STATE OF VERMONT

SUPERIOR COURT — ENVIRONMENTAL DIVISION

Re:	**Jay Peak Stormwater Discharge Permit and General Permit Authorizations**))))	**Docket No. 76-5-14 Vtec**

STIPULATED CONSENT ORDER AND JUDGMENT ORDER

This matter involves the Vermont Natural Resources Council's appeal of NPDES Permit No. VT50000116, Permit No. 5467-INDC.4, and Authorization to Discharge Nos. 5467-9015.10A and 3758-9015.A under General Permit 3-9015 issued by the Vermont Agency of Natural Resources to Jay Peak Resort. Based on the Parties' Joint Motion for Approval of Stipulated Consent Order and Judgment Order in this matter, and pursuant to V.R.E.C.P. 5(j), and this Court's inherent equitable powers, the Court hereby ORDERS, ADJUDGES, and DECREES:

1.0 The Parties

1.1 The Vermont Agency of Natural Resources ("ANR") is a state agency with various offices in Vermont.

1.2 The Vermont Natural Resources Council ("VNRC") is a not-for-profit Vermont corporation with its principal place of business in Montpelier, Vermont.

1.3 Jay Peak Resort ("JPR") is the business name of Jay Peak Inc., a Vermont corporation with its principal place of business in Jay, Vermont.

2.0 Background

2.1 In 2004 and 2005, members of the ANR Water Quality Division observed multiple instances at JPR where waters were not in compliance with the Vermont

Water Quality Standards ("VWQS") due in part to the release of sediment into Jay Branch and Tributary 9 of Jay Branch, associated with the construction of residential units and a golf course.

2.2 Based on biological monitoring conducted in 2004 and 2005, ANR identified these two stream segments as impaired, specifically for aquatic life support. The specific cause of these impairments was embeddedness of the stream bed habitat due to excess sediment deposition.

2.3 As a result of the consecutive year measurements indicating non-compliance with the VWQS for aquatic life support, both Jay Branch from river mile 8.3 upstream to river mile 9.1 and Tributary 9 of Jay Branch were listed as impaired on Part B of Vermont's List of Priority Surface Waters ("Part B List").

2.4 On April 28, 2006, ANR issued an order under 10 V.S.A. § 1272 ("1272 Order") mandating JPR to develop a Water Quality Remediation Plan ("WQRP"). The WQRP was approved by ANR to remediate the two streams to meet VWQS within a reasonable period of time.

2.5 JPR began implementing the WQRP in 2006 at the same time that additional development was undertaken at JPR. The WQRP was updated in 2009 and 2012. The 2012 WQRP Update contained a new and comprehensive inventory of sediment sources impacting Tributary 3 of South Mountain Branch among the other impaired surface waters.

2.6 Jay Branch from river mile 7.3 to 9.1, Tributary 9 of Jay Branch, and Tributary 3 of South Mountain Branch are all listed as impaired on the 2014 Part B List. The waters are impaired for aquatic life support and the cause of the impairment is sediment. Jay Branch from river mile 8.3 to 9.1 and Tributary 9 of Jay Branch

were added to the Part B List in 2006. Water quality monitoring data from 2013 indicated water quality improvements in Jay Branch at river mile 7.3 and 8.3 and Tributary 9 of Jay Branch, however, the improvements were not great enough to remove these waters from the Part B List. Jay Branch from river mile 7.3 to 8.3 and Tributary 3 of South Mountain Branch were added to the Part B List in 2014.

2.7 On August 2, 2013, JPR filed an application for amendments to existing Authorization to Discharge No. 3758-9015 under General Permit 3-9015 for operational stormwater discharges to the Phase II Tributary to the Jay Branch Brook. The original Authorization covered discharges from Phase II of Jay Peak Village located on the Upper and Lower South Village Road in Jay, Vermont. The application sought amendments to discharge points in the original Authorization.

2.8 On December 23, 2013, JPR filed an application for amendments to existing Authorization to Discharge No. 5467-9015.10 under General Permit 3-9015 for operational stormwater discharges to South Mountain Branch. The original Authorization covered discharges from Hotel 3, the Day Lodge, and the Powerline Chair Lift at the Stateside Base Area of JPR. The application sought to amend the Authorization to include the Stateside Recreation Center.

2.9 On January 3, 2014, JPR filed an application for an Individual Construction Stormwater Discharge Permit for construction stormwater discharges to Jay

Branch, Tributary 9 of Jay Branch, and South Mountain Branch. The application sought coverage for discharges from various construction projects across JPR.[1]

2.10 On March 13, 2014, VNRC filed comments in opposition to the issuance of the above referenced stormwater discharge permits.

2.11 On March 21, 2014, ANR issued a 1272 Order (the "March 21, 2014 1272 Order") directing JPR to update its existing WQRP to bring Jay Branch from river mile 7.3 to 9.1, Tributary 9 of Jay Branch, and Tributary 3 of South Mountain Branch into compliance with the VWQS.

2.12 The March 21, 2014 1272 Order directed JPR to revisit and prioritize actions in its existing WQRP previously developed for Jay Branch and Tributary 9 of Jay Branch, and to create a prioritized schedule of implementation measures for Tributary 3 of South Mountain Branch. The March 21, 2014 1272 Order required that JPR's WQRP identify and rank all potential sources of sediment loading to the impaired waters and identify and rank best management practices ("BMPs") to remediate the sediment load sources.

2.13 On April 29, 2014, ANR issued the following permit authorizations to JPR: NPDES Permit No. VT50000116, Permit No. 5467-INDC.4; and Authorization to Discharge Nos. 5467-9015.10A and 3758-9015.A under General Permit 3-9015. NPDES Permit No. VT50000116, Permit No. 5467-INDC.4 is an Individual Construction Stormwater Discharge Permit for discharges of stormwater from the

[1] The projects included the South Village Townhomes, the Clubhouse Practice Facility, the Clubhouse Sewer Connection, State Side Soil Waste, the Sky Haus Sewer, the Taxi Novice Quad, Admin and Golf Maintenance, Mountain Maintenance, Snowmaking, the Bonnie Relocation, the Stateside Hotel/Lodge, the Wedding Chapel, the Lodge and Town Homes II, the Mountain Learning Center, the Phase I Tributary Culvert, the Stoney Path Condominiums, the Jay Peak Water System, the Hole 18 Bridge, the 242 Parking Lot, the Recreation Center, the Snowline Medical Center, the Stateside Cottages, Snowmaking Parking, the Snowline Welcome Center, the X-Man Course, and Townhome 3.

construction projects listed within the permit. Authorization to Discharge Nos. 5467-9015.10A and 3758-9015.A under General Permit 3-9015 authorize operational discharges of stormwater to waters not principally impaired by stormwater runoff from the facilities listed within the Authorizations.

2.14 On May 21, 2014, pursuant to the March 21, 2014 1272 Order, JPR submitted its draft 2014 WQRP.

2.15 After several rounds of comments and revisions, ANR approved JPR's 2014 WQRP on February 2, 2015.

2.16 On May 29, 2014, VNRC filed an appeal of NPDES Permit No. VT50000116, Permit No. 5467-INDC.4, and Authorization to Discharge Nos. 5467-9015.10A and 3758-9015.A under General Permit 3-9015 (the "Appeal").

2.17 Pursuant to this Court's July 15, 2014 Order, the parties engaged in informal negotiations from July 30, 2014 to February 11, 2015 to resolve their dispute.

3.0 Settlement

3.1 ANR, VNRC, and JPR (collectively, "the Parties") have agreed to resolve this dispute through the following stipulated agreement and the Parties respectfully request that the Court adopt this agreement as a Court Order.

3.2 ANR, VNRC, and JPR have also agreed to resolve this dispute through an additional private civil settlement agreement enforceable by the Parties ("Settlement Agreement").

4.0 Definitions

4.1 "Attainment" is defined as when ANR provides notice to the Parties that the impaired waters have met all physical, chemical, and biological requirements of the VWQS for two consecutive years and therefore may be removed from

Vermont's List of Priority Surface Waters. If the U.S. Environmental Protection Agency ("EPA") does not subsequently approve ANR's proposal to remove impaired waters from Vermont's List of Priority Surface Waters, then such waters would be deemed not in Attainment until approval by EPA is obtained.

4.2 "Commence construction" means the construction of the first improvement on the land or to any structure or facility located on the land including work preparatory to construction such as clearing, the staking out or use of a right-of-way in any way incidental to altering the land according to a plan or intention to improve or to divide by sale, lease, partition, or otherwise transfer an interest in the land; provided that such commencement of construction does not include any activity which is principally for preparation of plans and specifications that may be required and necessary for making application for a permit, such as test wells and pits (not including exploratory oil and gas wells), percolation tests, and line-of-sight clearing for the placement of survey markers; and provided further that no permanent improvements to the land will be constructed.

4.3 "Compliance" or "VWQS Compliance" means that the applicable aquatic biota use criterion of the VWQS are met based on the results of instream biological sampling conducted and evaluated in accordance with ANR's protocols. This determination shall be made by ANR using the applicable biocriteria for individual water quality sampling locations.

4.4 "Compliance Year" means a year as referenced in the "Interim Biocriteria Targets and Compliance Schedule" or "Compliance Schedule" attached at **Appendix A**.

4.5 "Final Stabilization" as used in Paragraph 5.7 of this Consent Order means that a project site has final landscaping implemented and is stabilized as necessary for

structural stormwater management practices and any necessary site reforestation or re-vegetation, including, as applicable, that all soil disturbing activities at the site have been completed and either of the two following criteria are met:

4.5.1 a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or

4.5.2 equivalent final stabilization measures (such as the use of gravel, riprap, gabions, or geotextiles) have been employed, and that such other landscaping elements as contemplated by the final landscaping plans approved by ANR and Act 250 have been implemented.

4.6 "Impaired waters" means waters to which JPR discharges that are listed on Vermont's List of Priority Surface Waters, Parts A, B, or D.

4.7 "West Side" means all undeveloped areas in JPR's holdings, as of the Effective Date of this Consent Order, draining to Jay Branch at river mile 9.1 and upstream, as shown on the "Jay Peak Resort Watershed Map" attached as **Appendix B** as "Jay Branch (West Bowl) Watershed." The "West Side" includes any undeveloped lands north and westward of the eastern-most extent of golf course hole 15, but excludes the ski area boundary within the "Jay Branch (West Bowl) Watershed" in existence as of the Effective Date of this Consent Order. "East Side" means all other areas in JPR's holdings, as of the Effective Date of the this Consent Order, where water drains to Jay Branch, Tributary 9 of Jay Branch, or South Mountain Branch, including the existing ski area boundary within the "Jay

Branch (West Bowl) Watershed," as shown on the " Jay Peak Resort Watershed Map" attached as **Appendix B.**

5.0 East Side

5.1 Exemptions. JPR may proceed with the following projects under NPDES Permit No. VT50000116, Permit No. 5467-INDC.4, which shall not be subject to the remaining provisions of this Consent Order:

5.1.1 Stateside Cottages,

5.1.2 Recreation Center, and

5.1.3 Medical Center.

5.2 Implementation Schedule. JPR shall complete any project identified in the "BMP Project List" attached at **Appendix C** as a "project to be completed in 2015" or as "winter ops." by November 1, 2015.

5.3 New development projects: offsets required. JPR shall offset all construction-phase and operational-phase discharges of the pollutant(s) of concern on the East Side for any development project not identified in Paragraph 5.1 until the waters have reached Attainment, as described in the Offset Methodology Memorandum dated February 3, 2015 (the "Offset Memo") attached at **Appendix D**.

5.3.1 Offset projects must be implemented within the same watershed as the proposed discharge, and prior to or concurrent with the proposed discharge.

5.3.2 Projects identified in the "BMP Project List" attached as **Appendix C** that are designated as "done," "winter ops.," or "projects to be completed in 2015" shall not be used in future years as offsets pursuant to Paragraph 5.3.

5.3.3 South Village Townhomes, Administration Building, and Golf Maintenance Center in the Jay Branch watershed and the Welcome Center, Chalet Meadows Residential Area and Snowline Redevelopment Area in the South Mountain Branch watershed are exempt from operational offsets. These specific projects require construction offsets as described in the Offset Memo attached at **Appendix D**.

5.4 WQRP amendments and public notice. JPR shall incorporate all offset projects and supporting calculations into its WQRP and shall submit or reference the offset projects as a part of its application for any stormwater permit for development projects that require offsets under this Consent Order. When JPR amends its WQRP to incorporate offset projects, ANR shall provide public notice and comment on the proposed amendments. ANR shall put the amended WQRP on public notice for 30 days. ANR shall provide public notice on the Department of Environmental Conservation's website and to a list of interested persons. ANR shall take written comments on the proposed amendments during the 30 day period. At the close of the 30 day period, ANR shall consider all public comments it has received and promptly prepare a written response to comments. ANR shall post the response to comments on the Department website and shall provide the response to comments to all individuals and entities that received notice of the WQRP amendment.

5.5 Compliance dates. JPR shall meet the dates agreed to by the Parties for VWQS Compliance for each of the impaired waters as described in the "Compliance Schedule" attached at **Appendix A**.

5.6 Failure to meet a compliance date. If JPR fails to meet a date as described in Paragraph 5.5 for any of the impaired waters during a Compliance Year, JPR may not commence construction of any projects that discharges the pollutant(s) of concern. See "Pre-Attainment Flowchart" attached at **Appendix E**.

5.7 Backsliding from Attainment to Impairment. If the waters at JPR that are in Attainment with the VWQS become impaired by a pollutant(s) of concern as determined by ANR, JPR shall not commence construction of any new projects that discharge the pollutant(s) of concern as set forth in the "Post-Attainment Flowchart" attached at **Appendix F.** However, JPR may finish existing projects that commenced construction the previous construction season to the point that the projects have achieved final stabilization even if further earth disturbance is required to do so and JPR may conduct remedial projects which ANR determines would improve water quality, but for the sole purpose of this sentence, and not withstanding Paragraph 4.2, the mere placement of stakes does not qualify as "commenced construction." Additionally, JPR must provide a plan to ANR and VNRC at the annual meeting that outlines additional protective measures, if any, beyond those required in the permits, authorizations, WQRP, and/or WQPP that demonstrate that the impacts to the receiving waters associated with finishing existing construction projects will be minimized or mitigated. VNRC and ANR may provide input at the annual meeting described in Paragraph 5.0 below and any additional protective measures that the Parties agree to shall be added to the WQRP and/or WQPP for ANR's approval as amendments to the WQRP and/or WQPP.

6.0 West Side

6.1 Water Quality Protection Plan. Prior to applying for any permits or certifications administered by the Department of Environmental Conservation's Watershed Management Division for construction on the West Side, JPR shall submit to ANR a Water Quality Protection Plan ("WQPP") which includes hydrologic and stormwater modeling, a water quality and stormwater treatment monitoring regime, geomorphic assessment, a margin of safety, and is consistent with the requirements outlined in ANR's February 9, 2012 and August 23, 2012 memoranda attached at **Appendix G**, in order to allow ANR to determine whether the streams have the assimilative capacity to accommodate proposed development.

6.2 WQPP approval. Prior to issuing a final determination on the WQPP, ANR agrees to put the WQPP on public notice and provide an opportunity for public comment on it. ANR shall promptly respond to all public comments received on the WQPP. After public notice and comment, ANR may request that JPR modify the WQPP as necessary to ensure continued Attainment.

6.3 All impaired waters at JPR must be in Attainment before JPR may commence construction on the West Side.

7.0 Other Causes of Action

7.1 Provided that JPR complies with its obligations under the Settlement Agreement and this Consent Order, VNRC will not appeal ANR's approvals of JPR's applications for amendments to existing or future Authorizations for Operational Stormwater Discharges or for Individual Construction Stormwater Discharge Permits for East Side only stormwater discharges to the Jay Branch, Tributary 9

of Jay Branch, Tributary 3 of South Mountain Branch, and/or Jay Brook to the extent that such future applications and approvals are consistent with and not in derogation of the terms and conditions of the Settlement Agreement and this Consent Order.

7.2 Provided that JPR complies with its obligations under the Settlement Agreement and this Consent Order, VNRC will not collaterally appeal the above mentioned submissions or approvals of JPR's applications for amendments to existing or future Authorizations for Operational Stormwater Discharges or for Individual Construction Stormwater Discharge Permits for East Side only stormwater discharges through other permitting proceedings, including, without limitation, local zoning permits and approvals, land use approvals under Act 250, and Water Quality Certifications under Section 401(a)(1) of the federal Clean Water Act to the extent these proceedings cover and are consistent with the specific stormwater discharge issues addressed in the Settlement Agreement and this Consent Order.

7.3 Nothing in the Settlement Agreement or this Consent Order shall be construed as limiting VNRC's rights to appeal ANR's approvals of JPR's permits or certifications related to the West Side. Except as explicitly set forth herein, nothing in the Settlement Agreement or this Consent Order shall prejudice, waive, or impair any right, remedy, argument, or defense VNRC may have in those or any other pending or future litigation proceedings.

7.4 If JPR fails to meet a date during a Compliance Year for two consecutive years and has exhausted the remedial actions as set forth in the Pre-Attainment Flowchart attached at **Appendix E**, including implementing all available BMPs and halting construction if so required, VNRC will not be bound by Paragraph 7.1

and 7.2 of this Consent Order. However, once the waters reach Attainment, VNRC is bound by Paragraphs 7.1 and 7.2 of this Consent Order.

7.5 JPR agrees not to appeal any condition included as a part of a permit or certification issued by ANR to implement the provisions of an approved WQPP or WQRP provided such conditions are required by the terms of this Consent Order.

8.0 Jurisdiction of Environmental Division of the Superior Court

8.1 The jurisdiction of the Environmental Division of the Vermont Superior Court shall terminate upon the filing of a Stipulation of the Parties that (i) JPR has not submitted applications for construction projects on the West Side until JPR has submitted a WQPP that is approved by ANR, and (ii) all impaired waters are in Attainment without JPR having commenced any construction on the West Side. However, the Environmental Division of the Superior Court will maintain limited jurisdiction over Paragraph 5.7 of this Consent Order which would be triggered only if the waters on the East Side at JPR that are in Attainment become impaired.

9.0 Remand of NPDES Permit No. VT50000116, Permit No. 5467-INDC.4

9.1 The Parties stipulate and agree to a remand of NPDES Permit No. VT50000116, Permit No. 5467-INDC.4 to ANR to update the Permit(s) and allow ANR to incorporate compliance with the 2014 WQRP, as approved by ANR on February 2, 2015, as a permit condition.

10.0 Dismissal of Appeal

10.1 In consideration of the terms and conditions herein, VNRC withdraws and seeks a dismissal without prejudice of its appeal of NPDES Permit No. VT50000116,

Permit No. 5467-INDC.4 and Authorization to Discharge Nos. 5467-9015.10A and 3758-9015.A under General Permit No. 3-9015.

11.0 General Provisions

11.1 This Consent Order is binding upon JPR and VNRC, their successors and assigns.

11.2 This Consent Order shall become effective only after it is entered as an order of the Court, and the date of entry will be the Effective Date of the Order. When so entered by the Court, this Consent Order shall become a final Judgment Order.

11.3 Any violation of this Consent Order shall be deemed to be a violation of a judicial order, and may result in the imposition of injunctive relief and/or penalties, including penalties for contempt, as set forth in 10 V.S.A. Chapters 201 and 211, and 12 V.S.A. § 122.

11.4 Nothing in this Consent Order shall be construed as having relieved, modified, or in any manner affected JPR's obligations to comply with all federal, state, and local statutes, rules, regulations, permits, orders, and directives applicable to JPR.

11.5 All terms and conditions within this Order shall be construed as being in addition to ANR's statutory and regulatory authority and shall not limit or otherwise affect any regulatory determination or enforcement action made by ANR with respect to JPR.

11.6 Nothing in this Consent Order shall be construed to preclude or prevent any enforcement action by ANR relating to JPR. Similarly, nothing in this Consent Order shall be construed to preclude or prevent any defense that may be raised by JPR in such action.

11.7 This Consent Order may be altered, amended, or otherwise modified only by subsequent written agreements signed by the Parties hereto or their legal

representatives and approved by the Environmental Division of the Vermont Superior Court.

11.8 The Court hereby finds that ANR, VNRC, and JPR have negotiated this Consent Order in good faith, that implementation of this Consent Order will avoid prolonged and complicated litigation between the Parties, and that this Consent Order is fair and reasonable. The Court hereby enters this Consent Order as a final Judgment Order of the Court.

SO ORDERED, and ENTERED as FINAL JUDGMENT.

DATED at Burlington, Vermont this 20th day of February, 2015.

Thomas S. Durkin

The Honorable Thomas S. Durkin
Judge, Environmental Division

Appendix A

Stipulated Consent Order, Docket No. 76-5-14 Vtec

Interim Biocriteria Targets and Compliance Schedule

("Compliance Schedule")

INTERIM BIOCRITERIA TARGETS AND COMPLIANCE SCHEDULE

Stream Jay Branch
Location WQM 4-3
DEC Site # 427800000083

Class B - SHG Criteria		Historic Data			Interim Target Years		Compliance Years	
		2011	2012	2013	2014	2015	2016	2017
Density	≥ 300 (≥ 350)	117	230	238	> 250	> 275	≥ 300	≥ 350
Richness	≥ 27 (≥ 28)	22	24	30	≥ 28	≥ 28	≥ 28	≥ 28
EPT	≥ 16 (≥ 17)	15	16.5	21.5	≥ 17	≥ 17	≥ 17	≥ 17
% PMA-O	≥ 45 (≥ 50)	58	71	80	(-)	(-)	(-)	(-)
BI	≤ 4.50 (≤ 4.35)	1.10	1.15	1.13	(-)	(-)	(-)	(-)
% Oligo.	≤ 12 (≤ 9.5)	17.8	6.9	10.1	≤ 12	≤ 12	≤ 12	≤ 9.5
EPT/EPT+C	≥ 0.45 (≥ 0.47)	0.97	0.98	0.95	(-)	(-)	(-)	(-)
% PPCS-FG	≥ 40 (≥ 45)	54	56	57	(-)	(-)	(-)	(-)

Stream Jay Branch
Location WQM 4-4A
DEC Site # 427800000073

Class B - SHG Criteria		Historic Data			Interim Target Years		Compliance Years	
		2011	2012	2013	2014	2015	2016	2017
Density	≥ 300 (≥ 350)	88	176	327	≥ 300	≥ 300	≥ 300	≥ 350
Richness	≥ 27 (≥ 28)	16.5	27.5	27.5	≥ 28	≥ 28	≥ 28	≥ 28
EPT	≥ 16 (≥ 17)	10.5	19.5	20.5	≥ 17	≥ 17	≥ 17	≥ 17
% PMA-O	≥ 45 (≥ 50)	71	67	73.8	(-)	(-)	(-)	(-)
BI	≤ 4.50 (≤ 4.35)	0.94	1.24	0.79	(-)	(-)	(-)	(-)
% Oligo.	≤ 12 (≤ 9.5)	3.7	9.3	9.2	≤ 9.5	≤ 9.5	≤ 9.5	≤ 9.5
EPT/EPT+C	≥ 0.45 (≥ 0.47)	0.99	0.96	0.96	(-)	(-)	(-)	(-)
% PPCS-FG	≥ 40 (≥ 45)	44	48	62	(-)	(-)	(-)	(-)

Stream Tributary 9 to Jay Branch
Location WQM 3-1
DEC Site # 427809000001

Class B - SHG Criteria		Historic Data			Interim Target Years		Compliance Years	
		2011	2012	2013	2014	2015	2016	2017
Density	≥ 300 (≥ 350)	77	95	157	> 200	> 250	≥ 300	≥ 350
Richness	≥ 27 (≥ 28)	22.5	25.5	30.0	≥ 28	≥ 28	≥ 28	≥ 28
EPT	≥ 16 (≥ 17)	15.0	15.5	19.5	≥ 17	≥ 17	≥ 17	≥ 17
% PMA-O	≥ 45 (≥ 50)	66	69	74.4	(-)	(-)	(-)	(-)
BI	≤ 4.50 (≤ 4.35)	1.47	1.96	2.07	(-)	(-)	(-)	(-)
% Oligo.	≤ 12 (≤ 9.5)	8.7	21.2	13.6	≤ 12	≤ 12	≤ 12	≤ 9.5
EPT/EPT+C	≥ 0.45 (≥ 0.47)	0.99	0.93	0.91	(-)	(-)	(-)	(-)
% PPCS-FG	≥ 40 (≥ 45)	55	54	58	(-)	(-)	(-)	(-)

Stream Tributary 3 to South Mountain Branch
Location WQM 106
DEC Site # 427807030001

Class B - SHG Criteria		Historic Data		Interim Target Years			Compliance Years	
		2012	2013	2014	2015	2016	2017	2018
Density	≥ 300 (≥ 350)	259	133	> 150	> 200	> 250	≥ 300	≥ 350
Richness	≥ 27 (≥ 28)	34.5	21.5	> 22	> 24	> 26	≥ 27	≥ 28
EPT	≥ 16 (≥ 17)	22.0	15.0	> 15.3	> 15.5	> 16.7	≥ 16	≥ 17
% PMA-O	≥ 45 (≥ 50)	67.4	58.3	(-)	(-)	(-)	(-)	(-)
BI	≤ 4.50 (≤ 4.35)	0.93	1.04	(-)	(-)	(-)	(-)	(-)
% Oligo.	≤ 12 (≤ 9.5)	20.7	29.6	< 25.0	< 20.0	≤ 14.5	≤ 12	≤ 9.5
EPT/EPT+C	≥ 0.45 (≥ 0.47)	0.93	0.93	(-)	(-)	(-)	(-)	(-)
% PPCS-FG	≥ 40 (≥ 45)	57	50	(-)	(-)	(-)	(-)	(-)

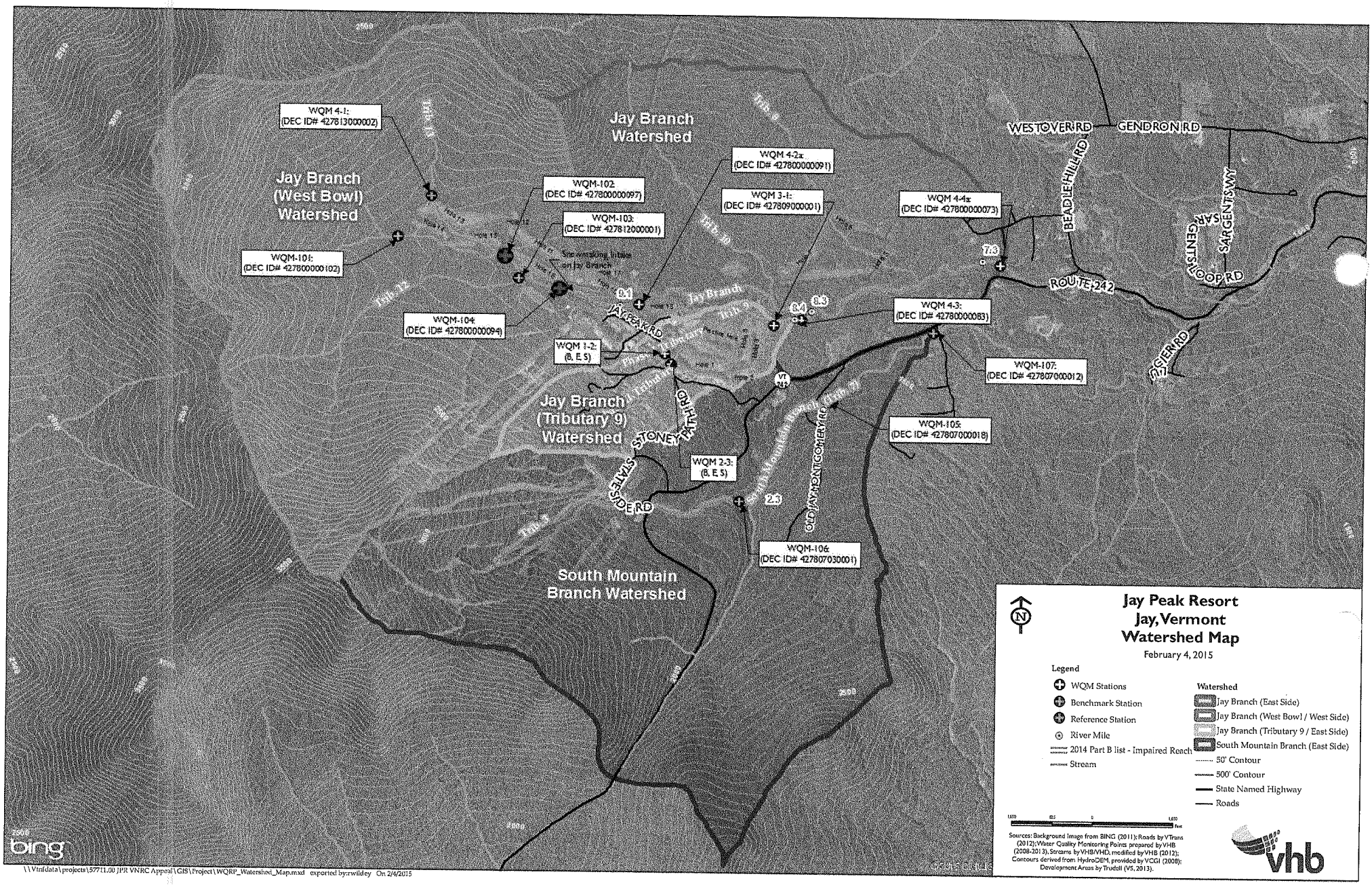
Biocriteria Color Coding System
Full Support (Pass)
Above Threshold (I+)
Below Threshold (I-)
Non-Support (Fail)

Targets are set to demonstrate improvement each year until criteria has reached compliance with VWQS or to continue meeting VWQS for criteria that are already being met. (-) indicates criterion is currently being met and no interim target is required. Attainment is reached following two years of compliance with the VWQS.

Appendix B

Stipulated Consent Order, Docket No. 76-5-14 Vtec

Jay Peak Resort Watershed Map



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Appendix C

Stipulated Consent Order, Docket No. 76-5-14 Vtec

Best Management Practices Project List

("BMP Project List")

Project ID #	Description	Status	Sediment Reduction Potential	Notes
	JAY BRANCH WATERSHED			
1001	iron seep at toe of slope at snowmaking pond	2015		build limestone cutoff trench
1002	revegetate informal parking spaces	done	lower	wattles were installed and will be replaced each year as needed
1003	revegetate edge of roadway and eliminate parking space	done	lower	
1004	improve and armor existing swale by snowmaking building	done	moderate	part of larger project A - Pave parking area by snowmaking building
1005	revegetate informal parking spaces by Tram Haus Lodge	done	lower	stream bank and unofficial parkig spce were revegetated
1006	stream bank stabilization	done	lower	part of larger project A - Pave parking area by snowmaking building
1012	prevent sediment from plowing activity from entering stream	winter ops.	moderate	part of snow management plan
1013	eliminate snow storage next to Tram Haus Lodge bridge	done	moderate	part of larger project A - Pave parking area by snowmaking building
1014	regrade road and parking area, restore riparian buffer	done	higher	part of larger project A - Pave parking area by snowmaking building
1015	armor upstream embankment of culvert crossing	done	lower	
1016	upgrade culvert	monitor	lower	part of West Bowl road extension
1017	bank stabilization by snowmaking intake	done monitor	lower	stream bank has been armored; live stakes to be planted in spring 2015
1018	bank stabilization by hole 18	monitor	moderate	this is an off site concern
1019	cart path erosion	done	lower	
	TRIB 9 WATERSHED			
2001	phase 2 trib at Raccoon Run/work road	done	lower	
2002	iron seep	2015	lower	build limestone check dam and spillway
2003	improve water bar on Raccoon Run	done	moderate	
2004	repair outfall of water bar on Raccoon Run	done	moderate	
2005	restore protective buffer on phase 2 trib	done	lower	no mowing zone created
2006	capture sand from snow melt	done	lower	
2007	revise snow plowing plan and capture sediment	done	moderate	new snow dump area has been created
2008	stream bank stabilization, remove existing sediment	done	moderate	
2009	culvert outlet repair, stream bank stabilization	done	moderate	bring in more rip rap and clean out debris
2010	culvert outlet repair, stream bank stabilization	done	moderate	
2013	repair phase 2 trib erosion	done	moderate	
2014	improve storm water management on road near phase 1 trib	done	moderate	
2016	improve work road crossing	done	lower	
2017	golf course driving range riparian buffer management	done	lower	no mowing zone created, shade shrubs were planted in fall 2014; continue to monitor
2018	iron seep near trib 9 near driving range	2015	lower	build limestone check dam and spillway
	SOUTH MOUNTAIN BRANCH WATERSHED			
3001	downstream sediment transport during utility line work	monitor	moderate	
3002	bank stabilization at Stoney Path Road	done	lower	
3005	seed and mulch areas next to Stoney Path Road	done	lower	seeded and mulched spring 2014, more improvements will be made when road is paved
3006	sand entering route 242 near 242 parking lot	done 2015	lower	2014: regrade parking lot; 2015: reconfigure intersection
3007	revise snow plowing practices near trib 3	winter ops.	moderate	part of snow management plan
3008	relocate 242 parking lot entrance away from route 242	done 2015	moderate	2014: regrade parking lot; 2015: reconfigure intersection
3009	re-route sediment into storm water management feature	done	moderate	2014: regrade parking lot; 2015: reconfigure intersection
3010	repair slope failure and improve swale	done	higher	additional improvements will be made in 2014 and 2015
3011	regrade parking lot to capture more sediment	done	higher	regrade parking lot and direct runoff to swales with check dams
3012	revise snow plowing practices near 242 parking lot	winter ops.	lower	part of snow management plan
3013	restore sediment controls around sand pile	done	higher	
3014	improve storm water management along Stateside Road	2015	higher	pave a part of Stateside Road in 2015
3015	revise snow plowing practices near 242 parking lot	winter ops.	moderate	part of snow management plan
3016	stream bank stabilization	done	moderate	berm was created at top of bank, area is now vegetated
3018	direct snow melt into Stateside Hotel treatment system	winter ops.	moderate	construct berm at toe of slope to direct flow of snowmelt in to swale
3020	upgrade/armor channel	done	lower	
3021	stream bank stabilization	done	moderate	additional rip rap armoring will be put in place
3022	bridge abutment replacement	2015	moderate	at a meeting with Chris Brunelle in Oct. paramters for bridge re-design were determined
3023	scoured banks at inlet and outlet of culvert	monitor	moderate	place mix of boulders on banks at inlet end; monitor outlet
3024	incised and widening stream	done monitor	moderate	site was improved in 2013, continue to monitor and assess
3025	stream bank stabilization	monitor	moderate	site is not directly connected to any development area, but may be a sediment source
3026	improve culvert outfall	done	lower	
3027	improve water bar and outfall on water bar on Powerline Trail	done	lower	
3028	stabilize roadside ditch	done 2015	moderate	this is Vtrans' ditch, some improvements made in 2014, more in 2015 when 242 is paved
3029	undersized culvert and erosion around header	monitor	moderate	ensure that storm water runoff is minimized and/or ditches armored to minimize erosion
3030	improve ditch along Stateside Road	done	lower	
	LEGEND			
	work has been completed			
	items related to revised snow plowing operations			
	items requiring on-going monitoring and assessment			
	projects to be completed in 2015			

Appendix D

Stipulated Consent Order, Docket No. 76-5-14 Vtec

Offset Methodology Memorandum ("Offset Memo")

vhb

Memorandum

To: Project File

Date: February 3, 2015
Project #: 57711.00

From: Robert Wildey

Re: Jay Peak Resort – Construction Phase and Operational Phase Sediment Discharges and Offset Projects

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VHB has prepared this memorandum to outline the calculation of construction phase and operational phase sediment offsets that would be implemented in order to mitigate sediment loading from certain proposed projects at Jay Peak Resort. The purpose of these offsets is to reduce and minimize the impact of sediment discharges to the streams within the Jay Branch and South Mountain Branch watersheds. The objective of the offset program would be to achieve no net increase to sediment loading attributable to construction projects or new areas of impervious cover. These offsets would be required for projects completed during the "pre-attainment" period while Jay Branch, Tributary 9 to Jay Branch, and Tributary 3 to South Mountain Branch do not meet the Vermont Water Quality Standards ("VWQS"). In accordance with the terms of the settlement agreement between the Vermont Natural Resources Council, the Vermont Agency of Natural Resources, and Jay Peak Resort, the Stateside Cottages, Recreation Center, and Medical Center projects do not require construction or operational phase offsets.

As described in the following sections, sediment loads will be calculated for both construction phase and operational phase discharges. Three key methodologies will be used to calculate sediment loads and offsets: the Revised Universal Soil Loss Equation ("RUSLE"), the Simple Method, and the Spreadsheet Tool for Estimating Pollutant Load ("STEPL"). The RUSLE will be used to evaluate sediment loads during construction. The Simple Method will be used to evaluate post-construction sediment loads as well as to evaluate offsets generated by providing treatment for existing impervious areas or by changing the land use/land cover to one that generates less sediment. The STEPL model estimates load reductions associated with gully stabilization and bank stabilization projects. Offsets associated with other types of projects that are not addressed by one of these models would be calculated in accordance with the methodology outlined in the Vermont Environmental Protection Rules ("EPR"), Chapter 22, Appendices B and C, using the appropriate calculation techniques and reasonable assumptions. Projects generating sediment offset credits are required to be implemented prior to or concurrently with the projects that need to be offset, and a ledger system will be maintained to track offset credits and debits.

Construction Phase Offsets

Subject to the limitations noted above, construction phase offsets would be required to offset sediment discharges associated with periods of soil exposure during construction. The RUSLE would be used to calculate potential soil losses from active construction earth disturbance areas (i.e. covered under a NPDES discharge permit), and thus the resultant sediment loading to receiving waters. The RUSLE methodology, including the application of calculation parameters, is described below in the section titled "Calculation of Discharges and Offsets." An example RUSLE calculation is included in the "Calculation of Discharges and Offsets" section.

Operational Phase Offsets

Operational phase offsets are required in order to offset the on-going discharge of additional sediment that would result from the creation of new impervious cover. Best Management Practices ("BMPs") designed in accordance with the Vermont Stormwater Management Manual ("VSMM") are presumed to provide an 80 percent reduction in the

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quantity of Total Suspended Solids ("TSS") discharged from pre-routed new impervious surfaces. To achieve no net increase of sediment discharge in the subject watershed, operational phase offsets are required that will provide sufficient treatment for the remaining 20 percent of sediment load that would otherwise be discharged by the project. BMPs constructed to provide these offsets would be in addition to the stormwater treatment facilities required under the Stormwater General Permit. A BMP required for compliance with the VSMM could be sized to also provide treatment for additional areas of existing untreated impervious. However, only the volume and sediment removal associated with the additional area treated would be counted as an offset. The Simple Method would be used to evaluate and document the offset required for operation phase discharges. An example Simple Method calculation is included in the "Calculation of Discharges and Offsets" section.

Calculation of Discharges and Offsets

Offsets for construction and operational phase sediment loads could include the construction of additional stormwater BMPs to reduce sediment loads from areas of existing untreated impervious cover, alteration of land cover (i.e. revegetation of work roads or other areas), or improvements that would reduce existing sediment sources, such as repair of gullies, upgrading work road water bar crossings, replacing culverts, or stream bank stabilization. These activities would all be measurable, verifiable and permanent and would not be granted for activities required for compliance with existing permit conditions or for operation and maintenance activities. Repair of gullies associated with stormwater treatment practices ("STPs") or impervious areas that are covered by an operational stormwater permit is already required as part of compliance with existing permit conditions and would not be eligible for offset credits. Repair of gullies associated with ski trail waterbars would be eligible for offset credits. The offset capacity provided by such projects would be tracked in a ledger format to ensure that debits (sediment loads to receiving waters) associated with construction projects are balanced by credits (reductions in sediment loads to receiving waters) from offset projects. The main methods for calculating sediment loads and offset generation are described below.

Revised Universal Soil Loss Equation

The RUSLE will be used to calculate losses due to exposed soils during construction as follows:

$$A = R \times K \times LS \times C \times P \times M \times SDR$$

Where:

A= soil loss (tons per acre)
R= erosivity factor (estimated to be 71 in northern Vermont; USDA, 1987)
K= erodibility factor (based on NRCS soils data for each construction site)
LS= slope length factor (based on horizontal slope length to depositional area or defined channel, Table 1)
C= cover management factor (seeding and mulch application rates per Table 2a and 2b)
P= practice factor (assume bare loose soil; use a factor of 1.0 across all sites; NYSDEC, 2005)
M = construction duration adjustment factor (calculated for each day of disturbance per Table 3)
SDR = Sediment Delivery Ratio (assume SDR equals 70 percent of the overall estimated load)

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Apply a 60 percent BMP efficiency for temporary sediment basins where present (i.e., multiply the overall estimated load by 0.4 if a temporary sediment basin designed in accordance with the Vermont Standard Specifications for Erosion Prevention and Sediment Control is used).

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Table 1. Values for topographic factor LS

Values for topographic factor, LS, for high ratio of rill to interrill erosion.[1]

Slope (%)	Horizontal slope length (ft): <6	6	9	12	16	25	50	75	100	150	200	250	300	400	600	800	1000
0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.06	0.05	0.05	0.06	0.05	0.05	0.06
0.5	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.11	0.12	0.12	0.13
1.0	0.09	0.09	0.09	0.09	0.10	0.13	0.14	0.15	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.26	0.27
2.0	0.13	0.13	0.13	0.13	0.16	0.21	0.23	0.28	0.33	0.37	0.40	0.43	0.46	0.50	0.53	0.53	0.59
3.0	0.17	0.17	0.17	0.17	0.21	0.30	0.35	0.41	0.50	0.57	0.64	0.69	0.80	0.86	1.10	1.10	1.23
4.0	0.20	0.20	0.20	0.20	0.26	0.38	0.47	0.56	0.68	0.79	0.89	0.98	1.14	1.42	1.85	1.85	1.86
5.0	0.23	0.23	0.23	0.23	0.31	0.46	0.58	0.69	0.85	1.02	1.16	1.28	1.51	1.91	2.25	2.25	2.55
6.0	0.26	0.26	0.26	0.26	0.36	0.54	0.69	0.82	1.03	1.25	1.43	1.60	1.90	2.43	2.89	2.89	3.30
8.0	0.30	0.32	0.32	0.32	0.45	0.70	0.91	1.10	1.43	1.72	1.99	2.24	2.70	3.52	4.24	4.24	4.91
10.0	0.35	0.37	0.38	0.39	0.40	0.87	0.91	1.20	1.45	1.82	2.34	2.72	3.09	3.75	4.85	5.03	7.02
12.0	0.35	0.41	0.45	0.47	0.49	0.71	1.15	1.54	1.85	2.51	3.07	3.60	4.09	5.01	6.87	8.17	9.67
14.0	0.38	0.45	0.51	0.55	0.58	0.85	1.40	1.87	2.31	3.09	3.81	4.46	5.11	6.30	8.45	10.40	12.23
16.0	0.39	0.49	0.56	0.62	0.67	0.98	1.64	2.21	2.73	3.68	4.56	5.37	6.15	7.60	10.26	12.69	14.96
20.0	0.41	0.56	0.67	0.79	0.84	1.24	2.10	2.86	3.57	4.85	6.04	7.16	8.23	10.24	13.94	17.35	20.57
25.0	0.45	0.64	0.80	0.93	1.04	1.56	2.67	3.67	4.59	6.30	7.88	9.38	10.81	13.53	18.67	23.24	27.66
30.0	0.48	0.72	0.91	1.08	1.24	1.86	3.22	4.44	5.59	7.70	9.67	11.55	13.35	16.77	23.14	29.07	34.71
40.0	0.53	0.85	1.13	1.37	1.59	2.41	4.24	5.88	7.44	10.35	13.07	15.67	18.17	22.85	31.69	40.29	48.29
50.0	0.58	0.97	1.31	1.62	1.91	2.91	5.15	7.20	9.13	12.75	16.15	19.42	22.57	28.60	39.85	50.83	60.84
80.0	0.63	1.07	1.47	1.84	2.19	3.35	5.97	8.37	10.63	14.89	18.92	22.79	26.51	33.67	47.18	59.99	72.15

[1]Such as for freshly prepared construction and other highly disturbed soil conditions with little or no cover (not applicable to thawing soil)

USDA, 1987. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE). http://www.ars.usda.gov/SP2UserFiles/Place/64080530/RUSLE/AH_703.pdf

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Table 2a. Construction Site Mulching C Factor

Type of Mulch (for slopes 2:1 or less)	Mulch Rate (tons per acre)	Land Slope (percent)	Mulching C Factor	Length Limit [1]
Straw or hay, tied down by anchoring and tacking equipment	1.0	1 – 5	0.20	200
	1.0	6 – 10	0.20	100
	1.5	1 – 5	0.12	300
	1.5	6 - 10	0.12	150
	2.0	1 – 5	0.06	400
	2.0	6 - 10	0.06	200
	2.0	11 – 15	0.07	150
	2.0	16 – 20	0.11	100
	2.0	21 – 25	0.14	75
	2.0	26 - 33	0.17	50
	2.0	34 - 50	0.20	35
Crushed Stone, to 1 ½ inch	135	< 16	0.05	200
	135	16 – 20	0.05	150
	135	21 – 33	0.05	100
	135	34 – 50	0.05	75
	240	< 21	0.02	300
	240	21 – 33	0.02	200
	240	34 - 50	0.02	150
Wood chips	7	< 16	0.08	75
	7	16 – 20	0.08	50
	12	< 16	0.05	150
	12	16 – 20	0.05	100
	12	21 – 33	0.05	75
	25	< 16	0.02	200
	25	16 – 20	0.02	150
	25	21 – 33	0.02	100
	25	34 - 50	0.02	75
Other				
Rolled erosion control fabrics for slopes greater than 2:1	Variable, refer to manufacturer specifications			

Source: Wischmeier and Smith, 1978 and Pitt 2004, as reproduced in New York Standards and Specifications for Erosion and Sediment Control, August 2005.

1. Maximum slope lengths for which the specified mulch rate is considered effective. If these limits are exceeded, either a higher application rate or mechanical shortening of the effective slope length is required (such as with terracing).

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Table 2b. Cover Factor C Values for Different Growth Periods for Planted Cover Crops for Erosion Control at Construction Sites

Vegetative Cover	SB (seedbed preparation)	Period 1 (Establishment)	Period 2 (Development)	Period 3A (maturing crop)	Period 3B (maturing crop)	Period 3C (maturing crop)
Crop Canopy	0 – 10 %	10 – 50%	50 – 75%	75 – 80%	70 – 90%	75 – 96%
Seeding on topsoil, without mulch	0.79	0.62	0.42	0.17	0.11	0.06
Seeding on a desurfaced areas, where residual effects of prior vegetation are no longer significant	1.0	0.75	0.50	0.17	0.11	0.06
Sod (laid immediately)	0.01	0.01	0.01	0.01	0.01	0.01

Source: Wischmeier and Smith, 1978 and Pitt 2004, as reproduced in New York Standards and Specifications for Erosion and Sediment Control, August 2005.

The Month ("M") adjustment factor is applied to the equation to reflect the number of days in a given month or months when active earth disturbance takes place. This factor varies by month due to the differing rates of erosion that occur at different times of the year. Construction projects at Jay Peak do not have continuously exposed soils during the entire construction season would not have any exposure during the winter months, therefore it is necessary to modify the RUSLE equation with this factor. The M factor is provided as a daily value to reflect the construction sequencing that occurs in accordance with the exposure limits outlined in the Individual Construction Stormwater Discharge Permit ("INDC"). During the construction season, individual project elements are allowed to be exposed for a limited time period (typically 7 days) prior to temporary stabilization. As each project element is stabilized, other project elements may become active, so long as the area of concurrent earth disturbance remains below the 5-acre threshold permitted by the INDC. Project elements that were temporarily stabilized but which were not fully constructed may be reactivated and completed at a later point during the construction season. Using a daily M factor allows the calculation of the erosion potential during the periods of active earth disturbance as well as the period of temporary stabilization between and following periods of active earth disturbance.

Table 3 provides the daily "M" factor for each month, regionally-adjusted for the site using the U.S. EPA online application designed to assist with these calculations. The EPA calculator can be accessed through the following website: http://water.epa.gov/polwaste/npdes/stormwater/Rainfall-Erosivity-Factor-Calculator.cfm.

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Table 3. Construction Duration Adjustment Factor "M"

Month	M Factor (Per Day of Month)
January	0.00063
February	0.00056
March	0.00084
April	0.00120
May	0.00233
June	0.00488
July	0.00633
August	0.00596
September	0.00356
October	0.00230
November	0.00191
December	0.00130

EPA Rainfall Erosivity Factor Calculator for Small Construction Sites http://water.epa.gov/polwaste/npdes/stormwater/Rainfall-Erosivity-Factor-Calculator.cfm

Simple Method Calculation

The Simple Method will be used to determine the allowable offset credit capacity for offset projects that implement or improve treatment or control practices at existing impervious surfaces, and will be used to determine both existing and proposed loading conditions from the site. Offset credits calculated under this analysis will be presented as a net reduction in pounds of sediment determined by subtracting the load under proposed conditions from the load under existing conditions. Sediment loads for both pre- and post- construction scenarios are calculated using the Simple Method as follows:

$$L = 0.226 \times P \times Pj \times C \times A \times Rv \times T$$

Where:

L = annual load (pounds/year)

0.226 = unit conversion coefficient

P = annual precipitation (inches)

Pj = fraction of rainfall events producing runoff

C = flow weighted mean concentration for pollutant (mg/l), varies by land use, see Table 4

A = area of contributing sub-watershed (acres)

Rv = runoff factor, 0.05 + 0.009 x (site imperviousness) or accepted value

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T = treatment removal rate; calculated as (1 – removal efficiency assumed for treatment practice); the removal efficiency is assumed to equal to 80 percent for BMPs that comply with the Vermont Stormwater Management Manual, therefore T = 1 – 0.80 = 0.2

The following site-specific values are assumed for the watersheds in the vicinity of Jay Peak:

P = 64 inches (PRISM climatological data, most recently updated as of 2006)

Pj = 0.9 (based on assumption that 10 percent of storms do not produce significant runoff)

Table 4. Sediment Loading Concentration Values by Land Use Type

Land Use	TSS (mg/L)	Sources
Commercial	77	NYS DEC Draft Manual (2001)
Commercial Lodging	97	NYS DEC Draft Manual (2001)
Forest	51	NYS DEC Draft Manual (2001)
Golf Course	70	EPA NURP Results for Forest/Rural Open (1993)
Meadow/Open	51	NYS DEC Draft Manual (2001)
Residential	70	NYS DEC Draft Manual (2001)
Ski Trail	100	VHB Best Professional Judgment
Transportation Gravel	374	Clinton & Vose - WQ Report (2003)
Transportation Paved	142	NYS SMDM (2001)
Water	0	n/a

Spreadsheet Tool for Estimating Pollutant Load

The STEPL model provides worksheets for calculating sediment load reductions associated with gully stabilization and bank stabilization projects. 100 percent of eroding soil from gullies and stream banks is assumed to be delivered to the stream. Units for both equations must be consistent, with distances given in feet or feet per year and soil weight given in tons per cubic foot. The spreadsheet is available for download at:
http://it.tetratech-ffx.com/steplweb/default.htm

The Gully Erosion Equation ("GEE") calculates the annual average sediment reduction associated with gully stabilization as follows:

GEE = [(Top Width + Bottom Width) / 2 x Depth x Length x Soil Weight] / Number of Years

The Channel Erosion Equation ("CEE") calculates the annual average sediment reduction associated with bank stabilization as follows:

CEE = Length x Height x Lateral Recession Rate x Soil weight

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Other Non-Impervious Surface Treatment Offset Projects

For proposed sediment reductions from the management of existing non-impervious sediment sources or from projects that decrease sediment loading in the watershed, offsets will be calculated in accordance with the methodology set out in EPR Chapter 22 Appendix C - Non-Impervious Surface Treatment Offset Projects (NISTOP):

- Project must provide enhancement of hydrologic and/or sediment attenuation
- Riparian Corridor Protection - establish and protect permanent forested riparian corridor to slow stormwater flows; hydrologic offset capacity only; requires average contributing area and riparian corridor slope to be less than 5 percent; Per NISTOP guidance, a Margin of Safety ("MOS") of 1 applies.
- Buffer Establishment and Protection – establish and protect forested riparian buffer adjacent to stream reaches the receive sheet flow from pervious and impervious areas adjacent to stream; requires level spreaders entering buffer and average 5 percent slope of contributing area and buffer zone; Per NISTOP guidance, MOS of 1 applies.
- Channel Modifications – stabilization of eroding stream banks, stream restoration, and floodplain enhancement or restoration necessary to restore Fluvial Geomorphic Equilibrium Condition (FGEC), enhance hydrologic and/or sediment attenuation; requires Phase 2 Stream Geomorphic Assessment (SGA), analysis of stream condition, characterization of sediment regime, and design details for proposed modifications; Per NISTOP guidance, MOS range of 3 to 10 applies.
- Infrastructure Modifications – culvert replacement or other transportation infrastructure modifications within channel, floodplain, or riparian corridor to support Fluvial Geomorphic Equilibrium Condition (FGEC), and enhance hydrologic and/or sediment attenuation; requires Phase 2 Stream Geomorphic Assessment (SGA), analysis of stream condition, characterization of sediment regime, and design details for proposed modifications; Per NISTOP guidance, MOS range of 3 to 10 applies.
- Calculations should account for potential sediment losses that would occur during the construction of sediment offset projects and any secondary stream adjustment that is anticipated to occur following construction which may reduce the benefit associated with the sediment offset project.

The suite of sediment offset projects may include tasks identified through the Sediment Source Tracking investigations that are completed as part of the WQRP, but shall not take credit for projects that were completed in 2014, projects that have been identified for completion in 2015, or projects identified as "winter operations." Potential sediment sources identified as "monitor and assess" in the 2014 WQRP may qualify as sediment offset projects in future years. In accordance with the principles of EPR Chapter 22, offset projects must be constructed prior to or concurrent with the project(s) requiring the offset. The offset project must be constructed within the sub-watershed of the proposed discharge.

vhb

Memorandum

Tracking and Management of Offset Credits

A ledger system will be maintained in order to manage the generation and use of offset credits. This record-keeping will ensure that sediment reduction activities and other offset projects are credited to the sediment offset bank and that construction and operational phase discharges are debited as they are used. The tracking ledger will be maintained within the Water Quality Remediation Plan ("WQRP") and will be reported on in the annual reports and annual meeting.

- An amount of sediment reduction equal to or greater than the sediment load associated with the proposed construction discharge would need to be available prior to or concurrent with the construction project. Commencement of earth disturbance activities associated with a project will be noted on the On Site Plan Coordinator ("OSPC") weekly report.

- A MOS of 1 will be applied to offset requirements for the sediment load discharged by each construction project. In other words, the offset project must provide a sediment load reduction capacity equal to the sediment load generated by the project.

- The sediment reduction associated with each offset project may only be used once and does not regenerate on an annual basis. This will serve as an additional factor of safety by establishing permanent sediment load reductions to offset temporary construction period discharges. The construction period offsets will thereby provide permanent benefits to the watershed through an ongoing reduction in sediment loading.

- Excess sediment load reduction capacity that is not required for a single construction project or construction season would be maintained in the bank for use in subsequent years. These credits could then be used to offset construction phase discharges or to offset operational phase discharges.

Operational phase offset credits have been previously established for the following proposed East Side projects: South Village Townhomes, Administration Building and Golf Maintenance Center within the Jay Branch watershed and the Welcome Center, Chalet Meadows Residential Area, and the Snowline Area Redevelopment in the South Mountain Branch watershed. These offsets were generated by enlarging the stormwater treatment basins that were designed to treat runoff from these specific project areas. This additional capacity was designed to provide treatment and control for existing areas of impervious that were previously untreated. Although the impervious area associated with these projects have not been constructed, the stormwater basins that will provide treatment and control of the runoff from these areas have already been constructed and are operating at a fractional capacity in expectation of these projects being built. The basins were designed and constructed to provide excess capacity that could be used to treat runoff from existing areas of untreated impervious. Runoff from these areas has been redirected or will be redirected during the construction of these projects. The calculation of the offsets associated with incorporating these areas of existing untreated impervious was performed in accordance with the guidance provided in the 2004 WQRP, which identified need to provide treatment for 25 percent of the existing untreated impervious. Construction-phase offsets are still required for these projects.

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Example Calculations

The example calculation below demonstrates how sediment loads associated with construction activities on a site will be calculated.

- 0.5 acres of proposed disturbance
- R = 71 (site-wide)
- K = 0.20 (Colton-Duxbury complex, 3 to 8 percent slopes)
- LS = 0.30 (3 percent slope for 50 feet)
- C_1 = 1 (active earth disturbance, May 7 - 17 and Aug. 3 - 14)
- C_2 = 0.06 (mulched at 2 tons per acre, May 18 - Aug. 2 and Aug. 15 - Sep. 30)
- P = 1 (site wide)
- M_1 = 0.026 (May 7 through May 17)
- M_2 = 0.387 (May 18 through August 2)
- M_3 = 0.072 (August 3 through August 14)
- M_4 = 0.208 (August 15 to September 30)

A = Area x R x K x LS x C x P x M x SDR

Period 1 = 0.5 x 71 x 0.20 x 0.30 x 1 x 1 x 0.026 x 0.7 = 0.04 tons

Period 2 = 0.5 x 71 x 0.20 x 0.30 x 0.06 x 1 x 0.387 x 0.7 = 0.03 tons

Period 3 = 0.5 x 71 x 0.20 x 0.30 x 1 x 1 x 0.072 x 0.7 = 0.11 tons

Period 4 = 0.5 x 71 x 0.20 x 0.30 x 0.06 x 1 x 0.208 x 0.7 = 0.31 tons

Total Construction Sediment Offset Required = 0.04 + 0.03 + 0.11 + 0.31 = 0.49 tons (981 pounds)

This calculation assumes that the area is seeded and mulched as of August 15 and that final stabilization occurs by September 30, which allows 6 weeks for establishment of permanent vegetation and thus the termination of the construction phase discharge permit for this portion of the site.

The example calculation provided below demonstrates how treating an additional area of existing impervious that is equal to 25 percent of the proposed new impervious area effectively offsets sediment loads associated with the new impervious area.

- Assume 1 acre of proposed new impervious area with "Commercial" cover type, 100 percent impervious cover, treated in a stormwater BMP that meets the VSMM design requirements and therefore provides 80 percent TSS removal. The Simple Method calculation for the sediment load remaining after treatment would be as follows:

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- 0.226 x P x Pj x C x A x Rv x (1 - Percent Treatment) = Remaining Sediment Load
- 0.226 x 64 x 0.9 x 77 x 1.0 x [0.05 + (0.009 * 100)] x (1 - 0.80) = 190 pounds/year

- Assume 0.25 acre of formerly untreated existing impervious area with the same "Commercial" cover type and 100 percent impervious cover is routed to treatment in a stormwater BMP providing 80 percent TSS removal. The Simple Method calculation for the sediment load reduction associated with this treatment would be as follows:
  - 0.226 x P x Pj x C x A x Rv x Percent Treatment = Sediment Load Removed Through Treatment
  - 0.226 x 64 x 0.9 x 77 x 0.25 x [0.05 + (0.009 * 100)] x 0.80 = 190 pounds/year

It can be seen from this calculation that 190 pounds sediment would be discharged from the new impervious area following treatment to the 80 percent treatment standard. This amount of sediment discharge can be offset by providing treatment for an area of existing untreated impervious equal to 25 percent of the new impervious area.

References

The following references provide more details on the calculation methods described herein and may be helpful in the calculation of sediment loading rates and offset benefits:

New York State Department of Environmental Conservation, 2005. New York Standards and Specifications for Erosion and Sediment Control. Appendix A – Revised Universal Soil Loss Equation (RUSLE). Available at: http://www.dec.ny.gov/docs/water_pdf/appendix.pdf

New York State Department of Environmental Conservation, 2001. New York State Stormwater Management Design Manual. Appendix A – Simple Method to Calculate Urban Stormwater Loads. Available at: http://www.dec.ny.gov/docs/water_pdf/simple.pdf

USDA, 1987. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE). Available at: http://www.ars.usda.gov/SP2UserFiles/Place/64080530/RUSLE/AH_703.pdf

USEPA, 2005. EPA Region 5. Pollutants Controlled Calculation and Documentation for Section 319 Watersheds Training Manual. September 2005. Originally published by Michigan Department of Environmental Quality. Available at: http://michigan.gov/documents/deq/deq-wb-nps-POLCNTRL_250921_7.pdf

USEPA, no date. Spreadsheet Tool for Estimating Sediment Load (STEPL) and Region 5 Model Website. Available at: http://it.tetratech-ffx.com/steplweb/default.htm

Appendix E

Stipulated Consent Order, Docket No. 76-5-14 Vtec

Pre-Attainment Flowchart

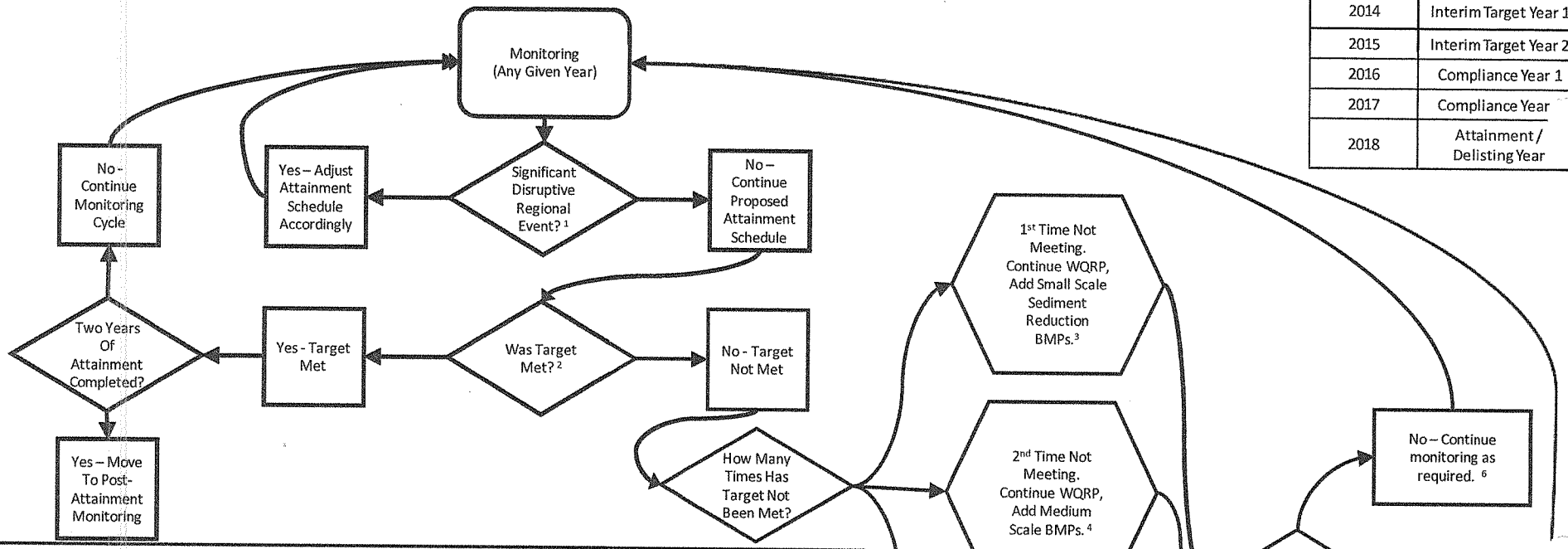
JAY PEAK

JAY BRANCH
INTERIM BIOCRITERIA TARGETS
PRE-ATTAINMENT FLOW CHART

vhb

February 11, 2015

Jay Branch Compliance Schedule	
2014	Interim Target Year 1
2015	Interim Target Year 2
2016	Compliance Year 1
2017	Compliance Year
2018	Attainment / Delisting Year



1. Significant regional events (flood, drought, etc.) may require the adjustment of the proposed Interim Target, Compliance, or Attainment Years. Such events may include major in-stream remediation projects. The determination of what constitutes such an event shall be made by the ANR and will be discussed at the annual meeting.
2. The "target" refers to the Interim Biocriteria Target established for the specific watershed for a given year, or to the VWQS once Compliance and Attainment Years are reached. See individual Attainment Schedules for specific Interim Biocriteria Targets and proposed Compliance and Attainment Years. All four of the interim biocriteria (density, richness, EPT, and % Oligochaetes) must be met in order for the interim target to be considered "met."
3. Small Scale BMPs: Ditch Repair; Mountain Work Road Improvements, Spot Channel Stabilization, Supplemental Water Quality Monitoring
4. Medium Scale BMPs: Culvert Upgrades, Streambank Stabilization, Stormwater Basin Retrofits, Buffer Enhancement
5. Large Scale BMPs: Additional Stormwater Basin Construction, Culvert Replacements, Channel Restoration
6. WQRP remedial activities and monitoring are assumed to be on-going throughout the pre-attainment period. New remedial actions and sediment reduction BMPS will be incorporated into the WQRP as required by this flow chart or as necessary due to site conditions.
7. If the waters at JPR that are in Attainment with the VWQS become impaired by a pollutant(s) of concern as set forth in the "Post-Attainment Flow Chart" provided, however, that JPR may not commence construction of any new projects that discharge the pollutant(s) of concern. JPR may finish existing projects that commenced construction the previous construction season to the point that the projects have achieved final stabilization even if further earth disturbance is required to do so and JPR may conduct remedial projects which ANR determines would improve water quality. Additionally, JPR must provide a plan to ANR and VNRC at the annual meeting that outlines additional protective measures beyond those required in the permits, authorizations, WQRP and/or WQPP that demonstrate that the impacts to the receiving waters associated with finishing existing construction projects will be minimized or mitigated. VNRC and ANR may provide input at the annual meeting and any additional protective measures that the Parties agree to shall be added to the WQRP and/or WQPP.

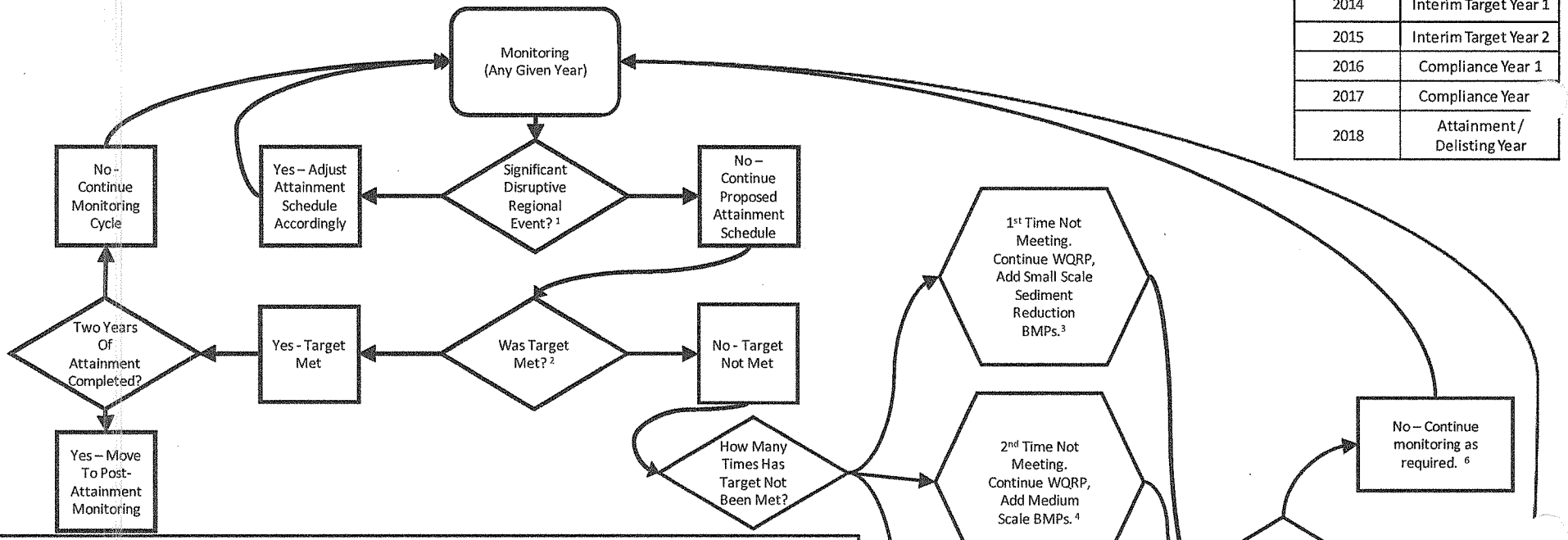
JAY PEAK

TRIBUTARY 9 TO JAY BRANCH
INTERIM BIOCRITERIA TARGETS
PRE-ATTAINMENT FLOW CHART

vhb

February 11, 2015

Trib. 9 Compliance Schedule	
2014	Interim Target Year 1
2015	Interim Target Year 2
2016	Compliance Year 1
2017	Compliance Year
2018	Attainment / Delisting Year



1. Significant regional events (flood, drought, etc.) may require the adjustment of the proposed Interim Target, Compliance, or Attainment Years. Such events may include major in-stream remediation projects. The determination of what constitutes such a event shall be made by the ANR and will be discussed at the annual meeting.
2. The "target" refers to the Interim Biocriteria Target established for the specific watershed for a given year, or to the VWQS once Compliance and Attainment Years are reached. See individual Attainment Schedules for specific Interim Biocriteria Targets and proposed Compliance and Attainment Years. All four of the interim biocriteria (density, richness, EPT, and % Oligochaetes) must be met in order for the interim target to be considered "met."
3. Small Scale BMPs: Ditch Repair; Mountain Work Road Improvements, Spot Channel Stabilization, Supplemental Water Quality Monitoring
4. Medium Scale BMPs: Culvert Upgrades, Streambank Stabilization, Stormwater Basin Retrofits, Buffer Enhancement
5. Large Scale BMPs: Additional Stormwater Basin Construction, Culvert Replacements, Channel Restoration
6. WQRP remedial activities and monitoring are assumed to be on-going throughout the pre-attainment period. New remedial actions and sediment reduction BMPS will be incorporated into the WQRP as required by this flow chart or as necessary due to site conditions.
7. If the waters at JPR that are in Attainment with the VWQS become impaired by a pollutant(s) of concern as set forth in the "Post-Attainment Flow Chart" provided, however, that JPR may not commence construction of any new projects that discharge the pollutant(s) of concern. JPR may finish existing projects that commenced construction the previous construction season to the point that the projects have achieved final stabilization even if further earth disturbance is required to do so and JPR may conduct remedial projects which ANR determines would improve water quality. Additionally, JPR must provide a plan to ANR and VNRC at the annual meeting that outlines additional protective measures beyond those required in the permits, authorizations, WQRP and/or WQPP that demonstrate that the impacts to the receiving waters associated with finishing existing construction projects will be minimized or mitigated. VNRC and ANR may provide input at the annual meeting and any additional protective measures that the Parties agree to shall be added to the WQRP and/or WQPP.

JAY PEAK

TRIBUTARY 3 TO SOUTH MOUNTAIN BRANCH

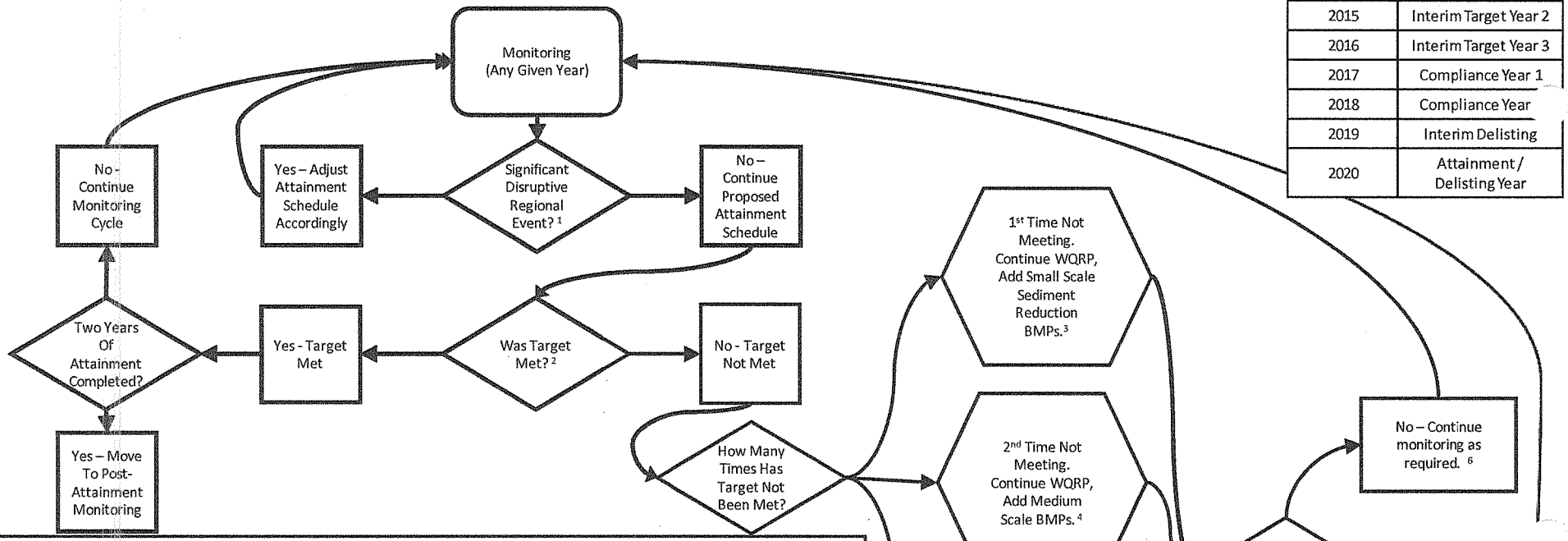
INTERIM BIOCRITERIA TARGETS

PRE-ATTAINMENT FLOW CHART

vhb

February 11, 2015

Trib. 3 Compliance Schedule	
2014	Interim Target Year 1
2015	Interim Target Year 2
2016	Interim Target Year 3
2017	Compliance Year 1
2018	Compliance Year
2019	Interim Delisting
2020	Attainment / Delisting Year

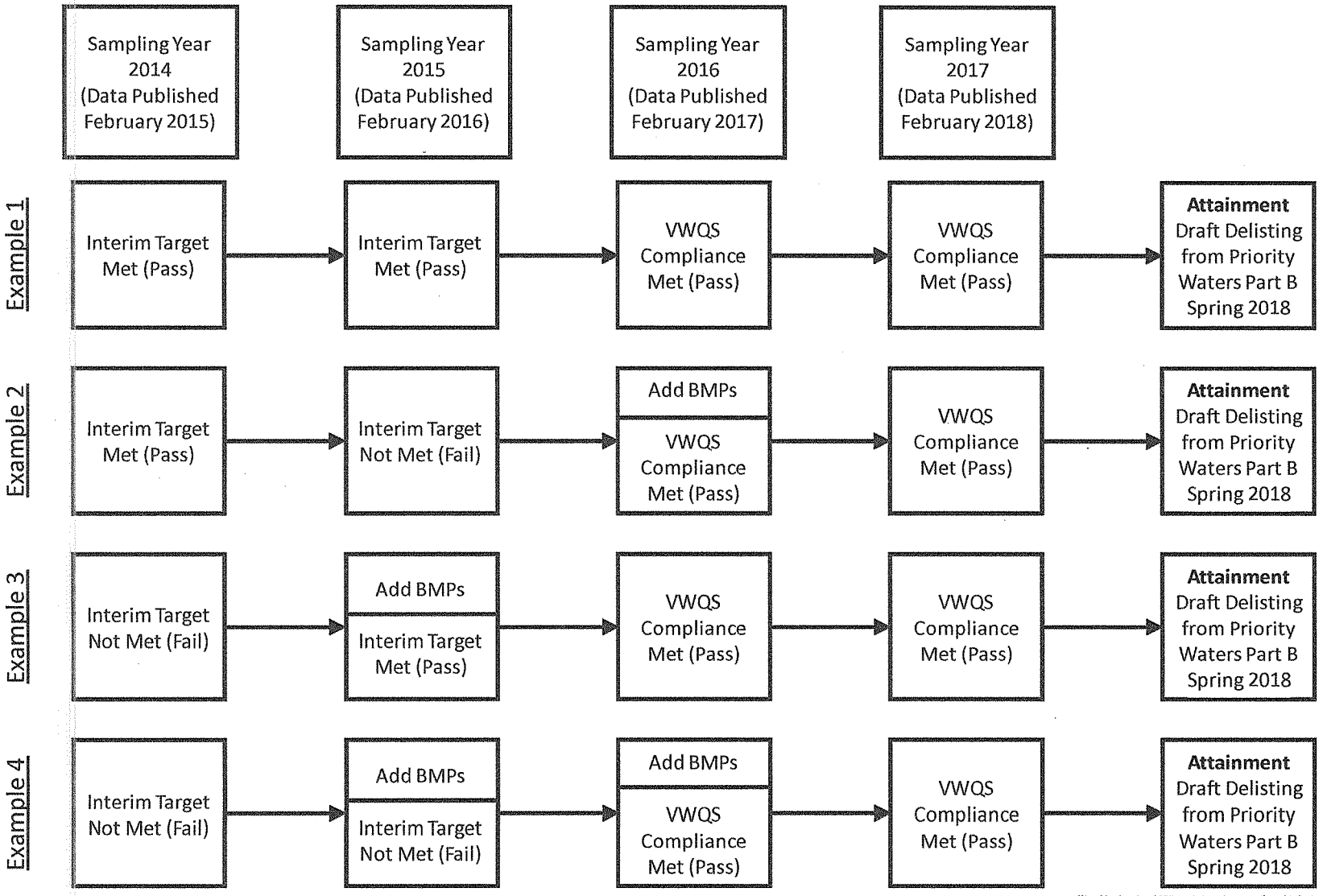


1. Significant regional events (flood, drought, etc.) may require the adjustment of the proposed Interim Target, Compliance, or Attainment Years. Such events may include major in-stream remediation projects. The determination of what constitutes such an event shall be made by the ANR and will be discussed at the annual meeting.
2. The "target" refers to the Interim Biocriteria Target established for the specific watershed for a given year, or to the VWQS once Compliance and Attainment Years are reached. See individual Attainment Schedules for specific Interim Biocriteria Targets and proposed Compliance and Attainment Years. All four of the interim biocriteria (density, richness, EPT, and % Oligochaetes) must be met in order for the interim target to be considered "met."
3. Small Scale BMPs: Ditch Repair; Mountain Work Road Improvements, Spot Channel Stabilization, Supplemental Water Quality Monitoring
4. Medium Scale BMPs: Culvert Upgrades, Streambank Stabilization, Stormwater Basin Retrofits, Buffer Enhancement
5. Large Scale BMPs: Additional Stormwater Basin Construction, Culvert Replacements, Channel Restoration
6. WQRP remedial activities and monitoring are assumed to be on-going throughout the pre-attainment period. New remedial actions and sediment reduction BMPS will be incorporated into the WQRP as required by this flow chart or as necessary due to site conditions.
7. If the waters at JPR that are in Attainment with the VWQS become impaired by a pollutant(s) of concern as set forth in the "Post-Attainment Flow Chart" provided, however, that JPR may not commence construction of any new projects that discharge the pollutant(s) of concern. JPR may finish existing projects that commenced construction the previous construction season to the point that the projects have achieved final stabilization even if further earth disturbance is required to do so and JPR may conduct remedial projects which ANR determines would improve water quality. Additionally, JPR must provide a plan to ANR and VNRC at the annual meeting that outlines additional protective measures beyond those required in the permits, authorizations, WQRP and/or WQPP that demonstrate that the impacts to the receiving waters associated with finishing existing construction projects will be minimized or mitigated. VNRC and ANR may provide input at the annual meeting and any additional protective measures that the Parties agree to shall be added to the WQRP and/or WQPP.

JAY PEAK

EXAMPLE SCENARIOS
JAY BRANCH AND TRIBUTARY 9 TO JAY BRANCH
DELISTING IN 2018

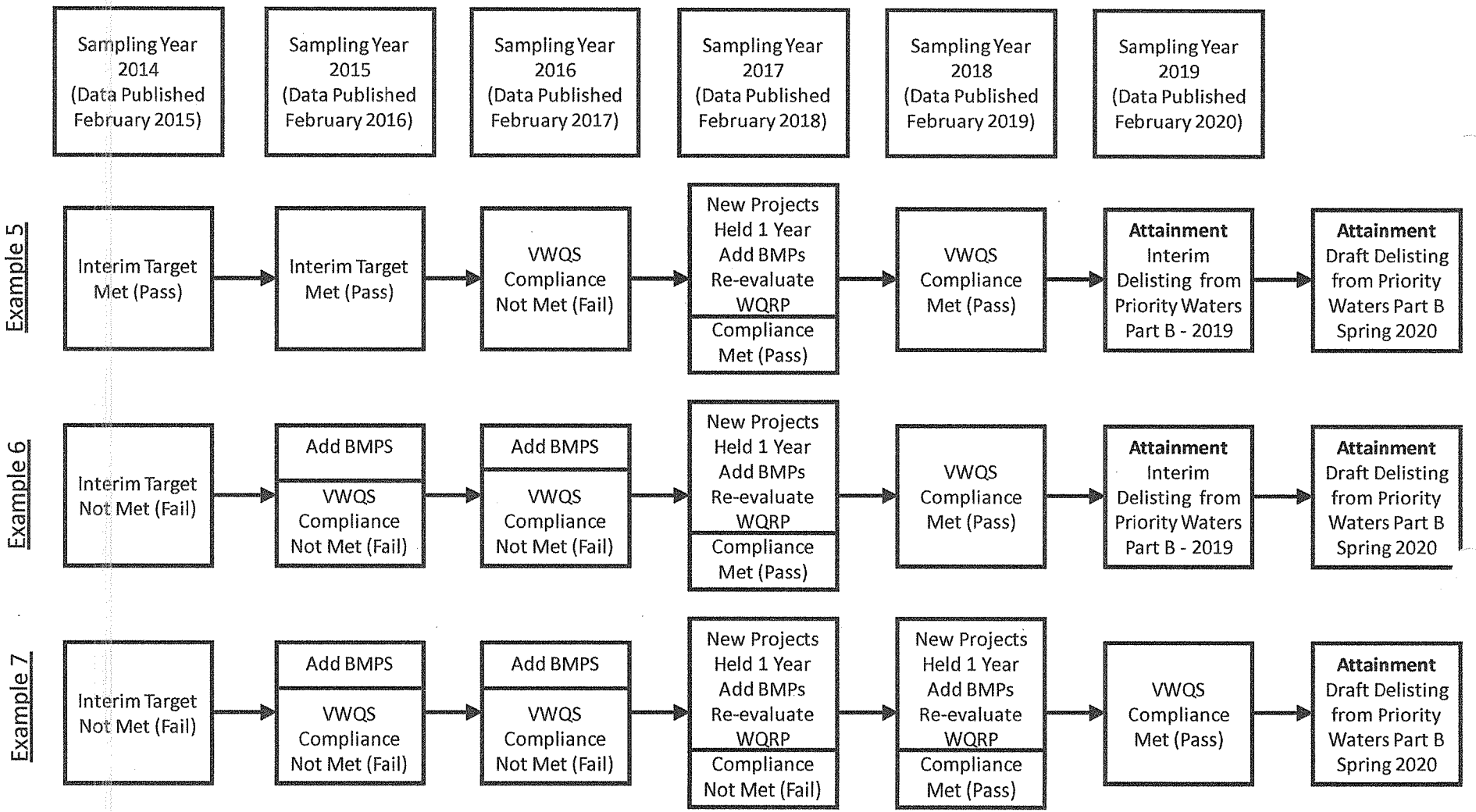
vhb



JAY PEAK

EXAMPLE SCENARIOS
JAY BRANCH AND TRIBUTARY 9 TO JAY BRANCH
DELISTING IN 2019 / 2020

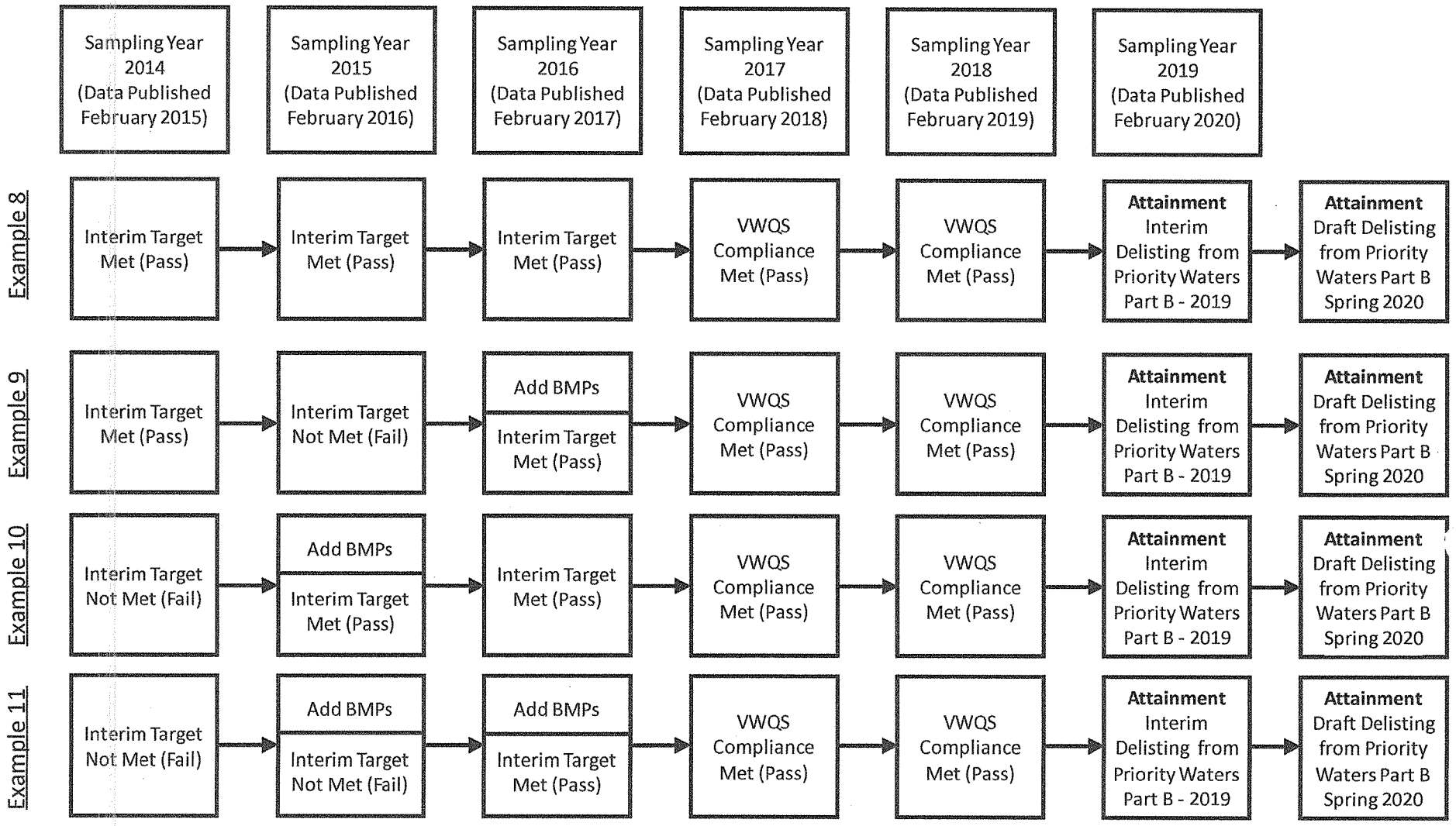
vhb



JAY PEAK

EXAMPLE SCENARIOS
TRIBUTARY 3 TO SOUTH MOUNTAIN BRANCH
DELISTING IN 2019 / 2020

vhb



\\Vtnfdata\projects\57711.00 JPR VNRC Appeal\graphics\SLIDES\BiocriteriaAttainmentFlowcharts.pptx

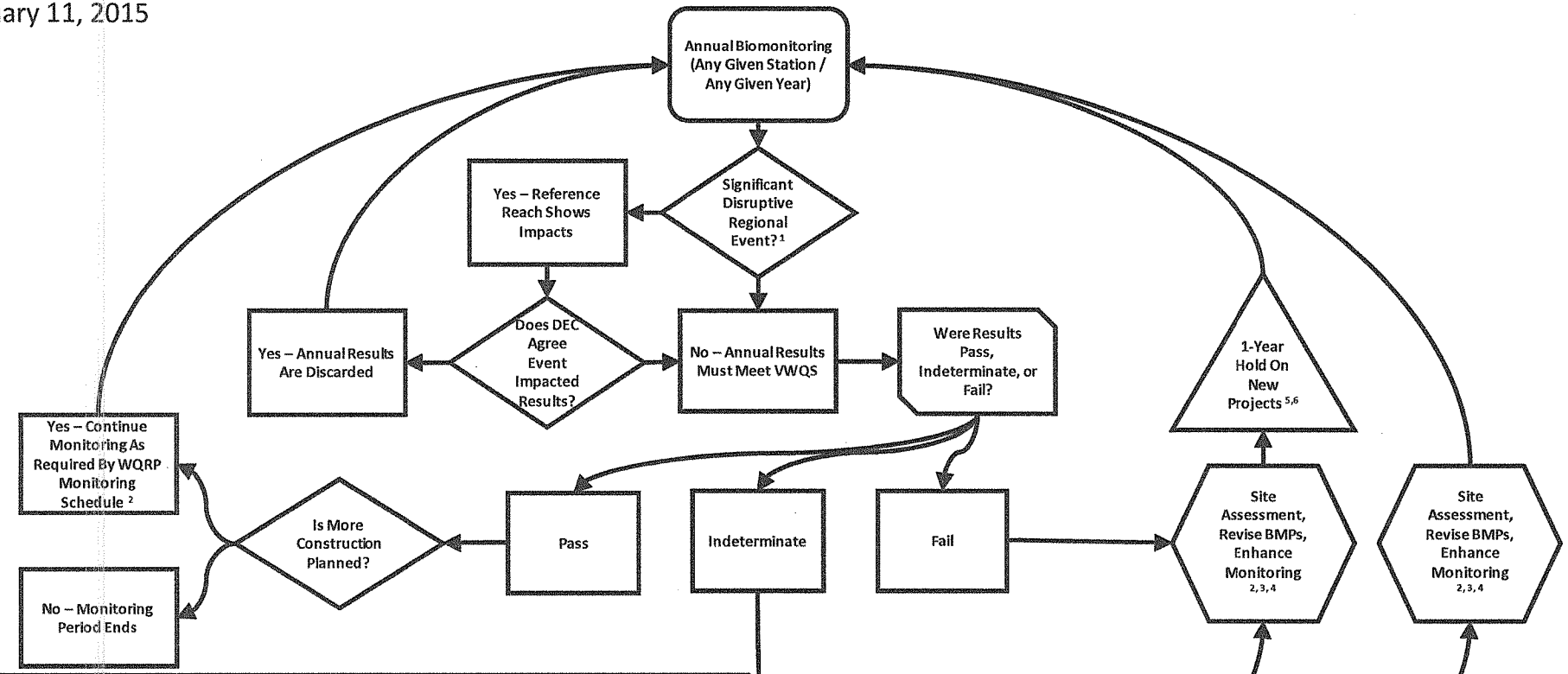
Appendix F

Stipulated Consent Order, Docket No. 76-5-14 Vtec

Post-Attainment Flowchart

JAY PEAK RESORT
POST-ATTAINMENT FLOW CHART

February 11, 2015



1. Significant regional events (flood, drought, etc.) may require the adjustment of the proposed Interim Target, Compliance or Attainment Years. Such events may include major in-stream remediation projects. The determination of what constitutes such an event shall be made by the ANR and will be discussed at the annual meeting.
2. Modeling/Monitoring Efforts continue through construction period to inform analysis of indeterminate or failing results if they occur.
3. Construction BMPs: Enhanced EPSC measures, Extent and Duration of Concurrent Earth Disturbance
4. Operational BMPs: Buffer Enhancement; Culvert Upgrades/Replacements; Spot Channel Stabilization, Bank Stabilization, or Channel Restoration; Stormwater Basin Retrofits/Additional Stormwater Basin Construction.
5. Following a failing or consecutive indeterminate result, parties at the annual meeting will meet and confer about whether or not to implement the 1-Year hold on new projects, taking into consideration any relevant extenuating factors that may have led to the indeterminate or failing result.
6. JPR may not commence construction of any new projects that discharge the pollutant(s) of concern. JPR may finish existing projects that commenced construction the previous construction season to the point that the projects have achieved final stabilization even if further earth disturbance is required to do so and JPR may conduct remedial projects which ANR determines would improve water quality. JPR must provide a plan at the annual meeting that outlines additional protective measures beyond those required in the permits, authorizations, WQRP and/or WQPP that demonstrate that the impacts to the receiving waters associated with finishing existing construction projects will be minimized or mitigated. VNRC and ANR may provide input at the annual meeting and any additional protective measures that the Parties agree to shall be added to the WQRP and/or WQPP.

Appendix G

Stipulated Consent Order, Docket No. 76-5-14 Vtec

February 9, 2012 and August 23, 2012 ANR Memoranda

Agency of Natural Resources
Department of Environmental Conservation

Watershed Management Division
Building 10 North
802-241-3777

MEMORANDUM

To: Jeannine McCrumb, Regulatory Policy Analyst, VTANR

Thru: Pete LaFlamme, Director, WMD

From: Neil Kamman, Manager, Monitoring, Assessment and Planning Program, WMD

Date: February 9, 2012

Subject: Act 250 evaluation for the Jay Peak Master Planning - West Bowl Expansion: Watershed Management Division position and roster of information needs to support decision making.

On Jan 18th, Watershed Management Division staff met with Jay Peak Resort (JPR) managers, ANR staff, ACOE, and EPA to discuss the master plan associated with development in the Stateside, West Bowl, and Golf Course areas.

In the items below, the Division has identified information needs that are necessary to support coordinated and project-wide decision making for the master plan proposal. This would include development of water quality certification(s) under §401 of the Clean Water Act, and evaluation of individual permits that may be needed under the Vermont Wetland Rules, Stream Alteration Program, Stormwater Program, or evaluation of compliance with snowmaking withdrawal rules. we are required to evaluate all proposals in light of applicable laws and rules, including the on-going consideration of cumulative impacts.

1. The scope of the project is challenging from a regulatory perspective. Under revision-4 of the draft Master Plan (ver. 1-18-2012), extensive development in excess of 300 housing units, gladed and traditional ski trails, three lifts, service roads, and associated snowmaking are proposed that overlay upon extensive sensitive water resources. This is in addition to approximately 500 additional units in areas that are envisioned to be developed in the Stateside region of the resort.

2. Significant areas of lift and trail development are proposed in Class A(1) watersheds. The Division will be concerned that JPR adopts a suite of surface water protections in these areas by minimizing or precluding alterations of aquatic habitat conditions, temperature regime and chemical and biological condition as per the Class A(1) water quality criteria under the VT Water Quality Standards (VWQS).

3. Existing data provided by JPR indicate that waters exhibit very high quality conditions in areas below 2,500ft in the proposed project area. These are waters that are significantly higher quality than Class B biological and chemical criteria thresholds, which, given the proximity of proposed buildings and infrastructure in the upper Jay Branch, may necessitate aggressive construction and post-construction BMP implementation including stream corridor protections.

4. The Division will be concerned as to whether proposed conversion of forested lands to gladed areas and cleared trails will result in more than a minimal impact to the natural flow regimes. The impacts of trails on surface waters will depend largely on the extent to which hydrology is altered from built drainage that channelizes runoff away from trails. Similarly, in order to facilitate assessment of hydrologic impacts due to snowmaking, the Division will need information as to whether there will be alteration of in-stream hydrology associated with the plan to bring water for snowmaking from the Missisquoi River in Troy to the upper reaches of Jay Branch.

5. Information may be necessary to assess the total cumulative impact of development in the Jay Branch watershed, and the socio-economic justifiability. The Antidegradation Policy of the VWQS also requires that the Agency consider the cumulative impacts associated with all development within the watershed of the Jay Branch in the vicinity of Jay Peak Resort. Accordingly, for each phase of the overall master plan project that is entered into permitting, the Division will retrospectively examine the cumulative impact of those projects that were built to date. The same policy requires the Agency to evaluate socio-economic justifiability if the project will cause a lowering of water quality criteria parameters in receiving waters.

6. To facilitate the assessment of cumulative impacts to water resources resulting from the conversion of existing land uses and associated stormwater discharges, as an initial step prior to the development of stormwater management systems, we request that JPR provide an assessment of existing (pre-phase 3a-3c) and proposed land use conditions, including an estimate of the percentage of land in forested, trail, and glade trail condition, and impervious cover for each subwatershed on JPR lands within the larger Jay Branch watershed. The analysis shall include an estimate of the amount of impervious surface managed in compliance with the "Channel Protection Volume" standard of the Vermont Stormwater Management Manual versus total impervious cover. The development and review of this information is intended to inform the appropriate stormwater management and permitting strategy.

8. The Division supports the maintenance of streams in their equilibrium condition to the degree possible. As such, information will be needed on: areas of stream where a no-encroachment zone may be established; how crossings and structural alterations will be minimized and located on transport versus depositional reaches; and; how aquatic organism passage will be preserved. To evaluate this it will be necessary to develop existing and proposed reach data summaries providing quantitative and qualitative data to inform the development of sediment departure maps illustrating existing degraded or

aggraded segments, existing stage of channel evolution, existing degree of incision and existing and proposed constraints to vertical and lateral channel adjustments.

9. While all waters in the proposed project area meet or exceed water quality criteria, downstream waters in the Jay Branch remain impaired. The Division will need information on how Jay Peak Resort plans to construct each project within the master plan without further contributing to this existing impairment.

10. While the individual wetland areas that may be affected are small, the cumulative impact to wetlands appears consequential. The Division is interested in JPR's plans for preserving the integrity of an instance of rare alpine peat bog that has been inventories in the West Bowl region.

Agency of Natural Resources
Department of Environmental Conservation

Water Quality Division
Building 10 North
802-241-3777

MEMORANDUM

To: Jeannine McCrumb, Regulatory Policy Analyst, VTANR

From: Neil Kamman, Manager, Monitoring, Assessment and Planning Program, DEC

Thru: Pete LaFlamme, Director, Watershed Management Division

Date: August 22, 2012

Subject: Jay Peak Master Planning - West Bowl Expansion: Watershed Management Division augmented guidance and response to Jay Peak Resort WQRP Report for 2011.

The content of this memo provides WSMD's response to the 2011 WQRP report filed by Jay Peak Resort, and lays out guidance for information that will be necessary for the Division to complete a comprehensive review of project-specific proposals and overall Clean Water Act §401 permitting that would be associated with the proposed Phase II Master Plan. Also included are suggestions for approaches to avoidance and minimization of sensitive water resources.

WQRP Results for 2011

Biomonitoring results show that the uppermost reference location has remained in reference or excellent condition in 2011, despite with a significant decrease in density that resulted from Tropical Storm Irene flows. All other locations were in poor to fair biological condition, below Class B expectations, and significantly lower than reported in 2010. The decrease in biological integrity was due to an extreme decrease in density, richness and EPT taxa and at some locations an elevated percent of Oligochaeta of the remaining community. This indicates stormwater continues to cause both scourflows and sediment movement within the lower reaches of Jay Branch, which remains a significant stress on the aquatic biota and habitat. The Division recognizes that TS Irene was a considerable contributing stressor. However, the maintenance of reference condition at the upper locations indicates that all other reaches in the Resort area have developed augmented sensitivity to ongoing stresses. The 2011 report also newly identifies the biological condition of the Trib #3 of Trib 7 (South Mountain Branch) as in poor condition, and thus it is a candidate for impairment listing.

The Division recognizes that Jay Peak Resort is implementing the 2009 WQRP, and is hopeful that the more normal flow regime that appears to be in place during 2012 will result in attainment of biological thresholds for Jay Branch and associated tributaries. The sediment source assessment performed by VHB on behalf of the Resort is instructive. It appears clear from this assessment that some or all of the documented sources are contributing to ongoing stress of the streams, and thus merit remediation in addition to possible changes in current practices.

Ensuring Attainment and Proposed Phase II Expansion in West Bowl and Stateside

As noted in our memo dated 2/9/2012, the Division is concerned over the ability to achieve attainment of the Jay Branch, given the level of proposed development (so-called "item 9").
The lack of ongoing attainment, combined with the extent and location of proposed development ("Phase I West Bowl Project Areas, Sheet C7, dated 7/19/2012), suggests to the Division that an update and extension of the existing WQRP is warranted, to include augmented sampling. With respect to additional sampling, the Division has reviewed and provided comments and field evaluations of the monitoring locations and designs presented in the draft QAPP delivered in the 2011 WQRP Report. Division staff can continue to consult as needed.

With respect to the WQRP, the update should provide a status report on existing remedial measures, as well as provide a strategy to address the likely impacts to receiving waters from the proposed development. Specifically, the update should address the following:

1. A compiled summary of the 2009 WQRP recommendations/action items and Jay Peak's date of attainment/implementation.

2. A complete summary of Jay Peak Resort's impervious amounts, the corresponding watershed and/if they are being treated to the Vermont Stormwater Management Manual.

3. For existing and proposed development, a corrected sediment loading analysis. The loading estimates provided to the Division to date contain significant errors. Our complete review of these estimates has been hampered due to a lack of information regarding particular parameters including precipitation, percent impervious, etc. However, based on our preliminary review it appears an incorrect runoff coefficient constant has been applied to all land use categories. Further, use of the Simple Method on undeveloped lands is not appropriate based on Simple Method guidance, due to the fact that it typically underestimates runoff from these areas because the runoff coefficient is determined by the amount of impervious surface. The Division typically accepts use of the Simple Method to assess pre-developed condition on undeveloped lands because it provides a margin of safety by underestimating the pre-developed load. If Jay Peak Resort proposes to continue use of the Simple Method for assess post-developed land use loadings from areas without impervious surface (e.g. golf course, ski trails), we anticipate the need to apply a multiplier to provide a margin of safety. Again, because of the errors in the existing estimates we are not able to complete our review, but we do note that we are unlikely to support JPR's estimation that forested land produces more sediment than the golf course on a per-acre basis.

4. As noted above there appears to be strong evidence that excessive precipitation event driven scour is preventing attainment of standards. Given the influence of land-use conversion on this stressor, we believe it is necessary to develop a calibrated hydrologic model capable of demonstrating the actual magnitude and timing of flows, as opposed to the typical approach of relative comparison using a non-calibrated model. This monitoring and modeling approach should address both existing and proposed development, including developed areas that lack impervious surfaces (e.g. trails and golf course), and can serve to evaluate the cumulative effect of hydraulic changes that may further impact downstream physical and biological integrity. Site specific precipitation and stream gauging will be necessary to ensure the reliability of the applied model. We request a precipitation, flow, and modeling plan be provided for WSMD input.

5. A list of proposed action items and their implementation dates necessary for Jay Peak resort's attainment of WQ standards for the Jay Branch, Tributary 9 and South Mountain Branch watersheds.

6. Finally, we request that the WQRP develop an approach to demonstrate that receiving waters will attain standards based on existing *and proposed* development. Given that some of the proposed development will fall outside the scope of the necessary post-construction stormwater permit, a means of addressing the hydrologic impacts of this development will likely be necessary. This plan should be based on assessment of geomorphic and stream flow data, and should be provided for WSMD input. Use of the Distributed Runoff Control Methodology or other approved approach may be warranted.

Additional Suggestions for Avoidance and Minimization of Surface Water Impacts

The Division recognizes that a complete evaluation of Jay Peak Resorts approach to avoidance and minimization necessitates more complete design plans than have been presented to date (Sheet C1 – 7/16 and Sheet C7 – 7/19). In the development of more complete design documentation, Jay Peak Resort is encouraged to consider the following:

7. There appear to be wetland and stream buffer impacts in the proposed Stateside real estate developments that, if avoided, , may circumvent the need to apply for and obtain 401/404 for this portion of the development. Given the lengthy time needed for master plan development, review and permitting, this outcome may be desirable.

8. There appear to be significant numbers of proposed crossings along the West Bowl Road, and proposed south loop access to the south-most West Bowl real estate development (bisected by Ullr's). An alternative road layout that takes advantage of existing cleared areas may significantly reduce the number of crossings necessary.

9. There appear to be wetland impacts associated with the northmost road extension to the proposed development NW of the golf course. The Division understands that this is an area of prior wetland restoration, and would expect avoidance.

10. The vicinity of the West Bowl proposed base area and parking is at the confluence of several tributary streams, and appears to have significant wetland resources. These wetlands likely provide significant buffering of high flows between the W. Bowl tributaries and Jay Branch proper. As such, this is not an ideal location to cluster large scale development.

11. The Division notes numerous areas of stream and wetland buffer disturbance along the two proposed western-most lifts. ANR Act 250 Buffer Guidance is clear about the need to maintain 50ft buffer widths to small streams in undeveloped areas that are proposed for development. We note that some proposed impacts occur in areas above 2,500 ft M.S.L. In these Class A(1) waters, even larger buffers may be desirable. Final designs presented by Jay Peak Resort for permitting should be carefully examined with these factors in mind.

12. There appear to be proposed trail developments associated with high elevation wetlands near "Lift K". The alpine peatland portion of the high elevation wetland complex is sensitive to any change in hydrology. Therefore, clearing and grading associated with trail building above this complex that could result in hydrological changes is discouraged, as alpine peatlands are rare and irreplaceable resources.

Summary:
As previously noted, the Phase II master plan as most recently proposed is a major project with the potential for wide ranging impacts. As a result of the combination of very high-quality and impaired surface waters, the Division sees the need for robust information to evaluate the proposal, some of which may take a period of time to assemble. The Division notes that if it is possible for Jay Peak Resort to separate applications for proposals in the South Mountain Branch/Stateside area from those of the West Bowl, a more predictable permitting process may result. The Division further emphasizes our uncertainty that cumulative impacts can be assessed under a §401 of the Clean Water Act or in conjunction with Act 250 Criteria 1A or 1E without the availability of the complete information such as is outlined above. Watershed Management Division staff remain available to discuss specific aspects of this memo with ANR Office of Planning and Legal Affairs, or Jay Peak Resort representatives.