STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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C.L. "Butch" Otter, Governor
John H. Tippets, Director

MEMORANDUM

February 8, 2017

TO: Bruce Olenick, Regional Administrator
Tom Hepworth, Engineering Manager, Pocatello Regional Office

FROM: Scott MacDonald, P.E., CPM, MBA, Staff Engineer SM

SUBJECT: **Staff Analysis for Draft Reuse Permit M-034-03, City of Lava Hot Springs**

Executive Summary

- The City of Lava Hot Springs operates a class 1 municipal collection and treatment system, a 4 cell lagoon system, a winter storage lagoon, and a land application system.
- The original system was constructed in the 1970's, with surface water discharge.
- The city is limited to an annual application volume of 66 MG.
- Current treatment storage capacity is 19.1 MG, with 33 MG of winter storage.
- Wastewater at the Lava municipal treatment plant is domestic sewage effluent flow; the treatment plant currently has no industrial wastewater that contributes to the system.
- No major changes to facility operations since the last permit was issued
- The facility is currently permitted for growing season application only, and the permit application indicates only growing season application going forward.
- The permit renewal is straight forward. The facility's treatment and reuse system is currently permitted under permit LA-000034-02; the new permit number is M-034-03, under the new permit template.
- Facility inspections have not revealed issues of noncompliance with the land application practices.
- Annual reports show a need for more accurate sampling, but no exceedances.
- Staff recommends the reuse permit duration of 10-years

1 Introduction

The purpose of this memorandum is to satisfy the requirements of IDAPA 58.01.17, "Recycled Water Rules," Section 400, for issuing Wastewater Reuse permits. It briefly states the principal facts and significant questions considered in preparing the draft permit, and provides a summary of the basis for the draft permit conditions.

As required by the Recycled Water Rules, the draft permit will be presented for a public comment period. After the comment period has closed, DEQ will provide written responses to all relevant comments and prepare a final permit for the City of Lava Hot Springs recycled water reuse facility.

Brief summary of the permit timeline:

- The current permit was issued on March 1, 2012; expiration date of February 28, 2017.
- The permit application was dated February 1, 2017; received February 8, 2017.
- Date of DEQ's Completeness Determination letter and effective date of application, February 8, 2017.

2 Site Location and Ownership

The City of Lava Hot Springs is located approximately 10 miles east of the City of McCammon in Bannock County. The city's four-cell municipal effluent treatment system has not changed significantly since it was originally constructed in the 1970's. Facility lagoons have been upgraded and seepage tested in 2010-12. The treatment facility is designed to treat municipal effluent by biologically removing a majority of the organic waste and other contaminants, and provides treated recycled water suitable for sprinkle-irrigated land application.

Concurrently with lagoon upgrades, a 90 acre parcel was purchased for construction of a new 20 acre winter storage lagoon, with the remaining 70 acres being operated as a single land application management unit. Additional system upgrades were completed as part of a phased project to upgrade the treatment lagoons, build new pumping facilities, and install a pipeline to the new land application site. The city is permitted to use the winter storage lagoon for storage during the non-growing season and use the land application acreage during the growing season.

The city currently has an NPDES permit for discharge of effluent to the Portneuf River. Permitted discharges to the river, flow by gravity and do not require pumping. The discharge limits associated with the NPDES permit have necessitated a change in operations from wastewater discharge, to additional storage for land application. The city plans to keep the NPDES permit active.

The Lava Hot Springs wastewater treatment facility consists of a four-cell, aerated/facultative lagoon system. The treatment system consists of two aerated lagoon cells and two facultative cells having a combined storage capacity of 17.7 MG. Operating parameters indicate 91.6% biological oxygen demand (BOD) removal.

At the lagoon site there are two facility buildings. The east building houses the pumps and electrical panels. The lift station grinder pumps are in a pit below the building next to the wet well. The second building north of cell #4 housed the chlorination system. A well adjacent to the chlorinator building is still active, but previously supplied water for adding chlorine to the wastewater stream prior to land application. Figure 1 shows the lagoon system layout with flow from right to left.

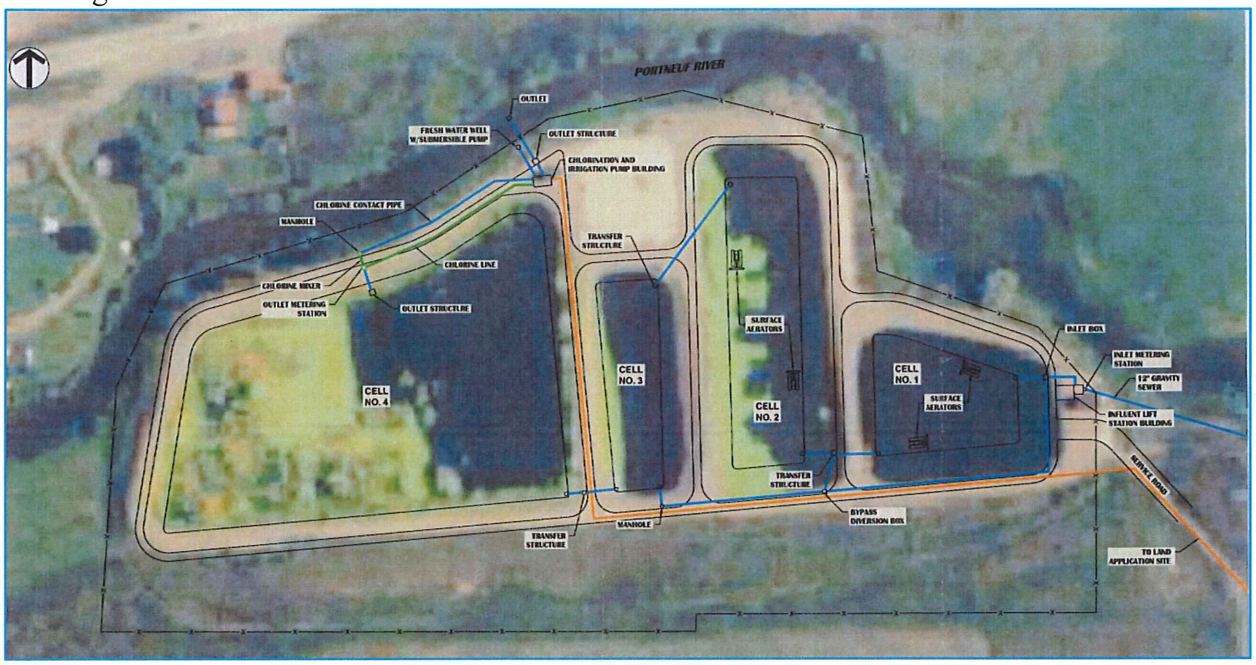


Figure 1. Facility Treatment Lagoons

At the lift station building next to lagoon #1, wastewater from the 12-inch city trunk line discharges to the headworks, and into the wet well below the building. The wastewater is then lifted from the wet well through a six inch pressure line to the diversion box at the head of the lagoon system.

Wastewater is pumped from the wet well at the influent level using grinder pumps, where it is lifted to the pond level; approximately 15 to 20 feet in elevation. All flow is by gravity from the diversion box through the lagoon system to the outlet. Aeration is provided in the first two cells using floating aerators.

Following treatment in the fourth cell at the lagoon site, wastewater is pumped to the 33 MG winter storage lagoon located at the north end of the land application site. Effluent pumped from the winter storage lagoon is treated with chlorine in a contact chamber. It is treated to class D standards of less than 230 CFU/100mL for a 3 day median and less than 2,300 CFU/mL in any sample. Recycled water is land applied only during the growing season; which is April 1 through October 31.

Municipal recycled water is applied to the 70 acre site which is permitted as a single hydraulic management unit (HMU) for the production of crops and the uptake of wastewater nutrients. While permitted as a single HMU, wastewater is applied to the acreage in four zones, with the majority applied in July and August when alfalfa water needs are the highest. Four sets of wheel lines will sprinkle irrigate the site at a design capacity of 640 gpm. The wheel line irrigation efficiency is 75% and is estimated to apply 1.98 inches of wastewater during weekly sets. See Figure 2 below for the irrigation system layout.

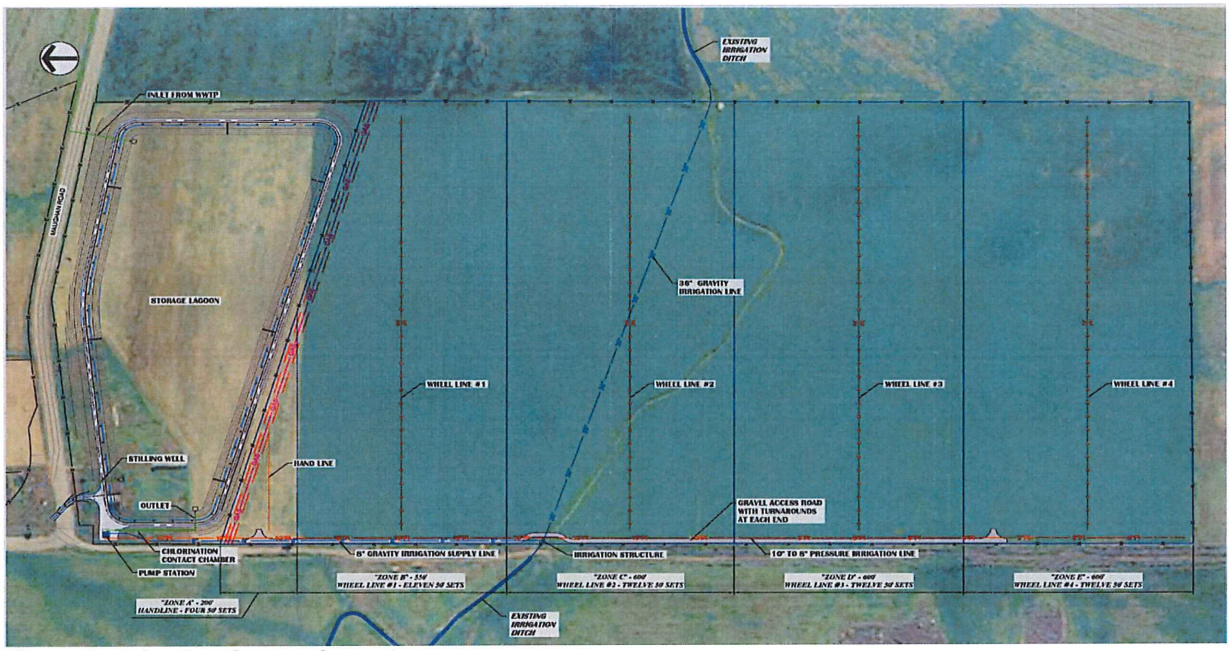


Figure 2. Irrigation System Layout

The facility is permitted to land apply municipal recycled water consisting of the sources described in the permit application including effluent from homes, schools, businesses, hot water discharges from pools, natural hot springs, and thermal heating systems.

The permit prohibits land application of any industrial sources of wastewater or other waste streams not specifically permitted or identified in the permit application. A flow diagram of the Lava Hot Springs land application system is included in Appendix A of the application.

Supplemental irrigation water will be supplied from the canal source that crosses the site. The canal is unnamed but is owned and operated by the Topaz Canal Company, so it is referred to as the Topaz Canal. The city has included a copy of the deed in the permit application showing 71 shares of canal water available for irrigation. The supplemental irrigation water source will be sampled as a monitoring point listed in the permit Section 5.

Both supplemental irrigation water from the canal ditch and effluent from the 33 MG winter storage lagoon is piped to the pump house on the west side of the storage lagoon. The chlorine contact chamber is also located to the west of the lagoon and will be used to inject chlorine as the effluent flows from the storage lagoon to the pump house. The pump house includes the chlorinator pump and irrigation pumps that will provide operating pressure to sprinkle irrigate the site with either recycled water or with supplemental irrigation water.

3 Process Description

The City of Lava Hot Springs operates a four-cell municipal effluent treatment system that has not changed significantly since it was originally constructed in the 1970's. The city census reports 420 people, the application materials estimate a population of 625 people for planning purposes. During the summer months, tourism greatly increases the population, so the actual full-time residents are not of much relevance for an average flow design, but the system is designed for maximum daily flows and future wastewater generation. The treatment facility is designed to treat municipal effluent by biologically removing a majority of the organic waste and other contaminants, and provides treated water suitable for sprinkle-irrigated land application.

The current operations at the facility consist of influent flow metering, biological treatment (lagoons), chlorine disinfection, and then effluent discharge to either the Portneuf River or the winter storage lagoon and adjacent reuse site via land application.

4 Site Characteristics

4.1 Site Management History

The Department of Environmental Quality (DEQ) issued the original reuse permit LA-000034 to the City of Lava Hot Springs on May 29, 1992. The permit allowed continued operation of the wastewater treatment and reuse system serving the City of Lava Hot Springs. These facilities are located in the City of Lava Hot Springs, with a new land application site located west of the city. The purpose of the draft permit is to renew permit LA-000034-02, which has an expiration date of February 28, 2017. Permit LA-000034-02 included the new winter storage lagoon, and the additional 70 acre land application site.

A permit renewal application from the City of Lava Hot Springs was originally received on October 5, 2011 for the previous permit renewal, and largely serves as the basis for the terms and conditions contained in the draft permit. Since there was significant effort put into renewing the permit in 2012, and since operations have not changed at the site, the permit application from 2011 will suffice for the majority of the information needed with only minor personnel updates included in the permit application forms submitted on February 1, 2017.

4.2 Climatic Characteristics

The 30 year average effective precipitation for the growing season is 7.3 inches per year, with an additional 6.7 inches occurring during the non-growing season (October 1 through March 31). *(ET-Idaho, McCammon NWS Station.)* The annual average maximum temperature is 85 °F and annual average minimum temperature is 16 °F. Additional meteorological data can be found at: *http://www.usclimatedata.com/climate/mccammon/idaho/united-states/usid0157*

Crop evapotranspiration for this location is the McCammon NWS station located at latitude 42° 39' north, longitude 112° 12' west at an elevation of 4,770 feet. The precipitation deficit (net irrigation water requirement), for alfalfa with frequent cuttings is 32.5 inches, not including irrigation efficiency.

4.3 Soils

Soil survey information from NRCS as listed in the permit application is shown below.

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	Depth (inches)	Description
9	Bancroft silt loam, 4 to 12 percent slopes	18.5	18.0%	0 - 7 7 - 37 37 - 60	Silt loam Silty clay loam Silt loam
10	Bancroft silt loam, 12 to 20 percent slopes	6.1	5.9%	0 - 7 7 - 37 37 - 60	Silt loam Silty clay loam Silt loam
65	Lanoak silt loam, 1 to 4 percent slopes	25.6	24.9%	0 - 22 22 - 44 44 - 60	Silt loam Silt loam Silt loam
72	Lanoak-Hades complex, 6 to 20 percent slopes	10.3	10.0%	0 - 22 22 - 44 44 - 60	Silt loam Silt loam Silt loam
				0 - 7 7 - 14 14 - 60	Gravelly silt loam Gravelly silt loam Gravelly silty clay loam
93	Rexburg silt loam, 1 to 4 percent slopes	7.5	7.3%	0 - 10 10 - 26 26 - 60	Silt loam Silt loam Silt loam
97	Ririe silt loam, 1 to 4 percent slopes	4	3.9%	0 - 12 12 - 60	Silt loam Silt loam
98	Ririe silt loam, 4 to 12 percent slopes	16.7	16.2%	0 - 12 12 - 60	Silt loam Silt loam
100	Ririe-Watercanyon complex, 4 to 12 percent slopes	11.4	11.1%	0 - 12 12 - 60	Silt loam Silt loam
				0 - 7 7 - 16 16 - 60	Silt loam Silt loam Silt loam
101	Ririe-Watercanyon complex, 12 to 20 percent slopes	2.8	2.7%	0 - 12 12 - 60	Silt loam Silt loam
				0 - 7 7 - 16 16 - 60	Silt loam Silt loam Silt loam
	Totals for Area of Interest	102.7	100.0%		

Figure 3. Site soil information as listed in the permit application Table 3-4 (Keller).

4.3.1 Soil Monitoring

The permit requires annual soil monitoring for pH, plant available P (Olsen Method), NO_3-N (nitrate nitrogen), NH_4^+-N (ammonium nitrogen), EC, and %OM monitored annually, with SAR, DTPA–Fe, and DTPA-Mn monitored and reported the first year of the permit. The annual reports have not indicated elevated levels of constituents in the soil profile that would warrant additional constituent sampling or monitoring. The quantities of fresh water discharged to the sewage lagoons from the pools and thermal sources make the effluent stream more dilute than traditional municipal effluent steams, leading to less chance for soils to become clogged or overloaded.

4.4 Surface Water

The nearest surface water to the site is the Portneuf River which is 1,325 feet from the northern end of the land application site. There are no springs reported in the area, but minor surface drainage passes near the site. The site has been graded to contain precipitation so it does not run-off from the site. An irrigation ditch passing through the site has been enclosed in a buried 36" pipeline, with the ends of the pipeline extended 50 feet on either side of the property so that overspray from the application of wastewater will not come in contact with the canal water.

To help protect surface waters from contact with wastewater, the city is required to maintain a runoff management plan, which shall be updated as necessary. The runoff plan describes how wastewater applied to the permitted HMU will be contained on-site and not allowed to flow to properties not owned by the city or to nearby surface waters.

4.5 Ground Water/Hydrogeology

Groundwater measurements of existing wells near the site have shown groundwater to be approximately 145 feet below ground surface near the upper portion of the site, and 55 feet below ground surface near the lagoon at the lower end of the site. Three monitoring wells monitor potential groundwater influences at the site. One well is located near the center of the upper portion of the site to measure ambient background constituents of groundwater flowing toward the site for comparison with the measured constituents from the wells at the lower portion of the site. Ground water flows from the upper elevations, north toward the Portneuf River. Two monitoring wells are located north of the winter storage lagoon to monitor any potential groundwater influences from the lagoon or from the land application activities on the site.

4.5.1 Ground Water Monitoring Data:

The permittee is required to conduct groundwater monitoring twice annually in the spring and fall. These monitoring requirements are included in the new permit to monitor the three monitoring wells for potential impacts on groundwater from site loading activities, and as an early indicator of any influence from potential lagoon seepage. The permittee will be required to submit collected monitoring data as required by Section 5 of the permit in the annual reports. The well at the treatment lagoon site is also listed as an active monitoring point.

4.6 Wastewater Characterization and Loading Rates

4.6.1 Wastewater Quality and Sampling

Wastewater characteristics appear to remain consistent from year to year. Although flows and constituents change seasonally with tourism and school attendance, the annual average values remain consistent. The key constituents in Figure 4 include nitrate, nitrite, TKN, total suspended solids, and COD averages from 1999 to 2010. Comparisons do not indicate substantial variations. The city monitors constituent characteristics for land application permit reporting to DEQ and for NPDES reporting to EPA.

Parameter	Concentration	
	Units	Average
BOD_5	mg/L	6.5
COD	mg/L	69.4
TSS	mg/L	7.3
Ammonia-N	mg/L	2.0
Total Nitrogen	mg/L	4.6
Nitrate-N	mg/L	1.2
Nitrite-N	mg/L	0.1
TKN	mg/L	3.3
Total-Phosphorus	mg/L	2.7
pH	SU	8.1
Note: Total Nitrogen = Nitrate + Nitrite + TKN		

Figure 4. Constituent Concentrations (Keller).

The permit application calculates loading rates for COD and nitrogen based on the average constituent concentrations from 1999 to 2010 listed in Figure 4. COD and nitrogen are believed to be the land limiting constituents. Nitrogen and COD loading analyses are reported in more detail below. Calculations indicate that the site will approach hydraulic loading limits before any land limiting constituents have been reached. This is consistent with the dilute nature of the wastewater which includes the inflow from pools and other thermal water sources that do not contain high constituent levels.

The permit will require the facility to report wastewater and supplemental irrigation water quantities applied on the land application site on a daily basis. Wastewater sampling is required on a monthly basis when effluent is being applied to the site. Wastewater monitoring parameters will be more involved than the previous permit, and may require additional training by the operators to complete the new monitoring and reporting requirements.

Coliform counts are generally below 10 CFU/100 ml, but sample results show a need to more accurately sample the recycled water and complete confirmatory samples, the treatment class is Class D recycled water.

4.6.2 Hydraulic Loading Rates

Crop requirements determine loading rates for the single management unit. The permit will limit growing season hydraulic loading to the crop specific irrigation water requirement (IWR), in any combination of process water and supplemental water. Calculations require specific methodology to determine the crop IWR. The permittee is allowed to use either thirty-year data or current climatic and agronomic information, but whatever method is used it must be used consistently throughout the permit period.

4.6.3 Historic Flows and Proposed Hydraulic Loading Rate

Data available from ETIdaho was used to compare application rates with the crop specific IWR. The comparisons show hydraulic loading for the management unit did not exceed the IWR. The IWR, or precipitation deficit (P_{def}) for alfalfa for the 70 acre site is reported as 43.57 inches of combined wastewater and supplemental irrigation water. Using 43.57 inches for the crop specific IWR, the 70 acre site could require up to 82 MG of water annually to sustain an alfalfa crop with frequent cuttings. Staff does not envision the city being limited by hydraulic loading for the foreseeable future.

The permit limit is 66 MG of recycled water annually. Generated wastewater quantities are not expected to exceed the IWR of the available acreage. Annual IWR calculations are required to plan for the most effective use of wastewater and supplemental irrigation water (SIW) to ensure vibrant crop growth and to maximize crop nutrient uptake.

4.6.4 Hydraulic Flow, and Storage

Previous land application practices in the original permit occurred only during July and October, or similar two-month application periods. As the city makes greater use of stored wastewater from the winter storage lagoon, the figure below shows a more even distribution of recycled water over time. The figure below also shows a natural decrease in SIW usage over time as effluent application increases.

Month	WW Applied (gal)		Irrigation Water Applied (gal)	
	2011	2040	2011	2040
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	4,429,903	4,429,903	0	0
May	13,423,405	13,423,405	0	0
June	16,337,163	16,342,752	5,588	0
July	4,080,378	15,571,810	16,827,968	5,336,536
August	4,217,226	5,506,850	12,855,861	11,566,237
September	4,219,015	5,467,039	7,394,515	6,146,491
October	4,395,889	5,685,513	1,573,506	283,882
November	0	0	0	0
December	0	0	0	0
Totals	51,102,979	66,427,272	38,657,439	23,333,146

Figure 5. Estimated wastewater application rates (Keller)

Wastewater was previously pumped from the treatment lagoons directly to the land application site irrigation piping. The new design directs all reuse effluent to the winter storage lagoon. Effluent pumped out of the winter storage lagoon has chlorine injected at the inlet of the chlorine contact chamber prior to being pumped to the irrigation wheel lines. Chlorine contact time is achieved in the chlorine contact chamber, with additional contact time provided in the irrigation lines as the recycled water is piped to the sprinkler spray heads.

Effluent flow will not be measured at the treatment lagoons as it is pumped to the winter storage lagoon. All sampling and flow measurement for land application is measured within the pump house at the winter storage lagoon. The pump house at the storage lagoon will be the only active sampling and flow measurement point listed in the permit as WW-03403.

There are a total of five wastewater storage structures listed in Table 1 below, and in Section 5.5 of the permit. The treatment cells and winter storage lagoon are HDPE lined. The total volume of the four treatment lagoons will remain unchanged at the estimated operating capacity of 17.7 MG. The original design capacity is between 15.5 MG and 19.1 MG depending on whether the depth at cell four is at 6 feet or 9 feet respectively. The winter storage lagoon has a design capacity of 33 MG. All storage lagoons have been seepage tested, with the results submitted to DEQ as required (see section 5.1.3 below).

Table 1. Wastewater Storage Structures.

Serial number	Description	Estimated Surface Area, acres	Maximum Operating Volume, MG	Liner Type
LG-03401	Cell 1 Primary Treatment Aerated Lagoon	1	2.8	HDPE
LG-03402	Cell 2 Primary Treatment Facultative Lagoon	1.5	3.9	HDPE
LG-03403	Cell 3 Primary Treatment Facultative Lagoon	0.63	1.7	HDPE
LG-03404	Cell 3 Primary Treatment Facultative Lagoon	3.1	7.1 (6 foot depth) 10.7 (9 foot depth)	HDPE
LG-03405	Winter Storage Lagoon	11.8	33	HDPE

4.6.5 Constituent Loading Rates

4.6.6 Nitrogen Loading

Historic application rates show nitrogen uptake of 122.1 lb/ac, meaning that nitrogen would be able to be loaded at 150% of the reported crop uptake, or 183 lb_N/ac. At the maximum loading rate of 66 MG annually estimated for the year 2040, nitrogen loading would be only 40 lb_N/ac. This estimate is well below the historic nitrogen removal rate.

Any supplemental fertilizer application must be reported in the annual report. The nitrogen loading limit listed in the permit is 150% of the median three-year crop uptake for all sources.

4.6.7 COD Loading

COD loading from 1999 to 2010 indicates an average application of 1.8 lb_{COD}/ac per day. The original permit required monthly sampling for COD. However, since the maximum COD levels have been shown to be only 3.6% of the standard limit of 50 lb/ac/day, the new permit will be the same as the current permit and not include COD loading limits or requirements for monthly wastewater COD monitoring.

4.6.8 Other Constituent Loading - Trace Element Management

The new permit will require supplemental irrigation water (SIW) source monitoring for quantity on a daily basis when being applied to the site, and SIW sampling twice the first year of the permit for total nitrogen, total phosphorus, and NVDS.

5 Site Management

5.1.1 Buffer Zones

Buffer zones for M-034-03 reflect the standard municipal buffer zone distances listed below in Figure 6 for Class D municipal effluent.

Serial Number	Buffer Distances (in feet) from Hydraulic Management Units					
	Public Water Supplies	Private Water Supplies	Inhabited Dwellings	Permanent and Intermittent Surface Water	Irrigation Ditches and Canals	Areas Accessible to the Public
MU-03403	1,000	500	300	50	25	50

Figure 6. Buffer Zone Table from the permit Section 4.4.

5.1.2 Runoff

The facility currently has an approved Runoff Management Plan on file with DEQ. The plan was submitted on June 25, 2010, and was reviewed at that time with comments submitted. To ensure that the proper approval letter was on file, an approval letter for the revised version was sent January 18, 2017.

5.1.3 Seepage Rate Testing

Table 2. Seepage Rate Testing

Lagoon	Test Date Completion	Date of DEQ approval of test report	Seepage rate, inches/day	Allowable rate, inches/day	Date next seepage rate test is due
Cell #1	8/22/2011	12/15/2014	<0.125	0.125	5/2023
Cell #2	8/22/2011	12/15/2014	<0.125	0.125	8/2024
Cell #3	8/22/2011	12/15/2014	<0.125	0.125	11/2023
Cell #4	8/22/2011	12/15/2014	<0.125	0.125	8/2023
Winter Storage Lagoon	9/20/2011	12/21/2011	<0.125	0.125	9/2021

5.1.4 Waste Solids, Biosolids, Sludge, and Solid Waste

The City of Lava Hot Springs municipal treatment plant does not have sludge treatment or sludge disposal facilities. As sludge settles in the lagoons, anaerobic bacteria break down the biological solids reducing its volume. At some point, removal of the accumulated solids will be necessary to maintain the active volume of the lagoons. However, the BOD removal performance of the lagoons and reports of the operators indicate that this is not yet a concern. During the facility upgrades in 2012, the majority of the sludge was removed from the lagoons, and disposed of in accordance with an approved biosolids management plan. No biosolids were applied to the management unit.

Biosolids derived from sewage are regulated by EPA under Federal Regulation 40 CFR 503. If these biosolids are land applied on permitted reuse fields, both the reuse permit requirements and 40 CFR 503 requirements would apply.

Biosolids used for land application (soil augmentation), are also regulated under the "Wastewater Rules", IDAPA 58.01.16.650 which requires a DEQ-approved "sludge disposal plan".

5.1.5 Nuisance Odors

The new permit will not include a compliance activity requirement for submittal of a nuisance odor management plan for the land application activities. The effluent composition is not known to produce nuisance odors. The treatment lagoons must continue to be managed without causing nuisance conditions according to standard permit requirements.

5.1.6 Cropping Plan

The land application site was previous planted with alfalfa and was managed effectively over the term of the previous permit. The city proposes to grow alfalfa at the site and may rotate in grain crops as necessary to maintain healthy crop production.

5.1.7 Grazing

Grazing is not proposed on the permitted hydraulic management units. The city has not proposed any grazing on the site, and they do not have an approved grazing management plan.

5.1.8 Salts

If salt loading rates cause ground water contamination (TDS) above the secondary standard of 500 mg/L a TDS/NVDS/TDIS management plan may be necessary as a compliance activity.

6 Monitoring

6.1.1 Recycled Water Monitoring

The permit section 5.1.1 describes the recycled water monitoring requirements which include, total nitrogen, total phosphorus, and NVDS.

6.1.2 Soil Monitoring

The permit section 5.3.2 describes the soil monitoring requirements, which include pH, plant available phosphorus, nitrate nitrogen, ammonium nitrogen, and electrical conductivity. The first year of the permit, the permittee will sample soils for chloride, percent organic matter, and SAR.

6.1.3 Ground Water Monitoring

The permit section 5.2.2 describes the ground water monitoring requirements, which include the water table elevation (1/100 of a foot), water table depth (1/100 of a foot), nitrate-nitrogen, total dissolved solids, pH, and total coliform organisms (CFU/100 mL).

6.1.4 Supplemental Irrigation Water Monitoring

The new permit will require supplemental irrigation water (SIW) source monitoring for quantity on a daily basis when being applied to the site, and SIW sampling twice during the first permit year for total nitrogen, total phosphorus, and NVDS.

6.1.5 Crop Yield and Tissue Monitoring

The permit section 5.4.2 describes the crop and harvest monitoring requirements, which include the yield on a dry basis, moisture content, TKN, nitrate nitrogen, phosphorus, and ash content.

6.1.6 Meteorological Monitoring

When land applying, operators monitor meteorological data from local instruments or have access to weather data from other local sources such as weather stations. The following parameters may be important to monitor for proper operation of land application systems:

- Wind direction
- Wind speed
- Precipitation
- Ambient temperature

6.1.7 Calculation Methodologies

Flow measurements are recorded from the flow meter in the pump house at the winter storage lagoon, both the total recycled water, and total supplemental irrigation water applied to the management unit will be recorded and reported according to Section 5 of the permit, in the annual report.

The irrigation water requirement for each specific crop is estimated annually from the data provided in the ET-Idaho website, for the McCammon NWS station.

7 Quality Assurance Project Plan

The Quality Assurance Project Plan (QAPP) is a written document outlining the procedures used by the permittee to ensure the data collected and analyzed meets the requirements of the permit.

In support of the agency mission, DEQ is dedicated to using and providing objective, correct, reliable, and understandable information. Decisions made by DEQ are subject to public review and may at times, be subject to rigorous scrutiny. Therefore, DEQ's goal is to ensure that all decisions are based on data of known and acceptable quality.

The QAPP is a permit requirement and must be submitted to DEQ as a stand-alone document for review and acceptance. The QAPP is used to assist the permittee in planning for the collection, analysis, and reporting of all monitoring data in support of the reuse permit and explaining data anomalies when they occur.

DEQ does not approve QAPPs, but reviews them to determine if the minimum EPA guideline requirements are met and that the reuse permit requirements are satisfied. The reason DEQ does not approve QAPPs is that the responsibility for validation of the facility sampling data lies with the permittee's quality assurance officer and not with DEQ.

Assurance and Data Processing sections of the DEQ Guidance and 2) EPA QAPP guidance documents. EPA QAPP guidance documents are available at the following website: *http://www.epa.gov/quality/qapps.html*

The facility has a current QAPP on file with DEQ, and is expected to keep all management plans updated as required.

8 Site Operation and Maintenance

The Lava Hot Springs municipal system is classified as Class 1 collection and Class 1 treatment facility. The required level of operator licensure is Class 1 collection and Class 1 treatment. The facility has two operators who will oversee operation of the treatment plant and reuse facilities and their level of certification reflects the system requirements.

Tony Hobson		Billy Thompson	
WWC1-13718-GP	8/13/2017	WWC1-15233	10/7/2017
WWT2-14327-GP	8/13/2017	WWT1-14510	10/7/2017
WWTL-10776	8/13/2017	WWTLA-15784	10/7/2017
WWTLA-14509-GP	8/13/2017		

Farming activities, if conducted by a third party, will be overseen by licensed operators.

9 Compliance Activities

A current Plan of Operation is on file with DEQ. The plan of operation is required to be updated or modified as operations and regulatory requirements change, and must be made current following issuance of the new permit.

9.1.1 Status of Compliance Conditions in Current Permit

The current permit includes Section E, 'Compliance Schedule for Required Activities:'

- CA-34-01
  - Part a) Submit a Plan of Operation – Approved June 5, 2015.
  - Part b) Complete and implement the QAPP – Acknowledged December 19, 2014.
  - Part c) Submit a Buffer Zone Plan – Approved July 13, 2015.
- CA -34-02
  - Submit a Runoff Management Plan – Approved January 18, 2017.
- CA-34-03
  - Submit a closure plan – Completed July 9, 2013.

9.1.2 Compliance Activities Required in New Permit

The following Compliance Activities are specified in the draft permit:

1. CA-034-01 – Conduct the required 10-year seepage testing on all municipal lagoons. While the DEQ seepage testing approval letters specify individual dates for the required follow-up seepage testing, the draft permit lists the month of November, as a standard due date, to allow the facility to conduct the seepage tests all at once without having to re-tool for individual tests if it is not necessary.
2. CA-034-02 – Conduct a Pre-Application Workshop
3. CA-034-03 – Submit the Permit Application

10 Recommendations

Staff recommends the draft wastewater reuse permit M-034-03 be issued. The permit specifies hydraulic and constituent loading limits and establishes monitoring and reporting requirements to evaluate system performance, environmental impacts, and permit compliance.

11 References

Lava Hot Springs, 2017 Permit Application Package, submitted February 1, 2017

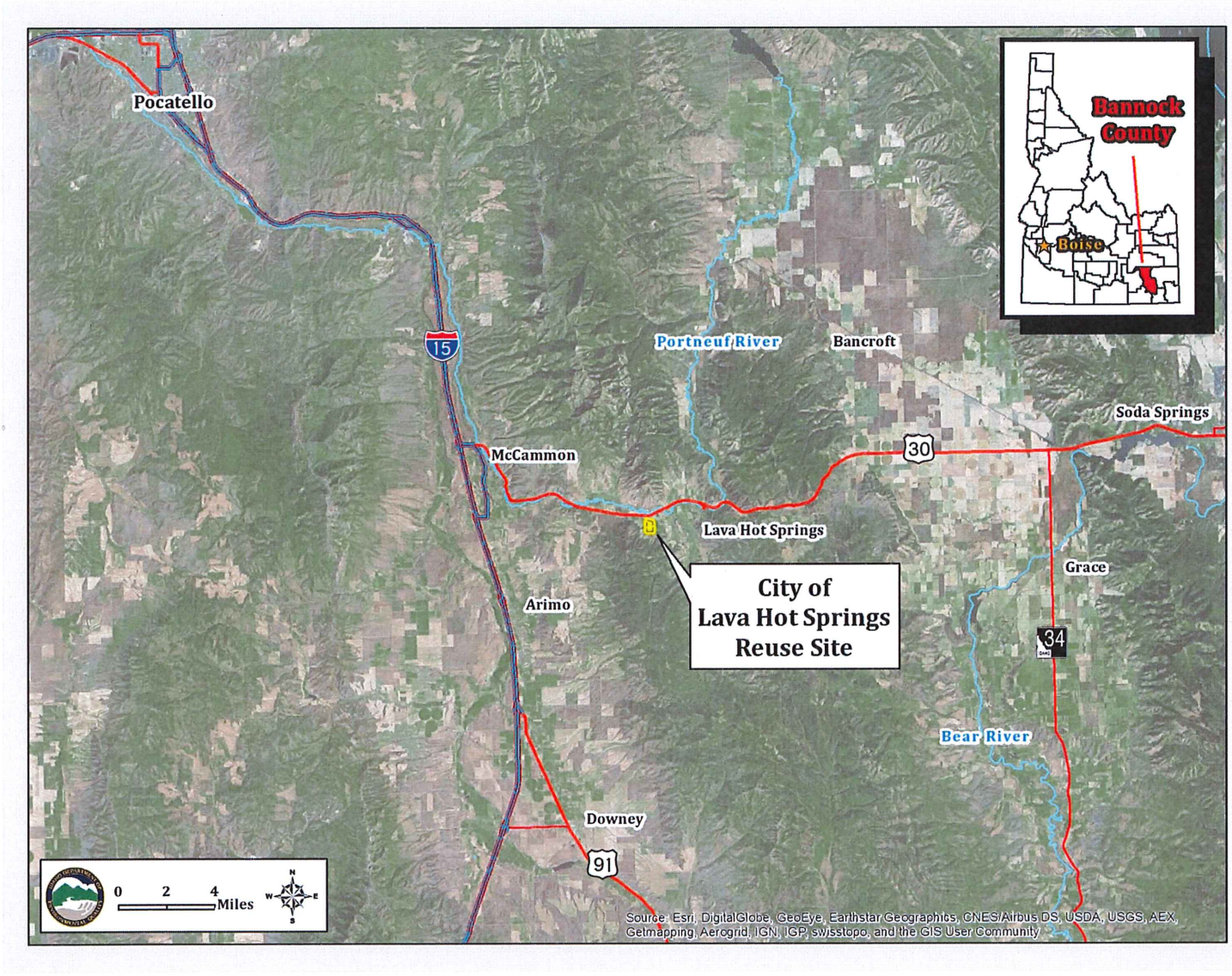
Keller, 2012, Permit Application Package

Lava Hot Springs 2017 Permit Renewal Application Package

Seepage testing result: TRIM 2014AGD4466 and 2011AGD4130

Appendix A. Site Maps

Appendix Figure 1. City of Lava Hot Springs Vicinity Map.



Appendix Figure 2. City of Lava Hot Springs Management Unit, Lagoons, and Reuse Features