Fact Sheet

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

McCain Foods USA
Burley Factory

Public Comment Start Date: July 16, 2014
Public Comment Expiration Date: August 15, 2014

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EPA Proposes To Reissue NPDES Permit
EPA proposes to reissue an NPDES permit to the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant 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

401 Certification
EPA is requesting that the Idaho Department of Environmental Quality 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
Twin Falls Regional Office
650 Addison Ave W #110
Twin Falls, ID 83301

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, the 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, the 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 permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-6251 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permit is also available at:

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

Idaho Department of Environmental Quality
Twin Falls Regional Office
650 Addison Ave W #110
Twin Falls, ID 83301
(208) 736-2190

Acronyms

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.
AML	Average Monthly Limit
BMP	Best Management Practices
BOD_5	Biochemical oxygen demand, five-day
ºC	Degrees Celsius
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
IDEQ	Idaho Department of Environmental Quality
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
:g/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
QAP	Quality assurance plan

RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
s.u.	Standard Units
TMDL	Total Maximum Daily Load
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
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit

I. Applicant

A. General Information

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

McCain Foods USA
Burley Factory
NPDES Permit # ID0000612

Physical Address:
218 West Highway 30
Burley, ID 83318

Mailing Address:
P.O. Box 10
Burley, ID 83318

Contact: Dusty Galliher, Environmental Supervisor

B. Permit History

The most recent NPDES permit for McCain Foods USA (McCain) was issued on June 9, 2006, became effective on July 1, 2006, and expired on June 30, 2011. An NPDES application for permit issuance was submitted by the permittee on November 9, 2010 and January 28, 2011. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6., the permit has been administratively extended and remains fully effective and enforceable.

II. Facility Information

McCain owns and operates a potato processing facility in Burley Idaho. The potato processing facility consists of two potato processing plants on the site, Plant 1 and Plant 2. Internal to the factories are water recycle systems and fryer oil recovery in the fryer areas. Process wastewater effluent from both plants is combined in a receiving pit where additional fryer oil recovery occurs. From the receiving pit, the wastewater is pumped over screens where waste potato material is removed. Following screening, the wastewater is pumped to a covered anaerobic lagoon where organic matter is removed via anaerobic digestion and the resultant biogas from anaerobic digestion is used in the plant steam boilers or flared. From the covered anaerobic lagoon, the wastewater flows by gravity to selector tank system where the wastewater can be routed to one of two aerobic lagoons, which are operated in parallel and provide additional removal of organic material and nutrients. From the aerobic lagoons, the treated effluent flows to a secondary clarifier and disinfection system. After disinfection, the waste flows through a Parshall flume for flow measurement and then discharged to the Snake River though Outfall 001. The treatment system had been upgraded during the last permit cycle to replace aging assets, install wastewater disinfection, and increase the capacity of the aerobic wastewater treatment system. The wastewater treatment upgrades included replacing the return activated sludge (RAS) and waste activated sludge (WAS) pumps, installation of a more efficient fine bubble aeration system, installation of chemical phosphorus removal, and installation of the wastewater disinfection system. The wastewater system overall has excess capacity due to original design and the upgrades.

The other two active outfalls, 002 and 004, do not contain process water, only potable water well pit overflow.

The discharge from outfall 001 will also include wastewater from a 0.040 mgd sequential batch reactor treating domestic wastewater with a service population estimated to be 600 employees.

McCain's Burley facility currently has nine septic tank fields located throughout the plant and one off site at Americold. Each septic tank field consists of one or more septic tanks discharging to its own leach field or similar type of a system for percolating septic tank drainage into the ground. McCain will stop sanitary wastes from discharging to ground water and instead install a new sequential batch reactor treatment system that would receive and treat all of the sanitary wastes. The nine septic tank fields will be combined into four small grinder lift stations that will pump the sanitary waste to the sanitary treatment system. The discharge will be combined with wastewater from Plants 1 and 2 at Outfall 001 after disinfection by the existing chlorination system. Start up is estimated for early 2015.

Effluent Characterization

In order to determine pollutants of concern for further analysis, EPA evaluated the application form, additional discharge data, and the nature of the discharge. Pollutants typical of a the frozen potato products category are five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli* bacteria, total residual chlorine (TRC), pH, ammonia, temperature and phosphorus. Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- E. coli bacteria
- pH
- Temperature
- Ammonia
- Nitrogen
- Nitrate-Nitrite
- Phosphorus

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

Compliance History

The EPA reviewed the last five years of effluent monitoring data (2009 – 2013) from the discharge monitoring report (DMR). McCain reported no violations.

III. Receiving Water

This facility discharges to the Snake River in the City of Burley, Idaho. The outfall is located at river mile 648.8 between the Burley/Heyburn Bridge and the Milner Dam.

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. However, 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 30B3 for the chronic ammonia criterion instead of the 7Q10. The 30B3 is a biologically-based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate.

The flow of the Snake River near the point of discharge is highly variable with the season. Therefore, EPA has calculated the 1Q10, 7Q10 and 30B3 on a seasonal, as well as a year-round, basis. The seasonal low flows are as follows:

Table 1: Seasonal Low Flows in the Snake River (at USGS Station #13081500)

Season	1Q10 (CFS)	7Q10 (CFS)	30B3 (CFS)
Full year	279	344	428
November through April	279	344	428
May	1020	1340	1820
June through September	4200	4750	7330
October	2340	2720	4940

B. Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. The federal regulation at 40 CFR 122.4(d) prohibits the issuance of an NPDES permit which does not 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 (such as warm or cold water biota, contact recreation, etc.) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial uses 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

This facility discharges to the Snake River, Milner Pool, in the Lake Walcott Subbasin (HUC 17040209), Water Body Unit S-1. At the point of discharge, the Snake River is protected for the following designated uses (IDAPA 58.01.02.150.11):

- warm water aquatic life
- primary contact recreation

In addition, Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats and aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

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).

- 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).

- Water quality criteria for agricultural water supply can be found in the EPA's *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA R3-73-033) (See IDAPA 58.01.02.252.02)

The numeric and narrative water quality criteria applicable to Snake River at the point of discharge are provided in Appendix B of this fact sheet.

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix F for the State's draft 401 water quality certification. The EPA has reviewed this antidegradation review and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification including the antidegradation review should be submitted to the IDEQ as set forth above (see State Certification).

C. Water Quality Limited Waters

Any waterbody for which the water quality does not, 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) management plan 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 non-point pollutant sources, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

The State of Idaho's 2010 Integrated Report Category 5 (the 303(d) lists) lists the Milner Pool segment of the Snake River to which the McCain facility discharges, from Minidoka Dam to Milner Dam, as impaired for sedimentation and siltation.

In June 2000, EPA approved the IDEQ's Lake Walcott TMDL. Page 193 of the Lake Walcott TMDL states the waste load allocation for McCain is 399 pounds per day of total phosphorus as a monthly average. The draft permit contains an average monthly limit of 399 lb/day total phosphorus, consistent with this WLA. The maximum daily limit for total phosphorus was calculated based on the WLA and the effluent variability, using the procedures outlined in the TSD.

No approved TSS allocation is provided in the Lake Walcott TMDL. The EPA has determined that the TSS effluent limits proposed in the draft permit will ensure compliance with water quality standards for sediment.

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 of a waterbody are being met and may be more stringent than technology-based effluent limits. The bases for the proposed effluent limits in the draft permit are provided in Appendix D.

B. Proposed Effluent Limitations

The following summarizes the proposed effluent limits that are in the draft permit.

Narrative Limitations to Implement Idaho's Narrative Criteria for Floating, Suspended or Submerged Matter

The permittee must not discharge, from any outfall, floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses of the receiving water.

Numeric Limitations

Tables 2 and 3 (below) present the proposed average monthly, maximum daily, and instantaneous maximum effluent limits for Outfalls 001, 002, and 004. The proper flow tier for effluent limits which are contingent upon river flow must be determined by the average river flow for the monitoring month, as recorded by the USGS gauge at Minidoka, Idaho. Only one flow tier can be effective for any calendar month.

The proper pH tier must be determined by the average river pH for the monitoring month, as measured downstream of the discharge as required by the permit. Only one pH tier can be effective for any calendar month.

Table 2: Effluent Limits for Outfall 001

Parameter	Units	Proposed Effluent Limits		
		Average Monthly Limit	**Maximum Daily Limit**	**Instantaneous Limit**
BOD_5 River flow[1] <500 CFS	lb/day	1500	3000	---
BOD_5 500 CFS ≤ River Flow[1] <1100 CFS	lb/day	2050	4100	---
BOD_5 River flow[1] ≥ 1100 CFS	lb/day	4244	8488	---
TSS	lb/day	4244	8488	---
pH	s.u	6.5 to 9.0 at all times		---
Total Phosphorus as P	lb/day	399	772	---
Total Ammonia as N Oct. 1 – Oct. 31	lb/day	1600	2700	---
Total Ammonia as N Nov. 1 – April 30 River flow[1] ≥ 1100 CFS	mg/L	12.5	43.5	---
	lb/day	497	1732	
Total Ammonia as N Nov. 1 – April 30 River flow[1] < 1100 CFS and pH ≤ 8.50	mg/L	6.16	21.4	---
	lb/day	245	853	
Total Ammonia as N Nov. 1 – April 30 River flow[1] < 1100 CFS and pH > 8.50	mg/L	3.44	12.0	---
	lb/day	137	476	---
Temperature	ºC	---	32	---
Total Residual Chlorine[2]	µg/L	99	199.0	---

Table 2: Effluent Limits for Outfall 001				
	lb/day	3.94	7.90	---
E. Coil	#/100	126[3]	---	406

1. For purposes of the flow-tiered BOD_5 and ammonia effluent limits, "river flow" for any date means the arithmetic mean of the flows recorded by the USGS gauge at Minidoka, Idaho (Station #13081500) during the monitoring month. The permittee must record and report the average and minimum river flows.
2. Effluent limits for total residual chlorine for outfall 001 apply only if the permittee adds chlorine to the effluent for total or partial disinfection.
3. The monthly geometric mean *E. coli* concentration must not exceed 126 organisms/100 ml.

Table 3: Effluent Limits for Outfalls 002 and 004

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
Total Residual Chlorine (Outfall 002)	mg/L	0.130	0.393
	lb/day	3.85	11.6
Total Residual Chlorine (Outfall 004)	mg/L	0.148	0.419
	lb/day	4.10	11.6

Notes:
Effluent limits for total residual chlorine for Outfalls 002 and 004 are effective at all times.

The following are changes from the existing permit to the proposed permit:

The pH effluent limitations is changed from 6.0 to 9.0 to 6.5 to 9.0.

Table 4 presents the proposed average monthly and weekly effluent limits for the Sewage Treatment Plant.

Table 4: Effluent Limits for Sewage Treatment Plant

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
	10 lbs./day	15 lbs/day
TSS	30 mg/L	45 mg/L
	10 lbs/day	15 lbs/day
Removal for BOD_5 and TSS (concentration)	85% (minimum)	---
pH	within the limits of 6.0 - 9.0 s.u.	

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits 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 necessary 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) 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 can be used for averaging if they are conducted using EPA approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits.

Tables 5, 6 and 7, below, describe the effluent monitoring requirements for McCain in the draft permit. The sampling location for Outfalls 002, 004 and 005 must be after the last treatment unit and prior to discharge to the receiving water. The sampling location for the Sewage Treatment Plant Internal Outfall 005 must be after the last treatment unit for the sewage treatment plant and before comingling with discharges from the Frozen Potato Food Products discharges. If no discharge occurs during the reporting period, "no discharge" must be reported on the DMR.

Table 5: Effluent Monitoring Requirements for Outfall 001

Parameter	Units	Sample Frequency	Sample Type
Flow	mgd	continuous	recording
Stream Flow	CFS	daily	See Note 2
BOD_5	mg/L	1/week	24-hour composite
	lbs/day		calculation[1]
TSS	mg/L	1/week	24-hour composite
	lbs/day		calculation[1]
pH	s.u.	5/week	grab
Total Phosphorus as P	mg/L	2/week	24-hour composite
	lb/day		
Total Ammonia as N (May 1 – October 31)	mg/L	1/month	24-hour composite
	lb/day		
Total Ammonia as N (November 1 – April 30)	mg/L	1/week	24-hour composite
	lb/day		
Total Residual Chlorine[1]	µg/L	1/week	grab
Oil and Grease	Visual	1/month	Visual
Oil and Grease	mg/L	1/quarter	grab
Floating, Suspended or Submerged Matter	Visual	1/month	Visual
Temperature	°C	continuous	recording
***E. Coli* Bacteria**	#/100 ml	5/month	grab

Notes:
1. These monitoring requirements apply only when the permittee adds chlorine to the wastewater for total or partial disinfection.
2. The permittee must report the daily minimum and monthly average stream flow rates as recorded by the USGS Minidoka gauge (#13081500)

Table 6: Effluent Monitoring Requirements for Outfalls 002 and 004			
Parameter	**Units**	**Sample Frequency**	**Sample Type**
Total Residual Chlorine	mg/L	1/week	grab

Internal Outfall 005 for Municipal Sewage Treatment Plant

The EPA's NPDES Permit Writers Manual states:

> "NPDES permit writers often find that a facility employs multiple processes each with its own effluent guidelines requirement. In addition, sometimes effluent guidelines from multiple categories and subcategories apply to wastewaters for a single facility. When a facility is subject to effluent guidelines for two or more processes in a subcategory or to effluent guidelines from two or more categories or subcategories, the permit writer must apply each of the applicable effluent guidelines to derive TBELs." Also: "If all wastewaters regulated by effluent guidelines are treated separately but are combined before the discharge, the permit writer may establish internal outfalls and separately apply the effluent guidelines at the respective internal outfall as discussed in § 122.45(h)…"

40 CFR § 122.45(h) states :

> "(h) *Internal waste streams.*
>
> (1) When permit effluent limitations or standards imposed at the point of discharge are impractical or infeasible, effluent limitations or standards for discharges of pollutants may be imposed on internal waste streams before mixing with other waste streams or cooling water streams. In those instances, the monitoring required by § 122.48 shall also be applied to the internal waste streams.
>
> (2) Limits on internal waste streams will be imposed only when the fact sheet under § 124.56 sets forth the exceptional circumstances which make such limitations necessary, such as when the final discharge point is inaccessible (for example, under 10 meters of water), *the wastes at the point of discharge are so diluted as to make monitoring impracticable* (emphasis added), or the interferences among pollutants at the point of discharge would make detection or analysis impracticable."

For McCain the multiple processes are the Frozen Potato Products Subcategory and the Sewage Treatment Plant Secondary Treatment Effluent. The discharges from the sewage treatment plant are less than one percent of the discharges from the frozen potato products discharges. Therefore the sewage treatment plant discharges are so diluted by the Frozen Potato Products discharges as to make monitoring impracticable at Outfall 001. To insure compliance with the technology based effluent standards an Internal Outfall 005 is established receiving only wastewater from the sewage treatment plant prior to mixing with the Frozen Potato Products Subcategory discharges at Outfall 001.

Similarly, compliance with the TBELs for the Frozen Potato Products discharges is ensured by monitoring at Outfall 001 because the Sewage Treatment Plant discharges are less than one percent of these discharges and will not be measurable.

Table 7: Effluent Monitoring Requirements for Sewage Treatment Plant Internal Outfall 005

Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Flow	Mgd	Effluent	Continuous	Recording
BOD_5	mg/L	Influent and Effluent	1/week	Grab
	lbs/day	Influent and Effluent	1/week	Calculation[1]
	% Removal	---	1/month	Calculation[2]
TSS	mg/L	Influent and Effluent	1/week	Grab
	lbs/day	Influent and Effluent	1/week	Calculation[1]
	% Removal	---	1/month	Calculation[2]
pH	standard units	Effluent	5/month	Grab

Notes:
1. Loading is calculated by multiplying the concentration (in mg/L) by the flow (in mgd) on the day sampling occurred and a conversion factor of 8.34.
2. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month, i.e.:.
   (average monthly influent – average monthly effluent) ÷ average monthly influent.
   Influent and effluent samples must be taken over approximately the same time period

Changes from Existing Permit

Outfall 001

Total Dissolved Solid (TDS)

The existing permit requires monitoring for Total Dissolved Solids (TDS). IDEQ's water quality standards do not include criteria for TDS. For that reason monitoring of TDS is discontinued.

Kjeldahl Nitrogen

The existing permit requires monitoring for total Kjeldahl nitrogen**.** Total phosphorus is the primary limiting nutrient in the Snake River. Monitoring will be discontinued.

Nitrate + Nitrite

The existing permit requires monitoring for nitrate + nitrite. Nitrate + nitrite discharges do not have a reasonable potential to violate the water quality standards in the Snake River. Therefore monitoring is discontinued.

Temperature

To better insure compliance with the daily temperature limit the EPA is requiring continuous monitoring that is more representative of the daily discharges. Monitoring is increased from grab sampling to continuous monitoring within six months of the effective date of the permit.

<u>Dissolved Oxygen</u>

The Snake River in the vicinity of the discharge is not listed for dissolved oxygen (DO). The principle method of maintaining sufficient DO levels is by control of BOD_5 and phosphorus. Therefore monitoring for DO is discontinued.

<u>Alkalinity</u>

The existing permit requires monitoring for alkalinity. Alkalinity is used in the pH reasonable potential determination and effluent limitations. Reasonable potential determination and effluent limitations have been determined for Outfall 001. For that reason monitoring of alkalinity is discontinued.

<u>Toxicity</u>

McCain does not have a reasonable potential to violate Idaho's toxicity standard. Therefore toxicity monitoring is discontinued.

<u>Outfalls 002 and 004</u>

<u>pH –</u>Discharges of pH do not have a reasonable potential to violate the water quality standards for pH. For that reason monitoring of pH is discontinued.

<u>TSS and BOD_5</u>

Discharges from potable water well pit overflow are not a source of TSS and BOD_5. Effluent data is low for both TSS and BOD_5. For these reasons monitoring of TSS and BOD_5 are discontinued.

<u>Alkalinity</u>

The existing permit requires monitoring for alkalinity. Alkalinity is used in the development of pH reasonable determination and effluent limitations. Reasonable potential determinations are completed for Outfalls 002 and 004. For that reason monitoring of alkalinity is discontinued.

<u>Temperature</u>

Discharges do not have a reasonable potential to violate the water quality standards for temperature. Therefore monitoring is discontinued.

<u>Oil and Grease</u>

Potable water supply is not a source of oil and grease. Of the 114 samples from Outfall 002 and the 12 samples from Outfall 004 none have been above the level of detection of 5.0 mg/L. Therefore monitoring of oil and grease is discontinued.

<u>Surface Water Monitoring</u>

All surface water monitoring is discontinued except for the pH and flow necessary to determine the effluent limits for BOD_5 and ammonia. Surface water monitoring results must be submitted with the DMR. Downstream monitoring will be discontinued because compliance with the effluent limitations is more accurately determined by effluent monitoring to meet the derived end of pipe limits. Upstream monitoring for ammonia and temperature were for calculation of the water quality standards. Those water quality standards have now been established and monitoring is discontinued. The EPA will consider additional surface water monitoring during the next permit cycle to determine if conditions of the receiving water have changed.

C. Electronic Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR within six months of the effective date of the permit. 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. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. The EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. McCain is required to develop and implement a Quality Assurance Plan within 90 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Best Management Practices Plan

The permit requires McCain to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times.

McCain is required to update its best management practices (BMP) plan for their facility within 90 days of the effective date of the final permit. The plan shall be retained on site and made available to EPA and IDEQ upon request.

C. Additional Permit Provisions

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

D. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." The EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, the EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/ .

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

McCain is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

Regardless of whether a facility is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

VIII. Other Legal Requirements

A. Endangered Species Act

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.

The Idaho State Habitat Office of NOAA Fisheries stated that there are no endangered or threatened species under NOAA Fisheries' jurisdiction in the Snake River upstream of the Hells Canyon Dam, which is approximately 400 river miles downstream of these discharges. Therefore, EPA has determined that the discharges will have no effect on any such species.

USFWS stated that the Snake River physa snail may occur in the vicinity of the discharges. USFWS and EPA believe that the discharges are well outside the range of the Snake River physa snail. Therefore the discharges will have no effect on these species.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, and grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. EPA has determined that the discharge from the McCain facility will no effect on any EFH species in the vicinity of the discharge, therefore EFH consultation is not required for this action.

C. State/Tribal Certification

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 anti-degradation analysis was conducted by the IDEQ as part of the State's CWA Section 401 certification (see Appendix F).

D. Permit Expiration

The permit will expire five years from the effective date.

IX. References

EPA. 1973. *Water Quality Criteria 1972*. United States Environmental Protection Agency. EPA-R3-73-033.

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

IDAPA 58. 2004. *Water Quality Standards and Wastewater Treatment Requirements.* Idaho Department of Environmental Quality rules., Title 01, Chapter 02.

IDEQ. 1999. *Lake Walcott Subbasin Assessment and Total Maximum Daily Load, The*. Idaho Division of Environmental Quality.

Appendix A: Facility Information

General Information

NPDES ID Number:	ID0000612
Physical Address:	218 West Highway 30 Burley, ID 83318
Mailing Address:	P.O. Box 10 Burley, ID 83318

Facility Information

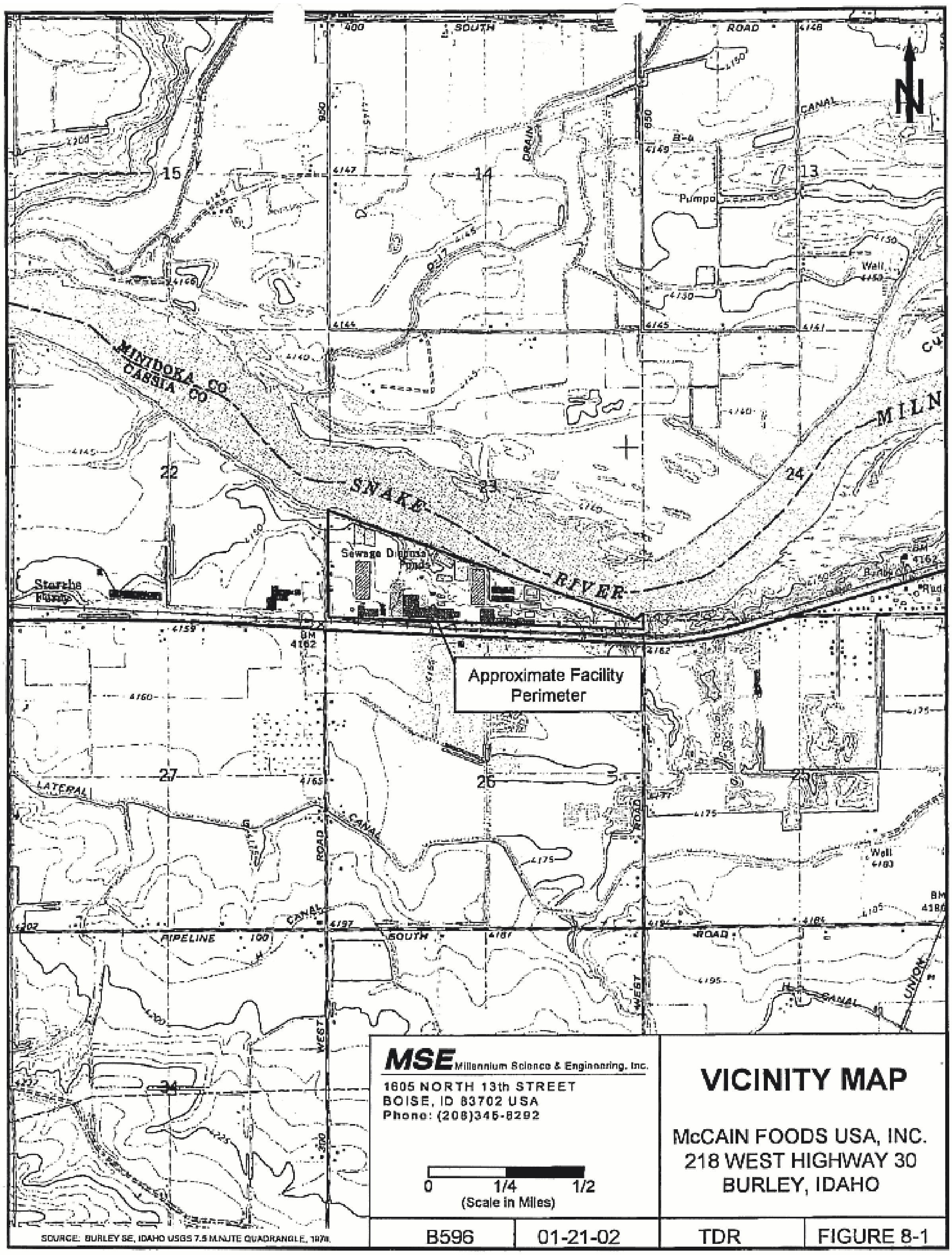
Type of Facility:	Frozen potato products manufacturer Privately Owned Sewage treatment plant
Treatment Train (Outfall 001)	Grease separation, screening, anaerobic digestion, aerobic lagoon, secondary clarification, chlorine desinfection
Sewage Treatment Plant (Outfall 005)	Primary, secondary activated sludge, chlorine disinfection
Flow:	Outfall 001: 4.16 mgd maximum, 3.12 mgd average Outfall 002: 0.452 mgd maximum, 0.295 mgd average Outfall 004: 0.974 mgd maximum, 0.216 mgd average Internal Outfall 005 0.040 mgd design flow for Sewage Treatment Plant
Outfall Location:	Outfall 001: latitude 42E 32' 15" N; longitude 113E 50' 50" W Outfall 002: latitude 42E 32' 15" N; longitude 113E 50' 50" W Outfall 004: latitude 42E 32' 10" N; longitude 113E 50' 25" W

Receiving Water Information

Receiving Water:	Snake River (Milner Pool)
Watershed:	Lake Walcott (HUC 17040209)), Segment 3 Minidoka Dam to Milner Dam

Beneficial Uses: Warm water aquatic life
Primary contact recreation
Water supply for:

- Agricultural
- Industrial
- Primary contact recreation
- Wildlife Habitats
- Aesthetics


Approximate Facility Perimeter
SNAKE RIVER
MINIDOKA CO
CASSIA CO
Sewage Disposal Ponds
MSE Millennium Science & Engineering, Inc.
1605 NORTH 13th STREET
BOISE, ID 83702 USA
Phone: (208)345-8292
0 1/4 1/2
(Scale in Miles)
VICINITY MAP
McCAIN FOODS USA, INC.
218 WEST HIGHWAY 30
BURLEY, IDAHO
SOURCE: BURLEY SE, IDAHO USGS 7.5 MINUTE QUADRANGLE, 1978.
B596
01-21-02
TDR
FIGURE 8-1

Appendix B: Water Quality Criteria Summary

This appendix provides a summary of water quality criteria applicable to the Snake River (Milner Pool).

Idaho water quality standards include criteria necessary to protect designated beneficial uses. The standards are divided into three sections: General Water Quality Criteria, Surface Water Quality Criteria for Use Classifications, and Site-Specific Surface Water Quality Criteria. The EPA has determined that the criteria listed below are applicable to the Snake River at Milner Pool. This determination was based on (1) the applicable beneficial uses of the river (i.e.warm water aquatic life, primary contact recreation, salmonid spawning, agricultural water supply, industreial water supply, industrial water supply wildlife habitats and aesthetics, (2) the type of facility, (3) a review of the application materials submitted by the permittee, and (4) the quality of the water in the Snake River.

A. General Criteria (IDAPA 58.01.02.200)

Surface waters of the state shall be free from:

- hazardous materials,
- toxic substances in concentrations that impair designated beneficial uses,
- deleterious materials,
- radioactive materials,
- floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses,
- excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses,
- oxygen demanding materials in concentrations that would result in an anaerobic water condition

Surface water level shall not exceed allowable level for:

- radioactive materials, or
- sediments

B. Numeric Criteria for Toxics (IDAPA 58.01.02.210)

This section of the Idaho Water Quality Standards provides the numeric criteria for toxic substances for waters designated for aquatic life, recreation, or domestic water supply use. Monitoring of the effluent has shown that the following toxic pollutants have been present at detectable levels in the effluent.

- Chlorine (Total Residual)
- temperature,
- *E. coli* bacteria,

- pH,
- ammonia

C. Surface Water Criteria To Protect Aquatic Life Uses (IDAPA 58.01.02.250)

1. pH: Within the range of 6.5 to 9.0

2. Temperature: Water temperatures of 33°C or less with a maximum daily average of no greater than 29°C.

3. Ammonia:

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. The table below details the equations used to determine water quality criteria for ammonia.

McCain has collected pH and temperature data seasonally in the Snake River upstream from McCain. These data were used to determine the appropriate pH and temperature values to calculate the ammonia criteria.

As with any natural water body the pH and temperature of the water will vary over time. Therefore, to protect water quality criteria it is important to develop the criteria based on pH and temperature values that will be protective of aquatic life at all times. The EPA used seasonal pH and temperature for the calculations.

Table B-1: Water Quality Criteria for Ammonia

	Acute Criterion[1]	Chronic Criterion
Equations:	$\frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \times MIN\left(2.85, 1.45 \times 10^{0.028\times(25-T)}\right)$
Seasonal Results at 95th percentile pH(mg/L):		
November – April	1.86	0.661
May		0.586
June – September		0.390
October		0.624
Seasonal Results at pH = 8.5 (mg/L):		
November – April	3.20	1.09
May		0.965
June – September		0.642
October		1.03

Notes:
1. No seasonal variation was assumed for pH, therefore, there is no seasonal variation in the acute criterion (which is a function of pH only).

D. Surface Water Quality Criteria For Recreational Use Designation (IDAPA 58.01.02.251)

a. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain *E. coli* in concentrations exceeding a geometric mean of 126 *E. coli* organisms per 100 ml based on a minimum of 5 samples taken every 3 to 7 days over a 30 day period.

b. Use of Single Sample Values: This section states that that a water sample that exceeds certain “single sample maximum” values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the “single sample maximum” value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.) for primary and contact recreation.

Appendix C: Low Flow Conditions and Dilution

A. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho's water quality standards require criteria be evaluated at the following low flow receiving water conditions (See IDAPA 58.01.02.210.03) as defined below:

Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3 or 30Q10

1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years.
2. The 1B3 is biologically based and indicates an allowable exceedence of once every 3 years.
3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.
4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.
5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.
6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.
7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

Idaho's water quality standards do not specify a low flow to use for acute and chronic ammonia criteria, however, the EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia; Notice* (64 FR 719769 December 22, 1999) identifies the appropriate flows to be used.

The EPA determined seasonal critical low flows upstream of the discharge from the following USGS Station: Minidoka, Idaho (station #13081500)

The estimated low flows for the station are presented in Table C-1 Because the previous permit contained ammonia effluent limits with two tiers based on the flow rate of the receiving water, EPA has included two flow tiers for the season with the lowest receiving water flow rates (November through April).

The flow of the Snake River near the point of discharge is highly variable with the season. Therefore, EPA has calculated the 1Q10, 7Q10 and 30B3 on a seasonal, as well as a year-round, basis. The seasonal low flows are as follows:

Table C-1: Seasonal Low Flows in the Snake River (at USGS Station #13081500)

Season	1Q10 (CFS)	7Q10 (CFS)	30B3 (CFS)
Full year	279	344	428
November through April	279	344	428
May	1020	1340	1820
June through September	4200	4750	7330
October	2340	2720	4940

B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality standards may be exceeded as long as acutely toxic conditions are prevented (the EPA, 1994). The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances."

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The policy allows the IDEQ to authorize a mixing zone for a point source discharge after a biological, chemical, and physical appraisal of the receiving water and the proposed discharge. The IDEQ considers the following principles in limiting the size of a mixing zone in flowing receiving waters (IDAPA 58.01.02.060.01.e):

i. The cumulative width of adjacent mixing zones when measured across the receiving water is not to exceed 50% of the total width of the receiving water at that point;

ii. The width of a mixing zone is not to exceed 25% of the stream width or 300 meters plus the horizontal length of the diffuser as measured perpendicularly to the stream flow, whichever is less;

iii. The mixing zone is to be no closer to the 10 year, 7 day low-flow shoreline than 15% of the stream width;

iv. The mixing zone is not to include more than 25% of the volume of the stream flow.

In the State 401 Certification, the IDEQ proposes to authorize a mixing zone of 25% of the stream flow volume for ammonia and chlorine.

The following formula is used to calculate a dilution factor based on the allowed mixing zone.

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$

Where:

D	=	Dilution Factor
Q_e	=	Effluent flow rate (set equal to the design flow of the WWTP)
Q_u	=	Receiving water low flow rate upstream of the discharge (1Q10, 7Q10, 30B3, etc)
%MZ	=	Percent Mixing Zone

The EPA calculated dilution factors for year round and seasonal critical low flow conditions. The dilution factors are listed in Table C-2 and C-3.

Table C-2: Seasonal Dilution Factors in the Snake River for Outfall 001 **(based on flows at USGS Station #13081500)**			
Season	**Acute Dilution Factor** (1Q10)	**Chronic Dilution Factor** (7Q10)	**Chronic Ammonia Dilution Factor** (30B3)
Full Year	10.5	12.7	---
November through April (Critical Flows)	10.5	12.7	15.5
November through April (River Flow ≥ 1100 CFS)	38.3	38.3	38.3
May	35.6	46.4	62.7
June through September	143	162	249
October	80.3	93.1	168

Table C-3: Dilution Factors in the Snake River for Outfalls 002 and 004 **(based on flows at USGS Station #13081500)**		
Outfall	**Acute Dilution Factor** (1Q10)	**Chronic Dilution Factor** (7Q10)
002	20.7	25.3
004	22.0	27.0

Appendix D: Basis for Effluent Limits

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, and Part C discusses facility-specific water quality-based effluent limits.

A. Technology-Based Effluent Limits

Federal Effluent Limit Guidelines

EPA has promulgated effluent limit guidelines (ELGs) for process wastewater discharges from this industry in 40 CFR Part 407. McCain is an existing frozen potato products facility, therefore the effluent limit guidelines in 40 CFR 407.47, representing the level of effluent quality attainable through application of the best conventional pollutant control technology, are the applicable effluent limit guidelines.

These effluent limit guidelines are based on the level of production at the facility. The federal regulation at 40 CFR 122.45(b)(2) requires that effluent limitations based on production or another measure of operation must be based on "a reasonable measure of actual production of the facility." McCain's average production level is unchanged at 3,031,580 pounds of raw material per day. EPA has calculated technology-based effluent limits based on this production figure and the effluent limit guidelines.

Table D-1: Technology-Based Effluent Limits
(40 CFR 407.47, Frozen Potato Products Subcategory)

Parameter	Average Monthly Limit (lb/1000 lb of raw material)	Maximum Daily Limit (lb/1000 lb of raw material)	Range
BOD_5	1.40	2.80	---
TSS	1.40	2.80	---
pH	---	---	6.0 - 9.0 s.u.
Limits Based On Expected Production Levels			
BOD_5 (lb/day)	4244	8488	---
	4244	8488	---

Federal Secondary Treatment Effluent Limits for Sewage Treatment Plants

Using Best Professional Judgment pursuant to CWA section 301(b)(2) and section 402(a)(1)(B) the EPA is applying the categorical requirements for Public Owned Treatment Plants (POTW) to the Sewage Treatment Plant at McCain. The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table D-2.

Table D-2: Secondary Treatment Effluent Limits (40 CFR 133.102)		
Parameter	**30-day average**	**7-day average**
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	---
pH	within the limits of 6.0 - 9.0 s.u.	

Mass-Based Limits for Sewage Treatment Plant

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[1]

Since the design flow for this facility is 0.03 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.04 mgd × 8.34 = 10.0 lbs/day

Average Weekly Limit = 45 mg/L × 0.04 mgd × 8.34 = 15.0 lbs/day

[1] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

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 by July 1, 1977. 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 make this evaluation 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 water quality-based effluent limits are needed based on numeric criteria, 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 chemical, then the discharge has the reasonable potential to cause or contribute to an exceedance of the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is 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 decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the receiving water meets the criteria necessary to protect the designated uses of the water body. Mixing zones must be authorized by the Idaho Department of Environmental Quality.

The reasonable potential analyses for McCain were based on a mixing zone of 25% based on IDEQ's draft certification. If IDEQ revises the allowable mixing zone in its final certification of this permit, reasonable potential analysis will be revised accordingly.

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 wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based Wasteload Allocation

   Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, 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 non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

Total Phosphorus – Outfall 001

The Lake Walcott TMDL provides a wasteload allocation to the McCain facility of 399 lb/day. The proposed average monthly limit for total phosphorus is identical to the wasteload allocation. Calculations for the maximum daily total phosphorus effluent limit proposed in the draft permit are found in Appendix E.

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. The WLAs for ammonia and chlorine were derived using a mixing zone.

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 wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an exceedance of the criteria. The WLA for *E. coli* was derived using this method.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

Summary - Water Quality-based Effluent Limits

The water quality based effluent limits in the draft permit are summarized below.

<u>Ammonia – Outfall 001</u>

A reasonable potential calculation demonstrated that the McCain discharge does not have a reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. See Appendices D for reasonable potential and effluent limit calculations for ammonia. However, the EPA has continued the previous permit's effluent limits for ammonia in compliance with the anti-backsliding provisions of the Clean Water Act and federal regulations. The EPA has determined that the previous permit's ammonia limits are stringent enough to ensure compliance with water quality standards.

<u>Nitrate + Nitrite</u>

A reasonable potential calculation demonstrated that the McCain discharge does not have a reasonable potential to cause or contribute to a violation of the water quality standards for nitrate + nitrite. Therefore, the draft permit does not propose effluent limits for nitrate + nitrite, and monitoring of nitrate + nitrite is discontinued.

<u>pH</u>

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were collected at the facility from 2009 through 2013, a total of 120 samples were collected. The data ranged from 7.15 – 8.83 standard units. The pH range of the effluent is well within the State's water quality criterion of 6.5 – 9.0 standard units, therefore no mixing zone is necessary for this discharge. Therefore the effluent limitation is changed from 6.0 to 9.0 to 6.5 to 9.0.

<u>Chlorine</u>

A reasonable potential calculation showed that the McCain discharge does have a reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. See Appendix E for reasonable potential and effluent limit calculations for chlorine.

<u>Total Phosphorus – Outfall 001</u>

The Lake Walcott TMDL requires reductions in total phosphorus loading from point sources. The wasteload allocation granted to the McCain facility in the Lake Walcott TMDL is 399 lb/day. EPA is required to include effluent limits which are consistent with available wasteload allocations from approved TMDLs. Calculations for the total phosphorus effluent limits in the draft permit are found in Appendix E.

Floating, Suspended and Submerged Matter – All Outfalls

The Idaho water quality standards require that surface waters of the State be free from floating, suspended or submerged matter of any kind in concentrations impairing designated beneficial uses. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

Total Residual Chlorine – Outfall 001

EPA has determined that the discharge from Outfall 001 has the reasonable potential to cause or contribute to water quality standards violations for total residual chlorine, if the permittee adds chlorine to the wastewater for total or partial disinfection (i.e. in order to meet the effluent limitations for E. coli bacteria). Therefore, EPA has calculated water quality-based effluent limits for total residual chlorine. EPA has determined reasonable potential to exceed water quality standards and calculated effluent limits on a year-round basis, rather than the seasonal approach used for ammonia.

EPA has calculated water quality-based chlorine effluent limits in this manner because chlorine is toxic to aquatic life at very low concentrations. The acute and chronic chlorine criteria are below the analytical quantitation limit for EPA-approved methods, and the chronic chlorine criterion has a much shorter averaging period (4 days) than does the chronic ammonia criterion (30 days). In order to better protect the receiving water from the toxic effects of chlorine, given the analytical uncertainty, the fact that chlorine is being discharged from multiple outfalls, and the fact that the chlorine criteria have short averaging periods and are not to be exceeded more than once every three years, EPA has used the more conservative approach of establishing effluent limits on a year-round basis.

Temperature – Outfall 001

EPA has retained the 32ºC maximum daily effluent temperature limitation from the previous permit, in compliance with the anti-backsliding requirements of Section 402(o) of the Clean Water Act. A reasonable potential analysis was conducted at the 95 percentile effluent temperature. The reasonable potential calculation determined that McCain does not have a reasonable potential to cause or contribute to a violation of the water quality standards for temperature.

E. coli Bacteria – Outfall 001

The Idaho water quality standards state that waters of the State of Idaho, that are designated for recreation, are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a thirty day period. Therefore, the draft permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho water quality standards also state that a water sample that exceeds certain “single sample maximum” values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the “single sample maximum” value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 406 organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

Total Residual Chlorine – Outfalls 002 and 004

EPA has determined that the discharges from Outfalls 002 and 004 have the reasonable potential to cause or contribute to water quality standards violations for total residual chlorine. Therefore, EPA has calculated water quality-based effluent limits for total residual chlorine for these two outfalls. EPA has determined reasonable potential to exceed water quality standards and calculated effluent limits on a year-round basis, rather than the seasonal approach used for ammonia in Outfall 001.

EPA has calculated water quality-based chlorine effluent limits in this manner because chlorine is toxic to aquatic life at very low concentrations. The acute and chronic chlorine criteria are below the analytical quantitation limit for EPA-approved methods, and the chronic chlorine criterion has a much shorter averaging period (4 days) than does the chronic ammonia criterion (30 days). In order to better protect the receiving water from the toxic effects of chlorine, given the analytical uncertainty, the fact that chlorine is being discharged from multiple outfalls, and the fact that the chlorine criteria have short averaging periods and are not to be exceeded more than once every three years, EPA has used the more conservative approach of establishing effluent limits on a year-round basis.

Discharges from Internal Outfall 005 for the Sewage Treatment Plant

Compliance with water quality standards for discharges from the Sewage Treatment Plant will be at Outfall 001. The *E Coli*, pH, ammonia and chlorine effluent limitations at Outfall 001 meet the water quality standards for the Snake River.

Appendix E: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Part A of this appendix explains the process the EPA has 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. Part B demonstrates how the water quality-based effluent limits (WQBELs) in the draft permit were calculated.

A. Reasonable Potential Analysis

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This following section discusses how the maximum projected receiving water concentration is determined

Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{(Equation 1)}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$
Q_e = Effluent flow rate[1]
Q_u = Receiving water low flow rate upstream of the discharge (i.e. 1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_eQ_e + C_uQ_u}{Q_e + Q_u} \qquad \text{(Equation 2)}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with the receiving stream. If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_eQ_e + C_u(Q_u \times MZ)}{Q_e + (Q_u \times MZ)} \qquad \text{(Equation 3)}$$

Where MZ is the fraction of the receiving water flow available for dilution. In this case, pursuant to Section 58.01.02.060 of the Idaho WQS, the mixing zone is not to exceed 25% of the volume of the stream flow and MZ is equal to 25% (0.25).

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{(Equation 4)}$$

Equation D-2 can be simplified by introducing a "dilution factor,"

$$D = \frac{Q_e + 0.25Q_u}{Q_e} \qquad \text{(Equation 5)}$$

After simplification, Equation D-2 becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{(Equation 6)}$$

Equation D-6 is the form of the mass balance equation that was used to determine reasonable potential and calculate wasteload allocations.

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 (see equation 3, page C-5). 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.

$$p_n = (1 - \text{confidence level})^{1/n} \qquad \text{(Equation 7)}$$

where,
p_n = the percentile represented by the highest reported concentration
n = the number of samples
confidence level = 99% = 0.99

EPA has obtained effluent data from the facility containing 59 samples for ammonia:

$$p_n = (1-0.99)^{1/59}$$
$$p_n = 0.925$$

This means that we can say, with 99% confidence, that the maximum reported effluent concentration is greater than the 93rd percentile.

The reasonable potential multiplier (RPM) is the ratio of the 99th percentile concentration (at the 99% confidence level) to the maximum reported effluent concentration. This is calculated as follows:

$RPM = C_{99}/C_p$ (Equation 8)

Where,

$C = \exp(z\,\sigma - 0.5\,\sigma^2)$ (Equation 9)

where,

$\sigma^2 = \ln(CV^2 + 1)$ (Equation10)

$\sigma = \sqrt{\sigma^2}$

CV = coefficient of variation = (standard deviation) ÷ (mean)

z = the inverse of the normal cumulative distribution function at a given percentile

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

$C_e = (RPM)(MRC)$ (Equation 11)

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

Once the maximum projected effluent concentration is calculated, the maximum projected effluent concentration at the edge of the acute and chronic mixing zones is calculated using the mass balance equations presented previously.

Reasonable Potential

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

Ammonia and nitrite/nitrate do not have a reasonable potential for any season to violate the warm water quality standards for the Snake River. The EPA demonstrated this by using the most stringent water quality criteria from Table B-1: Water Quality Criteria for Ammonia. That is, the ammonia criteria developed from the 95th percentile pH.

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	McCain Foods
Design Flow (MGD)	4.16
Waterbody Type	Freshwater

Dilution Factors	(IDAPA 58.01.02 03. b)	Nov- April	May	June-April	October	Annual
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	**1Q10**	**10.5**	**35.6**	**143.0**	**80.3**	**10.5**
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	**7Q10 or 4B3**					**12.7**
Ammonia	**30B3/30Q10** (seasonal)	**15.5**	**62.7**	**249.0**	**163**	
Human Health - Non-Carcinogen	**30Q5**	--	--	--		
Human Health - carcinogen	**Harmonic Mean Flow**	--	--	--		

Receiving Water Data		Notes:	Annual		
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***	5^{th} % at critical flows			
Temperature, °C	**Temperature, °C**	95^{th} percentile			
pH, S.U.	**pH, S.U.**	95^{th} percentile			

Pollutants of Concern			AMMONIA, warm water, fish early life stages present	AMMONIA, warm water, fish early life stages present	AMMONIA, warm water, fish early life stages present	AMMONIA, warm water, fish early life stages present	Nitrite-Nitrate
Effluent Data	**Number of Samples in Data Set (n)**		59	59	59	59	20
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.82	1.82	1.82	1.82	2.34
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		530	530	530	530	156
	Calculated 50^{th} % Effluent Conc. (when n>10), Human Health Only						
Dilution Factors	Aquatic Life - Acute	1Q10	10.5	35.6	143.0	80.3	10.5
	Aquatic Life - Chronic	7Q10 or 4B3	-	-	-	-	12.7
	Ammonia	30B3 or 30Q10	15.5	62.7	249.0	163.0	--
	Human Health - Non-Carcinogen	30Q5	-	-	-	--	--
	Human Health - carcinogen	Harmonic Mean	-	-	-	--	--
Receiving Water Data	**90^{th} Percentile Conc., µg/L - (C_u)**		120	120	120	120	730
	Geometric Mean, µg/L, Human Health Criteria Only						
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	1,860	1,860	1,860	1,860	100,000
		Chronic	661	586	390	624	100,000
	Human Health Water and Organism, µg/L		--	--	--	--	
	Human Health, Organism Only, µg/L		--	--	--	--	
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	--	--	--	--	--
		Chronic	--	--	--	--	--
	Carcinogen (Y/N), Human Health Criteria Only		--	--	--	--	--

Aquatic Life Reasonable Potential Analysis

σ	σ^2=ln(CV^2+1)		1.209	1.209	1.209	1.209	1.367
P_n	=(1-confidence level)$^{1/n}$ where confidence level =	99%	0.925	0.925	0.925	0.925	0.794
Multiplier (TSD p. 57)	=exp(2.326σ-0.5σ^2)/exp[invnorm(P_N)σ-0.5σ^2], prob. =	99%	2.9	2.9	2.9	2.9	7.8
Statistically projected critical discharge concentration (C_d)			1549.52	1549.52	1549.52	1549.52	1219.97
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	256.14	160.15	130.00	137.80	776.66
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	212.23	142.80	125.74	128.77	768.58
Reasonable Potential to exceed Aquatic Life Criteria			**NO**	**NO**	**NO**	**NO**	**NO**

Reasonable Potential for pH – Outfall 001

A model of pH mixing was used to determine the effluent pH values that would result in meeting the criteria at the edge of the mixing zone. Mixing zone boundary pH is a function of effluent and ambient pH, flow, alkalinity (buffering capacity), and temperature. The worst-case scenario is a warm, highly buffered effluent being discharged into a warm, poorly buffered stream.

Outfall 001	
procedure in EPA's DESCON program (EPA, 1988. Technical	
Guidance on Supplementary Stream Design Conditions for Steady	
State Modeling. USEPA Office of Water, Washington D.C.)	
Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93	
INPUT	
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	12.700
2. UPSTREAM/BACKGROUND CHARACTERISTICS	
Temperature (deg C):	21.90
pH:	7.60
Alkalinity (mg CaCO3/L):	172.00
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	28.60
pH:	5.75
Alkalinity (mg CaCO3/L):	426.00
OUTPUT	
1. IONIZATION CONSTANTS	
Upstream/Background pKa:	6.37
Effluent pKa:	6.33
2. IONIZATION FRACTIONS	
Upstream/Background Ionization Fraction:	0.94
Effluent Ionization Fraction:	0.21
3. TOTAL INORGANIC CARBON	
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	182.11
Effluent Total Inorganic Carbon (mg CaCO3/L):	2048.13
4. CONDITIONS AT MIXING ZONE BOUNDARY	
Temperature (deg C):	22.43
Alkalinity (mg CaCO3/L):	192.00
Total Inorganic Carbon (mg CaCO3/L):	329.04
pKa:	6.37
pH at Mixing Zone Boundary:	6.51

The effluent temperature used in the model is the 95th percentile of DMR temperature data from 2009 through 2014. The effluent alkalinity value represents the 95th percentile from 2009 through 2014. The upstream temperature, alkalinity and pH is from upstream monitoring during the existing permit cycle. The upstream pH was the 10th and 90th percentiles. The upstream alkalinity was the 10th percentile. The upstream temperature used was the 90th percentile.

The model demonstrates the surface water standards for pH of 6.5 can be achieved with a discharge of a pH of 5.75. However the lowest pH discharged is 7.1. Even without a mixing zone the surface water standard of 6.5 to 9.0 can be achieved by McCain. Therefore the pH limit is changed from 6.0 to 9.0 to 6.5 to 9.0.

Reasonable Potential for Temperature

For Outfall 001 a model of temperature mixing was used to determine the effluent temperature values that would result in meeting the criteria at the edge of the mixing zone. EPA has used the 95th percentile effluent temperature.

INPUT	Warm Water Criteria	Data Source
Chronic Dilution Factor at Mixing Zone Boundary	12.7	High River Flow
Ambient Temperature (T) (Upstream Background)	21.9 °C	95th Percentile based on permittee or USGS data
Effluent Temperature	26.0 °C	95th Percentile of **monthly daily max effluent** based on daily max per DMR data
Aquatic Life Temperature WQ Criterion in Fresh Water	29.0 °C	Lowest daily max criteria
OUTPUT		
Temperature at Chronic Mixing Zone Boundary:	22.4 °C	Mass balance

For Outfall 001 the model demonstrates discharges do not have a reasonable potential to violate the water quality standards at the edge of the mixing zone. The existing effluent limits are retained under the anti-backsliding provisions of the Clean Water Act.

Reasonable Potential for pH – Outfalls 002 and 004

For Outfall 002 the model demonstrates discharges at the point of discharge would have to be 5.35 to cause a violation of the 6.5 pH standard at the edge of the mixing zone.

procedure in EPA's DESCON program (EPA, 1988. Technical	
Guidance on Supplementary Stream Design Conditions for Steady	
State Modeling. USEPA Office of Water, Washington D.C.)	
Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93	
INPUT	
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	25.300
2. UPSTREAM/BACKGROUND CHARACTERISTICS	
Temperature (deg C):	21.90
pH:	7.60
Alkalinity (mg CaCO3/L):	172.00
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	16.70
pH:	5.35
Alkalinity (mg CaCO3/L):	247.00
OUTPUT	
1. IONIZATION CONSTANTS	
Upstream/Background pKa:	6.37
Effluent pKa:	6.41
2. IONIZATION FRACTIONS	
Upstream/Background Ionization Fraction:	0.94
Effluent Ionization Fraction:	0.08
3. TOTAL INORGANIC CARBON	
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	182.11
Effluent Total Inorganic Carbon (mg CaCO3/L):	3059.57
4. CONDITIONS AT MIXING ZONE BOUNDARY	
Temperature (deg C):	21.69
Alkalinity (mg CaCO3/L):	174.96
Total Inorganic Carbon (mg CaCO3/L):	295.84
pKa:	6.37
pH at Mixing Zone Boundary:	6.53

For Outfall 004 the model demonstrates discharges at the point of discharge have to be 5.09 to cause a violation of the 6.5 pH standard at the edge of the mixing zone.

Outfall 004	
procedure in EPA's DESCON program (EPA, 1988. Technical	
Guidance on Supplementary Stream Design Conditions for Steady	
State Modeling. USEPA Office of Water, Washington D.C.)	
Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93	
INPUT	
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	27.000
2. UPSTREAM/BACKGROUND CHARACTERISTICS	
Temperature (deg C):	21.90
pH:	7.60
Alkalinity (mg CaCO3/L):	172.00
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	25.60
pH:	5.09
Alkalinity (mg CaCO3/L):	171.00
OUTPUT	
1. IONIZATION CONSTANTS	
Upstream/Background pKa:	6.37
Effluent pKa:	6.35
2. IONIZATION FRACTIONS	
Upstream/Background Ionization Fraction:	0.94
Effluent Ionization Fraction:	0.05
3. TOTAL INORGANIC CARBON	
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	182.11
Effluent Total Inorganic Carbon (mg CaCO3/L):	3258.16
4. CONDITIONS AT MIXING ZONE BOUNDARY	
Temperature (deg C):	22.04
Alkalinity (mg CaCO3/L):	171.96
Total Inorganic Carbon (mg CaCO3/L):	296.04
pKa:	6.37
pH at Mixing Zone Boundary:	6.51

The measured minimum and maximum pH measured at the point of discharge is compared to the pH that will result in a violation at the edge of the mixing zone is shown below.

Outfall	Measured Minimum pH at Point of Discharge	Measured Maximum pH at Point of Discharge	pH Necessary at the Point of Discharge to Cause a Violation at the Edge of the Mixing Zone	Water Quality Standard
002	7.1	8.6	5.35	6.5-9.0
004	6.9	7.9	5.09	6.5-9.0

Since the measured pH is well within pH standards at the point of discharge and at the edge of the allowable mixing zone and potable water supply is not a source of pH violations the EPA concludes discharges from Outfall 002 and 004 do not have a reasonable potential to violate the water quality standards for pH. Therefore monitoring is discontinued for pH. Monitoring of alkalinity, used in the calculation of pH reasonable potential, is also discontinued.

<u>Reasonable Potential for Temperature – Outfall 002 and Outfall 004</u>

<u>Outfall</u>	Maximum Measured Temperature	Water Quality Standard maximum daily average
002	21.9	29
004	20.2	29

Even without a mixing zone Outfalls 002 and 004 do not have a reasonable potential to violate the water quality standard for temperature. For this reason temperature monitoring is discontinued for these outfalls.

Reasonable Potential for Chlorine

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	McCain CL
Design Flow (MGD)	
Waterbody Type	Freshwater

Dilution Factors	(IDAPA 58.01.02 03. b)	Ouf 001	Out 002	Out 004
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	**1Q10**	**10.5**	**20.7**	**22.0**
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	**7Q10 or 4B3**	**12.7**	**25.3**	**27.0**
Ammonia	**30B3/30Q10** (seasonal)		**--**	**--**
Human Health - Non-Carcinogen	**30Q5**	**--**	**--**	**--**
Human Health - carcinogen	**Harmonic Mean Flow**	**--**	**--**	**--**

Receiving Water Data		Notes:	Annual		
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***	5th % at critical flows			
Temperature, °C	**Temperature, °C**	95th percentile			
pH, S.U.	**pH, S.U.**	95th percentile			

Pollutants of Concern			CHLORINE (Total Residual)	CHLORINE (Total Residual)	CHLORINE (Total Residual)
Effluent Data	**Number of Samples in Data Set (n)**		59	60	9
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		0.66	1.08	0.87
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		77	80	156
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only				
Dilution Factors	Aquatic Life - Acute	1Q10	10.5	20.7	22.0
	Aquatic Life - Chronic	7Q10 or 4B3	12.7	25.3	27.0
	Ammonia	30B3 or 30Q10	0.0	--	--
	Human Health - Non-Carcinogen	30Q5	-	-	-
	Human Health - carcinogen	Harmonic Mean	-	-	-
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		0	0	0
	Geometric Mean, µg/L, Human Health Criteria Only				
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	19	19	19
		Chronic	11	11	11
	Human Health Water and Organism, µg/L		--	--	--
	Human Health, Organism Only, µg/L		--	--	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	--	--	--
		Chronic	--	--	--
	Carcinogen (Y/N), Human Health Criteria Only		N	N	N

Aquatic Life Reasonable Potential Analysis

σ	σ^2=ln(CV^2+1)		0.601	0.879	0.751
P_n	=(1-confidence level)$^{1/n}$ where confidence level =	99%	0.925	0.926	0.599
Multiplier (TSD p. 57)	=exp(2.326σ-0.5σ^2)/exp[invnorm(P_N)σ-0.5σ^2], prob. =	99%	1.7	2.2	4.7
Statistically projected critical discharge concentration (C_d)			130.44	173.25	740.30
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	12.42	8.37	33.65
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	--	--	--
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)			4	4	4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			4	4	4
LTA Coeff. Var. (CV), decimal (Use CV of data set or default = 0.6)			0.660	1.080	0.870
Permit Limit Coeff. Var. (CV), decimal (Use CV from data set or default = 0.6)			0.660	1.080	0.870
Acute WLA, ug/L	C_d = (Acute Criteria x MZ_a) - C_u x (MZ_a-1)	Acute	199.5	393.3	418.0
Chronic WLA, ug/L	C_d = (Chronic Criteria x MZ_c) - C_u x (MZ_c-1)	Chronic	--	--	--
Long Term Ave (LTA), ug/L	WLAc x exp(0.5σ^2-2.326σ)	Acute	59.0	74.9	96.7
(99th % occurrence prob.)	WLAa x exp(0.5σ^2-2.326σ); ammonia n=30	Chronic	--	--	--
Limiting LTA, ug/L	used as basis for limits calculation		59.0	74.9	96.7
Applicable Metals Criteria Translator (metals limits as total recoverable)			--	--	--
Average Monthly Limit (AML), ug/L , where % occurrence prob =		95%	**95**	**151**	**176**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		99%	**200**	**393**	**418**
Average Monthly Limit (AML), mg/L			**0.10**	**0.15**	**0.18**
Maximum Daily Limit (MDL), mg/L			**0.20**	**0.39**	**0.42**

The average monthly limit for Outfall 002 is calculated as 151 µg/L and the monthly average limit is calculated as 176 µg/L. However EPA has retained the 130 µg/L and 148 µg/L monthly limitations for Outfalls 002 and 004 respectively from the previous permit, in compliance with the anti-backsliding requirements of Section 402(o) of the Clean Water Act.

Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity (WET) tests are laboratory tests that measure the total toxic effect of an effluent on living organisms. Whole effluent toxicity tests use small vertebrate and invertebrate species and/or plants to measure the aggregate toxicity of an effluent. There are two different types of toxicity test: acute and chronic. An acute toxicity test is a test to determine the concentration of effluent or ambient waters that causes an adverse effect (usually death) on a group of test organisms during a short-term exposure (e.g., 24, 48, or 96 hours). A chronic toxicity test is a short-term test, usually 96 hours or longer in duration, in which sublethal effects (e.g., significantly reduced growth or reproduction) are usually measured in addition to lethality. Both acute and chronic toxicity are measured using statistical procedures such as hypothesis testing (i.e., no observable effect concentration, NOEC and lowest observable effect concentration, LOEC) or point estimate techniques (i.e., lethal concentration to 50 percent of organisms, $LC_{50;}$ and inhibition concentration in a biological measurement to 25 percent of organisms, IC_{25}).

Federal regulations at 40 CFR §122.44(d) (1) require that NPDES permits contain limits on whole effluent toxicity when a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a State’s numeric or narrative water quality criteria for toxicity. In Idaho, the relevant water quality standards for toxicity states that surface waters of the State shall be free from toxic substances in concentrations that impair designated beneficial uses. Since Idaho does not have numeric water quality criteria for toxicity, the EPA Region 10 uses the Toxic Units (TU) approach for acute (0.3 TUa) and chronic criteria (1 TUc). The use of TU as a mechanism for quantifying instream toxicity when a State lacks numeric criteria is described in Sections 2 and 3 of the 1991 Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001) (TSD).

The proposed permit does not contain effluent limitations or monitoring because the EPA has determined that the discharge does not have the reasonable potential to cause or contribute to an excursion above Idaho’s narrative criteria for toxicity. As a result, the EPA is not including an effluent limitation for WET or monitoring for WET in this permit reissuance. The rationale for the EPA’s reasonable potential determination are provided below.

Rationale for Reasonable Potential Determination:

When determining whether or not a discharge causes, has the reasonable potential to cause, or contribute to an excursion of a numeric or narrative water quality criteria for toxicity, the permitting authority can use a variety of factors and information. Some of these factors include, but are not limited to, the amount of available dilution, type of industry, existing data, type of receiving water and designated uses and history of compliance.

Results

Survival and reproduction Ceriodaphnia Dubia toxicity tests conducted in 2010 found no statistical difference in response between effluent dilutions and controls. None of the dilutions experienced any abnormalities regarding survival even in 100 percent effluent. For reproduction, none of the dilutions failed to produce the minimum number of organisms required during the seven-day test. Statistical analyses of reproduction also indicate that none of the dilutions are significantly different from controls.

		NOEC	LOEC
Ceriodaphnia Dubia	Survival	100%	100%
	Reproduction	100%	100%

None of the dilutions experienced any abnormalities regarding survival or growth of larval Fathead Minnow except in 100 percent effluent. That is survival of larval Fathead Minnow toxicity tests found no statistical difference for survival between effluent dilutions and controls except in 100 percent effluent.

		NOEC	LOEC
Fathead Minnow	Survival	54%	100%
	Growth	54%	100%

The toxicity report stated "Chronic toxicity was not found in either toxicity test at a dilution of less than or equal to 100.0 percent effluent."

Toxicity is determined at the edge of the mixing zone. The percent dilution of the effluent at the edge of the chronic mixing zone provided by IDEQ is 7.9 percent. At 7.9 percent dilution survival and growth of Fathead Minnow are not statistically different then controls. The NOEC for survival and growth is much higher at 54 percent dilution.

The EPA has determined that McCain does not have a reasonable potential to cause or contribute to an excursion above Idaho's water quality standard for toxics for the following reasons.

1. Toxicity monitoring is not required for the Frozen Potato Products source category.
2. Toxics are not generally characterized for the food process industry.
3. Categorical standards for this category apply for pH, TSS and BOD_5. TSS, BOD_5 and pH are the pollutants that characterize these source categories. The treatment system at McCain is designed to treat these pollutants.
4. The WET test results: No toxicity to Ceriodaphnia Dubia in 100 percent of the effluent in survival or reproduction. No Fathead Minnow toxicity at the edge of the chronic mixing zone and no toxicity for at any dilution less than 100 percent effluent and the high NOEC.
5. The existing data that indicates that the effluent does not contain individual toxics,
6. A record of no violations.

WQBEL Calculations

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated, when those limits are intended to protect aquatic life criteria. WQBELs for total phosphorus are calculated differently. The following discussion presents the general equations used to calculate the water quality-based effluent limits.

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis. To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation ___ is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{Equation 12}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\sigma)} \qquad \text{Equation 13}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \qquad \text{Equation 14}$$

where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile probability basis)
CV = coefficient of variation (standard deviation ÷ mean)
σ_4^2 = $\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \qquad \text{Equation 15}$$

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below.

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \qquad \text{Equation 16}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)} \qquad \text{Equation 17}$$

where σ, and σ² are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1$
z_a = 1.645 (z-score for the 95th percentile probability basis)

z_m = 2.326 (z-score for the 99th percentile probability basis)

n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 30.

B. 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 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 ammonia at Outfall 001. None of the exceptions apply to the ammonia effluent limitations.

An anti-backsliding analysis was done for chlorine at Outfall 002 and Outfall 004. None of the exceptions apply to chlorine limitations. Therefore the McCain effluent limitations for chlorine at Outfalls 002 and Outfall 004 are being retained in the proposed permit.

An anti-backsliding analysis was done for temperature for Outfall 001. None of the exceptions apply to the temperature limitations. Therefore the McCain effluent limitations for temperature is being retained in the proposed permit.

Total Phosphorus

The effects of total phosphorus on a watershed are a function of the average loading. In contrast, the effects of pollutants such as ammonia and chlorine, which have toxic effects on aquatic life, are based on short term exposure (generally 1 hour for acute effects and 4 days for chronic effects). Therefore, it is not appropriate to calculate effluent limits for total phosphorus using the procedures shown above, which are used for the protection of aquatic life criteria.

When the deleterious effects of a pollutant are based on long term average loading or concentration (as with human health criteria or nutrients), the TSD recommends setting the average monthly limit equal to the WLA. NPDES regulations at 40 CFR 122.45(d)(1) require that effluent limitations for continuous discharges from dischargers other than POTWs be expressed as average monthly and maximum daily limits, unless impracticable. Therefore, the TSD recommends calculating a maximum daily limit based on effluent variability from the following equation:

$$\frac{\text{MDL}}{\text{AML}} = \frac{\exp(z_m\sigma - 0.5\sigma^2)}{\exp(z_a\sigma_n - 0.5{\sigma_n}^2)}$$

Where:

- CV = Coefficient of variation = 0.451
- $\sigma^2 = \ln(CV^2 + 1) = 0.185$
- $\sigma = \sqrt{\sigma^2} = 0.430$
- $\sigma_n^2 = \ln(CV^2/n + 1) = 0.0495$
- $\sigma_n = \sqrt{{\sigma_n}^2} = 0.223$
- n = number of sampling events per month = 8
  (a minimum of 4 samples is assumed if actual sample frequency is less than 4 per month)
- z_m = 2.326 for 99th percentile probability basis
- z_a = 1.645 for 95th percentile probability basis

This yields an MDL to AML ratio of 1.93:1. Page 193 of the Lake Walcott TMDL states the waste load allocation for McCain is 399 pounds per day of TP as a monthly average. Therefore, the average monthly limit is 399 lb/day and the maximum daily limit is 772 lb/day (399 lb/day × 1.93 = 772 lb/day).

Appendix F: IDEQ 401 Certification

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

July 9, 2014

NPDES Permit Number(s): ID0000612, McCain Foods USA – Burley Factory

Receiving Water Body: Snake River

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.

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 McCain Foods USA facility discharges the following pollutants of concern: BOD_5, TSS, pH, total phosphorus (TP), total ammonia as nitrogen, total residual chlorine (TRC), *Escherichia coli* (*E. coli*), temperature, and oil & grease. Effluent limits have been developed for BOD_5, TSS, pH, TP, total ammonia as nitrogen, TRC, temperature and *E. coli*.

Receiving Water Body Level of Protection

The McCain Foods USA facility discharges to the Snake River (Heyburn/Burley Bridge to Milner Dam) within the Lake Walcott Subbasin assessment unit (AU) ID17040209SK001_07 (2010 Integrated Report). This AU has the following designated beneficial uses: warm water aquatic life and primary contact recreation. Although not designated as such, DEQ presumes that cold water aquatic life is also a beneficial use in this AU. In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

According to DEQ's 2010 Integrated Report, this AU is not fully supporting one or more of its assessed uses. The warm and cold water aquatic life uses are not fully supported. Causes of impairment include nutrient eutrophication and sedimentation/siltation. As such, DEQ will provide Tier 1 protection (IDAPA 58.01.02.051.01) for the aquatic life uses. The contact recreation beneficial use is unassessed. DEQ must provide an appropriate level of protection for the contact recreation use using information available at this time (IDAPA 58.01.02.052.05.c). DEQ reviewed the water quality data for *E. coli* (2007-2011) and determined that *E. coli* is meeting the primary contact recreation standard. Therefore, DEQ will provide Tier 2 protection for this use (IDAPA 58.01.02.051.02).

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 McCain Foods USA facility permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

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.

Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04).

The EPA-approved *Lake Walcott TMDL* (2000) establishes wasteload allocations for TP and TSS. These wasteload allocations are designed to ensure the Snake River (Heyburn/Burley Bridge to Milner Dam) 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 McCain Foods USA facility permit are set at levels that comply with these wasteload allocations.

In sum, the effluent limitations and associated requirements contained in the McCain Foods USA facility permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the *Lake Walcott TMDL*. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the Snake River (Heyburn/Burley Bridge to Milner Dam) in compliance with the Tier 1 provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

High-Quality Waters (Tier 2 Protection)

The Snake River (Heyburn/Burley Bridge to Milner Dam) is considered high quality for primary contact recreation. As such, the water quality relevant to primary contact recreation uses of the Snake River (Heyburn/Burley Bridge to Milner Dam) must be maintained and protected, unless a lowering of water quality is deemed necessary to accommodate important social or economic development.

To determine whether degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to primary contact recreation uses of the Snake River (Heyburn/Burley Bridge to Milner Dam) (IDAPA 58.01.02.052.05). These include the following: bacteria as *E. coli.* Effluent limits are set in the proposed and existing permit for this pollutant.

For a reissued permit or license, the effect on water quality is determined by looking at the difference in water quality that would result from the activity or discharge as authorized in the current permit and the water quality that would result from the activity or discharge as proposed in the reissued permit or license (IDAPA 58.01.02.052.06.a). For a new permit or license, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit or license (IDAPA 58.01.02.052.06.a).

Pollutants with Limits in the Current and Proposed Permit

For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.06.a.i), and the future discharge quality is based on the proposed permit limits (IDAPA 58.01.02.052.06.a.ii). For the McCain Foods USA facility permit, this means determining the permit's effect on water quality based upon the limits for *E. coli* in the current and proposed permits. Table 1 provides a summary of the current permit limits and the proposed or reissued permit limits.

Table 1. Comparison of current and proposed permit limits for pollutants of concern relevant to uses receiving Tier 2 protection.

Pollutant	Units	Current Permit			Proposed Permit			Change[a]
		Average Monthly Limit	Average Weekly Limit	Max. Daily Limit	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit	
Pollutants with limits in both the current and proposed permit								
E. coli	no./100 mL	126	---	406	126	---	406	NC

[a] NC = no change.

In sum, DEQ concludes that this discharge permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.06).

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

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 25% of the critical flow volumes of Snake River (Heyburn/Burley Bridge to Milner Dam) for ammonia and chlorine.

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 Dr. Balthasar Buhidar, Twin Falls Regional Office, (208) 736-2190, **balthasar.buhidar@deq.idaho.gov**.

DRAFT

Bill Allred
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