

Undergraduate Thesis Prospectus

Stormwater Management at the Ivy Corridor

(technical research project in Civil Engineering)

A Nation in Fear: Opposition to the Second Amendment in the United States

(STS research project)

by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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General Research Problem

How do the conflicting agendas of Trump supporters and his opposers complicate efforts to create permanent solutions?

Controversies such as gun control and climate change divide Americans. According to Orr (2017), “Self-interest dictates that the Trump administration move climate from the political crosshairs to the economic crossroads” (Orr 2017). At an NRA press conference, Wayne Lapiere (2018) said “the surest way to stop a bad guy with a gun is a good guy with a gun”. However, in an article in the Corpus Christi *Caller-Times*, officer Terrance Hopkins said, "Since people can open carry, concealed carry in Texas, how many incidents have you seen in these mass shootings where a 'good guy with a gun' has ended that terror?" (Choate 2019).

Stormwater Management at the Ivy Corridor

How can the University of Virginia better manage stormwater at the intersection of Emmet Street and Ivy Road along the Ivy Corridor?

This CEE capstone project is advised by Professor Culver with two professional advisors, Dawson Garrod and Don Rissmeyer. When sites are redeveloped, impervious area is increased. During storm events these impervious areas produce more runoff with higher concentrations of pollutants. The Virginia DEQ defines stormwater pollutants as “Excess fertilizers; herbicides and insecticides from residential areas; oil, grease and toxic chemicals from roadways and parking lots; sediment from improperly managed construction sites; bacteria and nutrients from pet waste; failing sewers and faulty septic systems; as well as carelessly discarded trash” (Virginia Stormwater). As the Ivy Corridor site is redeveloped, stormwater mitigation techniques will prevent harmful effects on surrounding ecosystems from this site’s stormwater.

Quantity of runoff is also a concern in Charlottesville. On the EPA website impaired water bodies in the Albemarle are listed as well as contributing factors to their impairment. The EPA cites wet weather discharges as one of those problems (Watershed Quality). Runoff Volume dangers the environment because of erosion on stream and river banks.

Our capstone group is designing a site that meets the needs specified by the university. The design must include best management practices to improve the runoff quality and quantity to meet the DEQ requirements. The low permeability soil of the Ivy Corridor is our biggest challenge. It limits alternative practices and produces more runoff. To best design this site, stormwater engineers would use AutoCAD, VRMM, and SWMM. Our group aims to emulate professional engineering work by using these same tools. VRMM models nutrient reduction given a storm event. By using AutoCAD, areas and land uses can be determined and inputted into VRMM to show how the BMPs reduce volume and pollutants in the runoff. SWMM will be used to measure peak flows on our site to determine culvert sizes and runoff volume. VRMM and SWMM will verify our proposed site reduces nutrients and volume to meet the DEQs criteria. By May a proposed site layout will be produced with models insuring volume and nutrient goals are met. An analysis of the proposed site will be done to see what changes could be made to more efficiently develop the Ivy Corridor.

A Nation in Fear: Opposition to the Second Amendment in the United States

Following the shooting at Marjory Stoneman Douglass High School, how have gun control advocates advanced their agenda?

In a poll, Quinnipiac University found 61 percent of Americans support more restrictions on guns (Montanaro 2019). Elections could be determined by candidates' appeals such voters. Innumerable mass shootings over the last decade have led to demands for government action.

Yet many Americans oppose new gun control measures. The executive director of the NRA wrote, “cynical politicians seek to exploit tragedy to ram through ill-considered and longstanding policy objectives while emotions are high” (Ouimet 2019).

Gun control groups use press releases and media coverage to promote their agenda. Steidley asserted “media coverage is valuable for SMOs because it both energizes supporters and brings in new members” (Steidley 2017). Gun control groups use press releases to gather more support after a shooting. The Brady Campaign “advocates freedom from fear of guns and gun violence” (Steidley 2017). After the Parkland Florida Shooting, student Emma Gonzalez founded Never Again. Using her platform, she gave a speech heard by millions in Washington DC to express her agony (Ogles 2018). Gonzalez appealed to listeners’ emotions.

Moms Demand Action, a national advocacy demands new gun laws. The movement was founded after the shooting at Sandy Hook. It lobbies legislators and calls for corporations to adopt stricter gun policies. MDA contributed to the prohibition of open carry in stores like Starbucks, Walgreens, and CVS (Everytown).

Some parents oppose stricter regulations of guns. According to one, guns legally and illegally registered “are so plentiful on the streets and people have them.... It's ludicrous to think you can take guns out of people's homes in this country.... It ain't gonna happen” (Younge 2016).

The NRA defends the second amendment and the use guns for protection and recreation. As pressure to revise the second amendment increases with each shooting The NRA warns “The terrorist attacks in France and Belgium show that gun bans—including those on semi-automatic firearms and standard-capacity magazines—don’t prevent crime” (NRA-ILA).

The Coalition to Stop Gun Violence seeks to end gun violence in in part by fighting to hold the gun industry accountable for it. It claims, “The toy industry has greater liability in the civil justice system than the gun industry” (CSGV).

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