From:

Chuck McCracken

Sent:

Thursday, February 25, 2010 3:03 PM

To:

donna.kniss@epa.state.oh.us

Cc:

Stephen Helmer; Michael Snee; Jim Colleli; David Lipp; Kenneth Barnhart

Subject:

Warren WWTP Study

Attachments:

OAC 3701-39-02.1 pdf; Request for Reg Concurence.pdf; Warren WWTP Test Study.pdf

02.25.2010

Donna:

After discussing the issue with other members of our team, we came to the conclusion that although it would be a more concise study of the radiological effect of introducing Oil & Gas Well Production Wastewater into the Warren WWTP, it was not necessary to make them clean out the sludge tank before restarting the test study. The premise of using "real life scenario" test conditions to do the study under is indeed justified.

That said, we a requesting that the radiological parameters be modified (see attached Warren WWTP Test Study.pdf) to help us better determine the radiological consequence (if any) of the addition of this waste stream.

Also attached is a copy of the criteria that must be met in order for the sludge to be considered "exempt from licensure" by ODH (see attached OAC 3701-39-02.1.pdf). Warren WWTP will need to have the post test sludge analyzed to demonstrate compliance with rule OAC 3701-39-02.1 (B)(1)(c) or OAC 3701-39-02.1 (B)(1)(d).

Finally, to help with your requests for approval of use of a waste stream (i.e., incinerator ash), I have attached a document that we provide to waste brokers and/or Ohio landfill permit holders that outlines the process that they must use to request our official regulatory position on the exempt disposal of a waste stream. If your requestor was directed to get ODH's regulatory position, this would be the process they would follow.

Any questions on any of the above, please call.

Charles D. Mc Cracken

Supervisor, Bureau of Radiation Protection Ohio Department of Health

Ph: 614.466.5136 Fx: 614.466.0381

- (A) In accordance with section 3748.21 of the Revised Code, this rule does not apply to any person to the extent that the person is subject to regulation by the United States nuclear regulatory commission. As used in this rule, naturally occurring radioactive material (NORM) means any nuclide that is radioactive in its natural physical state, but does not include source material, byproduct material, or special nuclear material. As used in this rule, technologically enhanced means the chemical properties or physical state of natural sources of radiation have been altered or the potential exposure pathways of natural sources of radiation to humans have been altered to increase the human radiation exposure. In all cases where special nuclear material is referenced, that term shall refer to quantities not sufficient to form a critical mass.
- (B) The following activities are exempt from licensure, unless the director determines that the dose received by an average member of the critical group would exceed the dose limit specified in rule 3701:1-38-22(B) of the Administrative Code:
 - (1) The handling, distribution, or processing of:
 - (a) Soil containing technologically enhanced radium-226 or radium-228 with a radon emanation rate less than 0.74 becquerels (twenty picocuries) per square meter per second, provided that the concentration of technologically enhanced radium-226 or radium-228 in the soil, averaged over any one hundred square meters, and averaged over the first fifteen centimeters of soil below the surface, does not exceed one becquerel (twenty-seven picocuries) per gram;
 - (b) Soil containing technologically enhanced radium-226 or radium-228 with a radon emanation rate equal to or greater than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 in the soil, averaged over any one hundred square meters, and averaged over the first fifteen centimeters of soil below the surface does not exceed 0.185 becquerel (five picocuries) per gram;
 - (č) Media, other than soil, containing technologically enhanced radium-226 or radium-228 with a radon emanation rate less than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 does not exceed one becquerel (twenty-seven picocuries) per gram;
 - (d) Media, other than soil, containing technologically enhanced radium-226 or radium-228 with a radon emanation rate is equal to or greater than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 does not exceed 0.185 becquerel (five picocuries) per gram;
 - (e) Soil containing NORM other than technologically enhanced radium-226 or radium-228 provided that the concentration of NORM averaged over any one hundred square meters, and averaged over the first fifteen

centimeters of soil below the surface is five becquerels (one hundred thirty-five picocuries) per gram or less;

- (f) Media, other than soil, containing NORM other than technologically enhanced radium-226 or radium-228 provided that the concentration of NORM is five becquerels (one hundred thirty-five picocuries) per gram or less; or
- (g) Materials in the recycling process contaminated with scale or residue not otherwise exempted or other equipment containing NORM with a radiation exposure level that does not exceed 0.25 micrograys (twentyfive microrads) per hour above background at any accessible point.
- (2) The manufacture, wholesale or retail commercial distribution, use, or disposal of the following products or materials, or the recycling of equipment used to produce, contain, or transport the following:
 - (a) Potassium or potassium compounds that have not been isotopically enriched in the radionuclide potassium-40;
 - (b) Fossil fuel or byproducts from fossil fuel combustion, including bottom ash, fly ash, and flue-gas emission control byproducts; or
 - (c) Material used for building construction, industrial processing, sandblasting, metal casings, or other NORM in which the radionuclide content has not been concentrated to a level higher than is found in its natural state, or zirconium-bearing sands and products produced from those sands provided that the radioactive constituent is consistent with the radioactive levels stated in the material safety data sheet accompanying the zirconium-bearing materials,
- (3) The wholesale and retail commercial distribution, including custom blending, possession, and use of the following products or materials or the recycling of equipment or containers used to produce, contain, or transport these products as follows:
 - (a) Phosphate or potash fertilizer;
 - (b) Phosphogypsum for agricultural uses if such commercial distribution and uses meet the requirements of 40 C.F.R. 61.204, 40 C.F.R. 61.207, and 40 C.F.R. 61.208 as specified in appendix E to this rule; or
 - (c) Materials used for building construction if the materials contain NORM that has not been concentrated to higher levels than found in its natural state.

The exemptions contained in this paragraph do not apply to the manufacture of phosphate or potash fertilizer.

(4) The possession, storage, use, transportation, or commercial distribution of natural gas and natural gas products or of crude oil and crude oil products containing NORM. The exemptions contained in this paragraph do not apply

to the processing of natural gas or crude oil or the manufacture of natural gas products or crude oil products containing NORM.

- (5) Possession of produced waters from crude oil or natural gas production provided that the produced waters are reinjected in a well approved by the United States environmental protection agency or discharged under the authority of the United States environmental protection agency.
- (6) The possession, storage, use, transportation or commercial distribution of compressed gases and compressed gas products containing NORM. The exemptions contained in this paragraph do not apply to the processing of compressed gas or compressed gas products containing NORM.
- (C) Information provided by a licensee or applicant for a license or license renewal that constitutes a "trade secret" as defined in section 1333.61 of the Revised Code is not subject to public disclosure in accordance with sections 1333.61 to 1333.69 of the Revised Code.

Effective: 12/22/2008

R.C. 119.032 review dates: 09/15/2008 and 12/01/2013

CERTIFIED ELECTRONICALLY

Certification

12/12/2008

Date

Promulgated Under: Statutory Authority: 119.03 3748.02 3748.04

Prior Effective Dates:

Rule Amplifies:

6/6/1997, 10/19/98, 7/22/01, 10/20/02,

4/14/03, 8/15/05, 2/6/06

OHIO DEPARTMENT OF HEALTH

The South Physical Committees Committees

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fed Strickland Concerns

Note to a know MD. Disease of halth

To:

Requesting Organization / Representative

Subject:

Request for Regulatory Concurrence

Chapter 3748 of the Ohio Revised Code (ORC) and Ohio Administrative Code (OAC) rules adopted there under establish that the Ohio Department of Health, Bureau of Radiation Protection (ODH/BRP) is the State of Ohio Radiation Control Agency and the licensing agency for possession and use of radioactive materials. However, there are certain types and quantities of radioactive materials that are exempt from ODH/BRP licensing requirements. Individuals or organizations seeking to dispose of radioactive materials that they have determined are exempt from ODH/BRP licensure may elect to submit a written request for ODH/BRP regulatory concurrence. Please be advised that the disposal facility owner/operator has the final decision on whether or not a waste is acceptable for disposal at their facility. ODH/BRP will render a regulatory position on subject materials provided by the requesting organization. The minimum required information is as follows:

- i. Identify the specific OAC regulations that you have determined applies to the material in question.
 - OAC 3701-39-02.1, Standards for Handling Radioactive Material
 - OAC 3701:1-44-09, Unimportant Quantities of Source Material
 - OAC 3701;1-40-08, Exempt Concentrations and Appendix
 - OAC 3701:1-40-09, Certain Items Containing Byproduct or Accelerator Produced Material
 - OAC 3701:1-40-11, Exempt Quantities and Appendix
 - OAC 3701:1-40-12, Self-Luminous products
 - OAC 3701:1-40-13, Gas and Aerosol Detectors Containing Byproduct or Accelerator Produced Material
- 2. Provide a detailed history of the subject material including but not limited to:
 - Where did it come from?
 - What was it used for?
 - Who currently possesses it or controls access to it? (Name, address, phone)
 - Where is the subject material physically located right now?
 - If it's not physically located in Ohio, what (if any) has been the host state's involvement thus far? (include host state contact information)

- 3. Provide a detailed physical description of the subject material including, but not limited to:
 - Physical size (provide dimensions)
 - Photographs (provide a 360 degree view)
 - MSDS sheets (if any)
 - Physical amount (volume, weight, number of pieces)
- 4. Provide a detailed radiological analysis of subject material including, but not limited to:
 - Radiological survey results (activity in ccpm and/or dose rates on contact and at 30 cm)
 - Supporting quality assurance (calibration records, source checks, surveyor credentials)
 - Radioisotopic analysis of material (HPGe Gamma specific printout or alpha spectroscopy with radionuclide identifications and concentrations)
 - Supporting quality assurance (calibration records, results, spikes, duplicates, operator credentials)

Upon receipt of a request for regulatory concurrence, ODH/BRP will evaluate the documentation submitted and make a determination of whether or not we agree that the subject material is exempt from the cited OAC licensing requirement. Upon completion of our review, a letter of regulatory concurrence or non-concurrence will be issued to each requesting organization.

If you have any question, please contact Jim Colleli of my staff at 614-728-0882 direct or E-mail: Jim.Colleli@odh.ohio.gov.

Sincerely

Chuck McCracken, Supervisor

Decommissioning & waste Management

Ohio Department of Health Bureau of Radiation Protection

Rev 08/2009

Warren WWTP Test Study: Oil and Gas Well Production Wastewater Required Analyses

B - Beginning of eight week test period

T - End of eight week test

D - Daily

W - End of each Monday-Friday 5 day test period

A - As needed, or non-routine (e.g., after rain event)

Parameter	001	Influent after return streams	801	901	Sludge ¹
Acute toxicity, ceriodaphia dubia	W ³		W ³	W ³	
Acute toxicity, pimephales promelas	T ³		T ³	T ³	
Chronic toxicity, ceriodaphia dubia	W		W	W	
Chronic toxicity, pimephales promelas	T		Т	T	
Specific conductivity	D, A5	D, A ⁵	W, A	W, A	
Total dissolved solids	W, A ^{4, 5}	W, A ^{4, 5}	W, A ⁴	W. A4	34.4
Chlorides	W, A4	W, A ⁴	W, A ⁴	W, A ⁴	B, T
Fluorides	T, A	T, A	T, A	T, A	В, Т
Sulfates	T, A	T, A	Т, А	T, A	
total alkalinity	T, A	T, A	T, A	T, A	
total suspended solids	T, A	T, A	T, A	T, A	
total phosphorus	T, A	T, A	T, A	T, A	
pH	W	W	W	W	
HEM oil and grease	T	T	*	T	
SGT-HEM oil and grease	T	T	T	T	
Metals ²	T				B, T ⁵
Barium, Strontium ⁸	W	W		-	ere i <mark>di</mark> aletti ere ett emallisti ere en
Low level mercury	T				<u> </u>
Hexavalent chromium	T			1	***************************************
Volatile organic compounds	T		and and inclines we consequence as an expension for more constitutions a gloss		
Base neutral organic compounds	T		Santing and property of the second of the se	-	
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T		W-1944		
CBOD₅	T				
COD	Angle				
total organic carbon (TOC)	T				
Total nitrogen	T		MOA************************************		
Ammonia-nitrogen	T		The first and a finished the Collection of the administrated by the state of the st		
Nitrate/nitrite nitrogen	T			<u> </u>	
Total alpha radiation in pCi/l	W, TB				B, T
Total beta radiation in pCi/l	W, T &				В, Т
Total uranium in pCi/l	TIME		ter tillhe famme sim lebiume see menusususus muunum r	-	XA T
Total radium in pCi/l (or Ra 226 + Ra 228),	TWB			-	XBT
Total thorium in pCi/l	T. W.B				XBT

Warren Test Parameter Table_r1 February 10, 2010

Production of the second

* ADD STUPLES

Notes:

- 1. Sludge after dewatering, before processing
- 2. Metals (for sludge see note 5): aluminum, antimony, silver, barium, beryllium, boron, cadmium, chromium, copper, iron, nickel, lead, selenium, strontium, zinc
- 3. Calculated endpoint
- 4. Conduct analyses on WET test samples
- 5. To develop a brine specific TDS/specific conductivity ratio
- 6. Metals regulated by 40 CFR 503
- 7. Required if there is a significant increase in total alpha or total beta radiation

* = -----

8. During 100,000 gpd weeks

From:

Donna Kniss <donna.kniss@epa.state.oh.us>

Sent:

Tuesday, March 02, 2010 5:07 PM

To:

Chuck McCracken

Subject:

Re: Brine transportation documentation

Attachments:

Warren WWTP flow diagram.pdf

Chuck:

We had an internal call this morning, and discussed your additions to the monitoring table. One question was where do you think the sludge sample should be taken. I have attached a flow diagram for the Warren WWTP. Unfortunately, the copier that would send me my PDF promptly did not do color, so my notes aren't in red. I have written "liquid w/solids" at three locations, and "water containing solids" at one location. The solids at the other three locations could be dewatered, and all 4 sites would still have water entrained in the sludge.

Regarding the DOT documentation, what exactly are you looking for? The Stallion rep said there was a "cradle to grave" manifesting system for the brine from when it leaves the well site until disposal. I don't know how that ties into DOT records. And do you want a few example records, or every record? Do you want to contact Patriot and/or Stallion directly?

Donna

Donna J. Kniss Ohio Environmental Protection Agency Division of Surface Water Northeast District Office 2110 East Aurora Road Twinsburg, Ohio 44087 330-963-1285 fax 330-487-0769

donna.kniss@epa.state.oh.us

>>> Chuck McCracken < $\frac{\text{Chuck.McCracken@odh.ohio.gov}}{03.02.2010} > 3/2/2010 12:31 PM >>> 03.02.2010$

Donna:

A question about transportation of the brine into Ohio came up at a meeting our internal TNORM working group held this morning.

Can you please find out what type of DOT shipping paperwork is being completed for each of these truckloads of brine from PA into Ohio.

An if possible, can you request that copies of the paperwork for each truckload (manifests, bill of ladings, etc...) be sent to you.

We would like a copy when you get it.

If you have questions, please call.

Thanks.

Charles D. McCracken

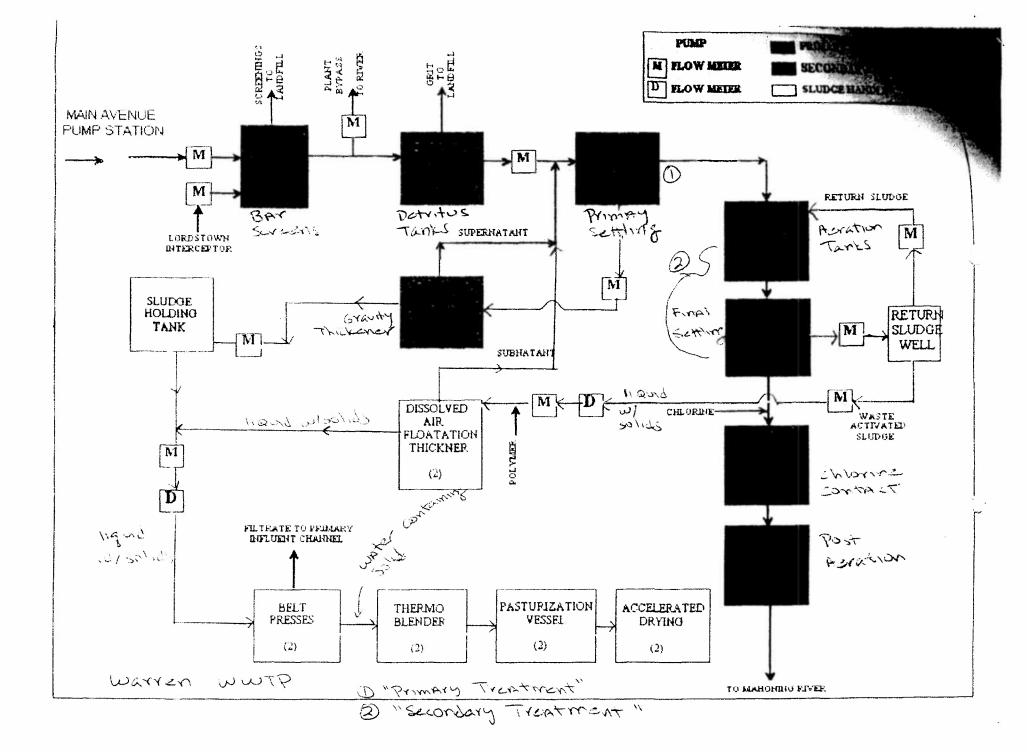
Supervisor, Bureau of Radiation Protection Ohio Department of Health

Ph: 614.466.5136 Fx: 614.466.0381

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Ohio Environmental Protection Agency This communication and any response to it may constitute a public record and

thus may be publicly available to anyone who requests it.



From:

Chuck McCracken

Sent:

Wednesday, March 10, 2010 1:49 PM

To:

donna.kniss@epa.state.oh.us

Cc:

Michael Snee

Subject:

FW: Brine transportation documentation

Attachments:

Warren WWTP flow diagram.pdf

Donna:

I've been unsuccessful in getting you on the phone, so I'm sending this email.

- (1) Sludge sampling for rad constituents should occur at the same locations that are being used for non-rad constituents. My review of the Warren WWTP test study finds that it requires sludge sampling for chlorides, fluorides and metals. Thus, wherever they are sampling sludge for these 3 constituents, they should be sampling for the rad constituents as well. As noted in my 02.25.2010 email message, the Warren WWTP needs to demonstrate compliance with the criteria found in OAC 3701-39-02.1 (B)(1)(c) or OAC 3701-39-02.1 (B)(1)(d) for the sludge to be considered non-licensable by ODH.
- (2) If you can give me the contact information for someone knowledgeable of the DOT criteria underwhich the brine is being shipped from PA to Ohio, I will contact them directly.

If you have additional questions, please give me a call.

Thanks.

Charles D. McCracken

Supervisor, Bureau of Radiation Protection

Ohio Department of Health

Ph: 614.466.5136 Fx: 614.466.0381

From: Donna Kniss [mailto:donna.kniss@epa.state.oh.us]

Sent: Tuesday, March 02, 2010 5:07 PM

To: Chuck McCracken

Subject: Re: Brine transportation documentation

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Division of Surface Water
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
330-963-1285
fax 330-487-0769

donna.kniss@epa.state.oh.us

>>> Chuck McCracken <<u>Chuck.McCracken@odh.ohio.gov</u>> 3/2/2010 12:31 PM >>> 03.02.2010

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Charles D. McCracken

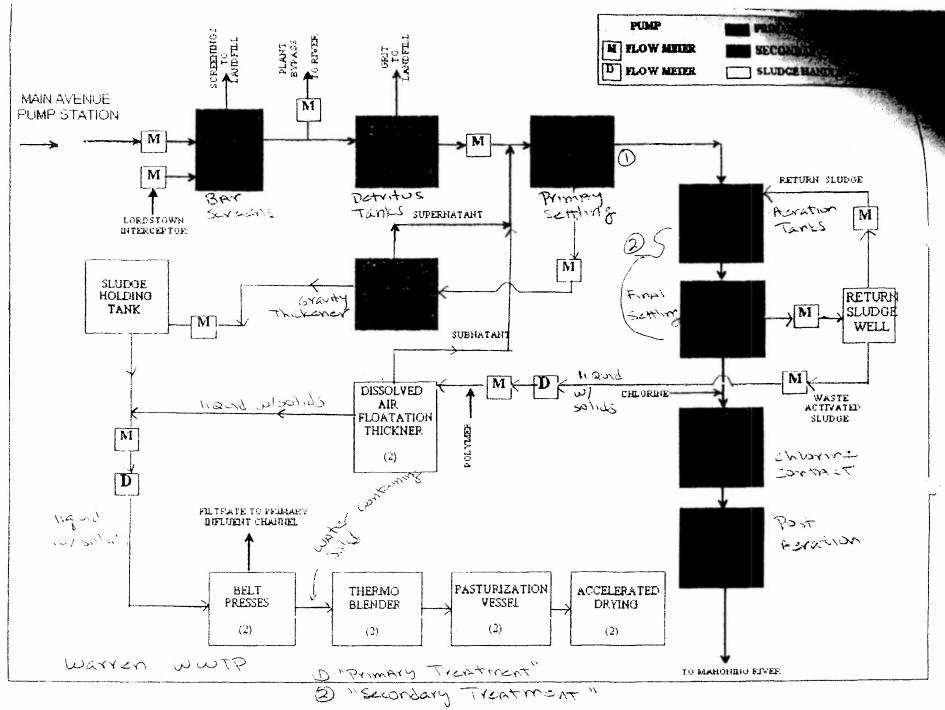
Supervisor, Bureau of Radiation Protection Ohio Department of Health

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From:

Donna Kniss <donna.kniss@epa.state.oh.us>

Sent:

Thursday, March 11, 2010 10:49 AM

To:

Chuck McCracken

Subject:

Re: FW: Brine transportation documentation

Chuck:

Sorry about not returning your call; it's been crazy.

Regarding the DOT paperwork: Andy Blocksom, Patriot, 330-853-9321 Mark Wimsatt, Stallion Oilfield, 330-760-4248

From our January meeting, Stallion is actually transporting the brine from the drill site to the Warren WWTP, or at least coordinates it.

We are planning on visiting Warren next week. Is there anything in particular you want me to ask or look for? I am going to look at the records they have been keeping on what they're getting and how it's going into their WWTP.

Donna

Donna J. Kniss
Ohio Environmental Protection Agency
Division of Surface Water
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
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Supervisor, Bureau of Radiation Protection

Ohio Department of Health

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Charles D. McCracken

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From:

Chuck McCracken

Sent:

Monday, March 15, 2010 3:23 PM

To:

Robert Leidy

Cc:

Stephen Helmer; Kenneth Barnhart; Michael Snee; David Lipp; Jim Colleli

Subject:

Warren WWTP Study

Attachments:

OAC 3701-39-02.1.pdf; Request for Reg Concurence.pdf; Warren WWTP Test Study.pdf

03/15/2010

Rob:

Thanks for making time to do this visit with OEPA-NEDO.

One of the things I would like you to check on is if the Warren WWTP is using the updated test parameters (see attached Warren WWTP Test Study.pdf).

Assuming they are, there should be "Parameter 001" liquid discharge beginning (B) rad data to review and weekly (W) liquid data to review as well.

In addition, there should be beginning (B) Sludge rad analysis to review. If possible, get copies of all rad analysis for our review back here as well.

If they are NOT using the updated parameters, then OEPA needs to find out why they are not.

Another issue that Donna may ask about (since there are multiple locations in the process) is where we want the sludge sampled. I already advised her that wherever OEPA is requiring sludge to be sampled for Chlorides, Fluorides and Metals (see WWTP test study) is where we would want rad analysis done as well. Based on what you see when you're there, you may have a different opinion – let us know. That being said, it important to note there is a difference between the WWPT Test Study and the OAC 3701-39-02.1 requirement for any and all sludge leaving the facility. The test study is to determine the effect of introducing radioactivity in the brine on the subsequent sludge, thus wherever OEPA is requiring sampling works for us. The OAC requirement is for determining whether any of the sludge leaving the facility is licensable. Clear as mud?

If you have any questions about this email, you can call me. Or, If you'd like to have a teleconference where you, Steve Helmer and the other members of our team can talk, let Steve know.

Thanks,

Charles D. McCracken

Supervisor, Bureau of Radiation Protection

Ohio Department of Health

Ph; 614.466.5136 Fx: 614.466.0381

From: Chuck McCracken

Sent: Thursday, February 25, 2010 3:03 PM

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Cc: Stephen Helmer; Michael Snee; Jim Colleli; David Lipp; Kenneth Barnhart

Subject: Warren WWTP Study

02.25.2010

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That said, we a requesting that the radiological parameters be modified (see attached Warren WWTP Test Study.pdf) to help us better determine the radiological consequence (if any) of the addition of this waste stream.

Also attached is a copy of the criteria that must be met in order for the sludge to be considered "exempt from licensure" by ODH (see attached OAC 3701-39-02.1.pdf). Warren WWTP will need to have the post test sludge analyzed to demonstrate compliance with rule OAC 3701-39-02.1 (B)(1)(c) or OAC 3701-39-02.1 (B)(1)(d).

Finally, to help with your requests for approval of use of a waste stream (i.e., incinerator ash), I have attached a document that we provide to waste brokers and/or Ohio landfill permit holders that outlines the process that they must use to request our official regulatory position on the exempt disposal of a waste stream. If your requestor was directed to get ODH's regulatory position, this would be the process they would follow.

Any questions on any of the above, please call.

Charles D. McCracken

Supervisor, Bureau of Radiation Protection Ohio Department of Health

Ph: 614.466.5136 Fx: 614.466.0381

- (A) In accordance with section 3748.21 of the Revised Code, this rule does not apply to any person to the extent that the person is subject to regulation by the United States nuclear regulatory commission. As used in this rule, naturally occurring radioactive material (NORM) means any nuclide that is radioactive in its natural physical state, but does not include source material, byproduct material, or special nuclear material. As used in this rule, technologically enhanced means the chemical properties or physical state of natural sources of radiation have been altered or the potential exposure pathways of natural sources of radiation to humans have been altered to increase the human radiation exposure. In all cases where special nuclear material is referenced, that term shall refer to quantities not sufficient to form a critical mass.
- (B) The following activities are exempt from licensure, unless the director determines that the dose received by an average member of the critical group would exceed the dose limit specified in rule 3701:1-38-22(B) of the Administrative Code:
 - (1) The handling, distribution, or processing of:
 - (a) Soil containing technologically enhanced radium-226 or radium-228 with a radon emanation rate less than 0.74 becquerels (twenty picocuries) per square meter per second, provided that the concentration of technologically enhanced radium-226 or radium-228 in the soil, averaged over any one hundred square meters, and averaged over the first fifteen centimeters of soil below the surface, does not exceed one becquerel (twenty-seven picocuries) per gram;
 - (b) Soil containing technologically enhanced radium-226 or radium-228 with a radon emanation rate equal to or greater than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 in the soil, averaged over any one hundred square meters, and averaged over the first fifteen centimeters of soil below the surface does not exceed 0.185 becquerel (five picocuries) per gram;
 - (c) Media, other than soil, containing technologically enhanced radium-226 or radium-228 with a radon emanation rate less than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 does not exceed one becquerel (twenty-seven picocuries) per gram;
 - (d) Media, other than soil, containing technologically enhanced radium-226 or radium-228 with a radon emanation rate is equal to or greater than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 does not exceed 0.185 becquerel (five picocuries) per gram;
 - (e) Soil containing NORM other than technologically enhanced radium-226 or radium-228 provided that the concentration of NORM averaged over any one hundred square meters, and averaged over the first fifteen

- centimeters of soil below the surface is five becquerels (one hundred thirty-five picocuries) per gram or less;
- (f) Media, other than soil, containing NORM other than technologically enhanced radium-226 or radium-228 provided that the concentration of NORM is five becquerels (one hundred thirty-five picocuries) per gram or less; or
- (g) Materials in the recycling process contaminated with scale or residue not otherwise exempted or other equipment containing NORM with a radiation exposure level that does not exceed 0.25 micrograys (twentyfive microrads) per hour above background at any accessible point.
- (2) The manufacture, wholesale or retail commercial distribution, use, or disposal of the following products or materials, or the recycling of equipment used to produce, contain, or transport the following:
 - (a) Potassium or potassium compounds that have not been isotopically enriched in the radionuclide potassium-40;
 - (b) Fossil fuel or byproducts from fossil fuel combustion, including bottom ash, fly ash, and flue-gas emission control byproducts; or
 - (c) Material used for building construction, industrial processing, sandblasting, metal casings, or other NORM in which the radionuclide content has not been concentrated to a level higher than is found in its natural state, or zirconium-bearing sands and products produced from those sands provided that the radioactive constituent is consistent with the radioactive levels stated in the material safety data sheet accompanying the zirconium-bearing materials,
- (3) The wholesale and retail commercial distribution, including custom blending, possession, and use of the following products or materials or the recycling of equipment or containers used to produce, contain, or transport these products as follows:
 - (a) Phosphate or potash fertilizer;
 - (b) Phosphogypsum for agricultural uses if such commercial distribution and uses meet the requirements of 40 C.F.R. 61.204, 40 C.F.R. 61.207, and 40 C.F.R. 61.208 as specified in appendix E to this rule; or
 - (c) Materials used for building construction if the materials contain NORM that has not been concentrated to higher levels than found in its natural state.
 - The exemptions contained in this paragraph do not apply to the manufacture of phosphate or potash fertilizer.
- (4) The possession, storage, use, transportation, or commercial distribution of natural gas and natural gas products or of crude oil and crude oil products containing NORM. The exemptions contained in this paragraph do not apply

to the processing of natural gas or crude oil or the manufacture of natural gas products or crude oil products containing NORM.

- (5) Possession of produced waters from crude oil or natural gas production provided that the produced waters are reinjected in a well approved by the United States environmental protection agency or discharged under the authority of the United States environmental protection agency.
- (6) The possession, storage, use, transportation or commercial distribution of compressed gases and compressed gas products containing NORM. The exemptions contained in this paragraph do not apply to the processing of compressed gas or compressed gas products containing NORM.
- (C) Information provided by a licensee or applicant for a license or license renewal that constitutes a "trade secret" as defined in section 1333.61 of the Revised Code is not subject to public disclosure in accordance with sections 1333.61 to 1333.69 of the Revised Code.

Effective:

12/22/2008

R.C. 119.032 review dates:

09/15/2008 and 12/01/2013

CERTIFIED ELECTRONICALLY

Certification

12/12/2008

Date

Promulgated Under: Statutory Authority:

Rule Amplifies:

Prior Effective Dates:

119.03

3748.02 3748.04

6/6/1997, 10/19/98, 7/22/01, 10/20/02,

4/14/03, 8/15/05, 2/6/06

OHIO DEPARTMENT OF HEALTH



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To: Requesting Organization / Representative

Subject: Request for Regulatory Concurrence

Chapter 3748 of the Ohio Revised Code (ORC) and Ohio Administrative Code (OAC) rules adopted there under establish that the Ohio Department of Health, Bureau of Radiation Protection (ODH/BRP) is the State of Ohio Radiation Control Agency and the licensing agency for possession and use of radioactive materials. However, there are certain types and quantities of radioactive materials that are exempt from ODH/BRP licensing requirements. Individuals or organizations seeking to dispose of radioactive materials that they have determined are exempt from ODH/BRP licensure may elect to submit a written request for ODH/BRP regulatory concurrence. Please be advised that the disposal facility owner/operator has the final decision on whether or not a waste is acceptable for disposal at their facility. ODH/BRP will render a regulatory position on subject materials provided by the requesting organization. The minimum required information is as follows:

- 1. Identify the specific OAC regulations that you have determined applies to the material in question.
 - OAC 3701-39-02.1, Standards for Handling Radioactive Material
 - OAC 3701:1-44-09, Unimportant Quantities of Source Material
 - OAC 3701:1-40-08, Exempt Concentrations and Appendix
 - OAC 3701:1-40-09, Certain Items Containing Byproduct or Accelerator Produced Material
 - OAC 3701:1-40-11, Exempt Quantities and Appendix
 - OAC 3701:1-40-12, Self-Luminous products
 - OAC 3701:1-40-13, Gas and Aerosol Detectors Containing Byproduct or Accelerator Produced Material
- 2. Provide a detailed history of the subject material including but not limited to:
 - Where did it come from?
 - What was it used for?
 - Who currently possesses it or controls access to it? (Name, address, phone)
 - Where is the subject material physically located right now?
 - If it's not physically located in Ohio, what (if any) has been the host state's involvement thus far? (include host state contact information)

- 3. Provide a detailed physical description of the subject material including, but not limited to:
 - Physical size (provide dimensions)
 - Photographs (provide a 360 degree view)
 - MSDS sheets (if any)
 - Physical amount (volume, weight, number of pieces)
- 4. Provide a detailed radiological analysis of subject material including, but not limited to:
 - Radiological survey results (activity in ccpm and/or dose rates on contact and at 30 cm)
 - Supporting quality assurance (calibration records, source checks, surveyor credentials)
 - Radioisotopic analysis of material (HPGe Gamma specific printout or alpha spectroscopy with radionuclide identifications and concentrations)
 - Supporting quality assurance (calibration records, results, spikes, duplicates, operator credentials)

Upon receipt of a request for regulatory concurrence, ODH/BRP will evaluate the documentation submitted and make a determination of whether or not we agree that the subject material is exempt from the cited OAC licensing requirement. Upon completion of our review, a letter of regulatory concurrence or non-concurrence will be issued to each requesting organization.

If you have any question, please contact Jim Colleli of my staff at 614-728-0882 direct or E-mail: Jim.Colleli@odh.ohio.gov.

Sincerely,

Chuck McCracken. Supervisor
Decommissioning & waste Management
Ohio Department of Health
Bureau of Radiation Protection

Warren WWTP Test Study: Oil and Gas Well Production Wastewater **Required Analyses**

B - Beginning of eight week test period

T - End of eight week test

D - Daily

W - End of each Monday-Friday 5 day test period

A - As needed, or non-routine (e.g., after rain event)

Parameter	001	Influent after return streams	801	901	Sludge ¹
Acute toxicity, ceriodaphia dubia	W^3		W^3	W ³	
Acute toxicity, pimephales promelas	T ³		T ³	T ³	
Chronic toxicity, ceriodaphia dubia	W		W	W	
Chronic toxicity, pimephales promelas	T		Т	T	
Specific conductivity	D, A ⁵	D. A ⁵	W, A	W, A	
Total dissolved solids	W, A ^{4, 5}	W, A4,5	W, A⁴	W, A ⁴	
Chlorides	W, A ⁴	W, A ⁴	W, A ⁴	W, A ⁴	B, T
Fluorides	T, A	T, A	T, A	T, A	B, T
Sulfates	T, A	T, A	T, A	T, A	
total alkalinity	T, A	T, A	T, A	T, A	
total suspended solids	T, A	T, A	T, A	T, A	*
total phosphorus	T, A	T, A	T, A	T, A	and the second s
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Barium, Strontium ⁸	Tw T	W		-	
Low level mercury	1 T	+			
Hexavalent chromium	1 T				
Volatile organic compounds	T				
Base neutral organic compounds	T				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
CBOD₅	T		Der geschen von Vorter werde beschaft auf der geschen gegen von erneren		
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Total thorium in pCi/l	T.W.B				XBT
Warren Test Parameter Table_r1 February 10, 2010	4			*	ADD STUPIT
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Notes:

- 1. Sludge after dewatering, before processing
- 2. Metals (for sludge see note 5): aluminum, antimony, silver, barium, beryllium, boron, cadmium, chromium, copper, iron, nickel, lead, selenium, strontium, zinc
- 3. Calculated endpoint
- 4. Conduct analyses on WET test samples
- 5. To develop a brine specific TDS/specific conductivity ratio
- 6. Metals regulated by 40 CFR 503
- 7. Required if there is a significant increase in total alpha or total beta radiation
- 8. During 100,000 gpd weeks

From:

Robert Leidy

Sent:

Thursday, March 18, 2010 2:51 PM

To: Cc: Stephen Helmer; Chuck McCracken Kenneth Barnhart

Subject:

Warren WWTP

Attachments:

Warren WWTP.pdf; Warren WWTP sludge.pdf; rad meter in use at WWTP.pdf

Steve and Chuck,

On March 17th, I met four members from the Ohio Environmental Protection Agency (OEPA) at their North East District Office (NEDO) located in Twinsburg, OH. The members included, Donna Kniss, Chris Moody, Erm Gomes and Greg Orr. We traveled together to the Warren Waste Water Treatment Plant (WWTP) where we met with the Superintendent, Jim Wilden and Keith Folman the Pre-Treatment Coordinator. Donna provided a schematic of the plant layout and the facility provided a tour which included observing the compositor where the effluent sample is taken prior to leaving the plant and where the plant empties into the Mahoning River. OEPA performed conductivity tests at the falls into the river and at the water path entrance to the screening building.

The Main Avenue Pump Station is the area where the liquid of concern is introduced into the process. There are approximately a dozen large storage containers that are connected together and when active pump their reserve into the screening building. They are currently ramping up to 100,000 gallons a day, 5 days a week. The storage containers are replenished by shippers. When a truck arrives it is evaluated by Mr. Andy Blocksom of Patriot Water Treatment. He performs several tests on the in-coming loads including an air test, flash test and a radiological survey. He documents the tests upon completion.

The radiological survey is performed with a hand held Technical Associates Surface Contamination Monitor, model TBM-3S (cal due date 2.15.11). It has a range multiplier of three decades (1X, 10X and 100X) allowing for measurements from 1-50,000cpm (0-15mR/hr). I asked how he used the unit and Mr. Blocksom indicated he sets it to 100X and surveys the entire truck. I asked why 100X and he stated he did not know why it's just how their Rad Consultant, Tom Weber demonstrated to use it. At the time of the visit he did not have any procedures for the use of the meter. A second radiation meter was available an Atomic Producers Corp, model 069-705, but I was informed it is not utilized. It did not have a cal due date sticker or calibration paperwork. Mr. Blocksom did not anticipate any radiological concerns as the loads they have received are from the SW and it was his understanding the radiological issues were from loads originating in the NE.

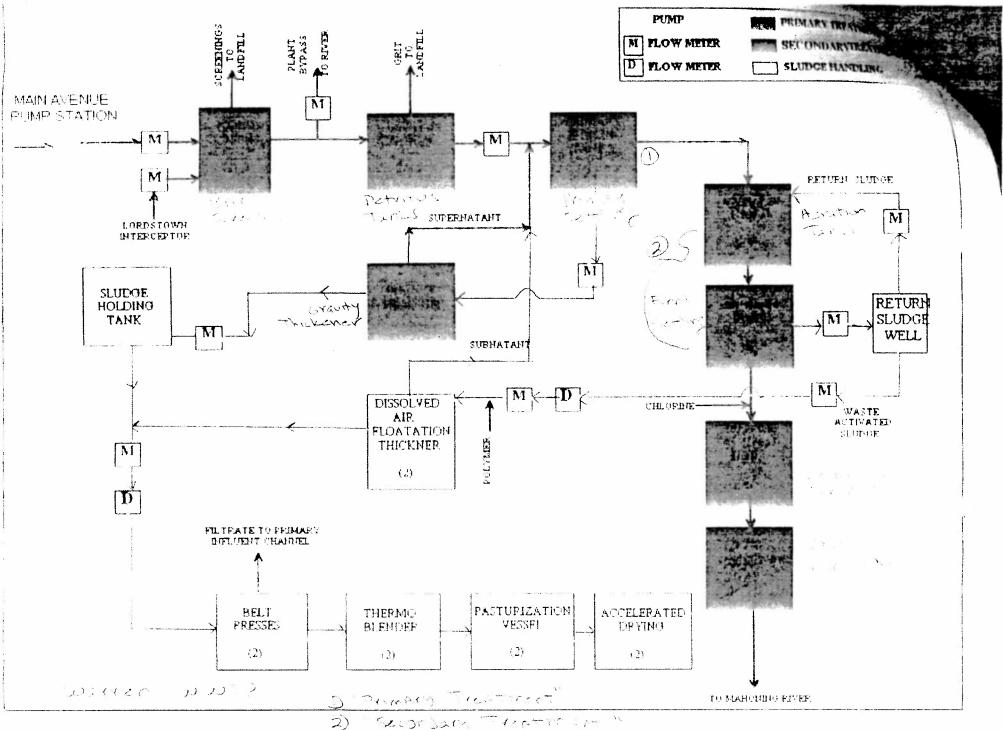
Shipping manifests were very basic with little detail. Only water type such as frack or drill water would be identified along with the load quantity. If shipments were previously surveyed for radioactivity it was not identified on the shipping manifest. They have used several different shippers but to date Stallion has not been used.

Mr. Blocksom indicated that a sludge sample and liquid samples had been taken and sent to the lab for analysis. The lab results for the sludge were available but the liquid results had not been received. I asked which lab the samples were sent to and he indicated the Ohio State Lab. The data sheet for the sludge sample confirmed the lab as The Ohio Department of Health, Radiochemistry Section. I spoke to Sang at the lab this morning and he confirmed that he had two or three water samples currently under analysis from the Warren WWTP for Patriot Water Treatment. He indicated the alphas are less then <3 and that the remaining results should be known by the end of next week.

Sang stated he did not want anymore sludge samples. He used the gamma detector and once complete could not get rid of the smell in the room or in the Marinelli sample container also he could not dump the sample down the drain. Sang feels if the samples do continue beyond the 8 week test period the evaluation could be scaled back to just gross alpha and gross beta. Radium would be captured under the gross beta and uranium under the gross alpha.

Mr. Moody was taking pictures that he is forward to me. Also, I have some pictures on my phone I need to download. I will forward once I have both.

On a personal note I am concerned if there is any possible appearance of the Department requiring specific samples then referring our lab as the company to benefit by the to performance of the analysis.



Ohio Department of Health, Division of Prevention **ODH Laboratory Report**

Ohn Department of Health Laboratory Radios homistry Section, Building 22. 8998 E Main ST Reynoldsburg, OH 4 9068

fed Strick and Consensati Roam M. Dr. Director of the fifth

Patrick Water Treatment (CustomeriD# water & wa) 1716 Depart Road Lisbon OH 14432 339 353 9321

Receive Place 1 25-3010 tos Report's Luce. 3, 4-2010. Hill-Lab Ontor# R5982

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Alth: Andy Blocksom Patriot Water Treatment 7716 Capat Road Lisbon OH 44432



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2323 MAIN AVE. S.W WARREN, OHIO 44481 PHONE 330-841-2591

CHAIN OF CUSTODY FORM

R5982-01

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SURFACE CONTAMINATION MONITOR

Model # TBM-3 Model # TBM-3S Model # TBM-3SR

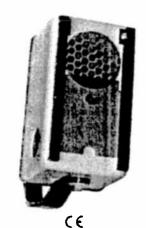
FEATURES:

- SENSITIVE TO ALPHA, BETA & GAMMA
- · ONE HAND OPERATION
- . BUILT-IN SPEAKER
- ANTI SATURATION CIRCUIT
- LARGE 2" PANCAKE DETECTOR
- BETA SHIELD/WINDOW PROTECTION (TBM-3SR Only)

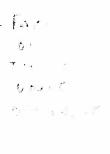
DESCRIPTION: Small three range Ratemeter with built in 2" diameter panciake tube and speaker. Reads out in counts per minute (and mR/h). Thin window recessed and protected by sturdy grill. TBM-3SR has sliding methacrylate beta shield which also acts as additional protection for thin GM tube window. Instrument will see alpha, beta, and gamma radiation. Anti-saturation circuit will not fall below full scale high fields. Tested to 100 R/h.

APPLICATION: Its small size, light weight, one hand operation, and large detector area make this a very useful monitor for surveying bench tops or checking hands, clothes, and fingertips for almost any radioactive contamination. Excellent for Fire Department, Ambulance, Police, First Response, and U.S. Custom Personnel use for surveying people, cars, luggage, surface of rooms, etc...

Experts Recommend the TBM-3SR for Fire Department use on every fire engine.







€ TBM-3SR

$\frac{T}{\Lambda}$ technical associates

DST FTON AVENUE * CANOGA PARK, CA 91303
 TELEPHONE (818) 883-7043 * FAX(818) 883-6103
 c mail: stroidar nwc.net - www.tech-associates.com

SURFACE CONTAMINATION MONITOR

Model # TBM-3 Model # TBM-3S Model # TBM-3SR

SPECIFICATIONS:

• Meter: FBM-3: 2-1-2" Rectangle FBM-3S & FBM-3SR: 2-1/2" Ruggedized.

- Ranges: 3 ranges, linear: 0-500; 0-5,000; 0-50,000 cpm (0-;15; 1-5; 15 mR/h).*
- · Switch Positions: Off, Battery Test, X100, X10, X1.
- · Audio:

FBM-3: internally mounted speaker.

TBM-3s & TBM-3SR: Sonalert with Volume Control.

- · Detector: T-1190 "pancake GM tube".
- Diameter: 2"; 5cm.
- Window Diameter: 1-3/4"; 4.5 cm.
- Window Thickness: 1.5 mg/cm².
- · Quench Gas: Halogen for long life.
- · Background: Typical 50 cpm. Thin Profile of tube (13mm) gives low background.
- Efficiency: 100% for all Betas and Alphas that have the energy to penetrate the thin window. Gamma sensitivity nominal is 3 cpm/μ R/h (based on Cs 137).
- · Physical dimensions:

3" Wide x 5-1/4" Long x 2-1/4" High. Excluding meter and handle. (7.6 cm x 13.3 cm x 6 cm)

- · Beta Shield: TBM-3SR Model Only. Methacrylate 0.125", 3.1 mm.
- · Calibration: Single master calibration pot as well as individual cal pots for each range.
- Power: 9 volt "transistor" battery; Eveready 1222, or equivalent.
- · Battery Life: 100 hours in normal operation.
- · Handle:

Swivel type, polished anodized aluminum.

(Optional Detachable Handle TBM-3SR(DL) Upon Request.)

· Weight: 22 oz; 625 gm

See "Beta Pancake Response" specification (BETA PANCAKE RESPONSE).

Fire Fighters: TBM-3SR is available with the Background x 10 meter, replacing the mR/hour or a single Counts Per Minute Scale or mR/hr Scale. (Upon Request)

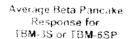
${f T}_{f A}$ technical associates

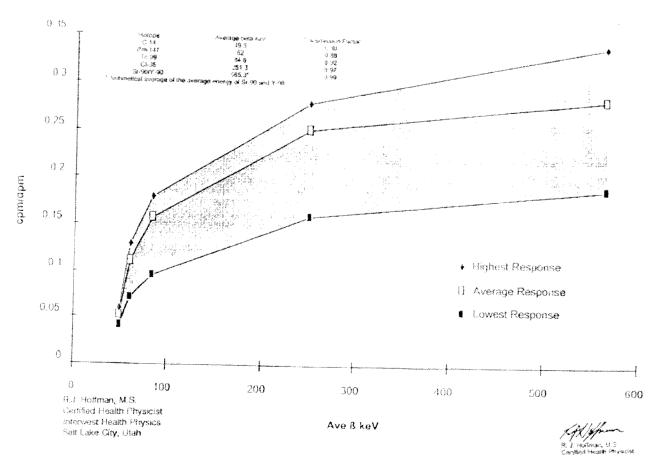
7051 ETON AVENUE * CANOGA PARK, CA 91303 TELEPHONE (818) 883-7043 * FAX(818) 883-6103 e-mail: tagold@nwc.net www.tech-associates.com

SURFACE CONTAMINATION MONITOR

Model # TBM-3 Model # TBM-3S Model # TBM-3SR

^{*} Option c/s. µ S). hr meter scale (SI Units).





T A TECHNICAL ASSOCIATES

7051 ETON AVENUE * CANOGA PARK, CA 91303 FELEPHONE (818) 883-7043 * FAX(818) 883-6103 e-mail: tagold@nwc.net www.tech-associates.com



From:

Robert Leidy

Sent:

Friday, March 19, 2010 2:19 PM Chuck McCracken

To: Cc:

Stephen Helmer

Subject:

Warren test parameters

Attachments:

Warren Test Parameter Table_r1.docx

Chuck,

One other item I learned is the ODH Lab is not testing for thorium.

Warren WWTP Test Study: Oil and Gas Well Production Wastewater Required Analyses

B - Beginning of eight week test period

T - End of eight week test

D - Daily

W - End of each Monday-Friday 5 day test period

A - As needed, or non-routine (e.g., after rain event)

Parameter	001	Influent after return streams	801	901	Sludge ¹
Acute toxicity, ceriodaphia dubia	W ³		W^3	W ³	
Acute toxicity, pimephales promelas	T ³		T ³	T ³	
Chronic toxicity, ceriodaphia dubia	W		W	W	
Chronic toxicity, pimephales promelas	T		T	T	
Specific conductivity	D, A ⁵	D, A ⁵	W, A	W, A	
Total dissolved solids	W, A ^{4, 5}	W, A ^{4, 5}	W, A ⁴	W, A ⁴	
Chlorides	W, A⁴	W, A⁴	W, A⁴	W, A⁴	B, T
Fluorides	T, A	T, A	T, A	T, A	B, T
Sulfates	T, A	T, A	T, A	T, A	
total alkalinity	T, A	T, A	T, A	T, A	
total suspended solids	T, A	T, A	T, A	T, A	
total phosphorus	T, A	T, A	T, A	T, A	
рН	W	W	W	W	
HEM oil and grease	T	Т	Т	T	
SGT-HEM oil and grease	T	T	Т	Т	
Metals ²	T				B, T ⁶
Barium, Strontium ⁸	W	W			
Low level mercury	T				
Hexavalent chromium	Т				
Volatile organic compounds	T				
Base neutral organic compounds	Т				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
CBOD ₅	T				
COD	Τ				
total organic carbon (TOC)	T			and the second s	
Total nitrogen	T				
Ammonia-nitrogen	Т			A Control of the Cont	
Nitrate/nitrite nitrogen	Т	The state of the s			
Total alpha radiation in pCi/l	W, T				B, T
Total beta radiation in pCi/l	W, T				B, T
Total uranium in pCi/l	T, A'				A'
Total radium in pCi/I (or Ra 226 + Ra 228),	T, A'				A [′]
Total thorium in pCi/I	T, A'				Α'

Notes:

- 1. Sludge after dewatering, before processing
- 2. Metals (for sludge see note 5): aluminum, antimony, silver, barium, beryllium, boron, cadmium, chromium, copper, iron, nickel, lead, selenium, strontium, zinc
- 3. Calculated endpoint
- 4. Conduct analyses on WET test samples
- 5. To develop a brine specific TDS/specific conductivity ratio
- 6. Metals regulated by 40 CFR 503
- 7. Required if there is a significant increase in total alpha or total beta radiation
- 8. During 100,000 gpd weeks

McCracken, Chuck

From:

Donna Kniss <donna.kniss@epa.state.oh.us>

Sent:

Wednesday, July 07, 2010 10:25 AM

To:

Chuck McCracken

Cc:

Virginia Wilson; Kenneth Barnhart; Michael Snee; Stephen Helmer

Subject:

Re: ODH Comments on Warren WWTP Brine Study

Chuck:

I just returned from vacation and am working through my e-mail; as an aside, did my auto reply work? It hasn't in the past.

Regarding the Warren report, before I left, the only rad data I had was for the effluent in the first few weeks. I had prepared a summary spreadsheet to plug in the data results as I received them, so I could see what was missing. It appears that more info arrived while I was gone. I was going to send you everything when I had the rest of the data, assuming you wouldn't start a review until more rad info was received. I'm sorry if that wasn't the case.

Please note that Warren is proposing not sampling for radioactivity; the Ohio EPA has not concurred with that, or any of the other recommendations. When I find out the current state of affairs, I will let you and Stephen Helmer know. I will also compile all of the rad data in the spreadsheet, and send it to you and Stephen.

Donna

Donna J. Kniss
Ohio Environmental Protection Agency
Division of Surface Water
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
330-963-1285
fax 330-487-0769

donna.kniss@epa.state.oh.us

>>> Chuck McCracken < $\frac{\text{Chuck.McCracken@odh.ohio.gov}}{7/2/2010 \text{ 4:49 PM}} >>> 07.02.2010$

Dear Donna:

I have attached a ,pdf copy of the ODH Comments on Warren WWTP Brine Study letter that I placed in today's mail to you.

For your reference, I have also attached the documents that we reviewed. For some reason, no one from your office sent them to me. I learned of them and got them in a round-about way from Brian Nichols.

I will be out of the office until July 14, 2010. In my absence, you can contact Stephen Helmer at 614.728.3611 for assistance.

Thanks,

Chuck McCracken

Supervisor, Bureau of Radiation Protection

Ohio Department of Health

Ph: 614.466.5136 Fx: 614.466.0381

"This e-mail is intended for the sole use of the intended recipient and may contain privileged, sensitive, or protected health information. If you are not the intended recipient, be advised that the unauthorized use, disclosure, copying, distribution, or action taken in reliance on the contents of this communication is prohibited. If you have received this e-mail in error, please notify the sender via telephone or return e-mail and immediately delete this e-mail."

Ohio Environmental Protection Agency Unless otherwise provided by law,

this communication and any response to it constitutes a public record.

Michael Snee

From:

Chuck McCracken

Sent:

Tuesday, February 09, 2010 9:58 AM

To:

Michael Snee

Subject:

FW: Oil and gas well wastewater

Attachments:

JPEG image.jpg; PBT brine rad data.pdf; Attachment B.PDF

FYI

OEPA NEDO is working with two cities (Youngstown and Warren) on gas-well brine treatment facilities. The request for assistance that is being sent to Bob will ask us to weigh in on the radiological component of the brine.

When were we planning to meet again to discuss staff's research?

Chuck

From: Donna Kniss [mailto:Donna.Kniss@epa.state.oh.us]

Sent: Tuesday, February 09, 2010 9:04 AM

To: Chuck McCracken

Cc: Brian Hall; Rich Blasick; Virginia Wilson **Subject:** Re: Oil and gas well wastewater

Chuck:

Unfortunately, it took more time for me to draft the letter; brine related issues (see below) have taken up a lot of time. The letter is in Central Office DSW for review, and hopefully will be sent out soon.

FYI, I have attached two PDFs of rad results. "PBT brine rad data" is from a sample of treated brine supplied by Pennsylvania Brine Treatment to Youngstown. PBT/Hart is working with D and L Energy and Youngstown to site a brine treatment facility; Youngstown has been conducting toxicity testing to evaluate how much brine they could accept.

Warren is working with Patriot Energy, Stallion, and Wastewater Management, and is beginning an eight week test to determine how much brine they could accept. The data they provided was from a similar type of facility, and is "Attachment B". Unfortunately, the scan they sent me is upside down, so you will have to rotate it.

Donna

Donna J. Kniss
Ohio Environmental Protection Agency
Division of Surface Water
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
330-963-1285
fax 330-487-0769

donna.kniss@epa.state.oh.us

>>> Chuck McCracken < Chuck.McCracken@odh.ohio.gov > 2/8/2010 5:09 PM >>>

02.08.2010

Donna:

It's been a little over a month since we last communicated on the NORM issue.

Is OEPA still intending to send a letter seeking ODH assistance with the oil & gas NORM issue?

Please advise.

Charles D. McCracken

Supervisor, Bureau of Radiation Protection Ohio Department of Health

Ph: 614.466.5136 Fx: 614.466.0381

From: Donna Kniss [mailto:Donna.Kniss@epa.state.oh.us]

Sent: Wednesday, January 06, 2010 10:14 AM

To: Chuck McCracken

Subject: Oil and gas well wastewater

Chuck:

As we discussed Monday, I have attached the rad info I have encountered while researching the potential impacts of oil and gas well wastewater discharges to waters of the state. The first PDF is a paragraph from a 1987 report I found when I was searching USEPA's archives. The second PDF is an appendix from the New York Supplemental Generic Environmental Impact Statement, which can be found at

http://www.dec.ny.gov/energy/47554.html

The third PDF is Director Korleski's letter to the entities we knew were involved in the various proposals. We intend to post this, and supplemental info, on the OEPA website.

I am working on the letter requesting ODH's assistance in evaluating TENORM. Should I address it to Dr. Jackson? I searched the Radiation Protection Program pages, and the Table of Organization on the website, but they didn't list anyone's name other than the Director, Dr. Jackson.

Thank you for taking the time to discuss this issue with us on Monday.

Donna



This communication and any response to it may constitute a public record and thus may be publicly available to anyone who requests it.

rad data

Microbac Laboratories, Inc.

1962 WAGER ROAD ERIE, PA 16509

(814) 825-8533 FAX (814) 825-9254 CHERI BROLASKI, LABORATORY DIRECTOR

http://www.microbac.com E-Mail: erie@microbac.com

STATE CERT ID 25-067, 10121

C-PA-05

Page 7 of 8

CHEMISTRY - MICROBIOLOGY - FOOD SAFETY - CONSUMER PRODUCTS WATER · AIR · WASTES · FOOD · PHARMACEUTICALS · NUTRACEUTICALS

PRELIMINARY CERTIFICATE OF ANALYSIS

PENNSYLVANIA BRINE TREATMENT MR. ELTON DELONG, JR. (SPARKY) 5148 US 322

FRANKLIN.PA 16323

Date Reported Date Received

Order Number

1/12/2010 1001-02981

Invoice No.

Cust #

016369

Sampler

Customer

Permit No. Cust P.O.

SUBJECT: GAS WELL WASTEWATER

TEST

METHOD

RESULT

UNITS

ANALYSIS

DATE

TIME TECH ACCRED.

008 GAS	WELL	WAST	TEWATER	₹
---------	------	------	----------------	---

	Sampled: 1/12/2010			Time Sampled:	9:45 a	m		
continued				_				
pH -Exceeds 15Min Hold Time	SM 4500-H+ B	8.6	Units	1/14/2010	14:30	DS.	3£	•
Solids, Dissolved	SM 2540 C	118000	mg/L	1/14/2010	16:00	DS	3£	•
Solids, Suspended	SM 2540 D	<10	mg/L	1/15/2010	10:30	DS	36	•
BOD5	SM 5210 B	360	mg/L	1/13/2010	14:37	MAB	*	•
Chloride	SM 4500-CI-E (Discrete)	101000	mg/L	1/15/2010	12:29	CAP	3£	•
Sulfate	SM 4500-SO4 D	9	mg/L	1/15/2010	15:30	DS	æ	•
Alkalinity As CaCO3	SM 2320 B	110	mg/L	1/26/2010	10:10	ВЈЈ	3£	•
Fluoride, Direct	SM 4500-F C	<1.0	mg/L	1/25/2010	11:05	CP		·

009 **GAS WELL WASTEWATER**

D	ate Sampled: 1/12/2010			Time Sampled:	9:45 a	m		
Phosphorus, Total	EPA 365.1(DISCRETE)	< 0.1	mg/L	1/26/2010	16:33	BJJ	æ	•
COD	HACH 8000	10 60	mg/L	1/20/2010	15:05	CP	×	•
Ammonia Distilled	SM 4500-NH3 B/G DISCRET	87.3	mg N/ L	1/18/2010	16:20	CP	3£	•
Nitrogen, Nitrate + Nitrite	EPA 1979 353.2(DISCRETE	<1	mg/L	1/13/2010	16:40	CAP	æ	

010 **GAS WELL WASTEWATER**

Date Sampled: 1/12/2010

TOC (Total Organic Carbon)

SM 5310 C

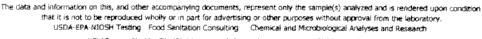
218 mq/L Time Sampled: 9:45 am 1/15/2010

THE TECH INITIALS "OST" (OUTSIDE TESTING) INDICATE THAT THESE ANALYSES WERE SUB-CONTRACTED TO MICROBAC LABORATORIES, INC./PITTSBURGH DIVISION. (W.O. 1001-00713).

011 **GAS WELL WASTEWATER**

	Date Sampled: 1/12/2010			Time Sampled:	9:45 a	ım
Gross Alpha	EPA 900.0	988+/-256	pCi/L	1/28/2010	9:49	OST
Gross Beta	EPA 900.0	524+/-177	pCi/L	1/28/2010	9:49	OST
Uranium	ASTM D5174	0.0219+/-0.0035	pCi/L	1/27/2010	9:49	OST
Radium 226	EPA 903.1	0.397+/-0.396	pCi/L	1/22/2010	9:49	OST







20F2

Microbac Laboratories, Inc.

ERIE DIVISION 1962 WAGER ROAD ERIE, PA 16509

(814) 825-8533 FAX (814) 825-9254 CHERI BROLASKI, LABORATORY DIRECTOR

http://www.microbac.com E-Mail: erie@microbac.com

STATE CERT ID 25-067, 10121

Page 8 of 8

C-PA-05

CHEMISTRY - MICROBIOLOGY - FOOD SAFETY - CONSUMER PRODUCTS WATER · AIR · WASTES · FOOD · PHARMACEUTICALS · NUTRACEUTICALS

PRELIMINARY CERTIFICATE OF ANALYSIS

PENNSYLVANIA BRINE TREATMENT

MR. ELTON DELONG, JR. (SPARKY) 5148 US 322 FRANKLIN.PA 16323

Date Reported Date Received

1/12/2010 1001-02981

Order Number Invoice No.

016369

Cust # Sampler

Customer

Permit No. Cust P.O.

SUBJECT: GAS WELL WASTEWATER

METHOD

RESULT

UNITS

ANALYSIS DATE

TECH ACCRED. TIME

011 GAS WELL WASTEWATER

Date Sampled:

1/12/2010

Time Sampled: 9:45 am

.....continued

Radium 228

Thorium

TEST

EPA 904.0

-0.021 + /-0.397see below pCi/L pCi/L 1/21/2010 1/23/2010 9:49

9:49

OST **OST**

THORIUM-228 0.876 +/-0.281 pCi/L THORIUM-230 0.0969 +/-0.087 pCi/L THORIUM-232 0.0125 +/-0.0398 pCi/L

THE TECH INITIALS "OST" (OUTSIDE TESTING) INDICATE THAT THE RADIUM, THORIUM AND URANIUM ANALYSES WERE SUB-CONTRACTED TO GEL LABORATORIES LLC. (W.O. MILA00502).

The Sampler's Initals 'Customer' means that some or all of the samples were collected by the customer. The verifiability of the final results are therefore limited by the customer's reported values. Microbac Laboratories, Inc. assumes that all sampling instructions are followed, and the data upon which these final results are based, have been accurately supplied by the client.

All samples received in proper condition and results conform to ISO 17025 unless otherwise noted

Accred.

- This symbol at the end of the test line means the test analysis met the requirements of NELAC (PA ID 25-00067)
- This symbol at the end of the test line means the test analysis met the requirements of AIHA (ID 100386).
- ◆ This symbol at the end of the test line means the test analysis met the requirements of NY ELAP (NY ID 10121)

ABBREVIATIONS:

M G/KG UG/L UG/KG MG/L = Milligram per Kilogram (PPM) = Micrograms per Liter (PPB) = Micrograms per Kilogram (PP6) = Milligrams per Liter (PPM) = 1 M G

Negative CFU

- Bacteria or target analyte not detected

ND TIC

bacteria or target analyte not detected
 Colony Forming Unit
 Not detected at or below the reporting limit
 Fentatively Identified Compound
 less than (also see "ND")
 Greater than

1000 UG = Bacteria or target analyte detected

For any feedback concerning our services, please contact Cheri Brolaski, Laboratory Director at cbrolaski@microbac.com or Jame Nokes, President at president@microbac.com





Eureka Resources, LLC DEP 11-25-09 RESPONSES ATTACHMENT R

Attachment B



Table B-1 SUMMARY OF LAB RESULTS OF RADIONUCLIDE IN UNTREATED WATER

Eureka Resources, LLC., Williamsport, PA

POLLUTANT	Result	Uncertainty.	Total
PULLUTANI		pCi/L	問機能
VARGENSON UNTREA	TED FLOWE	ACK:	建筑线
Gross Alpha	11,620	± 1239	12,859
Gross Beta	3,163	± 526.2	3,689.2
Radium-226	680.6	± 15.32	695.92
Radium-228	59.34	± 11.37	70.71
Seewald Final Report	on Untreate	ed Vargenson Flo	owback !
Gross Alpha	182.8	± 82.98	265.78
Gross Beta	117.4	± 33.50	150.9
OGONTZ 3H- PIT WAT	ER/UNTREA	TED "	建装 额
Gross Alpha	1,327	± 521.3	1,848.3
Gross Beta	2,831	± 572.9	3,403.9
Radium-226	30.71	± 3.80	34.51
Radium-228	4.57	± 10.04	14.61
Pil 8 Flowbark Comp	osite :	南美国中国的	にまるほう
Gross Alpha	123.1	± 52.24	175.3
Gross Beta	192.3	± 55.14	247.4
Radium-228	3.77	± 9.43	13.2
Total Uranium	0.19	± 0.006	0.20
TEEL#8 FLOWBACK M	IDDLE福建步	特性的 原则是	tere inte
Gross Alpha	3,787	± 387.6	4,174.6
Gross Beta	1,238	± 159.3	1,397.3
Radium-226	158.9	± 5.10	164
Radium-228	10.03	± 1.34	11.37
Total Uranium	0.874	± 0.033	0.91
Thorium-228	1.72	± 0.715	2.44
Thorium-230	0.494	± 0.352	0.85
Thorlum-232	0.123	± 0.172	0.30
		MUM Gross Alpha	12,859
		IMUM Gross Beta	3,689
		MUM Radium 226 MUM Radium 228	695.92 70.71
		UM Total Uranium	0.91
		MUM Thorium 228	2.44
		MUM Thorium 230	0.85
	MAXIM	AUM Thorium 232	0.30

Table B-2
RADIONUCLIDE EMISSIONS FROM UNTREATED WATER
Eureka Resources, LLC., Williamsport, PA

	***	Concentration	
Gedionuelle	41000 (102 4x40)(1)	Liquid (CI/m³)	Air (Cl/m³)(2)
Gross Alpha	12,859.00	1.29E-05	1.29E-08
Gross Beta	3,689.20	3.6892E-06	3.69E-09
Radium-226	695.92	6.9592E-07	6.96E-10
Radium-228	70.71	7.071E-08	7.07E-11
Total Uranium	0.91	9.07E-10	9.07E-13
Thorium-228	2.44	2.436E-09	2.44E-12
Thorium-230	0.85	8.46E-10	8.46E-13
Thorium-232	0.30	2.95E-10	2.95E-13

Notes:

- (1) Source: laboratory analytical data for gas well water
- (2) Based on calculations methodology in Appendix D to 40 CFR Part 61 (attached)

Sample calculations:

Gross Alpha emissions = $1.29 \text{ E-}05 \text{ Ci/m}^3 \times 10\text{-}3 = 1.29 \text{ E-}08 \text{ Ci/m}^3$

McCracken, Chuck

From: Robert Leidy

Sent: Tuesday, June 22, 2010 2:14 PM

To: Chuck McCracken
Cc: Stephen Helmer
Subject: WWTP lab results

Attachments: LAB results WWTP 1.pdf; WWTP lab results 2.pdf

Chuck,

I received two packages of environmental data from the lab yesterday and WWTP results were included. I have attached copies of all the WWTP results I received.

Let me know if you need me to send hard copies down to you.

Thanks

Onto Department of Health Laboratory Radiochemistry Section, Building 22 8995 F. Main ST Reynoldsburg, OH 43068 Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

2716 Depot Road Lisbon, OH, 44432 330-853-9321 Receive Date:

2/25/2010

This Report's Date. ODH-Lab Order#:

4/27/2010 R5981

Sample# R5981-01

Collector:

Collect Date: 2/12/2010

Site:

Client#

Matrix: Water

Parameter Alpha

Beta

Result <3 9.2 +/- 4.3

Units
pCi/L
pCi/L

Analysis Date 3/29/2010 4/26/2010 Analyzed by K_Grandfield K_Grandfield

Charastry Fav. (614) 728-2671

Voice: (614) 466-5600

E-mail: Ram.Chandrasekar@odh.ohio.gov

ERI http://www.ohio.gov/ohio/

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #'s
Katherine Grandfield, 3548
Rita Shesky, 1407
Sang H Chung, 2934

Total Alpha. 222 Total Beta. 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Tritium. 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

Sample Chain of Custody Record

Sine Address 7716 Depot Road Lisbon, Ohio 44432 Project Name Sample Sample Date Time Comp. Grab Sample Location/site ID Analysis / Preservative Water & Wastewater Laboratories, Inc. 2779 Rockefeller Avenue Cleveland, Ohio 44115 Phone (216)696-6831	Suc Name			ple Chain of	Custo	dy Ro	ecord			
	Site Address 7716 De Lisbon, Sample Sampl Date Time	epot Road Ohio 44432 le e Comp. Grab	Project # Project Name Sample Location	/site ID	Number of Containers	Physic Lingres TDS. C. pil Cond.	Analysis / Pro	eservative	2779 Rockefeller Avenue Cleveland, Ohio 44115 Phone (216)696-0280 Fax (216)696-6831 Sample Comments	W/
	(5081-01	alpha 23f beta = 9.2	Call 03/29/11 = 4.3 pCi/L	0 KG 04/24/10 K	6					N) lo
	clinquished by (sampler signature)	and reconstruction and relative process of the contract of the	Date/Time	Received by A	Signature o	r shippe	t u.c.	Phone: Fax:	2: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon, Ohio 44432	
Chinquished by: (signature) Date/Time: Received by: (signature or shipper) 7716 Depot Road Lisbon, Ohio 44432 Phone:	elinquished by . (signature)		Date Time:	Received by: 6				P.O.#: Bill to:	Verbal-Andy Patriot Water Treatment 7716 Depot Road Lisbon, Ohio 44432	

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 F. Main ST Reynoldsburg, OH 43068 Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (C 7716 Depot Road Lisbon OH 44432 330-853-9321	'ustomerID# water & wa)		Receive Di This Report's Di ODH-Lab Ordo	ite: 4/27/2010	
Sample# R5993-01	Collector: Andy Blocks Collect Date: 3/5/2010	Site:		Client # FII Matrix: Wa	
F/S	Result		Units	Analysis Date	Analyzed by
Parameter Alpha	<3		pCi/L	3/29/2010	K Grandfield
Beta	<4		рСіЛ.	4/26/2010	K Grandfield
Ra-226	<1		pCi/L	3/30/2010	SChung
Ra-228	<1		pCi/L	3/24/2010	K Grandfield
U-Natural	<1		pCi/L	4/5/2010	SChung

Chemistry Fax: (614) 728-2671 URL: http://www.ohio.gov/ohio/ Voice: (614) 466-5600

E-mail: Ram.Chandrasekar@odh.ohio.gov

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934 Total Alpha, 222 Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222 223 Tritium 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

Sample Chain of Custody Record

Site Name	Patriot Water Treatmen			2	A		n		Water & Wastewater Labo	ratories, Inc.
Site Address	7716 Depot Road			an ye	Апа	1y515 /	Preserv	auve	2779 Rockefeller Avenue	
	Lisbon, Ohio 44432	Project Name	غربي يو ده د موسد ا	Number of Containers	# 226	n 228	Rahatum	adiation	Cleveland, Ohio 44115 Phone (216)696-0280 Fax (216)696-6831	Wal
Sample	Sample Comp. Gra	b Sample Leastion		dim Det	Total Radium 226 (pC./L.)	Fotal Radium 228 (pCivL)	Total Alpha Radian (pC/A.)	Form Bern Radiation (pCsL)	Section 1.	The season of th
Date	Time Comp. Gra	b Sample Location/	Site (L)	- .5	<u>2 </u>	15 B	,3 <u>%</u>	<u> </u>	Sample Comments	Lab#
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R5993	-01 Gross	Alpha < 3 pal	L 03/29/10 K	(G) _		officer - The manager of	encolar de marco especiales espec	A SANA CONTRACTOR OF THE SANA CONTRACTOR OF T		
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									Reynoldsburg, Ohio 43068	
ampler(s) (print	name(s)-sign below]:					ette kaj urban e kanadarus kok ka kin Olekon ilian ilian kaj e bilando u kuni	İ	Report to:	Andy Blocksom Patriot Water Treatment	
elinquished by:	(sampler signature)	Date/Time:	Received by: (signa	iture or :	(hipper)				7716 Depot Road Lisbon, Ohio 44432	
elinquished by:	(signature)	Date/Time:	Received by: (signo	iture or s	hipper)	EMBERSHIPE E EMBES	- 11-		Elsbon, Onto 44432	e se la companya de l
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elinquished by .	(signature)	Date/Time:	Received by: (signa	ture or s	hipper)		I	Bill to:	Patriot Water Treatment 7716 Depot Road	
									Lisbon, Ohio 44432	



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2329 HERW AVE. 6.W WARREN, OHIG 44401

PHONE 930-867-9504

CHAIN OF CUSTODY FORM

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	- Annual Control of the Control of t	RE	ESULTS I	N ug/I UNI	ESS OT	HERWISE	SPECIFIED *				
				was a state of the	. <u> </u>						
We SERRIAT JE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	~ 46 G 4 (41 4	SELECTED	PARAMETER	RESULT	EPA TEST METHOD		
3		*NH3-N		350.2	1		SILVER		200.7		
3		• TKN		351.3	1		ARSENIC		200.7 6010 8		
3		· coo	S and American Co.	410.4	1		LEAD		200.7 5010 8		
1		CADMIUM		200.7 6010B	1		ZINC		200.7 6010B		
1	•	CHROMIUM	:	200.7 6010B	4		·TSS		160.2		
1		COPPER		200.7 6010B	4	***** **	PHENOLICS		420.1		
2		* TOT CYANIDE		335.2	4		РН		150.1		
2		*FREE CN		4500CN#	4		HEX CHROMIUM		35 00CrB		
1		MERCURY		1831 245.1 7471A	1		MOLYBDENUM		20 0.7 3010 8		
f		NICKEL		200.7 6010 A	1		ANTIMONY		20 0.7 6010 5		
3		OIL & GREASE		1684	1		SELENIUM		20 0.7 6010 B		
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PRESERV	ATIVES NITE	IC ACID -1, SODI	UM HYDRO	KIDE - 2, SU	LFURIC AC	ID - 3, UNF	PRESERVED 4				
		bottles used on									
COMMEN		Section aspect Off			7	*					
		e centero av							· · · · · · · · · · · · · · · · · · ·		
LABURAT	OKT KESULT	S CERTIFIED BY:				DATE					

DIRECT INQUIRIES AND THIS FORM TO: SAM LUDWICK, CHEMIST, CITY OF WARREN, WATER POLLUTION CONTROL FACILITY 330-841-2591 EXT 112 OR BY E-MAIL studwick@warren.org

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432

Receive Date: This Report's Date: ODII-Lab Order#. R 5999

3/15/2010 4/27/2010

330-853 9321

Sample# R5999-01 Collector: Andy Blocks Site: Final Client # 1003120052 Collect Date: 3/12/2010 Matrix: Water Parameter: Result Units Analysis Date Analyzed by Upha <3 3/29/2010 pCi/L K Grandfield Beta <4 pCi/L 4/26/2010 K. Grandfield Ra-226 <1 pCi/L 3/30/2010 SChung. Ra-228 <1 pCi/L K Grandfield 3/24/2010 U-Natural <1 pCi/L 4/5/2010 SChung

Chemistry Fax: (614) 728-2671

Voice: (614) 466-3600

E-mail: Ram Chandrasekar@odh.ohio gov

URL: http://www.ohio.gov/ohio/

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432

OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934

OEPA Methixia Total Alpha, 200 Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Tritium, 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2323 MAIN AVE: SW WARREN; OHIO-44461 PHONE-668-841-2864

CHAIN OF CUSTODY FORM

R5999-01

May as In Cart

							1/51		and the second s
							Time Sample Taken		
		me Period					b Cr+6, O&G, TOT or		englics, PH, H
Date (Grab Taken	1 10		Investigator	/ Sampler _	1.5.	ß		
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1		CADMIUM	E	200.7 6010 B	1		ZINC		200.7 5010 8
1		CHROMIUM	•	200.7 5010 8	4		·TSS		160.2
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1		NICKEL	•	200.7 6010A	1		ANTIMONY		20 0.7 6010 B
3		OIL & GREASE	ŧ	1664	1	n i	SELENIUM	and the same of th	20 0.7 6010 B
3		· PHOSPHORUS		6010A 4500PE	1		ALUMINUM		20 0.7 6010B
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MMEN	T\$:			and the second s					
BORA	TORY RESULT	S CERTIFIED BY:				DATE			

DIRECT INQUIRIES AND THIS FORM TO: SAM LUDWICK, CHEMIST, CITY OF WARREN, WATER POLLUTION CONTROL FACILITY 330-841-2591 EXT 112 OR BY E-MAIL sludwick@warren.org

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068 Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (7716 Depot Road Lisbon OH 44432 330-853-9321	CustomerID# water & wa)			Receive D This Report's D ODH-Lab Ord	ate: 6/7/2010
Sample# R6011-01	Collector:	Site:		Client # 10	03190054
-	Collect Date: 3/19/2010			Matrix: Wa	iter
Parameter	Result		Units	Analysis Date	Analyzed by
Alpha	<3		pCi/L	5/3/2010	K_Grandfield
Beta	6.6 +/- 2.	.9	pCi/L	5/3/2010	K_Grandfield
Ra-226	<1		pCi/L	5/25/2010	K_Grandfield
Ra-228	<1		pCi/L	5/12/2010	K_Grandfield
U-Natural	<1		pCi/L	4/15/2010	SChung
Sample# R6011-02	Collector:	Site:		Client # 10	03260064
	Collect Date: 3/26/2010			Matrix: Wa	iter
Parameter	Result		Units	Analysis Date	Analyzed by
Alpha	<3		pCi/L	5/3/2010	K_Grandfield
Beta	4.4 +/- 2.	5	pCi/L	5/3/2010	K_Grandfield
Ra-226	<1		pCi/L	5/25/2010	K_Grandfield

Chemistry Fax: (614) 728-2671 URL: http://www.ohio.gov/ohio/

Ra-228

U-Natural

Voice: (614) 466-5600

1.08 +/- 1.00

<1

E-mail: Ram.Chandrasekar@odh.ohio.gov

5/12/2010

4/15/2010

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934

pCi/L

pCi/L

Total Alpha, 222 Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Tritium, 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

OEPA Method#

K_Grandfield

SChung



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2323 MAIN AVII-5-16-14 MARREN, OFFIO 40481 PHOME 330-644-2591

CHAIN OF CUSTODY FORM

ROLL TO PATERAT

				te Sample Take	en. <u> </u>		Time Sample Taken		
		me Period:			- L		b: Cr+6, O&G, TOT or	Free CN, P	henolics, PH, Hc
Date (Grab Taken:	3-19-16	****	Investigator	/ Sampler:	MARY	BLOCKSOM		
		Away Blu	ileson	Date/ Tir	Accep	ted By: 💢	S. Chung	3/.	Date/Time
	uished By:								
Reimq Receiv	uished By:	у ву:	inng	*	Accep Analys				
							ANALYSIS SPECIFIED *		
POFOCALATIVE	SELECTED	PARAMETER	RESULT	METHOD	magnijan amus	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		NH3-N		350.2	1		SILVER		200.7
3		*TKN		351.3			ARSENIC		200.7 6010B
3		·cop		410.4	1		LEAD		200.7 8010B
1		CADMIUM		200.7 6010B	†		ZINC		200.7 8010B
1		CHROMIUM	,	20 0.7 6 0108	1		· TSS	-1	180,2
1		COPPER	İ	20 0.7 5010 B	4		PHENOLICS		420.1
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2		• FREE CN		4500CNF	ı.		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A			MOLYBDENUM		200.7 6010 B
1		NICKEL	• Tables	200,7 6010A	1		ANTIMONY		200.7 6010B
3		OIL & GREASE	•	1664	1		SELENIUM	i	200.7 60108
3	· · · · · · · · · · · · · · · · · · ·	PHOSPHORUS		3010A 4500PE	1		ALUMINUM		200.7 60108
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	2					t .	TOTAL THEREIN	1	
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DIRECT INQUIRIES AND THIS FORM TO: SAM LUDWICK, CHEMIST, CITY OF WARREN, WATER POLLUTION CONTROL FACILITY 330-841-2591 EXT 112 OR BY E-MAIL studwick@warren.org



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2323 MAIN AVE. S.W WARREN, OHIO 44481

CHAIN OF CUSTODY FORM R6011-02

		32600611		Address					
Sourc	e <u>// // // /</u>	P - Flagge	Da	te Sample Take	n: <u>}</u>	<u> </u>	Time Sample Taken		-
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3		* NH3-N		350.2			SILVER		200.7
3		TKN		351.3	1		ARSENIC		6010B
3		*COD	<u> </u>	410.4	1		LEAD		200.7 6010B
1	[CADMIUM		200.7 6010 B	1		ZINC		200.7 6010B
1	I I	CHROMIUM		20 0.7 6010 B	4		· TSS		160.2
1	P. C.	COPPER		200.7 6010 B	4	Parties of Address of Address of Address of	PHENOLICS		420.1
2	ì	· TOT CYANIDE		335.2	4		РН		150.1
2		FREE CN		4500CNI	4		HEX CHROMIUM		3500CrB
1	:	MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 5010B
1		NICKEL		200.7 6010 A	1	:	ANTIMONY		200.7 6010B
3		OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		· PHOSPHORUS	are him decimalizational alternatives.	6010A 4500PE	1	· ·	ALUMINUM- 3 TK	oution.	200.7 6010B
		Tom ALPHA	4300	05/03/10	Ku	L V	TETAL FADIC	E .	
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		JOING U	LIPE,	4/15/10	56		BARKEM		學。於
		C ACID -1, SODI	UM HYDRO:		LFURIC A		PRESERVED 4 -228 = 1.08 ±	1.00pX; 05/12/10 1L.05/2	/L KG 5/10/KG
		S CERTIFIED BY:			Indiana, Indiana	DATE			

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432

330-853-9321

Receive Date:

4/6/2010

This Report's Date:

6/7/2010

ODH-Lab Order#:

R6017

Sample# R6017-01

Collect Date: 4/2/2010

Collector: Andy Blocks

Site:

Client # 1004020075

Matrix: Water

Parameter Alpha Beta

Ra-226

Ra-228

U-Natural

<3 <4

2.14 + / - 0.79

<1

Result

<1

pCi/L pCi/L pCi/L

pCi/L

Units

pCi/L

5/3/2010 6/3/2010 5/28/2010

Analysis Date

5/3/2010

4/15/2010

K Grandfield K_Grandfield K_Grandfield

Analyzed by

K_Grandfield

SChung

Chemistry Fax: (614) 728-2671

Voice: (614) 466-5600

E-mail: Ram.Chandrasekar@odh.ohio.gov

URL: http://www.ohio.gov/ohio/

OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407

Sang H Chung, 2934

Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Tritium, 198 Strontium, 196 Uranium-Nat, 184

Gamma, 207

OEPA Method# Fotal Alpha, 222

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2323 MAIN AVE. S.W WARREN, OHIO 44481 PHONE 330-841-2591

CHAIN OF CUSTODY FORM

R6017-01

Reinquished By Accepted By Acc	30010	9	44	Da	ite Sample Taker	1		Time Sample Taken	- C) 80	20
Reinquished By Accepted By Analyst PLEASE CHECK PARAMETERS FOR ANALYSIS RESULTS IN ug/I UNLESS OTHERWISE SPECIFIED * PLEASE CHECK PARAMETERS FOR ANALYSIS RESULT BATTERS FOR ANALYSIS RESULT BATT	Comp	osite Sample T	ime Period:				Gra	b: Cr+6, O&G, TOT c	or Free CN, P	henolics, PH
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Received in Laboratory By	Reling	uished By:				Accep	ted By:	~		,
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3	3		* NH3-N		350.2	1		SILVER		200.7
3	3		· TKN	*	351.3	1	<u> </u>	ARSENIC		200.7
CADMIUM CODPER CONTROL CONTROL CONTROL CODPER COOPER	3		·COD		410.4	1		LEAD		200.7
1 CHROMIUM 200.7 4 150.2 1 COPPER 200.7 4 PHENOLICS 420.1 2 'TOT CYANIDE 335.2 4 PH 150.1 2 'FREE CN 4500CNI 4 HEX CHROMIUM 35000 1 MERCURY 1631 245.1 1 MOLYBDENUM 200.7 1 NICKEL 200.7 1 ANTIMONY 60108 3 'OIL & GREASE 1664 1 SELENIUM 80108 3 'PHOSPHORUS 6010A 1 ALUMINUM 50108 3 'PHOSPHORUS 6010A 1 ALUMINUM 50108 3 'PHOSPHORUS 6010A 1 ALUMINUM 50108 5 TOTAL ALUMINUM 50108 5 TOTAL ALUMINUM 50108 1 TOTAL GOLD A COLL GOLD 1 TOTAL CHARLES ESERVATIVES NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIG ACID - 3, UNPRESERVED 4 Ra-124	1		CADMIUM			1		ZINC		200.7
COPPER 200.7 1 PHENOLICS 420.1	1	and an interest part of the pa	CHROMIUM		200.7	4		• TSS		160.2
2	1	and state () () as Manufacture and As ()	COPPER	1	200.7	4	and the state of t	PHENOLICS		420.1
2 FREE CN 4500CN 4 HEX CHROMIUM 35000 1 MERCURY 1631 245.1 1 MOLYBDENUM 200,7 7471A 1 MOLYBDENUM 5010B 1 NICKEL 200.7 5010B 3 OIL & GREASE 1664 1 SELENIUM 6010B 3 PHOSPHORUS 5010A 1 ALUMINUM 200,7 4500PE 1 ALUMINUM 5010B 1 TOTAL 14700 43 OIL GOODS 1 STANTIAN SOLUM 15010B 1 TOTAL 14700 43 OIL GOODS 1 STANTIAN SOLUM 15010B 1 TOTAL 14700 43 OIL GOODS 1 STANTIAN SOLUM 15010B 1 TOTAL 14700 15010B 1 TOTAL 14700 15010B 1 TOTAL 14700 15010B 1 SEERVATIVES NITRIC ACID -1, SODIUM HYDROXIDE -2, SULFURIC ACID -3, UNPRESERVED 4 Ra-22A	2	, , , , , , , , , , , , , , , , , , ,	* TOT CYANIDE			4	The state of the s	РН		150.1
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3 PHOSPHORUS 6010A 1 ALUMINUM 2007 5010B V 7771 ALTER GOTO CA DC LOS 3/10 KL STADETICAL TOTAL CONTROL SOCIETA SOCIETA CONTROL CONTRO	3	**** *** *** *** *** *** *** *** *** *	OIL & GREASE	A THE PARTY OF A STATE OF THE S	to the local control of the lo	1	T	SELENIUM	1	200.7
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ESERVATIVES NITRIC ACID-1, SODIUM HYDROXIDE-2, SULFURIC ACID-3, UNPRESERVED 4	Ī	レー	Total Alma	43.00		slic VI		JADIN M		
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	ESERV	ATIVES NITRI		UM HYDROX		manar v , E v , , , , , , , , , , , , , , , ,	ID - 3 LINE	TOTAL TIME	ium	-37A
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mber of sample bottles used on this Chain Of Custody	undet	or sample	no besu semou	this Chair	n Of Custody			. F	,	

DIRECT INQUIRIES AND THIS FORM TO: SAM LUDWICK, CHEMIST, CITY OF WARREN, WATER POLLUTION CONTROL FACILITY 330-841-2591 EXT 112 OR BY E-MAIL <u>studwick@warren.org</u>

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068 Ted Strickland, Governor Alvin Jackson M.D.: Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432

330-853-9321

Receive Date:

4/13/2010

This Report's Date:

5/11/2010

ODH-Lab Order#:

R6022

Sample# R6022-01

Collector: Tonya Kuzm

Collect Date: 4/9/2010

Site: Final

Client # 1004090085

Matrix: Water

Parameter

Result

Units pCi/L Analysis Date 5/3/2010 Analyzed by K_Grandfield

Alpha Beta

9.0 +/- 4.0

pCi/L

5/3/2010

K_Grandfield

Chemistry Fax: (614) 728-2671

Voice: (614) 466-5600

E-mail: Ram.Chandrasekar@odh.ohio.gov

URL: http://www.ohio.gov/ohio/

OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934

Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Tritium, 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

OEPA Method# Total Alpha, 222

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432



CITY OF WARREN, OHIO WATER POLLUTION CONTROL DEPARTMENT

2323 MAIN AVE. S.W WARREN, OHIO 44481 PHONE 330-841-2591

CHAIN OF CUSTODY FORM

20022-01

ampie	Final	090085 Effluent	WWTRan	Address:	04-	09-10	Time Sample Taken	0900	am CD
				oup.e			: Cr+6, O&G, TOT, or		
,	ite Sample Ti	900 an CD		I	Compler	ionya Ki			
ate Gr	ab Taken: <u>U</u>) local p		Date/ Tim		J			Date/ Tir
	-	the Hone				ed By:	Dukus		4/9/10/
	shed By:	9 107				ed By:	< 1		
	shed By:	Jane		7-1-10					
	shed By:		<u>)</u>	11,21,7-1					
ceive	in Laborator	y By:	<u> </u>	11/201	<u> </u>				
		DI FA	er cur	CK DAD	ANGTI	EDC EOD	ANALYSIS		
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ATTUE	SELECTED	PARAMETER	RESULT	METHOD					200.7
		* NH3-N	· 	3 50.2	1		SILVER		200.7
	where the second residence is a second of the second of th	* TKN		351.3	1		ARSENIC	<u> </u>	6010B 200.7
	and the second s	* COD	į	410.4	1		LEAD		6010B
		CADMIUM	April a ser out a communication over the com-	200.7 6010B	1		ZINC		60108
		CHROMIUM	. Server by	200.7 6010B	4		· TSS		160.2
-		COPPER		20 0.7 6010 8	4		PHENOLICS	ļ	420,1
		* TOT CYANIDE		335.2	4		РН		150.1
	700	* FREE CN		4500CNI	4		HEX CHROMIUM		3500CrB
		MERCURY		1631 245.1 7471 /	1		MOLYBDENUM		200.7 6010B
	- The second sec	NICKEL		200.7 6010A	1		ANTIMONY	į	200.7 6010B
1	a management i peut accesso mer plant a recerción de mala	OIL & GREASE		1664	1		SELENIUM		200.7 6010B
	agenta in a same area etc. For the	• PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B
	7	total alpha 1	adusti		/_	1301.	16 05/03/1	O KC	- 模型 - 模型 - 1
	V	total beta ra				9.0±4	DOGIL OSIG	1	
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erou.	ATISIEC MET	RIC ACID -1, SOD	I IM UVNDA	(IDE . 2 91)	ILFURIC A	CID.3 LIN	PRESERVED 4		
						Q Q	, mount of		
nber	of sample	bottles used on	this Chai	n Of Custoc	ty				
MENT	'S :								

DIRECT INQUIRIES AND THIS FORM TO: SAM LUDWICK, CHEMIST, CITY OF WARREN, WATER POLLUTION CONTROL FACILITY 330-841-2591 EXT 112 OR BY E-MAIL <u>studwick@warren.org</u>

McCracken, Chuck

From:

Robert Leidy

Sent:

Monday, August 09, 2010 11:15 AM

To:

Chuck McCracken

Cc:

Stephen Helmer; Kenneth Barnhart

Subject:

WWTP lab results

Attachments:

WWTP lab results 3.pdf

Chuck,

I received environmental data from the lab last Thursday and WWTP results were included. I have attached copies of the WWTP results I received.

Let me know if you need me to send a hard copy down to you.

Thanks

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068 Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)	Receive Date:	4/19/2010
7716 Depot Road	This Report's Date:	7/12/2010
Lisbon OH 44432	ODH-Lab Order#:	R6027
330-853-9321		

Collector: Andy Blocks Site: Client # final Sample# R6027-01 Collect Date: 4/16/2010 Matrix: Water Analysis Date Analyzed by Result Units Parameter 5/3/2010 K_Grandfield <3 pCi/L Alpha 5/3/2010 K_Grandfield 9.2 +/- 3.3 pCi/L Beta Ra-226 <1 pCi/L 6/3/2010 K_Grandfield K_Grandfield Ra-228 pCi/L 5/28/2010 <1

Sample# R6027-02	Collector: Andy Blocks	Site:	Client # liquid sludge
------------------	------------------------	-------	------------------------

Collect Date: 4/16/2010 Matrix: Other Radiological

Parameter	Result	Units	Analysis Date	Analyzed by
Ac-228	3.28E02 +/- 1.02E01	pCi/kg	4/23/2010	$K_{\underline{}}$ Grandfield
Ce-139	9.30E01 +/- 5.58E00	pCi/kg	4/23/2010	K_{\perp} Grandfield
Gamma Scan	All other nuclides <lld< th=""><th>pCi/kg</th><th>4/23/2010</th><th>K_Grandfield</th></lld<>	pCi/kg	4/23/2010	K_Grandfield
1-131	5.95E03 +/- 1.60E02	pCi/kg	4/23/2010	K_Grandfield
K-40	3.17E02 +/- 3.12E01	pCi/kg	4/23/2010	K_Grandfield

Chemistry Fax: (614) 728-2671 Voice: (614) 466-5600 E-mail: Ram.Chandrasekar@odh.ohio.gov

ERI http://www.ohio.gov/ohio/

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934 Total Alpha, 222 Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Tritium, 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

Sample Chain of Custody Record

	Patriot Water Treatment	Project #		ustody F	CCOIG		WW.		
Site Address	7716 Depot Road	THOUGHT.		ners	Analysis /	Preservativ	e	Water & Wastewater Labe	ratories, Inc.
Sample Date	Lisbon, Ohio 44432 Sample Time Comp. Grab	Project Name Sample Locatio	n/site ID	Number of Contain Total Uranum(pC/L)	Foral Radium 226 (pCr4.) Total Radium 228	Total Alpha Radiation (pCEL) Total Beta Radiation	Robins	2779 Rockefeller Avenue Cleveland, Ohio 44115 Phone: (216)696-0280 Fax: (216)696-6831	177.1
4/16/10		FINAL	The second secon		v				Lab#
4/10/10.		Liquid Study	c. (0.663)		X X	, x , x		260270	. #
Klc027	-CI alpha.	43 pt/ 1 05/03	110 46					um :	
	lala =	92 = 33 pal	rs/102/101	V					
	21a - 778	KIPCIL 05/2	100100110 K	KG					
	0: 221	1) 00.11	10/10 KG.						
	KH-241	o Lipcill ad	03/10 KG	- -					
2/1027-0	2 Samma A	C-228 3 28Eat	02E°1 P(;	1/kg 02	1123/10	KG		Phone: 614-644-4658	
	\mathcal{C}	6-139 9.30E "+ 5	5.58E" pc/k	ν. ⁹			1	Attn: John Ohio Department of Health	
	· ************************************	And the second s		=- \ \ .			1		
	I	e-139 9.30E01±6	60E or pcilky	7				Building 22	
	A	-40 317ET = 3.12	LET OF / Go		λ Ariλ			Bidlding 22 8995 E. Main Street Reynoldsburg, Ohio 43068	
A		-131 5.95 E 03 ± 1.10 -40 317 E 9 ± 3.12 11 Other Muchiden CL	LET OF / Go		d Acid		P14	Befilding 22 8995 E. Main Street Reynoldsburg, Ohio 43068 ← ⊋.○	
ampler(s) [print n	Anne(s)-sign below]:	1 Other MUCLIDIA CL	Personal by	Fiel	The Committee of the Co		PI4	Building 22 8995 E. Main Street Reynoldsburg, Ohio 43068	
ampler(s) [print n	A name(s)-sign below): supplier signature)	1 Other Muchides 21 A-16 7 PM	Personal by	Fiel	The Committee of the Co		P14	Bufilding 22 8995 E. Main Street Reynoldsburg, Ohio 43068	
ampler(s) [print n	A name(s)-sign below): supplier signature)	1 Other MUCLIDIA CL	Received by: soign	mature or ship	peri Halia!	Rep	P14	Building 22 8995 E. Main Street Reynoldsburg, Ohio 43068	
ampler(s) (print nething) ished by (selinquished by (seli	A name(s)-sign below]: supporter signature) supporture)	1 Other Muchides 21 A-16 7 PM	Received by soin Received by soin & Ban &	mature or ship	per) 4 (19) 16-9	Rep Phon Fax:	PH port to:	Building 22 8995 E. Main Street Reynoldsburg, Ohio 43068 C. Q.O Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon, Ohio 44432	P009
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ampler(s) [print nething] shed by (selinquished by (selin	A name(s)-sign below]: supputer signature) supputure)	1 Other Muchides 21 A-16 7 PM Date Time: Date Time:	Received by soin Received by soin & Ban &	mature or ship the ship mature or ship	peri Halled I beri 6-9	Rep Phon Fax:	PI4	Building 22 8995 E. Main Street Reynoldsburg, Ohio 43068 Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon, Ohio 44432	POOA 709/10 =



Wisconsin State Labor flory of Hygiene 2601 Agriculture Dave 20 Box 1996 Madison, WI 33707, 3996 (800)442-4618 + FAX (948)274-6213 http://www.slh wise odu

Laboratory Report

D.F. Kurtycz, M.D., Medical Director • Charles D. Brokopp, Dr.P.H., Director

Environmental Health Division

Radiochemistry

WDNR LAB ID: 113133790

NELAP LAB ID: E37658 EPA LAB ID: WI00007

WSLH Sample:

WI DATCP ID: 105-415

Supplement to test report#:

9321307

RU002128

OHIO DEPARTMENT OF HEALTH LABO

8995 E MAIN ST/RADCHEM BLDG 22

REYNOLDSBURG, OH 43068

Bill To

Collected By:

Date Received:

Date Reported:

Sample Reason:

Account:

Billing ID:

7324709

Customer ID:

Well Completion Date:

339055

OHIO DEPARTMENT OF HEALTH

1999 EMAIR ST/RADIOCHEM BUILDING 22

REYNOLDSBURG OH 43068

PP009

Collection Date: 04/16/2010 13:00:00

Unique Well #:

Well Construction:

County:

Owner:

Driller or Pump Installers License #:

KATHERINE GRANDFIELD

Sampling Location: PATRIOT WATER TREATMENT Sampling Point: PUBLIC DRINKING ENTRY POINT

Sampling information:

OHIO SAMPLE # R6027-01 Min:

Long Deg:

Min:

Method:

06/09/2010 10:41:00

GRAB SAMPLE

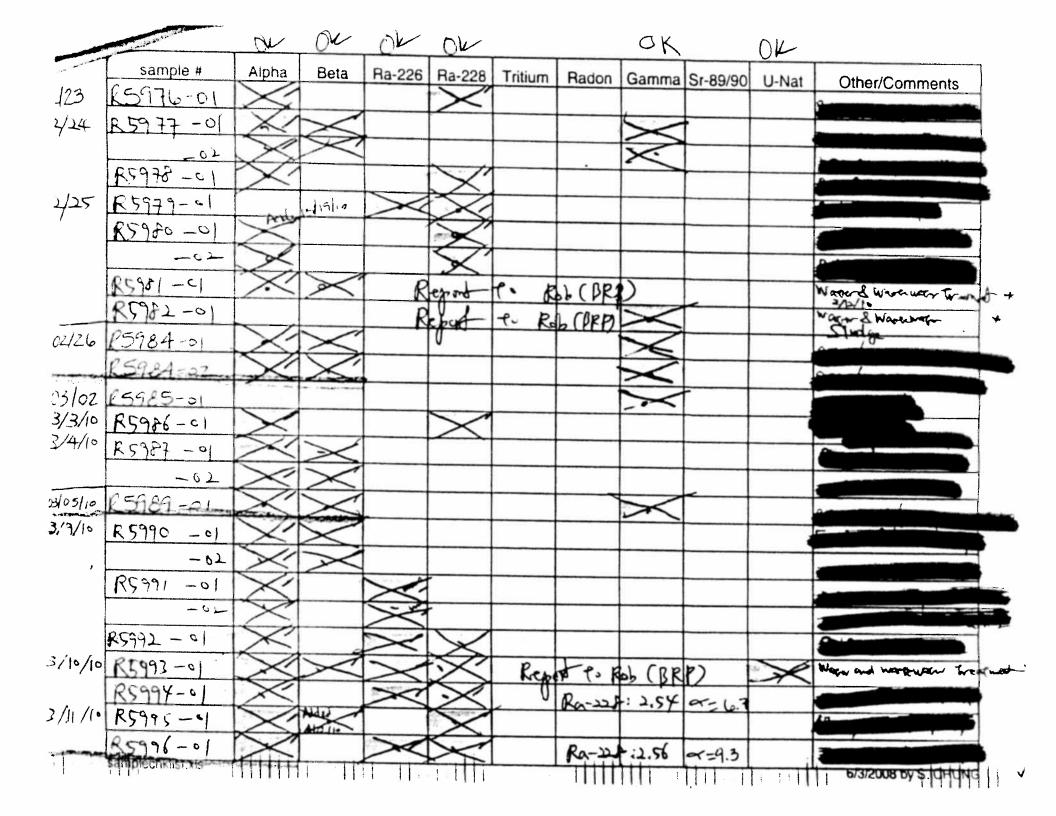
06/29/2010

Lat Deg: Driller:

Analyses and Results:

Analysis Date Lab 0 06/30/2010	Comment		· · · · · · · · · · · · · · · · · · ·	
Analysis Method	Result	Units	LOD	
SM7500_U_C URANIUM 234 ACTIVITY	0.13±0.07	pCi/L	0.09	
SM7500_U_C URANIUM 234 ACTIVITY	0 0000±0 0000	ug/L	0.0000	
SM7500_U_C URANIUM 235 ACTIVITY	0.01±0.03	pCi/L	0.06	
SM7500_U_C URANIUM 235 ACTIVITY	0.00±0.01	ug/L	0.03	
SM7500_U_C URANIUM 238 ACTIVITY	0.04±0.03	pCi/L	0.04	
SM7500 U_C URANIUM 238 ACTIVITY	0 11±0.08	ug/L	0.11	
SM7500 U.C. TOTAL URANIUM ACTIVITY	0.13±0 08	pCi/L	0.04	
SM7500_U_C TOTAL URANIUM ACTIVITY	0.00±0.08	ug/L	0.11	

		DI	OV		OV			OK		OK	
1-15	sample #	Alpha	Beta	Ra-226	Ra-228	Tritium	Radon		Sr-89/90	U-Nat	Other/Comments
1-15			ļ		><						Mons
1-71	R 5959-01				$\simeq <$						
, ,				-	\sim		•				
1/25	R5961-01	\sim		-	\sim	-					
1/23	_UL							> <			
								$>\!\!\!<$			
	_~5							\times			
	(- <u>2!</u> !		\times			
	7					W.C.W.		\prec			*
1-27	R5962-01		~		5 Small			$\geq \leq$			<u> </u>
	R 5962-02				~						
1/30	R5964-01	\Leftrightarrow				-11-			#		
/30	R5965-01	\Leftrightarrow			\sim	· Reg	1-10	Rob (RP)	\simeq	WHITER & Ware water LAB &
	-0)	\Longrightarrow					- 4				
2/2	R5966-01			-				\approx	-		
/ -	R5967-07	>									
,	_ ()										
2/3	25767 -01				\sim						
2/4	R5967 -01	\Rightarrow					-	$\overline{}$			
	_ 0.2	\$	7								
2/9	R5971-01		SHEAT	, -o ^L	1						"
2.11	R5A73-01	X	7=4.4	-							
4/1			-	-							
	R 5974-01	1111			\longrightarrow			11 1			
		500 · · · · · · · · · · · · · · · · · ·	, ,	1 1				111 .1			6/3/2008 by 5 10Hebyc



		سان	Or	OV	02			Ok		0	
	sample #	Alpha	Beta	Ra-226	Ra-228	Tritium	Radon	Gamma	Sr-89/90		04.70
3/15/10	R5798-01	>			X		· iddoii	Gamma	31-09/90	U-Nat	Other/Comments
- A. 7	25999-01	\rightarrow	>	$\nearrow <$	\sim	k	1-00	Rob (B	R.D)	~/	Worter and Ware worker from
10	R6000 - 01	\nearrow		and Dire		a-8.		Por (V	V		Water and Wage water French
موسي ويديدم	-02	\gg	ल्या	00000	*			N.T.	also e	- \	
1/24/10	R60+2-01	X			\sim	=8	. 5	Liei C	mylor	same	
	R6003 -01	X			\bigcirc						
5/26/10	R6005-01	\sim	\sim						-		
	R6005-02	> <	X								
-	P600-01-				\times 1						
3/30/10	R6007-01	\searrow	Aday and	,	7						
,	RECOR - U	\sim			$\langle \rangle$						
	- C L		×=3.5		$\langle \rangle$						
	R6039-01	><									
	-07	> <			X						
	- 63	>><			> <						
	R6010 -01	\searrow	X								Production of the second
	-01	>	× 1					\Rightarrow			
,	R6411 -01	\sim			X1	8.5	J +-	Rob	(BRP)		Warre & Ware war +
	-02	X	N.	X		Velia	11	- Koh	(")	\Rightarrow	
03/3/10	R6012-01	\times	X	X			- ' '		` /		*
04/01/10	R6013-01	X							+		
15 MES	FLOOI 4 - 01	\searrow	X								
	RECIS-01								-		
,	Ch016-01	>			~						
1	B6:17-4	X	×	文 本		Rep	60	Roh	(BRP)		more & wark more non
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sample #	Alpha	02	OV.	DV	OV		Ok		or	
9/8/2018 R6019-01 R6020-01	7 lipha	Beta	Ha-226	Ra-228	Tritium	Radon	Gamma	Sr-89/90	U-Nat	_ Other/Comments
4/13/10 1-10022-01			and the same of							
126023-01	8									
1119/10 2 6026-01		7:32								
26027-01		X	X	•	CANC	EL			<u>A</u>	
123/10 RG028-01							X			townships made
126/10 R6030-01		Y=73	X	2			_			
R6030-02 -03										
-04					\gtrsim					
17/10 E6031-61				2	X					V
- <i>c</i> ₂ - <i>c</i> ₃							3			
-c1 -c5						1	3			
-06						1				
KC032 - 01							<			V

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432 330-853-9321

Receive Date:

2/1/2010

This Report's Date:

12/19/2011

ODH-Lab Order#:

R5964

Sample# R5964-01

Collector:

Client # Brine Water

Collect Date: 1/27/2010		Matrix: Water		
Parameter	Result	Units	Analysis Date	Analyzed by
Alpha Beta Ra-226 Ra-228 U-Natural	<3 45.2 +/- 5.1 <1 <1 <1	pCi/L pCi/L pCi/L pCi/L pCi/L	2/12/2010 3/22/2010 3/30/2010 3/24/2010 3/12/2010	K_Grandfield K_Grandfield SChung K_Grandfield SChung

Site

Chemistry Fax: (614) 728-2671 URL: http://www.ohio-gov/ohio/

Voice: (614) 466-5600

E mail: Ram Chandrasekar@odh.ohio.gov

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432

OEPA Analyst #'s Katheune Grandheld, 3548 Rita Shesky, 1407 Sang H Chung, 2934

Total Alpha, 222 Total Beta, 165 Radium-226, 169 Radium-228, 183 Radon-222, 223 Entium, 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

Olio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432 330-853-9321

Receive Date:

2/25/2010

This Report's Date: ODH-Lab Order#:

12/19/2011 R5981

Sample# R5981-01

Parameter

Alpha

Beta

Collector:

Site:

Client#

Collect Date: 2/12/2010

Matrix: Water

Result <3 9.2 +/- 4.3

Units pCi/L pCi/L

Analysis Date 3/29/2010

Analyzed by K_Grandfield

4/26/2010

K_Grandfield

Chemistry Fax: (614) 728-2671 URL http://www.ohiri.gov/ohio/

Voice: (614) 466-5600

E mail. Ram Chandrasekarerodh,ohio, gov

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432

OEPA Analyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934

Total Alpha, 222 Total Beta, 165 Radami-226, 169 Radium-228, 183 Rarfon 222, 223 Intom, 198 Strontium, 196 Uranium-Nat, 184 Gamma, 207

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (7716 Depot Road Lisbon OH 44432 330-853 9321		ate: 2/25/2010 ate: 12/19/2011 cr#: R5982				
Sample# R5982-01	Collector: Collect Date: 2/17/2010	Site:	- The control of the discount of the control of the	Chent # 1002170030 Matrix: Other Radiological		
Parameter	Resul	Result		Analysis Date	Analyzed by	
Gamma Scan K-40	All other nuclic 2.6E+02 +/- 2		pCi/L pCi/L	3/4/2010 3/4/2010	SChung SChung	

Chemistry Fav. (614) 728-2671 URL: http://www.ohio-gov/ohio/

Voice: (614) 466-5600

E-mail Ram Chandrasekar@odh.ohio.gov

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #'s Katherine Grandfield: 3548 Bita Shesky, 1407 Sang H Chung, 2934 Fotal Alpha, 222 Total Beta, 165 Badium-226, 169 Badium-228, 183 Badon-222, 223 Totium, 198 Strontium, 196 Uranium-Nat, 184 Gamina, 207

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432

330-853-9321

Receive Date:

3/10/2010

This Report's Date: ODH-Lab Order#.

12/19/2011 R5993

Sample# R5993-01

Collector: Andy Blocks

Site:

Client # FINAL

Collect Date: 3/5/2010			Matrix: Water		
Parameter	Result	Units	Analysis Date	Analyzed by	
Alpha	<3			K_Grandfield	
Beta Ra-226	<4	pCi/L	4/26/2010	K_Grandfield	
Ra-228	<1	pCi/L	3/30/2010	SChung	
U-Natural	<1	pCi/L	3/24/2010	K_{\perp} Grandfield	
	<1	pCi/L	4/5/2010	SChung	

Chemistry Fax: (614) 728-2671 URL: http://www.ohio.gov/ohio/

Voice: (614) 466-5600

E-mail: Ram.Chandrasekar@odh.ohio.gov

OEPA Arrilyst #'s Katherine Grandfield, 3548 Rita Shesky, 1407 Sana H Chung, 2934

Total Alpha, 222 Total Beta 165 Radium-226, 199 Radium-228 183 Radon-222, 223 Tahum, 198 Strontum 196 Utanium Nat. 184 Gamma, 207

OEPA Methoda

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E. Main ST Reynoldsburg, OH 43068

Fed Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa) 7716 Depot Road

1.15bon OH 44432 330-853-9321 Receive Date. 3/15/2010
This Report's Date 12/19/2011
ODH-Lab Order# R5999

Sample# R5999-01	Collector: Andy Blocks Collect Date: 3/12/2010	* * * * * * * * * * * * * * * * * * * *		Client # 1003120052 Matrix: Water		
Parameter	Result		Units			
Alpha	<3	the same and the same same same same same same same sam		Analysis Date	Analyzed by	
Beta			pCi/L	3/29/2010	$K_{\perp}Grandfield$	
Ra-226	<-1		pCi/L	4/26/2010	K_Grandfield	
	<1		pCi/L	3/30/2010	SChung	
Ra-228	<1		pCi/L	3/24/2010	_	
U-Natural	<1		pCi/L	4/5/2010	K_Grandfield SChung	

Chemistry Fax: (614) 728-2671 URL: http://www.ohio.gov/ohio/

Nonce, (614) 466-5600

E-mail: Ram Chandrasekai wodh ohio gov

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #'s Katherine Grandfield, 3548 Bita Shesky, 1407 Sang H Chung, 2934 Total Alpha 222 Total Beta 165 Radiom 226 169 Radiom 228, 183 Radon 222, 223 Totion, 198 Strottian, 196 Unimure Nat, 184 Gamma, 207

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment 7716 Depot Road Lisbon OH 44432 330-853-9321	(Customer[D# water & wa)			Receive : This Report's ODH-Lab Or	Date: 12/19/201
Sample# R6011-01	Collector: Site: Collect Date: 3/19/2010			Client # 1003190054 Matrix: Water	
Parameter	Result		1 haire		
Alpha	<3	Francis Conference - Conference - Conference -	Units	Analysis Date	Analyzed by
Beta	6.6 +/- 2.9		pCi/L	5/3/2010	K_Grandfield
Ra-226			pCi/L	5/3/2010	K_Grandfield
Ra-228	<1		pCi/L	5/25/2010	K Grandfield
U-Natural	<1		pCi/L	5/12/2010	K_Grandfield
	<1		pCi/L	4/15/2010	SChung
Sample# R6011-02	Collector: Collect Date: 3/26/2010	Site:		Client # 1003260064 Matrix: Water	
Parameter	Result		Units	Analysis Date	
Alpha	<3		pCi/L		Analyzed by
Beta	4.4 +/- 2.5			5/3/2010	K_Grandfield
Ra-226	<1		pCi/L	5/3/2010	K_Grandfield
Ra-228	1.08 ±/- 1.00		pCi/L	5/25/2010	K_Grandfield
U-Natural	<1		pCi/L	5/12/2010	K_{\perp} Grandfield
	~1		pCi/L	4/15/2010	SChung

Chemistry Fax: (614) 728-2671 URL: http://www.ohio.gov/ohio/

Voice, (614) 466-5600

F mail Ram.Chandrasekartwodh olno gov

Attn: Andy Blocksom Patriot Waler Treatment 7716 Depot Road Lisbon OH 44432 OEPA Analyst #5 Katherine Grandfield, 3548 Rita Shesky, 1407 Sang H Chung, 2934 OEPA Methodia Total Alpha, 202 Total Beta, 105 Radium-226, 169 Radium-228, 183 Radon-222, 201 Totium, 198 Strontern, 196 Uranium-Nat, 184 Gamma, 207

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldshurg, OH 43068

Ted Strickland, Governor Alvin Jackson M.D., Director of Health

Patriot Water Treatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432

330-853-9321

Receive Date:

4/6/2010

This Report's Date: ODH-Lab Order#:

12/19/2011 R6017

Sample# R6017-01

Collector: Andy Blocks

Site:

Client # 1004020075

Collect Date: 4/2/2010			Client # 1004020075		
Parameter	Result	Units	Matrix: Water		
Alpha Beta	<3 <4	pCi/L	Analysis Date 5/3/2010	Analyzed by K_Grandfield	
Ra-226 Ra-228	<1	pCi/L pCi/L	5/3/2010 6/3/2010	K_Grandfield K_Grandfield	
U-Natural	2.14 +/- 0.79 <1	pCi/L pCi/L	5/28/2010 4/15/2010	K_Grandfield SChung	

Chemistry Lax (614) 728-2671 URL http://www.ohio.gov/ohio/

Vince (614) 466 5600

E-mail: Ram.Chandrasckar@odh.ohio.gov

Attn. Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432

OEPA Analyst #'s Kathonne Grandfield, 3548 Rita Shesky, 1407 Sang H Ching, 2004

Fotal Alpha, 222 Fotal Beta 165 Ramum 226, 169 Radium-228, 183 Barton-222, 323 Tutum, 198 Strontium, 194 Uramum Nat, 184 Gamma 207

OEPA Methodia

Ohio Department of Health Laboratory Radiochemistry Section, Building 22 8995 E Main ST Reynoldsburg, OH 43068

Ted Strickland, Covernor Alvin Jackson M.D., Director of Health

Patriot Water Freatment (CustomerID# water & wa)

7716 Depot Road Lisbon OH 44432 330-853-9321

Receive Date:

4/19/2010 12/19/2011

This Report's Date: ODH-Lab Order#:

R6027

Sample# R6027-01

Collector: Andy Blocks

Client # final

Parameter Result Units Alpha <3 pCi/L	Client# final		
Alpha <3	Matrix: Water		
Beta 9.2 +/- 3.3 pCi/L Ra-226 <1 pCi/L Ra-228 <1 pCi/L	Analysis Date 5/3/2010 5/3/2010 6/3/2010 5/28/2010	Analyzed by K_Grandfield K_Grandfield K_Grandfield K_Grandfield	

Site:

Chemistry Fax: (614) 728-2671 URL, http://www.ohia.gov/ohio/

Voice: (614) 466 5600

Esmail Ram Chandrasekai (godh,ohio gov

Attn: Andy Blocksom Patriot Water Treatment 7716 Depot Road Lisbon OH 44432

OEPA Analyst Fa Katherine Grandfield 3548 Pida Shiesky 1407 Sang H Chung 2934

Total Alpha, 222 Total Beta, 165 Radium-226, 169 Plachum-228, 183 Radon-222, 223 Triburn, 198 Stronitum, 196 Uranium-Nat, 194 Gamma, 207