**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 8**
**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**
**STATEMENT OF BASIS**

| | |
|---|---|
| PERMITTEE: | Symes Hot Springs Hotel and Mineral Baths |
| FACILITY NAME AND ADDRESS: | Symes Hot Springs Mineral Baths and Swimming Pool<br>209 Wall St.<br>Hot Springs, MT 59845 |
| PERMIT NUMBER: | MT-0030619 |
| RESPONSIBLE OFFICIAL: | Leslee Smith<br>P.O. Box 651<br>208 Wall Street<br>Hot Springs, MT 59845 |
| FACILITY CONTACT: | Leslee Smith |
| PERMIT TYPE: | Minor Industrial, Indian Country, Renewal |
| TYPE OF TREATMENT: | None |
| FACILITY LOCATION: | NE ¼ of Section 4, Township 21N, Range 24 W<br>Hydraulic Code 17010210, Lower Flathead River |
| DISCHARGE LOCATION(S): | Latitude 47.609955° N<br>Longitude 114.671389° W |

## 1. INTRODUCTION

This statement of basis (SoB) is for the issuance of a NPDES permit to the Symes Hot Springs Hotel and Mineral Baths, for the Symes Hot Springs Mineral Baths and Swimming Pool (Symes). The Permit establishes discharge limitations for any discharge of water from Outfall 001. The SoB explains the nature of the discharges, and the EPA's decisions for limiting the pollutants in the wastewater, as well as the regulatory and technical basis for these decisions.

The EPA Region 8 is the permitting authority for facilities located in Indian country, as defined in 18 U.S.C. § 1151, located within Region 8 states and supports implementation of federal environmental laws consistent with the federal trust responsibility, the government-to-government relationship, and the EPA's 1984 Indian Policy.

## 2. BACKGROUND INFORMATION

Symes is a Mission-style hotel that was built in 1930. The EPA has not promulgated Effluent Limitation Guidelines for this type of discharge. Proposed Permit limits are based on Water Quality Standards and permit writer professional judgement (PJ).

### 2.1. Facility Description

Symes is located in Hot Springs, MT the NE ¼ of Section 4, Township 21N, Range 24W, and the discharge point (Outfall 001) is located at latitude 47.609955° N and longitude 114.671389° W. The mineral baths are supplied by water from a 280-foot deep geothermal well. Water from the well is approximately 109° to 115° F. Water first enters a small top pool before flowing over a short cascading waterfall into a larger bottom pool. From there the water flows into a 20-foot by 40-foot swimming pool. The top pool is maintained at approximately 104° and the bottom pool at approximately 101°F. Water in the bottom pool discharges through an overflow structure. Chlorination of bath and swimming water is not used at the facility. Routine maintenance of the mineral baths includes draining the pools twice a week to clean by pressure washing. No chemicals are added during this time.

The bottom pool's discharge runs through approximately 100-feet of buried 4-inch PVC pipe under the front lawn and discharges into a roadside ditch beside Wall Street. The ditch then runs approximately 30-feet in the open along Wall Street before going underground again for approximately 200-feet and then discharging into Hot Springs Creek. The discharge, along with any storm water run-off carried by the ditch, then empties into Hot Springs Creek under the Wall Street Bridge. The facility has consistently reported discharge flow as 25 gallons per minute (0.036 million gallons per day [MGD]) year-round.


Figure 1. Aerial Image, Symes Hot Springs Mineral Baths and Swimming Pool

2.2. Treatment Process

This facility directly discharges without treatment.

2.3. Chemicals Used

Chlorination has not been used in the facility since the 2006 Permit. No other chemicals are used at the facility.

## *3.* WATER QUALITY CONSIDERATIONS

3.1. Description of Receiving Water

The Confederated Salish and Kootenai Tribes (Tribes) have been granted treatment as a state (TAS) by the EPA and have adopted water quality standards (WQS), which are approved by the U.S. EPA. The most recent revision to the Tribes WQS was approved by the EPA on April 11, 2007. Surface waters are defined in the Tribes WQS, as "any waters on the surface of the Flathead Reservation,

including but not limited to streams (permanent, intermittent, and ephemeral), lakes, ponds, wetlands, seeps and springs, reservoirs, and irrigation and drainage systems discharging into a stream, lake, pond, wetland reservoir, or other surface water. Treatment works used solely for treating, transporting, or impounding pollutants are not considered surface water." The Tribes WQS goes on to state "water quality segments specified in Section 1.3.5 through 1.3.12 include all elements referred to in the definition of surface water."

Water from the facility ultimately discharges into Hot Spring Creek. Section 1.3.12 *C-3 Classification*, of the Tribes WQS, lists the Hot Springs Creek (mainstem) from Hot Springs water-supply intake to the Little Bitterroot River as class C-3 water. Waters classified as C-3 must be maintained suitable for bathing, swimming, and recreation; wildlife (birds, mammals, amphibians, and reptiles); the marginal growth and propagation of non-salmonid fishes and associated aquatic life; and agricultural and industrial water supply purposes.

When the facility was last visited by EPA in September of 2005, there was no flow in Hot Springs Creek upstream of the discharge. According the StreamStats Report generated by the USGS StreamStats program, the estimated low flow (7Q10) in Hot Springs Creek near the where the effluent enters the stream is approximately 0.712 cfs (1.1 mgd). After approximately 7 river miles, Hot Springs Creek discharges into the Little Bitterroot River. Section 1.3.8 *B-2 Classification*, of the Tribes WQS, lists the Little Bitterroot River (mainstem) from the Reservation boundary to the Flathead River as class B-2 waters. The dissolved oxygen (DO) and temperature standards associated with class B-2 waters are slightly more stringent than those associated with class C-3 waters. The composition of the discharge with low nutrient loading and low biological oxygen demand is not anticipated to have an effect on the DO concentrations in receiving waters. For temperature, PJ anticipates that the approximate 7 river miles is a sufficient distance for the effluent to mix completely with the receiving stream and restore the naturally occuring water body temperature prior to Hot Springs Creek discharging into Little Bitterroot River (See Appendix A for a reasonable potential analysis [RPA]). Temperature monitoring is also being added into the permit to verify this assessment.

## 4. PERMIT HISTORY

The data in Table 1 is collected from discharge monitoring report (DMR) data submitted to the EPA from 2014 through 2018. Table 1 shows the minimum, maximum, average, and median pollutant values calculated from the DMR data. Complete DMR results can be found in Appendix B.

Table 1. Discharge Data, 2014 – 2018

| Parameter | Units | 2011 Permit Limits | Minimum Value | Maximum Value | Average Value | Median Value | Number of Violations | Number of Samples |
|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | 30/45[(1)] | ND | 2 | 0.33 | 0 | 0 | 55 |
| Total flow | MGD | -- | 0.036 | 0.036 | 0.036 | 0.036 | 0 | 54 |

| Parameter | Units | 2011 Permit Limits | Minimum Value | Maximum Value | Average Value | Median Value | Number of Violations | Number of Samples |
|---|---|---|---|---|---|---|---|---|
| Fecal Coliforms | Number/100 mL | -- | 0.93 | >2,420 | 53.4 | 1 | 1 | 55 |

(1) 30-Day Average/7-Day Average

## 5. MAJOR CHANGES FROM PREVIOUS PERMIT

Based on previous sampling results, it has been determined that fecal coliform exhibits reasonable potential to cause or contribute to an excursion of water quality-based criterion (See Section 6.1 below). As a result, limits for bacteriological indicators were added into the Permit.

*E. coli* effluent limits were added.

Effluent limits were added for pH and a temperature monitoring requirement was added. These limits and monitoring requirements are consistent with the Surface Water Quality Standards and Antidegradation Policy of the Confederated Salish and Kootenai Tribes of the Flathead Reservation [Section 1.2.12(3)] (See Sections 6.1 and 7.1 below). Additional sampling for pH and temperature will be required at points up and downstream of where the discharge from the ditch along Wall Street enters into Hot Springs Creek. The upstream sample (US1) shall be collected at the upstream side of the bridge on Wall Street where it crosses over Hot Spring Creek. The downstream sample (DS1) shall be collected on the downstream side of the bridge. The exact location where the effluent from the ditch enters into Hot Springs Creek is not easily accessible which is why the downstream side of the bridge is being used.

## 6. PROPOSED PERMIT LIMITATIONS

### 6.1. Water Quality Based Effluent Limitations

#### *6.1.1. Fecal coliforms and E. coli*

The Tribal WQS contain standards for both *E. coli* and fecal coliforms. According to the WQS, the geometric number of *E. coli* may not exceed 126 colony-forming units per 100-milliliters (cfu/100 mL) during any 30-day period, and ten percent of the samples may not exceed 252 cfu/100 mL during any 30-day period. The geometric mean number of organisms in the fecal coliform group must not exceed 200 cfu/100 mL, and 10 percent of the total samples during any 30-day period are not to exceed 400 cfu/100 mL.

This evaluation is used to establish water quality based effluent limits to ensure protection of the receiving stream's water quality and its existing and designated beneficial uses. From 2014 to 2019, fecal coliform results exceeded WQS once on October 2015 when fecal coliforms were detected at >2,420 Number/ 100 mL. The maximum number of fecal coliforms in the effluent was >2,420 Number/100 mL and the average was 53.4 Number/100 mL. Based on these results there is reasonable potential to violate bacteriological water quality standards and corresponding limits for fecal coliforms and *E. coli* will be included in the Permit.

### *6.1.2. pH*

The previous permit did not contain effluent limits or monitoring requirements for pH. The Tribes' WQS have fresh water aquatic life standards for pH of 6.5 – 9.0 standard units (S.U.) for both acute and chronic exposure and 5.0 – 9.0 S.U. for human health criteria. The narrative standard for C-3 classified waters states in part: "Induced variation of hydrogen ion concentration (pH) within the range of 6.5 to 9.0 must be less than 0.5 standard units. Natural pH outside this range must be maintained without change. Natural pH above 7.0 must be maintained above 7.0.

The application lists one effluent pH data point at 9.4 S.U., which is outside the range of 6.5 – 9.0 S.U. required by Tribal WQS. There is no pH adjustment conducted within the mineral baths or pool nor prior to discharge, therefore, the pH variation is likely a natural phenomenon.

Currently there is no information available on the pH and buffering capacity of Hot Springs Creek at the point of discharge. Monitoring will be required for pH to provide information on the need for a revised effluent limitation in subsequent NPDES permits.

Monthly samples will be collected at Outfall 001 and quarterly at points just upstream and downstream of where the discharge from the ditch along Wall Street enters Hot Springs Creek. Samples at the effluent will help establish the natural pH of the effluent. The upstream sample (US1) shall be collected on the upstream side of the North Wall Street Bridge where it crosses over Hot Springs Creek and the downstream samples (DS1) will be collected on the downstream side of the bridge. The upstream and downstream samples will be collected to determine what change, if any, the effluent has on the pH in Hot Springs Creek.

### *6.1.3. Temperature*

The Tribes WQS contains standards for temperature. According to the WQS, where naturally occuring water temperatures are within the range of 32°F to 77°F a 3°F maximum water temperature increase is allowed. Where naturally occuring water temperatures are within the range of 77°F to 79.5°F, a 0.5°F maximum water temperature increase is allowed. Where the naturally occuring water temperature is above 55°F, a 2°F per hour maximum decrease is allowed. Where naturally occuring water temperatures are within the range of 55°F to 32°F a 2°F per hour maximum decrease below naturally occuring water temperature is allowed.

An RPA was conducted using instream temperature data from an upstream monitoring station (CSKTRIBE-LBR-HSC0785), low flow data calculated by the online United States Geological Service (USGS) program StreamStats: Streamflow Statistics and Spatial Analysis Tools for Water-Resources Applications, and the reported temperature of the effluent water in the lower pool. This RPA indicated the possibility of elevated temperatures in Hot Springs Creek, however, temperature sampling has not been required by previous permits; therefore, temperature will be monitored to provide information on the need for an effluent limitation in subsequent NPDES permits. Sampling for temperature will be performed monthly at Outfall 001, and quarterly at points just upstream and downstream of where the discharge from the ditch along Wall Street enters Hot Springs Creek. The upstream sample (US1) shall be collected on the upstream side of the North Wall Street Bridge where it crosses over Hot Springs Creek and the downstream sample (DS1) shall be collected on the downstream side of the bridge (as shown in Figure 1 of the SoB). The upstream and downstream samples will be collected to determine what change, if any, the effluent has on the temperature of Hot Springs Creek.

6.2. Technology based Water Quality Standards

*6.2.1. Total Suspended Solids (TSS)*

The EPA has not promulgated effluent limitation guidelines for this type of discharge. Based on previous sampling data the facility has shown that it can meet a 30-day average of 30 milligrams per liter (mg/L) and a 7-day average of 45 mg/L limit for TSS). These limits are based on the National Secondary Standards for wastewater treatment are included in the previous permit and will be continued in the Permit.

6.3. Effluent Limitations

Table 2. Outfall 001 - Effluent Limitations

| **Effluent Characteristics** | **Units** | **30-day Average** | **7-day Average** | **Basis(1)** |
|---|---|---|---|---|
| Total Suspended Solids, mg/L | mg/L | 30 | 45 | PJ |
| *E. coli*[4] | #/100 mL | 126 | -- | WQS |
| Fecal coliforms[5] | #/100 mL | 200 | -- | |
| The pH of the discharge shall not be less than 6.5 or greater than 9.0 at any time(2)(3) | | | | WQS |

1. "PJ" refers to permit writer professional judgement. "WQS" refers to effluent limitations based on water quality standards.
2. Induced variation of hydrogen ion concentration (pH) within the range of 6.5 to 9.0 must be less than 0.5 standard units. Natural pH outside this range must be maintained without change. Natural pH above 7.0 must be maintained above 7.0. Exceedances of this effluent limitation are not a violation of this Permit if the pH of the Symes' source water exceeds 9.0 based on the justification in section 6.1.2 of this SoB.
3. Additional samples are required for pH and shall be collected at US1and DS1 points on each side of the Wall Street Bridge that crosses Hot Springs Creek.
4. 30 day average calculated with geometric mean. 10 percent of the total samples during any 30-day period shall not exceed 252 Number/100 mL for *E. coli*.
5. 30 day average calculated with geometric mean. 10 percent of the total samples during any 30-day period shall not exceed 400 Number/100 mL for fecal coliforms.

## 7. MONITORING REQUIREMENTS

7.1. Self-Monitoring Requirements – Outfall 001

Monitoring for flow, TSS, *E. coli*, temperature, and pH will be for the duration of the Permit. Flow measurement and samples for TSS, *E. coli*, pH, and temperature will be taken at the point where the 4-inch pipe leaves the Symes property which is prior to any stormwater entering the ditch. Samples for pH and temperature will be collected at the effluent of the mineral baths and at points US1 and

DS1of where the discharge from the ditch along Wall Street enters Hot Springs Creek. See the previous discussions of where US1 and DS1 are located.

In general, the samples will consist of the overflow from the mineral baths and discharge from the swimming pool. Samples of the wastewater from the cleaning of the pools will be collected on an annual basis in April and take the place of the overflow sample for that month.

Table 3. Monitoring Requirements

| **Effluent Characteristic** | **Frequency** | **Sample Type**[1] | **Monitoring Location** |
|---|---|---|---|
| Total Flow, million gallons per day | Monthly | Instantaneous | Outfall 001 |
| Total Suspended Solids, mg/L | Monthly | Grab | Outfall 001 |
| *E. coli*, Number/100 mL | Monthly[2] | Grab | Outfall 001 |
| Fecal coliforms, Number/100 mL | Monthly | Grab | Outfall 001 |
| pH, S.U. | Monthly | Grab | Outfall 001, US1[2], DS1[2] |
| Temperature, °F | Monthly | Instantaneous | Outfall 001, US1[2], DS1[2] |

[1]See Definitions, Permit Part 1.1., for definition of terms.

[2] US1 and DS1 monitoring is to be conducted quarterly. Not monthly.

## 8. FACILITY INSPECTION REQUIREMENTS

On a monthly basis, unless otherwise modified in writing by the EPA, the Permittee shall inspect its outfall. The permittee shall maintain a log in hardcopy or electric format documenting all information obtained during the inspection.

## 9. REPORTING REQUIREMENTS

Reporting of Monitoring Results: With the effective date of this Permit, the Permittee must electronically report monthly DMRs on a quarterly frequency using NetDMR. Electronic submissions by permittees must be sent to the EPA Region 8 no later than the 28th of the month following the completed reporting period. The Permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at https://netdmr.zendesk.com/home.

In addition, the Permittee must submit a copy of the DMR to the Confederated Salish and Kootenai Tribes. Currently, the Permittee may submit a copy to the Confederated Salish and Kootenai Tribes by one of three ways: 1. a paper copy may be mailed. 2. The email address for Confederated Salish and

Kootenai Tribes may be added to the electronic submittal through NetDMR, or 3. The Permittee may provide the Tribes viewing rights through NetDMR.

## 10. ENDANGERED SPECIES CONSIDERATIONS

The Endangered Species Act (ESA) of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any Federal action carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species (together, "listed" species), or result in the adverse modification or destruction of habitat of such species that is designated by the FWS as critical ("critical habitat"). See 16 U.S.C. § 1536(a)(2), 50 C.F.R. Part 402. When a Federal agency's action "may affect" a protected species, that agency is required to consult with the FWS, depending upon the endangered species, threatened species, or designated critical habitat that may be affected by the action (50 C.F.R. § 402.14(a)).

The U. S. Fish and Wildlife Information for Planning and Conservation (IPaC) website program was utilized to determine Federally-Listed Endangered, Threatened, Proposed and Candidate Species in and around the project area. The IPaC Trust Resource Report findings are provided in Table 4 below for the Flathead Reservation in Montana. The designated area utilized was taken directly from the IPaC system and covers the area downstream of the discharge

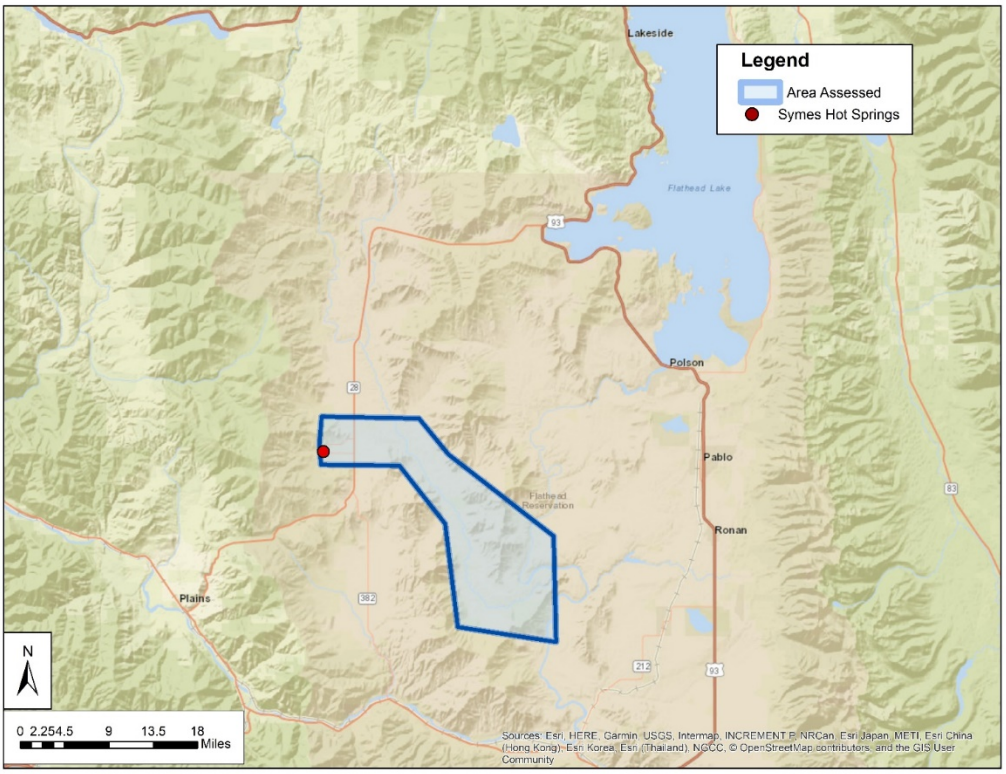


Figure 2. IPaC area considered, Sanders County and Lake County

Table 4. Threatened, Endangered, and Candidate Species on the Flathead Reservation

| **Common Name** | **Scientific Name** | **Status** |
|---|---|---|
| Canada Lynx | *Lynx canadensis* | T; PCH |
| Grizzly Bear | *Ursus arctos horribilis* | T; PCH |
| North American Wolverine | *Gulo gulo luscus* | P |
| Yellow-billed Cuckoo | *Coccyzus americanus* | T; PCH |
| Bull Trout | *Salvelinus confluentus* | T, PCH |
| Spalding's Catchfly | *Silerie spaldingii* | T |

Symbols/Acronyms:

T = Threatened
E = Endangered
P = Proposed
CH = Critical Habitat

10.1. Conclusion

- Canada Lynx : May affect, Not likely to adversely affect
- Grizzly Bear: May affect, Not likely to adversely affect
- North American Wolverine May affect, Not likely to adversely affect
- Yellow-billed Cuckoo: May affect, Not likely to adversely affect
- Bull Trout: May affect, Not likely to adversely affect
- Spalding's Catchfly: May affect, Not likely to adversely affect

The EPA has determined that this action is not likely to adversely affect any of the listed species or their critical habitat. This action is a renewal of an existing NPDES discharge permit. Renewal of the NPDES discharge permit does not authorize any new discharge or changes to the volume or location of the current discharge and no new construction will occur at the site. The NPDES discharge permit renewal merely continues the EPA's regulatory authority over the facility, requiring the facility's discharge meet effluent limitations that are protective of water quality and placing monitoring, reporting and record-keeping requirements on the permittee to ensure they comply with the discharge permit effluent limitations.

Before going to public notice, an informal consultation with the FWS was held to validate the EPA's finding that reissuance of this NPDES Permit (MT0030619) for Symes is Not Likely to Adversely Affect any of the species listed as threatened or endangered for Lake County by the FWS under the Endangered Species Act nor their critical habitat.

On February 9, 2019, the FWS concurred with the EPA's conclusion that the described project is not likely to adversely affect listed species.

## 11. NATIONAL HISTORIC PRESERVATION ACT REQUIREMENTS

During public notice of this Permit the Tribal Historic Preservation Officer will be contacted to ensure that all historic properties are not negatively affected by the conditions of this Permit.

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The U.S. National Park Service (U.S. NPS) National Register of Historic Places Focus Database was utilized to determine and evaluate resources of concern at Symes' location.

The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

| | |
|---|---|
| **Title:** | Symes Hotel |
| **National Register Information System ID:** | 98001363 |
| **Areas of Significance:** | COMMUNITY PLANNING AND DEVELOPMENT |
| **Resource Type:** | BUILDING |
| **Asset ID:** | 6e3eff9c-8995-4357-a7cf-c30153615bdb |

The EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this Permit is a renewal and will not be associated with any new ground disturbances or changes to the volume or point of discharge. In addition, issuance of the Permit allows Symes, built in 1930, to continue its historic business.

## 12. MISCELLANEOUS

The effective date of the Permit and the Permit expiration date will be determined upon issuance of the Permit. The intention is to issue the Permit for a period not to exceed 5 years.

Paul Garrison
(303) 312-6016
PHONE NUMBER
Region 8 – Water Division
United States Environmental Protection Agency

## ADDENDUM:

## PUBLIC NOTICE AND RESPONSE TO COMMENTS

The Permit and statement of basis were public noticed in the Missoulian on date,year. The comment(s) received and the response(s) are provided below.

**Comment:**

The commenter noted that …

**Response:**

The following language was added to the final Permit…

# Appendix A: Temperature Analysis

## Hot Springs Creek

CSKTRIBE-LBR-HSC0785

$$Tr = \frac{QsTs + QdTd}{Qr} = \frac{(0.712\ cfs \times 31.96°F) + (0.056\ cfs \times 101\ °F)}{0.768\ cfs} = 37.00\ °F$$

**Change in Temperature[4] = 5.03 °F**

Tr = Temperature of the stream after mixing

Qs[1] = Low flow (7Q10) of the receiving stream = 0.712 cfs

Ts[2] = Temperature of the receiving stream = 31.96 °F

Qd = Effluent Flow = 0.056 cfs

Td[3] = Effluent Temperature = 101 °F

Qr = Qs + Qd = 0.768 cfs

[1] Low flow (7Q10) value was obtained using USGS Stream Stats program

[2] To be most conservative, the low temperature was used when calculating the final mix temperature. The low flow temperature was determined using a stream gage slightly upstream of where the effluent discharges into Hot Springs Creek (Station ID: CSKTRIBE-LBR-HSC0785)

[3] For the purpose of this calculation it was assumed that there would be no temperature change between the bottom pool temperature and where the effluent enters Hot Springs Creek. This is a conservative assumption since the effluent flows through a pipe and a ditch before discharging into Hot Spring Creek.

[4] The maximum temperature change allowed is 3 °F.

| Date | Temperature °F |
|---|---|
| 2001-10-09 | 43.83 |
| 2001-11-13 | 35.62 |
| 2002-02-12 | 32.90 |
| 2002-04-09 | 37.54 |
| 2002-05-20 | 43.95 |
| 2002-06-11 | 43.38 |
| 2002-07-23 | 62.87 |
| 2002-08-13 | 57.06 |
| 2002-09-17 | 54.39 |
| 2003-01-22 | 31.96 |
| 2003-02-17 | 35.71 |
| 2003-04-01 | 38.21 |
| 2003-04-22 | 41.09 |
| 2003-05-14 | 42.21 |
| 2003-06-04 | 53.40 |
| 2003-07-08 | 58.51 |
| 2003-08-26 | 65.62 |
| 2003-09-17 | 49.26 |
| 2003-10-27 | 46.49 |
| 2003-11-14 | 33.46 |
| 2003-12-05 | 34.16 |
| 2004-02-24 | 33.60 |
| 2004-03-22 | 40.14 |
| 2004-04-02 | 40.64 |
| 2004-05-17 | 47.93 |
| 2004-06-11 | 48.38 |
| 2004-07-09 | 56.53 |
| 2004-08-26 | 55.26 |
| 2004-09-10 | 57.78 |
| 2004-10-06 | 51.10 |

| Date (cont'd) | Temperature °F (cont'd) |
|---|---|
| 2004-11-29 | 32.00 |
| 2004-12-09 | 34.54 |
| 2005-01-10 | 32.07 |
| 2005-02-21 | 32.43 |
| 2005-03-03 | 35.01 |
| 2005-04-19 | 42.75 |
| 2005-05-19 | 48.40 |
| 2005-06-27 | 55.81 |
| 2005-07-21 | 68.83 |
| 2005-08-17 | 58.55 |
| 2005-09-28 | 48.09 |
| 2005-10-04 | 44.22 |
| 2005-11-02 | 42.10 |
| 2005-12-06 | 32.05 |
| 2006-01-10 | 33.82 |
| 2006-02-14 | 33.03 |
| 2006-03-07 | 34.45 |
| 2006-03-07 | 34.45 |
| 2006-04-05 | 38.73 |
| 2006-05-26 | 48.34 |
| 2006-06-07 | 55.96 |
| 2006-07-07 | 61.47 |
| 2006-08-03 | 60.13 |
| 2006-09-07 | 55.99 |
| 2006-10-05 | 51.44 |
| 2006-11-03 | 35.28 |
| 2006-12-15 | 32.88 |
| 2007-01-22 | 32.52 |
| 2007-02-14 | 32.83 |
| 2007-03-14 | 36.14 |

| Date (cont'd) | Temperature °F (cont'd) |
|---|---|
| 2007-03-14 | 35.94 |
| 2007-04-07 | 35.94 |
| 2007-05-11 | 47.26 |
| 2007-06-14 | 55.74 |
| 2007-07-27 | 72.55 |
| 2007-08-27 | 56.68 |
| 2007-09-06 | 63.03 |
| 2007-10-24 | 43.11 |
| 2007-11-15 | 38.70 |
| 2007-12-05 | 37.65 |
| 2008-01-09 | 32.18 |
| 2008-03-12 | 35.22 |
| 2008-04-22 | 35.29 |
| 2008-05-15 | 42.96 |
| 2008-06-18 | 45.97 |
| 2008-07-15 | 57.18 |
| 2008-08-06 | 59.92 |
| 2008-09-03 | 50.85 |
| 2015-08-20 | 61.56 |
| 2015-09-24 | 51.60 |
| Max | 65.62 |
| Min | 31.96 |
| Average | 45.77 |

# Little Bitterroot

Station ID: CSKTRIBE-LBR-LHS2822

| Date | Temperature °F |
|---|---|
| 2001-10-10 | 42.96 |
| 2001-11-14 | 37.44 |
| 2002-03-27 | 34.56 |
| 2002-04-10 | 43.47 |
| 2002-05-21 | 51.62 |
| 2002-06-12 | 59.25 |
| 2002-08-14 | 64.58 |
| 2002-09-18 | 55.44 |
| 2003-01-23 | 31.68 |
| 2003-03-13 | 41.79 |
| 2003-04-02 | 42.87 |
| 2003-04-23 | 55.85 |
| 2003-05-15 | 55.38 |
| 2015-08-20 | 64.56 |
| 2015-09-24 | 55.85 |
| 2017-06-12 | 60.23 |
| 2017-06-12 | 60.29 |
| 2017-07-11 | 68.08 |
| 2017-07-11 | 68.07 |
| 2018-07-17 | 69.14 |
| 2018-08-28 | 55.38 |
| 2019-07-10 | 68.92 |
| 2019-08-26 | 61.24 |
| Max | 69.14 |
| Min | 31.68 |
| Average | 54.29 |

$$Tr = \frac{QsTs + QdTd}{Qr} = \frac{\textbf{(21.6 cfs x 31.68 °F) + (0.056 cfs x 101 °F)}}{\textbf{22.66 cfs}} = \textbf{31.86 °F}$$

**Change in Temperature[4] = 0.18 °F**

Tr = Temperature of the stream after mixing

Qs[1] = Low flow (7Q10) of the receiving stream = 21.6 cfs

Ts[2] = Temperature of the receiving stream = 31.68 °F

Qd = Effluent Flow = 0.056 cfs

Td[3] = Effluent Temperature = 101 °F

Qr = Qs + Qd = 21.66 cfs

[1] Low flow (7Q10) value was obtained using USGS Stream Stats program

[2] To be most conservative, the low temperature was used when calculating the final mix temperature. The low flow temperature was determined using a stream gage slightly downstream of where Hot Springs Creek discharges into Little Bitterroot (Station ID: CSKTRIBE-LBR-LHS2822)

[3] For the purpose of this calculation it was assumed that there would be no temperature change between the bottom pool and when the effluent discharged into Little Bitterroot. This is an extremely conservative assumption as the effluent travels over 8.5 river miles with many tributaries discharging into Hot Springs Creek prior to Little Bitterroot.

[4]The maximum temperature change allowed is 1 °F.

# Appendix B: Historic DMR Data

| Date | Flow (MGD) | Fecal Coliform (MPN/100 mL) | TSS (mg/L) |
|---|---|---|---|
| 05/31/2014 | 0.36 | 12 | |
| 06/30/2014 | 0.36 | 1 | |
| 07/31/2014 | | 1 | 2 |
| 08/31/2014 | 0.36 | 10 | 1 |
| 09/30/2014 | 0.036 | 1 | |
| 10/31/2014 | 0.036 | 1 | |
| 11/30/2014 | 0.036 | 1 | 2 |
| 12/31/2014 | 0.036 | 3 | |
| 01/31/2015 | 0.036 | | |
| 02/28/2015 | 0.036 | 1 | 1 |
| 03/31/2015 | 0.36 | 1 | |
| 04/30/2015 | 0.036 | 5 | |
| 05/31/2015 | 0.036 | 2 | |
| 06/30/2015 | 0.36 | 22 | |
| 07/31/2015 | 0.032 | 32 | 1 |
| 08/31/2015 | 0.036 | 24 | |
| 09/30/2015 | 0.036 | | |
| 10/31/2015 | 0.036 | 2420 | |
| 11/30/2015 | 0.036 | 79 | |
| 12/31/2015 | 0.036 | 1 | |
| 01/31/2016 | 0.036 | 1 | |
| 02/29/2016 | 0.036 | 1 | 1 |
| 03/31/2016 | 0.036 | 1 | |
| 04/30/2016 | 0.036 | 1 | 1 |
| 05/31/2016 | 0.036 | 2 | 1 |
| 06/30/2016 | 0.036 | 5 | |
| 07/31/2016 | 0.036 | 11 | 1 |
| 08/31/2016 | | | |
| 09/30/2016 | 0.036 | 25 | 1 |
| 10/31/2016 | 0.036 | 6 | |
| 11/30/2016 | 0.036 | 1 | 2 |
| 12/31/2016 | 0.036 | 1 | 1 |
| 01/31/2017 | 0.036 | 1 | |
| 02/28/2017 | 0.036 | 1 | |
| 03/31/2017 | 0.036 | 1 | 1 |
| 04/30/2017 | 0.036 | 1 | 1 |
| 05/31/2017 | 0.036 | 1 | 2 |
| 06/30/2017 | 0.036 | 8 | |
| 07/31/2017 | 0.036 | 48 | 1 |
| 08/31/2017 | 0.036 | 0.93 | 2 |
| 09/30/2017 | 0.036 | 4 | |
| 10/31/2017 | 0.036 | 1 | |
| 11/30/2017 | 0.036 | 1 | |
| 12/31/2017 | 0.036 | 1 | |
| 01/31/2018 | 0.036 | 25 | 2 |