Congregational Watershed Discipleship Manual

Faith Communities as Stewards of the World's Waters

The Rev. Dr. Nancy Wright
Richard Butz, MFA

1st Christian edition: November, 2018

Water is life's matter and matrix, mother and medium.
There is no life without water.—
Albert Szent-Gyorgyi, M.D., Discoverer of Vitamin C

About the Authors

Rev. Dr. Nancy Wright: The Rev. Dr. Nancy Wright pastors Ascension Lutheran Church, South Burlington, Vermont www.alcvt.org. She has had an abiding interest in caring for God's Creation and is excited by the work of Ascension parishioners to foster watershed stewardship. She is Environmental Liaison to the New England Synod of the Evangelical Lutheran Church in America. With Fr. Donald Kill she coauthored *Ecological Healing: A Christian Vision* (Orbis Books, 1993) and has published articles on water and environmental justice.

Richard Butz: Growing up with a mother and father who loved to fish, water and water quality have always been important to him. Over the last 20 years he's been involved in water issues as a water sampler and board member for Buffalo Niagara RiverKeeper. Presently he serves on the board of the Addison County River Watch Collaborative and, on the Bristol Conservation Commission. As a college professor he employed "object lessons" and hands-on experience in his teaching and established programs for inner city kids on boat building and environmental education. He believes that getting people and, particularly kids, on the water will help them care about the water.

Congregational Watershed Discipleship Manual

Faith Communities as Stewards of the World's Waters

The Rev. Dr. Nancy Wright
Richard Butz, MFA

1st Christian edition: November, 2018

Water is life's matter and matrix, mother and medium.
There is no life without water.—
Albert Szent-Gyorgyi, M.D., Discoverer of Vitamin C

Lone Leaf Publishing

Published by Lone Leaf Publishing, E Dummerston VT.

Publication of this manual was made possible by a grant from the Institute for Museum and Library Services through ECHO, Leahy Center for Lake Champlain, in conjunction with the Vermont Clean Water Network, a network of more than 75 organizations dedicated to creating a culture of clean water. www.vtcleanwaternetwork.org

Graphic design by Carmen Bywater, carmen@valleygreenjournal.com

Photos by Rev. Nancy Wright, Richard Butz, William Valliere, Jan Lambert, Sherry Osborn unless otherwise noted.

Editorial services by Jan Lambert.

Preface

November 14, 2018

Two stories are dominant in U.S. American culture at the early stage of the 21st Century. The first is one of consumer capitalism and its promise to deliver a utopian world where every man, woman and child can achieve happiness through acquisition. The second is a related narrative of technological salvation in which a magical messianic like invention will rescue humanity from our afflictions. The sacred stories of ancient peoples challenge these human centric approaches to life on this planet. Those sacred stories articulate an emphasis on one's roots. In the Hebrew scripture the roots are in the land, and in the parables of Jesus the roots are in the agrarian culture of his time. Yet, woven in all these writings is the gift of water.

"They have forsaken me, the fountain of water." Writes the prophet Jeremiah. How easy it is to forget water, especially in more industrialized countries where water can be found everywhere, even in our toilets. Yet, water is increasingly a topic of concern. Can you say Flint, Michigan?

Water is life. One cannot live without water. People who are followers of Jesus the Christ recognize this through the sacrament of Holy Baptism. In the Lutheran movement of Christianity, the prayer that precedes the bathing explores the whole history of water from creation through flood to Red Sea to Jesus in the Jordan River. Water is essential.

In this manual, Pastor Nancy Wright, and Ascension parishioner Richard Butz, have captured the Watershed moment we find ourselves. They begin with an overview of the most recent theological literature and proceed into an application in their community in South Burlington, Vermont. Here you will find a concise treatise that links both the theoretical and the practical. Pastors in congregations will find helpful tools to bring the reality of climate change to their parishes. Lay readers will find an accessible introduction to the topic, and come away with a desire to learn more. Academics will realize that the new movement in the church is about linking theory and application.

Climate change is one of those subjects that often confound people. While the overwhelming majority of scientists point to its growing impact on our current and future lives, the average person is trying to figure out how it relates to their home, job, family, church. The authors provide a model for how local congregations can think and act in ways that bring the abstract into the concrete. Begin with a simple question: "Where does the water in our home come from?" This will set you out on a journey of discovery. What you will discover is how water is the thread of life and community.

Rev. James E. Hazelwood
Bishop
New England Synod – ELCA Lutheran

Table of Contents

Introduction

Bartlett Brook, Restoration: A Success Story

Beginning in 2010, Ascension Lutheran Church of South Burlington, Vermont undertook a three-year project to restore a portion of Bartlett Brook which abuts the church property. Bartlett Brook and its surrounding tributaries encompass a watershed of 736 acres, which flow directly into Lake Champlain. The land around Bartlett Brook headwaters was extensively cleared for agricultural use in the 1800s.

University of Vermont students showing some of the debris removed from Bartlett Brook.

The section of the brook near the church had become unsightly and hazardous not only for the environment, but for those living near the brook. The congregation's Care for Creation Committee, with support from the congregation, took the initiative to clean up the sections of the brook filled with agricultural and urban debris. The congregation also re-vegetated and stabilized parts of the stream bank through planting native trees and shrubs. The restoration efforts took place on Green Up Day in May. Green Up Day is the first Saturday in May, which Vermont has set aside for efforts to remove trash along roadsides, and more generally care for the environment. On Green Up Days in 2010, 2011, and 2012, church members, community volunteers, and University of Vermont students volunteered to remove debris from Bartlett Brook in sections roughly 30 feet in length each year. Along with the clean-up of the stream, native trees and shrubs were planted along approximately 100 feet of stream bank to restore the riparian zone and stabilize the bank where debris was cleared.

Debris removal in progress.

What was once an eyesore has now become an oasis in the forest. The pictures here show some of the progress.

Some objects were a challenge to remove.

Once debris was removed, planting commenced.

Planting native trees and shrubs in the riparian zone helped restore and stabilize the stream bank.

Part 1
Water and Spirituality

Congregations and Water Care

We live in a watershed moment for the planet and for religious congregations. A threatening planetary water crisis asks now for a strong response. Ascension Lutheran Church of South Burlington, Vermont, engaged in water-focused activities, education, and worship to respond faithfully to God's call to care for Earth and its water. In so doing, the church developed a potential model for watershed stewardship that enhances a congregation's discipleship, spreads the vision of creation care through watershed stewardship, and offers practical guidance. This project, and other national and international water discipleship projects, offer insight into congregational leadership and education for water care. Caring for water orients a congregation in a new and deep way to its social, cultural, and ecological community, while also positioning it to develop supportive ties to other congregations and groups in the area to foster watershed health. When a congregation cares for its local watershed, it potentially promotes awareness and action to ameliorate worldwide water justice issues, including climate change and the feminization of poverty, both of which reflect and create water justice issues. A watershed discipleship congregation faithfully responds in our time to the challenge, worldwide, that all Earth's peoples have sufficient food and water and watersheds' health be promoted and sustained.

Youths assisting in gathering samples of New Haven River, VT.

This "Congregational Watershed Discipleship Manual" with some specific VT examples, is intended to engage, educate, and stimulate action. Hopefully, the manual will be adapted and revised by congregations in other watersheds When people of faith realize that their traditions call them to act for creation, and that failure to do so jeopardizes all future generations, they will step up by changing their own habits and advocating for change at local, state, national, and global levels.

The World's Waters

Water is foundational for life; no living organism exists without it. Professor of theology, science, and ethics Christiana Z. Peppard writes, "Fresh water's status as sui generis [unique] and sine qua non [essential] for life must be recognized and considered as a first principle of ethical reasoning."[1] Without access to enough water, illness and disruption ensue. Science writer Philip Ball states that "for humankind, water is a force of social change—a precious resource to be treasured, nurtured, and used wisely, for the alternative is deprivation, disease, environmental degradation, conflict, and death."[2]

It is not hard to be stunned when you begin to study water's dynamic properties. Although essential to all life, water is unique and "thoroughly…disrupts the theoretical landscape."[3] For example, the molecular structure of water, related to the unusual attractive force of the hydrogen bonds, results in water as "more highly structured, than most liquids. It is more akin to a crystal than to a gas."[4]

---

1 Christiana Z. Peppard, *Just Water: Theology, Ethics, and the Global Water Crisis* (Maryknoll, NY: Orbis Books, 2014), 186.
2 Philip Ball, *Life's Matrix: A Biography of Water* (New York: Farrar, Straus and Giroux, 1999), x.
3 Ball, *Life's Matrix,* xi.

Water is so elusive to full understanding that scientist and water expert Felix Frank claims, "Of all the known liquids, water is probably the most studied and least understood."[5] In sum, Ball writes, "Water still offers up profound challenges to science."[6]

Scientists believe that the possibilities for water began, essentially, with the Big Bang 13.8 billion years ago. Hydrogen formed, and stellar evolution created oxygen, along with other elements. Hydrogen and oxygen reformulated into the H_2O molecule. Over eons, water and other substances froze and condensed. Planetesimals formed, coated with ice, some colliding with a planet in the Milky Way Galaxy, Earth, as did similarly ice-coated comets and meteorites, all bringing water to Earth. As Earth cooled enough for water to condense, water vapor rose and rain fell, creating oceans, an atmosphere, and deep vents in the ocean floor where multi cellular life probably began. Ball describes the result: "Over two-thirds of the planet's surface is covered by liquid water, and over one-twentieth by ice. We call our home Earth—but Water would be more apt."[7] The essential role of water in creating and making life possible indicates that water rightly should be central to worship and ritual in the world's religions.

Though life depends on water, fresh water, depended on by human societies through the centuries, does not flow in great abundance. This is because, as author and economic journalist Steve Solomon puts it, "Only 2.5 percent of Earth's water is fresh. But two-thirds of that is locked away… in ice caps and glaciers…. In all, less than three-tenths of 1 percent of total freshwater is in liquid form on the surface."[8] The non-liquid form of fresh water exists in permafrost, soil moisture, vapor, and the bodies of plants and animals. Thus, the relative rarity of flowing surface water conveys water's preciousness.

But water quality has deteriorated, creating stress for living creatures. Celebrated Harvard scientist Edward O. Wilson writes, "The world as a whole is already well into a water crisis."[9] Water around the world is depleted and polluted, and yet increasingly in demand due to an exponential rise in human population as well as the heightened materialism and consumerism that has accompanied higher living standards in many countries. The abundance of populations of other-than-human species living in fresh water habitats declined by an alarming 81 percent between 1970 and 2012; 31 percent of fish stocks declined due to over fishing; and three-quarters of the world's coral reefs became bleached or degraded due to over fishing, pollution and warming oceans.[10] Further, the World Wildlife Foundation reports that "nearly 50 countries experienced water stress or water scarcity in 2014, up from just over 30 in 1992."[11]

The World Wildlife Federation's *Living Planet Report* 2016 has made an important recommendation for addressing issues of water and rivers, recognizing that the realities and projections of current human demand surpass Earth's regenerative capacity: "A strategic, [river] basin-level approach to management by governments, communities and businesses can optimize the balance between water resources development and maintenance of critical ecosystem functions. It can also help to minimize costly restoration activities in the future."[12] This suggestion highlights the importance of watershed discipleship by congregations and others as part of overall needed care for Earth.

---

4 Ball, *Life's Matrix,* 172.
5 Ball, *Life's Matrix,* 153.
6 Ball, *Life's Matrix,* x.
7 Ball, *Life's Matrix,* 22.
8 Steven Solomon, *Water: The Epic Struggle for Wealth, Power, and Civilization* (New York: Harper Perennial, 2010), 12.
9 Edward O. Wilson, *Half-Earth: Our Planet's Fight for Life* (New York: W. W. Norton, 2016), 171.
10 Natasja Oerlemans, ed., *"WWF Living Planet Report 2016: Risk and Resilience in a New Era,"* accessed January 12, 2018, https://www.worldwildlife.org/publications/living-planet-report-2016, pdf. See "Freshwater living planet index" and "A closer look at coral reefs," 30, 31, 42.
11 *Living Planet Report,* 54.
12 *Living Planet Report,* 111. The report notes that "under a business-as-usual path human demand on the Earth's regenerative capacity is projected to continue growing steadily and to exceed such capacity by about 75 per cent by 2020." (83)

Vermont's Waters

Rebekah Weber, Lake Champlain Lake Keeper with the Conservation Law Foundation, has noted that, "At the State House, many legislators are turning to the question of enforcement of environmental laws. Vermont's water will remain polluted without enforcement of the protective laws already on the books. This discussion is coming after a summer of horrific blue-green algae outbreaks, particularly in Lake Carmi and along the shores of Lake Champlain. The question is why Vermont's rivers and lakes remain polluted from nutrients, metals, temperature, invasive species, and other contaminants despite increased investment and regulation. One possible answer is a broken system of ensuring compliance with clean water requirements."[13]

Otter Creek enters Lake Champlain with a plume of pollution. Deb Healey photo.

When talking about liquid water in Vermont we have to realize that the term "water" encompasses ground water, springs, streams, rivers, ponds, and lakes. And, in looking at "water" in Vermont, we are really talking about water quality and the factors affecting it, as well as how water quality impacts us.

So, what is the state of Vermont's water quality? As Weber's statement indicates, our waters are affected by pollution from a variety of sources, some natural and some human-driven. Natural sources include the introduction of contaminants from animals and the decay of plants. They also include sources such as runoff from forests, fields, and stream-bank erosion.

Human-caused pollution includes runoff from agriculture, lawns, roofs, parking lots, roads, and ditches. It also includes effluent from leaking septic systems, and inadequate sewage treatment plants and landfills, these often affected by storm events. Runoff contains nutrients such as phosphorous and nitrogen, as well as heavy metals.

Attention recently has focused on the highly visible issue of cyanobacteria (blue-green algae) blooms in Lake Champlain and Lake Carmi, but it is occurring in many other lakes as well. These blooms are toxic and result in beach closings and even falling real estate prices in lake-front communities.

The impact on Vermont's economy, partly tourist driven, can be enormous as visitors begin to suspect that the "Vermont brand" of pristine waters is not all that they expect. But a more silent impact is on human health.

Human activity has caused serious stresses on Vermont's waters over the several hundred years since the arrival of Europeans, and the advent of the industrial and technical revolutions. Now, we are at the point where we need to act to stem the flow.

Critical Need for Change

As people of faith, we are beginning to recognize that it is our responsibility to take an active role in caring for, not defiling, God's creation. Our religious leaders are speaking out and we are speaking

13 Statement made at the Lake and River Cruise Action Tutorial, June 16, 2017

out as are congregations by way of statements of principle drafted in assemblies of various faith traditions.

We challenge an economic paradigm that pursues materialistic goals while ignoring their true costs, both in increasing inequity of their benefits and in environmental degradation. Unregulated free market capitalism draws down on natural and human resources and uses the Earth as a dumping ground for our increasingly toxic wastes - all of this in the service of convenience and profit.

So what actually needs to change? First, we need to affirm that all creatures have a right to clean air, clean water, and clean lands, all free from exploitation and degradation for the profit of the few.

Second, we need to change our habits and really think about how our daily actions impact God's creation now and for future generations. This means looking at the true cost of what we do: how we live, where we live, how we get around, what we consume, what we advocate for, how we invest, and how we vote.

Since in Vermont, a major water concern centers on runoff during rain, snow and storm events, have we taken steps to reduce our waste stream by composting, recycling and reducing our use of materials that are not biodegradable? Do we understand that our lakes are now loaded with microplastics that are entering the cells of living organisms? Are we using reusable shopping bags? Are we looking at our properties to see if we can reduce water runoff during rain and snow events by using rain barrels and installing rain gardens? Are our septic systems working properly or are we willing to support upgrades to municipal systems?

Do we support legislation that addresses municipal and agricultural runoff in a way that's fair to all, even if it will cost us in taxes? Are those of us who are able willing to shoulder a heavier financial burden?

Climate change is not only increasing rainfall, but also raising temperatures that increase the growth of algal blooms and facilitates the migration of invasive species. Are we doing our part to reduce energy use, which reduces greenhouse gasses associated with climate change, by tightening up our homes, driving more efficient vehicles, driving less, and investing in more efficient heating systems and appliances? Are we considering more sustainable energy sources? Can we get behind legislation to put a true price on carbon while protecting the poor?

Third, we need to speak up and speak out. In Vermont we are very fortunate to have easy access to our governor and legislators. Our legislators don't have staff, so they have to rely on us to help keep them informed on issues so lobbyists aren't the only ones talking to them. We can write, email, call and visit them in their districts and in Montpelier. At the federal level it is a bit more difficult, but our legislators are pretty responsive and their staff are available to listen to our concerns. (Go to the Vermont legislature's website at legislature.vermont.gov to look up your district, your legislator(s), and their contact information.)

Fourth, we need to get active in our villages, towns, and cities by joining conservation commissions, planning boards, energy committees, and more. Becoming active at this level can have a big impact that can trickle up to the state and national level. Working to ensure that local zoning laws protect sensitive natural areas such as wetlands can make Vermont more resilient during storm events, by providing areas that can absorb runoff and reduce flooding that carries more pollutants into the lake.

Finally, for those of us who have investments, are we willing to divest from companies whose operations adversely affect our environment.

Christian Responses to the Environmental Crisis and Water Care

Virtually all the world's major religious traditions, including indigenous traditions, honor water. Water is seen as the source of life and as central to spiritual life. The logical extension of such awareness of the centrality of water is that the religious traditions would be leaders in protection of Earth's waters.[14]

Within Christianity, water is seen as a sacramental gift. Baptism in water was depicted in art and architecture through the centuries. Care for Earth's waters would seem a natural and critically important part of Christian discipleship. All major denominations have made public statements about the urgency of creation care.

Many contemporary Christian theologians have contributed deep insights.[15] They highlight the following themes, among others:

The wisdom of the Creator is expressed in a wondrous creation. Human behavior toward creation ideally models God's intimate knowledge and care. As God says to Job, "Do you know when the mountain goats give birth?...Can you number the months that they fulfill? (Job 39:1-2)." Knowing about the ecosystems in which people of faith live and supporting legislation such as the Endangered Species Act naturally incarnate such care.

Further, the cosmic origin stories in Genesis reveal the blessed and good order in creation, which elicits wonder and praise of God. Indeed, the Psalms reveal that nature prays and worships (Pss. 8, 104), which can be emphasized in all worship services.

Too, the universe may be said to convey God's presence and holiness. God's presence is in nature, and held together by Christ (John 1:1-18, Col. 1:15-20, Heb. 1:1-3a). Learning about nature through science and time spent in nature deepens spirituality, knowledge, and energy for action.[16]

Finally, biblical texts illuminate vitally important aspects of Christian discipleship. A disciple feels and expresses gratitude for the gifts of Creation. Disciples see themselves as stewards (caretakers of the gifts of God). They learn about God and God's purposes for humanity from serving creation. Disciples worship with awareness that discipleship means caring for vulnerable, marginalized people, as did Jesus. Many more Christians now are holding baptisms out of doors, including restoring the ancient practice of baptizing into local creeks, rivers, lakes, or other bodies of water, as well as other worship services, to truly honor Christ in all of creation.

Many environmental problems (e.g., climate change and polluted water) especially harm the poor. Christian responsibility includes redressing the causes of pollution and degradation, which the Hebrew prophets saw as a result of human sin (Is. 24:4-6). Resistance to an economic

---

14 Interfaith statements about the centrality of water may be found at http://trinityshelburne.org/2017/11/17/sacred-waters-panel-discussion, accessed July 26, 2018; Lutherans Restoring Creation (www.lutheransrestoringcreation.org) includes many resources for watershed stewardship under Advocacy/Issue Based.

15 See *Eco-Reformation: Grace and Hope for a Planet in Peril*, ed. Lisa E. Dahill and James B. Martin-Schramm (Eugene, OR: Cascade Books, 2016); *Living Cosmology: Christian Responses to Journey of the Universe*, ed. Mary Evelyn Tucker and John Grim (Maryknoll, NY: Orbis Books, 2016); *Christianity and Ecology: Seeking the Well-Being of Earth and Humans*, ed. Dieter T. Hessel and Rosemary Radford Ruether (Cambridge, Mass.: Harvard University Press, 2000); *The Environmental Justice Reader: Politics, Poetics & Pedagogy*, ed. Joni Adamson, Mei Mei Evans, and Rachel Stein (Tucson, AZ: The University of Arizona Press, 2002); Pope Francis, *Encyclical on Climate Change & Inequality: On Care for Our Common Home* (New York: Melville House, 2015). Nancy Wright's 2018 doctoral dissertation *A Watershed Moment: Care for the Church and Earth's Waters* may be found at https://hdl.handle.net/2144/30038 and offers background to this manual.

16 See Lisa E. Dahill, "Rewilding Christian Spirituality: Outdoor Sacraments and the Life of the World," in *Eco-Reformation: Grace and Hope for a Planet in Peril,* for consideration of Christians engaging with the natural sciences, with contemplative time outdoors as a prayer practice, and with restoring the ancient practice of baptizing literally (and spiritually) into one's watershed.

system that marginalizes the poor, destroys environmental goods without moral sensitivity, promotes greed and materialism, and that fosters inequality is essential. Resistance is an honorable dimension of Christianity. The Protestant Reformation as initiated by Martin Luther denounced idolatry. Similarly, the Lutheran World Federation on the 500th anniversary of the Reformation urged faithfulness for creation care with the clarion call: "salvation not for sale, human beings not for sale, creation not for sale." Similarly Pope Francis' urges "integral ecology," which unites care for the poor with care for all creatures and ecosystems on Earth.

The next several decades will prove crucial to the well-being and stability of planet Earth and civilization as we know it. The impact of Christians who care for God's creation can not only inspire others but is critical to living out the Great Commandment, to love God with heart, soul, mind and strength and neighbor as oneself (Lk. 10:27).

Pastor Duffy Johnson, of Windham Community Chapel, Dummerston VT baptizes a congregation member by full immersion at a local pond.

In the beginning when God created the heavens and the earth, the earth was a formless void and darkness covered the face of the deep, while a wind from God swept over the face of the waters. Then God said, "Let there be light"; and there was light. And God saw that the light was good; and God separated the light from the darkness. God called the light Day, and the darkness God called Night. And there was evening and there was morning, the first day.

And God said, "Let there be a dome in the midst of the waters, and let it separate the waters from the waters." So God made the dome and separated the waters that were under the dome from the waters that were above the dome. And it was so. God called the dome Sky. And there was evening and there was morning, the second day.

And God said, "Let the waters under the sky be gathered together into one place, and let the dry land appear." And it was so. God called the dry land Earth, and the waters that were gathered together he called Seas. And God saw that it was good.....

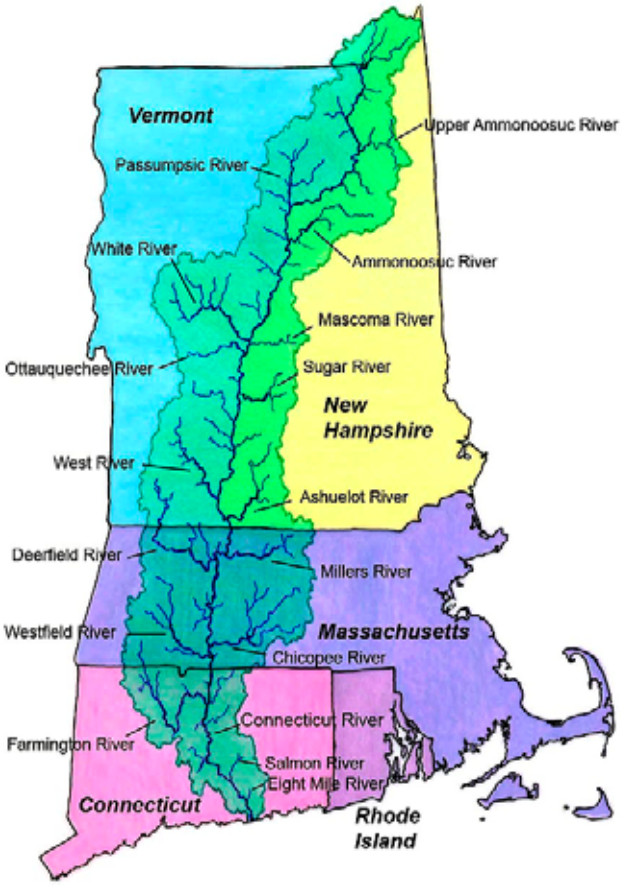
And God said, "Let the waters bring forth swarms of living creatures, and let birds fly above the Earth across the dome of the sky." So God created the great sea monsters and every living creature that moves, of every kind, with which the waters swarm, and every winged bird of every kind. And God saw that it was good. (Genesis 1:1-10, 20-20)

Part 2

Watershed Discipleship

A Watershed

A watershed may be described in several ways, but in the United States, a watershed is usually considered an area of land that drains the waters flowing to a particular river, lake, or ocean. In German, the term for "watershed" is *wasserscheide*, literally water-divide. A recent congregational effort by the Evangelical Lutheran Church in America called for watershed stewardship and for "Watershed Discipleship."[17] According to the resolution, "Christians acknowledge that water lies both at the center of our Christian rite of baptism and our current ecological and climate crisis, thus deserving deep theological treatment." Further, the resolution urges that waters be named and known in worship and prayers and that Christians attend to social problems related to water contamination and floods. By grounding such work within the official concerns of the national church, this resolution gives inspiration and acceptability, even a mandate, to a congregation's effort to steward a watershed.



Connecticut River watershed.

Watersheds vary in size, and are nested. So, in Vermont, at the macro level, we talk about the Lake Champlain or Connecticut River watersheds. But one may also speak about river watersheds, such as the Winooski or New Haven River watersheds.

Watershed Discipleship

Several Christian organizations have developed valuable resources for congregations who wish to grow in water care. Lutherans Restoring Creation promotes many care-for-creation actions and resources on its website. One such resource is "Toolkit: Our Watershed Moment,"[18] produced by the EcoFaith Network, an official program committee of the Minneapolis Area synod of the Evangelical Lutheran Church in America.

Ched Myers, the prominent Christian theologian who has focused in recent years on building a movement toward watershed discipleship, passionately argues that to engage in true

---

17 The resolution defines a watershed as "the ground that water flows within as it moves toward a stream, river, or lake, and is a natural boundary within God's creation, unlike arbitrary and haphazard geopolitical boundaries, and all of God's creatures live in a watershed." See "Motion C: Resolution Urging Stewardship of the Gift of Water," accessed February 14, 2018, http://www.lutheransrestoringcreation.org/events/synod-and-church-wide- resolutions/water-stewardship-resolution---2016-churchwide-assembly.

18 "Toolkit: Our Watershed Moment," EcoFaith Network, Minneapolis Synod, ELCA, accessed February 12, 2018, http://mpls-synod.org/files/EcoFaithToolkit_-Our-Watershed-Moment.pdf.

discipleship today is necessarily to be watershed stewards. Myers writes:

> It is both theologically sound and politically radical to propose… That we Christians ought to recenter our citizen-identity in the topography of creation rather than in the political geography of dominant cultural ideation, in order to ground our discipleship practices in the watershed where we embody our faith.[19]

Myers explains the vital importance of watershed care: "Watershed Discipleship [is] a new (and ancient) paradigm for ecological theology and practice that I and my fellow contributors believe is key to addressing the new (and ancient) crisis confronting human civilization."[20] Myers describes a watershed as both a cradle and an ark. Watersheds sustain virtually every living creature, and reengaging with a watershed reorients a people to home and roots. Displacements from roots through human migratory patterns, extractive development, and modern economies can create rootlessness. Such rootlessness activates alienation, even despair, and may promote violence against others as well as against the surrounding ecosystem.[21]

Essays in Myers' book by young environmental and watershed activists in both urban and rural settings treat eco-justice in relation to water and watersheds, as well as the domination paradigm that leads to degradation of God's creation, including water. Several authors poignantly state that people of faith are more apt to know the geography of the Holy Land (that they may never see) than of the holy land in which they live.

The authors in Myers' book insist that because we are imbedded in watersheds and because the divine presence is in creation, loyalty to God requires us to serve and preserve these watersheds. Myers offers numerous ways to be disciples of watersheds, including watershed mapping, installation of road signs with names of local water sources, applying economic metrics, and learning from traditional people of the land, as well as from the watershed. Ideally, care for a watershed would not only serve the purposes of watershed health, but also community justice, by mapping marginalized people and engaging in restorative justice through a process of truth and reconciliation. Myers advocates that the watershed inform all aspects of a congregation's life, believing that only in doing so can we forego anthropocentric superiority.

Watersheds as Part of the Natural Water Cycle

Communities can help reduce floods as well as drought, heat waves and violent storms, by understanding how the water cycle needs to function. In nature water, plants, and soils all function together harmoniously with the atmosphere to absorb and regulate the flow of precipitation. Natural landscapes provide a "giant sponge" with ample vegetation and deep root systems and soil life that absorb water easily, replenish groundwater, and release a cooling cloud-forming water vapor, via plant transpiration, into the atmosphere to later fall as rain. This is the essence of the land-based (as opposed to ocean-based) water cycle. We need to allow more stormwater to soak into land and vegetation to complete the water cycle. Nature cycles water in a most efficient and elegant manner, in and through our landscapes and our local atmospheres, whether urban areas or countryside. When we interrupt those cycles and prevent rains from

---

19 Myers, "A Critical, Contextual, and Constructive Approach, in *Watershed Discipleship: Reinhabiting Bioregional Faith and Practice* (Eugene, OR: Cascade Books, 2016), 15..

20 Myers, "A Critical, Contextual, and Constructive Approach," 1.

21 Myers quotes Simone Weil's statement from her 1947 *The Need for Roots*: "Uprootedness is by far the most dangerous malady to which human societies are exposed, for it is a self-propagating one. For people who are really uprooted there remain only two possible sorts of behavior: either to fall into a spiritual lethargy resembling death, like the majority of the slaves in the days of the Roman Empire, or to hurl themselves into some form of activity necessarily designed to uproot, often by the most violent methods, those who are not yet uprooted, or only partly so…Whoever is uprooted himself uproots others. Whoever is rooted himself doesn't uproot others." In Myers, "A Critical, Contextual, and Constructive Approach," 9

soaking into the land, our landscapes become chronically, quickly draining, resulting in both floods and droughts and contributing significantly to climate change.

Dehydration of water cycles results from poor agriculture and deforestation that bare the soil, greatly increasing runoff. In urban areas rain is often literally treated as a waste product. Paved areas and rooftops drain water directly into rivers, lakes, and oceans with downspouts, storm drains, and pipes, ultimately contributing to sea level rise. Storm water runoff is thus not only a major source of water pollution, but also contributes greatly to flooding, drought, and diminished fresh water supplies. Furthermore, less water soaked into the land leads to less plant growth, yet plants are so greatly needed as prime regulators of climate. Paved areas and bare crop fields, lacking vegetation to absorb the sun's energy, instead radiate heat and contribute significantly to increased air temperatures. But with retention of rainwater in the land, water is allowed to use its ability to move the sun's energy throughout the atmosphere so that climate is moderated, with fewer violent storms and extremes of temperature.

The connection between storm water management and climate change is being addressed much more in recent years, as communities strive to become more resilient to damaging changes such as more severe storms. A growing number of researchers and land managers, moreover, are saying that excessive water drainage has been the cause of some undesirable climate changes, which are typically blamed on the buildup of greenhouse gases. By using a variety of existing and emerging measures for capturing precipitation in the land, there is much that we can do to restore local water cycles within our landscapes, which could significantly moderate our regional climates, and greatly increase productivity and biodiversity. Congregations can join with other individuals and organizations in helping to infiltrate more water into the land and send less flood water directly into streams and lakes. The same methods used to improve water quality, such rain gardens and rain barrels, more green spaces, and pervious pavement can also help moderate water cycles. By doing so we can curb erosion, pollution, floods, and droughts; replenish water tables; increase farm and ranch yields; increase property values; and create beautiful green areas for recreation and wildlife, all the while helping to moderate local climate.

Special mention is due to beavers, who are often acknowledged as nature's prime water engineers. They build numerous small dams that hold water back, capturing sediment and helping to prevent floods, and creating ponds and wetlands that are rich in biodiversity. The collected water soaks into the ground, keeping the water table stocked with moisture that will tide the land over during a dry spell. Beavers were almost trapped out of existence by the nineteenth century here in both North America and Europe. Subsequently, water tables dropped, floods and droughts increased, entire floodplains changed shape, and wildlife died out. Today communities worldwide are starting to encourage beavers to fulfil their role in reestablishing wetlands vital to healthy watersheds, and congregations can be part of this effort.[22]

Mist arising from a beaver wetland demonstrates a local water cycle. Skip Lisle photo.

22 This section on the natural water cycle is contributed by Jan Lambert, author and editor of *Water, Land and Climate—The Critical Connection* and cofounder of the organization, Voices of Water for Climate. See Resources list for additional information.

Part 3

Transformational Leadership in Congregations

Ascension Lutheran Church in the Lake Champlain Watershed

This Watershed Discipleship Manual is inspired by an action-reflection project carried out for seven months in 2017 at Ascension Lutheran Church (ALC), South Burlington, Vermont. The project included varied congregational activities, as well as opportunities for reflection and learning. The action component included water sampling, boat trips, a worship service by the shore of Lake Champlain, and summer Sunday school lessons focused on water, many of these described in later sections of this Manual. Related congregational reflection occurred in several ways: during the lakeside worship service, through teaching opportunities as part of the Lake Champlain Action Cruise and Tutorial, through practices engaged by families who covenanted to be especially aware of water over the seven-month action project, and by way of a final congregational evaluation. Further, the pastor engaged in extensive reading and writings about transformational education and leadership. A grant from the New England Synod of the Evangelical Lutheran Church in America supported and energized the activities planned by the church committees.

Lake Champlain

The Lake Champlain Watershed numbers among 2,110 watersheds in the United States. Though much smaller than the five Great Lakes, Lake Champlain is the sixth largest U.S. freshwater lake. It crosses three political boundaries (Vermont, New York, and Canada) and is deeper than Lake Erie. Nestled between the Adirondacks and Green Mountains, the lake is home to eighty species of fish, and its 435 square-mile surface area draws people to enjoy its beauty, fishing, swimming, boating, and other recreation.

Lake Champlain viewed from bridge at Crown Point, New York.

Lake Champlain provides safe drinking water for 145,000 people, with the water treated and monitored for eighty-four potential contaminants.[23] Every acre of the lake drains eighteen acres of land around it, far exceeding the drainage basin statistics for the Great Lakes (which have a two-to-one ratio) and making Lake Champlain much more sensitive than other water bodies to practices on the surrounding lands.

Regarding its health, Lake Champlain shares many characteristics with other major lakes, estuaries, and watersheds in the United States, such as Puget Sound, Long Island Sound, and Chesapeake Bay. Agriculture and development degrade the water. Restored wetlands, enhanced storm drainage, upgraded sewage treatment, and lessened farm runoff create momentum toward healthy water bodies.

As is true for other water bodies, many groups are working to help improve Lake Champlain, with the goal of making it fishable, swimmable, and drinkable (the U.S. Clean Water Act goals). Challenges can seem insurmountable. According to the Lake Champlain Basin Program, "Lake Champlain is experiencing environmental, biological, and chemical stresses that influence the ecosystem and are causing the character of the Lake to change."[24] The warmer and wetter conditions created by

23 Lake Champlain Basin Program, *2015 State of the Lake and Ecosystems Indicators Report* (Grande Isle, VT: Lake Champlain Basin Program), 17.
24 Lake Champlain Basin Program, *State of the Lake*, 20.

climate change negatively affect the lake. The lake completely freezes over less often, phosphorus runoff has spawned algae blooms during summer months, and some species of fish carry consumption advisories due to mercury content. Beaches may close due to sewage runoff or other sanitation issues, resulting in unhealthy levels of coliform bacteria, especially after heavy rainstorms. Other pollutants in the lake include pharmaceuticals, microplastics, and household trash.

Of Vermont's 9,616 square miles, Lake Champlain drains about 5,385 square miles. Draining such a large area of Vermont means that ALC parishioners encounter and appreciate rivers and streams that drain into the lake; several parishioners have served as river or lake monitors.

Parishioners come to the church from within a fifty-mile radius that includes mountains and valleys, streams, rivers, and lakes. The proximity of parishioners to fishable, swimmable, and visible water creates many possibilities for enjoyment and deepened leadership at ALC when it comes to caring for the watershed.

Fostering Watershed Discipleship in a Congregation

Transformational leadership and education toward watershed discipleship enable a congregation to design activities and resources that celebrate water and care for it. Transformational leaders will help a congregation discover the spiritual and scriptural inspiration for such work. The original leaders delegate the work—both the planning and the implementation, with the expectation that new ideas will emerge from newer leaders. This delegation of work fosters creativity. Joy and celebration of beauty will often infuse water stewardship activities. Grief about water abuse and watershed injustice may surface and can be honored through confession in worship and acknowledgement of the paradigm shift in which humanity is engaging, a shift toward caring for rather than exploiting, Earth. Deepened work for transformation toward watershed discipleship makes room for expressions of grief, joy, and creativity through the varied activities a congregation may undertake. Renewed ties among congregation members strengthen as their relationship with water develops. Fellowship grows, inspiring further work and commitment.

A congregational canoe trip on a local river can help to foster a sense of caring for the watershed.

While addressing concerns about watersheds, watershed stewardship promotes a rediscovery of the natural world that brings a congregation home, ecologically. It fosters renewed compassion for the web of life and for people in varied circumstances around the world.

Transformational leadership and transformational educational findings by Ronald Heifetz[25] and others, reveal processes of change that can be galvanized for watershed stewardship and for maximizing momentum and effectiveness, while minimizing burnout. Congregations can effectively utilize the principles of "getting on the balcony" for a wider perspective of the issue or task, giving the work back to the people, infusing the work with meaning, keeping attention disciplined, building trust, and generating more leadership for ecological care.

Strength for the journey emerges from reconsideration of, and even change in, values, experiences

25 Ronald Heifetz, Alexander Grashow, and Marty Linsky, *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World* (Boston: Harvard Business Press, 2009).

in nature, dedicated spiritual practices, and collaborative action. Leadership from within the congregation usually emerges, expressed as practical know-how, scientific literacy, and creative artistic endeavors. When supported and encouraged, such leadership augments excitement, commitment, and deepened relationships within and without the congregation. A supportive judicatory, or other groups in the parish neighborhood that are engaged in similar work, can enhance congregational leadership and the community effort, especially if they are able to allocate even a small amount of funding support. Sustained attention to a theme or project energizes a congregation's growth in leadership.

People may resist watershed stewardship or other care-for-creation efforts for several reasons. Some may view the emphasis as new and unusual, while others might perceive the initiative to be overly focused on water in the midst of other challenging problems, or overly focused on nature rather than on God. Also, such stewardship requires work and frustration: people may become overwhelmed, and conflict may result. Such resistance may stem from the new paradigm that deep watershed stewardship promotes. As Thomas Berry notes, "We need to move from a spirituality of alienation from the natural world to a spirituality of intimacy with it, from a spirituality of the divine as revealed in verbal revelation to a spirituality of the divine as revealed in the visible world about us, from a spirituality concerned with justice simply to humans to a justice that includes the larger Earth community."[26]

Such deep transformation, required by the knowledge that our planet is under siege and that religions must respond, will involve struggle as people develop a wide range of responses, including denial, concern, grief, anxiety, determination and commitment to strengthen community, advocacy, and healing.

If leaders prepare for these feelings, identify deep values in their parishioners, and link these values with traditional ethics and suggested actions, the leaders offer the possibility of forward movement for transformation, albeit within a spectrum of commitment and involvement. New learning can be stimulating, including learning about watershed biology and geology, economic metrics, stories of past communities linked to the watershed, and imaginative retelling of biblical stories set in the community's watershed. Water's beauty, expressed perhaps through creative expressions among the congregation or experiences of enjoying water, softens and enlivens the activities and helps people appreciate one another and the project. Indeed, fun and laughter go a long way to bind the community in watershed stewardship and create hope that actions undertaken contribute to positive movements fostered by many people around the world.

Projects and activities to bring congregations home to their highly varied neighborhoods and watersheds honor the spectrum of the congregation's life and thus may include worship, education, advocacy, community involvement, and many types of activities directly involving water. Transformational leadership and education provided by a denominational leader and/or by a passionate church leader galvanizes the congregation and keeps momentum going. Further, strength builds when governing bodies and committees participate. Consider some of the myriad activities that might be fostered and overseen by passionate congregational leaders:

Worship. A congregation engaged in water stewardship may choose to return to the ancient Christian practice of baptizing outdoors[27], purchase a fountain or pool with running water indoors, or create or purchase a beautiful baptismal bowl. During baptisms, clergy may sprinkle parishioners with water and preach sermons that describe water pollution as a sin. The prayers during such a service will lift up names of local waters, and descriptions of the health of local waters can be printed in the bulletin. Worship leaders may plan a water month or liturgical

26 Thomas Berry, *The Christian Future and the Fate of the Earth,* ed. Mary Evelyn Tucker and John Grim (Maryknoll, NY: Orbis Books, 2009), 60.
27 See Dahill's chapter, "Rewilding" in *Eco-Reformation.*

season for special focus, which also fosters the link between science and religion through guest speakers or the sharing of scientific information about water.

Community involvement. Congregations may engage in removal of invasive plants on stream banks, adopt a watershed (with the church name listed strategically), and work with nonprofits to create road signs that identify water bodies for motorists passing over. They can visit sewage treatment facilities, learn about what nonprofits are doing to care for water, and work alongside these organizations in projects such as storm drain marking. If a congregation has a yard, parishioners may start a garden project that invites the neighborhood to participate and that teaches about the link between local farming and the health of soil and water.

Education. Educational opportunities abound for all ages, especially considering that children and youth love water activities. The congregation might invite geologists or other scientists or speakers from local colleges or nonprofits to speak about water stresses around the world. A congregation should reach out to Native Americans in its region to learn about the history of the watershed and current issues from an indigenous perspective. An active congregation might display a map of the watershed and create a brochure about what to do in the household and community to protect water. Actually caring for water as a congregation by going pesticide free, planting native species, using rain barrels, planting a rain garden, and developing permeable parking lots teaches parishioners what they can do in the grounds around their homes. Sermons that encourage parishioners to learn from a stream or river and then to meditate beside the water or write a prayer about it can foster a coming home to the ecosystem. Awareness of the link between physical health and the health of local waters takes on urgency when a municipal water supply is threatened.

Advocacy. The justice issues presenting opportunities for advocacy by a congregation and its members differ by location, with different resources available to support action. In cities, speakers from local watershed groups can illumine the issues of runoff from highways and developed areas that raise concerns about toxics and sewage capacity. A study of international agreements and statements such as the Earth Charter and the One Campaign contribute to understanding how water issues link internationally to farming, housing development, and transportation systems. All of these are issues around which advocacy can develop. Letter-writing campaigns and testifying at public hearings have become part of ministries involved with climate change, energy development, transportation, dams, and fisheries.

What may emerge over time is an increasingly fierce protection of water. Some of the water advocates who have made this move are Maude Barlow, Ched Myers, and Betsy Damon.[28] Love will form the basis of this stance and work: as Lutheran theologian David Rhoades notes, "We need to have a love affair with nature, because we will not save what we do not love."[29]

Water excursions. Water excursions help parishioners grow to love water. They may sample water in creeks or streams to determine the phosphorus and nitrogen content, picking up trash alongside the banks while they are out. There are many types of excursions a family or congregation can plan, such as a camping or canoe trip to the headwaters of a stream, or a guided walk alongside a stream with stops for prayer, counting waterfowl, describing the "melodies" of moving water, and the sharing of relevant scientific information. Congregations have researched about plastics in local water, and youth have taught others about what not to put down drains. Even visiting a water treatment plant can bring the concept of a watershed to life, fostering love and knowledge about ways to care practically for local waters.

---

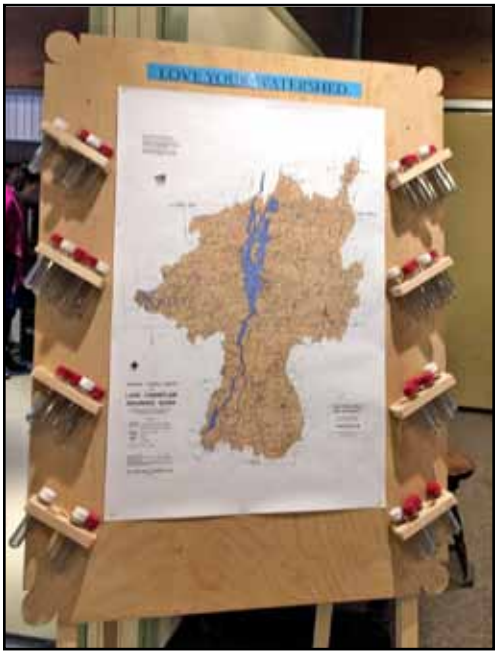
28 Maude Barlow cofounded the Blue Planet Project, serves as board chair of Food and Water Watch, and has published books on, and advocated for, the human right to clean water. Betsy Damon is an artist, lecturer, and water advocate. She founded and directs Keepers of the Waters.

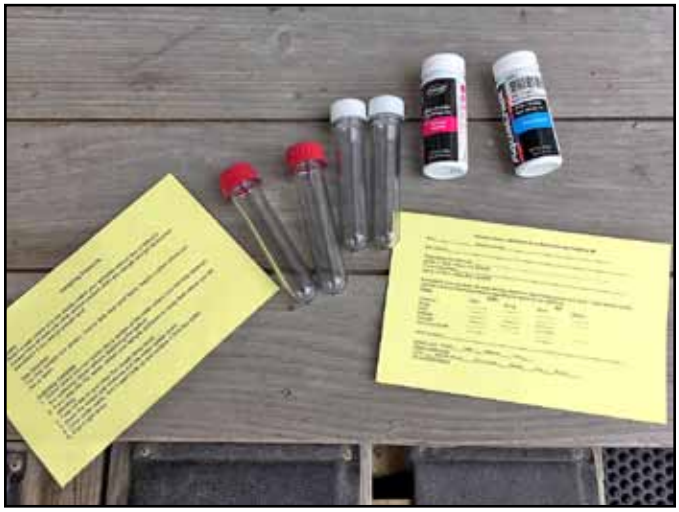
29 David Rhoads, "A Theology of Creation," in *Eco-Reformation: Grace and Hope for a Planet and Peril,* ed. Lisa E. Dahill and James B. Martin-Schramm (Eugene, OR: Cascade Books, 2016), 17.

Part 4

Getting to Work: A Field Manual for Action

This section contains examples of programs that have been found to be effective in producing awareness and what we came to call "buy-in." A survey, taken at the end of the action year by Ascension Lutheran church parishioners, indicated high appreciation of the issues and a desire to keep going.





Testing the waters

The first field experience involves familiarizing members with the concept of a watershed, involving them in the issues affecting it and, getting them out in it. This exercise does all these things.

The first step is to define the watershed you are studying and a watershed map does that. So the map is posted.

Second, in Vermont right now, the signature issue affecting our watersheds is high concentrations of phosphorous entering Lake Champlain and other lakes and high concentrations of nitrogen entering the Connecticut River. So, a way to inform and connect is to collect water samples from streams and rivers where members live, and to test them for phosphorous and nitrogen. This is done with the Hatch test kits, which utilize indicator strips that change color depending on the concentration of nutrient present.

So, members are given test tubes (bottle pre-forms, actually), a protocol and data card, and asked to go to a stream or river where they live, collect a sample and bring it back to church where they are shown how to use the test strips. (The instructions are right on the bottles.) While collecting they are asked to observe the water and the area around it and to enter their observations on the data card supplied. And, they are asked to find out the name of the stream or river where they are sampling.

Finally, when the samples have been tested, they are racked on the watershed board and a string is used to connect their sample to the location on the map where they collected the sample. The results of the water tests and their observations are posted for all to see.

Sampling Card

Side 1

Sampling Protocols

Safety

Select a spot where you can easily and safely collect your samples without fear of falling in. Always have at least one other person with you when you sample and get landowners permission if sampling on private property.

Site Selection

You may sample in a stream, river, or lake near your home, maybe a place where you fish or swim.

Collecting Samples

1. Collect where you can reach into a section of the water where you can fully immerse the test tube without disturbing the bottom.
2. If you step into the water, collect your sample upstream from where you are standing.
3. Take off the lid and rinse the test tube 3 times.
4. Invert the vessel and immerse it in the water upside down.
5. Once under water, turn it right side up and take it out once it is full.
6. Cap it right away.

Side 2

Use your senses, sight and smell, to characterize the site

Date _____ Samplers' Names _____
Site Location and Name _____
Precipitation Last 24 Hours _____
(clear, light rain, heavy rain, snow?) _____
Current Conditions _____

Instructions: use your senses and record on the checklist what you see and smell. These senses can be valuable alerts to important conditions regarding the health of your waterway. Use the checklist to record the water and adjacent soil smells.

Odor	**Water**		**Soil**	
	Faint	**Strong**	**Faint**	**Strong**
Chemical	_____	_____	_____	_____
Musty	_____	_____	_____	_____
Fishy	_____	_____	_____	_____
Sewage	_____	_____	_____	_____
Aromatic	_____	_____	_____	_____
No Distinct Smell	_____	_____	_____	_____

Other (explain) _____

Water Level: Flood _____ High _____ Normal _____ Low _____
Water Appearance:
Clear _____ Slightly Cloudy _____ Muddy _____ Oily _____ Foamy
Other Observations: _____

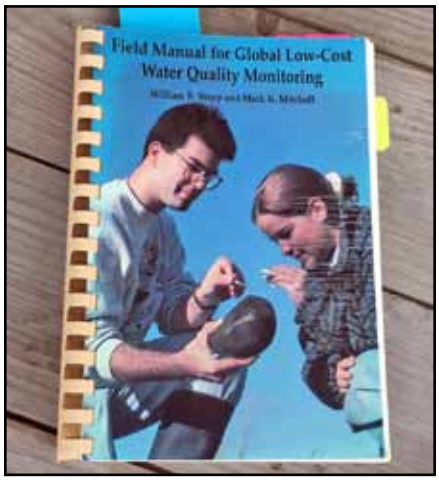
So, what's the point? The tests are not definitive, but they are a good indication and, they facilitate a connection with the water where people actually live. In our experience, members said they really pay attention now to their local bodies of water; prior to this activity, many didn't know the names of the water bodies, and they are more aware now of the issues that affect them.

Supplies:

Watershed Maps can be obtained from county planning commissions.

Soda - Bottle Pre-forms (cheap test tubes) can be ordered from: Educational Innovations, www.teacherssource.com. 203-748-3224.

Hatch Nitrogen and Phosphorous Test Strips can be ordered from: www.hatch.com/water-analysis or Carolina Biological, www.carolina.com. 800-334-5551



These Sunday School kids are learning how to collect a sample so they can teach their families how to do it!

Building Rain Barrels

Building rain barrels and offering them to your congregation and community can be a good way to raise the issue of storm water runoff. The Environmental Protection Agency estimates that a typical rain barrel can collect up to 1,300 gallons of water a season. This is water that doesn't run off into local streams, rivers and lakes, and it's water you don't have to pay for when you use it to water your garden. In cities, disconnecting downspouts and collecting the water can have a big impact on runoff.

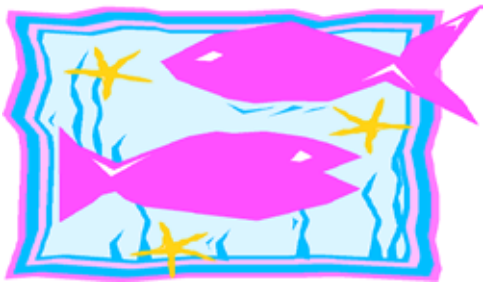
Rain Brothers rain barrel kit.

The EPA also says that the water is super-oxygenated and may be slightly acidic, thus good for plants. And, water from rain barrels can be used on vegetable gardens. A study conducted by researchers Michael Bakacs, Michael Haberland and Steve Yergeau, at Rutgers University, found that water in rain barrels typically measured below EPA limits for lead, zinc, polycyclic hydrocarbons. And total coliform bacteria were below limits, if the barrels were disinfected at the beginning of the season and once a month thereafter. To disinfect add one ounce of chlorine to a full barrel.[30]

There are lots of ways to build rain barrels but one approach is simple and convenient. You can buy used, food quality rain barrels locally, and a company called Rain Brothers (www.rainbrothers.com) puts together the kit pictured above that makes it easy. It even includes installation tools so all you need is an electric drill and a Phillips screwdriver. The total cost is about $55 for the kit and barrel.

Painted by Jane A'Lee Heyerdahl, Shelburne, Vermont.

Every congregation has artists and craftspeople who can paint a rain barrel that can be sold or auctioned off to defray expenses for the project. Painted rain barrels are also great advertisements and can even be used to involve different arts organizations in the project.



30 Rain Barrels Part IV: "Testing and Applying Harvested Water to Irrigate a Vegetable Garden." Fact Sheet FS1218.

The Turbidity Tube Water Clarity Test

Lab Manual and Field Data Sheet

Introduction: What is turbidity and why is it important?

Turbidity is cloudiness in water, and the degree of cloudiness indicates possible problems related to the presence of substances that can affect suitability for drinking, swimming, and fishing and the likelihood of contributing to algal blooms and excessive underwater plant growth. Turbidity sampling can help identify sources of pollution caused by runoff from roads, parking lots, lawns, agricultural fields, and forests.

How is it measured?

There are several ways to measure turbidity, some of which involve expensive equipment and laboratory testing. But, reliable field tests have been developed, which use a device called a Secchi disk–a flat, round plate, 30 cm in diameter, with black and white markings, that is dropped into the water on the end of a line, and the depth noted when it can no longer be seen. Conversion scales have been developed that quantify the measure in NTU's (nephelometric trubidity units), and this measurement can indicate how suitable water sampled is for various uses. Because the Secchi disk is inexpensive, and can even be home-made, it is useful in the developing world or classrooms where resources are limited.

However, the Secchi disk is not useful in bodies of water where there isn't enough depth to get a reading. So in this case the turbidity tube comes into play.

The Turbidity Tube

The turbidity tube is a 4' long tube, about 1 1/4" in diameter that has a Secchi disk mark in the bottom and a centimeter scale marked along its length. It can be used in two ways:

1. Water can be collected in another container and slowly poured in the tube until you can no longer see the marking at the bottom. You then note the depth in centimeters.

or,

2. The tube can have a drain at the bottom that can let the water out slowly after the tube is filled from the other container. This is a more convenient way to conduct the test, but it does require more of a procedure in making the tube.

NTU's and what they indicate.

1. NTU's are a measure of the light that is scattered by particles in the water.
2. The World Health Organization standards specify that drinking water turbidity should be no higher than 5 NTU's, and the U.S. follows that standard as well.
3. The human eye can detect turbidity beginning at the 5 NTU level.

Measuring Turbidity with a Turbidity Tube

Field Sheet: Procedure for using the tube.

1. Without disturbing the bottom, draw water with a bucket or other container that is large enough to fill the tube.
2. Swirl the water in the container to ensure it is consistent - that all the particles are suspended.
3. Pour water from the container into the tube, filling it to the top.
4. Standing in daylight, hold your head 10 - 20 cm above the tube and sight down to the bottom. Drain water from the tube slowly until the disk appears.
5. Note the water line, read the cm scale and record that on the data sheet.
6. Using the chart: convert the CM reading on the tube to NTU's.
7. Enter the result on your lab sheet.

Converting to NTU's

Length-to-NTU Turbidity Conversion

Centimeters	NTU's
85.4	5
53.4	10
50.9	11
48.3	12
45.8	13
43.3	14
40.7	15
38.2	17
35.6	19
33.1	21
25.5	30
20.4	40
17.9	50
11.5	100
11.9	150
7.3	200
6.7	240

NOTE: chart taken from: *Turbidity Tube: Simple and Accurate Measurement of Turbidity in the Field,* by Elizabeth Myre and Ryan Shaw, Department of Civil and Environmental Engineering at Michigan Technological University, 2006. This paper also tells how to make the turbidity tube.

Name of Water Body: **Location:**

Date	NTU's	Weather Last Three Days	Comments

NOTES: 1. The higher the NTU's the more cloudy the water is. Over 5 NTU's, the water must be clarified before it can be subjected to purification for drinking water. (World Health Organization)

2. The higher the NTU's, the more turbidity is going to prevent light from filtering down through the water column, affecting fish, plant growth and oxygen levels.

3. High NTU's also indicate possible runoff problems, and the turbidity tube can be used to "bracket" suspected areas of runoff to determine where the problem is.

A Lake and River Cruise Action Tutorial

Introduction

The activities just described may involve a good bit of walking, perhaps over difficult terrain, and not everybody can do that. But, most people can ride in a boat and, once informed, most people can become advocates for clean water in Vermont.

This experience involves chartering a boat large enough for the group you expect to serve, arranging for a venue where box lunches can be handed out and eaten and where speakers from a state agency and NGOs can speak.

So, following is the description of our 2017 event.

The cruise boat Escape and a group of attentive but soggy participants.

Julie Moore, Secretary of the Vermont Agency of Natural Resources

Lake Champlain Action Cruise and Tutorial

Schedule
Friday, June 16, 9:30 -4:00

The goal of this event is to inspire people of faith to become effective advocates for clean water and provide them with insights and information enabling them to engage with policy-makers at the local, state and national level.

9:30: Assemble at the Lake Champlain Maritime Museum, Basin Harbor Rd, Vergennes, VT.

On the water

10:00: A cruise on Lake Champlain and Otter Creek on the Escape, leaving from the Basin Harbor Club, led by **Matthew Wittten**, naturalist/educator, Lake Champlain Maritime Museum and Executive Director, Addison County River Watch Collaborative.

Also on the water

Why should clean water be a faith/spiritual issue? Led by **Rev. Nancy Wright,** Ascension Lutheran Church, **Grace Oedel,** Executive Director, Ohavi Zedek Synagogue, J. Bradley Materick representing the Burlington Shambhala Center.

At the Museum

12:15 The conversation continues during lunch at Gateway Auditorium at the Lake Champlain Maritime Museum.

1:00 How will the Federal budget affect the clean-up of Lake Champlain and how did the 2017 Vermont legislative session affect funding? Led by **Julie Moore**, Secretary, Vermont Agency of Natural Resources.

1:45 What is threatening to degrade the "Vermont Brand"? Led by **Rebekah Weber**, Lake Champlain Lake Keeper.

2:30 What measures need to be taken right now to address these issues? Led by **James Ehlers,** Exec. Director, Lake Champlain International.

3:15 What does Act 64 Require? Led by **Jon Groveman,** Policy and Water Program Director, Vermont Natural Resources Council.

4:00 Open tour of the Museum

How Did It Work?

The event took place on a rainy day, but all forty-five people showed up, and off we went. The boat cruised out into Lake Champlain and on up Otter Creek a mile or so. During this time an educator talked about the lake and river from an ecological standpoint and three religious leaders spoke about water from the perspective of their faith traditions and why faith communities should care and act.

At one point in the river the boat's engine was turned off and the silence, broken only by the rain, was a powerful experience for many.

Back at the Museum, box lunches were distributed and the speakers began to speak on the subjects listed above. (Perhaps the number of speakers proved too many to keep participants' full attention, as a few people drifted off toward the end of the program.)

Handouts were available from the organizations from which the speakers came, and participants were urged to join at least one NGO so they could continue to be updated on important issues.

During the following year updates on Vermont legislation affecting clean water were posted at the church, and letter and post-card signings kept the issues in our members' minds.

A Water Pilgrimage

In cooperation with the Clean Water Network originating from ECHO, The Leahy Center for Lake Champlain, we helped organize a Water Pilgrimage at the LaPlatte River boat launch in Shelburne, Vermont. The goal was to provide families the opportunity to experience the watershed by canoeing, rowing, walking, and communing together.

Left: LaPlatte River boat launch in Shelburne. Right: Gathering around the common bowl.

The event took place in late September on a cloudy day and about thirty people participated. The site was chosen because it offered sheltered waters, a marshland, hiking trails, a boat launch, rest room facilities, a secluded green space for meeting and for lunch, and plenty of parking.

9:00 Yoga on the riverside.

9:45 Common circle for readings and a brief meditation; test tubes handed out and participants encouraged to collect a water sample at some point during the morning.

10:00 Canoe, row a long boat, or hike, all with naturalist- educators.

12:00 Lunch provided, and fellowship.

1:00 Canoe, row a long boat, or hike, all with naturalist-educators.

2:30 Closing circle; all pour the water from their test tubes into the common bowl and then take the common water out again and take it home in the test tubes as a reminder of the event through the year.

Comments indicated a variety of experiences. Those who rowed reported their satisfaction at learning how to coordinate as part of the team and how "big" the lake was. Those who canoed reported that they saw more heron varieties than they thought possible, and several families had fun learning to canoe for the first time. The hikers were impressed with the diversity of plants they encountered, and how "natural" it was in the middle of civilization.

Many appreciated the meditations and the quiet moments on the water and on the trail, when everybody paused to observe and contemplate.

Worship on the Water

The Sunday after Labor Day in 2017 we held our worship service at North Beach in Burlington, right on the shore of Lake Champlain. We reserved a pavilion, ordered a catered lunch, and spent the afternoon after the service, visiting and hanging out. There were games for the kids, the day was beautiful, and all thoroughly enjoyed this culminating event. Interestingly enough, that Sunday proved to be one of our highest attended Sundays other than holiday celebrations. People really enjoy being near the water.

Organizing for Action: Making it a Congregational Concern

Ascension Lutheran Church's experience: Ascension has a long history of social activism, and its members have been active in such things as the establishing of The Good News Garage, and Vermont Interfaith Power and Light. And we have a very active Caring for Creation Committee, and a supportive (and more) pastor in Nancy Wright. In fact, it was Pastor Wright who proposed the Watershed Discipleship project at the church as part of her doctoral dissertation. So the Caring for Creation Committee and Church Council committed to support her work and provide leadership in the year-long events that, along with her graduate work, provided the foundation of this project and are detailed in this manual.

In addition to the projects just described, advocacy is essential. Many lobbying guides are available to help faith communities advocate for clean water. Energy Independent Vermont created one such guide (see next page). Advocacy activities may range from individual letter writing to legislative visits. Advocacy is essential to promote clean water.

TOP RIGHT: At the State House, Montpelier VT for Clean Water Day, March 7, 2018. TOP LEFT: Marcia, Gale and Richard at Clean Water Day. BOTTOM RIGHT: The members of Ascension Lutheran Church and other concerned leaders march to the State House on Clean Water Day 2018.

ENERGY INDEPENDENT VERMONT

Citizen Lobbying 101

Organizing an in-district meeting with your legislator(s)

What is lobbying and how do I know if I am doing it?

Simply put, lobbying is advocating a point of view, and is done either by groups or individuals. A *special interest* is an identified group promoting their point of view — be it colleges and universities, businesses, hospitals and even state, local or foreign governments. A *public interest* is an identified group promoting the general public's interest- whether that be clean air, water or healthy communities. While most people think of lobbyists only as paid professionals, there are also many independent, volunteer lobbyists — all of whom are protected by the First Amendment. Lobbying is an important part of the democratic process.

The Citizen Lobbyist

You don't need to be a high-powered, big name, professional lobbyist to make an impact. It is to your advantage that you are a Vermonter concerned about the consequences of unmitigated global warming and you have taken the time to come to speak to your legislator. As a constituent, you have a level of credibility that professional lobbyists do not. No elected official can survive with a reputation for ignoring constituents.

Know Your Target

In our campaign to put a price on carbon pollution, the targets are state legislators who will vote on the issue. Your legislator is accountable to their constituents, so think about which groups in your town might be major influences on them. Local employers and institutions are examples of groups that influence your representative. Also, go online and find information on your legislators by running a Google search, looking up their LinkedIn profile, or simply reading profiles at legislature.vermont.gov. You will feel more confident in your dealings with your legislator if you know their background.

Know What You'd Like to Say

First, you don't need to be an expert. A few talking points on the benefits of a price on carbon pollution combined with your personal story and concerns will do just fine. You're a constituent and that means a lot to the legislator. Also, only say what you know, as exaggeration or misinformation can cause the legislator not to listen to you in the future. And you do want your conversation to be brief (especially if the legislator is running off to a committee room) so being prepared is key.

Know What Your "Ask" Is

Be prepared with an action that your legislator can take to address your concerns. The more specific and direct the "ask" the better. The "ask" is not always a question, but often is telling your legislator what you would like or expect to see from them. In this case, the "ask" is:

"Representative/Senator _____, we want you to support the ESSEX plan and commit to working with your colleagues to advance this commonsense policy"

Be sure to take diligent notes during the meeting, then get in touch with us at Energy Independent Vermont (EIV) and we will work with you to formulate next steps!

The Citizen Lobbying Guide was provided by Vermont Public Interest Research Group and does not constitute an endorsement of the content or positions included elsewhere in the publication. Vermont Public Interest Research Group (VPIRG) 141 Main St., Ste. 6, Montpelier, VT 05602, (802) 223-5221.

Part 5
Resources

Books

Altman, Nathaniel. *Sacred Water: The Spiritual Source of Life.* Mahwah, NJ: Hidden Spring, 2002.

Ball, Philip. *Life's Matrix: A Biography of Water.* New York: Farrar, Straus and Giroux, 1999.

Barlow, Maude. *Blue Future: Protecting Water for People and the Planet Forever.* New York: The New Press, 2014.

Berry, Thomas. *The Christian Future and the Fate of the Earth*. Edited by Mary Evelyn Tucker and John Grim. Maryknoll, NY: Orbis Books, 2009.

Brown, Peter G., and Jeremy J. Schmidt, eds. *Water Ethics: Foundational Readings for Students and Professionals*. Wash., DC: Island Press, 2010.

Brown, Rebecca A., ed. *Where the Great River Rises: An Atlas of the Connecticut River Watershed in Vermont and New Hampshire.* Hanover, NH: Dartmouth College Press, 2009.

Burke, Suzanne, ed. *Living the Promises of Baptism: 101 Ideas for Parents.* Minneapolis: Augsburg Fortress, 2010.

Dahill, Lisa E., and James B. Martin-Schramm, eds. *Eco-Reformation: Grace and Hope for a Planet in Peril*. Eugene, OR: Cascade Books, 2016.

Chamberlain, Gary L. *Troubled Waters: Religion, Ethics, and the Global Water Crisis.* Lanham, MD: Rowman & Littlefield Publishers, Inc., 2008.

EcoFaithNetwork. "Toolkit: Our Watershed Moment." Minneapolis synod, ELCA, 2006.

Graffagnino, J. Kevin, H. Nicholas Muller III, David A. Donath, and Kristin Peterson-Ishaq, eds. *The Vermont Difference: Perspectives from the Green Mountain State* Woodstock, VT: The Woodstock Foundation, 2014.

Grim, John, and Mary Evelyn Tucker. *Ecology and Religion*. Washington, DC: Island Press, 2014.

Kutolowski, Lisa Hershey, and Mark Kutolowski. *River of Life: 40 Days of Prayer,* Connecticut River Pilgrimage 2017, booklet produced for the Connecticut River Pilgrimage, May 31–July 9, 2017 by Kairos Earth. www.kairosearth.org/river.

Lake Champlain Basin Program. *2018 State of the Lake and Ecosystems Indicators Report*. Grande Isle, VT: Lake Champlain Basin Program, VT: June, 2018

Lambert, Jan. *Water, Land and Climate--The Critical Connection: How We Can Rehydrate Landscapes Locally to Renew Climates Globally.* Putney, VT: Valley Green Journal, 2015. www.valleygreenjournal.com.

Lloyd-Sidle, Elena, and Gray Henry-Blakemore, eds. *Water: Its Spiritual Significance*. Louisville, KY: Fons Vitae, 2009.

Marsh, George Perkins. *Man and Nature*. Originally pub. 1864. Seattle, WA: University of Washington Press, 2003.

Myers, Ched, ed. *Watershed Discipleship: Reinhabiting Bioregional Faith and Practice*. Eugene, OR: Cascade Books, 2016. https://watersheddiscipleship.org

Nichols, Wallace J. *Blue Mind: The Surprising Science That Shows How Being Near, In, On, or Under Water Can Make You Happier, Healthier, More Connected, and Better at*

What You Do. New York: Back Bay Books, 2015. https://watersheddiscipleship.org

Partridge, Rosemary, Ellen Powell, and Annette Smith. *Respect Water—Protect Water: Facts, Prayers, Actions and Rituals for Water*. Danby, VT: Vermonters for a Clean Environment, 2008.

Peppard, Christiana Z. *Just Water: Theology, Ethics, and the Global Water Crisis*. Maryknoll, NY: Orbis Books, 2014.

Pielou, E. C. *Fresh Water*. Chicago: The University of Chicago Press, 1998.

Pope Francis, *Encyclical on Climate Change & Inequality: On Care for Our Common Home*. New York: Melville House, 2015.

Rasmussen, Larry L. *Earth-Honoring Faith: Religious Ethics in a New Key*. New York: Oxford University Press, 2013.

Schwartz, Judith. *Water in Plain Sight: Hope for a Thirsty World*. New York: St. Martin's Press 2016.

Sedlak, David. Water 4.0: *The Past, Present, and Future of the World's Most Vital Resource*. New Haven, CT: Yale University Press, 2014.

Solomon, Steven. *Water: The Epic Struggle for Wealth, Power, and Civilization*. New York: Harper Collins, 2010.

Stapp, William B., and Mark K. Mitchell. *Field Manual for Global Low-Cost Water Quality Monitoring*. 2d ed. Dubuque, Iowa, 1997.

Thompson, Elizabeth H., and Eric R. Sorenson. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. The Nature Conservancy and the Vermont Department of Fish and Wildlife: 2005.

Winslow, Mike. *Lake Champlain: A Natural History*. Burlington, VT: The Lake Champlain Committee, 2008.

Organizations

Vermont Clean Water Network: Representing more than 75 organizations and people from all walks of life. Join us in transforming the way we think about and care for water. www.vtcleanwaternetwork.org

Watersheds United Vermont: www.watershedsunitedvt.org

Lake Champlain Maritime Museum: www.lcmm.org

Voices of Water for Climate: www.vow4climate.org . Learn how individuals and communities can effectively deal with climate change through improvements in managing stormwater runoff. Simply put, soak up the rain not only to reduce pollution and erosion but also to help your local climate.

BioFinder: http://anr.vermont.gov/maps/biofinder . BioFinder is a database and mapping tool for identifying Vermont's lands and waters that support important ecosystems, natural communities, habitats, and species.

The Vermont Rain Garden Manual:
www.uvm.edu/seagrant/sites/default/files/uploads/publication/VTRainGardenManual_Ful l.pdf

The Yale Forum on Religion and Ecology: fore.yale.edu. The largest multinational interreligious project of its kind. Conferences, publications, and website.

Litanies

Prayer of the Day— Dear God, Creator of the Universe, we thank you for the gift of life. We thank you for the gift of water, which makes all life possible. Move us to love these waters as you do. Fill us with a vision of a renewed creation, and give us the will to be faithful stewards of all your gifts. We pray in the name of Jesus Christ, who brings Living Water, Amen

Respect Water, Protect Water
There are resources inside of us
Resources outside of us\And water is one of the most precious

The condition of our internal water matters
The hydration of our cells\The fluidity of our emotions\The waters of our psyche

The condition of our planetary water matters
The health of our oceans
The flow of our rivers, streams and creeks
The well being of our underground springs

All species from trees to caterpillars
Humans to river rocks Interact with and depend on water

Mothers of many species
Bring their young to drink and play
At the water's edge

And from space
The blue green nature\Of our watery planet Is apparent
All of creation knows\And is affected by How we treat water

So when a resource is this crucial
This important
This valuable
How do we behave?
We protect and we respect
Sustainer of All Life\Your flow is within us\And all around us
May we grow in consciousness

Teach us to protect and respect water
May we receive
The wisdom of interdependence and interconnectedness

May we change behaviors\As individuals, as groups\To value the waters of life

May we change policies
As countries and as counties
To value the waters of life
And may we welcome
The inventions
And the changes they will create
That value the waters of life

We pray for the well-being of Planet Earth
Protect Water, Respect Water

(From *Respect Water—Protect Water: A Drop of Hope, An Ocean of Love: Facts, Prayers, Actions and Rituals for Water*, Vermonters for a Clean Environment, December 2008)

Acknowledgements

ECHO, Leahy Center for Lake Champlain

ECHO, Leahy Center for Lake Champlain is an innovative science and nature center located on Burlington, Vermont's Waterfront. ECHO currently welcomes more than 150,000 visitors annually, leveraging its unique setting to inspire and engage with more than 100 interactive exhibits; 60 species of fish, reptiles, and amphibians; major changing exhibits; and a 2,500-square foot early learning interactive space. ECHO encourages visitors to view the natural environment as part of their neighborhood and to explore, learn about, and consider opportunities for stewardship. www.echovermont.org

Vermont Clean Water Network

The Vermont Clean Water Network is comprised of more than 75 organizations dedicated to creating a culture of clean water. Established in 2016, the Network provides opportunities for cross-sector collaboration and shared learning around clean water issues. www.vtcleanwaternetwork.org

Voices of Water for Climate

Voices of Water for Climate is an organization based in New Hampshire, which shares a message of hope for the earth's waters and climate, through its emphasis on recognizing the central role of the water cycle. In the spiritual context, water (as rain) is a gift from God to mankind, and it is not wise to waste this gift by polluting it, eroding valuable soil, and sending rainwater down storm sewers. By allowing rain and snow to soak into the earth and plants as nature intended, we can restore our local land-based water cycles. This will reduce floods and drought, renew springs and streams, lessen poverty and conflict, and improve landscape health for both humans and wildlife. For more information visit their website at www.vow4climate.org, or contact Jan Lambert at jan@vow4climate.org or 603-477-9947. www.vow4climate.org

Vermont Interfaith Power & Light (VTIPL)

Vermont Interfaith Power & Light (VTIPL) is a nonprofit organization working with faith and spiritual communities statewide, helping them understand the extent of the climate crisis, and that it is, at heart, a spiritual crisis. Earth, including all of its waters, is a precious gift that we must strive to protect. And since we live our faith through our actions, VTIPL empowers members of faith and spiritual communities to advocate and take action in their houses of worship, homes, workplaces, and the broader community to conserve energy, use it efficiently, and push for more renewable energy. VTIPL also encourages people to lobby legislators for good policies and funding for wise energy use and clean water throughout Vermont.

VTIPL's largest program is the annual conference, held in a different part of the state each year, with a powerful Keynote Speaker and workshops. Other work includes free energy assessments for any Vermont faith community that requests one, and grants given to faith communities for energy audits and energy efficiency projects. VTIPL has a growing number of faith community members; currently the number is 86. More information about VTIPL's work is at www.vtipl.org
Email: info@vtipl.org

Caring for water orients a congregation in a new and deep way to its social, cultural, and ecological community, while also positioning it to develop supportive ties to other congregations and groups in the area to foster watershed health. When a congregation cares for its local watershed, it potentially promotes awareness and action to ameliorate worldwide water justice issues, including climate change and the feminization of poverty, both of which reflect and create water justice issues.