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STATEMENT OF BASIS
FOR
UNDERGROUND INJECTION CONTROL
SECOND CLASS V DRAFT PERMIT
PERMT NUMBER: CO50924-04915

Colorado Division of Wildlife
Foothills Wildlife Health Laboratory
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I. DESCRIPTION OF FACILITY AND BACKGROUND INFORMATION

On June 22, 2001, the Colorado Division of Wildlife (CDOW) office in Fort Collins, Colorado submitted an application to the Environmental Protection Agency (EPA) Region 8 office for an Underground Injection Control (UIC) permit to dispose of sanitary and a minimal volume of laboratory waste fluids into a septic tank/drainfield (septic system) located at the Colorado Division of Wildlife (CDOW) Foothills Wildlife Health Laboratory (WHL), 4330 La Porte Avenue west of Fort Collins, in Larimer County, Colorado.

The WHL septic system serves an office building containing restrooms, shower, laundry room, and two laboratory rooms. The WHL provides general wildlife health research services to the Terrestrial Section of the CDOW. The WHL performs routine necropsies on any wild animal carcass submitted for necropsy for the purpose of monitoring the health of Colorado wild animal populations. Work is not necessarily limited to zoonotic diseases; such diseases comprise only a subset of the wildlife health problems that may be studied. While diseases are among the things evaluated during a necropsy, the WHL does not specifically work with tissues that are infected with rabies, plague, or tularemia in the laboratory. Various specific submissions are screened for West Nile Virus. During hunting season, laboratory staff performs necropsies on animal heads submitted by hunters as part of the Chronic Wasting Disease (CWD) surveillance program. The program determines the extent of CWD in Colorado. When waste streams other than sanitary waste are disposed of in a septic system, the disposal system is considered a Class V Shallow Injection Well and is regulated by the UIC program.

A. First Draft Permit

When CDOW had submitted all required information and data necessary for a complete permit application in accordance with Title 40 of the Code of Federal Regulations (40 CFR) Parts 144, 146, and 147, EPA issued a Draft Permit. Public notice of the Draft Permit was published in the Fort Collins *Coloradoan* on May 9, 2005. The public notice announced the beginning of a public comment period during which time the EPA would receive comments on the Draft Permit. During the public comment period, a public hearing was requested and held on August 16, 2005 at the Fort Collins Public Library located at 201 Peterson Street in Fort Collins. The public notice for the public hearing was published in the Fort Collins *Coloradoan* on July 14, 2005. The public comment period for the Draft Permit period ended on August 31, 2005. Comments received during the public comment period and the public hearing were addressed by EPA in the document entitled "*EPA Region 8 Response to Public Comments on the Colorado Division of Wildlife Foothill Wildlife Health Laboratory UIC Class V Permit*," which accompanies this document in the Administrative Record.

B. Drinking Water Standard Exceedence

In response to a public comment received on the Draft Permit, EPA collected samples of fluid waste from the WHL septic tank on September 12, 2005. The samples were analyzed for total metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) at the EPA Region 8 Laboratory in Golden, Colorado. Analysis of these samples showed that all constituents met Primary Drinking Water Standards (maximum contaminant levels [MCLs]) and

lifetime Health Advisories except for Di (2-ethlyhexyl) phthalate (DEHP). DEHP is a chemical constituent of plastics that makes them more flexible. It is easily leached from plastic materials and is, therefore, a common contaminant in laboratories, including analytical laboratories. To eliminate the possibility that EPA's sampling and laboratory procedures were contributing to the DEHP exceedence in WHL samples, the EPA conducted testing of its own laboratory samples and sample collection procedures. Test results showed that no DEHP was detected in the EPA test samples, therefore, a second set of samples was collected at the WHL facility to confirm the exceedence of DEHP in the waste fluids in the WHL septic tank. The second WHL set of analytical results confirmed the MCL exceedence.

CDOW addressed the MCL exceedence by:

- Immediately ceasing the discharge of waste fluid from the septic tank into the drainfield;
- Having the septic tank pumped;
- Developing a plan to manage waste fluids in the interim while no discharge was going to the drainfield;
- Developing procedures to avoid future exceedences of DEHP in the fluid waste stream entering the septic system;
- Collecting soil samples from beneath the drainfield to be analyzed for DEHP;
- Collecting water samples beneath the drainfield to be analyzed for DEHP to evaluate potential to mobilize DEHP from the soil into groundwater; and
- Collecting water samples beneath the drainfield to analyze for Biological Oxygen Demand (BOD), ammonia, and nitrate to compare with analytical results of samples from septic tank to verify that drainfield microbes are functioning properly.

Waste fluids pumped from the septic tank were stored on site in temporary above-ground storage tanks. Envirosolve, Inc. transported the fluids off site to the Tower Landfill, Inc. in Commerce City, Colorado run by Allied Waste Services of Denver. The waste fluids are placed in a solidification chamber. The resulting solid from this chamber is taken to the landfill area for disposal.

The latest sampling results are included in Appendix A of this Statement of Basis (SOB). The DEHP in soil samples collected beneath the drainfield were below the Colorado Department of Public Health and Environment soil cleanup standard of 34,700 micrograms per kilograms and below the level at which DEPH may leach from soil to groundwater, which is 1,000,000 micrograms per kilograms. EPA has no equivalent standards for DEHP. The analytical results for BOD, ammonia, and nitrate are discussed under Part II, Section A. 3.

To prevent DEHP from entering the septic system in concentrations above the MCL, CDOW has disconnected the plumbing system for the necropsy laboratory from the septic system. The necropsy laboratory plumbing system is now connected to two-1,000 gallon underground storage vaults. The septic system now receives only sanitary waste with a minimal volume of laboratory waste fluid from the office building on site.

C. Second Draft Permit

The waste stream currently discharged into the WHL septic system has changed significantly from that addressed by the first Draft Permit. CDOW updated the permit application by collecting and analyzing fluid samples representative of the waste stream the septic tank is currently receiving. CDOW submitted analytical results for total metals, VOCs, SVOCs, and formaldehyde demonstrating that the current waste stream meets permit limits.

The second Draft Permit is for the disposal of sanitary waste and minimal amounts of laboratory waste fluids into the existing septic system. The waste fluids are then released into the subsurface above the septic or into underlying aquifers. This SOB presents the derivation of the site-specific permit conditions and their rationale.

II. PERMIT REQUIREMENTS

Authorization to inject is issued for 10 years from the effective date of this permit (40 CFR Section 144.36) unless the permit is terminated (see Part III, Section B of the Draft Permit). The permit will expire upon delegation of primary enforcement responsibility for the UIC Program to the State of Colorado. The permit may also be terminated for reasonable cause (40 CFR Section 144.40).

The UIC Program, created under the authority of the Safe Drinking Water Act (SDWA), is a preventive program tasked with protecting existing and future underground sources of drinking water (USDWs). Shallow disposal systems that discharge certain types of fluids into the subsurface are known as Class V wells. These disposal systems consist of subsurface fluid distribution systems defined as an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground (40 CFR Section 144.3). Class V wells with waste streams containing constituents with Primary Drinking Water Standard or Health Advisories that have the potential to contaminate or degrade groundwater are required to operate under a permit. Permit requirements generally include monitoring the concentrations of contaminants of concern in waste fluids being released into the subsurface. The permit may also include Best Management Practices (BMP) designed to restrict or minimize the volume of contaminants released into the subsurface.

In order to demonstrate compliance with permit conditions; analytical results of fluid samples must verify that all the analyzed constituent concentrations are below the values established by permit conditions. The permit conditions have been established using Primary Drinking Water Standards called MCLs for drinking water, Region 8 limits, or Health Advisories to prevent contamination of underground sources of drinking water. These constituents are included in Appendix A of this SOB.

A. Contaminants of Concern

1. ***Potentially Chronic Wasting Disease (CWD)-contaminated wastes*****.** The SOB for the first Draft Permit included potentially CWD-contaminated waste as being a contaminant of concern, because during hunting season the WHL laboratory is used to perform necropsies on deer, elk, and moose heads submitted by hunters, as part of the State's Chronic Wasting Disease (CWD) surveillance program. Researchers believe that CWD and other transmissible spongiform encephalopathy (TSE) diseases are caused by prions[1]; self-propagating, protein-based particles lacking genetic material (Prusiner 1982, Prusiner 1993, Aguzzi and Weissman 1997; Prusiner 1997). Potentially CWD-contaminated waste material is considered to be waste derived from: 1) operations processing deer or elk from herds or areas where CWD is known to occur or, 2) research involving infected or exposed animals.

The WHL currently has BMPs in place as part of their Standard Operating Procedures (SOPs) for handling and disposing of potentially CWD-contaminated tissues and fluids. The BMPs minimize the potential for untreated prions to enter the septic system in necropsy laboratory waste fluids. These BMPs resulted in the generation of a large volume of waste fluids entering the septic system from the necropsy laboratory. The waste fluids contain chemicals that have the potential to kill the microbes in the septic system that treat the sanitary waste. Now that the necropsy laboratory sink and floor drains are no longer connected to the septic system, these waste fluids are no longer entering the septic system and potentially CWD-contaminated wastes are no longer a concern for this permit action. For a more detailed discussion of potentially CWD-contaminated waste refer to the SOB for the first Draft Permit.

2. ***Chemical contaminants.*** Permit limits are established for any contaminant with an MCL under the SDWA and for any contaminant for which a Health Advisory value has been assigned. Although a permittee is required by UIC regulations to meet all established MCLs and Health Advisories, a UIC permit generally requires sampling and analysis for only the constituents of concern present in the waste stream entering the permitted disposal system. Constituents that have an MCL or Health Advisory and are present, or have been present, in detectible concentrations in the waste stream are considered to be the chemical contaminants of concern for the purposes of this permit.

EPA collected fluid samples from the septic tank at WHL when it was still receiving necropsy laboratory waste fluids. The samples were analyzed for total metals, VOCs, and SVOCs. Appendix A, Table 1 lists the constituents with permit limits detected in the necropsy laboratory fluid waste stream collected by EPA. Tables 2 through 6 show analytical results of

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[1]Prions are abnormal, disease-causing forms of normal proteins that are naturally produced in mammalian cells. The normal form of the protein is referred to as PrPC (Prion Protein Cellular) or PrPSen (Prion Protein Sensitive). The abnormal, disease-causing forms occur when the normal cellular protein (PrPC) becomes folded in an abnormal way, resulting in resistance to normal cellular breakdown processes. The abnormal form is referred to as PrPRes (Prion Protein Resistant). By definition, a prion is "a small proteinaceous infectious particle which resists deactivation by procedures that modify nucleic acids," and, therefore, throughout the context of this document, the term prion will refer to the abnormal, disease-causing form only.

waste fluids samples collected by CDOW from the WHL septic tank after the necropsy laboratory plumbing system had been disconnected from the septic system.

The WHL uses formaldehyde, which is then stored on site and recycled. No formaldehyde will be placed in any conduit leading to the septic system. CDOW sampling results (Appendix A, Table 2) show that no formaldehyde is detectable in the septic system, therefore, ongoing analysis for formaldehyde is not required under this permit. The permit limit for formaldehyde is 1,000 mg/L. If one gallon of formaldehyde or greater accidentally entered the septic system, the permit limit for formaldehyde in the septic tank would be exceeded. If that unlikely event should occur, WHL will immediately plug the outlet of the septic tank leading to the drainfield, report the incident to EPA, and have the tank pumped.

3. ***Inactivating agents and decontaminating solutions.*** Another concern was the effect of inactivating agents and decontaminating solutions on the septic system. In sufficient concentrations, these constituents can kill septic system microbes. Without a viable population of microbes present in the septic system, it is ineffective for treating the sanitary waste component of the waste stream.

The first Draft Permit required the collection and analysis of fluid samples beneath the drainfield quarterly (every three months) to verify that the ongoing disposal of necropsy laboratory waste fluids was not compromising microbes in the septic system. Because the necropsy laboratory floor drain is now connected to underground storage vaults, the septic system no longer receives these solutions. For this reason, this second Draft Permit does not require ongoing analysis of fluid samples collected beneath the drainfield.

To verify that the septic system has not been affected by previous disposal of inactivating agents and decontaminating solutions, CDOW collected fluid samples beneath the drainfield and analyzed them for BOD, ammonia, and nitrate. The analytical results of samples collected beneath the drainfield were compared to analytical results of fluids collected from the septic system. These analytical results are shown in Appendix A, Table 3.

As waste fluids percolate through a properly functioning drainfield, the BOD will decrease compared to the BOD measured in waste fluids in the septic tank. A properly functioning drainfield will also convert ammonia to nitrate. The decrease in the BOD observed in samples collected beneath the drainfield compared with samples from the septic tank shows that the drainfield is functioning well. Detecting ammonia in the septic tank and only nitrate beneath the drainfield is further confirmation that the drainfield is functioning properly.

4. ***Spills*****.** All accidental spills of constituents not authorized for disposal into the septic system, including formaldehyde, untreated animal tissues, and prion-inactivating agents will be cleaned up with an appropriate absorbent material and disposed of in a manner compliant with federal, state, and local regulations and requirements thus preventing unauthorized contaminants from being discharged into the septic system. The BMPs discussed in the following section provide reference for what constitutes a spill and how spills are to be handled to prevent unauthorized releases of substances into the septic system.

B. Best Management Practices

CDOW has developed SOPs for their laboratories that, for the purposes of this permit, serve as BMPs limiting the type of waste fluids entering the septic system. Two laboratories are located in the CDOW office building and connected to the septic system. These are the General Bench Laboratory and the DNA/PCR laboratory. The SOPs for these two laboratories are included in Appendix B of the Draft Permit.

The second Draft Permit does not authorize the disposal of any waste fluids from the necropsy laboratory in the septic system. The CDOW SOPs authorize the disposal of uncontaminated buffer solutions and approved assay reagents in sink drains connected to the septic system (page 31, B.7.c.i and page 37 C.3.e.ii.3). The SOPs require that decontaminated fluids and used decontamination fluids go to the necropsy laboratory for disposal in the holding tanks (page 25, B.3.e.ii.2 and page 31 B.7.c).

All waste fluids from the necropsy laboratory will be stored in two-1,000 gallon underground storage vaults. The vaults will be pumped periodically. The pumped fluids will be dehydrated by Envirosolve, Inc. Residual solids will be disposed on in a "special" cell at the Tower Landfill in Commerce City, Colorado, operated by Allied Waste Services of Colorado.

III. SAMPLING AND REPORTING OF RESULTS

A. Shallow Injection Well Sampling Program

The permit requires the permittee to collect waste fluid samples at the last accessible location prior to the drainfield, in this case the septic tank. Fluid samples will be collected from the septic tank monthly and analyzed for SVOCs. Every three months fluid samples will be collected from the septic tank and analyzed for total metals and VOCs. The sampling methods utilized must be adequate to provide a representative sample of the waste stream and allow the fluid sample to be analyzed using EPA approved methods. If concentrations of SVOC constituents remain consistent for one year, then the Director may reduce the frequency of sample collection and analysis to quarterly (every three months).

The constituents analyzed as conditions of this permit are based on chemicals of concern that have an MCL or Health Advisory and are present, or have been present, in detectible concentrations in the waste stream. If there is a change in chemicals used at the facility, the Director, at his discretion, may add additional analytes to the list of constituents for which analyses are required as conditions of this permit. Appendix C of the Draft Permit shows the list of analytes, sampling frequency, and permit limits that will be required under this permit.

CDOW will notify EPA in advance of any modifications that might result in changes in chemical components of the fluid waste stream. The Director will review the proposed changes to determine if additional monitoring requirements will be needed.

1. ***Total Metals*****.** Fluid samples were collected from the septic tank and analyzed for total metals. The list of metals and the analytical results are shown in Appendix A, Tables 1 and 4. Fifteen metals with permit limits were present in detectible amounts. None of the concentrations were near the respective permit limit. The permit will require analysis of all detectable metals every three months for one year. If concentrations remain consistent and do not exceed permits for one year, then the Director may eliminate some of the metals with very low concentrations from the list required for ongoing analysis every three months.

2. ***Formaldehyde.*** Formaldehyde has a lifetime Health Advisory of 1 mg/l. This value will be used as the permit limit for formaldehyde concentration in the waste stream entering the septic system. Because there is little chance of formaldehyde entering the septic system, the permit does not require monitoring of formaldehyde.

3. ***Volatile Organic compounds*****.** A fluid sample was collected from the septic tank and analyzed for VOCs in the waste stream both before and after the necropsy laboratory was disconnected from the septic system. The concentrations of detected VOCs with permit limits are shown in Appendix A, Tables 1 and 5. None of the concentrations were near the respective permit limit. The permit will require that a sample from the septic system be analyzed for VOCs using EPA Method 524.2, 8260B or an equivalent method.

4. ***Semivolatile Organic Compounds.*** A fluid sample was collected from the septic tank and analyzed for SVOCs in the waste stream. The concentrations of SVOCs with permit limits are shown in Appendix A, Tables 1 and 6. None of the concentrations were near the respective permit limit except for Di(2-ethylhexyl) phthalate (DEHP), which exceeded the permit limit. After the necropsy laboratory was disconnected from the septic system, CDOW submitted analytical results demonstrating that DEHP was below the analytical method detection limits. The permit will require that a sample from the septic system be collected and analyzed for SVOCs using EPA Method 525.2, 8270C or an equivalent method every month for one year. After one year, the Director may reduce the sampling frequency for SVOCs to quarterly.

B. Reporting of Results

The permittee shall submit monitoring reports that provide sampling information and analytical results. All samples will be sent to a laboratory approved for analysis using drinking water analyses or an equivalent method. The analyzing laboratory will provide a written report of all the results including quality control procedures employed during the handling and analyses of the samples.

1. ***Monthly Reports*****.** Monitoring reports for SVOC analysis will be submitted to EPA monthly. The first sample for SVOC analysis will be collected within 30 days of the effective date of the permit. The report for SVOC analysis will be submitted to the Director no later than four weeks after the samples have been collected

2. ***Quarterly Reports*****.** Monitoring reports for total metals and VOC analysis will be submitted to EPA quarterly (every three months). The first quarterly analyses are due no later than

January 1, 2007, and subsequent reports are due no later than January 1, April 1, July 1, and October 1 of each year.

3. ***Reports after Change in Waste Stream*****.** Within 30 calendar days of any approved modification in waste stream, another fluid sample must be collected from the septic tank, analyzed for the constituents of concern, and the results submitted to the Director within four weeks of sample collection.

IV. AREA HYDROLOGY

A. Conditions at the Drainfield

Two boreholes were drilled at the WHL site to provide geologic information of the immediate area for the construction of the laboratory buildings and the septic system. The drainfield is constructed in silty, clayey sand that extends to a depth of approximately 10 feet below the ground surface. Underlying the 10 feet of unconsolidated material is weathered bedrock of claystone/siltstone. The weathered zone extends to approximately 12.5 feet below the ground surface. No groundwater was encountered during the drilling of the boreholes to a depth of about 19.5 feet below the ground surface.

EPA staff reviewed water table monitoring data, measured quarterly from December 1996 through December 2004, from a well located about 170 feet south and east of the drainfield. During that time period, the highest elevation measured for the groundwater table was 5,188.5 feet. The drainfield connected to the WHL is located at an elevation of approximately 5,195 feet. In the State of Colorado regulations, drainfield design requires four feet between the level of the groundwater table and the base of the drainfield. Based on available information, even during the spring when the groundwater is at its highest level, the groundwater table has not risen to a level less than four feet below the base of the drainfield.

B. Surface Water Features

The Horsetooth Reservoir is located west of the CDOW laboratory facility. Regional flow of groundwater is generally east from of Horsetooth Reservoir as shown in Figure 1, Foothills Department of Wildlife Location Map. The hogback west of the CDOW facility serves as the eastern boundary of Horsetooth Reservoir. From the hogback, the geologic strata dip to the northeast, steeply at the hogback and at a shallower angle where the CDOW laboratory is located. Influenced by the dipping strata, the regional flow of groundwater in the area is to the northeast. Locally, at the CDOW laboratory there are four surface drainages:

1) The nearest surface drainage is the canal that flows north from the Ft. Collins Drinking Water Treatment Plant (FCDWTP) property, through the CDOW animal pens located east of the laboratory building. The topographic map shows the canal as an intermittent drainage beginning about ½ mile to the north of the CDOW property. The canal actually originates at the FCDWTP property. The canal flows north toward, but not into, Claymore Lake, and joins an outflow from Claymore Lake that enters the Pleasant Valley and Lake Canal.

2) The Dixon Canal is located about 0.4 mile to the southwest of the facility. The canal splits off of a drainage from Soldier Creek Dam on the eastern side of Horsetooth Reservoir and flows south.
3) An intermittent drainage splits off the Dixon canal and flows south into College Lake.
4) A drainage is located approximately 0.2 mile due south of the CDOW laboratory and flows due east for about 3/4 mile and then south to join the Pleasant Valley and Lake Canal.

C. Nearby Wells

Well records from the State Engineer's Office show that there are 27 wells located within a mile of the CDOW laboratory. Of these wells, 21 are for domestic use, two are used for crop irrigation, three are monitoring wells, and one is designated for other uses. With the limited locational data available in the State Engineer's database, it was not possible to accurately locate each well relative to the WHL facility.

The FCDWTP has six monitoring wells located up-gradient of the site. Besides these monitoring wells, the nearest well is a crop-irrigation well about 3/4 miles away from the laboratory in an east-southeast direction. The well is located in SW1/4 NE1/4 Section 8 and is completed at a depth of 76 feet. The next closest well is a domestic well completed at a depth of 250 feet in NW1/4 SE1/4 Section 8. The remaining wells are about one mile or more away. They are all located in NE1/4 NE1/4 Section 8 and are completed at depths of 26, 23, and 24 feet respectively. The Colorado State University (CSU) physical plant well is completed at a depth of 16 feet and is located in SW1/4 SE1/4 Section 8, about a mile to the southeast of the facility.

D. Drinking Water Treatment Plant

The FCDWTP is located at 4316 West La Porte Avenue, just south and adjacent to the WHL property. The treatment plant obtains source water from the Horsetooth Reservoir and from the Cache la Poudre River. The raw water from these sources enters the treatment plant through underground pipelines. There are two storage ponds on the treatment plant property that hold water that was used for backwashing of the treatment plant filters. A portion of this water is recovered, treated, and used as drinking water.

Because the WHL septic system is located down gradient from the FCDWTP relative to groundwater and surface water flow, the discharge from the septic system will not affect the storage ponds on the treatment plant site. The water pipelines for the incoming raw water are isolated from any sources of contamination. Even if a pipe were to leak, the pressure inside the pipe would push the raw water out, preventing anything from entering the pipe.

V. PLUGGING AND ABANDONMENT PLAN

In the event that the WHL septic system is to be closed, the permittee shall notify the Director in writing and provide a Plugging and Abandonment Plan at least 30 calendar days before plugging and abandonment of the shallow injection well takes place. The Plugging and Abandonment Plan shall propose a closure method that is protective of groundwater and shall be approved by EPA prior to the plugging and abandonment of the shallow injection well. EPA reserves the right to change the manner in which the shallow injection well will be plugged and abandoned if it is deemed that the designated closure method is not protective of any underground source of drinking water.

VI. CITED REFERENCES

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APPENDIX A Analytical Results from Waste Fluid Samples Collected at the WHL

Table 1. Chemical Constituents Occurring in Detectible Concentrations in the WHL Septic Tank Collected and Analyzed by EPA Before the Necropsy Laboratory was Disconnected from the Septic System, September 2005

Chemical Constituent	CAS #	Permit Limit (mg/l)	Concentration Measured at WHL (mg/l)
Acetone	67-64-1	7.0	2.38 & 2.43
Chloroform	67-66-3	0.08	0.011
Dichloromethane (Methylene chloride)	75-09-2	0.005	0.0005
Methyl ethyl ketone	78-93-3	4.0	0.017 & 0.018
Di(2-ethlyhexyl) phthalate	117-81-7	0.006	0.099 & 0.109
Butyl benzyl phthalate	85-68-7	7.0	0.075 & 0.069
Phenol	108-95-2	4.0	0.307 & 0.276
Barium		2.0	0.025
Chromium		0.1	0.002
Copper		1.3	0.088
Iron		5.0	0.1120
Manganese		0.8	0.038
Nickel		0.1	0.006
Zinc		2.0	0.163

Table 2. Analytical Results for Formaldehyde in Septic Tank at WHL laboratory, June 2007

Chemical Constituent	CAS #	Permit Limit (mg/l)	Concentration Measured at WHL (mg/l)
Formaldehyde	500-00-0	1,000	Not Detected

Table 3. Ammonia, Nitrate, and Biological Oxygen Demand (BOD), June 2007

Chemical Constituent	Concentration Measured in WHL Septic Tank mg/L	Concentration Measured below WHL Drainfield mg/L
Ammonia	26.6	Not Detected
Nitrate	ND	0.22
BOD	24	Not Detected

Table 4. Total Metals Concentrations in Septic Tank at WHL Laboratory, June 2007

Metal	Concentration Measured at WHL µg/L	Permit Limit µg/L
Antimony	Not Detected	6.0
Beryllium	Not Detected	4.0
Mercury	Not Detected	2.0
Thallium	Not Detected	2.0
Arsenic	1.5	10
Barium	16.8	2,000
Boron	291	1,400
Cadmium	0.04	5.0
Chromium	0.4	100
Copper	25.2	1,300
Iron	156	5,000
Lead	0.34	15
Manganese	20.7	800
Molybdenum	0.26	40
Nickel	2.9	100
Selenium	1.1	50
Silver	0.08	100
Strontium	103	4,000
Zinc	12.6	2,000

Table 5. Volatile Organic Compounds Concentrations in Septic Tank at WHL Laboratory, June 2007

Parameter Name	CAS No	Permit Limit (µg/L)	Concentration Measured in WHL Septic Tank (µg/l)
1,1,1,2-Tetrachloroethane	630-20-6	70	ND
1,1,1-Trichloroethane	71-55-6	200	ND
1,1,2,2-Tetrachloroethane	79-34-5	0.3	ND
1,1,2-Trichloroethane	79-00-5	5.0	ND
1,1-Dichloroethylene	75-35-4	7.0	ND
1,2-(cis)Dichloroethylene	156-59-2	70	ND
1,2-(trans)Dichloroethylene	156-60-5	100	ND
1,2,3-Trichloropropane	96-18-4	40	ND
1,2,4-Trichlorobenzene	120-82-1	70	ND
1,2-Dibromomethane (Ethylene Dibromide [EDB])	106-93-4	0.05	ND
1,2-Dichlorobenzene o-	95-50-1	600	ND
1,2-Dichloroethane	107-06-2	5.0	ND

Parameter Name	CAS No	Permit Limit (µg/L)	Concentration Measured in WHL Septic Tank (µg/l)
1,2-Dichloropropane	78-87-5	5.0	ND
1,3-Dichlorobenzene m-	541-73-1	60	ND
1,4-Dichlorobenzene p-	106-46-7	75	ND
2-Butanone	78-93-3	4,000	ND
2-Chlorotoluene (o-)	95-49-8	100	ND
4-Chlorotoluene (p-)	106-43-4	100	ND
Acetone	67-64-1	7000	ND
Benzene	71-43-2	5.0	ND
Bromobenzene	108-86-1	4,000	ND
Bromochloromethane	74-97-5	90	ND
Bromodichloromethane (THM)	75-27-4	80	ND
Bromoform (THM)	75-25-2	80	ND
Bromomethane	74-83-9	10	ND
Carbon tetrachloride	56-23-5	5.0	ND
Chlorobenzene (Monochlorobenzene)	108-90-7	100	ND
Chlorodibromomethane (Dibromochloromethane)(THM)	124-48-1	80	ND
Chloroform (THM)	67-66-3	80	1.1
Chloromethane	74-87-3	3.0	ND
Dichlorodifluoromethane	75-71-8	1,000	ND
Dichloromethane (Methylene chloride)	75-09-2	5.0	ND
Ethylbenzene	100-41-4	700	ND
Hexachlorobutadiene	87-68-3	1.0	ND
Isopropylbenzene (cumene)	98-82-8	4,000	ND
Naphthalene	91-20-3	100	ND
Perchloroethylene (PCE) (Tetrachloroethylene)	127-18-4	5.0	ND
Styrene	100-42-5	100	ND
Toluene	108-88-3	1,000	17
Total Trihalomethanes (THM)		80	ND
Trichloroethylene (TCE)	79-01-6	5.0	ND
Trichlorofluoromethane	75-69-4	2,000	ND
Vinyl chloride	75-01-4	2.0	ND
Xylenes	1330-20-7	10,000	ND

Table 6. Semivolatile Organic Compound Concentrations in Waste Fluids in Septic Tank and Below Drainfield at WHL Laboratory, June 2007

Chemical Constituent	CAS #	Permit Limit (µg/l)	Concentration Measured in WHL Septic Tank (µg/l)	Concentration Measured below WHL Drainfield (µg/l)
1,2,4-Trichlorobenzene	120-82-1	70	ND	ND
1,2-Dichlorobenzene	95-50-1	600	ND	ND
1,3-Dichlorobenzene	541-73-1	600	ND	ND
1,4-Dichlorobenzene	106-46-7	75	ND	ND
2,4,6-Trichlorophenol	88-06-2	10	ND	ND
2,4-Dichlorophenol	120-83-2	20	ND	ND
2,4-Dinitrotoluene	121-14-2	100	ND	ND
2,6-Dinitrotoluene	606-20-2	40	ND	ND
2-Chlorophenol	95-57-8	40	ND	ND
4-Nitrophenol	100-02-7	60	ND	ND
Acenaphthene	83-32-9	2,000	ND	ND
Aldrin	309-00-2	1	ND	ND
Anthracene	120-12-7	10,000	ND	ND
Benzo(a)pyrene	50-32-8	0.2	ND	ND
Di(2-Ethylhexyl) phthalate	117-81-7	6	ND	ND
Butyl benzyl phthalate	85-68-7	7,000	ND	ND
Chlordane	57-74-9	2	ND	ND
Dieldrin	60-57-1	40	ND	ND
Diethyl phthalate	84-66-2	30,000	ND	ND
Di-n-butyl phthalate	84-74-2	4,000	ND	ND
Endrin	72-20-8	2	ND	ND
Fluorene	86-73-7	1,000	ND	ND
Heptachlor	76-44-8	0.4	ND	ND
Heptachlor epoxide	1024-57-3	0.2	ND	ND
Hexachlorobenzene	118-74-1	1	ND	ND
Hexachlorobutadiene	87-68-3	1	ND	ND
Hexachlorocyclopentadiene	77-47-4	50	ND	ND
Hexachloroethane	67-72-1	1	ND	ND
Isophorone	78-59-1	100	ND	ND
Lindane	58-89-9	0.2	ND	ND
Naphthalene	91-20-3	100	ND	ND
Pentachlorophenol	87-86-5	1	ND	ND
Phenol	108-95-2	2,000	ND	ND
Pyrene	129-00-0	1,050	ND	ND
Toxaphene	8001-35-2	3	ND	ND