February 18, 2015

Ref: 57201.07

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

RE: Jay Peak Resort
Water Quality Monitoring Plan ("WQMP")
2014 Performance Report

Dear Tim:

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

Water quality monitoring was performed in accordance with the *Jay Peak Resort Quality Assurance Project Plan* (most recently revised, August 2012). Results indicated that aquatic life use standards for macroinvertebrates were being met at the reference station (WQM 4-1) and the farthest upgradient and downgradient stations on the Jay Branch (WQM 4-2a and WQM 4-4a, respectively), but not at certain other locations. Trends in macroinvertebrate metrics in the Jay Branch watershed indicate that the quality of most stations has been improving since 2011 when Tropical Storm Irene impacted the area. Macroinvertebrate metrics in the South Mountain Branch watershed have also been improving and a newly sampled station (WQM 108) met the Class B threshold values in 2014. Additional sampling will be conducted in 2015 and any trends will be reported in the 2015 Performance Report.

If you have any questions or require further information please do not hesitate to call me directly at (802) 497-6164 or email rwildey@vhb.com.

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Very truly yours,

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Enclosure

cc: Neil Kamman, VT DEC (electronic copy only)
Steven Fiske, VT DEC (electronic copy only)
Kim Greenwood, VNRC (electronic copy only)
Walter Elander, JPR (electronic copy only)

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Water Quality Monitoring Plan
2014 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
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South Burlington, Vermont 05403

February 18, 2015

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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 data collected in 2013/2014, in conformance with the "Water Quality Monitoring Plan, Quality Assurance Project Plan" ("QAPP") (Pioneer, 2007 last revised by VHB, 2012). The WQRP was most recently updated on January 16, 2015 and was approved by the Vermont Department of Environmental Conservation ("VT DEC") on February 2, 2015.

2.0 Background

Since 2004, an annual WQMP Performance Report for the Jay Branch watershed, that encompasses JPR holdings, has been prepared and submitted to the VT DEC. 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.

JPR has implemented a series of measures, as outlined in the WQRP, aimed at improving stormwater management and releases of sediment in order to reduce in-stream impacts. Restoration actions have included the capture and treatment of stormwater runoff from existing impervious surfaces, culvert replacements, revegetation, and drainage infrastructure improvements as well as on-the-ground and model-based assessments of the Jay Branch Watershed.

Beginning in 2007, JPR also designed and implemented additional stormwater treatment to comply with VT DEC-stipulated specific "Stormwater Remedial Action Requirements", which include a goal of

providing stormwater treatment and control for 25 percent of existing impervious surfaces for the Jay Branch and Tributary 9 watersheds. Documentation of progress toward the 25 percent requirement, provided by others, indicates that JPR has designed, permitted, or constructed systems which meet the requirement for Jay Branch and is nearly in compliance within the Tributary 9 watershed. The design of stormwater management systems for new impervious areas has continued to incorporate treatment and control of runoff from existing untreated impervious areas where feasible. Over the past two years JPR has certified stormwater treatment practices ("STP") throughout the Resort area and determined that they are in compliance with the current stormwater permits. Several STPs constructed during 2013 were certified in 2014 once they were completely stabilized.

The Resort implemented a snow management plan and developed snow storage areas in 2014. This plan includes specific instructions for plow operators in designated areas to direct snowmelt into swales with checkdams or snow storage areas and away from streams and wetlands.

In addition, interim aquatic biota targets have been established during 2014 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 with thresholds established by VT DEC demonstrating compliance with 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 metric (density, richness, EPT and percent Oligochaetes).

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 Sampling Locations included on page 1 of 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. The principal tributaries associated with Jay Branch within the vicinity of JPR include: Phase I Tributary, Phase II 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 I and Phase II tributaries join downslope of Jay Peak Road to form Tributary 9. The following is a description of these major tributaries, which are also shown on the Sampling Locations map on page 1 of Appendix 1.

- Phase I 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 Phase I development area. Downslope of the Village Phase I area, Phase I Tributary flows through a wooded area and then through an existing town culvert under the Jay Peak Road, where it joins with Phase II Tributary within the golf course to become Tributary 9 to Jay Branch.

- Phase II 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 II development area. Downslope of the Village Phase II area, Phase II Tributary flows through a wooded area and then through a culvert under Jay Peak Road to its confluence with Phase I 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 I and II tributaries, the total drainage area of the stream is 0.34 square miles.

- South Mountain Branch (Tributary 7 to Jay Branch) watershed, which flows northeasterly, is bisected by VT Route 242 before converging with Jay Branch. The area northwest of VT Route 242 includes much of the existing Stateside Hotel and Base Lodge and trail area at JPR, while southeast is largely undeveloped forested area.

- Tributary 3 originates upgradient from the Stateside Hotel and Base Lodge 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.

4.0 Monitoring Network Design

As outlined in the QAPP, water quality monitoring 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

A supplemental turbidity monitoring program was added in 2014 in an effort to identify potential sources of sediment within the smaller tributaries to the Jay Branch that may have been impacted by development at the Resort. The intent of this data collection is to identify where supplemental BMPs may be needed, in the context of the adaptive management approach

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, with regard to water quality monitoring station locations, sampling activities, and frequency. Sampling activities conducted in 2014 followed the protocols that are outlined in the 2012 QAPP. Table 1 summarizes water quality data collected during the 2014 sampling period. A Sampling Locations map, included on page 1 of Appendix 1, identifies the locations of these stations.

Table 1: Jay Peak Resort Water Quality 2013 - 2014 Monitoring Station Locations, Activities, and Frequency									
Stream	**Water Quality Monitoring Station Name**	**Water Chemistry**						**Substrate**	**Biomonitoring**
		Baseflow		**Event Flow**		**Winter Melt***		**10/2/2014 and 10/3/2014**	
		8/29/14	**9/29/14**	**8/13/14**	**9/11/14**	**4/18/14**	**4/28/14**		
Jay Branch	WQM 4-1	X	X	X	X	X	X	X	X
	WQM 4-2a	X	X	X	X	X	X	X	X
	WQM 4-3	X	X	X	X	X	X	X	X
	WQM 4-4a	X	X	X	X	X	X	X	X
Phase I Trib.	WQM 1-2	Dry	Dry	X	Dry	X	X	Dry	
Phase II Trib.	WQM 2-3	X	X	X	X	X	X	X	
Trib. 9	WQM 3-1	X	X	X	X	X	X	X	X
South Mountain Branch	WQM 105	X	X	X	X			X	
	WQM 106	X	X	X	X			X	X
	WQM 107	X	X	X	X	X	X	X	X
	WQM-108	X	X	Dry	X			X	X

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

As indicated in Table 1, in 2014 an attempt to monitor 11 water quality monitoring ("WQM") stations for water chemistry was made during Baseflow conditions and Event Flow conditions; however WQM 1-2 was dry on both Baseflow sampling dates and the September 11, 2014 Event Flow sampling date and WQM 108 was dry on the August 13, 2014 Event Flow sampling date. Substrate characteristics were monitored at all 11 monitoring stations in 2014. Eight WQM stations were monitored during winter melt conditions for field parameters. Eight WQM stations were sampled for aquatic biota. As per the WQRP, only five WQM stations were identified as biomonitoring stations; however, to present a more detailed view of biological data throughout the Resort area, WQM 4-2a, WQM 106 and WQM 108 were also sampled in 2014.

The West Bowl baseline stations (WQM 101, WQM 102, WQM 103 and WQM 104) were established in 2012 to provide baseline water quality data for development planned in that area as part of the JPR Master Plan. Sampling at these locations will resume once a construction schedule for the West Bowl development has been determined.

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

Upper Jay Branch Watershed

- WQM 4-1 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 was named 4-1b due to a winter 2009 sample taken on the southern segment of Jay Branch at WQM 4-1a, but was re-designated WQM 4-1 in the 2010 report. This station corresponds to VT DEC station 427800000101.

Jay Branch Watershed

- WQM 4-2a 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, station WQM 4-2 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 has been sampled as part of a paired sampling effort conducted alongside VT DEC biologists. This station receives drainage from the JPR Tram base area and a significant portion of the golf course. This station corresponds to VT DEC station 427800000091.
- WQM 4-3 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 VT DEC station 427800000083.
- WQM 4-4a/b is located on the main stem of Jay Branch downstream of all Resort development, near the Route 242 Bridge. WQM 4-4a/b corresponds to VT DEC station 427800000073.

Tributary 9 Watershed

- WQM 1-2 is located on Phase I 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 Phase I development area and upslope on-mountain activities.
- WQM 2-3 is located on the Phase II Tributary downstream of the Village Phase II development area and associated stormwater management system infrastructure,

therefore representing in-stream water quality conditions including both the Phase II development area and upslope on-mountain activities.

- WQM 3-1 is located on Tributary 9 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 VT DEC station 427809000001.

South Mountain Branch Watershed

- WQM 105 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 VT DEC station 427807000018.
- WQM 106 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 VT DEC station 427807030001.
- WQM 107 is located on the main stem of South Mountain Branch, upslope 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 VT DEC station 427807000012.
- WQM 108 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 VT DEC Station 427807030005.

5.0 Monitoring Results

5.1 Baseflow Water Chemistry Analysis

Baseflow water chemistry samples were collected on August 29 and September 29, 2014 in the Jay Branch, Upper Jay Branch (reference), Phase II Tributary, Tributary 9, Tributary 3 and South Mountain Branch. Water quality monitoring samples were collected from the 10 of the 11 Baseflow monitoring

stations. Sample could not be collected from the Phase I Tributary (WQM 1-2) due to the absence of streamflow at the monitoring station on both sampling dates.

The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2004 to 2014. 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 2014 data points. A complete summary of 2004 through 2014 Baseflow water chemistry results for each monitoring station and the laboratory reports for each sampling event are included in pages 2 to 27 of Appendix 1.

Water quality monitoring results were evaluated to determine compliance with relevant narrative and numerical criteria of the Vermont Water Quality Standards ("VWQS"). The USEPA Guidance Value ("EPA–GV") for certain parameters is provided, in the absence of a corresponding VWQS criterion. However, the use of EPA-GVs, which represent suggested values for good water quality, does not carry any regulatory significance with regard to the VWQS.

5.1.1 Alkalinity

Water quality monitoring samples were analyzed by Endyne Inc. ("Endyne"), a certified environmental testing laboratory, for alkalinity. Figure 1 displays the Baseflow results for alkalinity at each respective station.

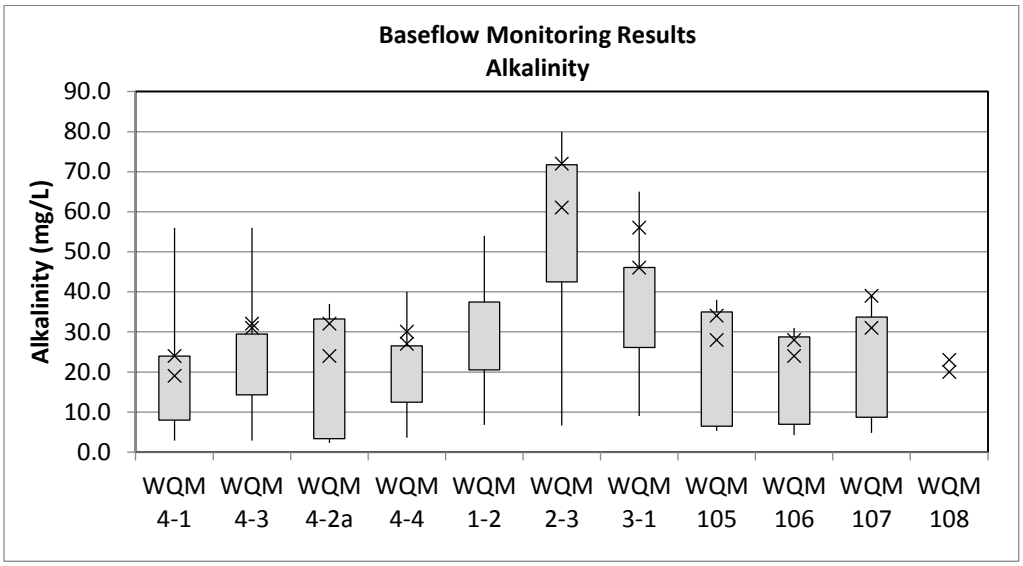

Figure 1: Baseflow Monitoring Results for Alkalinity

Baseflow alkalinity concentrations measured in 2014 were within the ranges previously observed during the period of record at all stations, with the exception of WQM 107, which exhibited maximum alkalinity concentration on September 29, 2014. As has been the case in the past, stations within the more developed Tributary 9 subwatershed (WQM 2-3 and WQM 3-1 and typically WQM 1-2 although it was not sampled in 2014) exhibited the highest alkalinity concentrations on the respective sampling dates as compared to other stations. All samples collected in 2014 were either at or above the USEPA chronic guidance minimum value of 20 mg/L (USEPA 2006)[1] for alkalinity. Only WQM 4-1 had a lower concentration than the minimum standard (19 mg/L) on August 29, 2014. In general, bedrock geology within the Jay Peak area is primarily composed of schist which contains relatively low levels of calcium carbonate that would provide buffering capacity (i.e. alkalinity) to the streams.

5.1.2 Conductivity

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton PCS Testr 35 meter. Figure 2 displays the results for conductivity measurements at each

1. Rivers and streams with alkalinity of 20mg/L and higher contain a good acidic buffer, with increasingly more sensitivity as alkalinity values decline.

respective station.

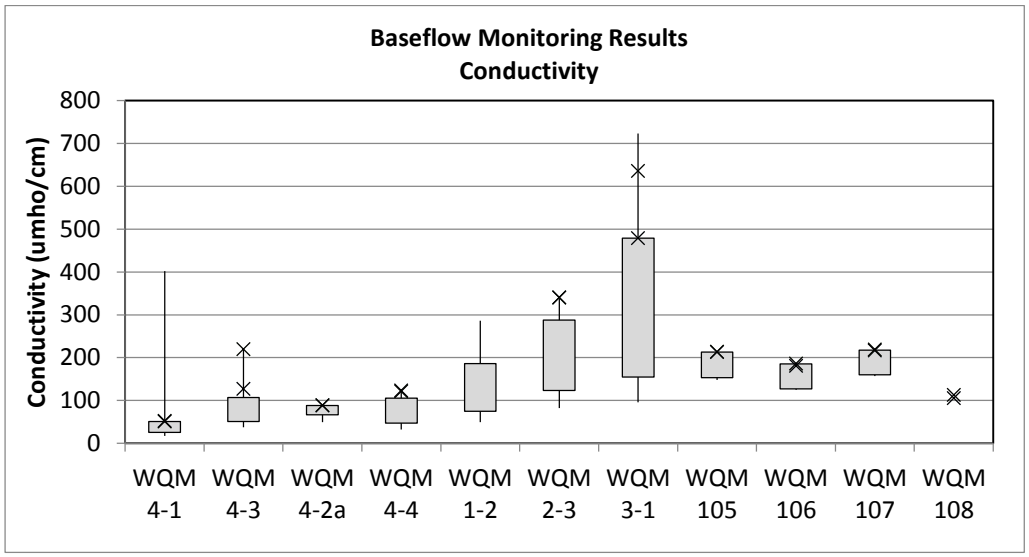

Figure 2: Baseflow Monitoring Results for Conductivity

Baseflow conductivity values measured in 2014 were generally high in comparison to the period of record. WQM 4-3 exhibited a maximum conductivity value on September 29, 2014. As has been the case in the past, stations within the more developed Tributary 9 subwatershed (WQM 2-3 and WQM 3-1 and typically WQM 1-2, although it could not be sampled in 2014) exhibited the highest conductivity values on the respective sampling dates as compared to other stations. Conductivity values observed at stations on Tributary 3 and the South Mountain Branch that are located downgradient of VT Route 242 (WQM 105, WQM 106 and WQM 107) were higher than conductivity values observed at station WQM 108, which is located on Tributary 3 upgradient of VT Route 242. This indicates that the effects of roadways and development are less pronounced higher in the watershed.

5.1.3 pH

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton 30 pH -meter. Baseflow pH values in 2013 were within the acceptable VWQS range of 6.5 to 8.5 standard units ("s.u.") with the exception of WQM 4-1 (8.6 s.u.) and WQM 4-2a (8.6 s.u.) on September 29, 2014 which were just out of range.

5.1.4 Turbidity and Total Suspended Solids

Water quality monitoring samples were field analyzed for turbidity using a Turb 355T/355IR portable turbidity meter and analyzed by Endyne for Total Suspended Solids ("TSS"). Figure 3 and Figure 4 displays the results for turbidity and TSS, respectively.

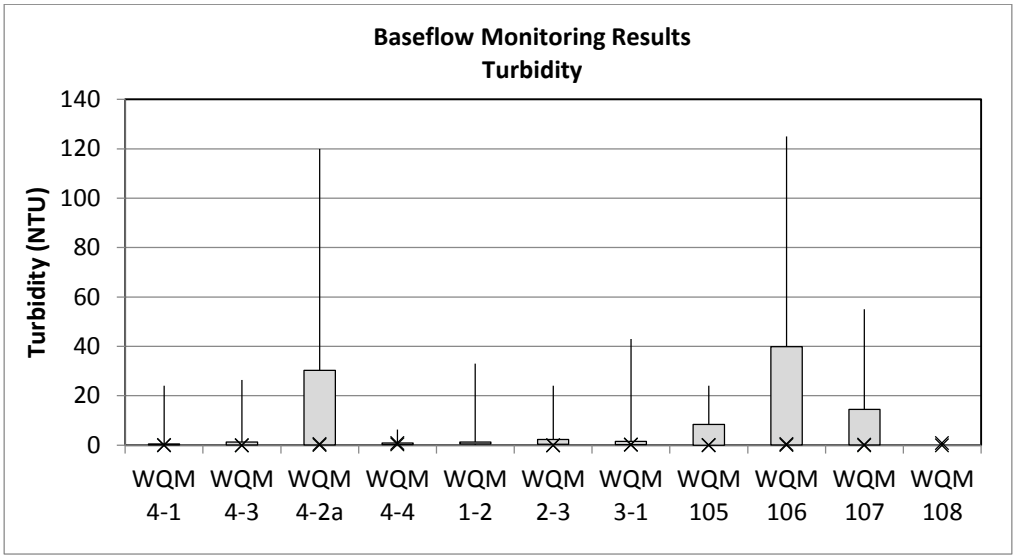

Figure 3: Baseflow Monitoring Results for Turbidity

Baseflow turbidity results for 2014 were within ranges from the period of record for all stations. Figure 3 displays a large variability in turbidity at WQM 4-2a, WQM 105, WQM 106 and WQM 107; however, these stations have only been sampled since 2012 and have relatively small sample sizes (n=6).

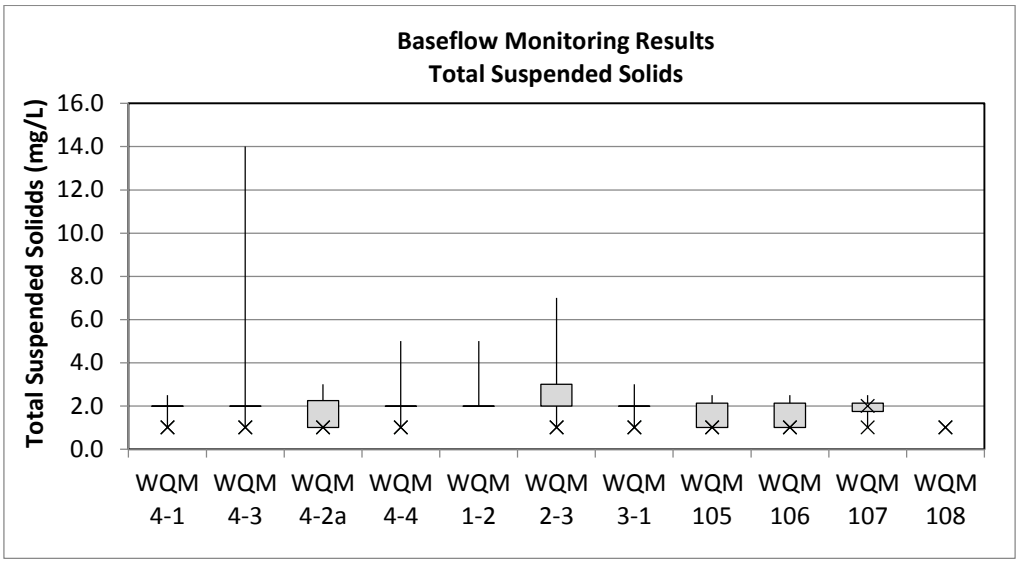

Figure 4: Baseflow Monitoring Results for Total Suspended Solids

All Baseflow TSS concentrations were below laboratory detection limits in 2014 (all values reported as not detected <1.0 mg/L) with the exception of WQM 107 which had a concentrations of 2.0 mg/L on August 29, 2014. WQM 2-3 exhibits the most variability in TSS concentrations which largely stems from slightly elevated TSS values in 2008 and 2009 which have subsequently decreased to below the laboratory detection limit in 2013.

5.1.5 Chloride

Water quality monitoring samples were analyzed by Endyne for chloride. Figure 5 displays the results for chloride at each respective station.

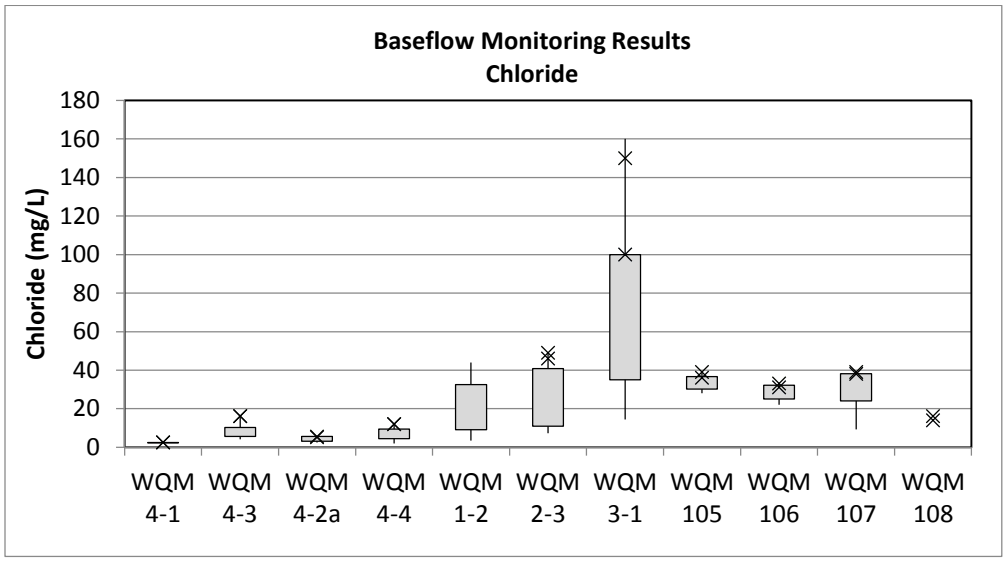

Figure 5: Baseflow Monitoring Results for Chloride

Baseflow chloride values measured in 2014 were at the upper end of their range from the period of record at each monitoring location; however, mean chloride concentrations in the Jay Peak watershed remained well below both the VWQS chronic criterion of 230 mg/L and the acute criterion of 860 mg/L in 2014 as they have throughout the period of record. As has been the case in the past, stations within the more developed Tributary 9 watershed (WQM 2-3 and WQM 3-1 and typically WQM 1-2, although it was not sampled in 2014) exhibited higher chloride values as compared to other stations. The South Mountain Branch and Tributary 3 stations (WQM 105, WQM 106 and WQM 107) downgradient from Route 242 have exhibited chloride concentrations similar to the Tributary 9 stations since monitoring began at those stations in 2012. Chloride concentrations from WQM 108 were considerably lower than those reported at the other stations within the South Mountain Branch watershed (WQM 105, WQM 106 and WQM 107). This indicates the effects of roadways and development are less pronounced higher in the watershed.

Baseflow Summary

In 2014 and over the period of record, stations within the Tributary 9 watershed (WQM 1-2, WQM 2-3 and WQM 3-1) have exhibited relatively higher concentrations of conductivity, alkalinity and chloride, indicating that these streams receive a higher percentage of their surface runoff from developed areas. In addition, conductivity, alkalinity and chloride concentrations from stations on Tributary 3 and the

South Mountain Branch located downgradient of VT Route 242 (WQM 105, WQM 106 and WQM 107) were higher than stations of Tributary 3 located upgradient of VT Route 242 (WQM 108) indicating the effects of roadways and development in this area. Chloride concentrations remained consistently below the regulatory limits in 2014. Alkalinity concentrations were above the minimum value in 2014 with the exception of one occurrence (WQM 4-1 on August 29, 2014, 19 mg/L). In general, turbidity and TSS values have been relatively low at all stations during Baseflow conditions. Low flow conditions dominated the sampling period during 2014, with some stations exhibiting no flow (WQM 1-2) or limited flow (WQM 2-3 and WQM 3-1).

5.2 Event Flow Water Chemistry Analysis

Event Flow water chemistry samples were collected during rainfall events on August 13 and September 11, 2014, representing conditions in Jay Branch, Upper Jay Branch (reference), Phase I Tributary, Phase II Tributary, Tributary 9, Tributary 3 and South Mountain Branch. The box and whisker plots below provide a summary of Event Flow water chemistry parameters at each monitoring station from 2004 to 2014. 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 2014 data points. A complete summary of 2004 through 2014 Event Flow water chemistry results for each monitoring station and laboratory reports for each sampling event are included in Appendix 2. Water quality monitoring samples were collected from the 11 Baseflow monitoring stations with the exception of WQM 108, which was inadvertently omitted on August 13, 2014, and WQM 1-2, which could not be sampled due to the absence of flow on September 11, 2014. .

Rainfall observed at the Jay Peak Coop Station (Station ID USC00434189), as reported to the National Climatic Data Center, totaled 1.1 inches on August 13, 2014 and 0.25 inches on September 11, 2014.

5.2.1 Alkalinity

Water quality monitoring samples were analyzed by Endyne for alkalinity. Figure 6 displays the results for alkalinity at each respective station.

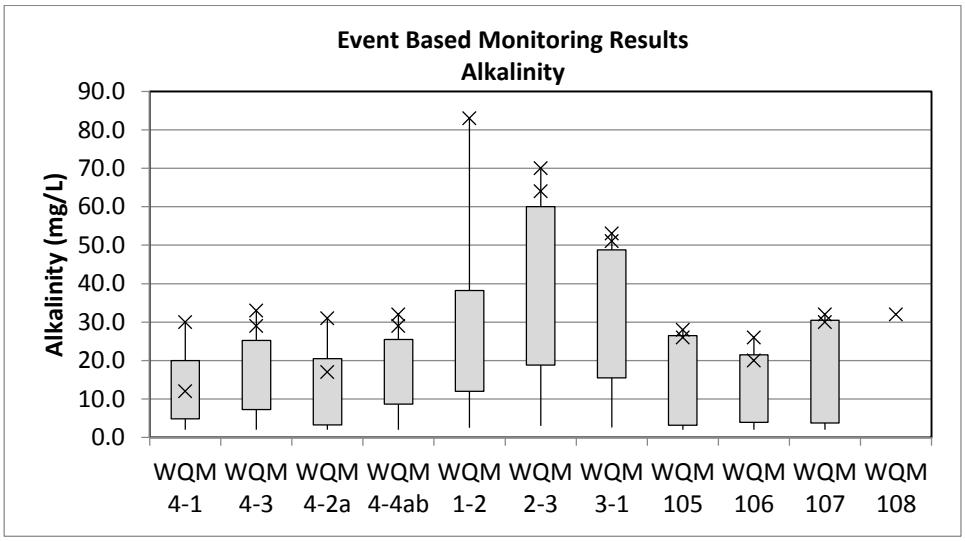

Figure 6: Event Flow Monitoring Results for Alkalinity

In general, Event Flow alkalinity concentrations measured in 2014 were toward the upper end of their ranges from the period of record or exhibited maximum concentrations. Alkalinity concentrations from August 13, 2013 exhibited all-time maximum alkalinity concentrations at each station with the exception of WQM 4-1. Alkalinity concentrations were lower than the minimum value of 20 mg/L at WQM 4-1 (12 mg/L) on August 13, 2014 and at WQM 4-2a (17 mg/L) on September 11, 2014. As has been the case in the past, and consistent with Baseflow conditions, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) exhibited the highest alkalinity concentrations on the respective sampling dates as compared to other stations. All samples were above the USEPA chronic guidance minimum value of 20 mg/L (USEPA 2006)[2] in 2014.

5.2.2 Conductivity

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton PCS Testr 35 meter. Figure 7 displays the results for conductivity measurements at each respective station.

2. Rivers and streams with alkalinity of 20 mg/L and higher contain a good acidic buffer, with increasingly more sensitivity as alkalinity values decline.

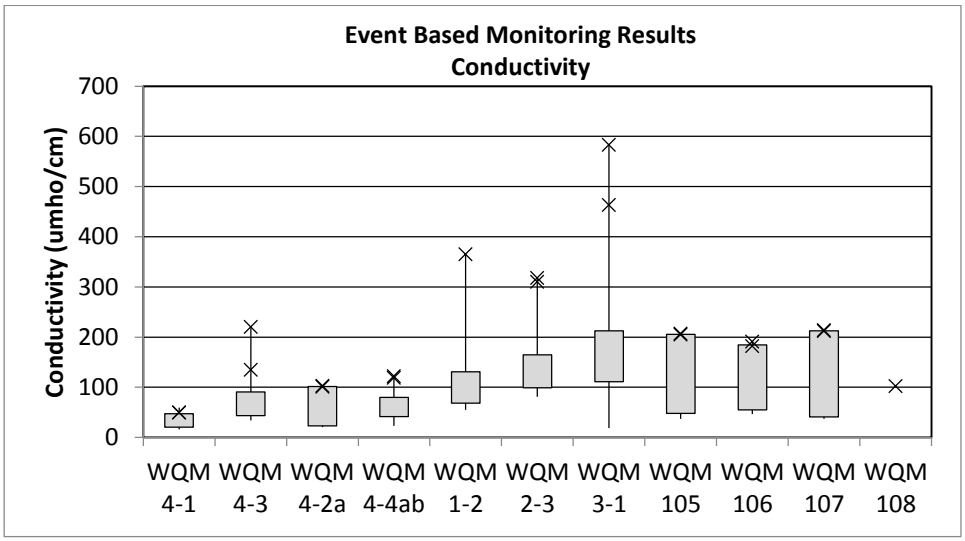

Figure 7: Event Flow Monitoring Results for Conductivity

In general, Event Flow conductivity values measured in 2014 were toward the upper end of their ranges from the period of record or exhibited maximum values. As has been the case in the past, and consistent with Baseflow results, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) exhibited the highest conductivity values on the respective sampling dates as compared to other stations. In addition, conductivity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (WQM 105, WQM 106 and WQM 107) were higher than stations of Tributary 3 located upgradient of VT Route 242 (WQM 108) indicating the effects of roadways and development are less pronounced higher in the watershed.

5.2.3 pH

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton 30 pH meter. Event Flow pH values in 2014 were within the acceptable VWQS range of 6.5 to 8.5 s.u. with the exception of WQM 4-3 (8.6 s.u.), WQM 4-2a (8.6 s.u.), WQM 4-4a (8.6 s.u.), WQM 3-1 (8.6 s.u.), WQM 105 (8.6 s.u.), WQM 106 (8.6 s.u.) and WQM 108 (8.6 s.u.) on September 11, 2014 which were just out of range.

5.2.4 Turbidity and Total Suspended Solids

Water quality monitoring samples were field analyzed for turbidity using a Turb 355T/355IR portable turbidity meter and analyzed by Endyne for TSS. Figure 8 and Figure 9 displays the results for turbidity and TSS, respectively.

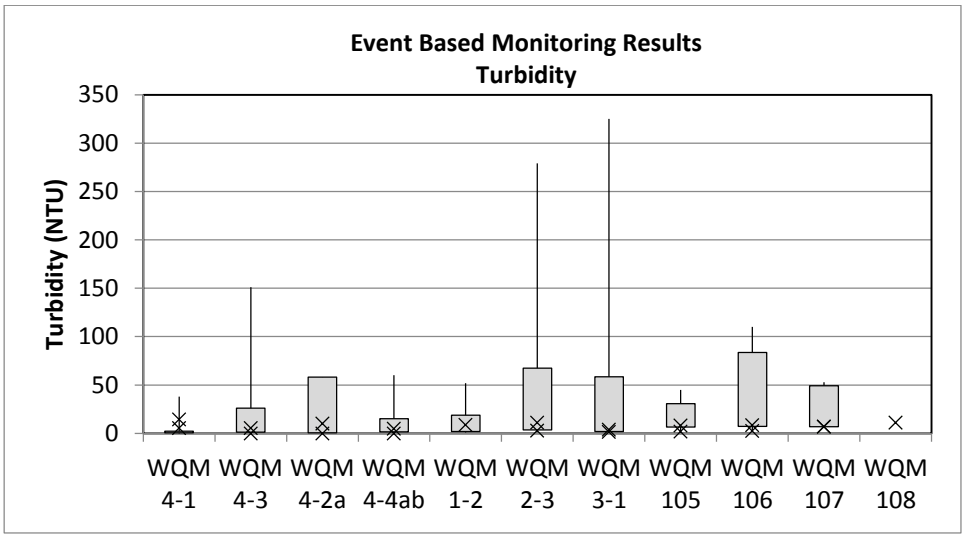

Figure 8: Event Flow Monitoring Results for Turbidity

Event Flow turbidity results for 2014 were within ranges from the period of record and generally low as compared to historic data.

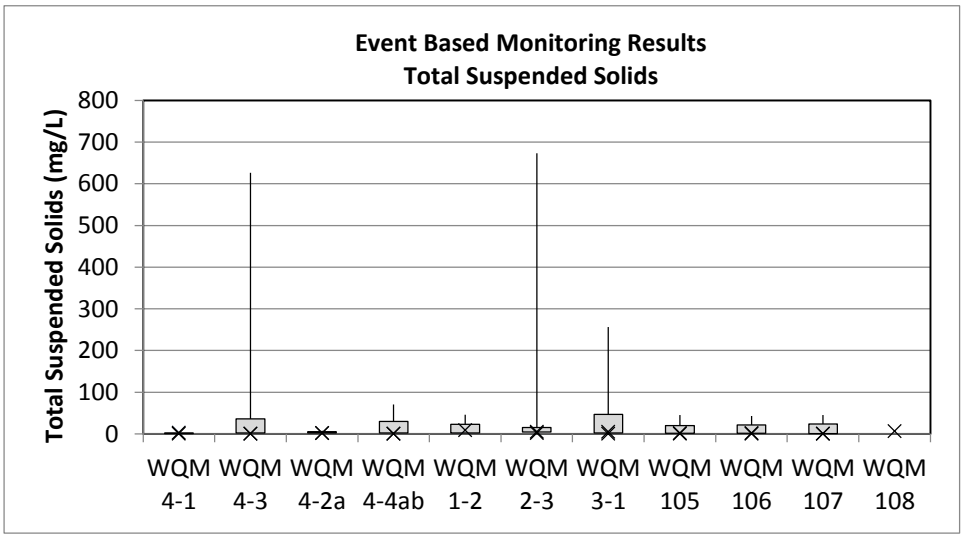

Figure 9: Event Flow Monitoring Results for Total Suspended Solids

All Event Flow TSS concentrations were within ranges from the period of record in 2014. The all-time minimum TSS concentrations were exhibited at WQM 4-2a, WQM 4-3, WQM 4-4a, WQM 105 and WQM 106 on August 13, 2014 and at WQM 2-3 and WQM 107 on September 11, 2014.

5.2.5 Chloride

Water quality monitoring samples were analyzed by Endyne for chloride. Figure 10 displays the results for chloride at each respective station.

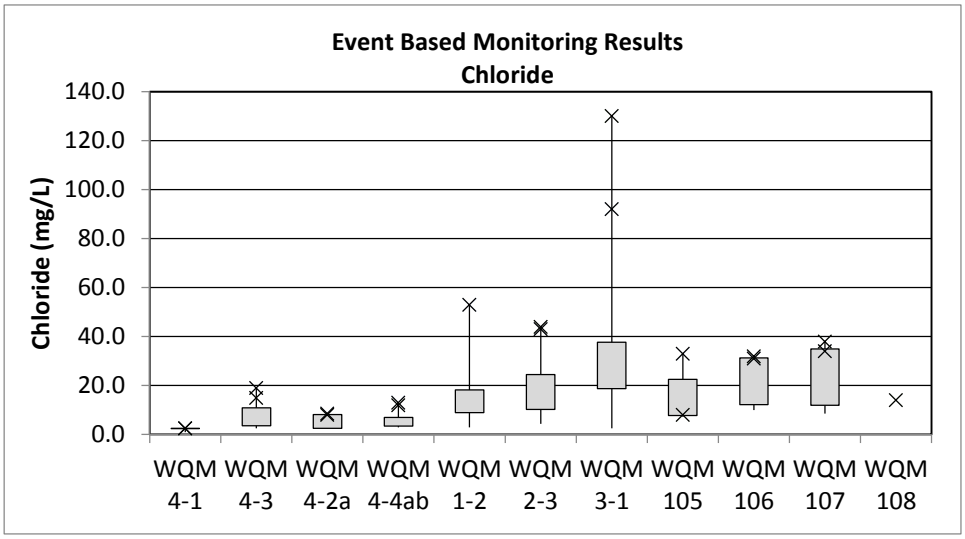

Figure 10: Event Flow Monitoring Results for Chloride

Event Flow chloride values measured in 2014 were at the upper end of their range or exhibited maximum concentrations at each monitoring location; however, mean chloride concentrations in the Jay Peak watershed remained well below both the chronic criterion of 230 mg/L and the acute criterion of 860 mg/L in 2014 and over the period of record. As has been the case in the past, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) exhibited the highest chloride values as compared to other stations. In addition, the South Mountain Branch stations (WQM 105, WQM 106 and WQM 107) have exhibited similar chloride concentrations to the Tributary 9 stations since monitoring began in this watershed in 2012. Chloride concentrations from WQM 108 were considerably lower than those reported from the

other South Mountain Branch stations (WQM 105, WQM 106 and WQM 107), indicating that the effects of roadways and development are less pronounced higher in the watershed

Event Flow Summary

In 2014 and over the period of record, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) have exhibited relatively higher concentrations of conductivity, alkalinity and chloride during Event Flow conditions, indicating that these streams receive a higher proportion of surface runoff from developed areas. In addition, conductivity, alkalinity and chloride concentrations from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (WQM 105, WQM 106 and WQM 107) were higher than stations of Tributary 3 located upgradient of VT Route 242 (WQM 108) indicating the effects of roadways and development in this area. All chloride concentrations were below regulatory limit in 2014. Alkalinity concentrations were lower than the minimum value of 20 mg/L at WQM 4-1 (12 mg/L) on August 13, 2014 and at WQM 4-2a (17 mg/L) on September 11, 2014. In general turbidity and TSS values were relatively low in 2013 in comparison to values from the period of record. TSS concentrations were within regulatory thresholds at all stations during Event Flow conditions in 2014.

5.3 Winter Melt Chemistry Analysis

Winter Melt water chemistry samples were collected on April 18 and April 28, 2014; representing conditions in the Jay Branch, Upper Jay Branch (reference), Phase I Tributary, Phase II Tributary, Tributary 9, Tributary 3 and South Mountain Branch watersheds. Field parameters (conductivity, turbidity, pH, dissolved oxygen and water temperature) were measured at the eight water quality monitoring stations. The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2004 to 2014. 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 2014 data points. A complete summary of 2004 through 2014 Winter Melt water chemistry results for each monitoring station is included in Appendix 3.

5.3.1 Conductivity

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton PCS Testr 35 meter. Figure 11 displays the results for conductivity measurements at each respective station.

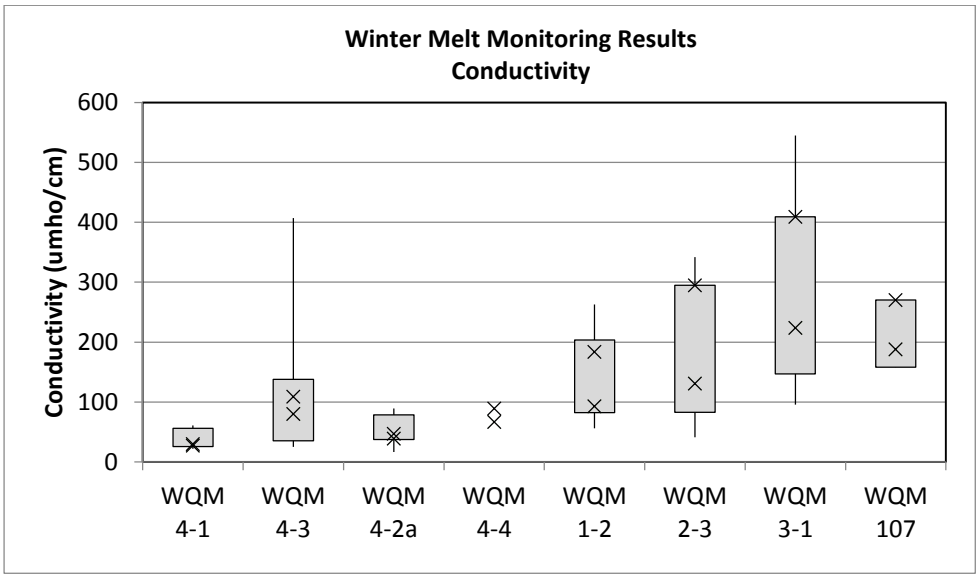

Figure 11: Winter Melt Monitoring Results for Conductivity

Winter Melt conductivity values measured in 2014 were within the period of record, with the exception of WQM 107 which exhibited a maximum value on April 18, 2014. In addition to the sampling points identified by the QAPP, winter melt samples were also collected at WQM 4-4a in 2014. As has been the case in the past, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) and within the South Mountain Branch watershed (WQM 107) exhibited the highest conductivity values on the respective sampling dates as compared to other stations.

5.3.2 pH

Water quality monitoring samples were collected from all seven Winter Melt monitoring stations and were field measured for pH using a pre-calibrated Oakton 30 pH meter. Winter Melt pH values in 2014 were within the acceptable VWQS range of 6.5 to 8.5 s.u. with the exception of

WQM 4-1 on April 18, 2014 (8.6 s.u.), and WQM 3-1 (8.9 s.u.), WQM 4-3 (8.6 s.u.), WQM 4-4a (8.9 s.u.) and WQM 107 (8.8 s.u.) on April 28, 2014 which were slightly out of range.

5.3.3 Turbidity

Water quality monitoring samples were field analyzed for turbidity using a Turb 355T/355IR portable turbidity meter. Figure 12 displays the results for turbidity at each respective station.

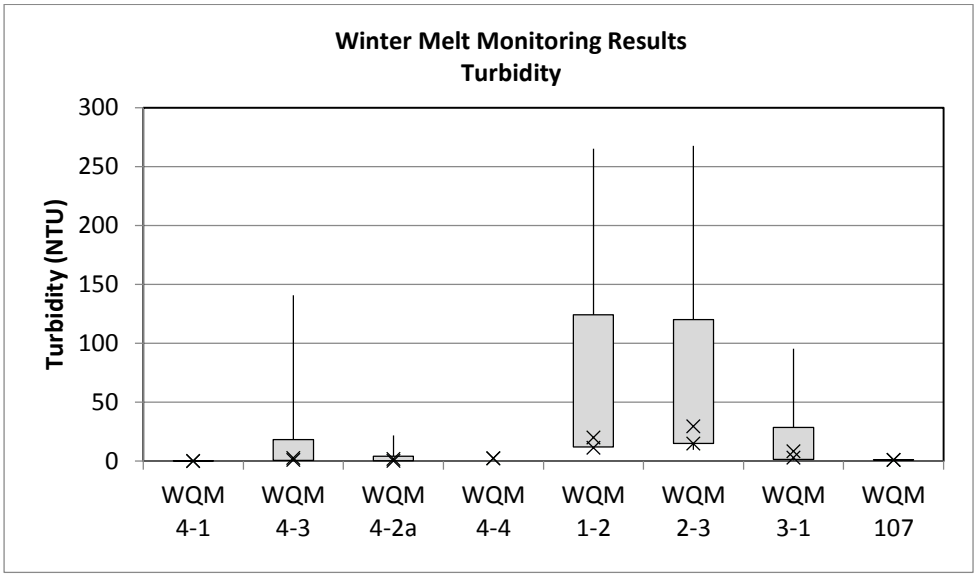

Figure 12: Winter Melt Monitoring Results for Turbidity

Winter Melt turbidity results for 2014 were within ranges from the period of record and generally low as compared to historic data from the period of record. As has been the case in the past, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) exhibited the highest conductivity values on the respective sampling dates as compared to other stations.

<u>Winter Melt Summary</u>

In 2014 and over the period of record, stations within the more developed Tributary 9 subwatershed (WQM 1-2, WQM 2-3 and WQM 3-1) have exhibited relatively higher concentrations of conductivity and turbidity during Winter Melt conditions, indicating that these streams receive a higher percentage of surface runoff from developed areas.

5.4 Supplemental Turbidity Monitoring

Supplemental turbidity monitoring was completed at multiple locations within the target watersheds during the summer of 2014 (see the map included on page 1 of Appendix 4 for location information). This monitoring was completed in addition to the WQRP required monitoring (e.g. baseflow, event flow, winter melt, substrate and biomonitoring). This monitoring was done to provide feedback on the success of the remedial activities that have been completed in the targeted watersheds and also to identify other potential sources of sediment 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 stations; two located on a tributary to the Jay Branch (JBT-01 and JBT-02), six located on the Phase I Tributary (P1-01 through P1-06) upgradient of Jay Peak Road, seven located on the Phase II 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 on page 1 of Appendix 4 for turbidity station location information.

Eight supplemental turbidity monitoring events were completed between June and September 2014. There was no rain during one round of sampling (July 11, 2014), which was completed as a baseflow sample for comparison purposes. Five of the events averaged approximately 0.5 inches of precipitation (June 25, July 8, July 16, July 28 and August 4, 2014) and two events had over 1.0 inches of precipitation (July 24 and September 22, 2014). Graphs depicting the turbidity results are included on pages 2 to 22 Appendix 4.

Although none of the sampling locations was associated with active construction sites, the turbidity levels measured during these events were compared to the Construction Discharge Action Level as a proxy since there is no numeric limit for turbidity in the VWQS. On the following six occurrences, turbidity levels exceeded the 25 NTU Construction Discharge Action Level:

- P1-01 on August 4, 2014
- P1-06 on July 24, 2014 and September 22, 2014
- P2-02 September 22, 2014

- P2-03 on June 25, 2014
- T9-01 on September 22, 2014

For each sampling station, there is a wide range of turbidity levels throughout the sampling events. There is no apparent correlation of turbidity levels with the amount of precipitation (which would indicate general sediment input from multiple sources) or to any single station (which would indicate a single point source of sediment). In addition, the exceedances of the Construction Action Level shown above only occurred once at any given station throughout the monitoring period with the exception of station P1-06 which exceeded the Construction Action Level twice. Therefore, no trend was recognized that could relate turbidity during large rainfall events to potential sources of sediment within the watersheds.

5.5 Substrate Analysis

In 2014, streambed substrate composition analyses was conducted on the Jay Branch (WQM 4-2a, WQM 4-3, and WQM 4-4a), the reference station on Upper Jay Branch (WQM 4-1), Tributary 9 (WQM 3-1), the Phase I Tributary (WQM 1-2), the Phase II Tributary (WQM 2-3), Tributary 3 (WQM 106 and WQM 108) and the South Mountain Branch (WQM 105 and WQM 107). Substrate analysis was completed to evaluate stream bed material composition. A summary of the substrate data for each station is provided in Appendix 5.

5.5.1 Embeddedness

The percentage of substrate embeddedness was observed at 9 of the 11 monitored stations using Bovee's (1986) quartile estimate guidelines. 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 50 and 75 percent considered fair and above 75 percent considered poor. Substrate embeddedness was minimal (5-25 percent) at WQM 4-1, WQM 4-2a, WQM 4-3, WQM 3-1, WQM 106, WQM 107 and WQM 108 and moderate (25 - 50 percent) at WQM 4-4a. Embeddedness ranges were generally consistent with historic data but displayed a decrease from the 2013 range at WQM 4-3 and WQM 3-1.

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, pebbles). Table 2 below displays the substrate metrics for 2014. This distribution of each stations' substrate particle size for 2014 and a comparison to historic averages from 2007 to 2014 is shown graphically for each station in Appendix 5. These detailed substrate monitoring results for each location are also included in Appendix 5.

Table 2: 2013 Summary of Channel Materials in Jay Branch and Select Tributaries

Station	Percent < 2 mm (sands and fines)	Percent Fines (sand)	D50 Particle Size
WQM 1-2	10	8	coarse gravel
WQM 2-3	8	4	coarse gravel
WQM 3-1	2	2	coarse gravel
WQM 4-1	2	2	cobble
WQM 4-2a	1	1	cobble
WQM 4-3	3	3	coarse gravel
WQM 4-4a	20	20	coarse gravel
WQM 105	0	0	cobble
WQM 106	8	8	cobble
WQM 107	11	11	cobble
WQM 108	9	9	cobble
Shaded = reference reach NS = not sampled			

The overall median particle size at most sites have remained relatively consistent with the exception of WQM 4-3 and WQM 4-4a which decreased since 2013.

Substrate results from the upper portion of the Jay Branch (WQM 4-1, WQM 4-2a, WQM 4-3), Tributary 9 (WQM 3-1) and Phase II Tributary (WQM 2-3) exhibited minimum percentage of small particles in 2014 while substrate results from the lowest station on the Jay Branch (WQM 4-4a) exhibited a maximum percentage of small particles in 2014 as compared to the period of record. Substrate results were within the period of record for stations on the South Mountain Branch (WQM 105 and WQM 107), Tributary 3 (WQM 106 and WQM 108) and the Phase I Tributary (WQM 1-2) in 2014.

Substrate Summary

Substrate embeddedness was minimal (5-25 percent) across the Resort area with the exception of WQM 4-4a which had moderate embeddedness (25-50 percent). The overall median particle size at most sites have remained relatively consistent with the exception of WQM 4-3 and WQM 4-4a which decreased in 2014. The percentage of fine particles has generally decreased or remained the same with the exception of WQM 4-4a which had a maximum percentage of small particles in 2014. The results throughout the Resort area indicate that most of the water quality stations are showing signs of stasis or coarsening of substrate materials with the exception WQM 4-3 which had a smaller median particle size and WQM 4-4a which shows a smaller median particle size and higher percentage of fine particles. This trend is indicative of the finer sediments that were observed at upstream sites in previous years having been scoured from those areas and are being deposited at downstream stations. Assuming that sediment inputs from upland areas continue to be controlled and no major storm events cause excess sedimentation in the upstream watershed, the sediment "plug" that is moving downstream is anticipated to be eliminated from the watershed within the next 1 -2 years.

5.6 Biomonitoring

On October 2 and October 3, 2014, aquatic biota sampling and kick net sampling was conducted by VHB in accordance with the VT DEC protocol (VT DEC 2004). Biomonitoring occurred at eight locations in 2014 on the Jay Branch (WQM 4-2, WQM 4-3, and WQM 4-4a), the reference station on Upper Jay Branch (WQM 4-1), Tributary 9 (WQM 3-1), Tributary 3 (WQM 106 and WQM 108), and South Mountain

Branch (WQM 107). All 2014 sampling locations are shown on the Water Quality Monitoring Sampling Locations map on page 1 of Appendix 1.

Biomonitoring data from 2014 was analyzed for aquatic life support ("ALS") use attainment in comparison to the VT DEC scoring guidelines for small-size high gradient ("SHG") Class B waters. Results for each station are discussed in detail below. The complete data set is included in Appendix 6.

WQM 4-1 (Upper Jay Branch)

As the uppermost station, WQM 4-1 represents water quality conditions within an undeveloped reference setting. Table 3 below displays the bio metrics for WQM 4-1 over time. Charts and graphs of all bio metrics evaluated at WQM 4-1 are provided in Appendix 6.

Table 3: Biomonitoring Results Jay Branch – Station WQM 4-1									
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**	
2008	469	32	21.5	63.0	1.22	0.860	0.943	55.8	Meets Class B Criteria
2009	625	34	23.0	73.0	1.34	0.000	0.930	59.0	Meets Class B Criteria
2010	642	40	24.5	78.4	1.71	0.360	0.889	56.4	Meets Class B Criteria
2011	421	35	23	70.0	0.849	0.110	0.931	46.0	Meets Class B Criteria
2012	883	36.0	24.5	75.4	1.13	0.000	0.947	44.2	Meets Class B Criteria
2013	872	33.0	21.0	69.9	0.935	0.000	0.922	60.8	Meets Class B Criteria
2014	781	35.5	23.5	74.4	1.24	0.000	0.919	65.4	Meets Class B Criteria

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

Results for all eight bio metrics were within the established thresholds for meeting Class B criteria as has been the case in the past, indicating excellent water quality conditions at station WQM 4-1.

WQM 4-2a (Jay Branch)

This station is located on the Jay Branch, upstream of the confluence with Tributaries 9 and 10. Table 4 below displays the bio metrics for WQM 4-3 over time. Charts and graphs of all bio metrics evaluated at WQM 4-3 are provided in Appendix 6.

Table 4: Biomonitoring Results Jay Branch – WQM 4-2a									
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	40.0	22.5	73.8	1.96	**24.3**	0.936	64.0	Does Not Meet Class B Criteria
2007	1872	38.5	21.5	61.6	1.50	**20.5**	0.951	52.0	Does Not Meet Class B Criteria
2008	1162	37.0	23.0	76.4	1.97	6.36	0.962	71.0	Meets Class B Criteria
2009	1892	46.0	25.0	76.2	1.88	**16.9**	0.920	66.0	Does Not Meet Class B Criteria
2010	1516	42.0	25.0	67.8	2.29	5.99	0.967	65.0	Meets Class B Criteria
2011	**238**	39.5	23.5	65.6	1.64	**17.7**	0.938	60.0	Meets Class B Criteria
2012	**172**	**24.5**	17.0	63.9	0.580	3.23	0.951	46.4	Does Not Meet Class B Criteria
2013	828	39.0	24.0	80.4	1.09	7.54	0.952	52.9	Meets Class B Criteria
2014	1039	40.0	26.0	68.7	1.46	10.9	0.948	56.9	Meets Class B Criteria

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

Results for all eight bio metrics during 2014 were within the established thresholds for meeting Class B criteria as has been the case intermittently in the past, indicating excellent water quality conditions at station WQM 4-2a.

WQM 4-3 (Jay Branch)

This station is located on the Jay Branch, downstream of the confluence with Tributaries 9 and 10. Table 5 below displays the bio metrics for WQM 4-3 over time. Charts and graphs of all bio metrics evaluated at WQM 4-3 are provided in Appendix 6.

Table 5: Biomonitoring Results Jay Branch – WQM 4-3									
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	27.0	17.5	59.6	1.96	7.20	0.980	56.0	Meets Class B Criteria
2005	849	49.0	23.0	69.0	2.65	**20.8**	0.870	60.0	Does Not Meet Class B Criteria
2006	851	33.5	20.5	57.9	2.68	0.295	0.953	**34.0**	Does Not Meet Class B Criteria
2007	363	32.0	21.5	72.0	1.12	8.30	0.960	60.0	Meets Class B Criteria
2008	311	30.5	19.0	70.0	1.41	**14.8**	0.980	50.0	Does Not Meet Class B Criteria
2009	374	31.5	23.5	70.9	1.55	9.90	0.977	61.0	Meets Class B Criteria
2010	361	31.0	25.0	57.0	1.36	5.70	0.992	54.7	Meets Class B Criteria
2011	**117**	**21.5**	15.0	58.0	1.10	**17.8**	0.972	54.0	Does Not Meet Class B Criteria
2012	**230**	**24.0**	16.5	71.1	1.15	6.94	0.976	56.3	Does Not Meet Class B Criteria
2013	**238**	30.0	21.5	79.9	1.13	10.1	0.950	57.0	Does Not Meet Class B Criteria
2014	403	34.0	22.5	63.2	0.988	**26.0**	0.973	**38.6**	Does Not Meet Class B Criteria

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

Station WQM 4-3 met 6 of the 8 Class B criteria in 2014, and did not meet the remaining two. However, this station has exhibited an improving trend in density and richness since 2011, which have met the respective Class B threshold values at this site for the first time since 2010. Percent Oligochaeta has increased since 2012 and exceeded the Class B maximum threshold value in 2014. The percent PPCS-FG criteria was not met at WQM 4-3 for the first time since 2006 but was very close to the threshold value. The results at this station meet the interim biocriteria targets that were established in the Revised 2014 WQRP

WQM 4-4a (Jay Branch)

This is the farthest downstream station on the Jay Branch, and is located near the VT Route 242 crossing. Table 6 below displays the bio metrics for WQM 4-4a over time. Charts and graphs of all bio metrics evaluated at WQM 4-4a are provided in Appendix 6.

Table 6: Biomonitoring Results
Jay Branch – WQM 4-4a

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**	**26.0**	19.5	60.8	1.54	4.40	0.980	54.0	Does Not Meet Class B Criteria
2005	458	40.0	21.0	62.0	2.34	8.10	0.880	**38.0**	Does Not Meet Class B Criteria
2006	1276	**24.5**	**14.0**	55.0	2.85	0.772	0.938	**23.0**	Does Not Meet Class B Criteria
2007	423	27.0	19.0	73.0	1.24	1.40	0.950	58.0	Meets Class B Criteria
2008	568	33.0	21.5	72.2	0.943	2.40	0.969	49.0	Meets Class B Criteria
2009	429	33.5	25.0	76.0	1.26	6.10	0.992	67.0	Meets Class B Criteria
2010	344	31.0	23.0	55.0	1.11	1.30	1.00	54.0	Meets Class B Criteria
2011	**97.5**	**16.5**	**10.5**	71.0	0.940	3.70	0.993	44.0	Does Not Meet Class B Criteria
2012	**176**	27.5	19.5	67.0	1.24	9.30	0.964	48.0	Does Not Meet Class B Criteria
2013	327	27.5	20.5	73.8	0.790	9.15	0.961	61.7	Meets Class B Criteria
2014	340	33.5	25.5	66.0	1.17	8.85	0.979	62.8	Meets Class B Criteria

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

In 2014, station WQM 4-4a met the Class B bio criteria for the second consecutive year. Density, richness and EPT have shown appreciable increases since 2011 which were in compliance with the respective Class B minimum threshold values in 2014. The results at this station also meet the interim biocriteria targets that were established in the Revised 2014 WQRP

WQM 3-1 (Tributary 9)

This station is located near the golf course on Tributary 9 and downstream of the confluence of the Phase I and Phase II tributaries. Table 7 below displays the bio metrics for WQM 3-1 over time. Charts and graphs of all bio metrics evaluated at WQM 3-1 are provided in Appendix 6.

Table 7: Biomonitoring Results
Tributary 9 – WQM 3-1

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**	**24.0**	**14.0**	**43.8**	**4.61**	0.200	**0.310**	42.0	Does Not Meet Class B Criteria
2005	309	41.0	17.0	70.0	4.23	**16.8**	0.820	53.0	Does Not Meet Class B Criteria
2006	320	35.7	16.0	54.5	**5.12**	0.970	0.878	**29.0**	Does Not Meet Class B Criteria
2007	484	37.0	24.0	63.0	1.22	1.90	0.950	**39.0**	Meets Class B Criteria
2008	492	28.0	17.0	69.6	1.18	0.00	0.916	42.0	Meets Class B Criteria
2009	**252**	28.0	**15.5**	879.7	1.72	7.80	0.952	61.0	Indeterminate
2010	**176**	**22.0**	**16.0**	63.4	2.13	**23.0**	0.980	53.4	Does Not Meet Class B Criteria
2011	**77**	**22.5**	**15.0**	66.0	1.47	8.70	0.989	55.0	Does not Meet Class B Criteria
2012	**95**	**25.5**	**15.5**	68.8	1.96	**21.2**	0.927	54.5	Does Not Meet Class B Criteria
2013	**157**	30.0	19.5	74.4	2.07	**13.6**	0.913	57.9	Does Not Meet Class B Criteria

Table 7: Biomonitoring Results Tributary 9 – WQM 3-1									
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**	
2014	**168**	27.0	**15.0**	62.9	1.49	**15.5**	0.957	53.9	Does Not Meet Class B Criteria

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

Station WQM 3-1 met 5 of the 8 Class B bio criteria in 2014, and did not meet the remaining three. Although density has shown an increasing trend, the 2014 value remained below the minimum threshold value. In addition, percent Oligochaeta has increased slightly since 2013 and remained above the maximum threshold value. The percent EPT criteria was not met at WQM 3-1 in 2014 but was very close to the threshold value. These results do not meet the interim bio criteria targets established in the 2014 WQRP. As a result, additional small scale sediment reduction BMPs will be implemented within this watershed during 2015, as outlined in the pre-attainment flow chart (Appendix 5 of the 2014 WQRP).

Flows within Tributary 3 were extremely low during the sampling event and in the preceding months. As noted previously, the Phase I Tributary was not flowing during either of the base flow sampling events or during the macroinvertebrate sampling and was only flowing during one of the storm event sampling events. This tributary represents roughly 35 percent of the watershed area contributing to WQM 3-1 and these low flow conditions resulted in sampling conditions that were inadequate for biomonitoring using the kick net sampling methodology. Sampling under low flow conditions impacts the biomonitoring results that are generated by kick net sampling for several reasons, all of which are unrelated to water quality. In order to stay wet during low flows, the organisms move down into the substrate and are therefore not present on the surface materials that are gathered during the sampling procedures. Furthermore, some of the organisms that are present on the surface materials and would otherwise be collected in the net are not collected because the inadequate flow velocity allows them to fall back to the bottom of the channel before they are captured in the net.

Compared with previous macroinvertebrate sampling events, conditions for sampling in 2014 were marginal, with approximate riffle depths of 1 inch, compared with 2 or more inches in previous years, and a wetted widths of approximately 3 feet, compared with 4 to 12 feet in previous years. Because the low flow conditions reduced the number of available sampling locations within the reach, the sampler was only able to collect a single composite sample for the site. Collection of a single composite sample is permissible according to the sampling protocol, however, replicate sampling (i.e., collecting two sets of composite samples for analysis) is the preferred method and is typically performed at all sites.

WQM 106 (Tributary 3 to South Mountain Branch)

This station is located on Tributary 3, downstream of VT Route 242 and the Stateside Hotel and Base Lodge area of the Resort. Table 8 below displays the bio metrics for WQM 106 over time. Charts and graphs of all bio metrics evaluated at WQM 106 are provided in Appendix 6.

Table 8: Biomonitoring Results
South Mountain Branch – Station WQM 106

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**	34.5	22.0	67.4	0.930	**20.7**	0.927	57.0	Does Not Meet Class B Criteria/Fair-Poor
2013	**133**	**21.5**	**15.0**	58.3	1.04	**29.6**	0.930	50.0	Does Not Meet Class B Criteria
2014	361	**26.5**	19.0	57.8	0.707	**18.5**	0.958	45.8	Does Not Meet Class B Criteria

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

Station WQM 106 met 6 of the 8 Class B bio criteria in 2014, and did not meet the remaining two. Density and EPT have increased since 2013 above the minimum threshold value. Although richness showed the same increasing trend, this parameter continued to remain below the minimum threshold

value. In addition, percent Oligochaeta has decreased since 2013 but remained above the maximum threshold value. The results at this station meet the interim biocriteria targets that were established in the Revised 2014 WQRP.

WQM 107 (South Mountain Branch)

This station 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 9 below displays the bio metrics for WQM 107 over time. Charts and graphs of all bio metrics evaluated at WQM 107 are provided in Appendix 6.

Table 9: Biomonitoring Results
South Mountain Branch – Station WQM 107

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**	27.5	19.3	70.5	0.890	**12.1**	0.980	58.0	Does Not Meet Class B Criteria/Fair
2013	**239**	**26.0**	17.5	61.0	0.805	**22**.6	0.960	49.1	Does Not Meet Class B Criteria/Fair
2014	354	27.0	20.0	71.0	0.713	**13.3**	0.986	63.1	Indeterminate

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

Station WQM 107 met 7 of the 8 Class B bio criteria in 2014, and nearly met the final metric. Density and richness increased since 2013 to above the minimum threshold value. Although percent Oligochaeta decreased since 2012 it remained slightly above the maximum threshold value.

WQM 108 (Tributary 3 to South Mountain Branch)

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. Table 10 below displays the bio metrics for WQM 108, which was

sampled for the first time in 2014. Charts and graphs of all bio metrics evaluated at WQM 108 are provided in Appendix 6.

Table 10: Biomonitoring Results
South Mountain Branch – Station WQM 108

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**	
2014	403	27.0	18.0	65.6	2.00	8.11	0.951	57.2	Meets Class B Criteria

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

Results for all eight bio metrics were within the established thresholds for meeting Class B criteria, indicating excellent water quality conditions at station WQM 108. This station was added to the monitoring network in order to help evaluate potential impacts from flows leaving the Resort at this location. Although the 2014 results represent only a single year of monitoring, these results suggest that potential impacts from development upgradient from this site are minor.

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**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Upper Jay Branch	WQM 4-1	-	-	-	-	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Jay Branch	WQM 4-2a	**-**	F	-	F	**P**	F	**P**	F	F	**P**	**P**
	WQM 4-3	**P**	F	F	**P**	F	**P**	**P**	F	F	F	F
	WQM 4-4a	F	F	F	**P**	**P**	**P**	**P**	F	F	**P**	**P**
Tributary 9	WQM 3-1	F	F	F	**P**	**P**	I	F	F	F	F	F
South Mountain Branch	WQM 106	-	-	-	**-**	**-**	-	-	-	F	F	F
	WQM 107	-	-	-	**-**	**-**	-	-	-	F	F	I
	WQM 108	-	-	-	**-**	**-**	-	-	-	-	-	**P**
P = Pass, I = Indeterminate, F = Fail - = Not sampled, Shaded Cells = Reference Reach												

In 2014 WQM 4-1 (reference), WQM 4-2a, WQM 4-4a and WQM 108 met the Class B bio criteria. WQM 107 had an indeterminate result. The remaining three stations (WQM 4-3, WQM 3-1 and WQM 106) did not meet the Class B bio criteria and exhibited lower than acceptable density, richness, EPT and percent PPCS-FG values and/or higher than acceptable percent Oligochaeta values. However, WQM 4-3 and WQM 3-1 have shown appreciable improvements in water quality indices since 2011, associated with the rebound from impacts of Tropical Storm Irene and on-going water quality remediation activities across the Resort. WQM 106 and WQM 107 have only been sampled since 2012 but have shown water quality improvements since that time.

8.0 Conclusions

In Baseflow, Event Flow and Winter Melt conditions in 2014 and over the period of record, stations within the Tributary 9 watershed (WQM 1-2, WQM 2-3 and WQM 3-1) have exhibited relatively higher concentrations of conductivity, alkalinity and chloride (where sampling was applicable), indicating that

these streams receive a higher percentage of their surface runoff from developed areas. In addition, conductivity, alkalinity and chloride concentrations from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (WQM 105, WQM 106 and WQM 107) were higher than stations of Tributary 3 located upgradient of VT Route 242 (WQM 108) indicating the effects of roadways and development in this area. Chloride concentrations were within regulatory limits in 2014. Alkalinity concentrations were within regulatory limits in 2014 with the exception two occurrences on the Upper Jay Branch (WQM 4-1) and one occurrence within the Jay Branch (WQM 4-2a). In general, turbidity and TSS values have been relatively low at all stations in 2014.

Substrate results throughout the Resort area indicate that most of the water quality stations are showing signs of stasis or coarsening of substrate materials with the exception WQM 4-3 which had a smaller median particle size and WQM 4-4a which shows a smaller median particle size and higher percentage of fine particles. This trend is indicative of repeated scouring processes at upstream locations and deposition of particles at downstream stations where stream slope decreases and velocity and power of the stream is reduced.

In 2014 WQM 4-1 (reference), WQM 4-2a, WQM 4-4a and WQM 108 met the Class B bio criteria. WQM 107 had an indeterminate result. The remaining three stations (WQM 4-3, WQM 3-1 and WQM 106) did not meet the Class B bio criteria and exhibited lower than acceptable density, richness, EPT and percent PPCS-FG values and/or higher than acceptable percent Oligochaeta values. However, WQM 4-3 and WQM 3-1 have shown appreciable improvements in water quality indices since 2011, associated with the natural rebound from impacts of Tropical Storm Irene, which occurred in 2011. WQM 106 has only been sampled since 2012 but has shown improvements in water quality since that time.

On an overall basis, the 2014 monitoring results indicate a continuing improvement in water quality throughout the Jay Peak Resort area.

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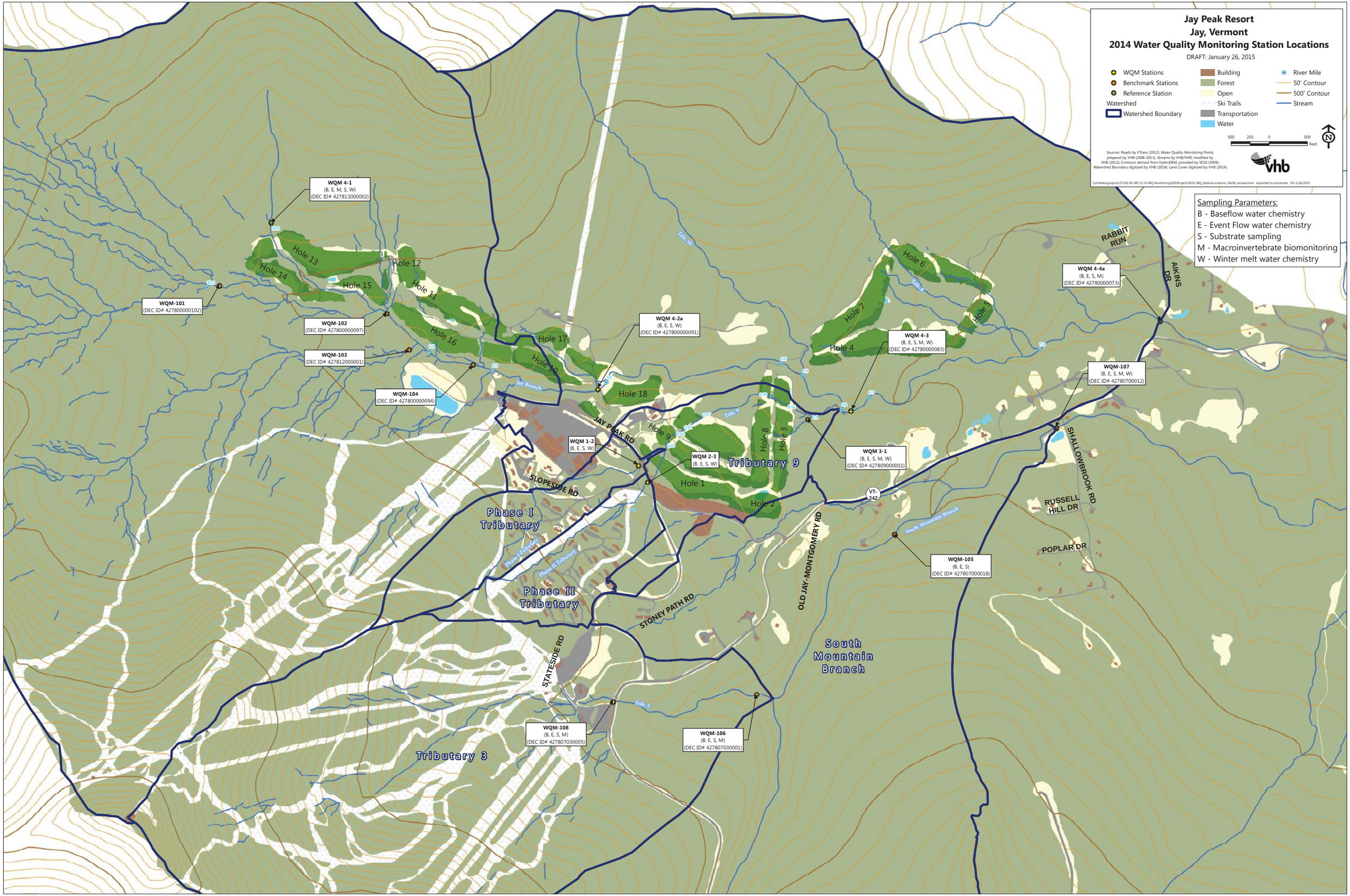
APPENDIX 1


Jay Peak Resort
Jay, Vermont
2014 Water Quality Monitoring Station Locations
DRAFT: January 26, 2015
WQM Stations
Benchmark Stations
Reference Station
Watershed
Watershed Boundary
Building
Forest
Open
Ski Trails
Transportation
Water
River Mile
50' Contour
500' Contour
Stream
500 250 0 500
Feet
N
Sources: Roads by VTrans (2012); Water Quality Monitoring Points prepared by VHB (2008-2013); Streams by VHB/VHD; modified by VHB (2012); Contours derived from HydroDEM, provided by VCGI (2008); Watershed Boundary digitized by VHB (2014); Land Cover digitized by VHB (2014).
vhb
Sampling Parameters:
B - Baseflow water chemistry
E - Event Flow water chemistry
S - Substrate sampling
M - Macroinvertebrate biomonitoring
W - Winter melt water chemistry
WQM 4-1
(B, E, M, S, W)
(DEC ID# 427813000002)
WQM-101
(DEC ID# 427800000102)
WQM-102
(DEC ID# 427800000097)
WQM-103
(DEC ID# 427812000001)
WQM-104
(DEC ID# 427800000094)
WQM 4-2a
(B, E, S, W)
(DEC ID# 427800000091)
WQM 4-3
(B, E, S, M, W)
(DEC ID# 42780000083)
WQM 4-4a
(B, E, S, M)
(DEC ID# 4278000073)
WQM-107
(B, E, S, M, W)
(DEC ID# 42780700012)
WQM 1-2
(B, E, S, W)
WQM 2-3
(B, E, S, W)
WQM 3-1
(B, E, S, M, W)
(DEC ID# 427809000001)
WQM-105
(B, E, S)
(DEC ID# 427807000018)
WQM-108
(B, E, S, M)
(DEC ID# 427807030005)
WQM-106
(B, E, S, M)
(DEC ID# 427807030001)
Hole 13
Hole 14
Hole 15
Hole 12
Hole 11
Hole 16
Hole 17
Hole 10
Hole 18
Hole 9
Hole 8
Hole 3
Hole 1
Hole 2
Hole 6
Hole 7
Hole 4
Hole 5
Tributary 9
Phase I Tributary
Phase II Tributary
Tributary 3
South Mountain Branch
Jay Branch
Trib. 10
Trib. 9
Trib. 3
JAY PEAK RD
SLOPESIDE RD
STONEY PATH RD
STATESIDE RD
OLD JAY-MONTGOMERY RD
VT-242
RABBIT RUN
AIKINS DR
SHALLOWBROOK RD
RUSSELL HILL DR
POPLAR DR

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 4-1 (DEC Station 427800000091), 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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
9/28/2004	12:06 PM								0.200	
10/26/2004	12:35 PM								0.050	
11/24/2004	12:12 PM	32.2	4.70		7.20	7.40	< 2.50		0.110	
9/29/2005		402			56.0	8.00	< 2.50		0.290	
10/22/2005		157			27.0	6.81		< 2.00	0.150	
11/3/2006		32.4			5.33	6.87	< 2.50	< 2.00	0.260	
9/7/2007	11:05 AM	49.1	16.6		17.0	7.02	< 2.50	< 2.00	3.50	
10/31/2007	1:00 PM	19.3	8.10		8.60	7.01	< 2.50	< 2.00	0.780	
11/26/2007	11:57 AM	25.3	4.16		10.0	7.28	< 2.50	< 2.00	1.29	
10/27/2008	12:35 PM	23.0	9.55		24.0	7.28	< 2.50	< 2.00	0.500	
11/4/2008	11:21 AM	17.4	8.39		5.60	6.96	< 2.50	< 2.00	0.500	
4/17/2009	9:06 AM	19.8	4.40			7.18	< 2.50	< 2.00	0.000	
8/17/2009	11:50 AM	50.6	15.5		21.0	6.91	< 2.50	< 2.00	0.500	
9/9/2009	9:23 AM	63.8	11.3		18.0	7.94	< 2.50	< 2.00	0.500	
10/20/2009	12:23 PM	42.1	6.80		12.0	7.32	< 2.50	< 2.00	0.500	
9/14/2010	9:43 AM	38.0	18.5		19.0	7.14	< 2.50	< 2.00	0.500	
9/22/2010	9:20 AM	44.7	18.9		19.0	7.76	< 2.50	< 2.00	0.500	
10/10/2011	3:40 PM	29.0	12.3	100	28.0	7.27	< 2.50	< 2.00	0.010	
10/20/2011	3:53 PM	19.6	10.4	101	26.0	6.92	< 2.50	< 2.00	0.000	
8/23/2012	12:01 PM	42.5	13.4	88.0	22.0	7.07	< 2.50	< 2.00	24.0	< 0.020
10/9/2012	1:30 PM	35.0	8.50	94.0	8.30	8.10	< 2.50	< 2.00	4.20	< 0.020
8/22/2013	9:50 AM	51.0	14.1	85.0	5.30	8.00	< 2.50	< 2.50	0.090	< 0.020
9/5/2013	4:10 PM	45.0	11.0	84.7	2.90	7.90	< 2.50	< 2.50	0.010	< 0.046
8/29/2014	12:16 PM	52.0	12.0	80.0	19.0	8.40	< 2.50	< 1.00	0.000	< 0.020
9/29/2014	10:36 AM	51.0	12.1	78.5	24.0	8.60	< 2.50	< 1.00	0.050	< 0.020
2014 STATISTICS										
Mean	***	51.5	12.1	79.3	21.5	8.49	2.50	1.00	0.025	0.020
2004 - 2014 STATISTICS										
Mean	***	58.3	11.0	88.9	17.5	7.22	2.50	< 1.95	1.54	0.024
Min	***	17.4	4.16	78.5	2.90	6.81	2.50	< 1.00	0.000	0.020
Max	***	402	18.9	101	56.0	8.60	2.50	< 2.50	24.0	0.046
n	***	23	20	8	22	23	22	21	25	6

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 4-2a (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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
8/23/2012	3:03 PM	86.7	15.5	95.0	37.0	7.49	6.00	< 2.00	0.040	0.100
10/9/2012	1:00 PM	49.0	8.00	97.3	12.0	7.90	< 2.50	< 2.00	120	0.047
8/22/2013	10:05 AM	83.0	15.6	83.7	3.70	8.00	5.20	< 3.00	0.300	0.093
9/5/2013	4:30 PM	72.0	12.1	89.1	2.30	7.80	< 3.30	< 2.00	0.360	0.170
8/29/2014	12:40 PM	88.0	13.5	83.7	32.0	8.40	5.10	< 1.00	0.430	0.092
9/29/2014	10:52 AM	89.0	13.0	78.3	24.0	8.60	5.50	< 1.00	0.050	0.092
2014 STATISTICS										
Mean	***	88.5	13.3	81.0	28.0	8.49	5.30	1.00	0.240	0.092
2012 - 2014 STATISTICS										
Mean	***	78.0	13.0	87.9	18.5	7.89	4.60	1.83	20.2	0.099
Min	***	49.0	8.00	78.3	2.30	7.49	2.50	1.00	0.040	0.047
Max	***	89.0	15.6	97.3	37.0	8.60	6.00	3.00	120	0.170
n	***	6	6	6	6	6	6	6	6	6

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 4-3 (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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
10/29/2004	9:35 AM								0.120	
11/24/2004	9:58 AM	61.2	4.50		16.0	7.50	4.16		0.610	
10/3/2005		124			23.0	7.53	6.15	< 2.00	1.34	
10/21/2005		41.0			8.60	6.71		< 2.00	1.19	
11/3/2006		48.4			7.79	8.61	7.98	< 2.00	0.520	
9/7/2007	9:45 AM	103	14.6		36.0	7.03	5.49	< 2.00	0.150	
10/31/2007	10:06 AM	38.0	5.30		29.0	7.66	6.00	< 2.00	0.330	
11/26/2007	11:15 AM	55.0	3.16		16.0	7.33	5.80	< 2.00	0.520	
10/27/2008	11:35 AM	52.0	9.28		24.0	7.51	5.60	< 2.00	4.06	
11/4/2008	9:50 AM	37.2	7.78		9.20	7.22	4.20	< 2.00	1.26	
4/17/2009	8:04 AM	60.0	3.70			7.23	4.30	< 2.00	0.000	
8/17/2009	10:24 AM	93.4	16.9		26.0	7.65	7.10	< 2.00	< 0.500	
9/9/2009	9:53 AM	120	12.4		29.0	7.85	11.0	< 2.00	< 0.500	
10/20/2009	10:59 AM		5.80		23.0	6.87	6.90	< 2.00	< 0.500	
9/14/2010	9:06 AM	81.7	11.3		22.0	7.02	5.90	< 2.00	1.80	
9/22/2010	8:36 AM	96.0	11.5		32.0	7.91	7.80	< 2.00	< 0.500	
10/10/2011	2:40 PM	64.3	12.7	106	27.0	7.21	6.50	< 2.00	0.550	
10/20/2011	2:53 PM	41.2	10.6	106	22.0	6.28	4.90	14.0	26.4	
8/23/2012	10:32 AM	98.8	14.8	89.0	38.0		12.0	< 2.00	0.050	< 0.020
10/9/2012	11:45 AM	75.0	7.70	97.0	16.0	8.10	5.90	3.00	4.80	0.044
8/22/2013	9:10 AM	103	16.0	90.0	4.80	8.30	10.0	< 2.50	0.550	< 0.029
9/22/2013	2:00 PM	116	12.6	89.5	5.90	8.10	12.0	2.00	0.010	0.059
8/29/2014	11:46 AM	127	13.5	85.0	31.0	8.50	16.0	< 1.00	0.000	0.029
9/29/2014	11:09 AM	220	13.3	76.5	32.0	8.30	16.0	< 1.00	0.000	0.030

2014 STATISTICS										
Mean	***	174	13.4	80.8	31.5	8.39	16.0	1.00	0.000	0.030
2004 - 2014 STATISTICS										
Mean	***	84.4	10.4	92.4	21.7	7.18	7.80	2.52	1.93	0.035
Min	***	37.2	3.16	76.5	4.80	6.28	4.16	1.00	0.000	0.020
Max	***	220	16.9	106	38.0	8.61	16.0	14.0	26.4	0.059
n	***	22	20	8	22	22	22	22	24	6

Notes:
Blank cell 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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 4-4 a/b (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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
9/28/2004	3:15 PM								0.130	
10/26/2004	7:55 AM								0.530	
10/3/2005		78.0			20.0	6.17	5.19	4.00	2.28	
10/21/2005		47.0			12.0	6.95		< 2.00	0.770	
11/3/2006		48.0			8.61	8.25	2.65	< 2.00	0.930	
9/7/2007	2:50 PM	94.1	17.4		24.0	7.22	7.16	< 2.00	0.170	
10/31/2007	1:23 PM	41.2	6.70		13.0	7.28	< 2.00	< 2.00	0.330	
11/26/2007	12:34 PM	45.9	3.05		14.0	7.35	4.70	< 2.00	0.630	
10/27/2008	12:55 PM	48.8	8.89		20.0	7.27	4.80	< 2.00	6.29	
11/4/2008	11:50 AM	32.0	8.50		10.0	7.18	2.90	2.00	1.67	
4/17/2009	9:40 AM	37.0	5.20			6.71	3.40	< 2.00	0.000	
8/17/2009	12:56 PM	91.0	19.4		26.0	7.37	7.10	< 2.00	< 0.500	
9/9/2009	11:41 AM	112	13.0		27.0	6.67	9.50	< 2.00	< 0.500	
10/20/2009	12:58 PM	79.9	6.90		23.0	6.90	6.20	< 2.00	< 0.500	
9/14/2010	10:10 AM	77.0	11.9		23.0	7.07	5.10	< 2.00	1.17	
9/22/2010	9:54 AM	95.2	12.1		29.0	7.59	7.40	< 2.00	< 0.500	
10/10/2011	1:53 PM	64.2	13.1	115	25.0	6.52	5.90	< 2.00	0.370	
10/20/2011	4:40 PM	42.6	11.0	105	22.0	7.20	4.20	4.00	2.15	
8/23/2012	3:42 PM	110	16.4	91.0	40.0	7.33	12.0	< 2.00	0.020	0.024
10/9/2012	9:30 AM	72.0	6.70	99.0	15.0	8.10	5.30	< 2.00	0.420	0.035
8/22/2013	11:00 AM	115	17.1	88.8	9.00	8.10	12.0	5.00	0.130	0.500
9/5/2013	9:30 AM	104	13.1	91.0	3.60	8.10	9.30	< 2.00	0.180	0.068
8/29/2014	3:46 PM	123	15.8	83.3	27.0	8.10	12.0	< 1.00	0.870	0.025
9/29/2014	12:25PM	121	14.2	80.7	30.0	8.50	12.0	< 1.00	0.300	< 0.020

2014 STATISTICS										
Mean	***	122	15.0	82.0	28.5	8.26	12.0	1.0	0.585	0.025
2004 - 2014 STATISTICS										
Mean	***	76.3	11.6	94.2	20.1	7.00	6.70	2.23	0.89	0.130
Min	***	32.0	3.05	80.7	3.60	6.17	2.00	1.00	0.000	0.024
Max	***	123	19.4	115	40.0	8.50	12.0	5.00	6.29	0.500
n	***	22	19	8	21	22	21	22	24	5

Notes:
Blank cell 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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 1-2, 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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
9/28/2004	1:35 PM								0.110	
10/26/2004	1:05 PM								0.590	
9/30/2005		172			54.0	6.75	14.3	2.00	0.910	
10/22/2005		84.0			25.0	7.45		< 2.00	1.07	
11/3/2006		64.2			15.6	8.12	3.43	< 2.00	0.850	
9/7/2007	9:05 AM	169	15.1		48.0	6.98	14.8	< 2.00	0.420	
10/31/2007	9:35 AM	78.0	11.6		22.0	7.72	8.60	< 2.00	0.580	
11/26/2007	12:22 PM	65.7	4.00		19.0	7.18	8.60	< 2.00	0.500	
10/27/2008	11:20 AM	79.3	12.2		28.0	7.36	12.0	< 2.00	2.78	
11/4/2008	11:22 AM	49.0	7.89		11.0	7.23	5.90	< 2.00	2.25	
4/17/2009	7:31 AM	55.1	3.60			7.17	9.50	5.00	0.150	
8/17/2009	9:28 AM	177	18.7		36.0	7.25	21.0	< 2.00	< 0.500	
9/9/2009	11:06 AM	286	14.3		46.0	7.40	40.0	< 2.00	< 0.500	
10/20/2009	10:03 AM	169	10.2		29.0	6.87	21.0	< 2.00	0.740	
9/14/2010	8:41 AM	180	12.1		38.0	6.74	29.0	< 2.00	6.01	
9/22/2010	8:15 AM	206	12.1		37.0	7.65	30.0	< 2.00	< 0.500	
10/10/2011	4:08 PM	172	13.5	96.0	32.0	7.37	38.0	< 2.00	0.160	
10/20/2011	4:20 PM	90.0	11.5	100	25.0	7.00	20.0	2.00	1.30	
8/23/2012	3:20 AM									
10/9/2012	4:00 PM	205	9.10	90.5	32.0	7.80	35.0	< 2.00	33.0	0.038
9/5/2013	4:45 PM	276	12.8	76.3	6.80	7.90	44.0	< 2.00	0.280	0.190
8/29/2014										
9/29/2014										

2014 STATISTICS										
Mean	***									
2004 - 2014 STATISTICS										
Mean	***	143	11.2	90.7	29.7	7.18	20.9	2.17	2.66	0.114
Min	***	49.0	3.60	76.3	6.80	6.74	3.43	2.00	0.110	0.038
Max	***	286	18.7	100	54.0	8.12	44.0	5.00	33.0	0.190
n	***	18	15	4	17	18	17	18	20	2

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 2-3, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (umho/cm)	Water Temp (ºC)	Total Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**>70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
9/28/2004	1:40 PM								0.390	
10/26/2004	1:08 PM								0.980	
9/30/2005		196			71.0	7.36	9.09	3.00	1.05	
10/22/2005		159			57.8	7.07		< 2.00	1.93	
11/3/2006		122			34.9	7.60	7.26	2.00	11.2	
9/7/2007	9:15 AM	218	15.8		76.0	7.45	13.6	< 2.00	0.340	
10/31/2007	9:38 AM	179	6.70		62.0	7.68	11.0	< 2.00	1.64	
11/26/2007	12:26 PM	107	4.17		42.0	7.26	11.0	< 2.00	2.42	
10/27/2008	11:25 AM	125	9.17		44.0	7.49	16.0	2.00	2.34	
11/4/2008	9:30 AM	109	8.06		24.0	7.18	9.50	4.00	2.05	
4/17/2009	7:39 AM	81.9	3.20			7.18	14.0	6.00	3.00	
8/17/2009	9:29 AM	219	17.8		59.0	7.59	23.0	< 2.00	0.580	
9/9/2009	11:16 AM	271	14.0		74.0	7.73	25.0	7.00	1.23	
10/20/2009	10:14 AM	210	7.90		48.0	6.96	23.0	< 2.00	< 0.500	
8/23/2012	3:23 PM									
10/9/2012	4:20 PM	283	10.3	85.0	54.0	7.70	45.0	< 3.00	24.0	0.034
8/22/2013	10:40 AM	323	17.5	78.0	80.0	8.00	37.0	< 2.50	0.300	0.027
9/5/2013	4:55 PM	293	13.3	84.1	6.60	8.00	42.0	< 1.00	0.450	0.044
8/29/2014	1:20 PM	340	17.4	67.3	72.0	8.20	46.0	< 1.00	0.000	< 0.042
9/29/2014	11:55 AM	341	14.2	60.5	61.0	8.10	49.0	< 1.00	0.000	0.042
2014 STATISTICS										
Mean	***	341	15.8	63.9	66.5	8.20	47.5	1.00	0.000	0.042
2004 - 2014 STATISTICS										
Mean	***	210	11.4	75.0	54.1	7.63	23.8	2.62	2.86	0.038
Min	***	81.9	3.20	60.5	6.60	6.96	7.26	1.00	0.000	0.027
Max	***	341	17.8	85.0	80.0	8.20	49.0	7.00	24.0	0.044
n	***	17	14	5	16	17	16	17	19	5

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 3-1 (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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 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	5.00		26.0	7.56	46.9		1.89	
10/4/2005		402			46.5	7.64	78.7	< 2.00	1.23	
10/21/2005		157			28.0	6.77		< 2.00	2.45	
11/3/2006		177			26.2	8.07	26.9	< 2.00	1.07	
9/7/2007	9:30 AM	97.7	16.3		14.0	7.20	14.4	< 2.00	0.230	
10/31/2007	9:52 AM	95.5	6.30		45.0	7.63	32.0	3.00	1.37	
11/26/2007	11:00 AM	155	3.38		46.0	7.42	36.0	< 2.00	1.47	
10/27/2008	11:30 AM	159	9.50		28.0	7.53	37.0	< 2.00	1.11	
11/4/2008	9:45 AM	109	8.06		16.0	7.23	24.0	< 2.00	1.42	
4/17/2009	7:56 AM	123	4.00			7.23	30.0	< 2.00	0.300	
8/17/2009	10:05 AM	355	18.9		46.0	7.65	68.0	< 2.00	< 0.500	
9/9/2009	9:46 AM	485	13.0		44.0	7.94	100	< 2.00	< 0.500	
10/20/2009	10:46 AM	317	6.50		44.0	7.13	60.0	< 2.00	0.970	
9/14/2010	9:00 AM	279	12.3		42.0	6.82	48.0	< 2.00	1.16	
9/22/2010	8:48 AM	415	12.8		51.0	7.77	79.0	< 2.00	< 0.500	
10/10/2011	2:49 PM	324	14.7	104	52.0	7.46	80.0	< 2.00	0.170	
10/20/2011	3:10 PM	116	11.9	107	36.0	6.83	41.0	< 2.00	2.42	
8/23/2012	10:54 AM	560	15.9	88.0	65.0		160	< 2.00	0.220	0.063
10/9/2012	12:15 PM	330	9.30	90.3	43.0	8.10	63.0	< 2.00	43.0	0.038
8/22/2013	9:00 AM	723	17.0	85.0	14.0	8.20	160	< 2.50	0.160	0.046
9/5/2013	2:10 PM	567	13.9	84.4	9.00	8.10	120	< 2.00	0.240	0.059
8/29/2014	11:09 AM	479	14.4	79.5	46.0	8.50	100	< 1.00	0.200	0.130
9/29/2014	11:21 AM	636	13.9	72.5	56.0	8.30	150	< 1.00	0.200	0.044
2014 STATISTICS										
Mean	***	558	14.2	76.0	51.0	8.39	125	1.00	0.200	0.087
2004 - 2014 STATISTICS										
Mean	***	318	11.3	88.8	37.4	7.47	70.7	1.98	2.93	0.063
Min	***	95.5	3.38	72.5	9.00	6.77	14.4	1.00	0.160	0.038
Max	***	723	18.9	107	65.0	8.50	160	3.00	43.0	0.130
n	***	23	20	8	22	22	22	22	25	6

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 105, 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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
8/23/2012	4:15 PM	148	13.5	95.0	38.0	7.50	34.0	< 2.00	0.010	< 0.020
10/9/2012	10:45 AM	155	6.90	95.5	16.0	8.20	28.0	< 2.00	24.0	< 0.020
8/22/2013	11:40 AM	199	14.3	88.0	6.90	7.90	31.0	< 2.50	0.970	< 0.080
9/5/2013	12:55 PM	188	11.0	90.7	5.30	8.10	36.0	< 2.00	3.25	< 0.100
8/29/2014	2:50 PM	213	12.5	77.3	28.0	8.30	36.0	< 1.00	0.000	< 0.020
9/29/2014	1:20 PM	214	12.0	76.5	34.0	8.30	39.0	< 1.00	0.050	0.029

2014 STATISTICS										
Mean	***	214	12.3	76.9	31.0	8.30	37.5	1.00	0.025	0.029
2012 - 2014 STATISTICS										
Mean	***	186	11.7	87.2	21.4	7.82	34.0	1.75	4.71	0.050
Min	***	148	6.90	76.5	5.30	7.50	28.0	1.00	0.000	0.020
Max	***	214	14.3	95.5	38.0	8.30	39.0	2.50	24.0	0.100
n	***	6	6	6	6	6	6	6	6	5

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 106, 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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
8/23/2012	4:41 PM	128	14.9	95.0	31.0	7.61	26.0	< 2.00	0.010	< 0.020
10/9/2012	11:00 AM	125	7.20	95.1	13.0	8.10	22.0	< 2.00	125	0.031
8/22/2013	12:00 PM	179	16.1	87.6	7.90	8.10	30.0	< 2.50	1.31	0.072
9/5/2013	1:55 PM	185	12.0	89.5	4.20	8.00	32.0	< 2.00	11.5	0.590
8/29/2014	2:35 PM	181	13.4	81.0	24.0	8.40	31.0	< 1.00	0.530	0.045
9/29/2014	1:38 PM	186	13.1	79.8	28.0	8.30	33.0	< 1.00	0.100	0.021

2014 STATISTICS										
Mean	***	184	13.3	80.4	26.0	8.35	32.0	1.00	0.315	0.033
2012- 2014 STATISTICS										
Mean	***	164	12.8	88.0	18.0	7.82	29.0	1.75	23.1	0.130
Min	***	125	7.20	79.8	4.20	7.61	22.0	1.00	0.010	0.020
Max	***	186	16.1	95.1	31.0	8.40	33.0	2.50	125	0.590
n	***	6	6	6	6	6	6	6	6	6

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Baseflow Water Chemistry Sampling 2014
Station WQM 107, 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)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
8/23/2012	3:56 PM	161	14.2	95.0	32.0	7.49	36.0	< 2.00	0.040	< 0.020
10/9/2012	10:30 AM	157	6.80	93.1	17.0	8.30	29.0	< 2.00	55.0	< 0.020
8/22/2013	11:15 AM	209	14.7	87.0	10.0	7.90	35.0	< 2.50	0.460	< 0.080
9/5/2013	11:55 AM	203	11.2	89.2	4.80	8.20	9.30	< 2.00	1.04	< 0.068
8/29/2014	3:26 PM	217	12.9	83.7	31.0	8.40	38.0	2.00	0.160	0.047
9/29/2014	12:36 PM	219	12.2	77.2	39.0	8.40	39.0	< 1.00	0.000	< 0.020

2014 STATISTICS										
Mean	***	218	12.6	80.5	35.0	8.40	38.5	1.50	0.080	0.047
2012 - 2014 STATISTICS										
Mean	***	194	12.0	87.5	22.3	7.89	31.1	1.92	9.45	0.047
Min	***	157	6.80	77.2	4.80	7.49	9.30	1.00	0.000	0.020
Max	***	219	14.7	95.0	39.0	8.40	39.0	2.50	55.0	0.080
n	***	6	6	6	6	6	6	6	6	5

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

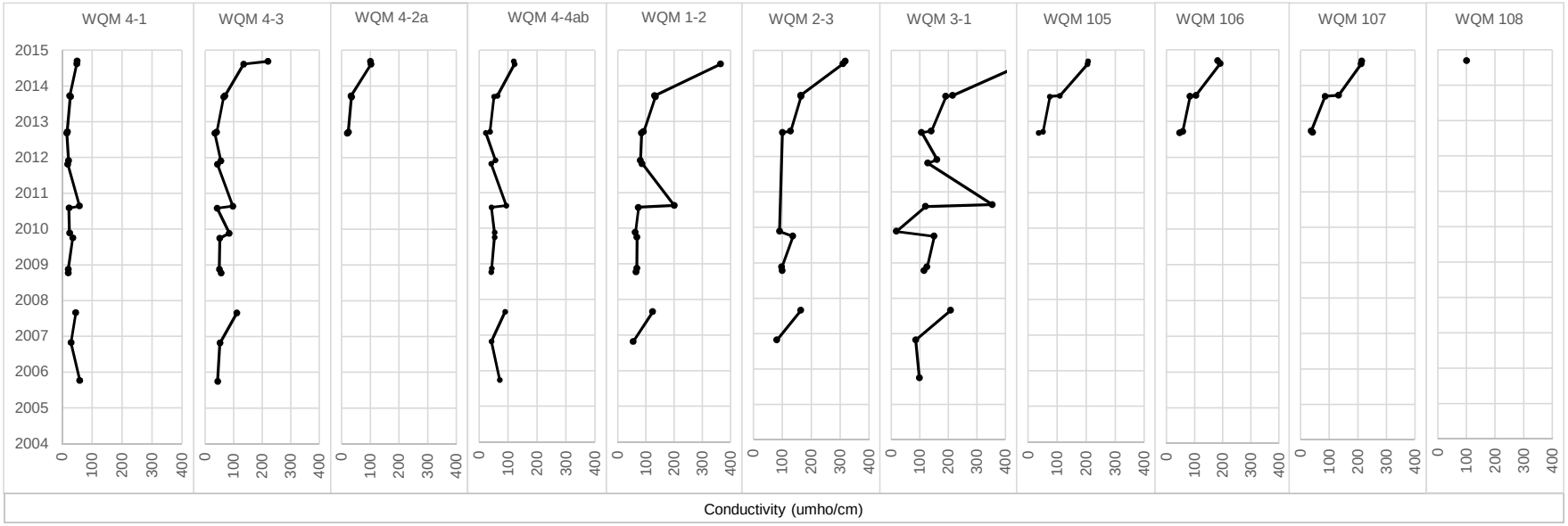
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014
Baseflow Water Chemistry Sampling 2014
Station WQM 108, Tributary 3 to South Mountain Branch

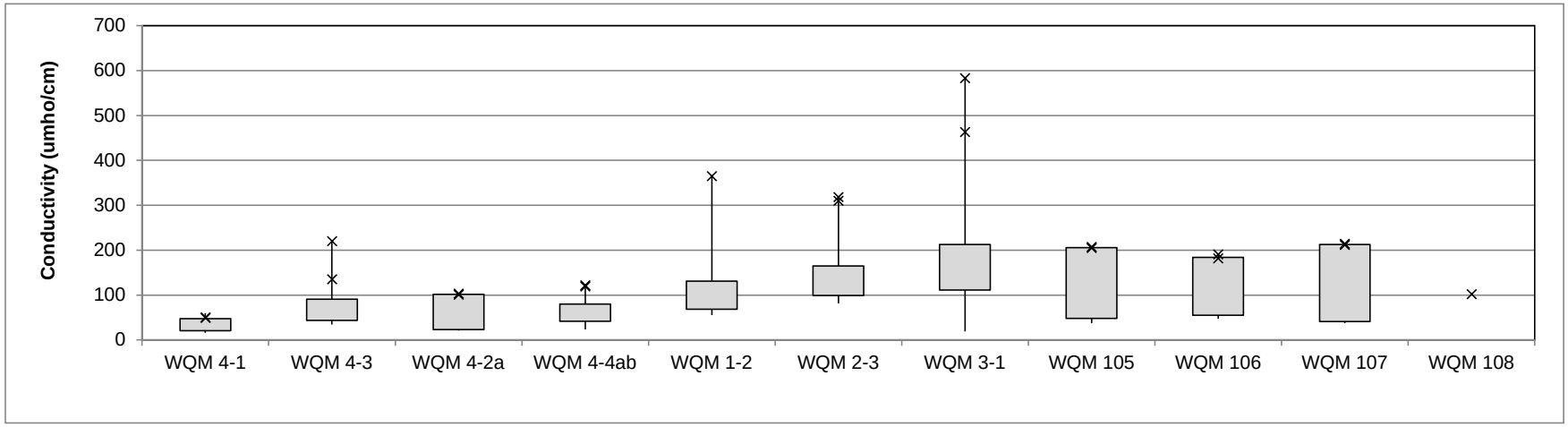
Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)	Total Iron (mg/L)
VWQS Threshold		**NA**	**NA**	**> 70%**	**NA**	**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**NA**	**≤ 10**	**< 1**
8/29/2014	1:35 PM	105	12.8	85.7	23.0	8.40	14.0	< 1.00	0.920	0.044
9/29/2014	1:55 PM	113	12.9	75.6	20.0	8.20	16.0	< 1.00	0.000	0.053

2014 STATISTICS										
Mean	***	109	12.9	80.7	21.5	8.31	15.0	1.00	0.460	0.049
2014 STATISTICS										
Mean	***	109	12.9	80.7	21.5	8.31	15.0	1.00	0.460	0.049
Min	***	105	12.8	75.6	20.0	8.20	14.0	1.00	0.000	0.044
Max	***	113	12.9	85.7	23.0	8.40	16.0	1.00	0.920	0.053
n	***	2	2	2	2	2	2	2	2	2

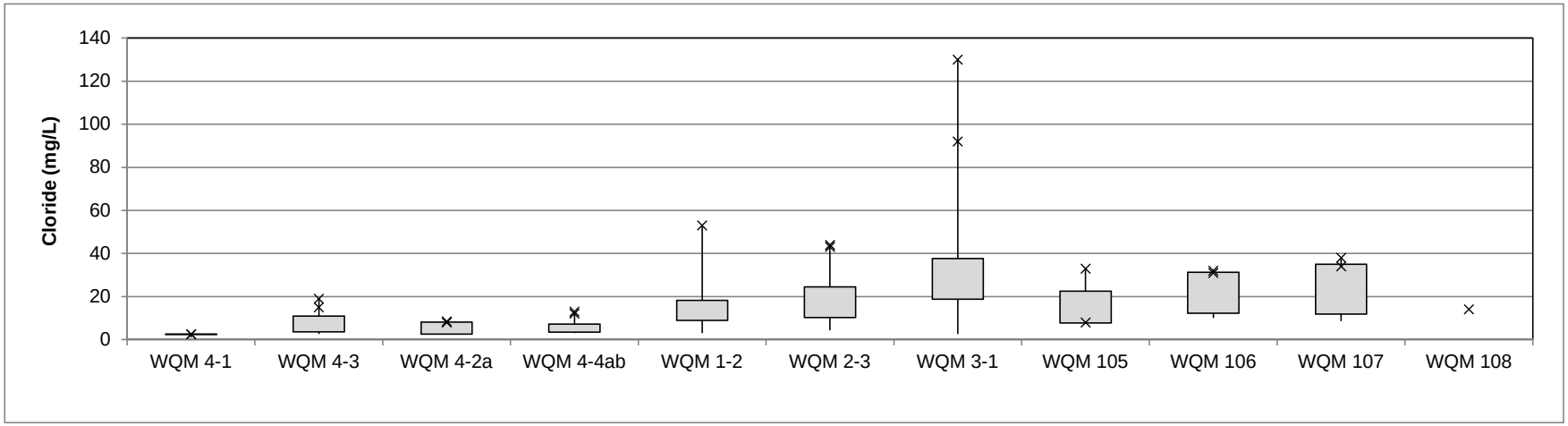
Notes:
Blank cells indicates no data available
*** indicates not applicable
pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Conductivity (umho/cm)

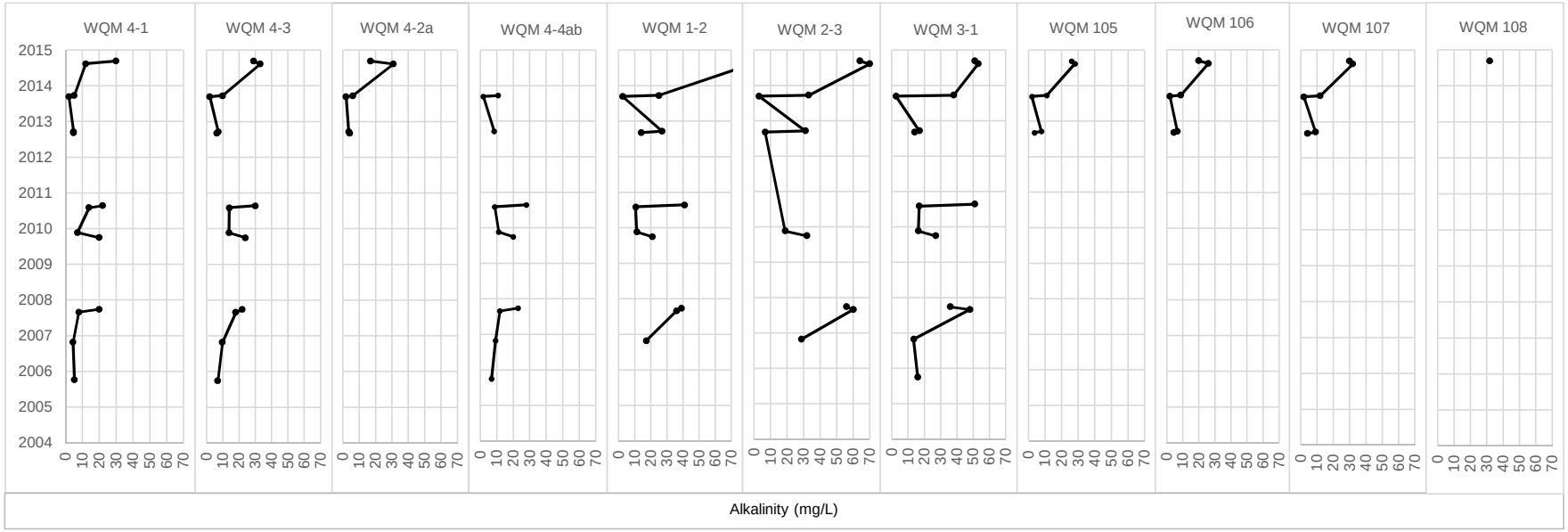


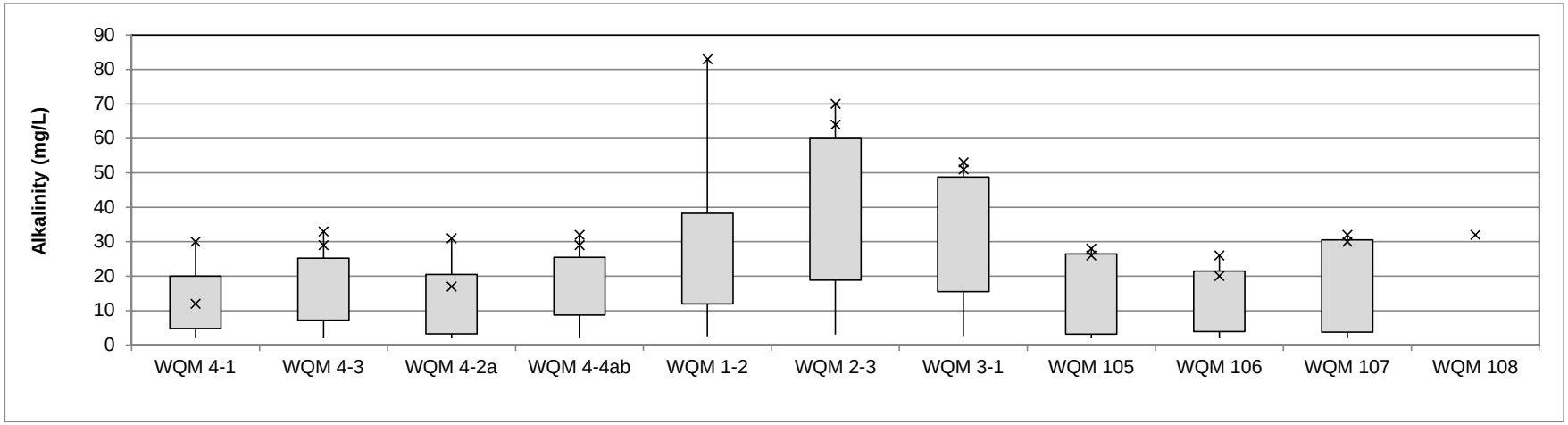


Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Chloride (mg/L)

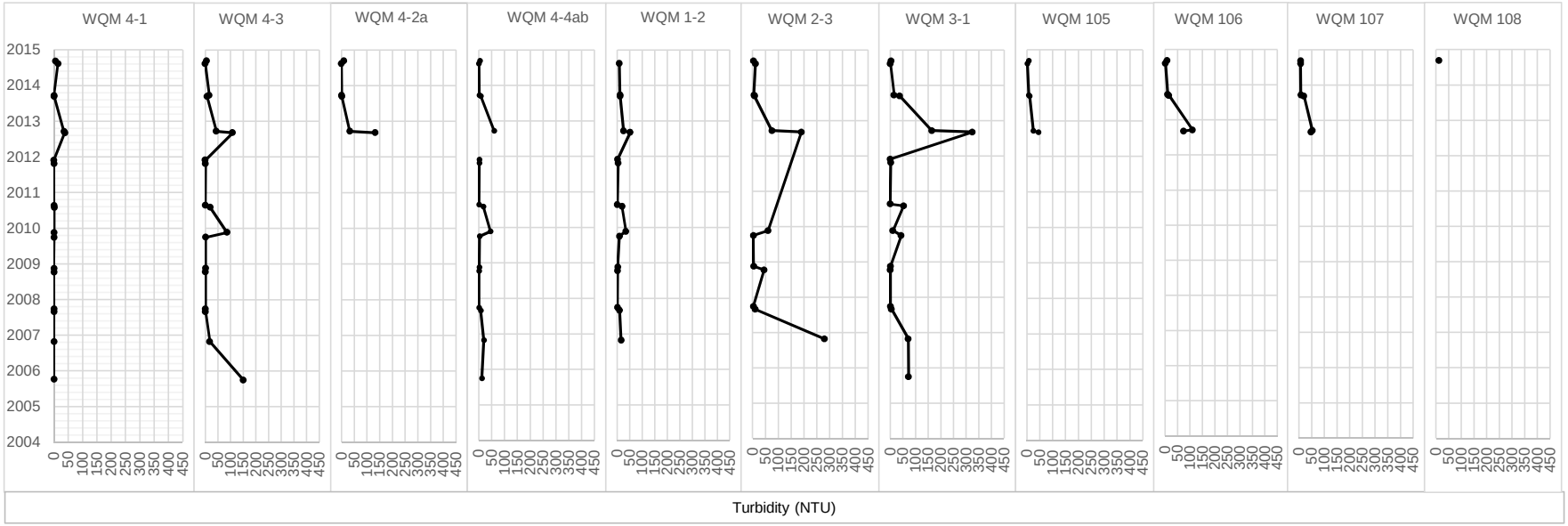


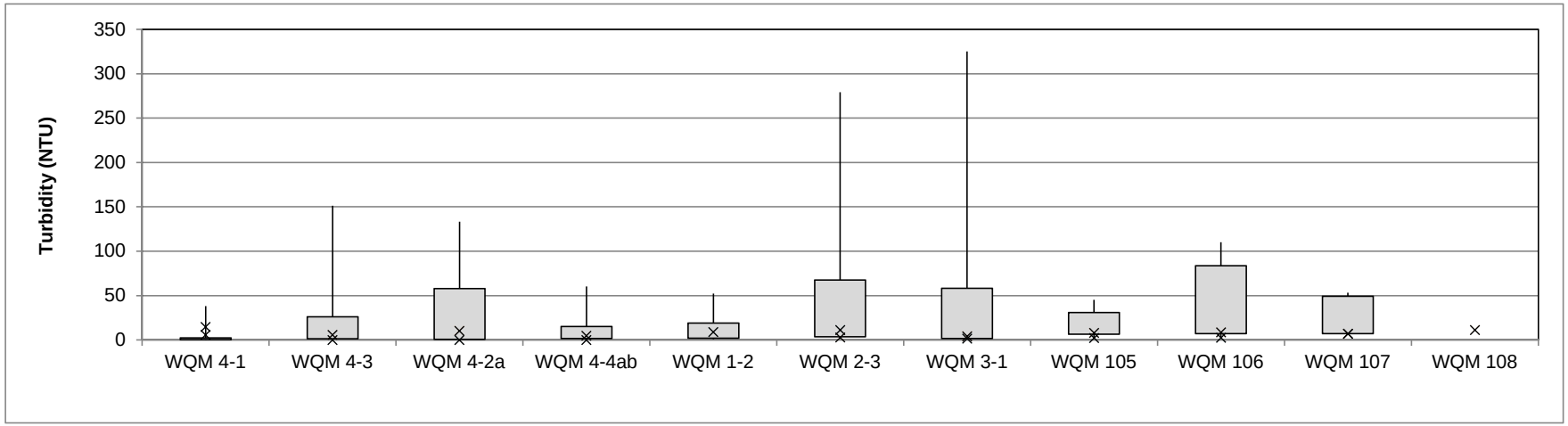
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Alkalinity (mg/L)



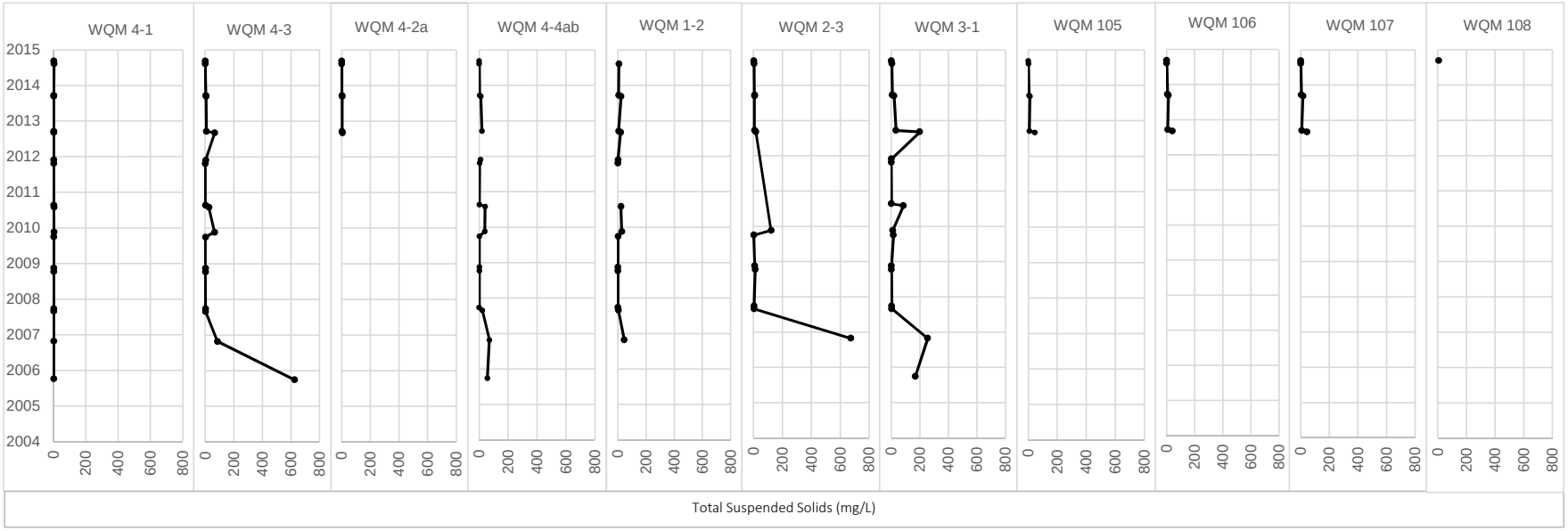


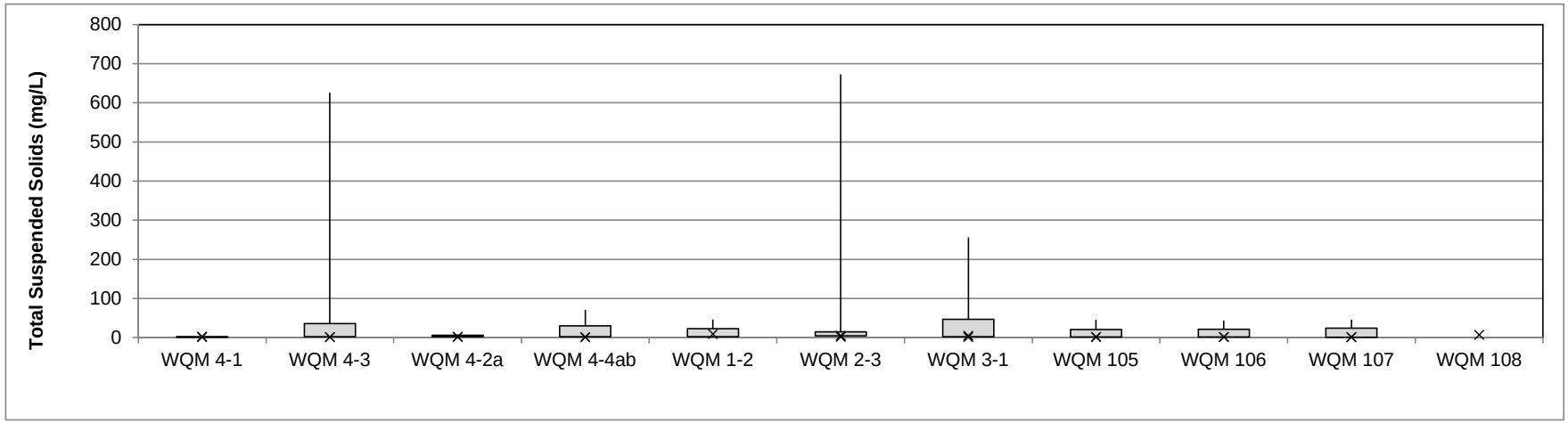
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Turbidity (NTU)





Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Total Suspended Solids (mg/L)





ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
PO Box 120	090395
N. Ferrisburgh, VT 05473	

PROJECT: Jay Peak 57201.07
WORK ORDER: **1408-16412**
DATE RECEIVED: August 13, 2014
DATE REPORTED: August 21, 2014
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: 08/21/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1408-16412**
PROJECT: Jay Peak 57201.07 DATE RECEIVED: 08/13/2014

001 Site: WQM 4-2 Date Sampled: 8/13/14 Time: 14:41

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	31	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	8.5	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.14	mg/L	EPA 200.7	8/20/14	W RGT	A	

002 Site: WQM 4-1 Date Sampled: 8/13/14 Time: 14:24

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	12	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	< 2.5	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	3	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.071	mg/L	EPA 200.7	8/20/14	W RGT	A	

003 Site: WQM 3-1 Date Sampled: 8/13/14 Time: 14:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	53	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	92	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	5	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.39	mg/L	EPA 200.7	8/20/14	W RGT	A	

004 Site: WQM 106 Date Sampled: 8/13/14 Time: 11:53

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	26	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	31	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.071	mg/L	EPA 200.7	8/20/14	W RGT	A	

005 Site: WQM 4-3 Date Sampled: 8/13/14 Time: 13:51

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	33	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	19	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.068	mg/L	EPA 200.7	8/20/14	W RGT	A	

006 Site: WQM 107 Date Sampled: 8/13/14 Time: 15:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	32	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	34	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.044	mg/L	EPA 200.7	8/20/14	W RGT	A	

007 Site: WQM 1-2 Date Sampled: 8/13/14 Time: 12:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.

Laboratory Report DATE REPORTED: 08/21/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1408-16412**
PROJECT: Jay Peak 57201.07 DATE RECEIVED: 08/13/2014

007 Site: WQM 1-2 Date Sampled: 8/13/14 Time: 12:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	83	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	53	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	9	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.48	mg/L	EPA 200.7	8/20/14	W RGT	A	

008 Site: WQM 105 Date Sampled: 8/13/14 Time: 12:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	28	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	33	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	2	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.038	mg/L	EPA 200.7	8/20/14	W RGT	A	

009 Site: WQM 4-4A Date Sampled: 8/13/14 Time: 15:18

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	32	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	13	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.064	mg/L	EPA 200.7	8/20/14	W RGT	A	

010 Site: WQM 2-3 Date Sampled: 8/13/14 Time: 12:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	70	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	43	mg/L	EPA 300.0	8/15/14	W KMB	A	
Solids, Total Suspended	5	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.31	mg/L	EPA 200.7	8/20/14	W RGT	A	

Report Summary of Qualifiers and Notes

AN1: Line verification standard was analyzed at a frequency of 1 in 20 samples, instead of the method defined 1 in 10 samples. All associated QA analyzed was within method acceptance limits.

Project # Jay Peak 57201.07

Endyne Inc. COC

Prepared: 8/11/14

Lab Use WO# 1408-16412

Customer # 090395

GENERAL

W-90395S11

Bill to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
Ph: 802-425-7788

Report to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
VHBPioneer
rwibley@vhb.com

001 WQm 4-2	Sampled Date/Time: 8/13/14 @ 14:41			Sampler: Robert Wibley
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
002 WQm- 4-1	Sampled Date/Time: 8/13/14 @ 1424			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
003 WQm 3-1	Sampled Date/Time: 8/13/14 @ 1340			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
004 WQm 106	Sampled Date/Time: 8/13/14 @ 11:53			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
005 WQm 4-3	Sampled Date/Time: 8/13/14 @ 1351			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
006 WQm 107	Sampled Date/Time: 8/13/14 @ 1505			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
007 WQm 1-2	Sampled Date/Time: 8/13/14 @ 12:55			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	

008 WQM 1.05 Sampled Date/Time: 8/13/14@ 12:30 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

009 WQM 4-4A Sampled Date/Time: 8/13/14@ 1518 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

010 WQM 2-3 Sampled Date/Time: 8/13/14@ 12:50 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

011 _____ Sampled Date/Time: ___/___/___@_____ Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

Relinquished by: [signature] 8/13/14 17:45 (Date Time) Accepted by: Eileen Dooney 8/13/14@ 17:45 (Date Time)

Relinquished by: _____ (Date Time) Received by: _____ (Date Time)

Sites/Parameters correct as listed. Client Initials _____

Client Authorization to use Subcontract lab Client Initials _____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) _____

Requested Turnaround Time: Routine: Rush Due Date _____

Lab use Only
Delv: Client
Temp C: 2.0
Comment:
Tmpl Ck
Log by

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
Lebanon, NH 03766
Ph 603-678-4891
Fax 603-678-4893

315 New York Rd.
Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
PO Box 120	090395
N. Ferrisburgh, VT 05473	
Atten: Robert Wildey	

PROJECT: Project #57201.07
WORK ORDER: **1409-18931**
DATE RECEIVED: September 11, 2014
DATE REPORTED: September 23, 2014
SAMPLER: RAW

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: 09/23/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1409-18931**
PROJECT: Project #57201.07 DATE RECEIVED: 09/11/2014

001 Site: WQM 108 Date Sampled: 9/11/14 Time: 11:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	32	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	14	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	7	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.092	mg/L	EPA 200.7	9/16/14	W RGT	A	

002 Site: WQM 106 Date Sampled: 9/11/14 Time: 11:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	20	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	32	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.073	mg/L	EPA 200.7	9/16/14	W RGT	A	

003 Site: WQM 2-3 Date Sampled: 9/11/14 Time: 11:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	64	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	44	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.029	mg/L	EPA 200.7	9/16/14	W RGT	A	

004 Site: WQM 3-1 Date Sampled: 9/11/14 Time: 11:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	51	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	130	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.12	mg/L	EPA 200.7	9/16/14	W RGT	A	

005 Site: WQM 4-1 Date Sampled: 9/11/14 Time: 12:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	30	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	< 2.5	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.11	mg/L	EPA 200.7	9/16/14	W RGT	A	

006 Site: WQM 4-2 Date Sampled: 9/11/14 Time: 12:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	17	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	8	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.11	mg/L	EPA 200.7	9/19/14	W RGT	A	

007 Site: WQM 4-4A Date Sampled: 9/11/14 Time: 13:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.

Laboratory Report DATE REPORTED: 09/23/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1409-18931**
PROJECT: Project #57201.07 DATE RECEIVED: 09/11/2014

007 Site: WQM 4-4A Date Sampled: 9/11/14 Time: 13:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	29	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	12	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.037	mg/L	EPA 200.7	9/19/14	W RGT	A	

008 Site: WQM 105 Date Sampled: 9/11/14 Time: 14:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	26	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	8	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	< 0.020	mg/L	EPA 200.7	9/19/14	W RGT	A	

009 Site: WQM 107 Date Sampled: 9/11/14 Time: 14:27

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	30	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	38	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	< 0.020	mg/L	EPA 200.7	9/19/14	W RGT	A	

010 Site: WQM 4-3 Date Sampled: 9/11/14 Time: 12:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	29	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	15	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.075	mg/L	EPA 200.7	9/19/14	W RGT	A	

rwildey@vhb.com P.H.

Project # 57201.07

Endyne Inc. COC

Prepared: 8/11/14

Lab Use WO# 1409-18931

Customer # 090395

GENERAL

W-90395S11

Bill to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
Ph: 802-425-7788

Report to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
VHBPioneer
ATTN: ROBERT WILDEY

001 WQM 108	Sampled Date/Time: 9/11/14 @ 11:00			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
002 WQM 106	Sampled Date/Time: 9/11/14 @ 11:15			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
003 WQM 2-3	Sampled Date/Time: 9/11/14 @ 11:30			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
004 WQM 3-1	Sampled Date/Time: 9/11/14 @ 11:55			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
005 WQM 4-1	Sampled Date/Time: 9/11/14 @ 12:30			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
006 WQM 4-2	Sampled Date/Time: 9/11/14 @ 12:45			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
007 WQM 4-4A	Sampled Date/Time: 9/11/14 @ 13:45			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	

008 WQM 105 Sampled Date/Time: 9/11/14 @ 14:15 Sampler: RAW

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

009 WQM 107 Sampled Date/Time: 9/11/14 @ 14:27 Sampler: RAW

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

010 WQM 4-3 Sampled Date/Time: 9/11/14 @ 12:05 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

~~011 _____ Sampled Date/Time: ___/___/___@_____ Sampler: _____~~

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

Relinquished by: [signature] 9/11/14 18:15 (Date Time) Accepted by: Eileen Dunmay 9-11-14@1811 (Date Time)

Relinquished by: _____ (Date Time) Received by: _____ (Date Time)

Sites/Parameters correct as listed. Client Initials _____

Client Authorization to use Subcontract lab Client Initials _____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) _____

Requested Turnaround Time: Routine: Rush Due Date _____

Lab use Only

Delv: Client
Temp C: 0.9
Comment:

Tmpl Ck
Log by

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
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315 New York Rd.
Plattsburgh, NY 12903
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APPENDIX 2

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2005-2014
Event Water Chemistry Sampling 2014
Station WQM 4-1 (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**			
10/8/2005	***	59.3			5.30	7.18	< 2.50	0.410		< 2.00
10/28/2006	---	30.2			4.51	7.15	< 2.50	0.510		< 2.00
8/30/2007	1:35 PM	45.9	13.0		8.00	7.29	< 2.50	0.230		< 2.00
9/28/2007	9:10 AM				< 20.0	7.00	< 1.00	0.530		< 1.00
10/10/2008	11:55 AM	20.7	5.78			7.22	< 2.50	< 0.500		< 2.00
11/17/2008	9:36 AM	21.0	6.33			7.00	< 2.50	< 0.500		< 2.00
10/1/2009	11:32 AM	36.0	8.00		20.0	6.89	< 2.50	< 0.500		< 2.00
11/20/2009	10:30 AM	25.5	7.30		7.07	7.34	< 2.50	0.900		3.00
8/3/2010	3:39 PM	23.4	14.8		14.0	7.00	< 2.50	1.30		3.00
8/23/2010	3:40 PM	58.2	12.8		22.0	7.73	< 2.50	< 0.500		< 2.00
10/25/2011	9:53 AM	19.0	7.00			6.47		0.500		< 1.00
11/30/2011	10:56 AM	22.0	7.10			6.31		0.000		< 1.00
9/5/2012	1:50 PM	16.0	14.6	91.0	4.80		< 2.50	38.0	0.028	< 2.00
9/19/2012	2:30 PM	17.8	10.7	89.3	4.80	7.05	< 2.50	35.0	0.027	< 2.00
9/12/2013	4:15 PM	28.0	14.5	97.1	< 2.00	7.60	< 2.50	0.810	0.053	< 1.00
9/22/2013	3:50 PM	26.0	10.9	99.0	5.20	7.60	< 2.50	0.400	0.067	2.00
8/13/2014	2:24 PM	49.0	13.3	72.2	12.0	8.30	< 2.50	14.5	0.071	3.00
9/11/2014	12:30 PM	50.0	12.8	78.1	30.0	8.50	< 2.50	5.70	0.110	1.00

2014 STATISTICS										
Mean	***	49.5	13.1	75.2	21.0	8.39	2.50	10.1	0.091	2.00
2005- 2014 STATISTICS										
Mean	***	32.2	10.6	87.8	11.4	7.00	2.41	5.60	0.059	1.89
Min	***	16.0	5.78	72.2	2.00	6.31	1.00	0.000	0.027	1.00
Max	***	59.3	14.8	99.0	30.0	8.50	2.50	38.0	0.110	3.00
n	***	17	15	6	14	17	16	18	6	18

Notes:

--- indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Event Water Chemistry Sampling 2014
Station WQM 4-2a (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**			
9/5/2012	1:10 PM	20.5	14.9	92.0	4.30		< 2.50	133	0.420	8.00
9/19/2012	1:00 PM	24.2	10.8	90.5	3.70	7.20	< 2.50	33.0	0.210	4.00
9/12/2013	12:00 PM	35.0	15.4	102	< 2.00	7.50	< 2.50	1.71	0.180	5.00
9/22/2013	3:50 PM	33.0	11.2	100	6.20	7.80	< 2.50	0.850	0.170	3.00
8/13/2014	2:41 PM	103	14.3	80.0	31.0	8.40	< 8.50	0.000	0.140	2.00
9/11/2014	12:45 PM	101	13.5	78.5	17.0	8.60	8.00	10.2	0.110	2.00
2014 STATISTICS										
Mean	***	102	13.9	79.3	24.0	8.49	8.25	5.08	0.125	2.00
2012 - 2014 STATISTICS										
Mean	***	52.8	13.4	90.5	10.7	7.63	4.42	29.8	0.205	4.00
Min	***	20.5	10.8	78.5	2.00	7.20	2.50	0.000	0.110	2.00
Max	***	103	15.4	102	31.0	8.60	8.50	133	0.420	8.00
n	***	6	6	6	6	5	6	6	6	6

Notes:

--- indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2005-2014
Event Water Chemistry Sampling 2014
Station WQM 4-3 (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**			
9/30/2005		44.3			7.00	6.41	3.15	151		626
10/28/2006		52.0			9.84	7.22	< 4.41	18.3		86.0
8/30/2007	12:25 PM	111	15.9		18.0	7.50	< 2.50	1.58		3.00
9/28/2007	8:20 AM				22.0	7.30	5.00	1.40		3.00
10/10/2008	10:45 AM	56.0	5.56			7.33	12.0	1.52		< 2.00
11/17/2008	8:10 AM	50.0	5.56			7.47	6.00	2.07		< 2.00
10/1/2009	10:18 AM	51.8	8.10		24.0	6.87	3.50	1.77		2.00
11/20/2009	11:15 AM	84.8	7.30		13.9	7.25	19.0	86.1		66.0
8/3/2010	2:35 PM	42.0	16.3		14.1	7.74	3.50	20.0		26.0
8/23/2010	2:35 PM	97.1	14.6		30.0	7.66	7.80	< 0.500		< 2.00
10/25/2011	10:33 AM	43.0	7.20			6.94		1.38		1.00
11/30/2011	9:45 AM	55.0	7.90			6.81		0.000		< 4.00
9/5/2012	11:50 AM	34.0	15.3	92.0	6.40	6.73	4.00	108	3.30	67.0
9/19/2012	12:15 PM	40.6	11.3	89.5	7.30	7.48	4.70	44.0	0.500	9.00
9/12/2013	2:45 PM	65.0	16.1	103	< 2.00	7.80	5.70	7.31	0.530	7.00
9/22/2013	3:05 PM	69.0	12.0	99.0	9.90	8.00	6.20	16.0	0.260	5.00
8/13/2014	1:51 PM	135	15.1	82.9	33.0	8.50	19.0	0.000	0.068	< 1.00
9/11/2014	12:05 PM	220	14.0	80.0	29.0	8.60	15.0	5.53	0.075	< 1.00

2014 STATISTICS										
Mean	***	178	14.6	81.5	31.0	8.55	17.0	2.77	0.072	1.00
2005 - 2014 STATISTICS										
Mean	***	73.6	11.5	91.0	16.2	7.12	7.59	25.9	0.789	50.7
Min	***	34.0	5.56	80.0	2.00	6.41	2.50	0.000	0.068	1.00
Max	***	220	16.3	103	33.0	8.60	19.0	151	3.30	626
n	***	17	15	6	14	18	16	18	6	18

Notes:
--- indicates no data available
*** indicates not applicable
2005 and 2006 data from ESI
pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2005-2014
Event Water Chemistry Sampling 2014
Station WQM 4-4a/b (DEC Station 427800000091/427800000073), 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**			
9/30/2005		70.9			7.00	7.07	3.20	12.3		58.0
10/28/2006		42.2			9.43	7.09	2.92	20.1		71.0
8/30/2007	2:05 PM	89.4	16.8		12.0	6.86	8.33	8.06		21.0
9/28/2007	9:30 AM				23.0	7.00	5.00	0.960		1.00
10/10/2008	12:10 PM	40.9	6.28			7.18	4.10	1.44		< 2.00
11/17/2008	10:00 AM	43.7	6.50			7.13	3.70	1.65		< 2.00
10/1/2009	11:59 AM	52.9	8.70		20.0	6.89	3.50	3.42		< 2.00
11/20/2009	11:15 AM	53.5	7.50		11.3	7.22	3.90	45.8		39.0
8/3/2010	4:10 PM	42.1	16.9		8.90	7.00	3.00	17.8		41.0
8/23/2010	4:15 PM	94.1	15.8		28.0	7.71	7.20	< 0.500		< 2.00
10/25/2011	9:08 AM	41.3	7.40			6.83		2.03		3.00
11/30/2011	8:59 AM	56.0	8.40			6.90		1.91		9.00
9/5/2012	8:50 AM	23.0	15.5	95.0						
9/19/2012	10:00 AM	37.3	11.6	91.0	8.50	7.24	3.70	60.0	0.810	20.0
9/12/2013	12:00 PM	51.0	16.0	101	< 2.00	8.00	3.50	7.58	0.660	12.0
9/22/2013	1:10 PM	63.0	12.9	102	11.0	8.30	4.80	2.30	0.240	4.00
8/13/2014	3:18 PM	122	15.8	79.0	32.0	8.40	13.0	0.000	0.064	< 1.00
9/11/2014	1:45PM	119	15.0	80.7	29.0	8.60	12.0	4.83	0.037	< 1.00

2014 STATISTICS										
Mean	***	121	15.4	79.9	30.5	8.49	12.5	2.42	0.051	1.00
2005 - 2014 STATISTICS										
Mean	***	61.3	12.1	91.5	15.5	7.12	5.46	11.2	0.362	17.0
Min	***	23.0	6.28	79.0	2.00	6.83	2.92	0.000	0.037	1.00
Max	***	122	16.9	102	32.0	8.60	13.0	60.0	0.810	71.0
n	***	17	15	6	13	17	15	17	5	17

Notes:
--- indicates no data available
*** indicates not applicable
2005 and 2006 data from ESI
pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2006-2014
Event Water Chemistry Sampling 2014
Station WQM 1-2, 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**			
10/28/2006		55.3			17.2	7.43	2.91	16.3		46.0
8/30/2007	11:45 AM	125	17.1		36.0	7.49	11.5	9.85		5.00
9/28/2007	7:36 AM				39.0	6.70	7.00	1.20		2.00
10/10/2008	10:12 AM	65.7	8.56			7.15	9.70	1.77		< 2.00
11/17/2008	7:28 AM	68.4	6.39			7.60	10.0	2.44		< 2.00
10/1/2009	9:43 AM	68.7	8.80		21.0	6.62	10.0	9.22		3.00
11/20/2009	8:37 AM	63.0	7.50		11.3	7.92	9.60	34.7		29.0
8/3/2010	2:10 PM	74.2	17.5		10.6	7.44	11.0	19.7		23.0
8/23/2010	1:55 AM	201	16.2		41.0	7.40	32.0	0.810		
10/25/2011	11:33 AM	87.1	7.30			6.94		4.43		2.00
11/30/2011	11:15 AM	81.0	7.10			6.71		1.10		3.00
9/5/2012	5:20	85.0	17.2	82.0	14.0		15.0	52.0	1.30	21.0
9/19/2012	3:45	92.3	12.5	86.6	27.0	7.47	19.0	26.0	0.680	7.00
9/12/2013	5:50	134	17.0	93.7	2.50	7.90	18.0	12.3	0.480	24.0
9/22/2013	5:45	131	12.4	97.0	25.0	7.70	7.00	11.5	0.300	7.00
8/13/2014	12:58	365	15.9	74.0	83.0	8.40	53.0	8.74	0.480	9.00
9/11/2014										

2014 STATISTICS										
Mean	***	365	15.9	74.0	83.0	8.40	53.0	8.74	0.480	9.00
2006 - 2014 STATISTICS										
Mean	***	113	12.2	86.7	27.3	7.15	15.4	13.3	0.648	12.3
Min	***	55.3	6.39	74.0	2.50	6.62	2.91	0.810	0.300	2.00
Max	***	365	17.5	97.0	83.0	8.40	53.0	52.0	1.30	46.0
n	***	15	14	5	12	15	14	16	5	15

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2006-2014
Event Water Chemistry Sampling 2014
Station WQM 2-3, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Turbidity (NTU)	Total Iron (mg/L)	Chloride (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**>70%**		**≥ 6.5 and ≤ 8.5**			**≥ 230 mg/L**	
10/28/2006		81.3			28.7	7.39	279		4.32	673
8/30/2007	12:05 PM	165	16.8		60.0	7.55	9.65		12.0	4.00
9/28/2007	7:47 AM				56.0	7.50	3.30		7.00	5.00
10/10/2008	10:22 AM	100	5.56			7.19	44.4		13.0	13.0
11/17/2008	7:35 AM	98.5	5.56			7.60	4.04		12.0	9.00
10/1/2009	9:50 AM	137	8.30		32.0	6.32	3.31		14.0	2.00
11/20/2009	8:37 AM	91.4	7.10		18.8	7.65	60.1		8.60	122
9/5/2012	4:50 PM	101	17.0	88.0	6.70		190	1.50	17.0	17.0
9/19/2012	4:00 PM	129	14.7	83.0	31.0	7.66	75.0	0.500	25.0	8.00
9/12/2013	6:00 PM	165	17.6	91.2	3.00	8.10	7.28	0.460	23.0	8.00
9/22/2013	4:15 PM	164	12.9	98.0	33.0	7.90	5.38	0.470	24.0	8.00
8/13/2014	12:50 PM	310	15.7	73.1	70.0	8.00	11.25	0.310	43.0	5.00
9/11/2014	11:30 AM	318	15.1	70.5	64.0	8.40	2.87	0.029	44.0	2.00

2014 STATISTICS										
Mean	***	314	15.4	71.8	67.0	8.16	7.06	0.170	43.5	3.50
2006 - 2014 STATISTICS										
Mean	***	155	12.4	84.0	36.7	7.21	53.5	0.545	19.0	67.4
Min	***	81.3	5.56	70.5	3.00	6.32	2.87	0.029	4.32	2.00
Max	***	318	17.6	98.0	70.0	8.40	279	1.50	44.0	673
n	***	12	11	6	11	12	13	6	13	13

Notes:
--- indicates no data available
*** indicates not applicable
2006 data from ESI
pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2005-2014
Event Water Chemistry Sampling 2014
Station WQM 3-1 (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)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Total Iron (mg/L)	Chloride (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**				**≥ 230 mg/L**
9/30/2005	***	99.6			16.0	6.81	73.2	169		12.3
10/28/2006	***	86.4			13.5	6.99	72.3	256		11.5
8/30/2007	12:20 PM	209	17.8		48.0	7.62	5.77	4.00		36.8
9/28/2007	8:45 AM				36.0	7.40	1.90	4.00		18.0
10/10/2008	10.36 am	116	5.67			7.27	1.42	< 2.00		23.0
11/17/2008	7:55 AM	126	6.50			7.53	2.05	< 2.00		27.0
10/1/2009	10:08 AM	151	8.40		27.0	6.66	44.0	16.0		24.0
11/20/2009	9:04 AM	18.6	7.30		16.4	7.63	11.5	11.0		< 2.50
8/3/2010	2:27 PM	121	19.3		16.9	7.73	53.7	86.0		21.0
8/23/2010	2:50 PM	355	14.6		51.0	8.07	0.58	< 2.00		62.0
10/25/2011	11:01 AM	129	7.50			6.89	3.08	< 1.00		
11/30/2011	10:02 AM	161	7.80			6.96	0.55	< 2.00		
9/5/2012	11:30 AM	107	19.0	92.0	14.0	6.68	325	200	17.0	22.0
9/19/2012	11:45 AM	141	14.0	83.0	17.0	7.41	165	34.0	4.70	33.0
9/12/2013	7:55 PM	192	15.1	98.5	2.60	7.90	38.5	20.0	1.50	32.0
9/22/2013	3:25 PM	216	13.2	100	38.0	8.10	16.0	8.00	0.890	38.0
8/13/2014	1:40 PM	463	16.1	79.1	53.0	8.50	1.45	5.00	0.390	92.0
9/11/2014	11:55 AM	583	15.0	69.5	51.0	8.60	3.94	1.00	0.120	130

2014 STATISTICS										
Mean	***	523	15.6	74.3	52.0	8.55	2.70	3.00	0.255	111
2005- 2014 STATISTICS										
Mean	***	193	12.5	87.0	28.6	7.18	45.6	45.7	4.10	36.6
Min	***	18.6	5.67	69.5	2.60	6.66	0.550	1.00	0.120	2.50
Max	***	583	19.3	100	53.0	8.60	325	256	17.0	130
n	***	17	15	6	14	18	18	18	6	16

Notes:

--- indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Event Water Chemistry Sampling 2014
Station WQM 105 (DEC Station 427807000018), South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Turbidity (NTU)	Total Iron (mg/L)	Chloride (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**			**≥ 230 mg/L**	
9/5/2012	9:40 AM	37.0	14.7	95.0	3.60	6.55	45.0	1.90	7.20	45.0
9/19/2012	10:45 AM	51.4	10.6	92.5	7.80	7.34	26.0	0.440	10.0	8.00
9/12/2013	1:50 PM	75.0	15.1	100	< 2.00	7.70	11.5	0.780	11.0	12.0
9/22/2013	1:45 PM	110	11.6	100	11.0	7.90	8.17	0.350	19.0	6.00
8/13/2014	12:30 PM	205	13.0	85.7	28.0	8.00	1.99	0.038	33.0	2.00
9/11/2014	2:15 PM	207	12.6	81.2	26.0	8.60	8.06	< 0.020	8.00	1.00
2014 STATISTICS										
Mean	***	206	12.8	83.5	27.0	8.20	5.03	0.029	20.5	1.50
2012 - 2014 STATISTICS										
Mean	***	114	12.9	92.4	13.1	7.21	16.8	0.588	14.7	12.3
Min	***	37.0	10.6	81.2	2.00	6.55	1.99	0.020	7.20	1.00
Max	***	207.0	15.1	100	28.0	8.60	45.0	1.90	33.0	45.0
n	***	6	6	6	6	6	6	6	6	6

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Event Water Chemistry Sampling 2014
Station WQM 106 (DEC Station 427807030001), South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Turbidity (NTU)	Total Iron (mg/L)	Chloride (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**			**≥ 230 mg/L**	
9/5/2012	10:30 AM	47.0	14.8	93.0	4.50	6.50	75.0	1.60	10.0	43.0
9/19/2012	11:15 AM	57.8	10.6	88.0	6.70	7.37	110	0.410	13.0	9.00
9/12/2013	2:10 PM	84.0	15.4	102	< 2.00	7.60	16.2	1.20	14.0	14.0
9/22/2013	2:15 PM	105	11.7	100	8.80	7.80	11.3	0.540	18.0	8.00
8/13/2014	11:53 AM	191	14.9	56.5	26.0	7.50	2.47	0.071	31.0	< 1.00
9/11/2014	11:15 AM	182	13.4	79.5	20.0	8.60	8.68	0.073	32.0	2.00

2013 STATISTICS										
Mean	***	187	14.2	68.0	23.0	7.77	5.58	0.072	31.5	1.50
2012 - 2014 STATISTICS										
Mean	***	111	13.5	86.5	11.3	7.14	37.3	0.649	19.7	12.8
Min	***	47.0	10.6	56.5	2.00	6.50	2.47	0.071	10.0	1.00
Max	***	191	15.4	102	26.0	8.60	110	1.60	32.0	43.0
n	***	6	6	6	6	6	6	6	6	6

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2012-2014
Event Water Chemistry Sampling 2014
Station WQM 107 (DEC Station 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)	Turbidity (NTU)	Total Iron (mg/L)	Chloride (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**			**≥ 230 mg/L**	
9/5/2012	9:15 AM	42.0	15.0	95.0	4.30	6.65	48.0	2.30	8.60	45.0
9/19/2012	10:25 AM	37.3	10.8	90.8	9.20	7.38	53.0	0.44	13.0	9.00
9/12/2013	12:30 PM	86.0	15.3	103	< 2.00	7.70	20.0	1.20	14.0	17.0
9/22/2013	1:30 PM	133	12.0	102	12.0	7.90	8.25	0.35	23.0	6.00
8/13/2014	3:05 PM	212	13.6	77.4	32.0	8.50	7.06	0.044	34.0	1.00
9/11/2014	2:27 PM	214	13.1	83.3	30.0	8.50	6.83	< 0.020	38.0	1.00

2014 STATISTICS										
Mean	***	213	13.4	80.4	31.0	8.50	6.95	0.032	36.0	1.00
2012 - 2014 STATISTICS										
Mean	***	121	13.3	91.9	14.9	7.29	23.9	0.726	21.8	13.2
Min	***	37.3	10.8	77.4	2.00	6.65	6.83	< 0.020	8.60	1.00
Max	***	214	15.3	103	32.0	8.50	53.0	2.30	38.0	45.0
n	***	6	6	6	6	6	6	6	6	6

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

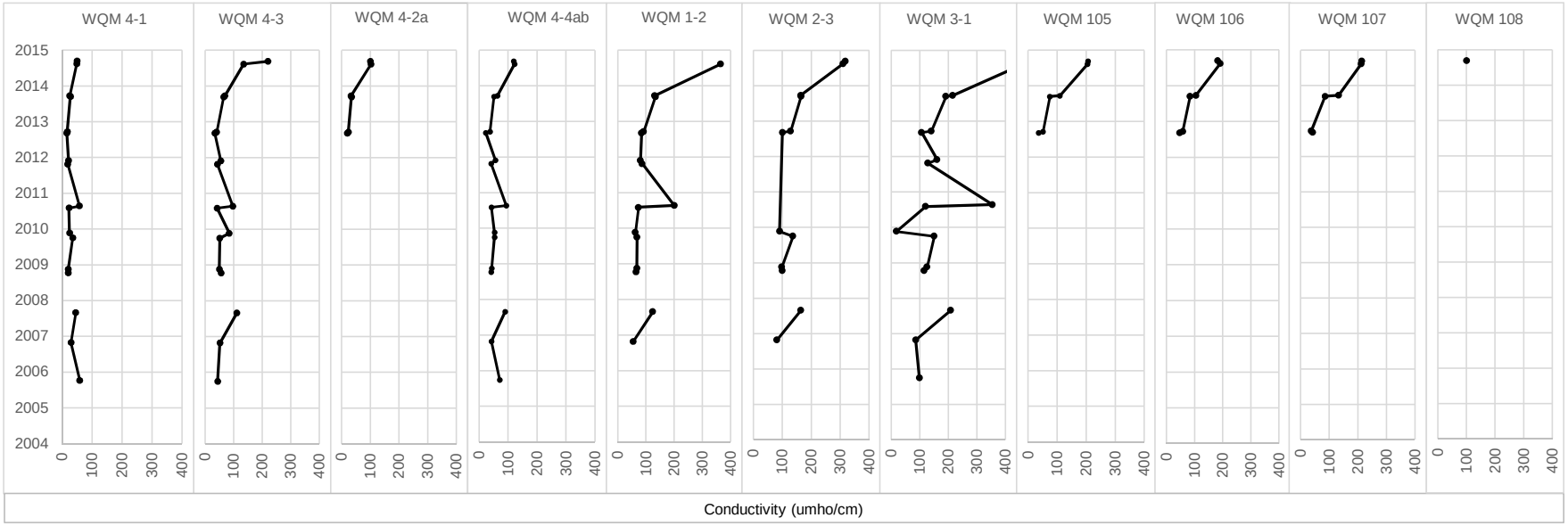
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014
Event Water Chemistry Sampling 2014
Station WQM 108 (DEC Station 427807000012), South Mountain Branch

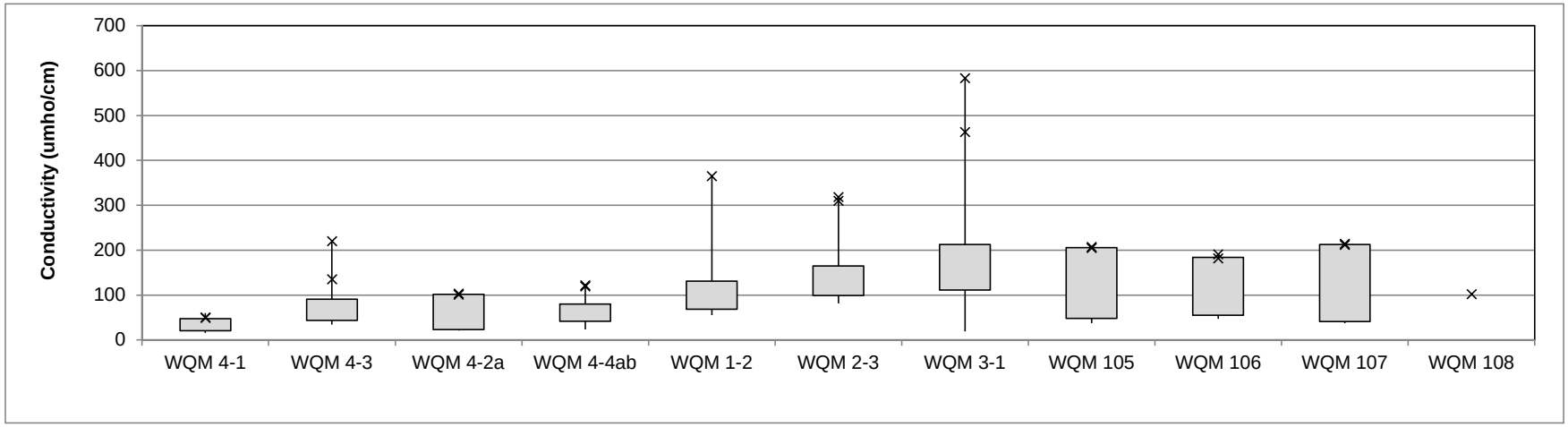
Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Turbidity (NTU)	Total Iron (mg/L)	Chloride (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**			**≥ 230 mg/L**	
8/13/2014										
9/11/2014	11:00 AM	102	12.8	82.0	32.0	8.60	11.0	0.092	14.0	7.00

2014 STATISTICS										
Mean	***	102	12.8	82.0	32.0	8.60	11.0	0.092	14.0	7.00
2014 STATISTICS										
Mean	***	102	12.8	82.0	32.0	8.60	11.0	0.092	14.0	7.00
Min	***	102	12.8	82.0	32.0	8.60	11.0	0.092	14.0	7.00
Max	***	102	12.8	82.0	32.0	8.60	11.0	0.092	14.0	7.00
n	***	1	1	1	1	1	1	1	1	1

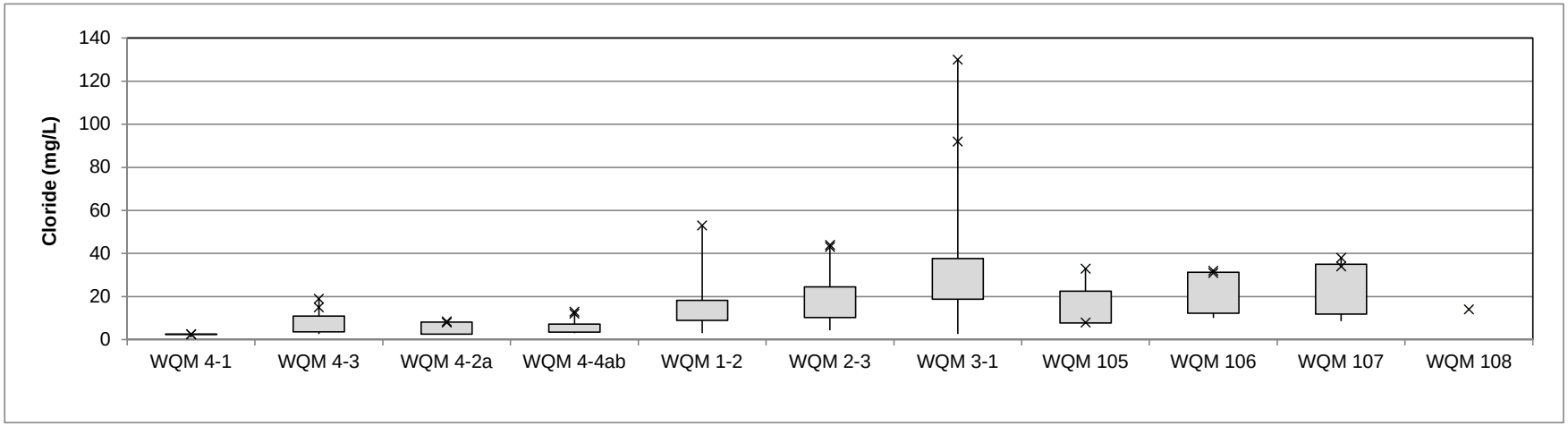
Notes:
--- indicates no data available
*** indicates not applicable
2006 data from ESI
pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Conductivity (umho/cm)

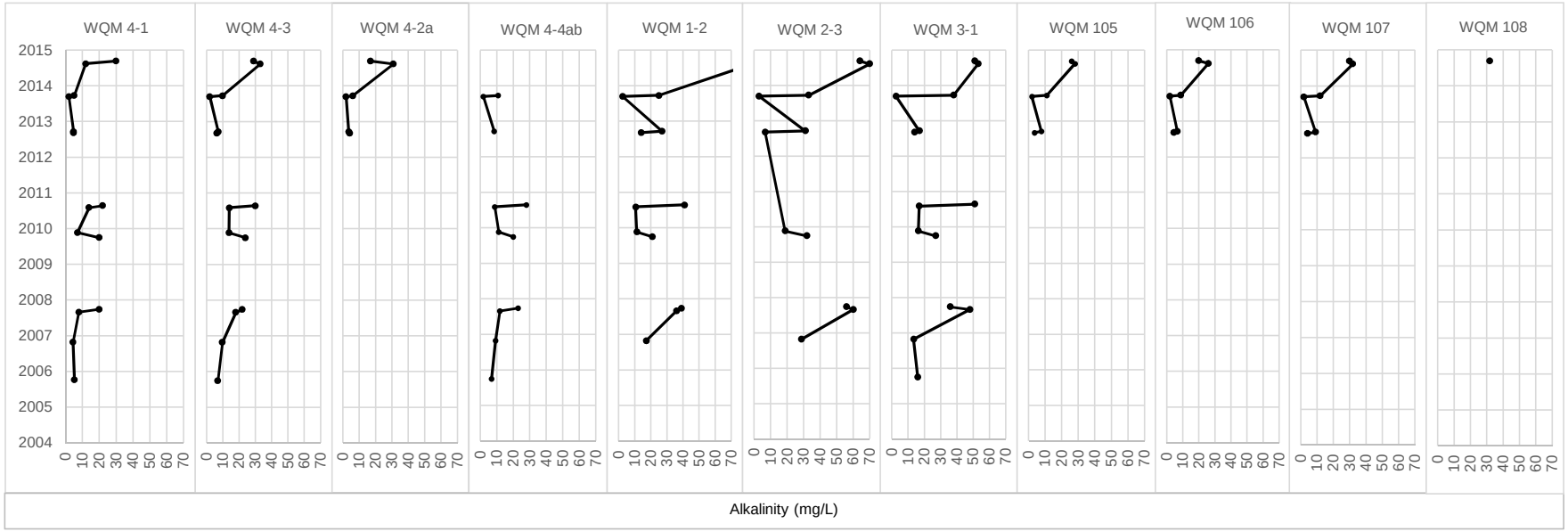


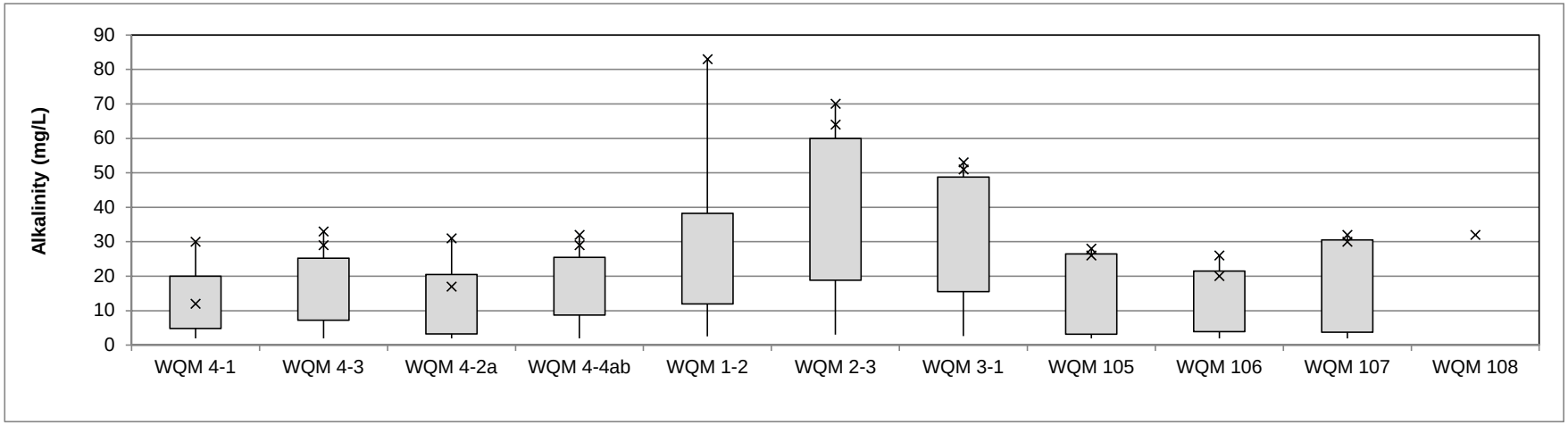


Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Chloride (mg/L)

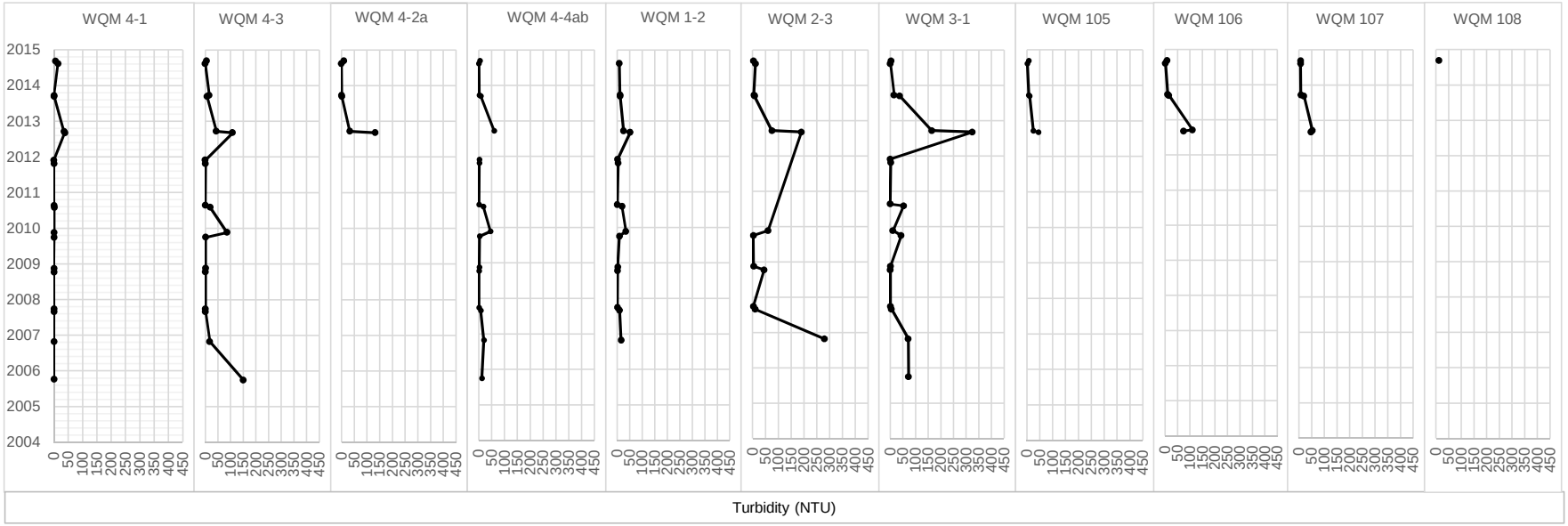


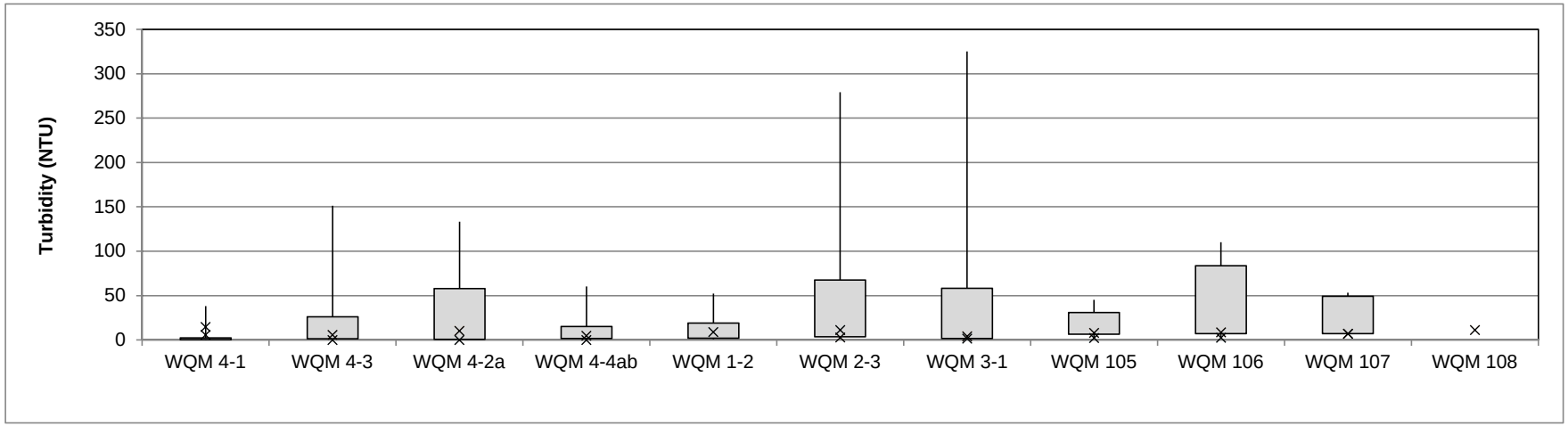
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Alkalinity (mg/L)



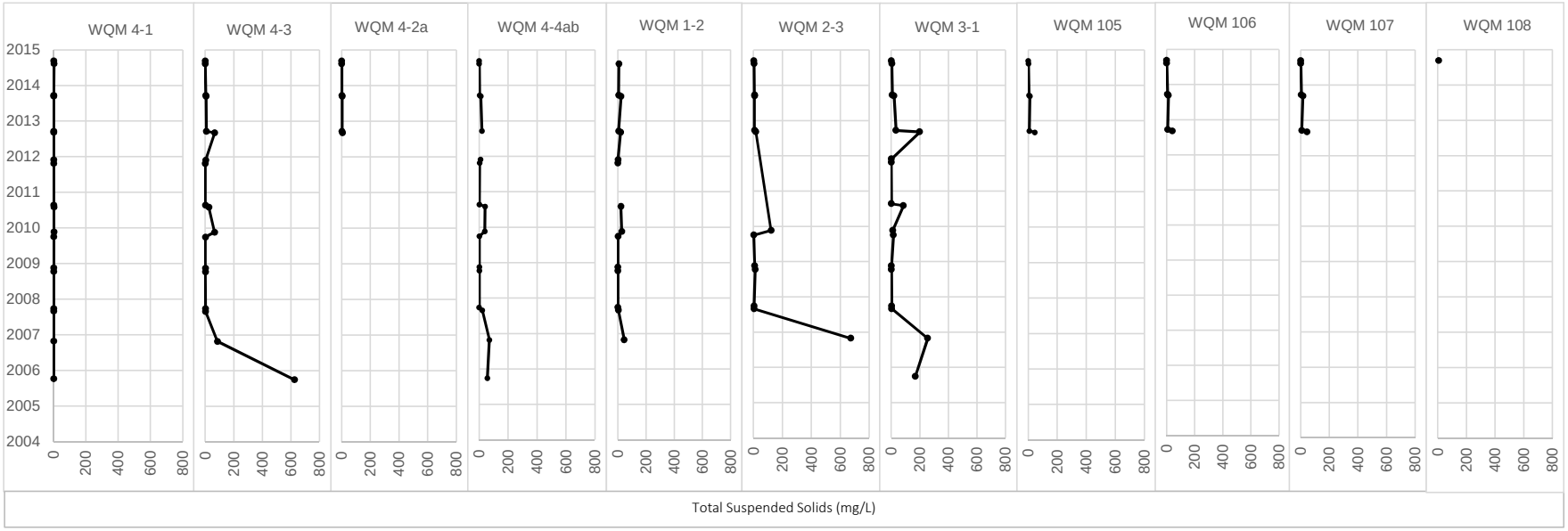


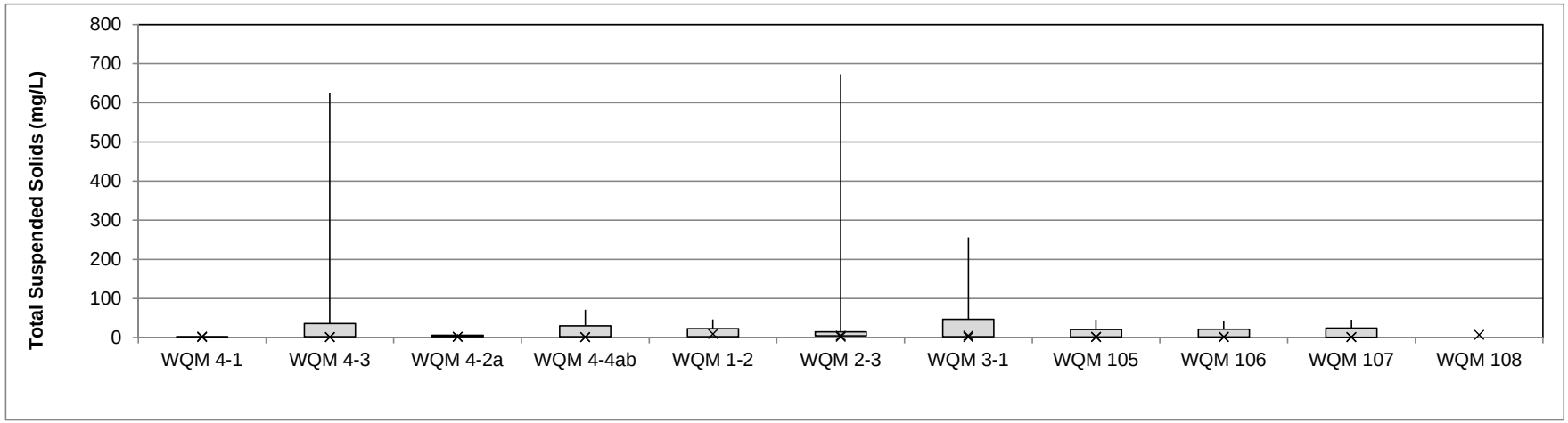
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Turbidity (NTU)





Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2014 Performance Report
Event Flow Water Chemistry
Total Suspended Solids (mg/L)





ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
PO Box 120	090395
N. Ferrisburgh, VT 05473	

PROJECT: Jay Peak 57201.07
WORK ORDER: **1408-16412**
DATE RECEIVED: August 13, 2014
DATE REPORTED: August 21, 2014
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: 08/21/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1408-16412**
PROJECT: Jay Peak 57201.07 DATE RECEIVED: 08/13/2014

001 Site: WQM 4-2 Date Sampled: 8/13/14 Time: 14:41

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	31	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	8.5	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.14	mg/L	EPA 200.7	8/20/14	W RGT	A	

002 Site: WQM 4-1 Date Sampled: 8/13/14 Time: 14:24

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	12	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	< 2.5	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	3	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.071	mg/L	EPA 200.7	8/20/14	W RGT	A	

003 Site: WQM 3-1 Date Sampled: 8/13/14 Time: 14:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	53	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	92	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	5	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.39	mg/L	EPA 200.7	8/20/14	W RGT	A	

004 Site: WQM 106 Date Sampled: 8/13/14 Time: 11:53

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	26	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	31	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.071	mg/L	EPA 200.7	8/20/14	W RGT	A	

005 Site: WQM 4-3 Date Sampled: 8/13/14 Time: 13:51

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	33	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	19	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.068	mg/L	EPA 200.7	8/20/14	W RGT	A	

006 Site: WQM 107 Date Sampled: 8/13/14 Time: 15:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	32	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	34	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.044	mg/L	EPA 200.7	8/20/14	W RGT	A	

007 Site: WQM 1-2 Date Sampled: 8/13/14 Time: 12:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.

Laboratory Report DATE REPORTED: 08/21/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1408-16412**
PROJECT: Jay Peak 57201.07 DATE RECEIVED: 08/13/2014

007 Site: WQM 1-2 Date Sampled: 8/13/14 Time: 12:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	83	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	53	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	9	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.48	mg/L	EPA 200.7	8/20/14	W RGT	A	

008 Site: WQM 105 Date Sampled: 8/13/14 Time: 12:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	28	mg/L	SM 2320B-97	8/19/14	W JSS	N	
Chloride	33	mg/L	EPA 300.0	8/14/14	W KMB	A	AN1
Solids, Total Suspended	2	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.038	mg/L	EPA 200.7	8/20/14	W RGT	A	

009 Site: WQM 4-4A Date Sampled: 8/13/14 Time: 15:18

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	32	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	13	mg/L	EPA 300.0	8/14/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.064	mg/L	EPA 200.7	8/20/14	W RGT	A	

010 Site: WQM 2-3 Date Sampled: 8/13/14 Time: 12:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	70	mg/L	SM 2320B-97	8/14/14	W JSS	N	
Chloride	43	mg/L	EPA 300.0	8/15/14	W KMB	A	
Solids, Total Suspended	5	mg/L	SM 2540 D-97	8/19/14	W JSS	A	
Iron, Total	0.31	mg/L	EPA 200.7	8/20/14	W RGT	A	

Report Summary of Qualifiers and Notes

AN1: Line verification standard was analyzed at a frequency of 1 in 20 samples, instead of the method defined 1 in 10 samples. All associated QA analyzed was within method acceptance limits.

Project # Jay Peak 57201.07

Endyne Inc. COC

Prepared: 8/11/14

Lab Use WO# 1408-16412

Bill to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
Ph: 802-425-7788

Report to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
VHBPioneer
rwibley@vhb.com

Customer # 090395

GENERAL

W-90395S11

001 WQm 4-2	Sampled Date/Time: 8/13/14 @ 14:41			Sampler: Robert Wibley
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
002 WQm- 4-1	Sampled Date/Time: 8/13/14 @ 1424			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
003 WQm 3-1	Sampled Date/Time: 8/13/14 @ 1340			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
004 WQm 106	Sampled Date/Time: 8/13/14 @ 11:53			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
005 WQm 4-3	Sampled Date/Time: 8/13/14 @ 1351			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
006 WQm 107	Sampled Date/Time: 8/13/14 @ 1505			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
007 WQm 1-2	Sampled Date/Time: 8/13/14 @ 12:55			Sampler: _____
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	

008 WQM 1.05 Sampled Date/Time: 8/13/14@ 12:30 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

009 WQM 4-4A Sampled Date/Time: 8/13/14@ 1518 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

010 WQM 2-3 Sampled Date/Time: 8/13/14@ 12:50 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

011 _____ Sampled Date/Time: ___/___/___@_____ Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

Relinquished by: [signature] 8/13/14 17:45 (Date Time) Accepted by: Eileen Dooney 8/13/14@ 17:45 (Date Time)

Relinquished by: _____ (Date Time) Received by: _____ (Date Time)

Sites/Parameters correct as listed. Client Initials _____

Client Authorization to use Subcontract lab Client Initials _____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) _____

Requested Turnaround Time: Routine: Rush Due Date _____

Lab use Only

Delv: Client
Temp C: 2.0
Comment:

Tmpl Ck
Log by

ENDYNE Inc.
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ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
PO Box 120	090395
N. Ferrisburgh, VT 05473	
Atten: Robert Wildey	

PROJECT: Project #57201.07
WORK ORDER: **1409-18931**
DATE RECEIVED: September 11, 2014
DATE REPORTED: September 23, 2014
SAMPLER: RAW

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: 09/23/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1409-18931**
PROJECT: Project #57201.07 DATE RECEIVED: 09/11/2014

001 Site: WQM 108 Date Sampled: 9/11/14 Time: 11:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	32	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	14	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	7	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.092	mg/L	EPA 200.7	9/16/14	W RGT	A	

002 Site: WQM 106 Date Sampled: 9/11/14 Time: 11:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	20	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	32	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.073	mg/L	EPA 200.7	9/16/14	W RGT	A	

003 Site: WQM 2-3 Date Sampled: 9/11/14 Time: 11:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	64	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	44	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.029	mg/L	EPA 200.7	9/16/14	W RGT	A	

004 Site: WQM 3-1 Date Sampled: 9/11/14 Time: 11:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	51	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	130	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.12	mg/L	EPA 200.7	9/16/14	W RGT	A	

005 Site: WQM 4-1 Date Sampled: 9/11/14 Time: 12:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	30	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	< 2.5	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.11	mg/L	EPA 200.7	9/16/14	W RGT	A	

006 Site: WQM 4-2 Date Sampled: 9/11/14 Time: 12:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	17	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	8	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	2	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.11	mg/L	EPA 200.7	9/19/14	W RGT	A	

007 Site: WQM 4-4A Date Sampled: 9/11/14 Time: 13:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.

Laboratory Report DATE REPORTED: 09/23/2014

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1409-18931**
PROJECT: Project #57201.07 DATE RECEIVED: 09/11/2014

007 Site: WQM 4-4A Date Sampled: 9/11/14 Time: 13:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	29	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	12	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.037	mg/L	EPA 200.7	9/19/14	W RGT	A	

008 Site: WQM 105 Date Sampled: 9/11/14 Time: 14:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	26	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	8	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	< 0.020	mg/L	EPA 200.7	9/19/14	W RGT	A	

009 Site: WQM 107 Date Sampled: 9/11/14 Time: 14:27

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	30	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	38	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	< 0.020	mg/L	EPA 200.7	9/19/14	W RGT	A	

010 Site: WQM 4-3 Date Sampled: 9/11/14 Time: 12:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Alkalinity, as CaCO3	29	mg/L	SM 2320B-97	9/22/14	W JSS	N	
Chloride	15	mg/L	EPA 300.0	9/12/14	W KMB	A	
Solids, Total Suspended	< 1	mg/L	SM 2540 D-97	9/17/14	W JSS	A	
Iron, Total	0.075	mg/L	EPA 200.7	9/19/14	W RGT	A	

rwildey@vhb.com P.H.

Project # 57201.07

Endyne Inc. COC

Prepared: 8/11/14

Lab Use WO# 1409-18931

Customer # 090395

GENERAL

W-90395S11

Bill to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
Ph: 802-425-7788

Report to:

Vanasse Hangen Brustlin, Inc.
PO Box 120
N. Ferrisburgh VT 05473
VHBPioneer
ATTN: ROBERT WILDEY

001 WQM 108	Sampled Date/Time: 9/11/14 @ 11:00			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
002 WQM 106	Sampled Date/Time: 9/11/14 @ 11:15			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
003 WQM 2-3	Sampled Date/Time: 9/11/14 @ 11:30			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
004 WQM 3-1	Sampled Date/Time: 9/11/14 @ 11:55			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
005 WQM 4-1	Sampled Date/Time: 9/11/14 @ 12:30			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
006 WQM 4-2	Sampled Date/Time: 9/11/14 @ 12:45			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	
007 WQM 4-4A	Sampled Date/Time: 9/11/14 @ 13:45			Sampler: RAW
Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C	
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace	
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____	

008 WQM 105 Sampled Date/Time: 9/11/14 @ 14:15 Sampler: RAW

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

009 WQM 107 Sampled Date/Time: 9/11/14 @ 14:27 Sampler: RAW

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

010 WQM 4-3 Sampled Date/Time: 9/11/14 @ 12:05 Sampler: _____

Chloride Solids, Total Suspended	1 - Liter --	Plastic	<6C
Alkalinity, as CaCO3		1 - 8 oz --Plastics Alkalinity	<6C, No Headspace
ICP Digestion HNO3-HCl Iron, Total	1 - 8 oz --	Plastic Total Metals	HNO3_____

~~011 _____ Sampled Date/Time: ___/___/___@_____ Sampler: _____~~

~~Chloride Solids, Total Suspended~~	~~1 - Liter --~~	~~Plastic~~	~~<6C~~
~~Alkalinity, as CaCO3~~		~~1 - 8 oz --Plastics Alkalinity~~	~~<6C, No Headspace~~
~~ICP Digestion HNO3-HCl Iron, Total~~	~~1 - 8 oz --~~	~~Plastic Total Metals~~	~~HNO3_____~~

Relinquished by: [signature] 9/11/14 18:15 Date Time

Accepted by: Eileen Dunmay 9-11-14 @ 1811 Date Time

Relinquished by: _____ Date Time

Received by: _____ Date Time

Sites/Parameters correct as listed. Client Initials _____

Client Authorization to use Subcontract lab Client Initials _____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) _____

Requested Turnaround Time: Routine: Rush Due Date _____

Lab use Only

Delv: Client
Temp C: 0.9
Comment:

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Log by

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Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

APPENDIX 3

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 4-1, Upper Jay Branch - Reference Station

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
2/11/2009	10:30 AM	54.8	2.20	18.0	6.78	3.50		<2.00	0.000
4/21/2009	12:01 PM	61.0	6.40	9.55	6.55	<2.50			0.000
3/12/2013	12:46 PM	30.0	0.800		8.50		97.0		0.000
4/27/2013	13:01 PM	22.0	5.80		6.70		130		0.880
4/18/2014	11:45 AM	30.0	2.20		8.60		96.5	<2.00	0.240
4/28/2014	3:40 PM	27.0	3.70		7.70		97.9		0.200

2014 STATISTICS									
Mean	***	28.5	2.95		7.95		97.2		0.220
2009-2014 STATISTICS									
Mean	***	37.5	3.52	13.8	6.95	3.00	105	2.00	0.220
Min	***	22.0	0.800	9.55	6.55	2.50	96.5	2.00	0.000
Max	***	61.0	6.40	18.0	8.60	3.50	130	2.00	0.880
n	***	6	6	2	6	2	4	2	6

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 4-2a, Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
2/27/2008	10:00 AM	44.7	2.00	37.0	7.03	3.00		<2.00	0.370
3/12/2010	12:44 PM	89.0	1.60	27.0	6.57	6.40			0.500
3/18/2010	11:25 AM	78.4	2.10	28.0	6.70	6.00			1.68
3/11/2011	11:58 AM	39.2	0.100	21.0	7.60	5.70			1.79
3/18/2011	10:00 AM	37.6	0.020	26.0	6.65	8.30			11.5
3/8/2012	1:02 PM	78.5	0.500	21.0	6.71	30.0			21.7
3/22/2012	9:48 AM	16.3	4.70	21.0	6.51	2.50			2.16
3/12/2013	12:02 AM	88.0	0.300		8.30		96.0		4.23
4/27/2013	12:25 PM	33.0	5.70		6.85		125		0.210
4/18/2014	12:15 PM	47.0	2.70		8.30		98.2		0.440
4/28/2014	4:10 PM	39.0	4.10		7.70		98.0		1.95
2014 Statistics									
Mean	***	43.0	3.40		7.90		98.1		1.20
2008 - 2014 Statistics									
Mean	***	53.7	2.17	25.9	6.87	8.84	104	2.00	4.23
Min	***	16.3	0.020	21.0	6.51	2.50	96.0	2.00	0.210
Max	***	89.0	5.70	37.0	8.30	30.0	125	2.00	21.7
n	***	11	11	7	11	7	4	1	11

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 4-3 (DEC Station 427800000083), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
1/30/2008	8:30 AM	37.4	2.10	13.0	7.07	2.70			
2/11/2009	10:30 AM	174	1.67	28.0	7.85	42.0		<2.00	0.660
4/21/2009	1:30 PM	25.1	5.60	10.0	6.66	3.20			0.000
3/12/2010	11:12 AM	107	1.20		6.69	22.0			0.540
3/18/2010	10:22 AM	114	1.40	23.0	6.47	18.0			1.85
3/11/2011	11:00 AM	38.6	0.500	21.0	6.90	18.0			0.640
3/18/2011	9:15 AM	73.5	0.100	28.0	6.65	23.0			35.6
3/8/2012	11:27 AM	162	0.400	20.0	6.70	77.0			141
3/22/2012	10:20 AM	28.4	5.70	24.0	6.73	5.10			3.34
3/12/2013	11:05 AM	407	1.10		8.20		97.0		23.4
4/27/2013	11:30 AM	33.0	5.10		7.05		133		0.800
4/18/2014	1:10 PM	109	3.30		8.30		99.2		1.12
4/28/2014	2:40 PM	80.0	4.70		8.60		95.4		2.70
2014 STATISTICS									
Mean	***	94.5	4.00		8.42		97.3		1.91
2008 - 2014 STATISTICS									
Mean	***	107	2.53	20.9	6.82	23.4	106	2.00	17.6
Min	***	25.1	0.100	10.0	6.47	2.70	95.4	2.00	0.000
Max	***	407	5.70	28.0	8.60	77.0	133	2.00	141
n	***	13	13	8	13	9	4	1	12

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 4-4a/b (DEC Station 427800000091/427800000073), Jay Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
4/18/2014	5:00 PM	89.0	3.60		8.30		98.8		2.60
4/28/2014	1:40 PM	67.0	5.00		8.90		98.7		2.65
2014 STATISTICS									
Mean	***	78.0	4.30		8.50		98.8		2.63
2008 - 2014 STATISTICS									
Mean	***	78.0	4.30		8.50		98.8		2.63
Min	***	67.0	3.60		8.30		98.7		2.60
Max	***	89.0	5.00		8.90		98.8		2.65
n	***	2	2		2		2		2

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 1-2, Phase I Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
3/8/2012	1:02 PM	136	0.400		6.37				265
3/22/2012	10:54 AM	56.2	6.90		6.94				24.9
3/12/2013	1:40 PM	263	0.800		8.30		67.0		77.1
4/27/2013	1:47 PM	91.0	8.50		7.25		128		12.3
4/18/2014	12:35 PM	184	2.50		8.30		95.2		11.6
4/28/2014	3:10 PM	93.0	4.40		8.20		101		20.2
2014 STATISTICS									
Mean	***	139	3.45		8.25		98.2		15.9
2012-2014 STATISTICS									
Mean	***	137	3.92		6.99		97.9		68.5
Min	***	56.2	0.400		6.37		67.0		11.6
Max	***	263	8.50		8.30		128		265
n	***	6	6		6		4		6

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 2-3, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
3/18/2011	10:33 AM	83.0	0.010		6.54				106
3/8/2012	1:09 PM	160	0.400		6.63				268
3/22/2012	11:01 AM	40.9	7.20		6.91				20.6
3/12/2013	2:00 PM	342	1.40		8.40				120
4/27/2013	1:55 PM	104	8.80		7.45		126		9.50
4/18/2014	12:50 PM	295	3.30		7.80		94.6		29.6
4/28/2014	3:00 PM	131	5.20		8.20		101		15.0
2014 STATISTICS									
Mean	***	213	4.25		7.96		97.9		22.3
2011 - 2014 STATISTICS									
Mean	***	165	3.76		7.00		107		81.2
Min	***	40.9	0.010		6.54		94.6		9.50
Max	***	342	8.80		8.40		126		268
n	***	7	7		7		3		7

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 3-1 (DEC Station 427809000001), Tributary 9

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
1/30/2008	8:47 AM	162	1.60	28.0	7.31	38.0			
2/8/2008	9:45 AM	194	2.10	29.0	7.27	54.0		3.00	0.590
3/12/2010	11:41 AM	545	1.50		6.37	130			1.72
3/18/2010	10:41 AM	334	1.90	25.0	6.92	75.0			2.72
3/11/2011	10:30 AM	409	1.00	41.0	6.84	180			1.39
3/18/2011	9:28 AM	116	0.000	19.0	6.57	49.0			95.3
3/8/2012	11:47 AM	232	0.400	21.0	6.36	110			78.0
3/22/2012	10:30 AM	95.4	7.90	20.0	6.99	29.0			7.06
3/12/2013	10:36 AM	530	0.000		8.00		96.9		28.7
4/27/2013	11:46 AM	142	7.70		7.51		122		1.01
4/18/2014	1:20 PM	409	4.00		7.70		95.4		3.12
4/28/2014	2:25 PM	224	5.90		8.90		97.7		8.55
2014 Statistics									
Mean	***	317	4.95		7.97		96.6		5.84
2008-2014 Statistics									
Mean	***	283	2.83	26.1	6.86	83.1	103	3.00	20.7
Min	***	95.4	0.000	19.0	6.36	29.0	95.4	3.00	0.590
Max	***	545	7.90	41.0	8.90	180	122	3.00	95.3
n	***	12	12	7	12	8	4	1	11

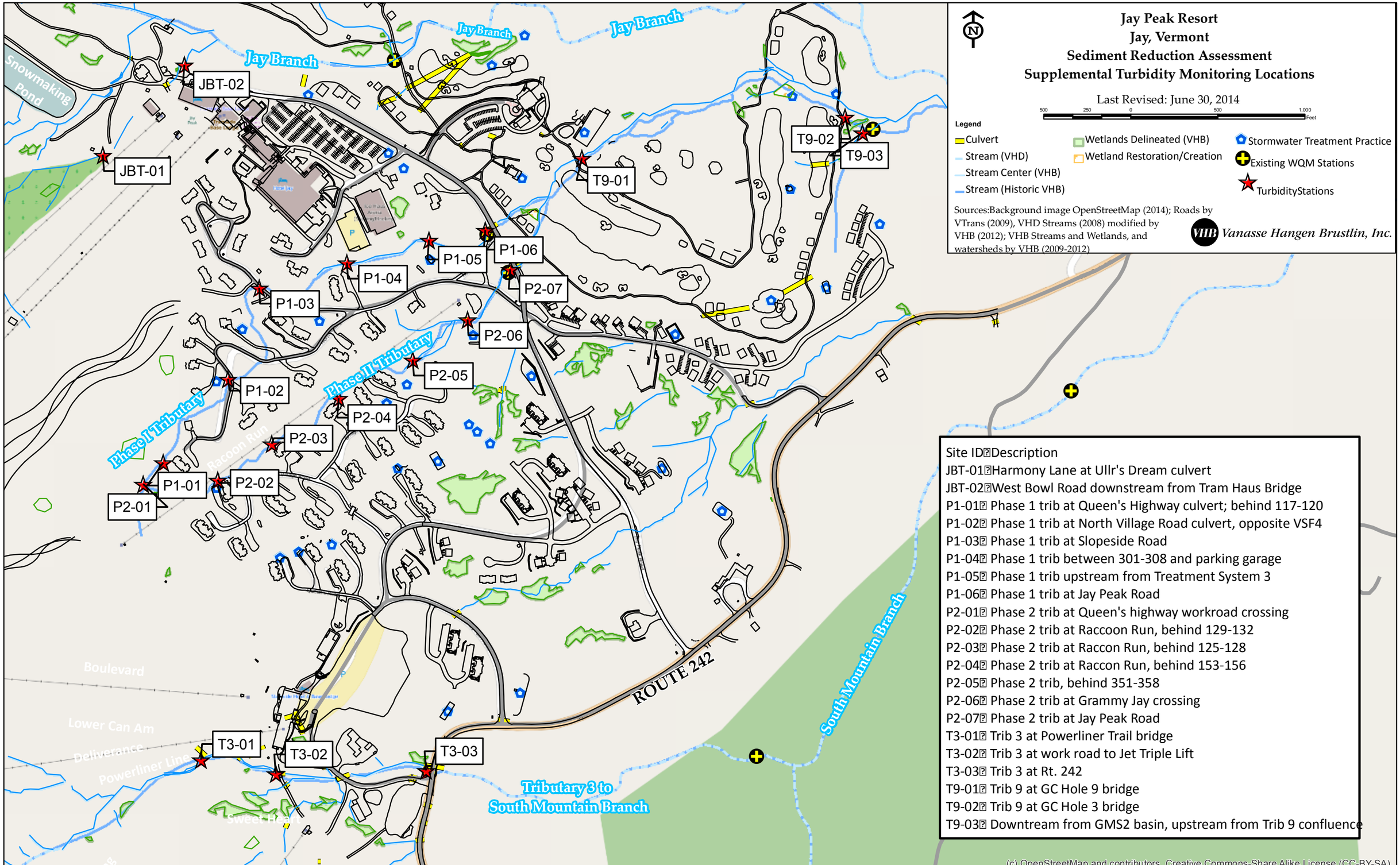
Notes:
Blank cell indicates no data available
*** indicates not applicable
pH statistics based on Hydrogen Ion concentration

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2004-2014
Winter Water Chemistry Sampling 2014
Station WQM 107 (DEC Station 427807000012), South Mountain Branch

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Dissolved Oxygen (%)	Total Suspended Solids (mg/L)	Turbidity (NTU)
VWQS Threshold					**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**> 70%**		
4/27/2013	2:07 PM	158	6.70		7.14		130		0.930
4/18/2014	3:30 PM	270	4.20		8.40		98.0		1.20
4/28/2014	2:00 PM	188	4.80		8.80		93.9		1.07
2014 STATISTICS									
Mean	***	229	4.50		8.56		96		1.14
2013 - 2014 STATISTICS									
Mean	***	205	5.23		7.58		107		1.07
Min	***	158	4.20		7.14		93.9		0.930
Max	***	270	6.70		8.80		130		1.20
n	***	3	3		3		3		3

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

APPENDIX 4



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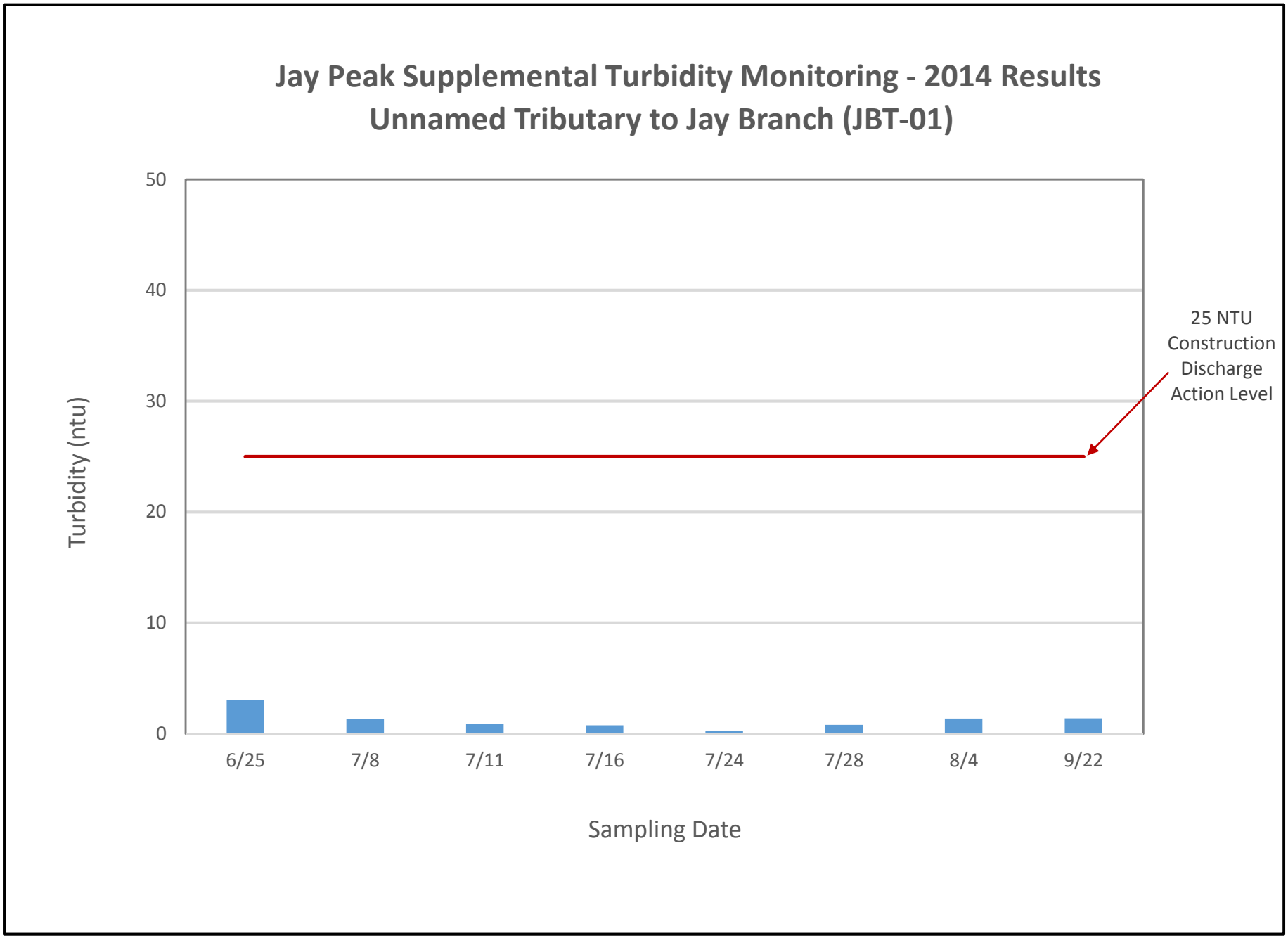
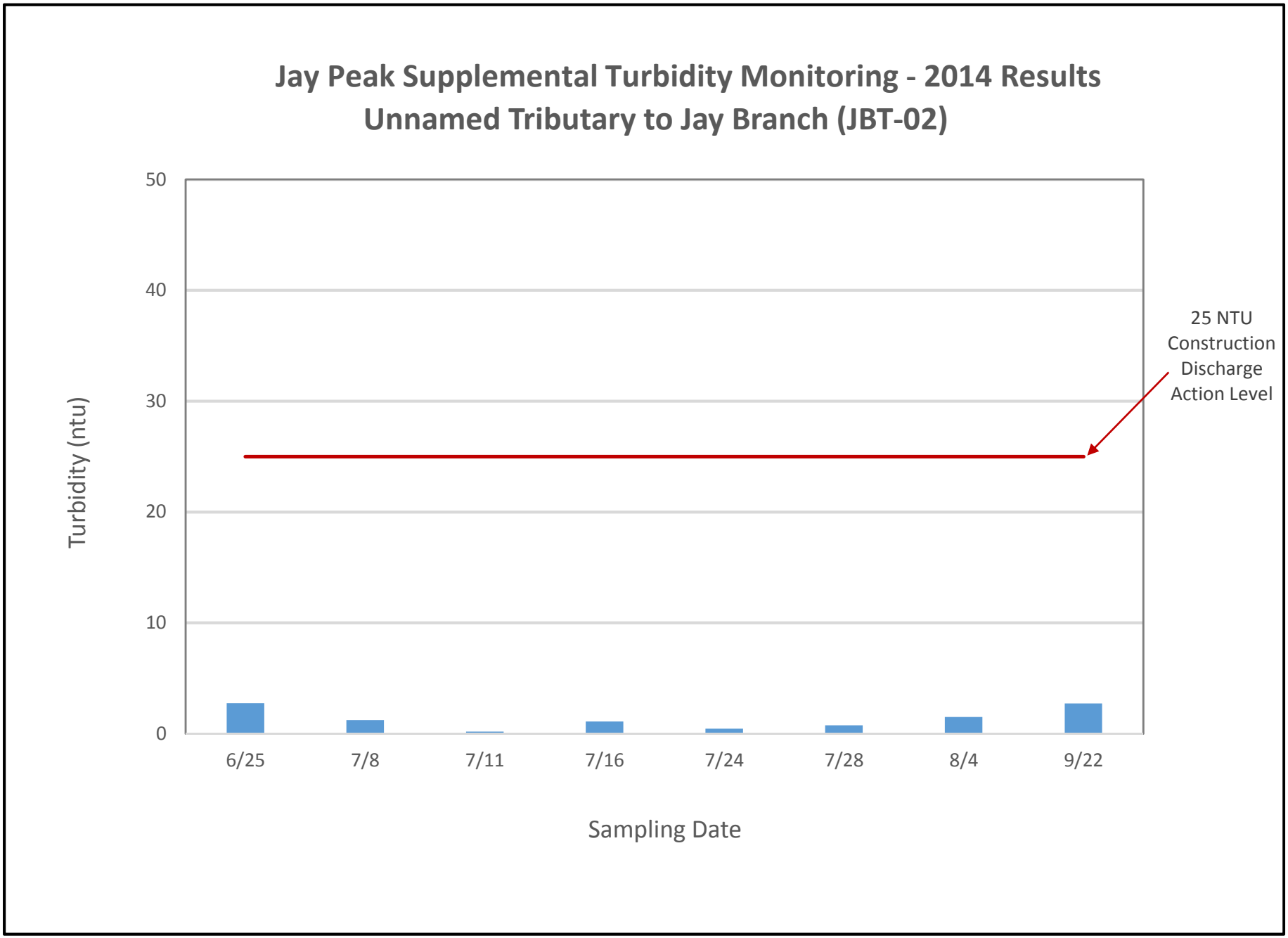
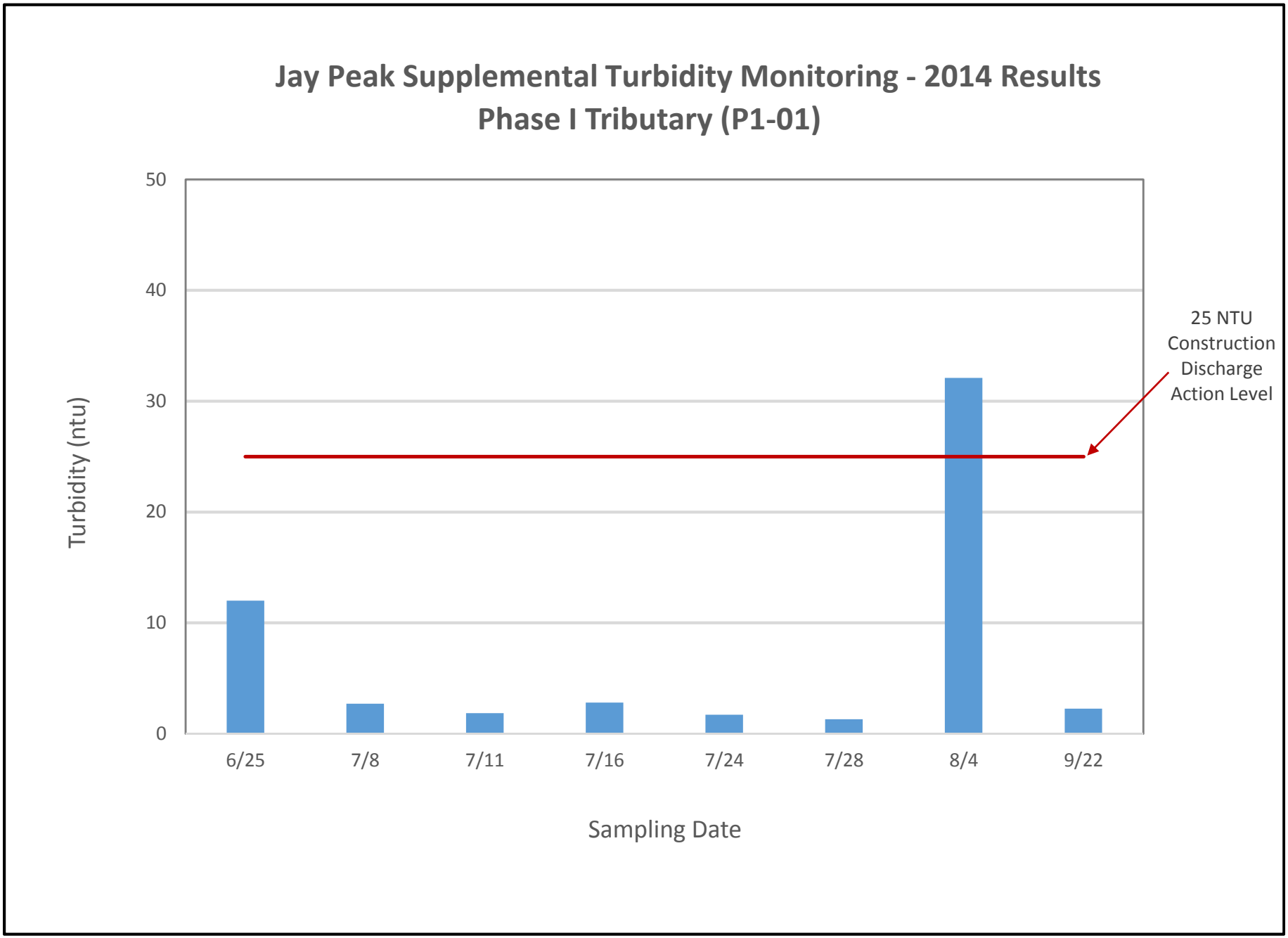
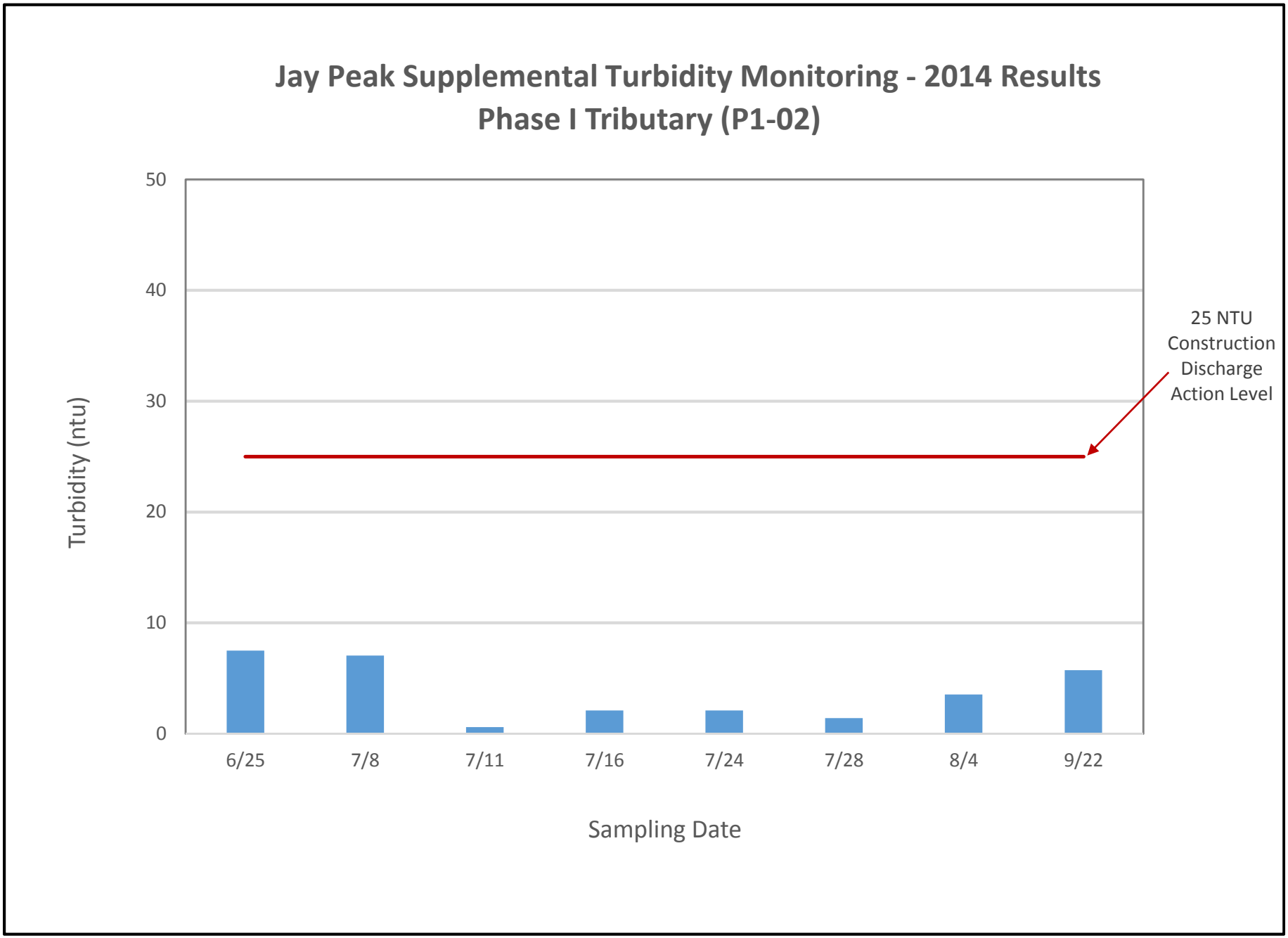
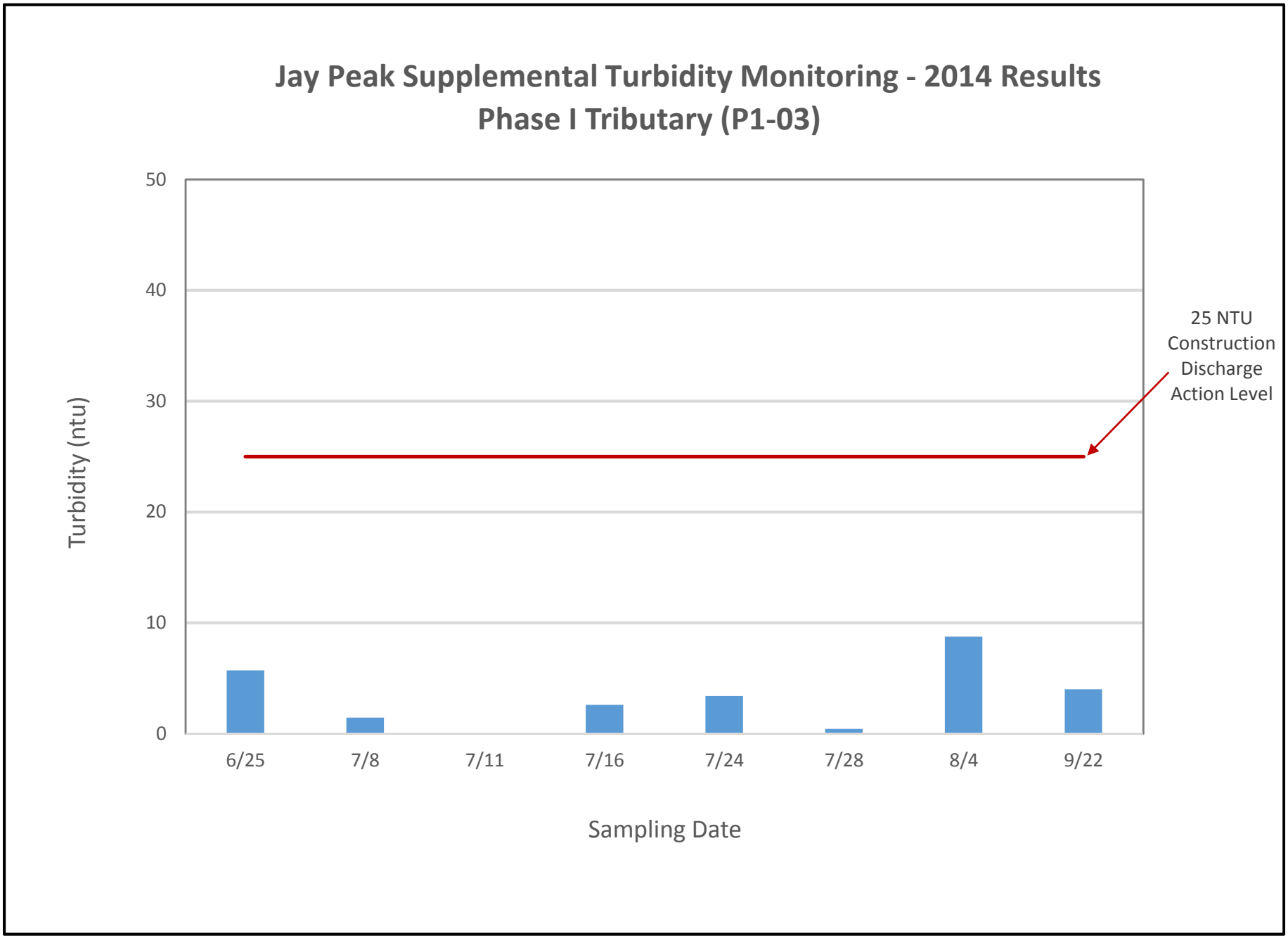
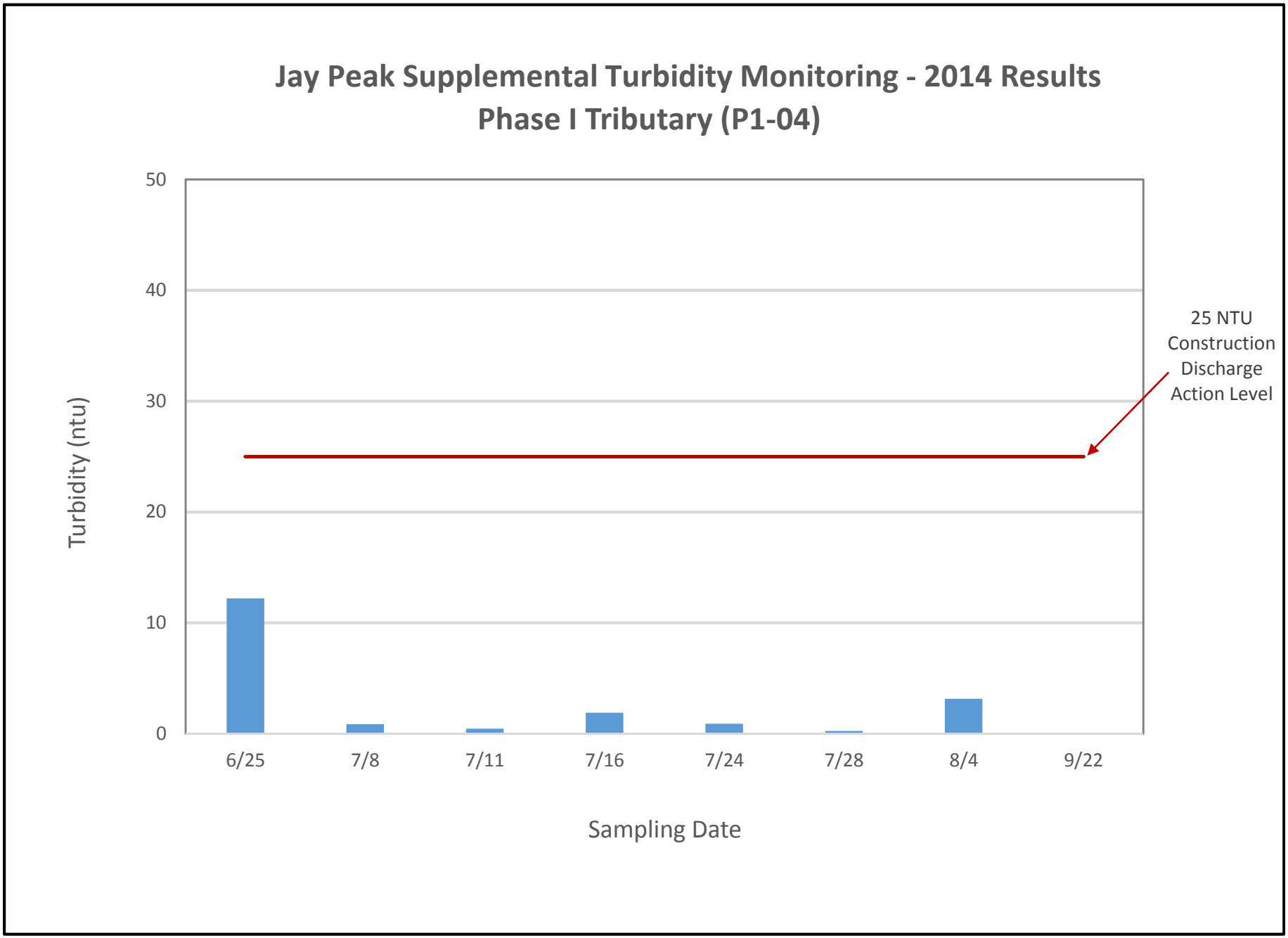

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Unnamed Tributary to Jay Branch (JBT-01)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

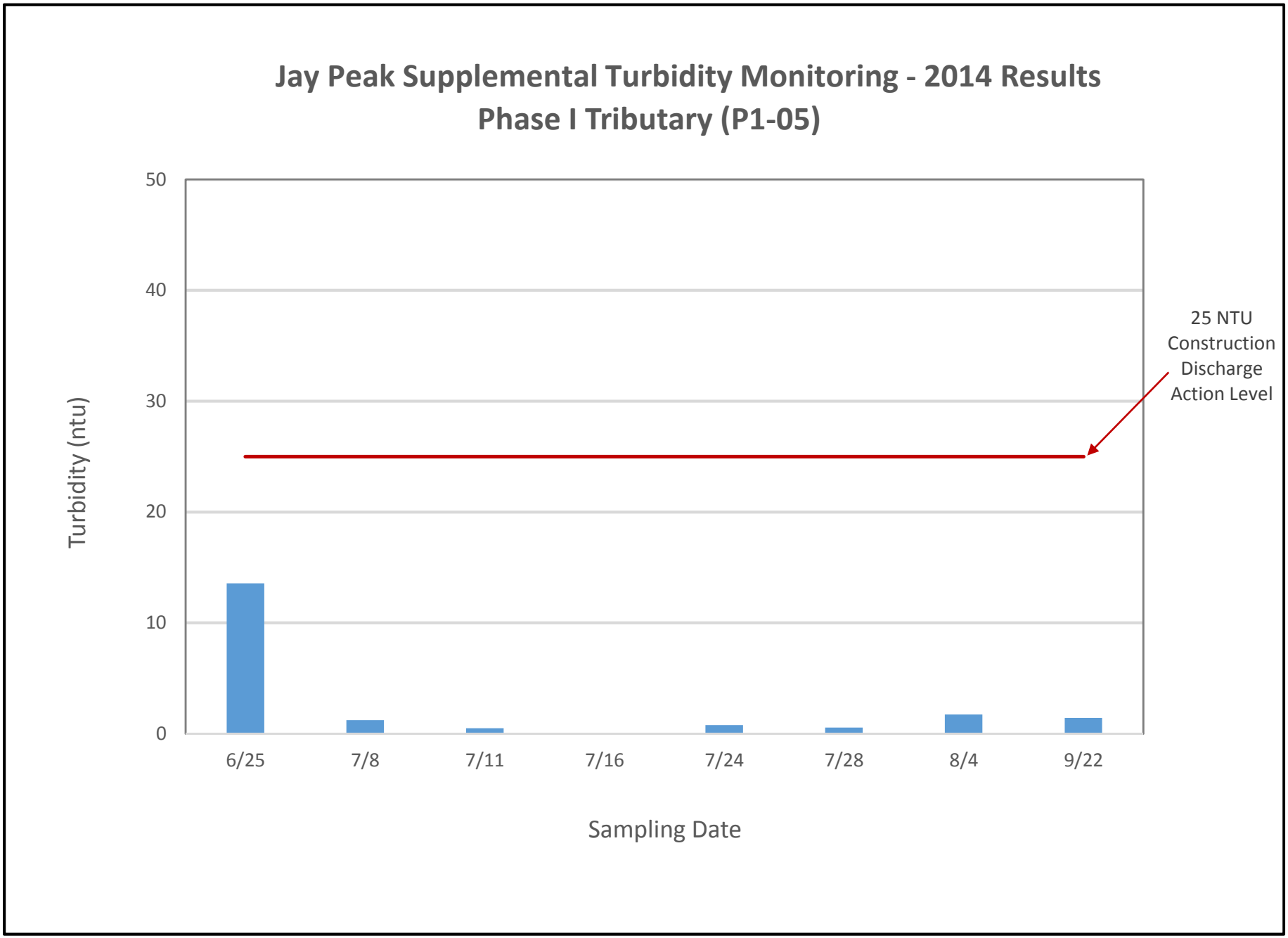

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Unnamed Tributary to Jay Branch (JBT-02)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

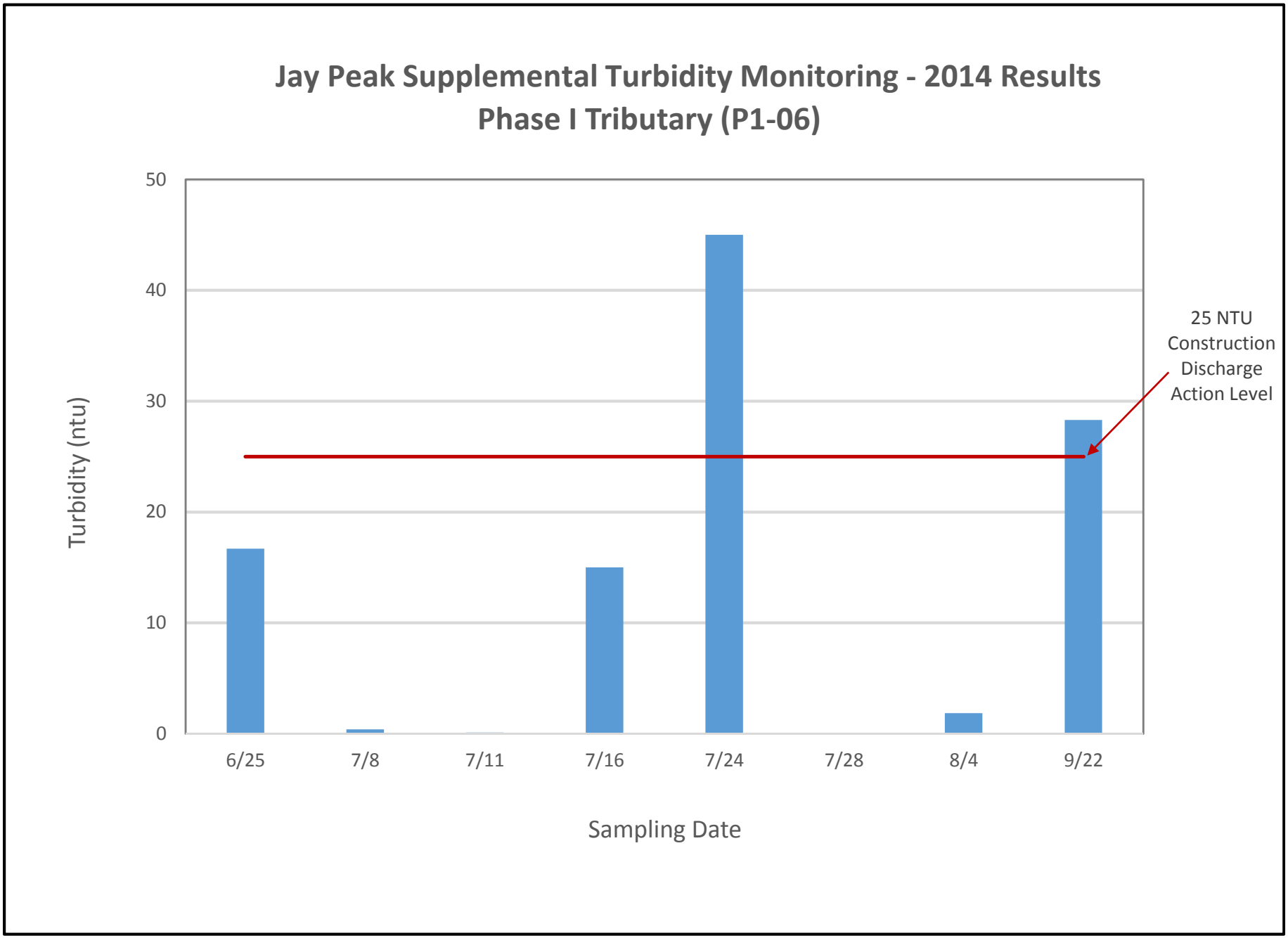

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase I Tributary (P1-01)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

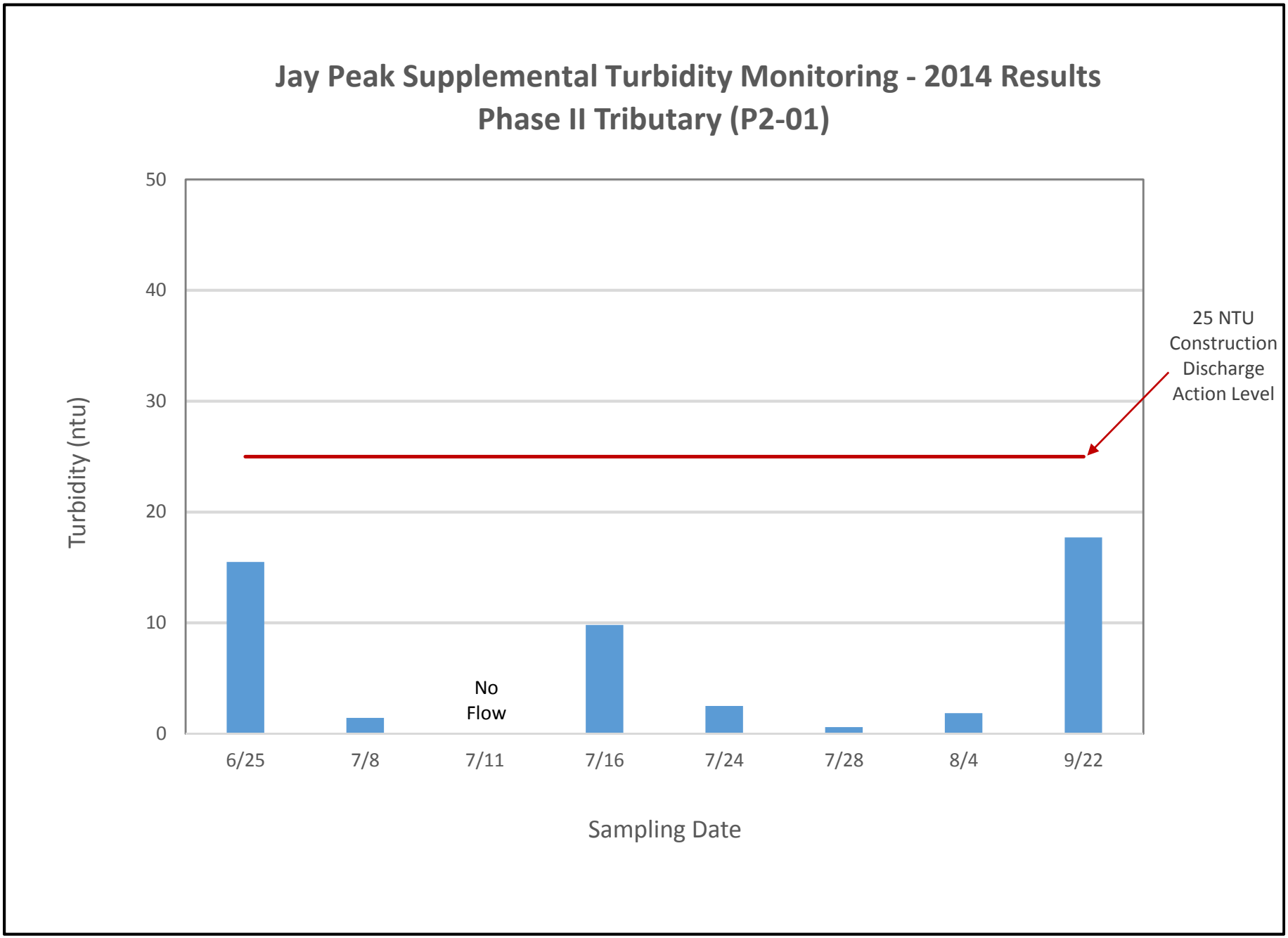

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase I Tributary (P1-02)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

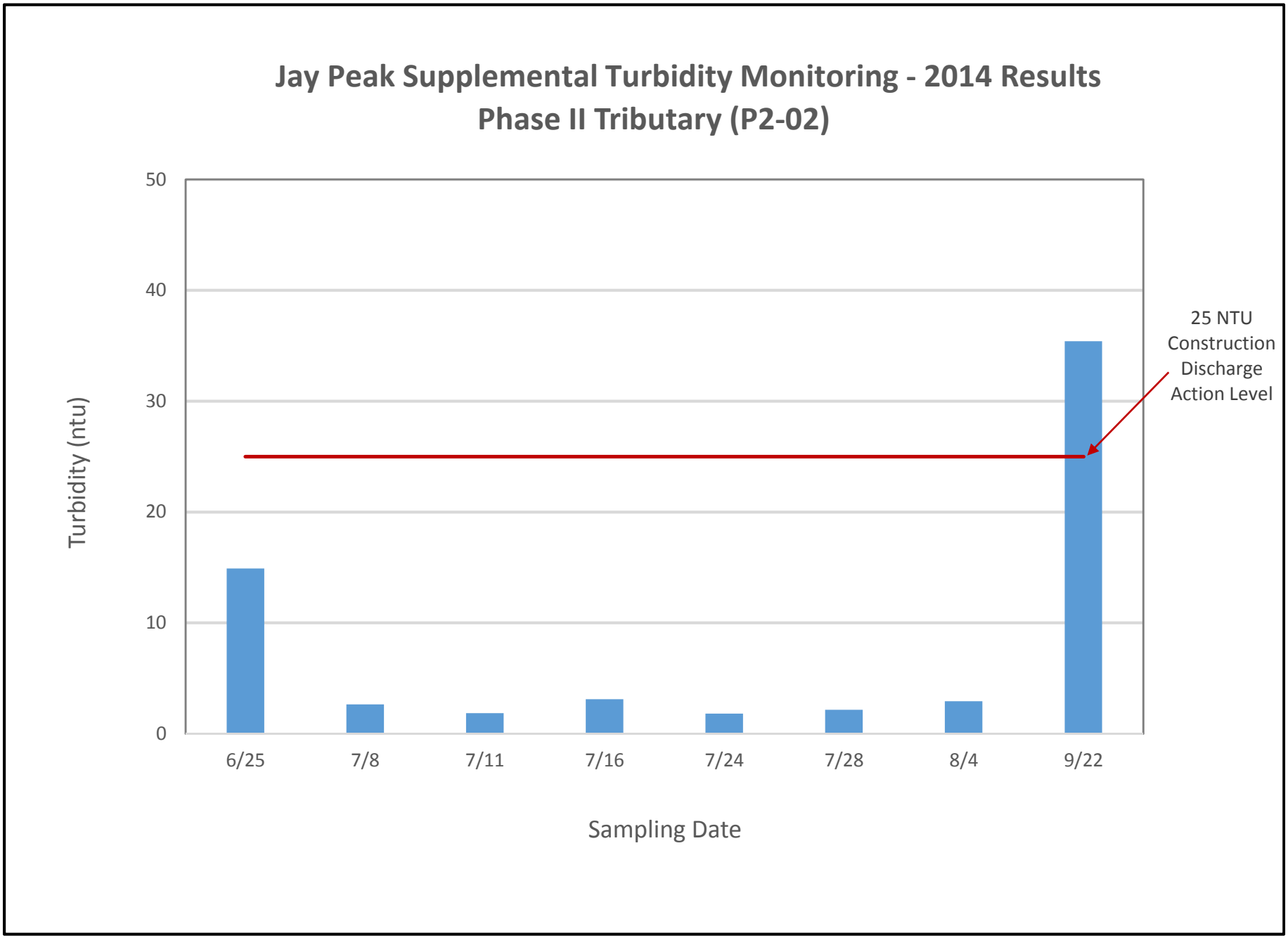

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase I Tributary (P1-03)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

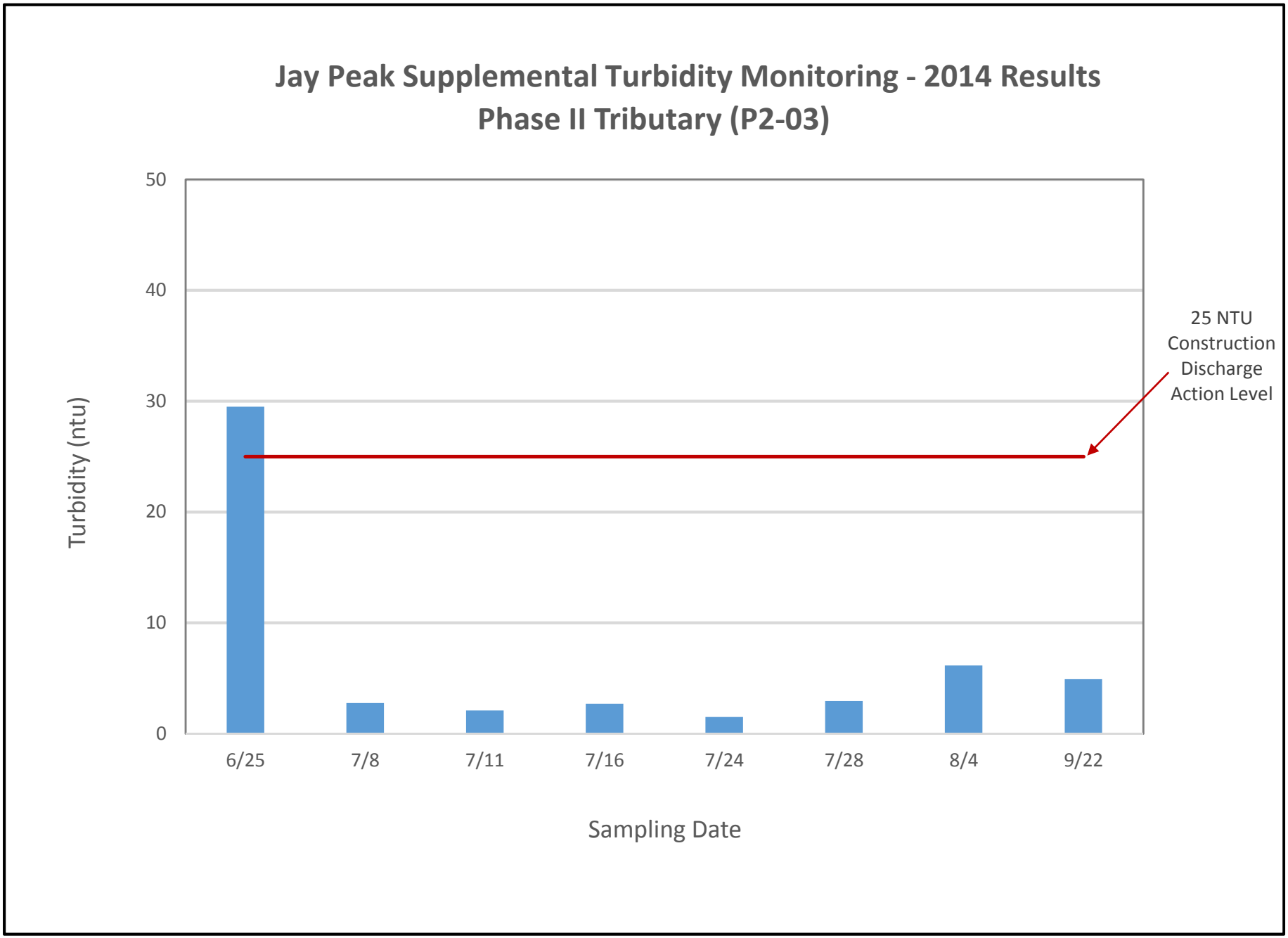

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase I Tributary (P1-04)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

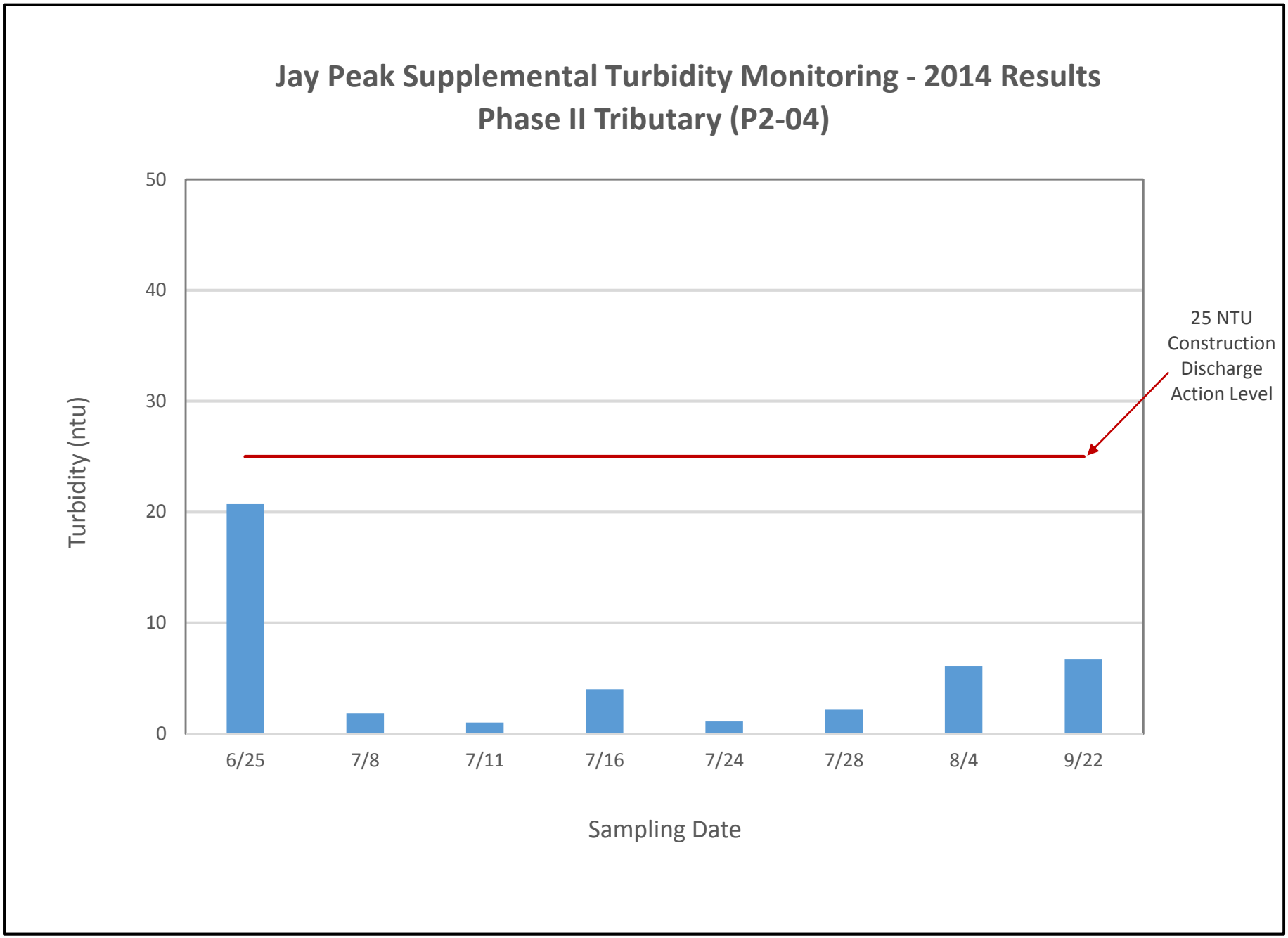

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase I Tributary (P1-05)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

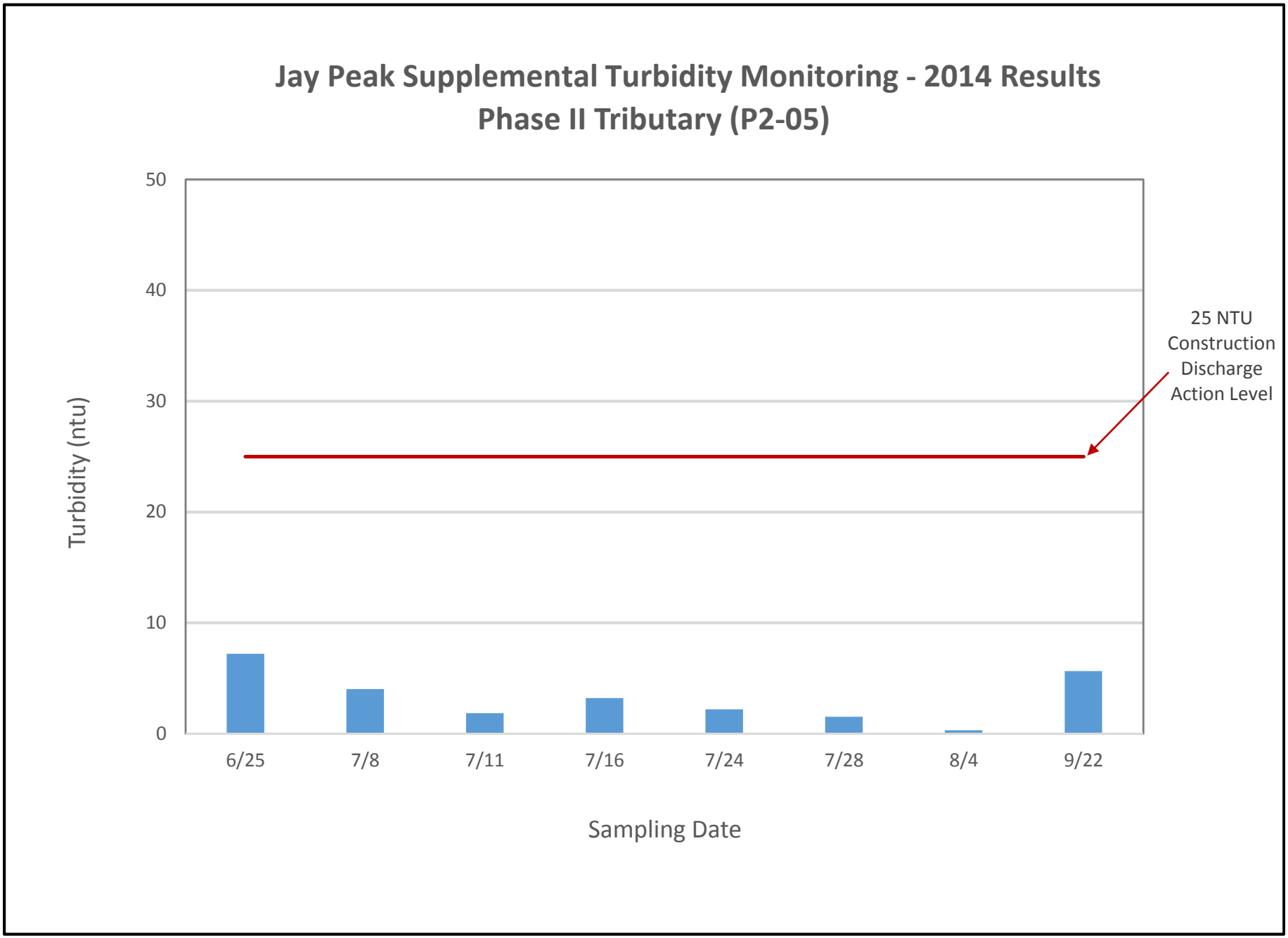

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase I Tributary (P1-06)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

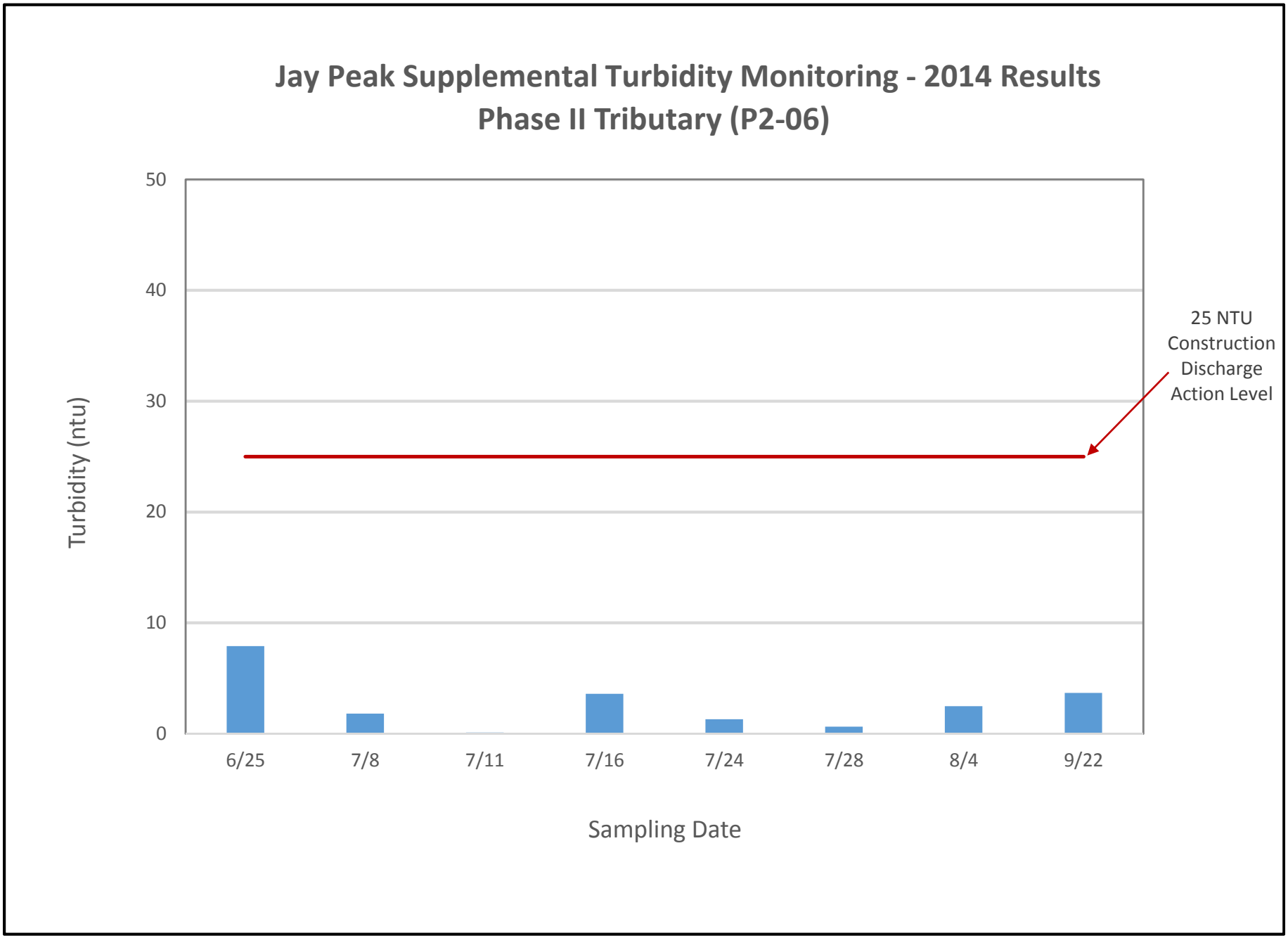

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-01)
Turbidity (ntu)
50
40
30
20
10
0
No
Flow
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

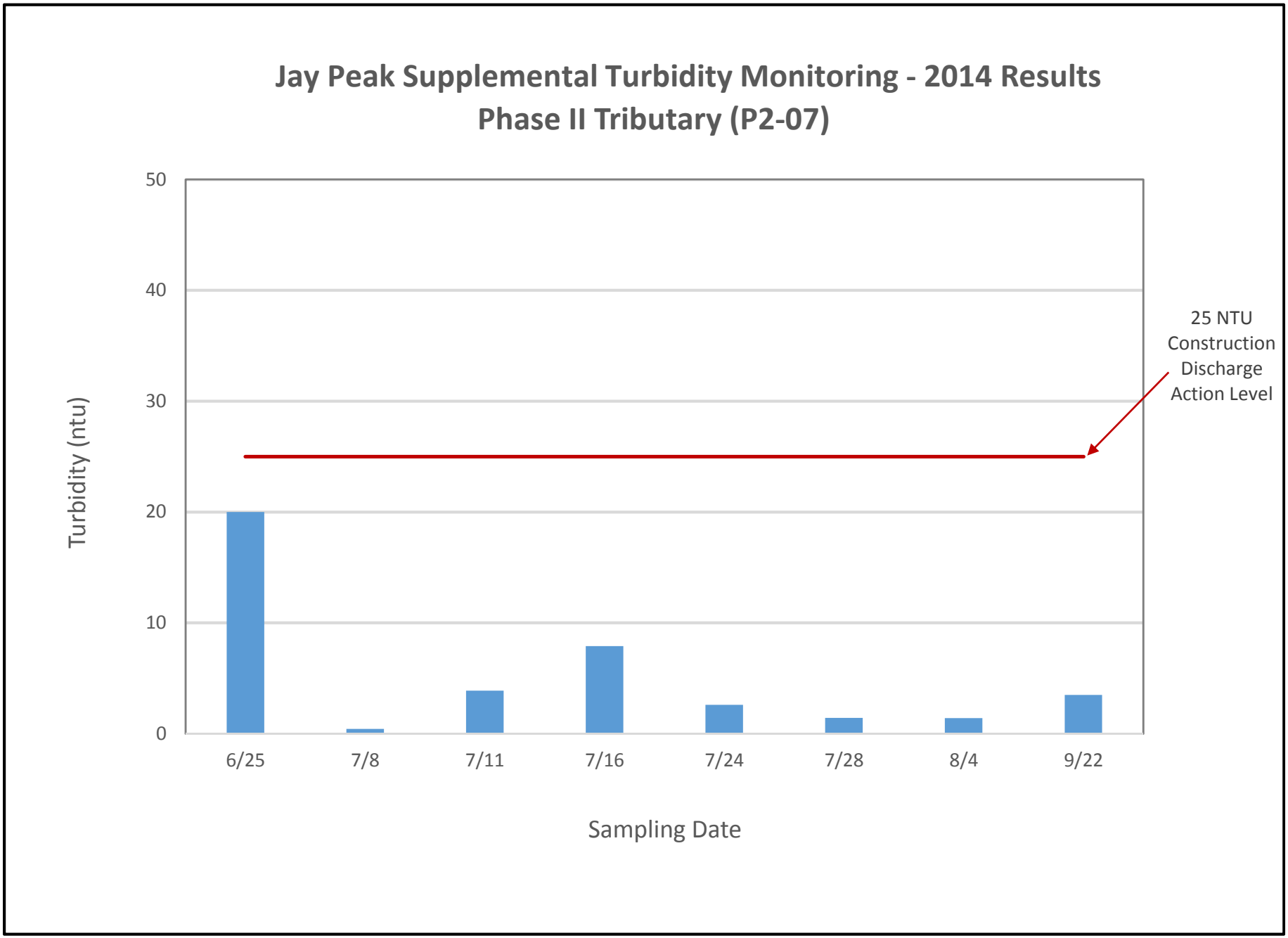

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-02)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

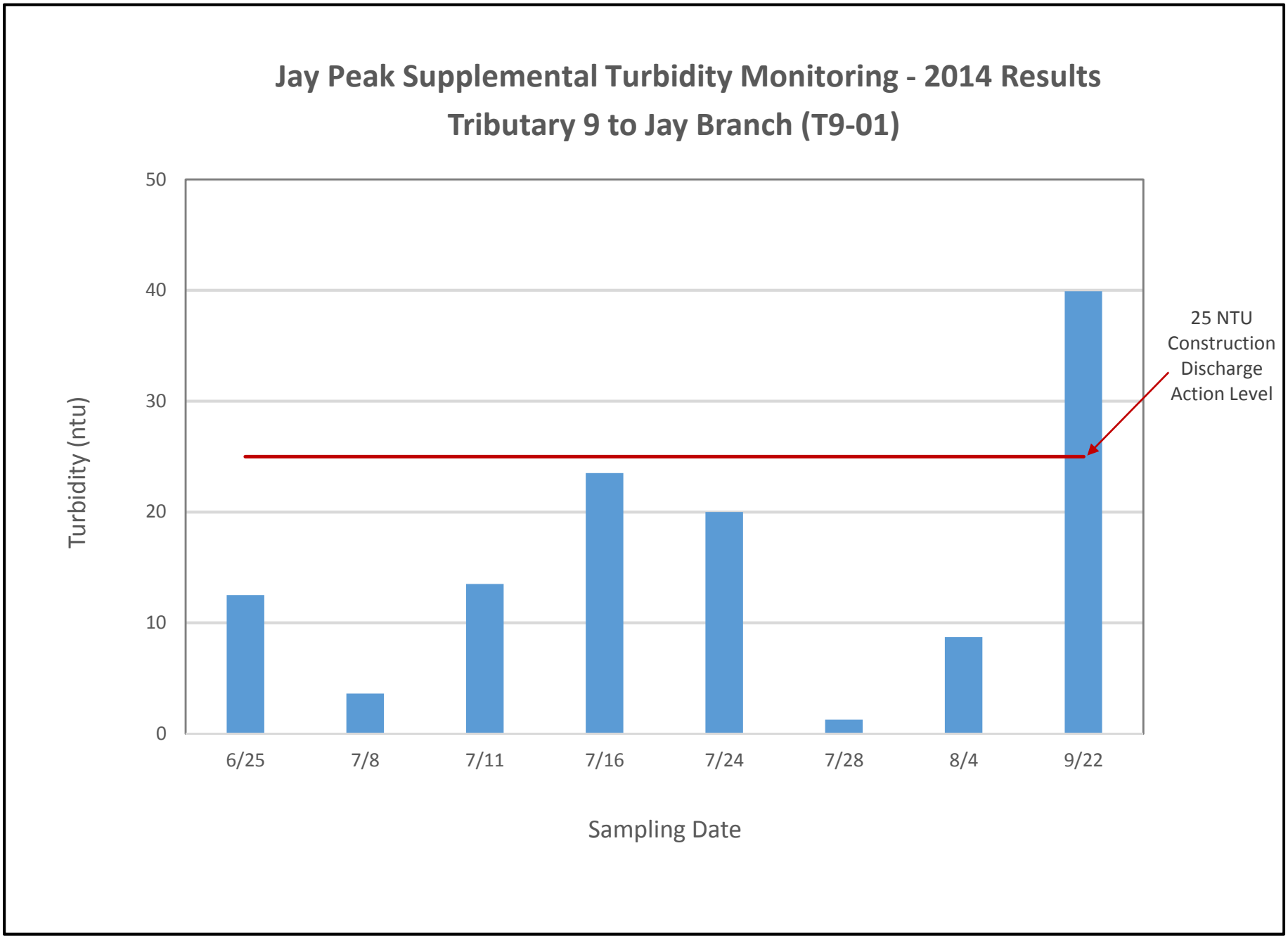

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-03)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

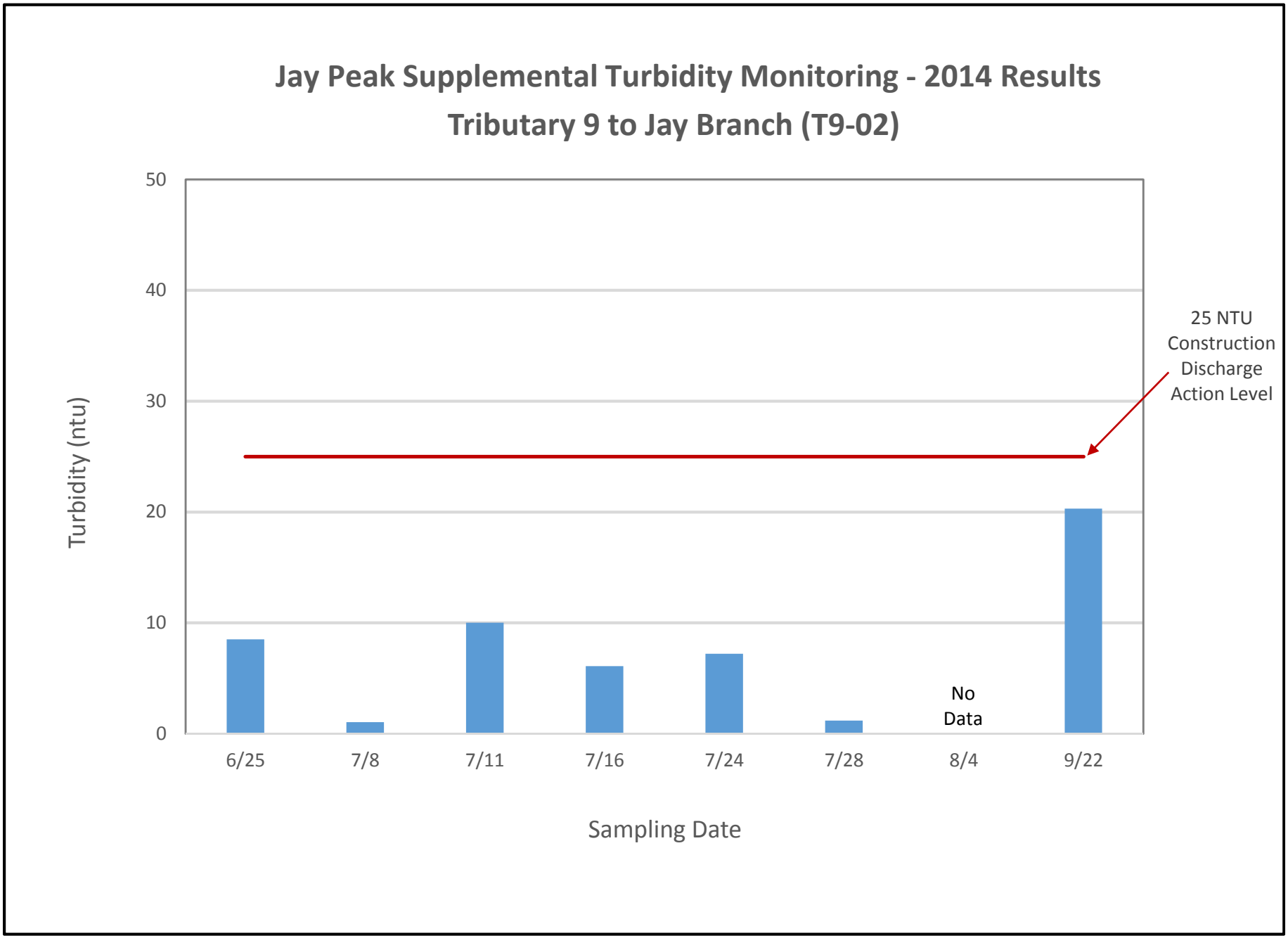

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-04)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

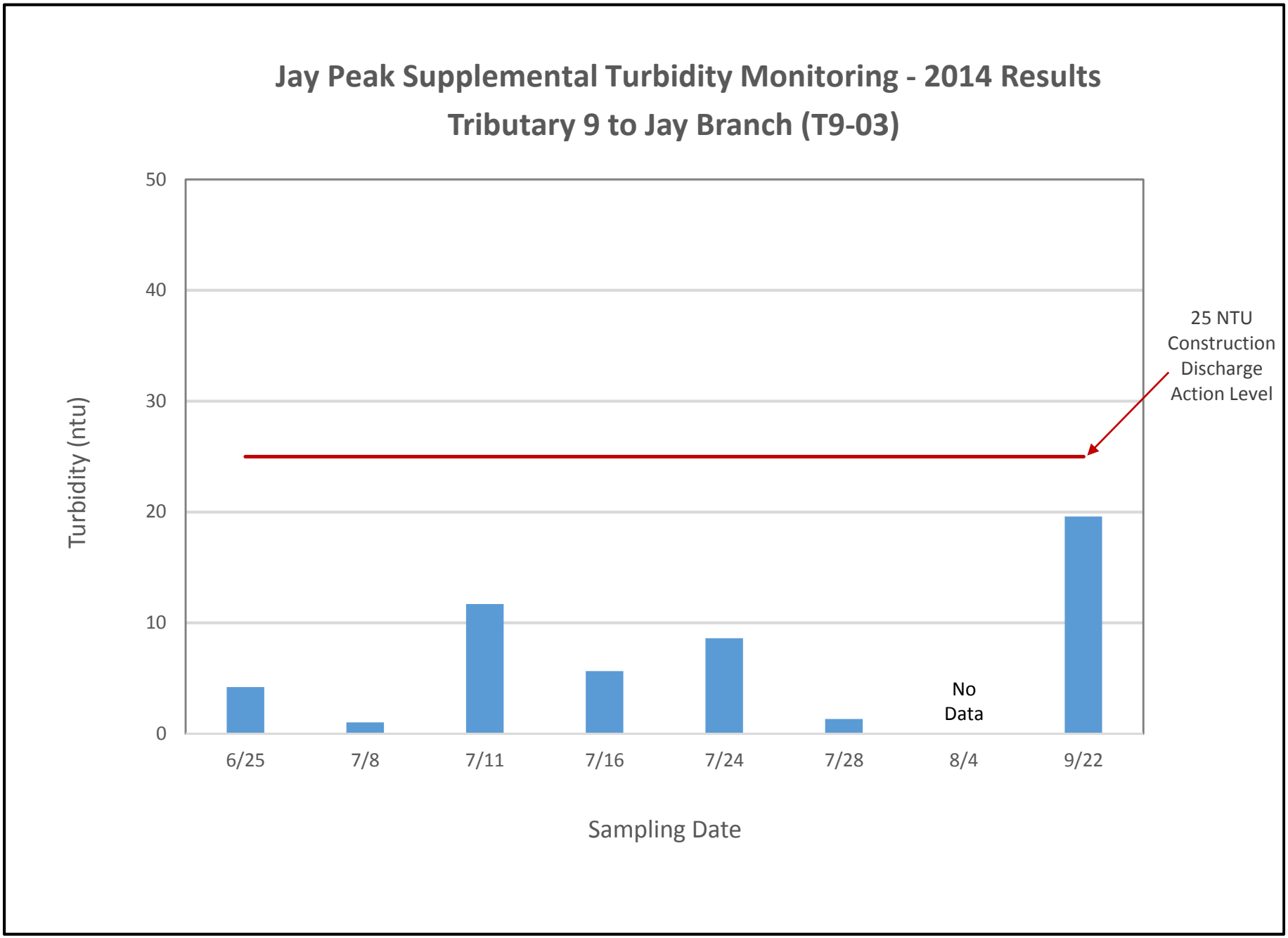

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-05)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

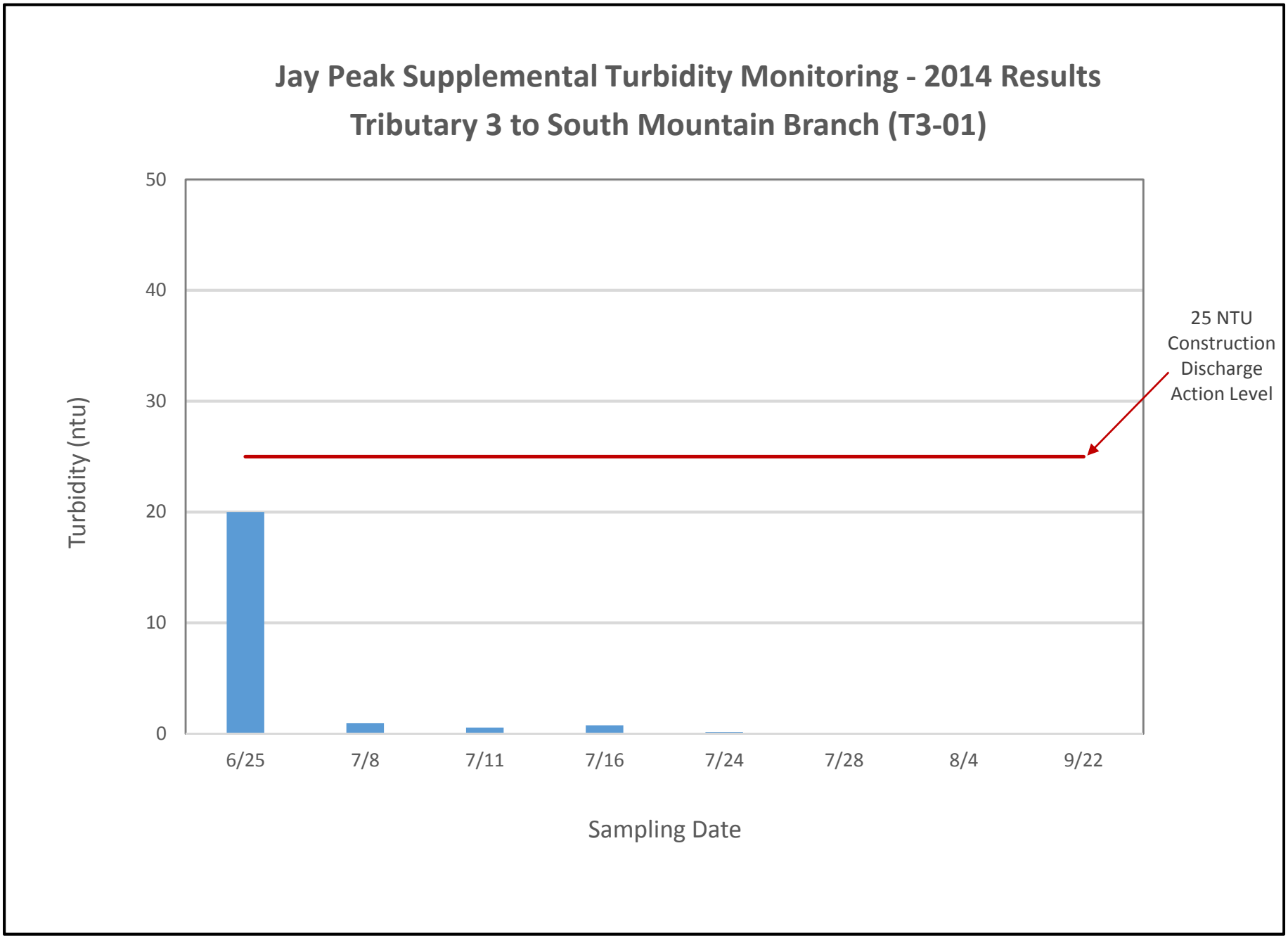

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-06)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

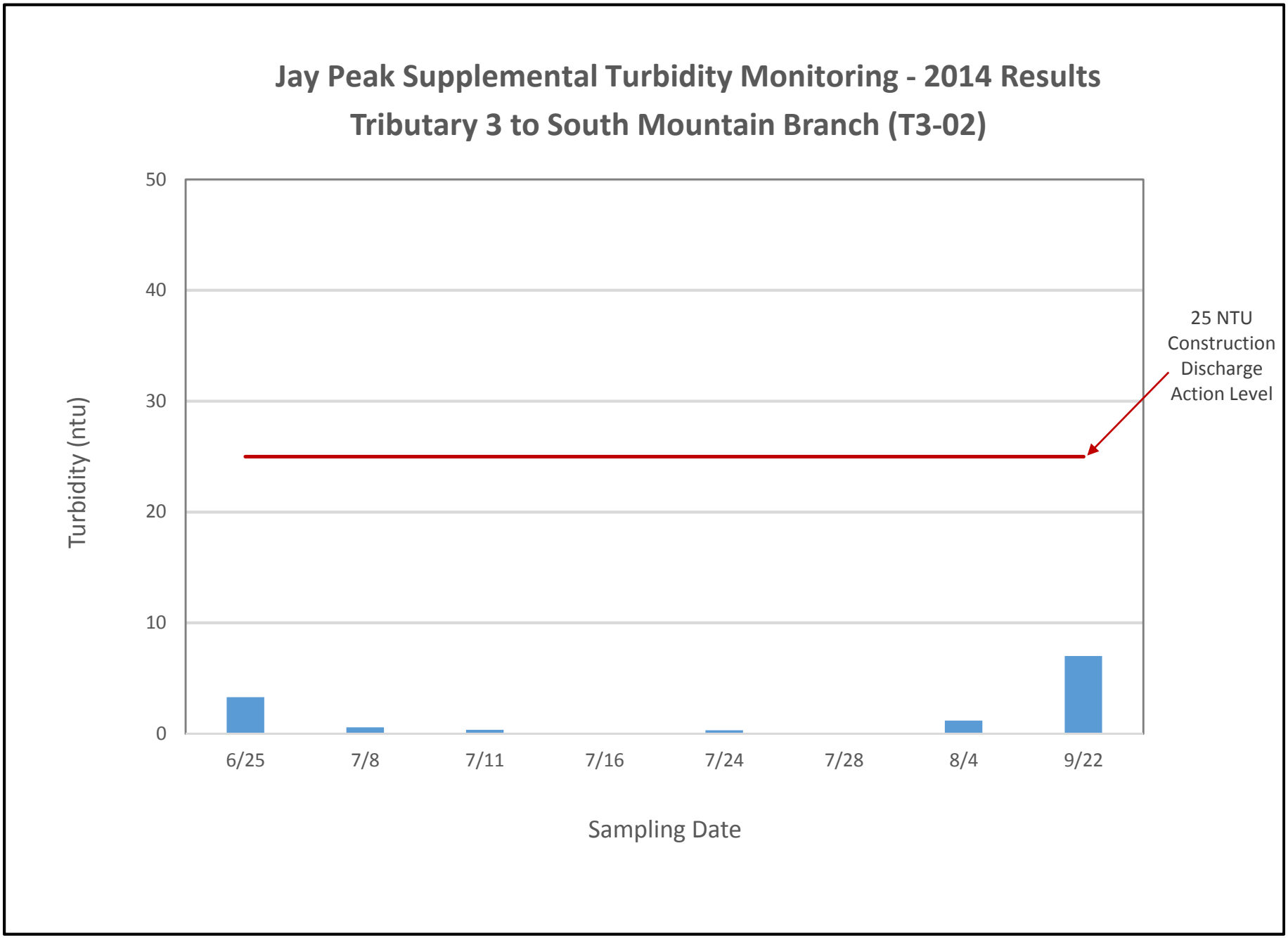

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Phase II Tributary (P2-07)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

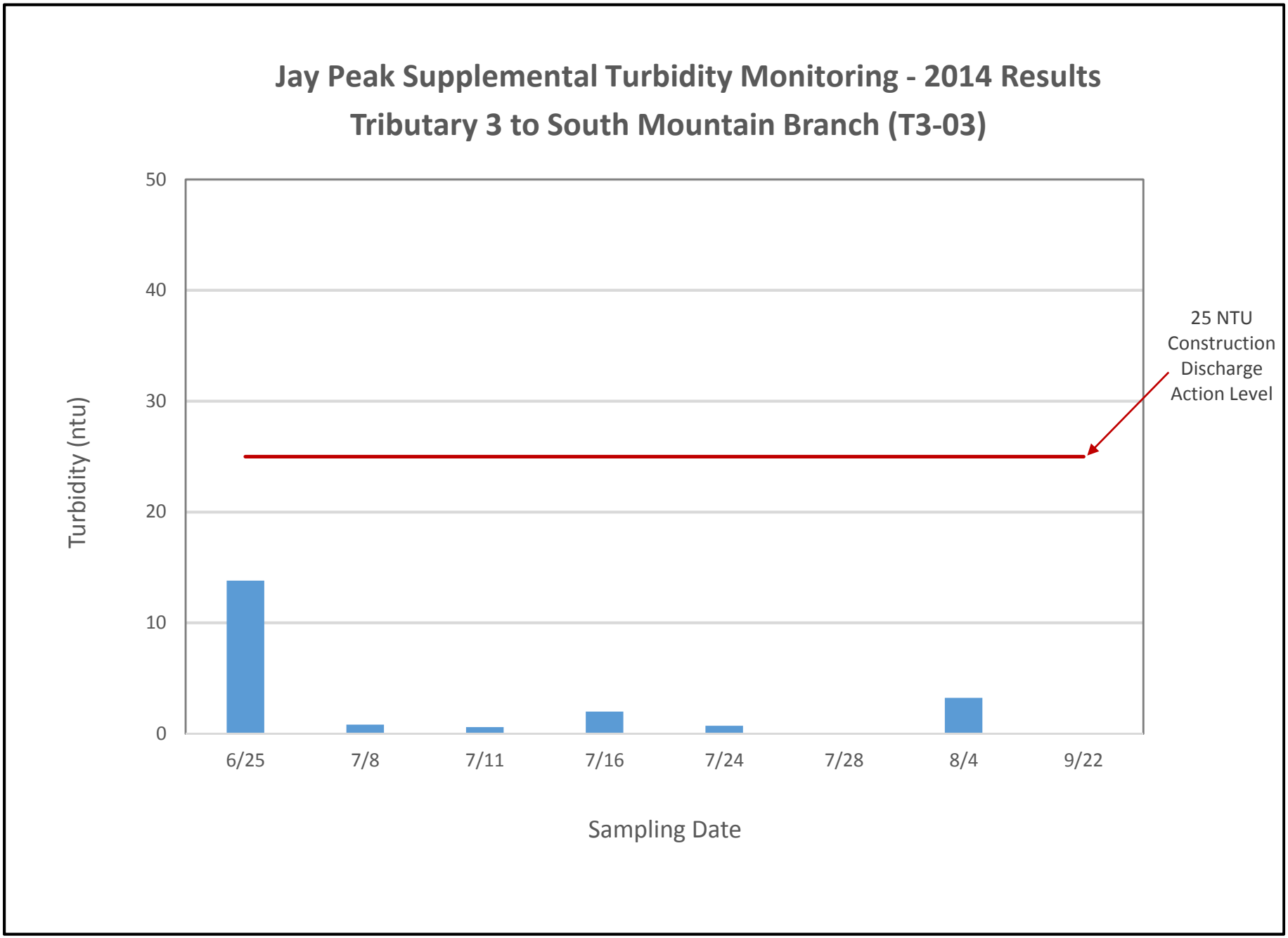

Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Tributary 9 to Jay Branch (T9-01)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level


Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Tributary 9 to Jay Branch (T9-02)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
No Data
25 NTU Construction Discharge Action Level
Sampling Date


Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Tributary 9 to Jay Branch (T9-03)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
No Data
25 NTU Construction Discharge Action Level


Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Tributary 3 to South Mountain Branch (T3-01)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level


Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Tributary 3 to South Mountain Branch (T3-02)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level


Jay Peak Supplemental Turbidity Monitoring - 2014 Results
Tributary 3 to South Mountain Branch (T3-03)
Turbidity (ntu)
50
40
30
20
10
0
6/25
7/8
7/11
7/16
7/24
7/28
8/4
9/22
Sampling Date
25 NTU
Construction
Discharge
Action Level

APPENDIX 5

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Sampling Summary 2004-2014
VHB

Pebble Count and Sediment Monitoring Observations 2004-2014

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Upper Jay Branch	WQM 4-1	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	5-25%	3.0	3.0	64-256
		2014	5-25%	2.0	2.0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	WQM 4-2a	2012	5-25%	5.0	5.0	64-256
		2013	---	---	---	---
		2014	5-25%	1.0	1.0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	WQM 4-3	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

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	WQM 4-4a/b	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

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Sampling Summary 2004-2014
VHB

Pebble Count and Sediment Monitoring Observations 2004-2014

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase I Tributary	WQM 1-2	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	---	7.0	8.0	16-64
		2014	---	10	8.0	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase II Tributary	WQM 2-3	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	---	4.0	8.0	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Tributary 9	WQM 3-1	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%	2.0	2.0	16-64

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Sampling Summary 2004-2014
VHB

Pebble Count and Sediment Monitoring Observations 2004-2014

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	WQM 105 (B)	2012	---	8.0	8.0	16-64
		2013	---	1.0	1.0	64-256
		2014	---	0	0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	WQM 106 (B)	2012	---	5.0	5.0	16-64
		2013	---	10	10	64-256
		2014	5-25%	8.0	8.0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	WQM 107 (B)	2012	25-50 %	12	12	64-256
		2013	5-25%	9.0	9.0	64-256
		2014	5-25%	11	11	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	WQM 108	2014	5-25%	9.0	9.0	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

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 4-1
Sampling Date: October 2, 2014
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	**90%**
Embeddedness:	**5-25%**
Bank stability:	**75-100%**
% Slope:	**4%**

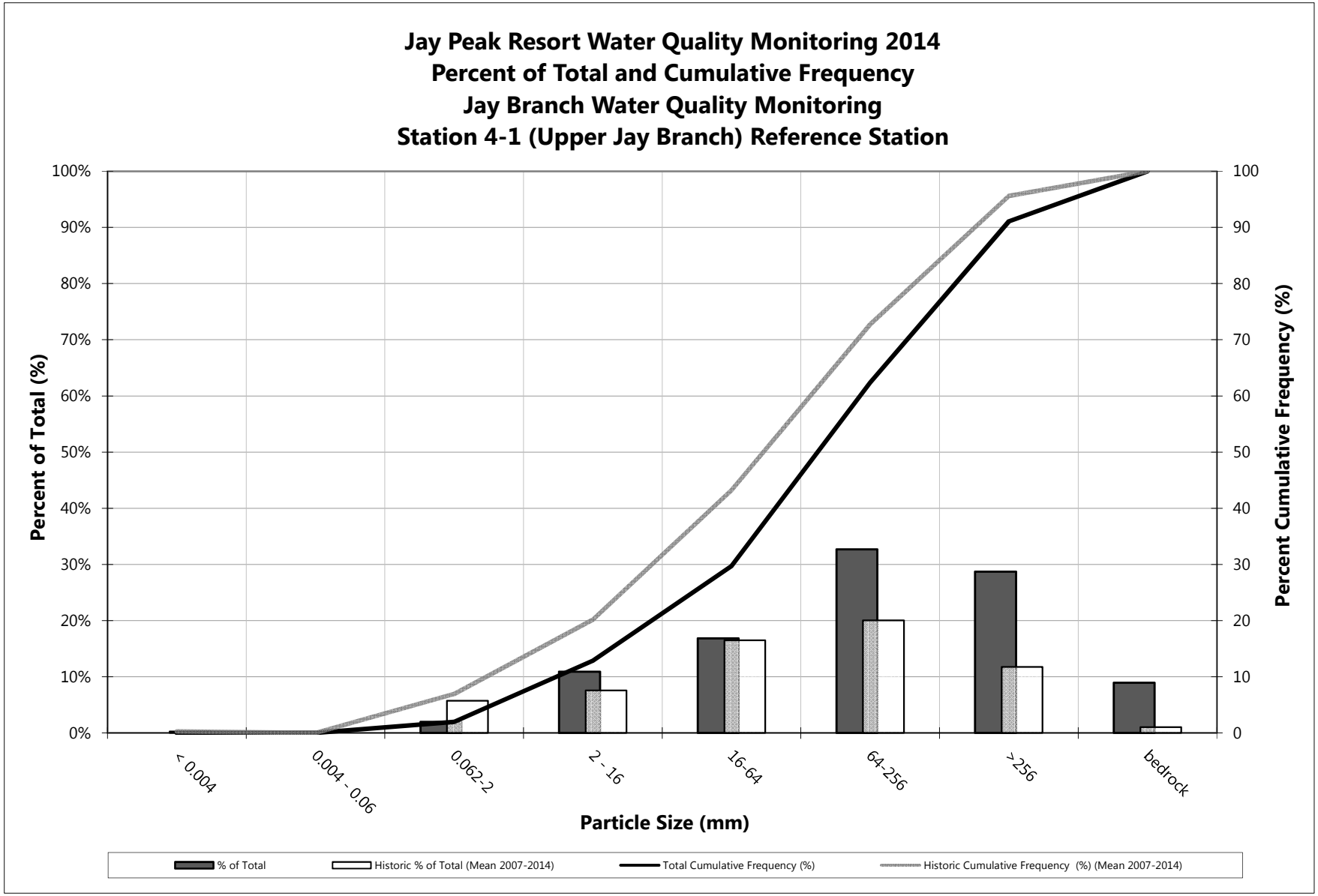
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	11	11%	13	13
Coarse gravel	16-64	17	17%	30	30
Cobble	64-256	33	33%	63	62
Boulder	>256	29	29%	92	91
Bedrock	bedrock	9	9%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	22	16	6	6

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	50	-	-	-

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	40	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 4-1 (Upper Jay Branch) Reference Station
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 (Mean 2007-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%) (Mean 2007-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 4-2a
Sampling Date: October 3, 2014
Samplers: CS, RW, RS, SF (am)

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	5-25%
Bank stability:	50-75%
% Slope:	4%

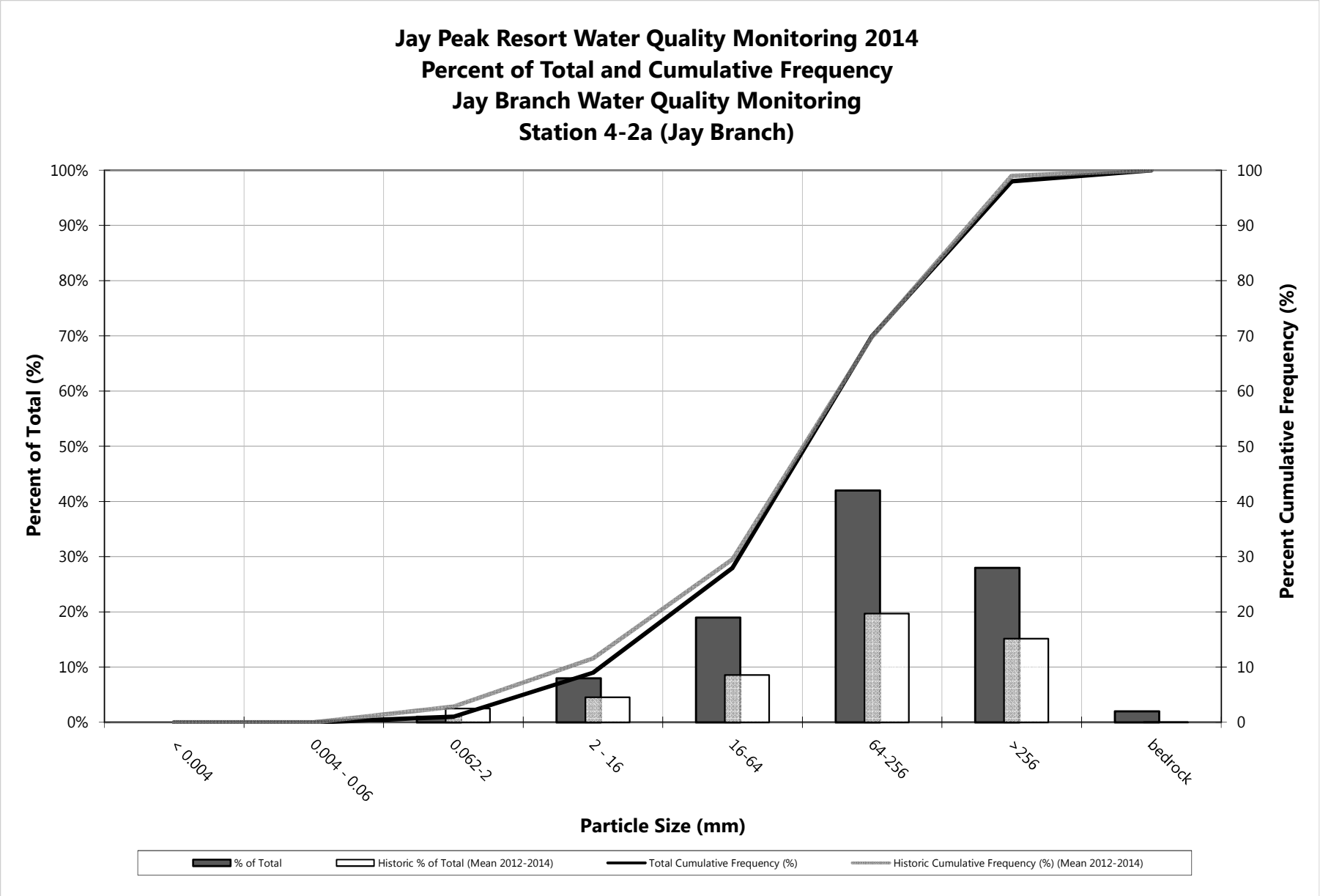
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	1	1%	1	1
Gravel	2 - 16	8	8%	9	9
Coarse gravel	16-64	19	19%	28	28
Cobble	64-256	42	42%	70	70
Boulder	>256	28	28%	98	98
Bedrock	bedrock	2	2%	100	100
	Sample Size (n)	100			
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	43	7	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	47	3	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	23	27	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 4-2a (Jay Branch)
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 (Mean 2012-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%) (Mean 2012-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 4-3
Sampling Date: October 3, 2014
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	60%
Embeddedness:	5-25%
Bank stability:	75-100%
% Slope:	4%

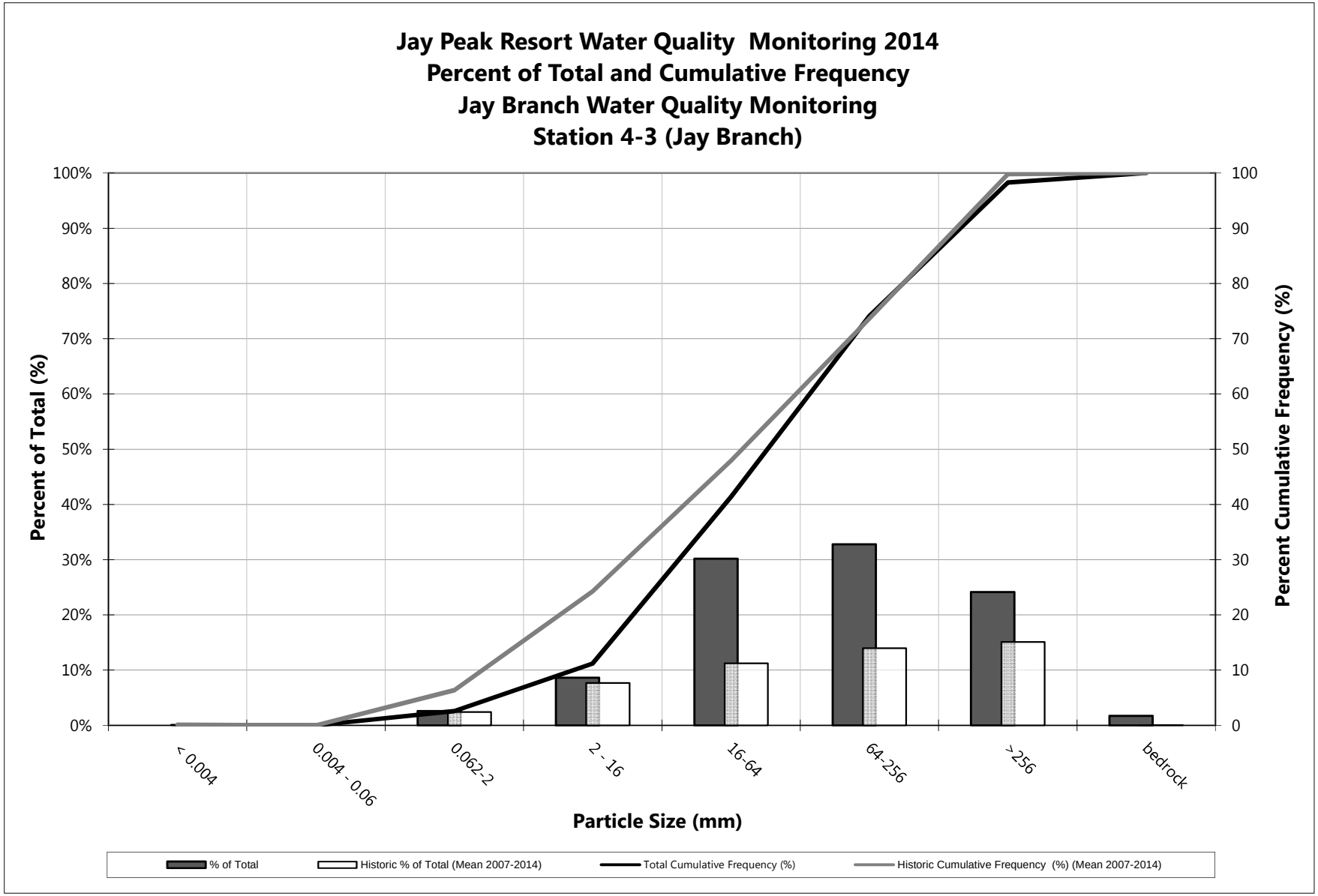
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	10	9%	13	11
Coarse gravel	16-64	35	30%	48	41
Cobble	64-256	38	33%	86	74
Boulder	>256	28	24%	114	98
Bedrock	bedrock	2	2%	116	100
	Sample Size (n)	116			
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	51	3	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	54	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	32	22	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 4-3 (Jay Branch)
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 (Mean 2007-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%) (Mean 2007-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 4-4a
Sampling Date: October 2, 2014
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	25-50%
Bank stability:	50-75%
% Slope:	5%

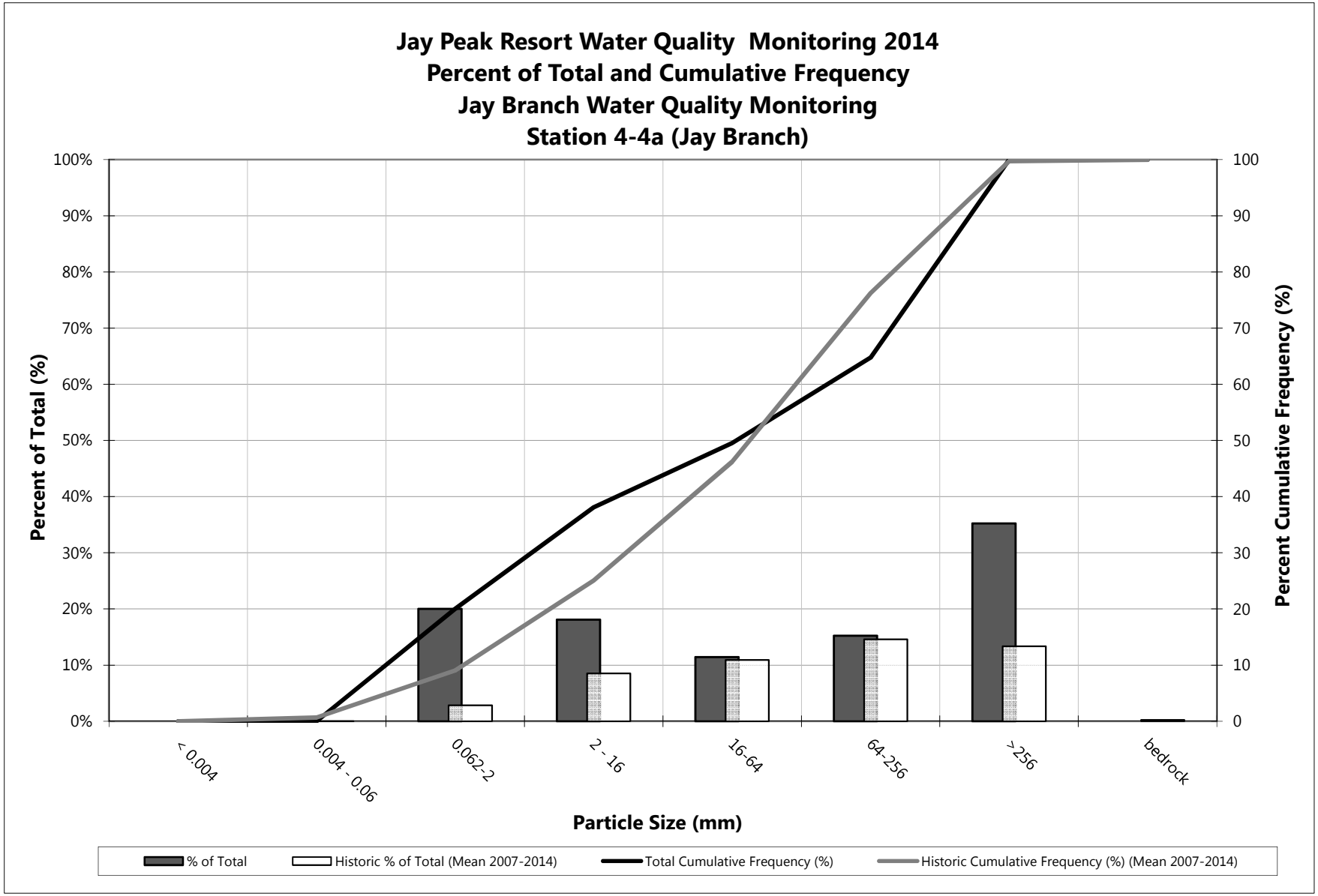
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	21	20%	21	20
Gravel	2 - 16	19	18%	40	38
Coarse gravel	16-64	12	11%	52	50
Cobble	64-256	16	15%	68	65
Boulder	>256	37	35%	105	100
Bedrock	bedrock	0	0%	105	100
	Sample Size (n)	105	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Boulder
% Fines	20%
% Particles < 2 mm	20%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	36	2	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	38	-	-	-

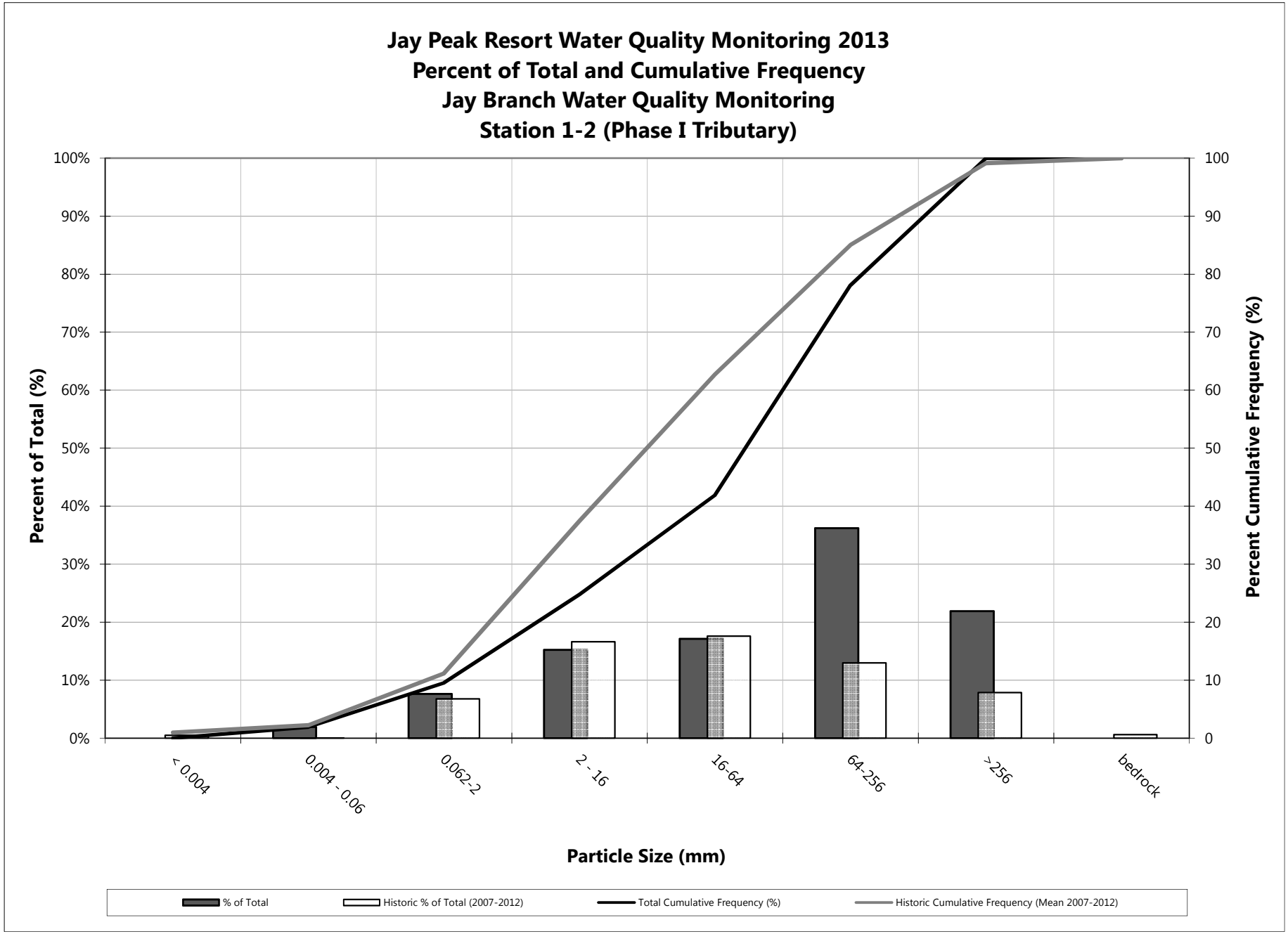
Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	6	32	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 4-4a (Jay Branch)
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 (Mean 2007-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%) (Mean 2007-2014)

Jay Peak Water Quality Monitoring Plan 2013 Performance Report
Substrate Data Collection
Sample Location: WQM 1-2
Sampling Date: October 3, 2014
Samplers: MRB

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	8	8%	10	10
Gravel	2 - 16	16	15%	26	25
Coarse gravel	16-64	18	17%	44	42
Cobble	64-256	38	36%	82	78
Boulder	>256	23	22%	105	100
Bedrock	bedrock	0	0%	105	100
	Sample Size (n)	105	100		
	Longitudinal Distance (ft)	0'-100'			

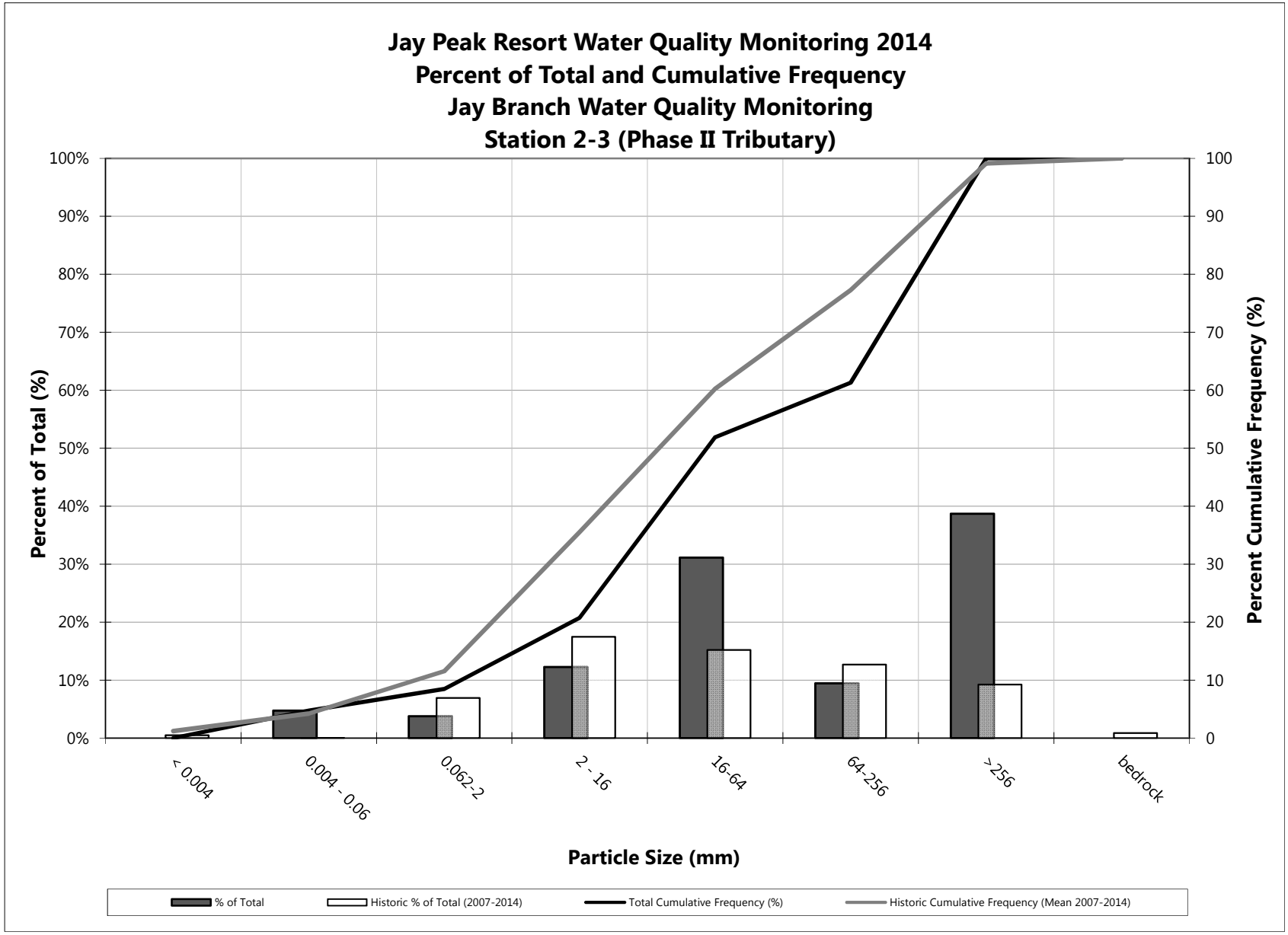
D50 Particle Size	Coarse gravel
Dominant Size Class	Gravel
% Fines	8%
% Particles < 2 mm	10%


Jay Peak Resort Water Quality Monitoring 2013
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 1-2 (Phase I Tributary)
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 (2007-2012)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (Mean 2007-2012)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 2-3
Sampling Date: October 3, 2014
Samplers: RAW, RS

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	5	5%	5	5
Sand (fines)	0.062-2	4	4%	9	8
Gravel	2 - 16	13	12%	22	21
Coarse gravel	16-64	33	31%	55	52
Cobble	64-256	10	9%	65	61
Boulder	>256	41	39%	106	100
Bedrock	bedrock	0	0%	106	100
	Sample Size (n)	106	100		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Boulder
% Fines	4%
% Particles < 2 mm	8%


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 2-3 (Phase II Tributary)
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 (2007-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (Mean 2007-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 3-1
Sampling Date: October 3, 2014
Samplers: CS, RAW, RS

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	5-25%
Bank stability:	25-50%
% Slope:	4%

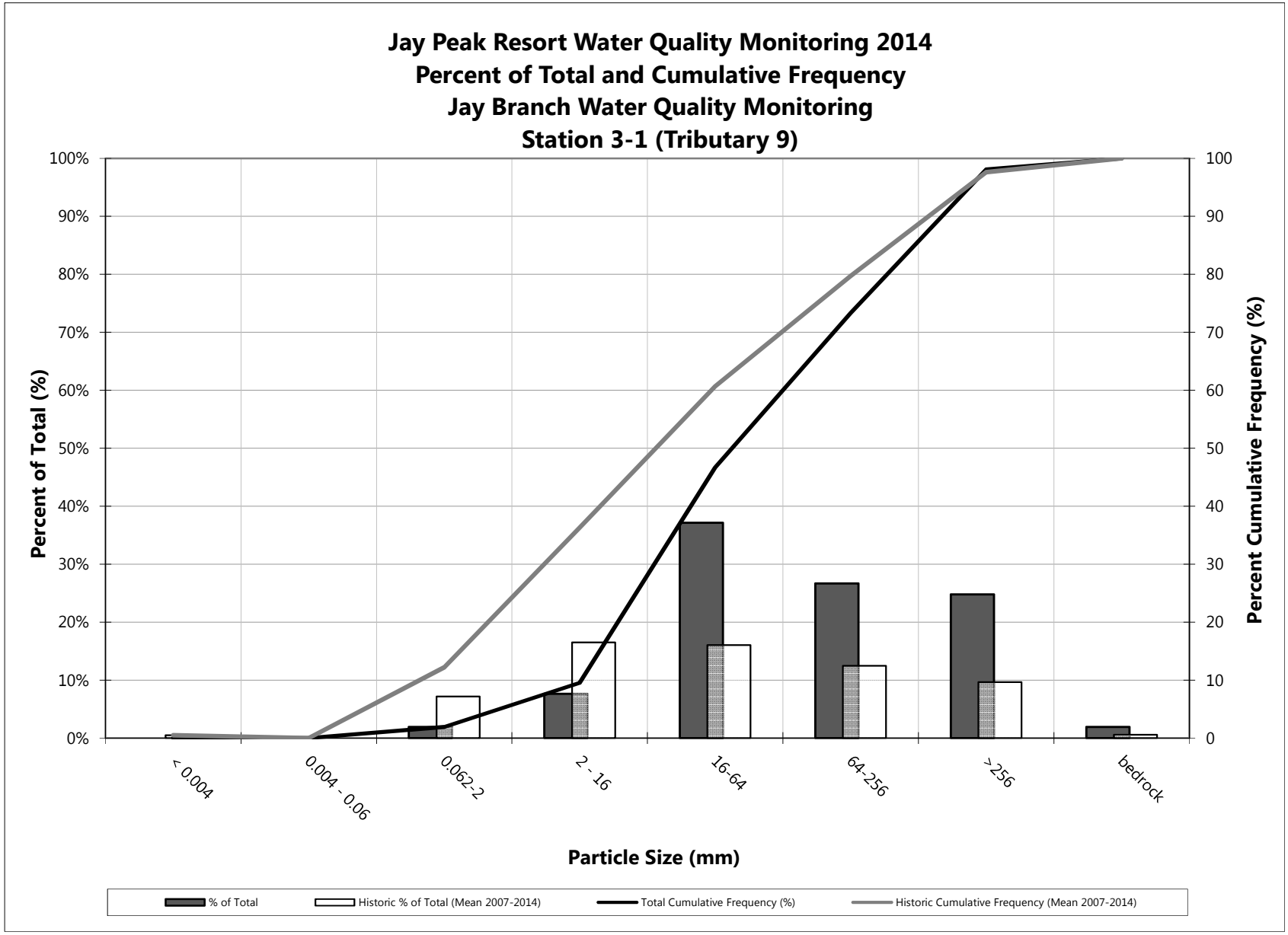
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	8	8%	10	10
Coarse gravel	16-64	39	37%	49	47
Cobble	64-256	28	27%	77	73
Boulder	>256	26	25%	103	98
Bedrock	bedrock	2	2%	105	100
	Sample Size (n)	105	100		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Coarse gravel
% Fines	2%
% Particles < 2 mm	2%

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

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	50	-	-	-

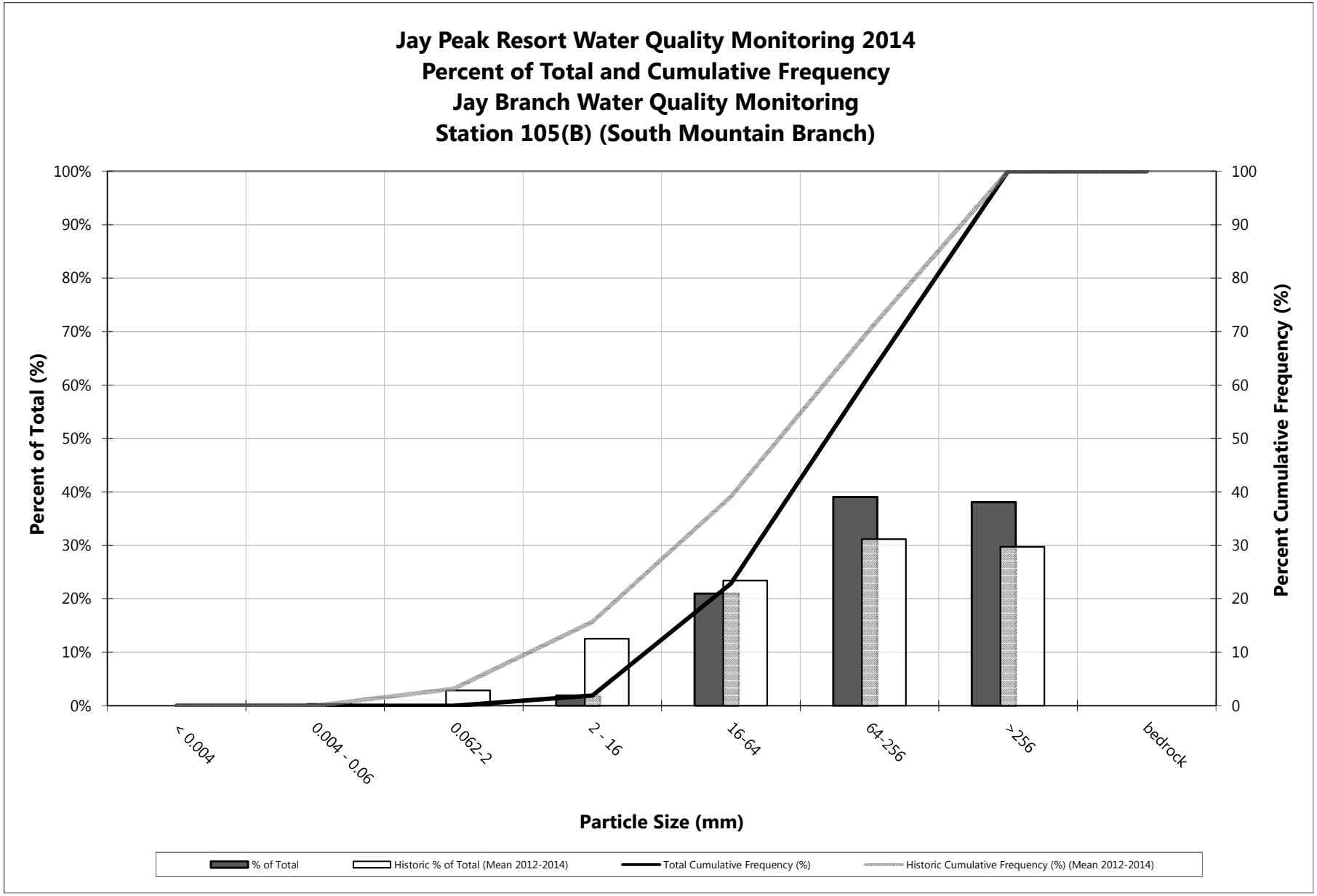
Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	43	7	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 3-1 (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 (Mean 2007-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (Mean 2007-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 105(B)
Sampling Date: October 3, 2014
Samplers: CS, RW, RS

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	2	2%	2	2
Coarse gravel	16-64	22	21%	24	23
Cobble	64-256	41	39%	65	62
Boulder	>256	40	38%	105	100
Bedrock	bedrock	0	0%	105	100
	Sample Size (n)	105	100%		
	Longitudinal Distance (ft)	0'-100'			

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


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 105(B) (South Mountain Branch)
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 (Mean 2012-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%) (Mean 2012-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 106
Sampling Date: October 3, 2014
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	**80%**
Embeddedness:	**5-25%**
Bank stability:	**50-75%**
% Slope:	**6%**

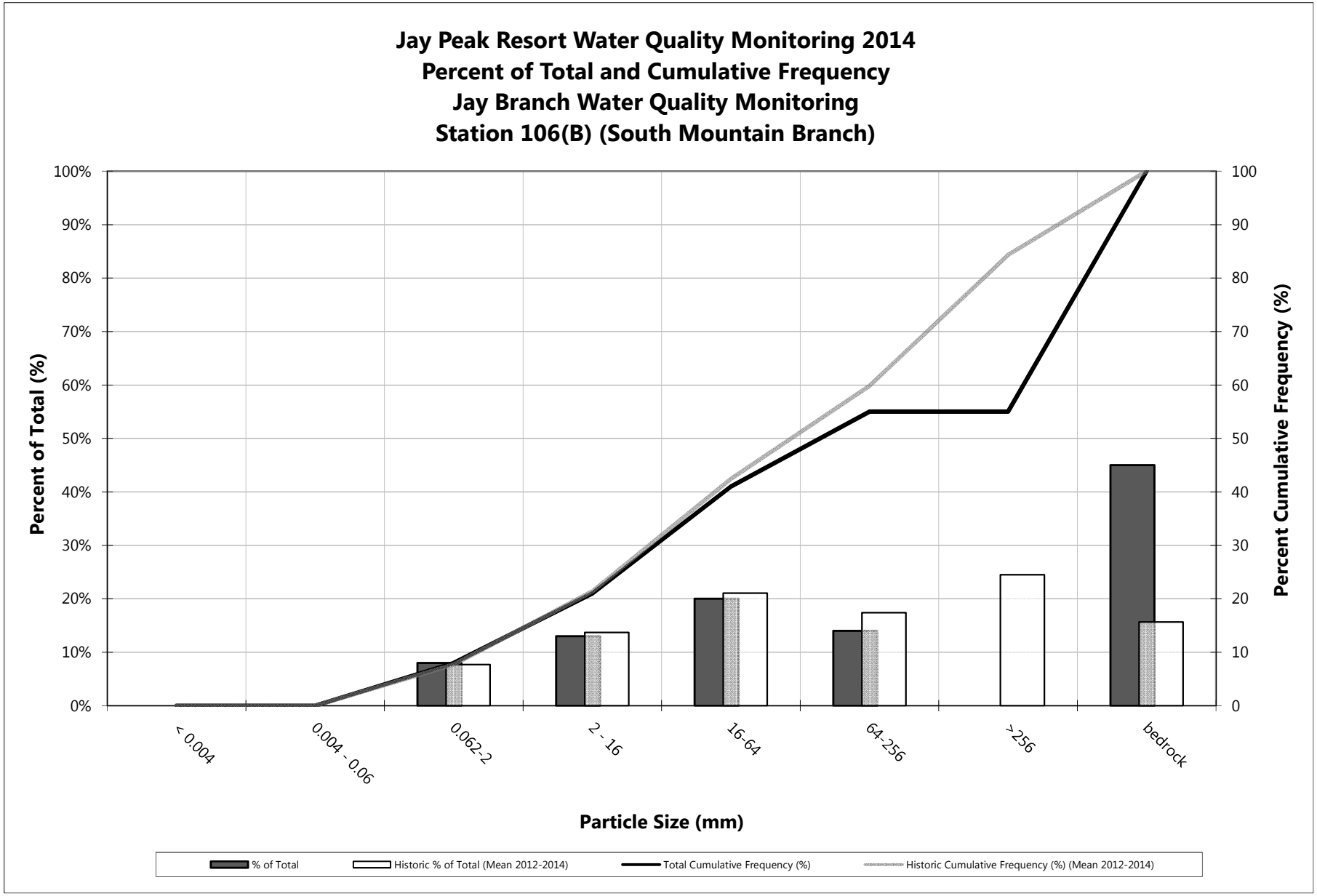
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	8	8%	8	8
Gravel	2 - 16	13	13%	21	21
Coarse gravel	16-64	20	20%	41	41
Cobble	64-256	14	14%	55	55
Boulder	>256	0	0%	55	55
Bedrock	bedrock	45	45%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Coarse Gravel
% Fines	8%
% Particles < 2 mm	8%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	45	5	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	50	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	5	45	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring 2014
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 106(B) (South Mountain Branch)
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 (Mean 2012-2014)
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%) (Mean 2012-2014)

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 107(B)
Sampling Date: October 3, 2014
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	5-25%
Bank stability:	50-75%
% Slope:	3%

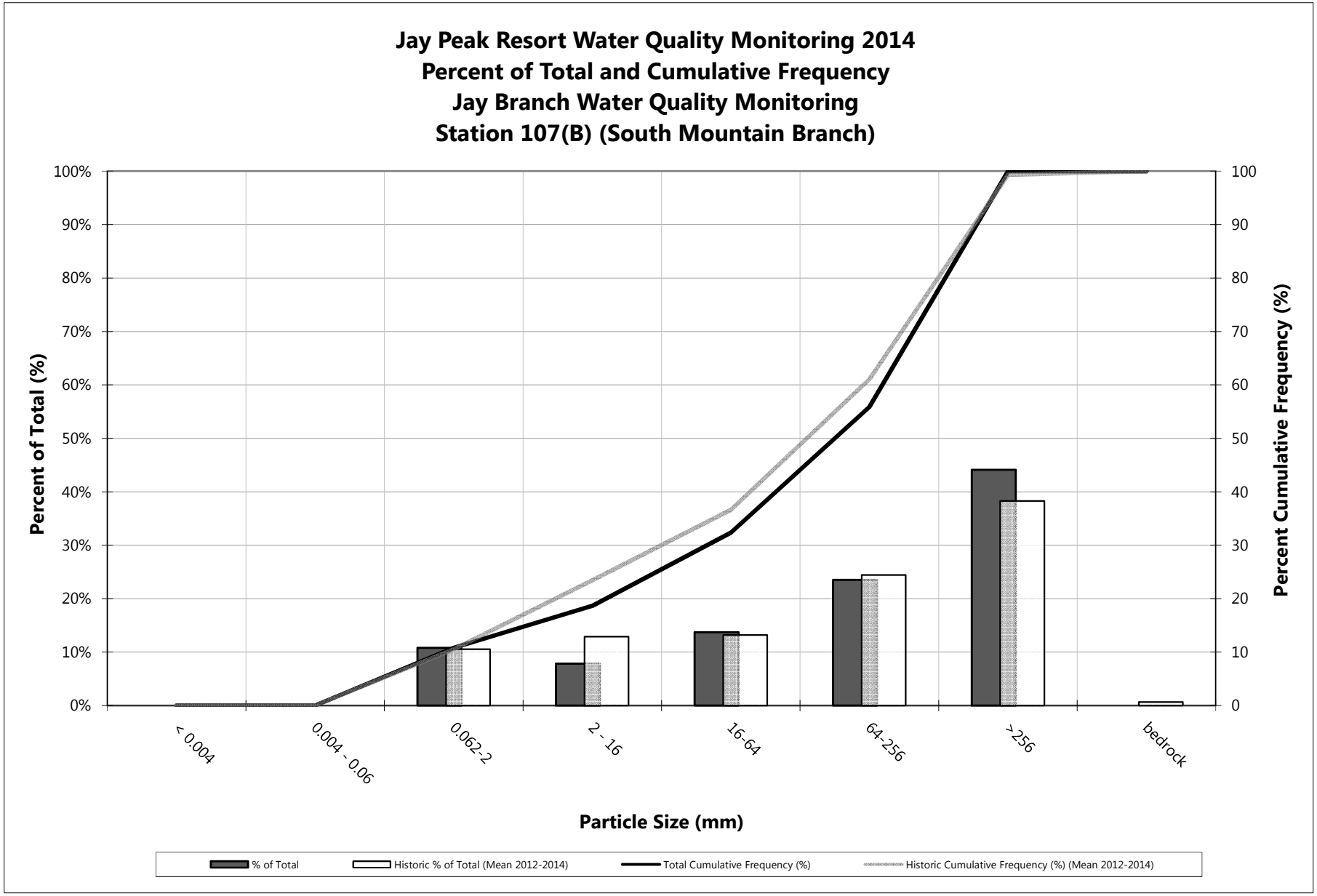
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	11	11%	11	11
Gravel	2 - 16	8	8%	19	19
Coarse gravel	16-64	14	14%	33	32
Cobble	64-256	24	24%	57	56
Boulder	>256	45	44%	102	100
Bedrock	bedrock	0	0%	102	100
	Sample Size (n)	102	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	11%
% Particles < 2 mm	11%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	41	6	3	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	50	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	0	50	-	-	-	-	-



F:\57201.07 JPR 14-15 WQ Monitoring\tech\Biomonitoring\Substrate\Jay Pebble Counts 2014and Means107 chart,2/5/2015

Jay Peak Water Quality Monitoring Plan 2014 Performance Report
Substrate Data Collection
Sample Location: WQM 108
Sampling Date: October 3, 2014
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	5-25%
Bank stability:	25-50%
% Slope:	

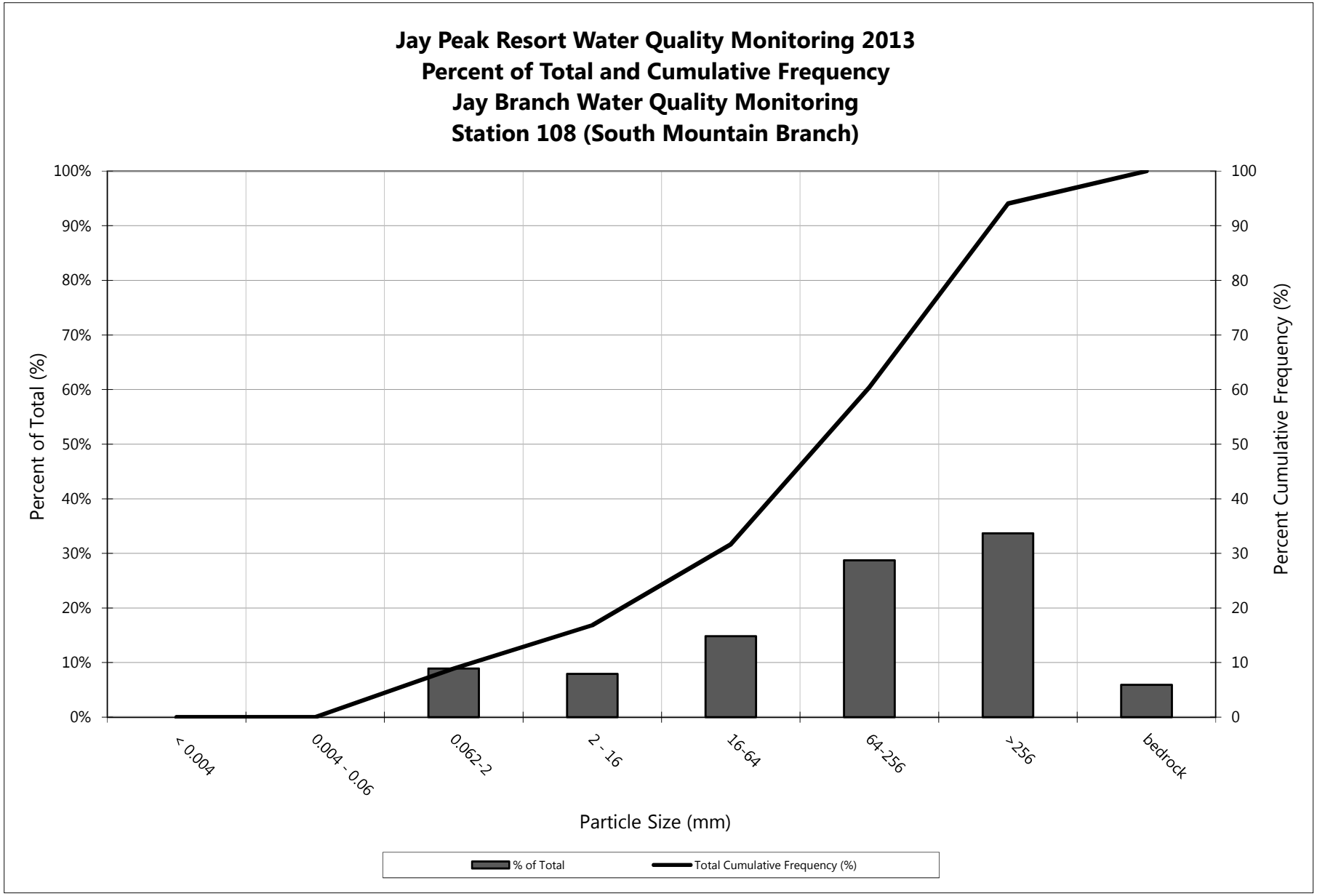
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	9	9%	9	9
Gravel	2 - 16	8	8%	17	17
Coarse gravel	16-64	15	15%	32	32
Cobble	64-256	29	29%	61	60
Boulder	>256	34	34%	95	94
Bedrock	bedrock	6	6%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	9%
% Particles < 2 mm	9%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	40	5	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	45	-	-	-

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


Jay Peak Resort Water Quality Monitoring 2013
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station 108 (South Mountain Branch)
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
Total Cumulative Frequency (%)

APPENDIX 6

Jay Peak Resort
2014 Kick Net Data Summary (DRAFT*)
Class B

Station	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity	Notes
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**		
WQM 3-1 (Trib. 9)	168	27.0	15.0	62.9	1.49	15.5	0.957	53.9	Does Not Meet Class B Criteria	Extremely low flow during sampling period. Interim targets not met, slight increase in density over 2013; decreases of richness and EPT that previously passed in 2013; increased % of worms over 2013.
WQM 4-1 (Jay Branch - near Hole 13)	781	35.5	23.5	74.4	1.24	0.00	0.919	65.4	Meets Class B Criteria	Benchmark station, no interim targets set.
WQM 4-2a (Jay Branch - Hole 18 Bridge)	1039	40.0	26.0	68.7	1.46	10.9	0.948	56.9	Meets Class B Criteria	QA/QC station with Steve Fiske, no interim targets set.
WQM 4-3 (Jay Branch - Trib. 9 Confluence)	403	34.0	22.5	63.2	0.99	26.0	0.973	38.6	Does Not Meet Class B Criteria	Interim targets not met. Oligochaetes increased from 10.1 to 26; %PPCS-FG decreased from 57 to 38.6 (no interim target since previously passed).
WQM 4-4a (Jay Branch - Route 242)	340	33.5	25.5	66.0	1.17	8.85	0.979	62.8	Meets Class B Criteria	Met all interim targets
WQM 106 (Trib. 3 to SMB)	361	26.5	19.0	57.8	0.71	18.5	0.958	45.8	Does Not Meet Class B Criteria	Met all interim targets. Improvements of all parameters except for %PPCS, but only minor decline on that parameter.
WQM 107 (South Mountain Branch)	354	27.0	20.0	71.0	0.71	13.3	0.986	63.1	Indeterminate	No interim targets set. Indeterminate rating, but improvement in all parameters over 2013.
WQM 108 (Trib. 3 to SMB)	403	27.0	18.0	65.6	2.00	8.11	0.951	57.2	Meets Class B Criteria	First time station, no interim targets set.
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%		
Above Threshold (I+) / 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%		

*Draft indicates that data has not been reviewed and approved by DEC.

Project Name: Jay Peak Resort	
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**WQM - 4-1**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.94083 N	72.49222 W
or VT Site ID:	427813000002	
Date collected:	10/2/2014	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 15	Jan.15
#sq picked:	10	9
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 15	Jan.15

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old Biotic Index		New Biotic Index		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
01.03.00.00.006.00.01	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	latiusculus	CCS	A	37	89	CCS	A	24	64		SCR	N	2	3	178	128	266	192	1	0	1	0
01.03.00.00.002.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	DUBIRAPHIA	N/A	sp	CCS	A	1	2				0		CG	N	3	6	7	0	14	0	1	0	-	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CCS	A	1	2	CCS	A	2	5		SCR	N	2	2	5	11	5	11	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPOM	BEZZIA	N/A	sp				0	CCS	A	1	3		PRD	N	3	6	0	8	0	16	-	0	1	0
02.05.01.00.055.00.00	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	MICROTENDIPES	N/A	sp	CCS	A	2	5				0		CG	Y	3	6	14	0	29	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	4	10				0		CG	Y	3	4	29	0	38	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis				0	CCS	A	3	8		CG	Y	2	2	0	16	0	16	-	0	1	0
02.05.05.00.065.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	sp				0	CCS	A	1	3		CG	Y	3	7	0	8	0	19	-	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	4	10	CCS	A	3	8		CG	Y	3	5	29	24	48	40	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	7	17	CCS	A	13	35		CG	Y	2	4	34	69	67	139	1	0	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	N/A	N/A	group	CCS	A	1	2	CCS	A	5	13		PRD	Y	3	6	7	40	14	80	1	0	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	2				0		CG	N	2	1	5	0	2	0	1	0	-	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	2	5	CCS	A	1	3		CG	N	3	4	14	8	19	11	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp				0	CCS	A	1	3		PRD	N	2	3	0	5	0	8	-	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	9	22	CCS	A	4	11		PRD	N	2	2	43	21	43	21	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp				0	CCS	A	2	5		SRD	N	3	6	0	16	0	32	-	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	2	CCS	A	1	3		CG	N	3	6	7	8	14	16	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	TRELLA/PLAU	PLAUDITUS	N/A	sp	CCS	A	1	2	CCS	A	1	3		SCR	N	2	5	5	5	12	13	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	3	7	CCS	A	3	8		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group				0	CCS	A	4	11		CG	N	2	4	0	21	0	43	-	0	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	2	5				0		SRD	N	1	0	5	0	0	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	5	12	CCS	A	2	5		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp				0	CCS	A	1	3		SCR	N	1	4	0	3	0	11	-	0	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	11	26	CCS	A	7	19		CG	N	2	1	53	37	26	19	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	4	10	CCS	A	4	11		SHR	N	1	2	10	11	19	21	1	1	1	1
04.05.01.00.001.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	ARCTOPSYCHE	N/A	ladogensis	CCS	A	2	5	CCS	A	1	3		CF	N	0	1	0	0	5	3	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	18	43	CCS	A	10	27		CF	N	0	0	0	0	0	0	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	20	48	CCS	A	40	107		SRD	N	1	1	48	107	48	107	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	19	46	CCS	A	14	37		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	3	7	CCS	A	1	3		PRD	N	3	6	22	8	43	16	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	5	12				0		PRD	N	1	2	12	0	24	0	1	1	-	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	5	12	CCS	A	2	5		PRD	N	0	1	0	0	12	5	1	1	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS	A	6	14	CCS	A	14	37		PRD	N	0	0	0	0	0	0	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	13	31	CCS	A	10	27		SCR	N	1	3	31	27	94	80	1	1	1	1
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	2	CCS	A	4	11		SRD	N	1	3	2	11	7	32	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	21	50	CCS	A	14	37		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	2				0		PRD	N	0	0	0	0	0	0	1	1	-	0
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	87	209	CCS	A	88	235		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	4	10	CCS	A	3	8		SRD	N	1	0	10	8	0	0	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	2	CCS	A	1	3		PRD	N	1	2	2	3	5	5	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	5	12	CCS	A	9	24		PRD	N	1	2	12	24	24	48	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	4	10	CCS	A	8	21		SRD	N	1	0	10	21	0	0	1	1	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp				0	CCS	A	4	11		PRD	N	2	5	0	21	0	53	-	0	1	0
TOTALS by Rep: --->										311	746			306	816													
GRAND TOTAL:		1562 organisms																										

	KN-1	KN-2	KN-1	KN-2
Total BI Score	593	669	881	1056
Total # Organisms	746	816	746	816
# of Organisms w/o BI	0.00	0.00	0.00	0.00
Total # Organisms with BI	746	816	746	816
Biotic Index	0.794	0.820	1.18	1.29

Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**
35		36	
	24		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 WQM - 4-1
Stream Jay Branch
VT Site ID 427813000002
Sample Date 10/02/14

2014 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.01	89	0	0	0	0	0	0	0	0	0	
01.03.00.00.002.00.00	2	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	2	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.055.00.00	0	5	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	10	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	10	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	17	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	2	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	2	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	5	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	22	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	2	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	7	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	5	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	12	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	26	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	10	0	0	0	0	0	0	
04.05.01.00.001.00.01	0	0	0	5	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	43	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	48	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	46	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	7	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	12	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	12	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	14	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	31	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	2	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	50	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	2	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	209	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	10	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	12	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	10	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**93.6**	**72.0**	**55.2**	**228**	**298**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**746**
Percent	**12.5%**	**9.65%**	**7.40%**	**30.5%**	**39.9%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 4-1
Stream Jay Branch
VT Site ID 427813000002
Sample Date 10/02/14

2014 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.01	64	0	0	0	0	0	0	0	0	0	
01.03.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	5	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.01.00.055.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	8	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	8	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	35	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	13	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	11	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	5	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	3	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	3	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	8	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	11	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	5	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	3	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	11	0	0	0	0	0	0	
04.05.01.00.001.00.01	0	0	0	3	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	27	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	107	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	37	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	5	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	37	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	27	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	11	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	37	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	235	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	8	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	24	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	21	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	11	0	
Total	**69.3**	**90.7**	**50.7**	**256**	**339**	**0.00**	**0.00**	**0.00**	**10.7**	**0.00**	**816**
Percent	**8.50%**	**11.1%**	**6.21%**	**31.4%**	**41.5%**	**0.00%**	**0.00%**	**0.00%**	**1.31%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM - 4-1
Stream Jay Branch
Location 427813000002
Sample Date 10/2/2014

2014 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
01.03.00.00.006.00.01	0	0	0	0	0	89	0		0	0	0	0	0	64	0	
01.03.00.00.002.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
01.03.00.00.007.00.00	0	0	0	0	0	2	0		0	0	0	0	0	5	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
02.05.01.00.055.00.00	5	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	10	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		8	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.05.00.075.00.00	10	0	0	0	0	0	0		8	0	0	0	0	0	0	
02.05.05.00.114.01.04	17	0	0	0	0	0	0		35	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	2	0	0	0	0		0	0	13	0	0	0	0	
02.06.00.00.001.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.001.00.00	5	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
02.19.00.00.006.00.00	0	0	22	0	0	0	0		0	0	11	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0		0	0	0	5	0	0	0	
03.01.00.00.001.00.09	2	0	0	0	0	0	0		3	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	7	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		11	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	5	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	12	0	0	0	0	0	0		5	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	0	0		0	0	0	0	0	3	0	
03.07.00.00.005.00.00	26	0	0	0	0	0	0		19	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	10	0	0		0	0	0	0	11	0	0	
04.05.01.00.001.00.01	0	5	0	0	0	0	0		0	3	0	0	0	0	0	
04.05.01.00.006.00.01	0	43	0	0	0	0	0		0	27	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	48	0	0	0		0	0	0	107	0	0	0	
04.12.00.00.002.00.00	0	46	0	0	0	0	0		0	37	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	7	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.00.01	0	0	12	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	12	0	0	0	0		0	0	5	0	0	0	0	
04.16.00.00.001.03.09	0	0	14	0	0	0	0		0	0	37	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	31	0		0	0	0	0	0	27	0	
05.01.00.00.000.00.01	0	0	0	2	0	0	0		0	0	0	11	0	0	0	
05.02.00.00.006.00.00	0	0	50	0	0	0	0		0	0	37	0	0	0	0	
05.02.00.00.091.00.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	209	0	0	0		0	0	0	235	0	0	0	
05.05.00.00.000.00.01	0	0	0	10	0	0	0		0	0	0	8	0	0	0	
05.07.00.00.006.00.00	0	0	2	0	0	0	0		0	0	3	0	0	0	0	
05.07.00.00.007.00.00	0	0	12	0	0	0	0		0	0	24	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	10	0	0	0		0	0	0	21	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0		0	0	11	0	0	0	0	
Total	**98.4**	**93.6**	**137**	**283**	**9.60**	**125**	**0.00**	**746**	**101**	**66.7**	**149**	**387**	**10.7**	**101**	**0.00**	**816**
Percent	**13.2%**	**12.5%**	**18.3%**	**37.9%**	**1.29%**	**16.7%**	**0.00%**	**100%**	**12.4%**	**8.17%**	**18.3%**	**47.4%**	**1.31%**	**12.4%**	**0.00%**	**100%**

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	13.2%	42.5%	12.4%	40.1%
Col. Filt.	18%	30%	36%	12.5%	69.7%	8.2%	45.4%
Predator	19%	13%	7%	18.3%	96.5%	18.3%	96.3%
Shred-Det.	15%	4%	2%	37.9%	39.5%	47.4%	31.7%
Shred- Herb.	1%	1%	5%	1.29%	77.8%	1.31%	76.5%
Scraper	12%	13%	22%	16.72%	71.77%	12.42%	96.6%
				PPCS-FG =	**66.3%**	**PPCS-FG =**	**64.4%**

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 WQM - 4-1
Stream Jay Branch
VT Site ID 427813000002 **Class** Small, High Gradient, B2-3
Sample Date 10/02/14 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	12.5%	4.54	8.50%	0.497
Diptera	19%	18%	13%	9.65%	9.35	11.1%	7.89
Ephemeroptera	23%	34%	32%	7.40%	15.6	6.21%	16.8
Plecoptera	21%	8%	8%	39.9%	18.9	41.5%	20.5
Trichoptera	28%	33%	33%	30.5%	2.55	31.4%	3.37
Oligochaeta	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
Other	0.5%	0.5%	1.0%	0.00%	0.500	1.31%	0.807
				Sum diff	51.9		50.4
				Sum diff * 0.5	26.0		25.2
				100-(sum diff * 0.5)	74.0		74.8
				% model affinity	**74.0%**		**74.8%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM - 4-1
Stream Jay Branch
Location 427813000002
Sample Date 10/2/2014
Class Small, High Gradient, B2-3
Sampler CS

	KN-1	KN-2
#EPT organisms	581	645
#C organisms	43.2	66.7
EPT/EPT+C	0.931	0.906

Biometric Summary

Project Jay Peak Resort
Station WQM - 4-1
Stream Jay Branch
Location 427813000002 **Class** Small, High Gradient, B2-3
Sample Date 10/2/2014 **Sampler** CS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	746	816	781
Species Richness	35.0	36.0	35.5
EPT Richness	24.0	23.0	23.5
Old Bio Index (0 to 5)	0.794	0.820	0.807
New Bio Index (0 to 10)	1.18	1.29	1.24
% dominant taxa	28.0%	28.8%	28.4%
EPT/EPT+C	0.931	0.906	0.919
EPT/Richness	0.686	0.639	0.662
% Model Affinity (orders)	74.0%	74.8%	74.4%
PPCS - functional groups	66.3%	64.4%	65.4%
Major Groups:			
Coleoptera (%)	12.5%	8.50%	10.5%
Diptera (%)	9.65%	11.1%	10.4%
Ephemeroptera (%)	7.40%	6.21%	6.80%
Trichoptera (%)	30.5%	31.4%	31.0%
Plecoptera (%)	39.9%	41.5%	40.7%
Oligochaeta (%)	0.00%	0.00%	0.00%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	1.31%	0.654%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	13.2%	12.4%	12.8%
Collector Filterer (%)	12.5%	8.17%	10.4%
Predator (%)	18.3%	18.3%	18.3%
Shredder - Detritus (%)	37.9%	47.4%	42.7%
Shredder - Herbivore (%)	1.29%	1.31%	1.30%
Scraper (%)	16.7%	12.4%	14.6%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM - 4-1
Stream Jay Branch
Location 427813000002
Sample Date 10/2/2014

Latitude 44.94083 N
Longitude 72.49222 W
Class Small, High Gradient, B2-3
Sampler CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	781	≥300	Pass	≥400	Pass	≥500	Pass
Richness	35.5	≥27	Pass	≥31	Pass	≥35	I+
EPT	23.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	74.4%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.24	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	0.00%	≤12%	Pass	≤5	Pass	≤2	Pass
EPT/EPT+C	0.919	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	65.4%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		N/A					

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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location: Jay
River (site) Jay Br River Mile _____ Site ID 4-1 BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description _____

Sampling Information:
Date 10/2/19 Time 1330 Personnel (circle sampler) CS Gear KN
Effort time (min) _____ Area (m^2) _____ Mesh (um) 500 Quantitative: Y (N) #Reps: 2 Comp/rep 4
Weather Sunny Flow/Weather Previous (2 weeks/2days) Quiet 2 wk
Baseflow ✓, or Freshet flow _____ Rising / Receding _____ Present Flow: H - M - (L)

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 5

A:-Debris Obvious 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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) 25-50% Good (3) 50-75% Fair (2) > 75% Poor (1)
Estimate 5 %
Silt rating (0-5) 1 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 4 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach) Fresh leaf packs

Bank Stability: (EX) G , F , P ; **Riparian Width**(facing upstream) L >100 m, R >100 m

% Canopy: 100 (90) 80 70 60 50 40 30 20 10 0 Overhead = Open, Partly Open, or (Closed)
(See back for Densiometer form) if leaves on-50% off now

Vegetation: (both sides) %: Overstory: Softwood 30 Hardwood 70
(Does not need to add up to 100%) %: Understory: Shrub (brush) 40 Grass/ferns etc 10
Surrounding Land Use: forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70 % Filamentous green _____ % and length _____ (in) Blue Green Tr % Moss 30 %
Green _____ % Other _____ % General Trophic Rating (0-5) 0 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder _____ Other _____ Warm _____ Cold ✓ Mixed _____
B.F.Width 15' (m), Wetted Width 10' (m) Riffle Depth 1-2" (m) Pool Depth 3' (m) and Obs _____
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) _____ (.4-2 ft/sec (M)) _____ >2 ft/sec (F)
Channelized: Y (N) Upstream Dam: Y ____ mi (N) Other modifications: _____
Water Quality Parameters: Field **(Record)** or Collected **(Circle)**, **Meter** (type, #) _____ **Chemistry LabId** _____
Temp Air 70 **°C,°F Water** 11 **°C fpH** _____ lab pH _____ **fCond** _____ labCond _____ ***D.O.%*** _____ **D.Omg/l** _____

Cond pH Alkalinity Color _____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Field Sheet Complete: CS (initial) **Photo's:** Y **Fish Survey Conducted (circle):Y (N)**

Site Sketch & Observations A number of trout 2"-6"

Aquatic Biota Observed:
Mussels
Crayfish
Gastropods
Fish
Other

Pebble count
Sand - 2
gravel - 11
coarse gravel - 17
cobble - 33
boulder - 29
bedrock - 9

Peri	0	1	2	3
moss	22	16	6	6
macro	50			
micro	10	40		

Jay Peak Resort
Kick Net Data - South Branch - WQM - 4-1
Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2008 VHBP	469	32.0	21.5	63.0	1.22	0.860	0.943	55.8	Meets Class B Criteria
2009 VHBP	625	34.0	23.0	73.0	1.34	0.000	0.930	59.0	Meets Class B Criteria
2010 VHB	642	40.0	24.5	78.4	1.71	0.360	0.889	56.4	Meets Class B Criteria
2011 VHB	421	35.0	23.0	70.0	0.849	0.110	0.931	46.0	Meets Class B Criteria
2012 VHB	883	36.0	24.5	75.4	1.13	0.000	0.947	44.2	Meets Class B Criteria
2013 VHB	872	33.0	21.0	69.9	0.935	0.000	0.922	60.8	Meets Class B Criteria
2014 VHB	781	35.5	23.5	74.4	1.24	0.000	0.919	65.4	Meets Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name: Jay Peak Resort	
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**WQM 4-2a**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.93972	72.50232
or VT Site ID:	427800000094	
Date collected:	10/3/2014	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan. 15
#sq picked:	7
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan. 15

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
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	3		PRD	N	3	2	10	6.857142857	1	0
01.03.00.00.006.00.01	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	latiusculus	CCS	A	8	27		SCR	N	2	3	55	82	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	4	14		CG	Y	3	4	41	55	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	3	10		PRD	Y	3	5	31	51	1	0
02.05.05.00.029.00.02	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	brehmi grp	CCS	A	2	7		CG	Y	2	4	14	27	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	3		CG	Y	2	2	7	7	1	0
02.05.05.00.065.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	sp	CCS	A	1	3		CG	Y	3	7	10	24	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	3		CG	Y	2	2	7	7	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	3		CG	Y	3	5	10	17	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	3	10		CG	N	3	4	31	41	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	10		PRD	N	2	3	21	31	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	3	10		PRD	N	2	2	21	21	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	7	24		CG	N	3	6	72	144	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	2	7		SCR	N	2	5	14	34	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	3	10		CG	N	0	0	0	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	6	21		CG	N	2	4	41	82	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	12	41		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	10	34		SCR	N	1	4	34	137	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	18	62		CG	N	0	0	0	0	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	1	3		CG	N	2	1	7	3	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	3		SCR	N	1	0	3	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	7	24		CF	N	2	3	48	72	1	1
04.05.00.02.008.01.06	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	slossonae	CCS	A	1	3		CF	N	2	4	7	14	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	1	3		CF	N	2	4	7	14	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	8	27		SRD	N	1	1	27	27	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	10	34		CF	N	0	0	0	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	2	7		PRD	N	3	6	21	41	1	1
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS	A	7	24		PRD	N	0	1	0	24	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	8	27		PRD	N	1	2	27	55	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	7	24		SCR	N	1	3	24	72	1	1
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	3		SRD	N	1	3	3	10	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	38	130		PRD	N	0	0	0	0	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	3		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	33	113		SRD	N	0	0	0	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	13	45		SRD	N	1	0	45	0	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	1	3		PRD	N	0	2	0	7	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	33	113		PRD	N	1	2	113	226	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	7	24		SRD	N	1	0	24	0	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	1	3		PRD	N	2	5	7	17	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	33	113		CG	N	-	-	-	-	1	0
TOTALS by Rep: --->										303	1039									

GRAND TOTAL: 1039 organisms

Total BI Score	782	1351	**Total Richness**	**Total EPT-R**
Total # Organisms	1039	1039		
# of Organisms w/o BI	113	113	40	
Total # Organisms with BI	926	926		26
Biotic Index	0.844	1.46		

*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 WQM 4-2a
Stream Jay Branch
Location 427800000094
Sample Date 10/03/14

2014 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	GASTROPODA	TOTAL
02.01.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.01	27	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	14	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	10	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.02	0	7	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	10	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	10	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	10	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	24	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	7	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	10	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	21	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	41	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	34	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	62	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	3	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	3	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	24	0	0	0	0	0	0	
04.05.00.02.008.01.06	0	0	0	3	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	3	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	27	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	34	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	7	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	24	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	27	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	24	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	3	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	130	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	3	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	113	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	45	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	113	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	24	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	3	0	
18.04.00.00.000.00.00	0	0	0	0	0	113	0	0	0	0	
Total	**27.4**	**78.9**	**202**	**178**	**435**	**113**	**0.00**	**0.00**	**3.43**	**0.00**	**1039**
Percent	**2.64%**	**7.59%**	**19.5%**	**17.2%**	**41.9%**	**10.9%**	**0.00%**	**0.00%**	**0.330%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM 4-2a
Stream Jay Branch
Location 427800000094
Sample Date 10/03/14

2014 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
02.01.00.00.001.00.00	0	0	0	0	3	0	0	0	0	0	0	**3**
01.03.00.00.006.00.01	0	0	0	0	0	0	0	27	0	0	0	**27**
02.05.01.00.085.00.05	0	14	0	0	0	0	0	0	0	0	0	**14**
02.05.05.00.008.00.00	0	0	0	0	10	0	0	0	0	0	0	**10**
02.05.05.00.029.00.02	0	7	0	0	0	0	0	0	0	0	0	**7**
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	0	**3**
02.05.05.00.065.00.00	0	3	0	0	0	0	0	0	0	0	0	**3**
02.05.05.00.068.00.00	0	3	0	0	0	0	0	0	0	0	0	**3**
02.05.05.00.075.00.00	0	3	0	0	0	0	0	0	0	0	0	**3**
02.19.00.00.001.00.00	0	10	0	0	0	0	0	0	0	0	0	**10**
02.19.00.00.003.00.00	0	0	0	0	10	0	0	0	0	0	0	**10**
02.19.00.00.006.00.00	0	0	0	0	10	0	0	0	0	0	0	**10**
03.01.00.00.001.00.09	0	24	0	0	0	0	0	0	0	0	0	**24**
03.01.00.02.007.00.00	0	0	0	0	0	0	0	7	0	0	0	**7**
03.04.00.00.004.00.01	0	10	0	0	0	0	0	0	0	0	0	**10**
03.04.00.00.004.01.00	0	21	0	0	0	0	0	0	0	0	0	**21**
03.06.00.00.003.00.00	0	41	0	0	0	0	0	0	0	0	0	**41**
03.06.00.00.004.00.00	0	0	0	0	0	0	0	34	0	0	0	**34**
03.06.00.00.005.00.00	0	62	0	0	0	0	0	0	0	0	0	**62**
03.07.00.00.005.00.00	0	3	0	0	0	0	0	0	0	0	0	**3**
04.03.00.00.002.00.00	0	0	0	0	0	0	0	3	0	0	0	**3**
04.05.00.02.008.01.04	24	0	0	0	0	0	0	0	0	0	0	**24**
04.05.00.02.008.01.06	3	0	0	0	0	0	0	0	0	0	0	**3**
04.05.00.02.008.01.07	3	0	0	0	0	0	0	0	0	0	0	**3**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	27	0	**27**
04.12.00.00.002.00.00	34	0	0	0	0	0	0	0	0	0	0	**34**
04.14.00.00.005.00.00	0	0	0	0	7	0	0	0	0	0	0	**7**
04.16.00.00.001.00.00	0	0	0	0	24	0	0	0	0	0	0	**24**
04.16.00.00.001.00.01	0	0	0	0	27	0	0	0	0	0	0	**27**
04.20.00.00.001.00.00	0	0	0	0	0	0	0	24	0	0	0	**24**
05.01.00.00.000.00.01	0	0	0	0	0	0	0	0	0	3	0	**3**
05.02.00.00.006.00.00	0	0	0	0	130	0	0	0	0	0	0	**130**
05.02.00.00.091.00.00	0	0	0	0	3	0	0	0	0	0	0	**3**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	113	0	**113**
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	45	0	**45**
05.06.00.00.007.00.01	0	0	0	0	3	0	0	0	0	0	0	**3**
05.07.00.00.007.00.00	0	0	0	0	113	0	0	0	0	0	0	**113**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	24	0	**24**
06.06.00.00.007.00.00	0	0	0	0	3	0	0	0	0	0	0	**3**
18.04.00.00.000.00.00	0	113	0	0	0	0	0	0	0	0	0	**113**
Group Total	**65.1**	**319**	**0.00**	**0.00**	**346**	**0.00**	**0.00**	**96.0**	**0.00**	**213**	**0.00**	**1039**
Percent of Sample Total	**6.27%**	**30.7%**	**0.00%**	**0.00%**	**33.3%**	**0.00%**	**0.00%**	**9.24%**	**0.00%**	**20.5%**	**0.00%**	**100%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	30.7%	99.0%
Col. Filt.	18%	30%	36%	6.27%	34.8%
Predator	19%	13%	7%	33.3%	57.0%
Shred-Det.	15%	4%	2%	20.5%	73.3%
Shred- Herb.	1%	1%	5%	0.00%	0.00%
Scraper	12%	13%	22%	9.24%	77.0%
				PPCS-FG =	**56.9%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station WQM 4-2a
Stream Jay Branch
Location 427800000094 **Class** SHG
Sample Date 10/03/14 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	2.64%	5.36
Diptera	19%	18%	13%	7.59%	11.4
Ephemeroptera	23%	34%	32%	19.5%	3.53
Plecoptera	21%	8%	8%	41.9%	20.9
Trichoptera	28%	33%	33%	17.2%	10.8
Oligochaeta	0.5%	0.5%	1.0%	10.9%	10.4
Other	0.5%	0.5%	1.0%	0.330%	0.170

Sum diff	62.6
Sum diff * 0.5	31.3
100-(sum diff * 0.5)	68.7
% model affinity	**68.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM 4-2a
Stream Jay Branch
Location 427800000094
Sample Date 10/03/14
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	816
#C organisms	45
EPT/EPT+C	0.948

Biometrics Summary

Project Jay Peak Resort

Station WQM 4-2a
Stream Jay Branch
Location 427800000094 **Class** SHG
Sample Date 10/03/14 **Sampler** C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	1039	1039
Species Richness	40.0	40.0
EPT Richness	26.0	26.0
Old Bio Index (0 to 5)	0.844	0.844
New Bio Index (0 to 10)	1.46	1.46
% dominant taxa	12.5%	12.5%
# dominant taxa	130	
dominant taxa ID	05.02.00.00.006.00.00	PLECOPTERA
EPT/EPT+C	0.948	0.948
EPT/Richness	0.650	0.650
% Model Affinity (orders)	68.7%	68.7%
PPCS - functional groups	56.9%	56.9%
Major Groups:		
Coleoptera (%)	2.64%	2.64%
Diptera (%)	7.59%	7.59%
Ephemeroptera (%)	19.5%	19.5%
Trichoptera (%)	17.2%	17.2%
Plecoptera (%)	41.9%	41.9%
Oligochaeta (%)	10.9%	10.9%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.330%	0.330%
Gastropoda (%)	0.00%	0.00%
Other (%)	0.00%	0.00%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	30.7%	30.7%
Collector Filterer (%)	6.27%	6.27%
Predator (%)	33.3%	33.3%
Shredder - Detritus (%)	20.5%	20.5%
Shredder - Herbivore (%)	0.00%	0.00%
Scraper (%)	9.24%	9.24%
Other (%)	0.00%	0.00%
Total (%)	100%	100%

Prepared By VHB
Project Jay Peak Resort

Station WQM 4-2a
Stream Jay Branch
Location 427800000094
Sample Date 10/03/14

Latitude 44.93972
Longitude 72.50232
Class SHG
Sampler C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	1039	≥300	Pass	≥400	Pass	≥500	Pass
Richness	40.0	≥27	Pass	≥31	Pass	≥35	Pass
EPT	26.0	≥16	Pass	≥19	Pass	≥21	Pass
PMA-O	68.7%	≥45%	Pass	≥55%	Pass	≥65%	I+
BI (New 1-10)	1.46	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	10.9%	≤12%	I+	≤5	Fail	≤2	Fail
EPT/EPT+C	0.948	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	56.9%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		N/A					

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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location:
River (site) JAY BRANCH River Mile _____ Site ID WQM 4-2 BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description UPSTREAM OF HOLE 18 G.C. BRIDGE

Sampling Information:
Date 10/3/14 Time 8:30 Personnel (circle sampler) (CS) RW RS / SF AM Gear _____
Effort time (min)_____ Area (m^2)_____ Mesh (um)_____ Quantitative: Y / N #Reps:_____ Comp/rep_____
Weather CLEAR Flow/Weather Previous (2 weeks/2days) DRY
Baseflow_____, or Freshet flow_____ Rising / Receding _____ Present Flow: H (M) L

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 4

A:-Debris Obvious 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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) 25-50% Good (3) 50-75% Fair (2) > 75% Poor (1)
Estimate 20 %

Silt rating (0-5) 2 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 4 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach)

Bank Stability: EX ,(G) , F , P ; **Riparian Width**(facing upstream) L 20 m, R 40 m

% Canopy: 100 90 80 70 60 (50) 40 30 20 10 0 Overhead = Open, (Partly Open,) or Closed
(See back for Densiometer form)

Vegetation: (both sides) %: Overstory: Softwood 20 Hardwood 80
(Does not need to add up to 100%) %: Understory: Shrub (brush) 20 Grass/ferns etc 30
Surrounding Land Use: GOLF COURSE / FOREST

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 80 % Filamentous green Tr % and length 4 (in) Blue Green Tr % Moss 5 %
Green_____% Other _____% General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle X Winder _____ Other _____ Warm _____ Cold X Mixed _____
B.F.Width 4 (m), Wetted Width 3 (m) Riffle Depth 4" (m) Pool Depth 11 (m) and Obs _____
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) X .4-2 ft/sec (M) _____ >2 ft/sec (F)
Channelized: Y /(N) Upstream Dam: Y ____mi /(N) Other modifications:_____
Water Quality Parameters: Field (**Record**) or Collected (**Circle**), **Meter** (type, #)_____ **Chemistry LabId**_____
Temp Air 60 °C,(°F) **Water** 10.2 °C **fpH**_____lab pH_____ **fCond**_____labCond _____ ***D.O.%***_____ **D.Omg/l**_____

Cond pH Alkalinity Color_____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K
92
Hardness Metals Other____,____,____,____,____ ,_____,_____,_____,_____

Field Sheet Complete: RW (initial) **Photo's:** Y **Fish Survey Conducted (circle):Y (N)**

Site Sketch & Observations

Aquatic Biota Observed:

Mussels
Crayfish
Gastropods
Fish
Other

Jay Peak Resort

Kick Net Data - Unnamed Tributary - WQM 4-2a

Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2005 DEC	923	40.0	22.5	73.8	1.96	24.3	0.936	64.0	Does Not Meet Class B Criteria
2007 DEC	1872	38.5	21.5	61.6	1.50	20.5	0.951	52.0	Does Not Meet Class B Criteria
2008 DEC	1162	37.0	23.0	76.4	1.97	6.36	0.962	71.0	Meets Class B Criteria
2009 DEC	1892	46.0	25.0	76.2	1.88	16.9	0.920	66.0	Does Not Meet Class B Criteria
2010 DEC	1516	42.0	25.0	67.8	2.29	5.99	0.967	65.0	Meets Class B Criteria
2011 DEC	238	39.5	23.5	65.6	1.64	17.7	0.938	60.0	Does Not Meet Class B Criteria
2012 VHB	172	24.5	17.0	63.9	0.580	3.23	0.951	46.4	Does Not Meet Class B Criteria
2013 VHB	828	39.0	24.0	80.4	1.09	7.54	0.952	52.9	Meets Class B Criteria
2014 VHB	1039	40.0	26.0	68.7	1.46	10.9	0.948	56.9	Meets Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name: Jay Peak Resort	
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**WQM 4-3**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.93895074	-72.48945144
or VT Site ID:	42780000083	
Date collected:	10/3/2014	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Oct. 14	Oct. 14
#sq picked:	18	20
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Oct. 14	Oct. 14

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old Biotic Index		New Biotic Index		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	1	1	CCS	A	2	2		SCR	N	2	3	3	4.8	4	7.2	1	0	1	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1	CCS	A	2	2		PRD	N	3	2	4	7.2	3	4.8	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPOM	BEZZIA	N/A	sp	CCS	A	2	3	CCS	A	1	1		PRD	N	3	6	8	3.6	16	7.2	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	2	3				0		CG	Y	3	4	8	0	11	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	6	8	CCS	A	4	5		CG	Y	2	2	16	9.6	16	9.6	1	0	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp				0	CCS	A	1	1		CG	N	2	1	0	2.4	0	1.2	-	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp				0	CCS	A	1	1		CF	N	1	2	0	1.2	0	2.4	-	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp				0	CCS	A	7	8		CG	N	3	4	0	25.2	0	33.6	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	4	5	CCS	A	5	6		PRD	N	2	3	11	12	16	18	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1	CCS	A	2	2		PRD	N	2	2	3	4.8	3	4.8	1	0	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	1				0		CG	N	3	4	4	0	5	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	5	7				0		CG	N	3	6	20	0	40	0	1	1	-	0
03.04.00.00.004.00.91	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	sp a	CCS	A	3	4	CCS	A	1	1		CG	N	2	4	8	2.4	16	4.8	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	1	1	CCS	A	2	2		CG	N	2	4	3	4.8	5	9.6	1	1	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	1	1				0		SRD	N	1	0	1	0	0	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	44	59	CCS	A	28	34		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1	CCS	A	9	11		SCR	N	1	4	1	10.8	5	43.2	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	25	33	CCS	A	45	54		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	2	3	CCS	A	2	2		CG	N	2	1	5	4.8	3	2.4	1	1	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	DPSYC/HYDP	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	1	1				0		CF	N	2	3	3	0	4	0	1	1	-	0
04.05.00.02.008.01.06	TRICHOPTERA	HYDROPSYCHIDAE	N/A	DPSYC/HYDP	CERATOPSYCHE	alh/slo/spa	slossonae	CCS	A	3	4	CCS	A	4	5		CF	N	2	4	8	9.6	16	19.2	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	5	7	CCS	A	1	1		SRD	N	1	1	7	1.2	7	1.2	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	26	35	CCS	A	2	2		CF	N	0	0	0	0	0	0	1	1	1	1
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp	CCS	A	1	1				0		CF	N	0	0	0	0	0	0	1	1	-	0
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1	CCS	A	1	1		PRD	N	3	6	4	3.6	8	7.2	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	14	19	CCS	A	8	10		PRD	N	1	2	19	9.6	37	19.2	1	1	1	1
04.16.00.00.001.00.22	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	amicis				0	CCS	B	2	2		PRD	N	-	-	-	-	-	-	-	0	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1	CCS	A	1	1		PRD	N	1	1	1	1.2	1	1.2	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				0		PRD	N	0	1	0	0	1	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp				0	CCS	A	4	5		SCR	N	1	3	0	4.8	0	14.4	-	0	1	1
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	1				0		SRD	N	1	3	1	0	4	0	1	1	-	0
05.02.00.00.000.00.01	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	45	60	CCS	A	36	43		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	17	23	CCS	A	17	20		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	1	1	CCS	A	2	2		SRD	N	1	0	1	2.4	0	0	1	1	1	1
05.06.00.00.004.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	PARAGNETINA	N/A	media	CCS	A	1	1				0		PRD	N	1	1	1	0	1	0	1	1	-	0
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata				0	CCS	A	1	1		PRD	N	0	2	0	0	0	2.4	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	30	40	CCS	A	25	30		PRD	N	1	2	40	30	80	60	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	3	4	CCS	A	2	2		SRD	N	1	0	4	2.4	0	0	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	1				0		SRD	N	2	3	3	0	4	0	1	1	-	0
06.04.00.00.001.00.00	ODONATA	CORDULEGASTRIDAE	N/A	N/A	CORDULEGASTER	N/A	sp	CCS	A	1	1				0		PRD	N	1	3	1	0	4	0	1	0	-	0
18.02.00.00.000.00.00	OLIGOCHAETA	NAIDIDAE	N/A	N/A	N/A	N/A	naididae unid	CCS	A	5	7	CCS	A	6	7		CG	N	-	-	-	-	-	-	1	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	65	87	CCS	A	88	106		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	unid	CCS	A	1	1				0		CG	N	-	-	-	-	-	-	1	0	-	0
TOTALS by Rep: --->										324	432			312	374													

GRAND TOTAL: 806 organisms

	KN-1	KN-2	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
Total BI Score	188	158	311	274	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**		
Total # Organisms	432	374	432	374						
# of Organisms w/o BI	94.7	115	94.7	115	37		31			
Total # Organisms with BI	337	259	337	259		25		20		
Biotic Index	0.557	0.611	0.921	1.06						

*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 WQM 4-3
Stream Jay Branch
VT Site ID 42780000083
Sample Date 10/03/14

2014 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	1	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	8	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	5	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	
02.19.00.00.019.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	7	0	0	0	0	0	0	0	
03.04.00.00.004.00.91	0	0	4	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	59	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	33	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	3	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.06	0	0	0	4	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	7	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	35	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1	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	19	0	0	0	0	0	0	
04.16.00.00.001.00.22	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	60	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	23	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.06.00.00.004.00.01	0	0	0	0	1	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	40	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	4	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	0	0	0	0	0	0	1	0	
18.02.00.00.000.00.00	0	0	0	0	0	7	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	87	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1	0	0	0	0	
Total	**1.33**	**22.7**	**109**	**70.7**	**132**	**94.7**	**0.00**	**0.00**	**1.33**	**0.00**	**432**
Percent	**0%**	**5%**	**25%**	**16%**	**31%**	**22%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM 4-3
Stream Jay Branch
VT Site ID 42780000083
Sample Date 10/03/14

2014 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	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	2	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	5	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	8	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	2	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.91	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	34	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	11	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	54	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	2	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.06	0	0	0	5	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	2	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	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	10	0	0	0	0	0	0	
04.16.00.00.001.00.22	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	5	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	43	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	20	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	2	0	0	0	0	0	
05.06.00.00.004.00.01	0	0	0	0	0	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	30	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	2	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
18.02.00.00.000.00.00	0	0	0	0	0	7	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	106	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**2.40**	**27.6**	**104**	**27.6**	**99.6**	**113**	**0.00**	**0.00**	**0.00**	**0.00**	**374**
Percent	**1%**	**7%**	**28%**	**7%**	**27%**	**30%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM 4-3
Stream Jay Branch
Location 42780000083
Sample Date 10/3/2014

2014 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	1	0		0	0	0	0	0	2	0	
02.01.00.00.001.00.00	0	0	1	0	0	0	0		0	0	2	0	0	0	0	
02.03.00.01.003.00.00	0	0	3	0	0	0	0		0	0	1	0	0	0	0	
02.05.01.00.085.00.05	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	8	0	0	0	0	0	0		5	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	
02.14.00.00.004.00.00	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		8	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	5	0	0	0	0		0	0	6	0	0	0	0	
02.19.00.00.006.00.00	0	0	1	0	0	0	0		0	0	2	0	0	0	0	
02.19.00.00.019.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	7	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.91	4	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.04.00.00.004.01.00	1	0	0	0	0	0	0		2	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	59	0	0	0	0	0	0		34	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	11	0	
03.06.00.00.005.00.00	33	0	0	0	0	0	0		54	0	0	0	0	0	0	
03.07.00.00.005.00.00	3	0	0	0	0	0	0		2	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.00.02.008.01.06	0	4	0	0	0	0	0		0	5	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	7	0	0	0		0	0	0	1	0	0	0	
04.12.00.00.002.00.00	0	35	0	0	0	0	0		0	2	0	0	0	0	0	
04.12.00.00.003.00.00	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.00.01	0	0	19	0	0	0	0		0	0	10	0	0	0	0	
04.16.00.00.001.00.22	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
04.16.00.00.001.01.00	0	0	1	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	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	5	0	
05.01.00.00.000.00.01	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	60	0	0	0	0		0	0	43	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	23	0	0	0		0	0	0	20	0	0	0	
05.05.00.00.000.00.01	0	0	0	1	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	0	0	0	0	0		0	0	1	0	0	0	0	
05.07.00.00.007.00.00	0	0	40	0	0	0	0		0	0	30	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	4	0	0	0		0	0	0	2	0	0	0	
05.09.00.00.000.00.01	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
18.02.00.00.000.00.00	7	0	0	0	0	0	0		7	0	0	0	0	0	0	
18.04.00.00.000.00.00	87	0	0	0	0	0	0		106	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	**213**	**41.3**	**136**	**38.7**	**0.00**	**2.67**	**0.00**	**432**	**221**	**8.40**	**101**	**26.4**	**0.00**	**18.0**	**0.00**	**374**
Percent	**49%**	**10%**	**31%**	**9%**	**0%**	**1%**	**0%**	**100%**	**59%**	**2%**	**27%**	**7%**	**0%**	**5%**	**0%**	**100%**

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	49.4%	62.8%	59.0%	52.6%
Col. Filt.	18%	30%	36%	9.57%	53.2%	2.24%	12.5%
Predator	19%	13%	7%	31.5%	60.4%	26.9%	70.6%
Shred-Det.	15%	4%	2%	8.95%	59.7%	7.05%	47.0%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.00%	0.00%
Scraper	12%	13%	22%	0.617%	5.14%	4.81%	40.1%
				PPCS-FG =	**40.2%**	**PPCS-FG =**	**37.1%**

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 WQM 4-3
Stream Jay Branch
VT Site ID 42780000083 **Class** Small, High Gradient, B2-3
Sample Date 10/03/14 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.309%	7.69	0.641%	7.36
Diptera	19%	18%	13%	5.25%	13.8	7.37%	11.6
Ephemeroptera	23%	34%	32%	25.3%	2.31	27.9%	4.88
Plecoptera	21%	8%	8%	30.6%	9.56	26.6%	5.60
Trichoptera	28%	33%	33%	16.4%	11.6	7.37%	20.6
Oligochaeta	0.5%	0.5%	1.0%	21.9%	21.4	30.1%	29.6
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	66.9		80.2
				Sum diff * 0.5	33.4		40.1
				100-(sum diff * 0.5)	66.6		59.9
				% model affinity	**66.6%**		**59.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM 4-3
Stream Jay Branch
Location 42780000083
Sample Date 10/3/2014
Class Small, High Gradient, B2-3
Sampler CS

	KN-1	KN-2
#EPT organisms	312	232
#C organisms	10.7	4.80
EPT/EPT+C	0.967	0.980

Biometric Summary

Project Jay Peak Resort
Station WQM 4-3
Stream Jay Branch
Location 42780000083 **Class** Small, High Gradient, B2-3
Sample Date 10/3/2014 **Sampler** CS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	432	374	403
Species Richness	37.0	31.0	34.0
EPT Richness	25.0	20.0	22.5
Old Bio Index (0 to 5)	0.557	0.611	0.584
New Bio Index (0 to 10)	0.921	1.06	0.988
% dominant taxa	20.1%	28.2%	24.1%
EPT/EPT+C	0.967	0.980	0.973
EPT/Richness	0.676	0.645	0.662
% Model Affinity (orders)	66.6%	59.9%	63.2%
PPCS - functional groups	40.2%	37.1%	38.6%
Major Groups:			
Coleoptera (%)	0.309%	0.641%	0.475%
Diptera (%)	5.25%	7.37%	6.31%
Ephemeroptera (%)	25.3%	27.9%	26.6%
Trichoptera (%)	16.4%	7.37%	11.9%
Plecoptera (%)	30.6%	26.6%	28.6%
Oligochaeta (%)	21.9%	30.1%	26.0%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.309%	0.00%	0.154%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	49.4%	59.0%	54.2%
Collector Filterer (%)	9.57%	2.24%	5.91%
Predator (%)	31.5%	26.9%	29.2%
Shredder - Detritus (%)	8.95%	7.05%	8.00%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	0.617%	4.81%	2.71%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM 4-3
Stream Jay Branch
Location 42780000083
Sample Date 10/3/2014

Latitude 44.9389507
Longitude -72.489451
Class Small, High Gradient, B2-3
Sampler CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	403	≥300	Pass	≥400	I+	≥500	Fail
Richness	34.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	22.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	63.2%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	0.988	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	26.0%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.973	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	38.6%	≥ 40%	I-	≥ 45%	Fail	≥ 50%	Fail
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		% Oligo, % PPCS-FG (I-)					

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
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%
B2-3	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%

Figure 6.4.2. Jay

LOTIC BENTHOS FIELD SHEET

Site Location:
River (site) Jay Br River Mile _____ Site ID 4-3 BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description _____

Sampling Information:
Date 10/3/14 Time 1030 Personnel (circle sampler) RW CS Gear KN
Effort time (min)_____ Area (m^2)_____ Mesh (um) 500 Quantitative: Y (N) #Reps: 2 Comp/rep 4
Weather Sunny Flow/Weather Previous (2 weeks/2days) Quiet 2 wk
Baseflow ✓, or Freshet flow_____ Rising / Receding _____ Present Flow: H - M (L)

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 4

A:-Debris Obvious Pollution: Sludge, Sawdust, Paper Fiber, (Sand) (Silt), Sewage, Oily Sheen, Trash, Iron, Scum, None Black rocks
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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) 25-50% Good (3) 50-75% Fair (2) > 75% Poor (1)
Estimate 25 %

Silt rating (0-5) 2 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 3 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach)

Bank Stability: (EX), G , F , P ; **Riparian Width**(facing upstream) L≤100m, R≤100m
well armored

% Canopy: 100 90 80 70 (60) 50 40 30 20 10 0 Overhead = Open, (Partly Open), or Closed
(See back for Densiometer form)

Vegetation: (both sides) %: Overstory: Softwood 50 Hardwood 50
(Does not need to add up to 100%) %: Understory: Shrub (brush) 30 Grass/ferns etc 10
Surrounding Land Use: Golf course, Forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 60 % Filamentous green _____% and length _____(in) Blue Green Tr % Moss 2 %
Green_____% Other _____% General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder _____ Other _____ Warm _____ Cold ✓ Mixed _____
B.F.Width 35 (m), Wetted Width 30 (m) Riffle Depth 6 (m) Pool Depth 18" (m) and Obs _____
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) _____ (.4-2 ft/sec (M)) _____ >2 ft/sec (F)
Channelized: Y / (N) Upstream Dam: Y ____mi / (N) Other modifications: _____
Water Quality Parameters: Field **(Record)** or Collected **(Circle)**, **Meter** (type, #)_____ **Chemistry LabId**_____
Temp Air 66 °C,°F **Water** 10 °C **fpH**_____lab pH_____ **fCond**_____labCond _____ ***D.O.%***_____ **D.Omg/l**_____

Cond pH Alkalinity Color_____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other____,____,____,____,____,_____,_____,_____,_____

Field Sheet Complete: CCS (initial) **Photo's:** Y **Fish Survey Conducted (circle):Y** (N)

Site Sketch & Observations

Aquatic Biota Observed:
Mussels
Crayfish
Gastropods
Fish
Other

Jay Peak Resort
Kick Net Data - Jay Branch - WQM 4-3
Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004 PIO	324	27.0	17.5	59.6	1.96	7.20	0.980	56.0	Meets Class B Criteria
2005 ESI	849	49.0	23.0	69.0	2.65	20.8	0.870	60.0	Does Not Meet Class B Criteria
2006 ESI	851	33.5	20.5	57.9	2.68	0.295	0.953	34.0	Does Not Meet Class B Criteria
2007 PIO	363	32.0	21.5	72.0	1.12	8.30	0.960	60.0	Meets Class B Criteria
2008 VHBP	311	30.5	19.0	70.0	1.41	14.8	0.980	50.0	Does Not Meet Class B Criteria
2009 VHBP	374	31.5	23.5	70.9	1.55	9.90	0.977	61.0	Meets Class B Criteria
2010 VHB	361	31.0	25.0	57.0	1.36	5.70	0.992	54.7	Meets Class B Criteria
2011 VHB	117	21.5	15.0	58.0	1.10	17.8	0.972	54.0	Does Not Meet Class B Criteria
2012 VHB	230	24.0	16.5	71.1	1.15	6.94	0.976	56.3	Does Not Meet Class B Criteria
2013 VHB	238	30.0	21.5	79.9	1.13	10.1	0.950	57.0	Does Not Meet Class B Criteria
2014 VHB	403	34.0	22.5	63.2	0.988	26.0	0.973	38.6	Does Not Meet Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name: Jay Peak Resort	
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**WQM - 4-4a**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.94218021	-72.47381049
or VT Site ID:	42780000073	
Date collected:	10/2/2014	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 15	Jan.15
#sq picked:	22	21
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 15	Jan.15

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old Biotic Index		New Biotic Index		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
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1				0		PRD	N	3	2	3	0	2	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps				0	CCS	A	2	2		CG	Y	3	4	0	7	0	9	-	0	1	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp				0	CCS	A	2	2		SRD	Y	3	5	0	7	0	11	-	0	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	1	1				0		PRD	Y	3	5	3	0	5	0	1	0	-	0
02.05.05.00.065.00.02	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	lignicola	CCS	A	1	1				0		CG	Y	3	5	3	0	5	0	1	0	-	0
02.05.05.00.109.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	THIENEMANNIELLA	N/A	sp	CCS	A	1	1				0		CG	Y	2	5	2	0	5	0	1	0	-	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	1	1	CCS	A	3	3		CG	Y	2	4	2	7	4	14	1	0	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp				0	CCS	A	3	3		CG	N	2	1	0	7	0	3	-	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1				0		CF	N	1	2	1	0	2	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2	CCS	A	6	7		PRD	N	2	3	4	14	7	21	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp				0	CCS	A	4	5		PRD	N	2	2	0	9	0	9	-	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	2	2				0		CG	N	3	6	7	0	13	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	2	2				0		CG	N	0	0	0	0	0	0	1	1	-	0
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	10	11	CCS	A	2	2		CG	N	2	4	22	5	44	9	1	1	1	1
03.06.00.00.000.00.01	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	17	19	CCS	A	24	27		-	N	-	-	-	-	-	-	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	27	29	CCS	A	19	22		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	35	38	CCS	A	20	23		SCR	N	1	4	38	23	153	91	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	66	72	CCS	A	52	59		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	14	15	CCS	A	4	5		CG	N	2	1	31	9	15	5	1	1	1	1
03.09.00.00.001.00.00	EPHEMEROPTERA	OLIGONEURIIDAE	N/A	N/A	ISONYCHIA	N/A	sp	CCS	A	1	1				0		CF	N	2	3	2	0	3	0	1	1	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1				0		SCR	N	1	0	1	0	0	0	1	1	-	0
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	DPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	9	10	CCS	A	1	1		CF	N	2	3	20	2	29	3	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	DPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	5	5	CCS	A	5	6		CF	N	2	4	11	11	22	23	1	1	1	1
04.05.01.00.001.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	ARCTOPSYCHE	N/A	ladogensis	CCS	A	1	1	CCS	A	1	1		CF	N	0	1	0	0	1	1	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1				0		CF	N	0	0	0	0	0	0	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	15	16	CCS	A	6	7		SRD	N	1	1	16	7	16	7	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	10	11	CCS	A	48	55		CF	N	0	0	0	0	0	0	1	1	1	1
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp				0	CCS	A	1	1		CF	N	0	0	0	0	0	0	-	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	5	5	CCS	A	1	1		PRD	N	3	6	16	3	33	7	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	CCS	A	9	10		PRD	N	1	2	4	10	9	21	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	2	2	CCS	A	1	1		PRD	N	1	1	2	1	2	1	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1				0		SCR	N	1	3	1	0	3	0	1	1	-	0
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm				0	CCS	A	1	1		SRD	N	1	3	0	1	0	3	-	0	1	1
05.02.00.00.000.00.01	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	8	9	CCS	A	12	14		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	11	12	CCS	A	13	15		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp				0	CCS	A	2	2		PRD	N	0	0	0	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	8	9	CCS	A	14	16		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	3	3	CCS	A	4	5		SRD	N	1	0	3	5	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	2	2	CCS	A	2	2		PRD	N	0	2	0	0	4	5	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	8	9	CCS	A	10	11		PRD	N	1	2	9	11	17	23	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus				0	CCS	A	4	5		SRD	N	1	0	0	5	0	0	-	0	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm				0	CCS	A	2	2		SRD	N	2	3	0	5	0	7	-	0	1	1
06.01.00.00.004.00.00	ODONATA	AESHNIDAE	N/A	N/A	BOYERIA	N/A	sp	CCS	A	1	1				0		PRD	N	2	2	2	0	2	0	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	23	25	CCS	A	31	35		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										300	327			309	353													
GRAND TOTAL:	680 organisms																											

	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
Total BI Score	205	149	399	273			**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	327	353	327	353						
# of Organisms w/o BI	43.6	62.9	43.6	62.9			35		32	
Total # Organisms with BI	284	290	284	290				26		25
Biotic Index	0.723	0.512	1.41	0.941						

*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 WQM - 4-4a
Stream Jay Branch
VT Site ID 42780000073
Sample Date 10/02/14

2014 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
02.01.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.02	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.109.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	1	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	11	0	0	0	0	0	0	0	
03.06.00.00.000.00.01	0	0	19	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	29	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	38	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	72	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	15	0	0	0	0	0	0	0	
03.09.00.00.001.00.00	0	0	1	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	10	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	5	0	0	0	0	0	0	
04.05.01.00.001.00.01	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	16	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	11	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	5	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	4	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	2	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	9	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	12	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	9	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	3	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	9	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
06.01.00.00.004.00.00	0	0	0	0	0	0	0	0	1	0	
18.04.00.00.000.00.00	0	0	0	0	0	25	0	0	0	0	
Total	**0.00**	**8.73**	**190**	**58.9**	**43.6**	**25.1**	**0.00**	**0.00**	**1.09**	**0.00**	**327**
Percent	**0.00%**	**2.67%**	**58.0%**	**18.0%**	**13.3%**	**7.67%**	**0.00%**	**0.00%**	**0.33%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 4-4a
Stream Jay Branch
VT Site ID 42780000073
Sample Date 10/02/14

2014 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
02.01.00.00.001.00.00	0	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	
02.05.05.00.005.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.02	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.109.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	3	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	
02.14.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	7	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	5	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.000.00.01	0	0	27	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	23	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	59	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	5	0	0	0	0	0	0	0	
03.09.00.00.001.00.00	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	
04.05.00.02.008.01.04	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	6	0	0	0	0	0	0	
04.05.01.00.001.00.01	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	7	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	55	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1	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	10	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	14	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	15	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	2	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	16	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	5	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	11	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	5	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	2	0	0	0	0	0	
06.01.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	35	0	0	0	0	
Total	**0.00**	**22.9**	**138**	**83.4**	**73.1**	**35.4**	**0.00**	**0.00**	**0.00**	**0.00**	**353**
Percent	**0.00%**	**6.47%**	**39.2%**	**23.6%**	**20.7%**	**10.0%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM - 4-4a
Stream Jay Branch
Location 42780000073
Sample Date 10/2/2014

2014 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
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		2	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
02.05.05.00.008.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.065.00.02	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.109.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	1	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	2	0	0	0	0		0	0	7	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0		0	0	5	0	0	0	0	
03.01.00.00.001.00.09	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.004.01.00	11	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.06.00.00.000.00.01	0	0	0	0	0	0	19		0	0	0	0	0	0	27	
03.06.00.00.003.00.00	29	0	0	0	0	0	0		22	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	38	0		0	0	0	0	0	23	0	
03.06.00.00.005.00.00	72	0	0	0	0	0	0		59	0	0	0	0	0	0	
03.07.00.00.005.00.00	15	0	0	0	0	0	0		5	0	0	0	0	0	0	
03.09.00.00.001.00.00	0	1	0	0	0	0	0		0	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	10	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.00.02.008.01.07	0	5	0	0	0	0	0		0	6	0	0	0	0	0	
04.05.01.00.001.00.01	0	1	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.01.00.006.00.01	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	16	0	0	0		0	0	0	7	0	0	0	
04.12.00.00.002.00.00	0	11	0	0	0	0	0		0	55	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	5	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.00.01	0	0	4	0	0	0	0		0	0	10	0	0	0	0	
04.16.00.00.001.01.00	0	0	2	0	0	0	0		0	0	1	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
05.02.00.00.000.00.01	0	0	9	0	0	0	0		0	0	14	0	0	0	0	
05.02.00.00.006.00.00	0	0	12	0	0	0	0		0	0	15	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	9	0	0	0		0	0	0	16	0	0	0	
05.05.00.00.000.00.01	0	0	0	3	0	0	0		0	0	0	5	0	0	0	
05.06.00.00.007.00.01	0	0	2	0	0	0	0		0	0	2	0	0	0	0	
05.07.00.00.007.00.00	0	0	9	0	0	0	0		0	0	11	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	0	0	0		0	0	0	5	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
06.01.00.00.004.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	25	0	0	0	0	0	0		35	0	0	0	0	0	0	
Total	**160**	**30.5**	**49.1**	**28.4**	**0.00**	**40.4**	**18.5**	**327**	**133**	**64.0**	**68.6**	**37.7**	**0.00**	**22.9**	**27.4**	**353**
Percent	**49.0%**	**9.33%**	**15.0%**	**8.67%**	**0.00%**	**12.3%**	**5.67%**	**100%**	**37.5%**	**18.1%**	**19.4%**	**10.7%**	**0.00%**	**6.47%**	**7.77%**	**100%**

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	49.0%	63.3%	37.5%	82.6%
Col. Filt.	18%	30%	36%	9.33%	51.9%	18.1%	99.3%
Predator	19%	13%	7%	15.0%	78.9%	19.4%	97.9%
Shred-Det.	15%	4%	2%	8.67%	57.8%	10.7%	71.2%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.00%	0.00%
Scraper	12%	13%	22%	12.3%	97.3%	6.47%	53.9%
				PPCS-FG =	**58.2%**	**PPCS-FG =**	**67.5%**

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 WQM - 4-4a
Stream Jay Branch
VT Site ID 42780000073 **Class** Small, High Gradient, B2-3
Sample Date 10/02/14 **Sampler** CS

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	0.00%	8.00
Diptera	19%	18%	13%	2.67%	16.3	6.47%	12.5
Ephemeroptera	23%	34%	32%	58.0%	35.0	39.2%	16.2
Plecoptera	21%	8%	8%	13.3%	7.67	20.7%	0.288
Trichoptera	28%	33%	33%	18.0%	10.0	23.6%	4.38
Oligochaeta	0.5%	0.5%	1.0%	7.67%	7.17	10.0%	9.53
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	84.7		51.4
				Sum diff * 0.5	42.3		25.7
				100-(sum diff * 0.5)	57.7		74.3
				% model affinity	**57.7%**		**74.3%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM - 4-4a
Stream Jay Branch
Location 42780000073
Sample Date 10/2/2014
Class Small, High Gradient, B2-3
Sampler CS

	KN-1	KN-2
#EPT organisms	292	295
#C organisms	4.36	8.00
EPT/EPT+C	0.985	0.974

Biometric Summary

Project Jay Peak Resort
Station WQM - 4-4a
Stream Jay Branch
Location 42780000073 **Class** Small, High Gradient, B2-3
Sample Date 10/2/2014 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	327	353	340
Species Richness	35.0	32.0	33.5
EPT Richness	26.0	25.0	25.5
Old Bio Index (0 to 5)	0.723	0.512	0.617
New Bio Index (0 to 10)	1.41	0.941	1.17
% dominant taxa	22.0%	16.8%	19.4%
EPT/EPT+C	0.985	0.974	0.979
EPT/Richness	0.743	0.781	0.761
% Model Affinity (orders)	57.7%	74.3%	66.0%
PPCS - functional groups	58.2%	67.5%	62.8%
Major Groups:			
Coleoptera (%)	0.00%	0.00%	0.00%
Diptera (%)	2.67%	6.47%	4.57%
Ephemeroptera (%)	58.0%	39.2%	48.6%
Trichoptera (%)	18.0%	23.6%	20.8%
Plecoptera (%)	13.3%	20.7%	17.0%
Oligochaeta (%)	7.67%	10.0%	8.85%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.333%	0.00%	0.167%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	49.0%	37.5%	43.3%
Collector Filterer (%)	9.33%	18.1%	13.7%
Predator (%)	15.0%	19.4%	17.2%
Shredder - Detritus (%)	8.67%	10.7%	9.67%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	12.3%	6.47%	9.40%
No FG Designation (%)	5.67%	7.77%	6.72%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM - 4-4a
Stream Jay Branch
Location 42780000073
Sample Date 10/2/2014

Latitude 44.9421802
Longitude -72.47381
Class Small, High Gradient, B2-3
Sampler CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	340	≥300	I+	≥400	Fail	≥500	Fail
Richness	33.5	≥27	Pass	≥31	Pass	≥35	Fail
EPT	25.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	66.0%	≥45%	Pass	≥55%	Pass	≥65%	I+
BI (New 1-10)	1.174	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	8.8%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.979	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	62.8%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		N/A					

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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location: Jay
River (site) Jay Br. River Mile _____ Site ID 4-4a BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description _____

Sampling Information:
Date 10/2/14 Time 1600 Personnel (circle sampler) CS Gear KN
Effort time (min) _____ Area (m^2) _____ Mesh (um) 500 Quantitative: Y (N) #Reps: 2 Comp/rep 4
Weather _____ Flow/Weather Previous (2 weeks/2days) 2 quiet wks.
Baseflow ✓, or Freshet flow _____ Rising / Receding _____ Present Flow: H - M (L)

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 4

A:-Debris Obvious Pollution: Sludge, Sawdust, Paper Fiber, (Sand), (Silt), Sewage, Oily Sheen, Trash, (Iron), Scum, None Heavy stain on some rocks
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

more embedded in pools

Embeddedness: 0-5% Excel (5) 5-25% V Good (4) (25-50% Good (3)) 50-75% Fair (2) > 75% Poor (1)
Estimate 40%

Silt rating (0-5) 2 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 0-1 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach) Fresh leaf packs Almost none

Bank Stability: EX, (G), F, P ; **Riparian Width**(facing upstream) L >100 m, R >100 m

% Canopy: 100 (90) 80 70 60 50 40 30 20 10 0 Overhead = Open, Partly Open, or (Closed)
(See back for Densiometer form) HP leaves were on - 50% leaves off

Vegetation: (both sides) %: Overstory: Softwood 30 Hardwood 70
(Does not need to add up to 100%) %: Understory: Shrub (brush) 20 Grass/ferns etc 20
Surrounding Land Use: Resort, Road Residential, Forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 80 % Filamentous green _____ % and length _____ (in) Blue Green Tr % Moss _____ %
Green _____ % Other _____ % General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder _____ Other _____ Warm _____ Cold ✓ Mixed _____
B.F.Width 40' (m), Wetted Width 20' (m) Riffle Depth 4-6" (m) Pool Depth 1.5' (m) and Obs filled in
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) _____ (.4-2 ft/sec (M)) _____ >2 ft/sec (F)
Channelized: Y / N Upstream Dam: Y ____ mi / N Other modifications: _____
Water Quality Parameters: Field **(Record)** or Collected **(Circle)**, **Meter** (type, #) _____ **Chemistry LabId** _____
Temp Air 65 **°C,°F Water** 13 **°C fpH** _____ lab pH _____ **fCond** _____ labCond _____ ***D.O.%*** _____ **D.Omg/l** _____

Cond pH Alkalinity Color _____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Field Sheet Complete: CS (initial) **Photo's:** Y **Fish Survey Conducted (circle):** Y (N) _____

Site Sketch & Observations Very hard to kick due to embeddness a sand sealing, need to move to atleast 8 spots to get 4 OK spots. Poor CPOM, very little

Aquatic Biota Observed:
Mussels Pebble count
Crayfish Sand 21
Gastropods gravel 19
coarse gravel 12
cobble 16
boulder 37

Peri	0	1
moss	36	2
macro	38	
micro	6	32

Fish
Other

Jay Peak Resort
Kick Net Data - South Branch - WQM - 4-4a
Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004 PIO	222	26.0	19.5	60.8	1.54	4.40	0.980	54.0	Does Not Meet Class B Criteria
2005 DEC/ESI	458	40.0	21.0	62.0	2.34	8.10	0.880	38.0	Does Not Meet Class B Criteria
2006 ESI	1276	24.5	14.0	55.0	2.85	0.772	0.938	23.0	Does Not Meet Class B Criteria
2007 PIO	423	27.0	19.0	73.0	1.24	1.40	0.950	58.0	Meets Class B Criteria
2008 VHBP	568	33.0	21.5	72.2	0.943	2.40	0.969	49.0	Meets Class B Criteria
2009 DEC/VHBP	427	33.5	25.0	76.0	1.26	6.10	0.992	67.0	Meets Class B Criteria
2010 VHB	344	31.0	23.0	55.0	1.11	1.30	1.00	54.0	Meets Class B Criteria
2011 VHB	97.5	16.5	10.5	71.0	0.940	3.70	0.993	44.0	Does Not Meet Class B Criteria
2012 VHB	176	27.5	19.5	67.0	1.24	9.30	0.964	48.0	Does Not Meet Class B Criteria
2013 VHB	327	27.5	20.5	73.8	0.790	9.15	0.961	61.7	Meets Class B Criteria
2014 VHB	340	33.5	25.5	66.0	1.17	8.85	0.979	62.8	Meets Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name: Jay Peak Resort
VT DEC Lab ID:
Stream Name: **Unnamed Trib.**
Station: **WQM 3-1**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.93859756	-72.49139171
or VT Site ID:	427809000001	
Date collected:	10/3/2014	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Oct. 14
#sq picked:	24
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Oct. 14

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	4	4		SCR	N	2	3	8	12	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	BEZZIA/PALPOMYIA	BEZZIA	N/A	sp	CCS	A	3	3		PRD	N	3	6	9	18	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	2	2		CG	Y	3	6	6	12	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1		CG	Y	2	2	2	2	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1		CG	Y	2	2	2	2	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	1	1		CG	Y	2	4	2	4	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	1		CG	N	2	1	2	1	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	8	8		PRD	N	2	3	16	24	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	7	7		PRD	N	2	2	14	14	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	1		CG	N	3	4	3	4	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1		CG	N	3	6	3	6	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1		SCR	N	1	0	1	0	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	5	5		CF	N	0	0	0	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	17	17		CF	N	2	3	34	51	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	2	2		CF	N	2	4	4	8	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	2	2		SRD	N	1	1	2	2	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	7	7		CF	N	0	0	0	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	2		PRD	N	1	2	2	4	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1		PRD	N	1	1	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1		SCR	N	1	3	1	3	1	1
05.02.00.00.000.00.01	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	27	27		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	14	14		SRD	N	0	0	0	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	20	20		SRD	N	1	0	20	0	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	2	2		PRD	N	0	2	0	4	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	8	8		PRD	N	1	2	8	16	1	1
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp	CCS	A	3	3		CG	N	4	8	12	24	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	26	26		CG	N	-	-	-	-	1	0
TOTALS by Rep: --->										168	168									

GRAND TOTAL: 168 organisms

Total BI Score	152	212	**Total Richness**	**Total EPT-R**
Total # Organisms	168	168		
# of Organisms w/o BI	26	26	27	
Total # Organisms with BI	142	142		15
Biotic Index	1.07	1.49		

*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 WQM 3-1
Stream Unnamed Trib.
Location 427809000001
Sample Date 10/03/14

2014 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	GASTROPODA	TOTAL
01.03.00.00.006.00.00	4	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	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	
02.05.05.00.068.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	1	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	8	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	7	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	1	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	5	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	17	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	7	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	27	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	14	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	20	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	8	0	0	0	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0	0	0	3	
18.04.00.00.000.00.00	0	0	0	0	0	26	0	0	0	0	
Total	**4**	**25**	**1**	**38**	**71**	**26**	**0**	**0**	**0**	**3**	**168**
Percent	**2.38%**	**14.9%**	**0.60%**	**22.6%**	**42.3%**	**15.5%**	**0.00%**	**0.00%**	**0.00%**	**1.79%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM 3-1
Stream Unnamed Trib.
Location 427809000001
Sample Date 10/03/14

2014 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	0	0	0	**4**
02.03.00.01.003.00.00	0	0	0	0	3	0	0	0	0	0	0	**3**
02.05.03.02.121.00.00	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**
02.05.05.00.068.00.00	0	1	0	0	0	0	0	0	0	0	0	**1**
02.05.05.00.114.01.04	0	1	0	0	0	0	0	0	0	0	0	**1**
02.06.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	0	**1**
02.19.00.00.003.00.00	0	0	0	0	8	0	0	0	0	0	0	**8**
02.19.00.00.006.00.00	0	0	0	0	7	0	0	0	0	0	0	**7**
02.19.00.00.019.00.00	0	1	0	0	0	0	0	0	0	0	0	**1**
03.01.00.00.001.00.09	0	1	0	0	0	0	0	0	0	0	0	**1**
04.03.00.00.002.00.00	0	0	0	0	0	0	0	1	0	0	0	**1**
04.05.00.00.003.00.01	5	0	0	0	0	0	0	0	0	0	0	**5**
04.05.00.02.008.01.04	17	0	0	0	0	0	0	0	0	0	0	**17**
04.05.00.02.008.01.07	2	0	0	0	0	0	0	0	0	0	0	**2**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	2	0	**2**
04.12.00.00.002.00.00	7	0	0	0	0	0	0	0	0	0	0	**7**
04.16.00.00.001.00.01	0	0	0	0	2	0	0	0	0	0	0	**2**
04.16.00.00.001.01.00	0	0	0	0	1	0	0	0	0	0	0	**1**
04.20.00.00.001.00.00	0	0	0	0	0	0	0	1	0	0	0	**1**
05.02.00.00.000.00.01	0	0	0	0	27	0	0	0	0	0	0	**27**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	14	0	**14**
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	20	0	**20**
05.06.00.00.007.00.01	0	0	0	0	2	0	0	0	0	0	0	**2**
05.07.00.00.007.00.00	0	0	0	0	8	0	0	0	0	0	0	**8**
12.08.00.00.002.00.00	0	3	0	0	0	0	0	0	0	0	0	**3**
18.04.00.00.000.00.00	0	26	0	0	0	0	0	0	0	0	0	**26**
Group Total	**31**	**37**	**0**	**0**	**58**	**0**	**0**	**6**	**0**	**36**	**0**	**168**
Percent of Sample Total	**18.5%**	**22.0%**	**0.00%**	**0.00%**	**34.5%**	**0.00%**	**0.00%**	**3.57%**	**0.00%**	**21.4%**	**0.00%**	**100%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	22.0%	71.0%
Col. Filt.	18%	30%	36%	18.45%	97.5%
Predator	19%	13%	7%	34.5%	55.0%
Shred-Det.	15%	4%	2%	21.4%	70.0%
Shred- Herb.	1%	1%	5%	0.00%	0.00%
Scraper	12%	13%	22%	3.57%	29.8%
				PPCS-FG =	**53.9%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station WQM 3-1
Stream Unnamed Trib.
Location 427809000001 **Class** SHG
Sample Date 10/03/14 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	2.38%	5.62
Diptera	19%	18%	13%	14.9%	4.12
Ephemeroptera	23%	34%	32%	0.595%	22.4
Plecoptera	21%	8%	8%	42.3%	21.3
Trichoptera	28%	33%	33%	22.6%	5.38
Oligochaeta	0.5%	0.5%	1.0%	15.48%	15.0
Other	0.5%	0.5%	1.0%	0.00%	0.500

Sum diff	74.3
Sum diff * 0.5	37.1
100-(sum diff * 0.5)	62.9
% model affinity	**62.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM 3-1
Stream Unnamed Trib.
Location 427809000001
Sample Date 10/03/14
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	110
#C organisms	5
EPT/EPT+C	0.957

Biometrics Summary

Project Jay Peak Resort
Station WQM 3-1
Stream Unnamed Trib.
Location 427809000001 **Class** SHG
Sample Date 10/03/14 **Sampler** C. Szal

Replicate #	1	Average
Sampling Method	**KN**	**KN**
Biometrics:		
Density/Unit	168	168
Species Richness	27.0	27.0
EPT Richness	15.0	15.0
Old Bio Index (0 to 5)	1.07	1.07
New Bio Index (0 to 10)	1.49	1.49
% dominant taxa	16.1%	16.1%
# dominant taxa	27	
dominant taxa ID	05.02.00.00.000.00.01	PLECOPTERA
EPT/EPT+C	0.957	0.957
EPT/Richness	0.556	0.556
% Model Affinity (orders)	62.9%	62.9%
PPCS - functional groups	53.9%	53.9%
Major Groups:		
Coleoptera (%)	2.38%	2.38%
Diptera (%)	14.9%	14.9%
Ephemeroptera (%)	0.595%	0.595%
Trichoptera (%)	22.6%	22.6%
Plecoptera (%)	42.3%	42.3%
Oligochaeta (%)	15.5%	15.5%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.00%	0.00%
Gastropoda (%)	1.79%	1.79%
Other (%)	0.00%	0.00%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	22.0%	22.0%
Collector Filterer (%)	18.5%	18.5%
Predator (%)	34.5%	34.5%
Shredder - Detritus (%)	21.4%	21.4%
Shredder - Herbivore (%)	0.00%	0.00%
Scraper (%)	3.57%	3.57%
Other (%)	0.00%	0.00%
Total (%)	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM 3-1 **Latitude** 44.9385976
Stream Unnamed Trib. **Longitude** -72.491392
Location 427809000001 **Class** SHG
Sample Date 10/03/14 **Sampler** C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	168	≥300	Fail	≥400	Fail	≥500	Fail
Richness	27.0	≥27	I+	≥31	Fail	≥35	Fail
EPT	15.0	≥16	I-	≥19	Fail	≥21	Fail
PMA-O	62.9%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	1.49	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	15.5%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.957	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	53.9%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I+
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		Density, EPT (I-), % 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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location: Jay
River (site) Trib 9 River Mile _____ Site ID 3-1 BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description _____

Sampling Information:
Date 10/5/14 Time 1130 Personnel (circle sampler) (CS) RW Gear _____
Effort time (min) _____ Area (m^2) _____ Mesh (um) 500 Quantitative: Y / N #Reps: 1 Comp/rep 4
Weather Sunny Flow/Weather Previous (2 weeks/2days) _____
Baseflow ✓, or Freshet flow _____ Rising / Receding _____ Present Flow: H - M (L)

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 3

A:-Debris Obvious 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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) 25-50% Good (3) 50-75% Fair (2) > 75% Poor (1)
Estimate 25 %
Silt rating (0-5) 4 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 2 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach)

Bank Stability: EX , G, (F), P ; **Riparian Width**(facing upstream) L>100 m, R>100 m
50-25% stable
% Canopy: 100 (90) 80 70 60 50 40 30 20 10 0 Overhead = Open, Partly Open, or (Closed)
(See back for Densiometer form)
if leaves on
Vegetation: (both sides) %: Overstory: Softwood 20 Hardwood 80
(Does not need to add up to 100%) %: Understory: Shrub (brush) 40 Grass/ferns etc 40
Surrounding Land Use: Golf course, residential, forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 50 % Filamentous green _____ % and length _____ (in) Blue Green _____ % Moss _____ %
Green _____ % Other _____ % General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder _____ Other _____ Warm _____ Cold ✓ Mixed _____
B.F.Width 12' (m), Wetted Width 3' (m) Riffle Depth 1" (m) Pool Depth 1' (m) and Obs _____
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) _____ (.4-2 ft/sec (M)) _____ >2 ft/sec (F)
Channelized: Y / (N) Upstream Dam: Y ____ mi / (N) Other modifications: _____
Water Quality Parameters: Field **(Record)** or Collected **(Circle)**, **Meter** (type, #) _____ **Chemistry LabId** _____
Temp Air 65 °C (°F) **Water** 11 °C **fpH** _____ lab pH _____ **fCond** _____ labCond _____ ***D.O.%*** _____ **D.Omg/l** _____

Cond pH Alkalinity Color _____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Field Sheet Complete: CS (initial) **Photo's:** Y **Fish Survey Conducted (circle):Y (N)**

Site Sketch & Observations Low flow only 1 KN due to limited space.

Aquatic Biota Observed:
Mussels
Crayfish
Gastropods
Fish
Other Quality of kick net impacted by low flow/ low flow velocity

Jay Peak Resort

Kick Net Data - Unnamed Tributary - WQM 3-1

Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004 PIO	200	24.0	14.0	43.8	4.61	0.200	0.310	42.0	Does Not Meet Class B Criteria
2005 DEC/ESI	309	41.0	17.0	70.0	4.23	16.8	0.820	53.0	Does Not Meet Class B Criteria
2006 DEC/ESI	320	35.7	16.0	54.5	5.12	0.970	0.878	29.0	Does Not Meet Class B Criteria
2007 DEC/PIO	484	37.0	24.0	63.0	1.22	1.90	0.950	39.0	Meets Class B Criteria
2008 DEC/VHBP	492	28.0	17.0	69.6	1.18	0.000	0.916	42.0	Meets Class B Criteria
2009 VHBP	252	28.0	15.5	79.7	1.72	7.80	0.952	61.0	Indeterminate
2010 VHB	176	22.0	16.0	63.4	2.13	23.0	0.980	53.4	Does Not Meet Class B Criteria
2011 VHB	77.0	22.5	15.0	66.0	1.47	8.70	0.989	55.0	Does Not Meet Class B Criteria
2012 VHB	95.0	25.5	15.5	68.8	1.96	21.2	0.927	54.5	Does Not Meet Class B Criteria
2013 VHB	157	30.0	19.5	74.4	2.07	13.6	0.913	57.9	Does Not Meet Class B Criteria
2014 VHB	168	27.0	15.0	62.9	1.49	15.5	0.957	53.9	Does Not Meet Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name: Jay Peak Resort
VT DEC Lab ID:
Stream Name: **South Branch**
Station: **WQM - 106**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928770	-72.49562
or VT Site ID:	427807030001	
Date collected:	10/3/2014	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Oct. 14	Oct. 14
#sq picked:	21	20
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Oct. 14	Oct. 14

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old Biotic Index		New Biotic Index		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	1	1	CCS	A	4	4.8		SCR	N	2	3	2.29	9.6	3.4285714	14.4	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANYT	MICROPSECTRA	N/A	sp				0	CCS	A	1	1.2		CG	Y	3	6	0	3.6	0	7.2	-	0	1	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp				0	CCS	A	2	2.4		SRD	Y	3	5	0	7.2	0	12	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	8	9	CCS	A	8	9.6		CG	Y	2	2	18.3	19.2	18.285714	19.2	1	0	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	N/A	N/A	group				0	CCS	A	1	1.2		PRD	Y	3	6	0	3.6	0	7.2	-	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	1	1				0		CG	N	3	4	3.43	0	4.5714286	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2	CCS	A	4	4.8		PRD	N	2	3	4.57	9.6	6.8571429	14.4	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	3	3	CCS	A	5	6		PRD	N	2	2	6.86	12	6.8571429	12	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1	CCS	A	3	3.6		CG	N	3	6	3.43	10.8	6.8571429	21.6	1	1	1	1
03.01.00.02.006.00.01	EPHEMEROPTERA	BAETIDAE	N/A	TRELLA/PLAU	ACENTRELLA	N/A	turbida	CCS	A	5	6	CCS	A	2	2.4		SCR	N	1	2	5.71	2.4	11.428571	4.8	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	117	134	CCS	A	96	115.2		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp				0	CCS	A	1	1.2		CG	N	2	1	0	2.4	0	1.2	-	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	OPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	3	3	CCS	A	1	1.2		CF	N	2	3	6.86	2.4	10.285714	3.6	1	1	1	1
04.05.00.02.008.01.06	TRICHOPTERA	HYDROPSYCHIDAE	N/A	OPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	slossonae				0	CCS	A	1	1.2		CF	N	2	4	0	2.4	0	4.8	-	0	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	OPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	sparna				0	CCS	A	1	1.2		CF	N	2	4	0	2.4	0	4.8	-	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis				0	CCS	A	1	1.2		CF	N	0	0	0	0	0	0	-	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	1	1	CCS	A	1	1.2		SRD	N	1	1	1.14	1.2	1.1428571	1.2	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	7	8	CCS	A	7	8.4		CF	N	0	0	0	0	0	0	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	2	CCS	A	3	3.6		PRD	N	1	2	2.29	3.6	4.5714286	7.2	1	1	1	1
04.16.00.00.001.00.22	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	amicis	CCS	B	2	2				0		PRD	N	-	-	-	-	-	-	1	1	-	0
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1				0		PRD	N	1	1	1.14	0	1.1428571	0	1	1	-	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1	CCS	A	2	2.4		PRD	N	0	1	0	0	1.1428571	2.4	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp				0	CCS	A	1	1.2		SCR	N	2	3	0	2.4	0	3.6	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	5	6	CCS	A	1	1.2		SCR	N	1	3	5.71	1.2	17.142857	3.6	1	1	1	1
05.02.00.00.000.00.01	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	24	27	CCS	A	29	34.8		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	29	33	CCS	A	27	32.4		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.000.00.01	PLECOPTERA	NEMOURIDAE	N/A	N/A	N/A	N/A	imm				0	CCS	A	1	1.2		SRD	N	1	2	0	1.2	0	2.4	-	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	1	1	CCS	A	3	3.6		SRD	N	1	0	1.14	3.6	0	0	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	24	27	CCS	A	39	46.8		PRD	N	1	2	27.4	46.8	54.857143	93.6	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	8	9	CCS	A	5	6		SRD	N	1	0	9.14	6	0	0	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	2	2	CCS	A	3	3.6		SRD	N	2	3	4.57	7.2	6.8571429	10.8	1	1	1	1
13.02.00.00.002.00.00	BIVALVIA	SPHAERIIDAE	N/A	N/A	PISIDIUM	N/A	sp	CCS	A	1	1				0		CF	N	4	8	4.57	0	9.1428571	0	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	62	71	CCS	A	52	62.4		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										311	355			305	366													

Total BI Score	108.5714286	161	164.57143	252	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	355.4285714	366	355.42857	366	24		29	
# of Organisms w/o BI	73.14285714	62.4	73.142857	62.4		17		21
Total # Organisms with BI	282.2857143	303.6	282.28571	303.6				
Biotic Index	0.38	0.53	0.58	0.83				

GRAND TOTAL: 721 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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 106
Stream South Branch
VT Site ID 427807030001
Sample Date 10/03/14

2014 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	1	0	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	9	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	3	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	1	0	0	0	0	0	0	0	
03.01.00.02.006.00.01	0	0	6	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	134	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	3	0	0	0	0	0	0	
04.05.00.02.008.01.06	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.07	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	0	0	
04.07.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	8	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.22	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	6	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	27	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	33	0	0	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	27	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	9	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	2	0	0	0	0	0	
13.02.00.00.002.00.00	0	0	0	0	0	0	1	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	71	0	0	0	0	
Total	**1.14**	**16.0**	**141**	**25.1**	**101**	**70.9**	**1.14**	**0.00**	**0.00**	**0.00**	**355**
Percent	**0%**	**5%**	**40%**	**7%**	**28%**	**20%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 106
Stream South Branch
VT Site ID 427807030001
Sample Date 10/03/14

2014 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	5	0	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	10	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	5	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	6	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	4	0	0	0	0	0	0	0	
03.01.00.02.006.00.01	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	115	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	1	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.06	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	8	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	4	0	0	0	0	0	0	
04.16.00.00.001.00.22	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	0	
04.16.00.00.001.02.00	0	0	0	2	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	35	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	32	0	0	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	4	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	47	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	6	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	4	0	0	0	0	0	
13.02.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	62	0	0	0	0	
Total	**4.80**	**25.2**	**122**	**22.8**	**128**	**62.4**	**0.00**	**0.00**	**0.00**	**0.00**	**366**
Percent	**1%**	**7%**	**33%**	**6%**	**35%**	**17%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM - 106
Stream South Branch
Location 427807030001
Sample Date 10/3/2014

2014 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	1	0		0	0	0	0	0	5	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
02.05.05.00.029.00.11	9	0	0	0	0	0	0		10	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	0	0	0	0	0		0	0	1	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	2	0	0	0	0		0	0	5	0	0	0	0	
02.19.00.00.006.00.00	0	0	3	0	0	0	0		0	0	6	0	0	0	0	
03.01.00.00.001.00.09	1	0	0	0	0	0	0		4	0	0	0	0	0	0	
03.01.00.02.006.00.01	0	0	0	0	0	6	0		0	0	0	0	0	2	0	
03.06.00.00.003.00.00	134	0	0	0	0	0	0		115	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	3	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.00.02.008.01.06	0	0	0	0	0	0	0		0	1	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	
04.05.01.00.006.00.01	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	1	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	8	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	2	0	0	0	0		0	0	4	0	0	0	0	
04.16.00.00.001.00.22	0	0	2	0	0	0	0		0	0	0	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	
04.16.00.00.001.02.00	0	0	1	0	0	0	0		0	0	2	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
04.20.00.00.001.00.00	0	0	0	0	0	6	0		0	0	0	0	0	1	0	
05.02.00.00.000.00.01	0	0	27	0	0	0	0		0	0	35	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	33	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	1	0	0	0		0	0	0	4	0	0	0	
05.07.00.00.007.00.00	0	0	27	0	0	0	0		0	0	47	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	9	0	0	0		0	0	0	6	0	0	0	
05.09.00.00.000.00.01	0	0	0	2	0	0	0		0	0	0	4	0	0	0	
13.02.00.00.002.00.00	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	71	0	0	0	0	0	0		62	0	0	0	0	0	0	
Total	**216**	**12.6**	**67.4**	**46.9**	**0.00**	**12.6**	**0.00**	**355**	**193**	**13.2**	**99.6**	**50.4**	**0.00**	**9.60**	**0.00**	**366**
Percent	**61%**	**4%**	**19%**	**13%**	**0%**	**4%**	**0%**	**100%**	**53%**	**4%**	**27%**	**14%**	**0%**	**3%**	**0%**	**100%**

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	60.8%	51.0%	52.8%	58.7%
Col. Filt.	18%	30%	36%	3.5%	19.6%	3.6%	20.0%
Predator	19%	13%	7%	19.0%	99.8%	27.2%	69.8%
Shred-Det.	15%	4%	2%	13.2%	87.9%	13.8%	91.8%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	3.54%	29.47%	2.62%	21.9%
				PPCS-FG =	**48.0%**	**PPCS-FG =**	**43.7%**

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 WQM - 106
Stream South Branch
VT Site ID 427807030001 **Class** Small, High Gradient, B2-3
Sample Date 10/03/14 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.322%	7.68	1.31%	6.69
Diptera	19%	18%	13%	4.50%	14.5	6.89%	12.1
Ephemeroptera	23%	34%	32%	39.5%	16.5	33.4%	10.4
Plecoptera	21%	8%	8%	28.3%	7.30	35.1%	14.1
Trichoptera	28%	33%	33%	7.07%	20.9	6.23%	21.8
Oligochaeta	0.5%	0.5%	1.0%	19.9%	19.4	17.0%	16.5
Other	0.5%	0.5%	1.0%	0.322%	0.178	0.00%	0.500
				Sum diff	86.6		82.1
				Sum diff * 0.5	43.3		41.1
				100-(sum diff * 0.5)	56.7		58.9
				% model affinity	**56.7%**		**58.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM - 106
Stream South Branch
Location 427807030001
Sample Date 10/3/2014
Class Small, High Gradient, B2-3
Sampler CS

	KN-1	KN-2
#EPT organisms	266	274
#C organisms	9.14	14.4
EPT/EPT+C	0.967	0.950

Biometric Summary

Project Jay Peak Resort
Station WQM - 106
Stream South Branch
Location 427807030001 **Class** Small, High Gradient, B2-3
Sample Date 10/3/2014 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	355	366	361
Species Richness	24.0	29.0	26.5
EPT Richness	17.0	21.0	19.0
Old Bio Index (0 to 5)	0.385	0.530	0.457
New Bio Index (0 to 10)	0.583	0.830	0.707
% dominant taxa	37.6%	31.5%	34.5%
EPT/EPT+C	0.967	0.950	0.958
EPT/Richness	0.708	0.724	0.717
% Model Affinity (orders)	56.7%	58.9%	57.8%
PPCS - functional groups	48.0%	43.7%	45.8%
Major Groups:			
Coleoptera (%)	0.322%	1.31%	0.817%
Diptera (%)	4.50%	6.89%	5.69%
Ephemeroptera (%)	39.5%	33.4%	36.5%
Trichoptera (%)	7.07%	6.23%	6.65%
Plecoptera (%)	28.3%	35.1%	31.7%
Oligochaeta (%)	19.9%	17.0%	18.5%
Bivalvia (%)	0.322%	0.00%	0.161%
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 (%)	60.8%	52.8%	56.8%
Collector Filterer (%)	3.54%	3.61%	3.57%
Predator (%)	19.0%	27.2%	23.1%
Shredder - Detritus (%)	13.2%	13.8%	13.5%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	3.54%	2.62%	3.08%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM - 106
Stream South Branch
Location 427807030001
Sample Date 10/3/2014

Latitude 44.928770
Longitude -72.49562
Class Small, High Gradient, B2-3
Sampler CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	361	≥300	Pass	≥400	I-	≥500	Fail
Richness	26.5	≥27	I-	≥31	Fail	≥35	Fail
EPT	19.0	≥16	Pass	≥19	I+	≥21	Fail
% PMA-O	57.8%	≥45%	Pass	≥55%	I+	≥65%	Fail
BI (New 1-10)	0.707	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	18.5%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.958	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	45.8%	≥ 40%	Pass	≥ 45%	I+	≥ 50%	I-
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		% Oligo, Richness (I-)					

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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location: Jay
River (site) Trib 3 River Mile ____ Site ID 106 BioLab ID ____
Town ____ Stream Order ____ Drainage Area ____ Km^2 Elevation ____ ft
Latitude ____ Longitude ____ Lat/Long source (GPS, USGS Map,Datum) ____
Site Description ____

Sampling Information:
Date 10/5/14 Time 1300 Personnel (circle sampler) CCS Gear KN
Effort time (min) ____ Area (m^2) ____ Mesh (um) ____ Quantitative: Y / N #Reps: 2 Comp/rep 4
Weather Sunny Flow/Weather Previous (2 weeks/2days) Quiet 2 wk
Baseflow ____, or Freshet flow ____ Rising / Receding ____ Present Flow: H / (M) / L

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 4

A:-Debris Obvious 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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) 25-50% Good (3) 50-75% Fair (2) > 75% Poor (1)
Estimate 10 %
Silt rating (0-5) 3 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 4 (0= none,5=high)
Snags/debris dams # 1 / 100 m (reach)

Bank Stability: EX, (G), F, P ; **Riparian Width**(facing upstream) L>100 m, R>100 m

% Canopy: 100 90 (80) 70 60 50 40 30 20 10 0 Overhead = Open, (Partly Open), or Closed
(See back for Densiometer form)
if leaves on
Vegetation: (both sides) %: Overstory: Softwood 10 Hardwood 90
(Does not need to add up to 100%) %: Understory: Shrub (brush) 40 Grass/ferns etc 20
Surrounding Land Use: Ski area, residential forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70 % Filamentous green ____ % and length ____ (in) Blue Green ____ % Moss 5 %
Green ____ % Other ____ % General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder ____ Other ____ Warm ____ Cold ✓ Mixed ____
B.F.Width 30' (m), Wetted Width 15' (m) Riffle Depth 4" (m) Pool Depth 3' (m) and Obs ____
Velocity (measured): ____ ft/sec, Velocity RANGE-estimate: (circle): ____ <.4 ft/sec (S) ____ (.4-2 ft/sec (M)) ____ >2 ft/sec (F)
Channelized: Y / (N) Upstream Dam: Y ____ mi / (N) Other modifications: ____
Water Quality Parameters: Field (**Record**) or Collected (**Circle**), **Meter** (type, #) ____ **Chemistry LabId** ____
Temp Air 65 °C,°F **Water** 11.5 °C **fpH** ____ lab pH ____ **fCond** ____ labCond ____ ***D.O.%*** ____ **D.Omg/l** ____

Cond pH Alkalinity Color ____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Field Sheet Complete: CS (initial) **Photo's:** Y **Fish Survey Conducted (circle):Y / (N)**

Site Sketch & Observations

Looks much better than last year, much less sand

Aquatic Biota Observed:
Mussels
Crayfish
Gastropods

Pebble count Sand - 8 Gravel - 13 Coarse gravel - 20 Cobble - 14 Bedrock - 45	Peri 0 moss 45	5
	macro 50	
	micro 5	45

Fish
Other

79

Jay Peak Resort
Kick Net Data - South Branch - WQM - 106
Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2012 DEC	259	34.5	22.0	67.4	0.930	20.7	0.927	57.0	Does Not Meet Class B Criteria/Fair-Poor
2013 VHB	133	21.5	15.0	58.3	1.04	29.6	0.930	50.0	Does Not Meet Class B Criteria
2014 VHB	361	26.5	19.0	57.8	0.707	18.5	0.958	45.8	Does Not Meet Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name: Jay Peak Resort	
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**WQM - 107**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938328	-72.479061
or VT Site ID:	427807000012	
Date collected:	10/2/2014	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 15	Jan.15
#sq picked:	22	19
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 15	Jan.15

Taxonomic Data																		Biotic Index						Richness Metrics			
								Rep1				Rep2						Biotic Index Scores		Old Biotic Index		New Biotic Index		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
01.03.00.00.006.00.01	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	latiusculus				0	CCS	A	1	1		SCR	N	2	3	0	3	0	4	-	0	1	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp				0	CCS	A	1	1		SCR	N	2	2	0	3	0	3	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	3	3	CCS	A	3	4		CG	Y	2	2	7	8	7	8	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1				0		CG	Y	3	5	3	0	5	0	1	0	-	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	2	2				0		CG	N	3	4	7	0	9	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	4	4	CCS	A	4	5		PRD	N	2	3	9	10	13	15	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp				0	CCS	A	2	3		PRD	N	2	2	0	5	0	5	-	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1	CCS	A	1	1		SRD	N	3	6	3	4	7	8	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	5	5	CCS	A	2	3		CG	N	3	6	16	8	33	15	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	TRELLA/PLAU	PLAUDITUS	N/A	sp	CCS	A	2	2				0		SCR	N	2	5	4	0	11	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1	CCS	A	6	8		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	53	58	CCS	A	29	37		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	6	7	CCS	A	5	6		SCR	N	1	4	7	6	26	25	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	10	11	CCS	A	15	19		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	2	2				0		CG	N	2	1	4	0	2	0	1	1	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1				0		SCR	N	1	0	1	0	0	0	1	1	-	0
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	DPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	5	5	CCS	A	8	10		CF	N	2	3	11	20	16	30	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	DPSYC/HYDR	CERATOPSYCHE	alh/slo/spa	sparna				0	CCS	A	2	3		CF	N	2	4	0	5	0	10	-	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis				0	CCS	A	1	1		CF	N	0	0	0	0	0	0	-	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	7	8				0		SRD	N	1	1	8	0	8	0	1	1	-	0
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	48	52	CCS	A	46	58		CF	N	0	0	0	0	0	0	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	7	8	CCS	A	13	16		PRD	N	1	2	8	16	15	33	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	4	4				0		PRD	N	1	1	4	0	4	0	1	1	-	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group				0	CCS	A	1	1		PRD	N	0	1	0	0	0	1	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	4	4	CCS	A	1	1		SCR	N	1	3	4	1	13	4	1	1	1	1
05.02.00.00.000.00.01	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	9	10	CCS	A	8	10		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	32	35	CCS	A	34	43		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	3	3				0		PRD	N	0	0	0	0	0	0	1	1	-	0
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	20	22	CCS	A	24	30		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A	N/A	SOYEDINA	N/A	sp				0	CCS	A	1	1		SRD	N	0	0	0	0	0	0	-	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	10	11	CCS	A	2	3		SRD	N	1	0	11	3	0	0	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	21	23	CCS	A	22	28		PRD	N	1	2	23	28	46	56	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	9	10	CCS	A	19	24		SRD	N	1	0	10	24	0	0	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				0		PRD	N	2	5	2	0	5	0	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	32	35	CCS	A	48	61		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										303	331			299	378													

GRAND TOTAL: 708 organisms

	KN-1	KN-2	KN-1	KN-2
Total BI Score	142	143	220	216
Total # Organisms	331	378	331	378
# of Organisms w/o BI	34.9	60.6	34.9	60.6
Total # Organisms with BI	296	317	296	317
Biotic Index	0.480	0.450	0.745	0.681

Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**
28		26	
	21		19

*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 WQM - 107
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 10/02/14

2014 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.01	0	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	2	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	5	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	58	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	7	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	11	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	2	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	5	0	0	0	0	0	0	
04.05.00.02.008.01.07	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	0	0	
04.07.00.00.001.00.00	0	0	0	8	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	52	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	8	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	4	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	10	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	35	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	3	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	22	0	0	0	0	0	
05.04.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	11	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	23	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	10	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1	0	
18.04.00.00.000.00.00	0	0	0	0	0	35	0	0	0	0	
Total	**0.00**	**12.0**	**86.2**	**82.9**	**113**	**34.9**	**0.00**	**0.00**	**1.09**	**0.00**	**331**
Percent	**0.00%**	**3.63%**	**26.1%**	**25.1%**	**34.3%**	**10.6%**	**0.00%**	**0.00%**	**0.330%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 107
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 10/02/14

2014 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.01	1	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	1	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	4	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	5	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	3	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	8	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	37	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	6	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	19	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	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	
04.05.00.02.008.01.04	0	0	0	10	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	3	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	58	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	16	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
05.02.00.00.000.00.01	0	0	0	0	10	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	43	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	30	0	0	0	0	0	
05.04.00.00.007.00.00	0	0	0	0	1	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	28	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	24	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	61	0	0	0	0	
Total	**2.53**	**12.6**	**72.0**	**90.9**	**139**	**60.6**	**0.00**	**0.00**	**0.00**	**0.00**	**378**
Percent	**0.669%**	**3.34%**	**19.1%**	**24.1%**	**36.8%**	**16.1%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM - 107
Stream South Mountain Branch
Location 427807000012
Sample Date 10/2/2014

2014 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
01.03.00.00.006.00.01	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
01.03.00.00.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
02.05.05.00.029.00.11	3	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.075.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.001.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	4	0	0	0	0		0	0	5	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	1	0	0	0		0	0	0	1	0	0	0	
03.01.00.00.001.00.09	5	0	0	0	0	0	0		3	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	0	0	
03.04.00.00.004.00.01	1	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.06.00.00.003.00.00	58	0	0	0	0	0	0		37	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	7	0		0	0	0	0	0	6	0	
03.06.00.00.005.00.00	11	0	0	0	0	0	0		19	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	
04.03.00.00.002.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	5	0	0	0	0	0		0	10	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0		0	3	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	8	0	0	0		0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	52	0	0	0	0	0		0	58	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	8	0	0	0	0		0	0	16	0	0	0	0	
04.16.00.00.001.01.00	0	0	4	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	4	0		0	0	0	0	0	1	0	
05.02.00.00.000.00.01	0	0	10	0	0	0	0		0	0	10	0	0	0	0	
05.02.00.00.006.00.00	0	0	35	0	0	0	0		0	0	43	0	0	0	0	
05.02.00.00.091.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	22	0	0	0		0	0	0	30	0	0	0	
05.04.00.00.007.00.00	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
05.05.00.00.000.00.01	0	0	0	11	0	0	0		0	0	0	3	0	0	0	
05.07.00.00.007.00.00	0	0	23	0	0	0	0		0	0	28	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	10	0	0	0		0	0	0	24	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	35	0	0	0	0	0	0		61	0	0	0	0	0	0	
Total	**119**	**57.8**	**88.4**	**51.3**	**0.00**	**14.2**	**0.00**	**331**	**130**	**72.0**	**106**	**59.4**	**0.00**	**10.1**	**0.00**	**378**
Percent	**36.0%**	**17.5%**	**26.7%**	**15.5%**	**0.00%**	**4.29%**	**0.00%**	**100%**	**34.4%**	**19.1%**	**28.1%**	**15.7%**	**0.00%**	**2.68%**	**0.00%**	**100%**

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	36.0%	86.2%	34.4%	90.0%
Col. Filt.	18%	30%	36%	17.5%	97.2%	19.1%	94.4%
Predator	19%	13%	7%	26.7%	71.1%	28.1%	67.6%
Shred-Det.	15%	4%	2%	15.5%	96.7%	15.7%	95.4%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.00%	0.00%
Scraper	12%	13%	22%	4.29%	35.8%	2.68%	22.3%
				PPCS-FG =	**64.5%**	**PPCS-FG =**	**61.6%**

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 WQM - 107
Stream South Mountain Branch
VT Site ID 427807000012 **Class** Small, High Gradient, B2-3
Sample Date 10/02/14 **Sampler** CS

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	0.669%	7.33
Diptera	19%	18%	13%	3.63%	15.4	3.34%	15.7
Ephemeroptera	23%	34%	32%	26.1%	3.07	19.1%	3.94
Plecoptera	21%	8%	8%	34.3%	13.3	36.8%	15.8
Trichoptera	28%	33%	33%	25.1%	2.92	24.1%	3.92
Oligochaeta	0.5%	0.5%	1.0%	10.6%	10.1	16.1%	15.6
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	53.2		62.7
				Sum diff * 0.5	26.6		31.3
				100-(sum diff * 0.5)	73.4		68.7
				% model affinity	**73.4%**		**68.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM - 107
Stream South Mountain Branch
Location 427807000012
Sample Date 10/2/2014
Class Small, High Gradient, B2-3
Sampler CS

	KN-1	KN-2
#EPT organisms	283	302
#C organisms	4.36	3.79
EPT/EPT+C	0.985	0.988

Biometric Summary

Project Jay Peak Resort
Station WQM - 107
Stream South Mountain Branch
Location 427807000012 **Class** Small, High Gradient, B2-3
Sample Date 10/2/2014 **Sampler** CS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	331	378	354
Species Richness	28.0	26.0	27.0
EPT Richness	21.0	19.0	20.0
Old Bio Index (0 to 5)	0.480	0.450	0.465
New Bio Index (0 to 10)	0.745	0.681	0.713
% dominant taxa	17.5%	16.1%	16.8%
EPT/EPT+C	0.985	0.988	0.986
EPT/Richness	0.750	0.731	0.741
% Model Affinity (orders)	73.4%	68.7%	71.0%
PPCS - functional groups	64.5%	61.6%	63.1%
Major Groups:			
Coleoptera (%)	0.00%	0.669%	0.334%
Diptera (%)	3.63%	3.34%	3.49%
Ephemeroptera (%)	26.1%	19.1%	22.6%
Trichoptera (%)	25.1%	24.1%	24.6%
Plecoptera (%)	34.3%	36.8%	35.6%
Oligochaeta (%)	10.6%	16.1%	13.3%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.330%	0.00%	0.165%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	36.0%	34.4%	35.2%
Collector Filterer (%)	17.5%	19.1%	18.3%
Predator (%)	26.7%	28.1%	27.4%
Shredder - Detritus (%)	15.5%	15.7%	15.6%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	4.29%	2.68%	3.48%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM - 107
Stream South Mountain Branch
Location 427807000012
Sample Date 10/2/2014
Latitude 44.938328
Longitude -72.479061
Class Small, High Gradient, B2-3
Sampler CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

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	354	≥300	Pass	≥400	I-	≥500	Fail
Richness	27.0	≥27	I+	≥31	Fail	≥35	Fail
EPT	20.0	≥16	Pass	≥19	Pass	≥21	Fail
% PMA-O	71.0%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.713	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	13.3%	≤12%	I-	≤5	Fail	≤2	Fail
EPT/EPT+C	0.986	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	63.1%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Indeterminate**					
The following metrics do not meet Class B thresholds:		% Oligo (I-)					

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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location: Jay
River (site) S. Jay Br. River Mile _____ Site ID WQM 107 BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description _____

Sampling Information:
Date 10/2/14 Time 1450 Personnel (circle sampler) CS Gear KN
Effort time (min) _____ Area (m^2) _____ Mesh (um) 500 Quantitative: Y/(N) #Reps: 2 Comp/rep 4
Weather Sunny Flow/Weather Previous (2 weeks/2days) quiet 2 wk
Baseflow ✓, of Freshet flow _____ Rising / Receding _____ Present Flow: H - M - (L)

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 4

A:-Debris Obvious Pollution: Sludge, Sawdust, Paper Fiber, (Sand), (Silt), Sewage, Oily Sheen, Trash, (Iron), Scum, None Heavy stain on some rocks
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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) 25-50% Good (3) 50-75% Fair (2) > 75% Poor (1) → very embedded pools
Estimate 25 %
Silt rating (0-5) 2 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 3 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach) fresh leaf packs

Bank Stability: EX, (G), F, P; **Riparian Width**(facing upstream) L 30 m, R 10 m
riprapped
% Canopy: 100 90 (80) 70 60 50 40 30 20 10 0 Overhead = Open, (Partly Open), or Closed
(See back for Densiometer form) if leaves on leaves ~ 40% off
Vegetation: (both sides) %: Overstory: Softwood _____ Hardwood 100
(Does not need to add up to 100%) %: Understory: Shrub (brush) 20 Grass/ferns etc 50
Surrounding Land Use: Road Residential Resort Forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 90 % Filamentous green _____ % and length _____ (in) Blue Green Tr % Moss 5 %
Green _____ % Other _____ % General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder _____ Other _____ Warm _____ Cold ✓ Mixed _____
B.F.Width 30' (m), Wetted Width 18' (m) Riffle Depth 4-6" (m) Pool Depth 1' (m) and Obs _____
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) (.4-2 ft/sec (M)) _____ >2 ft/sec (F)
Channelized (Y) N Upstream Dam: Y ____ mi / (N) Other modifications: _____
Water Quality Parameters: Field **(Record)** or Collected **(Circle)**, **Meter** (type, #) _____ **Chemistry LabId** _____
Temp Air 70 **°C,°F Water** 12 **°C fpH** _____ lab pH _____ **fCond** _____ labCond _____ ***D.O.%*** _____ **D.Omg/l** _____

Cond pH Alkalinity Color _____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Field Sheet Complete: CS (initial) **Photo's:** Y **Fish Survey Conducted (circle):Y/(N)** _____

Site Sketch & Observations

Aquatic Biota Observed:
Mussels
Crayfish
Gastropods

Pebble count	
Sand	11
Gravel	8
Coarse gravel	14
Cobble	24
Boulder	45

Fish
Other

Peri	0	1	2
moss	41	6	3
macro	50		
micro		50	

Jay Peak Resort
Kick Net Data - South Branch - WQM - 107
Class B

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2012 VHB/DEC	234	27.5	19.3	70.5	0.890	12.1	0.980	58.0	Does Not Meet Class B Criteria/Fair
2013 VHB	239	26.0	17.5	61.0	0.805	22.6	0.960	49.1	Does Not Meet Class B Criteria/Fair
2014 VHB	354	27.0	20.0	71.0	0.713	13.3	0.986	63.1	Indeterminate
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) / 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%	

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**WQM - 108**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:		
or VT Site ID:	4278070005	
Date collected:	10/3/2014	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 15	Jan.15
#sq picked:	20	22
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 15	Jan.15

Taxonomic Data																		Biotic Index						Richness Metrics			
								Rep1				Rep2						Biotic Index Scores		Old Biotic Index		New Biotic Index		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
01.03.00.00.006.00.01	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	latiusculus	CCS	A	2	2				0		SCR	N	2	3	5	0	7	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1				0		CG	Y	3	4	4	0	5	0	1	0	-	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS	A	2	2				0		SRD	Y	3	5	7	0	12	0	1	0	-	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp				0	CCS	A	1	1		PRD	Y	3	5	0	3	0	5	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	20	24	CCS	A	5	5		CG	Y	2	2	48	11	48	11	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1				0		CG	Y	3	5	4	0	6	0	1	0	-	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	N/A	N/A	group				0	CCS	A	1	1		PRD	Y	3	6	0	3	0	7	-	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1				0		CF	N	1	2	1	0	2	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	7	CCS	A	1	1		PRD	N	2	3	14	2	22	3	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	3	4	CCS	A	4	4		PRD	N	2	2	7	9	7	9	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1				0		SRD	N	3	6	4	0	7	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	42	50	CCS	A	71	77		CG	N	3	6	151	232	302	465	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	TRELLA/PLAU	PLAUDITUS	N/A	sp	CCS	A	52	62	CCS	A	20	22		SCR	N	2	5	125	44	312	109	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	17	20	CCS	A	14	15		CG	N	0	0	0	0	0	0	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	3	4				0		CG	N	0	0	0	0	0	0	1	1	-	0
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp				0	CCS	A	1	1		SHR	N	1	2	0	1	0	2	-	0	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp				0	CCS	A	1	1		SCR	N	1	0	0	1	0	0	-	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	7	8	CCS	A	2	2		CF	N	0	0	0	0	0	0	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	5	6	CCS	A	10	11		SRD	N	1	1	6	11	6	11	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	13	16	CCS	A	21	23		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp				0	CCS	A	2	2		PRD	N	3	6	0	7	0	13	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	9	11	CCS	A	7	8		PRD	N	1	2	11	8	22	15	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	7	8	CCS	A	5	5		PRD	N	1	1	8	5	8	5	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	CCS	A	5	5		PRD	N	0	1	0	0	1	5	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	1	1				0		SCR	N	2	3	2	0	4	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1				0		SCR	N	1	3	1	0	4	0	1	1	-	0
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm				0	CCS	A	4	4		SRD	N	1	3	0	4	0	13	-	0	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	65	78	CCS	A	52	57		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	58	70	CCS	A	83	91		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A	N/A	SOYEDINA	N/A	sp	CCS	A	6	7				0		SRD	N	0	0	0	0	0	0	1	1	-	0
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	1	1				0		SRD	N	1	0	1	0	0	0	1	1	-	0
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	4	5	CCS	A	2	2		PRD	N	1	2	5	2	10	4	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	1	1	CCS	A	1	1		SRD	N	1	0	1	1	0	0	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	2	2				0		SRD	N	2	3	5	0	7	0	1	1	-	0
07.02.00.00.001.00.00	MEGALOPTERA	SIALIDAE	N/A	N/A	SIALIS	N/A	sp				0	CCS	A	1	1		PRD	N	3	6	0	3	0	7	-	0	1	0
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp				0	CCS	A	1	1		CG	N	4	8	0	4	0	9	-	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	unid	CCS	A	24	29	CCS	A	33	36		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										356	427			348	380													

	Old BI	New BI	KN-1	KN-2	KN-1	KN-2
Total BI Score	410	352	792	694	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	427	380	427	380				
# of Organisms w/o BI	28.8	36.0	28.8	36.0	29		25	
Total # Organisms with BI	398	344	398	344		19		17
Biotic Index	1.03	1.03	1.99	2.02				

GRAND TOTAL: 807 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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 108
Stream Jay Branch
VT Site ID 0
Sample Date 10/03/14

2014 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	4278070005	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.01	2	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	24	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	7	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	50	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	62	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	20	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	4	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	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	
04.05.01.00.006.00.01	0	0	0	8	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	6	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	16	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	11	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	8	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	78	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	70	0	0	0	0	0	
05.04.00.00.007.00.00	0	0	0	0	7	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	5	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	1	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	2	0	0	0	0	0	
07.02.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	29	0	0	0	0	
Total	**2.40**	**42.0**	**137**	**52.8**	**164**	**28.8**	**0.00**	**0.00**	**0.00**	**0.00**	**427**
Percent	**0.562%**	**9.83%**	**32.0%**	**12.4%**	**38.5%**	**6.74%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station WQM - 108
Stream Jay Branch
VT Site ID 0
Sample Date 10/03/14

2014 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.01	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	5	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	1	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	77	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	22	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	15	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	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	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	11	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	23	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	8	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	5	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	4	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	57	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	91	0	0	0	0	0	
05.04.00.00.007.00.00	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	
05.07.00.00.006.00.00	0	0	0	0	2	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	1	0	0	0	0	0	
05.09.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
07.02.00.00.001.00.00	0	0	0	0	0	0	0	1	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0	0	0	1	
18.04.00.00.000.00.00	0	0	0	0	0	36	0	0	0	0	
Total	**0.00**	**13.1**	**115**	**58.9**	**155**	**36.0**	**0.00**	**1.09**	**0.00**	**1.09**	**379.636**
Percent	**0%**	**3%**	**30%**	**16%**	**41%**	**9%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station WQM - 108
Stream Jay Branch
Location 0
Sample Date 10/3/2014

2014 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	4.28E+09	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.01	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	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	
02.05.05.00.008.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.05.05.00.029.00.11	24	0	0	0	0	0	0		5	0	0	0	0	0	0	
02.05.05.00.075.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.14.00.00.004.00.00	0	1	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	1	0	0	0	0	
02.19.00.00.006.00.00	0	0	4	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	50	0	0	0	0	0	0		77	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	62	0		0	0	0	0	0	22	0	
03.06.00.00.003.00.00	20	0	0	0	0	0	0		15	0	0	0	0	0	0	
03.14.00.00.001.00.00	4	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	0	0		0	0	0	0	0	1	0	
04.05.01.00.006.00.01	0	8	0	0	0	0	0		0	2	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	6	0	0	0		0	0	0	11	0	0	0	
04.12.00.00.002.00.00	0	16	0	0	0	0	0		0	23	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	11	0	0	0	0		0	0	8	0	0	0	0	
04.16.00.00.001.01.00	0	0	8	0	0	0	0		0	0	5	0	0	0	0	
04.16.00.00.001.02.00	0	0	1	0	0	0	0		0	0	5	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	1	0		0	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	4	0	0	0	
05.02.00.00.006.00.00	0	0	78	0	0	0	0		0	0	57	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	70	0	0	0		0	0	0	91	0	0	0	
05.04.00.00.007.00.00	0	0	0	7	0	0	0		0	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	5	0	0	0	0		0	0	2	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	1	0	0	0		0	0	0	1	0	0	0	
05.09.00.00.000.00.01	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
07.02.00.00.001.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
18.04.00.00.000.00.00	29	0	0	0	0	0	0		36	0	0	0	0	0	0	
Total	**130**	**25.2**	**114**	**91.2**	**0.00**	**67.2**	**0.00**	**427**	**135**	**25.1**	**88.4**	**107**	**1.09**	**22.9**	**0.00**	**380**
Percent	**30.3%**	**5.90%**	**26.7%**	**21.3%**	**0.00%**	**15.7%**	**0.00%**	**100%**	**35.6%**	**6.61%**	**23.3%**	**28.2%**	**0.287%**	**6.03%**	**0.00%**	**100%**

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	30.3%	97.9%	35.6%	87.0%
Col. Filt.	18%	30%	36%	5.90%	32.8%	6.61%	36.7%
Predator	19%	13%	7%	26.7%	71.2%	23.3%	81.6%
Shred-Det.	15%	4%	2%	21.3%	70.3%	28.2%	53.3%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.287%	28.7%
Scraper	12%	13%	22%	15.7%	76.3%	6.03%	50.3%
				PPCS-FG =	**58.1%**	**PPCS-FG =**	**56.3%**

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 WQM - 108
Stream Jay Branch
VT Site ID 0 **Class** Small, High Gradient, B2-3
Sample Date 10/03/14 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	######	6%	13%	0.562%	7.44	0.00%	8.00
Diptera	19%	18%	13%	9.83%	9.17	3.45%	15.6
Ephemeroptera	23%	34%	32%	32.0%	9.02	30.2%	7.17
Plecoptera	21%	8%	8%	38.5%	17.5	40.8%	19.8
Trichoptera	28%	33%	33%	12.4%	15.6	15.5%	12.5
Oligochaeta	0.5%	0.5%	1.0%	6.74%	6.24	9.48%	8.98
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.575%	0.075
				Sum diff	65.5		72.1
				Sum diff * 0.5	32.7		36.0
				100-(sum diff * 0.5)	67.3		64.0
				% model affinity	**67.3%**		**64.0%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station WQM - 108
Stream Jay Branch
Location 0
Sample Date 10/3/2014
Class Small, High Gradient, B2-3
Sampler CS

	KN-1	KN-2
#EPT organisms	354	4278070005
#C organisms	28.8	7.64
EPT/EPT+C	0.925	0.977

Biometric Summary

Project Jay Peak Resort
Station WQM - 108
Stream Jay Branch
Location 0 **Class** Small, High Gradient, B2-3
Sample Date 10/3/2014 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	4278070005	380	403
Species Richness	29.0	25.0	27.0
EPT Richness	19.0	17.0	18.0
Old Bio Index (0 to 5)	1.03	1.03	1.03
New Bio Index (0 to 10)	1.99	2.02	2.00
% dominant taxa	18.3%	23.9%	21.1%
EPT/EPT+C	0.925	0.977	0.951
EPT/Richness	0.655	0.680	0.667
% Model Affinity (orders)	67.3%	64.0%	65.6%
PPCS - functional groups	58.1%	56.3%	57.2%
Major Groups:			
Coleoptera (%)	0.562%	0.00%	0.281%
Diptera (%)	9.83%	3.45%	6.64%
Ephemeroptera (%)	32.0%	30.2%	31.1%
Trichoptera (%)	12.4%	15.5%	13.9%
Plecoptera (%)	38.5%	40.8%	39.6%
Oligochaeta (%)	6.74%	9.48%	8.11%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.287%	0.144%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.287%	0.144%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	30.3%	35.6%	33.0%
Collector Filterer (%)	5.90%	6.61%	6.25%
Predator (%)	26.7%	23.3%	25.0%
Shredder - Detritus (%)	21.3%	28.2%	24.8%
Shredder - Herbivore (%)	0.00%	0.287%	0.144%
Scraper (%)	15.7%	6.03%	10.9%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station WQM - 108
Stream Jay Branch
Location 0
Sample Date 10/3/2014

Latitude 0
Longitude 0
Class Small, High Gradient, B2-3
Sampler CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results 4278070005					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	403	≥300	Pass	≥400	I+	≥500	Fail
Richness	27.0	≥27	I+	≥31	Fail	≥35	Fail
EPT	18.0	≥16	Pass	≥19	Fail	≥21	Fail
% PMA-O	65.6%	≥45%	Pass	≥55%	Pass	≥65%	I+
BI (New 1-10)	2.00	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	8.1%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.951	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	57.2%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		N/A					

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
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%
B2-3	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%

Figure 6.4.2. **LOTIC BENTHOS FIELD SHEET**

Site Location: Joy
River (site) S.Br River Mile _____ Site ID 108 BioLab ID _____
Town _____ Stream Order _____ Drainage Area _____ Km^2 Elevation _____ ft
Latitude _____ Longitude _____ Lat/Long source (GPS, USGS Map,Datum) _____
Site Description _____

Sampling Information:
Date 10/3/14 Time 0700 Personnel (circle sampler) CS Gear KN
Effort time (min) _____ Area (m^2) _____ Mesh (um) 500 Quantitative: Y / N #Reps: 2 Comp/rep 4
Weather Sunny Flow/Weather Previous (2 weeks/2days) Quiet 2 wk
Baseflow ✓, or Freshet flow _____ Rising / Receding _____ Present Flow: H - M - (L)

General observations circle those that apply: Overall Aesthetic Rating 0 (poor) – 5 (exc.) 4

A:-Debris Obvious 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

Embeddedness: 0-5% Excel (5) (5-25% V Good (4)) (25-50% Good (3)) 50-75% Fair (2) > 75% Poor (1)
Estimate 25 %
Silt rating (0-5) 3 (0=none, 5= high) CPOM rating (leaf packs)(0-5): 3 (0= none,5=high)
Snags/debris dams # 0 / 100 m (reach)

Bank Stability: EX , G (F) P ; **Riparian Width**(facing upstream) L 20 m, R 50 m
very unstable banks, bank loss immediately upstream
% Canopy: 100 (90) 80 70 60 50 40 30 20 10 0 Overhead = Open, Partly Open, or (Closed)
(See back for Densiometer form) If leaves on, about 80% off

Vegetation: (both sides) %: Overstory: Softwood _____ Hardwood 100
(Does not need to add up to 100%) %: Understory: Shrub (brush) 10 Grass/ferns etc 40
Surrounding Land Use: Resort, forest

Periphyton Cover: For each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 80 % Filamentous green _____ % and length _____ (in) Blue Green _____ % Moss 5 %
Green _____ % Other _____ % General Trophic Rating (0-5) 1 (0=oligo, 5=Eutroph)

General Water Type:
Riffle ✓ Winder _____ Other _____ Warm _____ Cold ✓ Mixed _____
B.F.Width 20' (m), Wetted Width 10' (m) Riffle Depth 2" (m) Pool Depth 2' (m) and Obs _____
Velocity (measured): _____ ft/sec, Velocity RANGE-estimate: (circle): _____ <.4 ft/sec (S) (.4-2 ft/sec (M)) >2 ft/sec (F)
Channelized: (Y) N Upstream Dam: Y ____ mi (N) Other modifications: _____
Water Quality Parameters: Field **(Record)** or Collected **(Circle)**, **Meter** (type, #) _____ **Chemistry LabId** _____
Temp Air 65 **°C,°F Water** 16.5 **°C fpH** _____ lab pH _____ **fCond** _____ labCond _____ ***D.O.%*** _____ **D.Omg/l** _____

Cond pH Alkalinity Color _____ TSS TP DP Cl SO4 Turb TN N02-3 TNH3 DOC, Ca Mg Na K

Hardness Metals Other ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Field Sheet Complete: _____ (initial) **Photo's:** _____ **Fish Survey Conducted (circle):Y / N** _____

Site Sketch & Observations

Aquatic Biota Observed:
Mussels
Crayfish
Gastropods

Pebble count	
Sand	9
Gravel	8
Coarse gravel	15
Cobble	29
Boulder	34
Bedrock	6

Peri	0	1
moss	40	5
macro	45	
micro	5	40

Fish
Other

Harder to kick due to sand sealing in areas, some areas OK

Jay Peak Resort Kick Net Data - South Branch - WQM - 108 Class B									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT/EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2014 VHB	403	27.0	18.0	65.6	2.00	8.11	0.951	57.2	Meets Class B Criteria
Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%	
Above Threshold (I+) Below Threshold (I-)	4.278E+09	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	