin:

The following email is related to the an on-going issue from June 2013.
Background - DND had detected lead concentrations in secondary containment water that was above the Alert water licence limits. Andrew Keim had directed follow up measures and DND is close to satisfying them. Based on the results so far, the lead contamination source may appear to be from elevated background levels in the shale rock used as gravel and/or field sampling error.

If you need more info, please feel free to contact me.

Again, thank you for contacting me.

Regards,

Andrew Tam, M.Sc., Ph.D. (Candidate)
Assistant 8 Wing Environment Officer | Officier de l'environnement de la 8ième escadre adjoint
Environmental Management | Gestion d'environnement
8 Wing Trenton | 8ième Escadre Trenton

National Defence | Défense Nationale
Room 303, 74 Polaris Ave. | Pièce 303, 74 Avenue Polaris
Box 1000 Stn Forces | Forces 1000 de Stn de boîte
Astra, Ontario K0K 3W0
andrew.tam@forces.gc.ca
Telephone | Téléphone 613-392-2811 x 4821; Facsimile | Télécopieur 613-965-3368
Government of Canada | Gouvernement du Canada

From: Tam A@CFB Trenton WENV@Trenton
Sent: Friday, 25, October, 2013 12:35 PM
To: 'Andrew Keim'
Cc: 'Erik Allain'; Craig DA@CFB Trenton WENV@Trenton; 'Phyllis Beaulieu'
Subject: RE: 3BC-ALT1015 Alert Berm Water Discharge Notice (Follow Up)

Hi Andrew:

Please find attached the Lead in fuel analytical results, as requested, for your review.
The results show concentrations of lead ranging from 2.00 to 2.38 ppb (ug/L) in the sampled fuel.
These lead concentrations are well lower than that those observed in the June 2013 berm water, even under the assumption of complete lead partitioning into water.

Regards,

Andrew Tam, M.Sc., Ph.D. (Candidate)
Assistant 8 Wing Environment Officer | Officier de l'environnement de la 8ième escadre adjoint
Environmental Management | Gestion d'environnement
8 Wing Trenton | 8ième Escadre Trenton
National Defence | Défense Nationale
Room 303, 74 Polaris Ave. | Pièce 303, 74 Avenue Polaris
Box 1000 Stn Forces | Forces 1000 de Stn de boîte
Astra, Ontario K0K 3W0
andrew.tam@forces.gc.ca
Telephone | Téléphone 613-392-2811 x 4821; Facsimile | Télécopieur 613-965-3368
Government of Canada | Gouvernement du Canada

From: Tam A@CFB Trenton WENV@Trenton
Sent: Monday, 19, August, 2013 14:24 PM
To: Andrew Keim
Cc: Erik Allain; Craig DA@CFB Trenton WENV@Trenton; Phyllis Beaulieu
Subject: RE: 3BC-ALT1015 Alert Berm Water Discharge Notice (Follow Up)

Hi Andrew:

Analytical results from the treat effluent water by the Lead in Water Filtration System (used prior to the straight discharge) have been received and attached for your review; the results did not detect the presence of lead from multiple (3) samples. The water being treated was from site ALT-9 (Upper Tank Farm).

The straight discharge berm water samples, as requested, just made it back to Trenton and have been sent to the lab for analysis. As well, I am still awaiting for the Lead in Fuel analytical results and the Breakthrough Calculation from the Filtration System's manufacturer; I'll send all of those along upon receipt.

Regards,
Andrew T.

Andrew Tam, M.Sc., Ph.D. (Candidate)
Assistant 8 Wing Environment Officer | Officier de l'environnement de la 8ième
escadre adjoint
Environmental Management | Gestion d'environnement
8 Wing Trenton | 8ième Escadre Trenton
National Defence | Défense Nationale
Room 303, 74 Polaris Ave. | Pièce 303, 74 Avenue Polaris
Box 1000 Stn Forces | Forces 1000 de Stn de boîte
Astra, Ontario K0K 3W0
andrew.tam@forces.gc.ca
Telephone | Téléphone 613-392-2811 x 4821; Facsimile | Télécopieur 613-965-
3368
Government of Canada | Gouvernement du Canada

From: Andrew Keim [<mailto:Andrew.Keim@aandc-aadnc.gc.ca>]
Sent: Thursday, 25, July, 2013 11:47 AM
To: Tam A@CFB Trenton WENV@Trenton
Cc: Erik Allain; Craig DA@CFB Trenton WENV@Trenton; Phyllis Beaulieu
Subject: RE: 3BC-ALT1015 Alert Berm Water Discharge Notice (Follow Up)

Hi Andrew,

Thank you for the prompt reply.

At this juncture I see no reason why you can not move to a controlled direct
discharge from the three sites.

I would ask however that an additional confirmatory sample be collected at each
location at the mid point of the discharge and the end of the discharge to
ensure that we are still on track and that we do not get any surprises after
the fact.

I assume this will meet with your approval.
If you have any questions or if I can be of any further assistance please let
me know.

Andrew Keim
Water Resources Officer
Field Operations Unit
Aboriginal Affairs and Northern Development Canada
Nunavut Regional Office
P.O. Box 100
Iqaluit, Nunavut X0A 0H0
Andrew.Keim@aandc-aadnc.gc.ca <<mailto:Andrew.Keim@aandc-aadnc.gc.ca>>
Phone: (867) 975-4289
Fax: (867) 979-6445
B.B (867) 222- 6488

>>> <Andrew.Tam@forces.gc.ca> 7/25/2013 11:29 AM >>>

Hi Andrew:

Good to hear from you.
I'm back in Trenton now, I was off on leave until yesterday.
Please find my responses to your three questions below:

For ALT-9 (Upper Tank Farm), DND has ruled out historical lead paint as the
white tanks were painted (recently) in 1994; for ALT-8 (Airfield Tanks), the

historical orange paint was confirmed in 2011 to contain lead. For ALT-9, the possible lead source could be associated with fuel tank cleaning residual waste in the berms that may not have been completely removed at the time of the last interior tank cleaning (years ago). For confirmation, I will have some gravel grab samples collected in mid-Aug when staff can safely access the base of the berm adjacent to the fuel tank, any residuals should be detected on the gravel near the tank man-hole ports.

For July I sampled at the same June locations for the berm waters; however, this time I took two grab samples from ALT-9 as this site had never previously tested presence for lead; for 2011 & 2012, lead was below detection and license limits. The second grab sample was for confirmation to rule out sampling error for this July's sampling efforts. As you have observed in Alert, spring freshet has been delayed by 2-3 wks, sampling error could have been a factor as the standing water in all three berms collected in June were at beginning of the melt; by July, the snow/ice within the berms had significantly melted.

Fuel test results - I have not received any results from our lab testing side yet; The test is to be done in parallel when we get Alert fuel samples for Env Can's Sulphur test. I have sent a follow up to expedite this process, so I will advise when results are received. As well, the June 2013 berm water results did not detect any presence of BTEX/Phenols/Oil&Grease in ALT-8 and 9, so this argument can help to rule out any recent hydrocarbon spills within the berms. For 2011 and 2012, BTEX/Phenols/Oil&Grease in ALT-8 and 9 were also all below detection and license limits.

Hope this helps. If you require more info, please let me know.

Regards,

Andrew Tam, M.Sc., Ph.D. (Candidate)
Assistant 8 Wing Environment Officer | Officier de l'environnement de la 8ième escadre adjoint
Environmental Management | Gestion d'environnement
8 Wing Trenton | 8ième Escadre Trenton
National Defence | Défense Nationale
Room 303, 74 Polaris Ave. | Pièce 303, 74 Avenue Polaris
Box 1000 Stn Forces | Forces 1000 de Stn de boîte
Astra, Ontario K0K 3W0
andrew.tam@forces.gc.ca
Telephone | Téléphone 613-392-2811 x 4821; Facsimile | Télécopieur 613-965-3368
Government of Canada | Gouvernement du Canada

From: Andrew Keim [<mailto:Andrew.Keim@aandc-aadnc.gc.ca>]
Sent: Thursday, 25, July, 2013 09:50 AM
To: Tam A@CFB Trenton WENV@Trenton
Cc: Erik Allain; Craig DA@CFB Trenton WENV@Trenton
Subject: RE: 3BC-ALT1015 Alert Berm Water Discharge Notice (Follow Up)

Good Morning Andrew,

Yes, we made it back more or less in one piece. Erik ended up going directly on to Kivalliq and spending another few days flying shot gun in the helicopter and fighting off the mosquitoes (they are nearly the same size over there).

Are you back in Trenton now ?..

As for the request to direct discharge, and in review:

Sample results collected on the 4th of June at ALT-8, ALT-9, and ALT-10,

showed that Lead exceeded the limit set by the Water License Effluent Quality Limits (Part D, Para. 11) at 16.5, 18.8 and 7.0 ug/L, respectively.

Samples were then collected again at the same locations on July 5th, 2013 and have returned results showing that the any concentration of lead would be below detectable limits and licensed limits..

Before I would entertain your request could you answer the following?

Has a source for the lead contamination been identified at this point?

Could it be attributed to sampling error at these three sites?..

Have the results of the fuel testing I asked for been received yet ?..

Thanks very much.

Andrew Keim

Water Resources Officer

Field Operations Unit

Aboriginal Affairs and Northern Development Canada

Nunavut Regional Office

P.O. Box 100

Iqaluit, Nunavut X0A 0H0

Andrew.Keim@aandc-aadnc.gc.ca <mailto:Andrew.Keim@aandc-aadnc.gc.ca>

Phone: (867) 975-4289

Fax: (867) 979-6445

B.B (867) 222- 6488

>>> <Andrew.Tam@forces.gc.ca> 7/25/2013 8:16 AM >>>

Good morning Andrew and Erik,

Hope you made it back to Iqaluit alright.

Good news regarding the lead concentration in the CFS Alert fuel tank facility secondary containment systems.

The attached Analytical Results (Page 7) of the re-sampled berm waters on 05 Jul 13 did not detect any lead (<1.0 ug/L) for:

the Airfield Fuel Tank Berm (ALT-8),

the Upper Fuel Tank Berms (ALT-9), and

the Day Tank Berm (ALT-10).

For ALT-9, I took two grab samples, they are shown as ALT-9-1 and ALT-9-2 in the attached certificate of analysis.

As you are aware, all berm water are currently being treated using the Oil/Water and Lead Filtration System; I have also collected the treated discharge water from the Filtration System, those samples were sent to the lab this week for analysis.

Andrew, based on the new results, DND would like to request your permission to cease using the filtration system and to conduct straight discharges to expedite the de-watering of all berms before winter returns by late-Aug.

May DND proceed with this as soon as possible?

DND will also ensure that all discharges will continue to be diffused at the final discharge locations to avoid/prevent ground rutting, erosion of sediments, and damage to permafrost.

As well, the attached certificate of analysis also contains the results of the July SNP results for ALT-4 (Main Station Landfill) and ALT-5 (Battery Dump); please note both ALT-6 (Millionaire's Dump) and ALT-7 (Dump#3) were dry.

Regards,
Andrew T.

Andrew Tam, M.Sc., Ph.D. (Candidate)
Assistant 8 Wing Environment Officer | Officier de l'environnement de la 8ième
escadre adjoint
Environmental Management | Gestion d'environnement
8 Wing Trenton | 8ième Escadre Trenton
National Defence | Défense Nationale
Room 303, 74 Polaris Ave. | Pièce 303, 74 Avenue Polaris
Box 1000 Stn Forces | Forces 1000 de Stn de boîte
Astra, Ontario K0K 3W0
andrew.tam@forces.gc.ca
Telephone | Téléphone 613-392-2811 x 4821; Facsimile | Télécopieur 613-965-
3368
Government of Canada | Gouvernement du Canada

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

From: Andrew Keim [<mailto:Andrew.Keim@aandc-aadnc.gc.ca>]
Sent: Thursday, 27, June, 2013 13:47 PM
To: Tam A@CFB Trenton WENV@Trenton
Subject: Re: 3BC-ALT1015 Alert Berm Water Discharge Notice

Last reply deleted from BB.

Andrew, as per our conversation. Please proceed with discharge utilizing filter
system for lead removal. Please conduct sampling to ensure discharge meets
criteria and collect samples of fuel to determine if lead is present. If you
require further clarification please let me know.

Andrew Keim

Aboriginal Affairs and Northern Development- Government of Canada

1 867 975 4289

1 867 222 6488

>>> <Andrew.Tam@forces.gc.ca> 6/27/2013 1:39:54 PM >>>

Thank you Andrew. Seems to be working now.

Cheers,
Andrew Tam

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

From: Andrew Keim [<mailto:Andrew.Keim@aandc-aadnc.gc.ca>]
Sent: Thursday, 27, June, 2013 13:37 PM
To: Tam A@CFB Trenton WENV@Trenton
Subject: Re: 3BC-ALT1015 Alert Berm Water Discharge Notice

I sent a reply which was bounced. Acknowledge receipt of this email please.

Andrew Keim

Aboriginal Affairs and Northern Development- Government of Canada

1 867 975 4289

1 867 222 6488

>>> <Andrew.Tam@forces.gc.ca> 6/27/2013 8:07:55 AM >>>

Good morning Andrew,

Just a reminder on the Berm Water notice for Alert.

Cheers,
Andrew T.

>

> From: Tam A@CFB Trenton WENV@Trenton
> Sent: Tuesday, 25, June, 2013 15:42 PM
> To: 'Andrew.Keim@aandc-aadnc.gc.ca'
> Cc: 'Phyllis Beaulieu'; Craig DA@CFB Trenton WENV@Trenton; St-Onge
MWO G@CFB Trenton WENV@Trenton
> Subject: RE: 3BC-ALT1015 Alert Berm Water Discharge Notice
>
> Hi Andrew,
> > <<3BC-ALT1015 SNP Results ALT8-9-10 June 2013.pdf>>
> Apologies, please find attached the Certificate of Analysis.
>
> Regards,
> Andrew Tam
>
>

> From: Tam A@CFB Trenton WENV@Trenton
> Sent: Tuesday, 25, June, 2013 14:58 PM
> To: Andrew.Keim@aandc-aadnc.gc.ca
> Cc: Phyllis Beaulieu; Craig DA@CFB Trenton WENV@Trenton; St-Onge MWO
G@CFB Trenton WENV@Trenton
> Subject: 3BC-ALT1015 Alert Berm Water Discharge Notice
>
> Good afternoon Andrew,
>
> As per our earlier conversation today and as per Nunavut Water Board
(NWB) Licence 3BC-ALT1015, Part D, Para. 14, the Department of National Defence
(DND) would like to provide notice of our intent to discharge water from the
Fuel Storage Facilities at CFS Alert, Nunavut.
>
> DND would like to discharge water from the following secondary
containment berms:
>
> ALT-8 - Airfield Tank Farm Secondary Containment;
> ALT-9 - Upper Tank Farm Secondary Containment; ALT-10 - Day Fuel Tank
> Farm Secondary Containment.
>
> Attached is the Certificate of Analysis containing the water
analytical results for 3BC-ALT1015 sites.
>
> Please note that due to the large area of ALT-8, I have collected two
samples labelled: ALT-8 from the southern portion of the Airfield Tank Farm and
ALT-8.2 from the northern portion of the Airfield Tank Farm.
>
> As well, ALT-11 (Landfarm, aka Biopile) does not require discharging
as the berm water is re-used to re-hydrate the contaminated soils located
within the Landfarm during summer treatment season.
>
> For the discharge of berm water at ALT-8, ALT-9, and ALT-10, the
analytical results for Lead exceeded the limit of the Water Licence Effluent
Quality Limits (Part D, Para. 11) at 16.5, 18.8 and 7.0 ug/L, respectively.
>
> In addition, the Phenol sample for ALT-10 was broken in transit to the
laboratory, and as a result, no data could be collected.
>
> For the Lead and Phenol issues at ALT-8, ALT-9, and ALT-10, DND would
like to propose utilizing the Portable Oil/Water Filtration System
(OWFS) to pump and treat this effluent water. DND will collect samples of the
treated effluent water from the OWFS for laboratory testing, and the results
will be submitted to you and the NWB. DND will further investigate the source
of the Lead concentration at these facilities.
>
> Please accept this notice and if there are no further concerns, DND
will proceed with discharging water as described above from the secondary

containments in 10 days from this notice.

>

> If you have any questions or concerns, please do not hesitate to contact me.

>

> Finally, may I please request a confirmation of receipt for this email?

>

>

> Regards,

>

> Andrew Tam, M.Sc., Ph.D. (Candidate)

> Assistant 8 Wing Environment Officer | Officier de l'> ' > environnement de la 8ième escadre adjoint

> Environmental Management | Gestion d'environnement

> 8 Wing Trenton | 8ième Escadre Trenton National Defence | Défense

> Nationale Room 303, 74 Polaris Ave. | Pièce 303, 74 Avenue Polaris Box

>

> 1000 Stn Forces | Forces 1000 de Stn de boîte Astra, Ontario K0K 3W0

> andrew.tam@forces.gc.ca Telephone | Téléphone 613-392-2811 x 4821;

> Facsimile | Télécopieur

613-965-3368

> Government

of Canada | Gouvernement du Canada

>

>