

Chapter 6 – Natural Resources

Goals, Policies, and Recommendations: Groundwater

Goal

1. The quality and quantity of groundwater resources are maintained or enhanced.

Policies

1. Commercial water withdrawal must be ~~carefully~~ monitored by the State and shall not lower aquifers and impact surface waters.
2. The ~~State should~~ Agency of Natural Resources will carefully review land use activities that potentially threaten groundwater quality, including the following:
 - a. Underground storage ~~tanks~~ for petroleum or other hazardous substances. ~~Permits are required from the State for most underground storage tanks containing gasoline or heating oil; however, exceptions are made for fuel oil storage tanks used for on-premises heating purposes and residential tanks storing motor fuel.~~
 - b. Pesticide and herbicide applications on agricultural land, golf courses, resorts, residential properties, and railroad and utility rights-of-way.
 - c. Junk yards and solid waste disposal sites.
- ~~3. Groundwater contamination from commercial and industrial uses must be remedied by the parties causing such contamination with assistance from regional, state, and federal sources when responsible and viable parties cannot be found~~
- ~~4.3.~~ It is the policy of TRORC to permanently protect Class I groundwater. These are high-quality resource areas mapped by the Agency of Natural Resources and ~~so~~ classified by the Secretary as currently being used or suitable for a public water supply source. ~~It is~~ undertaking the above, regional land use policy and decision making should limit human activities in these areas.

Recommendations

1. TRORC will work with the Agency of Natural Resources and with towns to identify and map aquifers and aquifer protection areas to determine critical areas for protection of drinking water supplies.
2. Towns should ~~are encouraged to~~ develop Source Protection Plans for public water supplies or aquifers that have been identified. Such programs may include limiting or prohibiting development and other land uses within wellhead or aquifer protection areas.
3. The Legislature must keep the Petroleum Cleanup Fund at a level sufficient to meet all cleanup needs, including enforcement.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

4. TRORC will work with the Agency of Natural Resources, town officials, and others on educational outreach about the proper use of floor drains and local spill response capacity.
5. TRORC will coordinate with the Agency of Natural Resources, other state agencies, and local officials in the assessment, cleanup, and redevelopment of contaminated (brownfield) sites.
6. TRORC will assist towns when requested to identify, monitor, and protect important local groundwater resources as part of their planning programs. ~~Aquifers, public water supplies, and recharge areas should be mapped whenever possible in order to determine critical areas for protection of drinking water supplies.~~

Goals, Policies, and Recommendations: Surface Water

Goals

1. ~~Surface water quality and quantity are for the purposes of recreation, aquatic habitat, and drinking water is improved.~~
2. A coordinated program for surface water quality and quantity is supported at municipal, basin, and regional levels.
3. High-quality waters, including fragile high-altitude waters, and the ecosystems they sustain are protected.

Policies

1. Maintenance or enhancement of recreation, fisheries, wildlife habitats, and quality aesthetics are high priorities. Water use decisions at all levels of government and the private sector shall protect these resources and their existing and desired uses and conditions.
2. Within each of the watershed basins in the Region ~~(see Figure 6-1)~~, state, regional, and local decisions relating to surface water must reflect:
 - a. The public's high interest in the use and enjoyment of rivers and streams for recreation, fishing, and aesthetics
 - b. Existing and projected growth rates for towns in each watershed, including towns within the Region, towns bordering the Region, and towns within each specific basin
 - c. Present state water quality management plans and relevant portions of municipal and state plans
 - d. To minimize any adverse effects on water quality, fish and wildlife habitats, and adjacent land uses
 - e. Status of existing and proposed municipal and community wastewater treatment facilities, plans, and needs

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

- f. Existing water quality conditions and known public and private pollution sources
3. ~~Efforts by public and private sectors to abate pollution in the Region's rivers, streams, lakes, and ponds are required.~~ Existing water pollution problems, as identified in the Agency of Natural Resources' Basin Plans, the Water Quality Integrated Assessment (305(b) report), the 303(d) List of Impaired Waters, and the Vermont Surface Water Management Strategy shall be considered high priority for abatement.
4. Discharges to any water in the Region shall be based upon assimilative capacity studies. Allocation and use of limited assimilative capacity shall be based on the following priorities from highest to lowest:
 - a. To abate pollution from existing and possible future sources
 - b. To hold in reserve some capacity to account for any uncertainties in mathematical assimilative capacity estimates
 - c. To accommodate new growth and development that is part of a detailed and publicly reviewed and accepted growth management plan or designated growth center
5. Class A1 and A2 waters shall be protected from development and other activities that diminish their purity, natural flow, or condition.
6. Vegetated buffer strips must be maintained in riparian zones and shoreland areas surrounding streams, rivers, lakes, and ponds. ~~Rock rip rap and retaining walls should only be used to the extent necessary and when bioengineering techniques may not be adequate to prevent significant loss of land or property.~~
7. Rock rip-rap and retaining walls should only be used to the extent necessary and when bioengineering techniques may not be adequate to prevent significant loss of land or property.
- ~~7.8.~~ Upland watersheds should be maintained predominantly in forest and low impact recreation use to ensure high quality of valley streams and their tributaries.
- ~~8.~~ ~~Preservation of the natural state of streams must be encouraged by the:~~
 - ~~a. Protection of adjacent wetlands and natural areas~~
 - ~~b. Protection of natural scenic qualities~~
 - ~~c. Maintenance of existing streambank vegetation, which also supports wildlife habitat~~
 - ~~d. Proper classification that reflects the condition of high-quality waters in areas with little development~~
9. Given the statewide recreational resource value of the free-flowing White River, new hydropower development on that river shall not be constructed ~~consistent with this Plan~~, except where it can be ~~is~~ done in a "run of the river" manner that does not affect the river flow volume and does not create any significant impounding or dewatering of bypass reaches.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

- ~~10.~~ All wastewater and stormwater runoff discharges into surface waters shall comply with water quality standards as administered by the Vermont Agency of Natural Resources (24 VSA Chapter 47 and related rules).
- ~~11.~~ Municipalities must employ road maintenance techniques to prevent soil erosion and road surface deterioration. Towns need to use the procedures contained in the Vermont Better Backroads Manual (2009) and should work to implement Best Management Practices (BMPs) on hydrologically connected road segments to comply with the Municipal Roads General Permit.
- ~~12.~~10. Great River Hydro, and its subsidiaries, shall carefully maintain the ramping rates associated with its hydroelectric facilities to prevent erosion and loss of land along the streambanks of the Connecticut River.
11. Tactical Basin Plan shall identify appropriate classifications for waters, including A1 for extremely high quality waters and B1 for very high quality waters based on existing and reasonably attainable uses as directed by water quality management goals.

Recommendations

1. Municipalities need to review existing and proposed water quality classifications of surface waters within town boundaries, or within basins, to determine if classifications meet their uses and needs. Both TRORC and the Agency of Natural Resources are available to provide support.
2. Municipalities must play an active role in the basin planning process and prepare water resources elements in municipal plans that comply~~are in compliance~~ with state and federal laws.
3. The Vermont Department of Environmental Conservation's listing of threatened and impaired waters must be targeted for immediate attention by the Department.
4. Towns in the Region are encouraged to cooperate on a watershed-wide basis when planning for surface water quality and use.
5. TRORC, in cooperation with the Vermont Watershed Management Division, the Agency of Natural Resources, Vermont Local Roads Program, and the Agency of Transportation, should advise town officials on cost-effective road erosion and sediment control.
6. TRORC shall continue to participate in watershed and basin planning efforts.
7. Unless there are specific public benefits to lower classifications, the Agency of Natural Resources shall adopt the highest possible classification, water management types, and uses for water bodies based on their actual conditions and uses or that which is reasonably attainable.
8. Public and private sectors should refrain from activities that spread invasive plants such as ill-timed roadside mowing, transporting invasive plants in ditch soil, and the cleaning of mowing and earthmoving equipment after working in an infested area. Road maintenance personnel should be trained to recognize the invasive plants on the Vermont Noxious Weed Quarantine List and Watchlist.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

9. The Agency of Natural Resources and local watershed groups are encouraged to monitor water quality, and when monitoring indicates a water quality violation, to promptly locate and address the source of degradation when possible.
10. In preparation for writing any basin plans, the Agency of Natural Resources must conduct a comprehensive assessment of water quality in such basins and identify the source(s) of any known water quality problems.
11. Proper erosion control procedures shall be applied in all construction activities, and all stormwater shall be treated through natural or mechanical systems to remove nutrients and sediments and to attenuate flood flows to natural levels before any stormwater reaches streams.
12. To protect high-quality forested riparian (riverbank, streambank, or lakeshore) habitat, towns should prohibit development near these areas and regulate the disturbance of vegetation in riparian zones through general, conditional use, and/or site plan standards.
- ~~13. The Agency of Agriculture, Food, and Markets must revise the Required Agricultural Practices to manage animal uses in buffer areas.~~
13. TRORC will help Municipalities employ road maintenance techniques to prevent soil erosion and road surface deterioration to comply with the Municipal Roads General Permit.

Goals and Policies: Fisheries and Aquatic Resources

Goals

1. The water quality and quantity necessary to sustain existing aquatic ecosystems ~~communities~~ is maintained.
2. The natural diversity, population, and migratory routes of fish are maintained or improved.

Policies

1. Manmade alterations to flows must ensure downstream protection of water quality and quantity for aquatic ~~communities~~ ecosystems ~~and stream functions and consider alternatives.~~
2. The ~~design and~~ construction of dams on rivers and streams, other than the White River where it is not consistent with this Plan, ~~are~~ discouraged except when the public interest is clearly benefited and the following criteria are met:
 - a. Projects operate as “run-of-the-river” and do not affect the flow of river volume.
 - b. Fish passage and canoe portages are provided at dams.
 - c. Water quality and minimum flows are maintained.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

3. ~~Because of threats to the natural ecosystem,~~ The construction of ponds is discouraged, unless fed by groundwater and/or overland drainage. Discharges from ponds, ~~if any,~~ shall be designed to withstand a 100-year storm event and operate in a “run-of-the-river” mode.
4. In-stream ponds are discouraged on all stream segments that support fish life.
5. Permanently vegetated streamside buffer strips of at least 50 feet on small streams and 100 feet on rivers should be preserved except in those areas with dense development in connection with existing similar development such as adjacent to, or infill of, existing downtowns or village centers. This does not include agricultural activities allowed by the State of Vermont’s Required Agricultural Practices (RAPs).
6. New or replacement bridges and culverts must be adequately designed and constructed to handle stormwater, provide sediment transport, and accommodate fish and wildlife passage.
7. Bioengineered bank stabilization is the preferred method of streambank restoration. When rock armament of streambanks is necessary, efforts should be made to revegetate on top of the rock to reduce water temperature.
8. Fishing shall be considered to be an existing use in all waters of the State.
9. Increased public access to surface waters is the policy of TRORC.

Goals, Policies, and Recommendations: Wetlands

Goals

1. There is no net loss of wetlands that provide significant functions and values.
2. Critical natural communities such as vernal pools, fens, and bogs are identified and protected.

Policies

1. Significant wetlands must be protected from development by maintaining an undisturbed buffer strip of naturally vegetated upland of at least 50 to 100 feet in width (or wider according to the type of development and the wildlife species to be protected) around the edge of each wetland and by preventing runoff and direct discharge into wetlands.
2. ~~Development should not occur in wetland areas.~~
3. ~~Vernal pools should be protected from development by establishing an overlay district that identifies vernal pools and their surrounding terrestrial amphibian habitat.~~

Recommendations

1. The State of Vermont must ~~more accurately~~ identify and map significant wetland areas not currently classified as Class 1 or 2 wetlands and petition the Agency of Natural Resources to have such areas reclassified at a higher level.
2. TRORC should work with towns to establish a priority list of wetlands for protection and/or acquisition.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

3. The State should provide property tax relief incentives for the protection of designated wetlands
4. To protect wetland functions, native biological diversity, and the loss of habitat, towns should adopt zoning and/or subdivision regulations that discourage development near wetlands and vernal pools that are not already protected under state or federal law. They should consider restricting development within 500 feet of all wetlands in conservation districts.
5. TRORC supports and encourages community efforts to identify and inventory of all types of wetlands, including seeps and vernal pools, and to adopt mechanisms for their increased protection, including formal petitions to be shown on the Vermont Wetlands Inventory Map, and adding Vernal pools to the Vernal Pool Atlas (VPAtlas). This information can increase the effectiveness of local, the state, and federal regulatory process.
6. Vernal pools should be protected in local zoning from development by establishing an overlay district that identifies vernal pools and their surrounding terrestrial amphibian habitat.

Goals, Policies, and Recommendations: Wildlife Resources

Goals

1. ~~The Wildlife~~ biodiversity and population ~~of wildlife, including natural predators,~~ is maintained or enhanced.
2. Stable populations ~~of state and federally designated~~ threatened or endangered wildlife (at both state and federal level) and their associated habitat areas are restored.
3. ~~Game species populations are healthy and support~~ Support and subsistence hunting is done in an ecologically sound manner.

Policies

1. Development should ~~be designed and sited in a manner to~~ preserve contiguous areas of active or potential wildlife habitat. Corridors connecting habitat areas for large mammals must be incorporated in plans for management and conservation of forested areas. Fragmentation of critical wildlife habitat should not be approved.
2. ~~Conserve large tracts of bear habitat when possible and adopt cluster land use concepts in zoning bylaws as a mechanism for maintaining contiguous areas of forest cover.~~
- 3.2. Large contiguous tracts of forest should be managed so as to maintain the diversity of tree cover necessary for shelter and food supply for wildlife. ~~deer, black bear, and other large mammals and for birds.~~

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

- ~~4.3.~~ The rate of harvest of wildlife for sport or subsistence must not exceed the capacity of an area to replenish the species.
- ~~5.~~ ~~Development, including roads and power line corridors, within designated bear habitat areas must be minimized.~~
- ~~6.4.~~ Development should utilize existing roads and field edges to avoid additional fragmentation.
- ~~7.5.~~ Deer wintering areas should be protected from development and other uses that threaten the ability of this habitat to support deer.
- ~~8.6.~~ Developers must demonstrate that they have taken reasonable steps during development planning to minimize impacts on critical habitats, including, but not limited, to the following:
- a. Habitat connectors.
 - b. Grassland regions.
 - c. Cliff areas identified as potential or active nesting places for peregrine falcons.
 - d. Areas over 2,500 feet in elevation.
 - e. Large tracts of contiguous forest land identified as priority or high priority forest blocks.
 - f. Oak mast stands and designated bear habitats.
- ~~9.7.~~ Landowners, foresters, and developers must be sensitive to critical bear habitat areas in their management plans.
- ~~10.8.~~ Buffer zones, necessary for species' health, should be maintained between land development and critical wildlife habitat.
- ~~11.9.~~ Actions to monitor and curb the spread of invasive species are encouraged.
10. Support efforts to raise public awareness of climate change-related hazards and mitigate its impacts on the natural environment.

Recommendations

1. With the help of specialists from the Department of Fish and Wildlife or the Vermont Institute of Natural Science, towns in the Region should ~~work to~~ inventory wildlife species; sensitive areas including wetlands, vernal pools, bogs, and fens; mature oak trees; and critical habitats for birds, deer, bear, bobcats, heron, and threatened or endangered plant species.
2. Towns should establish Conservation Commissions that work alongside VTrans, Vermont Fish and Wildlife, and nonprofit conservation organizations to maintain wildlife corridors.
3. Towns are encouraged to use ~~mechanisms such as~~ cluster zoning, conservation districts, transferring or purchasing of development rights, or purchasing of land containing critical habitat areas in order to maintain ~~the integrity of~~ large forest blocks and preserve critical habitat and habitat connectors.
4. Towns should work cooperatively with and seek assistance from land trusts to maintain large tracts of undeveloped habitat that cross political boundaries.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

5. Town Plans and zoning regulations should protect significant natural features and sensitive habitat areas by using setbacks and buffers.
- ~~6. Local officials are encouraged to work with staff from regional offices of the Vermont Department of Fish and Wildlife and wildlife biologists from VINS to assist in identifying and creating inventories of the critical habitat areas and significant natural communities in their municipalities.~~
- ~~7. Towns should attempt to identify critical bear habitat areas within the broader areas identified on Vermont bear habitat maps.~~
- ~~8-6.~~ VTrans and towns should always consider terrestrial and aquatic wildlife passage as part of a design when constructing bridges and culverts, especially in areas along known wildlife corridors.
- ~~9-7.~~ Towns should time roadside mowing to limit spread of plants such as wild chervil and wild parsnip.
- ~~10-8.~~ When using heavy machinery near streams, machinery operators must clean them before and after use to avoid the inadvertent spread of invasive species such as Japanese knotweed.
- ~~11-9.~~ Conserve large tracts of bear habitat and adopt cluster land use concepts in zoning bylaws as a mechanism for maintaining contiguous areas of forest cover.
- ~~12-10.~~ TRORC should work with municipalities to distribute information on Lyme disease and prevention.

Goals, Policies, and Recommendations: Air Quality

Goals

1. Air quality in local and regional airsheds is maintained or improved.
2. Dependence upon fossil-fueled and single-occupant automobiles for transportation is reduced.
- ~~3. The transfer of pollution into the Region from outside sites is reduced.~~

Policies

1. Proposed developments must be reviewed for their direct and indirect impact ~~upon air quality, and acceptability by local and regional airshed users.~~
2. Wood burning as a method of disposal should be reduced. ~~As a source of heat, wood burning should be continued, but efforts should be made to update wood stoves.~~
- ~~3. Air pollution impact review should include visual quality in addition to contaminant concentrations over time and distance.~~
- ~~4-3.~~ Any emissions of hazardous or toxic air pollutants by commercial operations shall be controlled and monitored for public health and safety so that concentrations of hazardous or toxic air contaminants in local and regional airsheds are below those listed for human health protection by federal and state regulations.

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

- ~~5.4. Backyard burning of trash is illegal, and~~ Local education and enforcement activities are strongly encouraged to eliminate backyard burning of trash ~~this practice.~~
- ~~6.5.~~ The development and use of more energy-efficient devices and renewable energy resources is promoted.

Recommendations

1. Install and maintain a regional air quality monitoring network in cooperation with the Vermont Agency of Natural Resources ~~so as~~ to determine current and potential threats to air quality. Potential impact areas include village centers or other areas of traffic congestion and high elevations, where pollutants and acidic levels are potentially greater and more harmful to fragile vegetation.
2. Municipalities and state agencies should educate communities about the impacts of trash burning and develop more effective mechanisms to enforce laws prohibiting backyard burning of trash, including the adoption of civil ordinances.
3. Woody debris from site clearing or forestry operations should be left on site or chipped, instead of being burned, in order to reduce pollution and to enable this material to contribute to soil formation.
4. TRORC should engage in ~~be prepared to comment upon~~ projects outside the Region that may potentially impact air quality within the Region.

Goals, Policies, and Recommendations: Mineral Resources

Goals

1. ~~Use Wise utilization~~ of mineral resources ~~occurs~~ to accommodate growth and development of the Region, and adequate maintenance of transportation infrastructure.
2. Extraction and processing of ~~resources~~ minerals ~~happens in a way that such activities~~ are appropriately managed and benefits the public interest ~~is clearly benefited.~~
3. ~~Remediation of e~~ Extraction and mining sites in the Region ~~are remedied~~ occurs in every instance.

Policies

1. Mineral extraction and processing facilities shall be planned, constructed, and managed:
 - a. To not unduly, adversely impact existing or planned uses within the vicinity of the project site
 - b. To provide direct access to Class 3 or better highways
 - c. To not ~~cause a burden to~~ the function and safety of existing roads and bridges serving the project site. Factors to be considered in determining impacts are:
 - Extent of increase in heavy vehicular traffic
 - Effects of weight loads on roadbeds and bridges
 - Conflicts with pedestrians or bike users

CHAPTER 6 – GOALS, POLICIES, AND RECOMMENDATIONS

- Numbers and frequency of heavy vehicles traveling through dense residential areas
 - d. To minimize loss of significant prime agricultural land
 - e. To minimize any adverse effects on water quality, fish and wildlife habitats, and adjacent land uses
2. Extraction sites must be screened to the extent practical if topography and vegetation allow.
 3. Commercial extraction of gravel from streams is prohibited by law, and private extraction is strongly discouraged ~~due to the destabilizing effects it can have~~. All streambed extraction should ~~only~~ be done after ~~careful consideration of the site is assessed by qualified~~ professionals and in consultation with the Vermont Department of Environmental Conservation's River Management Section.
 4. Future extraction activities of copper and ~~or~~ other metals must follow protocols for safe disposal ~~safely deal with mine wastes disposal and not impact ground or surface water.~~

Recommendations

1. All sites must plan for their eventual rehabilitation so that slopes are stable and the surface is revegetated. To that end, topsoil shall not be removed from sites and excavations shall stop early enough so that stable slopes can be established on the property.
2. Mineral extraction and processing facilities must be planned and developed so they do not ~~place an excessive or uneconomic burden on~~ local and state highways and bridges.
3. All extraction sites must maintain at least a 50-foot buffer of undisturbed land by any wetland or surface water and sufficient additional land above the grade of adjacent streams to preclude a danger of avulsion of the stream into any working areas under flood conditions.