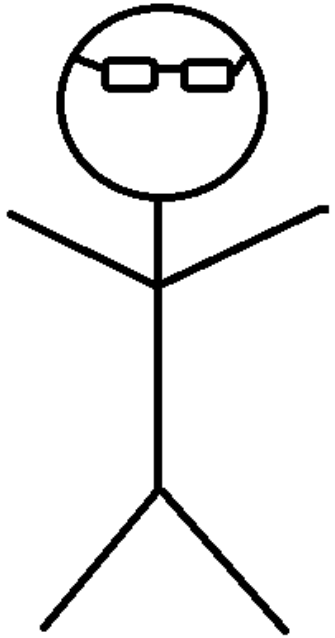
EPSCoR and State Government

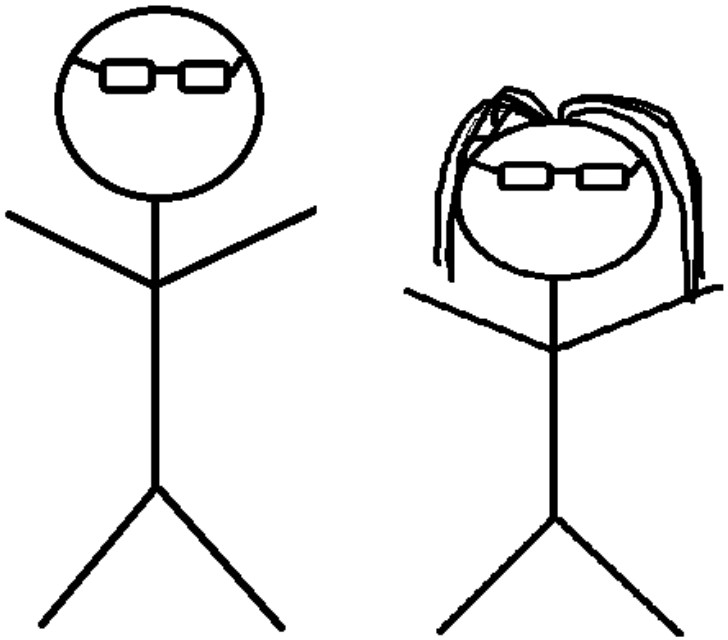
Brian Woods

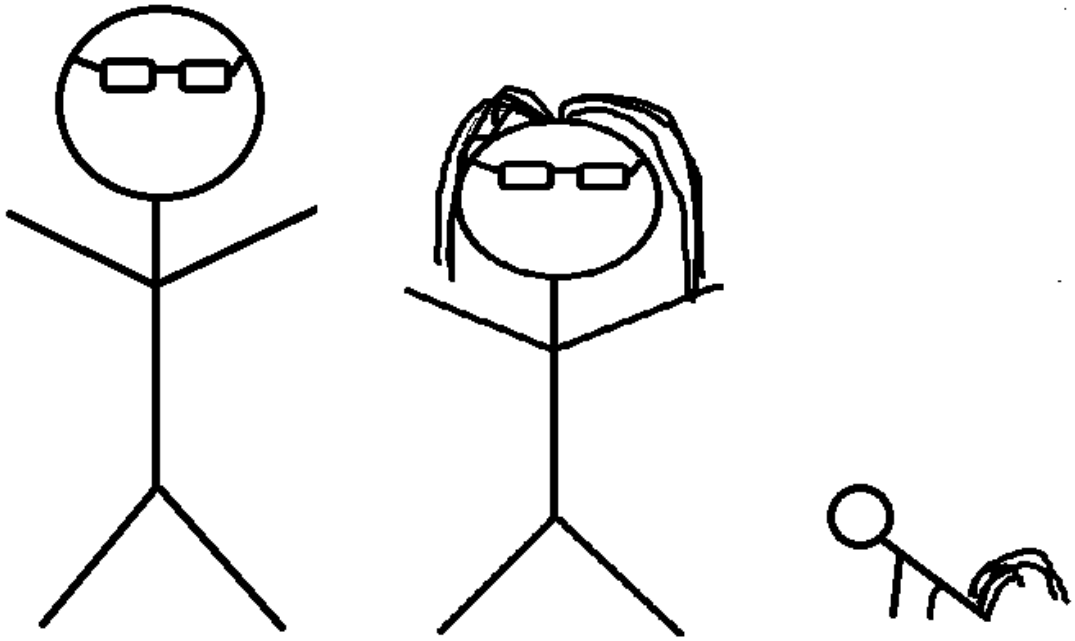
VERMONT
AGENCY OF NATURAL RESOURCES

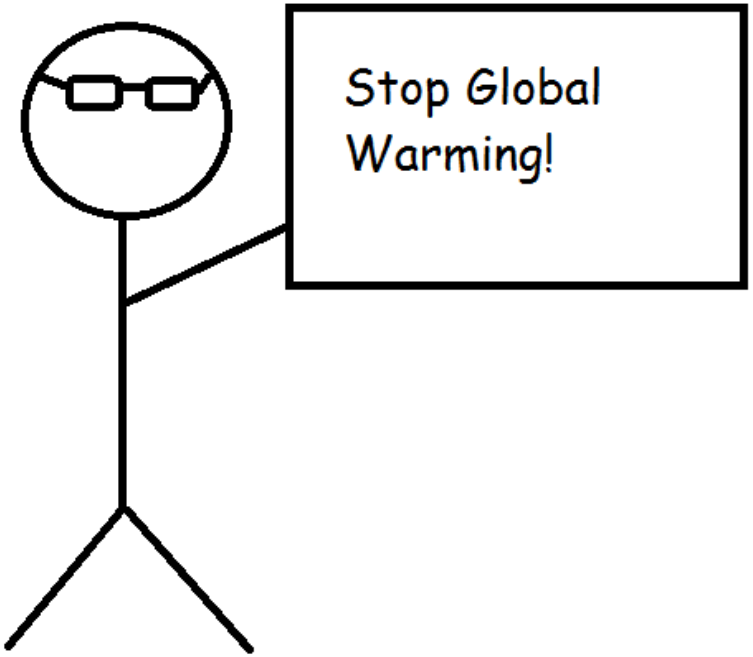
EPSCoR and State Government

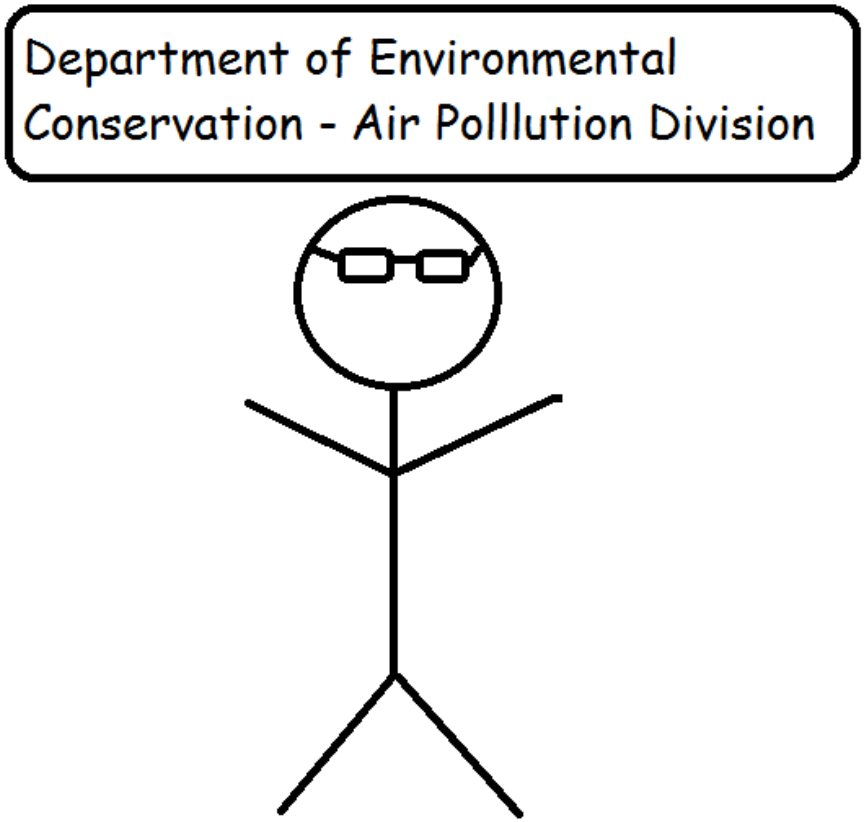
- State Government Organization
- Overview of DEC Watershed Management
- Example Project
- ANR Research Needs








Stop Global
Warming!


Department of Environmental
Conservation - Air Polllution Division

DEC Commissioner's Office

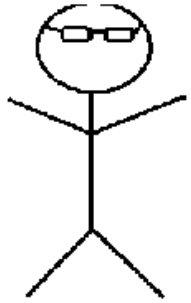
Drinking Water and Groundwater Protection

Facilities Engineering

Waste Management and Prevention

Watershed Management

Air Pollution



DEC Commissioner's Office

Drinking Water and Groundwater Protection

Facilities Engineering

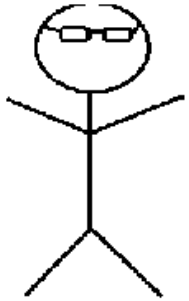
Waste Management and Prevention

Watershed Management

Air Pollution

Climate Change Team

+ Forestry, Fish & Wildlife



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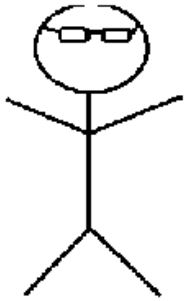


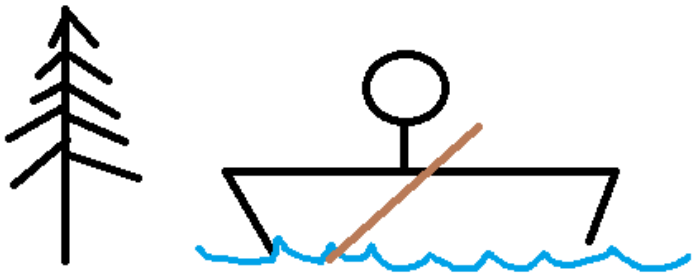
@vtclimatechange

Agency of Natural Resources

DEC

Forests, Parks and Recreation

Fish and Wildlife



Vermont Climate Cabinet

Agency of Administration

Buildings and General Services

Agency of Agriculture

Department of Public Service

VTrans

Department of Health

Agency of Commerce and Community Development

Department of Economic Housing and Community Development

DEC Commissioner's Office

Drinking Water and Groundwater Protection

Facilities Engineering

Waste Management and Prevention

Watershed Management

Air Pollution

Watershed Management Division

Lakes and Ponds Program

Eric Smeltzer, Angela Shambaugh

Lakes and Ponds Monitoring

Lake Champlain Data Set

Watershed Management Division

Monitoring, Assessment and Planning Program

Neil Kamman

Watershed Management Division

River Management Program

Mike Kline & Co.

Watershed Management Division

Stormwater Program

Padraic Monks

Watershed Management Division

Wetlands Program

Alan Quackenbush

Watershed Management Division

Wastewater Program

Ginny Little

Watershed Management Division

Ecosystem Restoration Program

Kari Dolan

Watershed Management Division

Ecosystem Restoration Grants

- 2006 ($1.3M)-2012 ($2.5M) – Capital Funds
- Average of 40 projects/year
- Grant amounts between $10K-$75K
- Reduce surface water pollution from runoff

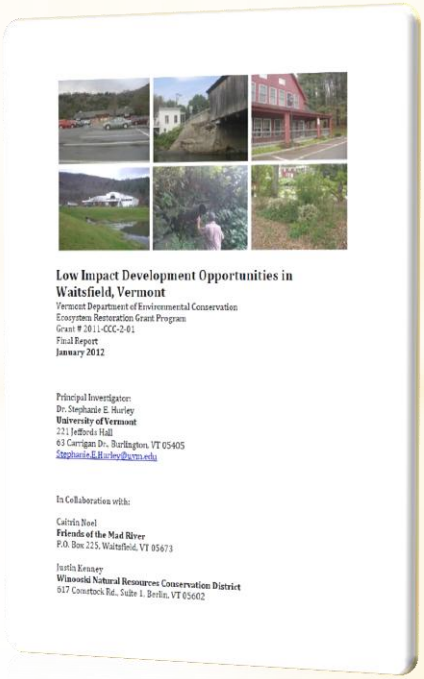
Watershed Management Division

Ecosystem Restoration Grants

Low Impact Development Opportunities in Waitsfield, Vermont

Dr. Stephanie Hurley – CALS

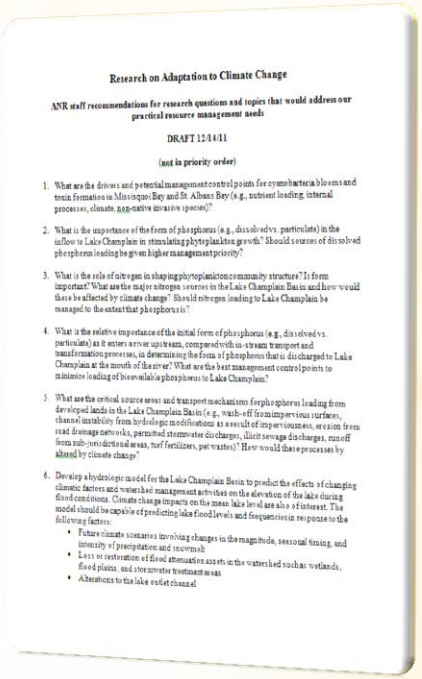
http://www.friendsofthemadriver.org/documents/WaitsfieldLID_report.pdf



ANR Staff Recommendations

December 2011Meeting

- Drivers and management control points for cyanobacteria blooms in Missisquoi and St Albans Bays
- Importance of the form of phosphorus in stimulating phytoplankton growth
- Role of nitrogen in shaping phytoplankton community structure
- Relative importance of the initial form of phosphorus in determining form that is discharged at river mouth
- Plus 6 more



Research on Adaptation to Climate Change

ANR staff recommendations for research questions and topics that would address our practical resource management needs

DRAFT 12/14/11

(not in priority order)

1. What are the drivers and potential management control points for cyanobacteria blooms and toxin formation in Missisquoi Bay and St. Albans Bay (e.g., nutrient loading, internal processes, climate, non-native invasive species)?
2. What is the importance of the form of phosphorus (e.g., dissolved vs. particulate) in the inflow to Lake Champlain in stimulating phytoplankton growth? Should sources of dissolved phosphorus loading be given higher management priority?
3. What is the role of nitrogen in shaping phytoplankton community structure? Is form important? What are the major nitrogen sources in the Lake Champlain Basin and how would these be affected by climate change? Should nitrogen loading to Lake Champlain be managed to the extent that phosphorus is?
4. What is the relative importance of the initial form of phosphorus (e.g., dissolved vs. particulate) as it enters river upstream, compared with in-stream transport and transformation processes, in determining the form of phosphorus that is discharged to Lake Champlain at the mouth of the river? What are the best management control points to minimize loading of bioavailable phosphorus to Lake Champlain?
5. What are the critical source areas and transport mechanisms for phosphorus loading from developed lands in the Lake Champlain Basin (e.g., wash-off from impervious surfaces, channel instability from hydrologic modifications as a result of imperviousness, erosion from road drainage networks, permitted stormwater discharges, illicit sewage discharges, runoff from sub-surface disposal areas, turf fertilizers, pet wastes)? How would these processes be altered by climate change?
6. Develop a hydrologic model for the Lake Champlain Basin to predict the effects of changing climatic factors and watershed management activities on the elevation of the lake during flood conditions. Climate change impacts on the mean lake level are also of interest. The model should be capable of predicting lake flood levels and frequencies in response to the following factors:
   - Future climate scenarios involving changes in the magnitude, seasonal timing, and intensity of precipitation and snowmelt
   - Loss or restoration of flood attenuation assets in the watershed such as wetlands, flood plains, and stormwater treatment areas
   - Alterations to the lake outlet channel