April 3, 2018

Ref: 57201.11

Mr. Tim Clear
Watershed Management Division
Vermont Department of Environmental Conservation
One National Life Drive, Main 2
Montpelier, VT 05620-3522

Via Electronic Copy Only

RE: Jay Peak Resort
Water Quality Monitoring Plan ("WQMP")
2017 Performance Report

Dear Tim:

In accordance with the latest *Jay Peak Resort Watershed Study and Water Quality Remediation Plan* ("Revised 2014 WQRP") (January 2015), VHB has prepared the enclosed annual report summarizing water quality monitoring activities conducted during 2017. The report contains monitoring data and analysis of water quality conditions within the Jay Branch and South Mountain Branch watersheds during the monitoring period.

Results indicate that aquatic life use standards for macroinvertebrates were met once again at all of the stations within the Jay Branch watershed, including the reference station (JB-T13-0.2), three Jay Branch main stem stations (JB-9.1, JB-8.3, and JB-7.3), and Tributary 9 to Jay Branch (JB-T9-0.1). These results mark two consecutive years of attainment at stations JB-7.3, JB-8.3, and JB-T9-0.1, and three consecutive years at Jay Branch station JB-9.1. In the South Mountain Branch watershed, neither the main stem station (SMB-1.2) nor the Tributary 3 station (SMB-T3-0.1) met the aquatic life use standards in 2017. Additional efforts to improve water quality downstream from the Stateside Hotel and Base Lodge appear necessary.

In accordance with the terms of the Settlement Agreement, 2017 was the second compliance year for the streams in the Jay Branch watershed and all of these streams met the VWQS biocriteria. No new BMPs are therefore required or proposed in this area, although maintenance of the existing BMPs and monitoring of the sediment source tracking sites will continue. The Settlement Agreement identifies 2017 as the first compliance year in the South Mountain Branch watershed. Per the Settlement Agreement flow chart, Large-Scale BMPs will be required in this watershed because the Tributary 3 to South Mountain Branch compliance station (SMB-T3-0.1) did not meet the interim target for the third time.

www.vhb.com

Engineers | Scientists | Planners | Designers

40 IDX Drive, Building 100
Suite 200
South Burlington, Vermont 05403
P 802.497.6100
F 802.495.5130

In order to provide the water quality monitoring information to interested parties as quickly as possible, proposed updates to the WQRP have not been included in this report. Proposed updates to the WQRP will be submitted for review and comment in advance of the Annual Public Meeting so that they can be properly noticed in accordance with the DEC's "Procedure for Water Quality Remediation Plans." These updates will include information such as the "Large-Scale" BMPs required in the South Mountain Branch watershed and any new sediment offset projects that are proposed for 2018.

If you have any questions or require further information, please feel free to call me at (802) 497-6164 or email rwildey@vhb.com.

Best regards,

Robert Wildey, CPESC
Water Resources Consultant

RAW/kmb

Enclosure

cc: Aaron Moore (DEC)
Jon Groveman (VNRC)
Rachel Stevens (VLS)
Walter Elander (JPR)

Water Quality Monitoring Plan
2017 Performance Report

JAY PEAK RESORT

Jay, Vermont

Prepared for **Jay Peak Resort**
4850 VT Route 242
Jay, Vermont 05859

Prepared by **VHB**
40 IDX Drive
Building 100, Suite 200
South Burlington, Vermont 05403

April 3, 2018

Table of Contents

1.0 Introduction 1

2.0 Background 1

3.0 Study Area 3

4.0 Monitoring Network Design 4

5.0 Monitoring Results 8

5.1 Baseflow Water Chemistry Analysis 8

5.1.1 Conductivity & Chloride 8
5.1.2 pH 10
5.1.3 Turbidity 10
5.1.4 Iron 11

5.2 Event Flow Water Chemistry Analysis 14

5.2.1 Conductivity & Chloride 14
5.2.2 pH 16
5.2.3 Turbidity 16
5.2.4 Iron 18

5.3 Winter Melt Water Chemistry Analysis 20

5.3.1 Conductivity 20
5.3.2 pH 21
5.3.3 Turbidity 22

5.4 Supplemental Turbidity Monitoring 23

5.5 Substrate Analysis 25

5.5.1 Embeddedness 25
5.5.2 Channel Materials 25

5.6 Biomonitoring 26

6.0 Monitoring Recommendations for 2018 40

7.0 Conclusions 41

References 42

Appendices

Appendix 1 – Baseflow Water Chemistry

Appendix 2 – Event flow Water Chemistry

Appendix 3 – Snow Melt Water Chemistry

Appendix 4 – Supplemental Turbidity

Appendix 5 - Substrate

Appendix 6 – Biomonitoring

1.0 Introduction

On behalf of Jay Peak Resort ("JPR" or the "Resort"), VHB has prepared this annual "Water Quality Monitoring Plan Performance Report" ("WQMP"). The WQMP was prepared pursuant to the JPR "Water Quality Remediation Plan" ("WQRP") and includes a record, analysis, and an evaluation of water quality monitoring ("WQM") data collected during the 2017 monitoring season. This data was collected in conformance with the "Water Quality Monitoring Plan, Quality Assurance Project Plan" ("QAPP") (VHB 2017).

The WQRP was most recently updated with the sediment offset calculations associated with the proposed Jay Peak Athletic Fields Project ("2018 WQRP Update"). This information was provided to the Vermont Department of Environmental Conservation ("DEC") on January 30, 2018. In accordance with the DEC's WQRP Procedure, this information was posted to the DEC website for a 30-day public comment period as of January 31, 2018.

2.0 Background

Since 2004, an annual WQMP Performance Report has been prepared and submitted to the DEC that describes surface water quality within portions of the Jay Branch watershed in the vicinity of the Resort. Concurrent with the WQMP program and in conjunction with the WQRP recommendations, JPR has implemented stormwater runoff remediation measures, as well as ongoing stream and wetland restoration and mitigation efforts. Continued monitoring and reporting serve to chart the progress of existing remediation efforts and guide the implementation of future water quality improvements in an adaptive management scenario, with the goal of attainment of Vermont Water Quality Standards ("VWQS") criteria in the subject waters (ANR 2017).

JPR has implemented a series of measures, as outlined in the WQRP, aimed at improving stormwater management and reducing sediment washoff in order to reduce in-stream impacts. Remedial actions have included the collection and treatment of stormwater runoff from existing impervious surfaces,

culvert upgrades, revegetation, and drainage infrastructure improvements as well as on-the-ground and model-based assessments of the Jay Branch Watershed. Beginning in 2011, streams in the South Mountain Branch watershed (Tributary 7 to Jay Branch) were also added to the WQRP, as portions of the Resort also drain to this watershed.

Since 2014, the Resort has been operating with a snow management plan that includes specific instructions for plow operators in designated areas to direct snowmelt into swales with check dams or snow storage basins and away from streams and wetlands. Snow storage basins constructed in 2014 and 2015 were maintained and a new snow storage basin near the Stateside base was completed in 2016.

Under the terms of the Settlement Agreement reached between DEC, JPR and the Vermont Natural Resources Council dated February 12, 2015 ("Settlement Agreement"), interim aquatic biota targets were established in the Revised 2014 WQRP (VHB 2015) to track the success of remedial measures and provide a comprehensive overall assessment of water quality trends in the impaired watersheds. Interim targets were set to demonstrate incremental improvements in biological metrics each year until attainment of thresholds established by DEC demonstrating compliance with the biocriteria implementing the VWQS, or to continue meeting VWQS for criteria that are already being met. 'Attainment' is represented by two years of compliance with the biocriteria thresholds for all four of the interim aquatic biota metrics that have been inconsistently met in previous years (density, richness, EPT and percent Oligochaeta). In accordance with the Settlement Agreement and the Revised 2014 WQRP, the results of the 2017 biomonitoring are discussed in Section 5.6 and the supporting data and calculations are included in Appendix 6. In addition to the interim biocriteria targets, the Settlement Agreement also required the creation of a sediment offset bank that would be used to offset sediment discharges associated with future construction activities. No additional sediment offset projects were completed in 2017. As described in the materials submitted in conjunction with the 2018 WQRP Update, the Athletic Fields Project will provide stormwater treatment for an existing gravel roadway and parking lot at the Inglenook Lodge. Credits previously generated by the North Village Road offset will be used to offset the Project's construction phase sediment load, as required by the Settlement Agreement.

3.0 Study Area

JPR is located in the town of Jay in northern Vermont, approximately 5.5 miles south of the Canadian border (see Water Quality Monitoring Station Location Map in Appendix 1). The Resort is situated on the eastern slope of Jay Mountain, as part of the northern section of the Green Mountains. All waters in the vicinity of JPR are within the Jay Branch Watershed, which is part of the larger Missisquoi River drainage basin, which drains to Lake Champlain. Jay Branch originates from a series of smaller tributaries on the north side of Jay Mountain. The stream flows generally easterly through the Resort, and runs along or through the JPR Golf Course for much of this distance. The principal tributaries associated with Jay Branch within the vicinity of JPR include: Phase 1 Tributary, Phase 2 Tributary, Tributary 9 to Jay Branch ("Tributary 9"), South Mountain Branch and Tributary 3 to South Mountain Branch ("Tributary 3"), all of which are Class B waters below 2,500 feet in elevation. The Phase 1 and Phase 2 tributaries join together downslope of Jay Peak Road to form Tributary 9. The following is a description of these major tributaries, which are also shown on the Water Quality Monitoring Station Location Map in Appendix 1.

- Phase 1 Tributary is a small perennial stream that flows northeast from its headwaters on the mountain slope through areas with ski trails and work roads, then through the Village development area. Downslope of the Village Phase 1 residential community, Phase 1 Tributary flows through a wooded area and then through an existing town culvert under the Jay Peak Road, where it joins with Phase 2 Tributary within the golf course to become Tributary 9 to Jay Branch.

- Phase 2 Tributary is a small perennial stream that flows northeast from its headwaters on the mountain slope through areas with ski trails and work roads then adjacent to the Village Phase 2 residential area. Downslope of the Village Phase 2 area, the Phase 2 Tributary flows through a wooded area and then through a culvert under Jay Peak Road to its confluence with Phase 1 Tributary within the golf course to become Tributary 9.

- Tributary 9 flows through the golf course (Practice Hole and Holes 3, 8, and 9) and converges with Jay Branch downslope of Hole 3. At the confluence of the Phase 1 and 2 tributaries, the total drainage area of the stream is 0.34 square miles.

- South Mountain Branch (Tributary 7 to Jay Branch), which flows northeasterly, is bisected by VT Route 242 before converging with Jay Branch. The area north and west of VT Route 242 includes much of the existing Stateside Hotel and Base Lodge and trail area at JPR, while south and east is largely undeveloped forested area. Tributary 3 originates upgradient from the Stateside Hotel, Base Lodge, and the Stateside Road culvert area and flows east, converging with the South Mountain Branch east of the VT Route 242 crossing. The majority of the Resort's activities within the South Mountain Branch watershed is within the Tributary 3 subwatershed. Station SMB-T3-0.8 provide a reference condition for Tributary 3.

4.0 Monitoring Network Design

As outlined in the QAPP, WQM activities and analyses that are to be conducted on an annual basis include:

- Baseflow Water Chemistry
- Event Flow Water Chemistry
- Winter Melt Water Chemistry
- Substrate Assessment
- Aquatic Biota Habitat Assessment (macroinvertebrates)
- Supplemental Turbidity Monitoring (conducted by JPR staff)

The water quality monitoring network at JPR is designed to examine water quality and stream habitat conditions within the major tributaries of the Resort's watershed. Monitoring stations have been chosen to assess in-stream water quality conditions that reflect discharges of managed stormwater runoff associated with Resort development. Ongoing monitoring and evaluation of data that has occurred since the implementation of the WQRP has resulted in various modifications to the sampling protocol,

including changes to the WQM station locations, sampling activities, and frequency. Table 1 summarizes water quality data collected during the 2017 sampling period. The Water Quality Monitoring Station Location Map in Appendix 1 identifies the locations of these stations.

Table 1: Jay Peak Resort Water Quality 2017 Monitoring Station Locations, Activities, and Frequency

Stream	Water Quality Monitoring Station Name	Water Chemistry						Substrate	Biomonitoring
		Winter Melt*		Baseflow		Event Flow		9/29/17 and 10/6/17	
		4/3/17	4/13/17	9/1/17	9/22/17	9/7/17	10/9/17		
Tributary 13 to Jay Branch (reference)	JB-T13-0.2	x	x	x	x	x	x	x	X
Jay Branch	JB-9.1	x	x	x	x	x	x	x	X
	JB-8.3	x	x	x	x	x	x	x	X
	JB-7.3	x	x	x	x	x	x	x	X
Phase I Trib.	JB-T9-P1-0.1	x	x	x	x	x	x		
Phase II Trib.	JB-T9-P2-0.1	x	x	x	x	x	x		
Tributary 9 to Jay Branch	JB-T9-0.1	x	x	x	x	x	x	x	X
Tributary 3 to South Mountain Branch	SMB-T3-0.5	x	x	x	x	x	x		
	SMB-T3-0.1			x	x	x	x	x	X
	SMB-T3-0.8	x	x	x	x	x	x	x	x
South Mountain Branch	SMB-1.8			x	x	x	x		
	SMB-1.2	x	x	x	x	x	x	x	x

Dry = streambed was dry, little to no flow
*Field Parameters Only – Temperature, Conductivity, pH, and Turbidity

As indicated in Table 1, the 12 WQM stations were monitored for water chemistry in 2017 during baseflow and event flow conditions. Following approval by DEC via email on July 13, 2015, chloride, alkalinity, and total suspended solids ("TSS") are no longer included in the suite of parameters analyzed during sampling events. For water quality samples collected after July 2015, estimated chloride concentrations are calculated from field-measured conductivity values and the site-specific regression equation that was developed using the analytical results from prior years (0.2239 * Conductivity - 7.9519, R^2 = 0.82). If field-measured conductivity at a site is greater than 500 umho/cm, a sample will be collected for laboratory analysis. Ten stations were monitored during winter melt conditions for field parameters, including Station SMB-T3-0.8, which was monitored for the first time.

Substrate characteristics and aquatic biota ("biomonitoring") were monitored at eight of the twelve stations in 2017.

The West Bowl sampling stations (JB-10.2, JB-9.7, JB-9.4 and JB-T12-0.2) were established in 2012 to provide baseline water quality data for future development planned in that area as part of the JPR Master Plan. No samples have been collected at these stations since 2012. Sampling at these locations will resume once a permitting and construction schedule has been determined for the West Bowl development.

The following is a general description of the location of each monitoring station:

Tributary 13 to Jay Branch Watershed

- JB-T13-0.2 is located on Tributary 13 to Jay Branch, upstream of existing development and golf course Hole 13, therefore representing water quality conditions of a reference reach. This station corresponds to DEC station 427813000002.

Jay Branch Watershed

- JB-9.1 is located on the main stem of Jay Branch just upstream of the cart path crossing from Hole 18 to Hole 10 of the golf course. Prior to 2013, this station was sampled farther downstream, near the cart path crossing between Hole 7 and Hole 8. Starting in 2013, the sampling location was moved to the current site and was sampled in 2014 as part of a paired sampling effort conducted alongside DEC biologists. This station receives drainage from the Tram base area and a significant portion of the golf course. This station corresponds to DEC station 427800000091.
- JB-8.3 is located on the main stem of Jay Branch just below the confluence with Tributary 9, therefore reflecting in-stream water quality conditions downstream of the Tram base area, residential development areas and golf course. This station corresponds to DEC station 427800000083.
- JB-7.3 is located on the main stem of Jay Branch downstream of all Resort development, upstream from the VT Route 242 Bridge. This station corresponds to DEC station 427800000073.

Tributary 9 Watershed

- JB-T9-P1-0.1 is located on Phase 1 Tributary downstream of the Village Phase I development area and associated stormwater management system infrastructure, therefore representing in-stream water quality conditions including both the Village development area and upslope on-mountain activities.
- JB-T9-P2-0.1 is located on the Phase 2 Tributary downstream of the Village development area and associated stormwater management system infrastructure, therefore representing in-stream water quality conditions including both the Village development area and upslope on-mountain activities.
- JB-T9-0.1 is located on Tributary 9, below the confluence of Phase 1 and Phase 2 Tributaries and downstream of the golf course area near the confluence with Jay Branch therefore representing conditions within the golf course area, residential development areas and areas and upslope on-mountain activities. This station corresponds to DEC station 427809000001.

South Mountain Branch Watershed

- SMB-T3-0.8 is located on Tributary 3, upgradient from the so-called "Wedding Bridge" that is approximately 375 feet upgradient from the Stateside Hotel. This station represents conditions of upslope on mountain activities and approximates a reference condition for downstream reaches of SMB-T3. This station corresponds to DEC Station 427807030008.
- SMB-T3-0.5 is located on Tributary 3, immediately upgradient from the VT Route 242 culvert and represents the majority of the Resort's contribution to Tributary 3. This station corresponds to DEC Station 427807030005.
- SMB-T3-0.1 is located on Tributary 3, downslope of VT Route 242 and represents the conditions within Tributary 3 downstream of the Resort and VT Route 242. This station corresponds to DEC station 427807030001.
- SMB-1.8 is located on the main stem of the South Mountain Branch approximately 530 feet downstream of the Old Jay-Montgomery Road crossing. This location integrates flows from the Resort, VT Route 242, and headwater contributions to South Mountain Branch. This station corresponds to DEC station 427807000018.

- SMB-1.2 is located on the main stem of South Mountain Branch, upstream of the Shallow Brook Road crossing. This station fully integrates all of the Resort's contributions to South Mountain Branch as well as a significantly greater length of VT Route 242 and nearby developed areas. This station corresponds to DEC station 427807000012.

5.0 Monitoring Results

The results from the monitoring conducted in 2017 are presented below. These include baseflow, event flow, and winter melt water chemistry analysis, supplemental turbidity monitoring, substrate analysis, and biomonitoring.

5.1 Baseflow Water Chemistry Analysis

Baseflow water chemistry samples were collected on September 1 and September 22, 2017 in the Jay Branch, Tributary 13 to Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9 to Jay Branch, Tributary 3 to South Mountain Branch, and South Mountain Branch. WQM samples were collected from 12 monitoring stations in 2017.

The box and whisker plots below provide a summary of the available water chemistry parameters at each monitoring station from 2004 to 2017. The box represents the 1st to 3rd quartile of the total data set. The whiskers represent the minimum and maximum values of the data set and the 'x' represents the 2017 data points. A complete summary of 2004 through 2017 baseflow water chemistry results for each monitoring station and the laboratory reports for each sampling event are included in Appendix 1. WQM results were evaluated to determine compliance with relevant narrative and numerical criteria of the VWQS.

5.1.1 Conductivity & Chloride

WQM samples were field measured for conductivity using a pre-calibrated YSI Pro30 meter (September 1) and a pre-calibrated YSI Multi-meter (September 22). Figure 1 displays the results for conductivity measurements at each respective station.

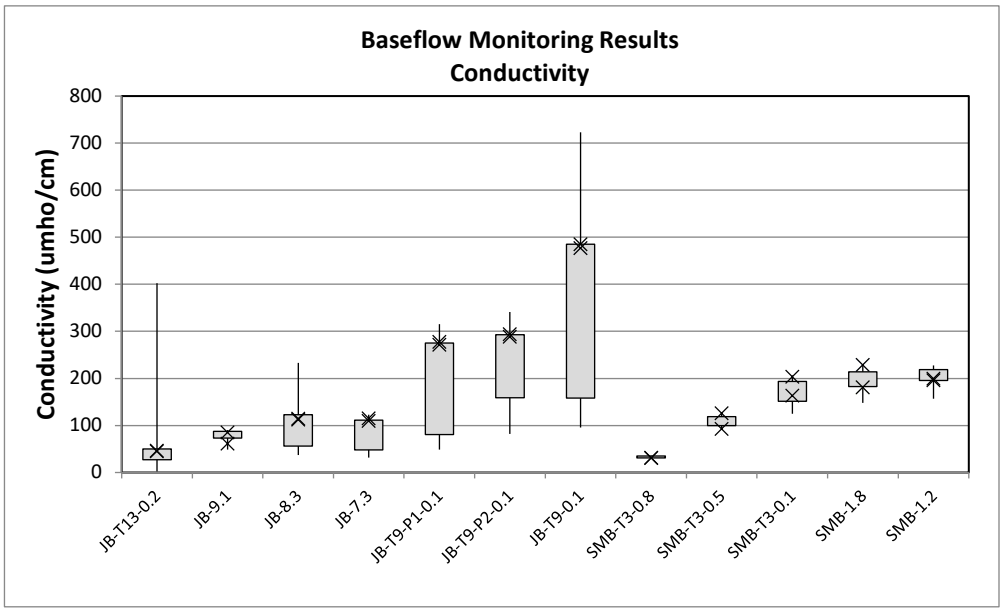


Figure 1: Baseflow Monioring Results for Conductivity

Baseflow conductivity values measured in 2017 were generally higher than average when compared to the period of record for each station. However, no samples were above 500 umho/cm, therefore no samples were collected for laboratory analysis. For the period of record for Station SMB-1.8 (2012 to 2017), the maximum conductivity value was observed on September 1, 2017 (229 umho/cm), the same as the maximum value previously observed on September 7, 2016. Using the site-specific regression equation, this value equates to an approximate chloride concentration of 43.3 mg/L and is well below the chronic VWQS threshold of 230 mg/L. As noted in the past, stations within the smaller and more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) exhibited the highest conductivity values on the respective sampling dates as compared to other stations. Although Tributary 9 stations exhibited conductivity values on September 22 that were slightly above the 3rd quartile, these measurements were within 4 umho/cm of that statistic. Using the site-specific regression, the 3rd quartile values ranging between 272 to 485 umho/cm would correspond to a chloride concentration of approximately 53 to 101 mg/L. Conductivity values observed at JB-8.3 in 2017 were within range for that station and were lower than the values observed in 2016.

As has been the case in the past, conductivity values observed at stations on Tributary 3 and the South Mountain Branch that are located downgradient of VT Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than conductivity values observed upgradient of VT Route 242 (SMB-T3-0.5 and SMB-T3-0.8). This is indicative of the cumulative effects of roadways and development in the lower portions of this watershed. As in 2016, Station SMB-T3-0.8 exhibited conductivity measurements less than 100 µmho/cm, similar to those observed at the Jay Branch reference station (JB-T13-0.2).

Chloride concentrations in baseflow samples that were calculated from field measurements of conductivity and the site-specific regression equation indicate that chloride concentrations were well below the VWQS maximum and EPA chronic criteria value of 230 mg/L.

5.1.2 pH

WQM samples were field measured for pH using a pre-calibrated Oakton 30 pH-meter (September 1) and a pre-calibrated YSI Multi-meter (September 22). Baseflow pH values in 2017 were within the acceptable VWQS range of 6.5 to 8.5 standard units ("s.u.").

5.1.3 Turbidity

WQM samples were field analyzed for turbidity using a HF Scientific MicroTPW portable turbidity meter. Figure 2 displays the results for turbidity.

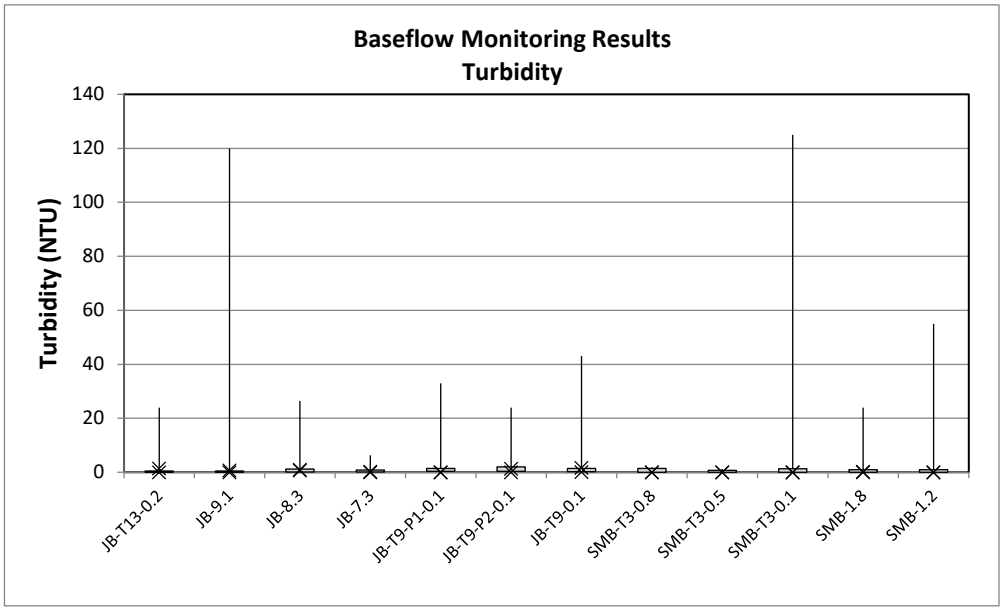


Figure 2: Baseflow Monitoring Results for Turbidity

Baseflow turbidity results for 2017 were within ranges of the period of record for all stations. The maximum sampled value for baseflow turbidity from all sampled stations in 2017 was 1.70 nephelometric turbidity units ("NTU"). The minimum possible value of 0.0 NTU was observed at 8 stations during the September 1, 2017 sampling event and at 4 stations during the September 22, 2017 sampling event. This indicates that entrainment of sediment was minimal during baseflow conditions in 2017.

5.1.4 Iron

Iron was in compliance with the VWQS criterion of 1 mg/L at all sampled stations under baseflow conditions.

Baseflow Summary

In 2017 and over the period of record, stations within the Tributary 9 watershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) have exhibited relatively higher conductivity values, indicating that these streams receive a higher percentage of their surface runoff from developed areas.

Additionally, conductivity concentrations from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 were higher than stations located upgradient of VT Route 242 indicating the effects of roadways and non-resort development in the lower portions of this watershed. Conductivity will continue to be monitored to determine if measures are required to mitigate the effects of chloride-based deicers in these areas.

In 2017, turbidity values were low and at or approaching 0.0 NTU at all stations and pH values were within the acceptable VWQS range during baseflow conditions. Iron concentrations were in compliance with the VWQS standard at all stations during both baseflow samples in 2017.

In 2016, JB-T9-P1-0.1 and JB-T9-0.1 each reported one sample that contained percent oxygen saturation that was below the 70 percent saturation criteria in the VWQS. In 2017, percent oxygen saturation was not recorded during the September 1 sampling event due to an equipment malfunction. During the second round of sampling conducted on September 22, 2017, JB-T9-0.1 met the VWQS with 94% saturation, while JB-T9-P1-0.1, at 61.5% saturation did not meet the VWQS. As with the conditions observed in 2016, the streams were very low during the 2017 baseflow sampling. As can be seen in Photographs 1 and 2 below, the flow at JB-T9-P1-0.1 was barely a trickle during baseflow sampling. Sampling from such marginally flowing water would result in lower percent saturation than would otherwise be expected. As described in Section 5.2, all stations were observed to have dissolved oxygen percent saturation above 90% during event flow samples on September 7 and October 9.

Photograph 1: Stream conditions during baseflow sampling event at JB-T9-P1-0.1 on September 1, 2017

Photograph 2: Stream conditions during baseflow sampling event at JB-T9-P1-0.1 on September 22, 2017

5.2 Event Flow Water Chemistry Analysis

Event flow water chemistry samples were collected during rainfall events on September 7 and October 9, 2017, representing conditions in Jay Branch, Tributary 13 to Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9, South Mountain Branch, and Tributary 3 to South Mountain Branch. The box and whisker plots below provide a summary of the available event flow water chemistry parameters at each monitoring station over the period of record (2005 to 2017). The box represents the 1st to 3rd quartile of the total data set. The whiskers represent the minimum and maximum values of the data set and the 'x' represent the 2017 data points. A complete summary of event flow water chemistry results over the period of record for each monitoring station and laboratory reports for each sampling event are included in Appendix 2. WQM samples were collected from the 12 monitoring stations in 2017.

In previous years, there has been an on-site rain gauge which observed rainfall at the Tram Haus base area. However, when the data from this on-site gage was downloaded at the end of the 2017 season, it was found that it had malfunctioned and could not be used to provide a reliable data for analysis. Therefore, rainfall data was extracted from the nearest publicly available weather station in Montgomery, Vermont (KVTMONTG2).

Rainfall recorded by the Montgomery weather station totaled 0.51 inches during the rainfall event of September 6 - 7, 2017 and 1.19 inches during the October 8 - 9, 2017 rainfall event.

5.2.1 Conductivity & Chloride

WQM samples were field measured for conductivity using a pre-calibrated YSI Pro30 meter (September 7) and a pre-calibrated YSI Multi-meter (October 9). Figure 3 displays the results for conductivity measurements at each respective station.

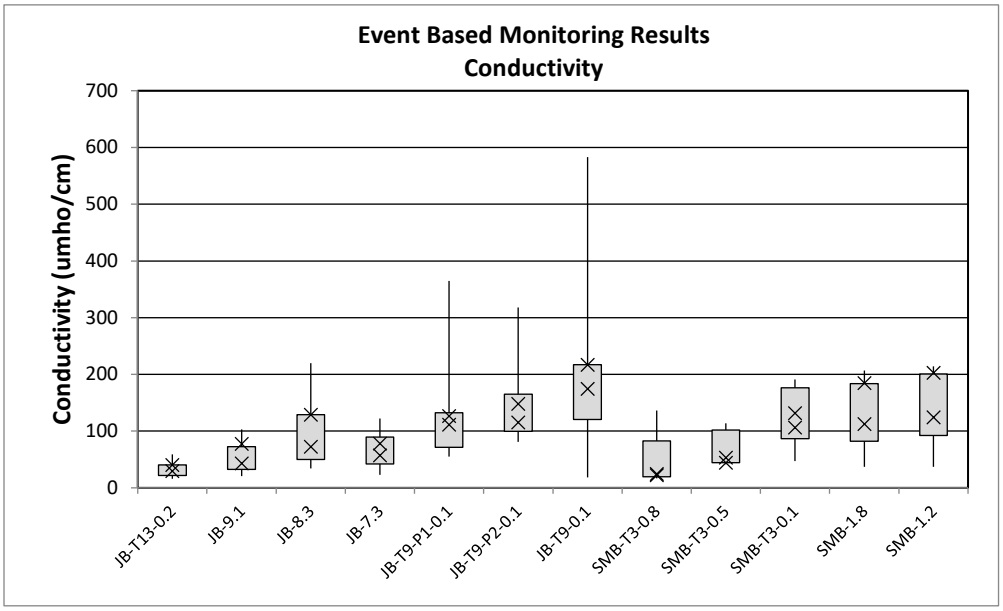


Figure 3: Event Flow Monitoring Results for Conductivity

Event flow conductivity values measured in 2017 were within ranges from the period of record. In 2017, conductivity values were generally higher during the October 9 sampling event when compared to the September 7. For 2017, the maximum conductivity value was observed in Station JB-T9-0.1 on October 9 (217 umho/cm). Using the site-specific regression equation, this value equates to an approximate chloride concentration of 44.4 mg/L and is well below the chronic VWQS threshold of 230 mg/L.

As has been the case in the past, stations within the more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) exhibited the highest conductivity values on the respective sampling dates as compared to other stations within the Jay Branch watershed. During 2017, conductivity values at JB-8.3 were also elevated, presumably because this station is located on the Jay Branch just downgradient from the confluence with the Tributary 9.

In addition, conductivity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than stations of Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.5 and SMB-T3-0.8)

indicating the cumulative effects of roadways and development in the lower portions of this watershed.

Chloride concentrations in event flow samples that were calculated from field measurements of conductivity and the site-specific regression equation indicate that chloride concentrations were well below the VWQS maximum and EPA chronic criteria value of 230 mg/L.

5.2.2 pH

WQM samples were field measured for pH using a pre-calibrated Oakton 30 pH meter (September 7) and a pre-calibrated YSI Multi-meter (October 9). Stations SMB-T3-0.8 and SMB-T3-0.5 exhibited low pH values which were not within the acceptable VWQS range of 6.5 to 8.5 s.u. Observations recorded at all other stations in 2017 had event flow pH values that were within the acceptable VWQS range.

5.2.3 Turbidity

WQM samples were field analyzed for turbidity using a HF Scientific MicroTPW portable turbidity meter. Figure 4 displays the results for turbidity.

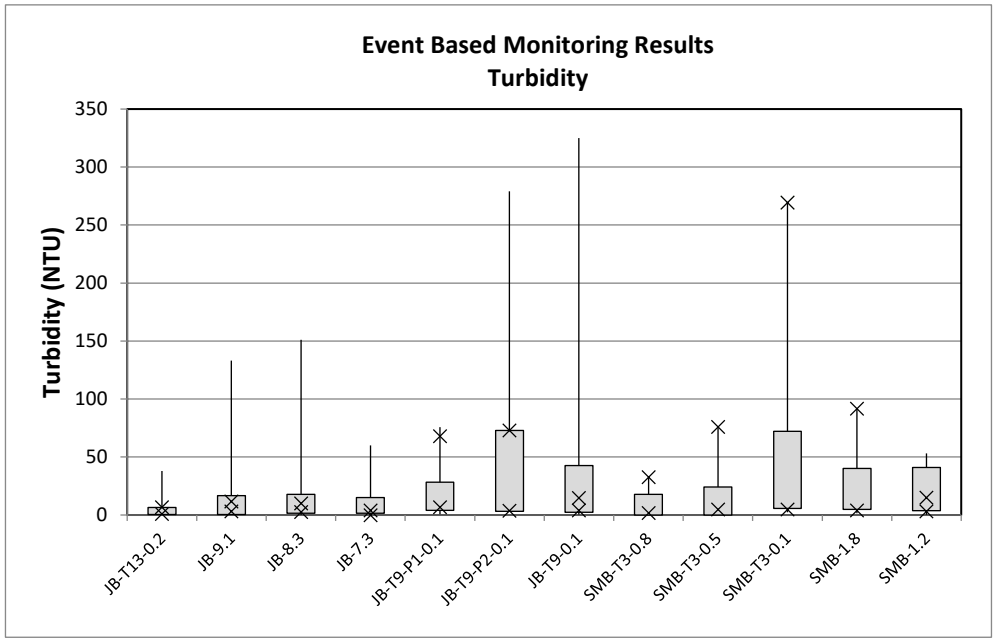


Figure 4: Event Flow Monitoring Results for Turbidity

Event flow turbidity results for 2017 were variable. All 12 stations exhibited higher turbidity during the October 9, 2017 event compared to the September 7, 2017 event. Station JB-T13-0.2 (reference station) displayed turbidity values on that date that were higher than the 3rd quartile for all records at that station. The peak intensity of the October 8 - 9 storm event prior to sampling averaged over 0.40 inches per hour, suggesting that mobilization of sediment associated with this intense rainfall likely led to the increase turbidity values. Stations SMB-T3-0.8, SMB-T3-0.5, SMB-T3-0.1, and SMB-1.8 all exhibited the maximum turbidity values for the period of record, and six stations (JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-T3-0.8, SMB-T3-0.5, SMB-T3-0.1, and SMB-1.8) reported turbidity values above the 25 NTU construction action level on that date. Elevated turbidity values within the Tributary 3 to South Mountain Branch watershed indicate that additional investigation of this area is warranted to identify sediment sources that need to be addressed. Elsewhere at the Resort, the turbidity results at most stations were generally low and within range of previous years.

Stations within the Tributary 9 subwatershed (JB-T9-0.1, JB-T9-P1-0.1, and JB-T9-P2-0.1) continue to exhibit generally higher turbidity values on the respective sampling dates as compared to other

stations within the Jay Branch watershed. Supplemental turbidity measurements at additional stations along the Phase 1 and Phase 2 tributaries are reported in Section 5.4, below. Turbidity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (SMB-T3-0.1 and SMB-1.8) were higher than stations of Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.5 and SMB-T3-0.8). In 2017, station SMB-1.2 produced the lowest turbidity values of the period of record, and were lower than the upgradient stations.

5.2.4 Iron

Iron concentrations in samples collected during the September 7, 2017 event flow sampling were all below the VWQS criterion of 1 mg/L. However, iron concentrations in samples collected at 7 of the 12 stations during the October 9, 2017 event flow sampling were at or above the VWQS criterion of 1 mg/L (JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-T3-0.8, SMB-T3-0.5, SMB-T3-0.1, SMB-1.2 and SMB-1.8). All three stations on Tributary 3 (SMB-T3-0.8, SMB-T3-0.5, SMB-T3-0.1) and one station on the South Mountain Branch main stem (SMB-1.8) exhibited maximum iron concentrations for the period of record during this event.

Based on the period of record, it appears that exceedances of iron occur periodically in some of the smaller streams around the Resort, with comparable results observed in some event flow samples collected in 2012, 2013, and 2015. Stations at the Jay Branch were below the VWQS criterion of 1 mg/L for iron, suggesting that the areas of concern are Tributary 9 of the Jay Branch, Tributary 3 of the South Mountain Branch, and the South Mountain Branch. Natural iron seeps were visually noticeable at SMB-1.2 during biomonitoring on September 29, 2017 (See Photograph 3). It is possible that iron-rich materials accumulate at these seeps during dry periods and are then flushed into the stream during wet weather events. Additional investigation of iron seeps and other potential sources may be required if elevated iron concentrations continue to be a concern. However, because they are limited to periodic event flow samples and do not appear to affect baseflow conditions, no additional investigation is proposed at this time.

Photograph 3: Iron seep observed at SMB-1.2 during biomonitoring on September 29, 2017

Event Flow Summary

In 2017, conductivity values were generally within the range of the period of record in the Jay Branch watershed (JB-T13-0.2, JB-8.3, and JB-7.3). Comparable to past results, conductivity and turbidity values for the Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1, and JB-T9-0.1) were relatively similar to the range of the period of record with generally higher values than the other stations. Additionally, conductivity and turbidity values from stations on Tributary 3 and the South Mountain Branch were at their highest values for the period of record (2012 to 2017), but conductivity values were still below the 500 umho/cm requirement for conducting additional chloride sampling. Stations along Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 continued to exhibit higher conductivity and turbidity values than stations of Tributary 3 located upgradient of VT Route 242. The increased conductivity results may reflect annual variations in salt usage based on the severity of the preceding winter.

In 2017, pH values were within the acceptable VWQS range during event flow conditions, except for two upgradient stations in Tributary 3. As discussed above, iron did not meet the VWQS standard at 7 stations in the Tributary 3 and Tributary 9 subwatersheds, and South Mountain Branch watershed in event flow samples collected on October 9, 2017. These areas will continue to be monitored for iron seeps and for any other possible sources.

5.3 Winter Melt Water Chemistry Analysis

Winter melt water chemistry samples were collected on April 3 and April 13, 2017, representing conditions in the Jay Branch, Tributary 13 to Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9, Tributary 3, and South Mountain Branch watersheds. Field parameters (conductivity, turbidity, pH, dissolved oxygen and water temperature) were measured at the ten WQM stations. The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2008 to 2017. The box represents the 1st to 3rd quartile of the total data set. The whiskers represent the minimum and maximum values of the data set and the 'x' represent the 2017 data points. A complete summary of 2008 through 2017 winter melt water chemistry results for each monitoring station is included in Appendix 3.

5.3.1 Conductivity

WQM samples were field measured for conductivity using a pre-calibrated YSI Pro30 meter. Figure 5 displays the results for conductivity measurements at each respective station.

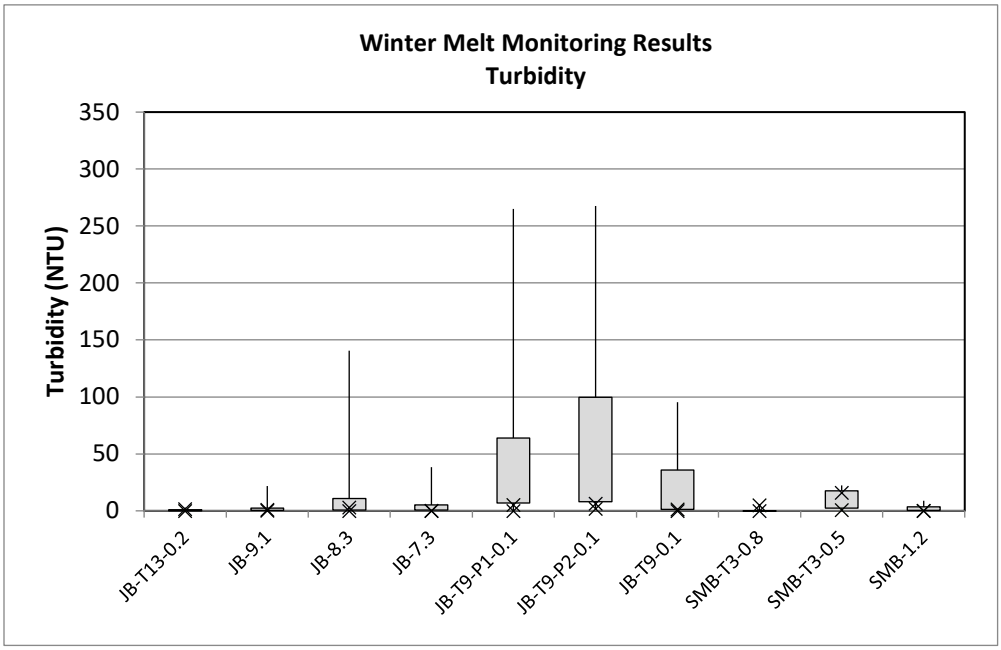


Figure 5: Winter Melt Monitoring Results for Conductivity

Conductivity values during April 13, 2017 sampling events were low relative to the historic data, containing values at or below the 1st quartile. Conductivity was higher on April 3, 2017 and contained values within the 3rd quartile. In 2017, the maximum conductivity value was observed at Station JB-T9-0.1 on April 3 (398 umho/cm) which was well under the 500 umho/cm sampling trigger.

As has been the case in the past, stations within the more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1, and JB-T9-0.1) and within the lower South Mountain Branch watershed (SMB-1.2) exhibited the highest conductivity values on the respective sampling dates as compared to other stations.

5.3.2 pH

WQM samples were collected from the winter melt monitoring stations and were field measured for pH using a pre-calibrated Oakton 30 pH meter. Winter melt pH values in 2017 were within the acceptable VWQS range of 6.5 to 8.5 s.u with the exception of values recorded on April 13

including JB-9.1, SMB-T3-0.8, and SMB-1.2 which recorded a pH of 8.6 and JB-7.3 which recorded a pH of 8.7.

5.3.3 Turbidity

WQM samples were field analyzed for turbidity using a HF Scientific MicroTPW portable turbidity meter. Figure 6 displays the results for turbidity at each respective station.

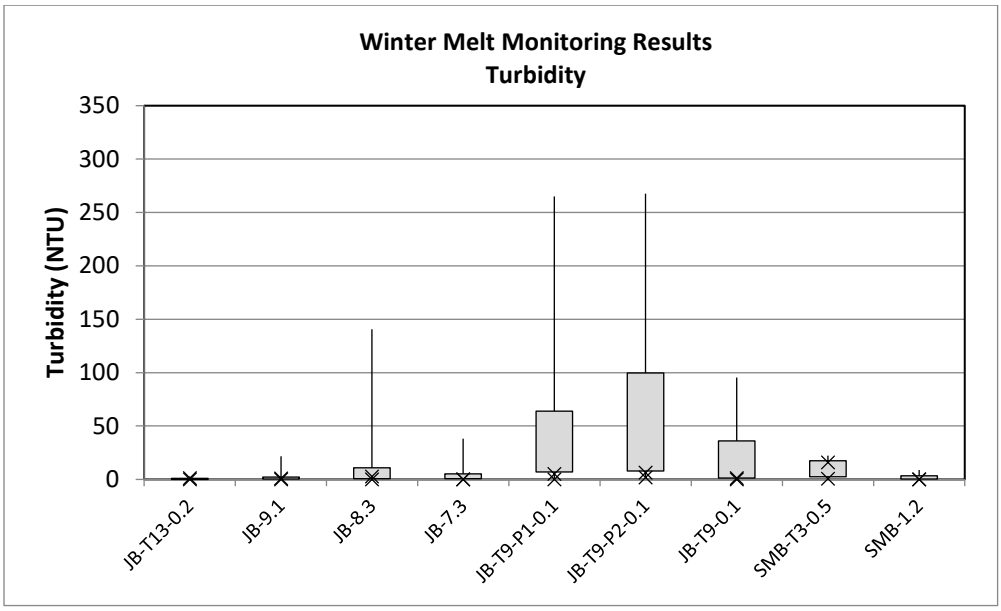


Figure 6: Winter Melt Monitoring Results for Turbidity

Winter melt turbidity results for 2017 were within range and were relatively low when compared to the period of record. Turbidity values were generally higher on April 13 than April 3, except for 3 stations (JB-T13-0.2, JB-T9-P2-0.1, and SMB-T3-0.5) which recorded turbidity values of 1.4, 6.4, and 16.0, respectively. Station SMB-T3-0.5 exhibited the highest turbidity values in 2017 as compared to other stations, but was within the range of turbidity values for the period of record. Additionally, the stations in Tributary 9 subwatershed (JB-T9-P1-0.1 and JB T9-P2-0.1) were generally higher in comparison to the other stations, similar to what was seen in 2016. All stations in 2017 exhibited turbidity values that were within the distribution of turbidity values throughout the period, except for station SMB-T3-0.5 on April 3, 2017 which was 16.0 NTU. None of the winter melt observations were above the construction action level of 25 NTU.

Winter Melt Summary

In 2017, conductivity values were within the range of the period of record. The highest conductivity readings were observed at stations within the Jay Branch (JB-8.3), Tributary 9 (JB-T9-P1-0.1 and JB-T9-P2-0.1, and JB-T9-0.1), and South Mountain Branch (SMB-1.2). All conductivity observations in 2017 were below the 500 umho/cm trigger for conducting additional chloride sampling. Chloride concentrations calculated from field measurements of conductivity and the site-specific regression equation indicate that chloride concentrations were well below the VWQS maximum and EPA chronic criteria value of 230 mg/L during winter melt sampling.

In 2017, pH values were within the acceptable VWQS range during winter melt conditions except for JB-9.1, SMB T3 0.8, SMB-1.2, and JB-7.3, which recorded pH values 0.1 to 0.2 higher than the VWQS range on April 13, 2017.

All turbidity observations in 2017 were below the 25 NTU construction action level, and the highest turbidity value recorded during winter melt sampling was 16 NTU, observed at station SMB-T3-0.5 on April 3, 2017.

5.4 Supplemental Turbidity Monitoring

Supplemental turbidity monitoring was completed at multiple locations within the target watersheds between August and November of 2017 (see the map included on page 1 of Appendix 4 for location information). This monitoring was done to provide feedback on the success of the remedial activities that have been completed in the targeted watersheds and to identify other potential sources of sediment washoff that require treatment, consistent with the adaptive management approach of the WQRP. Monitoring was completed by JRP staff and in accordance with the wet weather monitoring protocols detailed in the QAPP.

There are 21 turbidity monitoring stations; two located on an unnamed tributary to Jay Branch (JBT-01 and JBT-02), six located on the Phase 1 Tributary (P1-01 through P1-06) upgradient of Jay Peak Road,

seven located on the Phase 2 Tributary (P2-01 through P2-07) upgradient of Jay Peak Road, three located on Tributary 9 (T9-01 through T9-03) and three located on Tributary 3 (T3-01 through T3-03). See the map included in Appendix 4 for turbidity station location information.

Fourteen supplemental turbidity monitoring events were completed between August and November 2017 (see event charts included in Appendix 4). Rainfall depths for each event were recorded by Resort staff using the on-site rain gage. Eight of these events occurred with antecedent rainfall depths of less than 0.5 inches, five of these events occurred with antecedent rainfall depths between 0.5 and 1 inches, and one event occurred with antecedent rainfall depths of greater than 1 inch. No dry weather samples were collected as part of this monitoring effort.

There were a total of 292 turbidity measurements collected during 2017. Of these, only 21 were above the construction action level of 25 NTU. Seven of these 21 occurred intermittently throughout the sampling period, while the remainder occurred during a large rainfall event on November 3, 2017. This event began on November 2 and continued through November 3, with a total rainfall depth of 0.92 inches per the on-site rain gauge. Eight stations (JBT-02, P1-02, P1-03, P1-04, P2-02, P2-03, P2-04, and T9-01) reported turbidity measurements above 100 NTU on this date. During the same event, seven other stations (P1-04, P2-05, P2-06, P2-07, T9-01, T9-02, T9-03, SMB-T3-01, SMB-T3-02, SMB-T3-03) reported measurements between 50 and 100 NTU. In total, stations in the Unnamed Tributary to Jay Branch, Phase 1 and 2 Tributaries, Tributary 9 to Jay Branch, and Tributary 3 to South Mountain Branch were affected by the November 2-3 rainfall event.

The mean turbidity for all samples at each station was below the 25 NTU construction action level in 2017, except for station P2-02, which recorded a mean turbidity of 31.9 NTU. This result was skewed by the turbidity measurements taken during the October 9 (46.61 NTU) and November 3, 2017 (349.10 NTU) rainfall events, which skews the mean value upwards. Sites with more than one event that exceeded the construction action level of 25 NTU included JBT-02, P1-03, P2-02, T9-01, and T9-03. A more detailed field review of the reaches that contain these sites will be performed in 2018 in an effort to identify potential sources of the turbidity. No specific actionable sediment sources were observed at these locations by field staff in 2017.

5.5 Substrate Analysis

In 2017, streambed substrate composition analyses were conducted at the reference station on Tributary 13 to Jay Branch (JB-T13-0.2), within Jay Branch (JB-9.1, JB-8.3 and JB-7.3), Tributary 9 to Jay Branch (JB-T9-0.1), South Mountain Branch (SMB-1.2) and Tributary 3 to South Mountain Branch (SMB-T3-0.8 and SMB-T3-0.1). These analyses were completed to evaluate stream bed material composition and a summary of the substrate data for each station is provided in Appendix 5.

Substrate composition analyses were inadvertently not conducted on the Phase 1 Tributary (JB-T9-P1-0.1), Phase II Tributary (JB-T9-P2-0.1), SMB-T3-0.5 or SMB-1.8 in 2016 or 2017. Analysis of these stations will be resumed in 2018.

5.5.1 Embeddedness

The percentage of substrate embeddedness was observed at the eight monitored stations using quartile estimates and is recorded in accordance with the DEC Lotic Benthos Field Sheet (2015 edition). Substrate embeddedness is evaluated because it is a key factor in the success of macroinvertebrate populations, with lower degrees of embeddedness typically corresponding to higher macroinvertebrate populations and vice-versa. Embeddedness ratios below 50 percent are desirable, with ratios between 0 and 5 percent considered excellent, between 25 and 50 percent considered good, between 50 and 75 percent considered fair and above 75 percent considered poor. Substrate embeddedness remained the same as 2016 at all eight monitored stations and was reported as very good (5-25 percent) at JB-T13-0.2, JB-9.1, JB-8.3, JB-7.3, SMB-T3-0.8, and SMB-T3-0.1, and as good (25-50 percent) at SMB-T9-0.1 and SMB-T3-0.1.

5.5.2 Channel Materials

The Wolman Pebble Count Procedure (Harrelson, et al. 1994) provided data that were used to calculate the D50 particle size (i.e., median particle), the percentage of sands and fines (materials finer than 2 millimeters), and the percentage of fines (silts, clays, and organic materials less than 0.062 millimeters) at each substrate monitoring station. These three parameters provide a broad understanding of the major channel material, and the proportion of coarser materials (i.e., cobbles, boulders) compared to finer materials (i.e., organic material, sand, gravels). Table 2 below

displays the substrate metrics for 2017. Detailed substrate monitoring results for each location is shown graphically for each station in Appendix 5, along with the distribution of each stations' substrate particle size for 2017 and a comparison to historic averages from 2007 to 2017.

Table 2: 2017 Summary of Channel Materials in Jay Branch and Select Tributaries		
Station	**Percent < 2 mm (sands and fines)**	**D50 Particle Size**
JB-T13-0.2	0	boulder
JB-9.1	5	cobble
JB-8.3	3	cobble
JB-7.3	3	cobble
JB-T9-0.1	5	cobble
SMB-T3-0.8	12	boulder
SMB-T3-0.1	6	cobble
SMB-1.2	11	cobble

Since 2016, the median particle size increased from cobble (64 to 256 mm) to boulder (>256 mm) at two of the eight monitored stations, including the reference station JB-T13-0.2 and Tributary 9. There were no changes in median particle size observed for the other six stations.

Substrate Summary

Substrate embeddedness remained the same as 2016 for all eight stations that were monitored in 2017. The median particle size increased at Tributary 9 (JB-T9-0.1) and at the reference reach on Tributary 13 of the Jay Branch (JB-T13-0.2). The most common median particle size for the stations sampled in 2017 was cobble. At JB-9.1, JB-8.3, SMB-T3-0.8 and SMB-T3-0.1 the percentage of small particles decreased, while at JB-T9-0.1 the percentage of small particles increased. The percentage of small particles remained the same at JB-T13-0.2 and JB-7.3 and was the highest at JB-T9-0.1.

5.6 Biomonitoring

On September 29 and October 6, 2017, kick net sampling per aquatic biota was conducted by VHB in accordance with the DEC protocol (ANR 2004). This biomonitoring occurred at eight locations in 2017:

three stations on Jay Branch (JB-9.1, JB-8.3, and JB-7.3), the reference station on Tributary 13 to Jay Branch (JB-T13-0.2), one station on Tributary 9 to Jay Branch (JB-T9-0.1), one station on South Mountain Branch (SMB-1.2) and two stations on Tributary 3 (SMB-T3-0.1 and SMB-T3-0.8). All sampling locations are shown on the Water Quality Monitoring Station Location map in Appendix 1.

Biomonitoring data from 2017 was analyzed for aquatic life support ("ALS") use attainment in comparison to the DEC scoring guidelines for small-size high gradient ("SHG") Class B waters. Results are also compared to the Interim targets set in the Revised 2014 WQRP for stations JB-8.3, JB-7.3, JB-T9-0.1, and SMB-T3-0.1. Results for each station are discussed in detail below and the complete data set is included in Appendix 6.

JB-T13-0.2 (Tributary 13 to Jay Branch)

Station JB-T13-0.2 is the uppermost station and is located away from actively-managed areas of the Resort, thereby representing water quality conditions with an undeveloped reference setting. Table 3 below displays the biometrics for JB-T13-0.2 over time. Charts and graphs of all biometrics evaluated at JB-T13-0.2 are provided in Appendix 6.

Table 3: Biomonitoring Results Jay Branch – JB-T13-0.2									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS- FG**	**Outcome / Biological Integrity**
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2008	469	32	22	63	1.22	0.9	0.94	56	Meets Class B Criteria
2009	625	34	23	73	1.34	0.0	0.93	59	Meets Class B Criteria
2010	642	40	25	78	1.71	0.36	0.89	56	Meets Class B Criteria
2011	421	35	23	70	0.85	0.1	0.93	46	Meets Class B Criteria
2012	883	36	25	75	1.13	0.0	0.95	44	Meets Class B Criteria
2013	872	33	21	70	0.94	0.0	0.92	61	Meets Class B Criteria
2014	781	36	24	74	1.24	0.0	0.9	65	Meets Class B Criteria
2015	914	34	21	70	1.03	0.5	0.94	55	Meets Class B Criteria
2016	874	34	21	70	0.72	0.6	0.96	61	Meets Class B Criteria
2017	512	35	22	65	0.77	5.0	0.93	64	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet the Class B Threshold Criteria

Results for all eight biometrics were within the established thresholds for meeting Class B criteria as has been the case in the past, indicating continued excellent water quality conditions at the reference station.

JB-9.1 (Jay Branch)

Station JB-9.1 is located on the Jay Branch, upstream of the confluence with Tributaries 9 and 10. Table 4 below displays the biometrics for JB-9.1 over time. Charts and graphs of all biometrics evaluated at JB-9.1 are provided in Appendix 6.

Table 4: Biomonitoring Results
Jay Branch – JB-9.1

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B [1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2005	923	40	23	74	1.96	**24**	0.94	64	Does Not Meet Class B Criteria
2007	1,872	39	22	62	1.50	**20**	0.95	52	Does Not Meet Class B Criteria
2008	1,162	37	23	76	1.97	6.40	0.96	71	Meets Class B Criteria
2009	1,892	46	25	76	1.88	**17**	0.92	66	Does Not Meet Class B Criteria
2010	1,516	42	25	68	2.29	6.0	0.97	65	Meets Class B Criteria
2011	**238**	40	24	66	1.64	**18**	0.94	60	Does Not Meet Class B Criteria
2012	**172**	**25**	17	64	0.58	3.2	1.0	46	Does Not Meet Class B Criteria
2013	828.0	39	24	80	1.09	7.5	0.95	53	Meets Class B Criteria
2014 [2]	1,071	40	24	68	1.95	**17**	0.93	52	Does Not Meet Class B Criteria
2015	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria
2016	865	33	22	75	1.19	10	0.96	63	Meets Class B Criteria
2017	430	32	22	72	0.98	8	0.93	50	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
[2] Combined results of VHB and DEC QA/QC Replicate Samples
Bold denotes metric did not meet Class B Criteria

Results for all eight biometrics during 2017 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-9.1. This marks the third consecutive year that this station has met the Class B criteria.

JB-8.3 (Jay Branch)

JB-8.3 is located on the Jay Branch, downstream of the confluence with Tributaries 9 and 10. Table 5 below displays the biometrics for JB-8.3 over time. Charts and graphs of all biometrics evaluated at JB-8.3 are provided in Appendix 6.

Table 5: Biomonitoring Results Jay Branch – JB-8.3									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2004	324	27	18	60	1.96	7	0.98	56	Meets Class B Criteria
2005	849	49	23	69	2.65	**21**	0.87	60	Does Not Meet Class B Criteria
2006	851	34	21	58	2.68	0	0.95	**34**	Does Not Meet Class B Criteria
2007	363	32	22	72	1.12	8	0.96	60	Meets Class B Criteria
2008	311	31	19	70	1.41	**15**	0.98	50	Does Not Meet Class B Criteria
2009	374	32	24	71	1.55	10	0.98	61	Meets Class B Criteria
2010	361	31	25	57	1.36	6	1.0	55	Meets Class B Criteria
2011	**117**	**22**	15	58	1.10	**18**	0.97	54	Does Not Meet Class B Criteria
2012	**230**	**24**	17	71	1.15	7	0.98	56	Does Not Meet Class B Criteria
2013	**238**	30	22	80	1.13	10	0.95	57	Does Not Meet Class B Criteria
2014	403	34	23	63	0.99	**26**	0.97	**39**	Does Not Meet Class B Criteria
2015	347	35	24	63	1.18	**13**	0.97	51	Indeterminate
2016	413	34	22	81	1.58	9	0.97	73	Meets Class B Criteria
2017	490	31	21	82	1.63	5	0.94	62	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet Class B Criteria

Results for all eight biometrics during 2017 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-8.3. This marks the second consecutive year that this station has met the Class B Criteria.

JB-7.3 (Jay Branch)

Station JB-7.3 is the farthest downstream location sampled on the Jay Branch and is located upstream from the VT Route 242 crossing. Table 6 below displays the biometrics for JB-7.3 over time. Charts and graphs of all biometrics evaluated at JB-7.3 are provided in Appendix 6.

Table 6: Biomonitoring Results
Jay Branch – JB-7.3

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2004	**222**	**26**	20	61	1.54	4.4	0.98	54	Does Not Meet Class B Criteria
2005	458	40	21	62	2.34	8.1	0.88	**38**	Does Not Meet Class B Criteria
2006	1,276	**25**	**14**	55	2.85	0.77	0.94	**23**	Does Not Meet Class B Criteria
2007	423	27	19	73	1.24	1.4	0.95	58	Meets Class B Criteria
2008	568	33	22	72	0.94	2.4	0.97	49	Meets Class B Criteria
2009	427	34	25	76	1.26	6.1	0.99	67	Meets Class B Criteria
2010	344	31	23	55	1.11	1.3	1.0	54	Meets Class B Criteria
2011	**98**	**17**	**11**	71	0.94	3.7	0.99	44	Does Not Meet Class B Criteria
2012	**176**	28	20	67	1.24	9.3	0.96	48	Does Not Meet Class B Criteria
2013	327	28	21	74	0.79	9.2	0.96	62	Meets Class B Criteria
2014	340	34	26	66	1.17	8.9	0.98	63	Meets Class B Criteria

Table 6: Biomonitoring Results Jay Branch – JB-7.3									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2015	378	35	24	68	0.95	**14**	0.97	45	Indeterminate
2016	394	33	25	76	1.06	8	0.98	61	Meets Class B Criteria
2017	464	32	24	77	1.37	2.7	0.98	58	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet Class B Criteria

Results for all eight biocriteria metrics during 2017 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-7.3. This marks the second consecutive year and the fourth year since 2013 that this station has met the Class B criteria.

JB-T9-0.1 (Tributary 9 to Jay Branch)

Station JB-T9-0.1 is located near the golf course on Tributary 9 and downstream of the confluence of the Phase 1 and Phase 2 tributaries. Table 7 below displays the biometrics for JB-T9-0.1 over time. Charts and graphs of all biometrics evaluated at JB-T9-0.1 are provided in Appendix 6.

Table 7: Biomonitoring Results Tributary 9 – JB-T9-0.1									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004	**200**	**24**	**14**	**44**	**4.61**	0	**0.31**	42	Does Not Meet Class B Criteria
2005	309	41	17	70	4.23	**17**	0.82	53	Does Not Meet Class B Criteria
2006	320	36	16	55	**5.12**	1	0.88	**29**	Does Not Meet Class B Criteria

Table 7: Biomonitoring Results Tributary 9 – JB-T9-0.1									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2007	484	37	24	63	1.22	2	0.95	**39**	Meets Class B Criteria
2008	492	28	17	70	1.18	0	0.92	42	Meets Class B Criteria
2009	**252**	28	**16**	80	1.72	8	0.95	61	Indeterminate
2010	**176**	**22**	**16**	63	2.13	**23**	0.98	53	Does Not Meet Class B Criteria
2011	**77**	**23**	**15**	66	1.47	9	0.99	55	Does not Meet Class B Criteria
2012	**95**	**26**	**16**	69	1.96	**21**	0.93	54	Does Not Meet Class B Criteria
2013	**157**	30	19.5	74	2.07	**14**	0.91	58	Does Not Meet Class B Criteria
2014	**168**	27	**15**	63	1.49	**15**	0.96	54	Does Not Meet Class B Criteria
2015	**209**	32	16	60	3.33	**27**	0.92	67	Does Not Meet Class B Criteria
2016	373	30	21	82	1.16	4	1.00	56	Meets Class B Criteria
2017	333	39	25	74	1.93	6	0.98	63	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet Class B Criteria

Results for all eight biometrics during 2017 were within the established thresholds for meeting Class B criteria indicating an increase in water quality at JB-T9-0.1. This marks the second consecutive year that this station has met the Class B criteria.

SMB-T3-0.8 (Tributary 3 to South Mountain Branch)

Station SMB-T3-0.8 is located on Tributary 3, upstream of the Stateside Hotel and Base Lodge. Sampling

began in 2016 at this station to isolate the potential effect of the ski trails from the effect of other development lower in the watershed. Table 8 below displays the biometrics for SMB-T3-0.8 collected to date. Charts and graphs of all biometrics evaluated at SMB-T3-0.8 are provided in Appendix 6.

Table 8: Biomonitoring Results
South Mountain Branch – SMB-T3-0.8

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2016	415	31	19	59	0.73	5.1	0.91	**35**	Meets Class B Criteria
2017	392	31	21	58	0.90	5.6	0.92	**35**	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet the Class B Threshold Criteria

Station SMB-T3-0.8 met seven of the eight metrics but exhibited a relatively low similarity to the reference stream as measured by the Pinkham-Pearson Coefficient of Similarity - Functional Groups (PPCS-FG) metric. The station experienced similar results in both years that it has been sampled (2016 and 2017). A review of the data by DEC aquatic biologists indicate that the low similarity may be due to the high elevation of the site and relatively small watershed size. Based on the other seven biocriteria results, this station received a "Good" rating from DEC, and was judged to meet the Class B Biocriteria. These results continue to suggest that the area of concern for Tributary 3 to South Mountain Branch is within the developed area between the Stateside Hotel and VT Route 242.

SMB-T3-0.5 (Tributary 3)

This station is located on Tributary 3, upstream of VT Route 242 and downstream of the Stateside Hotel and Base Lodge area of the Resort. This station was sampled in 2014 and 2015 as a diagnostic tool to evaluate Tributary 3 upstream from SMB-T3-0.1. Since 2016, SMB-T3-0.8 has been sampled because SMB-T3-0.5 did not consistently meet the biocriteria, as described above.

SMB-T3-0.1 (Tributary 3)

Station SMB-T3-0.1 is located on Tributary 3, downstream of VT Route 242 and the Stateside Hotel and Base Lodge area of the Resort. Table 9 below displays the biometrics for SMB-T3-0.1 over time. Charts and graphs of all biometrics evaluated at SMB-T3-0.1 are provided in Appendix 6.

Table 9: Biomonitoring Results
South Mountain Branch – SMB-T3-0.1

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2012	**259**	35	22	67	0.93	**21**	0.93	57	Does Not Meet Class B Criteria/Fair-Poor
2013	**133**	**22**	**15**	58	1.04	**30**	0.93	50	Does Not Meet Class B Criteria
2014	361	**27**	19	58	0.71	**18**	0.96	46	Does Not Meet Class B Criteria
2015	**218**	**21**	**14**	46	0.71	**37**	0.98	42	Does Not Meet Class B Criteria
2016	**206**	**26**	19	58	0.93	**30**	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets
2017	**178**	**23**	17	64	0.81	**20**	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet the Class B Threshold Criteria

Station SMB-T3-0.1 met 5 of the 8 Class B biocriteria in 2017, and did not meet the remaining three. Density and richness both decreased since 2016. Percent Oligochaeta also decreased, but still exceeded the SHG criterion for this metric. These results suggest excess sediment is still entering the reach, reducing the overall number of macroinvertebrates while shifting the population toward Oligochaetes. These results also did not meet 3 of the 4 interim biocriteria targets that were established for this station in the Revised 2014 WQRP. Therefore, large-scale sediment reduction BMPs will be implemented within this watershed during 2018, as outlined in the pre-attainment flow chart (Appendix 4 of the Revised 2014 WQRP). The required sediment reduction BMPs will be included in a planned WQRP update that will be submitted under separate cover.

SMB-1.2 (South Mountain Branch)

Station SMB-1.2 is located on the main stem of South Mountain Branch, downstream of the confluence with Tributary 3 and upstream of the Shallow Brook Road crossing. Table 10 below displays the biometrics for SMB-1.2 over time. Charts and graphs of all biometrics evaluated at SMB-1.2 are provided in Appendix 6.

Table 10: Biomonitoring Results
South Mountain Branch – Station SMB-1.2

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2012	**234**	28	19	71	0.89	**12.1**	0.98	58	Does Not Meet Class B Criteria/Fair
2013	**239**	**26**	18	61	0.81	**22.6**	0.96	49	Does Not Meet Class B Criteria/Fair
2014	354	27	20	71	0.71	**13.31**	0.99	63	Indeterminate
2015	339	27	18	54	0.62	**17.1**	0.96	44	Does Not Meet Class B Criteria
2016	307	**27**	18	59	0.86	**18.1**	0.95	49	Does Not Meet Class B Criteria
2017	**288**	33	22	75	1.20	**13.8**	0.92	61	Does Not Meet Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold denotes metric did not meet the Class B Threshold Criteria

SMB-1.2 met six of the eight Class B biocriteria in 2017 but did not meet density or the percent Oligochaeta. Richness met the biocriteria in 2017, reaching the highest number of species for the period of record at this station. The EPT was also at its highest, indicating relatively high-water quality as these are environmentally sensitive, pollutant-intolerant species. The percent Oligochaeta criterion has not been met since sampling started in 2012. Because this station is well outside of the Resort boundary

and receives inputs from other sources, no interim biocriteria targets were established in the Revised 2014 WQRP.

Biomonitoring Summary

A summary of biomonitoring results, is included in Table 11 below and in Appendix 6.

Table 11: Biomonitoring Summary
Kick Net Monitoring Results Compliance with Class B Criteria

Stream	Station	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
Tributary 13 to Jay Branch (Reference Reach)	JB-T13-0.2	-	-	-	-	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Jay Branch	JB-9.1	**-**	F	-	F	**P**	F	**P**	F	F	**P**	F	**P**	**P**	**P**
	JB-8.3	**P**	F	F	**P**	F	**P**	**P**	F	F	F	F	I	**P**	**P**
	JB-7.3	F	F	F	**P**	**P**	**P**	**P**	F	F	**P**	**P**	I	**P**	**P**
Tributary 9	JB-T9-0.1	F	F	F	**P**	**P**	I	F	F	F	F	F	F	**P**	**P**
South Mountain Branch	SMB-T3-0.8	-	-	-	**-**	**-**	-	-	-	-	-	-	-	**P**	**P**
	SMB-T3-0.5	-	-	-	**-**	**-**	-	-	-	-	-	**P**	F	-	-
	SMB-T3-0.1	-	-	-	-	-	-	-	-	F	F	F	F	F	F
	SMB-1.2	-	-	-	**-**	**-**	-	-	-	F	F	I	F	F	F

P = Pass, I = Indeterminate, F = Fail, - = Not sampled

In 2017, six of the eight sampled stations, JB-T13-0.2 (reference), JB-9.1, JB-8.3, JB-7.3, and JB-T9-0.1, and SMB-T3-0.8 met the Class B biocriteria. As in 2016, Station SMB-T3-0.8 did not meet the percent PPCS-FG criteria, but based on the other metrics, this station was given an assessment of "Good" by the DEC. Two stations (SMB-T3-0.1 and SMB-1.2) did not meet the Class B biocriteria. Station SMB-1.2 had lower than acceptable density and a higher than acceptable percent Oligochaeta. Station SMB-T3-0.1 exhibited lower than acceptable levels of density, richness, and higher than acceptable levels of percent Oligochaeta.

6.0 Monitoring Recommendations for 2018

Monitoring recommendations for 2018 highlight the continuing adaptive management approach outlined in the WQRP and reflect the challenges that occurred during the 2017 monitoring season.

- VHB recommends discontinuing analysis of samples for total iron concentration. This analyte has been sampled as part of baseflow and event flow samples since 2012. The results of this analyte only periodically exceed the VWQS, and then almost exclusively in event flow samples. Although some minor areas of iron seeps have been observed, the iron-oxidizing bacteria does not to be present in quantities significant enough to impair these streams. The biomonitoring data further supports this conclusion, as it does not appear that these periodic exceedances of the iron criteria are affecting in-stream biota.
- VHB recommends conducting an early-season stream walk-over of Tributary 3 to South Mountain Branch between the confluence with South Mountain Branch and the Route 242 culvert. The increase in turbidity that has been observed between SMB-T3-0.1 and SMB-T3-0.5 indicates that additional sources may be present.
- VHB recommends collecting on-site rainfall data from the rain gage with greater frequency to ensure data continuity, which is necessary to provide site-specific rainfall records for evaluation.
- VHB recommends conducting a stream walk-over with Resort staff responsible for turbidity monitoring to refresh their training on identifying and reporting sediment sources.

7.0 Conclusions

Water quality monitoring at Jay Peak Resort was conducted in 2017 in accordance with the requirements of the Resort's Water Quality Remediation Plan and the associated Quality Assurance Project Plan. The results of this monitoring continue to show improvements within the Jay Branch watershed with full attainment of all VWQS criteria, but a need for further remedial efforts in the South Mountain Branch watershed.

As described in the Settlement Agreement, the Jay Branch and Tributary 9 to Jay Branch stream segments that were listed as impaired have reached attainment, successfully meeting the biomonitoring criteria for two or more years. These stream segments may be considered for delisting in 2018 and move to the Post-Attainment flow chart in future years.

Per the requirements of the Settlement Agreement, large-scale BMPs, such an additional stormwater basin, culvert replacement, or channel restoration, are now required in the Tributary 3 to South Mountain Branch. With the implementation of a large-scale BMP and continued focus on eliminating sediment sources in the Tributary 3 watershed, it is anticipated that sediment reductions can be achieved that will support compliance with the biocriteria in this reach. A plan and WQRP update describing the large-scale BMP will be distributed for review under separate cover.

References

ANR 2017. Vermont Agency of Natural Resources. Vermont Water Quality Standards (Effective January 15, 2017). Watershed Management Division. Montpelier, Vermont. 33 pages plus appendices.

ANR 2004. Biocriteria for Fish and Macroinvertebrate Assemblages in Vermont Wadeable Streams and Rivers, Implementation Phase (Methods for Determining Aquatic Life Use Status in Selected Wadeable Streams Pursuant to Applicable Water Quality Management Objectives for Aquatic Biota Found in Vermont Water Quality Standards (WQS) Chapter 3 §3-01, as Well as Those Specified in 3-02 (A1 and B3), 3-03 (A1 and B3), and 3-04 (A1 and B4:a-d)). Biomonitoring and Aquatic Studies Section, Water Quality Division, Department of Environmental Conservation. Waterbury, Vermont.

Harrelson 1994. Harrelson, C.C., and C.L. Rawlins, and J.P. Potyondy. 1994. Stream Channel Reference Sites: An Illustrated Guide to Field Technique. United States Department of Agriculture (Forest Service). Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado. General Technical Report RM-245.

VHB 2017. Water Quality Monitoring Program Quality Assurance Project Plan. Last revised August 31, 2017.

VHB 2015. Jay Peak Resort, Water Quality Remediation Plan 2014 Update. January 16, 2015.

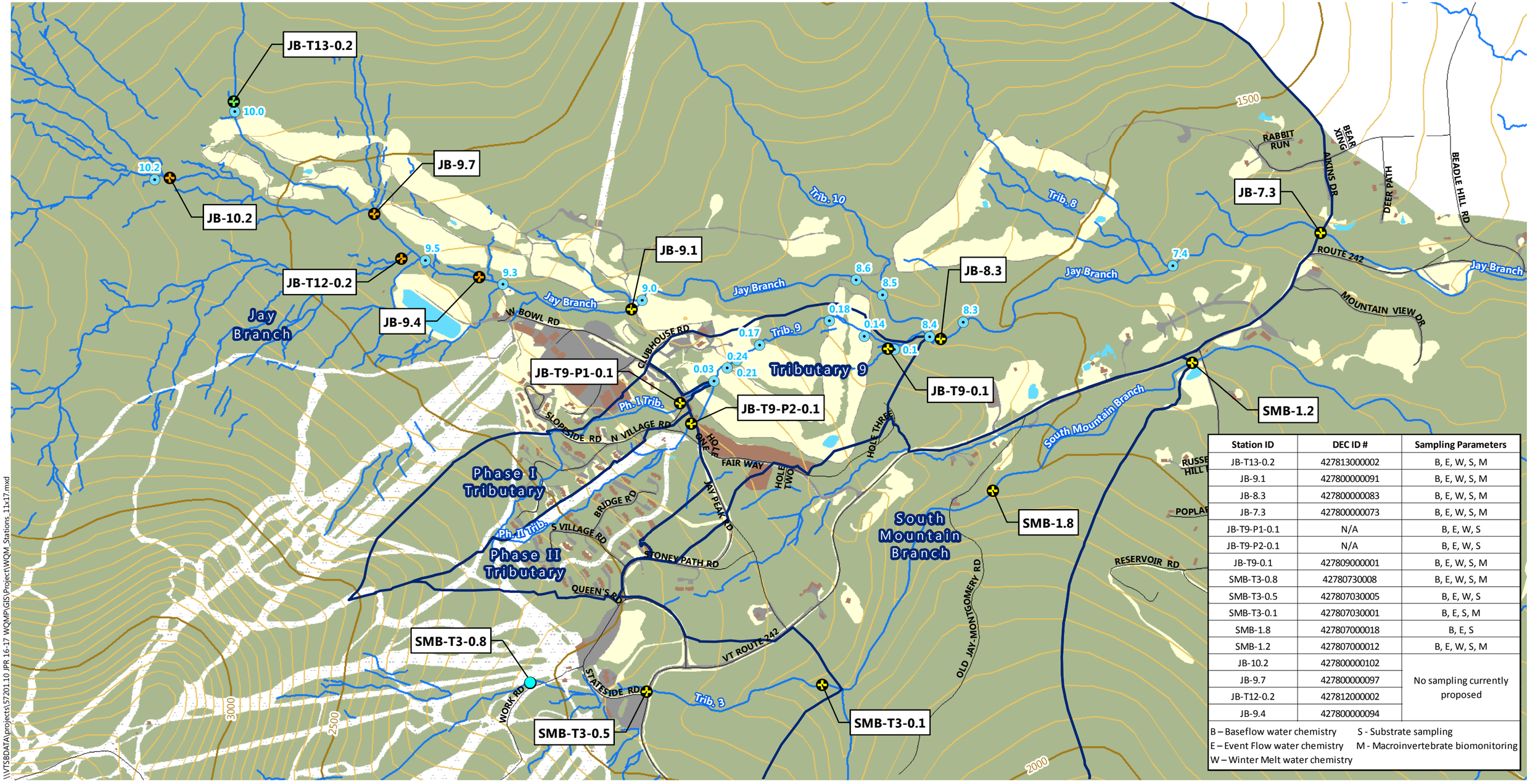
\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\reports\WQMP\2017 WQMP\2017 WQMP Report.docx

APPENDIX 1

JAY PEAK VERMONT

vhb

January 13, 2017



Station ID	DEC ID #	Sampling Parameters
JB-T13-0.2	427813000002	B, E, W, S, M
JB-9.1	427800000091	B, E, W, S, M
JB-8.3	427800000083	B, E, W, S, M
JB-7.3	427800000073	B, E, W, S, M
JB-T9-P1-0.1	N/A	B, E, W, S
JB-T9-P2-0.1	N/A	B, E, W, S
JB-T9-0.1	427809000001	B, E, W, S, M
SMB-T3-0.8	42780730008	B, E, W, S, M
SMB-T3-0.5	427807030005	B, E, W, S
SMB-T3-0.1	427807030001	B, E, S, M
SMB-1.8	427807000018	B, E, S
SMB-1.2	427807000012	B, E, W, S, M
JB-10.2	427800000102	No sampling currently proposed
JB-9.7	427800000097	
JB-T12-0.2	427812000002	
JB-9.4	427800000094	

B – Baseflow water chemistry
E – Event Flow water chemistry
W – Winter Melt water chemistry
S - Substrate sampling
M - Macroinvertebrate biomonitoring

1000 500 0 1000 Feet

Water Quality Monitoring Station (VHB)
- Water Quality Monitoring Station
- Benchmark Station
- Reference Station
- River Mile (VHB)
- Watershed Boundary (VHB)

2012 Landuse/Landcover (VHB)
- Building
- Forest
- Open
- Ski Trails
- Transportation
- Water
- Stream (VHB/VCGI)
- Road (VTrans)
- 500 ft Contour (VCGI)
- 50 ft Contour (VCGI)

Jay Peak Resort Water Quality Monitoring | Jay, Vermont

Water Quality Monitoring Station Location Map

Sources:
VCGI (Vermont Center for Geographic Information - Various Dates)
VTrans (Vermont Department of Transportation - 2015)
VHB - 2011-2016

\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\GIS\Project\WQM_Stations_11x17.mxd

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	12:06 PM							0.20		
10/26/2004	12:35 PM							0.05		
11/24/2004	12:12 PM	32	4.7		7.20	7.4	< 2.5	0.11		
9/29/2005		402			56.00	8.0	< 2.5	0.29		
10/22/2005		157			27.00	6.8		0.15		< 2
11/3/2006		32			5.33	6.9	< 2.5	0.26		< 2
9/7/2007	11:05 AM	49	16.6		17.00	7.0	< 2.5	3.50		< 2
10/31/2007	1:00 PM	19	8.1		8.60	7.0	< 2.5	0.78		< 2
11/26/2007	11:57 AM	25	4.2		10.00	7.3	< 2.5	1.29		< 2
10/27/2008	12:35 PM	23	9.6		24.00	7.3	< 2.5	0.50		< 2
11/4/2008	11:21 AM	17	8.4		5.60	7.0	< 2.5	0.50		< 2
4/17/2009	9:06 AM	20	4.4			7.2	< 2.5	0.00		< 2
8/17/2009	11:50 AM	51	15.5		21.00	6.9	< 2.5	0.50		< 2
9/9/2009	9:23 AM	64	11.3		18.00	7.9	< 2.5	0.50		< 2
10/20/2009	12:23 PM	42	6.8		12.00	7.3	< 2.5	0.50		< 2
9/14/2010	9:43 AM	38	18.5		19.00	7.1	< 2.5	0.50		< 2
9/22/2010	9:20 AM	45	18.9		19.00	7.8	< 2.5	0.50		< 2
10/10/2011	3:40 PM	29	12.3	100	28.00	7.3	< 2.5	0.01		< 2
10/20/2011	3:53 PM	20	10.4	101	26.00	6.9	< 2.5	0.00		< 2
8/23/2012	12:01 PM	43	13.4	88	22.00	7.1	< 2.5	24.00	< 0.020	< 2
10/9/2012	1:30 PM	35	8.5	94	8.30	8.1	< 2.5	4.20	< 0.020	< 2
8/22/2013	9:50 AM	51	14.1	85	5.30	8.0	< 2.5	0.09	< 0.020	< 2.5
9/5/2013	4:10 PM	45	11.0	85	2.90	7.9	< 2.5	0.01	< 0.046	< 2.5
8/29/2014	12:16 PM	52	12.0	80	19.00	8.4	< 2.5	0.00	< 0.020	< 1
9/29/2014	10:36 AM	51	12.1	79	24.00	8.6	< 2.5	0.05	< 0.020	< 1
8/27/2015	12:40 PM	47	12.5	83		8.5	2.6	0.15	< 0.340	
9/23/2015	10:11 AM	50	10.9	88		8.5	3.2	0.51	< 0.020	
9/7/2016	10:40 AM	2	14.4	*81*		7.8	< 2.5	0.76	< 0.120	
9/20/2016	10:21 AM	43	13.8	*78*		7.8	1.7	0.00	< 0.020	
9/1/2017	11:00 AM	46	8.3			7.7	2.2	0.00	< 0.020	
9/22/2017	10:38 AM	47	11.1	95		7.6	< 2.5	1.45	< 0.110	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	46	9.7	95		7.7	2.4	0.73	0.065	
Min	***	46	8.3	95		7.6	2.2	0.00	0.020	
Max	***	47	11.1	95		7.7	2.5	1.45	0.110	
n	***	2	2	1		2	2	2	2	
2004 - 2017 STATISTICS										
Mean	***	54	11.2	87	17.51	7.3	2.5	1.33	0.065	< 2
Min	***	2	4.2	78	2.90	6.8	1.7	0.00	0.020	< 1
Max	***	402	18.9	101	56.00	8.6	3.2	24.00	0.340	< 2.5
n	***	29	26	13	22	29	28	31	12	21

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	3:03 PM	87	15.5	95	37.00	7.5	6	0.04	0.100	< 2
10/9/2012	1:00 PM	49	8.0	97	12.00	7.9	< 2.5	120.00	0.047	< 2
8/22/2013	10:05 AM	83	15.6	84	3.70	8.0	5.2	0.30	0.093	< 3
9/5/2013	4:30 PM	72	12.1	89	2.30	7.8	< 3.3	0.36	0.170	< 2
8/29/2014	12:40 PM	88	13.5	84	32.00	8.4	5.1	0.43	0.092	< 1
9/29/2014	10:52 AM	89	13.0	78	24.00	8.6	5.5	0.05	0.092	< 1
8/27/2015	12:51 PM	78	13.9	92		8.4	9.5	0.00	0.410	
9/23/2015	10:29 AM	86	11.1	91		8.0	11.3	0.01	0.085	
9/7/2016	10:55 AM	90	15.3	*84*		7.9	12.2	0.00	0.084	
9/20/2016	10:48 AM	77	14.7	*80*		8.0	9.4	0.00	0.076	
9/1/2017	11:15 AM	62	9.5			7.8	5.8	0.76	0.085	
9/22/2017	10:12 AM	86	11.6	103		8.0	11.2	0.00	0.100	
2017 STATISTICS										
Mean	***	74	10.6	103		7.9	8.5	0.38	0.093	
2012 - 2017 STATISTICS										
Mean	***	79	12.8	89	18.50	7.9	7.3	10.16	0.120	< 2
Min	***	49	8.0	78	2.30	7.5	2.5	0.00	0.047	< 1
Max	***	90	15.6	103	37.00	8.6	12.2	120.00	0.410	< 3
n	***	12	12	11	6	12	12	12	12	6

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
10/29/2004	9:35 AM							0.12		
11/24/2004	9:58 AM	61	4.5		16.00	7.5	4.2	0.61		
10/3/2005		124			23.00	7.5	6.2	1.34		< 2
10/21/2005		41			8.60	6.7		1.19		< 2
11/3/2006		48			7.79	8.6	8	0.52		< 2
9/7/2007	9:45 AM	103	14.6		36.00	7.0	5.5	0.15		< 2
10/31/2007	10:06 AM	38	5.3		29.00	7.7	6	0.33		< 2
11/26/2007	11:15 AM	55	3.2		16.00	7.3	5.8	0.52		< 2
10/27/2008	11:35 AM	52	9.3		24.00	7.5	5.6	4.06		< 2
11/4/2008	9:50 AM	37	7.8		9.20	7.2	4.2	1.26		< 2
4/17/2009	8:04 AM	60	3.7			7.2	4.3	0.00		< 2
8/17/2009	10:24 AM	93	16.9		26.00	7.7	7.1	< 0.50		< 2
9/9/2009	9:53 AM	120	12.4		29.00	7.9	11	< 0.50		< 2
10/20/2009	10:59 AM		5.8		23.00	6.9	6.9	< 0.50		< 2
9/14/2010	9:06 AM	82	11.3		22.00	7.0	5.9	< 1.80		< 2
9/22/2010	8:36 AM	96	11.5		32.00	7.9	7.8	< 0.50		< 2
10/10/2011	2:40 PM	64	12.7	106	27.00	7.2	6.5	< 0.55		< 2
10/20/2011	2:53 PM	41	10.6	106	22.00	6.3	4.9	< 26.42		14
8/23/2012	10:32 AM	99	14.8	89	38.00		12	< 0.05	< 0.020	< 2
10/9/2012	11:45 AM	75	7.7	97	16.00	8.1	5.9	< 4.80	0.044	3
8/22/2013	9:10 AM	103	16.0	90	4.80	8.3	10	0.55	< 0.029	< 2.5
9/22/2013	2:00 PM	116	12.6	90	5.90	8.1	12	0.01	0.059	2
8/29/2014	11:46 AM	127	13.5	85	31.00	8.5	16	0.00	< 0.029	< 1
9/29/2014	11:09 AM	220	13.3	77	32.00	8.3	16	0.00	0.030	1
8/27/2015	12:18 PM	233	14.8	93		8.3	44.2	0.62	0.046	
9/23/2015	11:02 AM	145	11.4	96		8.0	24.5	0.19	0.055	
9/7/2016	10:10 AM	137	15.4	*87*		8.0	22.6	1.42	0.044	
9/20/2016	9:40 AM	143	14.8	*77*		8.2	24	0.00	0.043	
9/1/2017	9:45 AM	113	9.2			8.1	17.3	0.73	0.030	
9/22/2017	9:20 AM	115	11.9	101		8.0	17.8	0.89	0.074	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	114	10.6	101		8.0	17.5	0.81	0.052	
2004 - 2017 STATISTICS										
Mean	***	98	11.0	92	21.74	7.3	11.5	1.67	0.042	2.5
Min	***	37	3.2	77	4.80	6.3	4.2	0.00	0.020	1
Max	***	233	16.9	106	38.00	8.6	44.2	26.42	0.074	14
n	***	28	26	13	22	28	28	30	12	22

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	3:15 PM							0.13		
10/26/2004	7:55 AM							0.53		
10/3/2005		78			20.00	6.2	5.2	2.28		4
10/21/2005		47			12.00	7.0		0.77		< 2
11/3/2006		48			8.61	8.3	2.7	0.93		< 2
9/7/2007	2:50 PM	94	17.4		24.00	7.2	7.2	0.17		< 2
10/31/2007	1:23 PM	41	6.7		13.00	7.3	< 2	0.33		< 2
11/26/2007	12:34 PM	46	3.1		14.00	7.4	4.7	0.63		< 2
10/27/2008	12:55 PM	49	8.9		20.00	7.3	4.8	6.29		< 2
11/4/2008	11:50 AM	32	8.5		10.00	7.2	2.9	1.67		2
4/17/2009	9:40 AM	37	5.2			6.7	3.4	0.00		< 2
8/17/2009	12:56 PM	91	19.4		26.00	7.4	7.1	< 0.50		< 2
9/9/2009	11:41 AM	112	13.0		27.00	6.7	9.5	< 0.50		< 2
10/20/2009	12:58 PM	80	6.9		23.00	6.9	6.2	< 0.50		< 2
9/14/2010	10:10 AM	77	11.9		23.00	7.1	5.1	1.17		< 2
9/22/2010	9:54 AM	95	12.1		29.00	7.6	7.4	0.50		< 2
10/10/2011	1:53 PM	64	13.1	115	25.00	6.5	5.9	0.37		< 2
10/20/2011	4:40 PM	43	11.0	105	22.00	7.2	4.2	2.15		4
8/23/2012	3:42 PM	110	16.4	91	40.00	7.3	12	0.02	0.024	< 2
10/9/2012	9:30 AM	72	6.7	99	15.00	8.1	5.3	0.42	0.035	< 2
8/22/2013	11:00 AM	115	17.1	89	9.00	8.1	12	0.13	0.500	5
9/5/2013	9:30 AM	104	13.1	91	3.60	8.1	9.3	0.18	0.068	< 2
8/29/2014	3:46 PM	123	15.8	83	27.00	8.1	12	0.87	0.025	1
9/29/2014	12:25PM	121	14.2	81	30.00	8.5	12	0.30	< 0.020	< 1
8/27/2015	2:15 PM	109	15.8	96		8.0	16.5	0.48	0.130	
9/23/2015	11:53 AM	119	12.2	87		8.3	18.7	1.05	0.029	
9/7/2016	11:28 AM	123	17.8	*76*		7.9	19.5	0.00	0.025	
9/20/2016	1:32 PM	108	17.1	*76*		8.4	16.3	0.00	0.074	
9/1/2017	12:35 PM	115	11.0			8.1	17.8	0.00	< 0.020	
9/22/2017	12:12 PM	110	14.5	107		8.2	16.6	0.19	0.020	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	112	12.8	107		8.1	17.23	0.10	0.020	
2004 - 2017 STATISTICS										
Mean	***	84	12.3	92	20.06	7.1	9.12	0.77	0.081	2.2
Min	***	32	3.1	76	3.60	6.2	2.00	0.00	0.020	1
Max	***	123	19.4	115	40.00	8.5	19.54	6.29	0.500	5
n	***	28	25	13	21	28	27	30	12	22

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	1:35 PM							0.11		
10/26/2004	1:05 PM							0.59		
9/30/2005		172			54.00	6.8	14.3	0.91		< 2
10/22/2005		84			25.00	7.5		1.07		< 2
11/3/2006		64			15.60	8.1	3.4	0.85		< 2
9/7/2007	9:05 AM	169	15.1		48.00	7.0	14.8	0.42		< 2
10/31/2007	9:35 AM	78	11.6		22.00	7.7	8.6	0.58		< 2
11/26/2007	12:22 PM	66	4.0		19.00	7.2	8.6	0.50		< 2
10/27/2008	11:20 AM	79	12.2		28.00	7.4	12	2.78		< 2
11/4/2008	11:22 AM	49	7.9		11.00	7.2	5.9	2.25		< 2
4/17/2009	7:31 AM	55	3.6			7.2	9.5	0.15		5
8/17/2009	9:28 AM	177	18.7		36.00	7.3	21	< 0.50		< 2
9/9/2009	11:06 AM	286	14.3		46.00	7.4	40	< 0.50		< 2
10/20/2009	10:03 AM	169	10.2		29.00	6.9	21	0.74		< 2
9/14/2010	8:41 AM	180	12.1		38.00	6.7	29	6.01		< 2
9/22/2010	8:15 AM	206	12.1		37.00	7.7	30	< 0.50		< 2
10/10/2011	4:08 PM	172	13.5	96	32.00	7.4	38	0.16		< 2
10/20/2011	4:20 PM	90	11.5	100	25.00	7.0	20	1.30		2
8/23/2012	3:20 AM									
10/9/2012	4:00 PM	205	9.1	91	32.00	7.8	35	33.00	0.038	< 2
9/5/2013	4:45 PM	276	12.8	76	6.80	7.9	44	0.28	0.190	< 2
8/29/2014										
9/29/2014										
8/27/2015	10:42 AM	315	15.6	89		8.2	62.6	10.30	1.700	
9/23/2015	2:18 PM	309	13.5	79		8.2	61.2	0.76	0.049	
9/7/2016	11:08 AM	310	17.8	*64*		7.7	61.5	1.07	0.026	
9/20/2016	11:29 AM	250	16.8	*41*		7.6	48	1.55	0.020	
9/1/2017	12:00 PM	272	10.3			8.0	52.9	0.00	0.210	
9/22/2017	11:54 AM	278	14.3	62		7.8	54.3	0.01	0.075	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	275	12.3	62		7.9	53.6	0.01	0.143	
2004 - 2017 STATISTICS										
Mean	***	180	12.2	77	29.67	7.3	30.2	2.57	0.289	2.2
Min	***	49	3.6	41	6.80	6.7	3.4	0.00	0.020	2
Max	***	315	18.7	100	54.00	8.2	62.6	33.00	1.700	5
n	***	24	21	9	17	24	23	26	8	18

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

WQM 1-2 was dry during both basedflow events in 2014

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (umho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**>70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	1:40 PM							0.39		
10/26/2004	1:08 PM							0.98		
9/30/2005		196			71.00	7.4	9.1	1.05		3
10/22/2005		159			57.80	7.1		1.93		< 2
11/3/2006		122			34.90	7.6	7.3	11.20		2
9/7/2007	9:15 AM	218	15.8		76.00	7.5	13.6	0.34		< 2
10/31/2007	9:38 AM	179	6.7		62.00	7.7	11	1.64		< 2
11/26/2007	12:26 PM	107	4.2		42.00	7.3	11	2.42		< 2
10/27/2008	11:25 AM	125	9.2		44.00	7.5	16	2.34		2
11/4/2008	9:30 AM	109	8.1		24.00	7.2	9.5	2.05		4
4/17/2009	7:39 AM	82	3.2			7.2	14	3.00		6
8/17/2009	9:29 AM	219	17.8		59.00	7.6	23	0.58		< 2
9/9/2009	11:16 AM	271	14.0		74.00	7.7	25	1.23		7
10/20/2009	10:14 AM	210	7.9		48.00	7.0	23	0.50		< 2
8/23/2012	3:23 PM									
10/9/2012	4:20 PM	283	10.3	85	54.00	7.7	45	24.00	< 0.034	< 3
8/22/2013	10:40 AM	323	17.5	78	80.00	8.0	37	0.30	< 0.027	< 2.5
9/5/2013	4:55 PM	293	13.3	84	6.60	8.0	42	0.45	< 0.044	< 1
8/29/2014	1:20 PM	340	17.4	67	72.00	8.2	46	0.00	< 0.042	< 1
9/29/2014	11:55 AM	341	14.2	61	61.00	8.1	49	0.00	< 0.042	< 1
8/27/2015	10:46 AM	256	16.0	96		8.1	49.4	1.06	< 0.220	
9/23/2015	2:05 PM	284	17.6	98		8.0	55.6	0.64	< 0.081	
9/7/2016	11:15 AM	315	17.8	*82*		8.1	62.5	0.00	< 0.050	
9/20/2016	11:42 AM	262	16.4	*82*		8.1	50.8	0.00	< 0.039	
9/1/2017	12:10 PM	289	11.3			8.2	56.8	0.00	0.061	
9/22/2017	11:36 AM	294	13.5	82		8.0	57.9	1.25	0.054	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (umho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	292	12.4	82		7.8	57.3	0.63	0.058	
2004 - 2017 STATISTICS										
Mean	***	229	12.6	81	54.14	7.8	32.5	2.29	0.063	2.6
Min	***	82	3.2	61	6.60	7.0	7.3	0.00	0.027	1
Max	***	341	17.8	98	80.00	8.2	62.5	24.00	0.220	7
n	***	23	20	10	16	23	22	25	11	17

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	2:30 PM							9.42		
10/26/2004	10:20 AM							1.11		
11/24/2004	9:47 AM	244	5.0		26.00	7.6	46.9	1.89		
10/4/2005		402			46.50	7.6	78.7	1.23		< 2
10/21/2005		157			28.00	6.8		2.45		< 2
11/3/2006		177			26.20	8.1	26.9	1.07		< 2
9/7/2007	9:30 AM	98	16.3		14.00	7.2	14.4	0.23		< 2
10/31/2007	9:52 AM	96	6.3		45.00	7.6	32	1.37		3
11/26/2007	11:00 AM	155	3.4		46.00	7.4	36	1.47		< 2
10/27/2008	11:30 AM	159	9.5		28.00	7.5	37	1.11		< 2
11/4/2008	9:45 AM	109	8.1		16.00	7.2	24	1.42		< 2
4/17/2009	7:56 AM	123	4.0			7.2	30	0.30		2
8/17/2009	10:05 AM	355	18.9		46.00	7.7	68	< 0.50		2
9/9/2009	9:46 AM	485	13.0		44.00	7.9	100	< 0.50		2
10/20/2009	10:46 AM	317	6.5		44.00	7.1	60	0.97		2
9/14/2010	9:00 AM	279	12.3		42.00	6.8	48	1.16		2
9/22/2010	8:48 AM	415	12.8		51.00	7.8	79	< 0.50		2
10/10/2011	2:49 PM	324	14.7	104	52.00	7.5	80	0.17		2
10/20/2011	3:10 PM	116	11.9	107	36.00	6.8	41	2.42		2
8/23/2012	10:54 AM	560	15.9	88	65.00		160	0.22	0.063	2
10/9/2012	12:15 PM	330	9.3	90	43.00	8.1	63	43.00	0.038	2
8/22/2013	9:00 AM	723	17.0	85	14.00	8.2	160	0.16	0.046	3
9/5/2013	2:10 PM	567	13.9	84	9.00	8.1	120	0.24	0.059	2
8/29/2014	11:09 AM	479	14.4	80	46.00	8.5	100	0.20	0.130	1
9/29/2014	11:21 AM	636	13.9	73	56.00	8.3	150	0.20	0.044	1
8/27/2015	12:12 PM	572	16.2	89		8.1	130	0.49	0.280	
9/23/2015	11:11 AM	540	12.7	95		7.8	120	0.25	0.061	
9/7/2016	10:15 AM	450	16.7	69		8.1	92.8	0.00	0.040	
9/20/2016	10:00 AM	353	15.6	69		8.2	71.1	0.00	0.082	
9/1/2017	10:15 PM	477	9.4			8.2	< 2.5	1.70	0.029	
9/22/2017	9:33 AM	485	12.1	94		8.1	100.7	0.12	0.110	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	481	10.8	94		8.1	51.6	0.91	0.070	
2004 - 2017 STATISTICS										
Mean	***	351	11.9	87	37.44	7.4	74	2.45	0.082	2
Min	***	96	3.4	69	9.00	6.8	2.5	0.00	0.029	1
Max	***	723	18.9	107	65.00	8.5	160	43.00	0.280	3
n	***	29	26	13	22	28	28	31	12	22

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station SMB-T3-0.8 (DEC Station ID 42780730008), Tributary 3 to South Mountain Branch, upstream from Stateside Hotel

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/7/2016	1:54 PM	36	13.6	*82*		7.6	0.1	1.91	0.026	
9/20/2016	12:19 PM	33	13.2	*85*		7.6	< 2.5	0.00	0.045	
9/1/2017	1:15 PM	31	8.1			7.6	< 2.5	0.00	< 0.020	
9/22/2017	1:54 PM	31	11.0	96		7.5	< 2.5	0.47	0.038	
2017 STATISTICS										
Mean	***	31	9.6	96		7.6	2.5	0.24	0.029	
2016 - 2017 STATISTICS										
Mean	***	33	11.5	88		7.6	1.9	0.60	0.032	
Min	***	31	8.1	82		7.5	0.1	0.00	0.020	
Max	***	36	13.6	96		7.6	2.5	1.91	0.045	
n	***	2	2	2		2	2	2	2	

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station SMB-T3-0.5 (DEC Station ID 427807030005), Tributary 3 to South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/29/2014	1:35 PM	105	12.8	86	23.00	8.4	14	0.92	0.044	< 1
9/29/2014	1:55 PM	113	12.9	76	20.00	8.2	16	0.00	0.053	< 1
8/27/2015	1:24 PM	98	13.3	95		8.1	14	0.10	0.059	
9/23/2015	1:45 PM	121	12.0	90		8.2	19.1	1.14	0.100	
9/7/2016	12:30 PM	112	15.7	*83*		7.9	17.2	0.00	0.046	
9/20/2016	12:04 PM	111	14.3	*81*		7.9	16.8	0.00	0.058	
9/1/2017	2:30 PM	126	8.9			7.8	20.2	0.00	0.045	
9/22/2017	1:23 PM	93	12.3	90		7.8	12.9	0.00	0.056	
2017 STATISTICS										
Mean	***	110	10.6	90		7.8	16.6	0.00	0.051	
2014 - 2017 STATISTICS										
Mean	***	110	12.8	86	21.50	8.2	16.3	0.27	0.058	< 1
Min	***	93	8.9	76	20.00	7.8	12.9	0.00	0.044	< 1
Max	***	126	15.7	95	23.00	8.4	20.2	1.14	0.100	< 1
n	***	2	2	2	2	2	2	2	2	2

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station SMB-T3-0.1 (DEC Station ID 42780730001), Tributary 3 to South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	4:41 PM	128	14.9	95	31.00	7.6	26	0.01	< 0.020	< 2
10/9/2012	11:00 AM	125	7.2	95	13.00	8.1	22	125.00	0.031	< 2
8/22/2013	12:00 PM	179	16.1	88	7.90	8.1	30	1.31	< 0.072	< 2.5
9/5/2013	1:55 PM	185	12.0	90	4.20	8.0	32	11.45	0.590	< 2
8/29/2014	2:35 PM	181	13.4	81	24.00	8.4	31	0.53	< 0.045	< 1
9/29/2014	1:38 PM	186	13.1	80	28.00	8.3	33	0.10	0.021	< 1
8/27/2015	1:41 PM	171	14.2	95		8.2	30.3	1.21	< 1.200	
9/23/2015	12:55 PM	196	11.7	94		8.1	35.9	0.77	0.028	
9/7/2016	11:58 AM	207	15.8	*81*		8.0	38.3	0.00	< 0.020	
9/20/2016	12:39 PM	147	13.4	*86*		7.9	25	0.00	0.025	
9/1/2017	1:35 PM	204	9.1			7.9	37.7	0.00	0.033	
9/22/2017	1:00 PM	164	12.5	101		7.9	28.7	0.00	0.070	

2017 STATISTICS										
Mean	***	184	10.8	101		7.9	33.2	0.00	0.052	
2012 - 2017 STATISTICS										
Mean	***	173	12.8	90	18.02	7.6	30.8	11.70	0.180	1.8
Min	***	125	7.2	80	4.20	7.6	22	0.00	0.020	1
Max	***	207	16.1	101	31.00	8.4	38.3	125.00	1.200	2.5
n	***	12	12	11	6	12	12	12	12	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station SMB-1.8 (DEC Station ID 427807000018), South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	4:15 PM	148	13.5	95	38.00	7.5	34.00	0.01	< 0.020	< 2
10/9/2012	10:45 AM	155	6.9	96	16.00	8.2	28.00	24.00	< 0.020	< 2
8/22/2013	11:40 AM	199	14.3	88	6.90	7.9	31.00	0.97	< 0.080	< 2.5
9/5/2013	12:55 PM	188	11.0	91	5.30	8.1	36.00	3.25	< 0.100	< 2
8/29/2014	2:50 PM	213	12.5	77	28.00	8.3	36.00	0.00	< 0.020	< 1
9/29/2014	1:20 PM	214	12.0	77	34.00	8.3	39.00	0.05	< 0.029	< 1
8/27/2015	1:56 PM	201	13.0	97		7.9	37.05	0.46	< 0.088	
9/23/2015	1:24 PM	210	11.1	90		8.1	39.07	0.77	< 0.039	
9/7/2016	11:43 AM	229	14.2	*82*		8.0	43.28	0.00	0.037	
9/20/2016	1:04 PM	202	13.9	*79*		7.8	37.34	0.00	0.036	
9/1/2017	1:15 PM	229	8.7			8.0	43.32	0.00	0.021	
9/22/2017	12:42 PM	181	11.0	104		7.8	32.64	0.23	< 0.020	
2017 STATISTICS										
Mean	***	205	9.9	104		7.9	37.98	0.12	0.021	
2012 - 2017 STATISTICS										
Mean	***	197	11.8	89	21.37	7.5	36.39	2.48	0.047	1.8
Min	***	148	6.9	77	5.30	7.5	28.00	0.00	0.020	1
Max	***	229	14.3	104	38.00	8.3	43.32	24.00	0.100	2.5
n	***	12	12	11	6	12	12	12	10	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017

Baseflow Water Chemistry Sampling
Station SMB-1.2 (DEC Station ID 427807000012), South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	3:56 PM	161	14.2	95	32.00	7.5	36	0.04	< 0.020	< 2
10/9/2012	10:30 AM	157	6.8	93	17.00	8.3	29	55.00	< 0.020	< 2
8/22/2013	11:15 AM	209	14.7	87	10.00	7.9	35	0.46	< 0.080	< 2.5
9/5/2013	11:55 AM	203	11.2	89	4.80	8.2	9.3	1.04	< 0.068	< 2
8/29/2014	3:26 PM	217	12.9	84	31.00	8.4	38	0.16	< 0.047	< 2
9/29/2014	12:36 PM	219	12.2	77	39.00	8.4	39	0.00	< 0.020	< 1
8/27/2015	2:10 PM	197	13.4	97		8.0	36.2	0.63	< 0.058	
9/23/2015	12:25 PM	227	10.8	99		8.1	42.9	0.85	< 0.025	
9/7/2016	11:34 AM	228	14.3	*86*		7.9	43	2.56	0.028	
9/20/2016	1:20 PM	195	14.2	*82*		8.0	35.8	0.00	0.028	
9/1/2017	12:55 PM	200	8.9			8.0	36.8	0.23	0.170	
9/22/2017	12:27 PM	196	11.2	104		7.9	36	0.00	0.031	
2017 STATISTICS										
Mean	***	198	10.1	104		7.9	36.4	0.12	0.101	
2012 - 2017 STATISTICS										
Mean	***	201	12.1	90	22.30	7.6	34.7	5.08	0.052	1.9
Min	***	157	6.8	77	4.80	7.5	9.3	0.00	0.020	1
Max	***	228	14.7	104	39.00	8.4	43	55.00	0.170	2.5
n	***	12	12	11	6	12	12	12	11	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 100, Suite 200	
South Burlington, VT 05403	
Atten: Robert Wildey	

PROJECT: Jay Peak WQM 57201.10
WORK ORDER: **1709-20696**
DATE RECEIVED: September 01, 2017
DATE REPORTED: September 25, 2017
SAMPLER: Robert Wildey

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and “N” the Plattsburgh, NY lab under certification ELAP 11892. “Sub” indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. “A” indicates the referenced laboratory is NELAC accredited for the parameter reported. “N” indicates the laboratory is not accredited. “U” indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an “A” meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 09/25/2017

CLIENT: Vanasse Hangen Brustlin, Inc.
PROJECT: Jay Peak WQM 57201.10

WORK ORDER: **1709-20696**
DATE RECEIVED 09/01/2017

001 Site: JB-7.3 Date Sampled: 9/1/17 Time: 12:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	9/22/17	W MGT	A	

002 Site: JB-8.3 Date Sampled: 9/1/17 Time: 9:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.030	mg/L	EPA 6010C	9/22/17	W MGT	A	

003 Site: JB-9.1 Date Sampled: 9/1/17 Time: 11:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.085	mg/L	EPA 6010C	9/22/17	W MGT	A	

004 Site: JB-T9-0.1 Date Sampled: 9/1/17 Time: 10:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.029	mg/L	EPA 6010C	9/22/17	W MGT	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/1/17 Time: 12:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.21	mg/L	EPA 6010C	9/22/17	W MGT	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/1/17 Time: 12:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.061	mg/L	EPA 6010C	9/22/17	W MGT	A	

007 Site: SMB-1.2 Date Sampled: 9/1/17 Time: 12:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.17	mg/L	EPA 6010C	9/22/17	W MGT	A	

008 Site: SMB-1.8 Date Sampled: 9/1/17 Time: 13:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.021	mg/L	EPA 6010C	9/22/17	W MGT	A	

009 Site: SMB-T3-0.8 Date Sampled: 9/1/17 Time: 14:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	

Laboratory Report DATE REPORTED: 09/25/2017

CLIENT: Vanasse Hangen Brustlin, Inc.
PROJECT: Jay Peak WQM 57201.10

WORK ORDER: **1709-20696**
DATE RECEIVED 09/01/2017

009 Site: SMB-T3-0.8 Date Sampled: 9/1/17 Time: 14:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	< 0.020	mg/L	EPA 6010C	9/22/17	W MGT	A	

010 Site: SMB-T3-0.5 Date Sampled: 9/1/17 Time: 14:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.045	mg/L	EPA 6010C	9/22/17	W MGT	A	

011 Site: SMB-T3-0.1 Date Sampled: 9/1/17 Time: 13:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	0.033	mg/L	EPA 6010C	9/22/17	W MGT	A	

012 Site: JB-T12-0.2 Date Sampled: 9/1/17 Time: 13:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/22/17	W SJM	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	9/22/17	W MGT	A	

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 100, Suite 200	
South Burlington, VT 05403	
Atten: Elvin Cordero	

PROJECT: Jay Peak WQM Project #57201.10
WORK ORDER: **1709-22809**
DATE RECEIVED: September 22, 2017
DATE REPORTED: October 09, 2017
SAMPLER: Elvin, JMD

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and “N” the Plattsburgh, NY lab under certification ELAP 11892. “Sub” indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. “A” indicates the referenced laboratory is NELAC accredited for the parameter reported. “N” indicates the laboratory is not accredited. “U” indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an “A” meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 10/09/2017

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1709-22809**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED 09/22/2017

001 Site: JB-T13-0.2 Date Sampled: 9/22/17 Time: 10:38

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.11	mg/L	EPA 6010C	10/6/17	W SJM	A	

002 Site: JB-9.1 Date Sampled: 9/22/17 Time: 10:12

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.10	mg/L	EPA 6010C	10/6/17	W SJM	A	

003 Site: JB-8.3 Date Sampled: 9/22/17 Time: 9:20

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.074	mg/L	EPA 6010C	10/6/17	W SJM	A	

004 Site: JB-7.3 Date Sampled: 9/22/17 0:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.020	mg/L	EPA 6010C	10/6/17	W SJM	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/22/17 Time: 11:54

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.075	mg/L	EPA 6010C	10/6/17	W SJM	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/22/17 Time: 11:36

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.054	mg/L	EPA 6010C	10/6/17	W SJM	A	

007 Site: JB-T9-0.1 Date Sampled: 9/22/17 Time: 9:33

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.11	mg/L	EPA 6010C	10/6/17	W SJM	A	

008 Site: SMB-T3-0.8 Date Sampled: 9/22/17 Time: 13:54

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.038	mg/L	EPA 6010C	10/6/17	W SJM	A	

009 Site: SMB-T3-0.5 Date Sampled: 9/22/17 Time: 13:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	

Laboratory Report DATE REPORTED: 10/09/2017

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1709-22809**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED 09/22/2017

009 Site: SMB-T3-0.5 Date Sampled: 9/22/17 Time: 13:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.056	mg/L	EPA 6010C	10/6/17	W SJM	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/22/17 Time: 13:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.070	mg/L	EPA 6010C	10/6/17	W SJM	A	

011 Site: SMB-1.8 Date Sampled: 9/22/17 Time: 12:42

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	10/6/17	W SJM	A	

012 Site: SMB-1.2 Date Sampled: 9/22/17 Time: 12:27

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/5/17	W SJM	A	
Iron, Total	0.031	mg/L	EPA 6010C	10/6/17	W SJM	A	

APPENDIX 2

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
10/8/2005	---	59			5.30	7.2	< 2.5	0.41		< 2
10/28/2006	---	30			< 4.51	7.2	< 2.5	0.51		< 2
8/30/2007	1:35 PM	46	13.0		8.00	7.3	< 2.5	0.23		< 2
9/28/2007	9:10 AM				< 20.00	7.0	1	0.53		< 1
10/10/2008	11:55 AM	21	5.8			7.2	< 2.5	0.50		< 2
11/17/2008	9:36 AM	21	6.3			7.0	< 2.5	0.50		< 2
10/1/2009	11:32 AM	36	8.0		20.00	6.9	< 2.5	0.50		< 2
11/20/2009	10:30 AM	26	7.3		< 7.07	7.3	< 2.5	0.90		< 3
8/3/2010	3:39 PM	23	14.8		14.00		< 2.5	1.30		< 3
8/23/2010	3:40 PM	58	12.8		< 22.00	7.7	< 2.5	0.50		< 2
10/25/2011	9:53 AM	19	7.0			6.5	< 2.5	0.50		< 1
11/30/2011	10:56 AM	22	7.1			6.3	< 2.5	0.00		< 1
9/5/2012	1:50 PM	16	14.6	91	4.80		< 2.5	38.00	0.028	< 2
9/19/2012	2:30 PM	18	10.7	89	< 4.80	7.1	< 2.5	35.00	0.027	< 2
9/12/2013	4:15 PM	28	14.5	97	2.00	7.6	< 2.5	0.81	0.053	< 1
9/22/2013	3:50 PM	26	10.9	99	< 5.20	7.6	< 2.5	0.40	0.067	< 2
8/13/2014	2:24 PM	49	13.3	72	12.00	8.3	< 2.5	14.53	0.071	< 3
9/11/2014	12:30 PM	50	12.8	78	< 30.00	8.5	< 2.5	5.70	0.110	< 1
8/21/2015	10:30 AM	37	14.5	94		8.1	0.3	8.75	0.037	
9/14/2015	10:24 AM	30	12.4	92		7.5	< 2.5	7.04	0.620	
8/22/2016	9:55 AM	22	12.9			7.7	< 2.5	0.00	0.022	
9/11/2016	1:37 PM	32	13.7	*83*		7.8	< 2.5	0.00	0.046	
9/7/2017	10:15 AM	30	10.8	97		6.7	< 2.5	1.11	0.130	
10/9/2017	2:00 PM	41	12.8	104		6.5	1.1	6.82	0.120	
2017 STATISTICS										
Mean	***	35	11.8	101		6.6	1.8	3.97	0.125	
2005 - 2017 STATISTICS										
Mean	***	32	11.2	91	11.41	7.0	2.3	5.19	0.111	2
Min	***	16	5.8	72	2.00	6.3	0.3	0.00	0.022	1
Max	***	59	14.8	104	30.00	8.5	2.5	38.00	0.620	3
n	***	23	21	11	14	22	24	24	12	18

Notes:

Blank cells indicates no data available

2005 and 2006 data from ESI

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	1:10 PM	21	14.9	92	4.30		< 2.5	133.00	0.420	8
9/19/2012	1:00 PM	24	10.8	91	3.70	7.2	< 2.5	33.00	0.210	4
9/12/2013	12:00 PM	35	15.4	102	2.00	7.5	< 2.5	1.71	0.180	5
9/22/2013	3:50 PM	33	11.2	100	6.20	7.8	< 2.5	0.85	0.170	3
8/13/2014	2:41 PM	103	14.3	80	31.00	8.4	8.5	0.00	0.140	2
9/11/2014	12:45 PM	101	13.5	79	17.00	8.6	8	10.16	0.110	
8/21/2015	10:45 AM	57	15.9	95			4.8	13.28	0.170	
9/14/2015	9:07 AM	44	13.0	98		7.6	1.9	17.67	5.500	
8/22/2016	10:10 AM	32	14.1			7.8	< 2.5	0.44	0.096	
9/11/2016	1:44 PM	51	14.8	*86*		7.8	< 2.5	0.00	0.250	
9/7/2017	9:55 AM	43	11.4	104		6.9	1.7	3.05	0.620	
10/9/2017	2:30 PM	78	13.3	117		6.6	9.4	11.69	0.640	
2017 STATISTICS										
Mean	***	60	12.4	111		6.8	5.6	7.37	0.630	
2012 - 2017 STATISTICS										
Mean	***	52	13.6	95	10.70	7.3	4.1	18.74	0.709	4
Min	***	21	10.8	79	2.00	6.6	1.7	0.00	0.096	2
Max	***	103	15.9	117	31.00	8.6	9.4	133.00	5.500	8
n	***	12	12		6	10	12	12	12	5

Notes:

Blank cells indicate no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005		44			7.00	6.4	3.2	151.00		626
10/28/2006		52			9.84	7.2	4.4	18.30		86
8/30/2007	12:25 PM	111	15.9		18.00	7.5	< 2.5	1.58		3
9/28/2007	8:20 AM				22.00	7.3	5	1.40		3
10/10/2008	10:45 AM	56	5.6			7.3	12	1.52		2
11/17/2008	8:10 AM	50	5.6			7.5	6	2.07		2
10/1/2009	10:18 AM	52	8.1		24.00	6.9	3.5	1.77		2
11/20/2009	11:15 AM	85	7.3		13.90		19	86.10		66
8/3/2010	2:35 PM	42	16.3		14.10	7.7	3.5	20.00		26
8/23/2010	2:35 PM	97	14.6		30.00	7.7	7.8	0.50		2
10/25/2011	10:33 AM	43	7.2			6.9		1.38		1
11/30/2011	9:45 AM	55	7.9			6.8		0.00		4
9/5/2012	11:50 AM	34	15.3	92	6.40	6.7	4	108.00	3.300	67
9/19/2012	12:15 PM	41	11.3	90	7.30	7.5	4.7	44.00	0.500	9
9/12/2013	2:45 PM	65	16.1	103	2.00	7.8	5.7	7.31	0.530	7
9/22/2013	3:05 PM	69	12.0	99	9.90	8.0	6.2	16.01	0.260	5
8/13/2014	1:51 PM	135	15.1	83	33.00	8.5	19	0.00	0.068	1
9/11/2014	12:05 PM	220	14.0	80	29.00	8.6	15	5.53	0.075	1
8/21/2015	10:05 AM	200	17.0	96		8.0	36.8	13.50	0.280	
9/14/2015	9:52 AM	131	13.8	92		6.6	21.4	9.72	1.200	
8/22/2016	9:20 AM	82	14.9			8.2	10.4	6.88	0.250	
9/11/2016	12:52 PM	169	16.1	*81*		8.1	29.9	7.93	0.290	
9/7/2017	9:10 AM	73	11.8	110		7.1	8.3	2.72	0.330	
10/9/2017	12:45 PM	129	13.4	104		6.7	21	10.15	0.280	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	101	12.6	107		6.8	14.6	6.44	0.305	
2005 - 2017 STATISTICS										
Mean	***	88	12.3	93	16.17	7.1	11.3	21.56	0.614	51
Min	***	34	5.6	80	2.00	6.4	2.5	0.00	0.068	1
Max	***	220	17.0	110	33.00	8.6	36.8	151.00	3.300	626
n	***	23	21	11	14	23	22	24	12	18

Notes:

Blank cells indicates no data available

2005 and 2006 data from ESI

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005		71			7.00	7.1	3.2	12.30		58
10/28/2006		42			9.43	7.1	2.9	20.10		71
8/30/2007	2:05 PM	89	16.8		12.00	6.9	8.3	8.06		21
9/28/2007	9:30 AM				23.00	7.0	5	0.96		1
10/10/2008	12:10 PM	41	6.3			7.2	4.1	1.44		2
11/17/2008	10:00 AM	44	6.5			7.1	3.7	1.65		2
10/1/2009	11:59 AM	53	8.7		20.00	6.9	3.5	3.42		2
11/20/2009	11:15 AM	54	7.5		11.30		3.9	45.80		39
8/3/2010	4:10 PM	42	16.9		8.90	7.0	3	17.80		41
8/23/2010	4:15 PM	94	15.8		28.00	7.7	7.2	0.50		2
10/25/2011	9:08 AM	41	7.4			6.8		2.03		3
11/30/2011	8:59 AM	56	8.4			6.9		1.91		9
9/5/2012	8:50 AM	23	15.5	95						
9/19/2012	10:00 AM	37	11.6	91	8.50	7.2	3.7	60.00	0.810	20
9/12/2013	12:00 PM	51	16.0	101	2.00	8.0	3.5	7.58	0.660	12
9/22/2013	1:10 PM	63	12.9	102	11.00	8.3	4.8	2.30	0.240	4
8/13/2014	3:18 PM	122	15.8	79	32.00	8.4	13	0.00	0.064	1
9/11/2014	1:45PM	119	15.0	81	29.00	8.6	12	4.83	0.037	1
8/21/2015	12:35 PM	95	17.5	98		7.8	13.3	2.12	0.170	
9/14/2015	11:55 AM	55	13.8	100		7.8	4.4	44.51	6.100	
8/22/2016	12:15 PM	54	14.9			7.7	4.1	0.00	0.110	
9/11/2016	4:00 PM	78	15.4	*80*		8.0	9.5	0.00	0.140	
9/7/2017	2:50 PM	57	12.6	107		7.2	4.9	3.94	0.270	
10/9/2017	3:10 PM	108	13.9	107		6.9	16.3	15.16	0.990	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	83	13.3	107		7.0	10.6	9.55	0.630	
2005 - 2017 STATISTICS										
Mean	***	65	12.8	95	15.55	7.2	6.4	11.15	0.872	17
Min	***	23	6.3	79	2.00	6.8	2.9	0.00	0.037	1
Max	***	122	17.5	107	32.00	8.6	16.3	60.00	6.100	71
n	***	23	21	11	13	22	21	23	11	17

Notes:

Blank cells indicates no data available

2005 and 2006 data from ESI

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
10/28/2006		55			17.20	7.4	2.9	16.30		46
8/30/2007	11:45 AM	125	17.1		36.00	7.5	11.5	9.85		5
9/28/2007	7:36 AM				39.00	6.7	7	1.20		2
10/10/2008	10:12 AM	66	8.6			7.2	9.7	1.77		< 2
11/17/2008	7:28 AM	68	6.4			7.6	10	2.44		< 2
10/1/2009	9:43 AM	69	8.8		21.00	6.6	10	9.22		< 3
11/20/2009	8:37 AM	63	7.5		11.30	7.9	9.6	34.70		< 29
8/3/2010	2:10 PM	74	17.5		10.60		11	19.70		< 23
8/23/2010	1:55 AM	201	16.2		41.00	7.4	32	0.81		
10/25/2011	11:33 AM	87	7.3			6.9		4.43		< 2
11/30/2011	11:15 AM	81	7.1			6.7		1.10		< 3
9/5/2012	5:20 AM	85	17.2	82	14.00		15	52.00	1.300	< 21
9/19/2012	3:45 AM	92	12.5	87	27.00	7.5	19	26.00	0.680	< 7
9/12/2013	5:50 AM	134	17.0	94	2.50	7.9	18	12.32	0.480	< 24
9/22/2013	5:45 AM	131	12.4	97	25.00	7.7	7	11.54	0.300	< 7
8/13/2014	12:58 PM	365	15.9	74	83.00	8.4	53	8.74	0.480	< 9
9/11/2014										
8/21/2015	11:05 AM	194	17.7	85		7.5	35.5	37.50	0.300	
9/14/2015	10:51 AM	87	13.8	94		7.6	11.5	75.66	7.300	
8/22/2016	10:35 AM	107	15.6			8.0	16	21.05	0.290	
9/11/2016	2:15 PM	223	16.4	*80*		8.0	41.9	5.88	0.250	
9/7/2017	11:25 AM	127	12.7	99		7.7	20.5	6.78	0.560	
10/9/2017	2:45 PM	112	14.3	98		6.8	17	68.15	3.800	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	119	13.5	99		7.0	18.7	37.47	2.180	
2006 - 2017 STATISTICS										
Mean	***	121	13.1	89	27.30	7.2	17.9	19.42	1.431	12
Min	***	55	6.4	74	2.50	6.6	2.9	0.81	0.250	2
Max	***	365	17.7	99	83.00	8.4	53	75.66	7.300	46
n	***	21	20	10	12	20	20	22	11	15

Notes:

Blank cells indicates no data available

2006 data from ESI

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**>70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
10/28/2006		81			28.70	7.4	4.3	279.00		673
8/30/2007	12:05 PM	165	16.8		60.00	7.6	12	9.65		4
9/28/2007	7:47 AM				56.00	7.5	7	3.30		5
10/10/2008	10:22 AM	100	5.6			7.2	13	44.40		13
11/17/2008	7:35 AM	99	5.6			7.6	12	4.04		9
10/1/2009	9:50 AM	137	8.3		32.00	6.3	14	3.31		2
11/20/2009	8:37 AM	91	7.1		18.80	7.7	8.6	60.10		122
9/5/2012	4:50 PM	101	17.0	88	6.70		17	190.00	1.500	17
9/19/2012	4:00 PM	129	14.7	83	31.00		25	75.00	0.500	8
9/12/2013	6:00 PM	165	17.6	91	3.00	8.1	23	7.28	0.460	8
9/22/2013	4:15 PM	164	12.9	98	33.00	7.9	24	5.38	0.470	8
8/13/2014	12:50 PM	310	15.7	73	70.00	8.0	43	11.25	0.310	5
9/11/2014	11:30 AM	318	15.1	71	64.00	8.4	44	2.87	0.029	2
8/21/2015	11:10 AM	192	18.5	96		7.9	35	45.35	0.620	
9/14/2015	10:55 AM	91	13.9	97		7.8	12.4	76.98	6.100	
8/22/2016	10:40 AM	105	15.2			8.1	15.4	2.53	0.120	
9/11/2016	2:23 PM	136	16.4	*85*		8.1	22.5	3.13	0.200	
9/7/2017	11:35 AM	148	13.3	92		7.9	25.3	3.84	0.260	
10/9/2017	2:48 PM	116	14.5	98		6.9	17.9	72.90	3.700	
2017 STATISTICS										
Mean	***	132	13.9			7.1	21.6	38.37	1.980	
2006 - 2017 STATISTICS										
Mean	***	147	13.4	88	36.65	7.3	19.8	47.38	1.189	67
Min	***	81	5.6	71	3.00	6.3	4.3	2.53	0.029	2
Max	***	318	18.5	98	70.00	8.4	44	279.00	6.100	673
n	***	18	17	11	11	17	19	19	12	13

Notes:

Blank cells indicates no data available

2006 data from ESI

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005	***	100			16.00	6.8	12.3	73.20		169
10/28/2006	***	86			13.50	7.0	11.5	72.30		256
8/30/2007	12:20 PM	209	17.8		48.00	7.6	36.8	5.77		4
9/28/2007	8:45 AM				36.00	7.4	18	1.90		4
10/10/2008	10.36 am	116	5.7			7.3	23	1.42		< 2
11/17/2008	7:55 AM	126	6.5			7.5	27	2.05		< 2
10/1/2009	10:08 AM	151	8.4		27.00	6.7	24	44.00		16
11/20/2009	9:04 AM	19	7.3		16.40		< 2.5	11.50		11
8/3/2010	2:27 PM	121	19.3		16.90	7.7	21	53.70		86
8/23/2010	2:50 PM	355	14.6		51.00	8.1	62	0.58		< 2
10/25/2011	11:01 AM	129	7.5			6.9		3.08		< 1
11/30/2011	10:02 AM	161	7.8			7.0		0.55		< 2
9/5/2012	11:30 AM	107	19.0	92	14.00	6.7	22	325.00	17.000	200
9/19/2012	11:45 AM	141	14.0	83	17.00	7.4	33	165.00	4.700	34
9/12/2013	7:55 PM	192	15.1	99	2.60	7.9	32	38.51	1.500	20
9/22/2013	3:25 PM	216	13.2	100	38.00	8.1	38	16.01	0.890	8
8/13/2014	1:40 PM	463	16.1	79	53.00	8.5	92	1.45	0.390	5
9/11/2014	11:55 AM	583	15.0	70	51.00	8.6	130	3.94	0.120	1
8/21/2015	9:55 AM	326	17.8	93		7.9	65	12.40	0.650	
9/14/2015	10:02 AM	125	14.2	18		7.4	20	38.87	3.600	
8/22/2016	9:35 AM	143	15.4			8.1	24.1	7.10	0.390	
9/11/2016	1:07 PM	233	16.6	*82*		8.2	44.1	5.60	0.380	
9/7/2017	9:30 AM	175	12.9	97		7.5	31.2	4.07	0.600	
10/9/2017	1:00 PM	217	14.2	99		6.9	40.7	14.74	0.890	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
2017 STATISTICS										
Mean	***	196	13.6	98		7.1	35.9	9.41	0.745	
2005 - 2017 STATISTICS										
Mean	***	195	13.3	83	28.60	7.2	36.8	37.61	2.593	45.7
Min	***	19	5.7	18	2.60	6.7	2.5	0.55	0.120	1
Max	***	583	19.3	100	53.00	8.6	130	325.00	17.000	256
n	***	23	21	11	14	23	22	24	12	18

Notes:

Blank cells indicates no data available

2005 and 2006 data from ESI

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station SMB-T3-0.8, Tributary 3 to South Mountain Branch, upstream from Stateside Hotel

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
8/22/2016	11:10 AM	17	12.2			7.5	< 2.5	0.00	0.081	
9/11/2016	2:48 PM	29	12.9	*83*		7.8	< 2.5	0.00	0.054	
9/11/2016	2:23 PM	136	16.4	*85*		8.1	22.5	3.13	0.200	
9/7/2017	12:40 PM	22	10.4	104		6.3	< 2.5	1.77	0.110	
10/9/2017	4:20 PM	24	12.6	101		5.9	< 2.5	32.66	1.800	
2017 STATISTICS										
Mean	***	23	11.5	103		6.3	2.5	17.22	0.955	
2016 - 2017 STATISTICS										
Mean	***	46	12.9	93		6.8	6.5	7.51	0.449	
Min	***	17	10.4	83		5.9	2.5	0.00	0.054	
Max	***	136	16.4	104		8.1	22.5	32.66	1.800	
n	***	5	5	4		5	5	5	5	

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

* questionable value due to problematic pH meter

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
8/13/2014										
9/11/2014	11:00 AM	102	12.8	82	32.00	8.6	14.0	11.04	0.092	7
8/21/2015	11:30 AM	114	15.4	96		7.9	17.6	2.36	0.150	
9/14/2015	11:47 AM	61	12.7	95		7.9	5.7	24.17	3.100	
8/22/2016	11:25 AM	42	12.7			7.5	< 2.5	0.00	0.110	
9/11/2016	2:34 PM	86	13.7	*85*		7.9	11.4	0.00	0.150	
9/7/2017	1:05 PM	54	11.0	99		6.5	4	4.75	0.160	
10/9/2017	4:05 PM	44	13.3	100		6.4	2	76.03	4.800	
2017 STATISTICS										
Mean	***	49	12.2	100		6.5	3	40.39	2.480	
2014 - 2016 STATISTICS										
Mean	***	72	13.1	93	32.00	7.2	8.2	16.91	1.223	7
Min	***	42	11.0	82	32.00	6.4	2	0.00	0.092	7
Max	***	114	15.4	100	32.00	8.6	17.6	76.03	4.800	7
n	***	7	7	6	1	7	7	7	7	1

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station SMB-T3-0.1, Tributary 3 to South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	10:30 AM	47	14.8	93	4.50	6.5	10	75.00	1.600	43
9/19/2012	11:15 AM	58	10.6	88	6.70	7.4	13	110.00	0.410	9
9/12/2013	2:10 PM	84	15.4	102	< 2.00	7.6	14	16.19	1.200	14
9/22/2013	2:15 PM	105	11.7	100	8.80	7.8	18	11.29	0.540	8
8/13/2014	11:53 AM	191	14.9	57	26.00	7.5	31	2.47	0.071	< 1
9/11/2014	11:15 AM	182	13.4	80	20.00	8.6	32	8.68	0.073	2
8/21/2015	11:55 AM	175	16.5	95		7.9	31.2	15.76	0.260	
9/14/2015	11:47 AM	156	12.9	98		7.8	27	64.05	4.500	
8/22/2016	11:30 AM	95	13.6			7.5	13.3	21.08	0.270	
9/11/2016	3:11 PM	177	14.6	*82*		7.9	31.6	4.39	0.230	
9/7/2017	1:50 PM	107	11.5	105		7.2	15.9	4.74	0.420	
10/9/2017	3:50 PM	132	13.8	106		6.8	21.6	269.30	20.000	
2017 STATISTICS										
Mean	***	119	12.7	105		6.9	18.7	137.02	10.210	
2012 - 2017 STATISTICS										
Mean	***	126	13.6	91	11.33	7.2	21.5	50.25	2.465	13
Min	***	47	10.6	57	2.00	6.5	10	2.47	0.071	1
Max	***	191	16.5	106	26.00	8.6	32	269.30	20.000	43
n	***	12	12	11	6	12	12	12	12	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station SMB-1.8, South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	9:40 AM	37	14.7	95	3.60	6.6	7.2	45.00	1.900	45
9/19/2012	10:45 AM	51	10.6	93	7.80	7.3	10	26.00	0.440	8
9/12/2013	1:50 PM	75	15.1	100	< 2.00	7.7	11	11.48	0.780	12
9/22/2013	1:45 PM	110	11.6	100	11.00	7.9	19	8.17	0.350	6
8/13/2014	12:30 PM	205	13.0	86	28.00	8.0	33	1.99	0.038	2
9/11/2014	2:15 PM	207	12.6	81	26.00	8.6	8	8.06	0.020	1
8/21/2015	12:10 PM	180	15.1	99		7.8	32.4	7.69	0.280	
9/14/2015	11:37 AM	137	12.8	96		7.8	22.7	51.82	4.800	
8/22/2016	11:50 AM	103	13.1			7.8	15.1	8.68	0.150	
9/11/2016	3:30 PM	178	13.5	*81*		7.9	31.9	1.47	0.110	
9/7/2017	2:20 PM	113	11.3	96		7.2	17.2	3.89	0.150	
10/9/2017	3:30 PM	185	12.7	100		6.9	33.4	91.88	5.900	
2017 STATISTICS										
Mean	***	149	12.0	98		7.8	25.3	47.89	3.025	
2012 - 2017 STATISTICS										
Mean	***	132	13.0	93	13.07	7.3	20.1	22.18	1.243	12
Min	***	37	10.6	81	2.00	6.6	7.2	1.47	0.020	1
Max	***	207	15.1	100	28.00	8.6	33.4	91.88	5.900	45
n	***	12	12	11	6	12	12	12	12	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Event Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	9:15 AM	42	15.0	95	4.30	6.7	8.6	48.00	2.300	45
9/19/2012	10:25 AM	37	10.8	91	9.20	7.4	13	53.00	0.440	9
9/12/2013	12:30 PM	86	15.3	103	< 2.00	7.7	14	20.02	1.200	17
9/22/2013	1:30 PM	133	12.0	102	12.00	7.9	23	8.25	0.350	6
8/13/2014	3:05 PM	212	13.6	77	32.00	8.5	34	7.06	0.044	1
9/11/2014	2:27 PM	214	13.1	83	30.00	8.5	38	6.83	0.020	1
8/21/2015	12:25 PM	194	15.4	100		7.8	35.5	3.13	0.140	
9/14/2015	11:23 AM	126	13.2	98		7.7	20.3	49.86	6.100	
8/22/2016	12:05 PM	112	13.3			7.9	17.1	5.78	0.110	
9/11/2016	3:48 PM	178	13.9	*81*		7.9	31.8	0.24	0.200	
9/7/2017	2:30 PM	125	11.6	95		7.2	19.9	3.23	0.130	
10/9/2017	3:17 PM	203	13.6	103		7.0	37.4	15.01	1.000	
2017 STATISTICS										
Mean	***	164	12.6	99		7.0	28.7	9.12	0.565	
2012 - 2017 STATISTICS										
Mean	***	138	13.4	93	14.92	7.3	24.4	18.37	1.003	13
Min	***	37	10.8	77	2.00	6.7	8.6	0.24	0.020	1
Max	***	214	15.4	103	32.00	8.5	38	53.00	6.100	45
n	***	12	12	11	6	12	12	12	12	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 100, Suite 200	
South Burlington, VT 05403	
Atten: Elvin Cordero	

PROJECT: Jay Peak WQM Project #57201.10
WORK ORDER: **1709-21321**
DATE RECEIVED: September 08, 2017
DATE REPORTED: September 27, 2017
SAMPLER: Elvin, Jason

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and “N” the Plattsburgh, NY lab under certification ELAP 11892. “Sub” indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. “A” indicates the referenced laboratory is NELAC accredited for the parameter reported. “N” indicates the laboratory is not accredited. “U” indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an “A” meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 09/27/2017

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1709-21321**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED 09/08/2017

001 Site: JB-T13-0.2 Date Sampled: 9/7/17 Time: 10:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.13	mg/L	EPA 6010C	9/26/17	W SJM	A	

002 Site: JB-9.1 Date Sampled: 9/7/17 Time: 9:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.62	mg/L	EPA 6010C	9/26/17	W SJM	A	

003 Site: JB-8.3 Date Sampled: 9/7/17 Time: 9:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.33	mg/L	EPA 6010C	9/26/17	W SJM	A	

004 Site: JB-7.3 Date Sampled: 9/7/17 Time: 14:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.27	mg/L	EPA 6010C	9/26/17	W SJM	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/7/17 Time: 11:25

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.56	mg/L	EPA 6010C	9/26/17	W SJM	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/7/17 Time: 11:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.26	mg/L	EPA 6010C	9/26/17	W SJM	A	

007 Site: JB-T9-0.1 Date Sampled: 9/7/17 Time: 9:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.60	mg/L	EPA 6010C	9/26/17	W SJM	A	

008 Site: SMB-T3-0.8 Date Sampled: 9/7/17 Time: 12:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.11	mg/L	EPA 6010C	9/26/17	W SJM	A	

009 Site: SMB-T3-0.5 Date Sampled: 9/7/17 Time: 13:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	

Laboratory Report DATE REPORTED: 09/27/2017

CLIENT: Vanasse Hangen Brustlin, Inc.
PROJECT: Jay Peak WQM Project #57201.10

WORK ORDER: **1709-21321**
DATE RECEIVED 09/08/2017

009 Site: SMB-T3-0.5 Date Sampled: 9/7/17 Time: 13:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.16	mg/L	EPA 6010C	9/26/17	W SJM	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/7/17 Time: 13:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.42	mg/L	EPA 6010C	9/26/17	W SJM	A	

011 Site: SMB-1.8 Date Sampled: 9/7/17 Time: 14:20

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.15	mg/L	EPA 6010C	9/26/17	W SJM	A	

012 Site: SMB-1.2 Date Sampled: 9/7/17 Time: 14:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/17	W SJM	A	
Iron, Total	0.13	mg/L	EPA 6010C	9/26/17	W SJM	A	

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 100, Suite 200	
South Burlington, VT 05403	
Atten: Elvin Cordero	

PROJECT: Jay Peak WQM Project #57201.10
WORK ORDER: **1710-24273**
DATE RECEIVED: October 10, 2017
DATE REPORTED: October 19, 2017
SAMPLER: JMD, EC

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 10/19/2017

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1710-24273**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED 10/10/2017

001 Site: JB-T13-0.2 Date Sampled: 10/9/17 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	0.12	mg/L	EPA 6010C	10/18/17	W SJM	A	

002 Site: JB-9.1 Date Sampled: 10/9/17 Time: 14:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	0.64	mg/L	EPA 6010C	10/18/17	W SJM	A	

003 Site: JB-8.3 Date Sampled: 10/9/17 Time: 12:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	0.28	mg/L	EPA 6010C	10/18/17	W SJM	A	

004 Site: JB-7.3 Date Sampled: 10/9/17 Time: 15:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	0.99	mg/L	EPA 6010C	10/18/17	W SJM	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 10/9/17 Time: 14:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	3.8	mg/L	EPA 6010C	10/18/17	W SJM	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 10/9/17 Time: 14:48

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	3.7	mg/L	EPA 6010C	10/18/17	W SJM	A	

007 Site: JB-T9-0.1 Date Sampled: 10/9/17 Time: 13:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	0.89	mg/L	EPA 6010C	10/18/17	W SJM	A	

008 Site: SMB-T3-0.8 Date Sampled: 10/9/17 Time: 16:20

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	1.8	mg/L	EPA 6010C	10/18/17	W SJM	A	

009 Site: SMB-T3-0.5 Date Sampled: 10/9/17 Time: 16:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	

Laboratory Report DATE REPORTED: 10/19/2017

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1710-24273**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED 10/10/2017

009 Site: SMB-T3-0.5 Date Sampled: 10/9/17 Time: 16:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	4.8	mg/L	EPA 6010C	10/18/17	W SJM	A	

010 Site: SMB-T3-0.1 Date Sampled: 10/9/17 Time: 15:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	20	mg/L	EPA 6010C	10/18/17	W SJM	A	

011 Site: SMB-1.8 Date Sampled: 10/9/17 Time: 15:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	5.9	mg/L	EPA 6010C	10/18/17	W SJM	A	

012 Site: SMB-1.2 Date Sampled: 10/9/17 Time: 15:17

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/17/17	W SJM	A	
Iron, Total	1.0	mg/L	EPA 6010C	10/18/17	W SJM	A	

APPENDIX 3

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/11/2009	10:30 AM	55	2.2		18.00	6.8	3.5	0.00	<2
4/21/2009	12:01 PM	61	6.4		9.55	6.6	<2.5	0.00	
3/12/2013	12:46 PM	30	0.8	97		8.5		0.00	
4/27/2013	13:01 PM	22	5.8	130		6.7		0.88	
4/18/2014	11:45 AM	30	2.2	97		8.6		0.24	<2
4/28/2014	3:40 PM	27	3.7	98		7.7		0.20	
4/10/2015	9:40 AM	40	1.5	*158*		7.4	<2.5	0.01	
4/15/2015	11:28 AM	19	2.2	*112*		7.5	<8	0.29	
3/18/2016	2:24 PM	13	2.3			7.2	<2.5	1.02	
4/8/2016	10:30 AM	12	0.2	94		8.1	<2.5	2.82	
4/3/2017	10:15 AM	20	2.3	*75*		8.0	<2.5	1.43	
4/13/2017	10:16 AM	10	1.4	84		7.8	<2.5	0.00	
2017 STATISTICS									
Mean	***	15	1.9	79.7		7.89	2.5	0.72	
2009-2017 STATISTICS									
Mean	***	28	2.6	105	13.78	7.16	3.3	0.57	<2
Min	***	10	0.2	75	9.55	6.55	<2.5	0.00	<2
Max	***	61	6.4	158	18.00	8.60	8	2.82	<2
n	***	12	12	9	2	12	8	12	2

Notes:
Blank cells indicates no data available
*** indicates not applicable
pH statistics based on Hydrogen Ion concentration

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/
2015 Chloride calculated using site-specific regression equation y=0.2239x-7.9519 (R^2 = 0.82)

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/27/2008	10:00 AM	45	2.0		37.00	7.0	3	0.37	<2
3/12/2010	12:44 PM	89	1.6		27.00	6.6	6.4	0.50	
3/18/2010	11:25 AM	78	2.1		28.00	6.7	6	1.68	
3/11/2011	11:58 AM	39	0.1		21.00	7.6	5.7	1.79	
3/18/2011	10:00 AM	38	0.0		26.00	6.7	8.3	11.53	
3/8/2012	1:02 PM	79	0.5		21.00	6.7	30	21.70	
3/22/2012	9:48 AM	16	4.7		21.00	6.5	2.5	2.16	
3/12/2013	12:02 AM	88	0.3	96		8.3		4.23	
4/27/2013	12:25 PM	33	5.7	125		6.9		0.21	
4/18/2014	12:15 PM	47	2.7	98		8.3		0.44	
4/28/2014	4:10 PM	39	4.1	98		7.7		1.95	
4/10/2015	10:17 AM	111	1.5	*112*		7.8	16	1.95	
4/15/2015	12:00 PM	28	2.8	*130*		6.9	<8	1.10	
3/18/2016	3:04 PM	20	1.8			7.2	<2.5	1.20	
4/8/2016	11:05 AM	16	0.4	100		7.9	<2.5	2.49	
4/3/2017	10:53 AM	42	1.9	*86*		7.8	1.5	0.20	
4/13/2017	10:51 AM	15	1.4	93		8.6	<2.5	0.98	

2017 Statistics									
Mean	***	29	1.7	89		8.0	2	0.59	
2008 - 2017 Statistics									
Mean	***	48	2.0	104	25.86	7.0	7.3	3.20	<2
Min	***	15	0.0	86	21.00	6.5	1.5	0.20	<2
Max	***	111	5.7	130	37.00	8.6	30	21.70	<2
n	***	17	17	9	7	17	13	17	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
1/30/2008	8:30 AM	37	2.1		13.00	7.1	2.7		
2/11/2009	10:30 AM	174	1.7		28.00	7.9	42	0.66	<2
4/21/2009	1:30 PM	25	5.6		9.95	6.7	3.2	0.00	
3/12/2010	11:12 AM	107	1.2			6.7	22	0.54	
3/18/2010	10:22 AM	114	1.4		23.00	6.5	18	1.85	
3/11/2011	11:00 AM	39	0.5		21.00	6.9	18	0.64	
3/18/2011	9:15 AM	74	0.1		28.00	6.7	23	35.64	
3/8/2012	11:27 AM	162	0.4		20.00	6.7	77	140.70	
3/22/2012	10:20 AM	28	5.7		24.00	6.7	5.1	3.34	
3/12/2013	11:05 AM	407	1.1	97		8.2		23.40	
4/27/2013	11:30 AM	33	5.1	133		7.1		0.80	
4/18/2014	1:10 PM	109	3.3	99		8.3		1.12	
4/28/2014	2:40 PM	80	4.7	95		8.6		2.70	
4/10/2015	11:13 AM	195	0.7	*136*		8.0	38	20.50	
4/15/2015	12:41 PM	80	3.5	*119*		7.1	10	7.68	
3/18/2016	1:38 PM	74	2.3			6.2	8.5	4.70	
4/8/2016	12:30 PM	23	0.8	96		8.0	<2.5	3.45	
4/3/2017	11:30 AM	89	1.8	*88*		7.9	11.9	0.00	
4/13/2017	12:50 PM	20	2.8	87		8.5	<2.5	2.90	
2017 STATISTICS									
Mean	***	54	2.3	87		8.1	7.2	1.45	
2008 - 2017 STATISTICS									
Mean	***	98	2.4	106	20.87	6.9	19	13.92	2
Min	***	20	0.1	87	9.95	6.2	2.5	0.00	2
Max	***	407	5.7	136	28.00	8.6	77	140.70	2
n	***	19	19	9	8	19	15	18	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/18/2014	5:00 PM	89	3.6	99		8.3		2.60	
4/28/2014	1:40 PM	67	5.0	99		8.9		2.65	
4/10/2015	12:46 PM	230	0.9	*121*		8.4	50	38.29	
4/15/2015	1:00 PM	42	4.0	*114*		7.0	<8	5.42	
3/18/2016	3:33 PM	44	2.2			7.7	1.9	3.64	
4/8/2016	1:15 PM	30	1.1	95		7.8	<2.5	4.99	
4/3/2017	12:15 PM	83	2.1	*85*		7.7	10.6	0.00	
4/13/2017	11:11 AM	24	1.9	94		8.7	<2.5	0.20	
2017 STATISTICS									
Mean	***	53	2.0	89		8.0	6.5	0.10	
2014 - 2017 STATISTICS									
Mean	***	76	2.6	101		7.6	12.6	7.22	
Min	***	24	0.9	85		7.0	1.9	0.00	
Max	***	230	5.0	121		8.9	50	38.29	
n	***	8	8	7		8	6	8	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
3/8/2012	1:02 PM	136	0.4			6.4		265.00	
3/22/2012	10:54 AM	56	6.9			6.9		24.94	
3/12/2013	1:40 PM	263	0.8	67		8.3		77.06	
4/27/2013	1:47 PM	91	8.5	128		7.3		12.30	
4/18/2014	12:35 PM	184	2.5	95		8.3		11.58	
4/28/2014	3:10 PM	93	4.4	101		8.2		20.17	
4/10/2015	12:00 PM	347	2.8	*91*		8.2	82	126.20	
4/15/2015	12:12 PM	78	1.2	*141*		6.8	9.5	15.54	
3/18/2016	3:20 PM	50	1.6			7.5	3.3	5.12	
4/8/2016	11:30 AM	45	0.1	92		7.5	2.1	18.31	
4/3/2017	12:46 PM	110	1.2	*79*		7.6	16.7	0.00	
4/13/2017	1:11 PM	57	3.3	86		8.3	4.9	5.31	
2017 STATISTICS									
Mean	***	84	2.3	83		7.8	10.8	2.66	
2012-2017 STATISTICS									
Mean	***	126	2.8	98		7.1	19.8	48.46	
Min	***	45	0.1	67		6.4	2.1	0.00	
Max	***	347	8.5	141		8.3	82	265.00	
n	***	12	12	9		12	6	12	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
3/18/2011	10:33 AM	83	0.0			6.5		106.10	
3/8/2012	1:09 PM	160	0.4			6.6		267.60	
3/22/2012	11:01 AM	41	7.2			6.9		20.61	
3/12/2013	2:00 PM	342	1.4			8.4		120.00	
4/27/2013	1:55 PM	104	8.8	126		7.5		9.50	
4/18/2014	12:50 PM	295	3.3	95		7.8		29.58	
4/28/2014	3:00 PM	131	5.2	101		8.2		15.02	
4/10/2015	12:14 PM	412	0.9	*93*		7.8	100	93.24	
4/15/2015	12:20 PM	95	1.7	*121*		7.0	13.2	15.63	
3/18/2016	3:25 PM	69	1.5			7.6	7.5	4.98	
4/8/2016	11:48 AM	54	0.2	96		7.6	4.2	20.48	
4/3/2017	1:00 PM	141	2.7	*82*		7.6	23.5	6.37	
4/13/2017	1:15 PM	66	3.0	85		8.4	6.7	1.86	
2017 STATISTICS									
Mean	***	103	2.9	84		7.8	15.1	4.12	
2011 - 2017 STATISTICS									
Mean	***	153	2.8	100		7.2	25.8	54.69	
Min	***	41	0.0	82		6.5	4.2	1.86	
Max	***	412	8.8	126		8.4	100	268	
n	***	13	13	8		13	6	13	

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
1/30/2008	8:47 AM	162	1.6		28	7.3	38		
2/8/2008	9:45 AM	194	2.1		29	7.3	54	0.59	3
3/12/2010	11:41 AM	545	1.5			6.4	130	1.72	
3/18/2010	10:41 AM	334	1.9		25	6.9	75	2.72	
3/11/2011	10:30 AM	409	1.0		41	6.8	180	1.39	
3/18/2011	9:28 AM	116	0.0		19	6.6	49	95.27	
3/8/2012	11:47 AM	232	0.4		21	6.4	110	77.98	
3/22/2012	10:30 AM	95	7.9		20	7.0	29	7.06	
3/12/2013	10:36 AM	530	0.0	97		8.0		28.70	
4/27/2013	11:46 AM	142	7.7	122		7.5		1.01	
4/18/2014	1:20 PM	409	4.0	95		7.7		3.12	
4/28/2014	2:25 PM	224	5.9	98		8.9		8.55	
4/10/2015	10:52 AM	751	0.7	*135*		8.4	200	49.96	
4/15/2015	12:34 PM	136	3.4	*126*		7.0	22.5	43.14	
3/18/2016	1:45 PM	136	2.3			7.0	22.5	7.20	
4/8/2016	12:10 PM	122	1.1	95		7.8	19.4	20.27	
4/3/2017	11:50 AM	398	1.7	*83*		7.7	81.1	0.00	
4/13/2017	12:35 PM	108	2.8	89		8.4	16.3	1.35	
2017 Statistics									
Mean	***	253	2.3	86		7.9	48.7	0.7	
2008-2017 Statistics									
Mean	***	280	2.6	104	26.1	7.0	73.3	20.59	3
Min	***	95	0.0	83	19.0	6.4	16.3	0.00	3
Max	***	751	7.9	135	41.0	8.9	200	95.27	3
n	***	18	18	0	7	18	14	17	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/10/2015	1:35 PM	174	2.8	*97*		8.4	31	22.30	
4/15/2015	1:17 PM	30	2.9	*130*		6.9	<8.0	5.04	
3/18/2016	3:57 PM	21	1.7			7.6	<2.5	3.20	
4/8/2016	2:00 PM	42	0.8	96		7.9	1.3	3.00	
4/3/2017	1:15 PM	110	2.9	*85*		7.7	16.6	16.00	
4/13/2017	12:00 PM	17	2.1	86		8.5	<2.5	0.66	
2017 STATISTICS									
Mean	***	64	2.5	85		7.9	9.6	8.33	
2015 - 2017 STATISTICS									
Mean	***	66	2.2	99		7.5	10.3	8.37	
Min	***	17	0.8	85		6.9	1.3	0.66	
Max	***	174	2.9	130		8.5	31	22.30	
n	***	6	6	5		6	6	6	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/27/2013	2:07 PM	158	6.7	130		7.1		0.93	
4/18/2014	3:30 PM	270	4.2	98		8.4		1.20	
4/28/2014	2:00 PM	188	4.8	94		8.8		1.07	
4/10/2015	1:01 PM	408	3.6	*171*		7.9	99	2.82	
4/15/2015	1:08 PM	106	3.7	*121*		6.9	15.9	3.49	
3/18/2016	3:46 PM	95	2.5			7.6	13.3	3.45	
4/8/2016	1:35 PM	92	1.5	98		7.7	12.6	8.92	
4/3/2017	12:31 PM	178	2.7	*86*		7.6	32	0.00	
4/13/2017	11:30 AM	86	2.1	91		8.6	11.2	0.05	
2017 STATISTICS									
Mean	***	132	2.4	88		7.9	21.6	0.03	
2013 - 2017 STATISTICS									
Mean	***	176	3.5	111		7.5	30.7	2.44	
Min	***	86	1.5	86		6.9	11.2	0.00	
Max	***	408	6.7	171		8.8	99	8.92	
n	***	9	9	8		9	6	9	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2017
Winter Water Chemistry Sampling
Station SMB-T3-0.8, Tributary 3 to South Mountain Branch, upstream from Stateside Hotel

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/3/2017	1:30 PM	22	3.7	*82*		7.6	<2.5	0.00	
4/13/2017	11:48 AM	9	2.0	88		8.6	<2.5	4.79	

2017 STATISTICS									
Mean	***	15	2.9	85		7.8	2.5	2.40	
2017 STATISTICS									
Mean	***	15	2.9	85		7.8	2.5	2.40	
Min	***	9	2.0	82		7.6	2.5	0.00	
Max	***	22	3.7	88		8.6	2.5	4.79	
n	***	2	2	2		2	2	2	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

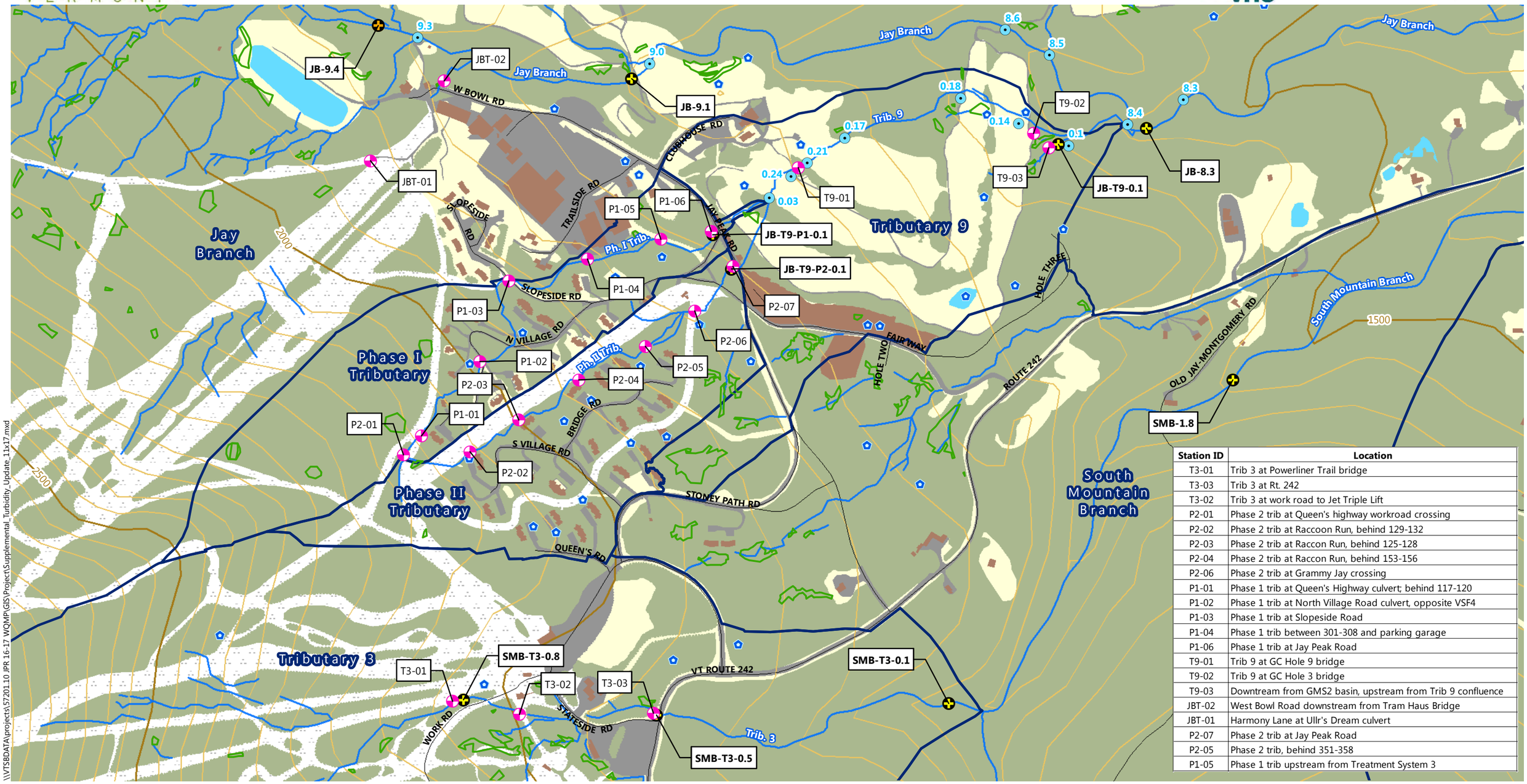
Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

APPENDIX 4

JAY PEAK VERMONT

vhb

February 06, 2017



Station ID	Location
T3-01	Trib 3 at Powerliner Trail bridge
T3-03	Trib 3 at Rt. 242
T3-02	Trib 3 at work road to Jet Triple Lift
P2-01	Phase 2 trib at Queen's highway workroad crossing
P2-02	Phase 2 trib at Raccoon Run, behind 129-132
P2-03	Phase 2 trib at Raccon Run, behind 125-128
P2-04	Phase 2 trib at Raccon Run, behind 153-156
P2-06	Phase 2 trib at Grammy Jay crossing
P1-01	Phase 1 trib at Queen's Highway culvert; behind 117-120
P1-02	Phase 1 trib at North Village Road culvert, opposite VSF4
P1-03	Phase 1 trib at Slopeside Road
P1-04	Phase 1 trib between 301-308 and parking garage
P1-06	Phase 1 trib at Jay Peak Road
T9-01	Trib 9 at GC Hole 9 bridge
T9-02	Trib 9 at GC Hole 3 bridge
T9-03	Downtream from GMS2 basin, upstream from Trib 9 confluence
JBT-02	West Bowl Road downstream from Tram Haus Bridge
JBT-01	Harmony Lane at Ullr's Dream culvert
P2-07	Phase 2 trib at Jay Peak Road
P2-05	Phase 2 trib, behind 351-358
P1-05	Phase 1 trib upstream from Treatment System 3

600 300 0 600 Feet

Turbidity Monitoring Station (VHB)

Water Quality Monitoring Station (VHB)

Water Quality Monitoring Station

Benchmark Station

Reference Station

River Mile (VHB)

Stormwater Feature (VHB)

Wetland (VHB)

Watershed Boundary (VHB)

2012 Landuse/Landcover (VHB)

Building

Forest

Open

Ski Trails

Transportation

Water

Stream (VHB/VCGI)

Road (VTrans)

500 ft Contour (VCGI)

50 ft Contour (VCGI)

Jay Peak Resort Water Quality Monitoring | Jay, Vermont

Supplemental Turbidity Monitoring Station Location Map

Sources:
VCGI (Vermont Center for Geographic Information - Various Dates)
VTrans (Vermont Department of Transportation - 2015)
VHB - 2011-2016

\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\GIS\Project\Supplemental_Turbidity_Update_11x17.mxd

Jay Peak Resort, Jay Vermont

Water Quality Monitoring Plan 2017

Supplemental Turbidity Monitoring

	Date	Location	8/23/2017	9/4/2017	9/5/2017	9/6/2017	9/7/2017	9/28/2017	10/5/2017	10/9/2017	10/10/2017
	Rainfall Depth (in)		0.87	1.00	0.08	0.37	0.37	0.29	0.41	0.58	1.14
	Sampler		BC/CP	C/J	J/K	J/K	J/K	K/C	C/K	K	TL
	0.02 ntu Standard (start)		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	10 ntu Standard (start)		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.02	4.38	0.02	0.02	0.02	0.02	0.02	0.00	0.02
	10 ntu Standard (end)		10.17	14.06	10.00	10.00	10.00	10.00	10.00	10.21	10.00
	1000 ntu Standard (end)		1027.00	715.10	1000.00	1000.00	1000.00	1000.00	1000.00	1048.00	1000.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	0.64	3.20	0.33	0.87	1.23	2.44	0.74	2.47	0.71
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	57.40	2.05	0.55	0.38	2.90	0.92	1.19	7.21	1.29
	P1-01	Phase I Tributary (P1-01)	1.14	1.77	0.39	1.45	0.68	0.71	1.34	2.10	0.95
	P1-02	Phase I Tributary (P1-02)	7.75	4.62	0.50	1.08	20.09	3.64	4.72	21.87	2.17
	P1-03	Phase I Tributary (P1-03)	2.92	4.29	0.75	1.74	6.53	2.69	2.12	35.66	1.96
	P1-04	Phase I Tributary (P1-04)	1.59	3.99	1.09	1.24	4.57	0.84	4.60	15.18	1.72
	P1-05	Phase I Tributary (P1-05)	21.68	8.37	2.79	3.78	4.69	1.97	1.05	19.13	5.54
	P1-06	Phase I Tributary (P1-06)	12.68	6.59	1.55	2.15	6.32	2.72	1.90	15.71	4.60
	P2-01	Phase II Tributary (P2-01)	2.83	2.8	1.03	0.94	2.42	Dry	Dry	24.83	1.50
	P2-02	Phase II Tributary (P2-02)	1.75	4.20	1.64	1.07	6.60	1.07	2.61	46.61	2.35
	P2-03	Phase II Tributary (P2-03)	1.95	5.65	1.24	1.25	2.85	1.70	1.58	20.01	1.56
	P2-04	Phase II Tributary (P2-04)	15.80	7.07	2.82	2.48	3.98	0.88	1.33	19.47	5.05
	P2-05	Phase II Tributary (P2-05)	7.87	7.88	2.13	1.08	3.00	0.89	0.61	9.66	2.91
	P2-06	Phase II Tributary (P2-06)	2.44	2.53	0.89	0.54	2.18	0.84	7.98	18.75	2.69
	P2-07	Phase II Tributary (P2-07)	3.63	5.41	0.42	1.47	3.44	2.79	1.23	14.47	2.33
	T9-01	Tributary 9 to Jay Branch (T9-01)	35.18	20.88	9.92	8.81	6.05	16.86	10.28	68.92	13.40
	T9-02	Tributary 9 to Jay Branch (T9-02)	20.93	8.19	2.29	2.35	9.78	2.73	4.87	19.45	11.36
	T9-03	Tributary 9 to Jay Branch (T9-03)	15.36	7.42	1.19	2.89	7.49	90.40	50.31	16.23	12.77
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	3.81	1.99	0.07	0.51	0.72	0.43	1.43	0.93	0.39
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	0.96	1.98	0.17	0.28	1.19	0.10	1.30	1.32	0.14
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	0.89	2.49	1.19	0.49	1.47	0.05	2.16	1.39	0.23

Notes:

All values reported as NTU

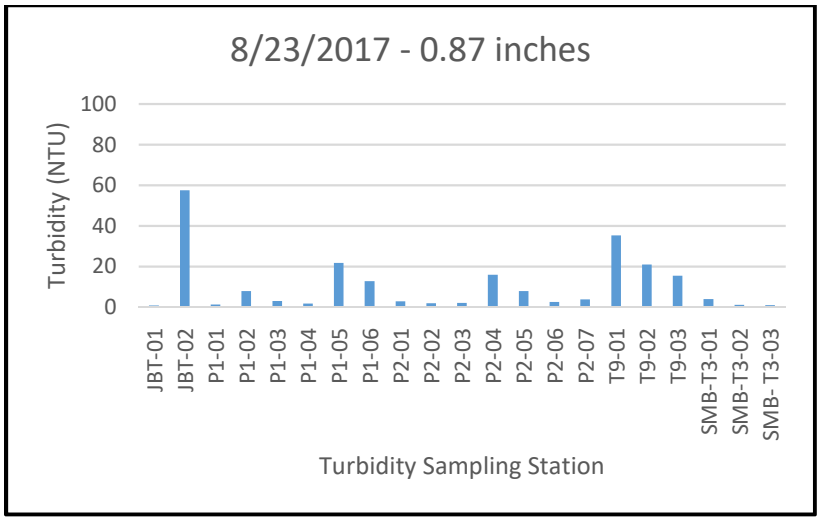
Highlighted cells indicate dry conditions or greater than 25 NTU

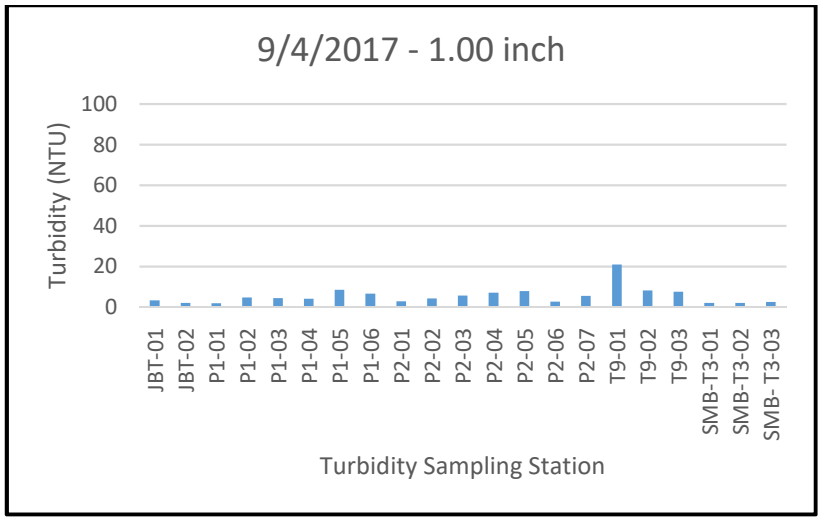
Jay Peak Resort, Jay Vermont
Water Quality Monitoring Plan 2017
Supplemental Turbidity Monitoring

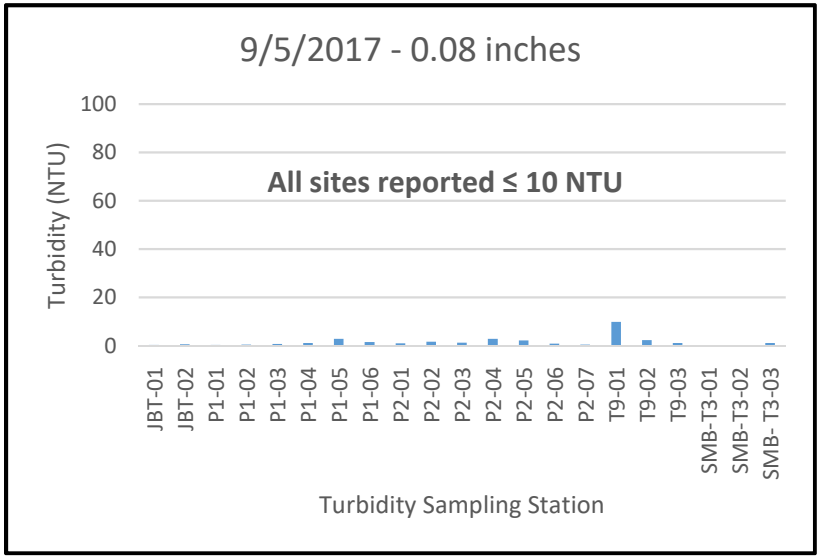
	Date	Location	10/16/2017	11/2/2017	11/3/2017	11/6/2017	11/7/2017
	Rainfall Depth (in)		0.46	0.37	0.55	0.71	0.12
	Sampler		C/K	K/C	K/C/J	J/K	k/j
	0.02 ntu Standard (start)		0.02	0.02	0.02	0.02	0.02
	10 ntu Standard (start)		10.00	10.00	10.00	10.00	10.00
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.60	2.20	2.76	1.83	3.14
	10 ntu Standard (end)		10.68	14.32	11.96	14.02	11.14
	1000 ntu Standard (end)		966.70	1100.00	681.80	1088.0	694.40
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	0.28	0.46	1.79	0.14	0.00
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	1.13	5.59	143.50	0.00	0.00
	P1-01	Phase I Tributary (P1-01)	3.31	0.00	3.38	7.79	0.01
	P1-02	Phase I Tributary (P1-02)	5.41	9.28	147.00	2.19	1.85
	P1-03	Phase I Tributary (P1-03)	2.33	7.37	130.80	1.56	0.93
	P1-04	Phase I Tributary (P1-04)	1.47	4.62	92.61	0.98	0.24
	P1-05	Phase I Tributary (P1-05)	1.22	2.71	2.62	0.84	0.89
	P1-06	Phase I Tributary (P1-06)	1.71	2.91	6.29	0.65	0.55
	P2-01	Phase II Tributary (P2-01)	1.71	10.81	9.98	6.02	0.56
	P2-02	Phase II Tributary (P2-02)	2.39	19.63	349.10	7.39	0.62
	P2-03	Phase II Tributary (P2-03)	2.98	6.60	121.70	2.34	1.55
	P2-04	Phase II Tributary (P2-04)	1.13	3.15	145.30	2.60	0.85
	P2-05	Phase II Tributary (P2-05)	1.02	1.51	61.01	0.94	0.41
	P2-06	Phase II Tributary (P2-06)	1.75	0.05	66.20	0.13	0.53
	P2-07	Phase II Tributary (P2-07)	1.54	3.14	59.16	0.00	0.74
	T9-01	Tributary 9 to Jay Branch (T9-01)	1.64	2.04	110.90	4.40	2.85
	T9-02	Tributary 9 to Jay Branch (T9-02)	1.38	3.33	85.60	3.24	17.68
	T9-03	Tributary 9 to Jay Branch (T9-03)	9.92	5.55	89.69	3.39	16.04
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	0.52	0.00	0.00	0.65	0.00
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	0.78	0.00	22.29	0.81	0.02
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	0.01	0.31	52.50	1.75	3.55

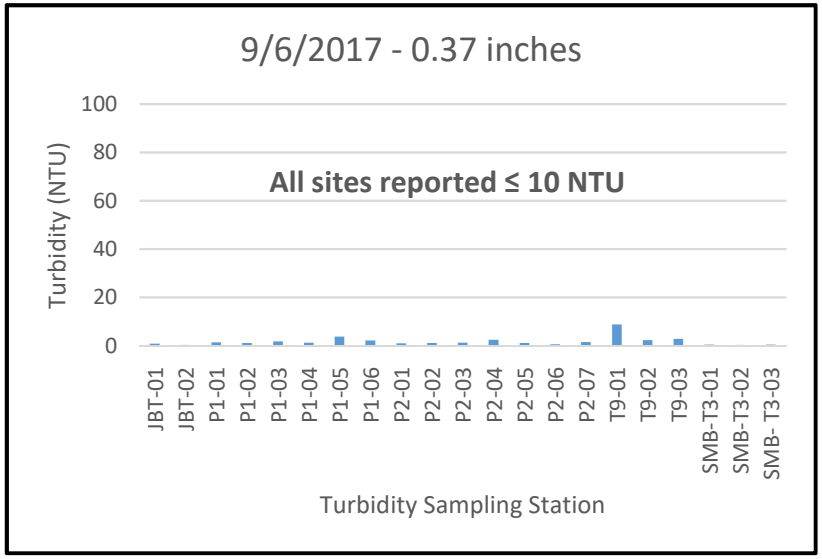
Notes:
All values reported as NTU
Highlighted cells indicate dry conditions or greater than 25 NTU

Jay Peak Resort
Supplemental Turbidity Monitoring Results
2017 Rainfall Events

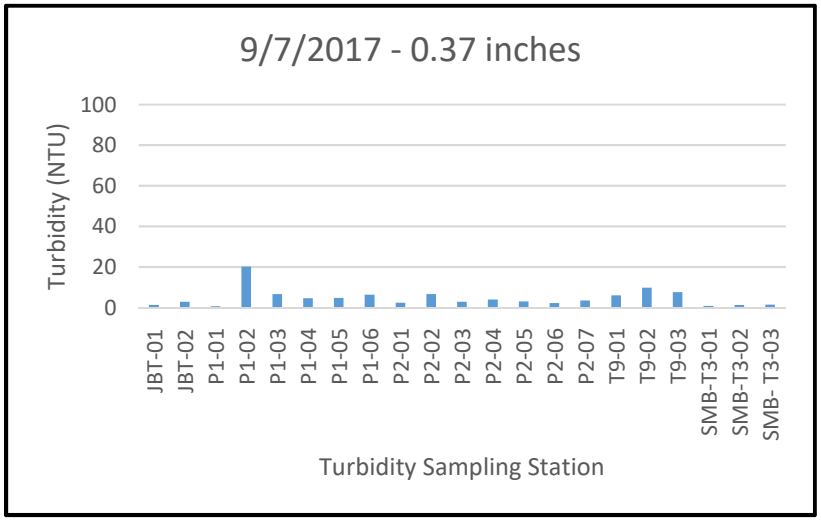


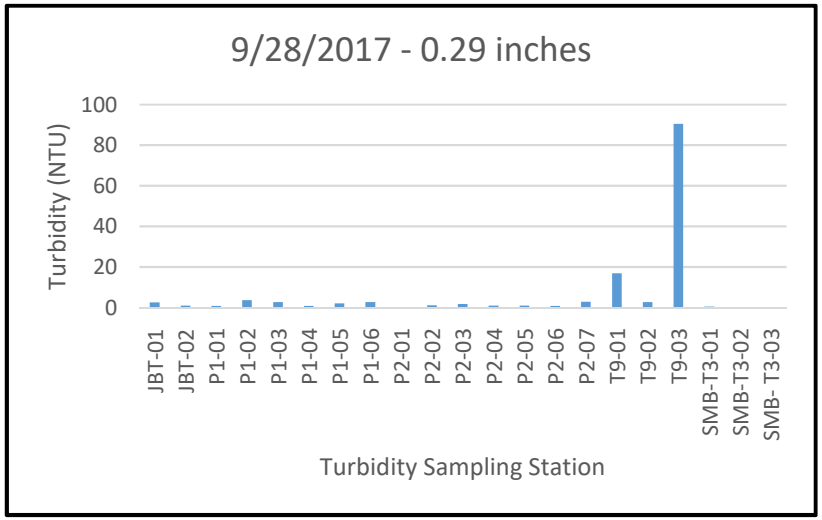


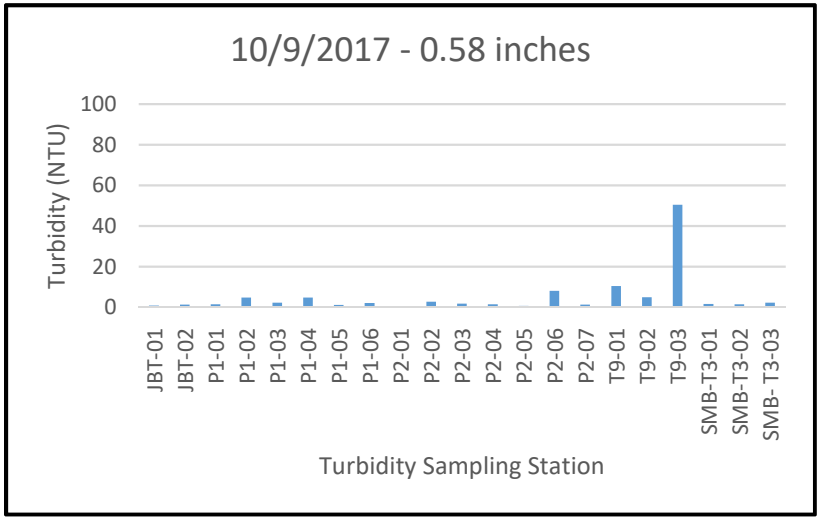


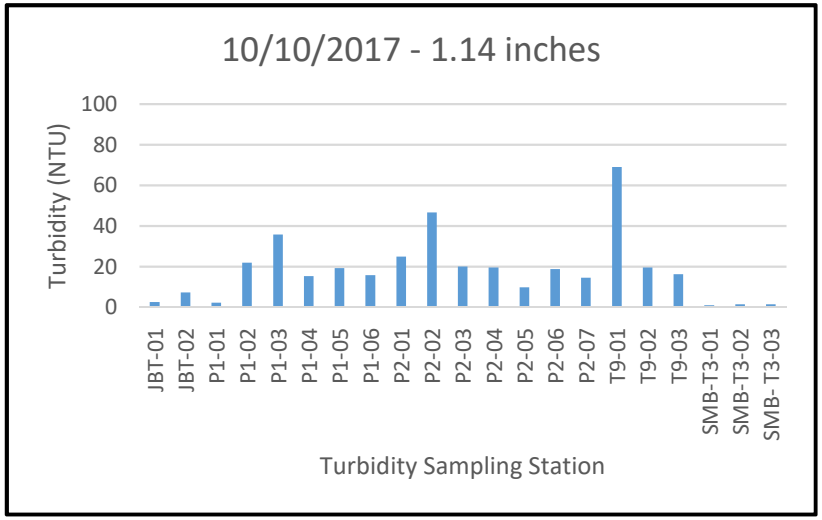


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2017 Rainfall Events

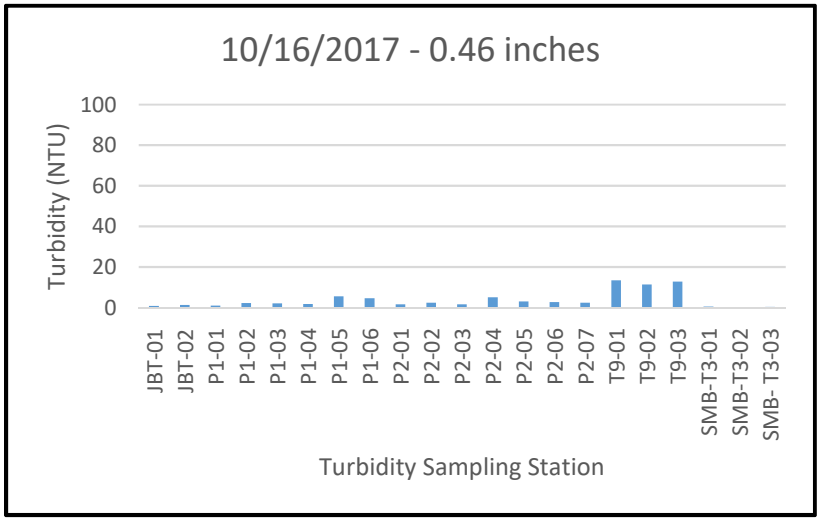


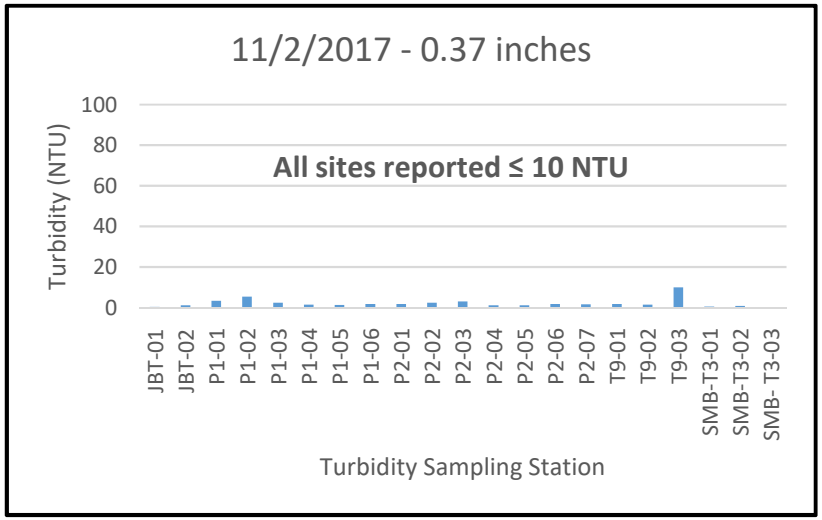


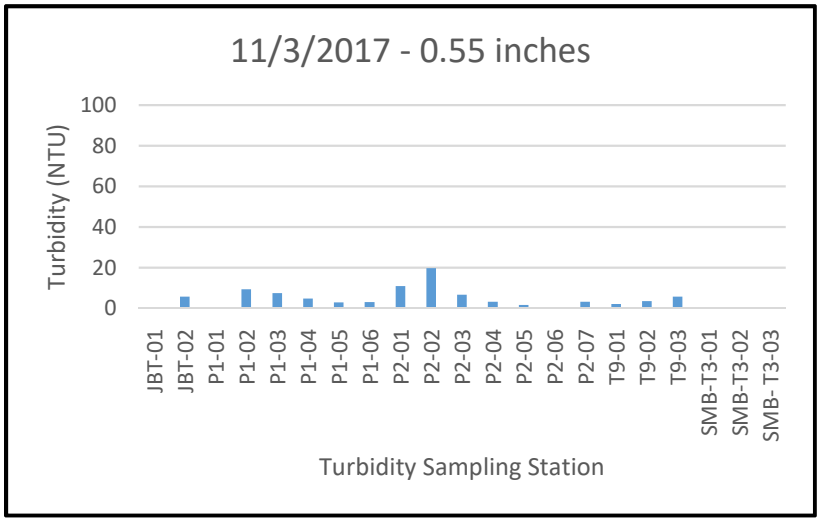


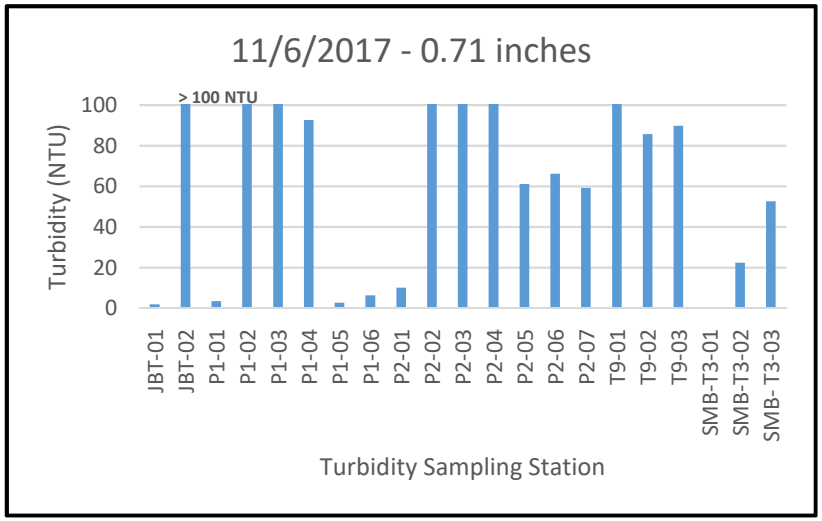


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2017 Rainfall Events

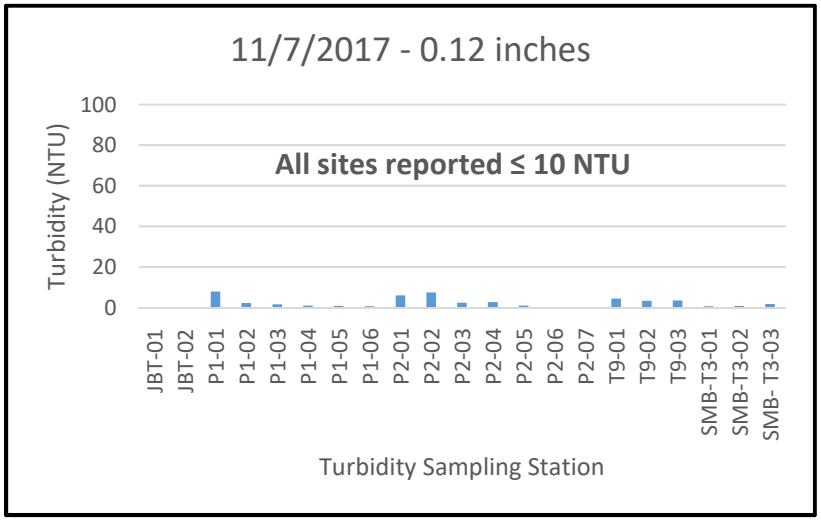








Jay Peak Resort
Supplemental Turbidity Monitoring Results
2017 Rainfall Events



APPENDIX 5

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2017

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Upper Jay Branch	JB-T13-0.2	2004	0-25%	2.7	***	64-90
		2005	---	***	***	16-64
		2006	---	***	***	16-64
		2007	25-50%	2.0	2.0	64-128
		2008	0-50%	3.0	2.3	64-129
		2009	5-20%	2.6	2.6	64-128
		2010	5-25%	4.0	4.0	36-64
		2011	5-25%	1.0	2.0	64-128
		2012	5-25%	3.0	3.0	64-256
		2013	0-25%	3.0	3.0	64-256
		2014	5-25%	2.0	2.0	64-256
		2015	25-50%	2.0	2.0	16-64
		2016	0-25%	0.0	0.0	64-256
		2017	0-25%	0.0	0.0	>256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-9.1	2012	5-25%	5.0	5.0	64-256
		2013	---	---	---	---
		2014	5-25%	1.0	1.0	64-256
		2015	25-50%	2.0	2.0	16-64
		2016	0-25%	5.0	5.0	64-256
		2017	0-25%	0.0	0.0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-8.3	2004	25-50%	4.3	***	90-128
		2005	---	***	***	64-256
		2006	---	***	***	64-256
		2007	25-50%	4.0	4.0	128-256
		2008	0-25%	4.7	4.7	63-128
		2009	25-30%	3.6	3.6	128-256
		2010	5-25%	4.0	4.0	16-32
		2011	25-50%	8.0	7.0	32-64
		2012	5-25%	8.0	8.0	64-256
		2013	25-50%	16	16	64-256
		2014	5-25%	3.0	3.0	16-64
		2015	25-50%	6.0	6.0	16-64
		2016	0-25%	3.0	3.0	64-256
		2017	0-25%	2.0	2.0	64-256

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsSUM,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2017

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-7.3	2004	0-25%	5.9	***	64-90
		2005	---	***	***	64-256
		2006	---	***	***	64-256
		2007	25-50%	4.0	4.0	128-256
		2008	0-50%	4.1	4.1	64-128
		2009	15-30%	3.7	3.7	64-128
		2010	5-25%	5.0	5.0	32-64
		2011	20-30%	10	10	30-64
		2012	5-25%	13	11	16-64
		2013	25-50%	13	13	64-256
		2014	25-50%	20	20	16-64
		2015	50-75%	3	3	16-64
		2016	0-25%	3	3	64-256
		2017	0-25%	3	3	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase I Tributary	JB-T9-P1-0.1	2004	50-75%	14.4	***	32-64
		2005	---	***	***	16-64
		2006	---	---	---	---
		2007	50-75%	10.5	10.5	64-128
		2008	---	---	---	---
		2009	---	---	---	---
		2010	---	---	---	---
		2011	---	---	---	---
		2012	---	11	14	16-64
		2013	---	7	8	16-64
		2014	---	10	8	16-64
		2015	25-50%	8	8	16-64
		2016	No sample collected			
		2017	No sample collected			

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsSUM,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2017

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase II Tributary	JB-T9-P2-0.1	2004	50-75%	25	***	8-16
		2005	---	***	***	2-16
		2006	---	---	---	---
		2007	25-50%	9.0	9.0	32-64
		2008	---	---	---	---
		2009	---	---	---	---
		2010	---	---	---	---
		2011	---	---	---	---
		2012	---	9.0	15	16-64
		2013	---	10	8.0	16-64
		2014	---	8	4	16-64
		2015	50-75%	5	5	16-64
		2016	No sample collected			
		2017	No sample collected			

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Tributary 9	JB-T9-0.1	2004	25-50%	7.6	***	32-64
		2005	---	***	***	16-64
		2006	---	***	***	16-64
		2007	50-75%	12	12	32-64
		2008	50-75%	10	9.9	32-65
		2009	40-60%	16	15	32-64
		2010	25-100%	14	14	8-16
		2011	25-75%	8	6	16-32
		2012	25-50%	16	16	2-16
		2013	25-50%	19	19	16-64
		2014	5-25%	2	2	16-64
		2015	50-75%	9	9	16-64
		2016	25-50%	5	5	16-64
		2017	25-50%	8	10	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.8	2016	0-25%	12	11	>256
		2017	0-25%	1	1	>256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.5	2014	5-25%	9	9	64-256
		2015	50-75%	6	6	16-64
		2016	No sample collected			
		2017	No sample collected			

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsSUM,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2017

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.1	2012	---	5	5	16-64
		2013	---	10	10	64-256
		2014	5-25%	8	8	64-256
		2015	50-75%	6	6	16-64
		2016	25-50%	10	10	64-256
		2017	25-50%	2	2	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.8	2012	---	8	8	16-64
		2013	---	1	1	64-256
		2014	5-25%	0	0	64-256
		2015	5-25%	0	0	64-256
		2016	No sample collected			
		2017	No sample collected			

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.2	2012	25-50 %	12	12	64-256
		2013	5-25%	9	9	64-256
		2014	5-25%	11	11	64-256
		2015	50-75%	4	4	16-64
		2016	0-25%	11	11	64-256
		2017	0-25%	3	3	64-256

--- no data available

*** no percentage due to size class variation

2004 data from Pioneer Environmental Associates LLC.

2005 and 2006 data from ESI

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: JB-T13-0.2
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	15%
Bank stability:	Exceeded

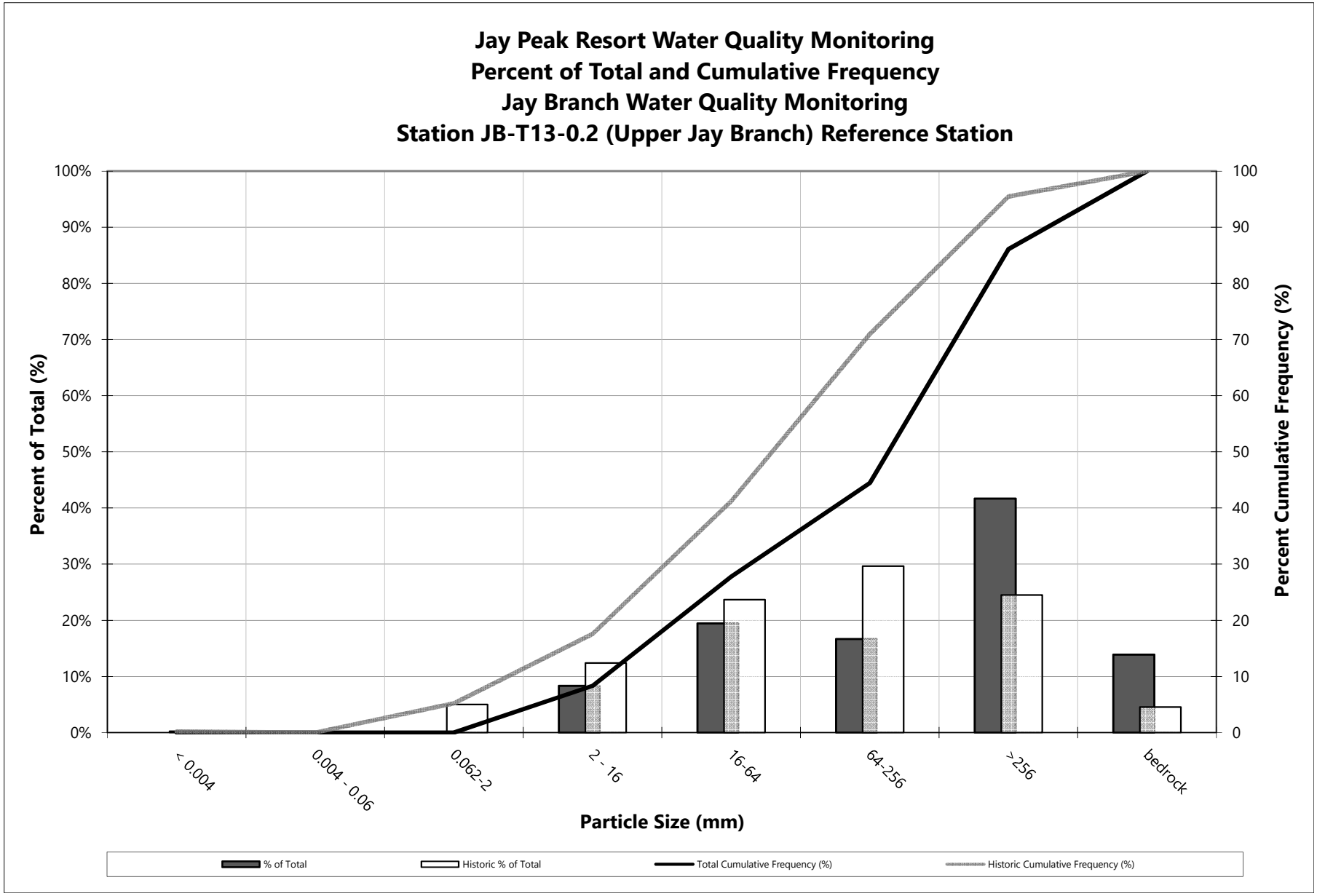
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	9	8%	9	8
Coarse gravel	16-64	21	19%	30	28
Cobble	64-256	18	17%	48	44
Boulder	>256	45	42%	93	86
Bedrock	bedrock	15	14%	108	100
	Sample Size (n)	108	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Boulder
Dominant Size Class	Boulder
% Fines	0%
% Particles < 2 mm	0%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	43	4	8	41

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	44	32	1	-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsJB-T13-0.2 chart,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: JB-9.1
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	15%
Bank stability:	Very Good

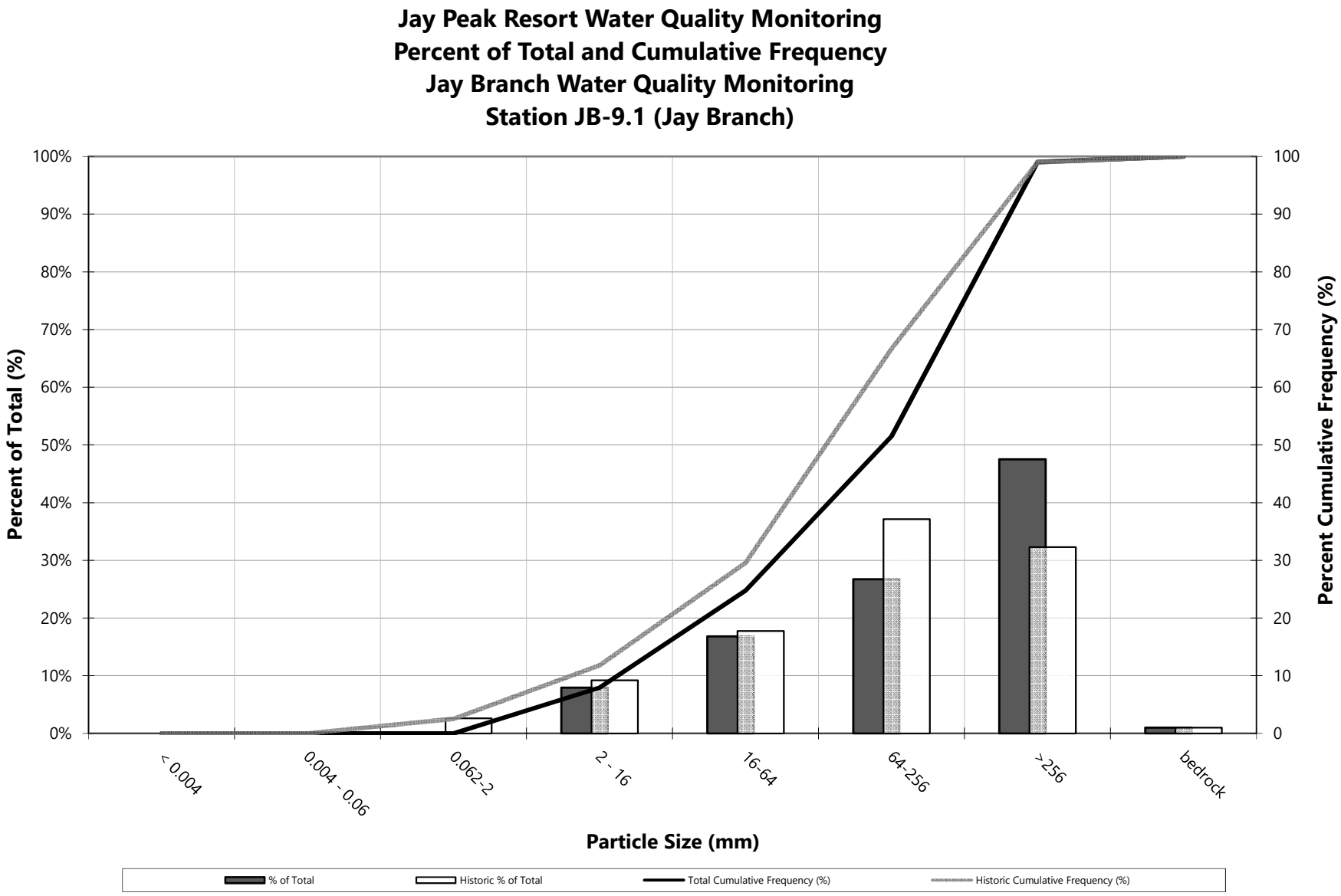
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	8	8%	8	8
Coarse gravel	16-64	17	17%	25	25
Cobble	64-256	27	27%	52	51
Boulder	>256	48	48%	100	99
Bedrock	bedrock	1	1%	101	100
	Sample Size (n)	101			
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	0%
% Particles < 2 mm	0%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	53	9	12	14

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	65	4	2	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	31	43	6	-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsJB-9.1 chart,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: JB-8.3
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	20%
Bank stability:	Very Good

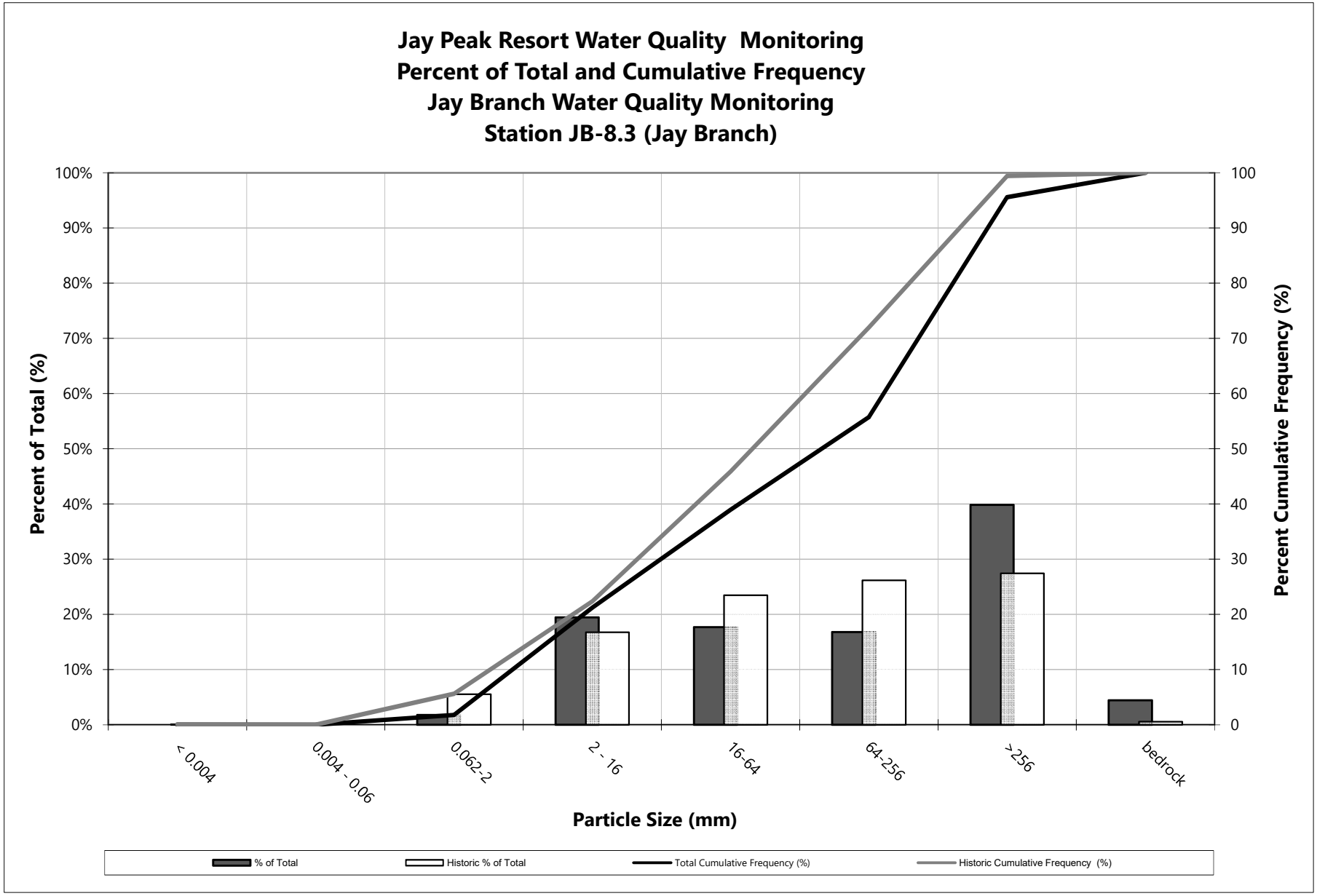
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	22	19%	24	21
Coarse gravel	16-64	20	18%	44	39
Cobble	64-256	19	17%	63	56
Boulder	>256	45	40%	108	96
Bedrock	bedrock	5	4%	113	100
	Sample Size (n)	113			
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	2%
% Particles < 2 mm	2%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	49	10	13	11

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	35	30	6	-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsJB-8.3 chart,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: JB-7.3
Sampling Date: October 6, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	15%
Bank stability:	Very Good

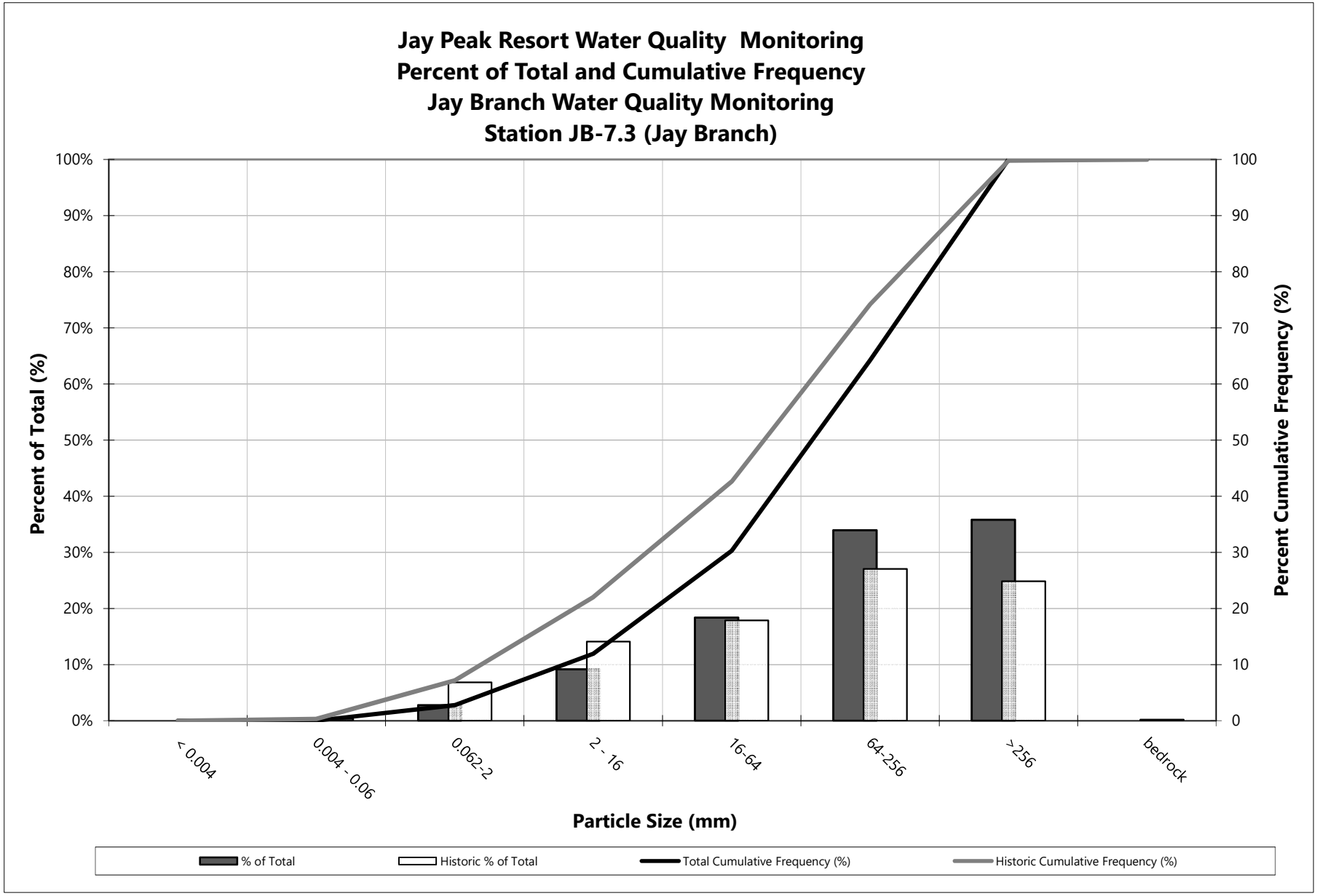
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	10	9%	13	12
Coarse gravel	16-64	20	18%	33	30
Cobble	64-256	37	34%	70	64
Boulder	>256	39	36%	109	100
Bedrock	bedrock	0	0%	109	100
	Sample Size (n)	109	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	3%
% Particles < 2 mm	3%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	66	22	8	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	10	41		-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsJB-7.3 chart,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: JB-T9-0.1
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	30%
Bank stability:	Fair

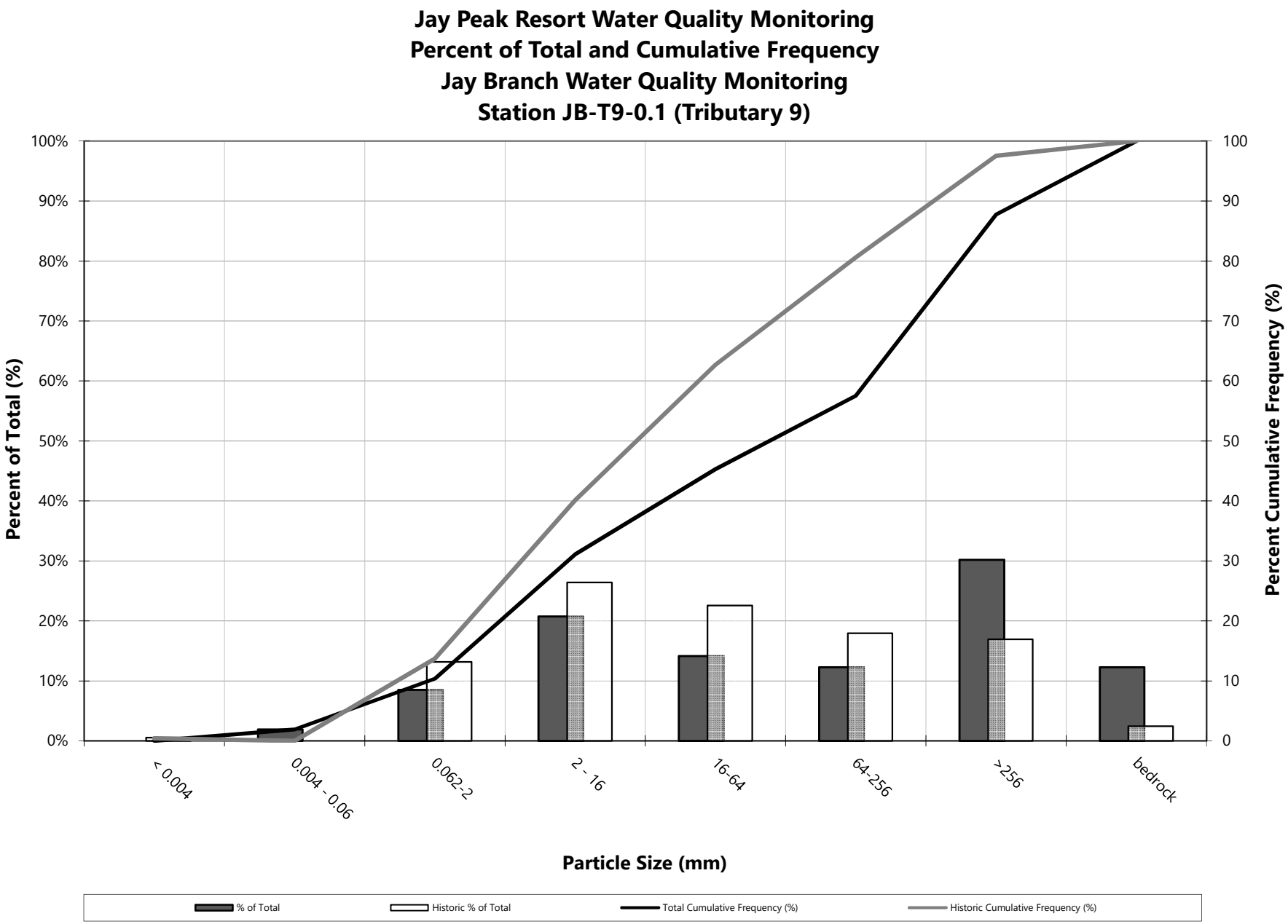
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	2	2%	2	2
Sand (fines)	0.062-2	9	8%	11	10
Gravel	2 - 16	22	21%	33	31
Coarse gravel	16-64	15	14%	48	45
Cobble	64-256	13	12%	61	58
Boulder	>256	32	30%	93	88
Bedrock	bedrock	13	12%	106	100
	Sample Size (n)	106	100		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	8%
% Particles < 2 mm	10%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	35	10	7	14

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	15	31	1	-	-	-	-


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-0.1 (Tributary 9)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004 - 0.06
0.062-2
2 - 16
16-64
64-256
>256
bedrock
Particle Size (mm)
% of Total
Historic % of Total
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%)

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: SMB-T3-0.8
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	5%
Bank stability:	Very Good

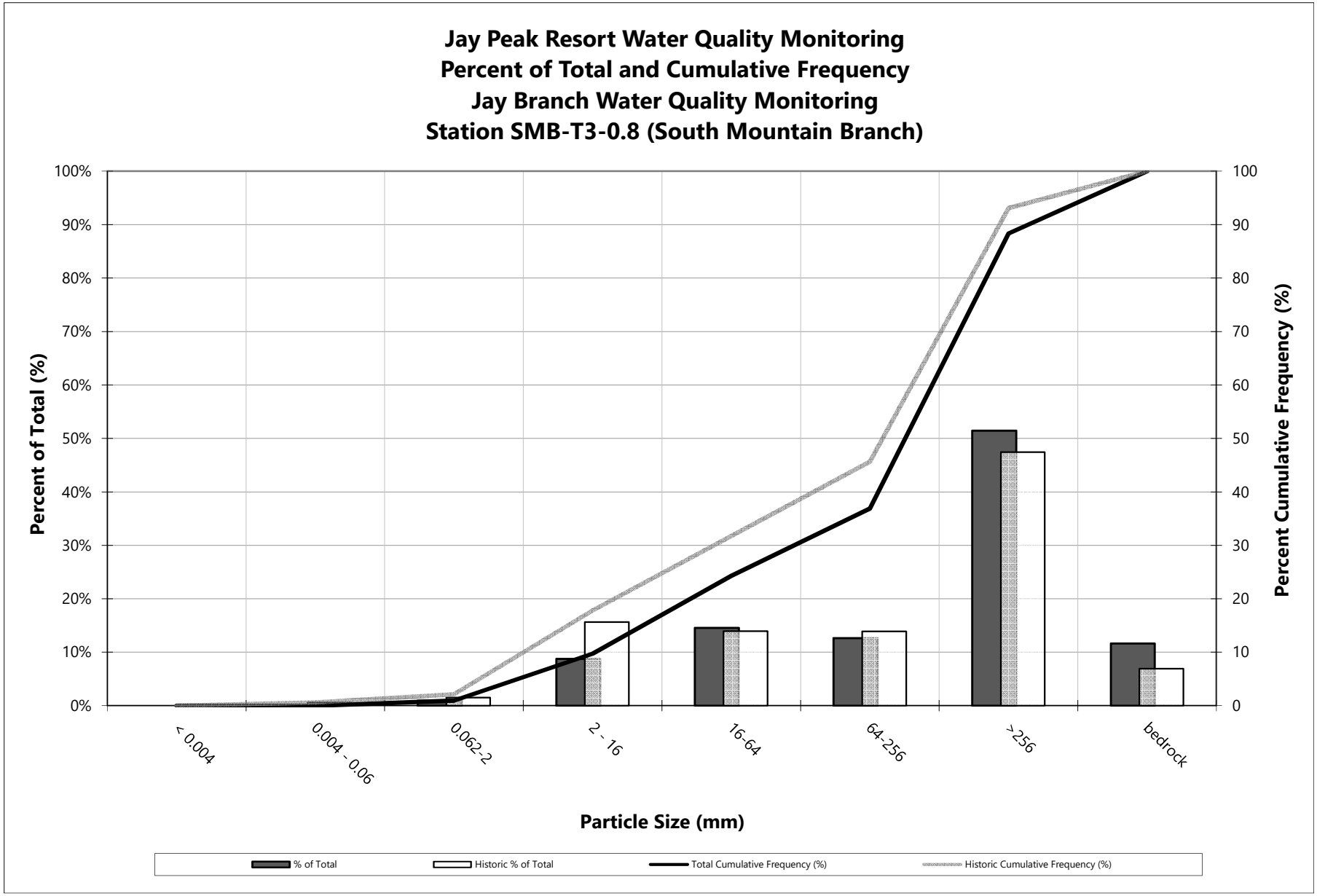
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	1	1%	1	1
Gravel	2 - 16	9	9%	10	10
Coarse gravel	16-64	15	15%	25	24
Cobble	64-256	13	13%	38	37
Boulder	>256	53	51%	91	88
Bedrock	bedrock	12	12%	103	100
	Sample Size (n)	103	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Boulder
Dominant Size Class	Boulder
% Fines	1%
% Particles < 2 mm	1%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	37	23	11	23

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	29	40	4	-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsSMB-T3-0.8 chart,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: SMB-T3-0.1
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	35%
Bank stability:	Good

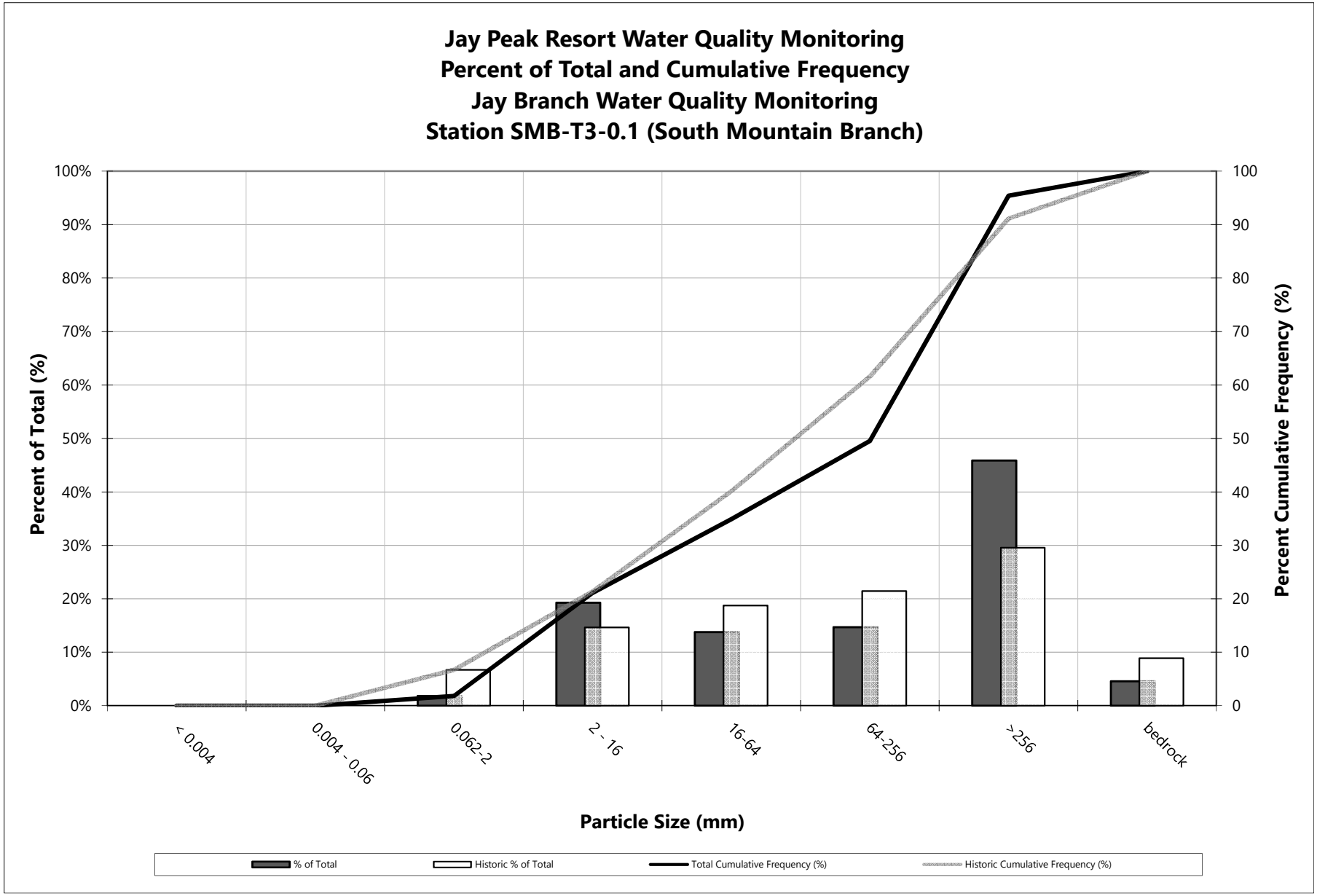
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	21	19%	23	21
Coarse gravel	16-64	15	14%	38	35
Cobble	64-256	16	15%	54	50
Boulder	>256	50	46%	104	95
Bedrock	bedrock	5	5%	109	100
	Sample Size (n)	109	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	2%
% Particles < 2 mm	2%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	54	10	11	9

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	30	47	2	-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsSMB-T3-0.1 chart,2/6/2018

Jay Peak Water Quality Monitoring Plan 2017
Substrate Sampling Summary
Sample Location: SMB-1.2
Sampling Date: September 29, 2017
Samplers: CS, EC

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	20%
Bank stability:	Very Good

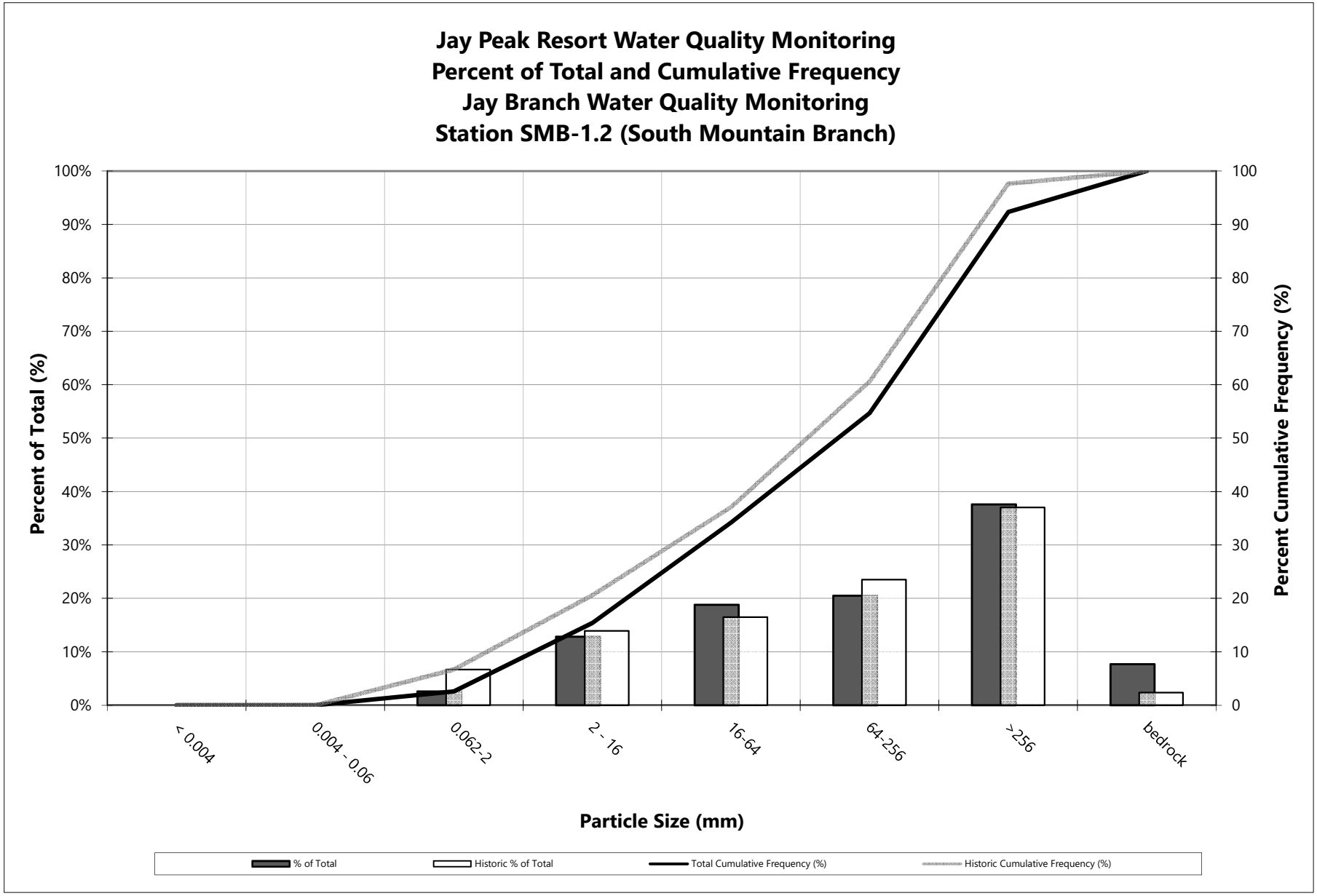
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	15	13%	18	15
Coarse gravel	16-64	22	19%	40	34
Cobble	64-256	24	21%	64	55
Boulder	>256	44	38%	108	92
Bedrock	bedrock	9	8%	117	100
	Sample Size (n)	117	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	3%
% Particles < 2 mm	3%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	61	6	10	20

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	-	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	25	47	2	-	-	-	-



\\vtsbdata\projects\57201.11 JPR 17-18 WQMP\tech\Biomonitoring\2017 Jay Pebble CountsSMB-1.2 chart,2/6/2018

APPENDIX 6

Jay Peak Resort
2017 Kick Net Data Summary (Class B, Small High Gradient Streams)
Prepared by VHB
February 14, 2018

Station	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+ C	% PPCS-FG	Outcome / Biological Integrity	Notes
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**		
JB-T13-0.2 Trib. 13 to Jay Branch	512	35	22	65	0.77	5	0.93	64	Meets Class B Criteria	Benchmark station, near Hole 13. No interim targets set.
JB-9.1 Jay Branch	430	32	22	72	0.98	8	0.93	50	Meets Class B Criteria	Upstream of Hole 10 bridge. No interim targets set.
JB-8.3 Jay Branch	490	31	21	82	1.63	5	0.94	62	Meets Class B Criteria	Downstream of confluence with Trib. 9. Interim and Compliance Targets met.
JB-7.3 Jay Branch	464	32	24	77	1.37	3	0.98	58	Meets Class B Criteria	Upstream of Route 242 bridge. Interim and Compliance Targts met.
JB-T9-0.1 Trib. 9 to Jay Branch	333	39	25	74	1.93	6	0.98	63	Meets Class B Criteria	Upstream of confluence with Jay Branch. Interim and Compliance Targets met.
SMB-T3-0.8 Trib. 3 to SMB	392	31	21	58	0.90	6	0.92	35	Meets Class B Criteria	* Per DEC, the failure of the PPCS-FG metric "is likely due to natural causes at this very high elevation site and the October collection date."
SMB-T3-0.1 Trib. 3 to SMB	178	23	17	64	0.81	20	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets	1 of 4 Interim targets met (Density >250; Richness >26, EPT >15.7, % Oligo <14.5)
SMB-1.2 South Mountain Branch (SMB)	288	33	22	75	1.20	14	0.92	61	Does Not Meet Class B Criteria	Upstream of Shallowbrook Road crossing. No interim targets set.

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.50	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.50	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Jay Peak Resort
Kick Net Data - Jay Branch - JB-T13-0.2
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2008 VHBP	469	32	22	63	1.22	0.9	0.94	56	Meets Class B Criteria
2009 VHBP	625	34	23	73	1.34	0.0	0.93	59	Meets Class B Criteria
2010 VHB	642	40	25	78	1.71	0.36	0.89	56	Meets Class B Criteria
2011 VHB	421	35	23	70	0.85	0.1	0.93	46	Meets Class B Criteria
2012 VHB	883	36	25	75	1.13	0.0	0.95	44	Meets Class B Criteria
2013 VHB	872	33	21	70	0.94	0.0	0.92	61	Meets Class B Criteria
2014 VHB	781	36	24	74	1.24	0.0	0.9	65	Meets Class B Criteria
2015 VHB	914	34	21	70	1.03	0.5	0.94	55	Meets Class B Criteria
2016 VHB	874	34	21	70	0.72	0.6	0.96	61	Meets Class B Criteria
2017 VHB	512	35	22	65	0.77	5.0	0.93	64	Meets Class B Criteria

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Macroinvertebrate data submittal form - VTDEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-T13-0.2**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.945723	-72.518770
or VT Site ID:	427813000002	
Date collected:	9/29/2017	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan. 2018
#sq picked:	15
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan. 2018

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				NOTES	FFG
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]		
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	3	4.8		SCR
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	3	4.8		CG
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	OPSEC/TANYTA	MICROPSECTRA	N/A	sp	CCS	A	1	1.6		CG
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	15	24		CG
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1.6		CG
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	1.6		CG
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1.6		CF
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	10	16		PRD
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1.6		PRD
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	1.6		CG
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	3	4.8		CG
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	5	8		CG
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	1	1.6		SRD
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1.6		SCR
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	1	1.6		CG
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	7	11.2		CG
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	3	4.8		SHR
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	3.2		SCR
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	51	81.6		CF
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	6.4		SRD
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	45	72		CF
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.6		PRD
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	3	4.8		PRD
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1.6		PRD
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	6	9.6		PRD
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS	A	8	12.8		PRD
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	7	11.2		SCR
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	23	36.8		PRD
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	36	57.6		SRD
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	30	48		SRD
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	23	36.8		PRD

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				NOTES	FFG
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]		
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	5	8		SRD
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	1	1.6		PRD
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	15	24		CG
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.6		CG
TOTALS by Rep:										320	512		
GRAND TOTAL:	512 organisms												

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Macroinvertebrate data submittal form - VTDEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-T13-0.2**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.945723	-72.518770
or VT Site ID:	427813000002	
Date collected:	9/29/2017	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

					Biotic Index				**Richness Metrics**	
Expanded Key	Order	Family	SubFamily Or Tribe	Chiro	Biotic Index Scores		Old Biotic Index (1-5)	New Biotic Index (1-10)	Richness	EPT
					Old BI	New BI	KN-1	KN-1	KN-1	KN-1
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N	2	3	9.6	14.4	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	Y	3	4	14.4	19.2	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	Y	3	6	4.8	9.6	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	Y	2	2	48	48	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	Y	3	5	4.8	8	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N	2	1	3.2	1.6	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N	1	2	1.6	3.2	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N	2	3	32	48	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N	2	2	3.2	3.2	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N	3	4	4.8	6.4	1	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N	0	0	0	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N	2	4	16	32	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N	1	0	1.6	0	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N	1	4	1.6	6.4	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N	0	0	0	0	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N	2	1	22.4	11.2	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N	1	2	4.8	9.6	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N	1	0	3.2	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N	0	0	0	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N	1	1	6.4	6.4	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N	0	0	0	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N	3	6	4.8	9.6	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N	1	2	4.8	9.6	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N	1	1	1.6	1.6	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N	0	1	0	9.6	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N	0	0	0	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N	1	3	11.2	33.6	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N	0	0	0	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N	0	0	0	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N	1	0	48	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N	1	2	36.8	73.6	1	1

Expanded Key	Order	Family	SubFamily Or Tribe	Chiro	Biotic Index: Biotic Index Scores Old BI	Biotic Index: Biotic Index Scores New BI	Biotic Index: Old Biotic Index (1-5) KN-1	Biotic Index: New Biotic Index (1-10) KN-1	Richness Metrics: Richness KN-1	Richness Metrics: EPT KN-1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N	1	0	8	0	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N	2	5	3.2	8	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N	-	-	-	-	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N	-	-	-	-	1	0
TOTALS by Rep:						**Total BI Score**	300.8	372.8	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	512 organisms					**Total # Organisms**	512	512		
						# of Organisms w/o BI	25.6	25.6	35	
						Total # Organisms with BI	486.4	486.4		22
						Biotic Index	0.62	0.77		

*Notes:
[1] ID is initial of taxonomist
[2] QA is confidence of ID: A
[3] Count: only report a 0 in
[4] Total Sample Count: estin

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/29/17

2016 Expanded Key ID#	KN-1: Numbers of Organisms								
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA
01.03.00.00.006.00.00	4.8	0	0	0	0	0	0	0	0
02.05.01.00.085.00.05	0	4.8	0	0	0	0	0	0	0
02.05.03.02.121.00.00	0	1.6	0	0	0	0	0	0	0
02.05.05.00.029.00.11	0	24	0	0	0	0	0	0	0
02.05.05.00.075.00.00	0	1.6	0	0	0	0	0	0	0
02.06.00.00.001.00.00	0	1.6	0	0	0	0	0	0	0
02.14.00.00.004.00.00	0	1.6	0	0	0	0	0	0	0
02.19.00.00.003.00.00	0	16	0	0	0	0	0	0	0
02.19.00.00.006.00.00	0	1.6	0	0	0	0	0	0	0
02.19.00.00.019.00.00	0	1.6	0	0	0	0	0	0	0
03.04.00.00.004.00.01	0	0	4.8	0	0	0	0	0	0
03.04.00.00.004.01.00	0	0	8	0	0	0	0	0	0
03.04.00.00.005.00.02	0	0	1.6	0	0	0	0	0	0
03.06.00.00.004.00.00	0	0	1.6	0	0	0	0	0	0
03.06.00.00.005.00.00	0	0	1.6	0	0	0	0	0	0
03.07.00.00.005.00.00	0	0	11.2	0	0	0	0	0	0
04.01.00.00.003.00.00	0	0	0	4.8	0	0	0	0	0
04.03.00.00.002.00.00	0	0	0	3.2	0	0	0	0	0
04.05.01.00.006.00.01	0	0	0	81.6	0	0	0	0	0
04.07.00.00.001.00.00	0	0	0	6.4	0	0	0	0	0
04.12.00.00.002.00.00	0	0	0	72	0	0	0	0	0
04.14.00.00.005.00.00	0	0	0	1.6	0	0	0	0	0
04.16.00.00.001.00.01	0	0	0	4.8	0	0	0	0	0
04.16.00.00.001.01.00	0	0	0	1.6	0	0	0	0	0
04.16.00.00.001.02.00	0	0	0	9.6	0	0	0	0	0
04.16.00.00.001.03.09	0	0	0	12.8	0	0	0	0	0
04.20.00.00.001.00.00	0	0	0	11.2	0	0	0	0	0
05.02.00.00.006.00.00	0	0	0	0	36.8	0	0	0	0
05.03.00.00.000.00.01	0	0	0	0	57.6	0	0	0	0
05.05.00.00.000.00.01	0	0	0	0	48	0	0	0	0
05.07.00.00.007.00.00	0	0	0	0	36.8	0	0	0	0
05.08.00.00.001.00.02	0	0	0	0	8	0	0	0	0
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1.6
18.04.00.00.000.00.00	0	0	0	0	0	24	0	0	0
18.06.00.00.000.00.00	0	0	0	0	0	1.6	0	0	0
Total	**4.8**	**54.4**	**28.8**	**209.6**	**187.2**	**25.6**	**0**	**0**	**1.6**
Percent	**0.94%**	**10.6%**	**5.6%**	**40.9%**	**36.6%**	**5.00%**	**0.00%**	**0.00%**	**0.31%**

2016 Expanded Key ID#	NEMATOMORPHA	TOTAL
01.03.00.00.006.00.00	0	
02.05.01.00.085.00.05	0	
02.05.03.02.121.00.00	0	
02.05.05.00.029.00.11	0	
02.05.05.00.075.00.00	0	
02.06.00.00.001.00.00	0	
02.14.00.00.004.00.00	0	
02.19.00.00.003.00.00	0	
02.19.00.00.006.00.00	0	
02.19.00.00.019.00.00	0	
03.04.00.00.004.00.01	0	
03.04.00.00.004.01.00	0	
03.04.00.00.005.00.02	0	
03.06.00.00.004.00.00	0	
03.06.00.00.005.00.00	0	
03.07.00.00.005.00.00	0	
04.01.00.00.003.00.00	0	
04.03.00.00.002.00.00	0	
04.05.01.00.006.00.01	0	
04.07.00.00.001.00.00	0	
04.12.00.00.002.00.00	0	
04.14.00.00.005.00.00	0	
04.16.00.00.001.00.01	0	
04.16.00.00.001.01.00	0	
04.16.00.00.001.02.00	0	
04.16.00.00.001.03.09	0	
04.20.00.00.001.00.00	0	
05.02.00.00.006.00.00	0	
05.03.00.00.000.00.01	0	
05.05.00.00.000.00.01	0	
05.07.00.00.007.00.00	0	
05.08.00.00.001.00.02	0	
06.06.00.00.007.00.00	0	
18.04.00.00.000.00.00	0	
18.06.00.00.000.00.00	0	
Total	**0**	**512**
Percent	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/29/17

2016 Expanded Key ID#	KN-1: Numbers of Organisms											
	Collector Filterer	Collector Gatherer	Parasite	Planktivore	Predator	Piercing Carnivore	Piercing Herbivore	Scraper	Shredder-Herbivore	Shredder-Detritus	Other/ Unidentified	Total
01.03.00.00.006.00.00	0	0	0	0	0	0	0	4.8	0	0	0	**4.8**
02.05.01.00.085.00.05	0	4.8	0	0	0	0	0	0	0	0	0	**4.8**
02.05.03.02.121.00.00	0	1.6	0	0	0	0	0	0	0	0	0	**1.6**
02.05.05.00.029.00.11	0	24	0	0	0	0	0	0	0	0	0	**24**
02.05.05.00.075.00.00	0	1.6	0	0	0	0	0	0	0	0	0	**1.6**
02.06.00.00.001.00.00	0	1.6	0	0	0	0	0	0	0	0	0	**1.6**
02.14.00.00.004.00.00	1.6	0	0	0	0	0	0	0	0	0	0	**1.6**
02.19.00.00.003.00.00	0	0	0	0	16	0	0	0	0	0	0	**16**
02.19.00.00.006.00.00	0	0	0	0	1.6	0	0	0	0	0	0	**1.6**
02.19.00.00.019.00.00	0	1.6	0	0	0	0	0	0	0	0	0	**1.6**
03.04.00.00.004.00.01	0	4.8	0	0	0	0	0	0	0	0	0	**4.8**
03.04.00.00.004.01.00	0	8	0	0	0	0	0	0	0	0	0	**8**
03.04.00.00.005.00.02	0	0	0	0	0	0	0	0	0	1.6	0	**1.6**
03.06.00.00.004.00.00	0	0	0	0	0	0	0	1.6	0	0	0	**1.6**
03.06.00.00.005.00.00	0	1.6	0	0	0	0	0	0	0	0	0	**1.6**
03.07.00.00.005.00.00	0	11.2	0	0	0	0	0	0	0	0	0	**11.2**
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	4.8	0	0	**4.8**
04.03.00.00.002.00.00	0	0	0	0	0	0	0	3.2	0	0	0	**3.2**
04.05.01.00.006.00.01	81.6	0	0	0	0	0	0	0	0	0	0	**81.6**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	6.4	0	**6.4**
04.12.00.00.002.00.00	72	0	0	0	0	0	0	0	0	0	0	**72**
04.14.00.00.005.00.00	0	0	0	0	1.6	0	0	0	0	0	0	**1.6**
04.16.00.00.001.00.01	0	0	0	0	4.8	0	0	0	0	0	0	**4.8**
04.16.00.00.001.01.00	0	0	0	0	1.6	0	0	0	0	0	0	**1.6**
04.16.00.00.001.02.00	0	0	0	0	9.6	0	0	0	0	0	0	**9.6**
04.16.00.00.001.03.09	0	0	0	0	12.8	0	0	0	0	0	0	**12.8**
04.20.00.00.001.00.00	0	0	0	0	0	0	0	11.2	0	0	0	**11.2**
05.02.00.00.006.00.00	0	0	0	0	36.8	0	0	0	0	0	0	**36.8**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	57.6	0	**57.6**
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	48	0	**48**
05.07.00.00.007.00.00	0	0	0	0	36.8	0	0	0	0	0	0	**36.8**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	8	0	**8**
06.06.00.00.007.00.00	0	0	0	0	1.6	0	0	0	0	0	0	**1.6**
18.04.00.00.000.00.00	0	24	0	0	0	0	0	0	0	0	0	**24**
18.06.00.00.000.00.00	0	1.6	0	0	0	0	0	0	0	0	0	**1.6**
Group Total	**155.2**	**86.4**	**0**	**0**	**123.2**	**0**	**0**	**20.8**	**4.8**	**121.6**	**0**	**512**
Percent of Sample Total	**30.3%**	**16.9%**	**0.0%**	**0.0%**	**24.1%**	**0.0%**	**0.0%**	**4.1%**	**0.9%**	**23.8%**	**0.0%**	**100%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/29/17

Col. Gath.	31%	32%	22%	16.9%	54.4%
Col. Filt.	18%	30%	36%	30.31%	59.4%
Predator	19%	13%	7%	24.1%	79.0%
Shred-Det.	15%	4%	2%	23.8%	63.2%
Shred- Herb.	1%	1%	5%	0.94%	93.8%
Scraper	12%	13%	22%	4.06%	33.9%
				PPCS-FG =	**63.9%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002 **Class** SHG
Sample Date 09/29/17 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	0.94%	7.06
Diptera	19%	18%	13%	10.6%	8.38
Ephemeroptera	23%	34%	32%	5.6%	17.38
Plecoptera	21%	8%	8%	36.6%	15.6
Trichoptera	28%	33%	33%	40.9%	12.9
Oligochaeta	0.5%	0.5%	1.0%	5.00%	4.50
Other	0.5%	0.5%	1.0%	5.31%	4.813

Sum diff	70.6
Sum diff * 0.5	35.3
100-(sum diff * 0.5)	64.7
% model affinity	**64.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/29/17
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	425.6
#C organisms	32
EPT/EPT+C	0.930

Biometrics Summary

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/29/17
Class SHG
Sampler C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	512	512
Species Richness	35.0	35.0
EPT Richness	22.0	22.0
Old Bio Index (0 to 5)	0.62	0.62
New Bio Index (0 to 10)	0.77	0.77
% dominant taxa	15.9%	15.9%
# dominant taxa	81.6	
dominant taxa ID	TRICHOPTERA	HYDROPSYCHIDAE
EPT/EPT+C	0.930	0.930
EPT/Richness	0.629	0.629
% Model Affinity (orders)	64.7%	64.7%
PPCS - functional groups	63.9%	63.9%
Major Groups:		
Coleoptera (%)	0.94%	0.94%
Diptera (%)	10.6%	10.6%
Ephemeroptera (%)	5.6%	5.6%
Trichoptera (%)	40.9%	40.9%
Plecoptera (%)	36.6%	36.6%
Oligochaeta (%)	5.00%	5.00%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.31%	0.31%
Other (%)	0.00%	0.00%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	16.9%	16.9%
Collector Filterer (%)	30.31%	30.31%
Predator (%)	24.1%	24.1%
Shredder - Detritus (%)	23.8%	23.8%
Shredder - Herbivore (%)	0.94%	0.94%
Scraper (%)	4.06%	4.06%
Other (%)	0.00%	0.00%
Total (%)	100%	100%

Project Jay Peak Resort
Station JB-T13-0.2 **Latitude** 44.945723
Stream Jay Branch **Longitude** -72.518770
Location 427813000002 **Class** B, Small High Gradient
Sample Date 09/29/17 **Sampler** C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	512	≥300	Pass	≥400	Pass	≥500	I+
Richness	35.0	≥27	Pass	≥31	Pass	≥35	I+
EPT	22.0	≥16	Pass	≥19	Pass	≥21	I+
PMA-O	64.7%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	0.77	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	5.00%	≤12%	Pass	≤5	I+	≤2	Fail
EPT/EPT+C	0.930	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	63.9%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support leve
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Project Jay Peak Resort
Station JB-T13-0.2 **Latitude** 44.945723
Stream Jay Branch **Longitude** -72.518770
Location 427813000002 **Class** B, Small High Gradient
Sample Date 09/29/17 **Sampler** C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	512	≥300	Pass	≥400	Pass	≥500	I+
Richness	35.0	≥27	Pass	≥31	Pass	≥35	I+
EPT	22.0	≥16	Pass	≥19	Pass	≥21	I+
PMA-O	64.7%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	0.77	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	5.00%	≤12%	Pass	≤5	I+	≤2	Fail
EPT/EPT+C	0.930	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	63.9%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support leve
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay JBT13-0.2 River Mile _____ USFS___ PROB___
Site ID 4-1 Date 9.29.17 Time 1000 New Site____
Crew CS EC
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk.
Surrounding Land Use: Forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m² Quantitative: Y / N
#Reps: 1 Comp/rep: 4
Limited due to low water

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 50 % Filamentous Green _____% and length _____in
Blue Green 10 % Dead Moss 40 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 0 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 15 % Silt Rating: 3 (0=none, 5= chocolate) FPOM
CPOM Rating (leaf packs): 2 (0= none,5=high) LWD (>4"dia) #: 10 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 12' (m) B.F.Hght 1' (m) Wetted Width: 10' (m) Riffle Depth: 1" (m) Pool Depth: 1' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 50 % Hardwood 50 % Understory: Shrub (brush) 30 % Herbaceous 30 % Grass____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed
Leaves 1/2 on

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: **H – M – L**
Meter (type, #)1-_____2-_____3- _____
Color_____ Color DUP:_____
Temp Air 50 °F, °C Temp Water 8.5 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 5

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name JBT13 0.2 Personnel CS EC Date 9.29.17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0				
Gravel	2.0 -16	5 4			
Coarse Gravel	16 – 64	5 5 5 5 1			
Cobble	64 – 256	5 5 5 3			
Boulder	>256	5 5 5 5 5 5 5 5 5			
Bedrock		5 5 5			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	5 5 5 5 5 5 5 5 5 3	4	5 5	5 5 5 5 5 5 5 5 1

	Macro-Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	Ø			

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	5 5 5 5 5 5 5 5 5 5 4	5 5 5 5 5 5 5 3	1				

	Other *Macro or Micro* _____ Cover Index					
Categoryy	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data - Jay Branch JB-9.1
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2005 DEC	923	40	23	74	1.96	24.0	0.94	64	Does Not Meet Class B Criteria
2007 DEC	1,872	39	22	62	1.50	20.0	0.95	52	Does Not Meet Class B Criteria
2008 DEC	1,162	37	23	76	1.97	6.40	0.96	71	Meets Class B Criteria
2009 DEC	1,892	46	25	76	1.88	17.0	0.92	66	Does Not Meet Class B Criteria
2010 DEC	1,516	42	25	68	2.29	6.0	0.97	65	Meets Class B Criteria
2011 DEC	238	40	24	66	1.64	18.0	0.94	60	Does Not Meet Class B Criteria
2012 VHB	172	25	17	64	0.58	3.2	1.0	46	Does Not Meet Class B Criteria
2013 VHB	828.0	39	24	80	1.09	7.5	0.95	53	Meets Class B Criteria
2014 DEC / VHB	1,071	40	24	68	1.95	17.0	0.93	52	Does Not Meet Class B Criteria
2015 VHB	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria
2016 VHB	865	33	22	75	1.19	10	0.96	63	Meets Class B Criteria
2017 VHB	430	32	22	72	0.98	8	0.93	50	Meets Class B Criteria

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Macroinvertebrate data submittal form - VT DEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-9.1**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.939733	-72.502249
or VT Site ID:	427800000091	
Date collected:	9/29/2017	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2018	Jan. 2018
#sq picked:	17	18
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2018	Jan. 2018

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1 ID [1]	Rep1 QA [2]	Rep1 Count [3]	Rep1 Total Sample Count [4]	Rep2 ID [1]	Rep2 QA [2]	Rep2 Count [3]	Rep2 Total Sample Count [4]	NOTES	FFG	Chiro
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	8	11.29	CCS	A	2	2.67		SCR	N
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	5	7.06	CCS	A	6	8.00		CG	Y
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp				0.00	CCS	A	1	1.33		CG	Y
02.05.05.00.007.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CHAETOCLADIUS	N/A	sp	CCS	A	1	1.41				0.00		CG	Y
02.05.05.00.029.00.02	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	brehmi grp				0.00	CCS	A	1	1.33		CG	Y
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	10	14.12	CCS	A	9	12.00		CG	Y
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	2	2.82	CCS	A	2	2.67		CG	Y
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp				0.00	CCS	A	1	1.33		CF	N
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp				0.00	CCS	A	1	1.33		CG	N
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	7	9.9	CCS	A	11	14.66666667		PRD	N
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1.41	CCS	A	1	1.33		PRD	N
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	3	4.24	CCS	A	6	8.00		CG	N
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.41	CCS	A	5	6.67		CG	N
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	3	4.2	CCS	A	10	13.33333333		CG	N
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis				0.0	CCS	A	1	1.3		SRD	N
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	2	2.8	CCS	A	8	10.66666667		CG	N
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1.4	CCS	A	2	2.666666667		SCR	N
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	21	29.65	CCS	A	15	20.00		CG	N
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	1	1.41				0.00		CG	N
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp				0.00	CCS	A	2	2.67		SCR	N
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	14	19.8	CCS	A	11	14.66666667		CF	N
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alh/slo/spa	sparna				0.00	CCS	A	1	1.33		CF	N
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	2	2.8	CCS	A	5	6.67		SRD	N
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	118	166.6	CCS	A	114	152		CF	N
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	8	11.29	CCS	A	14	18.67		PRD	N
04.16.00.00.001.00.04	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	torva	CCS	A	1	1.4				0.0		PRD	N
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp				0.00	CCS	A	1	1.33		PRD	N
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1.41	CCS	A	1	1.33		PRD	N
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	1	1.4				0		SCR	N
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	2	2.8	CCS	A	10	13.33333333		SCR	N
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	27	38.12	CCS	A	24	32.00		PRD	N
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	2	2.82	CCS	A	2	2.67		PRD	N
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	5	7.06	CCS	A	11	14.67		SRD	N
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	7	9.88	CCS	A	4	5.33		SRD	N
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata				0.0	CCS	A	1	1.33		PRD	N
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	15	21.18	CCS	A	17	22.67		PRD	N
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	6	8.47	CCS	A	2	2.67		SRD	N
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	25	35.29	CCS	A	25	33.33		CG	N
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.41				0.00		CG	N
TOTALS by Rep:										301	**425**			327	**436**			
GRAND TOTAL:	861 organisms																	

Biotic Index

Expanded Key	Biotic Index Scores: Old BI	Biotic Index Scores: New BI	Old BI (1-5): KN-1	Old BI (1-5): KN-2	New BI (1-10): KN-1	New BI (1-10): KN-2
01.03.00.00.006.00.00	2	3	22.59	5.33	33.9	8.00
02.05.01.00.085.00.05	3	4	21.18	24.00	28.24	32.00
02.05.03.02.121.00.00	3	6	0.00	4.00	0.00	8.00
02.05.05.00.007.00.00	2	6	2.82	0.00	8.47	0.0
02.05.05.00.029.00.02	2	4	0.00	2.67	0.00	5.33
02.05.05.00.029.00.11	2	2	28.24	24.00	28.24	24.00
02.05.05.00.075.00.00	3	5	8.47	8.00	14.12	13.33
02.14.00.00.004.00.00	1	2	0.00	1.33	0.00	2.67
02.19.00.00.001.00.00	3	4	0.00	4.00	0.00	5.33
02.19.00.00.003.00.00	2	3	19.8	29.3	29.6	44.0
02.19.00.00.006.00.00	2	2	2.8	2.7	2.8	2.7
03.01.00.00.001.00.09	3	6	12.7	24.00	25.4	48.0
03.04.00.00.004.00.01	0	0	0.00	0.00	0.00	0.00
03.04.00.00.004.01.00	2	4	8.5	26.7	16.9	53
03.04.00.00.005.00.02	1	0	0.00	1.33	0.00	0.00
03.06.00.00.003.00.00	0	0	0.0	0.0	0.0	0.0
03.06.00.00.004.00.00	1	4	1.41	2.67	5.65	10.67
03.06.00.00.005.00.00	0	0	0.0	0.0	0.00	0.00
03.07.00.00.005.00.00	2	1	2.82	0.00	1.41	0.00
04.03.00.00.002.00.00	1	0	0.00	2.67	0.00	0.00
04.05.00.02.008.01.04	2	3	40	29.3	59	44.0
04.05.00.02.008.01.07	2	4	0.00	2.67	0.0	5.3
04.07.00.00.001.00.00	1	1	2.8	6.67	2.8	6.67
04.12.00.00.002.00.00	0	0	0.00	0.00	0.00	0.00
04.16.00.00.001.00.01	1	2	11.29	18.67	22.59	37.33
04.16.00.00.001.00.04	0	0	0.0	0.0	0.0	0.0
04.16.00.00.001.01.00	1	1	0.00	1.33	0.00	1.33
04.16.00.00.001.02.00	0	1	0.00	0.00	1.41	1.33
04.18.00.00.001.00.00	2	3	2.8	0.0	4	0.0
04.20.00.00.001.00.00	1	3	2.82	13.33	8.47	40.00
05.02.00.00.006.00.00	0	0	0.00	0.00	0.00	0.00
05.02.00.00.091.00.00	0	0	0.00	0.00	0.00	0.00
05.03.00.00.000.00.01	0	0	0.00	0.00	0.00	0.00
05.05.00.00.000.00.01	1	0	9.88	5.33	0.00	0.00
05.06.00.00.007.00.01	0	2	0.00	0.00	0.0	2.7
05.07.00.00.007.00.00	1	2	21.18	22.67	42.35	45.3
05.08.00.00.001.00.02	1	0	8.47	2.67	0.00	0.0
18.04.00.00.000.00.00	-	-	-	-	-	-
18.06.00.00.000.00.00	-	-	-	-	-	-
Total BI Score			230	265	336	441
Total # Organisms			425	436	425	436
# of Organisms w/o BI			36.7	33.333	36.7	33.333
Total # Organisms with BI			388	403	388	403
Biotic Index			0.59	0.66	0.87	1.10

Richness Metrics

Expanded Key	Richness: KN-1	EPT Richness: KN-1	Richness: KN-2	EPT Richness: KN-2
01.03.00.00.006.00.00	1	0	1	0
02.05.01.00.085.00.05	1	0	1	0
02.05.03.02.121.00.00	-	0	1	0
02.05.05.00.007.00.00	1	0	-	0
02.05.05.00.029.00.02	-	0	1	0
02.05.05.00.029.00.11	1	0	1	0
02.05.05.00.075.00.00	1	0	1	0
02.14.00.00.004.00.00	-	0	1	0
02.19.00.00.001.00.00	-	0	1	0
02.19.00.00.003.00.00	1	0	1	0
02.19.00.00.006.00.00	1	0	1	0
03.01.00.00.001.00.09	1	1	1	1
03.04.00.00.004.00.01	1	1	1	1
03.04.00.00.004.01.00	1	1	1	1
03.04.00.00.005.00.02	-	0	1	1
03.06.00.00.003.00.00	1	1	1	1
03.06.00.00.004.00.00	1	1	1	1
03.06.00.00.005.00.00	1	1	1	1
03.07.00.00.005.00.00	1	1	-	0
04.03.00.00.002.00.00	-	0	1	1
04.05.00.02.008.01.04	1	1	1	1
04.05.00.02.008.01.07	-	0	1	1
04.07.00.00.001.00.00	1	1	1	1
04.12.00.00.002.00.00	1	1	1	1
04.16.00.00.001.00.01	1	1	1	1
04.16.00.00.001.00.04	1	1	-	0
04.16.00.00.001.01.00	-	0	1	1
04.16.00.00.001.02.00	1	1	1	1
04.18.00.00.001.00.00	1	1	-	0
04.20.00.00.001.00.00	1	1	1	1
05.02.00.00.006.00.00	1	1	1	1
05.02.00.00.091.00.00	1	1	1	1
05.03.00.00.000.00.01	1	1	1	1
05.05.00.00.000.00.01	1	1	1	1
05.06.00.00.007.00.01	-	0	1	1
05.07.00.00.007.00.00	1	1	1	1
05.08.00.00.001.00.02	1	1	1	1
18.04.00.00.000.00.00	1	0	1	0
18.06.00.00.000.00.00	1	0	-	0
Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**	
	30	21	34	23

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	11.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	7.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.007.00.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	14.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	9.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	4.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	4.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	29.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	19.76	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	166.59	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	11.29	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.04	0.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	38.12	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	7.06	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	9.88	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	21.18	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	8.47	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	35.29	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	
Total	**11**	**37**	**45**	**208**	**88**	**37**	**0**	**0**	**0**	**0**	**425**
Percent	**3%**	**9%**	**11%**	**49%**	**21%**	**9%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.02	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	14.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	10.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	14.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	152.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	18.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	14.67	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	5.33	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	22.67	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**3**	**44**	**62.66666667**	**212**	**81.33333333**	**33.33333333**	**0**	**0**	**0**	**0**	**436**
Percent	**1%**	**10%**	**14%**	**49%**	**19%**	**8%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0	0	0	0	0	11	0		0	0	0	0	0	3	0	
02.05.01.00.085.00.05	7	0	0	0	0	0	0		8	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.05.00.007.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.02	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.05.00.029.00.11	14	0	0	0	0	0	0		12	0	0	0	0	0	0	
02.05.05.00.075.00.00	3	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	10	0	0	0	0		0	0	15	0	0	0	0	
02.19.00.00.006.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
03.01.00.00.001.00.09	4	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.04.00.00.004.00.01	1	0	0	0	0	0	0		7	0	0	0	0	0	0	
03.04.00.00.004.01.00	4	0	0	0	0	0	0		13	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
03.06.00.00.003.00.00	3	0	0	0	0	0	0		11	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	1	0		0	0	0	0	0	3	0	
03.06.00.00.005.00.00	30	0	0	0	0	0	0		20	0	0	0	0	0	0	
03.07.00.00.005.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0		0	0	0	0	0	3	0	
04.05.00.02.008.01.04	0	20	0	0	0	0	0		0	15	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	3	0	0	0		0	0	0	7	0	0	0	
04.12.00.00.002.00.00	0	167	0	0	0	0	0		0	152	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	11	0	0	0	0		0	0	19	0	0	0	0	
04.16.00.00.001.00.04	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.02.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	3	0		0	0	0	0	0	13	0	
05.02.00.00.006.00.00	0	0	38	0	0	0	0		0	0	32	0	0	0	0	
05.02.00.00.091.00.00	0	0	3	0	0	0	0		0	0	3	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	7	0	0	0		0	0	0	15	0	0	0	
05.05.00.00.000.00.01	0	0	0	10	0	0	0		0	0	0	5	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
05.07.00.00.007.00.00	0	0	21	0	0	0	0		0	0	23	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	8	0	0	0		0	0	0	3	0	0	0	
18.04.00.00.000.00.00	35	0	0	0	0	0	0		33	0	0	0	0	0	0	
18.06.00.00.000.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
Total	**106**	**186**	**88**	**28**	**0**	**17**	**0**	**425**	**119**	**169**	**96**	**31**	**0**	**21**	**0**	**436**
Percent	**25%**	**44%**	**21%**	**7%**	**0%**	**4%**	**0%**	**100%**	**27%**	**39%**	**22%**	**7%**	**0%**	**5%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/29/2017

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	24.9%	80.4%	27.2%	87.8%
Col. Filt.	18%	30%	36%	43.9%	41.0%	38.8%	46.3%
Predator	19%	13%	7%	20.6%	92.2%	22.0%	86.3%
Shred-Det.	15%	4%	2%	6.6%	44.3%	7.0%	46.9%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	3.99%	33.22%	4.89%	40.8%
				PPCS-FG =	**48.5%**	**PPCS-FG =**	**51.4%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	2.66%	5.34	0.61%	7.39
Diptera	19%	18%	13%	8.6%	10.36	10.1%	8.908
Ephemeroptera	23%	34%	32%	10.6%	12.4	14.37%	8.6
Plecoptera	21%	8%	8%	20.6%	0.4	18.7%	2.3
Trichoptera	28%	33%	33%	48.8%	20.8	48.6%	20.6
Oligochaeta	0.5%	0.5%	1.0%	8.64%	8.14	7.65%	7.15
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	58.0		55.5
				Sum diff * 0.5	29.0		27.8
				100-(sum diff * 0.5)	71.0		72.2
				% model affinity	**71.0%**		**72.2%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	340	356
#C organisms	25.41176471	25.33333
EPT/EPT+C	0.93	0.93

Biometric Summary

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	425	436	430
Species Richness	30.0	34.0	32.0
EPT Richness	21.0	23.0	22.0
Old Bio Index (0 to 5)	0.59	0.66	0.63
New Bio Index (0 to 10)	0.87	1.10	0.98
% dominant taxa	39.2%	34.9%	37.0%
EPT/EPT+C	0.931	0.934	0.932
EPT/Richness	0.700	0.676	0.688
% Model Affinity (orders)	71.0%	72.2%	71.6%
PPCS - functional groups	48.5%	51.4%	49.9%
Major Groups:			
Coleoptera (%)	2.66%	0.61%	1.63%
Diptera (%)	8.6%	10.1%	9.4%
Ephemeroptera (%)	10.6%	14.37%	12.50%
Trichoptera (%)	48.8%	48.6%	48.7%
Plecoptera (%)	20.6%	18.7%	19.6%
Oligochaeta (%)	8.64%	7.65%	8.14%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	24.9%	27.2%	26.1%
Collector Filterer (%)	43.9%	38.84%	41.3%
Predator (%)	20.6%	22.0%	21.3%
Shredder - Detritus (%)	6.6%	7.0%	6.8%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	3.99%	4.89%	4.44%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/29/2017

Latitude 44.939733
Longitude -72.502249
Class Small, High Gradient, B
Sampler CCS

As of 12/20
This spread

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	430	≥300	Pass	≥400	I+	≥500	Fail
Richness	32.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	22.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	71.6%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.98	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	8.14%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.932	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	49.9%	≥ 40%	Pass	≥ 45%	I+	≥ 50%	I-
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay JB-9.1 River Mile _____ USFS___ PROB___
Site ID 4-2 Date 9.29.17 Time 1130 New Site___
Crew CS EC
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk
Surrounding Land Use: golf course, resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 65 % Filamentous Green 10 % and length 4 in
Blue Green 15 % Moss 20 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 15 % Silt Rating: 4 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 3 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 40 (m) B.F.Hght 2' (m) Wetted Width: 16' (m) Riffle Depth: 4-6" (m) Pool Depth: 2' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 30 m, R 40 m
Overstory: Softwood _____% Hardwood 100 % Understory: Shrub (brush) 40 % Herbaceous 20 % Grass 10 %
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: **H - M - L**
Meter (type, #)1-_____2-_____3- _____
Color_____ Color DUP:_____
Temp Air 50 °F, °C Temp Water 10.5 °C fpH_____ lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Blackrock, light Fe staining

Field Sheet Complete: CS (initial)
Photos: Y N
Fish Survey Conducted: Y / N

Site Name JB9.1 Personnel CS EC Date 9.29.17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0				
Gravel	2.0 -16	5 III			
Coarse Gravel	16 – 64	5 5 5 II			
Cobble	64 – 256	5 5 5 5 5 II			
Boulder	>256	5 5 5 5 5 5 5 5 5 5 III			
Bedrock		I			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	5 5 5 5 5 5 5 5 5 5

Jay Peak Resort
Kick Net Data - Jay Branch JB-8.3
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2004 PIO	324	27	18	60	1.96	7	0.98	56	Meets Class B Criteria
2005 ESI	849	49	23	69	2.65	21	0.87	60	Does Not Meet Class B Criteria
2006 ESI	851	34	21	58	2.68	0	0.95	34	Does Not Meet Class B Criteria
2007 PIO	363	32	22	72	1.12	8	0.96	60	Meets Class B Criteria
2008 VHBP	311	31	19	70	1.41	15	0.98	50	Does Not Meet Class B Criteria
2009 VHBP	374	32	24	71	1.55	10	0.98	61	Meets Class B Criteria
2010 VHB	361	31	25	57	1.36	6	1.0	55	Meets Class B Criteria
2011 VHB	117	22	15	58	1.10	18	0.97	54	Does Not Meet Class B Criteria
2012 VHB	230	24	17	71	1.15	7	0.98	56	Does Not Meet Class B Criteria
2013 VHB	238	30	22	80	1.13	10	0.95	57	Does Not Meet Class B Criteria
2014 VHB	403	34	23	63	0.99	26	0.97	39	Meets 3 of 4 Interim Targets
2015 VHB	347	35	24	63	1.18	13	0.97	51	Meets 3 of 4 Interim Targets
2016 VHB	413	34	22	81	1.58	9	0.97	73	Meets Compliance Year Targets and Class B Criteria
2017 VHB	490	31	21	82	1.63	5	0.94	62	Meets Compliance Year Targets and Class B Criteria

2014 Interim Targets	>250	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	>275	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2016 Compliance Year	≥300	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Macroinvertebrate data submittal form - VT DEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-8.3**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938950	-72.489451
or VT Site ID:	427800000083	
Date collected:	9/29/2017	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2018	Jan. 2018
#sq picked:	20	16
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2018	Jan. 2018

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1 ID [1]	Rep1 QA [2]	Rep1 Count [3]	Rep1 Total Sample Count [4]	Rep2 ID [1]	Rep2 QA [2]	Rep2 Count [3]	Rep2 Total Sample Count [4]	NOTES	FFG	Chiro
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	17	20.40	CCS	A	8	12.00		SCR	N
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1.20	CCS	A	1	1.50		PRD	N
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp				0.00	CCS	A	1	1.50		CG	Y
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	16	19.20	CCS	A	8	12.00		CG	Y
02.05.05.00.065.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	sp	CCS	A	2	2.40				0.00		CG	Y
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	2	2.40				0.00		CG	Y
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	8	9.60				0.00		PRD	Y
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp				0.00	CCS	A	1	1.50		CG	N
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	1	1.20	CCS	A	2	3.00		CG	N
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	5	6.0	CCS	A	17	25.5		PRD	N
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	6	7.20	CCS	A	7	10.50		PRD	N
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	2	2.40	CCS	A	1	1.50		CG	N
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	13	15.60	CCS	A	3	4.50		CG	N
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	19	22.8	CCS	A	13	19.5		CG	N
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens				0.0	CCS	A	1	1.5		CG	N
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	20	24.0	CCS	A	10	15		CG	N
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	8	9.6	CCS	A	11	16.5		SCR	N
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	14	16.80	CCS	A	15	22.50		CG	N
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	2	2.40				0.00		CG	N
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	38	45.60	CCS	A	52	78.00		CF	N
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis				0.0	CCS	A	1	1.5		CF	N
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	6	7.20				0.00		SRD	N
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	81	97.2	CCS	A	42	63.00		CF	N
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp				0.0	CCS	A	1	1.5		PRD	N
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	6	7.20	CCS	A	7	10.50		PRD	N
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1.2				0.0		PRD	N
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp				0.00	CCS	A	1	1.50		SCR	N
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	23	27.60	CCS	A	29	43.50		SCR	N
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	32	38.4	CCS	A	27	40.5		PRD	N
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1.2	CCS	A	3	4.5		PRD	N
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	9	10.80	CCS	A	17	25.50		SRD	N
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	16	19.20	CCS	A	3	4.50		SRD	N
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	1	1.20	CCS	A	2	3.00		PRD	N
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	24	28.80	CCS	A	20	30.00		PRD	N
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	9	10.8	CCS	A	3	4.50		SRD	N
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	5	6.00				0.00		PRD	N
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	4	4.80	CCS	A	32	48		CG	N
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.20				0		CG	N
TOTALS by Rep:										393	**472**			339	**509**			

GRAND TOTAL: 980 organisms

Expanded Key	Biotic Index Scores: Old BI	Biotic Index Scores: New BI	Old BI (1-5) KN-1	Old BI (1-5) KN-2	New BI (1-10) KN-1	New BI (1-10) KN-2	Richness KN-1	EPT KN-1	Richness KN-2	EPT KN-2
01.03.00.00.006.00.00	2	3	40.80	24.00	61.2	36.00	1	0	1	0
02.01.00.00.001.00.00	3	2	3.60	4.50	2.40	3.00	1	0	1	0
02.05.03.02.121.00.00	3	6	0.00	4.50	0.00	9.00	-	0	1	0
02.05.05.00.029.00.11	2	2	38.40	24.00	38.40	24.0	1	0	1	0
02.05.05.00.065.00.00	3	7	7.20	0.00	16.80	0.00	1	0	-	0
02.05.05.00.075.00.00	3	5	7.20	0.00	12.00	0.00	1	0	-	0
02.05.09.04.110.00.00	3	6	28.80	0.00	57.60	0.00	1	0	-	0
02.06.00.00.001.00.00	2	1	0.00	3.00	0.00	1.50	-	0	1	0
02.19.00.00.001.00.00	3	4	3.60	9.00	4.80	12.00	1	0	1	0
02.19.00.00.003.00.00	2	3	12.0	51.0	18.0	76.5	1	0	1	0
02.19.00.00.006.00.00	2	2	14.4	21.0	14.4	21.0	1	0	1	0
03.01.00.00.001.00.09	3	6	7.2	4.50	14.4	9.0	1	1	1	1
03.04.00.00.004.00.01	0	0	0.00	0.00	0.00	0.00	1	1	1	1
03.04.00.00.004.01.00	2	4	45.6	39.0	91.2	78	1	1	1	1
03.04.00.00.008.00.01	1	2	0.00	1.50	0.00	3.00	-	0	1	1
03.06.00.00.003.00.00	0	0	0.0	0.0	0.0	0.0	1	1	1	1
03.06.00.00.004.00.00	1	4	9.60	16.50	38.40	66.00	1	1	1	1
03.06.00.00.005.00.00	0	0	0.0	0.0	0.00	0.00	1	1	1	1
03.07.00.00.005.00.00	2	1	4.80	0.00	2.40	0.00	1	1	-	0
04.05.00.02.008.01.04	2	3	91.20	156.00	136.80	234.00	1	1	1	1
04.05.01.00.006.00.01	0	0	0	0.0	0	0.0	-	0	1	1
04.07.00.00.001.00.00	1	1	7.20	0.00	7.2	0.0	1	1	-	0
04.12.00.00.002.00.00	0	0	0.0	0.00	0.0	0.00	1	1	1	1
04.14.00.00.005.00.00	3	6	0.00	4.50	0.00	9.00	-	0	1	1
04.16.00.00.001.00.01	1	2	7.20	10.50	14.40	21.00	1	1	1	1
04.16.00.00.001.01.00	1	1	1.2	0.0	1.2	0.0	1	1	-	0
04.18.00.00.001.00.00	2	3	0.00	3.00	0.00	4.50	-	0	1	1
04.20.00.00.001.00.00	1	3	27.60	43.50	82.80	130.50	1	1	1	1
05.02.00.00.006.00.00	0	0	0.0	0.0	0	0.0	1	1	1	1
05.02.00.00.091.00.00	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.03.00.00.000.00.01	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.05.00.00.000.00.01	1	0	19.20	4.50	0.00	0.00	1	1	1	1
05.06.00.00.007.00.01	0	2	0.00	0.00	2.40	6.00	1	1	1	1
05.07.00.00.007.00.00	1	2	28.80	30.00	57.60	60.00	1	1	1	1
05.08.00.00.001.00.02	1	0	10.80	4.50	0.0	0.0	1	1	1	1
06.06.00.00.007.00.00	2	5	12.00	0.00	30.00	0.0	1	0	-	0
18.04.00.00.000.00.00	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	-	-	-	-	-	-	1	0	-	0
Total BI Score			428	459	704	804	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms			472	509	472	509				
# of Organisms w/o BI			6.0	48	6.0	48	32		30	
Total # Organisms with BI			466	461	466	461		20		21
Biotic Index			0.92	1.00	1.51	1.75				

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	20.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.01.00.00.001.00.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	19.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.065.00.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	9.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	7.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	15.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	22.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.008.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	9.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	16.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	45.60	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	7.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	97.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	7.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	27.60	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	38.40	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	10.80	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	19.20	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	28.80	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	10.80	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	4.80	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	
Total	**20.4**	**49**	**94**	**186**	**110**	**6**	**0**	**0**	**6**	**0**	**472**
Percent	**4%**	**10%**	**20%**	**39%**	**23%**	**1%**	**0%**	**0%**	**1%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.01.00.00.001.00.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.065.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	25.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	10.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	19.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.008.00.01	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	16.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	22.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	78.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	10.50	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	43.50	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	40.50	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	25.50	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	48.00	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**12**	**55.5**	**81**	**200**	**112.5**	**48**	**0**	**0**	**0**	**0**	**509**
Percent	**2%**	**11%**	**16%**	**39%**	**22%**	**9%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0	0	0	0	0	20	0		0	0	0	0	0	12	0	
02.01.00.00.001.00.00	0	0	1	0	0	0	0		0	0	2	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.05.00.029.00.11	19	0	0	0	0	0	0		12	0	0	0	0	0	0	
02.05.05.00.065.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.075.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	10	0	0	0	0		0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.19.00.00.001.00.00	1	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	6	0	0	0	0		0	0	26	0	0	0	0	
02.19.00.00.006.00.00	0	0	7	0	0	0	0		0	0	11	0	0	0	0	
03.01.00.00.001.00.09	2	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.04.00.00.004.00.01	16	0	0	0	0	0	0		5	0	0	0	0	0	0	
03.04.00.00.004.01.00	23	0	0	0	0	0	0		20	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.06.00.00.003.00.00	24	0	0	0	0	0	0		15	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	10	0		0	0	0	0	0	17	0	
03.06.00.00.005.00.00	17	0	0	0	0	0	0		23	0	0	0	0	0	0	
03.07.00.00.005.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	46	0	0	0	0	0		0	78	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	0	0	0	0		0	2	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	7	0	0	0		0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	97	0	0	0	0	0		0	63	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
04.16.00.00.001.00.01	0	0	7	0	0	0	0		0	0	11	0	0	0	0	
04.16.00.00.001.01.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	2	0	
04.20.00.00.001.00.00	0	0	0	0	0	28	0		0	0	0	0	0	44	0	
05.02.00.00.006.00.00	0	0	38	0	0	0	0		0	0	41	0	0	0	0	
05.02.00.00.091.00.00	0	0	1	0	0	0	0		0	0	5	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	11	0	0	0		0	0	0	26	0	0	0	
05.05.00.00.000.00.01	0	0	0	19	0	0	0		0	0	0	5	0	0	0	
05.06.00.00.007.00.01	0	0	1	0	0	0	0		0	0	3	0	0	0	0	
05.07.00.00.007.00.00	0	0	29	0	0	0	0		0	0	30	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	11	0	0	0		0	0	0	5	0	0	0	
06.06.00.00.007.00.00	0	0	6	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	5	0	0	0	0	0	0		48	0	0	0	0	0	0	
18.06.00.00.000.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
Total	**115**	**143**	**108**	**48**	**0**	**58**	**0**	**472**	**131**	**143**	**128**	**35**	**0**	**74**	**0**	**509**
Percent	**24%**	**30%**	**23%**	**10%**	**0%**	**12%**	**0%**	**100%**	**26%**	**28%**	**25%**	**7%**	**0%**	**14%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/29/2017

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	24.4%	78.8%	25.7%	82.8%
Col. Filt.	18%	30%	36%	30.3%	59.4%	28.0%	64.2%
Predator	19%	13%	7%	22.9%	83.0%	25.1%	75.8%
Shred-Det.	15%	4%	2%	10.2%	67.9%	6.8%	45.2%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	12.21%	98.25%	14.45%	83.0%
				PPCS-FG =	**64.6%**	**PPCS-FG =**	**58.5%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	4.33%	3.67	2.36%	5.64
Diptera	19%	18%	13%	10.4%	8.57	10.9%	8.086
Ephemeroptera	23%	34%	32%	19.8%	3.2	15.93%	7.1
Plecoptera	21%	8%	8%	23.4%	2.4	22.1%	1.1
Trichoptera	28%	33%	33%	39.4%	11.4	39.2%	11.2
Oligochaeta	0.5%	0.5%	1.0%	1.27%	0.77	9.44%	8.94
Other	0.5%	0.5%	1.0%	1.27%	0.772	0.00%	0.500
				Sum diff	30.8		42.6
				Sum diff * 0.5	15.4		21.3
				100-(sum diff * 0.5)	84.6		78.7
				% model affinity	**84.6%**		**78.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	390	393
#C organisms	33.6	13.5
EPT/EPT+C	0.92	0.97

Biometric Summary

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	472	509	490
Species Richness	32.0	30.0	31.0
EPT Richness	20.0	21.0	20.5
Old Bio Index (0 to 5)	0.92	1.00	0.96
New Bio Index (0 to 10)	1.51	1.75	1.63
% dominant taxa	20.6%	15.3%	18.0%
EPT/EPT+C	0.921	0.967	0.944
EPT/Richness	0.625	0.700	0.661
% Model Affinity (orders)	84.6%	78.7%	81.7%
PPCS - functional groups	64.6%	58.5%	61.5%
Major Groups:			
Coleoptera (%)	4.33%	2.36%	3.34%
Diptera (%)	10.4%	10.9%	10.7%
Ephemeroptera (%)	19.8%	15.93%	17.89%
Trichoptera (%)	39.4%	39.2%	39.3%
Plecoptera (%)	23.4%	22.1%	22.8%
Oligochaeta (%)	1.27%	9.44%	5.36%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	1.27%	0.00%	0.64%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	24.4%	25.7%	25.0%
Collector Filterer (%)	30.3%	28.02%	29.2%
Predator (%)	22.9%	25.1%	24.0%
Shredder - Detritus (%)	10.2%	6.8%	8.5%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	12.21%	14.45%	13.33%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/29/2017

Latitude 44.938950
Longitude -72.489451
Class Small, High Gradient, B
Sampler CCS

As of 12/20
This spread

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	490	≥300	Pass	≥400	Pass	≥500	I-
Richness	31.0	≥27	Pass	≥31	I+	≥35	Fail
EPT	20.5	≥16	Pass	≥19	Pass	≥21	I-
% PMA-O	81.7%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.63	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	5.36%	≤12%	Pass	≤5	I-	≤2	Fail
EPT/EPT+C	0.944	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	61.5%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay JB-8.3 River Mile _____ USFS___ PROB___
Site ID 4-3 Date 9.29.17 Time 1230 New Site____
Crew CS EC
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk
Surrounding Land Use: golf course, resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m^2 Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 60 % Filamentous Green _____% and length _____in
Blue Green Tr % Moss 5 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 20 variable %
Silt Rating: 4 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 2 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 50' (m) B.F.Hght 3' (m) Wetted Width: 20' (m) Riffle Depth: 26" (m) Pool Depth: 3' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 30 % Hardwood 70 % Understory: Shrub (brush) 10 % Herbaceous _____% Grass ____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H - M - L
Meter (type, #)1-_____ 2-_____ 3- _____
Color_____ Color DUP:_____
Temp Air 50 °F, °C Temp Water 10.5 °C fpH_____ lab pH_____ fCond_____ *D.O.*%_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Black rocks light Fe staining

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name JB 8.3 Personnel CS EC Date 9.26.17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0	//			
Gravel	2.0 -16	卌 卌 卌 卌 /			
Coarse Gravel	16 – 64	卌 卌 卌 卌			
Cobble	64 – 256	卌 卌 卌 ////			
Boulder	>256	卌 卌 卌 卌 卌 卌 卌 卌			
Bedrock		卌			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	卌 卌 卌 卌 卌 卌 卌 卌 卌 ////	卌 卌	卌 ////	卌 卌 /

	Macro-Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally				

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	卌 卌 卌 卌 卌 卌 卌	卌 卌 卌 卌 卌 ////	卌 /				

	Other *Macro or Micro*_____Cover Index					
Categoryy	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data - Jay Branch JB-7.3
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2004 PIO	222	26	20	61	1.54	4.4	0.98	54	Does Not Meet Class B Criteria
2005 DEC/ESI	458	40	21	62	2.34	8.1	0.88	38	Does Not Meet Class B Criteria
2006 ESI	1,276	25	14	55	2.85	0.77	0.94	23	Does Not Meet Class B Criteria
2007 PIO	423	27	19	73	1.24	1.4	0.95	58	Meets Class B Criteria
2008 VHBP	568	33	22	72	0.94	2.4	0.97	49	Meets Class B Criteria
2009 DEC/VHBP	427	34	25	76	1.26	6.1	0.99	67	Meets Class B Criteria
2010 VHB	344	31	23	55	1.11	1.3	1.0	54	Meets Class B Criteria
2011 VHB	97.5	17	11	71	0.94	3.7	0.99	44	Does Not Meet Class B Criteria
2012 VHB	176	28	20	67	1.24	9.3	0.96	48	Does Not Meet Class B Criteria
2013 VHB	327	28	21	74	0.79	9.2	0.96	62	Meets Class B Criteria
2014 VHB	340	34	26	66	1.17	8.9	0.98	63	Meets Interim Target and Class B Criteria
2015 VHB	378	35	24	68	0.95	14	0.97	45	Indeterminate; Meets 3 of 4 Interim Targets
2016 VHB	394	33	25	76	1.06	8	0.98	61	Meets Compliance Year Targets and Class B Criteria
2017 VHB	464	32	24	77	1.37	2.7	0.98	58	Meets Compliance Year Targets and Class B Criteria

2014 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	
2016 Compliance Year	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Macroinvertebrate data submittal form - VT DEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-7.3**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.942180	-72.473810
or VT Site ID:	427800000073	
Date collected:	10/6/2017	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2018	Jan. 2018
#sq picked:	18	15
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2018	Jan. 2018

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		Richness	EPT	Richness	EPT
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	3	4.00				0.00		SCR	N	2	3	8.00	0.00	12.0	0.00	1	0	-	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus				0.00	CCS	A	1	1.60		SCR	N	2	3	0.00	3.20	0.00	4.80	-	0	1	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1.33				0.00		PRD	N	3	2	4.00	0.00	2.67	0.00	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps				0.00	CCS	A	2	3.20		CG	Y	3	4	0.00	9.60	0.00	12.8	-	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp	CCS	A	1	1.33				0.00		CG	Y	3	6	4.00	0.00	8.00	0.00	1	0	-	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS	A	1	1.33				0.00		SRD	Y	3	5	4.00	0.00	6.67	0.00	1	0	-	0
02.05.05.00.007.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CHAETOCLADIUS	N/A	sp	CCS	A	1	1.33				0.00		CG	Y	2	6	2.67	0.00	8.00	0.00	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis				0.00	CCS	A	3	4.80		CG	Y	2	2	0.00	9.60	0.00	9.60	-	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca				0.00	CCS	A	1	1.60		CG	Y	2	4	0.00	3.20	0.00	6.40	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	8	10.7	CCS	A	8	12.8		PRD	N	2	3	21.3	25.6	32.0	38.4	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	6.67	CCS	A	5	8.00		PRD	N	2	2	13.3	16.0	13.3	16.0	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	5	6.67	CCS	A	2	3.20		CG	N	3	6	20.0	9.60	40.0	19.2	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.33	CCS	A	5	8.00		CG	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	17	22.7	CCS	A	18	28.8		CG	N	2	4	45.3	57.6	90.7	115	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	18	24.0	CCS	A	40	64.0		CG	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	9	12.0	CCS	A	11	17.6		SCR	N	1	4	12.0	17.6	48.0	70.4	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	24	32.0	CCS	A	28	44.8		CG	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	6	8.00	CCS	A	5	8.00		CG	N	2	1	16.0	16.0	8.00	8.00	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp				0.00	CCS	A	1	1.60		CG	N	0	0	0.00	0.00	0.00	0.00	-	0	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1.33				0.00		SCR	N	1	0	1.33	0.00	0.00	0.00	1	1	-	0
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	38	50.7	CCS	A	17	27.2		CF	N	2	3	101	54.4	152	81.6	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	3	4.00	CCS	A	2	3.20		CF	N	2	4	8.00	6.40	16.0	12.8	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	9	12.0	CCS	A	2	3.20		SRD	N	1	1	12.0	3.20	12.0	3.20	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	56	74.7	CCS	A	70	112		CF	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.33	CCS	A	1	1.60		PRD	N	3	6	4.00	4.80	8.00	9.60	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	8	10.7	CCS	A	10	16.0		PRD	N	1	2	10.7	16.0	21.3	32.0	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1.33				0.00		PRD	N	0	1	0.00	0.00	1.33	0.00	1	1	-	0
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	1	1.33				0.00		SCR	N	2	3	2.67	0.00	4.00	0.00	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	25	33.3	CCS	A	17	27.2		SCR	N	1	3	33.3	27.2	100	81.6	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	25	33.3	CCS	A	37	59.2		PRD	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	2	2.67	CCS	A	2	3.20		PRD	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	4	5.33				0.00		SRD	N	0	0	0.00	0.00	0.00	0.00	1	1	-	0
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature				0.00	CCS	A	1	1.60		SRD	N	1	0	0.00	1.60	0.00	0.00	-	0	1	1
05.06.00.00.004.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	PARAGNETINA	N/A	media	CCS	A	1	1.33				0.00		PRD	N	1	1	1.33	0.00	1.33	0.00	1	1	-	0
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	13	17.3	CCS	A	6	9.60		PRD	N	0	2	0.00	0.00	34.7	19.2	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1.33	CCS	A	4	6.40		PRD	N	1	2	1.33	6.40	2.67	12.8	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	4	5.33	CCS	A	7	11.2		PRD	N	1	2	5.33	11.2	10.7	22.4	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	5	6.67	CCS	A	9	14.4		SRD	N	1	0	6.67	14.4	0.00	0.00	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm				0.00	CCS	A	1	1.60		SRD	N	2	3	0.00	3.20	0.00	4.80	-	0	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	10	13.3	CCS	A	7	11.2		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:										308	**411**			323	**517**													
GRAND TOTAL:	927 organisms																											

Total BI Score	339	317	633	581	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	411	517	411	517				
# of Organisms w/o BI	13.3	11.2	13.3	11.2	33		30	
Total # Organisms with BI	397	506	397	506		25		23
Biotic Index	0.85	0.63	1.59	1.15				

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/06/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
01.03.00.00.006.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.01.00.00.001.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.007.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	10.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	22.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.14.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	50.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	74.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	10.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	5.33	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.01	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	17.33	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	5.33	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	
Total	**4**	**23**	**107**	**191**	**73**	**13**	**0**	**0**	**0**	**0**	**411**
Percent	**1%**	**6%**	**26%**	**46%**	**18%**	**3%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/06/2017

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
01.03.00.00.006.00.02	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	12.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	28.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	64.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	44.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.14.00.00.001.00.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	27.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	27.20	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	59.20	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	9.60	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	6.40	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	11.20	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	14.40	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0	0.00	11.20	0.00	0.00	0.00	0.00	
Total	**1.6**	**30.4**	**176**	**190**	**107.2**	**11.2**	**0**	**0**	**0**	**0**	**517**
Percent	**0%**	**6%**	**34%**	**37%**	**21%**	**2%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/06/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0	0	0	0	0	4	0		0	0	0	0	0	0	0	
01.03.00.00.006.00.02	0	0	0	0	0	0	0		0	0	0	0	0	2	0	
02.01.00.00.001.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.03.02.121.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.007.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	0	0	0	0	0	0		5	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	11	0	0	0	0		0	0	13	0	0	0	0	
02.19.00.00.006.00.00	0	0	7	0	0	0	0		0	0	8	0	0	0	0	
03.01.00.00.001.00.09	7	0	0	0	0	0	0		3	0	0	0	0	0	0	
03.04.00.00.004.00.01	1	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.04.00.00.004.01.00	23	0	0	0	0	0	0		29	0	0	0	0	0	0	
03.06.00.00.003.00.00	24	0	0	0	0	0	0		64	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	12	0		0	0	0	0	0	18	0	
03.06.00.00.005.00.00	32	0	0	0	0	0	0		45	0	0	0	0	0	0	
03.07.00.00.005.00.00	8	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	51	0	0	0	0	0		0	27	0	0	0	0	0	
04.05.00.02.008.01.07	0	4	0	0	0	0	0		0	3	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	12	0	0	0		0	0	0	3	0	0	0	
04.12.00.00.002.00.00	0	75	0	0	0	0	0		0	112	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1	0	0	0	0		0	0	2	0	0	0	0	
04.16.00.00.001.00.01	0	0	11	0	0	0	0		0	0	16	0	0	0	0	
04.16.00.00.001.02.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	33	0		0	0	0	0	0	27	0	
05.02.00.00.006.00.00	0	0	33	0	0	0	0		0	0	59	0	0	0	0	
05.02.00.00.091.00.00	0	0	3	0	0	0	0		0	0	3	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	5	0	0	0		0	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
05.06.00.00.004.00.01	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	17	0	0	0	0		0	0	10	0	0	0	0	
05.07.00.00.006.00.00	0	0	1	0	0	0	0		0	0	6	0	0	0	0	
05.07.00.00.007.00.00	0	0	5	0	0	0	0		0	0	11	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	7	0	0	0		0	0	0	14	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
18.04.00.00.000.00.00	13	0	0	0	0	0	0		11	0	0	0	0	0	0	
Total	**111**	**129**	**93**	**25**	**0**	**52**	**0**	**411**	**179**	**142**	**128**	**21**	**0**	**46**	**0**	**517**
Percent	**27%**	**31%**	**23%**	**6%**	**0%**	**13%**	**0%**	**100%**	**35%**	**28%**	**25%**	**4%**	**0%**	**9%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/06/2017

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	26.9%	86.9%	34.7%	89.4%
Col. Filt.	18%	30%	36%	31.5%	57.2%	27.6%	65.3%
Predator	19%	13%	7%	22.7%	83.6%	24.8%	76.7%
Shred-Det.	15%	4%	2%	6.2%	41.1%	4.0%	26.8%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	12.66%	94.77%	8.98%	74.8%
				PPCS-FG =	**60.6%**	**PPCS-FG =**	**55.5%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/06/2017
Class Small, High Gradient, B
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.97%	7.03	0.31%	7.69
Diptera	19%	18%	13%	5.5%	13.48	5.9%	13.118
Ephemeroptera	23%	34%	32%	26.0%	3.0	34.06%	11.1
Plecoptera	21%	8%	8%	17.9%	3.1	20.7%	0.3
Trichoptera	28%	33%	33%	46.4%	18.4	36.8%	8.8
Oligochaeta	0.5%	0.5%	1.0%	3.25%	2.75	2.17%	1.67
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	48.3		43.1
				Sum diff * 0.5	24.1		21.6
				100-(sum diff * 0.5)	75.9		78.4
				% model affinity	**75.9%**		**78.4%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/06/2017
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	371	473.6
#C organisms	4	9.6
EPT/EPT+C	0.99	0.98

Biometric Summary

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/06/2017
Class Small, High Gradient, B
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	411	517	464
Species Richness	33.0	30.0	31.5
EPT Richness	25.0	23.0	24.0
Old Bio Index (0 to 5)	0.85	0.63	0.74
New Bio Index (0 to 10)	1.59	1.15	1.37
% dominant taxa	18.2%	21.7%	19.9%
EPT/EPT+C	0.989	0.980	0.985
EPT/Richness	0.758	0.767	0.762
% Model Affinity (orders)	75.9%	78.4%	77.1%
PPCS - functional groups	60.6%	55.5%	58.1%
Major Groups:			
Coleoptera (%)	0.97%	0.31%	0.64%
Diptera (%)	5.5%	5.9%	5.7%
Ephemeroptera (%)	26.0%	34.06%	30.01%
Trichoptera (%)	46.4%	36.8%	41.6%
Plecoptera (%)	17.9%	20.7%	19.3%
Oligochaeta (%)	3.25%	2.17%	2.71%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	26.9%	34.7%	30.8%
Collector Filterer (%)	31.5%	27.55%	29.5%
Predator (%)	22.7%	24.8%	23.7%
Shredder - Detritus (%)	6.2%	4.0%	5.1%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	12.66%	8.98%	10.82%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/06/2017

Latitude 44.942180
Longitude -72.473810
Class Small, High Gradient, B
Sampler CCS

As of 12/20
This spread

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	464	≥300	Pass	≥400	Pass	≥500	I-
Richness	32	≥27	Pass	≥31	I+	≥35	Fail
EPT	24	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	77%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.37	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	2.71%	≤12%	Pass	≤5	Pass	≤2	I-
EPT/EPT+C	0.98	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	58%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay JB-7.3 River Mile _____ USFS___ PROB___
Site ID 4-4a Date 10.6.17 Time 1230 New Site___
Crew CS
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk
Surrounding Land Use: resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m^2 Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70 % Filamentous Green _____% and length _____in
Blue Green Tr % Moss 1 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS variable - more sand than it initially appears
Embeddedness Estimate 15 % Silt Rating: 3 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 1 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 40' (m) B.F.Hght 3' (m) Wetted Width: 18' (m) Riffle Depth: 4-6" (m) Pool Depth: 2' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 20 % Herbaceous 30 % Grass ____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed
leaves mainly on

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H - M - L
Meter (type, #)1-_____ 2-_____ 3- _____
Color_____ Color DUP:_____
Temp Air 60 °F, °C Temp Water 11.5 °C fpH_____ lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 5

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Fe staining

Sampled 1 wk later than the rest of Jay, ran out of time on 9.29.17. Brown rocks

A lot of terristrial moss little periphytic moss

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name Jay 4-4 Personnel CS Date 10·6·17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0	111			
Gravel	2.0 -16	𝍸 𝍸			
Coarse Gravel	16 – 64	𝍸 𝍸 𝍸 𝍸			
Cobble	64 – 256	𝍸 𝍸 𝍸 𝍸

Macroinvertebrate data submittal form - VTDEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch - Trib 9**
Station:	**JB-T9-0.1**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938650	-72.491635
or VT Site ID:	427809000001	
Date collected:	9/29/2017	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan. 2018
#sq picked:	24
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan. 2018

Taxonomic Data															Biotic Index				Richness Metrics	
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				NOTES	FFG	Chiro	Biotic Index Scores		Old Biotic Index (1-5)	New Biotic Index (1-10)	Richness	EPT
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]				Old BI	New BI	KN-1	KN-1	KN-1	KN-1
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	14	14		SCR	N	2	3	28	42	1	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS	A	5	5		SCR	N	2	3	10	15	1	0
01.05.00.00.002.00.00	COLEOPTERA	PSEPHENIDAE	N/A	N/A	PSEPHENUS	N/A	sp	CCS	A	1	1		SCR	N	2	4	2	4	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMIN	N/A	POLYPEDILUN	N/A	aviceps	CCS	A	2	2		CG	Y	3	4	6	8	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN	N/A	UKIEFFERIELL	N/A	tirolensis	CCS	A	1	1		CG	Y	2	2	2	2	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	2	2		CG	Y	2	4	4	8	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	3	3		CG	N	2	1	6	3	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	20	20		PRD	N	2	3	40	60	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1		PRD	N	2	2	2	2	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	4	4		SRD	N	3	6	12	24	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	19	19		CG	N	3	6	57	114	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	NTRELLA/PLAUD	PLAUDITUS	N/A	sp	CCS	A	4	4		SCR	N	2	5	8	20	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELL	N/A	aurivillii	CCS	A	1	1		CG	N	0	0	0	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELL	subv/inv/rotund	group	CCS	A	8	8		CG	N	2	4	16	32	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	22	22		CG	N	0	0	0	0	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	2	2		SCR	N	1	4	2	8	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	ALEPTOPHLE	N/A	sp	CCS	A	19	19		CG	N	2	1	38	19	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	1	1		SHR	N	1	2	1	2	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	4	4		SCR	N	1	0	4	0	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	10	10		CF	N	0	0	0	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	TOPSYC/HYDRO	ERATOPSYCH	alh/slo/spa	alhedra	CCS	A	51	51		CF	N	2	3	102	153	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	TOPSYC/HYDRO	ERATOPSYCH	alh/slo/spa	sparna	CCS	A	5	5		CF	N	2	4	10	20	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	EPIDOSTOMA	N/A	sp	CCS	A	6	6		SRD	N	1	1	6	6	1	1
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp	CCS	A	2	2		SCR	N	0	0	0	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	OLOPHILODI	N/A	sp	CCS	A	52	52		CF	N	0	0	0	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	OLYCENTROP	N/A	sp	CCS	A	1	1		PRD	N	3	6	3	6	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHIL	N/A	fuscula	CCS	A	9	9		PRD	N	1	2	9	18	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHIL	invaria grp	invaria grp	CCS	A	5	5		PRD	N	1	1	5	5	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHIL	carolina/fenestra	carolina group	CCS	A	4	4		PRD	N	0	1	0	4	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	20	20		PRD	N	0	0	0	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	1		SRD	N	0	0	0	0	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	4	4		PRD	N	0	2	0	8	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1		PRD	N	1	2	1	2	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	3	3		PRD	N	1	2	3	6	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	TERONARCY	N/A	proteus	CCS	A	3	3		SRD	N	1	0	3	0	1	1
13.02.00.00.002.00.00	BIVALVIA	SPHAERIIDAE	N/A	N/A	PISIDIUM	N/A	sp	CCS	A	1	1		CF	N	4	8	4	8	1	0
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	1	1		-	N	-	-	-	-	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	20	20		CG	N	-	-	-	-	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1		CG	N	-	-	-	-	1	0
TOTALS by Rep:										333	333					**Total BI Score**	384	599	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	333 organisms															**Total # Organisms**	333	333		
																# of Organisms w/o BI	22	22	39	
																Total # Organisms with BI	311	311		25
																Biotic Index	1.23	1.93		

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/29/17

2016 Expanded Key	KN-1: Numbers of Organisms										
ID#	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	NEMATOMORPHA	TOTAL
01.03.00.00.006.00.00	14	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	5	0	0	0	0	0	0	0	0	0	
01.05.00.00.002.00.00	1	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	2	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	20	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	4	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	19	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	4	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	8	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	22	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	2	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	19	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	1	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	4	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	10	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	51	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	5	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	6	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	52	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	9	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	5	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	4	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	20	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	4	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	3	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	3	0	0	0	0	0	
13.02.00.00.002.00.00	0	0	0	0	0	0	1	0	0	0	
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	1	
18.04.00.00.000.00.00	0	0	0	0	0	20	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1	0	0	0	0	
Total	**20**	**33**	**75**	**150**	**32**	**21**	**1**	**0**	**0**	**1**	**333**
Percent	**6.01%**	**9.9%**	**22.5%**	**45.0%**	**9.6%**	**6.31%**	**0.30%**	**0.00%**	**0.00%**	**0.30%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/29/17

2016 Expanded Key ID#	KN-1: Numbers of Organisms											
	Collector Filterer	Collector Gatherer	Parasite	Planktivore	Predator	Piercing Carnivore	Piercing Herbivore	Scraper	Shredder-Herbivore	Shredder-Detritus	Other/ Unidentified	Total
01.03.00.00.006.00.00	0	0	0	0	0	0	0	14	0	0	0	**14**
01.03.00.00.006.00.02	0	0	0	0	0	0	0	5	0	0	0	**5**
01.05.00.00.002.00.00	0	0	0	0	0	0	0	1	0	0	0	**1**
02.05.01.00.085.00.05	0	2	0	0	0	0	0	0	0	0	0	**2**
02.05.05.00.029.00.11	0	1	0	0	0	0	0	0	0	0	0	**1**
02.05.05.00.114.01.04	0	2	0	0	0	0	0	0	0	0	0	**2**
02.06.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	0	**3**
02.19.00.00.003.00.00	0	0	0	0	20	0	0	0	0	0	0	**20**
02.19.00.00.006.00.00	0	0	0	0	1	0	0	0	0	0	0	**1**
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	4	0	**4**
03.01.00.00.001.00.09	0	19	0	0	0	0	0	0	0	0	0	**19**
03.01.00.02.007.00.00	0	0	0	0	0	0	0	4	0	0	0	**4**
03.04.00.00.004.00.01	0	1	0	0	0	0	0	0	0	0	0	**1**
03.04.00.00.004.01.00	0	8	0	0	0	0	0	0	0	0	0	**8**
03.06.00.00.003.00.00	0	22	0	0	0	0	0	0	0	0	0	**22**
03.06.00.00.004.00.00	0	0	0	0	0	0	0	2	0	0	0	**2**
03.07.00.00.005.00.00	0	19	0	0	0	0	0	0	0	0	0	**19**
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	1	0	0	**1**
04.03.00.00.002.00.00	0	0	0	0	0	0	0	4	0	0	0	**4**
04.05.00.00.003.00.01	10	0	0	0	0	0	0	0	0	0	0	**10**
04.05.00.02.008.01.04	51	0	0	0	0	0	0	0	0	0	0	**51**
04.05.00.02.008.01.07	5	0	0	0	0	0	0	0	0	0	0	**5**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	6	0	**6**
04.11.00.00.001.00.00	0	0	0	0	0	0	0	2	0	0	0	**2**
04.12.00.00.002.00.00	52	0	0	0	0	0	0	0	0	0	0	**52**
04.14.00.00.005.00.00	0	0	0	0	1	0	0	0	0	0	0	**1**
04.16.00.00.001.00.01	0	0	0	0	9	0	0	0	0	0	0	**9**
04.16.00.00.001.01.00	0	0	0	0	5	0	0	0	0	0	0	**5**
04.16.00.00.001.02.00	0	0	0	0	4	0	0	0	0	0	0	**4**
05.02.00.00.006.00.00	0	0	0	0	20	0	0	0	0	0	0	**20**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	1	0	**1**
05.06.00.00.007.00.01	0	0	0	0	4	0	0	0	0	0	0	**4**
05.07.00.00.006.00.00	0	0	0	0	1	0	0	0	0	0	0	**1**
05.07.00.00.007.00.00	0	0	0	0	3	0	0	0	0	0	0	**3**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	3	0	**3**
13.02.00.00.002.00.00	1	0	0	0	0	0	0	0	0	0	0	**1**
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	1	**1**
18.04.00.00.000.00.00	0	20	0	0	0	0	0	0	0	0	0	**20**
18.06.00.00.000.00.00	0	1	0	0	0	0	0	0	0	0	0	**1**
Group Total	**119**	**98**	**0**	**0**	**68**	**0**	**0**	**32**	**1**	**14**	**1**	**333**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/29/17

Percent of Sample Total	**35.7%**	**29.4%**	**0.0%**	**0.0%**	**20.4%**	**0.0%**	**0.0%**	**9.6%**	**0.3%**	**4.2%**	**0.3%**	**100%**

	Model			**Kicknet 1 vs. SHG**	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	29.4%	94.9%
Col. Filt.	18%	30%	36%	35.74%	50.4%
Predator	19%	13%	7%	20.4%	93.0%
Shred-Det.	15%	4%	2%	4.2%	28.0%
Shred- Herb.	1%	1%	5%	0.30%	30.0%
Scraper	12%	13%	22%	9.61%	80.1%
				PPCS-FG =	**62.7%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001 **Class** SHG
Sample Date 09/29/17 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	6.01%	1.99
Diptera	19%	18%	13%	9.9%	9.09
Ephemeroptera	23%	34%	32%	22.5%	0.48
Plecoptera	21%	8%	8%	9.6%	11.4
Trichoptera	28%	33%	33%	45.0%	17.0
Oligochaeta	0.5%	0.5%	1.0%	6.31%	5.81
Other	0.5%	0.5%	1.0%	6.91%	6.407

Sum diff	52.2
Sum diff * 0.5	26.1
100-(sum diff * 0.5)	73.9
% model affinity	**73.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/29/17
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	257
#C organisms	5
EPT/EPT+C	0.981

Biometrics Summary

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/29/17
Class SHG
Sampler C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	333	333
Species Richness	39.0	39.0
EPT Richness	25.0	25.0
Old Bio Index (0 to 5)	1.23	1.23
New Bio Index (0 to 10)	1.93	1.93
% dominant taxa	15.6%	15.6%
# dominant taxa	52	
dominant taxa ID	TRICHOPTERA	PHILOPOTAMIDAE
EPT/EPT+C	0.981	0.981
EPT/Richness	0.641	0.641
% Model Affinity (orders)	73.9%	73.9%
PPCS - functional groups	62.7%	62.7%
Major Groups:		
Coleoptera (%)	6.01%	6.01%
Diptera (%)	9.9%	9.9%
Ephemeroptera (%)	22.5%	22.5%
Trichoptera (%)	45.0%	45.0%
Plecoptera (%)	9.6%	9.6%
Oligochaeta (%)	6.31%	6.31%
Bivalvia (%)	0.30%	0.30%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.00%	0.00%
Other (%)	0.30%	0.30%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	29.4%	29.4%
Collector Filterer (%)	35.74%	35.74%
Predator (%)	20.4%	20.4%
Shredder - Detritus (%)	4.2%	4.2%
Shredder - Herbivore (%)	0.30%	0.30%
Scraper (%)	9.61%	9.61%
Other (%)	0.30%	0.30%
Total (%)	100%	100%

Project Jay Peak Resort
Station JB-T9-0.1 **Latitude** 44.938650
Stream Jay Branch - Trib 9 **Longitude** -72.491635
Location 427809000001 **Class** B, Small High Gradient
Sample Date 09/29/17 **Sampler** C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	333	≥300	Pass	≥400	Fail	≥500	Fail
Richness	39.0	≥27	Pass	≥31	Pass	≥35	Pass
EPT	25.0	≥16	Pass	≥19	Pass	≥21	Pass
PMA-O	73.9%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.93	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	6.31%	≤12%	Pass	≤5	I-	≤2	Fail
EPT/EPT+C	0.981	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	62.7%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support leve
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Support	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Below Threshold	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay Peak JB-T9-0.1 River Mile _____ USFS___ PROB___
Site ID 3-1 Date 9.29.17 Time 1330 New Site____
Crew CS EC
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk
Surrounding Land Use: golf course, resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m² Quantitative: Y / N
#Reps: 1 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 50 % Filamentous Green _____% and length _____in
Blue Green _____% Moss Tr % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 30 % Silt Rating: 4-5 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 2 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 20' (m) B.F.Hght 2' (m) Wetted Width: 4' (m) Riffle Depth: 1-2" (m) Pool Depth: 1' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 20 % Hardwood 80 % Understory: Shrub (brush) 30 % Herbaceous 40 % Grass ____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed
w/ leaves on,

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H - M - L
Meter (type, #)1-_____ 2-_____ 3- _____
Color_____ Color DUP:_____
Temp Air 50 °F/°C Temp Water 10.5 °C fpH_____ lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 3

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Areas of significant bank lose. Black rock

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name JBT9 0.1 Personnel CS EC Date 9.29.17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6	//			
Sand	0.06 – 2.0	卌 ////			
Gravel	2.0 -16	卌 卌 卌 卌 //			
Coarse Gravel	16 – 64	卌 卌 ////			
Cobble	64 – 256	卌 卌 ///			
Boulder	>256	卌 卌 卌 卌 卌 //			
Bedrock		卌 卌 ///			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	卌 卌 卌 卌 卌 卌 卌	卌 卌	卌 //	卌 卌 ////

	Macro-Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally				

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	卌 卌 卌	卌 卌 卌 卌 卌 卌 /	/				

	Other *Macro or Micro*_____Cover Index					
Categoryy	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data -South Mountain Branch - SMB-T3-0.8
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2016 VHB	415	31	19	59	0.73	5.1	0.91	35	Meets Class B Criteria *
2017 VHB	392	31	21	58	0.90	5.6	0.92	35	Meets Class B Criteria *

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

* Per email from DEC Aquatic Biologist Steve Fiske dated 1/18/2017, the failure of the PPCS-FG metric "is likely due to natural causes at this very high elevation site and the October collection date" and characterize the final assessment outcome as good-very good.

Macroinvertebrate data submittal form - VT DEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-T3-0.8**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928484	-72.507207
or VT Site ID:	427807030008	
Date collected:	9/29/2017	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2018	Jan. 2018
#sq picked:	20	18
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2018	Jan. 2018

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1 ID [1]	Rep1 QA [2]	Rep1 Count [3]	Rep1 Total Sample Count [4]	Rep2 ID [1]	Rep2 QA [2]	Rep2 Count [3]	Rep2 Total Sample Count [4]	NOTES	FFG	Chiro
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp				0.00	CCS	A	2	2.67		SCR	N
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	TIA/PALPOM	BEZZIA	N/A	sp				0.00	CCS	A	1	1.33		PRD	N
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps				0.00	CCS	A	1	1.33		CG	Y
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp	CCS	A	1	1.20				0.00		CG	Y
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS	A	2	2.40				0.00		SRD	Y
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	6	7.20	CCS	A	7	9.33		CG	Y
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp				0.00	CCS	A	1	1.33		CG	Y
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	RHEOCRICOTOPUS	N/A	sp	CCS	A	1	1.20				0.00		CG	Y
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	11	13.20	CCS	A	12	16.00		CG	Y
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	4	4.8	CCS	A	1	1.333333333		CG	N
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	4	4.80				0.00		CF	N
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	7.20	CCS	A	15	20.00		PRD	N
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	8	9.60	CCS	A	14	18.67		PRD	N
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	2	2.4	CCS	A	1	1.333333333		CG	N
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAU	PLAUDITUS	N/A	sp	CCS	A	2	2.4	CCS	A	1	1.3		SCR	N
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	5	6.0	CCS	A	2	2.666666667		CG	N
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	2	2.4				0		SRD	N
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	4	4.80	CCS	A	1	1.33		CG	N
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	2	2.40				0.00		CG	N
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	4	4.80	CCS	A	1	1.33		CG	N
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	3	3.6	CCS	A	9	12		CF	N
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	10	12.00	CCS	A	7	9.33		SRD	N
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	7	8.4	CCS	A	3	4.00		CF	N
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.2				0		PRD	N
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	12	14.40	CCS	A	10	13.33		PRD	N
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	5	6.0	CCS	A	2	2.7		PRD	N
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	2	2.40	CCS	A	3	4.00		PRD	N
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	2	2.40	CCS	A	14	18.67		SCR	N
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	5	6.0	CCS	A	5	6.666666667		SCR	N
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm				0.0	CCS	A	1	1.333333333		SRD	N
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	79	94.80	CCS	A	52	69.33		PRD	N
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	87	104.40	CCS	A	111	148.00		SRD	N
05.04.00.00.000.00.01	PLECOPTERA	NEMOURIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	2	2.40	CCS	A	1	1.33		SRD	N
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1.20	CCS	A	1	1.33		PRD	N
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIRIEKUS	N/A	sp	CCS	A	11	13.2	CCS	A	10	13.33		PRD	N
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	3	3.60	CCS	A	2	2.67		SRD	N
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	21	25.20	CCS	A	14	18.67		CG	N
TOTALS by Rep:										315	**378**			305	**407**			
GRAND TOTAL:		785 organisms																

	Biotic Index: Biotic Index Scores: Old BI	New BI	Old BI (1-5): KN-1	KN-2	New BI (1-10): KN-1	KN-2	Richness Metrics: Richness: KN-1	EPT: KN-1	Richness: KN-2	EPT: KN-2
01.03.00.00.006.00.00	2	3	0.00	5.33	0.0	8.00	-	0	1	0
02.03.00.01.003.00.00	3	6	0.00	4.00	0.00	8.00	-	0	1	0
02.05.01.00.085.00.05	3	4	0.00	4.00	0.00	5.33	-	0	1	0
02.05.03.02.121.00.00	3	6	3.60	0.00	7.20	0.0	1	0	-	0
02.05.05.00.005.00.00	3	5	7.20	0.00	12.00	0.00	1	0	-	0
02.05.05.00.029.00.11	2	2	14.40	18.67	14.40	18.67	1	0	1	0
02.05.05.00.075.00.00	3	5	0.00	4.00	0.00	6.67	-	0	1	0
02.05.05.00.096.00.00	2	6	2.40	0.00	7.20	0.00	1	0	-	0
02.05.05.00.114.01.04	2	4	26.40	32.00	52.80	64.00	1	0	1	0
02.06.00.00.001.00.00	2	1	9.6	2.7	4.8	1.3	1	0	1	0
02.14.00.00.004.00.00	1	2	4.8	0.0	9.6	0.0	1	0	-	0
02.19.00.00.003.00.00	2	3	14.4	40.00	21.6	60.0	1	0	1	0
02.19.00.00.006.00.00	2	2	19.20	37.33	19.20	37.33	1	0	1	0
03.01.00.00.001.00.09	3	6	7.2	4.0	14.4	8	1	1	1	1
03.01.00.02.007.00.00	2	5	4.80	2.67	12.00	6.67	1	1	1	1
03.04.00.00.004.00.01	0	0	0.0	0.0	0.0	0.0	1	1	1	1
03.04.00.00.005.00.02	1	0	2.40	0.00	0.00	0.00	1	1	-	0
03.06.00.00.003.00.00	0	0	0.0	0.0	0.00	0.00	1	1	1	1
03.06.00.00.005.00.00	0	0	0.00	0.00	0.00	0.00	1	1	-	0
03.14.00.00.001.00.00	0	0	0.00	0.00	0.00	0.00	1	1	1	1
04.05.01.00.006.00.01	0	0	0	0.0	0	0.0	1	1	1	1
04.07.00.00.001.00.00	1	1	12.00	9.33	12.0	9.3	1	1	1	1
04.12.00.00.002.00.00	0	0	0.0	0.00	0.0	0.00	1	1	1	1
04.14.00.00.005.00.00	3	6	3.60	0.00	7.20	0.00	1	1	-	0
04.16.00.00.001.00.01	1	2	14.40	13.33	28.80	26.67	1	1	1	1
04.16.00.00.001.01.00	1	1	6.0	2.7	6.0	2.7	1	1	1	1
04.16.00.00.001.02.00	0	1	0.00	0.00	2.40	4.00	1	1	1	1
04.18.00.00.001.00.00	2	3	4.80	37.33	7.20	56.00	1	1	1	1
04.20.00.00.001.00.00	1	3	6.0	6.7	18	20.0	1	1	1	1
05.01.00.00.000.00.01	1	3	0.00	1.33	0.00	4.00	-	0	1	1
05.02.00.00.006.00.00	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.03.00.00.000.00.01	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.04.00.00.000.00.01	1	2	2.40	1.33	4.80	2.67	1	1	1	1
05.07.00.00.006.00.00	1	2	1.20	1.33	2.40	2.67	1	1	1	1
05.07.00.00.007.00.00	1	2	13.20	13.33	26.4	26.7	1	1	1	1
05.08.00.00.001.00.02	1	0	3.60	2.67	0.00	0.0	1	1	1	1
18.04.00.00.000.00.00	-	-	-	-	-	-	1	0	1	0
Total BI Score			184	244	290	379	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms			378	407	378	407				
# of Organisms w/o BI			25.2	18.667	25.2	18.667	32		30	
Total # Organisms with BI			353	388	353	388		22		20
Biotic Index			0.52	0.63	0.82	0.98				

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	7.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.096.00.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	13.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	7.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	9.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.14.00.00.001.00.00	0.00	0.00	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	8.40	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	14.40	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	94.80	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	104.40	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.000.00.01	0.00	0.00	0.00	0.00	2.40	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	13.20	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	25.20	0.00	0.00	0.00	0.00	
Total	**0**	**52**	**25**	**56**	**220**	**25**	**0**	**0**	**0**	**0**	**378**
Percent	**0%**	**14%**	**7%**	**15%**	**58%**	**7%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	9.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.096.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	18.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.14.00.00.001.00.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	9.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	18.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	69.33	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	148.00	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.000.00.01	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	18.67	0.00	0.00	0.00	0.00	
Total	**2.666666667**	**69.33333333**	**8**	**71**	**237.3333333**	**18.66666667**	**0**	**0**	**0**	**0**	**407**
Percent	**1%**	**17%**	**2%**	**17%**	**58%**	**5%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0	0	0	0	0	0	0		0	0	0	0	0	3	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.03.02.121.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	7	0	0	0	0	0	0		9	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.05.00.096.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	13	0	0	0	0	0	0		16	0	0	0	0	0	0	
02.06.00.00.001.00.00	5	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	5	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	7	0	0	0	0		0	0	20	0	0	0	0	
02.19.00.00.006.00.00	0	0	10	0	0	0	0		0	0	19	0	0	0	0	
03.01.00.00.001.00.09	2	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	2	0		0	0	0	0	0	1	0	
03.04.00.00.004.00.01	6	0	0	0	0	0	0		3	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	5	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.06.00.00.005.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.14.00.00.001.00.00	5	0	0	0	0	0	0		1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	4	0	0	0	0	0		0	12	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	12	0	0	0		0	0	0	9	0	0	0	
04.12.00.00.002.00.00	0	8	0	0	0	0	0		0	4	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	14	0	0	0	0		0	0	13	0	0	0	0	
04.16.00.00.001.01.00	0	0	6	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.02.00	0	0	2	0	0	0	0		0	0	4	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	2	0		0	0	0	0	0	19	0	
04.20.00.00.001.00.00	0	0	0	0	0	6	0		0	0	0	0	0	7	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
05.02.00.00.006.00.00	0	0	95	0	0	0	0		0	0	69	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	104	0	0	0		0	0	0	148	0	0	0	
05.04.00.00.000.00.01	0	0	0	2	0	0	0		0	0	0	1	0	0	0	
05.07.00.00.006.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
05.07.00.00.007.00.00	0	0	13	0	0	0	0		0	0	13	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	4	0	0	0		0	0	0	3	0	0	0	
18.04.00.00.000.00.00	25	0	0	0	0	0	0		19	0	0	0	0	0	0	
Total	**73**	**17**	**150**	**127**	**0**	**11**	**0**	**378**	**55**	**16**	**144**	**163**	**0**	**29**	**0**	**407**
Percent	**19%**	**4%**	**40%**	**34%**	**0%**	**3%**	**0%**	**100%**	**13%**	**4%**	**35%**	**40%**	**0%**	**7%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/29/2017

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	19.4%	62.5%	13.4%	43.4%
Col. Filt.	18%	30%	36%	4.4%	24.7%	3.9%	21.9%
Predator	19%	13%	7%	39.7%	47.9%	35.4%	53.7%
Shred-Det.	15%	4%	2%	33.7%	44.6%	40.0%	37.5%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	2.86%	23.81%	7.21%	60.1%
				PPCS-FG =	**33.9%**	**PPCS-FG =**	**36.1%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.00%	8.00	0.66%	7.34
Diptera	19%	18%	13%	13.7%	5.35	17.0%	1.951
Ephemeroptera	23%	34%	32%	6.7%	16.3	1.97%	21.0
Plecoptera	21%	8%	8%	58.1%	37.1	58.4%	37.4
Trichoptera	28%	33%	33%	14.9%	13.1	17.4%	10.6
Oligochaeta	0.5%	0.5%	1.0%	6.67%	6.17	4.59%	4.09
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	86.5		82.9
				Sum diff * 0.5	43.3		41.5
				100-(sum diff * 0.5)	56.7		58.5
				% model affinity	**56.7%**		**58.5%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	301	316
#C organisms	25.2	28
EPT/EPT+C	0.92	0.92

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	378	407	392
Species Richness	32.0	30.0	31.0
EPT Richness	22.0	20.0	21.0
Old Bio Index (0 to 5)	0.52	0.63	0.57
New Bio Index (0 to 10)	0.82	0.98	0.90
% dominant taxa	27.6%	36.4%	32.0%
EPT/EPT+C	0.923	0.919	0.921
EPT/Richness	0.688	0.667	0.677
% Model Affinity (orders)	56.7%	58.5%	57.6%
PPCS - functional groups	33.9%	36.1%	35.0%
Major Groups:			
Coleoptera (%)	0.00%	0.66%	0.33%
Diptera (%)	13.7%	17.0%	15.3%
Ephemeroptera (%)	6.7%	1.97%	4.32%
Trichoptera (%)	14.9%	17.4%	16.1%
Plecoptera (%)	58.1%	58.4%	58.2%
Oligochaeta (%)	6.67%	4.59%	5.63%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	19.4%	13.4%	16.4%
Collector Filterer (%)	4.4%	3.93%	4.2%
Predator (%)	39.7%	35.4%	37.5%
Shredder - Detritus (%)	33.7%	40.0%	36.8%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	2.86%	7.21%	5.04%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/29/2017

Latitude 44.928484
Longitude -72.507207
Class Small, High Gradient, B
Sampler CCS

As of 12/20
This spread

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	392.3	≥300	Pass	≥400	I-	≥500	Fail
Richness	31.0	≥27	Pass	≥31	I+	≥35	Fail
EPT	21.0	≥16	Pass	≥19	Pass	≥21	I+
% PMA-O	57.6%	≥45%	Pass	≥55%	I+	≥65%	Fail
BI (New 1-10)	0.90	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	5.63%	≤12%	Pass	≤5	I-	≤2	Fail
EPT/EPT+C	0.921	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	35.0%	≥ 40%	Fail	≥ 45%	Fail	≥ 50%	Fail
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		% PPCS-FG					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay SMB-T3-0.8 River Mile _____ USFS___ PROB___
Site ID Arbor Date 9.29.17 Time 1400 New Site____
Crew CS EC
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk.
Surrounding Land Use: Ski area, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 50 % Filamentous Green _____% and length _____in
Blue Green Tr % Moss 15 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 0 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 5 % Silt Rating: 2 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 2 (0= none,5=high) LWD (>4"dia) #: 3 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other step pool Channelized: Y / N Upstream Dam: Y / N ___mi
B.F.Width: 25' (m) B.F.Hght 3' (m) Wetted Width: 10' (m) Riffle Depth: 2-4" (m) Pool Depth: 3' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 30 m, R 20 m
Overstory: Softwood _____% Hardwood 100% Understory: Shrub (brush) 10 % Herbaceous 20 % Grass____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed
Leaves mainly on here

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: **H – M – L**
Meter (type, #)1-_____2-_____3- _____
Color_____ Color DUP:_____
Temp Air 50 °F, °C Temp Water 9 °C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 5

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other salamander

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name Jay Arbor Personnel CS EC Date 9.29.17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0	I			
Gravel	2.0 -16	卌 卌 I			
Coarse Gravel	16 – 64	卌 卌 卌			
Cobble	64 – 256	卌 卌 III			
Boulder	>256	卌 卌 卌 卌 卌 卌 卌 卌 卌 卌	卌 II		
Bedrock		卌 卌 II			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	卌 卌 卌 卌 卌 卌 卌 II	卌 卌 卌 卌 III	卌 卌 I	卌 卌 卌 卌 III

	Macro-Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally				

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	卌 卌 卌 卌 卌 IIII	卌 卌 卌 卌 卌 卌 卌 卌	IIII				

	Other *Macro or Micro*_____Cover Index					
Categoryy	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data - South Mountain Branch - SMB-T3-0.1
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2012 DEC	259	35	22	67	0.93	21	0.93	57	Does Not Meet Class B Criteria/Fair-Poor
2013 VHB	133	22	15	58	1.04	30	0.93	50	Does Not Meet Class B Criteria
2014 VHB	361	27	19	58	0.71	18	0.96	46	Meets All Interim Targets
2015 VHB	218	21	14	46	0.71	37	0.98	42	Meets 1 of 4 Interim Targets
2016 VHB	206	26	19	58	0.93	30	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets
2017 VHB	178	23	17	64	0.81	20	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Compliance Year Targets

2014 Interim Targets	> 150	> 22	> 15.3	(-)	(-)	< 25	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	> 200	> 24	> 15.5	(-)	(-)	< 20	(-)	(-)	
2016 Interim Targets	> 250	> 26	> 15.7	(-)	(-)	< 14.5	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Macroinvertebrate data submittal form - VT DEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-T3-0.1**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928768	-72.494217
or VT Site ID:	427807030001	
Date collected:	9/29/2017	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2018	Jan. 2018
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2018	Jan. 2018

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		Richness	EPT	Richness	EPT
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	2	2.00	CCS	A	1	1.00		SCR	N	2	3	4.00	2.00	6.0	3.00	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	3	3.00	CCS	A	3	3.00		CG	Y	2	2	6.00	6.00	6.00	6.00	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca				0.00	CCS	A	2	2.00		CG	Y	2	4	0.00	4.00	0.00	8.00	-	0	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp				0.00	CCS	A	1	1.00		CG	N	2	1	0.00	2.00	0.00	1.00	-	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	1	1.00				0.00		CG	N	3	4	3.00	0.00	4.00	0.00	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp				0.00	CCS	A	4	4.00		PRD	N	2	3	0.00	8.00	0.00	12.00	-	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp				0.00	CCS	A	2	2.00		PRD	N	2	2	0.00	4.00	0.00	4.00	-	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1.00	CCS	A	1	1.00		CG	N	3	6	3.00	3.00	6.00	6.00	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLA	PLAUDITUS	N/A	sp	CCS	A	2	2.00	CCS	A	3	3.00		SCR	N	2	5	4.00	6.00	10.00	15.00	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.00				0.00		CG	N	0	0	0.00	0.00	0.00	0.00	1	1	-	0
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group				0.00	CCS	A	2	2.00		CG	N	2	4	0.00	4.00	0.00	8.00	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	42	42.00	CCS	A	36	36.00		CG	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp				0.00	CCS	A	1	1.00		SHR	N	1	2	0.00	1.00	0.00	2.00	-	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alt/sto/spa	alhedra	CCS	A	2	2.00	CCS	A	1	1.00		CF	N	2	3	4.00	2.00	6.00	3.00	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alt/sto/spa	sparna	CCS	A	1	1.00				0.00		CF	N	2	4	2.00	0.00	4.00	0.00	1	1	-	0
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis				0.00	CCS	A	2	2.00		CF	N	0	0	0.00	0.00	0.00	0.00	-	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp				0.00	CCS	A	1	1.00		SRD	N	1	1	0.00	1.00	0.00	1.00	-	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	8	8.00	CCS	A	10	10.00		CF	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	4	4.00	CCS	A	5	5.00		PRD	N	1	2	4.00	5.00	8.00	10.00	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1.00	CCS	A	3	3.00		PRD	N	1	1	1.00	3.00	1.00	3.00	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	2	2.00				0.00		PRD	N	0	1	0.00	0.00	2.00	0.00	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	7	7.00	CCS	A	5	5.00		SCR	N	1	3	7.00	5.00	21.00	15.00	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	7	7.00	CCS	A	28	28.00		PRD	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	13	13.00	CCS	A	32	32.00		SRD	N	0	0	0.00	0.00	0.00	0.00	1	1	1	1
05.04.00.00.000.00.01	PLECOPTERA	NEMOURIDAE	N/A	N/A	N/A	N/A	imm				0.00	CCS	A	1	1.00		SRD	N	1	2	0.00	1.00	0.00	2.00	-	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature				0.00	CCS	A	2	2.00		SRD	N	1	0	0.00	2.00	0.00	0.00	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	8	8.00	CCS	A	18	18.00		PRD	N	1	2	8.00	18.00	16.00	36.00	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	5	5.00	CCS	A	14	14.00		SRD	N	1	0	5.00	14.00	0.00	0.00	1	1	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	1	1.00				0.00		PRD	N	2	5	2.00	0.00	5.00	0.00	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	37	37.00	CCS	A	30	30.00		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:										148	**148**			208	**208**					**Total BI Score**	53	91	95	135	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:		356 organisms																		**Total # Organisms**	148	208	148	208				
																				# of Organisms w/o BI	37.0	30	37.0	30	20		25	
																				Total # Organisms with BI	111	178	111	178		15		18
																				Biotic Index	0.48	0.51	0.86	0.76				

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	42.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	37.00	0.00	0.00	0.00	0.00	
Total	**2**	**4**	**46**	**25**	**33**	**37**	**0**	**0**	**1**	**0**	**148**
Percent	**1%**	**3%**	**31%**	**17%**	**22%**	**25%**	**0%**	**0%**	**1%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.000.00.01	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	
Total	**1**	**12**	**42**	**28**	**95**	**30**	**0**	**0**	**0**	**0**	**208**
Percent	**0%**	**6%**	**20%**	**13%**	**46%**	**14%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0	0	0	0	0	2	0		0	0	0	0	0	1	0	
02.05.05.00.029.00.11	3	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.19.00.00.001.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	0	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
03.01.00.00.001.00.09	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	2	0		0	0	0	0	0	3	0	
03.04.00.00.004.00.01	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.06.00.00.003.00.00	42	0	0	0	0	0	0		36	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0		0	0	0	0	1	0	0	
04.05.00.02.008.01.04	0	2	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.00.02.008.01.07	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	0	0	0	0		0	2	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
04.12.00.00.002.00.00	0	8	0	0	0	0	0		0	10	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	4	0	0	0	0		0	0	5	0	0	0	0	
04.16.00.00.001.01.00	0	0	1	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.02.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	7	0		0	0	0	0	0	5	0	
05.02.00.00.006.00.00	0	0	7	0	0	0	0		0	0	28	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	13	0	0	0		0	0	0	32	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
05.07.00.00.007.00.00	0	0	8	0	0	0	0		0	0	18	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	5	0	0	0		0	0	0	14	0	0	0	
06.06.00.00.007.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	37	0	0	0	0	0	0		30	0	0	0	0	0	0	
Total	**85**	**11**	**23**	**18**	**0**	**11**	**0**	**148**	**75**	**13**	**60**	**50**	**1**	**9**	**0**	**208**
Percent	**57%**	**7%**	**16%**	**12%**	**0%**	**7%**	**0%**	**100%**	**36%**	**6%**	**29%**	**24%**	**0%**	**4%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/29/2017

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	57.4%	54.0%	36.1%	86.0%
Col. Filt.	18%	30%	36%	7.4%	41.3%	6.3%	34.7%
Predator	19%	13%	7%	15.5%	81.8%	28.8%	65.9%
Shred-Det.	15%	4%	2%	12.2%	81.1%	24.0%	62.4%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.48%	48.1%
Scraper	12%	13%	22%	7.43%	61.94%	4.33%	36.1%
				PPCS-FG =	**53.3%**	**PPCS-FG =**	**55.5%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	1.35%	6.65	0.48%	7.52
Diptera	19%	18%	13%	2.7%	16.30	5.8%	13.231
Ephemeroptera	23%	34%	32%	31.1%	8.1	20.19%	2.8
Plecoptera	21%	8%	8%	22.3%	1.3	45.7%	24.7
Trichoptera	28%	33%	33%	16.9%	11.1	13.5%	14.5
Oligochaeta	0.5%	0.5%	1.0%	25.00%	24.50	14.42%	13.92
Other	0.5%	0.5%	1.0%	0.68%	0.176	0.00%	0.500
				Sum diff	68.1		77.2
				Sum diff * 0.5	34.1		38.6
				100-(sum diff * 0.5)	65.9		61.4
				% model affinity	**65.9%**		**61.4%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	104	165
#C organisms	3	5
EPT/EPT+C	0.97	0.97

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	148	208	178
Species Richness	20.0	25.0	22.5
EPT Richness	15.0	18.0	16.5
Old Bio Index (0 to 5)	0.48	0.51	0.49
New Bio Index (0 to 10)	0.86	0.76	0.81
% dominant taxa	28.4%	17.3%	22.8%
EPT/EPT+C	0.972	0.971	0.971
EPT/Richness	0.750	0.720	0.733
% Model Affinity (orders)	65.9%	61.4%	63.7%
PPCS - functional groups	53.3%	55.5%	54.4%
Major Groups:			
Coleoptera (%)	1.35%	0.48%	0.92%
Diptera (%)	2.7%	5.8%	4.2%
Ephemeroptera (%)	31.1%	20.19%	25.64%
Trichoptera (%)	16.9%	13.5%	15.2%
Plecoptera (%)	22.3%	45.7%	34.0%
Oligochaeta (%)	25.00%	14.42%	19.71%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.68%	0.00%	0.34%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	57.4%	36.1%	46.7%
Collector Filterer (%)	7.4%	6.25%	6.8%
Predator (%)	15.5%	28.8%	22.2%
Shredder - Detritus (%)	12.2%	24.0%	18.1%
Shredder - Herbivore (%)	0.00%	0.48%	0.24%
Scraper (%)	7.43%	4.33%	5.88%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-T3-0.1 **Latitude** 44.928768
Stream South Mountain Branch **Longitude** -72.494217
Location 427807030001 **Class** Small, High Gradient, B
Sample Date 09/29/2017 **Sampler** CCS

As of 12/20
This spread

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	178.0	≥300	Fail	≥400	Fail	≥500	Fail
Richness	22.5	≥27	Fail	≥31	Fail	≥35	Fail
EPT	16.5	≥16	Pass	≥19	Fail	≥21	Fail
% PMA-O	63.7%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	0.81	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	19.71%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.971	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	54.4%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I+
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		Density, Richness, % Oligo					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay SMB-T3-0.1 River Mile ____ USFS___ PROB___
Site ID 106 Date 9·29·17 Time 1500 New Site____
Crew CS EC
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk.
Surrounding Land Use: Resort, highway, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 50 % Filamentous Green _____% and length _____in
Blue Green _____% Moss 2 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 35 % Silt Rating: 4 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 0 (0= none,5=high) LWD (>4"dia) #: 3 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other step pool Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 35' (m) B.F.Hght 2' (m) Wetted Width: 15' (m) Riffle Depth: 2-4" (m) Pool Depth: 3' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100m, R >100 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 20 % Herbaceous 20 % Grass ____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed

WQ Section Sampler(s) _____ Baseflow or Freshet Present Flow: H / M / L
Meter (type, #)1-_____2-_____3- _____
Color_____ Color DUP:_____
Temp Air 50 °F °C Temp Water 10.5 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand (+++) | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Trout Yoy

light Fe staining, very hard to kick. Substrate sealed in sand, I put in the kick effort, but few bugs.

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name Jay 106 Personnel EC CS Date 9/29/17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0	//			
Gravel	2.0 -16	5 5 5 5 1			
Coarse Gravel	16 – 64	5 5 5			
Cobble	64 – 256	5 5 5 1			
Boulder	>256	5 5 5 5 5 5 5 5 5 5 5			
Bedrock		5			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	5 5 5 5 5 5 5 5 5 5 ////	5 5	5 5 1	5 ////

	Macro-Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally				

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	5 5 5 5 5 5	5 5 5 5 5 5 5 5 5 5 //	//				

	Other *Macro or Micro* _____ Cover Index					
Categoryy	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data - South Mountain Branch - SMB-1.2
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2012 VHB/DEC	234	28	19	71	0.89	12.1	0.98	58	Does Not Meet Class B Criteria/Fair
2013 VHB	239	26	18	61	0.81	22.6	0.96	49	Does Not Meet Class B Criteria/Fair
2014 VHB	354	27	20	71	0.71	13.31	0.99	63	Indeterminate
2015 VHB	339	27	18	54	0.62	17.1	0.96	44	Does Not Meet Class B Criteria/Fair
2016 VHB	307	27	18	59	0.86	18.1	0.95	49	Does Not Meet Class B Criteria
2017 VHB	288	33	22	75	1.20	13.8	0.92	61	Indeterminate

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I-)	<300	<27	<16	<45%	>4.5	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

Macroinvertebrate data submittal form - VT DEC October 2016 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-1.2**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938327	-72.479061
or VT Site ID:	427807000012	
Date collected:	9/29/2017	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2018	Jan. 2018
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2018	Jan. 2018

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1 ID [1]	Rep1 QA [2]	Rep1 Count [3]	Rep1 Total Sample Count [4]	Rep2 ID [1]	Rep2 QA [2]	Rep2 Count [3]	Rep2 Total Sample Count [4]	NOTES	FFG	Chiro
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	2	2.00				0.00		SCR	N
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp				0.00	CCS	A	1	1.00		PRD	N
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp	CCS	A	1	1.00				0.00		PRD	N
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1.00	CCS	A	2	2.00		CG	Y
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	18	18.00	CCS	A	5	5.00		CG	Y
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1.00				0.00		CG	Y
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	4	4.00	CCS	A	1	1.00		CG	Y
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	1	1.00				0.00		PRD	Y
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	1.00	CCS	A	1	1.00		CG	N
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	1	1.00				0.00		CG	N
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	6.00	CCS	A	8	8.00		PRD	N
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp				0.00	CCS	A	2	2.00		PRD	N
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp				0.00	CCS	A	1	1.00		CG	N
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	2	2.00	CCS	A	4	4.00		CG	N
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAC	PLAUDITUS	N/A	sp				0.00	CCS	A	4	4.00		SCR	N
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.00	CCS	A	1	1.00		CG	N
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	2	2.00	CCS	A	1	1.00		CG	N
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	1	1.00				0.00		SRD	N
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	11	11.00	CCS	A	16	16.00		CG	N
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	2	2.00	CCS	A	8	8.00		SCR	N
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	24	24.00	CCS	A	52	52.00		CG	N
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	2	2.00				0.00		CG	N
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp				0.00	CCS	A	1	1.00		SHR	N
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	2.00	CCS	A	4	4.00		SCR	N
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	6	6.00	CCS	A	10	10.00		CF	N
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	1	1.00				0.00		SRD	N
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	13	13.00	CCS	A	28	28.00		CF	N
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	2	2.00				0.00		PRD	N
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	3	3.00	CCS	A	10	10.00		PRD	N
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	3	3.00	CCS	A	1	1.00		PRD	N
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	3	3.00	CCS	A	1	1.00		PRD	N
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	14	14.00	CCS	A	31	31.00		SCR	N
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	35	35.00	CCS	A	31	31.00		PRD	N
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1.00	CCS	A	1	1.00		PRD	N
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	11	11.00	CCS	A	13	13.00		SRD	N
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	1	1.00	CCS	A	3	3.00		SRD	N
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	24	24.00	CCS	A	20	20.00		PRD	N
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	11	11.00	CCS	A	24	24.00		SRD	N
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp				0.00	CCS	A	1	1.00		PRD	N
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP				0.00	CCS	A	1	1.00		-	N
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	44	44.00	CCS	A	33	33.00		CG	N
TOTALS by Rep:										255	**255**			320	**320**			

GRAND TOTAL: 575 organisms

Biotic Index

Expanded Key	Biotic Index Scores: Old BI	Biotic Index Scores: New BI	Old BI (1-5): KN-1	Old BI (1-5): KN-2	New BI (1-10): KN-1	New BI (1-10): KN-2
01.03.00.00.006.00.00	2	3	4.00	0.00	6.0	0.00
02.01.00.00.001.00.00	3	2	0.00	3.00	0.00	2.00
02.03.00.01.003.00.00	3	6	3.00	0.00	6.00	0.00
02.05.01.00.085.00.05	3	4	3.00	6.00	4.00	8.00
02.05.05.00.029.00.11	2	2	36.00	10.00	36.00	10.00
02.05.05.00.068.00.00	2	2	2.00	0.00	2.00	0.00
02.05.05.00.114.01.04	2	4	8.00	2.00	16.00	4.00
02.05.09.04.110.00.00	3	6	3.00	0.00	6.00	0.00
02.06.00.00.001.00.00	2	1	2.00	2.00	1.00	1.00
02.19.00.00.001.00.00	3	4	3.00	0.00	4.00	0.00
02.19.00.00.003.00.00	2	3	12.00	16.00	18.00	24.00
02.19.00.00.006.00.00	2	2	0.00	4.00	0.00	4.00
02.19.00.00.019.00.00	3	4	0.00	3.00	0.00	4.00
03.01.00.00.001.00.09	3	6	6.00	12.00	12.00	24.00
03.01.00.02.007.00.00	2	5	0.00	8.00	0.00	20.00
03.04.00.00.004.00.01	0	0	0.00	0.00	0.00	0.00
03.04.00.00.004.01.00	2	4	4.00	2.00	8.00	4.00
03.04.00.00.005.00.02	1	0	1.00	0.00	0.00	0.00
03.06.00.00.003.00.00	0	0	0.00	0.00	0.00	0.00
03.06.00.00.004.00.00	1	4	2.00	8.00	8.00	32.00
03.06.00.00.005.00.00	0	0	0.00	0.00	0.00	0.00
03.07.00.00.005.00.00	2	1	4.00	0.00	2.00	0.00
04.01.00.00.003.00.00	1	2	0.00	1.00	0.00	2.00
04.03.00.00.002.00.00	1	0	2.00	4.00	0.00	0.00
04.05.00.02.008.01.04	2	3	12.00	20.00	18.00	30.00
04.07.00.00.001.00.00	1	1	1.00	0.00	1.00	0.00
04.12.00.00.002.00.00	0	0	0.00	0.00	0.00	0.00
04.14.00.00.005.00.00	3	6	6.00	0.00	12.00	0.00
04.16.00.00.001.00.01	1	2	3.00	10.00	6.00	20.00
04.16.00.00.001.01.00	1	1	3.00	1.00	3.00	1.00
04.16.00.00.001.02.00	0	1	0.00	0.00	3.00	1.00
04.20.00.00.001.00.00	1	3	14.00	31.00	42.00	93.00
05.02.00.00.006.00.00	0	0	0.00	0.00	0.00	0.00
05.02.00.00.091.00.00	0	0	0.00	0.00	0.00	0.00
05.03.00.00.000.00.01	0	0	0.00	0.00	0.00	0.00
05.05.00.00.000.00.01	1	0	1.00	3.00	0.00	0.00
05.07.00.00.007.00.00	1	2	24.00	20.00	48.00	40.00
05.08.00.00.001.00.02	1	0	11.00	24.00	0.00	0.00
06.06.00.00.007.00.00	2	5	0.00	2.00	0.00	5.00
16.01.00.00.001.00.00	-	-	-	-	-	-
18.04.00.00.000.00.00	-	-	-	-	-	-
Total BI Score			170	192	262	329
Total # Organisms			255	320	255	320
# of Organisms w/o BI			44.0	34	44.0	34
Total # Organisms with BI			211	286	211	286
Biotic Index			0.81	0.67	1.24	1.15

Richness Metrics

Expanded Key	Richness: KN-1	EPT: KN-1	Richness: KN-2	EPT: KN-2
01.03.00.00.006.00.00	1	0	-	0
02.01.00.00.001.00.00	-	0	1	0
02.03.00.01.003.00.00	1	0	-	0
02.05.01.00.085.00.05	1	0	1	0
02.05.05.00.029.00.11	1	0	1	0
02.05.05.00.068.00.00	1	0	-	0
02.05.05.00.114.01.04	1	0	1	0
02.05.09.04.110.00.00	1	0	-	0
02.06.00.00.001.00.00	1	0	1	0
02.19.00.00.001.00.00	1	0	-	0
02.19.00.00.003.00.00	1	0	1	0
02.19.00.00.006.00.00	-	0	1	0
02.19.00.00.019.00.00	-	0	1	0
03.01.00.00.001.00.09	1	1	1	1
03.01.00.02.007.00.00	-	0	1	1
03.04.00.00.004.00.01	1	1	1	1
03.04.00.00.004.01.00	1	1	1	1
03.04.00.00.005.00.02	1	1	-	0
03.06.00.00.003.00.00	1	1	1	1
03.06.00.00.004.00.00	1	1	1	1
03.06.00.00.005.00.00	1	1	1	1
03.07.00.00.005.00.00	1	1	-	0
04.01.00.00.003.00.00	-	0	1	1
04.03.00.00.002.00.00	1	1	1	1
04.05.00.02.008.01.04	1	1	1	1
04.07.00.00.001.00.00	1	1	-	0
04.12.00.00.002.00.00	1	1	1	1
04.14.00.00.005.00.00	1	1	-	0
04.16.00.00.001.00.01	1	1	1	1
04.16.00.00.001.01.00	1	1	1	1
04.16.00.00.001.02.00	1	1	1	1
04.20.00.00.001.00.00	1	1	1	1
05.02.00.00.006.00.00	1	1	1	1
05.02.00.00.091.00.00	1	1	1	1
05.03.00.00.000.00.01	1	1	1	1
05.05.00.00.000.00.01	1	1	1	1
05.07.00.00.007.00.00	1	1	1	1
05.08.00.00.001.00.02	1	1	1	1
06.06.00.00.007.00.00	-	0	1	0
16.01.00.00.001.00.00	-	0	1	0
18.04.00.00.000.00.00	1	0	1	0
Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**	
34		32		
	23		21	

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	44.00	0.00	0.00	0.00	0.00	
Total	**2**	**34**	**45**	**47**	**83**	**44**	**0**	**0**	**0**	**0**	**255**
Percent	**1%**	**13%**	**18%**	**18%**	**33%**	**17%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.01.00.00.001.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.06.00.00.001.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	52.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	31.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	31.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00	0.00	
Total	**0**	**21**	**86**	**86**	**92**	**33**	**0**	**0**	**1**	**1**	**320**
Percent	**0%**	**7%**	**27%**	**27%**	**29%**	**10%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/29/2017

2016 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.03.00.01.003.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	1	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.05.00.029.00.11	18	0	0	0	0	0	0		5	0	0	0	0	0	0	
02.05.05.00.068.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	4	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.06.00.00.001.00.00	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.19.00.00.001.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	6	0	0	0	0		0	0	8	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
02.19.00.00.019.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.01.00.00.001.00.09	2	0	0	0	0	0	0		4	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	4	0	
03.04.00.00.004.00.01	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.04.00.00.004.01.00	2	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	11	0	0	0	0	0	0		16	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	2	0		0	0	0	0	0	8	0	
03.06.00.00.005.00.00	24	0	0	0	0	0	0		52	0	0	0	0	0	0	
03.07.00.00.005.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0		0	0	0	0	1	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	2	0		0	0	0	0	0	4	0	
04.05.00.02.008.01.04	0	6	0	0	0	0	0		0	10	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	13	0	0	0	0	0		0	28	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	3	0	0	0	0		0	0	10	0	0	0	0	
04.16.00.00.001.01.00	0	0	3	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.02.00	0	0	3	0	0	0	0		0	0	1	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	14	0		0	0	0	0	0	31	0	
05.02.00.00.006.00.00	0	0	35	0	0	0	0		0	0	31	0	0	0	0	
05.02.00.00.091.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	11	0	0	0		0	0	0	13	0	0	0	
05.05.00.00.000.00.01	0	0	0	1	0	0	0		0	0	0	3	0	0	0	
05.07.00.00.007.00.00	0	0	24	0	0	0	0		0	0	20	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	11	0	0	0		0	0	0	24	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
16.01.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	0	1	
18.04.00.00.000.00.00	44	0	0	0	0	0	0		33	0	0	0	0	0	0	
Total	**112**	**19**	**79**	**25**	**0**	**20**	**0**	**255**	**117**	**38**	**76**	**40**	**1**	**47**	**1**	**320**
Percent	**44%**	**7%**	**31%**	**10%**	**0%**	**8%**	**0%**	**100%**	**37%**	**12%**	**24%**	**13%**	**0%**	**15%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/29/2017

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	43.9%	70.6%	36.6%	84.8%
Col. Filt.	18%	30%	36%	7.5%	41.4%	11.9%	66.0%
Predator	19%	13%	7%	31.0%	61.3%	23.8%	80.0%
Shred-Det.	15%	4%	2%	9.8%	65.4%	12.5%	83.3%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.31%	31.3%
Scraper	12%	13%	22%	7.84%	65.36%	14.69%	81.7%
				PPCS-FG =	**50.7%**	**PPCS-FG =**	**71.2%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.78%	7.22	0.00%	8.00
Diptera	19%	18%	13%	13.3%	5.67	6.6%	12.438
Ephemeroptera	23%	34%	32%	17.6%	5.4	26.88%	3.9
Plecoptera	21%	8%	8%	32.5%	11.5	28.8%	7.8
Trichoptera	28%	33%	33%	18.4%	9.6	26.9%	1.1
Oligochaeta	0.5%	0.5%	1.0%	17.25%	16.75	10.31%	9.81
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.62%	0.125
				Sum diff	56.6		43.1
				Sum diff * 0.5	28.3		21.6
				100-(sum diff * 0.5)	71.7		78.4
				% model affinity	**71.7%**		**78.4%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	175	264
#C organisms	25	8
EPT/EPT+C	0.88	0.97

Biometric Summary

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/29/2017
Class Small, High Gradient, B
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	255	320	288
Species Richness	34.0	32.0	33.0
EPT Richness	23.0	21.0	22.0
Old Bio Index (0 to 5)	0.81	0.67	0.74
New Bio Index (0 to 10)	1.24	1.15	1.20
% dominant taxa	17.3%	16.3%	16.8%
EPT/EPT+C	0.875	0.971	0.923
EPT/Richness	0.676	0.656	0.667
% Model Affinity (orders)	71.7%	78.4%	75.1%
PPCS - functional groups	50.7%	71.2%	60.9%
Major Groups:			
Coleoptera (%)	0.78%	0.00%	0.39%
Diptera (%)	13.3%	6.6%	9.9%
Ephemeroptera (%)	17.6%	26.88%	22.26%
Trichoptera (%)	18.4%	26.9%	22.7%
Plecoptera (%)	32.5%	28.8%	30.6%
Oligochaeta (%)	17.25%	10.31%	13.78%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.31%	0.16%
Other (%)	0.00%	0.31%	0.16%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	43.9%	36.6%	40.2%
Collector Filterer (%)	7.5%	11.88%	9.7%
Predator (%)	31.0%	23.8%	27.4%
Shredder - Detritus (%)	9.8%	12.5%	11.2%
Shredder - Herbivore (%)	0.00%	0.31%	0.16%
Scraper (%)	7.84%	14.69%	11.27%
No FG Designation (%)	0.00%	0.31%	0.16%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-1.2 **Latitude** 44.938327
Stream South Mountain Branch **Longitude** -72.479061
Location 427807000012 **Class** Small, High Gradient, B
Sample Date 09/29/2017 **Sampler** CCS

As of 12/20
This spread

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	287.5	≥300	I-	≥400	Fail	≥500	Fail
Richness	33.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	22.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	75.1%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.20	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	13.78%	≤12%	I-	≤5	Fail	≤2	Fail
EPT/EPT+C	0.923	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	60.9%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Indeterminate**					
The following metrics do not meet Class B thresholds:		Density, % Oligo					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay SMB-1.2 River Mile _____ USFS___ PROB___
Site ID 107 Date 9.29.17 Time 1630 New Site___
Crew EC CS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Quiet 2 wk.
Surrounding Land Use: residential, resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: _____ m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70 % Filamentous Green _____% and length _____in
Blue Green Tr % Moss 5 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 20 % Silt Rating: 3 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 2 (0= none,5=high) LWD (>4"dia) #: 4 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other some riprapping Channelized: Y / N Upstream Dam: Y / N ___mi
B.F.Width: 35' (m) B.F.Hght 3' (m) Wetted Width: 12' (m) Riffle Depth: 2-4" (m) Pool Depth: 1' (m)
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 50 m, R 30 m
Overstory: Softwood _____% Hardwood 100 % Understory: Shrub (brush) 30 % Herbaceous 30 % Grass ____%
Canopy%: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H - M - L
Meter (type, #)1-_____2-_____3- _____
Color_____ Color DUP:_____
Temp Air 50 °F, °C Temp Water 9.5 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Heavy Fe seep, iron bacteria, BL

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Site Name Jay SMB1.2 Personnel CS EC Date 9.29.17

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0	111			
Gravel	2.0 -16	5 5 5 4			
Coarse Gravel	16 – 64	5 5 5 5 11			
Cobble	64 – 256	5 5 5 5 1111			
Boulder	>256	5 5 5 5 5 5 5 5 5 1111			
Bedrock		5 1111			
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	5 5 5 5 5 5 5 5 5 5 5 5 1	5 1	5 5	5 5 5 1111

	Macro-Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally				

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	5 5 5 5 5 1111	5 5 5 5 5 5 5 5 5 11	11				

	Other *Macro or Micro* Fe P → at seep Cover Index					
Categoryy	0	1 slimy	2 (line)	3 (.5-1 m)	4	5
Tally			111		1	

Substrate Comments: