

Virginia Water Central

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Ice and frost on a temporary pond adjacent to Toms Creek in Blacksburg, Va., November 22, 2014.

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S² on H₂O



Growth and Change at the Virginia Water Center

*By Stephen Schoenholtz, Director
Virginia Water Resources Research Center*

I am pleased to highlight some of our recent activities at the Virginia Water Resources Research Center, touching on the three parts of our mission: providing education for future water professionals, coordinating and conducting research to address the Commonwealth's complex water-resources challenges, and promoting transfer of water information to stakeholders and decision makers throughout Virginia.

On the **education** side, we are fortunate to have welcomed two new Virginia Tech faculty to the Water Center's ranks. Dr. Luke Juran, an Assistant Professor in the Department of Geography, is coordinating community engagement at the Water Center. Luke's expertise is in the human ecology of water, including human interactions with inadequate provision of water and sanitation services, and the intersection of water and natural hazards. Dr. Daniel McLaughlin, an Assistant Professor in the Department of Forest Resources and Environmental Conservation, is helping to coordinate our water science advisory efforts. Daniel's expertise is in forest ecohydrology, wetland and stream processes, emerging environmental sensors, watershed and landscape hydrology, and biogeomorphology. I look forward to working closely with Luke and Daniel to advance the mission of the Water Center.

We continue to support innovative water **research** through our seed grant program and through the William Walker Graduate Fellowship. These two programs are currently funding graduate student research projects in the Departments of Civil and Environmental Engineering and Biological Systems Engineering at Virginia Tech, the Department of Environmental Sciences at the University of Virginia, and the Department of Physical Sciences and Chemical Oceanography at the Virginia Institute of Marine Sciences. We plan to provide summaries of these research projects in an upcoming issue of *Virginia Water Central*. As of November 2014 The Water Center supports an additional six graduate students and five undergraduate students at Virginia Tech through external grants and contracts.

In its latest three-year review of our programs, the U.S. Geological Survey (USGS) rated our **information-transfer** efforts as "exemplary." Our information-transfer program has been very active in 2014, including offering of a water seminar series at Virginia Tech; coordinating the annual Virginia Water Monitoring Council Conference in June; and, in September, joining with the seven other mid-Atlantic Water Centers and Institutes to host a two-day conference on water infrastructure challenges and solutions at the National Conservation Training Center in Shepherdstown, W. Va. We also are working to correlate our weekly *Virginia Water Radio* programing (<http://www.virginiawaterradio.org/>) with Virginia Standards of Learning for science and social studies. And in August, we unveiled a reformatted and more active Web site (<http://www.vwrrc.vt.edu/>), which allows you to subscribe to e-mail notifications of Water Center announcements and of new items posted on the Virginia Water News Grouper (<http://vawatercentralnewsgrouper.wordpress.com/>). I encourage you to visit our Web site to learn more about our efforts to provide water information for you.

Finally, with the assistance of our Statewide Advisory Board we have embarked on efforts to develop a **new strategic plan** for the Water Center. We intend for the plan to help keep us positioned to play an expanding role in serving the Commonwealth through education, research, and information to the public. As we strive to complete our new strategic plan in the coming months, I welcome your suggestions on how to enhance our effectiveness in meeting our goals. I can be reached at stephen.schoenholtz@vt.edu.

FEATURE ARTICLE

Water in the 2014 Virginia General Assembly

The 2014 Virginia General Assembly (online at <http://virginiageneralassembly.gov/>) convened January 9 and adjourned March 8. During the session, the Assembly considered 2899 measures, the proposed biennial budget for 2014-16, and amendments to the 2012-14 budget.

The General Assembly was not able to agree on a biennial budget during the regular session, so a special session convened on March 24, 2014, and amendments for the 2012-14 budget were passed that day and approved by the governor on April 1. After several weeks of disagreements among the House of Delegates, Senate, and the governor, on June 23 the budget for the upcoming biennium received final approval. The normal reconvened session—for the General Assembly to consider vetoes or amendments by the governor—was held April 23.

In this article, *Virginia Water Central* lists 161 measures in the 2014 Assembly (including six budget bills) dealing with water resources directly or indirectly. The list comes from the Legislative Information System (LIS) Web site, at <http://leg1.state.va.us>, in the categories indicated by sub-headings below. Bill summaries were also taken from LIS (edited in some cases for space or clarity). Bills are listed under only one category, even if LIS listed them more than once. The categories searched and the bills listed include all those with *direct* water relevance (such as bills in the “Water and Sewer Systems” category) as well as those with a *potential or indirect* relevance to water (such as bills dealing with land conservation and energy-efficiency, two activities that ultimately affect water resources). *Water Central’s* list below *does not necessarily include all bills* that potentially affect Virginia’s water resources.

Within each category, bills are listed in order of their **bill number**, using the following abbreviations: **HB** = bill started in House of Delegates; **HJ** = joint resolution started in the House; **SB** = bill started in the Senate; and **SJ** = joint resolution started in the Senate. Numbers in the left-hand column have been added by *Water Central* for cross-referencing among the bills.

A box at the end of the article lists several topics and bills from the 2014 Assembly that received attention in various news media. For a selection of online news articles about water-related legislation in the 2014 Assembly, please visit the *Virginia Water Central* News Grouper at <http://vawatercentralnewsgrouper.wordpress.com/category/2014-virginia-general-assembly/>.

Thanks to Water Center summer employee Bryce Thompson for compiling information on bill status, editing bill summaries, and cross-referencing related bills.

Water Central’s inventories of water-related bills in previous General Assembly sessions (1998-2013) are available online at www.vwrrc.vt.edu/legislation.html.



2014 Water-related Bill Inventory

Click on the bill numbers to access information at the Legislative Information System (LIS).

Frequently used abbreviations: House ACNR = House Agriculture, Chesapeake, and Natural Resources committee; Senate ACNR = Senate Agriculture, Conservation, and Natural Resources committee; DCR = Virginia Department of Conservation and Recreation; DEQ = Virginia Department of Environmental Quality; DGIF = Virginia Department of Game and Inland Fisheries; NPS = National Park Service; SCC = State Corporation Commission; SWCB = State Water Control Board; VDOF = Virginia Department of Forestry; VDOT = Virginia Department of Transportation; VMRC = Virginia Marine Resources Commission.

BUDGET

1	HB 5001	Budget Bill. Amendments to the 2012-14 biennial budget.	Passed during special session (after HB 29 failed during the regular session).
2	HB 5002	Budget Bill. Appropriations for the 2014-2016 biennium (July 1, 2014—June 30, 2016).	Passed during special session (after HB 30 failed during the regular session).
3	SB 29	Budget Bill. Amendments to the 2012-14 biennial budget.	Failed during regular session.
4	SB 30	Budget Bill. Appropriations for the 2014-2016 biennium (July 1, 2014—June 30, 2016).	Failed during regular session.

CONSERVATION

Land Conservation/Preservation Bills

5	HB 738	Conservation easements; agreements to obtain land, consent required, inverse condemnation. Would provide that, where the Commonwealth or any political subdivision possessing the power of eminent domain enters into an agreement to obtain a conservation easement, the Commonwealth shall first obtain the consent of all private landowners whose property would be subject to such easement.	Continued to 2015 in House Courts of Justice.
6	HB 968	Purchasers of brownfield properties. Changes the definition of the "bona fide prospective purchaser" of brownfield property to include not only the person who acquires or proposes to acquire ownership of a brownfield property but also the tenant of such person (this conforms Virginia's definition to the federal definition).	Passed.
7	SB 568	Land preservation tax credit; retention of qualified mineral interest. Would have disallowed a tax credit for the donation of an interest in land, including the donation of a conservation easement, where the donor retains a qualified mineral interest as defined by Internal Revenue Service (IRS) regulations.	Failed in Senate Finance.

Other Conservation Bills

8	HB 363	Electric utility regulation; approval of generation facilities. Would have required the SCC, in its consideration of an application for approval of an electrical generation facility, to consider environmental effects not expressly governed by a permit or expressly considered by a permitting authority, including carbon emissions.	Failed in House Commerce and Labor.
9	HB 506	Littering. Would provide that a person charged with littering in an amount no more than 0.7 cubic feet may prepay fine of \$50 in lieu of appearance in court.	Continued to 2015 in House Transportation.
10	HB 529	Federal parks in Virginia; provision of temporary funding. Would have authorized the governor, in the event of a federal government shutdown, to provide funding and execute necessary agreements to allow the temporary operation of any Virginia property controlled by the National Park Service.	Failed in House Rules.
11	HB 856	Hazardous waste permit. Removes the requirement for a DEQ permit to <i>transport</i> hazardous waste (currently regulated by the transporting of hazardous waste). State regulation of storage, treatment, and disposal of hazardous waste is retained.	Passed.
12	HB 858	State forest activity fee. Authorizes VDOF to establish a special use permit fee for other activities in state forests in addition to the five currently specified activities of hunting, fishing, trapping, riding bikes, and riding horses.	Passed.
13	HB 1006	Update of the Probable Maximum Precipitation level applied to impounding structures (dams). Directs the DCR to utilize a storm-based approach to calculate the Probable Maximum Precipitation (PMP) for various locations in or affecting Virginia. Companion bill is SB 582 (#20). Similar to HJ 132 (#142).	Passed.
14	HB 1070	Litter Control and Recycling Fund Advisory Board; membership. Would have increased membership on the Advisory Board from five to six persons, with the new member designated to represent the craft brewery industry.	Failed in House ACNR.
15	HJ 28	Recycled material; Manufacturing Development Commission to study benefits in manufacturing process. Directs the Manufacturing Development Commission to examine the economic and environmental benefits of the use of recycled material in the manufacturing process in Virginia. Companion bill is SJ 75 (#22).	Passed.
16	HJ 57	Selenium; Department of Environmental Quality to review toxicity to aquatic life. Requests the DEQ to study the toxicity of selenium to aquatic life. Companion Bill is SJ 35 (#21).	Passed.
17	SB 53	Regulation of storm-water; waiver of charges for places of worship. Would have required any locality that adopts a system of storm-water management service charges to provide for a waiver of at least 50 percent of such charge to any church, synagogue, or other place of worship.	Reported from Senate Local Government; Failed in Senate ACNR.
18	SB 431	Voluntary remediation program; removes cap on registration fees. Removes the \$5,000 cap on registration fees	Passed.

		collected by the DEQ from persons conducting voluntary remediation on contaminated properties.	
19	SB 545	Reforestation Operations Fund; changes current Fund to non-reverting special fund. Changes the current Reforestation Operations Fund to a non-reverting special fund in which all money, including interest the fund generates, stays in this fund rather than reverting to the Commonwealth's general fund at the end of each fiscal year.	Passed.
20	SB 582	Update of the Probable Maximum Precipitation level applied to impounding structures (dams). Companion bill is HB 1006 (#13); please see that bill for summary. Similar to HJ 132 (#142).	Passed.
21	SJ 35	Selenium; Department of Environmental Quality to review toxicity to aquatic life. Companion bill is HJ 57 (#16); please see that bill for summary.	Passed.
22	SJ 75	Recycled material; Manufacturing Development Commission to study benefits in manufacturing process. Companion bill is HJ 28 (#15); please see that bill for summary.	Passed.

ENERGY CONSERVATION AND RESOURCES

23	HB 784	Virginia Geographic Information Network Advisory Board, etc.; membership and terms. Reduces the number of non-legislative citizen members who serve on this board from nine to seven; eliminates the position for an elected official that serves on a planning district commission and one of the two representatives of a utility or transportation industry.	Passed.
24	HB 796	Virginia Energy Plan; postpones due date for quadrennial updates. Postpones the due date for quadrennial updates to the Virginia Energy Plan from July 1 to October 1. Companion bill is SB 514 (#36). See much more comprehensive related bill HB 1261 (#30).	Passed.
25	HB 910	Renewable energy property; tax credits for placing into service. Would establish tax credits for placing into service renewable energy property, defined as energy derived from sunlight, wind, falling water, biomass, waste, landfill gas, municipal solid waste, wave motion, tides, and geothermal power, but not including energy derived from coal, oil, natural gas, or nuclear power. Credits could be up to 40 percent of the cost of installation, not to exceed \$3 million for any individual property or \$100 statewide annually. Similar to HB 1063 (#27).	Continued to 2015 in House Finance.
26	HB 1025	Biofuels Production Incentive Grant Program; eligibility to receive grants. Changes the amount of the grant for biofuels produced in the Commonwealth from \$0.10 for each gallon produced and subsequently sold to (i) \$0.04 for each gallon sold in calendar year 2014, (ii) \$0.03 for each gallon in calendar year 2015, and (iii) \$0.025 for each gallon sold in calendar year 2016 and during the period January 1, 2017, through June 30, 2017.	Passed.
27	HB 1063	Renewable energy property; tax credits for installing. Essentially identical to HB 910 (#25); please see that bill for summary.	Failed in House Finance.

28	HB 1158	Distributed electric generation; establishment of community solar gardens. Would have authorized the establishment of community solar gardens, owned by a subscriber organization that has at least 10 subscribers, and through which subscribers would receive credit on electricity bills for solar power generated by the solar garden.	Failed in House Commerce and Labor.
29	HB 1239	Real and personal property tax exemption; solar energy equipment, facilities, or devices. Adds business-owned or business-operated solar energy equipment, facilities, or devices to the kinds of equipment or facilities considered “certified pollution control equipment and facilities” for the purpose of exemption from real and personal property tax. Companion bill is SB 418 (#35).	Passed.
30	HB 1261	Virginia Energy Plan; carbon dioxide emission control impact; schedule. Requires the Virginia Energy Plan to include, with regard to any regulations proposed or promulgated by the U.S. EPA to reduce carbon dioxide emissions from fossil fuel-fired electric generating units, an analysis of the following: costs to and benefits for energy producers and electric utility customers; the effect on energy markets and reliability; and the commercial availability of technology required to comply with such regulations. The measure also requires the Division of Energy of the Department of Mines, Minerals and Energy (DMME), in Plan updates starting in 2014, to set forth energy policy positions relevant to any potential regulations of the State Air Pollution Control Board to reduce carbon dioxide emissions from fossil fuel-fired electric generating units under Section 111(d) of the Clean Air Act; this information is to address policy options for establishing separate standards of performance for carbon dioxide emissions from existing fossil fuel-fired electric generating units to promote the Plan's overall goal of fuel diversity. The Plan is also required to (i) examine policy options for state regulatory action to adopt less stringent standards or longer compliance schedules than those provided for in applicable federal rules or guidelines and (ii) identify options, to the maximum extent permissible, for any federally required regulation of carbon dioxide emissions from existing fossil fuel-fired electric generating units. Companion bill is SB 615 (#37).	Passed.
31	HJ 76	Mandatory renewable energy portfolio standard program; report. Would have directed the Commission on Electric Utility Regulation to study the establishment of a mandatory renewable energy portfolio standard program for the Commonwealth.	Failed in House Rules.
32	SB 25	Offshore natural gas and oil royalties; establishment of Virginia Offshore Energy Emergency Response Fund. Establishes the Virginia Offshore Energy Emergency Response Fund and directs to it the first \$50 million in royalties by the Commonwealth as the result of offshore natural gas and oil drilling and exploration. Non-reverting funds of up to \$50 million is to be used by the director of the DEQ solely for emergency preparation, emergency response, emergency environmental protection, or mitigation associated with a release of liquid hydrocarbons or associated fluids directly related to offshore energy exploration, development, production, or transmission. Any revenues generated above \$50 million are to be transferred	Passed.

		annually to the Commonwealth's general fund.	
33	SB 123	Wind energy projects; regulations to mitigate adverse effects of turbine blades on wildlife. Would have directed the Board of Game and Inland Fisheries to establish regulations for mitigation measures to reduce impacts of wind turbines on wildlife.	Failed on Senate floor.
34	SB 222	Solar panels; community association's authority to prohibit. Changes the previous law disallowing a community association from prohibiting solar-collection devices to authorizing associations to do so if the community association's recorded declaration establishes such a prohibition.	Passed.
35	SB 418	Real and personal property tax exemption; solar energy equipment, facilities, or devices. Companion bill is HB 1239 (#29); please see that bill for summary. The bill incorporated SB 512 (not included separately in this list).	Passed.
36	SB 514	Virginia Energy Plan; postpones due date for quadrennial updates. Companion bill is HB 796 (#24); please see that bill for summary.	Passed.
37	SB 615	Virginia Energy Plan; carbon dioxide emission control impact; schedule. Companion bill is HB 1261 (#30); please see that bill for summary.	Passed.
38	SB 643	Electric utilities; costs of offshore wind facilities. Limits to 30 percent the portion of all costs incurred by an electric utility between July 1, 2007, and December 31, 2013, in developing an offshore wind facility that are recoverable through a rate adjustment clause. Remaining 70 percent are to be recovered through existing base rates.	Passed.
39	SB 653	Renewable Energy Property Grant Fund. Establishes, beginning with fiscal year 2016, grants for placing into service renewable energy property. The grant would equal 35 percent of the costs paid or incurred to place the renewable energy property into service, not to exceed \$2.5 million for any individual piece of renewable energy property. The bill defines renewable energy as energy derived from sunlight, wind, falling water, biomass, waste, landfill gas, municipal solid waste, wave motion, tides, or geothermal power, but not including energy derived from coal, oil, natural gas, or nuclear power. The DMME would administer the grant program and would be authorized, subject to appropriation, to award up to \$10 million in renewable energy property grants for fiscal year 2016. The act contains a second enactment that requires the act to be reenacted in the 2015 General Assembly in order to become effective	Passed.

FISHERIES AND HABITAT OF TIDAL WATERS

40	HB 135	Home-produced or farm-produced products; sale of products by certain farm operations. Would have allowed the sale of food products made from any fruit, grain, herbs, honey, meat, milk, mushrooms, nuts, poultry, seafood, or vegetables by a farm operation employing 10 or fewer people or by a private home under certain conditions, including direct sale to customers.	Failed in House ACNR.
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		Companion bill is SB 176 (#50).	
41	HB 390	Sand replenishment and riparian rights. Provides that, when sand or other material is placed on state-owned bottomlands seaward of the mean low-water mark in order to provide beach nourishment or storm protection or as a result of a dredging project, and the public has an established right of use and maintenance upon the adjacent land above the mean low-water mark, the deposited material shall be deemed accretion for purposes of ownership, and shall <i>not</i> be deemed a severance or taking of, or otherwise to have impaired, an adjacent landowner's riparian or littoral rights. Companion bill is SB 209 (#51).	Passed.
42	HB 648	Oyster measures; reduces minimum size of container by which oysters in shell may be bought or sold. Reduces from 2,800 cubic inches to 2,500 cubic inches the minimum size of the container that is one of the measures by which oysters in the shell may be bought or sold.	Passed.
43	HB 655	Management of the Menhaden fishery. Extends the sunset date for management of the Menhaden fishery from January 1, 2015 to July 1, 2016, as well as various provisions enacted in 2014, including the reduction in the quota that was installed in 2014. The bill also allows any person purchasing more than one of the licenses for the same vessel to catch Menhaden with a purse net to pay a fee equal to that for a single license. Companion bill is SB 49 (#49).	Passed.
44	HB 845	Baylor Survey lines. Authorizes the VMRC to reestablish the boundaries of the Baylor Survey between holders of leases on public and private oyster grounds in light of recent information that a number of private leases were granted by the VMRC within the Baylor grounds.	Passed.
45	HB 847	Dumping of Menhaden. Would require that commercial fishermen report any release, disposal, or dumping of more than 2,000 harvested Menhaden to the Commissioner of the VMRC and that the person responsible for the dumping remove any Menhaden that wash onto abutting shorelines.	Continued to 2015 in House ACNR.
46	HB 909	Channel Bass (Red Drum) harvest. Repeals an obsolete section restricting the taking of Channel Bass. The Atlantic State Marine Fisheries Commission currently establishes the restrictions on the taking of Channel Bass. Companion bill is SB 434 (#53).	Passed.
47	HB 911	Living shorelines general permit. Requires that regulations for the issuance of general permits for living shoreline projects include an expedited review process. Companion bill is SB 569.	Passed.
48	HB 1089	Zoning and agricultural activities. Clarifies definition of agriculture products in the Virginia Code section that prohibits zoning ordinances from requiring a special permit for any agricultural, aquacultural, or silvicultural activity in areas zoned as an agricultural district or classification.	Passed.
49	SB 49	Management of the Menhaden fishery. Companion bill is HB 655 (#43); please see that bill for summary.	Passed.
50	SB 176	Home-produced or farm-produced products; sale of products by certain farm operations. Companion bill is HB 135 (#40); please see that bill for summary.	Failed in Senate ACNR (stricken at request of patron).

51	SB 209	Sand replenishment and riparian rights. Companion bill is HB 390 (#41); please see that bill for summary.	Passed.
52	SB 210	Suspension of tidal fishing privileges. Would have authorized the VMRC to suspend for five years the tidal fishing privileges of any commercial fisherman who has violated the tidal fishery laws five times or more in a two-year period.	Failed in Senate ACNR (stricken at request of patron).
53	SB 434	Channel Bass (Red Drum) harvest. Companion bill is HB 909 (#46); please see that bill for summary.	Passed.
54	SB 569	Living shorelines general permit. Companion bill is HB 911 (#47); please see that bill for summary.	Passed.

GAME, INLAND FISHERIES, AND BOATING

Hunting on Sunday Bills

55	HB 1237	Hunting on Sundays. Allows hunting on Sundays on private lands under certain conditions. Companion bill is SB 154 (#58).	Passed.
56	HB 1250	Hunting on Sundays. Would have authorized the Counties of Fairfax, Fauquier, Loudoun, and Prince William to adopt an ordinance that allows the hunting of wild animals on private lands on Sunday.	Failed in House ACNR.
57	SB 9	Hunting coyotes on Sunday. Would have made it lawful to hunt or kill coyotes on Sundays.	Reported from Senate ACNR; failed on Senate floor.
58	SB 154	Hunting on Sundays. Companion bill is HB 1237 (#55); please see that bill for summary.	Passed.

Other Game, Inland Fisheries, and Boating Bills

59	HB 423	Alcoholic consumption on boats. Would have allowed passengers in motor vehicles or boats operated by a restricted common carrier or contract passenger carrier to consume alcoholic beverages. Current law allows passengers to consume alcoholic beverages only on a chartered boat.	Failed in House General Laws.
60	HB 650	Boating-safety course exemption. Would have exempted from the requirements of the boating-safety education course those people who hold various landing and aquaculture licenses and permits from the VMRC, and people 45 years of age or older who have possessed a Virginia motorboat registration certificate for at least six continuous years. See related SB 52 (#69).	Passed House and Senate; vetoed by governor.
61	HB 803	Seizure and forfeiture of property for certain crimes. Would have provided that property used in connection with certain crimes associated with human trafficking is subject to forfeiture to the Commonwealth, and would have expanded the asset-forfeiture statute pertaining to automobiles to include watercraft used in attempted robbery.	Failed in House Courts of Justice.
62	HB 991	Hunting and fishing licenses for non-resident disabled veterans. Allows non-resident Armed Services veterans who are totally and permanently disabled due to a service-connected disability to purchase hunting and fishing licenses at a cost equal	Passed.

		to one-quarter of the regular fee for non-residents.	
63	HB 1042	Use of certain muzzle-loading pistols. Would have allowed the use of muzzle-loading pistols (.50 caliber and using at least 50 grains of black powder or black powder equivalent) for hunting game birds and animals in certain counties.	Failed in House ACNR.
64	HB 1121	Composition of the Board of Game and Inland Fisheries. Changes the criteria for appointments made to the Board of Game and Inland Fisheries. The bill sets membership at 11 members, appointed by the governor, who are to be citizens of the Commonwealth and knowledgeable of wildlife conservation, hunting, fishing, boating, agriculture, forestry, or habitat. Prior to this bill, each congressional district had one Board member.	Passed.
65	HB 1175	Special hunting and fishing license for disabled veterans. Would have expanded the special hunting and fishing license for totally disabled resident veterans to include fishing for trout in waters stocked by the DGIF and issuance of the Virginia Migratory Waterfowl Conservation Stamp.	Failed in House ACNR.
66	HJ 29	Wild-game over-population study. Would have requested the DGIF to study whether there is an overpopulation of wild animals in the Commonwealth.	Failed in House Rules.
67	SB 37	Appointment of conservation police officers. Eliminates the requirement that the DGIF director, when making appointments to sworn officer positions above the rank of conservation police officer, select from among the sworn conservation police officers within the DGIF. This bill incorporated SB 192 (not included separately in this list).	Continued to 2015 in House ACNR.
68	SB 50	Endangered and threatened species. Allows a person to possess, breed, sell, and transport any <i>non</i> -native wildlife that is included on any federal list of endangered or threatened species so long as i) the federal designation does not specifically prohibit such possession, breeding, selling, or transporting; and (ii) the non-native wildlife is not included on the list of predatory or undesirable animals specified by Virginia regulations.	Passed.
69	SB 52	Boating-safety course exemption. Would have exempted person 45 years of age or older on July 1, 2014, from having to pass a boating-safety education course in order to operate a motorboat. See related HB 650 (#60).	Failed in Senate ACNR.
70	SB 258	Law-enforcement consolidation plan. Would direct the Secretary of Natural Resources, in cooperation with the DGIF and the VMRC, to develop a plan for the consolidation of the law enforcement functions of the two agencies under the DGIF.	Continued to 2015 in Senate ACNR.
71	SB 371	Terms of hunting, trapping, and fishing licenses and permits. Allows the DGIF to issue hunting, trapping, and fishing licenses valid for one year <i>from a future effective date</i> . Under current law, such licenses are valid for one year <i>from the date of purchase</i> .	Passed.
72	SB 413	Wildlife rehabilitators. Provides that the state law on practice of veterinary medicine does not prohibit wildlife care by people authorized by DGIF to do so, as long as the care provided complies with DGIF regulations and permit conditions.	Passed.
73	SB 487	Driving or boating while intoxicated; penalty for serious bodily injury. Would raise from a Class 6 felony to a Class 4	Continued to 2015 in Senate Finance.

		felony the penalty for maiming a person (“causing significant and permanent impairment”) while driving under the influence or while operating a motorboat while intoxicated. The bill would also create a Class 6 felony for causing serious bodily injury without maiming.	
74	SB 504	Watercraft titling certificates; amendments to uniform act. Amends the Virginia Uniform Certificate of Title for Watercraft Act to conform it to other watercraft-related laws, including in its definition of watercraft.	Passed.
75	SB 602	Location of non-riparian blinds. Prohibits the placement of non-riparian stationary blinds in a marked navigation channel. The bill also removes the prohibition against such blinds being located in waters having a depth greater than eight feet at mean high tide.	Passed.
76	SB 629	Navigation on certain waters. Would have provided that no person who is recreationally floating in a non-motorized vessel upon a non-tidal river, stream, or creek with a drainage area of at least seven square miles within the Commonwealth shall be liable for civil or criminal trespass.	Reported from Senate ACNR; failed on Senate floor.

HIGHWAYS, BRIDGES, AND FERRIES

77	HB 311	Re-codifying and revising laws. Organizes laws in a more logical manner, removes obsolete and duplicative provisions, and improves the structure and clarity of statutes pertaining to highways, bridges, ferries, rail and public transportation, transportation funding, and local and regional transportation.	Passed.
78	HB 341	Natural gas vehicles weight-limit exception. Allows vehicles fueled, wholly or partially, by natural gas to weigh up to 2,000 pounds more than the applicable weight limit on non-Interstate highways.	Passed.
79	HB 528	Drainage ditch maintenance, etc.; use of revenue-sharing highway funds. Would have added drainage-ditch maintenance to the allowable uses of revenue-sharing highway funds.	Failed in House Transportation (stricken at request of patron).
80	HB 555	Highway drains and culverts; localities to prohibit interfering with or impeding storm water runoff. Would have allowed localities by ordinance to prohibit interfering with or impeding storm water runoff into drains or culverts on VDOT-controlled highway rights-of-way. Same as HB 744 (#81).	Reported from House Transportation; failed on House floor.
81	HB 744	Highway drains and culverts; localities to prohibit interfering with or impeding storm water runoff. Same as HB 555 (#80); please see that bill for summary.	Failed in House Transportation.
82	HB 806	Tree replacement; VDOT to adhere to locality's policy. Would have required VDOT, in highway construction projects, to adhere to localities’ tree-replacement policies.	Failed in House Transportation.
83	HB 986	Designating the Master Trooper Jerry L. Hines Memorial Bridge. Designates the Interstate 81 bridge over the Maury River in Rockbridge County as the “Master Trooper Jerry L. Hines Memorial Bridge.” Companion bill is SB 612 (#86).	Passed.
84	HB 1050	Soil and water conservation district signs. Would exempts certain soil and water conservation district signs from regulation	Continued to 2015 in House Transportation.

		as outdoor advertising structures.	
85	SB 505	Natural gas; incentives for expanded use as transportation fuel. A complicated measure that would amend several parts of the <i>Virginia Code</i> with language relating to incentives to use natural gas for transportation purposes. The amendments would involve grant programs, vehicle registration requirements, taxes and fees, a special fund established; a Natural Gas Vehicle Incentive Fund; standards for dispensing natural gas motor fuels; the replacement program for state-owned vehicles; a loan program for home fueling appliances; regulation of natural gas fueling services; membership on the board of the Virginia Universities Clean Energy Development and Economic Stimulus Foundation; and requiring the Virginia Port Authority to conduct a study of liquefied natural gas storage and refueling facilities in Hampton Roads.	Continued to 2015 in Senate Finance.
86	SB 612	Designating the Master Trooper Jerry L. Hines Memorial Bridge. Companion bill is HB 986 (#83); please see that bill for summary.	Passed.

MINES AND MINING

87	HB 140	Multistate Coal Compact; established. Would have established a multi-state coal compact that allows member states that mine, process, market, or sell coal or coal-related products to facilitate best industry practices and to more effectively coordinate the mining, processing, marketing, and sales of coal and coal-related products.	Failed in House Privileges and Elections.
88	HB 461	Coalbed methane gas; release of funds held in escrow or suspense. Would make several changes related to the release of funds held in escrow or suspense because of conflicting claims to coalbed methane gas.	Continued to 2015 in Senate ACNR.
89	HB 710	Funding for reclamation of coal-mined areas. Amends the Virginia Coal Surface Mining Control and Reclamation Act of 1979 by removing the ability of certain applicants to provide a bond without separate surety, raising the target balance of the Coal Surface Mining Reclamation Fund (the Fund) from \$1.75 million to \$20 million, and altering the method of deducting certain expenditures from the Fund. Companion bill is SB 560 (#98).	Passed.
90	HB 915	Hydraulic fracturing on state-owned uplands. Would have required that any permit or lease for oil or gas exploration or extraction on state-owned uplands allow the use of hydraulic fracturing.	Failed in House ACNR.
91	HB 1028	Gas severance tax. Extends the sunset date from December 31, 2014, to December 31, 2015, for the local gas severance tax that is dedicated to the Gas Road Improvement Fund, to the Virginia Coalfield Economic Development Fund, and to water, sewer, and gas lines. Companion bill is SB 552 (#97).	Passed.
92	HB 1167	Virginia Coal and Energy Alliance and Coal Mine Safety Board membership. In the list of organizations that may nominate people for membership on the Virginia Coal Mine Safety Board, changes “Virginia Coal Association” to “Virginia Coal and Energy Alliance,” in accordance with that organization’s	Passed.

		creation from the merger (announced in January 2014) of the Eastern Coal Council, Virginia Coal Association, and Virginia Mining Association.	
93	SB 48	Oil and gas drilling in the Eastern Virginia Groundwater Management Area. Would have prohibited the DMME from issuing any permits to drill in the Eastern Virginia Groundwater Management Area until the DEQ completes its review of (i) the current surface water and groundwater quality and quantity regulations in the management area and (ii) any amendments to the regulation that are necessary to protect groundwater and surface water. The DEQ review is to be completed by December 1, 2014.	Passed Senate; failed in House Commerce and Labor
94	SB 217	Pollutant discharge permits for surface-mining. Would have eliminated the requirement that the DMME director submit a copy of the application for a discharge permit to the SWCB for its review and provide the SWCB with a written notice of every action taken in consideration of the permit application. The bill also would have removed the authority of the SWCB to object to issuance of a discharge permit.	Failed in Senate ACNR (stricken at request of patron).
95	SB 547	Sampling of water wells near uranium exploration activity. Would require the holder of a permit to conduct uranium activities to contact property owners who have water wells located within 750 feet of the exploration activity and, with the owners' consent, to periodically sample their water supply. Would also require regular testing, a technical report to the VDH, and a non-technical report from the VDH to the well owner.	Continued to 2015 in House ACNR.
96	SB 548	Coalbed methane; arbitration of conflicting claims of ownership. Would have allowed "any claimant," rather than "all claimants" (under current law) in a dispute over ownership of coalbed methane, to request arbitration over a decision by the Virginia Gas and Oil Board. Also would have required arbitrators to be retired circuit court judges and would have allowed an arbitration decision to be appealed to the circuit court.	Failed in Senate ACNR (stricken at request of patron).
97	SB 552	Gas severance tax. Companion bill is HB 1028 (#91); please see that bill for summary.	Passed.
98	SB 560	Funding for reclamation of coal-mined areas. Companion bill is HB 710 (#89); please see that bill for summary.	Passed.

WASTE DISPOSAL

99	HB 62	Fees for disposal of solid waste; Southampton County. Allows Southampton County to levy fees for the disposal of solid waste at a county collection or disposal facility not to exceed the actual cost incurred by the county in removing and disposing of solid waste; adds Southampton County to the list of counties permitted to use fees to purchase equipment and to the counties for which certain specific authorities are specified; and allows Southampton County to exempt certain disabled veterans from such fees. Companion bill is SB 589 (#101).	Passed.
100	HB 1234	Landfills; limitation on location. Would require the director of the DEQ, during consideration of whether to issue a permit for a new solid waste management facility or the expansion of an existing facility, to determine that the proposed expansion of a	Continued to 2015 in House ACNR.

		facility will <i>not</i> be located within 150 feet of a Resource Protection Area as defined by the 1988 Virginia Chesapeake Bay Preservation Act and the Chesapeake Bay Preservation Area Designation & Management Regulations.	
101	SB 589	Fees for disposal of solid waste; Southampton County. Companion bill is HB 62 (#99); please see that bill for summary.	Continued to 2015 in Senate Local Government, but companion House bill passed.

WATER AND SEWER SYSTEMS

102	HB 227	Public water and sewer utilities and authorities; service contracts. Would have authorized localities and water and sewer authorities to establish and operate programs under which they agree to repair, replace, or maintain the water or sewer line of a customer's residential dwelling.	Failed in Senate Commerce and Labor.
103	HB 253	Alternative onsite sewage systems; licensure of installers. Would remove the requirement for an applicant of licensure as an installer of alternative onsite sewage systems to pass an examination, if such applicant demonstrates to the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals that he or she has been performing that duties of an alternative onsite sewage system installer for at least eight years within the 12-year period immediately preceding the date of application for licensure. This exemption already applies to licensing for installers of <i>conventional</i> sewer systems.	Continued to 2015 in House Health, Welfare and Institutions.
104	HB 409	Department of Health onsite-sewer services in relation to private vendors. Would have required the VDH to convene a work group to identify any currently VDH engineering and design services related to the onsite septic systems that are in "inappropriate direct competition" with private sector engineering and design firms, and to develop a plan to stop providing such services.	Failed in House Health, Welfare and Institutions.
105	HB 473	Discounted water and sewer fees and charges; City of Richmond. Provides that the City of Richmond may provide discounted water and sewer fees and charges for low-income, elderly, or disabled customers, and may offer financial assistance to customers for plumbing repairs and the replacement of water-inefficient appliances. Current law allows only a locality that owns a water and sewer system and has a population density of no more than 200 persons per square mile to develop such criteria. Combines provisions of two companion bills: SB 67 (#111) and SB 98 (#112). See similar bill for the Town of Louisa, SB 10 (#110).	Passed.
106	HB 495	Mandatory sewer and water connections; Montgomery County. Would have added Montgomery County to the list of localities that may require connections to their water and sewer systems by owners of property that can be served by the systems.	Failed in House Counties, Cities and Towns.
107	HB 1012	Charges for water and sewer shall be a lien on real estate; City of Suffolk. Adds the City of Suffolk to the list of localities permitted to provide by ordinance that charges for water and	Passed.

		sewer shall be a lien on the real estate served by such waterline or sewer.	
108	HB 1177	Safe drinking water testing requirements for private builders; Bedford County. Adds Bedford County to the list of localities in which the governing body may establish reasonable testing requirements to determine compliance with existing drinking water standards prior to the issuance of building permits.	Passed.
109	HB 1217	Chesapeake Bay Preservation Areas documentation in lieu of proof of septic tank pump-out. Adds the following to requirements for in Chesapeake Bay Preservation Areas: that any locality which allows owners of certain on-site sewage treatment systems to submit documentation in lieu of proof of septic tank pump-out, shall require that such documentation be certified by a licensed or certified on-site sewage system operator or soil evaluator.	Passed.
110	SB 10	Discounted water and sewer fees and charges; Town of Louisa. Permits the Town of Louisa to provide discounted water and sewer fees and charges for low-income and disabled customers. Current law allows only a locality that owns a water and sewer system and has a population density of no more than 200 persons per square mile to develop such criteria. See similar bill for the City of Richmond, HB 473 (#105).	Passed.
111	SB 67	Discounted water and sewer fees and charges in for low-income, elderly, and disabled customers; City of Richmond. Companion bill (in part, along with SB 98, #112) to HB 473 (#105); please see that bill for summary.	Passed.
112	SB 98	Financial assistance in for plumbing repairs and replacing water-inefficient appliances; City of Richmond. Companion bill (in part, along with SB 67, #111) to HB 473 (#105); please see that bill for summary.	Passed.
113	SB 290	Charges for water and sewer shall be a lien on real estate; Prince George and Smyth counties. Adds Prince George and Smyth counties to those localities in which charges for water and sewer constitute a lien against the real property. This bill incorporated SB 81 (not included in this list).	Passed.
114	SB 657	Alternative onsite sewage systems; extension of certain interim licenses. Directs the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals to extend one time, and deem to be valid, interim licenses as an alternative onsite sewage system installer held by an individual at such time as the individual applies and meets the eligibility criteria to take the examination required for issuance of an alternative onsite sewage system installer license.	Passed.

WATERS OF THE STATE, PORTS AND HARBORS

115	HB 265	Multistate Non-navigable Waters Compact. Would have established a multistate compact that allows a member of the compact to regulate non-navigable waters located wholly within its state.	Failed in House Privileges and Elections.
116	HB 445	TMDL waste load allocations procedural requirements.	Passed.

		Establishes public-notice and comment requirements for the adoption of waste load allocations as part of a total maximum daily load (TMDL); the requirements are in lieu of waste load allocations being subject to the full requirements of Administrative Process Act regulations.	
117	HB 572	Wetlands zoning ordinance; local credit for in-lieu fees. Requires a local wetlands board to give a permit applicant credit toward in-lieu fees in the amount of the fee he has paid, as an agreed-upon permit condition, to the Virginia Aquatic Resources Trust Fund or another dedicated wetlands restoration fund.	Passed.
118	HB 654	Wetland and stream mitigation banks; hydrologic unit boundaries. Allows the use of a hydrologic system or dataset other than the National Watershed Boundary Dataset for the purpose of determining the boundaries of hydrologic units (watersheds) for wetland and stream mitigation, and allows the adjustment of the hydrologic unit boundaries of such dataset based on site-specific geographic or hydrologic information provided by the bank sponsor.	Passed.
119	HB 672	Port of Virginia Economic and Infrastructure Zone and development grant program. Expands the area eligible for grants under this program from the previous Port of Virginia Economic and Infrastructure Development Zone into a statewide grant program; allows the Virginia Port Authority and the Department of Taxation to exchange information. This bill incorporated HB 871 (not included in this list).	Passed.
120	HB 673	Virginia Stormwater Management Program; permit fees for land-disturbing activities of one to five acres involving single-family residences. Would have limited the fee, under a General Permit for Discharges of Stormwater from Construction Activities, for coverage of one-acre to five-acre single-family residential projects to the amount charged for projects of less than one acre.	Failed in House ACNR.
121	HB 697	Virginia Stormwater Management Program; statewide delay of local implementation. Would have delayed the date that local governments will have to assume responsibility for administering the Virginia Stormwater Management Program from July 1, 2014 to July 1, 2015. Same as HB 1071 (#131) and HB 1117 (#133). Similar to SB 469 (#150).	Failed in House ACNR.
122	HB 735	Ownership of beds of streams and creeks under special grant; requirement for posting claim. Would have required any property owner posting a no-trespassing notice for the bed of a river or creek based on a claim of a right by special grant also to post the location where a record of the special grant for the property may be found.	Failed in House ACNR.
123	HB 835	Virginia Residential Property Disclosure Act; underground pipelines. Would have required the disclosure that the owner/seller of residential real property makes no representations with respect to the presence of any underground pipelines or storage tanks carrying hazardous material such as natural gas or oil, and that purchasers are advised to exercise whatever due diligence they deem necessary to determine the presence of any pipeline that may lie beneath the property.	Failed in House General Laws.
124	HB 842	Port of Virginia Economic and Infrastructure	Failed in House

		Development Zone. Would have added Accomack County and Northampton County to the localities composing the Port of Virginia Economic and Infrastructure Development Zone. See HB 672 (#119), which expanded the zone into a statewide grant program.	Appropriations.
125	HB 846	Virginia Stormwater Management Program; exemption for certain Eastern Shore localities. Would exempt the towns of Chincoteague, Saxis, and Tangier from compliance with the Virginia Stormwater Management Program (VSMP). The bill also would exempt Chincoteague and Tangier from any VSMP for land-disturbing activities adopted by Accomack County.	Continued to 2015 in House ACNR.
126	HB 873	Ports-related tax credits. Changes Virginia's ports-related tax credits by increasing the annual amount of international trade facility tax credits that may be issued from \$250,000 to \$1.25 million, decreasing the annual amount of barge and rail usage tax credits that may be issued from \$1.5 million to \$500,000, and allowing a taxpayer to be eligible for the port volume increase tax credit and the barge and rail tax credit if the taxpayer meets the criteria for both. Also changes some of the criteria for those tax credits.	Passed.
127	HB 876	Virginia Port Authority Board of Commissioners. Changes the composition of the Board of Commissioners of the Virginia Port Authority by adding a member from Greater Hampton Roads and requiring that one member have maritime shipping experience.	Passed.
128	HB 938	Coast Guard and Marines service members' requirement to serve as jurors. Same as HB 1124 (#134), which passed; please see that bill for summary.	Failed in House Courts of Justice.
129	HB 1033	Soil and water conservation district dams; risk management plan. Would have required the Division of Risk Management, with the approval of the governor, to establish a risk management insurance plan to provide protection against claims made against a landowner on whose property is located a dam owned, maintained, or operated by a soil and water conservation district. Companion bill is SB 323 (#146); similar to HB 1034 (#130).	Failed in House General Laws.
130	HB 1034	Soil and water conservation district dams; liability protection for property owners. Protects owners of land upon which dams are located that are owned, maintained, or operated by soil and water conservation districts from liability for damages to the property of others or the injury to persons resulting from the failure of the dam. Void if the damage is the result of an act by the owner that isn't related to ownership, maintenance, or operation of the dam. Companion bill is SB 466 (#148); similar to HB 1033 (#129).	Passed.
131	HB 1071	Virginia Stormwater Management Program; statewide delay of local implementation. Same as HB 697 (#121) and HB 1117 (#133); please see HB 697 (#121) for summary. Similar to SB 469 (#150).	Failed in House ACNR.
132	HB 1116	Banister River Scenic River designation. Extends the State Scenic River designation of the Banister River from the current 38.4 miles to 63.3 miles.	Passed.

133	HB 1117	Virginia Stormwater Management Program; statewide delay of local implementation. Same as HB 697 (#121) and HB 1071 (#131); please see HB 697 (#121) for summary. Similar to SB 469 (#150).	Failed in House ACNR.
134	HB 1124	Liability of owners or operators of impoundment structures (dams). Requires the owner of a dam, prior to conveying ownership of the dam or decommissioning the dam to a third party, to notify the director of the DCR of the transfer in accordance with the Virginia Impounding Structure Regulations requirements.	Passed.
135	HB 1157	Coast Guard and Marines service members' requirement to serve as jurors. Provides that, for purposes of determining whether a person is liable to serve as a juror, military personnel of the United States Coast Guard and Marine Corps are not to be considered Virginia residents solely by reason of being stationed in the Commonwealth; current law makes this provision for members of the U.S. Air Force, Army, and Navy. Same as HB 938 (#128), which failed.	Passed.
136	HB 1168	Wetland and stream mitigation. Would have provided that preservation of upland or stream buffers or wetlands on state land would be allowed for compensatory mitigation credits for impacts on wetlands or streams unless <i>only if</i> the Commonwealth acquires the land after mitigation activity is proposed, or if a state agency or a foundation related to a state institution of higher education is compensating for state agency impacts to wetlands or streams.	Passed House; failed in Senate Finance.
137	HB 1170	Virginia Stormwater Management Program; acreage for exemption for separately built single-family residences. Would have expanded the exemption from state stormwater permit requirements for certain separately built single-family residences by raising the area of disturbance for exempt projects from one to three acres, except in in jurisdictions subject to the Chesapeake Bay Preservation Area Designation and Management Regulations.	Failed in House ACNR.
138	HB 1173	Virginia Stormwater Management Program; state implementation in lieu of local program. Requires the DEQ to establish a stormwater program for any locality that doesn't have one, and requires the SWCB to adopt regulations relating to the management programs. This bill incorporated HB 58 , HB 261 , and HB 649 (these bills are not included separately in this inventory). Companion bill is SB 423 (#147).	Passed.
139	HB 1193	Appointments to the State Water Control Board. Requires the governor, in making appointments to the SWCB, to try to ensure that membership is geographically balanced.	Passed.
140	HB 1244	Department of Transportation study concerning Potomac River crossings. Would have required VDOT to consider the results of an ongoing transportation-demand study regarding Potomac River crossings between Virginia and Maryland, in order to provide data on congestion for the region and to determine whether to recommend a new Potomac River crossing between the Point of Rocks Bridge (U.S. Route 15) in Virginia and Route 301 in Maryland.	Failed in House Appropriations.
141	HJ 118	Study of dam safety regulations. Would have requested the	Failed in House Rules.

		DCR to study changes to Virginia's Impounding Structure Regulations issued in 2008 that might result in cost savings to owners of dams without jeopardizing public safety.	
142	HJ 132	Update of the Probable Maximum Precipitation level applied to impounding structures (dams). Would have requested that the DCR study the utilization of a storm-based approach in updating the Probable Maximum Precipitation for locations within or affecting the Commonwealth. Similar to HB 1006 (#13) and SB 582 (#20).	Failed in House Rules.
143	HJ 79	Commending Coast Guard Auxiliary Flotilla 63. Commends this volunteer group, which assists the U.S. Coast Guard in water safety, boater education, and search-and-rescue, on the group's 50 th anniversary in June 2013.	Passed.
144	SB 152	Disclosure of presence of dam. Would have required the first seller of a residential property (developer) that is located in a dam-break inundation zone to disclose to any prospective purchaser of the property that the property is located in such a zone and that the failure of the dam may represent a threat to public health and safety.	Failed in Senate General Laws and Technology (stricken at request of patron).
145	SB 257	Scenic river designation for Tye River section. Designates a 12.7-mile segment to the Tye River in Nelson County as a component of the Virginia Scenic Rivers System.	Passed.
146	SB 323	Soil and water conservation district dams; risk management plan. Companion bill is HB 1033 (#129); please see that bill for summary.	Failed in House General Laws.
147	SB 423	Virginia Stormwater Management Program; state implementation in lieu of local program. Companion bill is HB 1173 (#138); please see that bill for summary. This bill incorporated SB 425 and SB 530 (these bills are not included separately in this inventory).	Passed.
148	SB 466	Soil and water conservation district dams; liability protection for property owners. Companion bill is HB 1034 (#130); please see that bill for summary.	Passed.
149	SB 467	York River; VMRC to grant an easement and rights-of-way across beds including Baylor Survey Grounds. Authorizes the VMRC to grant an easement and rights-of-way across beds of the York River, including a portion of the Baylor Survey Grounds No. 5, to Plains Marketing for the expansion, construction, updating, and maintenance, of the Yorktown oil facility, an area containing 160,908 square feet or 3.694 acres.	Passed.
150	SB 469	Virginia Stormwater Management Program; delay of local implementation in localities with minimal Chesapeake Bay watershed. Would have delayed the date on which local governments are required to assume responsibility for administering the Virginia Stormwater Management Program from July 1, 2014, to July 1, 2015, in those localities in which less than 11 percent of the land area drains to the Chesapeake Bay. Similar to HB 697 (#121), HB 1071 (#131), and HB 1117 (#133).	Failed in Senate ACNR.
151	SB 551	Scenic river designation for Cranesnest River section; plus limits on what Scenic River designation affects. Designates a 10.7-mile segment of the Cranesnest River in	Passed.

		Dickenson County as a component of the Virginia Scenic Rivers System. The bill also makes applicable to all Virginia Scenic Rivers the following language that previously had been applied to certain river sections: "Designation as a scenic river shall not be used: 1. To designate the lands along the river and its tributaries as unsuitable for mining pursuant to [Va. Code section] 45.1-252 or regulations promulgated with respect to such section, or as unsuitable for use as a location for a surface mineral mine as defined in [Va. Code section] 45.1-161.292:2;...or 2. To be a criterion for purposes of imposing water quality standards under the federal Clean Water Act."	
152	SB 671	Reporting of water usage by electricity-generating stations. Would have required that electricity-generating stations seeking a Virginia Water Protection Permit submit an estimate of the amount of water that would be withdrawn and consumed for the lifecycle of the fuel used by the proposed generating station.	Failed in Senate ACNR.
153	SJ 69	Master rail plan for Port of Virginia. Requests that the Office of Intermodal Planning and Investment, in consultation with the Department of Rail and Public Transportation and the Virginia Port Authority, develop a Master Rail Plan for the principal facilities of the Port of Virginia.	Passed.

FROM MISCELLANEOUS CATEGORIES

154	HB 674	Water supplies and waterworks; human consumption. Defines "human consumption" as used in the context of water supplies and waterworks. <i>(From Health category.)</i>	Passed.
155	HB 766	Service districts; energy and water conservation and management services. Would have added energy and water conservation and management services to those powers available to service districts. <i>(From Drainage, Soil Conservation, Sanitation, and Public Facilities category.)</i>	Failed in House Counties, Cities and Towns.
156	HB 975	Hybrid electric motor vehicles; repeals annual license tax. Repeals the \$64 annual license tax on hybrid electric motor vehicles that was first imposed beginning July 1, 2013. The bill also provides for refunds of the license tax paid on hybrid electric motor vehicles for registration years beginning on or after July 1, 2014. Companion bill is SB 127 (#159). <i>(From Taxation category.)</i>	Passed.
157	HB 1092	Condemnation of oyster grounds. Prohibits localities from exercising the right of eminent domain to condemn privately leased riparian and general oyster planting grounds. These planting grounds are assigned to persons under a lease agreement approved by the VMRC. An exception to the condemnation prohibition is made for permitted water-dependent linear wastewater projects where there is no practical alternative. Companion bill is SB 603 (#161). <i>(From Eminent Domain category.)</i>	Passed.
158	HB 1253	Hampton Roads Transportation Accountability Commission created. Creates the Hampton Roads Transportation Accountability Commission, which is composed of the chief elected officers of the governing bodies of the 14	Passed.

		localities in Planning District 23, two senators, three delegates, and four non-voting ex officio members. Companion bill is SB 513 (#160). <i>(From Transportation category.)</i>	
159	SB 127	Hybrid electric motor vehicles; repeals annual license tax. Companion bill is HB 975 (#156); please see that bill for summary. <i>(From Taxation category.)</i>	Passed.
160	SB 513	Hampton Roads Transportation Accountability Commission created. Companion bill is HB 1253 (#158); please see that bill for summary. <i>(From Transportation category.)</i>	Passed.
161	SB 603	Condemnation of oyster grounds. Companion bill is HB 1092 (#157); please see that bill for summary. <i>(From Eminent Domain category.)</i>	Passed.

Some 2014 General Assembly Issues and Bills Covered by News Media

Aquaculture

HB 1089 (#48 above) - Aquaculture and permits for agricultural activities.

Dams

HJ 132 (#142 above) - Study of maximum precipitation estimation for dams.

Boating

HB 650 (#60 above) – Exemption from boating-safety education requirement for certain groups of experienced boat operators.

Energy: Coalbed Methane Escrow Funds

HB 461 (#88 above).

Energy: Transportation

HB 975 (#156 above) and SB 127 (#159 above) – Repealing \$64 annual tax on hybrid gas-electric vehicles passed in 2013 transportation package.

Hydraulic Fracturing for Gas and Oil

SB 48 (#93 above) – Groundwater and permitting for gas and oil drilling in eastern Virginia.

Hunting on Sunday

HB 1237 (#55 above), HB 1250 (#56 above), SB 9 (#57 above), and SB 154 (#58 above).

Menhaden Management

HB 655 (#43 above) and SB 49 (#49 above) – Keeping harvest quota in place.

Stormwater Management

HB 1173 (#138 above) and SB 423 (#147 above) – Allowing certain localities to opt out of establishing a local stormwater-management program, in which case the Department of Environmental Quality manages program in that locality; plus several other provisions.

Wind Energy

SB 123 (#33 above) - Mitigation of wind-turbine impacts on wildlife.

Sources (each issue listed, but not necessarily each bill, was mentioned by one or more of the following sources): *Bay Journal, Capital News Service, [Newport News] Daily Press, Field & Stream, Fredericksburg Free Lance-Star, Lynchburg News & Advance, Richmond Times-Dispatch, Roanoke Times, [Norfolk] Virginian-Pilot, Washington Post, Williamsburg Yorktown Daily.*

FOLLOWING THE 2015 VIRGINIA GENERAL ASSEMBLY

2015 Session Overview

The Virginia General Assembly convenes each year at noon on the second Wednesday in January. The 2015 General Assembly, which convenes on January 14, is scheduled for 30 days; this is a so-called “short session,” which is held in all odd-numbered years. Sixty-day sessions (“long sessions”) are scheduled for each even-numbered year. During long sessions, the Commonwealth’s budget for the upcoming two years is set; amendments to the current biennial budget may be considered both in long and short sessions. In some years, sessions are extended beyond the scheduled length, particularly for budget discussions.

[Click this link to go to the General Assembly Web site’s calendar page.](#) As of November 26, 2014, however, the 2015 session calendar was not yet available at that site. Following are some key turning points that take place in each session, with dates from the **2013** short session shown to give you an idea of when these turning points typically happen.

January 9, 2013 - General Assembly convened.

January 18 - All bills and joint resolutions were due with clerk.

January 31 - Committees responsible for revenue bills completed work.

February 3 - Committees responsible for revenue bills completed work.

February 5 - Each house completed work on its own legislation except for its own Budget Bills.

February 7 - Each house completed work on its own Budget Bill.

February 12 - Committees considering revenue bills of other house completed work.

February 13 - Each house completed work on the other house’s Budget Bill and revenue bills and appoint budget conferees.

February 16 - First conference on revenue bills completed work.

February 19 - First conference on Budget Bill completed work.

February 21 - Budget Bill conference report was due by noon; last day to put bills in conference.

February 22 - Only conference reports and certain joint resolutions could be considered.

February 23 - Adjournment *sine die*.

April 3 - Reconvened (“veto”) session.

Following Bills and Contacting Legislators

The General Assembly’s Web site, <http://virginiageneralassembly.gov/>, offers several useful features, including member lists, session calendars, live video of floor sessions (see below), and information on legislative processes. The Legislative Information System (LIS) Web site at <http://lis.virginia.gov/lis.htm> provides lists and summaries of all bills, searchable by topic, member, committee, etc.

To express an opinion on legislation, citizens can contact their members of the House or Senate. You can find your representatives and their contact information by using the online “Who’s My Legislator” service, available at <http://whosmy.virginiageneralassembly.gov/>; or you can find members’ contact information at these links:

House: <http://virginiageneralassembly.gov/house/members/members.php>;

Senate: <http://apps.lis.virginia.gov/sfb1/Senate/TelephoneList.aspx>.

If you know the numbers of your legislative districts, you can also use the **following code to identify your representatives’ Capitol phone numbers**: for delegates, (804) 698-10 + district number (for example, 698-1003 for the District 3 delegate); for senators, (804) 698-75 + district number (for example, 698-7510 for the District 10 senator).

The **Lobbyist-In-A-Box** subscriber service also offers free tracking for up to five bills, and it offers tracking of more than five bills for a fee; visit <http://lis.virginia.gov/h015.htm>. For assistance, phone Legislative Automated Systems at (804) 786-9631.

Live Video of House and Senate Floor Sessions

Here are the Web addresses for **live-streaming video of House and Senate floor sessions**:

House of Delegates – http://virginia-house.granicus.com/ViewPublisher.php?view_id=3;

Senate – http://virginia-senate.granicus.com/ViewPublisher.php?view_id=3.

Standing Virginia General Assembly Committees

Committees and subcommittees play key roles in the progress of legislation in the General Assembly. Following are the General Assembly's **standing (or permanent) committees**, according to the LIS Web site at <http://leg1.state.va.us/121/com/COM.HTM> (as of 11/26/14). That site provides links to each committee; in turn, each committee's online page provides a list of members, agendas, reports, and legislation on the committee's docket.

House Standing Committees

Agriculture, Chesapeake and Natural Resources
 Appropriations
 Commerce and Labor
 Counties, Cities and Towns
 Courts of Justice
 Education
 Finance
 General Laws
 Health, Welfare and Institutions
 Militia, Police and Public Safety
 Privileges and Elections
 Rules
 Science and Technology
 Transportation

Senate Standing Committees

Agriculture, Conservation and Natural Resources
 Commerce and Labor
 Courts of Justice
 Education and Health
 Finance
 General Laws and Technology
 Local Government
 Privileges and Elections
 Rehabilitation and Social Services
 Rules
 Transportation

Water Central's Water Bills and News Services

Beginning in late January each year, *Virginia Water Central* posts a list of water-related legislation in the Virginia General Assembly on the Water Center's Web site at <http://www.vwrrc.vt.edu/virginia-water-legislation/>. As done in this issue, *Water Central* annually publishes a final inventory of water-related legislation—showing the final status for the year of bills—sometime after the Assembly's reconvened session (held in April).

Also, the **Virginia Water Central News Grouper** posts links to online news articles about water-related legislation in the General Assembly. To find these items, please visit <http://vawatercentralnewsgrouper.wordpress.com/>, click on the "Select Categories" box on the right, and then click on "2014 Virginia General Assembly" or other years of interest (back to 2012).

VIRGINIA WATER STATUS REPORT

This section of Water Central presents recent and historical data on Virginia's precipitation, groundwater levels, stream flow, and occurrence of drought conditions. For monthly updates on water-quantity conditions in Virginia, please see the following Virginia Water Central News Grouper link:
<http://vawatercentralnewsgrouper.wordpress.com/?s=Water+Status>.

Precipitation in Virginia, December 2013-November 2014

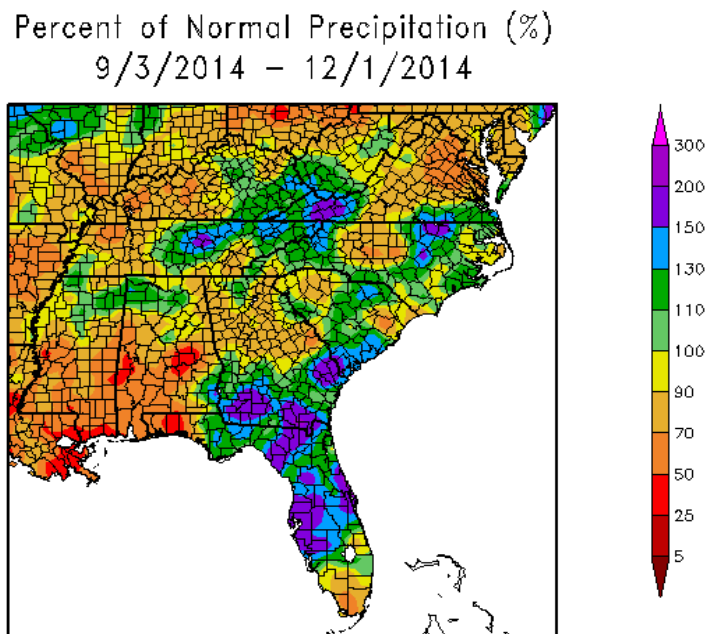
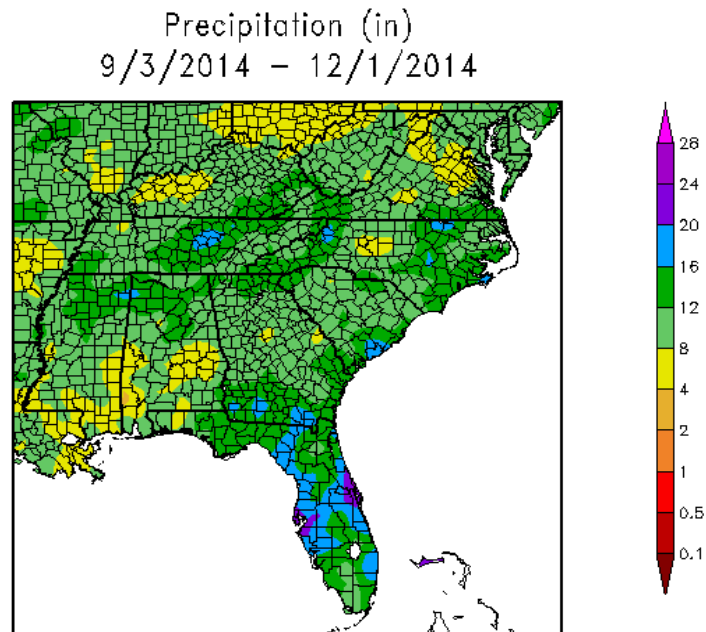
The chart below shows precipitation (in inches) over the last 12 months at nine National Weather Service (NWS) observation sites in or near Virginia. The numbers in the rows marked "O" are **observed precipitation** for the respective site and month (with yearly total at the bottom of the chart), including the equivalent amount of water contained in any snowfall or other frozen precipitation. These values were found at the "Climate" sections of NWS Web sites, as follows: www.weather.gov/climate/index.php?wfo=mrnx for the Tri-cities Airport in Tennessee, about 20 miles from Bristol, Va.; www.weather.gov/climate/index.php?wfo=rnk, for Blacksburg, Danville, Lynchburg, and Roanoke; www.weather.gov/climate/index.php?wfo=lwx, for Washington-Dulles; and <http://mi.nws.noaa.gov/climate/index.php?wfo=akq>, for Norfolk, Richmond, and Wallops Island. The number in the rows marked "N" (in red italics) are the **normal** (average) **precipitation** for the locality and month, from 1981-2010 records that were released from the National Climatic Data Center (NCDC) in 2011 (<http://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/climate-normals>). The amounts listed here are classified by the NWS as *provisional* data and are subject to revision; the NCDC maintains any edited and *certified* data that are available.

	Bristol (Tri-Cities Airport)	Blacks- burg (VT Airport)	Danville (Station #37)	Lynchburg (Regional Airport)	Norfolk (Internat. Airport)	Richmond (Byrd Intern. Airport)	Roanoke (Woodrum Airport)	Wash.- Dulles Airport	Wallops Island
Dec13 O	6.34	5.26	4.23	5.69	4.75	6.11	4.38	5.58	5.74
<i>Dec N</i>	<i>3.37</i>	<i>2.95</i>	<i>3.27</i>	<i>3.24</i>	<i>3.26</i>	<i>3.26</i>	<i>2.94</i>	<i>2.96</i>	<i>3.43</i>
Jan14 O	1.80	1.65	3.29	3.27	3.24	3.28	1.81	2.69	2.96
<i>Jan N</i>	<i>3.37</i>	<i>3.08</i>	<i>3.42</i>	<i>3.14</i>	<i>3.40</i>	<i>3.04</i>	<i>2.92</i>	<i>2.68</i>	<i>3.04</i>
Feb14 O	3.26	3.98	1.83	3.81	3.06	3.03	4.47	3.81	2.61
<i>Feb N</i>	<i>3.45</i>	<i>2.81</i>	<i>3.01</i>	<i>2.93</i>	<i>3.12</i>	<i>2.76</i>	<i>2.89</i>	<i>2.74</i>	<i>2.76</i>
Mar14 O	2.27	2.42	3.20	2.93	3.82	3.24	2.76	4.10	3.15
<i>Mar N</i>	<i>3.44</i>	<i>3.64</i>	<i>4.11</i>	<i>3.58</i>	<i>3.68</i>	<i>4.04</i>	<i>3.46</i>	<i>3.38</i>	<i>4.00</i>
Apr14 O	2.47	4.10	5.76	5.62	4.87	4.05	4.18	7.41*	4.01
<i>Apr N</i>	<i>3.33</i>	<i>3.48</i>	<i>3.46</i>	<i>3.31</i>	<i>3.41</i>	<i>3.27</i>	<i>3.37</i>	<i>3.47</i>	<i>3.07</i>
May14 O	2.20	2.68	4.48	5.39	4.64	2.44	2.38	6.34	3.45
<i>May N</i>	<i>3.80</i>	<i>4.33</i>	<i>3.88</i>	<i>3.73</i>	<i>3.41</i>	<i>3.78</i>	<i>4.06</i>	<i>4.55</i>	<i>2.90</i>
Jun14 O	3.58	3.07	1.23	2.40	1.91	3.39	3.05	4.62	1.58
<i>Jun N</i>	<i>3.90</i>	<i>4.00</i>	<i>3.85</i>	<i>3.62</i>	<i>4.26</i>	<i>3.93</i>	<i>3.83</i>	<i>3.98</i>	<i>3.29</i>
Jul14 O	5.25	1.92	3.73	5.76	7.87	2.63	3.40	2.09	3.35
<i>Jul N</i>	<i>4.69</i>	<i>4.26</i>	<i>4.59</i>	<i>4.36</i>	<i>5.14</i>	<i>4.51</i>	<i>4.04</i>	<i>3.67</i>	<i>4.09</i>
Aug14 O	4.21	5.95	6.23	4.78	3.01	3.61	6.53	5.15	4.48
<i>Aug N</i>	<i>3.47</i>	<i>3.59</i>	<i>3.97</i>	<i>3.26</i>	<i>5.52</i>	<i>4.66</i>	<i>3.56</i>	<i>3.53</i>	<i>4.19</i>
Sep14 O	1.42	3.80	3.88	1.62	9.17	1.35	1.23	0.93	4.73
<i>Sep N</i>	<i>2.99</i>	<i>3.10</i>	<i>3.96</i>	<i>3.88</i>	<i>4.76</i>	<i>4.13</i>	<i>3.89</i>	<i>3.92</i>	<i>3.98</i>
Oct 14 O	6.20*	4.35	4.13	3.57	1.57	2.63	3.56	3.01	1.31
<i>Oct N</i>	<i>2.10</i>	<i>2.78</i>	<i>3.53</i>	<i>3.11</i>	<i>3.42</i>	<i>2.98</i>	<i>2.89</i>	<i>3.25</i>	<i>3.17</i>
Nov14 O	2.44	2.73	2.72	2.43	3.44	2.95	3.52	2.66	3.13
<i>Nov N</i>	<i>3.10</i>	<i>2.87</i>	<i>3.36</i>	<i>3.41</i>	<i>3.15</i>	<i>3.24</i>	<i>3.40</i>	<i>3.41</i>	<i>2.87</i>
TOTAL O	41.44	41.91	44.71	47.27	51.35	38.71	41.27	48.39	40.50
TOTAL N	<i>41.01</i>	<i>40.89</i>	<i>44.41</i>	<i>41.57</i>	<i>46.53</i>	<i>43.60</i>	<i>41.25</i>	<i>43.04</i>	<i>40.79</i>

* Record high for month.

Precipitation, continued: Regional Precipitation September-December 2014

For a more visual presentation over a wider area, the two graphs below show the total precipitation (in inches; top graph) for September 3-December 1, 2014, and the departure from normal (in percentage of normal; bottom graph) over that period. *These data are provisional.* These graphs were taken from the National Oceanic and Atmospheric Administration's (NOAA) **Southeast Regional Climate Center**, located at the University of North Carolina in Chapel Hill, accessed online at http://www.sercc.com/climateinfo/precip_maps, 12/2/14.



More Virginia climate information and data are available from the **University of Virginia Climatology Office**, online at <http://climate.virginia.edu>. To contact the office in Charlottesville, phone (434) 924-0548 or send e-mail to climate@virginia.edu.

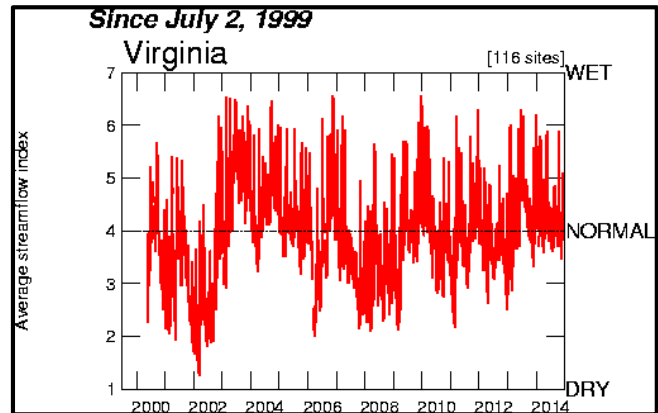
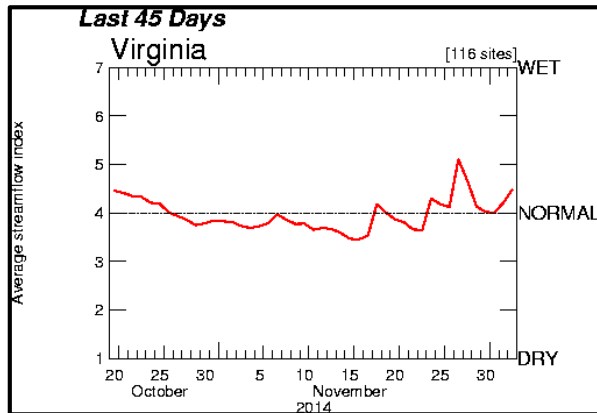
Groundwater Levels at Selected Virginia Wells, Early December 2014

As of December 2, 2014, the Virginia Active Water Level Network—maintained by U.S. Geological Survey (USGS) and found online at <http://groundwaterwatch.usgs.gov/statemap.asp?sc=51&sa=VA>—provided access to groundwater-level readings from 416 Virginia wells in 62 Virginia counties and cities. At 134 of these wells in 41 localities, *real-time* data were being reported. The table below shows the daily average for December 2 readings (except as noted) from real-time wells in 19 localities. These readings are *provisional* (i.e., subject to revision). All measurements are in **feet below the land surface**, rounded (by *Virginia Water Central*) to the nearest 0.1 foot; **a smaller value means wetter conditions, while a larger value means drier conditions**. The table also shows levels reported in previous issues of *Water Central*, plus the median level for the current month, the deepest (driest) level, and the shallowest (wettest) level for each well's period of record. Historical information on groundwater is provided in USGS annual reports of groundwater, available online at <http://wdr.water.usgs.gov/>. For more on Virginia's network of groundwater monitoring wells, please see the Virginia Department of Environmental Quality's Groundwater Characterization Program Web site at <http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/GroundwaterCharacterization/StateObservationWellNetwork.aspx>.

Well (Local #)	12/2/14 Level	12/13/13 Level	12/19/12 Level	December Monthly Median	Record Deepest (Driest)	Record Shallowest (Wettest)	Records Since
Accomack (66M19SOW110S)	10.1	9.7	9.2	9.5	11.3 (Nov. 1981)	6.8 (Mar. 2010)	Sep. 1978
Buckingham (41H 3)	27.8	28.1	30.4	23.8	36.4 (Oct. 2002)	7.4 (Apr. 1973)	Mar. 1971
Clarke (46W 175)	37.3	34.4	38.5	37.9	45.7 (Sep. 2002)	23.5 (Sep. 2003)	Mar. 1987
Fairfax (52V 2D)	16.1	14.3	15.8	14.7	24.9 (Dec. 1998)	6.5 (Mar. 1984)	Oct. 1976
Hanover (53K 19 SOW 080)	21.2	17.6	21.2	19.3	22.9 (Aug. 1984)	5.1 (Aug. 2004)	Jan. 1978
Loudoun (49Y 1 SOW 022)	60.5	58.8	59.9	59.2	62.0 (Jan. 2002)	48.0 (June 1972)	Nov. 1963
Montgomery (27F 2 SOW 019)	3.6	3.1	5.9	4.6	7.3 (Dec. 1969)	< 0.0 (Mar. 1993)	Jul. 1953
Northampton (63H 6 SOW 103A)	7.1	7.0	7.9	7.0	10.0 (Oct. 2002)	0.8 (Aug. 2004)	Sep. 1977
Orange (45P 1 SOW 030)	32.3	23.7	30.7	25.6	39.0 (Aug. 2002)	11.8 (Apr. 1973)	Feb. 1965
Prince William (49V 1)	9.3	7.8	9.5	8.8	15.4 (Jul. 2011)	6.5 (Mar. 2010)	Nov. 1968
Roanoke City (31G 1 SOW 008)	18.8	18.7	19.1	18.5	19.3 (Jun. 1987)	12.4 (Feb. 1986)	Aug. 1966
Rockbridge (35K 1 SOW 063)	25.1	23.7	28.5	24.5	30.4 (Sep. 2002)	14.3 (Apr. 1987)	Feb. 1964
Rockingham (41Q 1)	77.1	78.9	85.7	74.1	99.0 (Oct. 2002)	57.7 (Feb. 1998)	Aug. 1970
Shenandoah (40U 3 SOW 218)	12.9	13.1	14.1	14.0	16.3 (Oct. 2009)	10.6 (May 2011)	Oct. 2006
Suffolk (58B 13)	9.9	6.9	8.8	9.6	13.4 (Jan. 1981)	2.0 (Sep. 1999)	Mar. 1975
Surry (57E 13 SOW 094C)	10.1	6.7	7.5	8.5	11.3 (Sep. 2010)	3.9 (May 1980)	Jul. 1978
Virginia Beach (62B 1 SOW 098A)	2.3	1.5	1.9	2.4	12.0 (Sep. 1980)	0.8 (Nov. 2009)	Jun. 1979
Westmoreland (55P 9)	11.8	8.2	10.4	8.2	12.8 (Dec. 1988)	< 0.0 (Dec. 2009)	Jul. 1977
York (59F 74 SOW 184C)	8.6	7.7	8.8	7.3	14.1 (Jan. 2002)	0.9 (Nov. 2006)	Jun. 1990

Stream Flow in Virginia: Oct.-Dec. 2014, and 1999-2014

Average Daily Stream Flow Index, Compared to the Historical Average for the Date



The graphs above, accessed 12/3/14 from the U.S. Geological Survey's (USGS) "WaterWatch" Web site, at <http://water.usgs.gov/waterwatch/?m=real&r=va> (for Virginia), compare recent Virginia stream flow to historical records.

The data in the graphs come from 116 sites that have at least 30 years of records. Each graph uses a "**stream flow index**," which measures how a site's average stream flow *over 24 hours* (the **average daily stream flow**) compares to the historical average stream flow *for that same site and date*. The graphs show a further average: the stream flow index averaged *over all monitoring stations*.

Index values (1-7 on the vertical axis in the graphs) mean the following:

Values indicating dry conditions:

- 1 = average daily flow is record low for that date;
- 2 = average daily flow is in the lowest 10 percent of historical values for that date;
- 3 = average daily flow is in the lowest 25 percent of historical values for that date, but exceeds the lowest 10 percent.

Value indicating "normal" flow:

- 4 = average daily flow exceeds the lowest 25 percent of historical values for that date, but is less than the highest 25 percent of values.

Values indicating wet conditions:

- 5 = average daily flow exceeds 75 of historical values for the date, but is lower than the highest 10 percent of values.
- 6 = average daily flow exceeds 90 percent of historical values for that date;
- 7 = average daily flow is record high for that date.

Gaps in the data: Data are not plotted for days when less than two-thirds of the sites report data (due to equipment or weather problems), because a statewide average on those days may misrepresent actual conditions.

The USGS WaterWatch site also has maps of stream flow conditions compared to historical records for current levels and for average levels over the previous 1 day, 7 days, 14 days, 28 days, and month.



Stream-gaging station on the New River at Ivanhoe (Wythe County), 2/22/14.

Drought Update

The U.S. Drought Monitor, available online at <http://droughtmonitor.unl.edu/>, is a weekly nationwide drought assessment by federal agencies and state climatological centers. The following map shows Drought Monitor assessments of the percentage of Virginia in five categories of drought conditions on November 25, 2014; the accompanying table shows the category percentages on several recent past dates.

U.S. Drought Monitor Virginia

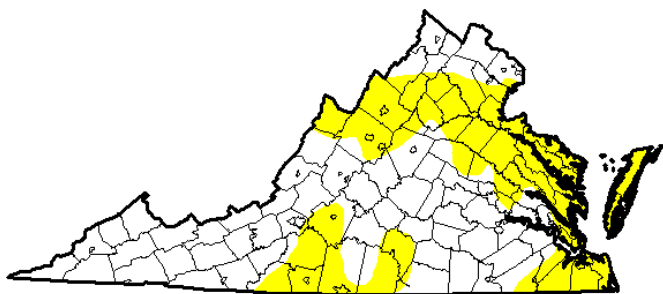
November 25, 2014

(Released Wednesday, Nov. 26, 2014)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	62.47	37.53	0.00	0.00	0.00	0.00
Last Week 11/19/2014	64.15	35.85	0.00	0.00	0.00	0.00
3 Months Ago 8/26/2014	91.39	8.61	0.00	0.00	0.00	0.00
Start of Calendar Year 12/31/2013	99.81	0.19	0.00	0.00	0.00	0.00
Start of Water Year 9/30/2014	51.94	48.06	0.00	0.00	0.00	0.00
One Year Ago 11/26/2013	37.66	62.34	0.00	0.00	0.00	0.00



Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Eric Luebehusen
U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

Image Source: U.S. Drought Monitor map archive, <http://droughtmonitor.unl.edu/MapsAndData/MapArchive.aspx>, 12/3/14. **Author:** Eric Luebehusen, U.S. Department of Agriculture.

TEACHING WATER

Especially for Virginia's K-12 teachers

This Issue of *Water Central* and the Virginia Standards of Learning

Below are suggested Virginia Standards of Learning (SOLs) that may be supported by items in this issue. The SOLs listed are from Virginia's 2010 Science SOLs and 2008 Social Studies SOLs. Abbreviations: CE = civics and economics; ES=earth science; GOV = Va. and U.S. government; LS=life science; WG = world geography.

Newsletter Section	Science SOLs	Social Studies SOLs
Water in 2014 Virginia General Assembly (pages 3-22) and Following the 2015 Virginia General Assembly (pages 23-24)	6.7, 6.9, LS.11, ES.6, ES.10	CE.1, CE.7, CE.9, WG.7, GOV.1, GOV.8, GOV.9, GOV.16
Water Status Report (pages 25-29)	4.6, 4.9, 6.7, LS.6, ES.6, ES.8, ES.12.	WG.2

N O T I C E S

If you would like to receive **regular e-mail notifications** about meetings, reports, and other items related to water quality and water monitoring, you may do so by joining the **Virginia Water Monitoring Council**; contact Jane Walker at (540) 231-4159 or janewalk@vt.edu.

For an online list of Virginia water-related conferences and other events (updated regularly), please see the Virginia Water Central News Grouper's "Quick Guide to Virginia Water Events," at <http://vawatercentralnewsgrouper.wordpress.com/?s=Quick+Guide>.

For an online list of water-related conferences and meetings outside of Virginia (updated quarterly), please see the Virginia Water Central News Grouper's "Water Conference Sampler from around the United States and Elsewhere," at <http://vawatercentralnewsgrouper.wordpress.com/?s=Water+Conference+Sampler>.

All Web sites listed in this section were functional as of 12/3/14.

Non-native, Invasive Catfish in the Chesapeake Bay Watershed – Information Sources as of October 2014

In June 2013, the Chesapeake Bay Program's Invasive Catfish Task Force released a draft report and recommendations on non-native Blue Catfish and Flathead Catfish in the Bay watershed. The report examines impacts of these species, especially the Blue Catfish, which has developed a large and expanding population that can infringe on habitat and food sources for native species of fish and shellfish, such as White Catfish, river shad, mussels, and Blue Crabs. The task force's draft report is available online at <http://chesapeakebay.noaa.gov/fisheries-hot-topics/invasive-catfish-task-force-recommendations>.

For overviews of invasive catfish issues, see the National Oceanic and Atmospheric Administration (NOAA) Web site, "Invasive Catfish," at <http://chesapeakebay.noaa.gov/fish-facts/invasive-catfish>; and "Task force looking for ways to control invasive blue catfish," *Bay Journal* September 2014, online at <http://www.bayjournal.com/newspaper> (or contact *Bay Journal* at 717-428-2819; e-mail: bayjournal@earthlink.net).



Blue Catfish. Photograph from National Oceanic and Atmospheric Administration, <http://chesapeakebay.noaa.gov/fish-facts/invasive-catfish>, accessed 10/14/14.

Geographic Information Systems and Virginia Localities

"GIS a crucial tool for localities," published in the *Richmond Times-Dispatch* on July 28, 2014, describes various uses by Virginia's local governments of computerized mapping and geographic data management technology, known as geographic information systems or GIS. The article is available online at this link: http://www.timesdispatch.com/news/local/henrico/gis-a-crucial-tool-for-localities/article_35a68546-8d45-5ffd-babc-4cc643bd1dcf.html; or contact the newspaper at 300 East Franklin Street, Richmond, VA 23219; phone (804) 649-6000; e-mail: content@timesdispatch.com.

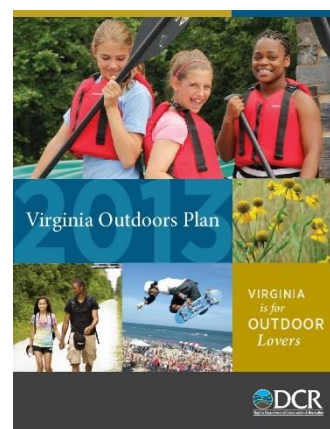
For a list of many sources of information about geography and GIS, see "Geography on the Web," Virginia Tech Geography Department, online at http://geography.vt.edu/geog_on_web/geogonweb.htm.

Upper James River Trail in Botetourt County

"Upper James Water Trail: Each Bend Has Its Own Course in History, Adventure," pp. 20-23 of the spring 2014 issue of "Bay Journeys" (an insert to the April 2014 issue of *Bay Journal*), describes the development, status, and offerings of this guide to paddling in Botetourt County. The article is available online at http://www.bayjournal.com/article/upper_james_water_trail; or contact *Bay Journeys* at (717) 428-2819; e-mail: kblankenship@bayjournal.com.

Virginia Outdoors Plan 2013 Edition Released in April 2014

On April 4, 2014, Virginia released the 2013 edition of the five-year “Virginia Outdoors Plan.” According to the Virginia Department on Conservation (DCR) Web site on the plan (at <https://governor.virginia.gov/news/newsarticle?articleId=3819>), the document is “the state’s comprehensive plan for land conservation, outdoor recreation, and open-space planning....[and] is required for Virginia to participate in the federal Land and Water Conservation Fund program.” The federal program, established in 1965, provides reimbursement to states for acquisition or development of public recreation areas. The 2013 edition is the tenth produced by Virginia. The 405-page document includes analyses and recommendations for each of the Commonwealth’s 23 planning districts. For more information, contact the DCR’s Office of Recreational Planning at (804) 786-5046.



Questions and Answers about Virginia’s Stormwater Regulation Changes in 2014

A good reference for the developments in 2013 and 2014 in Virginia’s regulation of stormwater is *Field Notes*, a newsletter published by Wetland Studies and Solutions, Inc. (located in Gainesville, Va.). Recent articles include the following: “Virginia Stormwater Management Act Triggers Changes,” in the December 3, 2014, issue; “DEQ Stormwater Regulations Update,” in the April 1, 2014, issue; and “Stormwater Regulations Guidance and FAQ’s,” in the March 11, 2014, issue. Links to newsletter issues are available at <http://www.wetlands.com/resources-regulations/fieldnotes-newsletter.html>; or contact the company at 5300 Wellington Branch Drive, Suite 100, Gainesville, VA 20155; phone (703) 679-5600; e-mail: contactus@wetlandstudies.com.

Current Issues in Worldwide Shipping and Ports Featured in Two Public Radio Stories in March 2014

On March 12 and 13, 2014, NPR (National Public Radio) carried two feature reports on developments in the worldwide shipping industry and the efforts of ports (including the Port of Virginia in Hampton Roads and other locations) to respond to those changes, such as larger ships able to transport more containers of cargo. The reports, “After a Downturn, Global Shipping Bets Big on Everything” (5 min./3 sec.) and “Hitching a Ride on the World’s Biggest Cargo Ship” (6 min./20 sec), both by reporter Julie Northam, are available online at this link: <http://www.npr.org/blogs/parallels/2014/03/12/288570982/after-a-downturn-global-shipping-bets-big-on-everything>. Information about Virginia’s ports is available online at <http://www.portofvirginia.com/>; or phone the Port of Virginia at (800) 446-8098.

River Basin Coordination Case Studies from the Delaware to the Columbia

The September 2014 issue of *Water Resources Impact*, published by the American Water Resources Association (AWRA, headquartered in Middleburg, Va.), presents case studies of regional coordination and management of water supply and water quality in six major river basins: the Delaware, Ohio, Tennessee, Missouri, Colorado, and Columbia. (Virginia in part of the basins of the Ohio and Tennessee rivers.) The publication is available online at <http://www.awra.org/impact/>; or contact AWRA at P.O. Box 1626, Middleburg, VA 20118-8390; (540) 687-8390; info@awra.org.

Coral Reefs and Protection of Coastal Areas Worldwide

A study conducted by an international team of researchers and published in May 2014 found that coral reefs provide an important protective barrier for coastal communities that are facing increased storm activity and flooding. According to a U.S. Geological Survey (USGS) news release on the study (one of the co-authors is at the USGS’ Pacific Coastal and Marine Science Center), the researchers’ key findings were the following: “Coral reefs provide substantial protection against natural hazards by reducing wave energy by an average of 97 percent (studies across all tropical oceans); [t]he reef crest, or shallowest part of the reef where the waves break first, dissipates 86 percent of wave energy on its own; [and the] median cost for building artificial breakwaters is...\$19,791 [U.S. dollars] per meter, compared to \$1,290 per meter for coral reef restoration projects” [emphasis in original]. The research article is “The effectiveness of coral reefs for coastal hazard risk reduction and adaptation,” by Filippo Ferrario *et al.*, *Nature Communications* 5, May 13, 2014; journal Web site: <http://www.nature.com/ncomms/index.html>. For a summary of the study’s findings,

see the 5/13/14 U.S. Geological Survey news release, “Coral Reefs are Critical for Risk Reduction & Adaptation,” online at <http://www.usgs.gov/newsroom/>.

An Introduction to the Arctic Council

Some 2000 miles from Virginia at its closest, the Arctic region is connected and relevant in various, complicated ways to the Old Dominion, as well as to the entire world. The Arctic Council was formed in 1996 as a high-level, intergovernmental forum to promote cooperation on the region’s environmental, economic, and social issues. Member states are Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, Russia, Sweden, and the United States; in addition, several organizations representing indigenous peoples are considered “Permanent Participants.” In 2015, the United States will become chair of the Council for a two-year period (Canada is the current chair). U.S. participation in the Council is under the leadership of the State Department. More information on the Arctic Council and the issues it addresses is available online at <http://www.arctic-council.org/index.php/en/>; information about U.S. participation is available from the State Department’s Web site at <http://www.state.gov/e/oes/ocns/opa/arc/ac/>. For information on many scientific and cultural aspects of the region, see the National Oceanic and Atmospheric Administration (NOAA) Web site, “Arctic theme page,” online at <http://www.arctic.noaa.gov/index.shtml>.



Tundra landscape and Arctic Ocean at Barrow, Alaska, June 24, 2005.

Energy and Climate Notices

● **New regulations from the U.S. EPA on the emissions of carbon dioxide and other “greenhouse gases”** connected to climate change are part of the federal government’s actions in response to President Obama’s Climate Action Plan, announced on June 25, 2013. (White House information on that plan is available online at <http://www.whitehouse.gov/share/climate-action-plan>). Placing regulatory limits on carbon emissions from **power-generating plants** is a major focus of the EPA’s actions under the president’s directive. On September 20, 2013, the EPA proposed a revised regulation for carbon-emission from *new* power plants, replacing a March 27, 2012, proposal that received some 2.5 million comments from the public. The September 2013 proposal’s public-comment period ran until May 9, 2014 (extended from the original deadline of January 8, 2014). Also, in June 2014, EPA published proposed regulations on carbon emissions from *existing* power plants, referred to by EPA as the “Clean Power Plan Proposed Rule.” The public-comment period for the draft Clean Power Plan ended December 1, 2014. Both regulatory actions come under Section 111 of the federal Clean Air Act. Information from the EPA on the current proposed regulation for new power plants and the upcoming proposal for existing plants is available online at <http://www2.epa.gov/carbon-pollution-standards/what-epa-doing#overview>.

● In March 2014, WVTF-FM public radio from Virginia Tech broadcast a five-part series on the status of and **prospects for renewable-energy development in Virginia**. The audio files (each about three minutes) and transcripts are available on the station’s Web site; the first episode is at <http://wvtf.org/post/going-green-maybe-not-virginia>, and from there you can find the others. For more information, contact the station at (540) 989-8900 or wvtf@vt.edu.

● The Fall 2013 issue of *Headwaters*, published by the Colorado Foundation for Water Education, examines the **connections among energy extraction, power production, and water use**. The focus is on Colorado, of course, but the articles offer information and perspectives useful for understanding water-energy connections in other states, too. See, for example, “Water Fuels Power” (page 7); the comparison of costs and water use for six sources of energy for electrical power (pages 14-15); and “How Hydraulic Fracturing Works” (pages 20-21). The publication’s issues archive is available online at <https://www.yourwatercolorado.org/cfwe-education/headwaters-magazine/archive>; or contact the Foundation in Denver at (303) 377-4433 or info@cfwe.org.

•On July 21, 2014, the non-profit organization Ceres, along with Clean Edge, Inc., released **“Benchmarking Utility Clean Energy Deployment,”** a report that ranks the United States’ 32 largest electric-utility companies according to their performance in energy efficiency and use of renewable power sources. Those are two of the four areas identified by the U.S. EPA’s Clean Power Plan Proposed Rule as possible “building blocks” for states to carbon-emission reduction targets under the federal agency’s proposed regulation for existing power plants, which was announced in June 2014. Among the companies assessed in the report are American Electric Power (AEP) and its subsidiary Appalachian Power and Dominion Resources, the largest electricity providers to Virginia. The report is available online at <http://www.ceres.org/resources/reports/>.

•In September 2014, World Resources Institute (WRI) released **“Global Shale Gas Development: Water Availability & Business Risks,”** an 88-page report that ranks the level of water stress (whether water is available to meet demands) in 20 countries with the largest reserves of shale-based natural gas being extracted or potentially extracted by hydraulic fracturing. This includes the United States, where the Marcellus formation in the Middle Atlantic states (including a small part of Virginia) is one of several formations that have generated large increases in recent years of natural gas extracted by hydraulic fracturing (also referred to as “fracking”). An overview of the report’s main findings, including a map that shows the results quickly, is available in a September 2, 2014, blog post by WRI available online at <http://www.wri.org/blog/2014/09/40-percent-countries-largest-shale-energy-resources-face-water-stress>. Access to the full report is available at that link.

•The U.S. Geological Survey (USGS) Water Science Centers have conducted a number of **studies on water-resources aspects of gas and oil drilling around the country**. The USGS has assembled those studies at one Web site, <http://water.usgs.gov/coop/products/energy/>. In addition, in July 2014, the USGS released a 16-page report summarizing studies concerning the hydraulic fracturing (or “fracking”) method of recovering gas or oil. The report, **“Summary of Studies Related to Hydraulic Fracturing Conducted by USGS Water Science Centers,”** is available at the Web site noted above.

Also Out There...

(Brief descriptions of some interesting articles *Water Central* has recently discovered.)

•**“Measuring the Weather,”** pages 20-23 in the September/October 2013 issue of *Colorado Water*, from the Water Center of Colorado State University. This four-page article looks at the changes in weather-measuring technology from the crafted, mechanical measuring devices in the early 20th Century to today’s wide variety of electronic-based devices. The newsletter is available online at <http://www.cwi.colostate.edu/newsletters.asp>; or contact the Colorado center at (970) 491-6308; e-mail: cwi@colostate.edu.

•**“Coastal Blue Carbon,”** in the January/February 2014 issue of *National Wetlands Newsletter*. Seven articles examine “coastal blue carbon,” that is, the climate-change mitigation benefits provided by coastal wetlands. Of particular relevance to Virginia is “Carbon Sequestration Benefits of Peatland Restoration: Attracting New Partners to Restore National Wildlife Refuge Habitats” (pp. 8-10), which discusses the carbon-storage potential of restoring pocosins and other peatland habitats in the Albemarle Sound-Pamlico Sound watershed in Virginia and North Carolina, including the Dismal Swamp area. The publication is available by subscription from the Environmental Law Institute, 2000 L Street NW, Suite 620, Washington, D.C. 20036; phone (800) 433-5120; e-mail: orders@eli.org; Web site: <http://www.wetlandsnewsletter.org/subscribe.cfm>; or check your local public or university/college library to see if they have a copy.

•**“On the Waterfront? Can Traditional Industries Survive Explosive Change?”** in the Spring 2014 issue of *Coastal Heritage*, from the South Carolina Sea Grant Consortium. This nine-page article discusses changes to fishing and shipping operations along the Atlantic Intracoastal Waterway, which runs from Virginia to Florida. The article includes information and historical background relevant to states and localities all along the waterway; particularly useful is a discussion of the evolution of container ships and the consequences for Atlantic coast ports. Available online at <http://www.scseagrant.org/Sections/?cid=82>, or contact the S.C. Sea Grant Consortium at (843) 953-2078; e-mail: Annette.dunmeyer@scseagrant.org.

•**“NASA Water Recycling Technologies Have Earthbound Uses,”** in the Summer 2014 issue of *Arizona Water Resource* (p. 1), from the Arizona Water Resources Research Center in Tucson. This two-page article describes several commercial “spinoffs” from water-treatment systems developed for the U.S. space-exploration program. The article is online at <https://wrrc.arizona.edu/innovative-technologies>, or contact the Arizona center at (520) 621-9591, or e-mail: wrrc@cals.arizona.edu.

AT THE WATER CENTER

To reach the Virginia Water Resources Research Center: phone (540) 231-5624; FAX (540) 231-6673; e-mail water@vt.edu; Web site www.vwrrc.vt.edu.

Mid-Atlantic Regional Water Conference, September 24-25, 2014

On September 24-25, 2014, at the National Conservation Training Center in Shepherdstown, West Virginia, the West Virginia Water Research Institute hosted the 2014 Mid-Atlantic Regional Water Conference. The conference theme was “The Future of Mid-Atlantic Water Infrastructure: Challenges and Solutions.” The conference was a joint effort of the National Institutes for Water Resources (NIWR) and its mid-Atlantic member institutes in Delaware, the District of Columbia, Maryland, New Jersey, New York, Pennsylvania, Virginia (the Virginia Water Resources Research Center), and West Virginia. Conference presentations are available online at <http://www.midatlanticwc.com/event-info/conference-agenda/>; to view the abstracts and presentations, click on a given talk’s title within the conference agenda table. For questions or more information about the conference, contact Glenn Waldron, West Virginia Water Research Institute/West Virginia University, (304) 293-7085, e-mail: Glenn.Waldron@mail.wvu.edu.

New Water Resources Major for Undergraduates

During its June 1-2, 2014, meetings, the Virginia Tech Board of Visitors approved creation of a new undergraduate, water resources major at the university, and in early December approval was received from the State Council for Higher Education in Virginia (SCHEV). The new “Water: Resources, Policy, and Management” Bachelors of Science degree will begin in 2015. The program’s academic home will be Tech’s Department of Forest Resources and Environmental Conservation, in the College of Natural Resources and Environment. But the major is designed to be highly interdisciplinary, with involvement and course offerings also in Tech’s colleges of Agriculture and Life Sciences, Architecture and Urban Studies, Engineering, and Science. Subject matter will include water chemistry and physics, water quantity, water quality, watershed management, law and policy, economics, and other areas designed to equip students to deal with the complexity of water resources issues. This comprehensive, interdisciplinary major is the first of its kind available for undergraduates in the United States. The Water Center’s director, Stephen Schoenholtz, will coordinate the new major, assisted by an advisory committee comprising faculty from 10 Tech departments. The new major’s development, which began in 2011, took place in concert with Tech’s hiring of a “cluster” of seven new water-resources faculty members in 2013-14; for more details on that hiring initiative, please see the item below. For more information, see the Web site for the degree, at <http://waterdegree.frec.vt.edu/>; or contact the Water Center.

“Water Cluster Hire” of Seven New Faculty Positions at Virginia Tech

With a “Water Cluster Hire” advertised in early February 2013, Virginia Tech began a major investment in water resources teaching and research by seeking seven new water-related faculty positions. As stated in Virginia Tech’s online information about the hire, the expectation is that the new faculty members “will develop significant collaborative research, teaching, and outreach programs in water science, policy, and management.” (Information on the hiring process is available online at article written in <http://cnre.vt.edu/faculty/positions-search/>.)

By fall 2014, all seven new assistant professors had been hired and begun their new duties. The new faculty members, their college and department affiliations, and their areas of specialization are listed below. For more information on this significant development in the academic capacity in water resources at Virginia Tech and in Virginia as a whole, please contact Water Center Director Stephen Schoenholtz at (540) 231-0711, or stephen.schoenholtz@vt.edu.

College of Natural Resources and Environment

Kelly Cobourn, Dept. of Forest Resources and Conservation – Water Resource Economics and Policy

Luke Juran, Dept. of Geography and Virginia Water Resources Research Center - Human Ecology of Water

Daniel McLaughlin, Dept. of Forest Resources and Environmental Conservation and Virginia Water Resources Research Center – Ecohydrology

College of Agriculture and Life Sciences

Zachary Easton, Dept. of Biological Systems Engineering - Watershed Modeling

Venkat Sridhar, Dept. of Biological Systems Engineering - Earth Systems Modeling

Meredith Steele, Dept. of Crop and Soil Environmental Sciences - Landscape Ecosystem Services

Ryan Stewart, Dept. of Crop and Soil Environmental Sciences - Critical Zone Physics



New “water cluster” faculty members attending a February 5, 2014, reception for Virginia Tech water-resources faculty (l. to r.): Zach Easton, Luke Juran, Kelly Cobourn, Ryan Stewart, Meredith Steele, and Venkat Sridhar. Not pictured is Daniel McLaughlin, who started work at Virginia Tech in October 2014.

Two New Faculty Members at the Water Center

Two of the seven new water-resources faculty members hired at Virginia Tech in 2013-2014 (as described in the item above) are formally affiliated with the Water Center. Part of the duties for **Luke Juran** and **Daniel McLaughlin** will involve helping the Water Center meet its three-part mission of teaching, research, and public information.

Dr. Juran, a native of Dyersville, Iowa, is an assistant professor of the human ecology of water in the Virginia Tech Department of Geography. He has a Ph.D. in Geography from the University of Iowa, an M.A. in International Studies from the University of Iowa, and a B.A. in Social Science Secondary Education from the University of Northern Iowa. His research and teaching interests include human-generated stressors upon water resources, human interactions with the inadequate provision of water and sanitation services, and the intersection of water and hazards.

Dr. McLaughlin, a native of Pendleton, South Carolina, is an assistant professor of ecohydrology in Virginia Tech’s Department of Forest Resources and Environmental Conservation. He has a Ph.D. in Systems Ecology and Ecological Engineering from the University of Florida, an M.S. in Environmental Engineering from Clemson University, and a B.S. in Civil Engineering from Clemson University. His research and teaching interests include forest ecohydrology, wetland and stream processes, emerging environmental sensors, watershed and landscape hydrology, and biogeomorphology.

Recent Publications

Juran, L. and M.C. MacDonald (in press), "An assessment of boiling as a method of household water treatment in South India," in *Journal of Water and Health*. For more information, contact Luke Juran at ljuran@vt.edu or via the Water Center phone number listed at the beginning of this newsletter section.

Recent Grants

1) **Social Media and Related Technologies for Emergency Readiness (SMARTER)** - \$25,000 from the U.S. State Department for innovative use of social media, specifically to improve disaster preparedness in India through 10 disaster preparedness workshops 2012 to 2014. For more information, contact Luke Juran at ljuran@vt.edu or via the Water Center phone at the contact information listed above.

2) 4VA Mini-Grant: Bringing an Understanding of Southeast Asia Environments and Hazards to Virginia - **\$5000 from the Commonwealth of Virginia** to offer a specialized online course to students at **George Mason University, James Madison University, the University of Virginia, and Virginia Tech** in summer 2013 and summer 2014. For more information, contact Luke Juran at ljuran@vt.edu or via the Water Center phone at the contact information listed above.

Scholarship and Competitive Grant Award Winners

Between January and June 2014, the Water Center conducted its two annual competitions for recognizing and supporting students studying water resources in Virginia.

Competitive Grants

Under the **Competitive Grants Program**, the Water Center awards grants of up to \$5000 to support research by students at Virginia colleges or universities. This year's grants, which are for the period June 1, 2014 to May 31, 2015, were awarded to following students and projects:

Emily Lipscomb, Ph.D. student in the Virginia Tech Department of Civil and Environmental Engineering:
"Effect of storm events on transport of antibiotic resistance genes in surface water and sediment:
Implications for watershed management."

Abby Lundstrum, M.S. student in University of Virginia Department of Environmental Sciences: "Using bioextraction to mitigate nutrient pollution in Chesapeake Bay: Is oyster aquaculture an effective BMP?"

Alison O'Connor, Ph.D. student in the Virginia Institute of Marine Science (VIMS) Department of Physical Sciences/Chemical Oceanography: "Mechanism and rate of uranium sequestration and mobilization in Virginia coastal groundwater?"

Tyler Weiglein, undergraduate student in the Virginia Tech Department of Biological Systems Engineering:
"Soil greenhouse gas emissions across a riparian-upland gradient: variation due to altered simulated rainfall frequency and magnitude."

The application period for competitive grants typically runs from January to March. More information about this grant program is available online at http://vwrrc.vt.edu/competitive_grants.html.

William R. Walker Award Graduate Research Fellow Award

Established to honor the late William Walker, the founding director of the Virginia Water Resources Research Center, this award has been given since 1999 to recognize and support graduate students in water resources who are pursuing work in a field different from their undergraduate study, or who have returned to school following a period of professional work.

The Walker Award winner for 2014-15 is Heather Govenor, Virginia Tech Department of Biological Systems Engineering.

The application period for the Walker Award typically runs from March to May. More information about this program is available online at http://vwrrc.vt.edu/walker_fellowship.html.

Guide to *Water Central* Topics, June 1998-November 2014

Listed below are topics covered in longer *Water Central* items (generally at least one page) in issues from June 1998 (issue #1) through November 2014 (issue #63). All issues of *Water Central* are available online at <http://www.vwrrc.vt.edu/water-central-news/>.

Feature Articles

Chesapeake Bay Blue Crabs—Jun. 2008, p.18.
 Chesapeake Bay Policy Developments—Aug. 2009, p.3; Nov. 2009, p.17.
 Clean Water Act Jurisdiction—Jan. 2007, p.1; Dec. 2008, p. 7.
 Coastal Conditions—Aug. 2004, p.8.
 Desalination—Jan. 2005, p.1.
 Disaster Preparedness and Response ¹—Aug.-Sep.2001, p.2; Jun. 2008, p.2; May 2010, p.22.
 Drinking Water—Dec. 1998, p.1; Feb. 1999, p.1; Jan. 2001, p.1; Jun. 2008, p.15 (Virginia Household Water Quality Program).
 Drought in 2007—Dec. 2007, p.1.
 Energy-Water Connections—Dec. 2008, p.4.
 Environmental Laboratory Certification Program—Aug. 2005, p.1.
 Federal Farm Bill—Jun. 2008, p.17.
 Flood Hazard Mitigation in Grundy, Va.—June 2006, p.1.
 Groundwater—Oct. 2002, p.1.
 Infrastructure (water and wastewater; needs, costs, etc.): Feb. 2010, p.3 (Amer. Society of Civil Engineers report).
 Invasive Plant Removal in Fairfax—Apr. 2009, p.25.
 James River Sojourn, Sep.2007, p.1.
 Marine Fisheries—Nov. 2003, p.2.
 Market-based Water Quality Management—Aug. 2003, p.2.
 Natural Gas in Southwestern Virginia—Dec. 2008, p.6.
 News Catch-up (categorized reviews of news items over several previous months): Apr. 2012, p.3; Nov. 2012, p.3; Nov. 2013, p.3.
 Non-tidal Wetlands—Nov. 2000, p.1.
 Nutrients—Jun. 2003, p.2; Jan. 2004, p.7.
 Oceans—Aug. 2004, p.1 (report of Oceans Commission).
 Off-shore Gas and Oil Exploration Reports—Feb. 2006, p.14; Sep.2006, p.1.
 Rappahannock River Water Resources Planning—Feb. 2002, p.1.
 Regional Water Authority (Roanoke area)—Aug. 2005, p.7.
 Shenandoah River Fish Kills—Jun. 2008, p.11.
 Stormwater—Feb. 2000, p.1 (urban stormwater); Sep.2006, p.11; Aug. 2009, p.7 (Virginia regulation proposals); Aug. 2010, p.6 (student intern introductory article).
 Tropical Storm Ida and Coastal Nor'easter—Nov. 2009, p.3.
 Virginia General Assembly Water-related Legislation—Jun. 1998, p.3; Aug. 1998, p.1; Apr. 1999, p.1; Jun. 1999, p.1; Apr. 2000, p.1; Jun.-Aug. 2000, p.2; Jun. 2001, p.1; Apr.-June. 2002, p.1; Mar. 2003, p.1; Apr. 2004, p.1; Apr. 2005, p.1; Feb. 2006, p.1; May 2007, p.8; Jun. 2008, p.3; Apr. 2009, p.3; May 2010, p.3; Jul. 2011, p.3; Jul. 2012, p.2; Jan. 2014, p.2; Nov. 2014, p.3.
 Virginia State Budget Related to Water—Apr. 2001, p.1 (see also Oct. 2002, p.22; Jan. 2004, p.18).
 Walker, William R.; tribute in memory of founding director—May 2007, p.3.
 Water Facts Every Virginian Should Know (student intern article on stormwater, watersheds, groundwater, geography, and TMDLs)—Jan. 2012, p.3.
 Water Quality in Recreational Waters—Jun. 2009, p.7.
 Water Quality Overview by Virginia Secretary of Natural Resources—Nov. 2005, p.9.
 Water Quality, Impaired Waters, and TMDLs—Oct. 1998, p.1; Oct. 1999, p.1; Dec. 1999, p.1; Dec. 2001, p.1; Dec. 2002, p.1; Jun. 2008, p.6.
 Water Supply Policy and Planning—Jan. 2004, p.2; Jan. 2004, p.13; Nov. 2004, p.1; Nov. 2005, pp.1 and 4; Nov. 2009, p.7 (overview from Va. and other states).

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 Bacteria—Aug. 1998, p.5; Oct. 1999, p.8; Aug. 2004, p.10 (at beaches).
 Beavers—Apr. 2005, p.14.
 Benthic Macroinvertebrates—Apr.-Jun. 2002, p.11.
 Biosolids—Aug. 2005, p.7.
 Blue Crabs—Sep.2007, p.9.

¹ Articles on hurricane season preparedness are Jun. 2008 and May 2010.

Drinking Water Infrastructure Research—Jun. 2006, p.8.
 Drought and Floods in Virginia—Sep.2006, p.5.
 Emerging Contaminants—Jan. 2012, p.8.
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 Pathogens in Water—Jan. 2007, p.9.
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 Urban Stormwater Research—Apr. 2008, p.16.
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 Virginia General Assembly—Feb. 2000, p.15; Dec. 2001, p.18; Jan. 2005, p.21; Dec. 2008, p.3; Nov. 2009, p.47; Jan. 2012, p.35; Nov. 2012, p.43; Jan. 2014, p.19; Nov. 2014, p.23.
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 Dragonflies Poster Source—Apr. 2000, p.8.
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 Geology in the Southern Appalachians—Apr.-Jun. 2002, p.18.
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 National Park Service Earth Science Explorers—Nov. 2000, p.6.
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 Understanding Invasive Aquatic Weeds—Apr.-Jun. 2002, p.18.
 U.S. Geological Survey Water Education Posters—Mar. 2003, p.12.
 Virginia Standards of Learning for selected articles—Each issue, page varies.
 Virginia Water Resources: A Tool for Teachers (book notice)—Jun. 2003, p.23.
 Virginia Watersheds Poster Source—Feb. 2000, p.11.

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Forest Reference Stream Monitoring and Research—Mar. 2003, p.22.
 Monitoring for Exotic Forest Pests at Virginia’s Ports—Aug. 2002, p. 6.
 National Research Council Report—Nov. 2004, p.23.
 Research on Small Water Systems and Community Drinking Water—Aug. 1999, p.2.
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 Water Science and Water Quality Management—Aug. 1999, p.5.

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Changing Leadership at the Water Center—Aug. 2002, p.1.
 Research Symposium Reports: Jan. 2007, p.9; Dec. 2008, p.4; Nov. 2009, p.46.
 Undergraduate Water Resources Major and New Water Faculty at Virginia Tech: Nov. 2014, p.34.
 Virginia Water Monitoring Council—Oct. 2002, p.27.
 Virginia STEP Program—Dec. 2001, p.17; Dec. 2002, p.21; Nov. 2003, p.23; Jan. 2005, p.20; Nov. 2005, p.27; Jan. 2007, p.26; Dec. 2007, p.28.
Water Central Turns 10—Sep.2009, p.3.

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Bacteria and other organisms in natural waters—Jun. 2009, p.34 (SP).
 Drinking Water and Health—Dec. 2008, p. 21 (SP).
 Emerging Contaminants—Apr. 2009, p.35 (SP).
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 Marine Debris (including poster)—Apr. 2008, p.24 (SP).
 Mercury—Aug. 2009, p.33 (SP).
 Motor Oil Disposal—Sep.2008, p.24 (SP) (repeated May 2010, p.36).
 Reporting Water Quality Problems—Sep.2007, p.13 (SP: Dec. 2007, p.13).
 Urban/residential Nonpoint Source Pollution Prevention—Sep.2007, p.16 (SP: Dec. 2007, p.13).
 Virginia's Pollution Prevention Programs—Sep. 2007, p.16 (SP: Dec. 2007, p.13).

Water Status Reports

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 Stream Flow—Aug. 2003, p.10; Apr. 2004, p.12; Jan. 2005, p.7; Nov. 2005, p.16; Sep.2006, p.10.
 As of January 2007, groundwater, precipitation, and streams are covered in each issue; as of September 2008, drought is also covered in each issue.

Miscellaneous Items

A Community Development Financial Institution and Water Resources—May 2007, p.27.
 Chesapeake Bay Total Maximum Daily Load (TMDL)—Aug. 2010, p.30 (special notice).
 Federal Stimulus Act of 2009—Jun. 2009, p.22.
 Forests—Jan. 2004, p.28 (federal "Healthy Forests Act").
 Governor's Water Initiatives and Proposals—Dec. 2002, p.11; Dec. 2002, p.12.
 Groundwater and Water Supply Planning—Apr. 2004, p.20 (reader comment).
 Groundwater Common Law and Rules—Dec. 2002, p.20.
 Groundwater Photo Essay from the Dominican Republic—Feb. 2010, p.36.
 Groundwater Rights Ruling in Virginia—Sep.2007, p.22.
 Hardware River Watershed Protection Project—Aug. 2009, p.32.
 Hurricane Preparedness Information—Aug. 2005, p.15 (see also Jun. 2008, p.2).
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 Water Supply Planning in Albemarle and Charlottesville (news focus)—Aug. 2010, p.14.
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² SP indicates a Spanish translation is included.

Virginia Water Central

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