James M. Jeffords Center's

Vermont Legislative Research Service

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Firing Ranges: Lead, Water, and the Environment of the Green Mountain State

Firing ranges provide an outlet to conduct outdoor recreation, hunting practice, and competitive target shooting. At the same time, firing ranges create a set of concerns for communities in which they reside, including but not limited to firearm safety, environmental concern of lead contamination in freshwater source(s) and soil from expired bullet cartridges, and, noise pollution affecting neighboring residents and communities. This report is a follow up to a previous Jeffords Center Vermont Legislative Research Service (JC VLRS) report on firing ranges (that can be found here).

Firing Ranges in Vermont

In the state of Vermont, there are a total of twenty-five firing ranges, nineteen outdoor facilities and six indoor shooting centers.[1] As illustrated in the map below (on which the locations of firing ranges are denoted by stars), eighty percent of the twenty outdoor facilities in Vermont lie within or adjacent to towns with populations over 1,050; the remaining twenty percent of outdoor ranges lie within or adjacent to towns with populations over 10,000.[2]

An article in Seven Days in 2011 suggested that firing ranges were scarce in Vermont relative to other states.[3] That claim turns out to be false when one examines the number of firing ranges per gun owner (while also controlling for population density). Vermont actually has more firing ranges than other states per gun owner, even after controlling for population density. Among states with low population density,[4] Vermont has the third most firing ranges available for its population of gun owners. (See Appendix A the data and analysis results on which these assertions are based.)

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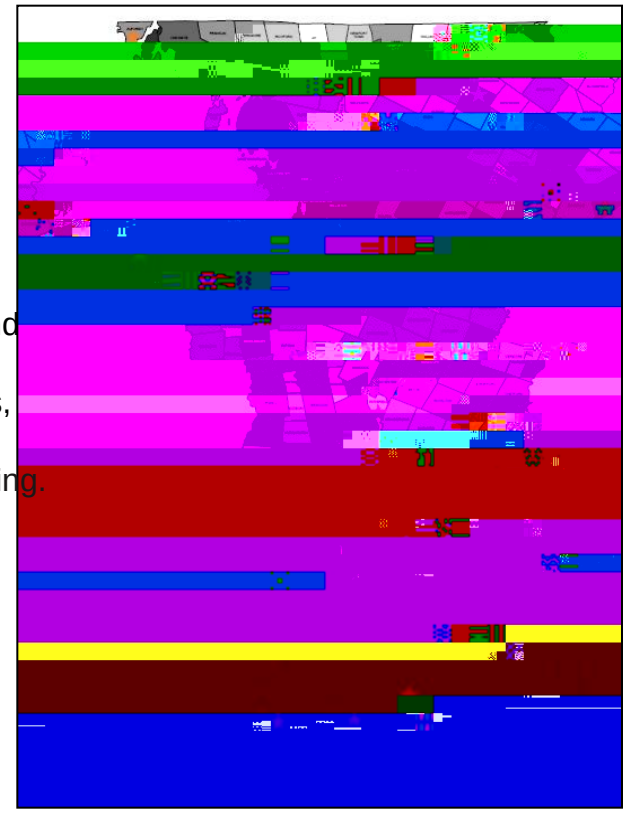
[1] Vermont Fish and Game Department, "VT Shooting Ranges Directory," accessed March 19, 2012, http://www.vtfishandwildlife.com/library/Vendors_and_sources/Shooting_Ranges_in_Vermont.pdf

[2] Vermont Department of Health, "2005 Vermont Population Estimates: Figure 2," accessed April 1, 2012, http://healthvermont.gov/research/2005pop/2005pop.aspx

[3] Ken Picard, "Home for the Ranges? So many guns in Vermont, so few safe places to shoot them," Seven Days, 22 September 2010, accessed 5 April 2011, http://www.7dvt.com/2010vermont-shooting-ranges

[4] Vermont falls into the category of states with population density between 100-199, making it one of twenty-six states within this designated population density.

Environmental and Health Impact of Lead



According to the EPA, an estimated 9,000 non-military outdoor ranges exist in the United States, collectively resulting in the firing of millions of pounds of lead annually.[5] Firing ranges can damage the environment and contaminate the soil, and possibly the groundwater, with lead from the birdshot, bullets, and bullet fragments, as well as produce airborne lead dust.[6] The impact of lead in firing ranges is long lasting. When bullets are left in shooting ranges, lead oxidizes when exposed to air and dissolves when exposed to acidic water or soil. Lead bullets, bullet particles, or dissolved lead can be moved by storm water runoff.[7] Dissolved lead can then migrate through soils to groundwater, contaminating soil in the area.[8]

For more information on the health effects of lead, refer to pages 3 and 4 in the earlier JCVLRS report titled 'The Effects of Firing Ranges in Vermont: How Lead and Noise Impact Communities'.

Legislation and Policies Regarding Firing Range Waste Management

Under the Resource Conservation and Recovery Act (RCRA) when ammunition is discharged from a weapon it is not considered solid waste as it is being used for its intended purpose; however, once spent shots or bullets are collected, or upon the closure of a range, this material becomes solid waste, and because of the lead content, hazardous waste.[9] Title 42 of the Code of Laws of the United States of America (US Code) defines hazardous waste as, a solid waste, or combination of solid wastes, which because of its quantity or characteristics may (A) cause an s'

transported or disposed of.[10] "Hazardous waste management" is defined by Title 42 as the systemic collection, proper storage, and consequent procedures in disposing of hazardous waste.[11] Firing range handling and storage waste management practices are outlined in the National Park Service "EnviroFacts" publication, which can be found here. Waste must be collected in accordance with the Occupational Safety and Health Administration (OSHA) requirements. Furthermore, employees collecting lead must be trained in lead abatement hazards and procedures.[12] Waste should be stored and segregated in a manner to facilitate covered, labeled receptacles for both reclamation and recycling. Spent projectiles must be classified as scrap metal and reclaimed; otherwise the spent rounds are considered hazardous waste under the RCRA. Metal cartridges should be collected and recycled via their respective manufacturer. Used gun cleaning materials should be recycled or reclaimed; while gun cleaning towels or rags should be cleaned by an industrial laundry service. Any lead dust or lead material must be disposed of as hazardous waste at the nearest RCRA permitted facility.[13]

For more information on the firing range regulations, refer to pages 5-4 in the earlier VLRS report titled "Th(ns)1(ybbTau2o)3(r re)4(6Ro09f5(e)-1a)-1(r)fesat thnrtriaifit th0l6CSu2or re-1(nne)-26-1

2005, Arizona began a program that offers coupons for the purchase of green ammunition. A 2006 report showed the program to be successful in promoting the use of green ammunition.[18]

California has created a lead-free zone to protect the endangered Condor from indirect lead poisoning.[19] In October 2007, Governor Schwarzenegger of California approved Assembly Bill No. 821, known as the Ridley-Tree Condor Preservation Act.[20] This act resulted in the California Fish and Game Commission's modification to the Methods Authorized for Taking Big Game (Section 353, Title 14, CCR) in December of 2007. The Methods of Take for Nongame Birds and

comes the Heritage Fund (state lottery revenue) and the Wildlife Conservation Fund (state gaming revenue).[28]

Use of Green Bullets by U.S. Army

Since June of 2011 the United States Army has switched their use of ammunition to a “greener” bullet.[29] The army has concluded that the new “greener” M855A1 Enhanced Performance Round (EPR) is as effective and more consistent than the current M855 round, which the army has used for years. This new round has an added bonus; it is completely comprised of copper, and contains no lead.[30] Lieutenant Colonel Jeffrey K. Woods, the product manager of the program, stated, “On M855 [the old round] best day, with that great performance that you will see, you’re going to see that type of performance out the EPR [the new round] you will see it every time.”[31] This new round is a completely new design from the previous M885; however, it does not affect the weaponry, which the army currently uses. The new M885A1 “green round” is compatible with both the M16 and M4 rifles; those most commonly used by the United States Army.[32] The new round has addressed the previous issues and concerns of the United States Army ammunition.

Firing Range Grants and Programs: National and State

A number of grant programs do exist to provide financial assistance to firing ranges for improvements. The grants are discussed in this section.

Federal Aid in Wildl

National Rifle Association (NRA)

The NRA has a matching grant to city, county, state or federal agencies providing funds to build or improve firing ranges, community relations, and environmental efforts as long as it can match the NRA's funding.[34] The funding from the NRA Public Range Funding Program covers labor, equipment, materials, construction, et cetera and is granted on a 50-50 basis with half of the funding provided by the NRA and half provided from the grantee. Funding is maxed out at $25,000.[35]

The Colorado Division of Wildlife's (CDOW) Shooting Range Grant Program (SRGP)

The Colorado Division of Wildlife offers a grant through its Shooting Range Grant Program. It

Fish Department hunter education activities, Hunter recruitment activities, and activities that support the Archery in the Schools Program and Scholastic Clay Target Program.”[45]

Texas

Texas’ Park and Wildlife department provides a target range grant, which provides up to 75% of the funding for a single project. The project covers construction needs. Grant proposals are

Appendix A

Table A1: Firing Ranges Calculations Arranged by Lowest to Highest Gun Ranges per Gun Owner by State

State	Population from 2000 Census[48]	Percent of Gun Owners[49]	Gun Owners per State	Gun Ranges per State[50]	Firing ranges per Gun Owner by State	Pop. Density by State[51]
RI	1,048,319	12.38%	129806	21	6181	1014
NH	1,235,786	30.00%	370733	58	6392	138

FL	15,982,378	24.55%	3924036	181	21680	298
AR	2,673,400	56.99%	1523693	69	22083	51.4
GA	8,186,453	38.97%	3190497	143		