

Fact Sheet

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Proposed Reissuance of a National Pollutant Discharge Elimination System (NPDES)
Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)

Sorrento Lactalis, Inc. 4912 Franklin Road Nampa, ID 83687

EPA Proposes To Reissue NPDES Permit

The United States (U.S.) Environmental Protection Agency (EPA) proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the facility to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

State Certification

EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Regional Administrator Idaho Department of Environmental Quality 1445 N. Orchard Boise, ID 83706

Finding of No Significant Impact (FONSI)

Because the proposed discharge from the Sorrento Lactalis, Inc. facility is subject to New Source Performance Standards in 40 CFR 405, the permit is subject to National Environmental Policy Act (NEPA) review as required under EPA's NEPA implementing regulations at 40 CFR Part 6. EPA developed an Environmental Assessment (EA) evaluating the impacts of the proposed actions and has issued a Finding of No Significant Impacts (FONSI).

The FONSI is available for a 30-day review period. Comments on the FONSI may be mailed, emailed, or faxed to:

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Fax: (206) 553-1280

Email: drabek.john@epa.gov

Comments must be received by September 12, 2016

Public Comment

Persons wishing to comment on, or request a Public Hearing for, the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address, and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permit, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

EPA
Region 10
1200 Sixth Avenue, Suite 900, OWW-191
Seattle, Washington 98101-3140
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

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The fact sheet and draft permits are also available at:

EPA Idaho Operations Office 950 W. Bannock Street, Suite 900 Boise, ID 83702 Phone: (208) 378-5746

Phone: (208) 378-574 Fax: (208) 378-5744

and

Idaho Department of Environmental Quality Boise Regional Office 1445 North Orchard Street Boise, ID 83706 (208) 373-0550

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Acronyn	ns
1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
30Q7	30 day, 7 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or	Biological Opinion
BiOp	
BOD_5	Biochemical oxygen demand, five-day
BOD_{u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practice
BPT	Best Practicable Control Technology Currently Available
°C	Degrees Celsius
CBOD	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor

Federal Register

FR

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gpd Gallons per day

HUC Hydrologic Unit Code IC Inhibition Concentration

ICIS Integrated Compliance Information System IDEO Idaho Department of Environmental Quality

I/I Infiltration and Inflow

LA Load Allocation
lbs/day Pounds per day

LC Lethal Concentration

 LC_{50} Concentration at which 50% of test organisms die in a specified time period

 LD_{50} Dose at which 50% of test organisms die in a specified time period

LOEC Lowest Observed Effect Concentration

LTA Long Term Average
LTCP Long Term Control Plan
mg/L Milligrams per liter

ml Milliliters

ML Minimum Level
μg/L Micrograms per liter
mgd Million gallons per day

MDL Maximum Daily Limit or Method Detection Limit

MF Membrane Filtration
MPN Most Probable Number

N Nitrogen

NEPA National Environmental Policy Act

NOAA National Oceanic and Atmospheric Administration

NOEC No Observable Effect Concentration

NOI Notice of Intent

NPDES National Pollutant Discharge Elimination System

NSPS New Source Performance Standards
OWW Office of Water and Watersheds
O&M Operations and maintenance
POTW Publicly owned treatment works

QAP Quality assurance plan RP Reasonable Potential

RPM Reasonable Potential Multiplier
RWC Receiving Water Concentration
SIC Standard Industrial Classification

SPCC Spill Prevention, Control, and Countermeasure

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SS Suspended Solids Standard Units

TKN Total Kjeldahl Nitrogen
TMDL Total Maximum Daily Load

TOC Total Organic Carbon
TRC Total Residual Chlorine

TRE Toxicity Reduction Evaluation

TSD Technical Support Document for Water Quality-based Toxics Control

(EPA/505/2-90-001)

TSS Total suspended solids

USFWS U.S. Fish and Wildlife Service
USGS United States Geological Survey

UV Ultraviolet

WET Whole Effluent Toxicity
WLA Wasteload allocation

WQBEL Water quality-based effluent limit

WQS Water Quality Standards
WWTP Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

Sorrento Lactalis, Inc. NPDES Permit # ID0028037

Physical Address: 4912 Franklin Road Nampa, ID 83687

Mailing Address: P.O. Box 1280 Nampa, ID 83653

Contact: Nicolas Depuydt Site Plant Director

B. Permit History

The existing NPDES permit for Sorrento Lactalis was issued on September 14, 2005, became effective on November 1, 2005, and expired on October 31, 2010. The permittee submitted an NPDES permit application on April 29, 2010. EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively continued and remains fully effective and enforceable. Operations at Sorrento Lactalis expanded before EPA began development of the draft permit, so Sorrento Lactalis submitted an updated application on June 18, 2013 and November 3, 2014.

II. Facility Information

A. Facility Description

Sorrento Lactalis, Inc., owns, operates, and maintains a cheese processing facility located in Nampa, Idaho. The treated effluent is discharged from Outfall 001 into Purdam Drain, a man-made tributary to the Boise River. The plant's wastewater flows have increased from 0.300 mgd, when the existing permit was issued in 2005, to 0.750 mgd in 2013. Sorrento Lactalis projects that its average monthly wastewater flows will increase to 1.52 mgd as the plant expands over the next ten years. The facility's current raw milk intake is 4.5 million pounds per day, and Sorrento Lactalis projects that its raw milk intake will increase to 6.5 million pounds per day within the next ten years.

The facility currently operates under three standard industrial classification (SIC) codes: 2022 (natural cheese), 2023 (dry whey products), and 2026 (cultured cream cheese). The facility will add 2021 (creamery butter) in 2017. Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendices A and B, respectively.

B. Background Information

Effluent Characterization

In order to determine pollutants of concern for further analysis, EPA evaluated the application form, facility discharge data, applicable effluent limitations guidelines (ELGs), and the nature of the discharge. The applicable ELGs for this facility, including the ELGs for the planned addition of butter production, are found in 40 CFR part 405 and include Subparts D, E, F, and L. Pollutant parameters included in these ELGs are five-day biochemical oxygen demand (BOD5), total suspended solids (TSS), and pH. In addition to the parameters regulated under the ELGs, the existing permit includes limits and/or monitoring for the following parameters: *E. coli* bacteria; ammonia; phosphorus; nitrate; nitrite; temperature; and oil and grease. Additionally, the monitoring results submitted with the application included data for chemical oxygen demand (COD) and total organic carbon (TOC). Based on this analysis, pollutants of concern are as follows:

- BOD₅
- TSS
- pH
- E. coli bacteria
- Ammonia
- Phosphorus
- Nitrate-Nitrite
- Temperature
- Oil and Grease
- Dissolved Oxygen (DO)
- COD
- TOC

The concentrations of pollutants in the discharge were reported in the NPDES application and DMRs, and were used in determining reasonable potential for several parameters (see Appendix D).

Facility Compliance

In 2010, Sorrento Lactalis paid a civil judicial penalty for multiple violations of its NPDES permit between 2005 and 2008. Most of the violations were exceedances of limits for pH, *E. coli*, TSS, BOD₅, and phosphorus. The facility also failed to conduct monitoring for several parameters and to notify EPA in a timely matter following discharges of pollutant parameters in amounts exceeding permit limits. Since 2008, the facility has generally been in compliance, although there have been sporadic exceedances of phosphorus limits and one exceedance of the *E. coli* limit. EPA conducted an inspection of the facility's treatment plant in 2010 and noted a need to improve temperature logs, which the facility planned to do.

In 2015 there were eight violations of the BOD₅ effluent limitations, six violations of the TSS effluent limitation and seven violations of the *E. Coli* limit.

III. Receiving Water

This facility discharges to the Purdam Drain, also known as Purdam Gulch Drain, in the City of Nampa, Idaho. Purdam Drain flows into Mason Creek, which then flows into the Boise River. The Boise River then flows into the Snake River.

A. Low Flow Conditions

The *Technical Support Document for Water Quality-Based Toxics Control* (hereafter referred to as the *TSD*) (EPA, 1991) and the Idaho Water Quality Standards (WQS) recommend the flow conditions for use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The *TSD* and the Idaho WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. Because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the 30Q7 for the chronic ammonia criterion instead of the 7Q10. The facility provided instream Purdam Drain flow monitoring for seven years. (see Appendix E of this fact sheet for additional information on flows).

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to attain, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

Designated Beneficial Uses

The facility discharges to the Purdam Drain. The Idaho WQS state, in Section 100, that all waters of the State of Idaho are protected for the uses of industrial and agricultural water supply (100.03.b. and c.), wildlife habitats (100.04.) and aesthetics (100.05.).

In Idaho, manmade waterways, for which uses are not designated in IDAPA 58.01.02, sections 110-160, are to be protected for the uses for which they were developed; in this case, agricultural water supply. (IDAPA 58.01.02.101.02). In addition, existing uses must be maintained and protected "The existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." (IDAPA 58.01.02.050.02.b; IDAPA 58.01.02.0051.01).

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft CWA 401 certification for this permit. See Appendix G for the State's draft CWA 401 certification. Comments on the CWA 401 certification including the antidegradation review can be submitted to the IDEQ as set forth on Page 1 under State Certification.

Tier 1 protection under the Antidegradation Policy applies to all water bodies under the CWA. It requires the protection of existing uses and requires that the water quality necessary to protect those uses be maintained and protected. (See federal regulations at 40 CFR Section 131.12(a)(1)). Under the antidegradation regulations, the EPA must include permit conditions in the NPDES permit sufficient to protect and maintain the existing uses in that water body.

IDEQ's CWA Section 401 certification does not identify the existing uses of Purdam Drain. Therefore, to support the development of the NPDES permit EPA conducted a survey to collect information to help characterize the existing uses of Purdam Gulch Drain. The *Purdam Gulch Drain, WQS Existing Use, Screening Assessment, EPA* 2015 is included as Appendix F. The screening survey was observational in nature due to access restrictions and legal restrictions precluding direct water and substrate sampling. The screening provided inconclusive results regarding the Purdam Drain existing aquatic life use and suggests the need for additional in-stream biological data prior to making a final determination. It is difficult to prove aquatic life diversity or human health contact does not exist from one screening survey based on observational data alone. Thus, the screening assessment recommends that for this permitting cycle, a permitting condition to collect necessary biological and human health data as well as available data concerning existing uses since 11/28/75.

Some unfenced areas might allow access to waterbodies and potential human contact. Therefore, the permit contains a requirement for data collection to aide in determining the aquatic life use category or signs of human contact in Purdam Drain (See Part VI of the fact sheet).

Downstream Waters

In addition to protecting the immediate receiving water, the CWA requires the attainment and maintenance of downstream WQS (*See* 40 CFR 131.10(b)). Therefore, the permit must protect any downstream waterbodies that are potentially impacted by the discharge. The draft permit limits are set to protect the downstream water quality of Mason Creek.

Surface Water Quality Criteria

The criteria are found in the following sections of the Idaho Water Quality Standards:

- The narrative criteria applicable to all surface waters of the State are found at IDAPA 58.01.02.200 (General Surface Water Quality Criteria). These narrative criteria state that all surface waters of the State shall be free from hazardous materials; toxic substances; deleterious materials; radioactive materials; floating, suspended or submerged matter; excess nutrients; oxygen-demanding materials; and sediment in concentrations which would impair beneficial uses.
- The numeric criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at IDAPA 58.01.02.210 (Numeric Criteria for

- Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use).
- Additional numeric criteria necessary for the protection of aquatic life can be found at IDAPA 58.01.02.250 (Surface Water Quality Criteria for Aquatic Life Use Designations).
- Numeric criteria necessary for the protection of recreation uses can be found at IDAPA 58.01.02.251 (Surface Water Quality Criteria for Recreation Use Designations).

C. Water Quality Limited Waters

Any water body for which the water quality does not meet, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment." Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and nonpoint pollutant sources, taking into account natural background levels and a margin of safety. Allocations for nonpoint sources are known as "load allocations" (LAs). The allocations for point sources, known as "wasteload allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

This facility discharges to the Purdam Drain, a manmade waterway that flows into Mason Creek, which flows into the Lower Boise River. The Lower Boise River flows into the Snake River. Mason Creek and the Lower Boise River are both impaired for bacteria, sediment, and temperature according to IDEQ's 2012 Integrated Report Section 5 (section 303(d)). Mason Creek is listed as impaired for temperature, chlorpyrifos, the pesticide residue malathion, *E. coli*, as well as "causes unknown" with suspected nutrient impairments. The Lower Boise River is also listed as impaired for phosphorus, low flow alterations, and physical substrate habitat alterations.

The *Lower Boise River TMDL Sediment and Bacteria Addendum*, State of Idaho Department of Environmental Quality, June 2015, (TSS and *E. Coli* Addendum) was approved by the EPA in September, 2015. The TSS and *E. Coli* Addendum in Table 26 provided Sorrento a total suspended solids (sediment) allocation of 222.0 lb/day based on a four month average.

The TSS and E. Coli Addendum in Table 26 also provided Sorrento with an E. Coli allocation of 7×10^9 cfu/day which is based on 126 cfu/100 L.

The Lower Boise River TMDL 2015 Total Phosphorus Addendum, State of Idaho Department of Environmental Quality, July 2015, (Phosphorus Addendum), was approved by the EPA in December, 2015. Table 27 provides a total phosphorus allocation to Sorrento of 1.3 lb/day as a monthly average from May 1 through September 30. The permit establishes a monthly average effluent limitation of 1.3 lb/day

The Phosphorus Addendum also provides in Table 34 a total phosphorus allocation of 4.4 lb/day as a monthly average from October 1 through April 30. The permit establishes a monthly average loading limit of 4.4 lb/day during these months.

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. This includes downstream waterbodies. The basis for the effluent limits proposed in the draft permit is provided in Appendix C.

B. Proposed Effluent Limitations

Below are the proposed effluent limits that are in the draft permit.

Narrative limitations:

- 1. The permittee must not discharge any waste streams, including spills and other unintentional or non-routine discharges of pollutants, that are not part of the normal operation of the facility as disclosed in the permit application, or any pollutants that are not ordinarily present in such waste streams.
- 2. The permittee must not discharge hazardous materials in concentrations found to be of public health significance or to impair designated beneficial uses of the receiving water.
- 3. The permittee must not discharge chemicals or toxic pollutants in concentrations that impair beneficial uses of the receiving water.
- 4. The permittee must not discharge deleterious materials in concentrations that impair beneficial uses of the receiving water.
- 5. The permittee must not discharge floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair beneficial uses of the receiving water.
- 6. The permittee must not discharge excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses of the receiving water.

Technology-based Effluent Limitations

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible.

Three ELGs apply to the production activities at the Sorrento Lactalis Nampa facility, and one additional ELG applies to planned future production activity. These ELGs were promulgated by EPA in 1974 and are all found in 40 CFR part 405 (Dairy Products

Processing). All of the applicable ELGs include standards for performance for new sources for five day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH. The following ELGs apply to current production at this facility:

- Subpart E (Cottage Cheese and Cultured Cream Cheese Subcategory), 40 CFR 405.55-Standards of performance for new sources
- Subpart F (Natural and Processed Cheese Subcategory), 40 CFR 405.65 Standards of performance for new sources
- Subpart L (Dry Whey Subcategory), 40 CFR 405.125 Standards of performance for new sources

Subpart D (Butter Subcategory), 40 CFR 405.45, applies to planned future production.

Once technology-based limits have been established, EPA must determine if the technology-based limits are stringent enough to protect ambient water quality. If they are not, EPA must develop more stringent water quality-based limits. Technology-based limits might not limit every pollutant that is in an effluent.

The new source performance standards (NSPS) at 40 CFR 405.45, 405.55, 405.65, and 405.125 are generally expressed in terms of an allowable mass of the regulated pollutant per hundred pounds of raw material processed. Therefore, effluent limits are determined by multiplying the standards provided in the ELG by a reasonable measure of the facility's actual input of raw material (in this case BOD₅).

Five-day Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS)

To accommodate the planned expansion of the facility's production, EPA developed tiered limits for BOD₅ and TSS based on the facility's projected BOD₅ input. Estimated 2013 average daily BOD₅ input was used as the basis for the tiers, with the first tier applying where the facility's production range is greater than or equal to 90% and less than or equal to 110% of the current input, tier 2 applying where production ranges greater than or equal to 110% and less than or equal to 130% of the current level, tier 3 applying where production is greater than or equal to 130% and less than or equal to 150% of the current level, and tier 4 applying where production is greater than or equal to 150% and less than or equal to 170% of the current level. These ranges were selected based on the process for tiering limits to allow for facility expansion as described in EPA's Guidance Manual for the Use of Production-Based Pretreatment Standards and the Combined Wastestream Formula (September 1985).

The three currently applicable ELG subparts contain different NSPS. The most stringent is the NSPS for the Natural and Processed Cheese Subcategory (40 CFR 405.65). The NSPS for future production, the Butter Subcategory (40 CFR 405.45), is the same as for the Natural and Processed Cheese Subcategory.

Because of the different NSPS for the applicable ELG subparts, in developing the effluent limits for the comingled wastestream, it was infeasible to account for the facility's planned growth while also accounting for all of the possible ratios of production among the various products over time with any certainty. Therefore, EPA applied the most stringent of the applicable subparts of the ELG (40 CFR 405.65, which contains the same NSPS as 40 CFR 405.45) in calculating the tiered limits. See Appendix C for a detailed description of the

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technology-based limits applied to this permit. This approach is consistent with the approach that was used to develop limits for BOD₅ and TSS in the existing permit for this facility.

The applicable BOD₅ and TSS tier can be determined based on the average daily BOD₅ input to the facility for the month for which reporting data are provided. This average daily BOD₅ input shall be reported in the DMR along with the discharge monitoring data for each reporting period. The BOD₅ input should be determined using the calculation found in the ELG as follows: "The term BOD₅ input shall mean the biochemical oxygen demand of the materials entered into process. It can be calculated by multiplying the fats, proteins and carbohydrates by factors of 0.890, 1.031 and 0.691 respectively. Organic acids (e.g., lactic acids) should be included as carbohydrates. Composition of input materials may be based on either direct analyses or generally accepted published values." The mass-based limits for BOD₅ and TSS for each tier is based on the midpoint of the BOD₅ input range for that tier.

pН

pH standards in all the applicable subparts of the ELG are the same: within the range 6.0 to 9.0 s.u. Tiered limits are not necessary for pH.

Water Quality-Based Effluent Limitations

For all pollutants discharged from the facility, EPA determines if the discharge is causing, has reasonable potential to cause, or is contributing to a violation of the State's water quality standards for that pollutant. If reasonable potential exists, EPA will develop water quality-based effluent limits for the pollutant. See Appendix D for detailed reasonable potential calculations. Additionally, where water quality criteria exist for parameters included in the applicable ELGs, EPA considers whether limits more stringent that those based on the ELG are necessary to protect the receiving water.

Total Suspended Solids (TSS)

Mason Creek (entire watershed) is classified as impaired for sediment, and the TSS and *E. Coli* Addendum for tributaries to the Lower Boise River, of which Mason Creek is one. While the mass-based limit for TSS for Sorrento Lactalis is based on the applicable ELG (see above) and applied in production-based tiers to allow for planned facility expansion, the draft permit also includes a concentration-based limit for TSS that is intended to ensure the protection of Mason Creek from further impairment. In other words, this permit allows an increase in load to the receiving water, but ensures that the TSS concentration does not increase so as to protect the receiving water from further impairment. The technology mass-based limits are more stringent than the corresponding water quality mass-based limits. Therefore, this permit maintains the concentration-based monthly average TSS limit of 13 mg/L and a daily maximum of 25 mg/L TSS, both of which are in the existing permit.

Five-day Biochemical Oxygen Demand (BOD₅)

Because the facility is expanding and the permit includes an increase in mass-based limits, the concentration-based limits for BOD₅ (average monthly limit of 10 mg/L and maximum daily limit of 20 mg/L) are being retained from the previous permit to ensure the discharge does not adversely affect the dissolved oxygen concentrations in the receiving water. The technology mass-based limits are more stringent than the corresponding water quality mass-based limits.

рН

Based on the Idaho WQS, the most stringent water quality criterion for pH is for the protection of aquatic life. The pH applicable to aquatic life uses must be no less than 6.5 and no greater than 9.0 s.u., which is more stringent than the pH standards in all the applicable subparts of the ELG, which are of 6.0-9.0 s.u. Sorrento does have a reasonable potential to violate the WQS therefore the ELG is included in the permit.

E. coli Bacteria

The TSS and *E. Coli* Addendum in Table 26 provided Sorrento with an *E.Coli* allocation of 126 cfu/100 L which is the same as the primary contact recreation criteria (in Section 251.01 of the WQS), a monthly geometric mean of 126 *E. coli* organisms/100 ml. The WQS also contain a criteria of a single sample maximum of 406 organisms/100 ml. The draft permit contains both these limits.

Setting the effluent limits equal to the criteria will ensure that the Sorrento Lactalis discharge will not cause or contribute to a WQS violation for *E. coli*.

Total Phosphorus

The 1.3 lbs/day summer limit and 4.4 lbs/day winter limit for total phosphorus are consistent with the WLA provided by the Phosphorus TMDL. Using procedures in the TSD average maximum daily limits are established at 2.69 lbs/day during the summer and 9.1 lbs/day during the winter.

Ammonia

The Idaho water quality standards contain criteria for the protection of aquatic life from the toxic effects of ammonia. The criteria are dependent on pH and temperature, because the fraction of the total ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the total ammonia criteria become more stringent as pH and temperature increase. Ammonia criteria were calculated for Mason Creek downstream of the confluence with Purdam Drain. The *Mason Creek Subbasin Assessment*, Idaho Department of Environmental Quality, December 2001 was used for pH. *Water-Quality and Biological Conditions in Selected Tributaries of the Lower Boise River, Southwestern Idaho, Water Years 2009-12* Scientific Investigations Report 2014-5132 U.S. Department of the Interior, U.S. Geological Survey page 41 (Selected Tributaries Investigation) was used for temperature. Based on three data points the maximum pH is 8.2. and based on continuous temperature monitoring the 95th percentile temperature is 21.0 °C and are used in the reasonable potential calculation.

Table 1: Water Quality Criteria for Ammonia

	Acute Criterion ¹	Chronic Criterion
Equations:	$\frac{0.275}{1+10^{7.204-pH}} + \frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \times MIN(2.85, 1.45 \times 10^{0.028 \times (25-T)})$
Results	3,830 mg/L	1,180 mg/L

A reasonable potential calculation showed that the Sorrento Lactalis discharge does not have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit contains no effluent limits for ammonia. See Appendix D for reasonable potential calculations for ammonia.

Proposed Limits

Tables 2, 3, 4, and 5 (below) present the proposed average monthly, average weekly, and maximum daily effluent limits based on the range of raw material used by the facility in its manufacturing process (in this case measured as BOD₅ input). The limit tables should be used as follows:

- Table 2: applies where BOD₅ input is between 393,000 and 481,000 lbs/day
- Table 3: applies where BOD₅ input is between 481,000 and 568,000 lbs/day
- Table 4: applies where BOD₅ input is between 568,000 and 656,000 lbs/day
- Table 5: applies where BOD₅ input is between 656,000 and 743,000 lbs/day

Should the facility anticipate or operate at a BOD₅ input level outside the above ranges, the facility shall contact EPA for a permit modification.

Table 2 Effluent Limitations for Tier 1 (BOD₅ input = 393,000 to 481,000 lbs/day)

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous Maximum
Biochemical Oxygen	mg/L	10	20	-
Demand (BOD ₅)	lbs/day	35	70	-
Total Suspended Solids	mg/L	13	25	-
(TSS)	lbs/day	44	87	-
E. coli Bacteria	#/100ml	126	-	406
рН	s.u.	6.1 to 9.0 at	all times	
Total Phosphorus as P May 1- September 30	lbs/day	1.3	2.69	-
Total Phosphorus as P October 1 – April 30	lbs/day	4.4	9.10	-
Floating, Suspended, or Submerged Matter		Narrative Limitation		-
Oil and Grease		No Visible Sheen		

Table 3 Effluent Limitations for Tier 2 (BOD₅ input = 481,000 to 568,000 lbs/day)

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous Maximum
Biochemical Oxygen Demand (BOD ₅)	mg/L	10	20	-
	lbs/day	42	84	-
Total Suspended Solids	mg/L	13	25	-

(TSS)	lbs/day	52	104	-
E. coli Bacteria	#/100ml	126	-	406
рН	s.u.	6.1 to	9.0 at all times	-
Total Phosphorus as P May 1- September 30	lbs/day	1.3	2.69	-
Total Phosphorus as P October 1 – April 30	lbs/day	4.4	9.10	-
Floating, Suspended, or Submerged Matter		Narrative Limitation -		
Oil and Grease		No Visible Sheen -		

Table 4 Effluent Limitations for Tier 3 (BOD₅ input = 568,000 to 656,000 lbs/day)

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous Maximum
Biochemical Oxygen	mg/L	10	20	-
Demand (BOD ₅)	lbs/day	49	98	-
Total Suspended Solids	mg/L	13	25	-
(TSS)	lbs/day	62	122	-
E. coli Bacteria	#/100ml	126	-	406
рН	s.u.	u. 6.1 to 9.0 at all times		-
Total Phosphorus as P May 1- September 30	lbs/day	1.3	2.69	-
Total Phosphorus as P October 1 – April 30	lbs/day	4.4	9.10	-
Floating, Suspended, or Submerged Matter		Narrative Limitation		
Oil and Grease		No Visible Sheen -		

Table 5 Effluent Limitations for Tier 4 (BOD₅ input = 656,000 to 743,000 lbs/day)

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous Maximum
Biochemical Oxygen	mg/L	10	20	-
Demand (BOD ₅)	lbs/day	56	112	-
Total Suspended Solids	mg/L	13	25	-
(TSS)	lbs/day	70	139	-
E. coli Bacteria	#/100ml	126	-	406
pН	s.u.	6.1 to 9.0 a	at all times	-
Total Phosphorus as P May 1- September 30	lbs/day	1.3	2.69	
Total Phosphorus as P October 1 – April 30	lbs/day	4.4	9.10	

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous Maximum
Floating, Suspended, or Submerged Matter	Narrative Limitation			-
Oil and Grease	No Visible Sheen			-

Basis for limits in permit

As mentioned above, when technology-based limits do not exist for a particular pollutant expected to be present in an effluent, EPA determines if the discharge has reasonable potential to cause or contribute to a violation of the State's water quality standards for that pollutant. If reasonable potential exists, EPA will impose water quality-based effluent limits for the pollutant. Additionally, where water quality criteria exist for parameters included in the applicable ELGs, EPA considers whether limits more stringent that those based on the ELG are necessary to protect the receiving water. Table 6 lists the basis for the final limits. Additional parameters that were considered for limitation in the permit but were not included as limited parameters are discussed in Appendix C.

Table 6 Technology or Water Quality Basis for Permit Limits

Parameter	Type of limit	Basis for limit
Biochemical Oxygen	Mass	Technology
Demand (BOD ₅)	Concentration	Water Quality
Total Suspended Solids	Mass	Technology
(TSS)	Concentration	Water Quality
E. coli Bacteria	Concentration	Water Quality
рН	Concentration	Technology and Water Quality
Total Phosphorus as P	Mass	Water Quality
Floating, Suspended, or Submerged Matter	Narrative	Water Quality
Oil and Grease	Narrative	Water Quality

Statutory Prohibitions on Backsliding

Section 402(o) of the CWA and the NPDES regulations at 40 CFR 122.44(l) contain anti-backsliding provisions that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the previous permit unless an anti-backsliding analysis is conducted. Section C of Appendix C describes the statutory and regulatory anti-backsliding requirements in more detail. A backsliding analysis found an exemption applies to the prohibition on backsliding for total phosphorus, BOD₅ and TSS.

Effluent limitation changes from previous permit

Mass-based limits for TSS and BOD₅ were increased and separated into tiers based on production to allow for facility expansion and resulting effluent flow increase. Revised total phosphorus limits based on the EPA-approved Phosphorus Addendum replace the existing total phosphorus limits.

Table 7 Changes in Effluent Limitatins

Parameter	Existing Permit	Draft Permit
BOD ₅	AML = 42 lbs/day	AML = 35 lbs/day (tier 1), 42 lbs/day (tier 2), 62 lbs/day (tier 3), 56 lbs/day (tier 4)
	MDL = 84 lbs/day	MDL = 84 lbs/day (tier 1),84 lbs/day (tier 2), 122 lbs/day (tier 3), 112 lbs/day (tier 4)
TSS	AML = 53 lbs/day	AML = 44 lbs/day (tier 1), 52 lbs/day (tier 2), 62 lbs/day (tier 3), 70 lbs/day (tier 4)
	MDL = 106 lbs/day	MDL = 87 lbs/day (tier 1), 104 lbs/day (tier 2), 122 lbs/day (tier 3), 139 lbs/day (tier 4)
pН	6.0 – 9.0	6.1-9.0

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and the NPDES regulations at 40 CFR 122.44(i) require permits to contain monitoring requirements to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for permit renewal, as appropriate, to the U.S. Environmental Protection Agency (EPA).

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR Part 136) or as specified in the permit.

Table 8, below, presents the proposed effluent monitoring requirements for Sorrento Lactalis, Inc. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 8 Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Effluent flow	mgd	Effluent	continuous	recording
Biochemical Oxygen Demand (BOD ₅)	lbs/day mg/L	Input ¹ & Effluent	MARKIN	Input: Calculation ¹ Effluent: 24-hour composite

Parameter	Units	Sample Location	Sample Frequency	Sample Type	
Total Suspended Solids (TSS)	lbs/day	E CCI	weekly	24.1	
	mg/L	Effluent		24-hour composite	
E. coli Bacteria ²	#/100ml	Effluent	5x/month	grab	
рН	s.u.	Effluent	Daily	grab	
DO	mg/L	Effluent	monthly	grab	
Total Ammonia as N	mg/L	Effluent	monthly	24 h	
I otal Ammonia as N	lbs/day	Emuent		24-hour composite	
T (I DI	mg/L	Effluent	monthly	24-hour composite	
Total Phosphorus as P	lbs/day	Emuent			
Floating, Suspended, or Submerged Matter	-	Effluent	monthly	visual	
Alkalinity as CaCO ₃	mg/L	Effluent	1/quarter	grab	
Oil and Grease	-	Effluent	monthly	visual	
Temperature	°C	Effluent	continuous	recording	

NOTES:

- As stated in the ELG, the term BOD₅ input shall mean the biochemical oxygen demand of the materials
 entered into process. It can be calculated by multiplying the fats, proteins and carbohydrates by factors of
 0.890, 1.031 and 0.691 respectively. Organic acids (e.g., lactic acids) should be included as carbohydrates.
 Composition of input materials may be based on either direct analyses or generally accepted published
 values.
- 2. The permittee must report the monthly geometric mean *E. coli* concentration and the instantaneous maximum concentration. Reporting is required within 24 hours of a maximum daily limit violation.

Monitoring Changes from the Previous Permit

Effluent monitoring for nitrite and nitrate + nitrite included in the previous permit is discontinued in this proposed permit, since effluent monitoring data received after permit issuance indicated that concentrations in the effluent were far below even human health criteria for these parameters.

Total phosphorus is the primary limiting nutrient in the Boise River. The target and allocation for nutrients is total phosphorus. Therefore orthophosphate and total kjeldahl nitrogen monitoring is discontinued.

Temperature is a pollutant of concern and Mason Creek is impaired for temperature. Temperature TMDLs have not yet been completed for this water body. To better characterize wastewater discharges for temperature monitoring is increased from grab sampling to continuous monitoring within six months of the effective date of the permit.

Alkalinity is added to better characterize the discharges for the reasonable potential calculation of pH to violate the water quality standards.

Dissolved Oxygen is added to characterize discharges and to determine impacts to the receiving water.

C. Surface Water Monitoring

Table presents the proposed surface water monitoring requirements for the draft permit. Sorrento Lactalis must continue receiving water monitoring at the established upstream location, outside the influence of the discharge in Purdam Drain and in Mason Creek within six months of the effective date of the permit.

Table 9 Surface Water Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Total Ammonia as N	mg/L	Upstream of outfall and in Mason Creek upstream of confluence of Purdam Drain and Mason Creek	quarterly ¹	grab
рН	s.u.	Upstream of outfall and in Mason Creek upstream of confluence of Purdam Drain and Mason Creek	quarterly ¹	grab
DO		Downstream in Purdam Drain	quarterly ¹	grab
Flow	mgd	In Mason Creek upstream of confluence of Purdam Drain and Mason Creek, In Purdam Drain Near the mouth	quarterly ¹	Measure
Temperature	°C	Upstream of outfall in Purdam Drain	Continuous	Recording
Alkalinity as CaCO3	mg/L	Upstream of outfall and in Mason Creek upstream of confluence of Purdam Drain and Mason Creek	quarterly ¹	grab

^{1.} Quarters are defined as January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31.

Surface Water Monitoring Changes from the Previous Permit

To better characterize background surface water quality, monitoring for pH and ammonia in Mason Creek is required to calculate the ammonia numeric criteria that apply in Mason Creek and to the assess reasonable potential of the Sorrento discharge to violate that water quality criteria during development of the next permit. The Selected Tributaries Investigation provided adequate temperature characterization of Mason Creek. Therefore no temperature monitoring is required in Mason Creek.

Alkalinity is added to provide a better calculation of reasonable potential for pH to violate the water quality standard for the next permit.

DO is added to characterize the receiving water for DO and to determine impacts to Mason Creek.

Upstream and downstream phosphorus monitoring is discontinued because an allocation has been provided by the Phosphorus Addendum to the Lower Boise TMDL.

For the same reasons effluent continuous temperature monitoring is required continuous temperature monitoring is required upstream of the outfall in Purdam Drain. Continuous temperature monitoring is more representative of this pollutant of concern then the existing grab sampling. Monitoring is increased from grab sampling to continuous monitoring within six months of the effective date of the permit.

Flow monitoring is required in Mason Creek and Purdam Drain to provide a more accurate mixing zone for the reasonable potential calculation of ammonia and pH to violate the water quality standards in developing the next permit.

For the same reasons as nitrite and nitrate + nitrite effluent monitoring is discontinued, nitrite and nitrate + nitrite is discontinued in the receiving water.

D. Monitoring and Reporting

The draft permit requires that the permittee submit DMR data electronically using NetDMR no later than December, 2016 as required by EPA's electronic reporting regulation. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR 122.41 and 403.12. Under NetDMR, all reports required under the permit are submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to EPA.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: http://www.epa.gov/netdmr. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

VI. Other Permit Conditions

A. Existing Use Data Collection

As described in Section IV.A. of this Fact Sheet, in accordance with the antidegradation regulations, the EPA must include permit conditions in the NPDES permit sufficient to protect and maintain the existing uses in a water body. Additional information is needed to identify existing uses in Purdam Drain to insure that the permit is protective of existing uses. An existing use can be established by demonstrating that:

- Fishing, swimming, or other uses have actually occurred since November 28, 1975; or
- That the water quality is suitable to allow the use to be attained unless there are physical problems, such as substrate or flow that prevent the use from being attained.¹

¹ Water Quality Standards Handbook, Chapter 4: Antidegradation, EPA, August 1994 (EPA 823-B-94-005a)

The draft permit includes a provision "Existing Use Data Collection" that requires the Permittee to collect additional information to determine the appropriate existing uses for Purdam Drain. Information collected will be used during the development of the next permit issuance.

B. Quality Assurance Plan

The NPDES regulations at 40 CFR 122.41(e) require the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. Sorrento Lactalis is required to update the Quality Assurance Plan (QAP) for the Nampa, Idaho, facility within 90 days of the effective date of the final permit. The permittee must submit written notice to EPA and IDEQ, within 90 days of the effective date of this permit, that the Plan has been developed and implemented. The QAP shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and be made available to the EPA and IDEQ upon request.

C. Best Management Practices Plan

Federal regulations at 40 CFR 122.44(k) require the permittee to develop a Best Management Practices (BMP) Plan in order to prevent or minimize the potential for the release of pollutants to waters of the United States through plant site runoff, spillage or leaks, or erosion. The draft permit contains certain BMP conditions which must be included in the BMP plan. The draft permit requires the permittee to update its BMP plan within 60 days of the effective date of the final permit and implement the updated plan within 90 days of the effective date of the final permit. Within 90 days after the effective date of the final permit, the permittee must provide EPA and IDEQ with written notification that the Plan has been developed and implemented. The Plan must be kept on site and made available to EPA or IDEQ upon request.

D. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VII. Other Legal Requirements

A. Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

EPA did not find that any ESA-listed species or critical habitat resides within the vicinity of the discharge, and determined that the discharge from the facility to Purdam Drain will have no effect in the vicinity of the discharge.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). EPA determined that the reissuance of the NPDES Permit will not adversely affect Essential Fish Habitat (EFH) in the vicinity of the discharge, therefore consultation is not required for this action.

C. State Certification

Section 401 of the CWA requires EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation.

EPA is requesting that IDEQ certify the NPDES permit for this facility, under Section 401 of the CWA.

D. Permit Expiration

The permit will expire five years from the effective date.

VIII. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

Lower Boise River TMDL Sediment and Bacteria Addendum, State of Idaho Department of Environmental Quality, June 2015

Lower Boise River TMDL 2015 Total Phosphorus Addendum, State of Idaho Department of Environmental Quality, July 2015

EPA. 2015 Purdam Gulch Drain, WQS Existing Use, Screening Assessment, 2015,

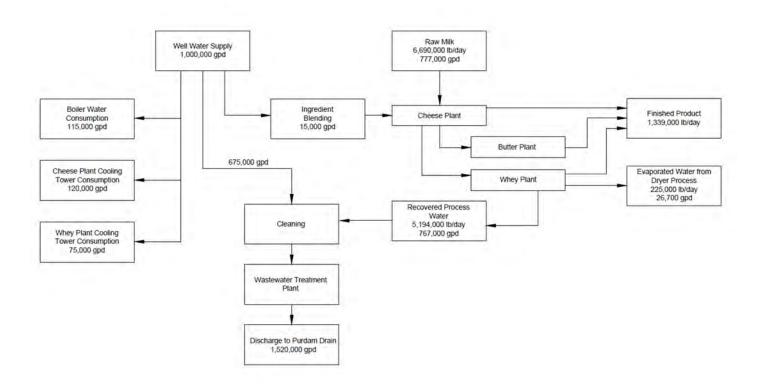
The Mason Creek Subbasin Assessment, Idaho Department of Environmental Quality, December 2001

Water-Quality and Biological Conditions in Selected Tributaries of the Lower Boise River, Southwestern Idaho, Water Years 2009-12 Scientific Investigations Report 2014-5132 U.S. Department of the Interior, U.S. Geological Survey

EPA. 2010. *NPDES Permit Writers' Manual*. Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001.

Appendix A: Facility Details

The Sorrento Lactalis Nampa facility currently operates under three standard industrial classification (SIC) codes - 2022 (natural cheese), 2023 (dry whey products), and 2026 (cultured cream cheese) - and will add 2021 (creamery butter) with a planned expansion. The processes used by the treatment plant include influent pumping, pre-screening and grit removal, an equalization tank, two sequencing batch reactors, a decant tank, a tertiary clarifier, primary and secondary continuous sand filters, temporary onsite storage for land application, and an inline ultraviolet disinfection system. A dissolved air flotation (DAF) treatment train is also scheduled to become operational.



Appendix B: Facility Maps







Appendix C: Basis for Effluent Limits

This Appendix explains the derivation of the technology- and water quality- based effluent limits proposed in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, Part C discusses anti-backsliding provisions, Part D discusses the effluent limits imposed due to the State's anti-degradation policy, and Part E summarizes the permit limits.

A. Technology-Based Effluent Limits

Section 301(b)(2) of the CWA requires technology-based controls on effluents. This section of the CWA requires that, by March 31, 1989, all permits contain effluent limitations which: (1) control toxic pollutants and nonconventional pollutants through the use of "best available technology economically achievable" (BAT), and (2) represent "best conventional pollutant control technology" (BCT) for conventional pollutants. In no case may BCT or BAT be less stringent than "best practicable control technology currently available" (BPT), which is a minimum level of control required by section 301(b)(1)(A) the CWA. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3).

Table C-1 outlines the technology-based effluent limitation guideline regulation that was used in the derivation of technology-based limitations in this permit. EPA applied the most stringent of the applicable subparts of the ELG Natural and Processed Cheese Subcategory (40 CFR 405.65) and the Butter Subcategory, 40 CFR 405.45.

Table C-1: Technology-Based Effluent Limitations Guideline (40 CFR 405.45)				
Standards of performance for new sources				
Parameter	Maximum Daily	Average Monthly		
	Limit	Limit		
	lb/100lb of BOD5 input			
BOD ₅	0.016	0.008		
TSS	0.020	0.010		
рН	6.0 to 9.0 s.u.			

Reasonable Measure of the Facilities BOD₅ Input:

Milk Composition

- 3.5 percent fat (butterfat)
- 3.2 percent protein
- 4.75 percent lactose (carbohydrates)

Fact Sheet

Milk Weight Input to Plant 4,500,000 pounds per day

BOD₅ input calculation:

4,500,000 lbs/day x 0.035 = 157,000 lbs of fat

4,500,000 lbs/day x 0.032 = 144,000 lbs of protein

4,500,000 lbs/day x 0.048 = 216,000 lbs of carbohydrates

 157,000 lbs fat x 0.890 = 140,000 BOD5

 144,000 lbs protein x 1.031 = $148,000 \text{ BOD}_5$

 216,000 lbs carbohydrates x 0.691 = $149,000 \text{ BOD}_5$

 Total BOD₅ Input
 = $437,000 \text{ lbs BOD}_5$

Calculation example for maximum daily BOD₅ limit (tier 1):

437,000 lbs BOD₅ input /day * $(0.016 \text{ lbs BOD}_5/100 \text{ lbs BOD}_5 \text{ input}) = 70 \text{ lbs BOD}_5/\text{day}$

Calculation example for average monthly BOD₅ limit (tier 1):

 $437,000 \text{ lbs BOD}_5 \text{ input /day * } (0.008 \text{ lbs BOD}_5/100 \text{ lbs BOD}_5 \text{ input)} = 35 \text{ lbs BOD}_5/\text{day}$

Calculation example for maximum TSS limit (tier 1)

 $437,000 \text{ lbs BOD}_5 \text{ input /day * } (0.020 \text{ lbs BOD}_5/100 \text{ lbs BOD}_5 \text{ input)} = 87 \text{ lbs BOD}_5/\text{day}$ $437,000 \text{ lbs BOD}_5 \text{ input /day * } (0.010 \text{ lbs BOD}_5/100 \text{ lbs BOD}_5 \text{ input)} = 44 \text{ lbs BOD}_5/\text{day}$

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water

quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to perform this reasonable potential analysis using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if the pollutant parameters in the effluent are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State/Tribal water quality criterion, EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A WLA is the concentration or loading of a pollutant that may be discharged to the receiving water without causing or contributing to an excursion above the water quality standards. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based WLA

Where the receiving water quality does not meet water quality standards, the WLA is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards, Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for nonpoint sources (load allocations), point sources (WLAs), natural

background loadings, and a margin of safety to account for any uncertainties. Permit limitations consistent with the WLAs are then developed for point sources.

The Sorrento Lactalis facility was provided a phosphorus WLA in the Phosphorus Addendum. The permit establishes this WLA as an effluent limitation. The title of Table 27 of the Phosphorus Addendum states:

"DEQ intends that wasteload allocations are to be expressed as average monthly limits."

Further, the column heading for the allocation in Table 27 states:

"Average May-Sept TP Allocation, (lb/day as a monthly average)"

Therefore the allocation is established as a monthly effluent limitation of 1.3 lbs/day.

The Sorrento Lactalis facility was also provided a waste load of 126 cfu/100 L for *E. Coli* and 222 lbs/day TSS averaged over four days.

2. Mixing zone based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant.

3. Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the WLA. Setting the WLA at the criterion value ensures that the effluent discharge will not contribute to an exceedance of the criteria.

Once the WLA has been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain the daily maximum permit limit. This approach takes into account effluent variability, sampling frequency, and water quality standards.

C. Anti-backsliding Provisions

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)), but in this case, the effluent limits being revised are water quality-based effluent limits (WQBELs).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be

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revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the EPA NPDES Permit Writers' Manual (EPA-833-K-10-001) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4). Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

An anti-backsliding analysis was done for total phosphorus, BOD₅ and TSS. As a result of the analysis the limitations in the Sorrento permit for the effluent limitations for total phosphorus, loading mass for BOD₅ and TSS are not being retained in the proposed permit. The anti-backsliding analysis for each limit or condition is discussed in more detail below.

BOD5 and TSS ELG

Mass-based limits for BOD₅ and TSS in the draft permit are higher than in the previous permit for the Sorrento Lactalis facility. These mass-based limits are based on a technology-based ELG that establishes a mass discharge allowance calculated from the facility's raw material utilization rate. For the draft Sorrento Lactalis permit, the applicable ELG performance standard is unchanged from the previous permit and the BOD₅ and TSS mass limits have increased solely due to an increase in the raw material utilization rate at the facility.

The antibacksliding provisions in Section 402(o)(1) of the CWA only apply to water quality-based effluent limitations and technology-based effluent limits developed using best professional judgment; thus, Section 402(o) is not applicable to the revised ELG-based limit for BOD₅ and TSS in the Sorrento Lactalis permit. The provisions of 40 CFR 122.44(l)(1) prohibit less stringent limits or other permit conditions unless "the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under 122.62." The facility's expansion of operations is a material and substantial change and would constitute "cause" under 122.62, therefore, the revised limit is permissible under 122.44(l)(1).

Total Phosphorus

Section 303(d)(4)(A) allows the establishment of a less stringent effluent limitation when the receiving water has been identified as not meeting applicable water quality standards (i.e. a nonattainment water) if the permittee meets two conditions. First , the existing effluent limitation must have been based on a WLA allocation established under CWA 303. Second relaxation of the effluent limitation is only allowed if attainment of water quality standards will be ensured.

The first condition is met as the existing 0.07 and 0.14 mg/L total phosphorus effluent limitations are based on a WLA. The Phosphorus Addendum analysis establishes total phosphorus targets and load capacities, estimates existing total phosphorus loads and allocates responsibility for total phosphorus reductions needed to return listed waters to a condition meeting water quality standards. It also identifies implementation strategies, including reasonable time frames, approach, responsible parties, and monitoring strategies necessary to achieve load reductions and meet water quality standards in the future. Therefore the 1.3 lbs/day allocation ensures

attainment of water quality standards and the second condition of the Section 303(d)(4)(A) exception to backsliding is satisfied.

D. Antidegradation

The proposed issuance of an NPDES permit triggers the need to ensure that the conditions in the permit ensure that Tier I, II, and III of the State's antidegradation policy are met. An antidegradation analysis was conducted by the IDEQ. See Appendix F for the antidegradation analysis.

E. Proposed Limits

The final limits are the more stringent of technology-based requirements, water quality-based requirements, limits retained as the result of anti-backsliding analysis, or limits necessary to meet the State's anti-degradation policy. A discussion of these limits is included in Section IV.B of this fact sheet.

Several parameters were measured based on monitoring requirements in the previous permit, but were not given proposed limits, as explained below:

Nitrite and Nitrate + Nitrite

All effluent monitoring data indicate that levels of both nitrite and nitrate + nitrite in the effluent are orders of magnitude less than human health criteria for these parameters. A comparison of upstream and downstream surface water monitoring data from Purdam Drain does not show an increase in nitrite or nitrate + nitrite from the Sorrento Lactalis facility.

Appendix D: Reasonable Potential Calculations

This Appendix describes the process EPA used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential and the EPA NPDES Permit Writers' Manual.

To determine if there is reasonable potential to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential for the discharge to cause or contribute to a water quality standards violation, and a water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

A. Ammonia Reasonable Potential Analysis

Development of Mass-based Equation

(Based on the EPA NPDES Permit Writers' Manual Page 6-26, 6-27 and 6-28)

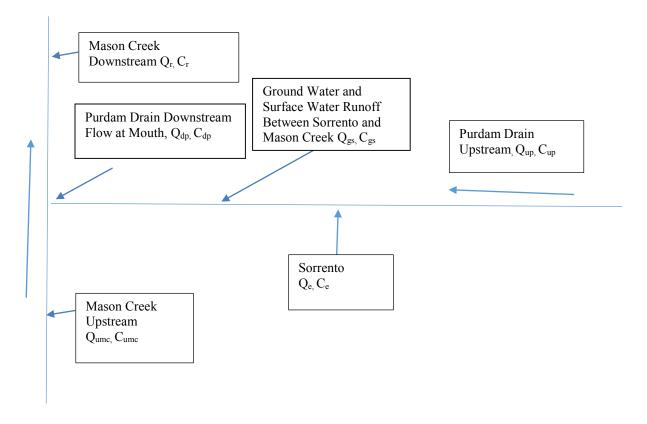


Figure 1

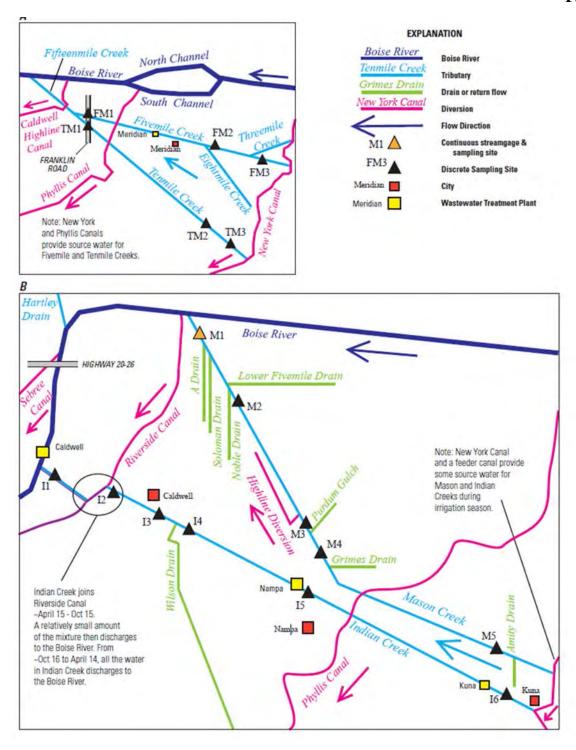


Figure 2

The mass-balance equation can be used to determine whether the discharge from Sorrento would cause, have the reasonable potential to cause, or contribute to an excursion above the water quality standards applicable to Mason Creek.

Mass Balance Equation:

$$C_r \times Q_r = (Q_e \times C_e) + (Q_{up} \times C_{up}) + (Q_{umc} \times C_{umc}) + (Q_{gs} \times C_{gs})$$

Q_{umc} = 27.5 cfs upstream of Purdam Drain, lowest measured flow

Flow upstream Mason Creek at USGS 13210965 MASON CREEK AT MADISON AVE NR NAMPA, ID, and

Water-Quality and Biological Conditions in Selected Tributaries of the Lower Boise River, Southwestern Idaho, Water Years 2009-12 Scientific Investigations Report 2014-5132 U.S. Department of the Interior, U.S. Geological Survey, Page 17, see Figure 2 Discrete Sampling Site M4:

With 25 percent mixing zone in Mason Creek:

$$27.5 \text{ cfs } \times 0.25 = 6.88 \text{ cfs}$$

C_{umc} = Concentration upstream in Mason Creek - 0.02 mg/L based on USGS 13210965 MASON CREEK AT MADISON AVE NR NAMPA, ID

 Q_e = Effluent Flow based on application = 2.35 cfs

C_e = Maximum projected effluent concentration, Sorrento based on 26 measurements from January, 2013 to February, 2015

$$95^{th}$$
 percentile = 2.86 mg/L

Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's Technical Support Document for Water Quality-based Toxics Controls (TSD, 1991) recommends using the maximum projected effluent concentration (Ce) in the mass balance calculation. To determine the maximum projected effluent concentration (Ce) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration (Ce) can be calculated using the following equations:

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - confidence level)^{1/n}$$

where,

 p_n = the percentile represented by the highest reported concentration

n = the number of samples

confidence level = 99% = 0.99

and

RPM=
$$\frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}} = 4.3$$

Where,

 $\sigma^2 = \ln(CV^2 + 1)$

 $Z_{99} = 2.326$ (z-score for the 99th percentile) $Z_{Pn} = z$ -score for the P_n percentile (inverse of the normal cumulative distribution function

at a given percentile)

CV = coefficient of variation (standard deviation ÷ mean)

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$$C_e = (RPM)(MRC)$$

where MRC = Maximum Reported Concentration

Calculate Reasonable Potential Multiplier (Ref. Page 57 TSD)

Input Field indication in Red

Number of Sampl	es in Data Set (n)			26
Coefficient of Var	iation (CV) = Std. Dev./Mear	1		1.52
σ	σ^2 =In(CV ² +1)			1.094
P _n	=(1-confidence level) ^{1/n} =	where confidence level	99%	0.838
RP Multiplier	=exp(zσ-0.5σ²)/exp[invnor prob.basis=	$m(P_N)\sigma$ -0.5 σ^2],	99%	4.3

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$$C_e = 4.3 \text{ x } 2.86 \text{ mg/L} = 12.3 \text{ mg/L}$$

Q_{up} = Flow Upstream Purdam Drain (100 percent flow):

Acute (1Q7) = 1.72 cfs acute based on application

Chronic (30B7) = 14.8 cfs chronic based on application

- C_{up} = Concentration Upstream Purdam Drain = non detected, from Application, treated as 0 mg/L
- Q_{dp} = Flow Downstream Purdam Drain. Monitoring location is approximately 4½ miles downstream from the outfall at the mouth of Purdam Drain into Mason Creek immediately south of the culvert where Purdam Drain crosses under Ustick Road. (100 percent flow, includes critical flows for Q_e and Q_{up} and also Q_{gs} (groundwater drainages and surface water runoff between Sorrento and the mouth of Purdam Drain):

Acute
$$(1Q7) = 8.82$$
 cfs acute

Calculated from *Surface Water Monitoring Report, Sorrento Lactalis, Inc.*, June 14, 2013, Prepared by Forsgren Associates, Inc. included as part of the application package

Chronic
$$(30Q7) = 29.3$$
 cfs chronic

Calculated from Surface Water Monitoring Report, Sorrento Lactalis, Inc., June 14, 2013, Prepared by Forsgren Associates, Inc. included as part of the application package

 Q_{gs} = Groundwater and Surface Water Contribution Between Sorrento and Downstream Monitoring Location. From the application:

"*note: On July 6th groundwater seeping into the canals was evident on the sides of the ditches"

Acute

$$Q_{dp} - Q_{up} - Q_e = 8.82 - 1.72 - 2.35 = 4.75 \text{ cfs}$$

Chronic

$$Q_{dp} - Q_{up} - Q_e = 29.3 - 14.8 - 2.35 = 12.15 \text{ cfs}$$

 $C_{gs} = 0 \text{ mg/L}$ based on downstream ammonia monitoring in Purdam Drain

At the Purdam Downstream Monitoring location the ammonia concentration, C_{dp} . was measured as shown below.

Sorrento Lactalis, Inc.

Surface Water Monitoring Report - 201:

Ammonia

Ammonia concentrations in upstream and downstream water samples are depicted in Figure 4.

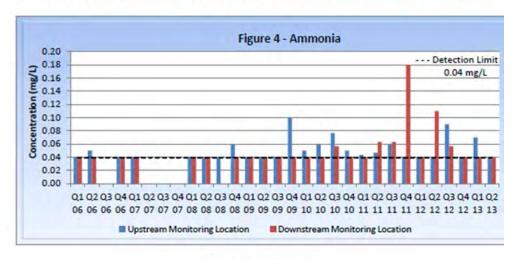


Figure 4 - Ammonia

Figure 4 indicates little or no contribution of ammonia from downstream groundwater or surface water discharges.

 Q_r = Flow Downstream in Mason Creek:

Acute
$$O_{dp} + O_{umc} = 8.82 + 6.88 = 15.7 \text{ cfs}$$

Chronic
$$Q_{dp} + Q_{umc} = 29.3 + 6.88 = 36.2 \text{ cfs}$$

C_r = Resultant in-stream pollutant concentration in mg/L in Mason Creek – receiving water –

Rearrange the equation to determine the concentration of ammonia in Mason Creek downstream of the discharge under critical conditions:

Dividing both sides of the mass-balance equation by Q_r gives the following:

$$C_r = \underbrace{Q_e \ \underline{x} \ C_e + (Q_{up} \ \underline{x} \ C_{up}) + (Q_{umc} \ \underline{x} \ C_{umc}) + (Q_{gs} \ \underline{x} \ C_{gs})}_{Q_r}$$

Find the projected downstream concentration (C_r) by inserting the given values into the equation as follows:

Acute Concentration Downstream in Mason Creek:

$$C_r = (2.35 \times 12.3) + (1.72 \times 0.0) + (6.88 \times 0.02) + (4.75 \times 0) = 1.85 \text{ mg/L or } 1,850 \text{ } \mu\text{g/L}$$

15.7

The acute water quality standard is 3,830 μ g/L derived from pH and temperature. See Section I.IV:

The EPA Permit Writer's Manual states:

"If the projected concentration is equal to or less than the applicable criterion, there is no reasonable potential and, thus far, there is no demonstrated need to calculate WQBELs."

The projected concentration in Mason Creek is less than the applicable acute ammonia criterion and there is no reasonable potential to violate the water quality standard and no need to calculate WQBELs.

Chronic Concentration Downstream in Mason Creek:

$$C_r = (2.35 \times 12.3) + (14.8 \times 0.0) + (6.88 \times 0.02) + (12.15 \times 0) = 0.802 \text{ mg/L or } 802 \text{ } \mu\text{g/L} = 36.2$$

The chronic water quality standard is 1,180 µg/L

The projected concentration in Mason Creek is less than the applicable ammonia chronic criterion and there is no reasonable potential to violate the water quality standard and no need to calculate WQBELs.

Reasonable Potential Without Mixing Zone in Mason Creek

Sorrento is able to achieve the acute and chronic ammonia water quality standards without a mixing zone in Mason Creek:

Q_r = Flow Downstream in Mason Creek:

Acute
$$Q_{dp} + Q_{umc} = 8.82 + 6.88 = 8.82 \text{ cfs}$$

Chronic $Q_{dp} + Q_{umc} = 29.3 + 6.88 = 29.3 \text{ cfs}$

Acute Concentration Downstream in Mason Creek:

$$C_r = (2.35 \times 12.3) + (1.72 \times 0.0) + (8.82 \times 0.02) + (12.5 \times 0) = 3.30 \text{ mg/L or } 3,300 \text{ } \mu\text{g/L}$$
 8.82 $3,300 < 3,830 \text{ } \mu\text{g/L}$

Chronic Concentration Downstream in Mason Creek:

$$C_r = C_r = (2.35 \times 12.3) + (14.8 \times 0.0) + (29.3 \times 0.02) + (12.5 \times 0) = 1.010 \text{ mg/L or } 1,010 \text{ µg/L}$$

29.3
 $1,010 < 1,180$

An authorization for a mixing zone for ammonia in Mason Creek is not required from IDEQ.

B. Reasonable Potential for pH

The following formula is used to calculate a dilution factor without a mixing zone in Mason Creek using only the dilution in Purdam Drain.

$$D = \frac{Q_e + Q_{dp}}{Q_e}$$

$$\frac{2.35 + 29.3}{2.35} = 13.4$$

Using the dilution available near the mouth of Purdam Drain to Mason Creek, Sorrento has a reasonable potential to violate the chronic water quality standard for pH at the technology based limit of 6.0.

Calculation of pH of a Mixture of Two Flows

Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washingto

	Yr. Around Basis		
INPUT	Min Limit	Max Limit	Comments
Dilution Factor at Mixing Zone Boundary	13.3	13.4	Chronic Dilution Factor at Design Flow and Low River Flow Conditions
2. Ambient/Upstream/Background Conditions			
Temperature (deg C):	6.00	21.00	Max. and min. temperature for lower and upper pH, respectively, based on USGS data
pH:	7.80	8.20	Min. and max. pH for lower and upper pH, respectively, based on USGS data.
Alkalinity (mg CaCO ₃ /L):	25.00	25.00	USGS Data or estimate. 25 mg/L conservative estimate.
3. Effluent Characteristics			
Temperature (deg C):	19.60	29.00	Max and min for lower and upper temperature, DMR data
pH:	6.00	9.00	Lower and Upper Effluent Limits, Sec. Treatment Standards 6.0 to 9.0 or established based on WQS.
Alkalinity (mg CaCO3/L):	300.00	300.00	Refer to effluent data or WET data sheets.
Applicable Water Quality Standards	6.50	9.00	
OUTPUT			
Ionization Constants			
Upstream/Background pKa:	6.50	6.38	
Effluent pKa:	6.38	6.33	
2. Ionization Fractions			
Upstream/Background Ionization Fraction:	0.95	0.99	
Effluent Ionization Fraction:	0.29	1.00	
3. Total Inorganic Carbon			
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	26	25	
Effluent Total Inorganic Carbon (mg CaCO3/L):	1028	301	
4. Conditions at Mixing Zone Boundary			
Temperature (deg C):	7.02	21.60	
Alkalinity (mg CaCO3/L):	45.68	45.52	
Total Inorganic Carbon (mg CaCO3/L):	101.56	45.92	
рКа:	6.49	6.37	
RESULTS			
pH at Mixing Zone Boundary:	6.41	8.43	
Reasonable Potential to contribute to excursion above WQS	YES	NO	

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At a pH of 6.1 Sorrento does not have a reasonable potential to violate the water quality standards of 6.5 to 9.0 in Mason Creek.

Calculation of pH of a Mixture of Two Flows

Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washingto

	Yr. Around Basis		
INPUT	Min Limit	Max Limit	Comments
Dilution Factor at Mixing Zone Boundary	13.3	13.4	Chronic Dilution Factor at Design Flow and Low River Flow Conditions
Ambient/Upstream/Background Conditions			
Temperature (deg C):	6.00	21.00	Max. and min. temperature for lower and upper pH, respectively, based on USGS data
pH:	7.80	8.20	Min. and max. pH for lower and upper pH, respectively, based on USGS data.
Alkalinity (mg CaCO ₃ /L):	25.00	25.00	USGS Data or estimate. 25 mg/L conservative estimate.
3. Effluent Characteristics			
Temperature (deg C):	19.60	29.00	Max and min for lower and upper temperature, DMR data
pH:	6.10	9.00	Lower and Upper Effluent Limits, Sec. Treatment Standards 6.0 to 9.0 or established based on WQS.
Alkalinity (mg CaCO3/L):	300.00	300.00	Refer to effluent data or WET data sheets.
4. Applicable Water Quality Standards	6.50	9.00	
OUTPUT			
Ionization Constants			
Upstream/Background pKa:	6.50	6.38	
Effluent pKa:	6.38	6.33	
2. Ionization Fractions			
Upstream/Background Ionization Fraction:	0.95	0.99	
Effluent Ionization Fraction:	0.34	1.00	
3. Total Inorganic Carbon			
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	26	25	
Effluent Total Inorganic Carbon (mg CaCO3/L):	878	301	
4. Conditions at Mixing Zone Boundary			
Temperature (deg C):	7.02	21.60	
Alkalinity (mg CaCO3/L):	45.68	45.52	
Total Inorganic Carbon (mg CaCO3/L):	90.30	45.92	
pKa:	6.49	6.37	
RESULTS			
pH at Mixing Zone Boundary:	6.50	8.43	
Reasonable Potential to contribute to excursion above WQS	NO	NO	

Therefore an effluent limit of 6.1 is established. Since the minimum discharge from Sorrento has been 6.22 this limit is achievable by Sorrento and a compliance schedule is not required. Also, an authorization for a mixing zone in Mason Creek for pH is not required from IDEQ.

Appendix E: WQBEL Calculations – Total Phosphorus, TSS, and E. Coli

The following calculations demonstrate how the total phosphorus, TSS, *E. Coli* and ammonia water quality-based effluent limits (WQBELs) in the draft permit were calculated.

A. Total Phosphorus

Current Limit

The effects of total phosphorus on a watershed are a function of the average loading. When the deleterious effects of a pollutant are based on long term average loading or concentration, the *TSD* recommends setting the average monthly limit equal to the WLA, and calculating a maximum daily limit based on effluent variability from the following relationship:

$$\frac{\text{MDL} = \exp(z_{\text{m}}s - 0.5s^2)}{\text{AML}} = \exp(z_{\text{a}}s_{\text{n}} - 0.5s_{\text{n}}^2)$$

Where:

CV = Coefficient of variation = 0.640

 $\sigma = \ln(CV^2 + 1) = 0.343$

 $\sigma^2 = \ln(CV^2/n + 1) = 0.0975$

n = number of sampling events per month (minimum of 4 samples assumed if sample frequency is less than 4 per month)

 $z_m = 2.326$ for 99th percentile probability basis

 $z_a = 1.645$ for 95^{th} percentile probability basis

This yields an MDL to AML ratio of 2.07.

The allocation in the approved Phosphorus Addendum for the months of May 1 – September 30 is 1.3 lbs/day monthly average and the MDL calculated as above is 2.7 lb/day.

The allocation for the months of October 1 - April 30 is 4.4 lbs/day. The MDL limit is 9.1 lbs/day.

These allocation based effluent limitations replace the current limitations.

B. TSS

The TSS and *E. Coli* Addendum in Table 26 provided Sorrento a total suspended solids (sediment) allocation of 222.0 lb/day averaged over four months. The highest effluent limitation guideline for TSS is 70 lbs/day averaged over a month. Therefore the ELG is more stringent and are established as the effluent limitations for TSS.

C. E. Coli

The TSS and E. Coli Addendum in Table 26 provided Sorrento with an E. Coli allocation of 7×10^9 cfu/day which is based on 126 cfu/100 ml:

 $7 \times 10^9 \, cfu/day \, (1 \, day/ \, 1,520,000 \, gallons) (1 \, gal/3.785 \, L) (0.1 \, L/100ml) \sim 126 \, cfu/100 \, ml$

The *E.Coli* effluent limitation is established at 126 cfu/100 ml.

The TSS and *E. Coli* effluent limitations are consistent with the TSS and *E. Coli* Addendum statement "All point sources in Table 26 presently meet these wasteload allocations, therefore no reductions are necessary."

Appendix F: Existing Use Information for Aquatic Life

Purdam Gulch Drain (PGD); near Sorrento Lactalis (Nampa, ID) Existing Use Screening Survey

This screening survey was conducted to support the development of the NPDES discharge permit for Sorrento Lactalis, Inc. (Sorrento), a cheese processing facility in Nampa, Idaho. NPDES permit writers must develop effluent limits that achieve water quality standards, including protection of existing, designated and downstream beneficial uses. The permit writer must also develop appropriate monitoring and reporting conditions to identify or refine existing beneficial uses as well as support water quality protection.

Idaho water quality standards define aquatic life as "any plant or animal that lives at least part of its life in the water column or benthic portion of waters of the state" and includes the protection of fish, shellfish and wildlife (IDAPA 58.01.02.010.04 and 100.01). If a State has not specifically designated beneficial uses for a waterbody, EPA [Section 131.12(a)(l)] and DEQ (IDAPA 58.01.02.052.07) regulations require the protection of existing uses at a minimum [Section 131.12(a)(l)].

This survey collected information to help characterize the existing beneficial use of the receiving water body, Purdam Gulch Drain (PGD), to which Sorrento discharges. This reports contains water quality data, DEQ water body assessment for the downstream water, limited field observations and historical information to evaluate the existing use.

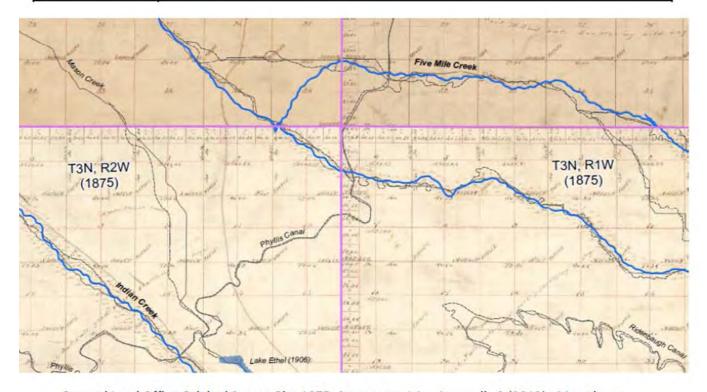
The combined information provides inconclusive results regarding the PGD existing uses and suggests the need for additional data prior to making a final determination. For this permitting cycle, we recommend a permitting condition to collect necessary and available data concerning existing uses since 11/28/75. Permit limits should be set to protect existing water quality or the downstream water quality, whichever is more stringent.

Designated and Existing Uses Summary

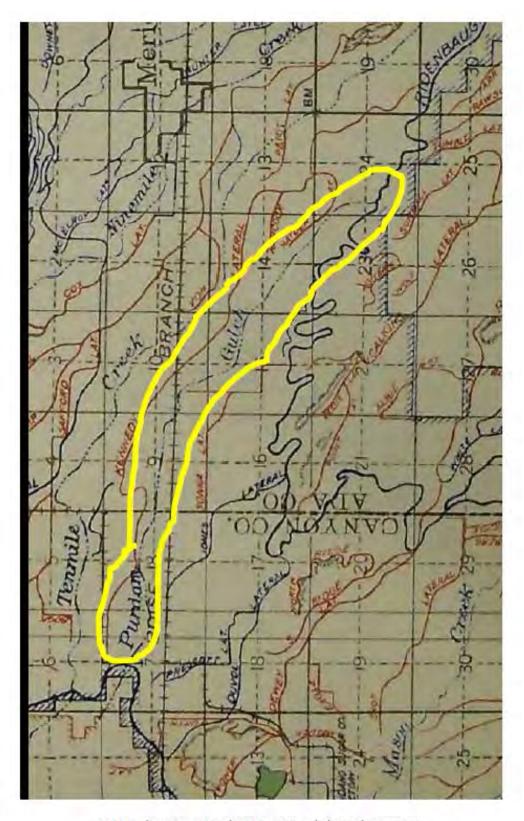
Water Body Name:	Purdam Gulch Drain (PGD)	
Table Purpose:	This table provides an overview of the designated and existing uses for the waterbody as well as the downstream waterbodies.	
Designated Uses		
PGD:	 All surface waters must protect for industrial and agricultural water supply, wildlife habitats, and aesthetics. 	
Downstream – Mason Creek and Boise River:	 Mason Creek – cold water aquatic life and secondary contact recreation. Boise River - cold water aquatic life, salmonid spawning, and primary contact recreation. 	
Existing Uses		
PGD:	 Undetermined See historical information section on next page. EPA did not find available information concerning existing uses after 11/28/1975 to 2005 when Sorrento started discharging to PGD. See WQS Existing Use Screening Survey section including field observations summary on pp 12-13. 	
PGD: DEQ Prior Existing Use Evaluation (2005)	 DEQ stated cold water aquatic life was not an existing use due to the physical character of the drain, the lack of riparian areas, the fact DEQ observed no fish during its visit, and comparison to similar sites. DEQ noted that the limited field visit relying on observations of aquatic life uses in the drain did not allow the agency to make a definitive determination as to existing aquatic life uses. DEQ stated that narrative criteria in Section 200 would be protective of any aquatic life that might be present in the drain. Source: DEQ 6/16/05 correspondence 	
Downstream – Mason Creek and Boise River:	 Mason Creek – available USGS information indicates rainbow trout in sections of Mason Creek. See downstream considerations section of this report. Boise River - cold water aquatic life, salmonid spawning, and primary contact recreation. 	

PG D Origin and Historical Information

Water Body Name:	Purdam Gulch Drain (PGD)
Table Purpose:	This table provides historical and physical information about how the waterbody originated. This relates to uses before 11/28/75.
PGD origin:	 In 1913, contract signed to construct drain from Purdam Gulch slough. In 1916, extended PGD beyond its initial end point to connect with a natural depression. (Stevens, p.52) Stevens notes that Boise Valley artificial irrigation created a shallow aquifer that formed new waterways in the natural depressions of the valley. (Stevens, p. 33) Mason Creek [downstream to PGD] was not a natural creek and had no flow at all before artificial irrigation was applied to surrounding lands in the 1890's. (Stevens, p.31) Source: Stevens, J.A. Water in the Boise Valley: A History of the Nampa & Meridian Irrigation District. Stevens Historical Research associates. (2013?)



General Land Office Original Survey Plat 1875, Stevenson. J.A., Appendix 2 (2013). Map shows area before PGD constructed.



1914 Reclamation Map showing PGD and planned extension. Source: p.9, Appendix 1, Stevenson, J.A (2013)

Water Quality Data Summary

Survey name:	Purdam Gulch Drain
Table Purpose:	Table summarizes the available water quality data, collected by the permittee, to evaluate if the water quality is adequate to support an existing aquatic life use.
Type of Survey:	Sorrento Lactalis Upstream and Downstream Water Quality Data
Date of Data Collection:	Data Collected: 03/15/06-04/01-13, Flow was collected 12/30/05-04/01-13
Date of Report:	
Preparers:	Cyndi Grafe and Susan Poulsom

Sorrento Outfall Location



Sorrento Lactalis Upstream and Downstream Water Quality Data

Parameter Description	Unit	Cold Water Aquatic Life Criteria	Warm Water Aquatic Life Criteria	Up- stream Mean	Upstream Comments	Down- stream Mean	Downstream Comments
emperature	āC	19	29	10.	9 Range (after 2009) 6 C - 18 C	10.8	8 Range (after 2009) 6 C 17.8 C
ıH	SU	6.5-9.0	6.5-9.0	7.	7	7.8	3
Vitrogen, ammonia otal [as N]	mg/L	3.27	4,99	<0.0	5 Detection levels 0.04- 0.05 mg/L	<0.06	Detection levels 0.04- 0.05 mg/L
Phosphorus, otal [as P]	mg/L	0,07	0.07	<0.259	Detection levels 0.01 (permit) -0.005 (min) mg/L	<0.278	Detection levels 0.01 (permit) -0.005 (min) mg/L
low	mgd				Range 1 - 59 mgd (measured monthly)		Range 5.75 – 130.68 mgd (measured monthly)
low	cfs				Range 1.7 - 91 cfs (calculated)		Range 10.7 – 242.8 cfs (calculated)
	101	0 7010	1 30Q	5 11	armonic Mean		
PGD Low Flow in cfs	1.7	72 3.2	8 3.	.61	9.55		

Summary

The Table presents ambient water quality results for samples collected by Sorrento for 03/15/06 to 04/01/13* the Purdam Gulch Drain, upstream and downstream of the Sorrento outfall. In comparing the ambient water quality results to the aquatic life criteria (listed in the Table), the collected data indicate concentrations below to criteria for all the parameters except phosphorus.

Water temperatures ranged from 6 °C to 18 °C which is lower than the aquatic life criteria. Temperature data prior to 2009 was not included in the range because Sorrento reported this data was unreliable. Monthly measurement results indicate perennial flow, with low conditions ranging from 1.7 cfs (1Q10) to 9.5 cfs (harmonic mean).

^{*}Exception: Flow collected 12/30/05-04/01-13.



Purdam Gulch Drain
Near Sorrento <u>Lactalis</u> , Inc. in Nampa, ID
WQS Existing Use Screen
October 8, 2015
October 26, 2015 (draft v.1)
Pat Stoll and Cyndi Grafe
EMAP Rapid Habitat Assessment: Glide/Pool (EPA 2000); Stream Habitat Walk, EPA 841-B-97-0003 (EPA 1997); Culvert Evaluation Field Form (Level A), Fish Passage Barrier and Surface Water Diversion Screening and Prioritization Manual (WA Ecology 2009)
Nikon D60 SLR / Pat Stoll
Report and photos located electronically on EPA R10 internal server (Baker drive).
JPG, DSC_144 through DSC-187

Summary

The Table presents ambient water quality results for samples collected by Sorrento for 03/15/06 to 04/01/13* in the Purdam Gulch Drain, upstream and downstream of the Sorrento outfall. In comparing the ambient water quality results to the aquatic life criteria (listed in the Table), the collected data indicate concentrations below the criteria for all the parameters except phosphorus.

Water temperatures ranged from 6 °C to 18 °C which is lower than the aquatic life criteria. Temperature data prior to 2009 was not included in the range because Sorrento reported this data was unreliable. Monthly measurement results indicate perennial flow, with low conditions ranging from 1.7 cfs (1Q10) to 9.5 cfs (harmonic mean).

*Exception: Flow collected 12/30/05-04/01-13.

Purdam Gulch Drain (PGD); near Sorrento Lactalis (Nampa, ID)

Existing Use Screening Survey



This screening survey for existing use is observational in nature due to access restrictions and legal restrictions precluding direct water and substrate sampling. The location of observation points on the PGD are noted on the image above. The numbered labels on the image correspond to sites where data were collected. The crew also checked six additional locations for indications of aquatic life or contact recreation, but did not collect data due to no aquatic life observed. These locations are delineated with open white circles. The crew did not record observations at these downstream locations because it appeared that conditions were similar to those at the upstream observation sites.

The PGD starts near W Overland Rd just east of W Ten Mile Rd and south of I-84 (PGD #1). The headwaters appear to start from ground water and field drainage. The drain then flows north underneath I-84 crossing S Ten Mile Rd and N Black Cat Rd (PGD#2). From there, the horizontal channel crosses N McDermott Rd (PGD #3) and then Star Rd just north of Sorrento. PGD #4 is located at the Star Rd intersection near the Sorrento outfall location. The Sorrento discharge is piped about 2500 ft. from the plant. The channel continues to angle in a northwesterly direction until it hooks south at the intersection of Ustick Rd and Northside Rd.

Fact Sheet

PGD flows into Mason Creek at this location (PGD #5) and then Mason Creek eventually flows to the Boise River northwest of Caldwell.

Approximate Distances:

PGD #1 to PGD #2: 2.5 miles

PGD #2 to PGD #3: 1 mile

PGD #3 to PGD #4: 1 mile

PGD #4 to PGD #5: 4.8 miles

PGD Total Distance: 9.3 miles

Mason Creek to Boise River: 7.5 miles

Field Observations Summary

Water Body Name:	Purdam Gulch Drain (PGD)
Table Purpose:	Table summarizes photo documentation, observations, and limited physical habitat survey at different locations along the waterbody.
Flow	 Irrigation water had been turned off at the time of the survey, but the drain maintained flow. Based on Sorrento data, PGD has perennial flow. Perennial flow may lead to conditions which are more favorable to aquatic life support, as compared to seasonally dewatered canals.
Physical Features Riparian condition: poor to marginal; Channel characteristics: channelized, steeply trapezoidal, natural silt/sand substrate, marginal to sub-optimal flow, O&MWater appearance: brown, high turbidity	 Aside from PGD-5, where there was some concrete on the upper bank (about 20 feet), the drain is not lined. Turbidity hindered observations, but crew indicated silt and sand natura substrate. Any larger size substrate unlikely because of routine mechanical maintenance. Mechanical treatment maintains a fairly straight channel with a trapezoidal shape and steep banks through the entire PGD. Some vegetation was left on the lower banks, perhaps to reduce bank erosion. Further information provided with photo images.
Physical Operation and Maintenance: heavy mechanical treatment	PGD field observations indicated mechanical cleaning, weeding, desilting, and re-shaping. Mechanical treatment spoils on bank indicate silt and sand substrate.
Rapid Habitat Assessment (RHA) % of total points (240 points) Condition: poor	RHA Range: 43 – 75 Average: 63 % Total Range: 18% – 31% Average: 26%
Aquatic Life: None observed	 No observations of specific barriers to prevent fish passage. However, the structure at the start of the drain (PGD-1) would likely prevent fish passage and the check dam at PGD-3 would temporarily prevent fish passage when in use. In 2005, IDEQ stated cold water aquatic life was not an existing use due to the physical character of the drain, the lack of riparian areas, the fact DEQ observed no fish during its visit, and comparison to similar sites. (IDEQ communication to EPA Region 10, June 16, 2005) Survey provides inadequate data to prove aquatic life diversity does not exist based on observational data alone. At PGD-2, a homeowner stated seeing fish in the drain periodically which may indicate the screening survey missed this aquatic life category. Observations indicated limited aquatic life diversity with two of six biological inventory categories present (see Table 1 below) and two of six unknown. Due to access and survey protocol limitations, staff were not able to sample the water or substrate for presence of fish and macroinvertebrates. Visual observations were particularly limited due to high turbidity.
Aquatic vegetation: Plentiful (1) Occasional (3) None (1)	 Staff noted steady decrease in aquatic vegetation as they neared the mouth of PGD. Staff observed aquatic vegetation in Mason Creek and then its disappearance in the mixing zone with the PGD discharge. Recommend collecting water quality data to determine the cause.
Incidental human contact (recreation use):	Some areas unfenced which might allow access to waterbody and potential human contact. No human contact or signs of human contact with the waterbody observed.

Table 1 - Biological Observation Summary (10/08/2015).

Biological Factor	Purdam Gulch Drain Field observations, 10/08/15		
Fish	Unknown*		
Macroinvertebrates	Unknown*		
Microinvertebrates	Unknown		
Phytoplankton	Unknown		
Periphyton	Present		
Macrophytes	Present		

Table 1 - Biological Inventory for Existing Use Analysis: 2 of 6 Categories Present.

*Note: fish and macroinvertebrates listed as unknown
because could not verify by collecting in-stream data.

Source: USEPA Water Quality Standards Handbook, 1994, Table 2.1, p. 2-11.

Headwaters: PGD-1 at W Overland Rd



Right Bank (Photo No. 149)



Headwaters

Downstream – facing north (Photo No. 146). Culvert (fish barrier) under W Overland Rd upstream. Ground water and area fields drain into PGD.

Observations:

Left Bank (Photo No. 150)

Land Use	Agricultural
Aquatic Veg	Aquatic plants plentiful. Algae occasional.
Aquatic Life	None Observed. Fish barrier upstream at road culvert.
Riparian / RHA Score/(% of Total)	Marginal/ 56 (23%)
Water Appearance	Clear
Channel	Channelized, steep trapezoidal, natural substrate, stable bank, low flow
Other	Spoils from O&M on left bank. ACHD storm drain south across road.
Width (Est.)	2.5 ft WW/ 6 ft BF

PGD-2 at N Black Cat Rd



Upstream (Photo No. 153_cropped)



Downstream (Photo No. 156)



Downstream Right Bank (Photo No. 157)



Downstream Left Bank (Photo No. 158)

Land Use	Agricultural/Some Residential
Aquatic Veg	Occasional
Aquatic Life	None observed. No fish barriers observed. Anecdotal fish observation was provided at the upstream location (Photo No. 153).
Riparian / RHA Score/(% of Total)	Marginal/ 75 (31%)
Water Appearance	Turbid - Milky Brown
Channel	Channelized, steep trapezoidal, natural substrate, moderate bank stability, flow marginal.
Other	Spoils from O&M on left bank.
Width (Est.)	12 ft WW/ 21 ft BF

PGD-3 at Mc Dermott Rd.

Above Sorrento Outfall



Upstream Left Bank (Photo No. 163)



Upstream Right Bank (Photo No. 162)



Downstream (Photo No. 164)



Downstream Right Bank (Photo No. 165)

Land Use	Residential/Agricultural				
Aquatic Veg	Occasional				
Aquatic Life	None observed except for ducks upstream. Temporary fish barrier (i.e., check board) may occur from dam to raise water level for irrigation to houses.				
Riparian / RHA Score/(% of Total)	Marginal/ 74 (31%)				
Water Appearance	Turbid - Milky Brown				
Channel	Channelized, steep trapezoidal, natural substrate, stable banks upstream but unstable downstream of road crossing. Flow sub-optimal.				
Other	Spoils from heavy O&M on left bank downstream of road crossing.				
Width (Est.)	17 ft WW/ 27 ft BF				

PGD-4 at Star Road

Sorrento Outfall



Upstream (Photo No. 170_cropped)



Upstream Right Bank (Photo No. 171)



Downstream (Photo No. 173)



Downstream Right Bank (Photo No. 178)

Land Use	Agricultural/Some Residential					
Aquatic Veg	Occasional					
Aquatic Life	None observed. No fish barriers observed.					
Riparian / RHA Score/(% of Total)	Poor/ 68 (28%)					
Water Appearance	Turbid – Brown. Foam in discharge.					
Channel	Channelized, steep trapezoidal, unstable left bank upstream, flow marginal					
Other	Spoils from heavy O&M on left bank. DEQ reuse permit indicates high P.					
Width (Est.)	8.5 ft WW/ 17 ft BF					

O&M Spoils,

PGD-5 at Northside Road

Mouth drains to Mason Creek



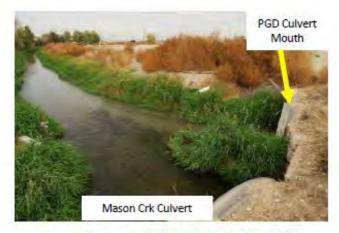
Upstream (Photo No. 180)



Upstream Right Bank (Photo No. 181)



Downstream (Photo No. 185). Note lack of vegetation in mixing zone.



Downstream Left Bank (Photo No. 186)

Land Use	Agricultural/Some Residential				
Aquatic Veg	None				
Aquatic Life	None observed. No fish barriers observed.				
Riparian / RHA Score/(% of Total)	Poor/ 43 (18%)				
Water Appearance	Turbid – Brown. Some light foam.				
Channel	Channelized, steep trapezoidal, unstable banks upstream, flow marginal.				
Other	Vegetation absent in mixing zone with Mason Creek.				
Width (Est.)	7 ft WW/ 17 ft BF				

Purdam Gulch Drain Downstream Use Considerations Mason Creek Support Status

Survey name:	Purdam Gulch Drain
Location:	Mason Creek downstream from Sorrento Lactalis, Inc. in Nampa, ID
Table Purpose:	Table summarizes IDEQ beneficial use reconnaissance information and assessment to evaluate uses in the downstream waterbody. The section also includes information from other sources concerning the downstream waterbody.
Type of Survey:	Mason Creek Assessment Status Report Sources: IDEQ 2012 303(d)/305(b) Integrated Report (IDEQ 2012) USGS Scientific Investigations Report 2014-5132 (USGS 2014)

Summary

- DEQ assessment of Mason Creek states not supporting of these cold water aquatic life and secondary contact recreation beneficial uses. (IDEQ 2012)
- Mason Creek is listed as impaired because of excess suspended sediment, E. coli, chlorpyrifos, "cause unknown-nutrients suspected," and elevated water temperature (IDEQ 2012)
- A USGS study of Mason Creek showed the most abundant invertebrate found was the highly tolerant
 and invasive New Zealand mudsnail. The USGS agency notes this might have impacted the low
 benthic community taxa richness score of 19 (average for least disturbed site in the Snake River Basin
 is 27) as well as a Stream Macroinvertebrate Index (SMI) score of 26 out of 100 (33 is considered
 poor and below the minimum threshold for considering a water body to meet aquatic life beneficial
 uses) (USGS 2014)
- USGS noted that the presence of small rainbow trout (90 millimeters) may indicate salmonid spawning in Mason Creek. According to USGS, their calculated rangeland-fish-index score of 58 is comparable to rangeland-fish-index scores calculated for the Boise River near Middleton, indicating intermediate biotic condition. (USGS 2014)



SUBBASIN

17050114 - Lower Boise

Assessment Unit Status Report 2010

Assessment Unit ID: ID17050114SW006_02

Assessment Unit Name: Mason Creek - entire watershed Assessment Unit Type: RIVER

Assessment Unit Size: 29.82 MILES

Assessment Date: 12/18/2010

This Assessment Unit is in Category: 5

Beneficial Uses

Support Status

Cause(s)

Cause Unknown Chlorovillos Escherichia coli Sedimentation Salation emperature water

Monitoring Methods

None Listed

Beneficial Use Comments

Cold Water Aquatic Life

Secondary Contact Recrustion

Monitoring History (1993 - Present)

BURPID	STREAM	ELEVINO	LATITUDE	LONGITUDE	SMIScore	SFIScore	SHIScore	AVGScore
TENTER DE ADRE	Manner Creedy	Time	4T 48T29	-116 S4884	6			0.00

Cause Comments

Cause Unknown

Nutranta suspected impairment

Chlorpyrifos

NOT/TO (RS). According to the Presidude Resonare Water Quality Report, Lower Bode River Tributaries (Kirk Campbell, 190A, December 2009). There were eight detections of chiarpyritos with load offitied detections (IDEC upil., and IDEC upil.) secondary the EPA action (IDES upil.) and chiarpyritos bearing the EPA action (IDES upil.) and chiarpyritos for mandelmates. The presente of form substances in concentrations that impain benefities upon a weathout of Matrix and Chiarpyritos for the substances in concentrations that impain benefities and action of Matrix and Chiarpyritos for the substances in concentrations.

Data collecte by ISDA in 1993-1999, and 2003 decument ranges from 50-to 5 750 cts/100 cts/100 of all samples > SCR angle-sample WQS (pg. 155-153). Data collected in 2005 by USGS document ranges from 340 to 1410 dts/100 mL, with 1994 of all samples > SCR single-sample WQS (pg.150-151). (Suson Beatle)

Sedimentation/Siltation

Escherichia coli

In latticing of the data, her years after the TMCs. required a 35% recipition, the arroyal land of recomming and if 5.50 is inventoring able with furbidity can satisfy standard is exceeded, at different times, during time months of the year (Surven Beatter).

2012 Integrated Report: Category 5 (§303(d))

ID17050114SW006 02 Mason Creek - entire watershed 29.83 MILES Sedimentation/Sitation (HS) - Temperature impairment added based upon data submitted by City of Boise. Temperature, water 1/31/10 (HS) - According to the "Pesticide Residue Water Quality Report", Lower Boise Chlorpyrifes River Tributaries (Kirk Campbell, ISDA, December 2009): "There were eight detections of chlorpyritos with two of the detections (0.062 ug/L and 0.052 ug/L) exceeding the EPA acute (0.05 ug/L) and chronic (0.04 ug/L) guidance benchmarks for invertebrates. The presence of force substances in concentrations that impair beneficial uses is a violation of Idaho's narrative standard for toxic substances. 9/22/2012 (HS) - Mason Craek is impaired due to presence of toxic substances in concentrations that impair beneficial uses (IDAPA 58.01.02.200.02). The toxin of Malathion concern is malathion, which was found at level that exceeds EPA's Aquatic Life Benchmarks for acute toxicity to aquatic life. The Aquatic Life Benchmarks are based on toxicity values reviewed by EPA and used in the EPA's most recent risk assessments.

developed as part of the decision making process for pesticide registration. Each developed as part of the decision making process for pesticide registration. Each Aquatic Benchmark is based on the most sensitive, scientifically acceptable toxicity endpoint available to EPA for a given taxon. Malatinion was detected once by ISDA sampling in 2011 and exceeded the acute Aquatic Life Benchmark by a factor of 2.3. (Source: ISDA Technical Report Summary W-42: Pestiade Residue Evaluation for Mason Greek, Noble Orain, Solomon Drain and Purdum Drain 2011).

3/7/2013 (HS) - USGS and ISDA collected E. coll samples from Mason Creek in June

and July 1999. The geometric mean was 709 col/100 mL, which is greater than the 126 col/100 mL criterion value, therefore the recreational use of this water body is considered

impaired by bacteria.

Nutrients suspected impairment. Cause Unknown

Temperature argument actived based upon data submitted by City of Bosse HS

NPDES Permit ID0028037 Fact Sheet



Appendix G: Draft Clean Water Act Section 401 Certification



1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550 www.deg.idaho.gov

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

July 19, 2016

Mr. Michael J. Lidgard NPDES Permits Unit Manager EPA Region 10 1200 Sixth Avenue, Suite 900 Seattle, WA 98101-3140

Subject:

Draft 401 Water Quality Certification for the Sorrento Lactalis Inc. Permit,

ID-0020837

Dear Mr. Lidgard:

On May 18, 2016, EPA provided DEQ with a draft modification to the above-referenced permit and requested DEQ provide a certification of the permit pursuant to Section 401 of the Clean Water Act.

Upon review of the preliminary draft permit modification, DEQ would like to provide the following recommendations for incorporation into the permit modification.

The proposed permit requires Sorrento Lactalis to conduct surface monitoring in Purdam Drain to determine the appropriate existing use. The permit should acknowledge that Sorrento Lactalis does not own the Purdum Drain and should be modified to clearly reflect this.

Upon review of the preliminary draft permit modification, DEQ has prepared and now submits the enclosed draft 401 certification for the permit.

Please contact Kati Carberry at (208) 373-0434 to discuss any questions or concerns regarding the content of this certification.

Sincerely,

Aaron Scheff

Regional Administrator Boise Regional Office

Enclosure

c:

Susan Poulsom

John Drabek

ec:

Nicole Deinarowicz, DEQ 401 Program Coordinator

Justin Hayes, Idaho Conservation League

Patrick Wickman, Forsgren Associates

Printed on Recycled Paper



Idaho Department of Environmental Quality Draft §401 Water Quality Certification

July 19, 2016

NPDES Permit Number(s): ID0028037; Sorrento Lactalis Wastewater

Treatment Facility (WWTF)

Receiving Water Body: Purdam Drain

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheet, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits, including without limitation, the approval from the owner of a private water conveyance system, if one is required, to use the system in connection with the permitted activities.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).

• Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The Sorrento Lactalis WWTF discharges the following pollutants of concern: five day biochemical oxygen demand (BOD₅), total suspended solids (TSS), pH, *E. coli* bacteria, ammonia, total phosphorus (TP), and oil and grease. Effluent limits have been developed for BOD₅, TSS, pH, *E. coli* bacteria, TP, and oil and grease. No effluent limits are proposed for ammonia, nitrate-nitrite, temperature, chemical oxygen demand (COD), and total organic carbon (TOC); however monitoring requirements are included in the permit to determine WQS compliance and future permit limits, for temperature, and ammonia.

Receiving Water Body Level of Protection

The Sorrento Lactalis WWTF discharges to the Purdam Drain within the Lower Boise Subbasin. Purdam Drain is a man-made waterway, not designated in sections 110-160 of the WQS which collects shallow groundwater and agricultural return water from agricultural land to the southeast. Purdam Drain enters Mason Creek, assessment unit (AU) 17050114SW006_02 (Mason Creek - entire watershed), approximately 4.5 miles downstream from the Sorrento Lactalis WWTF discharge. Mason Creek then flows into the Boise River.

In Idaho, Man-made waterways, for which uses are not designated in IDAPA 58.01.02, sections 110-160, are to be protected for the uses for which they were developed; in this case, agricultural water supply. (IDAPA 58.01.02.101.02). In addition, existing uses must be maintained and protected (IDAPA 58.01.02.050.02.b; IDAPA 58.01.02.0051.01).

On October 8, 2015 EPA conducted an existing use screen for both aquatic life and recreational uses. The survey provided inconclusive results regarding any existing uses in Purdam Drain so additional data is needed to further investigate the existence of aquatic life and or recreational uses in the canal.

As the Purdam Drain is protected only for agricultural water supply, and there is no evidence to date regarding other existing uses, DEQ will provide Tier 1 protection only to the Purdam Drain.

While the Purdam Drain is the receiving water for the Sorrento Lactalis WWTF discharge, DEQ has also examined whether the discharge is consistent with achieving compliance with WQS in Mason Creek and the Boise River through compliance with the sediment and bacteria load allocations (LAs) applicable to Sorrento Lactalis in the Lower Boise River TMDL, and the TP

LA for the Boise River in the Lower Boise River TP TMDL Addendum and Snake River Hells Canyon (SRHC) TMDL.

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the Sorrento Lactalis WWTF permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS that are applicable to Purdam Drain, Mason Creek, and the Boise River.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limitations that are consistent with wasteload allocations in the approved TMDL.

The Sorrento Lactalis WWTF discharges to the Purdam Drain which then flows for five miles before entering Mason Creek. Mason Creek is impaired for elevated temperature. Temperature TMDLs have not yet been completed for this water body. At this time, there is not sufficient data to determine whether or not the discharge of heat from the WWTF to the Purdam Drain has the reasonable potential to cause or contribute to excursions above the water quality standards for temperature in Mason Creek. Continuous monitoring of the effluent and receiving water temperature is a permit requirement. This data will determine whether the discharge to Purdam Drain adversely impacts the temperature of Mason Creek and whether temperature related effluent limits will be required in the future.

Mason Creek is listed for cause unknown (nutrients suspected). The Boise River (AU 17050114SW005_06b), downstream from Mason Creek, is also impaired for TP. The *Lower Boise River TMDL 2015 Total Phosphorus Addendum (TMDL)* was developed to address the TP impairment in the Lower Boise River. Water quality monitoring and modeling completed since 2012 have determined the extent of impairment in the Boise River as well as WLAs expected to restore beneficial uses in the Boise River. The final permit includes mass-based effluent limits for TP; and is consistent with the TMDL WLA for the Boise River.

The Hells Canyon segment of the Snake River is also impaired because of excess nutrients. The *SRHC TMDL* (DEQ 2003) established a load allocation for the Boise River based upon a total phosphorus concentration of 0.07 mg/L at the mouth of the Boise River. The WLAs in the *Lower Boise River TMDL 2015 Total Phosphorus Addendum (TMDL)* were developed to also meet the WLAs in the *SRHC TMDL* (DEQ 2003). The limits for TP in the permit were developed to ensure that the WLAs in both the Lower Boise River and SRHC TMDLs will be met; therefore,

DEQ believes the permit will ensure compliance with the TMDLs and applicable narrative criteria.

Mason Creek is also listed for sedimentation/siltation and *E. coli*. The *Lower Boise River TMDL 2015 Tributary Sediment and Bacteria Addendum (TMDL)* was developed to address the sediment and bacteria impairment in Mason Creek. The final permit includes concentration and mass-based effluent limits for TSS and a concentration limit for E-coli? that are consistent with the TMDL WLA.

The Boise River (AU 17050114SW005_06b) is also impaired for sediment and bacteria at the confluence of Mason Creek. The EPA-approved *Lower Boise River TMDL* (DEQ 1999) and TMDL Addendum (2008) establishes load allocations for sediment and bacteria at the mouth of Mason Creek. These sediment and bacteria allocations are designed to ensure the Boise River will achieve the water quality necessary to support its existing and designated aquatic life beneficial uses and comply with the applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the Sorrento Lactalis WWTF permit are set at levels that comply with these load allocations.

In sum, the effluent limitations and associated requirements contained in the Sorrento Lactalis WWTF permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the load allocations established in the SRHC TMDL (2003), Lower Boise River Tributary TMDL Addendum (2015), and Lower Boise River TMDL (1999), and Lower Boise River TMDL Addendum (2015). Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the Purdam Drain in compliance with the Tier 1 provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Compliance with IDAPA 58.01.02.050.02.b and IDAPA 58.01.02.051.01 Protecting Existing Aquatic Life in the Purdam Drain—Effluent Limits and Gathering Existing Use Information

The Idaho WQS require, in all cases, the protection and maintenance of existing uses. This obligation applies to all waters subject to the WQS, including man-made waterways like the Purdam Drain (IDAPA 58.01.02.050.02.b ("In all cases, existing beneficial uses of the waters of the state will be protected."); IDAPA 58.01.02.051.01 ("The existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.")).

EPA gathered information that was inconclusive regarding the existence of aquatic life in the Purdam Drain. Therefore, information regarding existing aquatic life uses is necessary to determine the application of and compliance with WQS. The permit requires the collection of existing use information. The information required to be gathered is appropriate. However, as mentioned below, the physical and biological data should be consistent with DEQ's Beneficial

Use Reconnaissance Project (BURP) protocol. The protocol can be found at http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/burp/.

Surface Water Monitoring Requirements

The permit requires surface water monitoring of the receiving water, Purdam Drain. In addition, the permit requires the permittee to collect additional information to determine the appropriate existing uses for the Purdam Drain. The information to be collected includes habitat information and certain biological data. In order to ensure this information is appropriate for determining the aquatic life uses, the permit should include a requirement that the information collected be consistent with DEQ's Beneficial Use Reconnaissance Project (BURP) protocol.

In addition, the requirement in the permit for monitoring is not dependent upon whether Sorrento Lactalis WWTF has access. The permit should reflect the fact that Sorrento Lactalis does not own the Purdam Drain and may not currently have access to collect the required information. Therefore, the permit should be modified (a) to require Sorrento Lactalis to make a good faith effort to obtain access to gather the surface water and existing use information, (b) so that it is not a violation of the permit if, after the good faith effort, access is denied so that the information cannot be collected, and (c) so that the obligation to collect the surface water data and existing use information is contingent upon the ability to safely access Purdam Drain.

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 25% of the stream width; and does not include more than 25% of the low flow design discharge conditions.

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to Kati Carberry, DEQ Boise Regional Office, at (208) 373.0434 or Kati.Carberry@deq.idaho.gov.

DRAFT

Aaron Scheff Regional Administrator Boise Regional Office