

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
SOIL				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Soil Erosion - Sheet and Rill	Detachment and transport of soil particles caused by rainfall splash and runoff degrade soil quality.	Rill and inter-rill erosion does not exceed the Soil Loss Tolerance "T".	Tons/Acre/Year – average annual tons of erosion reduced per acre for the field or planning area/unit	RUSLE2 (or current approved NRCS erosion prediction technology) – required, target = "T" or less
Soil Erosion - Ephemeral Gully	Small channels caused by surface water runoff degrade soil quality and tend to increase in size. On cropland, they can be obscured by heavy tillage.	Surface water runoff is controlled sufficiently to stabilize the small channels and prevent reoccurrence of new channels.	Tons/Year – average annual tons of erosion reduced for the field or planning area/unit	<ul style="list-style-type: none"> • Visual assessment - required • Client Interviews – required • VT EGS Erosion Estimator (volume calculation) – required when ephemeral gullies exist
Soil Erosion - Classic Gully	Deep, permanent channels caused by the convergence of surface runoff degrade soil quality. They enlarge progressively by head cutting and lateral widening.	Surface water runoff is controlled sufficiently to stop progression of head cutting and widening.	Tons/Year – average annual tons of erosion reduced for the field or planning area/unit	Visual assessment - required Volume calculation – required if resource concern is present. Use VT EGS Erosion Estimator Aerial photo trend analysis Client Interviews Engineering Field Handbook, Chapter 10
Soil Erosion - Streambank	Accelerated loss of streambank soils restricts land and water use and management.	Landowner/operator activities do not contribute to accelerated streambank erosion. Soil loss does not exceed a level commensurate with upstream land use and normal geomorphologic processes on site.	Tons/Year – average annual tons of erosion reduced for the field or planning area/unit	VT Visual Assessment of Streambank Stability Worksheet, required, target = 7 or above , Note: If below 7, and if erosion is attributed to landowner activity, this erosion is considered a resource concern requiring treatment. VT EGS Erosion Estimator Aerial photo geomorphic analysis Engineering Field Handbook, Chapter 16 Vermont Rapid Stream Assessment; Field Protocols

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Soil Erosion - Shoreline	Soil is eroded along shorelines by wind and wave action, causing physical damage to vegetation, limiting land use, or creating a safety hazard.	Landowner/operator activities do not contribute to accelerated shoreline erosion. Shoreline erosion is stabilized to a level that does not restrict the use or management of adjacent land, water or structures.	Tons/Year – average annual tons of erosion reduced for the field or planning area/unit	Visual assessment - required Aerial photo trend analysis Volume calculation Erosion transects/pins Engineering Field Handbook, Chapter 16
Soil Erosion – Irrigation-induced	Improper irrigation water application and equipment operation are causing soil erosion that degrades soil quality.	Irrigation-induced erosion does not exceed the Soil Loss Tolerance “T”.	Tons/Acre/Year – average annual tons of erosion reduced per acre for the field or planning area/unit	Visual Assessment – required NRCS National Irrigation Guides
Soil Erosion - Mass Movement	Soil slippage, landslides, or slope failure, normally on hillsides, result in large volumes of soil and rock movement.	Shallow slumps, slides, or slips are prevented or minimized so that the mass movement of earth material does not exceed naturally occurring rates.	Tons/Year – average annual tons of erosion reduced for the field or planning area/unit	<ul style="list-style-type: none"> • Visual assessment – required • Client Interviews - required • Aerial photo trend analysis • Volume calculation
Soil Erosion – Road, road sides and Construction Sites	Soil loss occurs on areas left unprotected during or after road building and/or construction activities.	Sites are adequately protected from soil loss during and after road building and construction activities.	Tons/Year – average annual tons of erosion reduced for the field or planning area/unit	<ul style="list-style-type: none"> • Visual assessment – required • Volume Calculation • RUSLE2 (or current approved NRCS erosion prediction technology)
Soil Condition - Organic Matter Depletion	Soil organic matter has or will diminish to a level that degrades soil quality.	Soil Conditioning Index is positive.	Soil Conditioning Index improvement – positive improvement in index for the field or planning area/unit	<ul style="list-style-type: none"> • Soil Conditioning Index – required, target = positive score • Soil Quality Kit • Soil testing and analysis
Soil Condition - Compaction	Compressed soil particles and aggregates caused by mechanical compaction adversely affect plant-soil-moisture relationships.	Mechanically compacted soils are renovated sufficiently to restore plant root growth and/or water movement.	Non Measurable	<ul style="list-style-type: none"> • Client Interviews - required (if identified as a potential concern, use other available tools for further analysis, example: dial penetrometer.) • Visual assessment of plant root systems • Soil probe • Bulk density test-Soil Quality Kit • Dial penetrometer

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Soil Condition - Contaminants - Salts and Other Chemicals	Inorganic chemical elements and compounds such as salts, selenium, boron, and heavy metals restrict the desired use of the soil or exceed the soil buffering capacity.	Salinity levels cause less than a 10% decrease in plant yield. Other contaminants do not exceed plant tolerances or are below toxic levels for plants or animals.	Electroconductivity (EC) – average reduction in EC for the field or planning area/unit	<ul style="list-style-type: none"> • Client Interviews - required • Soil test • Soil Quality Kit- EC meter • Farm*A*Syst assessment
Soil Condition - Contaminants - Residual Pesticides	Residual pesticides in the soil have an adverse effect on non-targeted plants and animals.	Pesticides are applied, stored, handled, disposed of, and managed so that residues in the soil do not adversely affect non-targeted plants and animals. Pesticides are applied according to the pest management standard (595) utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies, to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.	Non Measurable	<p>Client Interviews – required VT NRCS Worksheet # 2– required, target = average score greater than 2.5, however any individual ranking (row) with a score of 2 or less must be further analyzed with a final decision documented</p> <p>Pest Management Plan required Visual assessment, including Pest Scouting WIN-PST Soil test Plant and animal tissue test</p>
Soil Condition - Damage from Sediment Deposition	Sediment deposition damages or restricts land use/management or adversely affects ecological processes.	Sediment deposition is sufficiently reduced to maintain desired land use/management and ecological processes.	Acres/Year – average annual acres of sediment deposition reduced for the field or planning area/unit	<p>Visual assessment – required Volume calculation RUSLE2 (or current approved NRCS erosion prediction technology) Plant and animal community assessment</p>

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²Water Quantity - Excessive Seepage	Subsurface water oozing to the surface restricts land use and management.	Subsurface water is managed to limit periods of saturation that are unfavorable to the present or intended land use. Management complies with wetland policies.	Acres/Year – average annual acres of seep reduced for the field or planning area/unit	Visual Assessment (physical presence of water, prevalence of hydrophytic vegetation, etc.) - required Client interview - required Aerial photography Soil Survey
Water Quantity - Excessive Runoff, Flooding, or Ponding	The land becomes inundated restricting land use and management.	Excess water amounts and/or rates of flow are controlled consistent with desired present or intended land use goals and wetland policies.	Non Measurable	<ul style="list-style-type: none"> • Visual assessment - required • Client interview - required • Stream Visual Assessment Protocol – as necessary • National Engineering Handbook (EFH – chapter 2 and 3) • Hydrologic models, e.g. HECRAS, TR-20, TR-55 Aerial photography <ul style="list-style-type: none"> • Soil Survey
Water Quantity - Excessive Subsurface Water	Water saturates upper soil layers restricting land use and management.	Subsurface water is managed to limit periods of saturation compatible with the present or intended land use and wetland policies.	Non Measurable	<ul style="list-style-type: none"> • Client interview - required • Visual Assessment – required (if drainage is chosen as a planning alternative) • Visual assessment of soil cores and coring holes • Soil Survey • Plant quality and quantity measurements • National Engineering Handbook, Part 650 (EFH-Chapter 14) Aerial photography
Water Quantity - Drifted Snow	Wind-blown snow forms deposits and accumulates around and over surface structures restricting ingress, egress and conveyance of humans and animals.	Snowdrifts are reduced or prevented to allow ingress, egress, and conveyance of humans and animals.	Non Measurable	Client interview – required Visual assessment of landscape features – Required (if client identifies this resource concern) Depth and area measurements

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¹ Water Quantity - Inadequate Outlets	Natural or constructed outlets are too small to remove excess water in a timely manner.	Outlets are designed, installed, upgraded or maintained to adequately convey water for present or intended uses. Management complies with wetland policies.	Non Measurable	Visual assessment - required Client interview - required National Engineering Handbook, part 650 (EFH – Chapters 2,3,7) Hydrologic models, e.g. HECRAS, TR-20, TR-55
Water Quantity - Inefficient Water Use on Irrigated Land	Limited water supplies are not optimally utilized.	Land and water management is planned and coordinated to provide optimal use of natural and applied moisture.	Acre-inches/ Acre/Year – average annual acre-inches of water per acre used more beneficially for the field or planning area/unit	Visual assessment - required Client Interview - required National Engineering Handbook, Part 652, Irrigation Guide Crop quality and quantity measurements
² Water Quantity - Inefficient Water Use on Non-irrigated Land	Natural moisture is not optimally utilized.	Management provides optimum use of natural moisture for the present or intended land use.	Acre-Inches/ Acre/Year – average annual acre-inches of water per acre used more beneficially for the field or planning area/unit	<ul style="list-style-type: none"> • Visual assessment - required • Client Interview - required • Plant or animal quality and quantity measurements
¹ Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition	Sediment deposits in ditches, canals, culverts, and other water conveyances reduce the desired flow capacity.	Conveyance structures are upgraded or maintained to adequately convey water for present or intended uses.	Cubic yards – volume of sediment in cubic yards removed to maintain water conveyances for the field or planning area/unit	<ul style="list-style-type: none"> • Visual assessment - required • Client interview - required • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7) • Hydrologic models, e.g., HECRAS, TR-20, TR-55
² Water Quantity -Reduced Storage of Water Bodies by Sediment Accumulation	Sediment deposits in water bodies reduce the desired volume capacity.	Water bodies and contributing source areas are treated to allow sufficient water storage for present and intended uses.	Acre-Inches/Year – average annual reduction in acre-inches in sediment deposition within water bodies for the field or planning area/unit	Visual assessment - required Client Interview - required Depth and area measurements National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7,11)

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Water Quality - Harmful Levels of Pesticides in Groundwater	Residues resulting from the use of pest control chemicals degrade groundwater quality.	Pesticides are applied, stored, handled, disposed of, and managed so that groundwater uses are not adversely affected. Pesticides are applied according to the pest management standard (595) utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies, to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.	Non Measurable	VT NRCS Worksheet # 2 – required, target = score greater than 2.5 Pest Management Plan required WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) – required when pesticides are used Vadose zone and groundwater chemical sampling and assay, including Well Testing
Water Quality - Excessive Nutrients and Organics in Groundwater	Pollution from natural or human induced nutrients such as N, P, and S (including animal and other wastes) degrades groundwater quality.	Nutrients and organics are stored, handled, disposed of, and applied such that groundwater uses are not adversely affected. The management of the amount, source, placement, form and timing of the application of nutrients and other soil amendments will be done according to the nutrient management standard (590).	Non Measurable	VT NRCS Worksheet #7 – required, target = score greater than 2.5 , however any individual ranking (row) with a score of 2 or less must be further analyzed with a final decision documented Client Interview - required Nitrogen Leaching Index – required Farm*A*Syst Worksheet # 3 National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook Vadose zone and groundwater chemical/particle sampling and assay, including Well Testing Current approved Nutrient Management Software Soil Tests Plant tissue tests SEEPAGE model

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Water Quality - Harmful Levels of Heavy Metals in Groundwater	Natural or human induced metal pollutants present in toxic amounts degrade groundwater quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Vadose zone and groundwater chemical sampling and assay, including Well Testing • State permits obtained (NPDES) • Visual observation of plant growth
Water Quality - Harmful Levels of Pathogens in Groundwater	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades groundwater quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Non Measurable	<ul style="list-style-type: none"> • VT NRCS Worksheet # 7 – required, target = score greater than 2.5, however any individual ranking (row) with a score of 2 or less must be further analyzed with a final decision documented • Farm*A*Syst Worksheet # 6 – required to be provided for client’s self-assessment • Client Interview - required • Visual Assessment – required (including calf-rearing areas) • Vermont NRCS Worksheet - <i>Assessment of Water and Air Quality Concerns Associated With On-Farm Livestock Mortality Handling</i> - required (if farmer does or will practice on-farm livestock mortality disposal) • Vadose zone and groundwater chemical sampling and assay, including Well Testing • State and local standards for animal disposal • Ag. Waste Mgt. Field Handbook, Chap. 16

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Water Quality - Harmful Levels of Petroleum in Groundwater	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade groundwater quality.	Petroleum products are used, stored, handled, disposed of, and managed such that groundwater uses are not adversely affected.	Non Measurable	<ul style="list-style-type: none"> • Farm*A*Syst Worksheet # 4 – required to be provided for client’s self-assessment • Vadose zone and groundwater chemical sampling and assay, including Well Testing • Visual Assessment • Client interview
Water Quality - Harmful Levels of Pesticides in Surface Water	Pest control chemicals present in toxic amounts degrade surface water quality.	Pesticides are applied, stored, handled, disposed of, and managed such that surface water uses are not adversely affected. Pesticides are applied according to the pest management standard (595) utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies, to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.	Non Measurable	<ul style="list-style-type: none"> • VT NRCS Worksheet # 2 – required, target = score greater than 2.5, however any individual ranking (row) with a score of 2 or less must be further analyzed with a final decision documented • Pest Management Plan required • WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) – required when pesticides are used • Surface water chemical sampling assay

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Water Quality - Excessive Nutrients and Organics in Surface Water	Pollution from natural or human induced nutrients such as N, P, and S (including animal and other wastes) degrades surface water quality.	Nutrients and organics are stored, handled, disposed of, and managed such that surface water uses are not adversely affected. The management of the amount, source, placement, form and timing of the application of nutrients and other soil amendments will be done according to the nutrient management standard (590).	Non Measurable	<ul style="list-style-type: none"> • P Screening Tool and P-Index – required, target = low to mod. risk, or appropriate application rate • Client Interview - required • Visual Assessment • Stream Visual Assessment Protocol (SVAP) • National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook • Surface water chemical/particle sampling and assay • Current Approved Nutrient Management Software • Manure Tests • Soil and Plant tissue tests • Water Quality Indicators Guide (2A, 2B1 or 2B2) as appropriate) - Target = good or excellent rating • VT Waste Sizing Calculator • AWM2
Water Quality - Excessive Suspended Sediment and Turbidity in Surface Water	Excessive concentrations of mineral or organic particles, algae, or organic stains degrade surface water quality.	Delivery or suspension of mineral and organic particles, and excessive algae growth or organic stains, is managed such that surface water uses are not adversely affected.	Non Measurable	<ul style="list-style-type: none"> • Sediment Indicators for Cropland – VT Modified Field Sheet IB – required, target rating of good or excellent • Stream Visual Assessment Protocol (SVAP) – required if VT Sheet (1B) is not used, target = good or excellent rating • Water Quality Indicators Guide – Surface Waters, Field Sheet 1A • Visual assessment • Client interview • Surface water chemical/particle sampling and assay • Engineering Field Handbook, Chap. 10

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Water Quality - Harmful Levels of Heavy Metals in Surface Water	Natural or human induced metal pollutants are present in toxic amounts that degrade surface water quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed so that surface water uses are not adversely affected.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Surface water chemical sampling and assay • Visual Assessment / Observation • State Permit obtained (NPDES)
Water Quality - Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality.	Use and management of land and water are coordinated to minimize impacts on surface water temperatures. This criteria only applies to streams less than 50 feet in width.	Non Measurable	<ul style="list-style-type: none"> • Vermont Visual Assessment of Stream Temperature Worksheet - Required, Target = score of 7 or higher • Surface water temperature sampling and assay • On-Site Visual Assessment
Water Quality - Harmful Levels of Pathogens in Surface Water	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades surface water quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed, including livestock access, such that surface water uses are not adversely affected.	Non Measurable	<ul style="list-style-type: none"> • Visual Assessment – required (including calf-rearing areas) • Client Interview - required • Vermont NRCS Worksheet - <i>Assessment of Water and Air Quality Concerns Associated With On-Farm Livestock Mortality Handling</i> - required (if farmer does or will practice on-farm livestock mortality disposal) • Water Quality Indicators Guide (2A, 2B1 or 2B2) as appropriate) - Target = good or excellent rating • Surface water pathogen sampling and assay • State and local standards for animal disposal • Animal Waste Management Field Handbook

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Water Quality - Harmful Levels of Petroleum in Surface Water	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade surface water quality.	Petroleum products are used, stored, handled, and disposed of such that surface water uses are not adversely affected.	Non Measurable	Farm*A*Syst Worksheet # 4 – required to be provided for client’s self-assessment Visual Assessment Client Interview Surface water chemical sampling and assay
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AIR				

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Air Quality - Particulate matter less than 10 micrometers in diameter (PM 10)	Particulate matter less than 10 micrometers in diameter (principally soil particles and smoke) are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations reduce PM-10 emissions into the atmosphere and comply with PM 10 requirements of the State Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Pounds/Year – average annual pounds of reduced PM-10 emissions for the field or planning area/unit	<ul style="list-style-type: none"> • Visual Assessment - required • Client Interview - required • Specific guidelines contained in State Implementation Plan; or other approved NRCS tool. • Air quality analysis
Air Quality - Ammonia (NH3)	Animal waste and inorganic commercial fertilizers emit ammonia that contributes to odor, is a PM2.5 precursor, and contributes to acid rain.	Land use and management operations reduce NH3 emissions into the atmosphere and comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and local regulations.	Pounds/Year – average annual pounds of reduced NH3 emissions for the field or planning area/unit	<ul style="list-style-type: none"> • Client Interview – required, target = on tilled cropland, manure will be incorporated immediately (within 4 hours) whenever possible. • Approved NRCS technical guidance and tools • Visual Assessment (required if observed during site visit) • Olfactory assessment
Air Quality - Chemical Drift	Materials applied to control pests drift downwind and contaminate/injure non-targeted fields, crops, soils, water, animals and humans.	Land use and management operations reduce chemical drift into the atmosphere and comply with all applicable Federal, Tribal, State, and Local regulations, and applicable label directions.	Non Measurable	<ul style="list-style-type: none"> • Client Interview – required, target = follow label directions • Visual Assessment (required if observed during site visit) • Approved NRCS technical guidance and tools • Application records • Weather Data

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Air Quality - Objectionable Odors	Land use and management operations produce offensive smells.	Odor-producing facilities and activities are planned and sited to mitigate potential nuisance impacts and meet all applicable Tribal, State, and local regulations.	Non Measurable	<ul style="list-style-type: none"> • Client Interview – required • Vermont NRCS Worksheet - <i>Assessment of Water and Air Quality Concerns Associated With On-Farm Livestock Mortality Handling</i> - required (if farmer does or will practice on-farm livestock mortality disposal) • Olfactory assessment • Agricultural Waste Management Field Handbook (AWMFH) • State and local standards for animal disposal
Air Quality - Reduced Visibility	Sight distance is impaired due to airborne particles (principally smoke) causing unsafe conditions and impeded viewing of natural vistas especially in Class I viewing areas (primarily national parks and monuments).	Land use and management operations reduce particle emission into the atmosphere and comply with all applicable Federal, Tribal, State, and local regulations including State and local smoke and/or burn management plans.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Regional air partnership recommendations and/or state guidance for smoke management • Visual Assessment
² Air Quality - Undesirable Air Movement	Wind velocities (too little or too much) reduce animal or plant productivity, impact human comfort and increase energy consumption.	Land use and management operations mitigate excessive or deficient air movement.	Non Measurable	Client Interview - required Visual assessment Anemometers
² Air Quality - Adverse Air Temperature	Air temperatures (too cold or too hot) reduce animal or plant productivity, impact human comfort and increase energy consumption.	Land use and management operations mitigate temperature extremes.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Chill factor indices; heat indices • Air temperature assessment

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<p>Plants not adapted or suited</p>	<p>Plants are not adapted and/or suited to site conditions or client objectives.</p>	<p>Selected plants are adapted to the soil and climatic conditions or the site is modified to make it suitable for the desired plants. Plants are sustainable, do not negatively impact other resources, and meet client objectives. For specific land uses, where clients' objectives are not being met, additional criteria apply: Cropland: A healthy stand with vigorous growth produces at least 75% of anticipated yield from soil fact sheets. Pastureland: Plants on or planned for the site have a pasture condition/trend score greater than 20 using VT Pasture Condition Score Sheet. Hayland: A healthy stand with vigorous growth produces at least 75% of anticipated yield from soil fact sheets. Forestland/Agroforest: Plants on or planned for the site are listed in Ecological Site Descriptions (ESD) or other natural plant community descriptions.</p>	<p>Non Measurable</p>	<ul style="list-style-type: none"> • Client interview – required for all land uses • Soil Fact Sheets – required for cropland and hayland. • Vermont Pasture Condition Score Sheet – required for pastures, target = total pasture condition/trend score greater than 20 • Wetland, Woodland, Wildland: A Guide To The Natural Communities of Vermont 2000 – required for forestland • On-site investigation and yield records • Forage Suitability Groups (FSG) – (under development) • Vermont Grazing Plan (Pasture Management Worksheet) • PLANTS database • VEGSPEC • Seeding and Planting Guide • Plant hardiness zone map • Soil pH, drainage class, and electrical conductivity (EC) suitability ranges. • Soil interpretations – Section II of eFOTG • Local agronomy guides • University Extension Service information • Ecological Site Descriptions (ESD) and other plant community descriptions • NRCS Discipline Manuals/handbooks • Silvics of North America • Consultation with County Forester
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<p>Plant – Condition – Productivity, Health and Vigor</p>	<p>Plants do not produce the yields, quality, and soil cover to meet client objectives.</p>	<p>Selected plants on or planned for the site are sufficiently productive to meet or exceed client needs. For specific land uses, where clients' objectives are not being met, additional criteria apply: Cropland: A healthy stand with vigorous growth produces at least 75% of anticipated yield from soil fact sheets. Pastureland: Plants on or planned for the site have a pasture condition/trend score greater than 20 using VT Pasture Condition Score Sheet. Hayland: Forage yields at least 75% of anticipated yield from soil fact sheets Forestland (if primary purpose is for timber production and Agroforestry): Forests consist of healthy stands with vigorous growth having a stand density within the optimum range of stocking on a stems/acre basis. Plants chosen for agro-forest applications are appropriate for the intended purpose and for site conditions. Forestland (if primary purpose is for wildlife habitat: see wildlife criteria)</p>	<p>Non Measurable</p>	<ul style="list-style-type: none"> • Client interview – required for all land uses • Soil Fact Sheets – required for cropland, pastureland and hayland. • Vermont Pasture Condition Score Sheet – required for pastures, target = total pasture condition/trend score greater than 20 • Stocking Rate Guides of desired species (USFS Stocking Guides and other appropriate guides for the northeast) as determined by a private forester as a component of a forest management plan– required for forestland managed for timber production, target = within optimum stocking rate range for species • Visual Assessment • On-site investigation and yield records • Forage Suitability Groups (FSG) – (under development) • Local agronomy guides • Plant tissue and harvest analysis • Crop scouting • NRCS discipline manuals and handbooks • National Range and Pasture Handbook • Ecological Site Descriptions • Electronic probe calibrated for the forage mixture, or a clip and weigh sampling procedure. <p>Plot sampling of understory vegetation Soil survey reports Soil Testing</p>
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				Crop and soil yield comparison in the vicinity Keys for disease and insect symptoms Keys for nutrient deficiencies, toxicities, and other conditions <ul style="list-style-type: none"> • Consultation with County Forester • Forest Management Plan
Plant Condition – Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act	The site includes individuals, habitat or potential habitat for one or more plant species listed or proposed for listing under the Endangered Species Act.	Populations and/or habitats of Threatened and Endangered plant species are managed to maintain, increase or improve current populations, health, or sustainability.	Non Measurable	Client interviews - required Available State and Federal GIS data (ex. Endanger GIS layer) – required (if a record is found, contact with VT Nongame and Natural Heritage is required) Inventory site with VT Nongame and Natural Heritage General Manual, 190, Part 410 State threatened & endangered species list (VT F&W Nongame) Federal and state endangered species rules and regulations Consultation with appropriate federal, state, and local agencies/groups PLANTS Website 'Wetland, Woodland, Wildland: A Guide To The Natural Communities of Vermont 2000'

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PLANTS				

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Plant Condition – Threatened or Endangered Plant Species, Declining Species, Species of Concern	The site includes individuals, habitat or potential habitat for one or more plant species that the State or Tribal government with jurisdiction, or the State Technical Committee, has identified as a species of concern. This includes plant species which have been identified as candidates for listing under the Endangered Species Act.	Populations and/or habitats of plant species of concern are managed to maintain, increase or improve current populations, health, or sustainability.	Non Measurable	<ul style="list-style-type: none"> • Client interviews - required • Available State and Federal GIS data (ex. Endanger GIS layer) – required (if a record is found, contact with VT Nongame and Natural Heritage is required) • Inventory site with VT Nongame and Natural Heritage • General Manual, 190, Part 410 • State threatened & endangered species list (VT F&W Nongame) • Federal and state endangered species rules and regulations • Consultation with appropriate federal, state, and local agencies/groups • PLANTS Website • 'Wetland, Woodland, Wildland: A Guide To The Natural Communities of Vermont 2000'
Plant Condition - Noxious and Invasive Plants	The site has noxious or invasive plants present.	The site is managed to control noxious and invasive plants and to minimize their spread when the plants interfere with the intended use of the land.	Non Measurable	<ul style="list-style-type: none"> • Client interviews - required • Inventory site – required • Consultation with appropriate federal, state, and local agencies/groups (ex. TNC) • VT State noxious weed list • PLANTS Website • The Nature Conservancy—Invasives on the Web (Control Methods, etc.) • Websites: <ul style="list-style-type: none"> http://www.invasivespecies.gov tncweeds.ucdavis.edu/links.html

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
PLANTS				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Plant Condition - Forage Quality and Palatability	Plants do not have adequate nutritive value or palatability for the intended use.	Forage plants are managed to produce the desired nutritive value and palatability for the intended use.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Visual assessment • NIRS Forage Quality Analysis (NUTBAL) • Plant tissue analysis
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Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
ANIMALS				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Fish and Wildlife - Inadequate Food	Quantity and quality of food is unavailable to meet the life history requirements of the species or guild of species of concern.	Food availability meets the life history requirements of the species or guild of species of concern. (Guilds are groups of species in a community that exploit the same set of resources in a similar manner. Example: Insect eating birds in grasslands.)	Non Measurable; based on habitat evaluation guide	<ul style="list-style-type: none"> • Vermont Wildlife Habitat Evaluation Worksheet – required, target score = .5 for all land covers, .7 if wildlife is the primary goal for that land cover • Visual assessment • Inventory of food species • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Consultation with appropriate federal, state, and local agencies/groups • Habitat Guides (Vermont Landowner's Guide, WHMI Leaflets, etc.)
Fish and Wildlife – Inadequate Cover/Shelter	Cover/shelter for the species or guild of species of concern is unavailable or inadequate. This includes lack of hiding, thermal, and/or refuge cover.	The ecosystem or habitat types support the necessary plant species in adequate diversity, abundance, and physical structure; and the connectivity of fish and wildlife cover is adequate to support, over time, the species or guild of species of concern. (Example: Cavity trees for wildlife, early successional habitat for dependent species, wood or rock structure in creeks).	Non Measurable; based on habitat evaluation guide	<ul style="list-style-type: none"> • Vermont Wildlife Habitat Evaluation Worksheet – required, target score = .5 for all land covers, .7 if wildlife is the primary goal for that land cover • Visual assessment • Inventory of cover/shelter • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Consultation with appropriate federal, state, and local agencies/groups • Habitat Guides (Vermont Landowner's Guide, WHMI Leaflets, etc.) • Stream Visual Assessment Protocol

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
ANIMALS				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Fish and Wildlife – Inadequate Water	The quantity and quality of water is unacceptable for the species or guild of species of concern.	The quantity and quality of water meets the life history requirements of the species or guild of species of concern.	Non Measurable; based on habitat evaluation guide	<ul style="list-style-type: none"> • Vermont Wildlife Habitat Evaluation Worksheet – required, target score = .5 for all land covers, .7 if wildlife is the primary goal for that land cover • Visual Assessment • Client interview • Surface water dissolved oxygen sampling and assay • Stream Visual Assessment Protocol • Habitat Suitability Index - model for target species • Inventory of water supplies • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Consultation with appropriate federal, state, and local agencies/groups
Fish and Wildlife – Inadequate Space	Lack of required area disrupts the life history of the species or guild of species of concern.	Area is adequate to meet life history requirements of the species or guild of species of concern. (Examples: staging areas for rest and feeding, areas for breeding, migratory movement corridors.) (Example: sufficient grassland size for grassland birds)	Non Measurable; based on habitat evaluation guide	<ul style="list-style-type: none"> • Vermont Wildlife Habitat Evaluation Worksheet – required, target score = .5 for all land covers, .7 if wildlife is the primary goal for that land cover • Client interview • Visual assessment • Stream Visual Assessment Protocol • Inventory of space/areas • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Consultation with appropriate federal, state, and local agencies/groups • Habitat Guides (Vermont Landowner's Guide, WHMI Leaflets, etc.)

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
ANIMALS				

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Fish and Wildlife – Habitat Fragmentation	Habitat has insufficient structure, extent, and connectivity to provide ecological functions and/or achieve management objectives.	Fish and wildlife habitats are connected and are maintained sufficiently to support the species or guild of species of concern. (Example: Forest with multiple vegetative strata, corridors linking habitat, ecotone or “soft edge” connect habitats).	Non Measurable; based on habitat evaluation guide	Vermont Wildlife Habitat Evaluation Worksheet – required, target score = .5 for all land covers, .7 if wildlife is the primary goal for that land cover Client interview Visual Assessment Aerial photo analysis Stream Visual Assessment Protocol Aquatic and terrestrial habitat evaluation procedures Consultation with appropriate federal, state, and local agencies/groups Habitat Guides (Vermont Landowner’s Guide, WHMI Leaflets, etc.)
Fish and Wildlife - Imbalance Among and Within Populations	Populations are not in proportion to available quantities and qualities of food (plants, predator/prey), cover/shelter, water, and space and other life history requirements.	Land and water use and management are consistent with direct population management activities conducted by fish and wildlife agencies.	Non Measurable; based on habitat evaluation guide	Client Interview – required Visual Assessment - required Fish and wildlife agency guidance and protocols Consultation with appropriate federal, state, and local agencies/groups

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
ANIMALS				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Fish and Wildlife – Threatened and Endangered Fish and Wildlife Species – Fish and Wildlife Species Listed or Proposed for Listing under the Endangered Species Act	The site includes individuals, habitat or potential habitat for one or more fish or wildlife species listed or proposed for listing under the Endangered Species Act.	Populations and/or habitats of Threatened and endangered fish and wildlife species and/or habitats they occupy are managed to maintain, increase or improve current populations, health, or sustainability.	Non Measurable	Client interview – required Available State and Federal GIS data (ex. Endanger GIS layer) – required (if a record is found, contact with VT Nongame and Natural Heritage is required) Inventory of presence/absence of T&E species with VT Nongame and Natural Heritage General Manual, 190, Part 410 State threatened & endangered species list (VT F&W Nongame) Fish and wildlife recovery plans Federal and state endangered species rules and regulations Consultation with appropriate federal, state, and local agencies/groups Fish and wildlife agency web sites
Fish and Wildlife – Threatened and Endangered Species : Declining Species, Species of Concern	The site includes individuals, habitat or potential habitat for one or more fish or wildlife species that the State or Tribal government with jurisdiction, or the State Technical Committee, has identified as a species of concern. This includes fish and wildlife species that have been identified as candidates for listing under the Endangered Species Act.	Populations and/or habitats of fish and wildlife species of concern are managed to maintain, increase or improve current populations, health, or sustainability.	Non Measurable	Client interview – required Available State and Federal GIS data (ex. Endanger GIS layer) – required (if a record is found, contact with VT Nongame and Natural Heritage is required) Inventory of presence/absence of T&E species with VT Nongame and Natural Heritage General Manual, 190, Part 410 State threatened & endangered species list (VT F&W Nongame) Fish and wildlife recovery plans Federal and state endangered species rules and regulations Consultation with appropriate federal, state, and local agencies/groups Fish and wildlife agency web sites

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
ANIMALS				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Domestic Animals – Inadequate Quantities and Quality of Feed and Forage	Total feed and forage are insufficient to meet the nutritional and production needs of the kinds and classes of livestock.	Feed and forage, including supplemental nutritional requirements, are provided to meet production goals for the kinds and classes of livestock. Native grazers are factored into the total feed and forage balance computations.	Non Measurable	<ul style="list-style-type: none"> • Client Interview – required • Approved Animal Feed Balance Worksheets • Measured inventory • National Range and Pasture Handbook • Grazing Lands Application (GLA) software • Nutritional Balance Program (NUTBAL) • NIRS/Nutritional Balance Profile Program (NUTBAL Pro) • Forage quality laboratory analysis • Prescribed Grazing Job Sheet • Vermont Grazing Plan Spreadsheet
² Domestic Animals – Inadequate Shelter	Livestock are not protected sufficiently to meet the production goals for the kinds and classes of livestock.	Artificial and/or natural shelter is provided to meet production goals for the kinds and classes of livestock.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Visual assessment - required • Inventory of facilities and their capacities • Aerial photo analysis • National Range and Pasture Handbook
Domestic Animals – Inadequate Stock Water	The quantity, quality and distribution of drinking water are insufficient to meet the production goals for the kinds and classes of livestock.	Sufficient water of acceptable quality is provided and adequately distributed to meet production goals for the kinds and classes of livestock. To reduce potential for water contamination, watering facilities are constructed or modified to minimize mortality to wildlife.	Non Measurable	<ul style="list-style-type: none"> • Client Interview - required • Visual assessment - required • Inventory of distribution needs • Aerial photo analysis • National Range and Pasture Handbook

Vermont State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	State Quality Criteria	Measurement Units	Assessment Tools for Quality Criteria Evaluation
ANIMALS				

Note: Listed tools will be used when necessary to adequately assess the resource concern, unless they are listed as required.

Domestic Animals - Stress and Mortality	Animals exhibit illness or death from disease, parasites, insects, poisonous plants, or other factors.	Land and water use and management are consistent with activities conducted to alleviate stress and mortality factors.	Non Measurable	<ul style="list-style-type: none"> • Client Interview – required • Visual assessment - required • Vermont NRCS Worksheet - <i>Assessment of Water and Air Quality Concerns Associated With On-Farm Livestock Mortality Handling</i> - required (if farmer does or will practice on-farm livestock mortality disposal) • Animal health/mortality alerts • State and local biosecurity protocols • State and local standards for animal disposal
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¹ Resource concerns for these criteria should be documented and alternatives offered by the conservation planner, however, the producer is not required to adopt the alternatives in order to achieve RMS plan level unless an adjacent landowner's property will be negatively impacted.

² Resource concerns for these criteria should be documented and alternatives offered by the conservation planner, however, the producer is not required to adopt the alternatives in order to achieve RMS plan level. These resource concerns have minimal environmental impacts in Vermont. The producer will base a decision regarding these concerns upon economic and farm management considerations as well as regulatory requirements.