McCracken, Chuck

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. McCracken

Supervisor, Bureau of Radiation Protection
Ohio Department of Health
Ph: 614.466.5136
Fx: 614.466.0381

3701-39-02.1 **Standards for handling radioactive material.**

(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;

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(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 (twenty-five 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:	119.03
Statutory Authority:	3748.02
Rule Amplifies:	3748.04
Prior Effective Dates:	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

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		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, 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	
pH	W	W	W	W	
HEM oil and grease	T	T	T	T	
SGT-HEM oil and grease	T	T	T	T	
Metals[2]	T				B, T[6]
Barium, Strontium[8]	W	W			
Low level mercury	T				
Hexavalent chromium	T				
Volatile organic compounds	T				
Base neutral organic compounds	T				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
$CBOD_5$	T				
COD	T				
total organic carbon (TOC)	T				
Total nitrogen	T				
Ammonia-nitrogen	T				
Nitrate/nitrite nitrogen	T				
Total alpha radiation in pCi/l	W, T B				B, T
Total beta radiation in pCi/l	W, T B				B, T
Total uranium in pCi/l	T, W B				* B T
Total radium in pCi/l (or Ra 226 + Ra 228),	T, W B				* B T
Total thorium in pCi/l	T, W, B				* B T

pCi/g " " "

* ADD stupt requirements to

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: 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 <Chuck.McCracken@odh.ohio.gov> 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.
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Thanks,

Charles D. McCracken

Supervisor, Bureau of Radiation Protection
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Ph: 614.466.5136
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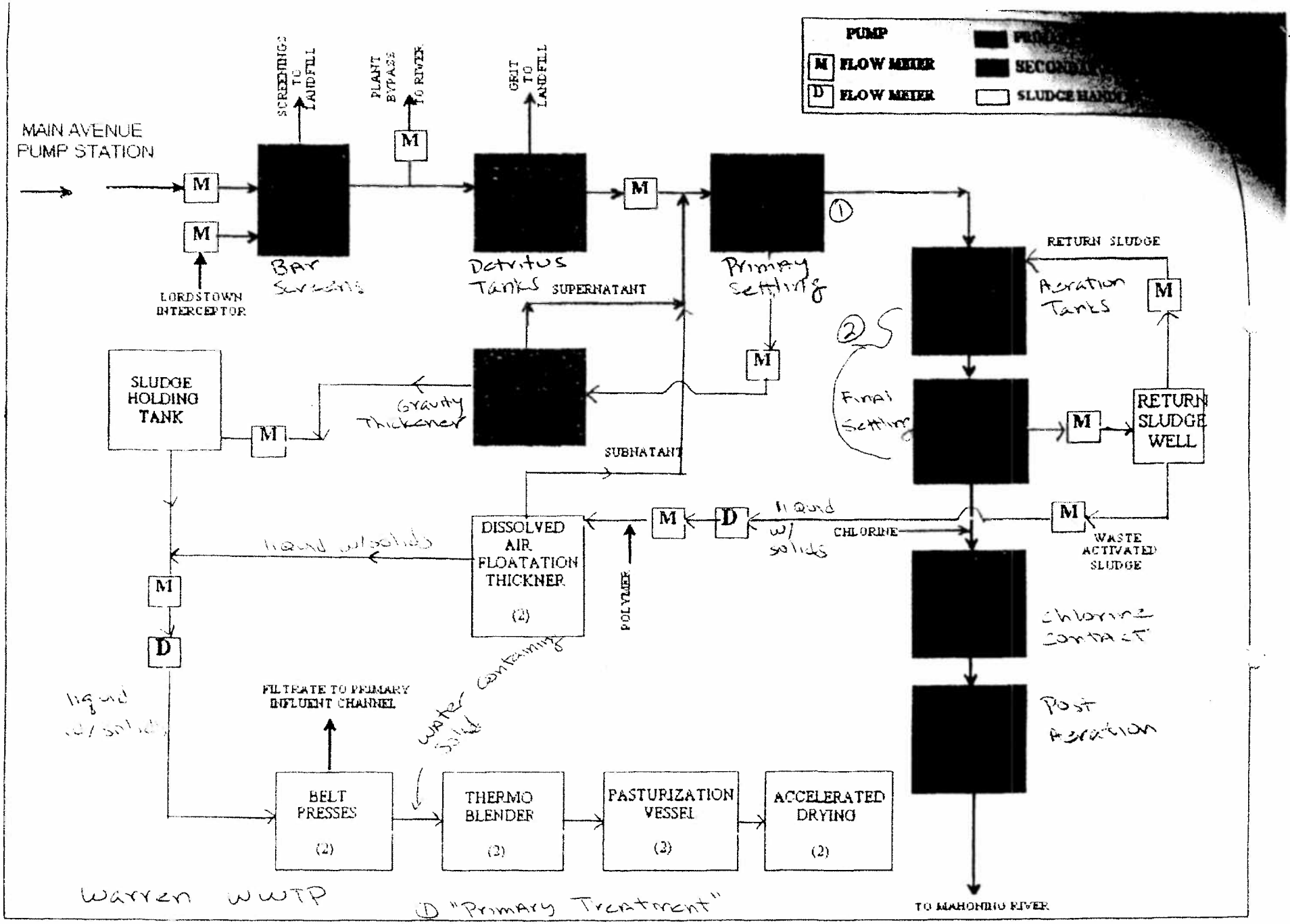

Warren WWTP

① "Primary Treatment"

② "Secondary Treatment"

McCracken, Chuck

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
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Ph: 614.466.5136
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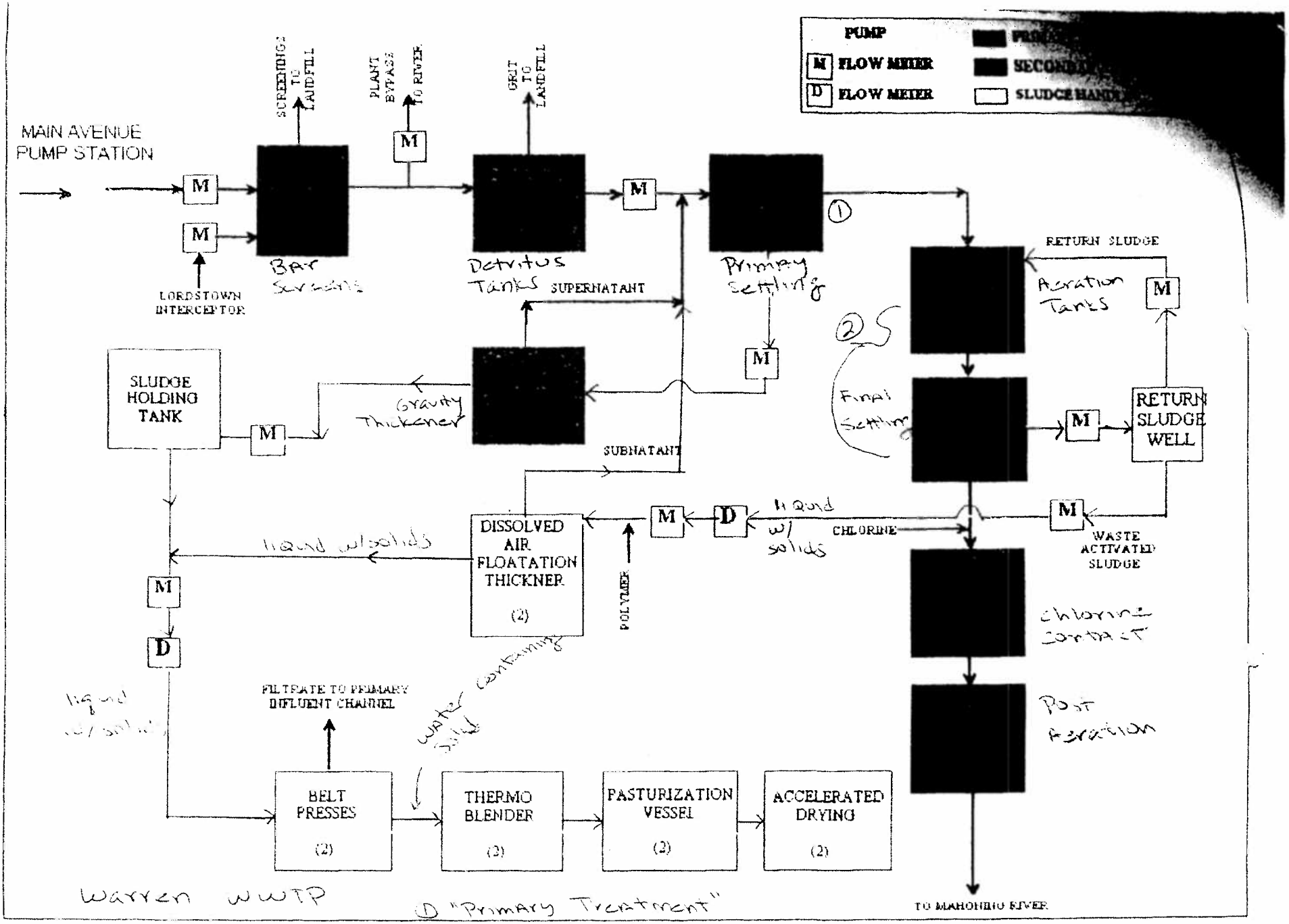

Warren WWTP

① "Primary Treatment"

② "Secondary Treatment"

McCracken, Chuck

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

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Ohio Department of Health
Ph: 614.466.5136
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McCracken, Chuck

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
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From: Chuck McCracken
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(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 (twenty-five 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:	119.03
Statutory Authority:	3748.02
Rule Amplifies:	3748.04
Prior Effective Dates:	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

Ted Strickland, Governor

Alvin D. Jackson, M.D., Director of Health

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 cepm 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		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, 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	
pH	W	W	W	W	
HEM oil and grease	T	T	T	T	
SGT-HEM oil and grease	T	T	T	T	
Metals[2]	T				B, T[6]
Barium, Strontium[8]	W	W			
Low level mercury	T				
Hexavalent chromium	T				
Volatile organic compounds	T				
Base neutral organic compounds	T				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
$CBOD_5$	T				
COD	T				
total organic carbon (TOC)	T				
Total nitrogen	T				
Ammonia-nitrogen	T				
Nitrate/nitrite nitrogen	T				
Total alpha radiation in pCi/l	W, T B				B, T
Total beta radiation in pCi/l	W, T B				B, T
Total uranium in pCi/l	T, W, B				~~B~~ B T
Total radium in pCi/l (or Ra 226 + Ra 228),	T, W, B				~~B~~ B T
Total thorium in pCi/l	T, W, B				~~B~~ B T

pCi/g " " "

* ADD to study requirements

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: Robert Leidy
Sent: Thursday, March 18, 2010 2:51 PM
To: Stephen Helmer; Chuck McCracken
Cc: 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.

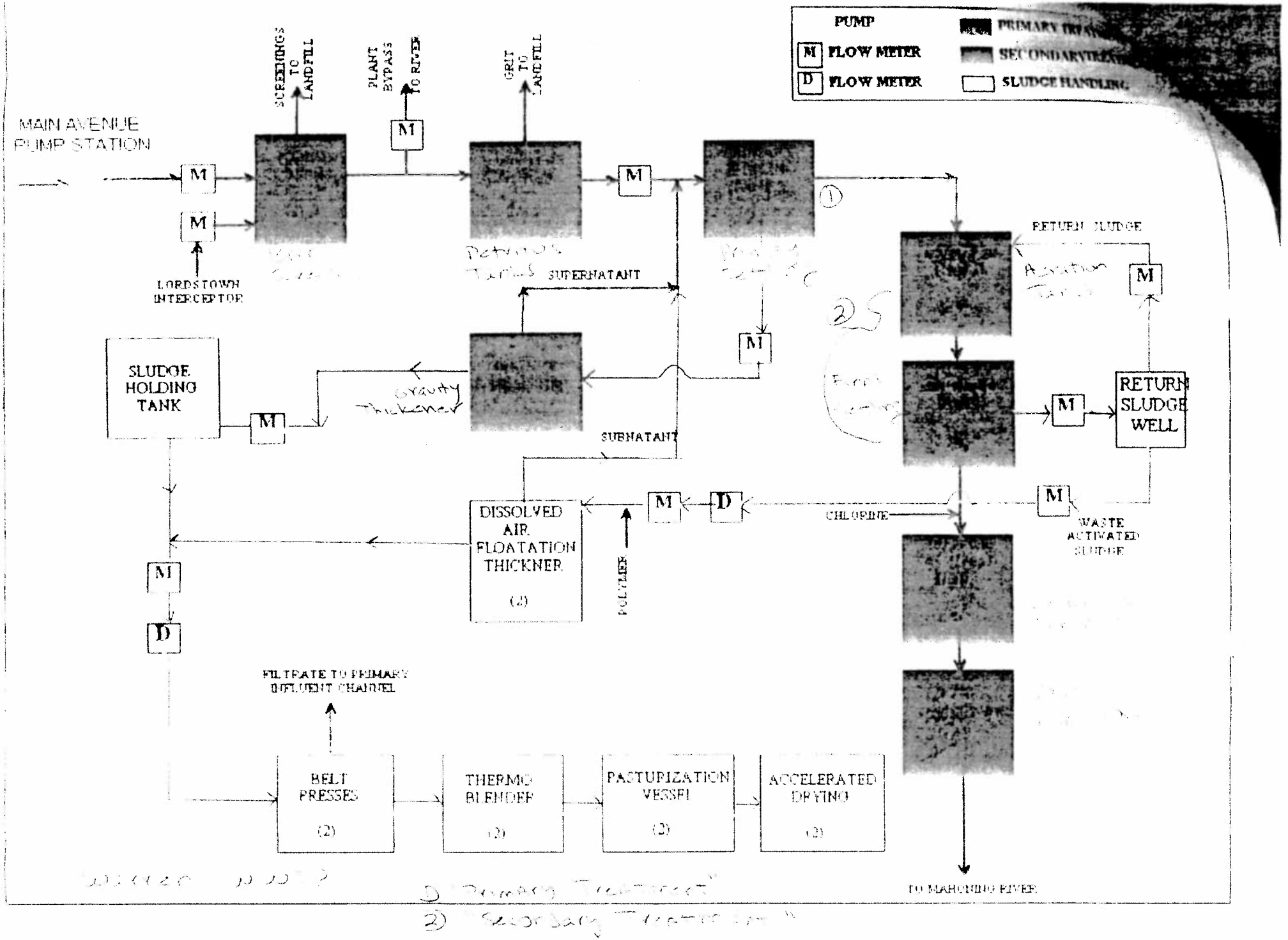
Shipping manifests were very basic with little detail. Only water type such as frack or drill water would be identified along with the load quantity. If shipments were previously surveyed for radioactivity it was not identified on the shipping manifest. They have used several different shippers but to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


PUMP
M FLOW METER
D FLOW METER
PRIMARY TREATMENT
SECONDARY TREATMENT
SLUDGE HANDLING
MAIN AVENUE PUMP STATION
SCREENINGS TO LANDFILL
PLANT BYPASS TO RIVER
GRIT TO LANDFILL
LORDSTOWN INTERCEPTOR
SUPERNATANT
SLUDGE HOLDING TANK
GRAVITY THICKENER
SUBNATANT
DISSOLVED AIR FLOATATION THICKNER (2)
POLYMER
CHLORINE
RETURN SLUDGE
RETURN SLUDGE WELL
WASTE ACTIVATED SLUDGE
FILTRATE TO PRIMARY EFFLUENT CHANNEL
BELT PRESSES (2)
THERMO BLENDER (2)
PASTURIZATION VESSEL (2)
ACCELERATED DRYING (2)
TO MAHONING RIVER

Ohio Department of Health, Division of Prevention
ODH Laboratory Report

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

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

Patriot Water Treatment (CustomerID# water & wat)
7716 Depot Road
Lisbon OH 44432
(330) 353-9421

Received Date: 2/5/2010
Lab Report's Date: 3/4/2010
ODH Lab Order#: R5982

Sample# R5982-01 Collector: Site: Client #: 16021700-01
Collect Date: 2/1/2010 Matrix: Other Radiological

Parameter	Result	Units	Analysis Date	Analyzed By
Gamma Scan	**All other nuclides < LLD**	pCi/L	3/2010	SE Bang
K-40	**2.6E+02 +/- 2.6E+01**	pCi/L	3/2010	SE Bang

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

R5982-01

CHAIN OF CUSTODY FORM

Sample # ____________ Address ____________

Source: ____________ Date Sample Taken ____________ Time Sample Taken ____________

Composite Sample Time Period ____________ Grab: O&G, TOT or Free CN, Phenolics, PH, Hg

Date Grab Taken ____________ Investigator/ Sampler ____________

Date/ Time | Date/ Time

Relinquished By ____________ Accepted By ____________

Relinquished By Jan Vrba 3/16 0900 Accepted By ____________

Relinquished By ____________ Accepted By ____________

Received in Laboratory By: ____________ Analyst ____________

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/l UNLESS OTHERWISE SPECIFIED *

[illegible]	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	[illegible]	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7, 6010B
3		* COD		410.4	1		LEAD		200.7, 6010B
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		PH		150.1
2		* FREE CN		4500CN	4		HEX CHROMIUM		3500C/B
1		MERCURY		1631, 245.1, 7471A	1		MOLYBDENUM		200.7, 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
1		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
1		* PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B

PRESERVATIVES: NITRIC ACID - 1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED - 4

Number of sample bottles used on this Chain Of Custody 1

COMMENTS: K-40 2.6E+02 +/- 1.6E+01 pCi/g Gamma [illegible] CLCD 3/4/[illegible]

LABORATORY RESULTS 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

On-Line Catalog Similar Products

SURFACE CONTAMINATION MONITOR

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

CE

CE

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 pancake 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 to100 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.

T A TECHNICAL ASSOCIATES
7051 ETON AVENUE * CANOGA PARK, CA 91303
TELEPHONE (818) 883-7043 * FAX(818) 883-6103
e-mail: tagroup@pacbell.net www.tech-associates.com

SURFACE CONTAMINATION MONITOR

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

SPECIFICATIONS:

- **Meter:**
  TBM-3: 2-1/2" Rectangle

TBM-3S & TBM-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:**
  TBM-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/cm^2.
- **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

* Option c/s, μ Sv/hr meter scale (SI Units).

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

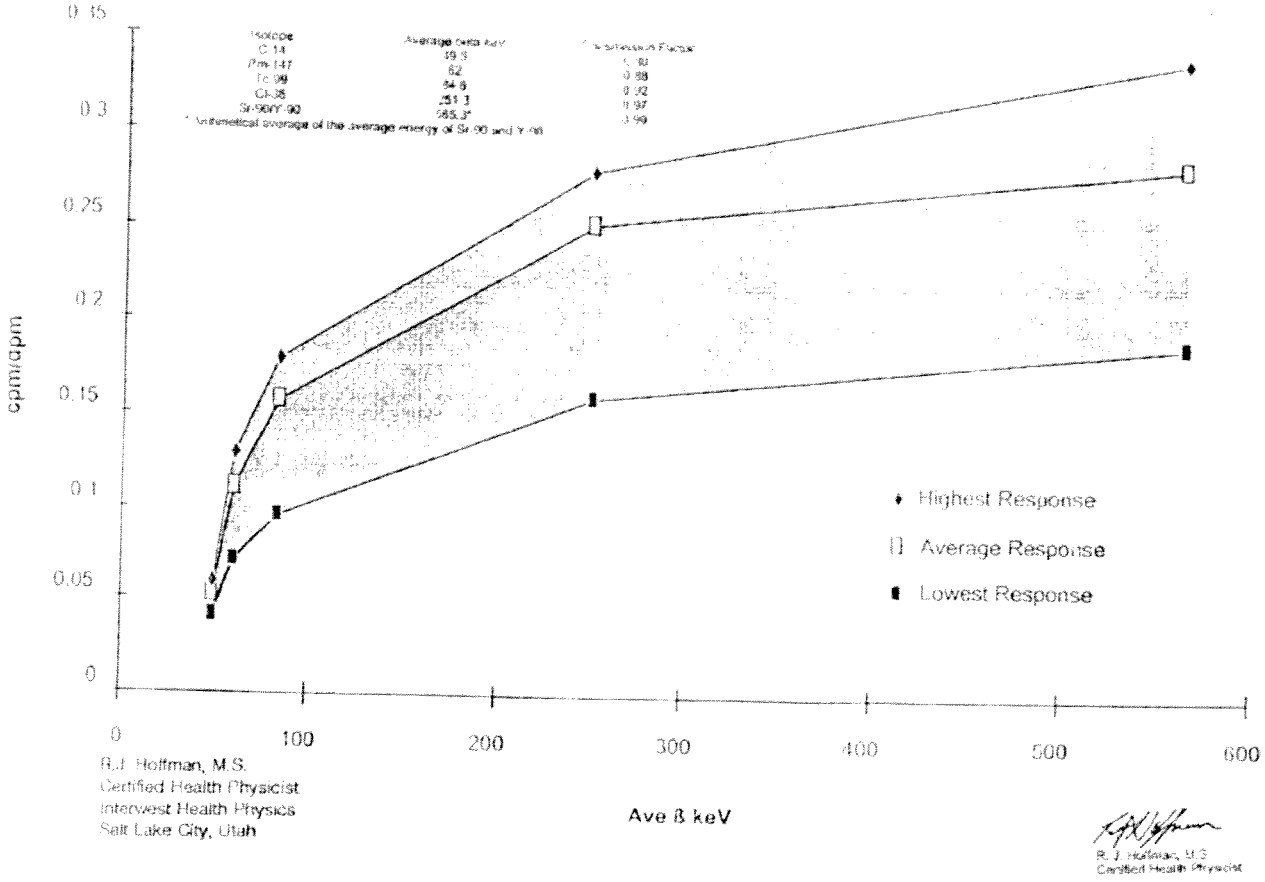
Fire Fighters: TBM-3SR is available with the Background x 10 meter, replacing the mR/hour or a single Counts Per Minute Scale or mR/hr Scale. (Upon Request)

T
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

Average Beta Pancake
Response for
TBM-3S or TBM-6SP



R.J. Hoffman, M.S.
Certified Health Physicist
Interwest Health Physics
Salt Lake City, Utah

R. J. Hoffman, M.S.
Certified Health Physicist

TA TECHNICAL ASSOCIATES

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e-mail: tagold@nwc.net www.tech-associates.com

On-Line Catalog Similar Products

McCracken, Chuck

From: Robert Leidy
Sent: Friday, March 19, 2010 2:19 PM
To: Chuck McCracken
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, 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	
pH	W	W	W	W	
HEM oil and grease	T	T	T	T	
SGT-HEM oil and grease	T	T	T	T	
Metals[2]	T				B, T[6]
Barium, Strontium[8]	W	W			
Low level mercury	T				
Hexavalent chromium	T				
Volatile organic compounds	T				
Base neutral organic compounds	T				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
$CBOD_5$	T				
COD	T				
total organic carbon (TOC)	T				
Total nitrogen	T				
Ammonia-nitrogen	T				
Nitrate/nitrite nitrogen	T				
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[7]				A[7]
Total radium in pCi/l (or Ra 226 + Ra 228),	T, A[7]				A[7]
Total thorium in pCi/l	T, A[7]				A[7]

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 <Chuck.McCracken@odh.ohio.gov> 7/2/2010 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

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

PBT brine rad data 1 of 2

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
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
Order Number 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 WASTEWATER**							
Date Sampled: 1/12/2010				**Time Sampled: 9:45 am**			
.....continued							
pH -Exceeds 15Min Hold Time	SM 4500-H+ B	8.6	Units	1/14/2010	14:30	DS	⌘ ◆
Solids, Dissolved	SM 2540 C	118000	mg/L	1/14/2010	16:00	DS	⌘ ◆
Solids, Suspended	SM 2540 D	<10	mg/L	1/15/2010	10:30	DS	⌘ ◆
BOD5	SM 5210 B	360	mg/L	1/13/2010	14:37	MAB	⌘ ◆
Chloride	SM 4500-Cl-E (Discrete)	101000	mg/L	1/15/2010	12:29	CAP	⌘ ◆
Sulfate	SM 4500-SO4 D	9	mg/L	1/15/2010	15:30	DS	⌘ ◆
Alkalinity As CaCO3	SM 2320 B	110	mg/L	1/26/2010	10:10	BJJ	⌘ ◆
Fluoride,Direct	SM 4500-F C	<1.0	mg/L	1/25/2010	11:05	CP	
009 **GAS WELL WASTEWATER**							
Date Sampled: 1/12/2010				**Time Sampled: 9:45 am**			
Phosphorus,Total	EPA 365.1(DISCRETE)	<0.1	mg/L	1/26/2010	16:33	BJJ	⌘ ◆
COD	HACH 8000	1060	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	⌘ ◆
Nitrogen, Nitrate + Nitrite	EPA 1979 353.2(DISCRETE	<1	mg/L	1/13/2010	16:40	CAP	⌘
010 **GAS WELL WASTEWATER**							
Date Sampled: 1/12/2010				**Time Sampled: 9:45 am**			
TOC (Total Organic Carbon)	SM 5310 C	218	mg/L	1/15/2010		OST	
011 **GAS WELL WASTEWATER**							
Date Sampled: 1/12/2010				**Time Sampled: 9:45 am**			
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	

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

2 of 2

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
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
Order Number 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.
011 **GAS WELL WASTEWATER**							
Date Sampled: 1/12/2010				**Time Sampled: 9:45 am**			
.....continued							
Radium 228	EPA 904.0	-0.021+/-0.397	pCi/L	1/21/2010	9:49	OST	
Thorium		see below	pCi/L	1/23/2010	9:49	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:

MG/KG	= Milligram per Kilogram (PPM)	Negative	= Bacteria or target analyte not detected
UG/L	= Micrograms per Liter (PPB)	CFU	= Colony Forming Unit
UG/KG	= Micrograms per Kilogram (PPB)	ND	= Not detected at or below the reporting limit
MG/L	= Milligrams per Liter (PPM)	TIC	= Tentatively Identified Compound
1000 UG	= 1 MG	"<"	= less than (also see "ND")
Positive	= Bacteria or target analyte detected	">"	= Greater than

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

1-3

ATTACHMENT B

Eureka Resources, LLC
DEP 11-25-09 RESPONSES

Attachment B

6663-001 / COL

MALCOLM PIRNIE

Table B-1

SUMMARY OF LAB RESULTS OF RADIONUCLIDE IN UNTREATED WATER

Eureka Resources, LLC., Williamsport, PA

POLLUTANT	Result	Uncertainty	Total
	pCi/L		
VARGENSON UNTREATED FLOWBACK			
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 Untreated Vargenson Flowback			
Gross Alpha	182.8	± 82.98	265.78
Gross Beta	117.4	± 33.50	150.9
OGONTZ 3H- PIT WATER/UNTREATED			
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
Pi1 8 Flowbark Composite			
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 MIDDLE			
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
Thorium-232	0.123	± 0.172	0.30
		MAXIMUM Gross Alpha	**12,859**
		MAXIMUM Gross Beta	**3,689**
		MAXIMUM Radium 226	**695.92**
		MAXIMUM Radium 228	**70.71**
		MAXIMUM Total Uranium	**0.91**
		MAXIMUM Thorium 228	**2.44**
		MAXIMUM Thorium 230	**0.85**
		MAXIMUM Thorium 232	**0.30**

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

Radionuclide	Concentration		
	Liquid (10^{-12} x Ci/l)[1]	Liquid (Ci/m^3)	Air (Ci/m^3)[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 E-05 Ci/m^3 x 10-3 = 1.29E-08 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

Ohio Department of Health, Division of Prevention
ODH Laboratory Report

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: 2/25/2010
This Report's Date: 4/27/2010
ODH-Lab Order#: R5981

Sample# R5981-01 Collector: Site: Client #
Collect Date: 2/12/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	3/29/2010	K. Grandfield
Beta	**9.2 +/- 4.3**	pCi/L	4/26/2010	K. Grandfield

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

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 Method#
Total Alpha, 222
Total Beta, 185
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 Treatment
Project #:
Site Address: 7716 Depot Road
Lisbon, Ohio 44432
Project Name:

Analysis / Preservative: Plastic - Unpres; TDS, Cl, pH, Cond

Water & Wastewater Laboratories, Inc.
2770 Rockefeller Avenue
Cleveland, Ohio 44115
Phone (216)696-0280
Fax (216)696-6831

Sample Date	Sample Time	Comp.	Grab	Sample Location/site ID	Number of Containers	Analysis / Preservative	Sample Comments	Lab #
					1		(W - list)	R5981-01

R5981-01 alpha < 3 pCi/L 03/29/10 KG
beta = 9.2 ± 4.3 pCi/L 04/26/10 KG

Sampler(s) [print name(s)-sign below]:

Relinquished by	Date/Time	Received by
Relinquished by: *(sampler signature)*	Date/Time:	Received by: *(signature or shipper)*
Relinquished by: *(signature)*	Date/Time:	Received by: *(signature or shipper)*
Relinquished by: *(signature)*	Date/Time:	Received by: *(signature or shipper)*
Relinquished by: *(signature)*	Date/Time:	Received by: *(signature or shipper)*

Report to: **Andy Blocksom**
Patriot Water Treatment
7716 Depot Road
Lisbon, Ohio 44432
Phone:
Fax:

P.O.#: Verbal-Andy
Bill to: Patriot Water Treatment
7716 Depot Road
Lisbon, Ohio 44432

Ohio Department of Health, Division of Prevention
ODH Laboratory Report

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: 4/27/2010
ODH-Lab Order#: 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**	pCi/L	3/29/2010	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	3/24/2010	K. Grandfield
U-Natural	**<1**	pCi/L	4/5/2010	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

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

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

Sample Chain of Custody Record

Site Name: Patriot Water Treatment
Site Address: 7716 Depot Road, Lisbon, Ohio 44432
Project #: (n/a)
Project Name:

Sample Date	Sample Time	Comp.	Grab	Sample Location/site ID	Number of Containers	Analysis / Preservative: Total Uranium (pCi/L)	Total Radium 226 (pCi/L)	Total Radium 228 (pCi/L)	Total Alpha Radiation (pCi/L)	Total Beta Radiation (pCi/L)	Sample Comments	Lab #
						X	X	X	X	X		R5993-01

R5993-01 Gross-Alpha <3 pCi/L 03/29/11a KG
Gross+Beta <4 pCi/L 04/26/11a KG
Ra-228 <1 pCi/L 03/24/11c KG
Ra-226 <1 pCi/L 3/3c/11c SC
U-Nat <1 pCi/L 4/5/10 SC

Water & Wastewater Laboratories, Inc.
2779 Rockefeller Avenue
Cleveland, Ohio 44115
Phone (216)696-0280
Fax (216)696-6831

Phone: 614-644-4658
Attn: John
Ohio Department of Health
Building 22
8995 E. Main Street
Reynoldsburg, Ohio 43068

Sampler(s) [print name(s)-sign below]

Relinquished by: *(sampler signature)*	Date/Time:	Received by: *(signature or shipper)*
Relinquished by: *(signature)*	Date/Time:	Received by: *(signature or shipper)*
Relinquished by: *(signature)*	Date/Time:	Received by: *(signature or shipper)*
Relinquished by: *(signature)*	Date/Time:	Received by: *(signature or shipper)*

Report to: **Andy Blocksom**
Patriot Water Treatment
7716 Depot Road
Lisbon, Ohio 44432
Phone:
Fax:

P.O.#: Verbal-Andy
Bill to: Patriot Water Treatment
7716 Depot Road
Lisbon, Ohio 44432

CITY OF WARREN, OHIO
WATER POLLUTION CONTROL DEPARTMENT

~~2320 YOUNG AVE. S.W. WARREN, OHIO 44481~~
~~PHONE 330-841-2504~~

CHAIN OF CUSTODY FORM

Sample # _____ Address _____ R5993-01

Source Final Date Sample Taken 3/9/10 Time Sample Taken 0900

Composite Sample Time Period _____ Grab Cr+6, O&G, TOT or Free CN, Phenolics, PH, Hg

Date Grab Taken 3/9/10 Investigator/ Sampler Warren Blackburn

	Date/ Time		Date/ Time
Relinquished By	Warren Blackburn 3/9/10	Accepted By	
Relinquished By		Accepted By	
Relinquished By		Accepted By	
Received in Laboratory By	S Chung 3/10/10 0900	Analyst	

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/l UNLESS OTHERWISE SPECIFIED *

	SELECTED	PARAMETER	RESULT	EPA TEST METHOD		SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7 6010B
3		* COD		410.4	1		LEAD		200.7 6010B
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		PH		150.1
2		* FREE CN		4500CN	4		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
3		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		* PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B
	✓	Total Alk				✓	Total Fe		
	✓	Total Cond				✓	Total Mn		
	✓	Total Cl							

PRESERVATIVES NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED -4

Number of sample bottles used on this Chain Of Custody 2

COMMENTS: _____

LABORATORY RESULTS 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, Division of Prevention
ODH Laboratory Report

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: 3/15/2010
This Report's Date: 4/27/2010
ODH-Lab Order#: R5999

Sample# R5999-01 Collector: Andy Blocks Site: Final Client # 1003120052
Collect Date: 3/12/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	3/29/2010	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	3/24/2010	K Grandfield
U-Natural	**<1**	pCi/L	4/5/2010	SChung

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

Attn: Andy Blocksom
Patriot Water Treatment
7716 Depot Road
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OEPA Analyst #'s
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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. S.W. WARREN, OHIO 44481~~
~~PHONE 330-841-2591~~

CHAIN OF CUSTODY FORM

R5999-01

Sample # _____ Address _____

Source _____ Date Sample Taken _____ Time Sample Taken _____

Composite Sample Time Period _____ Grab Cr+6, O&G, TOT or Free CN, Phenolics, PH, Hg

Date Grab Taken _____ Investigator/ Sampler _____

	Date/ Time		Date/ Time
Relinquished By	Andrew Blackburn	Accepted By	S. Chung 3/15/10 15:30
Relinquished By		Accepted By	
Relinquished By		Accepted By	
Received in Laboratory By		Analyst	

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/L UNLESS OTHERWISE SPECIFIED *

PRESERVATION	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	PRESERVATION	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7 6010B
3		* COD		410.4	1		LEAD		200.7 6010B
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		PH		150.1
2		* FREE CN		4500CNI	4		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
3		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		* PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B
	✓	[illegible]	<3 pCi/L 03/29/10 KG			✓	[illegible]	Ra-228 <1 pCi/L 03/29/10 KG	
	✓	[illegible]	<4 pCi/L 04/26/10 KG			✓	[illegible]	Ra-226 <1 pCi/L 3/30/10 SC	
	✓	[illegible]	<1 pCi/L 4/5/10 SC						

PRESERVATIVES NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED -4

Number of sample bottles used on this Chain Of Custody _____

COMMENTS: _____

LABORATORY RESULTS 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, Division of Prevention
ODH Laboratory Report

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: 3/30/2010
This Report's Date: 6/7/2010
ODH-Lab Order#: R6011

Sample# R6011-01 Collector: Site: Client # 1003190054
Collect Date: 3/19/2010 Matrix: Water

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 # 1003260064
Collect Date: 3/26/2010 Matrix: Water

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
Ra-228	**1.08 +/- 1.00**	pCi/L	5/12/2010	K_Grandfield
U-Natural	**<1**	pCi/L	4/15/2010	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

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

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~~

Bill to [illegible]

CHAIN OF COUSTODY FORM

~~[illegible]~~ R6011_01

Sample #: 100319[illegible] Address: ______

Source: Final Date Sample Taken: 3-19-10 Time Sample Taken: 0800

Composite Sample Time Period: —— Grab: Cr+6, O&G, TOT or Free CN, Phenolics, PH, Hc

Date Grab Taken: 3-19-10 Investigator/ Sampler: Andy Blocksom

		Date/ Time			Date/ Time
Relinquished By:	x Andy Blocksom		Accepted By:	x S. Chung	3/30/10 16[illegible]
Relinquished By:	x		Accepted By:	x	
Relinquished By:			Accepted By:		
Received in Laboratory By:	S. Chung		Analyst		

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/L UNLESS OTHERWISE SPECIFIED *

PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7 6010B
3		* COD		410.4	1		LEAD		200.7 6010B
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	✓	~~[illegible]~~ Strontium		150.1 DL 5 ug/L
2		* FREE CN		4500CNI	4		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
3		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		* PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B
	✓	Total Alpha	<3 pCi/L	05/03/10 KG		✓	Total Radium		
	✓	Total Beta	2.9 pCi/L	05/03/10 KG		✓	Total Thorium		
	✓	Total U	<1 pCi/L	4/15/10 SC		✓	Barium		DL 50 ug/L

PRESERVATIVES: NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED -4

Ra-228 <1 pCi/L 05/12/10 KG

Number of sample bottles used on this Chain Of Custody ______ Ra-226 <1 pCi/L 05/25/10 KG

COMMENTS: ______

LABORATORY RESULTS 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

CITY OF WARREN, OHIO
WATER POLLUTION CONTROL DEPARTMENT

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

CHAIN OF CUSTODY FORM R6011-02

Sample # [illegible] Address: _____

Source [illegible] Date Sample Taken: 3-26-10 Time Sample Taken: _____

Composite Sample Time Period: ~~24hr~~ 2200 Grab Cr+6, O&G, TOT or Free CN, Phenolics, PH, Hg

Date Grab Taken: 3-26-10 Investigator/ Sampler: Andy Wacksman

	Date/ Time		Date/ Time
Relinquished By: [illegible]		Accepted By: S. Chmg	3/30/10 16[illegible]
Relinquished By: _____		Accepted By: _____	
Relinquished By: _____		Accepted By: _____	
Received in Laboratory By: S. Chmg		Analyst: _____	

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/l UNLESS OTHERWISE SPECIFIED *

PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7 6010B
3		* COD		410.4	1		LEAD		200.7 6010B
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		PH		150.1
2		* FREE CN		4500CN[illegible]	4		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
3		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		* PHOSPHORUS		6010A 4500PE	1	✓	~~ALUMINUM~~ STRONTIUM		200.7 6010B
	✓	TOTAL ALPHA 4.3pCi/L		05/03/10 KG	✓		TOTAL BARIUM		
	✓	TOTAL BETA EA ± 2.5pCi/L		05/03/10 KG	✓		TOTAL THORIUM		
	✓	TOTAL U 1.1pCi/L		4/15/10 SC	✓		BARIUM		

PRESERVATIVES NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED -4

Number of sample bottles used on this Chain Of Custody 4

Ra 228 = 1.08 ± 1.00 pCi/L 05/12/10 KG

COMMENTS: Lu-176 41 pCi/L 05/25/10 KG

LABORATORY RESULTS 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, Division of Prevention
ODH Laboratory Report

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 Collector: Andy Blocks Site: Client # 1004020075
Collect Date: 4/2/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	5/3/2010	K_Grandfield
Beta	**<4**	pCi/L	5/3/2010	K_Grandfield
Ra-226	**<1**	pCi/L	6/3/2010	K_Grandfield
Ra-228	**2.14 +/- 0.79**	pCi/L	5/28/2010	K_Grandfield
U-Natural	**<1**	pCi/L	4/15/2010	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

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

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

Sample # 10040200[illegible] Address ____

Source Final Date Sample Taken 4-5-10 Time Sample Taken 0800

Composite Sample Time Period: ____ Grab: Cr+6, O&G, TOT or Free CN, Phenolics, PH, H

Date Grab Taken 0800 Investigator/ Sampler Andy B.

	Date/ Time		Date/ Time
Relinquished By: Andy Blackburn		Accepted By: Sang Chung	4/6/10
Relinquished By:		Accepted By:	
Relinquished By:		Accepted By:	
Received in Laboratory By:		Analyst:	

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/l UNLESS OTHERWISE SPECIFIED *

PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7 6010B
3		* COD		410.4	1		LEAD		200.7 6010B
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		PH		150.1
2		* FREE CN		4500CNF	4		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
3		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		* PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B
	✓	Total Alpha	<3 pCi/L 05/03/10 KG			✓	Barium		
	✓	Total Beta	<4 pCi/L 05/03/10 KG			✓	Strontium		
	✓	Total U	<1 pCi/L 4/15/10 SC			✓ ✓	Total Radium Ra-226 / Total Radium Ra-228		

PRESERVATIVES NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED -4

Number of sample bottles used on this Chain Of Custody 2

COMMENTS: Ra-226 <1 pCi/L 06/03/10 KG Ra-228 2.14 ± 0.79 pCi/L 05/28/10 KG

LABORATORY RESULTS 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, Division of Prevention
ODH Laboratory Report

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 Site: Final Client # 1004090085
Collect Date: 4/9/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	5/3/2010	K_Grandfield
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/

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 Method#
Total Alpha, 222
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. S.W WARREN, OHIO 44481
PHONE 330-841-2591

CHAIN OF CUSTODY FORM

Sample # 1004090085 Address:

Source Final Effluent-WWTP Date Sample Taken 04-09-10 Time Sample Taken 0900am CD

Composite Sample Time Period: Grab: Cr+6, O&G, TOT. or Free CN, Phenolics, PH, Hg

Date Grab Taken: 0900 on CD Investigator/ Sampler: Tonya Kuzma

		Date/ Time			Date/ Time
Relinquished By:	Tonya Kuzma	4-9-10	Accepted By:	K Dudley	4/9/10 11:[illegible]
Relinquished By:	K Dudley	4-9-10	Accepted By:		
Relinquished By:			Accepted By		
Received in Laboratory By:		4/13/2010	Analyst:		

PLEASE CHECK PARAMETERS FOR ANALYSIS
RESULTS IN ug/l UNLESS OTHERWISE SPECIFIED *

PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD	PRESERVATIVE	SELECTED	PARAMETER	RESULT	EPA TEST METHOD
3		* NH3-N		350.2	1		SILVER		200.7
3		* TKN		351.3	1		ARSENIC		200.7 6010B
3		* COD		410.4	1		LEAD		200.7 6010B
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		PH		150.1
2		* FREE CN		4500CNI	4		HEX CHROMIUM		3500CrB
1		MERCURY		1631 245.1 7471A	1		MOLYBDENUM		200.7 6010B
1		NICKEL		200.7 6010A	1		ANTIMONY		200.7 6010B
3		* OIL & GREASE		1664	1		SELENIUM		200.7 6010B
3		* PHOSPHORUS		6010A 4500PE	1		ALUMINUM		200.7 6010B
4	✓	total alpha radiation in pCi/L			< 3 pCi/L 05/03/10 KG				
4	✓	total beta radiation in pCi/L			= 9.0 ± 4.0 pCi/L 05/03/10 KG				

PRESERVATIVES: NITRIC ACID -1, SODIUM HYDROXIDE - 2, SULFURIC ACID - 3, UNPRESERVED -4

Number of sample bottles used on this Chain Of Custody 2

COMMENTS:

LABORATORY RESULTS 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

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, Division of Prevention
ODH Laboratory Report

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: 4/19/2010
This Report's Date: 7/12/2010
ODH-Lab Order#: R6027

Sample# R6027-01 Collector: Andy Blocks Site: Client # final
Collect Date: 4/16/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	5/3/2010	K_Grandfield
Beta	**9.2 +/- 3.3**	pCi/L	5/3/2010	K_Grandfield
Ra-226	**<1**	pCi/L	6/3/2010	K_Grandfield
Ra-228	**<1**	pCi/L	5/28/2010	K_Grandfield

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_Grandfield
Ce-139	**9.30E01 +/- 5.58E00**	pCi/kg	4/23/2010	K_Grandfield
Gamma Scan	**All other nuclides <LLD**	pCi/kg	4/23/2010	K_Grandfield
I-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
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 Shosky, 1407
Sang H Chung, 2934

OEPA Method#
Total Alpha, 222
Total Beta, 165
Radium-226, 159
Radium-228, 183
Radon-222, 223
Tritium, 198
Strontium, 196
Uranium-Nat, 184
Gamma, 207

Sample Chain of Custody Record

Site Name: Patriot Water Treatment / Project #:

Site Address: 7716 Depot Road, Lisbon, Ohio 44432 Project Name:

Sample Date	Sample Time	Comp.	Grab	Sample Location/site ID	Number of Containers	Analysis / Preservative: Total Uranium(pCi/L)	Total Radium 226 (pCi/L)	Total Radium 228 (pCi/L)	Total Alpha Radiation (pCi/L)	Total Beta Radiation (pCi/L)	Nitrogen	Sample Comments	Lab #
4/16/10				FINAL									
4/16/10				Liquid Sludge (0.663 kg)		X	X	X	X	X	X	R6027-01 /	
						X	X	X	X	X	X	R6027-02	

R6027-01 alpha < 3 pCi/L 05/03/10 KG
beta = 9.2 ± 3.3 pCi/L 05/03/10 KG
Ra-228 < 1 pCi/L 05/28/10 KG.
Ra-226 < 1 pCi/L 06/03/10 KG

R6027-02 gamma Ac-228 3.28E^{02} ± 1.02E^{01} pCi/kg
Ce-139 9.30E^{01} ± 5.58E^{00} pCi/kg
I-131 5.95E^{03} ± 1.60E^{02} pCi/kg
K-40 3.17E^{02} ± 3.12E^{01} pCi/kg
All other nuclides < LLD

04/23/10 KG

Field Acidified PH < 2.0

Water & Wastewater Laboratories, Inc.
2779 Rockefeller Avenue
Cleveland, Ohio 44115
Phone:(216)696-0280
Fax:(216)696-6831

Phone: 614-644-4658
Attn: John
Ohio Department of Health
Building 22
8995 E. Main Street
Reynoldsburg, Ohio 43068

Sampler(s) [print name(s)-sign below]:

Relinquished by: *(sampler signature)* — Date/Time: 4-16 1 PM — Received by: *(signature or shipper)*

Relinquished by: *(signature)* — Date/Time: — Received by: *(signature or shipper)* 4/19/10

Relinquished by: *(signature)* — Date/Time: — Received by: *(signature or shipper)* Dan Helberter 6-9-10

Relinquished by: *(signature)* — Date/Time: — Received by: *(signature or shipper)*

Report to: **Andy Blocksom**
Patriot Water Treatment
7716 Depot Road
Lisbon, Ohio 44432
Phone:
Fax:

P.O.#: Verbal-Andy
Bill to: Patriot Water Treatmer
7716 Depot Road
Lisbon, Ohio 44432

PP009
06/09/10
10:41
RU002128

Wisconsin State Laboratory of Hygiene
2601 Agriculture Drive • PO Box 7996
Madison, WI 53707-7996
(800)442-4618 • FAX (608)224-6213
http://www.slh.wisc.edu

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 WI DATCP ID: 105-415

Supplement to test report#: 9321307

WSLH Sample: RU002128

OHIO DEPARTMENT OF HEALTH LABO
8995 E MAIN ST/RADCHEM BLDG 22
REYNOLDSBURG, OH 43068

Bill To
Billing ID: 7324709
Customer ID: 339055
OHIO DEPARTMENT OF HEALTH LABORATORY
8995 E MAIN ST/RADIOCHEM BUILDING 22
REYNOLDSBURG OH 43068

Collection Date: 04/16/2010 13:00:00
Owner:
Unique Well #:
Well Construction:
County:
Driller or Pump Installers License #: KATHERINE GRANDFIELD
Sampling Location: PATRIOT WATER TREATMENT
Sampling Point: PUBLIC DRINKING ENTRY POINT
Sampling information: OHIO SAMPLE # R6027-01
Lat Deg: Min: Long Deg: Min: Method:
Driller:

Collected By:
Well Completion Date:
Account: PP009
Date Received: 06/09/2010 10:41:00
Date Reported: 06/29/2010
Sample Reason: GRAB SAMPLE

Analyses and Results:

Analysis Date 06/30/2010	Lab 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

OK (Alpha) OK (Beta) OK (Ra-228) OK (Gamma) OK (U-Nat)

	sample #	Alpha	Beta	Ra-226	Ra-228	Tritium	Radon	Gamma	Sr-89/90	U-Nat	Other/Comments
1-15	R5956-01	X			X						[redacted]
1-20	R5957-01	X			X						
1-21	R5959-01	X			X						
	R5960-01	X			X						
1/25	R5961-01							X			
	-02							X			
	-03							X			↓
	-04							X			↓
	-05							X			↓
	-06							X			↓
	-07							X			↓
1-27	R5962-01	X	X					X			[redacted]
	R5962-02	X	X					X			
1/30	R5964-01	X	X	X	X	"Refer to		Rob (BRP)"		X	WATER & Waste water LAB * Brine Water
	R5965-01	X	X					X			[redacted]
	-02	X	X					X			
2/2	R5966-01							X			
	R5967-01	X			X						
	-02	X			X						
2/3	R5968-01	X	X					X			
2/4	R5969-01	X	X								
	-02	X	X								
2/9	R5971-01	X	added -02		X						" [redacted]
2/11	R5973-01	X	T=4.4		X						[redacted]
2/17	R5974-01	X			X						

→ very small amount!!

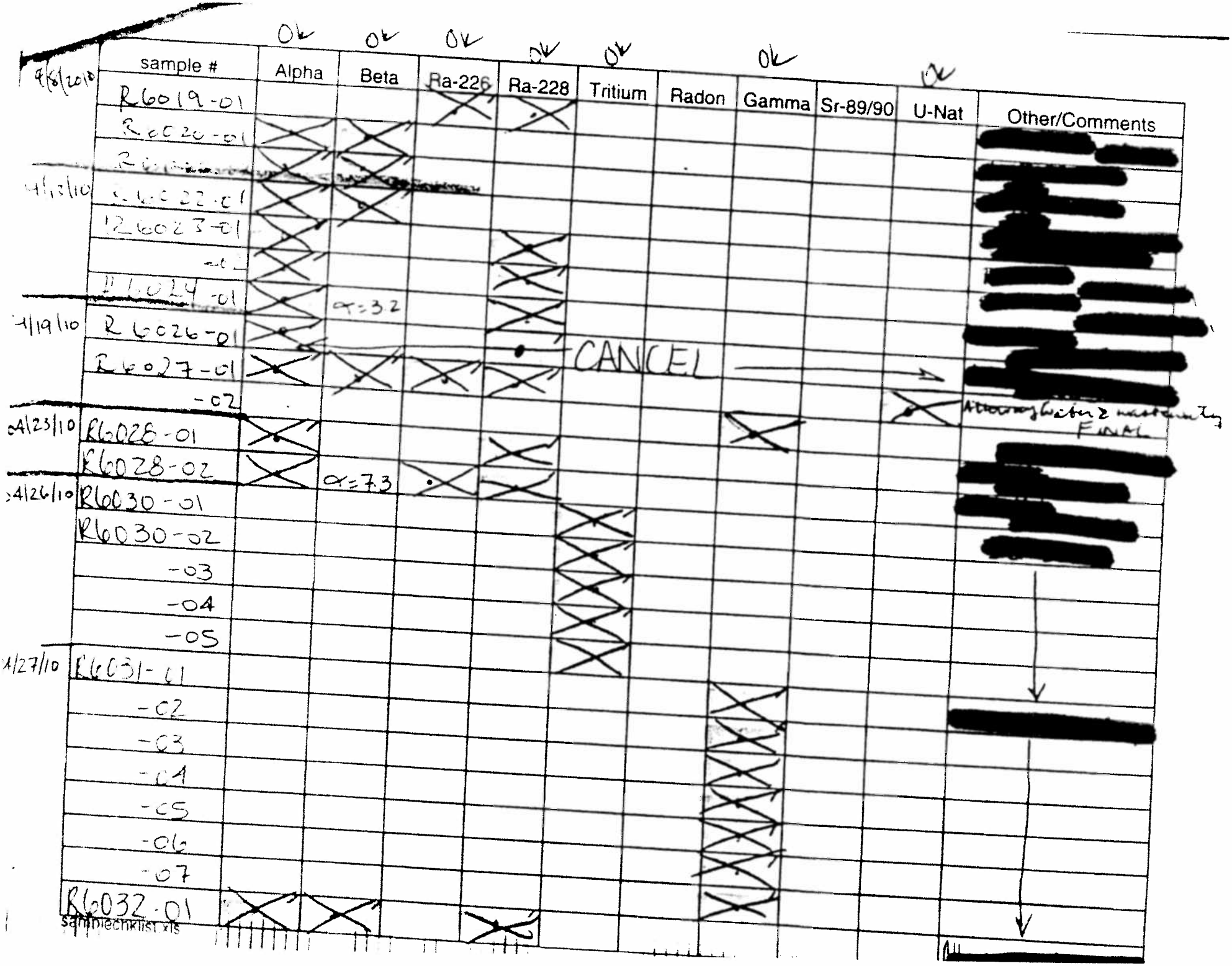
✓

	sample #	Alpha	Beta	Ra-226	Ra-228	Tritium	Radon	Gamma	Sr-89/90	U-Nat	Other/Comments
		OK	OK	OK	OK			OK		OK	
1/23	R5976-01	X			X						[redacted]
2/24	R5977-01	X	X					X			[redacted]
	-02	X	X					X			[redacted]
	R5978-01	X			X						[redacted]
2/25	R5979-01	[illegible]	2/19/10	X	X						[redacted]
	R5980-01	X			X						[redacted]
	-02	X			X						[redacted]
	R5981-01	X	X		Report to Rob (BRP)						Water & Wastewater Treatment * 2/12/10
	R5982-01				Report to Rob (BRP)			X			Water & Wastewater Sludge *
02/26	R5984-01	X	X					X			[redacted]
	~~R5984-02~~	X	X					X			[redacted]
03/02	R5985-01							X			[redacted]
3/3/10	R5986-01	X			X						[redacted]
3/4/10	R5987-01	X	X								[redacted]
	-02	X	X								[redacted]
03/05/10	~~R5989-01~~	X	X					X			[redacted]
3/9/10	R5990-01	X	X								[redacted]
	-02	X	X								[redacted]
	R5991-01	X		X							[redacted]
	-02	X		X							[redacted]
	R5992-01	X		X	X						[redacted]
3/10/10	R5993-01	X	X	X	X	Report to Rob (BRP)				X	Water and wastewater treatment
	R5994-01	X		X	X		Ra-228: 2.54		σ=6.7		[redacted]
3/11/10	R5995-01	X	Added 3/11/10 X		X						[redacted]
	R5996-01	X		X	X		Ra-228: 2.56		σ=9.3		[redacted]

Date	sample #	Alpha	Beta	Ra-226	Ra-228	Tritium	Radon	Gamma	Sr-89/90	U-Nat	Other/Comments
		OK	OK	OK	OK			OK		OK	
3/15/10	R5998-01	X			X						[redacted]
	R5999-01	X	X	X	X						
3/18/10	R6000-01	X		added 3/17	X	Report to	Rob (BRP)			X	Water and Waste water Treatm 1003120052
	-02	X	wait	added 3/31	X	α=8.5					[redacted]
3/24/10	R6002-01	X		X	X	α=8.5		not compliant sample			[redacted]
	R6003-01	X		X	X						[redacted]
3/26/10	R6005-01	X	X					X			[redacted]
	R6005-02	X	X					X			[redacted]
	R6006-01	X			X						[redacted]
3/30/10	R6007-01	X	Added 4/21/10		X						[redacted]
	R6008-01	X			X						[redacted]
	-02	X	α=3.5		X						[redacted]
	R6009-01	X			X						[redacted]
	-02	X			X						[redacted]
	-03	X			X						[redacted]
	R6010-01	X	X					X			[redacted]
	-02	X	X					X			[redacted]
	R6011-01	X	X	X	X	Report to	Rob	(BRP)		X	Water & Waste wat... *
	-02	X	X	X	X	//		(")		X	// *
03/31/10	R6012-01	X	X	X	X						[redacted]
04/01/10	R6013-01	X	X	X	X						[redacted]
	R6014-01	X	X								[redacted]
04/06/10	R6015-01							X			[redacted]
	R6016-01	X			X						[redacted]
	R6017-01	X	X	X	X	Report to	Rob	(BRP)		X	Water & Waste wat... treat 100402[illegible] *

samplechklist.xls

8/3/2008 by S. [illegible]HONG


sample #
Alpha
Beta
Ra-226
Ra-228
Tritium
Radon
Gamma
Sr-89/90
U-Nat
Other/Comments
OK
OK
OK
OK
OK
OK
OK
9/8/2010
R6019-01
R6020-01
4/13/10
R6022-01
R6023-01
-02
R6024-01
α=3.2
4/19/10
R6026-01
R6027-01
CANCEL
-02
4/23/10
R6028-01
R6028-02
α=7.3
4/26/10
R6030-01
R6030-02
-03
-04
-05
4/27/10
R6031-01
-02
-03
-04
-05
-06
-07
R6032-01
FINAL
samplechklist.xls

Ohio Department of Health, Division of Prevention
ODH Laboratory Report

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: Site: Client # Brine Water
Collect Date: 1/27/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	<3	pCi/L	2/12/2010	K_Grandfield
Beta	45.2 +/- 5.1	pCi/L	3/22/2010	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	3/12/2010	SChung

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

Attn: Andy Blocksom
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7716 Depot Road
Lisbon OH 44432

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

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

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Receive Date: 2/25/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: R5981

Sample# R5981-01 Collector: Site: Client #
Collect Date: 2/12/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	3/29/2010	K_Grandfield
Beta	**9.2 +/- 4.3**	pCi/L	4/26/2010	K_Grandfield

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Rita Shesky, 1407
Sang H Chung, 2934

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

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Receive Date: 2/25/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: R5982

Sample# R5982-01 Collector: Site: Client # 1002170030
Collect Date: 2/17/2010 Matrix: Other Radiological

Parameter	Result	Units	Analysis Date	Analyzed by
Gamma Scan	**All other nuclides <LLD**	pCi/L	3/4/2010	SChung
K-40	**2.6E+02 +/- 2.6E+01**	pCi/L	3/4/2010	SChung

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Radon-222, 223
Tritium, 198
Strontium, 196
Uranium-Nat, 184
Gamma, 207

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330-853-9321

Receive Date: 3/10/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: 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	pCi/L	3/29/2010	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	3/24/2010	K_Grandfield
U-Natural	<1	pCi/L	4/5/2010	SChung

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Strontium, 196
Uranium Nat, 184
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Receive Date: 3/15/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: R5999

Sample# R5999-01 Collector: Andy Blocks Site: Final Client # 1003120052
Collect Date: 3/12/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	<3	pCi/L	3/29/2010	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	3/24/2010	K_Grandfield
U-Natural	<1	pCi/L	4/5/2010	SChung

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OEPA Analyst #'s
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Rita Shosky, 1407
Sang H Chung, 2934

OEPA Method#
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Total Beta: 165
Radium-226: 160
Radium-228: 183
Radon-222: 223
Tritium: 198
Strontium: 196
Uranium Nat: 184
Gamma: 207

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Receive Date: 3/30/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: R6011

Sample# R6011-01 Collector: Site: Client # 1003190054
Collect Date: 3/19/2010 Matrix: Water

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 # 1003260064
Collect Date: 3/26/2010 Matrix: Water

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
Ra-228	1.08 +/- 1.00	pCi/L	5/12/2010	K_Grandfield
U-Natural	<1	pCi/L	4/15/2010	SChung

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Lisbon OH 44432

OEPA Analysts:
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Sang H Chung, 2934

OEPA Method#
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Total Beta, 165
Radium-226, 169
Radium-228, 183
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Receive Date: 4/6/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: R6017

Sample# R6017-01 Collector: Andy Blocks Site: Client # 1004020075
Collect Date: 4/2/2010 Matrix: Water

Parameter	Result	Units	Analysis Date	Analyzed by
Alpha	**<3**	pCi/L	5/3/2010	K_Grandfield
Beta	**<4**	pCi/L	5/3/2010	K_Grandfield
Ra-226	**<1**	pCi/L	6/3/2010	K_Grandfield
Ra-228	**2.14 +/- 0.79**	pCi/L	5/28/2010	K_Grandfield
U-Natural	**<1**	pCi/L	4/15/2010	SChung

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Receive Date: 4/19/2010
This Report's Date: 12/19/2011
ODH-Lab Order#: R6027

Sample# R6027-01 Collector: Andy Blocks Site: Client # final
Collect Date: 4/16/2010 Matrix: Water

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

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OEPA Analyst #'s:
Katherine Grandfield 3548
Rita Shosky 1407
Sang H Chung 2566

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