

VERMONT ENVIRONMENTAL BOARD
10 V.S.A. §§ 6001-6092

Re: Barre Granite Quarries, LLC
William and Margaret Dyott
Land Use Permit Application #7C1079 (Revised)-EB
Docket # 739

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

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i. **SUMMARY OF DECISION**

This decision pertains to an appeal from Land Use Permit #7C1079(Revised) (“Revised Permit”) issued to Barre Granite Quarries, LLC and William and Margaret Dyott (“Permittees”) pursuant to 10 V.S.A. §§ 6001-6092 (“Act 250”) authorizing the Permittees to reactivate and expand abandoned granite quarries located on the Dyott, Padula and LeCours properties in the Town of Sheffield, Vermont (“Project”). Specifically, the appeal concerns whether the Project conforms with 10 V.S.A. § 6086(a)(1) (water and air pollution), (1)(A) (headwaters), (1)(B) (waste disposal), (1)(E) (streams), (2) (sufficient water supply), (3) (burden on existing water supply), (4) (erosion), (5) (traffic), (7) (municipal or governmental services), (8) (aesthetics), (S)(A) (wildlife habitat and endangered species), (9)(E) (extraction of earth resources), (9)(K) (public investments and services), and (10) (local and regional plans) (“Criteria 1, 1(A), 1(B), 1(E), 2, 3, 4, 5, 7, 8, 8(A), 9(E), 9(K) and 10” respectively).

As explained below, the Vermont Environmental Board (“Board”) concludes that the Project conforms with Criteria 1, 1(A), 1(B), 1(E), 2, 3, 4, 5, 7, 8, S(A), 9(E), 9(K) and 10. Accordingly, the Board issues Permittees Land Use Permit #7C1079(Revised)-EB.

Key findings of the Board include:

A. Criterion 1. The Board concludes that the Project will not result in undue water pollution based on its findings that the Permittees will conduct regular monitoring and assessment and may be required to halt the operation of the Quarry under certain circumstances. The Board also concludes that the Project will not result in undue air pollution based on its findings that the levels of noise generated by the Project will not result in undue air pollution, that the emission levels from diesel engines from the Project will not result in undue air pollution, and that the dust controls implemented on-site at the Project and off-site will minimize any air pollution caused by the project.

B. Criterion 1(A). The Board concludes that the Project satisfies Criterion 1(A)(Headwaters).

C. Criterion 1(B). The Board concludes that the project meets all applicable health and environmental conservation department regulations and will not involve the injection of waste materials or any harmful or toxic substances into groundwater or wells

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D. Criterion 1(E). The Board concludes that there will be no adverse impact upon any of the unnamed tributaries located on the Permittees' property.

E. Criterion 1(G). The Board concludes that because the Project lands contain only Class Three wetlands, the Project complies with Criterion 1(G).

F. Criteria 2 & 3. The Board concludes that the project has sufficient water available for the reasonably foreseeable needs of the Quarry and that the Quarry operations will not cause an unreasonable burden on any existing water supplies.

G. Criterion 4. The Board finds that the Project plans will prevent soil erosion on-site and prevent sediment discharges to wetland areas and streams. Based upon this finding and others, the conditions imposed, and monitoring and reporting requirements, the Board concludes that the project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.

H. Criterion 5. Based on the Boards findings, especially, the roadway improvements, in concert with the conditions required herein, the Board concludes that this project will not cause unreasonable congestion or unsafe conditions with respect to the use of highways.

I. Criterion 7. The Board concludes that the Project will not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services.

J. Criterion 8. The Board concludes that the Project satisfies Criterion 8.

K. Criterion 8(A). The Board concludes that the Project will destroy or significantly imperil deer wintering areas on the Project Tract. However, the Applicants have applied all feasible and reasonable means of preventing or lessening the destruction, diminution or imperilment of the deer wintering habitat on the lands of the proposed project.

L. Criterion 9(E). The Board concludes that the Project will not have an unduly harmful impact upon the environment or surrounding land uses and development.

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M. Criterion 9(K). With respect to the public investments, the Board concludes that the Project will not unnecessarily or unreasonably endanger the public investment in such facilities. The Board also concludes that the Project will not materially jeopardize or interfere with (a) the function, efficiency, or safety of these facilities, or (b) the public's use or enjoyment of or access to these facilities.

N. Criterion 10. The Board concludes that in the absence of a town plan and in the absence of any clear policies in the Regional Plan which prohibit the Project, the Project complies with this criterion.

I. SUMMARY OF PROCEEDINGS

For a complete procedural history see Appendix A.

On June 23, 1999, the District #7 Environmental Commission ("Commission") issued Land Use Permit #7C1079 ("Permit") and Findings of Fact and Conclusions of Law and Order ("Decision") to Permittees authorizing the Permittees to reactivate and expand abandoned granite quarries located on the Dyott, Padula and LeCours properties in the Town of Sheffield, Vermont.

On July 28, 1999, Residents of Northeast Kingdom Preservation, Ltd. ("RNKP") filed a Motion to Alter with the Commission.

On August 9, 1999, the Commission issued the Revised Permit, Revised Findings of Fact and Conclusions of Law and Order ("Revised Decision") and Memorandum of Decision on RNKP's Motion to Alter ("MOD").

On August 12, 1999, RNKP filed a Notice of Appeal with the Board from the Commission's Revised Decision contending that the Commission erred by finding that the Project fails to comply with Criteria 1, 1(A), 1(B), 1(E), 2, 3, 4, 5, 7, 8, 8(A)(i)-(iii), 9(E), 9(K), and 10. RNKP also appealed the Commission's denial of RNKP's party status under Environmental Board Rule ("EBR") 14(B)(1). The Notice of Appeal was filed on behalf of RNKP by Stephanie J. Kaplan, Esq.

On September 14, 1999, Board Chair Marcy Harding convened a preheating conference and on September 20, 1999, Chair Harding issued a Prehearing Conference Report and Order ("PHCRO").

On October 13, 1999 and January 19, 2000, the Board performed site visits to the Project.

On January 19 and 26, 2000, and March 15, 2000, the Board convened a public hearing in this matter.

On June 7, 2000, the Board conducted a site visit to the Page Brook Cedar Swamp, observed a noise demonstration and convened a fourth public hearing day in this matter.

Based upon a thorough review of the record, related argument, and the parties' proposed findings of fact and conclusions of law, the Board declared the record complete and adjourned. The matter is now ready for final decision.

II. ISSUES

1. Whether, pursuant to 10 V.S.A. § 6086(a)(1), the Project will result in undue water or air pollution.
2. Whether, pursuant to 10 V.S.A. § 6086(a)(1)(A), the Project will meet any applicable health and environmental conservation department regulations regarding reduction of the quality of the ground or surface waters.
3. Whether, pursuant to 10 V.S.A. § 6086(a)(1)(B), the Project will meet any applicable health and environmental conservation department regulations regarding the disposal of wastes, and will not involve the injection of waste materials or any harmful or toxic substances into the groundwater or wells.
4. Whether, pursuant to 10 V.S.A. § 6086(a)(1)(E), the Project will, whenever feasible, maintain the natural condition of streams on the site, and will not endanger the health, safety, welfare of the public or of adjoining landowners.
5. Whether the Project has sufficient water available for its reasonably foreseeable needs, pursuant to 10 V.S.A. § 6086(a)(2), or will cause an unreasonable burden on the water supply currently utilized by existing residences under 10 V.S.A. § 6086(a)(3).

6. Whether, pursuant to 10 V.S.A. § 6086(a)(4), the Project will cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.
7. Whether, pursuant to 10 V.S.A. § 6086(a)(5), the Project will cause unreasonable congestion or unsafe conditions with respect to use of highways.
8. Whether, pursuant to 10 V.S.A. § 6086(a)(7), the Project will place an unreasonable burden on the ability of the local government to provide municipal or governmental services.
9. Whether, pursuant to 10 V.S.A. § 6086(a)(S), the Project will have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas.
10. Whether, pursuant to 10 V.S.A. § 6086(a)(S)(A), the Project will destroy or significantly imperil necessary wildlife habitat, and if it will, whether (i) the economic, social, cultural, recreational, or other benefit to the public from the Project will not outweigh the economic, environmental, or recreational loss to the public from the destruction or imperilment of the habitat, or (ii) all feasible and reasonable means of preventing or lessening the destruction, diminution, or imperilment of the habitat or species have not been or will not continue to be applied, or (iii) a reasonable acceptable alternative site is owned or controlled by the applicant which would allow the Project to fulfill its intended purpose.
11. Whether, pursuant to 10 V.S.A. § 6086(a)(9)(E), the Project will have an unduly harmful impact upon the environment or surrounding land uses and development, and there is a site rehabilitation plan which insures upon completion of the extracting operation the site will be left in a condition suited for an approved alternative use.
12. Whether, pursuant to 10 V.S.A. § 6086(a)(9)(K), the Project will unnecessarily or unreasonably endanger the public or quasi-public investment in the area's highways or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to the area highway.
13. Whether, pursuant to 10 V.S.A. § 6086(a)(10), the Project is in conformance with the Northeastern Vermont Development Association Regional Plan for the Northeast Kingdom.

III. FINDINGS OF FACT

To the extent that any proposed findings of fact are included within, they are granted; otherwise, they are denied. See **Secretary, Agency of Natural Resources v. Upper Valley Regional Landfill Corp.**, 167 Vt. 228, 241-242 (1997); **Petition of Village of Hardwick Electric Department**, 143 Vt. 437,445 (1983).

The findings of fact below are organized into a general section followed by sections related to the specific issues. Because many findings are relevant to more than one issue, the findings should not be read as applicable only to the specific issue(s) under which they are contained. Where findings from the general category or another specific category are relevant, they are assumed and not repeated.

A. General Findings

1. The Project at issue includes the reactivation and expansion of the existing granite quarries located on the Dyott, Padula, and LeCours properties in the Town of Sheffield, Vermont (“Sheffield Quarry” or “Quarry”).
2. The Quarry has been developed for the extraction of dimension granite. The three properties on which the granite reserves are located have a combined area of approximately 147 acres. The properties have frontage on Sheffield Town Highway 40, also known as Quarry Road, (“TH40”) and Town Highway 28 (“TH28”). The Barre Granite Quarries, LLC currently has a lease agreement on an approximately 90 acre parcel (“Parcel No. 1”) owned by William & Margaret Dyott of Yardley, Pennsylvania. Barre Granite Quarries, LLC has purchased an approximately 42 acre parcel (“Parcel No. 2”) from Steven & Linda Padula of Gualala, California, and the company has purchased the surface rights on an approximately 15 acre parcel (“Parcel No. 3”) from Elizabeth LeCours of Hardwick, Vermont, with the mineral rights held in reserve under a lease agreement. Barre Granite Quarries, LLC have also purchased the Amos property and entered into contracts to purchase the Collins, Archambault, Lasseigne/Drew and the Gage and Yandow properties.
3. Permittees began operating the Quarry during the summer of 1999.
4. The Permittees have an Operations and Maintenance Manual (“O&M Manual”) which sets out in detail the operating procedures for the Quarry (Exhibit P-1 13).

The provisions of the O&M Manual, including all Appendices, are incorporated herein by reference.

5. Grey granite will be extracted from the Sheffield Quarry situated at the south end of Parcel No. 1. The proposed maximum extraction (for market) rate for the Sheffield Quarry operation is 400,000 cubic feet per year. In addition, Permittees will annually extract 400,000 to 800,000 cubic feet of waste granite with on-site storage in grout piles. It will take the Permittees approximately three to five years to achieve this level of extraction.
6. The quarrying methods will include waste rock stripping and block extraction using a combination of diamond wire sawing and drilling and broaching methods. Granite block transfer and equipment movement within the Quarry is by means of a rubber-tired loader. Granite blocks are transported from the Quarry area by rubber-tired equipment to an on-site block storage yard located west of the Quarry. Waste rock (grout) is hauled by rubber-tired truck from the Quarry and spread by dozer in one of two grout storage areas located east and west of the Quarry opening. The west grout pile will be developed first and when it reaches full capacity, the east grout pile will be developed.
7. The equipment used by Permittees will be limited to the following: a Caterpillar 988F loader; a Caterpillar 972 wheel loader; a Caterpillar D350 dump truck; a Caterpillar D320L excavator; an Ingersoll Rand 850 CFM air compressor; a T.R. generator; a Liebherr 912 excavator; and one wire saw; four hydraulic hammers operated off a Liebherr excavator; a three-wheel skid steer driving three pneumatic hammers; two drill bars driving two hammers each (4 hammers); and, one single mobile hammer, for a total of twelve drills.
8. At maximum production granite will be transported by transfer truck from the Quarry and the number of such trips will not exceed ten round trip truck trips per day. Highway access to the property is from VT Route 16 traveling easterly along a 1.3 mile length of Town Highway 57 ("TH57") in Glover and Town Highway 2 ("TH2") in Sheffield (Sheffield Square Road), and traveling southerly along a 0.6 mile length of Sheffield TH40.
9. The project term is 25 years; however, there may be sufficient granite reserves on the property for extraction over a period of time extending well beyond this term at the proposed extraction rate. Upon deactivation of the Sheffield Quarry, a site reclamation plan will be implemented.

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10. The Quarry will operate eight months per year, from April 15 through December 15. The Quarry will not operate, and block shipments from the Quarry property will not occur, during winter months.
11. A 4.25 acre on-site block storage yard and equipment staging area has been developed adjacent to, and north of, the proposed Quarry opening. The yard area slopes gently (5-10%) to the west. Blocks will be hauled from the Quarry by rubber-tired equipment to the on-site yard for trimming, storage, or transfer to a truck for transportation off-site. Transfer trucks will be loaded at the on-site block storage yard. A truck wash will be used to wash truck tires and granite products prior to shipment off-site. Truck scales are located at the Quarry access road. The Quarry site is accessed from the south end of Parcel No. 1. Block transport will occur on weekdays during daylight hours only and no block transfer trucks will operate during the time when school buses use these roads.
12. At the proposed maximum scale of operations, the Permittees will employ a twenty-person Quarry crew and one Quarry foreman on-site. A mobile trailer, and an employee/equipment shelter will be located at the Quarry adjacent to the block storage yard and equipment staging area. Employee parking will be located in this area as well. Initially, sanitary facilities and a potable water supply will be furnished to employees on-site in the form of portable chemical toilets and bottled water. An on-site waste disposal system and drilled well water supply is expected to be permitted and installed within three years when the maintenance/equipment shelter is built.
13. Hours of Quarry operation and highway truck haulage will be Monday through Friday from 7:00 a.m. to 5:00 p.m. No operations or hauling will occur on weekends or Federal legal holidays.
14. The granite to be quarried on the Permittees' properties is of the "Medium Barre" variety which is described as a medium grained, medium grey biotite granite with excellent soundness and strength qualities. Medium Barre type granite dimension stone is typically utilized for fabrication of memorials, flooring/paving materials, curbing, and for a wide variety of interior and exterior applications. Granite from the Permittees' property will be distributed to Vermont, North American, and international markets.
15. Geologic exploration has indicated that the granite formation underlying the property and adjacent lands in the Town of Sheffield is a significant earth resource

in terms of stone quality, reserve quantity, and potential economic value. The subject properties form a contiguous tract of land which encompasses the majority of the area which is underlain by the granite formation, The three parcels involved are the largest remaining tracts on the deposit which have a high level of development potential for dimension granite. Beyond the boundaries of the property, the feasibility for granite Quarry development within the deposit is significantly diminished due to land subdivision or access problems.

16. Located primarily on the southern one-third of Parcel No. 1 and straddling the boundaries between Parcels No. 1, No. 2 and No. 3, this Quarry site will involve approximately 25 acres of land in combined Quarry area, grout piles, yard area, haul roads, berms, and settling ponds. The remaining approximately 122 acres will remain essentially undisturbed and 48.5 acres of deer winter shelter area will be permanently protected. The Quarry will be worked as an open pit type Quarry with elevations at the top of the Quarry ranging from 489 meters to 516 meters above mean sea level. The proposed maximum depth of excavation for the Quarry ranges from 19 meters to 46 meters (62 - 151 feet) below the ground surface with a final Quarry floor elevation not to be lower in elevation than 470 meters above mean sea level.
17. A restricted access road 400 feet in length has been constructed from TH40 to the Quarry site. Approximately 700 feet of Quarry haul road will be constructed around the perimeter of the Quarry opening. The proposed maximum limit of excavation for the Quarry will involve 12 acres. Waste rock and soil overburden will be removed from the Quarry site, hauled by rubber-tired trucks, and stockpiled near one of the two designated grout pile locations on-site. Quarry face development will advance, in general, from south to north.
18. No party or witness, expert or otherwise, opposed to the Project has introduced into evidence any objective data or studies relating to Criteria 1 through 4, nor has any opposing party or witness performed any on-site or off-site testing or independent hydrologic analysis.
19. The general operating parameters for the Barre Granite Quarry project are outlined as follows:

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| PROJECT TERM | 25 YEARS |
| HOURS OF OPERATION: | 7:00 am -- 5:00 pm |

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| DAYS OF OPERATION: | MONDAY -FRIDAY (No operations on Fed. legal holidays) |
| ANNUAL OPERATIONS: | APRIL 15 DECEMBER 15 |
| MAXIMUM ANNUAL PRODUCTION: | 400,000 CU.FT. /YEAR |
| MAXIMUM NUMBER OF EMPLOYEES: | 20 Plus one Supervisor |
| TOTAL PROJECT AREA: | 25 ACRES |
| PROJECT COMPONENTS: | 12.0 ACRE MAXIMUM Quarry AREA 4.00 ACRE GROUT PILE AREA (WEST) 4.15 ACRE GROUT PILE AREA (EAST) 4.25 ACRE YARD AREA |
| MAXIMUM # OF BLOCK SHIPMENTS: | 10 TRUCKS / DAY |
| NOISE LIMITS: | 70 dB(A) AT PROPERTY BOUNDARIES 55 dB(A) AT ANY RESIDENCES (EXTERIOR) |
| VIBRATION LIMIT: | 0.5 IPS AT CLOSEST RESIDENCE |
| MAXIMUM FUEL STORAGE ON-SITE: | 500 GAL. (DIESEL FUEL) |
| BUILDINGS / STRUCTURES: | (1) OFFICE TRAILER (1) GARAGE / STORAGE BUILDING 5000 SQ.FT., SINGLE STORY (1) STORAGE SHED 400 SQ.FT., SINGLE STORY POWDER MAGAZINES (1) TRUCK SCALE (1) TRUCK WASH |
| DRILLING HOURS: | 7:00 am 5:00 pm |
| BLASTING HOURS: | PRIMARY SHOTS: 10:00 am – 4:00 pm SECONDARY SHOTS: 8:00 am – 4:00 pm |
| BLASTING LIMIT: | 100 LBS OF EXPLOSIVE /SHOT |
| LIGHTING: | (2) 60 WATT SENSOR LIGHTS ON GARAGE & OFFICE TRAILER |

B. Criterion 1 (air pollution)

20. The Quarry does not have any stationary sources of air pollution that are large enough to require permits. The two stationary compressors are rated at 200 HP and are below the threshold limit for requiring an air quality permit. The Project does not have other stationary sources of air pollution.
21. The Project has seven mobile diesel-powered pieces of equipment (2 loaders, 2 excavators, 1 dump truck, 1 TR generator, and one 3-wheeled skid steer). The emissions from these pieces of equipment are subject to federal emissions standards imposed on the manufacturer and are not regulated on a site-specific basis.
22. There are three potential sources of air pollution at the Quarry. The first source category is the emissions from diesel engines, which includes engines on excavation equipment, air compressors used to power the drills, and the diesel trucks that will carry stone from the Quarry. The emissions from diesel engines are regulated by federal standards imposed on the manufacturer. These standards are designed to insure adequate air quality in major urban areas where thousands of diesel vehicles are operating. The operation of small numbers of diesel engines in a rural area will not significantly increase diesel related air pollution in the region.
23. The second source of air pollution is the dust that is generated from rock drilling, rock sawing, rock blasting, loading of cut rock and waste and the operation of wheeled equipment and trucks on roads. These sources are known as fugitive sources because the dust escapes into the air from a variety of points rather than from a single stack or exhaust pipe.
24. The applicant has agreed to control the emissions of fugitive dust by the use of the best practical control technology for each source. Dust from rock drilling will be controlled by the use of water in the drills when temperatures are above freezing and by the use of dust collectors when the temperatures are below freezing. Water drilling provides a very high level of dust control.
25. All granite sawing will be undertaken with constant water control which will prevent dust from entering the air.

26. Cut blocks of granite will be washed down to remove all dust and loose material so that there will be little or no dust generated during loading and transit.
27. Involved roads, on-site and off-site including the approved access route, will be wetted down with water during dry weather and/or treated with calcium chloride as needed to control dust in accordance with Permittees' Operations and Maintenance Plan ("O&M Plan").
28. A truck and wheel wash station will be used at the exit of the Project to minimize dust particles being carried out of the Quarry and on to public roads.
29. Because of the nature of the operation and the employment of dust suppression techniques there will be low levels of dust generated on site and this dust is unlikely to be blown beyond the Quarry property.
30. The third potential source is noise rising to the level of a health hazard. Hearing damage, or similar injuries to persons, result when individuals are exposed to noise exceeding 70 dB(A) Leq over a 24 hour period. The sound levels generated by the Sheffield Quarry are lower and for a shorter duration. (See findings under Criterion 8 and 9E.)

C. **Criterion: 1 (Water Pollution); I(A) (Headwaters); I(B) (Waste Disposal); I(E) (Streams); and I(G) (Wetlands)**

Surface Water.

31. The project site is within the headwaters for the Lamoille River.
32. The Project lands drain westerly to unnamed tributaries of Page Brook, which in turn, is part of the Lamoille River Watershed. A series of small, Class Three Wetlands are located on the Project lands. These wetlands have primarily formed in small perched water depressions along intermittent streams which drain the project land. Other wetland areas on-site have formed in poorly drained, topographic depressions.
33. The project site is underlain by shallow glacial till soils which overlie granite bedrock. Numerous granite outcrops and large granite boulders are evident on the land surface. Areas beyond the limit of the granite formation on-site are underlain by deep glacial till soils which overlie weathered quartzite and schist type bedrock.

34. Storm water, groundwater, and snow melt which accumulates within the Quarry flows by gravity across Quarry floors to a sump. Water stored in the sump is pumped to a two-cell settling pond structure constructed to the west of the Quarry. The settling ponds are constructed using above-grade earth till berms.
35. The Quarry de-watering discharge volume and water quality is regulated through the National Pollutant Discharge Elimination System ("NPDES") program under the authority of the Wastewater Management Division of the State of Vermont Agency of Natural Resources ("ANR").
36. Treated discharge water flows westerly from the Permittees' property to an unnamed tributary of Page Brook. Analysis of the receiving stream tributary indicates that the proposed maximum discharge rate of 300 gallons per minute ("gpm") will not result in erosion of the existing stream channel.
37. Sediment and suspended solids removal is achieved by temporarily retaining drainage water within the Quarry sump and within the two-cell settling ponds.
38. The discharge water treatment system will provide sufficient retention time for settling of suspended solids. Sediment retained within the sump and settling ponds will be excavated periodically and disposed of in a stable area on the grout piles.
39. Quarry activity does not involve the use of processing chemicals and, as such, poses little threat of pollutant release. The potential for leaching of detrimental elements from the granite deposit and Quarry waste rock is negligible. Storage of small quantities of diesel fuel and hydraulic oil is necessary. An above-ground diesel fuel storage tank (500 gallons) has been installed at the Quarry. A suitable containment structure has been constructed for the fuel storage tank.
40. The Permittees have developed and implemented a hazardous waste management plan pursuant to, and in compliance with, the Vermont Hazardous Waste Management Regulations. In accordance with this plan, all used fuel oil will either be utilized on-site as heating fuel or recycled off-site by a certified handler.
41. The ANR, Waste Management Division has issued Permittees discharge permit #3-1446.

42. Haul road drainage flows to stabilized, stone-lined or grass-lined ditches. Haul road drainage is diverted through culverts placed at 300 foot intervals beneath the road for dispersion of storm water by overland flow through wooded areas. Culvert outfalls are stabilized with stone riprap. Properly sized culverts have been installed by the Permittees at the access road intersections with TH40 as per the requirements of the Town of Sheffield. The yard area has been crowned for storm water dispersion to adjacent undisturbed woodlands. The yard area has been surfaced with coarse crushed granite material to prevent erosion of the yard surface.
43. A small perennial stream originates on the property to the west of the proposed Quarry operation. In order to protect this stream from storm water drainage impact, a 100 foot undisturbed, wooded buffer zone will be maintained parallel to, and on both sides of, the stream channel. A perennial stream originates on Parcel No. 2, east of the proposed Quarry limit. This stream will be isolated from the Quarry site by a minimum 125 to 150 foot undisturbed, wooded buffer zone. Both perennial streams are unnamed tributaries of Page Brook.
44. No Class I or II wetlands are located on the property. Class III wetlands have been delineated on the three involved parcels. These wetlands have been flagged on-site and their delineation has been approved by a State wetlands expert. An additional forested wetlands area exists in the northeast corner of Parcel No. 1. This wetland is in a remote location and is located greater than 500 feet north of the proposed Quarry site.
45. The Project has involved the disturbance of 4,900 square feet of a small Class III wetland with the development of the two-cell sediment basin. All remaining Class III wetlands will be isolated from disturbance by the establishment of 50 foot buffer zones.
46. On October 15, 1997, the Permittees received a permit from the U.S. Army Corps of Engineers identified as permit #199801627, authorizing the construction of the settling ponds in the above-stated Class III wetland.
47. The limit of the Sheffield Quarry working area is located more than 150 feet from a small stream located east of the Quarry. The western limit of the Quarry work area is located at a distance of 100 feet from a small stream channel. Both streams originate on the Quarry property. No alteration of the stream channels is proposed.

48. In addition to the 50 foot buffer zones surrounding the Class III wetlands, undisturbed, wooded buffer zones will be maintained at the Quarry site as follows:

- 200 Foot Zone: between the Quarry site and TH40
- 200 Foot Zone: Toe of west grout pile and East edge of meadow on TH40
- 125 Foot Zone: Quarry - stream on East side
- 100 Foot Zone: Quarry - stream on West side

Groundwater:

49. The Permittees conducted a hydrogeologic investigation to determine the potential impact to wetlands hydrology and groundwater conditions potentially resulting from any Quarry dewatering activity. Findings regarding this hydrogeologic investigation are provided under Criteria 2 and 3 and are incorporated here by reference.
50. Based on the hydrogeologic investigation, the lowering of groundwater levels in the bedrock aquifer in response to Quarry dewatering will not result in an adverse impact to wetland hydrology because the wetlands derive supporting hydrology from surface water recharge and shallow groundwater flow within the perched aquifer. The perched aquifer is isolated from the bedrock aquifer by a glacial till impeding layer or by zones of unfractured granite bedrock. The coarse blocky fill which will be placed in grout piles adjacent to any wetland area will not obstruct surface water drainage to the wetlands and accordingly will not result in an adverse impact to wetland hydrology. Similarly, the sediment control berms located downgradient of the grout piles allow the small amount of collected surface water to disperse by infiltration to the shallow aquifer.
51. As long as the 50 foot buffer is in place, the Project will not result in any adverse impacts to wetland functions related to relevant Act 250 criteria.
52. Based upon the recommendations of the ANR, the Permittees have agreed to monitor on-site surface water and groundwater conditions to protect against unanticipated impacts to wetland hydrology.
53. In addition to the on-site monitoring, Permittees will also monitor shallow groundwater off-site at the Page Brook Cedar Swamp (see Criterion 8).

54. An outline of the on-site monitoring plan is as follows:

- A. Monthly recording of groundwater levels will be taken by Permittees in a series of bedrock and soil-based monitor wells installed in, and adjacent to, wetland areas.
- B. Monthly recording of stream flow data from a series of weirs installed in adjacent stream tributaries will be taken by the Permittees.
- C. The Permittees shall prepare a determination of dominant plant species within mapped wetland areas at project start-up. The Permittees shall repeat plant species inventory work in the event that hydrologic monitoring indicates that adverse changes to wetland hydrology are occurring.
- D. The Permittees have installed four (4) shallow, screened, soil-based wells; three (3) bedrock wells; and, two (2) stream flow pipe weirs. The locations of the monitoring wells and weirs are identified in Section 6 of the O&M Plan, revised August 1999. Precipitation data will be collected from the remote meteorology station at Lyndon State College.
- E. Groundwater levels are to be measured with an electric water level probe to approximately 0.01 foot accuracy.
- F. Stream flow is to be measured at the pipe weirs by the container and stopwatch method with flows calculated to the nearest 1 .0 gpm during high flow periods and to the nearest 0.25 gpm during low flow periods.
- G. Recording frequency shall be monthly for the project term of active Quarry operation.
- H. All data will be analyzed with a computer model which can simultaneously simulate the hydrogeologic conditions of the Quarry.

Waste:

55. The primary waste material generated will be stone grout. Grout is disposed of on-site in two grout piles. (See site plan and Criterion 9(E) findings.)

56. All topsoil and organic material collected on-site during Quarry clearing and stripping will be either stockpiled on-site or used in the construction of berms to be later used in Quarry reclamation.
57. Quarry seepage water, storm water, and process water is pumped from a collection and treatment sump in the bottom of the Quarry to two settling lagoons prior to discharge via a controlled outlet structure to a riprap level spreader which will then discharge over land to an unnamed tributary of Page Brook.
58. Quarry effluent water will be discharged only in compliance with the following limits as approved in discharge permit #3-1446:
- | | |
|-------------------------|------------|
| Total suspended solids: | 10 mg/1 |
| Turbidity: | 10 NTU |
| pH: | 6.5 to 8.5 |
59. Portable chemical toilets are provided for employees at both the office trailer and Quarry yard until the Permittees construct the maintenance structure. At that time, Permittees will obtain an appropriate water and wastewater permit.

D. Criteria 2 and 3 (Water Availability and Unreasonable Burden on Existing Water Supplies)

60. A hydrologic investigation has been performed at the Project site by the Permittees to determine potential impacts to wetland hydrology and groundwater conditions which may result from Quarry dewatering activity. The two existing quarries located on the property were de-watered during a five day pump test based upon guidelines established by ANR hydrologists.
61. A groundwater contour map of the projected drawdown of groundwater levels in the fractured bedrock aquifer resulting from the dewatering of the Quarry to the proposed maximum limits was generated by the Permittees from the analysis.

Hydrogeology

Surface Water Discharge

62. The small stream tributaries located east and west of the proposed Quarry site derive groundwater base flow from the shallow perched aquifer which overlies

impermeable till soils on-site. The perched water table aquifer is significantly isolated from the underlying bedrock aquifer by the glacial till impeding layer. The volume of seepage discharging from the perched aquifer to surface waters is very low adjacent to the Quarry site. The ravine seep discharge rate was measured at plus or minus 1 gpm.

63. Stream tributaries gain flow primarily from surface drainage upstream (east) from TH40. Downstream (west) from TH40 stream tributaries gain significant groundwater base flow from the fractured bedrock aquifer. Prior to the start-up of Quarry operations each year, water collected within the Quarry will be pumped out. Permittees' wastewater discharge permit (#3-1446) allows a maximum of 0.43 million gallons per day ("mgd") for 6 to 8 weeks of dewatering prior to the operating season and 0.05 mgd intermittently throughout the Quarry season.

Wetlands

64. The supporting hydrology for wetlands located on, and adjacent to, the granite formation is derived exclusively from surface water recharge and shallow groundwater flow in the perched water table aquifer identified on-site. Static water levels in the bedrock aquifer range from a depth of 1.5 feet below the wetland water level at the ravine seep to a depth of 20 feet below the wetland water level well OW-3. (See groundwater monitoring map for well locations - 4/29/99 Geo-mapping Hydrogeologic Report and see also water levels as summarized in The Cross Section Elevation Table attached in the appendix of 4/21/99 report.)

Groundwater Aquifer Conditions

65. Two discrete groundwater aquifers have been identified on-site:
- 1) A shallow perched water table aquifer overlying impermeable glacial till soils and unfractured bedrock with a saturated thickness ranging from 3-10 feet. Water levels in this aquifer have wide seasonal fluctuations typical of vadose zone conditions resulting in surface water ponding and surface seepage on a seasonal basis.
 - 2) A fractured bedrock aquifer with a saturated thickness greater than 100 feet. Water levels in this aquifer are relatively stable due to buffering from the overlying perched aquifer and associated wetlands.

66. Hydraulic conductivity of the bedrock formations away from fracture zones is close to nil, particularly within the granite formation as indicated by subsurface testing. Prominent fracture zones south and west of the Quarry site have high yielding water bearing intervals. An observation well drilled on the northwest-southeast fracture trace has yielded approximately 50 gpm at a relatively shallow depth of 85 feet. Calculation of pit flow from the bedrock aquifer indicates a recharge rate ranging from 22-67 gpm at the proposed maximum limit of excavation.

67. Drawdown of groundwater levels in the bedrock aquifer in response to dewatering of the Quarry excavation to the proposed maximum depth of approximately 100 feet will extend to a maximum distance of approximately 700 feet from the Quarry limit. Calculated drawdown/distance is as follows:

| <u>Distance from Quarry</u> | <u>Drawdown</u> |
|-----------------------------|-----------------|
| 0' | 100.0' |
| 10' | 65.0' |
| 100 | 29.5' |
| 200 | 19.0' |
| 300 | 13.0' |
| 400' | 8.5' |
| 500' | 5.0' |
| 600' | 3.0' |
| 700' | 0 |

68. No potable water supplies are located within 300 feet of the Quarry limit. The drilled wells servicing the Collins and Archambault residences are located 300 - 400 feet from the Quarry limit and, as a result, these wells may experience a reduction in total available head of up to 13 feet.

69. The Permittees have purchase agreements with the owners of both the Collins and Archambault residences. The agreements require that Permittees purchase the properties, if they are not otherwise sold, after Permittees are issued an Act 250 permit.

70. The Gage/Yandow spring is located greater than 700 feet southeast from the Quarry limit, however, this shallow, low flow spring should be monitored as the Quarry extends to the maximum depth to assure that the minimal amount of available head in this spring (approximately 1 ft.) is not adversely impacted by dewatering operations.

71. Lowering of groundwater levels in the bedrock aquifer in response to Quarry dewatering will not result in an adverse impact to wetland hydrology due to the fact that the wetlands derive supporting hydrology from surface water recharge and shallow groundwater flow within the perched aquifer.
72. The perched aquifer is significantly isolated from the bedrock aquifer by a glacial till impeding layer or by zones of **unfractured** granite bedrock.
73. The extremely coarse blocky till which will be placed in grout piles adjacent to wetland areas will not obstruct surface water drainage to the wetland and accordingly will not result in an adverse impact to wetland hydrology. Base flow in streams adjacent to the Quarry site is derived from groundwater discharge from the perched aquifer east of TH40. As a result, base flow in streams immediately adjacent to the Quarry will not be effected by drawdown within the bedrock aquifer.
74. The combined buffering from distance (bedrock aquifer discharge zones associated with stream tributaries are located greater than 500 feet from the Quarry limit) and elevation (bedrock aquifer discharge zones associated with stream tributaries are located primarily below the proposed maximum Quarry depth at Elev. 470 meters.) will prevent a significant reduction in base flow conditions in the effluent stream tributaries west of TH40.

Potable and Process Water Supply

75. The Quarry project may require a drilled bedrock well in order to supply an estimated 10 - 20 gpm of process water for diamond drilling and sawing, dust control, and for periodic wash-down of Quarry surfaces. The proposed maintenance building, which is to be constructed on-site after the initial phase of Quarry development (3-5 years), will utilize this bedrock well for its potable water supply.
76. Process water will be recycled through the proposed two-cell settling pond in order to minimize groundwater withdrawal. Freshwater will periodically be required to replenish recycle water volume, primarily during dry periods. Pumping will occur on an intermittent basis at the proposed 10 - 20 gpm rate.
77. A continuous (24 hours per day) groundwater withdrawal at the proposed pumping rate will not be required. Settling Pond Cell #1 will be utilized for

Recycled Water Storage with a capacity of 29,000 cubic feet (approximately 200,000 gallons).

78. At peak operational capacity, it is estimated that 5,000 - 7,500 gallons per day of fresh water will be required to supplement the recycled water volume in storage during dry weather. This fresh water volume will be pumped from the production well to Cell #1 during the course of a normal operating day (10 hours) at a rate of 10 - 15 gpm.
79. The primary source for groundwater in the area of the project is a fractured bedrock aquifer. A bedrock fracture trace analysis has been performed in order to identify potential water bearing, high angle fracture zones at the project site. The proposed drilled bedrock well site on the Quarry project site has been located on a prominent north/northwest - south/southeast trending bedrock fracture zone.
80. Groundwater withdrawal at the Quarry site from process water well pumping and Quarry de-watering may potentially result in source interference in neighboring water supplies which have been developed in the fracture bedrock aquifer.
81. Quarry blasting may also potentially result in source interference by altering fracture patterns in bedrock.
82. Based upon a proposed rate of 50 - 100 gpm, a 2,500 foot zone of potential source interference has been established by the State of Vermont based on pump test data from previous hydrogeologic evaluations of aquifer conditions in Vermont.
83. The Permittees' evaluation, which is based upon a pumping rate of 22 - 67 gpm, utilized a 2,500 foot zone of potential influence.
84. A total of nine individual groundwater supplies are located within 2,500 feet of the proposed Quarry limit and proposed production well site. These water supplies are owned by the following landowners: (1) John Riedle; (2) Harry and Sue Simonds; (3) Stephen Amos; (4) Elaine and Oliver Collins; (5) D'Arcy Archambault; (6) Walter Gage, Robert and Arthur Yandow, James Gage; (7) Jon and Lori Lasseigne; (8) Anthony and Alice Session; and, (9) William and Margaret Dyott.
85. Review of Well Completion reports on file at the ANR, Water Supply Division indicate that, for the nine existing wells located within the 2,500 foot radius, well

records exist only for the Lasseigne and Dyott wells. The nine water supplies are, therefore, all assumed to have a bedrock aquifer source.

86. Operations at the Quarry will not adversely impact the groundwater yield or the groundwater quality in individual potable water supplies located beyond the delineated 2,500 foot potential zone of interference. The zone of interference extends to 700 feet.
87. Operations at the Quarry have the potential to result in a minor level of source interference at the nine individual potable water supplies located within the delineated 2,500 foot zone of potential source interference. Drawdown of the groundwater level at the Project site, could possibly result in a minor level of drawdown at the nine identified water supplies.
88. Baseline yield and water quality data has been collected from each of the nine involved water supplies and this data has been filed with the District Commission.
89. The Permittees have negotiated conditional purchase or impact agreements with several of the owners of the water sources located within the 2,500 foot zone of potential influence (Amos, Collins, Archambault, and Gage/Yadow). Additionally, one of the nine potentially affected wells is located at the Dyott cabin which is on the project land.
90. In the event that an unacceptable level of source interference is experienced at any of the water supply source locations not under prior agreement, the following measures will be implemented by the Permittees, at Permittees' own cost and expense, in order to rectify any source interference problems:
 - A. In the event that the existing affected groundwater supply is a drilled well, the well will be deepened by re-drilling with additional improvements made to the well pump size and configuration as required.
 - B. If the above method is unsuccessful, a replacement bedrock well water supply will be drilled on the individual properties. The bedrock fracture trace analysis indicates that there is a high potential for locating replacement well sites on each of the affected properties.
 - C. Finally, to the extent necessary, additional potable water storage would be installed to service the affected properties experiencing a reduction in source yield due to interference.

E. Criterion 4 (Soil Erosion and Sediment Control)

91. The Permittees have prepared and implemented a comprehensive soil erosion control plan for the Sheffield Quarry.
92. The plan mandates that all erosion control procedures are to conform with the recommended practices described in the Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites (“Handbook”).
93. The erosion control plan provides, in part, as follows:
- A. In consultation with the Town of Sheffield, the Permittees will install minimum 16” diameter drainage pipe at the access road intersection with TH 40.
 - B. The access road width at the intersection of TH40 will be a minimum of 30 feet. The access road is to be graded to slope away from TH40 for a minimum distance of 3 feet from the roadway shoulder before any incline in access road grade. The Permittees will maintain an approach area with a maximum 3% grade for a 20 foot distance from the shoulder of TH40, and maintain a maximum access road grade of 8%. A sediment trap will be constructed at the access road culvert outlet.
 - C. The Permittees shall surface the traveled width of access road with crushed gravel or crushed stone for a minimum 300 foot length from the Town Highway shoulder. The Permittees will further apply fertilizer, specified grass seed mixture, and mulch to all exposed soils upon completion of access road construction. Finally, the Permittees will install a silt fence along the north shoulder of the road prior to construction.
 - D. The Permittees will grade the access road from the office trailer location to the settling pond access road to drain to Quarry sump. The access road will be super-elevated at the west shoulder to prevent a drainage to the wetland buffer and adjacent stream. A silt fence will be installed along the west shoulder prior to construction.
 - E. The Permittees will construct a sediment trap at the upstream shoulder of the settling pond access road. Installation of hay bale check dams will occur in down gradient drainage courses prior to settling pond access road and sediment trap construction.

F. The Permittees shall construct a 10 foot by 15 foot concrete fueling pad with trench drain catchment for mobile rubber-tired equipment fueling.

G. The construction of both settling ponds will occur prior to initial Quarry de-watering. A silt fence will be installed prior to commencement of settling pond site work.

H. The Permittees will prepare the western grout pile site by progressive tree clearing prior to placement of soil overburden and waste rock fill.

I. The Permittees shall maintain a down slope erosion control berm at the toe of grout till and advance the berm progressively to the grout area limit as the toe of fill advances.

J. The Permittees will prepare the yard area site by progressive tree clearing to the limit shown. The Permittees will not grub stumps and strip soils from the yard area site other than as required for berm building and reclamation soil stockpiling. A silt fence will be installed along the eastern perimeter of the yard area prior to placement of till.

K. A yard area pad will be constructed of clean rock fill on undisturbed soils. An erosion control diversion berm will be installed along the entire eastern perimeter of the yard area to prevent drainage to adjacent wetland buffer zones. Soil fill shall be placed to form earth berms with a 3 foot minimum height. The Permittees shall apply fertilizer, specified grass seed mixture, and mulch to graded berm slopes. The Permittees will crown the yard area as shown to disperse storm water drainage.

L. Preparation of the eastern grout pile site will occur by progressive tree clearing prior to placement of soil overburden and waste rock fill.

M. The Permittees will maintain a down slope erosion control berm at the toe of the grout fill. Berms will be advanced progressively to the grout area limit as the toe of fill advances. A silt fence and hay bale check dams will be installed in the drainage course at the southern limit of the grout pile area and up slope from the wetland buffer zone prior to commencement of site preparation.

N. The Permittees will stockpile soil overburden/reclamation cover material on the eastern side of the grout pile area. Soil fill will be stabilized by seeding with conservation grass seed mixture and mulch application. Exposed soil fill is to be stabilized by seed application no later than September 1st of each operating year.

O. An erosion control diversion berm will be installed, and maintained, along the northern Quarry limit to prevent drainage to the wetland buffer zone. The Permittees will place soil fill to form an earth berm with a three foot minimum height. Application of fertilizer, specified grass seed mixture, and mulch will be made to the graded berm slopes.

P. The Permittees will install and maintain an erosion control diversion berm along the northern Quarry limit to prevent drainage to the wetland buffer zones. Soil fill will be placed to form an earth berm with a three foot minimum height. The Permittees will apply fertilizer, specified grass seed mixture, and mulch to graded berm slopes.

94. A Seeding and Mulching Plan Description has been submitted by the Permittees.
95. For the first two years of operations, Permittees will perform weekly inspections of soil erosion control devices and compile weekly erosion control reports, detailing any and all device failure or discharges and the related repair efforts. Also Permittees will perform bi-weekly inspections of seed germination status until vegetative covers are well established. Both reports to be prepared and submitted monthly to the Commission.
96. Daily inspection of the grout pile erosion control devices will be performed particularly during the early stages of development to prevent sediment discharges and/or to monitor the extent to which sediment from the grout pile migrates.
97. Flagging of all impacted wetland and stream buffer areas has been done and all erosion control devices have been placed outside of the protected buffer zones.
98. With respect to Criteria 1, 2, 3, and 4, the Permittees' consultants have prepared detailed plans related to the Sheffield Quarry's operations and potential impacts. These reports are identified as: (1) Quarry Operation and Reclamation Plan (Exhibit P-5); (2) Operation Plan Map (Exhibit P-6); (3) Operation Plan - Wetlands Map (Exhibit P-8); (4) Settling Ponds Design Plan (Exhibit P-1 1); (5)

Hydrologic Analysis (Exhibit P-12); (6) Hydrogeologic Evaluation (Exhibit 14); (7) Hydrogeologic Investigation Report (Exhibit P-15); (8) Bedrock Fracture Trace Map (Exhibit P-16); (9) Final Grading and Erosion Control Plans (Exhibits P-19 and P20). These exhibits and the material contained therein are incorporated herein by reference.

99. All of the water quality, wetlands, and hydrologic work performed by the Permittees have been reviewed by the ANR and all studies, reports, and analysis were performed based upon, and pursuant to, the ANR's recommendations.

F. Criterion 5 (Unreasonable Congestion or Unsafe Traffic Conditions)

100. At full operation, the Sheffield Quarry will generate approximately twenty passenger vehicle round trips per day. There will be a maximum of ten round trips per day of Quarry block transfer trucks. In addition to these thirty round trips per day, there will be additional vehicular trips attributable to support trucks and vehicles (fuel and supply deliveries). The support trucks and vehicles will not generate traffic on a daily basis but could, on any given day, generate an additional ten to fifteen vehicular round trips.
101. Permittees maintain a daily traffic log, for all traffic other than employees, entering and leaving the Quarry.
102. The travel route for Quarry block transfer trucks is specifically limited to the 1.12 mile section of TH57 in Glover; the 0.2 mile section of TH2 in Sheffield; and, the 0.6 mile section of TH40 between the intersection at TH2 and the Quarry access.
103. The roads identified above, in addition to TH2 in Sheffield, from the TH2 intersection to Route 122 are currently utilized for a variety of vehicular traffic including, but not limited to, passenger cars, service vehicles, school buses, farm equipment, and large, multi-axle logging trucks and trailers.
104. The Quarry block transfer trucks will not be owned or controlled by the Permittees, but will be owned, primarily, by independent transporters who will transfer block from the Quarry pursuant to written agreements.
105. School bus traffic during the school year may pose a safety risk with Quarry block transfer trucks.

106. The maximum trailer length of the transfer trucks will be 48 feet and the maximum gross vehicle weight will be 99,000 pounds.
107. Pursuant to Title 23 V.S.A. §1400a, *et seq*, local municipalities, knowledgeable with regard to their local road conditions, must approve the use of their local roads for vehicles carrying a gross weight of more than 24,000 pounds. The Permittees' transport hauler, Granite Importers, Inc., has received from both the Towns of Glover and Sheffield, Uniform Municipal Access Weight permits to carry up to 99,000 pounds of maximum weight on TH57, TH2, and TH40. The Glover permit is conditioned on the transfer hauler consulting with the Glover Road Foreman with regard to any transfer hauling between March 1 and May 1, and the Sheffield permit is conditioned on the hauler not operating between 7:00 AM to 8:30 AM and from 2:00 PM to 4:00 PM (school bus hours) or during spring months.
108. Pursuant to Title 19 V.S.A., the Town of Glover Selectboard is designated as the Town's Highway Commission and is responsible for the laying-out, maintenance, and repair of all roads within the Town of Glover. The Permittees' highway engineers and traffic consultants met with the Town of Glover Selectboard and their Highway Road Foreman and, at the Selectboard's request, the Permittees agreed to make certain roadway improvements to TH57 in Glover. These improvements include the repair or relaying of five culverts along TH57 and the widening of TH57 to a traveled surface area of not less than 18 feet. In the event the surface area of any of the TH57 roadway in Glover needs additional gravel, the Permittees agreed to pay for and provide said gravel so as to maintain a 24 inch minimum depth of gravel for the entire length of TH57. Subsequent to receiving the Town of Glover's highway recommendations, the Commission, by condition, required that TH57 in Glover be reconfigured so as to provide a traveled surface of not less than 20 feet wide. The Permittees agreed to this additional widening and agreed to pay for its implementation which has been completed.
109. Pursuant to Title 19 V.S.A., the Town of Sheffield Selectboard is also designated as the Town's Highway Commission and is responsible for the laying out, maintenance, and repair of all roads within the Town of Sheffield. The Permittees' highway engineers and traffic consultants met with the Town of Sheffield Selectboard and their Highway Road Foreman and, at the Selectboard's request, the Permittees agreed to make certain roadway improvements to TI-12 and TH40 in Sheffield. These improvements include inspection of all culverts on TH2 and the repair of said culverts so as to retain a minimum cover of 24 inches of

gravel over the culvert. In addition, the vertical drop in the road west of the intersection of TH40 required approximately 2 feet of fill to provide a minimum stopping sight distance of 220 feet. In the event the culvert located at this location shows wear or damage, it will be replaced. With respect to TH40, the Sheffield Selectboard and its Highway Road Foreman requested that additional gravel be added to the road so that a minimum depth of 15 inches is maintained for its entire length to the proposed Quarry access road. As truck traffic levels increase, additional gravel will be added to the road so that a 24 inch minimum depth of gravel is maintained for its entire length. Where the road is lined with large maples, a minimum road width of 16 feet will be established. This will be accomplished by adding gravel and not by excavating material near the base of the trees.

In addition to the above, at the request of the Sheffield Selectboard, TH2 in Sheffield will have its traveled way increased to 20 feet wide and TH40 will have its traveled way increased to 18 feet wide except in the maple tree locations described above. Subsequent to the receiving of the Town of Sheffield's highway recommendations, the Commission, by condition, required that TH2 in Sheffield be widened to 20 feet. The Permittees agreed to all of the roadway improvements described above.

110. The above roadway improvements within the Towns of Glover and Sheffield have been completed. Permittees filed an Engineer's Certification certifying that the roadway improvements have been satisfactorily completed. In an August 7, 2000 Memorandum to Parties, Chair Harding approved the certification.
111. In accordance with the agreements entered into by and between the Permittees and Sheffield, all plans and specifications for work to be performed on the roads were, at all times, subject to the final approval of the Sheffield Selectboard.
112. The Town of Sheffield has posted a maximum speed limit of 25 miles per hour for TH40 and TH2 to the Glover border. The Town of Glover completed the statutory procedures necessary to post TH57 in Glover at a speed limit of 25 mph. The Permittees have included in all of Permittees' contracts with granite transfer haulers, a requirement that all granite transfer trucks utilizing TH40, TH2 and TH57, operate at a speed limit of not more than 20 mph on these roadways.
113. The Board finds, pursuant to 23 V.S.A. §1007, that the Towns of Sheffield and Glover cannot legally post their roads at a speed limit below 25 mph. While, as the findings herein demonstrate, 25 mph would be a safe speed limit for the

operation of these vehicles, the Board, by permit condition, requires the granite transfer vehicles to operate at the 20 mph speed limit set forth in the Permittees' trucking contracts,

114. Pursuant to agreements entered into by and between the Permittees and its transfer hauler, the transfer hauler's vehicles may not exceed 20 miles per hour for the approximately 1.92 miles of roadway between the Quarry access road and Route 16.
115. The Vermont Agency of Transportation ("VAOT") records demonstrate that no accidents were reported in their most recent 5-year recording period along the town road section of the truck transport route.
116. The grades on TH57 in Glover and TH2 and TH40 in Sheffield are all within the maximum grades allowed for these roads pursuant to Vermont's Design Standards for state highways.
117. With the widening and other improvements in place, all of the roadways utilized by the transfer truck vehicles will have adequate sight distances at all points along the transfer route. In particular, the intersection of Vermont Route 16 with TH57 will meet all VAOT standards with respect to sight distances at that intersection.
118. Over one-half the town and state roads on which the VAOT conducts vehicle classification counts have more than 20 trips per day by large trucks.
119. TH57 in Glover and TH2 and TH40 in Sheffield have low traffic volumes and have sufficient capacity to carry any additional traffic which will be generated by the Quarry. Given the low volumes of traffic, both prior to and with the Quarry's operation, there will be no traffic congestion on these roadways,
120. On October 22, 1997, the VAOT implemented the Vermont State Design Standards for the construction, reconstruction and rehabilitation of roadways and bridges within the State of Vermont. Section 1.1 of the Vermont State Design Standards entitled "The Purpose of Design Standards" states that the standards were designed to achieve the following two purposes: "To provide clear technical direction to the designers of transportation projects in Vermont. To achieve roadway and bridge design which provide access, mobility and safety for users, and which are also sensitive to the social and environmental context of Vermont."

Section 1.1 further provides that the “Standards present the physical design parameters and guidelines of bridges and roadways in Vermont. In some cases they change and in other cases they augment the standards previously used by the VAOT and...AASHTO.”

Section 1.2 of the Vermont State Design Standards states that the standards were developed over a 21 month period as part of the State of Vermont’s Long Range Transportation Plan. The design standards committee was comprised of representatives from VAOT, the ANR, the Division of Historic Preservation, Regional Planning commissions throughout the state, numerous other agencies, private citizens, and the Federal Highway Administration.

121. The Board finds that the Vermont State Design Standards is a comprehensive document intended to provide design standards for Vermont’s roadways. Based upon Vermont’s experience with its own roadways, traffic flows, safety patterns, and climate, it is apparent that the State of Vermont intended to create a document which was relevant to Vermont’s roads and driving needs as opposed to merely adopting more national standards which would apply to roads and driving conditions on a more generic basis which may have little relevance to Vermont.
122. TH57 in Glover, TH2 in Sheffield, and TH40 are “local roads” and are governed by the design standards set forth in Section 6.0 of the Vermont State Design Standards.
123. At Table 6.1 of the Vermont State Design Standards, the minimum stopping sight distance for local roads and streets with “wet pavements” is 150 feet for a vehicle traveling 25 miles per hour.
124. Table 6.2 of the Vermont State Design Standards requires a corner sight distance of 275 feet for a vehicle traveling 25 miles per hour.
125. As previously found by the Board, the ten (10) granite transfer trucks which will be utilizing the roadway from the Quarry access road to Route 16 will all, by contract, be traveling at a maximum speed of 20 miles per hour.
126. There are no locations on these roads where the stopping sight distance is less than 150 feet. Mr. Dickinson’s, RNKP’s traffic consultant, Pre-filed Rebuttal Testimony, determined that the sight distances at the critical locations on TH57 were 272 feet, 202 feet, 230 feet, and 250 feet. He also determined that on TH2, just east of TH40, the minimum sight distance was 230 feet. Based upon the

testimony of all the traffic consultants, including that of RNKP, the Board finds that there are no locations which will be utilized by granite transfer trucks where the sight distances will be less than that required under the Vermont State Design Standards. In most cases the sight distances are significantly greater.

127. Table 6.6 of the Vermont State Design Standards sets forth the maximum grades for rural local roads. All involved roads fall within the “mountainous” category for the purposes of evaluating the areas’ grades. Based upon Table 6.6, at a speed of 25 miles per hour, the maximum safe grade for these roads would be 15%. All of the expert testimony with regard to this issue acknowledged that the steepest grade for a very short distance was approximately 14% and that the average grade from Route 16 was 8-10%.
128. The Permittees will not be using these roads in the winter.
129. Table 6.3 of the Vermont State Design Standards for the average daily traffic (ADT) requires only nine foot travel lanes.
130. Permittees have entered ongoing monitoring and maintenance agreements with the towns of Glover and Sheffield.

G. Criterion 7 (Impact on Municipal Services) 6086(a)(7)

131. In an impact questionnaire, the Town of Sheffield, with the exception of the roadway improvements described with regard to Criterion 5, determined that the Sheffield Quarry would not cause an unreasonable burden on the ability of the Town of Sheffield to provide municipal or governmental services. Specifically, the Town of Sheffield determined that the Sheffield Quarry would not place a burden on the Town’s tire protection services, police protection services, rescue services, or solid waste disposal services.
132. Pursuant to an agreement entered into by and between the Permittees and the Town of Sheffield, the Permittees have agreed to pay for all roadway improvements requested by the Town of Sheffield and as identified in the Criterion 5 findings. The Permittees have further entered into a road maintenance agreement with the Town of Sheffield and has agreed to pay a proportionate share of maintaining both TH40 and TH2 within the Town of Sheffield.
133. In addition to the above, the Permittees have agreed to pay to the Town of Sheffield an impact fee in an amount equal to \$0.20 per cubic foot of granite sold

in the form of “dimension stone” from the Quarry. This impact fee shall be paid to the Town of Sheffield general fund and shall be available for use by the Town of Sheffield for any and all town related purposes. The Permittees will pay the impact fee on a quarterly basis and has agreed to make available to the Town of Sheffield its books and records with respect to its dimension stone sales to allow the Town of Sheffield to verify the impact fee payment amounts.

134. The Permittees have amended their January 28, 1999 Roadway Agreement with the Town of Glover to provide that the Permittees will reimburse the Town of Glover for maintenance costs attributable to the Permittees’ use of TH57. The Permittees have further agreed to pay the Town of Glover one half of the expenses for repairs over and above normal maintenance, including repairs resulting from heavy rainfalls or other extraordinary climatic events,

H. Criterion 8 (Aesthetics)

VISUAL IMPACT

135. The Permittees’ properties encompass a combined area of approximately 147 acres situated in the southwest corner of the Town of Sheffield. The Village of Sheffield is located approximately 4 miles to the east of the property. Parcel No. 1 (approximately 90 acres) has frontage on TH40, Parcel No. 2 (approximately 42 acres) fronts on TH28, and Parcel No. 3 (approximately 15 acres) is situated at the intersection of TH28 and TH40. The subject property and adjacent lands are primarily wooded and adjacent land use involves a mix of low density residential development, agricultural use, logging, and undeveloped woodlands.
136. Of the 147 acres, only 25 acres will be cleared for the Quarry and approximately 48.5 acres will be perpetually preserved by a conservation easement. The clearing of 25 acres out of 147 acres is similar to and smaller than numerous other clearings within a five to ten mile radius.
137. Parcels No. 1, No. 2, and No. 3 range in elevation from 485 - 540 meters (1591 - 1771 feet) above sea level and are located on the west facing slope of a ridge trending northeast/southwest. Granite quarries and related grout piles are situated approximately between elevations ranging from 489 - 526 meters (1604 - 1725 feet).

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138. The proposed extraction rate is 400,000 cubic feet per year. In addition, Permittees will annually extract 400,000 to 800,000 cubic feet of waste granite with on-site storage in grout piles.
 139. The granite transfer truck traffic (tractor trailers carrying blocks from the Quarry) will not exceed a maximum of ten round trips per day.
 140. The project term is 25 years.
 141. The site is located in a remote rural area of the Town of Sheffield and is characterized by hilly terrain forested by predominantly softwood vegetation.
 142. Occasional permanent and seasonal residences dot the landscape with openings and buildings associated with agricultural activities on gradually sloping hillsides and in valley areas.
 143. Evidence of logging activity is apparent in portions of the surrounding landscape and the site, itself, was significantly logged by prior owner/s within the last ten years.
 144. The site is a former quarry which included grout piles, quarry holes, and quarry roads.
 145. The Project development plan is to quarry in the area of the pre-existing quarry working laterally and downward.
 146. TH40 accesses nine scattered residences and camps.
 147. Vegetation along TH40 varies. Most of the woodland along TH40 and the site is comprised of dense stands of balsam fir 45 to 65 feet in height providing screening of the Quarry operations.
 148. The closest point of the proposed Quarry operations is 200 feet from TH40.
 149. Cross section analysis indicates that the grout piles, settling ponds, yard areas, Quarry, and all structures, except the scale house, will not likely be visible from any roadways.
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150. All of the Quarry operations and structures are lower in height than the surrounding woodland vegetation as seen from viewing angles provided along TH40.
 151. Areas of dense vegetation between the roadway and Quarry operations will be protected against future cutting.
 152. All views into the Quarry will be screened by a minimum of 200 feet of existing woodland and no direct views of the Quarry operations will be visible from TH40 except through the roadway opening at the Quarry access road. This view will be of very short duration and at a perpendicular angle of view.
 153. Proposed buildings for the site are single-story steel structures with gable-end or shed roofs. Most buildings are small scale with the largest being the 5,000 square foot maintenance garage.
 154. The scale house shall be 200 square feet or less in size.
 155. The scale house will be the only structure visible from the roadway and will be observable by travelers on TH40.
 156. The Quarry and structures will not be visible from TH2.
 157. All camp and residence owners within 1,500 feet of the Quarry operation (Collins, Gage, Amos, Archambault, and LeCours properties) have entered into purchase and sales or other agreements with the Permittees.
 158. Two 60 watt sensor operated downgradient spotlights will be located at the office trailer and at the equipment building and will be in use from dusk to dawn.
 159. During the 25 year project term, the grout piles will be progressively developed to capacity. It will take approximately ten years to fill the lower (west) grout pile, as well as the yard area, to their proposed maximum elevations. The west grout pile will then be reclaimed by soil capping and planting with native grasses and legumes.
 160. During the remaining 15 year term, the upper (east) grout pile will be progressively developed. During this same time period, the top of the west grout pile will naturally re-vegetate with pioneering tree varieties such as poplar, birch, willow, balsam fir, and white pine. By the time that the east grout pile reaches its
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highest elevation, it will be closed and reclaimed in the same manner as the west pile during a relatively short time period (i.e. the unreclaimed crest may be exposed for approximately 5 years). Consequently, the eastern grout pile will not reach its maximum height until the very end of the Project term and will be reclaimed shortly thereafter.

161. The western grout pile will have a maximum base area of 4.0 acres. The eastern grout pile will have a maximum base area of 4.75 acres.
162. Rock fill in the grout piles will range in height from 10 to 20 meters above land surface at full capacity.
163. The ridge line east of the proposed eastern grout pile ranges in elevation from approximately 530 meters to 553+ meters above sea level. The top of the eastern grout pile will not exceed 540 meters above sea level. The top of the western grout pile will not exceed 520 meters above sea level. In addition, the ridge line along the eastern property line east of the grout pile has woodland vegetation ranging in height from 50 to 65-t feet (15 to 20 meters). Using the lower height, this adds approximately 15 meters to the effective height of the ridge line which is greater than the maximum height of the grout pile.
164. The Permittees have stipulated to a permit condition requiring that the height of the grout piles shall be contoured such that it will not exceed the height of any adjacent tree line.
165. While the site is typical of the aesthetic quality of the region in general it is not located in a uniquely sensitive viewing area.
166. The opening created for the Quarry is similar to the size of openings created in the general area for agricultural and residential activities. The opening for the Quarry is compatible with existing openings which are part of the local landscape and surroundings.
167. Permittees identified potential viewing locations using USGS maps, and an analysis of potential off-site views was made by combining cross-sections with field reconnaissance to determine specific viewing characteristics and factors that influence potential visibility of the project. Areas of public congregation including major highways, village centers and recreation areas were included in the analysis, including Route 16, Route 122, Sheffield Square Road, the Villages

of Sheffield, Glover and Greensboro and recreation areas located along local lakes.

168. Based upon the exhibits on file and the site visit, neither the Quarry nor its grout piles will be evident from any areas of public congregation,
169. Based on the exhibits on file and the site visit, visual aspects of the Project will be off-set by: (1) low viewing angles; (2) long viewing distances; (3) brief viewing durations; and, (4) intervening landforms and screening vegetation,
170. The height of the surrounding landscape and forest combined with the low viewing angles and long site distance is such that the Quarry, grout piles, buildings and associated site work will not be evident from any residences.
171. The Quarry operation is visible from an unnamed road located approximately four miles southwest of the Quarry. There are very few homes and farms located along this road. From this distance the Quarry, grout piles and operations will be barely visible and, if seen at all, will be seen as a very small part of a large panoramic view.
172. There are direct views of the Quarry from a residential structure on open hillside located approximately four miles southwest of the Quarry site. From this vantage point, portions of the lower grout pile and only the southwest corner and very top of the upper grout pile will be visible (approximately 20 years from now). Even if no intervening vegetation influences the view, the southwest corner of the pile is insignificant in size when compared to the broader landscape.
173. Visibility of the Project will vary based on location of the viewer, the season, the Project component under consideration, the Project's maturity, and changes in intervening vegetation.
174. The Kinnell residence is located at elevation 510 meters above sea level and the top of the uppermost proposed eastern grout pile is at a maximum elevation of 540 meters. The bottom of the south end of the proposed eastern grout pile is at 522 meters. The topography between the Kinnell residence and the proposed eastern grout pile flattens out at approximately 1.2 miles from the Kinnell residence. There is, therefore, 0.3 to 0.4 miles of woodland that is approximately at grade or higher than the grout pile. With 1,500 to 2,000 feet of intervening woodland at nearly the same elevation as the grout pile, the probability of screening the grout pile as seen from the Kinnell residence is extremely high.

175. The angle of view from the Kinnell residence further adds to the screening effect of the intervening woodland.

NOISE IMPACT

176. Sound is measured in units called decibels ("dB"). The range of audible sounds are compressed into a logarithmic scale.
177. Logarithmic scales are not additive. That is, the combination of two 70 dB noise sources does not result in 140 dB; rather, the result is approximately 73 dB.
178. Sound level meters are often equipped to give weight (A, B, and C) to sounds of differing frequencies. Noise generated by traffic on highways is measured with "A" weighted decibels ("dB(A)").
179. The Equivalent Sound Level ("Leq") is a logarithmic average of noise levels due to all sources of noise (for example, Quarry operations, traffic, and ambient level in the absence of those sources) in a given area over a stated period of time (e.g. 24 hours, one year, etc.) as opposed to an instantaneous maximum level of noise at any one given point in time.
180. The Leq is the average sound pressure and tends to weight the higher decibel levels. The L10, L50, and L90 are the 10th, 50th, and 90th percentile sound level. The L10 represents the sound level exceeded 10 percent of the time, the L50 is the median level, and the L90 is the level exceeded 90% of the time. Lmax is the maximum sound level. Since the L90 represents the quieter portion of a measurement period (90% of the observations exceed it), it is often considered the "background" level.
181. Various noise sources contributing to the noise environment at the residences in the area of the Quarry include the Quarry (including trucks, drills, and loaders), traffic on TH40, and traffic on Sheffield Square Road. Birds, the wind in the trees, dogs barking, lawn mowers, radios, private generators, farm equipment, and other sounds typical in a rural setting are also part of the environment.
182. During the fall of 1999, the Project site was possibly used for rifle, shotgun or other firearm target practice.

183. The United States Environmental Protection Agency (“EPA”) has determined that for purposes of hearing conservation alone, a level which is protective of that segment of the population at or below the 96th percentile will protect virtually the entire population. This level has been calculated to be an Leq of 70 dB. This hearing loss level represents annual averages of the daily level over a period of forty years.
184. If the difference between the sound levels produced by two sources is greater than 5 dB, the lower source contributes nothing to the sound level.
185. The sound level reduces as one moves away from a sound source. In open country (meadows, lawns, brush) this reduction is approximately 6 dB for each doubling of the distance.
186. Sound travels by line-of-sight. Sound is dissipated where there are obstructions blocking the travel of the sound source.
187. Barriers such as berms, hills, or trees lead to reduction in sound levels due to their obstruction of the line-of-sight between the sound source and listener.
188. The EPA was charged by the Noise Control Act of 1972 to “publish information on the levels of environmental noise the attainment and maintenance of which in defined areas under various conditions are requisite to protect the public health and welfare with an adequate margin of safety.” As such, the EPA researched various issues surrounding noise and published their results in several documents. One such document, entitled “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety,” lists their recommended outdoor standard for “Residential with Outside Space and Farm Residences” as 55 dB Ldn (see definition below) to protect against both hearing loss and activity interference.
189. The Ldn is the day-night sound level. To calculate this using the EPA methodology, the sound level is averaged over a year with nighttime sound (10:00 PM to 7:00 AM) weighted with an extra 10 dB.
190. The VAOT has set forth its transportation roadway noise impact analysis in a document entitled “Vermont Agency of Transportation Noise Analysis and Abatement Policy.” The policy is described in its text as “for the purpose of providing a basis for statewide uniformity in the analysis of transportation generated sounds, the identification of potential transportation project impacts,

and the implementation of noise abatement measures determined to be reasonable and feasible.” That standard lists an hourly Leq of 57 dB(A) for “Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.”

191. The Permittees analyzed the potential sound impacts from the Quarry utilizing both computer modeling and actual on-site monitoring techniques. In an effort to determine a worst case scenario, Permittees took actual sound level readings for equipment which may operate at the Quarry. These readings were taken at a distance of 50 feet from each of the pieces of equipment and the sound pressures recorded on the dB(A) scale. Permittees’ sound level ratings were as follows:

| Quantity | Equipment | Sound Pressure at 50 FT (dB(A)) |
|----------|--|---------------------------------|
| 2 | Caterpillar 988F Loader | 80 |
| 1 | Caterpillar 330 Excavator | 74 |
| 2 | Caterpillar D350 Dump Truck | 82 |
| 2 | Caterpillar 980 Loader | 80 |
| 14 bits | Hydraulic Drilling Rig (with compressor) | 84 (for 2 bits) |
| 1 | Wire Saw | 64 |

192. Sound impacts of the Quarry operation were modeled using the NTerrain modeling software developed by Resource Systems Group, a consultant of Permittees. This software models the propagation of sound and takes into account a variety of factors including: acoustical characteristics of the source, atmospheric spreading, meteorological absorption, vegetation, attenuation due to terrain, attenuation due to man-made barriers and berms.
193. To create a “worst case scenario” Permittees assumed for the purpose of the modeling that all vegetation over the Quarry had been removed; that the drilling and other operations of the Quarry would occur only on the surface of the Quarry and not within the Quarry itself; and, that the drilling and other operations of the Quarry would occur in the area closest to the property lines. It was also assumed that of the equipment operating within the Quarry, a dump truck and loader would be operating on the grout pile closest to the nearest residence and that all fourteen drill bits would be operating simultaneously.

194. Based upon the modeling results of the three closest residences to the Quarry, none of the residences (Gage, Collins, and Simonds) modeled sound levels exceeding the 55 dB(A) Ldn standard as set forth in the EPA regulations.
 195. Permittees utilized the Federal Highway Administration's new Traffic Noise Model to determine the sound levels that would be expected 50 feet from the roadways utilized by the block transfer trucks. With regard to this model, Permittees assumed two trucks per hour traveling at 20 miles per hour. The Traffic Noise Model takes into account vehicle type, speed, acceleration at stop signs, and grades in calculating sound levels. The results of the modeling demonstrate that the average hourly sound level from the two Quarry trucks per hour would be 39 dB(A)(Leq) at the Sessions' residence (corner of TH2 and TH40) and 52 dB(A)(Leq) 50 feet from TH2 along the area with steeper grades.
 196. These modeling sound level ratings were all below the VAOT Noise Abatement Criteria for "lands on which serenity and quiet are of significance and serve an important public need and where the preservation of those qualities is essential of the areas to continue to serve its intended purpose."
 197. Permittees performed actual on-site sound level measurements on five separate occasions. The first was on December 1, 1998 with a drill, loader, and compressor operating. The second was with the Commission present with equipment operating adjacent to the Quarry. The third was on October 5, 1999 with drills operating on the Quarry surface, back-up alarms, compressors, and both a loader and excavator operating. The fourth was on November 18, 1999 at five of the properties of witnesses submitting testimony on behalf of RNKP. The fifth was on June 7, 2000 during the noise demonstration observed by the Board. During the first four monitoring experiences, at no time did the sound levels exceed 55 dB(A) Lmax at any of the RNKP witnesses' residences. Monitoring of the closest residence to the Quarry showed that the sound levels did not exceed 32.2 dB(A) Lmax.
 198. On November 18, 1999, Permittees measured sound levels at five of the properties of witnesses submitting testimony. The measurements were taken using a calibrated Bruel and Kjaer 2236 (Type 1) sound level meter fitted with a wind screen. The meter was set on slow response. During the measurement period, the Quarry was engaged in normal operation. All drilling during the measurements was done on the surface using a 3-bit air drill with air from a compressor. A loader and excavator were constructing the grout pile road. There was no wind and the deciduous trees were bare of leaves.
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199. The results of the monitoring are shown in the following table.

| Location | Equipment Operating at Quarry | Distance from Drilling | Leq (average level) | L90 (level during quieter times of measurements) |
|----------|---|------------------------|---------------------|--|
| Simonds | Loader and excavator operating on grout pile. Compressor and 3 drills operating on surface. | 0.4 miles | 32.2 dB(A) | 27.0 dB(A) |
| Kim | same as above | 0.7 miles | 32.8 dB(A) | 25.0 dB(A) |
| Johnson | same as above | 0.7 miles | 29.2 dB(A) | 22.0 dB(A) |
| Benson | same as above | 1.7 miles | 26.0 dB(A) | 20.5 dB(A) |
| Kinnell | same as above | 1.6 miles | 29.3 dB(A) | 22.5 dB(A) |

200. Permittees validated noise level findings by comparing sound levels measured at nearby residences to the actual model output to test the accuracy of the model. The results demonstrated that the sound levels measured on November 18 matched the modeled values very well. The modeled values tended to overstate the actual values.

201. The L90 results of Permittees' comparisons are as follows:

| <u>Residence</u> | <u>Monitored Value dB(A)</u> | <u>Modeled Value dB(A)</u> | <u>Difference</u> |
|------------------|------------------------------|----------------------------|-------------------|
| Simonds | 27 | 32 | +5 |
| Kim | 25 | 32 | +7 |
| Johnson | 22 | 30 | +8 |

202. To attenuate the sounds from the Quarry, Permittees have agreed to implement the following mitigation procedures to minimize the impacts of the Quarry operations on surrounding residences:

A. A 13-foot high barrier or berm will be constructed between the quarrying operations and the Gage and Collins residences. This berm will be long enough to block the line of sight between all drilling and blasting operations and the residences. The berm will not be removed until the Quarry is deep enough for the Quarry walls to sufficiently block the sound from the quarrying operations.

- B. The grout pile nearest to the Simonds' property will be constructed so as to block sound transmission between the grout pile, yard, and Quarry operations and the Sessions' residence.
 - C. The surface phase of the drilling and blasting will move towards the residences along TH40. In this way, the Quarry walls can act to block sound transmission from the loading and excavation activities.
 - D. All equipment will be equipped with effective mufflers,
 - E. At the request of neighbors, sound checks will be made by the Permittees or their representatives at the property lines or residences to assure conformance with the Permit.
 - F. To the maximum extent possible, the area around the Quarry will be kept densely forested.
 - G. Loaders and excavators will be equipped with "radar" or equivalent backup alarms that are activated only when an object is detected behind the equipment when it is backing up.
 - H. The neighbors will be provided the phone number of a company contact person so that complaints may be dealt with in a timely manner.
 - I. Drilling operations will start after 7:00 a.m. and blasting will occur no earlier than 8:00 a.m. The Quarry will not operate on weekends or Federal holidays.
203. Because this is a dimensional stone Quarry, per blast explosive requirements and permitted limits will be significantly less than crushed rock quarries where allowed blasting may occur at as much as 6,000 lbs. per blast and as much as 1,200 lbs. per delay.
204. The per blast maximum powder charge is 100 lbs., with the average blast less than 10 lbs. No delay charges will be used.
205. On-site testing of such blasting indicated that blasting itself will not generate noise greater than 70 dB(A) Lmax at the project's closest property lines,

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206. Detonation of black powder and cord charges results in transmission of sound vibrations through the air. The degree of sound generation due to detonation is relative to the weight of the charge, the degree of confinement of the charge, and the distance from the point of detonation at which the sound is detected.
207. Sound resulting from detonation of black powder and cord charges occurs as both audible noise and as inaudible low frequency vibration. Audible noise from detonation of black powder and cord type charges is of an impulse type duration (i.e., 1 second in duration). Measurement of noise from this type of detonation relative to the audible decibel scale (dB(A)) is not appropriate as this scale is a measure for sounds of a continuous duration.
208. The U.S. Bureau of Mines (“USBM”) has developed a set of decibel limits relative to explosive usage in quarries based on monitoring and testing of active operations. The recommended safe air concussion limitations developed by the USBM are as follows:

| Frequency of Monitory Instrument | Maximum Decibel Level at Structure |
|----------------------------------|------------------------------------|
| 0.1 Hz High Pass System | 134 dBL Peak |
| 2 Hz High Pass System | 133 dBL Peak |
| 5 Hz High Pass System | 129 dBL Peak |
| C Weighted Scale, Slow | 105 dBC |

209. Based on a worst case scenario with a maximum black powder charge weight/delay of 100 lbs. and a distance to the closest residence from the proposed Quarry limit of 600 feet, the Cube Root Scaled Distance applicable to air concussion is calculated at 129.5 dBL (0.1 Hz System) and 120 dBL (2 Hz System). Both sound levels are below the recommended USBM decibel limits. The 600 foot distance creates a very conservative analysis since this property is to be purchased by the Permittees. The closest non-owned or under contract residence is over 2000 feet away or over three times this distance.
210. On June 7, 2000, at the request of the Board, the Permittees performed a sound level monitoring analysis under conditions intended to simulate the actual operation of the Quarry at a time in the future when the Quarry would be operating at full capacity. The Permittees leased additional pieces of equipment, many of which would not be needed at the Quarry until at least 2005. The equipment which was utilized in the sound level analysis included a Caterpillar 988F loader; a Caterpillar 972 wheel loader; a Caterpillar D350 dump truck; a Caterpillar D320L excavator; an Ingersoll Rand 850 CFM air compressor; a T.R.

generator; a Liebherr 912 excavator; and one wire saw. In addition to the above, the Permittees operated four hydraulic hammers off a Liebherr excavator; a three-wheel skid steer driving three pneumatic hammers; two drill bars driving two hammers each (4 hammers); and, one single mobile hammer, for a total of twelve drills.

211. During the noise demonstration, the Permittees continuously operated in all areas of the Quarry which would be utilized in normal use. This included, but was not limited to, operating the drills both at the Quarry surface and in the Quarry hole and in the yard area. In addition, the loader and the dump truck operated continuously between the Quarry and the westerly grout pile, dumping soil and rock. Finally, the Permittees set off three blasts consisting of two small secondary blasts and one seventy-five pound primary blast.
212. In accordance with the Board's directions, the Permittees set up five perimeter sound level recording monitors. Perimeter monitor #1 was located adjacent to the property line near TH40 and the Quarry access road; perimeter monitor #2 was located at the property line between the Quarry property and the Moffatt property; perimeter monitor #3 was located near Sue Simonds' property; perimeter monitor #4 was located at the northeasterly property line and adjacent to the property of the Sessionses; and perimeter monitor #5 was located at the westerly property line adjacent to TH40 and across from the Amos property. The locations of the perimeter monitors were selected by RNKP and agreed to by the Permittees.
213. In addition to the perimeter monitors, monitoring also occurred at the following locations: (1) at the Quarry; (2) at the intersection between the Quarry access road and TH40; (3) at the Collins residence; (4) at the Gage residence; (5) at the Teepee on the Kim property; (6) at the Sessions residence; and (7) at the Kinnell residence.
214. The monitoring recorded the noise levels associated with an unloaded Quarry transfer truck as it passed by Page Road and a loaded Quarry transfer truck as it passed by the Sessionses' property. In addition, the primary blast, and the three blast warnings associated with this blast, were recorded at the Simonds residence.
215. All of the monitoring was performed with a Bruel and Kjaer Model 2236 Type I sound level meter which was calibrated both before and after the measurements were taken. Sound levels at the perimeter stations were recorded as energy weighted averages over a 10 second period.

216. Based upon the sound level readings taken at the property lines, at no time did the operations of the Quarry exceed 70 dB(A) at the property line. The only perimeter monitoring meter which showed a recording above the 70 dB(A) level were the meters located across from Sue Simonds' property and the Amos property which showed readings slightly above the 70 dB(A) level at the same time that the transfer truck passed these locations.
217. At perimeter monitor #1 (Quarry entrance), the sound level readings fluctuated between approximately 30 dB(A) and 70 dB(A) with the majority of the readings falling within the 50 to 60 dB(A) range. The highest short duration readings (spikes) were approximately 65-69 dB(A).
218. At perimeter monitor #2 (Moffatt property line), the sound level readings ranged between 30 dB(A) and 65 dB(A) with the average readings in the 40 dB(A) range.
219. At perimeter monitor #3, (northern property line), the sound level monitor readings ranged from approximately 29 dB(A) to 69 dB(A), with the average readings in the range of 30-45 dB(A). The higher readings appear to correspond with the passage of the granite transfer truck. This is consistent with the fact that the sound level meter was located near TH40.
220. At perimeter monitor #4, (at the Sessions property line), the highest readings were approximately 53 dB(A) with the average readings falling in the range of 40 to 50 dB(A).
221. At perimeter monitor #5, (across from the Amos property), the highest readings were approximately 70 dB(A) Lmax with average readings in the 40-50 dB(A) range. The highest readings appear to correspond to the passage of vehicles on TH40. This is consistent with the location of the sound level meter.
222. The first non-perimeter sound level recordings were taken in the Quarry area itself with no equipment operating. These recordings occurred at 8:30 a.m. for a duration of one minute and five seconds. The recordings demonstrated that the background sound levels in the Quarry were 33.1 dB(A) Leq with an Lmax of 45.3 dB(A) and a L90 of 30 dB(A).
223. The next measurement taken in the Quarry was with all equipment operating. This measurement was taken at 8:55 a.m. for a duration of one minute and 40

seconds. The Leq was 77.8 dB(A) with an Lmax of 82 dB(A) and an L90 of 73 dB(A). Mr. Blomberg, RNKP's noise consultant, also took readings with all Quarry equipment operating using his own sound meter and his readings were taken at 9:06 a.m. for a duration of one minute. Mr. Blomberg's readings show an Leq of 72.9 dB(A) with Lmax of 77.6 dB(A) and an L90 of 70.5 dB(A).

224. The next non-perimeter sound level recordings were taken on the Quarry access road to the Quarry near its intersection with TH40 with no equipment operating (background). Measurements were taken for a duration of one minute and two seconds. The Leq was 34.5 dB(A) with an Lmax of 40.8 dB(A) and an L90 of 31.5 dB(A). With all equipment operating in the driveway, and with a sound level duration of one minute, sound levels included a Leq of 55.9 dB(A) with a Lmax of 68.6 dB(A) and an L90 of 51.5 dB(A). Due to its function as a driveway, there are no trees at this location to buffer the Quarry sounds. At no time did the sound levels at this location exceed EPA's 70 dB(A) Leq standard.
225. The next non-perimeter sound level recordings were taken at the Collins residence. The Collins residence is a buffer property which is to be purchased by the Permittees. Three monitoring readings were taken at the Collins property. The first reading was with no equipment operating (background). These sound level readings were taken at approximately 9:16 a.m. for a duration of one minute and two seconds. The Leq was 44.5 dB(A) with an Lmax of 52.9 dB(A) and an L90 of 33.5 dB(A). There were several birds in the vicinity of the Collins residence which may account for the Lmax readings.
226. Two readings were taken at the Collins property with all Quarry equipment operating. The first such reading was taken at 9:21 a.m. for a duration of one minute and three seconds. The Leq for this sound level monitoring was 46.2 dB(A) with an Lmax of 51.9 dB(A) and an L90 of 43 dB(A). The second sound level monitoring occurred at 9:27 a.m. for a duration of three minutes and forty-three seconds. The sound level readings with regard to this monitoring event showed an Leq of 45.6 dB(A) with an Lmax of 50.3 dB(A) and an L90 of 41 dB(A). A grout pile dumping event occurred during this monitoring period and recorded a reading of 47.9 dB(A) at this location. During the periods of time when the readings were the highest (51.9 dB(A) and 50.3 dB(A)), the Board was able to hold normal conversations and could hear other background noises such as birds and the wind in the trees.
227. The next non-perimeter sound level recordings were taken at the Gage property. The first sound level monitoring occurred at 9:42 a.m. for a duration of one

minute and fourteen seconds. With all equipment operating, the sound level readings showed a Leq of 51.7 dB(A) with an Lmax of 55.7 dB(A) and an L90 of 50 dB(A). With no equipment operating (background) the sound level monitoring for a duration of one minute and one second showed an Leq of 41.6 dB(A) with an Lmax of 53.4 dB(A) and an L90 of 31.5 dB(A). There were bird sounds in the area of the sound level monitor at the time of the monitoring event.

228. The next monitoring event occurred on Page Road fifty feet from its intersection with TH2. At this location an empty granite truck passed by the site for a duration of thirty-eight seconds. The road contained potholes. The sound level monitoring during the truck passage, showed an Leq of 67.8 dB(A) with an Lmax of 77 dB(A) and an L90 of 48 dB(A).
229. The next non-perimeter sound level recordings were taken in the vicinity of the teepee located on Nova Kim's property. The teepee is in a clearing located approximately 1,000 feet from Nova Kim's residence and is accessible only by path through a somewhat wooded area. The sound level meter readings with no equipment operating were taken at 10:35 a.m. for a duration of one minute and five seconds. These readings demonstrate an Leq of 38.1 dB(A) with an Lmax of 52.1 dB(A) and an L90 of 33.5 dB(A). With all equipment operating, a second sound level monitoring event occurred at 10:44 a.m. for a duration of four minutes and forty-three seconds. This monitoring event recorded readings of 37.4 dB(A) Leq with an Lmax reading of 47.7 dB(A) and an L90 reading of 33 dB(A). The Quarry was not noticeably audible. During this monitoring event a secondary blast occurred which recorded a reading of less than 39 dB(A).
230. The next non-perimeter sound level recordings were taken at the Sessions residence at 11:11 a.m. for a duration of one minute and one second. With all equipment operating, the sound level readings showed an Leq of 43.6 dB(A) with an Lmax of 55.7 dB(A) and an L90 of 38.5 dB(A). There were wind chimes and animal (dogs) noises occurring during the sound level monitoring events at the Sessions residence.
231. While at the Sessions property the fully loaded granite transfer truck passed and sound level readings were taken of this event for one minute and ten seconds. The fully loaded transfer truck passage showed an Leq of 61.7 dB(A) with an Lmax of 73 dB(A) and an L90 of 47 dB(A). The actual amount of time the truck was passing the Sessions property was no more than 15 to 20 seconds. The driver applied the truck's jake brakes as it slowed down passing the Sessions property.

232. The next non-perimeter sound level recordings were taken at the Kinnell property at 11:56 a.m. for a duration of one minute and two seconds. The Leq for this sound level monitoring event was 35.1 dB(A) with an Lmax of 41 dB(A) and an L90 of 31 dB(A). These sound level readings were taken with all equipment operating. In addition, a second secondary blast occurred while the Board was at the Kinnell residence and it was barely discernable.
233. Prior to the Noise Demonstration, the Permittees installed special mufflers on all drills and constructed noise attenuating berms around sections of the Quarry and yard area. These berms function as sound attenuating measures and attenuate the sound between the Quarry and yard area and properties located to the north and northeast. The mufflers and berms act to reduce the sound levels coming from the Quarry. The berm will remain in place until the Quarry activities reach a depth whereby the walls of the Quarry act to attenuate the operating equipments' sound levels. When most of the equipment is located in the Quarry at a depth of 15 to 20 feet, the Quarry walls will significantly buffer the sounds of that equipment. Because the yard area involves surface activity, the yard area berm will remain in place so long as that area is used for Quarry operations.
234. The sound level recordings taken on June 7, 2000, represent the sound levels for only the time periods measured on that day. Atmospheric conditions or other factors, may result in sound at higher or lower levels.
235. Sound level readings were taken at the Simonds residence in connection with a primary blast at the Quarry. This blast occurred at 2:00 p.m. and was precipitated and followed by the USBM required blast warnings. The primary blast recorded an Lmax reading of 65.2 dB(A) and the three initial blast warnings recorded readings of 44, 45 and 46 dB(A) Lmax respectively.
236. The Permittees have taken available mitigating steps to improve the harmony of the project with its surroundings. These steps include the following:
- A. The Permittees have agreed to maintain a 200-foot (minimum) woodland buffer around the project.
 - B. The Permittees have agreed that the proposed grout piles will be limited in height to the heights of the surrounding trees.
 - C. All structures will be single story.

D. The Permittees have agreed to establish a 48.5 acre area of protected conservation land adjacent to the site.

E. The Permittees have prepared a reclamation plan and established an escrow account to fund the plan.

F. The Permittees have prepared a comprehensive O&M Manual covering all aspects of its operations.

G. The Permittees will maintain a 50-foot wide minimum buffer around all wetland areas and larger buffer zones around all streams.

H. The Permittees will operate only from April 15 to December 15 of each year and will not operate during Federal holidays.

I. The Permittees will operate only on weekdays from 7:00 a.m. to 5:00 p.m.

J. The Permittees will limit the amount of any blast to a maximum of 100 lbs. and will limit the number of these blasts to only two times per week.

K. The Permittees will utilize the highest and best technology with regard to dust suppression.

L. The Permittees will limit all noise at surrounding residences to no more than 55 dB(A) Lmax and to no more than 70 dB(A) Lmax at its property line.

M. The Permittees' granite transfer trucks will use a limited route from the Quarry access road to Route 16 and will travel at no more than 20 mph.

N. The Permittees have agreed that no additional logging of its lands beyond the limits of the Quarry will occur without the consent of the Commission.

O. The Permittees have agreed that all blasting shall be in accordance with the methods established by the USBM and that in no event will the

Quarry exceed the USBM maximum decibel levels at structures or the USBM maximum particle velocities.

HISTORIC SITES

237. There is no evidence of an historic site on the project site or in the surrounding area or otherwise relating to the Project.

PAGE BROOK CEDAR SWAMP

238. The Page Brook Cedar Swamp is a B-ranked example of a Northern White Cedar Swamp. It consists of three delineated swamp areas, the northernmost section of which is located approximately 1,400 to 1,600 feet from the Quarry property. The Quarry is not located adjacent to, nor is it contiguous with, the Page Brook Cedar Swamp and the properties are bisected by TH40 and a 1,400 foot treed buffer area.
239. The Page Brook Cedar Swamp water regime is determined in part by groundwater discharge which enters the swamp through seeps in the banks surrounding the swamp area.
240. The Quarry dewatering process in the Spring may have an effect on the Cedar Swamp. The ANR submitted an affidavit with Exhibits relating to the Page Brook Cedar Swamp. The Affidavit was prepared by Eric Sorenson, an ecologist with the Non-Game and Natural Heritage Program ("N.N.H.P.").
241. Bedrock fractures underlining the granite between the proposed Quarry and the Page Brook Cedar Swamp may cause effects to the swamp from Quarry activities,
242. Page Brook Cedar Swamp is located 1,400 feet from the proposed Quarry site, a distance that reduces the potential impact of the project on the swamp.
243. There may be an alteration of the quantity and/or quality of groundwater that reaches the Cedar Swamp.
244. The best way to evaluate these potential impacts is through groundwater monitoring.
245. As demonstrated by the Quarry pump test, groundwater drawdown resulting from Quarry dewatering will be limited to a 700 foot radius of influence when the

Quarry is opened to the proposed maximum limit of excavation. This is less than the 1,400 foot distance between the Quarry and the northernmost swamp area.

246. The ANR, Wastewater Management Division's discharge permit #3-1446 specifies that the Quarry discharge water quality must be within a Ph range of 6.5-8.5. The normal Ph range for surface waters in cedar swamps is 5.9-7.6.
247. The ANR, Wastewater Management Division determined, in issuing discharge permit #3-1446, that the Permittees' Quarry operation would not impact Ph levels in the Page Brook tributary or wetlands.
248. Permittees' existing ANR approved monitoring program will be amended to include the installation of a minimum of six new groundwater monitoring wells at the Page Brook Cedar Swamp. The monitoring wells will be located at the edge of the seeps in the swamp and the Permittees will report monthly water level, Ph, and conductivity results to the ANR and the Commission. Monitoring will be conducted for the life of the Quarry operation. In the event that water levels in the Cedar Swamp show a downward trend or a change in characteristics that ANR believes are attributable to the Quarry's activities (as opposed to weather or other natural causes), Permittees must immediately develop an action plan to be approved by N.N.H.P. and the ANR Water Supply Division. This action plan may include additional groundwater monitoring well installation and monitoring to determine if Quarry methods of operation require alteration. The action plan shall address whether it is necessary to shut down Quarry operations until further information is known regarding the change in water levels or characteristics.
249. The location of the monitoring wells will be determined in the field by Personnel from N.N.H.P., the ANR Water Supply Division, and Permittees.

I. Criterion S(A) (Wildlife Habitat)

250. The significant habitat map for the Town of Sheffield, published by the ANR Department of Fish and Wildlife ("DFW"), N.N.H.P., does not indicate that any rare, threatened or endangered species or significant natural communities have been identified on the Sheffield Quarry property.
251. The Permittees wildlife consultants in connection with wildlife consultants from the DFW determined that 84.5 acres of deer winter sheltering habitat exists on the property owned or controlled by the Permittees. This habitat is part of a larger

(1,000 acre) deer winter shelter area (“Greensboro deeryard”) part of which is within the Town of Sheffield.

252. Of this 84.5 acres 68.65 acres are currently in an undisturbed state and 15.85 acres are in the natural regeneration process after previous logging activity performed by the land owner approximately ten years ago.
253. The quality of the deer winter sheltering area on the Permittees’ property is fair. As a result of prior logging practices, the soft wood canopy closure is poor resulting in excessive snow accumulation. Consequently, this deer winter sheltering area acts as a secondary shelter which is utilized by deer during mild conditions and is abandoned by the deer for more substantial cover when winter conditions become more severe.
254. The Quarry site will directly disturb approximately 15.35 acres of the deer winter shelter habitat area. To compensate for the loss of this deer winter shelter area the Permittees and the landowners have entered into a perpetual conservation easement agreement, entitled “Easement and Grant of Development Rights and Conservation Restriction” (“Conservation Grant”) (Exhibit P-49), with the ANR which will perpetually protect 48.5 acres of primary deer winter shelter area.
255. The Conservation Grant provides for a mitigation ratio of 3 to 1 whereby 3 acres of winter shelter area will be perpetually protected for every 1 acre which is imperiled or lost.
256. Where mitigation is considered a viable option, the DFW has historically required that for each acre of habitat impacted, two (2) acres of deer wintering area be permanently protected.
257. In addition, the Conservation Grant not only limits, but restricts any activities occurring on the protected area including, the construction of any buildings, structures, facilities or improvements. The Conservation Grant provides that there can be no rights-of-way, driveways, roads, utility lines or other easements constructed on or over the property and that the property cannot be disturbed in any manner or cleared without the consent of the ANR.
258. All remaining terms and conditions of the Conservation Grant are incorporated by reference.

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259. In addition to the above as set forth in the Permittees' O&M Manual, the Permittees will not be operating the Quarry during the winter months (December 15 through April 15) during the time when the winter sheltering area is utilized by deer. Moreover, as can be seen on Schedule A of Exhibit P-49 there are other deer winter sheltering areas on the Permittees' properties which, although not included in the Conservation Grant, will not be disturbed by any quarrying activities. Consequently, more than the 48.5 acres of deer winter shelter area will be protected.
260. The Conservation Grant entered into by and between the ANR and the Permittees provides that its purpose is to protect wildlife habitat and to conserve these values for present and future generations and is intended to meet the State's primary purpose of protecting, maintaining and enhancing critical wildlife habitat in perpetuity. The benefit realized by the public is that a legal guarantee is created that a certain area of habitat will be protected in perpetuity that was previously not protected.
261. There are no other wildlife habitats that are either concentrated, identifiable or necessary to the survival of any wildlife species. While fox, moose, bear and other creatures traverse the site and perhaps feed on the site, there is no concentrated habitat which is necessary for the survival of any of those species.
262. There are economic and other benefits to the public which will be derived from the development of the Sheffield Quarry. There are economic benefits which will accrue to the Town of Sheffield through impact fees. The Project will result in the creation of jobs and job opportunities in the Northeast Kingdom. Granite manufacturers and purchasers of granite in Vermont desire a new source of dimension stone granite for their continued operation. These Vermont companies employ Vermont workers.
263. Permittees have utilized all feasible and reasonable means of preventing or lessening the destruction, diminution, or imperilment of the deer winter habitat. In addition to the Conservation Grant there will be no tree cutting other than for the Quarry area itself in non-easement areas.
264. Permittees do not own or control a reasonably acceptable alternative site for the extraction of granite given the fact that the granite resources have been determined by the Permittees' consultants to exist within the area of the preexisting Quarry. The only other alternative sites owned by the Permittees are properties which the Permittees have purchased around the Quarry to act as a buffer zone.
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265. The DFW has no jurisdiction over logging operations in deeryards. The Greensboro deeryard is experiencing significant logging activity. Deeryard preservation agreements, such as that entered into by the Permittees, assist in the protection, in perpetuity, of deer winter sheltering areas which could otherwise be lost to logging operations or residential home construction.

266. Logging in the Northeast Kingdom is a common landowner activity. Mr. Kinnell, Mr. Perkins and Mr. Huling have logged their lands within the past year.

J. Criterion 9E (Extraction of Earth Resources)

267. The provisions of the Permittees' Quarry Operation and Reclamation Plan (Exhibit P-5) are incorporated herein by reference.

268. The granite deposit which underlies the Permittees' property in Sheffield, Vermont has a high level of potential for extraction of granite dimension stone. Geologic exploration work has demonstrated that the granite reserve underlying the Quarry properties is of suitable quality and quantity for Quarry development. The three parcels involved are the largest remaining tracts on the deposit which have a high level of potential for extraction of dimension granite.

269. The site in Sheffield is one of the few remaining sites in Vermont with granite deposits located on lands which have not been subdivided or otherwise developed and are accessible by town roads.

270. The Operation and Reclamation Plan (described below) has been designed to maintain long term access to the granite reserve which underlies the project site. The two grout pile sites have been positioned in areas which are not underlain by the granite formation, thus maintaining access to future reserves. Granite reserves exposed within the Quarry will not be buried by backfilling of the excavation with waste rock. Finally, the combined conditional purchase agreements which the Permittees have negotiated with adjacent landowners will insure that this granite resource area is buffered from conflicting development on abutting land. Therefore, the Quarry project will enhance the potential for extraction of earth resources at the project site in the future.

271 The Permittees will not use delay blasts/charges.

272. If Permittees use detonating cord, the cord will be covered by mat material or other similar material to minimize air concussion and ground vibration.
273. Use of black powder and detonating cord for dimension stone quarrying is not intended for rock fragmentation. In order to maximize recovery and minimize any damage to salable stone, highly controlled splitting of blocks is achieved using small quantities of black powder and detonating cord.
274. In order to design the maximum scale of black powder splitting to be utilized at the Quarry, Permittees analyzed the potential impacts to adjacent properties from air concussion and ground vibration using methods developed by the USBM.
275. The forces generated from detonation of black powder and cord type charges in quarrying operations propagate ground vibrations beyond the Quarry site in the form of non-deforming (elastic) impulse waves. The degree of ground vibration is measured in terms of Particle Velocity in units of time-varying displacement (inches/second [ips]). The USBM has developed recommended ground vibration limits based on monitoring of human and structural responses to detonations at Quarry and mine sites. The USBM studies have concluded that there is negligible potential for structural damage in the area of Quarry activity when detonation related ground vibrations are maintained at or below a Particle Velocity Limit of 0.5 ips. USBM studies of human reactions to ground vibration indicate that Particle Velocities of 0.5 ips “should be tolerable to about 95% of the people perceiving it as distinctly perceptible”.
276. The recommended method for calculation of ground vibrations which may result from detonation of black powder and cord type charges is the Scaled Distance Method. A worst case scenario analysis of the proposed Quarry is based on a maximum charge weight/delay of 100 lbs. and a distance to the closest residence of 600 feet from the limit of the proposed Quarry opening. The Scaled Distance is calculated by the formula: the distance to the nearest structure divided by the square root of the maximum charge weight/delay. The Scaled Distance is thus calculated at 60 (Scaled Distances above 50 are recommended by the USBM).
277. Based on the calculated Scaled Distance, the worst case ground vibration measured at the nearest structure to the Quarry will result in Particle Velocities in the range of 0.040-0.225 ips (0.5 recommended limit).

278. The Permittees have set out in Section 3 of the O&M Manual (Exhibit P-1 13) a comprehensive set of Blasting Procedures. These procedures include notification of Primary Blasts and a Blast Monitoring Protocol.
279. For the first year of Quarry operation, all primary blasts (100 lbs.) will be monitored with a seismograph to record: (a) maximum decibel levels on a linear scale (dB_L) or a weighted scale (dB_C); and, (b) particle velocities expressed in inches/second (ips).
280. A seismic recording log will be maintained at the Quarry site along with the blasting data indicating: (a) air concussion; (b) ground vibration data; (c) instrument location; and (d) weather conditions.
281. Based upon the data set forth above, blast design shall be adjusted as required to provide compliance with the USBM requirement.
282. Prior to commencement of blasting operations, the Permittees retained an independent consultant to perform a pre-blast survey of all dwellings, structures, and potable water supplies located within 2,500 feet of the proposed Quarry limit. The following is a list of the existing residential structures and potable water supplies located within the 2,500 foot survey zone: (1) John Riedle; (2) Harry & Sue Simonds; (3) the former Stephen Amos property; (4) Elaine & Oliver Collins; (5) D'Arcy Archambault; (6) Walter Gage, Robert & Arthur Yandow, James Gage; (7) Jon & Lori Lesseigne; (8) Anthony & Alice Sessions; and, (9) William & Margaret Dyott.
283. The purpose of the pre-blast survey was to document the condition of the dwelling or structure and identify any pre-blasting damage and other physical factors that could reasonably be affected by the blasting.
284. The written pre-blast survey report has been submitted to the involved owner and a copy sent to the Commission.
285. The pre-blast survey will be updated by the Permittees upon written request from owners of dwellings and/or structures to cover renovations, additions, or new construction on properties located within the 2,500 foot survey zone.
286. A similar pre-blast survey was performed with regard to each resident's existing water supply.

287. The Quarry property will be a registered mine site which is subject to federal regulation and inspection by the U.S. Department of Labor, Mine Safety and Health Administration (“MSHA”).
288. Access to Quarry high walls will be restricted by means of a heavy gauge, 3 wire fence which will be placed around the perimeter of the Quarry opening. Steel rods will be drilled into rock and wires suspended from the rods to a height of 4 Feet. Vehicular access to the Quarry site from the access road will be restricted by a locking metal gate. Existing woods roads which traverse the Quarry site will be secured with gates or barricaded with large granite blocks to prevent vehicular access.
289. Small quantities of black powder and detonating cord will be stored in an MSHA approved powder magazine to be located at the Quarry area. All block splitting with black powder and detonating cord will be performed by a licensed employee of Permittees or licensed contractor according to MSHA guidelines regarding quarry area security and signaling.
290. Warning signs indicating restricted access will be placed at the access road entrance and at strategic points along property boundaries. Road signs posted “Trucks Entering” will be placed north and south of the access road intersection such that the signs will be visible to vehicles traveling on TH40.
291. Stone blocks and berms will be placed along embankment crests and around the Quarry perimeter in areas which are accessible to vehicular traffic.
292. The goal of the proposed Quarry reclamation plan is to: (1) secure and stabilize involved Quarry lands so that the area does not pose a threat to human health or the environment; (2) incorporate the involved Quarry lands into the surrounding landscape; and, (3) protect granite reserves on-site for future extraction.
293. Reclamation goals will be accomplished both progressively during the course of operations and finally upon deactivation of the Quarry.
294. As grout pile areas are filled to capacity the top surfaces of the tilled area will be covered with 4 inches of soil fill and the areas will be seeded, fertilized, and mulched to initiate the reclamation process. No soil fill will be placed on the outer slopes of the grout piles. The slopes of the grout piles will remain exposed course granite block till. The grout pile area west of the Quarry site will be filled

and reclaimed during initial Quarry development. After the western grout pile is completed, the eastern grout pile will be developed.

295. The Quarry opening will be allowed to fill with groundwater and surface water upon deactivation. This will effectively create a 12 acre ponded area. Water flooding the Quarry opening is anticipated to be of high quality. The Quarry will be free draining after deactivation and a stabilized outlet will be established to route drainage towards existing, stable surface water courses,
296. Although recreational trespass will not be promoted as part of this reclamation plan, it is inevitable that the site will be accessed in the future by fisherman and swimmers due to the attractive nature of the deep clear water in the Quarry. A gently sloping, shallow water area will be established on the west side of the Quarry for safety. This area will slope gently to a water depth of 6 feet and drop vertically beyond into deep water. The shallow water area in the Quarry will provide habitat for amphibians and other shallow water species. The flooded Quarry opening will provide good fish habitat with suitable shelter and good water quality conditions.
297. Upon deactivation of the Quarry, all machinery and equipment, scrap metal, solid waste, buildings, and other materials related to the Quarry operation will be removed from the site prior to flooding of the Quarry opening.
298. Vehicular access to the Quarry site will be restricted by placement of large stone blocks at the access road intersection with TH40. The access road surface will be ripped with a bulldozer, seeded, fertilized, and mulched for stabilization. The perimeter haul road surface will be ripped with a bulldozer, seeded, fertilized, and mulched. Waterbars will be placed at 200 foot intervals along the reclaimed roadway and any drainage culverts will be removed from the road.
299. During the course of overburden stripping operations at the active Quarry a sufficient volume of stripped soil will be segregated for storage near the grout piles for reclamation.
300. The yard area will be cleared of all equipment and materials upon deactivation. All granite blocks will be removed from the storage yard. The yard surface area will be ripped with a bulldozer and the scarified surface planted with a grass seed mixture, fertilizer, and mulch.

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301. All reclamation grading and seeding shall be completed by June 1 st of the year in which these measures are to be implemented to allow for a full growing season after planting. All areas will be inspected weekly for the first month after planting. Reseeding will be performed as required to assure complete vegetation cover. Inspections will be performed monthly for the first year after planting to assure that the site is fully stabilized with additional measures to be implemented as required.
302. To implement the final Reclamation Plan, the Permittees have established and entered into a Reclamation Escrow Agreement as amended (Exhibits P-30 and P30A). Based upon estimated Final Reclamation Costs (Exhibit P-29), the Permittees will deposit \$15,000 annually with the Chittenden Bank, as escrow agent, and all deposits plus interest shall be utilized for reclamation as per the instructions of the Commission. Pursuant to an April 13, 2000 Chair's Preliminary Ruling, Permittees have deposited \$15,000 as an initial deposit, \$15,000 for operating year 1999 and an advance deposit of \$15,000 for operating year 2000 in this escrow account.
303. Permittees agreed that Permittees are responsible for all costs of reclamation.

K. Criterion 9K (Public or Quasi Public Investment)

304. The only public or quasi public investments associated with this project are TH40 and TH2 in Sheffield and TH57 in Glover.
305. The municipalities of Sheffield and Glover entered into separate agreements with the Permittees regarding roadway improvements and maintenance.
306. The roadway improvements have been completed by Permittees.
307. Based upon the findings set forth under Criterion 5, the additional traffic generated by the project will not cause traffic congestion.
308. Based upon the findings set forth under Criterion 5, the roadway improvements, and the maintenance agreements, the project traffic will not materially jeopardize or interfere with the safety or public use of these roads.

L. Criterion 10 (Conformance with Duly Adopted Regional Plan)

309. The Town of Sheffield, Vermont does not have a duly adopted town plan nor local zoning ordinances.

3 10. The Regional Plan for the Northeast Kingdom (“Regional Plan”) was adopted by the Northeast Vermont Development Association (“NVDA”) on January 26, 1995, effective March 2, 1995. The Regional Plan covers Caledonia County. The Town of Sheffield is located within Caledonia County, one of three counties commonly referred to as the “Northeast Kingdom.”

311. At Section II, How This Plan Will be Used, the Regional Plan states the following:

The plan is intended to be a policy document that helps guide decisions at local, regional, state and international levels. It sets a general direction, puts forth ideas, and assists in the region’s overall development.

This plan will be considered in Act 250 proceedings, used to guide State Agencies’ planning, and serves as a broad framework that joins municipal planning efforts, It will be used to support and evaluate grant applications, to encourage economic development activity and as a policy document, it clarifies a regional perspective.

NVDA strongly believes decisions are best made at the local level. As an agency philosophy, NVDA primarily provides technical assistance to municipal officials and assists a community when requested.

3 12. At Section III, Overall Vision, the Regional Plan states that:

...Development needs to occur in a well thought out, careful manner. Change will not happen in a huge rush but will be gradual and in a slow manner - one house at a time. It is easy to ignore any single action or development proposal, but the cumulative impact can be dramatic - and the character of the Northeast Kingdom lost.

The communities in the Northeast Kingdom have a unique opportunity to do it right. We still have a chance to protect our way of life, maintain our village centers, open spaces and working farms and forests. Maintaining the environment and the rural character of the area are critical to creating a healthy economy for the Northeast Kingdom. We have the opportunity and responsibility to maintain the long held Northeast Kingdom traditions.

313. The Regional Plan identifies five future land use districts. These districts include principal activity centers, secondary activity centers, recreational activity centers, village centers, and agricultural and forest areas. The Regional Plan states at page 34 that “all of the land not designated in another district will be in Rural/Agricultural/Forest district.”

314. The Project is located in a Rural/Agricultural/Forest district.

315. The Regional Plan states at page 31 that:

The districts are general in nature and meant to guide growth in an appropriate manner which is in keeping with the character of the area. There will need to be exceptions as determined by the municipalities for locating certain facilities outside the areas designated most appropriate for a particular land use; in all cases the public health and welfare should be protected.

316. With regard to Rural Agricultural/ Forest Areas, the Regional Plan provides that:

These areas should receive very little commercial or industrial development unless it occurs in an established industrial park or in an area specifically designated in the local zoning by-law.

317. The Regional Plan at page 34, Regional Land Use Issues, states that:

Although development should be concentrated in the activity centers, rural lands will also receive limited development. Rural development, if permitted by local zoning, should take place in ways that:

- minimize the impacts on the rural character,

- do not strain municipal services,
- built along existing roads that can handle the traffic generated,
- discourage strip development,
- requires that driveways are properly constructed so as not to create a negative visual or traffic impact.

3 18. Under Subsection C of the Land Use section of the Regional Plan entitled “Development Considerations” the Regional Plan reiterates, in general language, most of the statutory criteria contained in Act 250.

3 19. Under Subsection C, subpart 3, “The Character of the Area Affected,” the Regional Plan states:

- a. The proposed project, by its nature, scale, appearance or operation should not significantly alter or adversely change the character of the potentially affected area as it exists or as the area is proposed to exist in the municipal land use plan and the zoning by-law in effect.
- b. The visual impacts of the proposed building size, height, siting and exterior will be designed to be in keeping with the existing uses within the area.
- c. Consideration should be made with respect to the proposed development’s effect on aesthetics, open spaces, and the scenic and historic integrity of the area affected. Measures to mitigate any such adverse impacts shall also be considered.

320. At Subsection C, subpart 8, “Landscaping/buffers/screening,” the Regional Plan states that “[l]andscaping, screening, or other buffering techniques should be included to mitigate adverse impacts; i.e. visual, noise, pollution filter, storm water retention, of proposed conditional uses on adjoining properties, or to preserve the existing character of the area.” and that “[p]reservation of existing or natural vegetative screening is encouraged over artificial landscaping.”

321. At Subsection C, subpart 10, “Signs, lighting and fences, the Regional Plan states that “[s]igns, outdoor advertising and lighting and fences shall be in keeping with the natural and/or historic beauty of both the town and the region.”

322. No other references are made in the Regional Plan to aesthetics, nor does the Regional Plan provide any clear, written community standard with regard to an aesthetic evaluation.
323. At Section X, Definition of Substantial Regional Impact, the Regional Plan further defines what it calls “substantial regional” impacts. For commercial development outside an activity or village center, a substantial regional impact will occur when there is created “a commercial facility that will employ more than 30 people (full time equivalent) and/or have more than 30,000 square feet of gross floor space or any addition to an existing facility that will have the same affect, excluding industrial parks.”
324. The Regional Plan includes a “natural resources map.” This map does not identify the Sheffield Quarry site as a natural heritage area or an area designated for special protection or containing a natural resource.
325. The Regional Plan does not mention or discuss mining or quarrying activities, a requirement imposed by Act 200 (24 V.S.A. Section 4302). The Regional Plan does not specifically identify Permittees’ property.

IV. CONCLUSIONS OF LAW

A. Jurisdiction, Scope of Review and Burden of Proof

The Project involves the construction of improvements for a commercial purpose on more than one acre and thus constitutes “development” pursuant to EBR 2(A)(2). The Town of Sheffield does not have a duly adopted Town Plan nor local zoning ordinances. The project is therefore subject to Act 250 jurisdiction. 10 V.S.A. § 6001(3).

When a party appeals from a Commission determination, the Board provides a “de novo hearing on all findings requested by any party that files an appeal or cross-appeal, according to the rules of the [B]oard.” 10 V.S.A. § 6089(a)(3). Board rules provide for the de novo review of a Commission’s findings of fact, conclusions of law, and permit conditions. EBR 40(A). Thus, the Board cannot rely upon the facts stated, conclusions drawn, or conditions issued by the Commission regarding the criteria on appeal in this matter. Rather, it must regard the Permit as evidence to be offered by the parties.

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The burden of proof consists of both the burden of producing evidence and the burden of persuasion. *Re: Pratt's Propane, #3R0486-EB*, Findings of Fact, Conclusions of Law, and Order at 4-6 (Jan. 27, 1987).

B. Criterion 1 -- Undue Water and Air Pollution

Before issuing a permit, the Board must find that the proposed project will not result in undue air or water pollution. 10 V.S.A. § 6086(a)(1). The burden of proof for all aspects of Criterion 1 is on the applicant. *Id.* § 6088(a).

Undue Air Pollution

Nothing in Act 250 specifically defines "undue air pollution." Commission and Board decisions show that a wide range of potential substances and nuisances may be considered air pollution. Whether a pollutant is "undue" depends on factors such as the nature and amount of the pollution, the character of the surrounding area, whether the pollutant complies with certain standards or recommended levels, and whether effective measures will be taken to reduce the pollution. "Undue" has been defined in *Brattleboro Chalet Motor Lodge, Inc. 4C0581-EB*, Findings of Fact, Conclusions of Law, and Order at 6 (Oct. 17, 1984) to mean "that which is more than necessary - exceeding what is appropriate or normal."

Air pollutants may include, among other things: dust, smoke, offensive odors, radiation, vibrations, and car and truck emissions. Industrial emissions such as, paint fumes, fly ash, saw dust, and chemical vapors also qualify as air pollutants. Pollution that occurs both during construction and during the operation of a proposed project is subject to Act 250 review. *James E. Hand and John R. Hand d/b/a Hand Motors and East Dorset Partnership, 8B0444-6-EB (Revised)*, Findings of Fact, Conclusions of Law, and Order at 22 (August 19, 1996) (noise, fumes and dust constitute air pollution); *George and Marjorie Drown, 7C0950-EB*, Findings of Fact, Conclusions of Law, and Order at 14 (June 19, 1995) (dust), *L&S Associates, 2W0434-8-EB*, Findings of Fact, Conclusions of Law, and Order at 38-41 (June 2, 1993) (fumes from diesel trucks); *David and Joyce Gonyon, 5W0125-EB*, Findings of Fact, Conclusions of Law, and Order at 7 (April 5, 1991) (toxic paints and thinners).

"Noise is considered air pollution where its occurrence may cause adverse health effects. The test for undue air pollution caused by noise is whether the noise has 'impacts rising above annoyance and aggravation to cause adverse health effects such as hearing damage.'" *Re: Bull's Eye Sporting Center, #5W0743-2-EB*, Findings of Fact,

Conclusions of Law, and Order at 14 (Feb. 27, 1997) (*quoting Talon Hill Gun Club and John Swinington, #9A0192-2-EB, Findings of Fact, Conclusions of Law, and Order at 8 (June 7, 1995)*); see also *Black River Valley Rod & Gun Club, Inc., #2S1019-EB (Altered), Findings of Fact, Conclusions of Law, and Order at 18 (Jun. 12, 1997)*; *Re: James E. Hand and John R. Hand, d/b/a Hand Motors and East Dorset Partnership, #8B0444-6-EB (Revised), Findings of Fact, Conclusions of Law, and Order at 22 (Aug. 19, 1996)* (“The Board considers noise, fumes, and dust to be relevant under this criterion.”).

The Board finds that the levels of noise generated by the Project will not result in undue air pollution. The Board also finds that the emission levels from diesel engines from the Project will not result in undue air pollution. The Board finds that the dust controls implemented on-site at the Project and off-site will minimize any air pollution caused by the project.

Based on the foregoing findings of fact, the Board concludes that the Project will not result in undue air pollution.

Undue Water Pollution

There is no clear definition of what constitutes “undue water pollution.” *Re: Herbert and Patricia Clark, #1R0785-EB, Findings of Fact, Conclusions of Law, and Order at 31 (Apr. 3, 1997)*; *Re: Upper Valley Regional Landfill, #3R0609-EB, Findings of Fact, Conclusions of Law, and Order at 32 (Nov. 12, 1991)*.

A review of decisions addressing the term “undue water pollution” in the context of Act 250 indicates that it has been interpreted in the context of the specific facts of each case under consideration; the decisions are more instructive about what is not undue rather than what is.

Upper Valley Regional Landfill, supra, at 33.

The Board is not limited to an analysis of the Criterion 1 subcriteria when determining whether or not a project complies with Criterion 1. *In re Hawk Mountain Corp., 149 Vt. 179, 184 (1988)*. In making the determination of whether or not the proposed project will result in undue water pollution, the Board shall at least consider:

[T]he elevation of the land above sea level; and in relation to the flood plains, the nature of soils and subsoils and their ability to adequately support waste

disposal; the slope of the land and its effect on effluents; the availability of streams for disposal of effluents; and the applicable health and environmental conservation department regulations.

10 V.S.A. § 6086 (a)(1).

The potential hydrogeologic impacts from the Quarry will be periodically assessed to ensure that the Project does not have an adverse impact on wetlands and streams. Permittees will collect and analyze data, including but not limited to water levels via the use of monitoring wells, flow characteristics of nearby streams, and precipitation in the area of the Project. By permit condition, the Board requires that Permittees analyze all water samples (surface and monitoring wells) for total suspended solids, turbidity, pH, and conductivity. All data collected will be assessed with a computer model which can simultaneously simulate the hydrogeologic conditions at the Quarry. If impacts are revealed by the data, the Permittees must develop an action plan to include increased monitoring and potentially halting the Quarry operation until impacts can be addressed.

Based upon the foregoing findings of fact, the Board concludes that the Project will not result in undue water pollution.

In addition to these general requirements, the applicant must comply with the following sub-criteria:

C. Criterion I(A) -- Headwaters

The Board will grant a permit whenever the applicant demonstrates, that, in addition to all other applicable criteria, the development or subdivision will meet any applicable health and environmental conservation department regulation regarding reduction of the quality of the ground or surface waters flowing through or upon lands which are not devoted to intensive development, and which lands are:

- (i) headwaters or watersheds characterized by steep slopes and shallow soils; or
- (ii) drainage areas of 20 square miles or less; or
- (iii) above 1,500 feet elevations; or
- (iv) watersheds of public water supplies designated by the Vermont department of health; or
- (v) areas supplying significant amounts of recharge waters to aquifers.

10 V.S.A. § 6086(a)(1)(A). The burden of proof is on the applicant under Criterion 1(A). *Id.* § 6088(a).

The Project is located at elevations ranging from approximately 1,590 to 1,770 feet above mean sea level in the headwaters for the Lamoille River. The treated discharge water from the Quarry will flow westerly from the Permittees' property to an unnamed tributary of Page Brook. The proposed maximum discharge rate of 300 gpm to the receiving stream tributary will not result in erosion of the existing stream channel. Sediment and suspended solids removal will be achieved by retention of drainage water within the Quarry sump and within the two-cell settling ponds constructed on the site. The ANR, Waste Management Division issued Permittees discharge permit number 3-1446 which the Board accepts as a presumption that the project complies with applicable Department of Environmental Conservation regulations. Based upon these facts and the foregoing findings of fact, the Board concludes that the Project satisfies Criterion 1(A) (Headwaters).

D. Criterion 1(B) -- Waste Disposal

The Board will grant a permit whenever the applicant demonstrates "that, in addition to all other applicable criteria, the [Project] will meet any applicable health and environmental conservation department regulations regarding the disposal of wastes, and will not involve the injection of waste materials or any harmful or toxic substances into groundwater or wells." 10 V.S.A. § 6086(a)(1)(B).

The burden of proof is on the applicant under Criterion 1(B). *Id.* § 6088(a). Pursuant to Sections 3 and 4 of the Environmental Protection regulations, a wastewater disposal system permit is not required unless there is a subdivision of lands or the construction of a public building. At this time, the Project does not include the subdivision of any lands and the Permittees do not anticipate constructing a public building on the site (storage and maintenance building) for at least three years. Until such time as this occurs, the Permittees will be utilizing portable waste facilities. When the storage and equipment building is constructed, a water and wastewater permit will be required as well as an amendment to the permit issued herewith, incorporating the terms and conditions of any future water and wastewater permit.

The primary waste material generated by the Quarry will be stone grout. Grout and related materials are not considered solid wastes pursuant to the State of Vermont Solid Waste Management Rules.

There will be no processing chemicals or other chemicals used at the Quarry. All hazardous materials will be disposed of pursuant to the Permittees' Hazardous Waste Management Plan (See Exhibit P-13).

Based upon the foregoing findings of fact, the Board concludes that the project meets all applicable health and environmental conservation department regulations and will not involve the injection of waste materials or any harmful or toxic substances into groundwater or wells.

E. Criterion I(E) -- Streams

The Board will grant a permit whenever the applicant demonstrates "that, in addition to all other applicable criteria, the development or subdivision of lands on or adjacent to the banks of a stream will, whenever feasible, maintain the natural condition of the stream, and will not endanger the health, safety, or welfare of the public or of adjoining landowners." 10 V.S.A. § 6086(a)(1)(E). "Stream" is defined as "a current of water which is above an elevation of 1,500 feet above sea level or which flows at any time at a rate of less than 1.5 cubic feet per second." *Id.* § 6001(18).

The burden of proof is on the applicant under Criterion I(E). *Id.* § 6088(a). The applicant has the burden of proof to demonstrate that "all reasonable alternatives" which would allow the stream to remain in its natural condition have been considered. *Re Mark and Pauline Kisiel, 5W1270-EB, Findings of Fact, Conclusions of Law and Order (Altered) at 33 (August 7, 1998), appeal docketed, In re Mark and Pauline Kisiel, No. 98-371 (filed Aug. 12, 1998) citing Re: Okemo Mountain, Inc., #2S0351-12A-EB, Findings of Fact, Conclusions of Law, and Order (Revised) at 14 (July 23, 1992).*

There are small unnamed tributaries which have been identified on the Permittees' property. None of the quarrying activities are taking place on or adjacent to the banks of either of these unnamed tributaries. Additionally, the Project includes an established 125 foot buffer zone around the unnamed tributary on the east side of the Quarry and a 100 foot buffer zone on the unnamed tributary located westerly of the Quarry.

The Permittees have received discharge permit number 3-1446 from the ANR, Waste Management Division. (See Exhibits P-9 and P-10). Based upon the response summary prepared by the ANR in connection with the issuance of the above-stated permit, the ANR determined that the receiving streams have the capacity to assimilate the flow from the Quarry discharge and that there will be no adverse effects upon either of the stream's banks or undue turbidity created as a result of the quarrying activities.

Based upon the foregoing findings of fact, the Board concludes that there will be no adverse impact upon any of the unnamed tributaries located on the Permittees property.

F. Criterion 1(G) -- Wetlands

Criterion 1 (G) provides that before granting a permit, the Board shall find that the Project “will not violate the rules of the water resources board, as adopted under [10 V.S.A. §905(9)], relating to significant wetlands.” 10 V.S.A. § 6086(a)(1)(G). The Vermont Water Regulations (“VWR”) classify wetlands as Class I, Class II, and Class III. VWR 4.1. Classes I and II are considered “significant” and are protected under the rules. *Id.* Therefore, Criterion 1(G) protects only Class I and II wetlands. There are several perched water Class III wetlands which, although not required to do so, Permittees have agreed to protect by imposing 50 foot buffers at their perimeters. Furthermore, Permittees have agreed to a monitoring plan in accordance with the ANR's recommendations. (See Exhibits P-13 and P-1 13).

Because the Project lands contain only Class III wetlands, the Project complies with Criterion 1(G).

Although the Board has no evidence that Page Brook Cedar Swamp is a Class I or II wetland, it is a Northern White Cedar Swamp consisting of three delineated swamp areas, the northernmost section being located approximately 1,400 to 1,600 feet from the Quarry property. The Quarry is not located adjacent to, nor is it contiguous with, the Page Brook Cedar Swamp and the properties are bisected by TH40 and a 1,400 foot treed buffer. Permittees monitoring plan will include a minimum of six groundwater monitoring wells at the Page Brook Cedar Swamp to determine potential impacts from the Quarry on the swamp. Even if the Page Brook Cedar Swamp is a Class I or II wetland, because of the location of the swamp in proximity to the Quarry and because of the monitoring plan, the Project complies with Criterion 1(G).

G. Criterion 2 -- Sufficient Water Supply

Before issuing a permit, the Board must find that the Project has “sufficient water available for the reasonably foreseeable needs of the subdivision or development.” 10 V.S.A. § 6086(a)(2). The burden of proof is on the applicant under Criterion 2. *Id.* § 6088(a).

Permittees performed a hydrologic investigation at the site to determine potential impacts to groundwater conditions which may result from Quarry de-watering activities. As part of this test, based upon guidelines established by the ANR hydrologists, the two existing quarries located on the property were de-watered during a five day pump test. From this analysis, a groundwater contour map of the projected drawdown of groundwater levels in the fractured bedrock aquifer was prepared. In addition, an observation well drilled on the northwest-southwest fracture yielded approximately 50 gpm at a relatively shallow depth of 85 feet. Based on the hydrologist's calculations, a recharge rate ranging from 22-67 gpm exists at the proposed maximum limit of excavation. In addition, the Permittees proposes to recycle water from the settling ponds which will further reduce its reliance upon a separate potable water supply.

Based upon the findings of fact, the Board concludes that the Permittees have sufficient water available for the reasonably foreseeable needs of the Project.

H. Criterion 3 -- Burden on Existing Water Supply

Before issuing a permit, the Board must find that the Project “[w]ill not cause an unreasonable burden on an existing water supply, if one is to be utilized.” 10 V.S.A. § 6086(a)(3). Criterion 3 addresses the “impacts on the ability to meet the demand of neighboring wells or water sources if those other wells or water sources share the same basic source of water such as an aquifer or common spring.” *Re: MBL Associates, #4C0948-EB Findings of Fact, Conclusions of Law, and Order (Altered) at 28 (May 2, 1995).* The burden of proof is on the applicant under Criterion 3. *Id.* § 6088(a).

Permittees' hydrologic examination determined within the zone of potential interference there are a total of 9 individual groundwater supplies. These water supplies are owned by the following landowners: John Riddle, Harry and Sue Simonds, Stephen Amos, Elaine and Oliver Collins, D'Arcy Archambault, Walter Gage, John and Laurie Lasseigne, Anthony and Alice Sessions, and William and Margaret Dyott. Of the nine groundwater source wells within the zone, four are on properties which are under contract to be purchased by the Permittees (Amos, Collins, Archambault, and Gage) and one is located on the co-applicants' property (Dyott).

Based upon the hydrologic evaluation, the Board concludes that the operations of the Quarry will not adversely impact the groundwater yield or the groundwater quality in individual potable water supplies located within the delineated potential zone of interference. However, since operations at the Quarry at least have the possibility of resulting in a minor level of source interference at these properties, the Permittees hired

an independent consultant to do baseline yield and water quality data from each of the nine wells.

Further, in the event that an unacceptable level of source interference is experienced at any of the water supply source locations, not under prior agreement with the Permittees, the following measures will be implemented by the Permittees at its own cost and expense in order to rectify any source interference problems: (1) in the event that the existing effected groundwater supply is a drilled well, the well will be deepened by re-drilling with additional improvements made to the well pump size and configuration as required; (2) if the above method is unsuccessful, a replacement bedrock well water supply will be drilled on the individual properties; and, (3) to the extent necessary, additional potable water storage would be installed to service the affected properties experiencing a reduction in source yield due to interference. As demonstrated in the bedrock fracture trace analysis, there is a high potential for locating replacement well sites on each of the affected properties.

The Board defines “unacceptable level of source interference” on an existing water supply to be the same as the definition of “unacceptable interference” in Section 11.6.3.1 of the State of Vermont Environmental Protection Rules, Chapter 21: Vermont Water Supply Rule. The Rule states as follows:

Public and private water supplies affected by the pumping of other proposed or existing groundwater sources shall be able to meet their average day demand while the proposed water supply is operated at the proposed pumping rates. If, as a result of predicted source interference, existing water supplies cannot meet their design demands, then unacceptable interference exists. Unacceptable interference may also include water quality problems resulting from source testing.

Based upon Findings of Fact, the Board concludes that the Quarry operations will not cause an unreasonable burden on any existing water supplies.

I. **Criterion 4 -- Erosion**

Before issuing a permit, the Board must find that the Project, “[w]ill not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.” 10 V.S.A. § 6086(a)(4). The burden of proof is on the applicant under Criterion 4. **Id.** § 6088(a).

Erosion control plans used to satisfy Criterion 4 must be site-specific. **Re: Sherman Hollow, Inc., #4C0422-5-EB** (Revised), Findings of Fact, Conclusions of Law, and Order at 37 (Feb. 17, 1989). The Handbook is often used to demonstrate compliance with Criterion 4. In discussing factors influencing erosion, the Handbook states:

The size and steepness of slopes within a watershed influence the amount and rate of runoff. As the length and gradient (steepness) of a slope increase, the amount and rate of runoff increase and the potential for erosion is magnified. By limiting the length and gradient of slopes created or modified during development, one can reduce the volume and velocity of runoff and minimize erosion.

Handbook at 6. See **Kisiel, supra** at 12-13.

Permittees’ site specific soil erosion control plan mandates that all erosion control procedures conform to the practices set out in the Handbook. The Board notes the lack of evidence on this criterion other than that of Permittees. The Board finds that the Project plans will prevent soil erosion on-site and prevent sediment discharges to wetland areas and streams. Based upon the foregoing findings of fact, conditions, and monitoring and reporting requirements, the Board concludes that the Project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.

J. **Criterion 5 -- Traffic Congestion and Safety**

Before issuing a permit, the Board must find that the proposed Project, “[w]ill not cause unreasonable congestion or unsafe conditions with respect to the use of highways ...” 10 V.S.A. § 6086(a)(5) (traffic). A permit may not be denied solely on the basis of Criterion 5, but the Board may attach reasonable conditions and requirements to the permit to alleviate the burden created. **Id.** § 6087(b). The burden of proof is on the opponent under Criterion 5, **id.** § 6088(b), but the applicant must provide sufficient information for the Board to make affirmative findings.

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Based on the findings of fact, the opponents have failed to persuade the Board that the increase in traffic due to the Quarry will result in unreasonable congestion. TH57, TH2 and TH40 will continue to have low volumes of traffic even with the Quarry operation. If passenger vehicle round trips were to double, the Board would not conclude that the Project would result in unreasonable congestion. Granite transfer trucks is the traffic of greatest concern and this is specifically limited. Consequently, the Board concludes that there will be no traffic congestion on these roadways.

The Board believes that the VAOT, when it set forth the Vermont State Design Standards, was cognizant of the fact that there would be snow on Vermont roads in the wintertime and that the maximum grades for rural local roads reflect that knowledge.

With regard to the issue of safety, the Board is persuaded that Quarry block transfer trucks and other large truck traffic associated with Quarry operations could result in unsafe conditions. The Board finds, however, that the road improvements completed by Permittees in concert with the Permit conditions imposed herein will insure continued safe conditions on the involved roads.

The Board's authority under Criterion 5 includes the power to impose permit conditions to alleviate impacts created by the proposed Project. Accordingly, the Board imposes the following conditions. The travel route for Quarry block transfer trucks is specifically limited to TH57, TH2 and TH40. The maximum trailer length to be utilized for transferring granite will not exceed 48 feet. Permittees shall communicate with school districts to confirm the hours that school busses use the involved roads, and with this information, Permittees shall institute a practice insuring that no granite transfer trucks are on the roads during these times. Permittees shall incorporate this bar to transfer truck traffic within contracts with the granite transfer companies. These contracts shall also incorporate the provision that all transfer trucks maintain a 20 mile per hour maximum speed limit. Permittees shall incorporate all road monitoring and maintenance provisions into the Quarry's O&M Manual.

Vehicular traffic to the Quarry will be limited to the period from April 15 to December 15 of each year with the exception of limited traffic to inspect the Quarry. The Board will allow Permittees to perform two round trips per week from December 15 to April 15 of each year to inspect the Quarry. The vehicle performing these off-season trips will be no bigger than a pick-up truck and will not travel beyond the Quarry gate. No snow plowing is allowed on the Project site, except for the following: 1) minimal plowing may occur to allow the vehicle used to perform off-season trips to park off of TH40 but

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may not extend beyond the Quarry access road gate; and 2) additional plowing may occur for equipment staging further discussed below.

The Board will allow Permittees to stage equipment along the Quarry access road from TH40 prior to April 15 while the roads remain frozen. No running of this equipment will be allowed. Limited snow plowing of a small staging area just beyond the gate is permissible for the sole purpose of staging the equipment. Only a single day will be allowed to transport the equipment to the Quarry and this may not occur prior to March 1st. Permittees must have the permission of the Sheffield and Glover Selectboards, the Commission and the DFW prior to transporting and staging this equipment.

The Board is concerned at the lack of existing enforcement potential relating to the above conditions, especially the established speed limits. We point out that strict adherence to these limits is essential to mitigation of noise, dust, safety and road maintenance problems inherent in the increased truck and other traffic resulting from this Project. We point out to the municipalities which are parties to this proceeding, and which will receive income and/or road improvements from the Project, that they bear the obligation to provide, if necessary, strict enforcement of the speed limits.

Based on the findings of fact, and especially, the roadway improvements in concert with the conditions required herein, the Board concludes that this Project will not cause unreasonable congestion or unsafe conditions with respect to the use of highways.

K. Criterion 7 -- Municipal or Government Services

Before issuing a permit, the Board must find that the proposed Project, “[w]ill not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services.” 10 V.S.A. §6086(a)(7). The burden of proof is on the opponent under Criterion 7. *Id.* §6088(b). Criterion 7 covers a wide range of services, including fire protection (both voluntary and paid), police, solid waste disposal (landfill or other), sewage treatment, water systems, rescue (both voluntary and paid), and road maintenance.

Criterion 7 has in common with other fiscal criteria (6,9(A), 9(H), and 9(K)) the protection of government finances from burdens imposed by new development, and a Project’s competitive effect on existing businesses is relevant since Act 250 protects the tax base of the relevant localities. *St. Albans Group and Wal*Mart Stores, Inc.*, #6F0471-EB (Altered) (June 27, 1995), *aff’d, In re St. Albans Group and Wal*Mart*

Store, Inc., 167 Vt. 75 (Aug. 29, 1997). Relevancy of fiscal impacts on public entities does not mean that Act 250 protects existing businesses from new competition. *Id.*

In making its determination, the Board considers the likelihood that the proposed Project will (1) place an undue, uneconomic or excessive burden on the ability of local and regional governments or public utilities to provide the services needed for the Project or other Projects, or accommodate growth and (2) endanger public investments in, or jeopardize or interfere with, adjacent public facilities under Criteria 7, 9(A), 9(H), 9(J), and 9(K). *Finard-Zamias Associates, #1R0661-EB*, Findings of Fact, Conclusions of Law, and Order (Nov. 19, 1990).

Based on the findings of fact, the Board finds that the Project will not place an unreasonable burden on the Towns of Sheffield or Glover or any other surrounding towns. The sole municipal or local government service potentially impacted by the Project is the maintenance of the involved roadways. Permittees have completed substantial improvements to the roadways and have entered into agreements with the Towns of Sheffield and Glover to pay for ongoing road maintenance required as a result of Quarry activities. Consequently, the Board concludes that the Project will not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services.

L. Criterion 8 -- Aesthetics

Before issuing a permit, the Board must find that the Project will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, or rare and irreplaceable natural areas. 10 V.S.A. § 6086(a)(S) (aesthetics). The burden of proof is on the opponents under Criterion 8, *id.* § 6088(b), but the applicant must provide sufficient information to the Board to make affirmative findings. See, e.g., *Re: Black River Valley Rod & Gun Club, Inc., #2S1019-EB*, Findings of Fact, Conclusions of Law, and Order (Altered) at 19 (June 12, 1997) and cases cited therein,

Criterion 8, “was not intended to prevent all change to the landscape of Vermont or to guarantee that the view a person sees from her property will remain the same forever.” *Re: Okemo Mountain, Inc., #2S0351-8-EB*, Findings of Fact, Conclusions of Law, and Order at 9 (Dec. 18, 1986). Criterion 8 was intended to ensure that as development occurs, reasonable consideration will be given to the visual impacts on neighboring landowners, the local community, and on the special scenic resources of Vermont. *Horizon Development Corp., #4C0841-EB*, Findings of Fact, Conclusions of Law, and Order (Aug. 21, 1992). Nevertheless, projects that result in the loss of open

space and the alteration of vistas can have an adverse effect on aesthetics and scenic beauty. See e.g., *Re: Thomas W. Bryant and John P. Skinner*, #4C0795-EB, Findings of Fact, Conclusions of Law, and Order at 21 (June 26, 1991); see also *Re: Maple Tree Place Associates*, #4C0775-EB, Findings of Fact, Conclusions of Law, and Order at 48-49 (June 25, 1998); *Re: George, Mary, and Rene Boissoneault*, #6F0499-EB, Findings of Fact, Conclusions of Law, and Order at 19 (Jan. 29, 1998).

Aesthetics, Scenic and Natural Beauty

The Board uses a two-part test to determine whether a project satisfies Criterion 8 (aesthetics). First, it must determine whether the project will have an adverse effect under Criterion 8. *Id.*; see also *Re: James E. Hand and John R. Hand, d/b/a Hand Motors and East Dorset Partnership*, #8B0444-6-EB (Revised), Findings of Fact, Conclusions of Law, and Order at 24-25 (Aug. 19, 1996); *Re: Quechee Lakes Corp.*, #3 W0411-EB and #3 W0439-EB, Findings of Fact, Conclusions of Law, and Order (Nov. 4, 1985). Second, it determines whether the adverse effect, if any, is undue. *Hand, supra*, at 24; *Quechee Lakes, supra*, at 17-20.

1. Adverse Effect

In determining whether a project will have an adverse effect,

[T]he Board looks to whether the proposed project will be in harmony with its surroundings or, in other words, whether it will “fit” the context within which it will be located. In making this evaluation, the Board examines a number of specific factors including the nature of the project’s surroundings, the compatibility of the project’s design with those surroundings, the suitability for the project’s context of the colors and materials selected for the project, the locations from which the project can be viewed, and the potential impact of the project on open space.

Hand, supra at 25. In other words, if a project “fits” its context, it will not have an adverse effect. *Re: Talon Hill Gun Club and John Swinington*, #9A0192-2-EB, Findings of Fact, Conclusions of Law, and Order at 9 (June 7, 1995).

The area surrounding the Project includes isolated and sparsely populated permanent and seasonal residences. Additional land uses in the area include agricultural farming, logging, and a Christmas tree farm. The Project site is a former Quarry. The area is heavily wooded with deciduous and coniferous trees with openings of various

sizes for residences and farming purposes. While views of the Project may be limited, there are areas surrounding the Project site from which the Quarry operation can be viewed.

The Quarry operation will be audible beyond the Project boundary. All noise monitoring, including the noise demonstration which the Board observed, produced data establishing that Quarry operations will not exceed 70 dB(A) Lmax at the Project boundary and 55 dB(A) Lmax outside any residence or area of frequent human use.

The Quarry represents a significant departure from those land uses existing in the area and it may be visible to some residents and the traveling public. The area of the Project will experience an increase in noise, traffic and dust. Accordingly, the Board concludes that the Project will not be in harmony with its surroundings and that the Quarry will create an adverse aesthetic impact.

2. Undue

If the Board concludes that the proposed Project will have an adverse effect under Criterion 8, the Board must evaluate whether the adverse effect is “undue.” **Hand, supra** at 25. The Board will conclude that the adverse effect is undue if it reaches a positive finding with respect to any one of the following factors:

- a. Does the project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area?
- b. Does the project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area?
- c. Has the applicant failed to take generally available mitigation steps which a reasonable person would take to improve the harmony of the project with its surroundings?

See, e.g., **Black River, supra**, at 19-20, **Hand, supra**, at 25-29; **Quechee Lakes, supra**, at 19-20.

With respect to the first factor, the Board concludes that there are no clear, written community standards intended to preserve the aesthetics or scenic beauty of the area.

There is no town plan or town zoning ordinance within the Town of Sheffield and the Regional Plan only states that:

Consideration should be made with respect to the proposed development's effect on aesthetics, open spaces, and the scenic and historic integrity of the area affected.

"Consideration should be made..." does not rise to a level of clear, written community standard. Furthermore, the Regional Plan does not specifically preclude quarrying activities or mining. The Project site is not designated in an area set aside for scenic preservation.

The neighbors of the Quarry insisted that noise from the Project was substantially louder than that heard and observed by the Board on day of the noise demonstration. Mufflers were installed on equipment and noise attenuation berms were constructed before that day so as to reduce noise coming from the Project.

With respect to the second and third factors, the Board concludes that the Project will not offend the sensibilities of the average person, and that the Permittees have taken generally available mitigating steps which a reasonable person would take to improve the harmony of the Project with its surroundings. These steps include the following: maintaining a 200-foot (minimum) woodland buffer around the Project; the height of the grout piles will be limited to the heights of the adjacent surrounding trees or 520 (western grout pile) or 540 (eastern grout pile) meters above sea level, whichever is less; all structures will be single story; a 48.5 acre area of protected conservation land adjacent to the site had been created, a reclamation plan and an escrow account to fund the plan have been created; a comprehensive O&M Manual covering all aspects of its operations has been created and will be supplemented based on this decision; a 50-foot wide minimum buffer around all wetland areas and larger buffer zones around all streams will be maintained; operations will only occur from April 15 to December 15, excluding Federal holidays, of each year and only on weekdays from 7:00 a.m. to 5:00 p.m; blasts will be limited to a maximum of 100 lbs. and the number of these blasts will be limited to only two times per week; the highest and best technology will be used for dust suppression; the Permittees have purchased the Amos property and entered into contracts to purchase the Collins, Archambault, Lasseigne/Drew and the Gage and Yandow properties, all of which will serve to mitigate noise; all noise at surrounding residences will be limited to no more than 55 dB(A) Lmax and to no more than 70 dB(A) Lmax at the Quarry property line as per the evidence in this case; the granite transfer trucks will use a limited route from the Quarry access road to Route 16 and all trucks will travel at no more than 20

mph; no additional logging of Permittees' lands beyond the limits of the Quarry will occur without the consent of the Commission; and all blasting shall be in accordance with the methods established by the USBM and that in no event will the Quarry exceed the USBM maximum decibel levels at structures or the USBM maximum particle velocities.

Based on the above, the Board concludes that the Project will not have an undue adverse effect on the scenic or natural beauty or aesthetics of the area.

Historic Sites

The Board uses a three-part test to determine whether a Project satisfies Criterion 8 (historic sites). First, it must determine whether the Project is or contains an historic site. Second, it determines whether the proposed Project will have an adverse effect on the historic site. Third, it determines whether the adverse effect, if any, is undue. *Re: Manchester Commons Associates, #8B0500-EB, Findings of Fact, Conclusions of Law, and Order at 18 (Sept. 29, 1995).*

1. Historic Site

“Historic site” is defined as “any site, structure, district or archeological landmark which has been officially included in the National Register of Historic Places and/or the state register of historic places or which is established by testimony of the Vermont Advisory Council on Historic Preservation as being historically significant.” 10 V.S.A. § 6001(9). Listing on the national and state registers is a question of fact. *Manchester Commons, supra*, at 19.

Even if the site has not been listed on the national or state register, 10 V.S.A. § 6001(9) allows the Board or district commissions to declare it to be an “historic site” if there is persuasive evidence of historic significance brought before the Board or district commissions by the testimony of the Vermont Advisory Council of Historic Preservation. Therefore, under this part of the “historic site” definition, the Board or district commissions must examine the testimony of the Advisory Council to determine whether such testimony establishes a site, structure, district, or archeological landmark as historically significant. *Id.* The Board and district commissions are not bound by the opinion provided by the Council. *Id.* at 20. Instead, as with any witness, the Board and district commissions may believe all of the Council’s testimony, none of it, or some of it. *Id.*

There is no evidence of, and the Board is not otherwise aware of, an historic site relating to the Project or the surrounding area. Accordingly, there is nothing for the Board to consider with respect to undue adverse effects relating to historic sites.

Rare and Irreplaceable Natural Areas

The Board uses a four-part test to determine whether a Project satisfies Criterion 8 (rare and irreplaceable natural areas). First, it must determine whether the Project is located in a natural area. Second, it determines whether the natural area is rare and irreplaceable. Third, it determines whether the Project will have an adverse effect on the rare and irreplaceable natural area. Fourth, it determines whether the adverse effect, if any, is undue. *Re: Leo and Theresa Gauthier, #4C0842-EB, Findings of Fact, Conclusions of Law, and Order at 11-13 (June 26, 1991).*

1. Natural Area

There are two guidelines for identifying natural areas:

- a. an area which contains an identifiable type of ecological community;
and
- b. an area in which natural conditions predominate over human influences.

Id. at 11. There are 24 officially designated “natural areas” in Vermont, but the Board has specifically ruled that a site does not have to be officially listed to be considered a natural area. *Id.* at 9.

The Board concludes that the Page Brook Cedar Swamp is a natural area under Criterion 8 because it is a high quality cedar swamp containing an identifiable type of ecological community where natural conditions predominate over human influences.

2. Rare and Irreplaceable

There are several examples of rare areas:

- a. community type which occurs infrequently in Vermont and usually occurs further south; *Id.* at 12;

- b. hosts rare plants; *Id.*
- c. is a valuable educational and scientific resource. ***Id.***

An example of an irreplaceable area is a, “pine-oak sandplain community because the conditions that caused it are unlikely to re-occur within the foreseeable future. Specifically, the creation of the community is closely related to particular effects of melting glaciers, including the deposit of sediment and the formation of large river deltas.” *Id.*

Because the Page Brook Cedar Swamp is a community of uncommon type in Vermont and contains rare and uncommon plants, The Board concludes that the Page Brook Cedar Swamp is rare and irreplaceable.

3. Adverse Effect

The Board has not set forth specific guidelines for determining adverse effects on rare and irreplaceable natural areas. Factors and guidelines from the aesthetics and historic sites analyses (adverse effect) may be applicable. As stated previously, the burden of proof with respect to issues involving whether a Project will have an undue adverse impact on rare and irreplaceable natural areas is on parties other than the Permittees.

No party produced evidence to allow the Board to conclude that the Project will have an adverse effect on the swamp. Evidence shows that there may be an effect upon the quantity or quality of water entering Page Brook Cedar Swamp and that it is possible that Quarry dewatering may affect swamp water levels, There is also other evidence that the Project will not have an effect on the swamp. The Project and the swamp are 1,400 feet apart and hydraulic testing shows that groundwater drawdown from Quarry dewatering will be limited to a 700 foot radius of influence. Accordingly, the Board cannot positively conclude that the Project will have an adverse effect on the Page Brook Cedar Swamp. The Board does, however, conclude that an adverse effect is possible.

4. Undue

The parties other than Permittees have failed to meet their burden of proof to show that the project will have an adverse effect on the Page Brook Cedar Swamp. Because an adverse effect to the Page Brook Cedar Swamp is possible, the Board has decided in this case to consider whether the potential adverse effect could be undue. The

Board has considered one factor in determining whether an adverse effect was undue in *Gauthier*: the failure of the applicant to take reasonably available steps to mitigate the adverse effect. *Gauthier, supra* at 13. This is one of the factors used in determining whether an adverse effect is “undue” in the aesthetics and historic sites analyses. The other two factors used in analyzing “undue adverse effects” on aesthetics and historic sites are applicable to rare and irreplaceable natural areas as well. An affirmative conclusion on any one of these factors may be sufficient to support a conclusion that an adverse effect on a rare and irreplaceable natural area is undue. See, e.g., *Black River, supra*, at 19-20; *Hand, supra*, at 25-29; *Quechee Lakes, supra*, at 19-20; *Manchester Commons, supra* at 22; *Middlebury College, supra* at 10.

As stated above, potential adverse effects to Page Brook Cedar Swamp from the Project could be caused by a change in the quantity or quality of water entering Page Brook Cedar Swamp. Permittees have agreed to perform groundwater monitoring within the swamp. The Board requires that this groundwater monitoring conform to findings numbered 248 and 249 above. Based on Permittees’ monitoring program, the Board concludes that any potential undue adverse effect to the Page Brood Cedar Swamp will be appropriately and sufficiently mitigated. The Board also concludes that there are no clear, written community standard intended to preserve the Page Brook Cedar Swamp. Furthermore, due to the proximity of the Quarry to the swamp, the Project does not offend the sensibilities of the average person by significantly diminishing the scenic qualities of the swamp.

Accordingly, the Board concludes that the Project satisfies Criterion 8 (rare and irreplaceable natural areas).

M. Criterion 8(A) (Necessary Wildlife Habitat and Endangered Species)

The Board will not grant a permit if it is demonstrated by any party opposing the applicant that the development or subdivision will destroy or significantly imperil necessary wildlife habitat or any endangered species, and

(i) the economic, social, cultural, recreational, or other benefit to the public from the development or subdivision will not outweigh the economic, environmental, or recreational loss to the public from the destruction or imperilment of the habitat or species, or

(ii) all feasible and reasonable means of preventing or lessening the destruction, diminution, or imperilment of the

habitat or species have not been or will not continue to be applied, or
(iii) a reasonable acceptable alternative site is owned or controlled by the applicant which would allow the development or subdivision to fulfill its intended purpose.

10 V.S.A. § 6086(a)(S)(A)(i)-(iii). The burden of proof is on the opponents under Criterion S(A). *Id.* § 6088(b). The Applicant still has the burden of producing evidence sufficient to enable the Board to make the requisite positive findings on all of the subcriteria. *Re: Okemo Mountain, Inc., #2S0351-12A-EB* (revised July 23, 1992; previous version Mar. 27, 1992; minor alteration Nov. 13, 1992).

“‘Necessary wildlife habitat’ means concentrated habitat which is identifiable and is demonstrated as being decisive to the survival of a species of wildlife at any period in its life including breeding and migratory periods.” 10 V.S.A. § 6001(12). See *Re: Bernard and Suzanne Carrier, #7R0639-EB*, Findings of Fact, Conclusions of Law and Order at 18 (Oct. 5, 1990); *Re: Southview Associates, #2W0634-EB*, Findings of Fact and Conclusions of Law at 7-9 (June 30, 1987) *aff’d, In re Southview Associates, 153 Vt. 171* (1989); *Re: Nile and Julie Dupstadt & John and Deborah Alden, #4C1013(Corrected)-EB*, Findings of Fact, Conclusions of Law, and Order (April 30, 1999).

Criterion 8(A) involves a three stage inquiry: (a) whether the alleged habitat constitutes “necessary wildlife habitat;” (b) if so, whether the Project will destroy or significantly imperil such habitat; and (c) if so, whether one or more of subcriteria (i) through (iii) is satisfied. *Kiesel, supra* at 37.

With respect to the first stage, the Project includes approximately 84.5 acres of deer wintering areas existing on the 147 acres owned or controlled by Permittees. The deer wintering areas are necessary wildlife habitat as defined by 10 V.S.A. § 6001(12). See *In re Southview Associates, 153 Vt. at 175-76* (1989) (Supreme Court upheld the Board’s conclusion that deer wintering areas constitute necessary wildlife habitat under 10 V.S.A. § 6001(12)). This deer wintering area is part of the Greensboro deeryard. There are no other wildlife habitats on the Project tract that are concentrated, identifiable or necessary to the survival of any wildlife species nor are there any endangered species on the Project tract.

With respect to the second stage, the Board concludes that the Project will destroy or significantly imperil deer wintering areas. Of the 84.5 acres of deer wintering area on the Project tract, 15.35 acres will be destroyed. To compensate for the loss of this deer

wintering area, the Permittees and underlying landowners have entered into a perpetual conservation easement with the ANR which will perpetually protect 48.5 acres of primary deer wintering area. The DFW requires a 2: 1 habitat compensation ratio for Projects that will impact deer wintering habitat (i.e. for every acre of habitat impacted, 2 acres of the same habitat must be protected). The Project's habitat compensation ratio is 3 :1. The Board concludes that this ratio meets the DFW's standard.

With respect to the third stage, the Board must conclude whether the Project fails one or more of subcriteria (i) through (iii). Subcriterion (i) requires the Board to determine that the economic, social, cultural, recreational, or other benefit to the public from the Project will not outweigh the economic, environmental, or recreational loss to the public from the destruction or imperilment of the habitat or species. The Project will have economic and other benefits to the public. There are economic benefits which will accrue to the Town of Sheffield through impact fees. The Project will result in the creation of jobs and job opportunities in the Northeast Kingdom. There is also evidence in the record that granite manufacturers and purchasers of granite in Vermont desire a new source of dimension stone granite for their continued operation. These Vermont companies employ Vermont workers. The Project will, however, cause economic and recreational loss to the public from the destruction or imperilment of deer wintering habitat. The Board concludes that the economic and recreational benefits to the public from the Project will outweigh the environmental and recreational losses to the public from the destruction or imperilment of deer wintering habitat. Therefore, the Project does not fail under subcriterion (i).

Subcriterion (ii) requires the Board to determine whether all feasible and reasonable means of preventing or lessening the destruction, diminution, or imperilment of the habitat or species have been or will continue to be applied. The Board concludes that Permittees have utilized all feasible and reasonable means of lessening the destruction, diminution, or imperilment of the deer wintering habitat. For example, Permittees have entered a perpetual conservation easement preserving deer wintering area and Permittees will not operate in the winter time when the deer wintering area is most likely used. Therefore, the Project does not fail under subcriterion (ii).

Subcriterion (iii) requires the Board to determine whether a reasonable, acceptable alternative site is owned or controlled by the Applicants which would allow the Project to fulfill its intended purpose. Permittees do not own or control a reasonably acceptable alternative site because the granite resource exists within the area of the me-existing Quarry. The only other sites owned by Permittees are properties which the Permittees

purchased to act as a buffer zone for the Project. Therefore, there is no alternative site and the Project does not fail under subcriterion (iii).

Although the Project will destroy deer wintering areas, a necessary wildlife habitat, Permittees have sufficiently mitigated this loss, and because the Project does not fail under the subcriteria of Criterion 8(A), the Board concludes that the Project complies with Criterion S(A).

N. Criterion 9(E) -- Extraction of Earth Resources

Before issuing a permit for the extraction or processing of mineral and earth resources, including fissionable material, the Board must find

(i) that, in addition to all other applicable criteria, the extraction or processing operation and the disposal of waste will not have an unduly harmful impact upon the environment or surrounding land uses and development; and

(ii) upon approval by the district commission or the Board of a site rehabilitation plan which insures that upon completion of the extracting or processing operation the site will be left by the applicant in a condition suited for an approved alternative use or development.

10 V.S.A. § 6086(a)(9)(E). The burden of proof is on the applicant under Criterion 9(E). *Id.* § 6088(a).

Criterion 9(E) embodies two key provisions. First, earth extraction and processing Projects may not cause undue harm to the environment or neighboring land uses. The Board considers Criterion 9(E) to include and go beyond aesthetic impacts, to encompass interference with enjoyment of the land and to seek to prevent such interference from becoming undue. *Re: John and Marion Gross d/b/a John Gross Sand and Gravel, #5W1198-EB* Findings of Fact, Conclusions of Law, and Order at 16 (April 27, 1995) Therefore, any specific effects demonstrated under other criteria (i.e. air, noise, or water pollution) may also be raised under 9(E) if the Project involves earth resources. Second, extraction Projects must have a “site rehabilitation plan” for restoring the disturbed land after extraction. This plan should include reclaiming the land and also preparing it for another use. *Id.*

Based on the findings of fact, the Board finds that the Quarry extraction is subject to considerable conditions which will successfully mitigate any potential undue harm to the environment or neighboring land uses. For instance, the Quarry has limited hours of operation, is subject to noise limits both at the Quarry boundary and the boundaries of neighboring parcels, and the Quarry has detailed operation and maintenance plans and blasting procedures which will safeguard against unduly harmful impacts.

There are no chemicals, processing or otherwise, used at the Quarry. All hazardous materials will be disposed of pursuant to the Hazardous Waste Management Plan. Consequently, the disposal of wastes will not have an unduly harmful impact upon the environment.

Accordingly, the Board concludes that the Project will not have an unduly harmful impact upon the environment or surrounding land uses and development.

The Quarry has a Reclamation Plan and a corresponding Reclamation Escrow Agreement (amended) requiring an annual deposit of \$15,000 to be utilized for reclamation. If the costs of reclamation exceed the amount of funds in the reclamation escrow account, Permittees remain responsible for all necessary reclamation activities. The Board concludes that the Reclamation Plan is satisfactory and should be fully incorporated into the O&M Plan.

0. **Criterion 9(K) -- Effects on Public Investments and Services**

Criterion 9(K) provides that:

[a] permit will be granted for the development or subdivision of lands adjacent to governmental and public utility facilities, services, and lands, including, but not limited to, highways, airports, waste disposal facilities, office and maintenance buildings, fire and police stations, universities, schools, hospitals, prisons, jails, electric generating and transmission facilities, oil and gas pipe lines, parks, hiking trails and forest and game lands, when it is demonstrated that, in addition to all other applicable criteria, the development or subdivision will not unnecessarily or unreasonably endanger the public or quasi-public investment in the facility, service, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to the facility, service, or lands.

10 V.S.A. § 6086(a)(9)(K). The burden of proof is on the applicant under Criterion 9(K). *Id.* § 6088(a). A failure to meet that burden may result in a denial of the Land Use Permit application. *Id.* § 6087.

The Board conducts two separate inquiries under Criterion 9(K) with respect to governmental and public facilities. First, the Board examines whether the proposed Project will unnecessarily or unreasonably endanger the public investment in such facilities. Second, the Board examines whether a proposed Project will materially jeopardize or interfere with (a) the function, efficiency, or safety of such facilities, or (b) the public's use or enjoyment of or access to such facilities. *Re: Swain Development Corp., #3W0445-2-EB*, Findings of Fact, Conclusions of Law, and Order at 33 (Aug. 10, 1990).

The Board has determined that public highways constitute "public facilities, services, or lands." See *Swain Development Corp., supra*, at 34. Based on the findings of fact, the only public or quasi public facilities associated with this Project are TH40 and TH2 in Sheffield and TH57 in Glover. With respect to these investments, the Board concludes that the Project will not unnecessarily or unreasonably endanger the public investment in such facilities. The Board also concludes that the Project will not materially jeopardize or interfere with (a) the function, efficiency, or safety of these facilities, or (b) the public's use or enjoyment of or access to these facilities.

P. Criterion 10 -- Conformance with the Regional Plan

Before issuing a permit, the Board must determine that the Project "[i]s in conformance with any duly adopted local or regional plan or capital program under [24 V.S.A. §§ 4301-4495]." 10 V.S.A. § 6086(a)(10). The burden of proof is on the applicant under Criterion 10. *Id.* § 6088(a).

There is no duly adopted local plan so conformance with a local plan is not at issue in this appeal. The Board, therefore, turns to the Project's conformance with the Regional Plan.

The Board performs its analysis regarding regional plans consistent with *Duppstadt, supra* at 44; see also *In re Green Peak Estates*, 154 Vt. 363, 369-70 (1990)(project was not in compliance with regional plan that contained a specific policy against the type of development at issue); *In re Molgano*, 163 Vt. 25, 31 (1994)(project was in compliance with broad and vague regional plan that had no specific prohibitions against type of development at issue). See also *Kiesel, supra* at 47; *Re The Mirkwood*

Group and Barry Randall, #1R0780-EB, Findings of Fact, Conclusions of Law and Order (August 19, 1996). These cases indicate that the Board is to apply specific policies contained in a regional plan and that an ambiguous provision is not such a policy. *Duppstadt, supra*.

For a regional plan's provisions to be deemed a specific policy, the applicable provisions must (a) pertain to the area or district in which the Project is located; (b) intend to guide or proscribe conduct or land use within the area or district in which the Project is located, and (c) be sufficiently clear to guide the conduct of an average person, using common sense and understanding. *Id.* at 45; *Re Herbert and Patricia Clark*, Application #1R0785-EB, Findings of Fact, Conclusions of Law and Order at 40 (April 3, 1997); *Mirkwood, supra* at 29.

Concerning the role of regional plans in Act 250 proceedings, Title 24 of the Vermont Statutes provides:

In proceedings under 10 V.S.A. chapter 15 1 in which the provisions of a regional plan or municipal plan are relevant to the determination of any issue in those proceedings:

(1) the provisions of the regional plan shall be given effect to the extent that they are not in conflict with the provisions of a duly adopted municipal plan;

(2) to the extent that such a conflict exists, the regional plan shall be given effect if it is demonstrated that the Project under consideration in the proceedings would have a substantial regional impact.

24 V.S.A. §4348(h).

Absent guidance as to the relevant provisions of the regional plan, the Board first reviews the entire regional plan to determine whether it contains any specific provisions applicable to the proposed Project. *Kisiel, supra* at 47. If the plan does not contain any specific provisions which prohibit the proposed Project, then the Board will conclude that the proposed Project complies with Criterion 10 (regional plan). *Id.*

In the matter at hand, the Regional Plan does not have specific language dealing with the development of stone quarries in rural areas. The site has previously been quarried though not as intensely as currently permitted. Additionally, Vermont is known for its mining industry, and quarrying is a major component of Vermont's economic base.

Given the location of the state's mineral resources, it would be unusual for a regional plan to prohibit Quarry development from occurring in rural or remote areas of the state.

The Project is located in a Rural Agricultural/Forest area which, according to the Regional Plan, "should receive very little commercial and industrial development." The Board believes that "very little" does not necessarily mean small scale, but could mean a small number of Projects. Furthermore, the Regional Plan does acknowledge that rural lands will receive limited development. The Project, as designed and restricted, constitutes limited development, and is therefore, in compliance with the Regional Plan in this regard.

The Regional Plan states that although development should be concentrated in activity centers, rural lands will receive limited development. The Regional Plan also states that rural development should, among other things: 1) minimize the impacts on the rural character; 2) not strain municipal services; and 3) be properly constructed with driveways that do not create negative visual or traffic impacts. The Board believes that the mitigation undertaken by Permittees, and as imposed by the conditions herein, meets these goals.

Additionally, the Board believes that the Project's nature, scale, appearance or operation is appropriately mitigated to prevent significant or adverse changes to the character of the area as discussed in the Regional Plan.

This Project does not have adverse effects on open space and the overall scenic and historic integrity of the area. Given the definition employed by the Regional Plan, this Quarry does not constitute a development with substantial regional impacts. The only potential adverse effect relates to aesthetics. The Regional Plan allows development having adverse impacts as long as the impacts are mitigated. As designed and as herein restricted, the Project impacts have been mitigated and are therefore acceptable.

The Board notes the concerns and interests of those residing near the Quarry and along Sheffield's roads. The Board points out that when a purchaser of land acquires or otherwise invests in land in an area lacking a town plan and local zoning, the purchaser lacks any protections ensuring that the property will not be adversely affected or compromised by ensuing development or land use activities. Lastly, the Board notes that the Regional Plan encourages local control and that the Sheffield Select Board has not opposed the Project and has approved the Roadway and Impact Fee Agreement.

In view of the absence of a town plan and in the absence of any clear guidance from the Regional Plan, the Project complies with this criteria.

The Board's findings are supported by pertinent findings which have been adopted by the legislature in Vermont's Capability and Development Plan. Two of the criteria on appeal in this matter were added to Act 250 in 1973. 1973 Vt. Laws No. 85 (the 1973 Amendment). When they were added, the legislature adopted specific findings which are printed in 10 V.S.A. § 6042. It is true that the 1973 amendment specified that these findings are not to be used as criteria in deciding whether or not to issue a land use permit. See 10 V.S.A. § 6086(a)(9). The Board may, however, look to these findings as a source of legislative intent in determining the meaning of the criteria. *Cf. Viskup v. Viskup*, 150 Vt. 208, 210 (1988) (the primary purpose of construing statutes is to effect the intent of the legislature); see also *St. Albans Group and Wal-Mart Stores, Inc.*, Memorandum of Decision on Motions to Alter, Application #6F0471-EB, page 5 (June 27, 1995).

The findings which accompanied the 1973 amendment indicate that the Board and district commissions are to consider natural resource impacts of the type alleged in this appeal. For example, the findings state:

(2) Utilization of Natural Resources

Products of the land and the stone and minerals under the land, as well as the beauty of our landscape are principal natural resources of the state. Preservation of the agricultural and forest productivity of the land, and the economic viability of agricultural units, conservation of the recreational opportunity afforded by the state's hills, forests, streams and lakes, wise use of the state's non-renewable earth and mineral reserves, and protection of the beauty of the landscape are matters of public good. Uses which threaten or significantly inhibit these resources should be permitted only when the public interest is clearly benefitted thereby.

The Board's findings that the Project, as conditioned herein, complies with criterion 10 and the other Act 250 Criteria gives effect to the above stated legislative intent.

Act 200, 24 V.S.A. §4300 et seq., referred to as the Vermont Planning and Development Act, also supports the Board's findings. 24 V.S.A. §4348a, Elements of a Regional Plan, states that a regional plan shall be consistent with the goals established in section 4302 of title 24. Section 4302 states in part that the purpose and goals of a regional plan should further the "wise and efficient use of Vermont's natural resources and to facilitate the appropriate extraction of earth resources and the proper restoration and preservation of the aesthetic qualities of the area." While the Regional Plan is silent

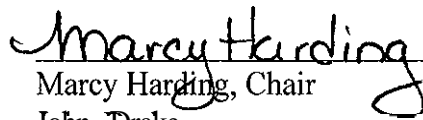
with respect to the extraction of earth resources and associated issues, thereby leaving those it is intended to guide without guidance in this area, the Board concludes that the Project, as conditioned, promotes the wise and efficient use of Vermont's natural resources.

V. ORDER

1. Land Use Permit # 7C1079(Revised)-EB is issued.
2. Jurisdiction is returned to the District #7 Environmental Commission.

Dated at Montpelier, Vermont this 8th day of December 2000.

ENVIRONMENTAL BOARD


Marcy Harding, Chair
John Drake
George Holland
Samuel Lloyd
William Martinez
Rebecca Nawrath
Alice Olenick
Gregory A. Rainville

- 1 The Board has made extensive use of defined terms in this decision. Please refer to Appendix B Glossary of Acronym Definitions for a listing of all defined terms.

APPENDIX A

SUMMARY OF PROCEEDINGS

On June 23, 1999, the Commission issued the Permit and Decision to Permittees authorizing the Permittees to reactivate and expand abandoned granite quarries located on the Dyott, Padula and LeCours properties in the Town of Sheffield, Vermont.

On July 28, 1999, RNKP tiled a Motion to Alter with the Commission.

On July 28, 1999, RNKP filed a Motion for Preliminary Stay with Chair Harding and a Motion for Long-Term Stay with the Board.

In early August, 1999, Permittees and the Town of Sheffield tiled in opposition to RNKP's Motions for Preliminary and Long-Term Stay.

In an August 5, 1999 Chair's Order Denying Motion for Preliminary Stay, the Board Chair denied RNKP's Motion for a Preliminary Stay because no appeal had been filed from the Commission's Decision and Permit to the Board (thereby transferring jurisdiction to the Board), RNKP was not an "aggrieved party," and there had been no "final order" issued by the Commission from which relief could be sought by means of a stay.

On August 9, 1999, in reaction to RNKP's Motion to Alter, the Commission issued the Revised Permit, Revised Decision and MOD on RNKP's Motion to Alter.

On August 12, 1999, RNKP filed a Notice of Appeal with the Board from the Commission's Revised Decision contending that the Commission erred by finding that the Project fails to comply with Criteria 1, 1(A), 1(B), 1(E), 2, 3, 4, 5, 7, 8,8(A)(i)-(iii), 9(E), 9(K), and 10. RNKP also appealed the Commission's denial of RNKP's party status under EBR 14(B)(1). The Notice of Appeal was filed on behalf of RNKP by Stephanie J. Kaplan, Esq.

On August 18, 1999, Permittees filed a second opposition to RNKP's Motion for Long-Term Stay and reply.

On August 18 and September 8, 1999, the Board deliberated on RNKP's Motion for Long-Term Stay.

In a September 8, 1999 Memorandum of Decision, the Board denied RNKP's Motion for a Long-Term Stay.

On September 14, 1999, Chair Harding convened a prehearing conference with the following participants:

The Permittees by C. Daniel Hershenson, Esq. and Mark Austin
RNKP by Stephanie J. Kaplan, Esq.
Town of Sheffield by Max Aldrich and Kathy Newland
ANR by Patrick Dakin and Dennis Nealon
Elizabeth and James LeCours
Nova Kim (The E'Sha'N Center)
Galway Kinnell and Barbara Bristol
Sue Simonds
Frances Henry and Ken Vos

On September 14, 1999, Michelle and James Perkins and Carl Benson and Tina Yohon tiled letters concerning their inability to attend the prehearing conference and requested continuance of their party status in the appeal tiled by RNKP.

On September 14, 1999, at the preheating conference, RNKP filed a request that the Board perform a site visit to the Barre Granite Quarries' site in Sheffield, Vermont prior to snow covering the ground. RNKP also requested that the Board visit the Rock of Ages quarries in Barre, Vermont in connection with this appeal.

On September 14, 1999, at the prehearing conference, RNKP verbally requested that the Board order that the Permittees serve all parties with copies of subsequent tilings required by the Revised Permit. The Permittees objected to this request.

On September 17, 1999, Permittees filed a response to RNKP's requests. Also on September 17, 1999, Nova Kim and Galway Kinnell each filed letters in support of RNKP's requests.

On September 20, 1999, Chair Harding issued a Prehearing Conference Report and Order.

In a September 23, 1999 Memorandum of Decision, the Board scheduled a site visit to the Barre Granite Quarries' site in Sheffield Vermont for October 13, 1999 and denied RNKP's request that the Board visit the Rock of Ages quarries.

On September 27 and 28, 1999, Alice and Anthony Sessions and Oliver and Elaine Collins, respectfully, filed letters petitioning for continued party status before the Board.

On September 28, 1999, Permittees filed a Response to the Prehearing Conference Report and Order seeking amended hearing and filing dates. RNKP agreed with the Permittees' Response by stipulation.

In an October 8, 1999 Memorandum of Decision, the Board dismissed RNKP's request for service of Permittees' subsequent filings to the Commission, granted the Collins's petition for continued party status, denied the Sessions's petition for continued party status and amended hearing and filing dates.

On October 8, 1999, RNKP filed a Motion to Alter the Board's Denial of its Request for Stay of Permit.

On October 13, 1999, the Sessionses petitioned for the Board to reconsider its denial of the Sessions's request for continued party status.

On October 13, 1999, members of the Board performed a site visit to the Project.

In an October 18, 1999 Chair's Preliminary Ruling, Chair Harding granted RNKP's October 15, 1999, request for modification of three pre-tiled testimony filing dates.

On November 1, 1999, Permittees tiled its Response to RNKP's Motion to Alter the Board's Denial of its Request for Stay of Permit.

In a November 3, 1999 Memorandum of Decision, the Board granted the Sessions's petition for the Board to reconsider its denial of the Sessions's request for continued party status.

On November 4, 1999, Permittees tiled a letter advising the Board of RNKP's request for an extension for the filing of its exhibits, pre-filed direct testimony, and lists of witnesses and exhibits to which Permittees agreed.

In a November 4, 1999 Chair's Preliminary Ruling, Chair Harding granted RNKP's request **for revising filing dates.**

In a November 8, 1999 Memorandum of Decision, the Board denied RNKP's Motion to Alter the Board's Denial of its Request for Stay of Permit. The Board also rescheduled the second prehearing conference and scheduled a second site visit.

During November and December 1999, the parties prefiled direct, rebuttal and surrebuttal testimony and exhibits.

In a December 21, 1999, Chair's Preliminary Ruling, Chair Harding extended the filing deadline for proposed findings of fact and conclusions of law at the joint request of Permittees and RNKP.

In late December 1999 and January 2000, the parties tiled evidentiary objections and responses thereto and proposed findings of fact and conclusions of law.

In a January 12, 2000 Memorandum of Decision, the Board ruled on evidentiary objections, took official notice of Exhibit R22, the U.S. Department of Labor, Occupational Safety & Health Administration web page of the Standard Industrial Classification description for 1411, "mining of dimension stone," and denied Permittees' request to prevent RNKP from calling Mark Austin as a witness under subpoena.

On January 14, 2000, Board Chair Marcy Harding convened a second prehearing conference with the following participants:

The Permittees by C. Daniel Hershenson, Esq. and Mark Austin
RNKP by Stephanie J. Kaplan, Esq.
ANR by Jon Groveman
Sue Simonds
Galway Kinnell and Barbara Bristol by telephone
Alice Sessions by telephone

On January 18, 2000, RNKP's traffic consultant and noise consultant filed additional exhibits.

On January 19 and 26, 2000, the Board convened a public hearing in this matter. As part of the January 19 hearing, the Board performed a site visit to the Project.

In late January, 2000, parties tiled testimony and documents relating to truck traffic.

On January 25, 2000, Permittees requested that the Board take official notice of Land Use Permits relating to the Woodbury, Vermont granite Quarry.

On February 4, 2000, Board Chair Harding issued a Recess Order that stated that the Board would reconvene the public hearing at a future date. The order also requested that parties file memoranda regarding a noise demonstration.

On February 11 and 14, 2000, Permittees and RNKP tiled memoranda regarding the noise demonstration.

In a February 22, 2000, Memorandum of Decision, the Board Ordered that the public hearing in this matter be reconvened on March 15, 2000, that the Permittees conduct a noise demonstration pursuant to protocol established by the Board, and that Permittees file and serve documents relating to granite sales, payments to the Town of Sheffield, and truck logs.

On March 3, 2000, D'Arcy Archambault filed a Petition for Party Status.

In March 2000, parties tiled responses and replies to the Board's Order concerning the noise demonstration.

On March 15, 2000, the Board convened a third public hearing day in this matter. D'Arcy Archambault's Petition for Party Status was denied by the Board at the beginning of this public hearing.

On April 3, 2000, RNKP filed Motions for Preliminary and Long-Term Stay,

Also on April 3, 2000, Nova Kim tiled a Petition for Adjoiner Party Status.

In an April 13, 2000 Chair's Ruling on Preliminary Stay and Chair's Preliminary Ruling, Chair Harding denied in part and granted in part RNKP's Motion for Preliminary Stay and Ordered that Permittees had additional time to respond to RNKP's Motion for Long-Term Stay.

In an April 17, 2000, Chair's Preliminary Ruling, Chair Harding approved Permittees' revised Quarry Reclamation Escrow Agreement.

In April 2000, parties tiled responses to the Chair's Ruling on Preliminary Stay.

In an April 21, 2000, Chair's Second Ruling on Preliminary Stay, Chair Harding reaffirmed and further clarified the April 13, 2000 Chair Ruling on Preliminary Stay.

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In an April 24, 2000, Memorandum of Decision, the Board granted, in part, Permittees' second request for additional time to reply to RNKP's Motion for Long-term stay.

On April 27 and May 4, 2000, Permittees filed Petitions for relief from preliminary stay.

On April 28, 2000, ANR filed a letter requesting that the Board accept evidence relating to the Page Brook Cedar Swamp. On May 18, 2000, Permittees objected to the admittance of this evidence.

Also on May 4, 2000, Permittees filed a Response to RNKP's Motion for Long-Term Stay.

In a May 5, 2000 Memorandum of Decision, the Board modified the noise demonstration protocol.

In a May 11, 2000 Memorandum of Decision, the Board denied, with limited exceptions, RNKP's Motion for Long-Term Stay. This Memorandum of Decision addressed Permittees' Petition for Relief from Stay.

On May 16, 2000, RNKP filed a Motion to Alter the Noise Demonstration Protocol.

In a May 18, 2000 Memorandum of Decision, the Board granted ANR's request that the Board accept into evidence documents and testimony relating to the Page Brook Cedar Swamp. In a separate May 18, 2000 Memorandum of Decision, the Board denied RNKP's Motion to Alter the Noise Demonstration Protocol.

In May 2000, parties prefiled testimony relating to the Page Brook Cedar Swamp.

In June 2000, parties filed supplemental proposed findings of fact and conclusions of law.

In a June 2, 2000 Memorandum of Decision, the Board denied Nova Kim's Petition for Adjoiner Party Status.

On June 7, 2000, the Board conducted a site visit to the Page Brook Cedar Swamp, observed a noise demonstration and convened a fourth public hearing day in this matter.

In June 2000, parties filed supplemental evidence, additional supplemental findings of fact and conclusions of law and closing statements.

On June 21, 2000, RNKP moved that the public hearing be reopened.

In a June 29, 2000 Memorandum of Decision, the Board ordered Permittees to file and serve additional documents including lease and purchase agreements with surrounding neighbors, Appendix A-1 through A-7 of the Sheffield Quarry Operation and Maintenance Manual, and the Amended Roadway Agreement with the Town of Glover.

On July 13, 2000, Permittees filed documents pursuant to the Board's June 29, 2000 Memorandum of Decision. In July, 2000, parties filed responses to these documents. On August 3, 2000, Permittees filed a letter replying to the responses.

In a July 20, 2000 Memorandum of Decision, the Board denied RNKP's Motion to Reopen the Hearing.

On July 27, 2000, RNKP filed its response to the documents filed by Permittees in response to the Board's June 29, 2000 Memorandum of Decision.

In an August 2, 2000 Memorandum of Decision, the Board on its own motion moved to admit additional evidence.

In an August 2, 2000 Chair's Preliminary Ruling, Chair Harding supplemented the record in this matter with testimony which was not properly recorded during the fourth public hearing day.

On August 4, 2000, Permittees filed an Engineering Certification that all required road improvements had been completed.

In an August 7, 2000 Memorandum to Parties, Chair Harding approved Permittees' Engineering Certification.

On August 15, 2000, RNKP filed a response to the Board's own motion to admit evidence and comments on unrecorded testimony supplemented within Chair Harding's August 2, 2000 Chair's Preliminary Ruling.

In a September 28, 2000 Memorandum of Decision, the Board admitted additional evidence, incorporated RNKP's comments/supplements concerning testimony presented at the public hearing that was not recorded and denied Permittees' request to strike replies

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relating to Permittees' agreements with residents and a map identifying the residents locations.

After recessing the hearing on June 7, 2000, the Board deliberated on June 28, July 19, September 20, October 18, November 8, November 29, and December 6, 2000.

APPENDIX B

GLOSSARY OF ACRONYM DEFINITIONS

| | |
|--------------------------|---|
| Act 250..... | 10 V.S.A. §§ 6001-6092 |
| ANR..... | State of Vermont Agency of Natural Resources |
| Board..... | Vermont Environmental Board |
| Commission..... | District #7 Environmental Commission |
| Conservation Grant..... | “Easement and Grant of Development Rights and Conservation Restriction” |
| dB..... | decibels |
| dB(A)..... | “A” weighted decibels |
| Decision..... | Commission’s June 23, 1999 Findings of Fact, Conclusions of Law, and Order |
| DFW..... | Department of Fish and Wildlife |
| EBR..... | Environmental Board Rule |
| EPA..... | Environmental Protection Agency |
| gpm..... | Gallons per minute |
| Greensboro deeryard..... | 1000 total acres of deer winter shelter area, 84.5 acres of deer winter sheltering habitat exists on the property is controlled by the Permittees |
| Handbook..... | Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites |
| Leq..... | Equivalent Sound Level over a period of time |
| Lmax..... | Instantaneous maximum sound level |
| mgd..... | Million gallons per day |
| MOD..... | Memorandum of Decision dated August 9, 1999 |

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|-----------------------|--|
| MSHA..... | U. S. Department of Labor, Mine Safety and Health Administration |
| NNHP..... | Non-Game and Natural Heritage Program |
| NPDES.. .. | National Pollutant Discharge Elimination System |
| NVDA.. .. | Northeast Vermont Development Association |
| O&M Manual.. .. | Permittee's Operations and Maintenance Manual |
| O&M Plan.. .. | Permittee's Operations and Maintenance Plan |
| Permit.. .. | Land Use Permit #7C 1079 |
| Permittees.. .. | Barre Granite Quarries, LLC and William and Margaret Dyott |
| PHCRO..... | Prehearing Conference Report and Order |
| Project.. .. | Reactivate and expand abandoned granite quarries located on the Dyott, Padula and LeCours properties in the Town of Sheffield, Vermont |
| Quarry..... | Granite quarries located on the Dyott, Padula, and LeCours properties in the Town of Sheffield, Vermont |
| Regional Plan.. .. | Regional Plan for the Northeast Kingdom adopted by NVDA |
| Revised Decision..... | Revised Findings of Fact, Conclusions of Law, and Order dated August 9, 1999 in response to Motion to Alter |
| Revised Permit..... | Land Use Permit #7C1079(Revised) dated August 9, 1999 |
| RNKP..... | Residents of Northeast Kingdom Preservation, Ltd. |
| Sheffield Quarry.. .. | Granite quarries located on the Dyott, Padula, and LeCours properties in the Town of Sheffield, Vermont |
| TH2..... | Town Highway #2 {also known as Sheffield Square Road in Sheffield} |
| TH28..... | Town Highway #28 |

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|-----------|--|
| TH40..... | Town Highway #40 {also known as Quarry Road} |
| TH57.. | Town Highway #57 {also known as Sheffield Square Road in Glover} |
| USBM..... | U. S. Bureau of Mines |
| VAOT..... | Vermont Agency of Transportation |
| VWR..... | Vermont Water Regulations |

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