

**GENERALIZED DEVELOPMENT PLAN – NARRATIVE
REZONING & SPECIAL USE PERMIT APPLICATIONS**

Applicant: Team Crucible, LLC (“Applicant”)
60 Jack Ellington Road, Fredericksburg, VA 22406

Owner: Radio Reconnaissance Technologies, Inc.
(hereafter the Applicant and Owner shall collectively be known as the
“Applicant”)

Representative: Charles W. Payne, Jr., Hirschler Fleischer
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Project Name: “Team - Crucible Training Complex”

Property: Spotsylvania County Tax Parcel 76-A-2, consisting of approximately
69.9846 acres (collectively, the “Property”)

Date: November 26, 2018

GDP: Generalized Development Plan, entitled “Team - Crucible Training
Complex”, prepared by W W Webb & Associates, PLLC, originally dated
March 27, 2017, as last revised on August 21, 2018, attached hereto and
marked as Exhibit A (the “GDP”) ¹

Rezoning Request: From A-2 to I-2

Special Use Permit
Request: Allow the operation of a security training facility
Pursuant to §23-6.22.4 (12)

Rezoning File No.: R17-0005 & SUP17-0003

I. Project Overview

The Applicant is requesting both a rezoning request from the Agricultural 2 District (“A-2”) to the Industrial 2 District (“I-2”), and a special use permit for purposes of developing and operating a high-level security training facility for both governmental and private organizations on the Property. The Applicant desires to relocate its current facility from Stafford, Virginia,

¹ Subsequent to the filing of this application, the Applicant reserves the right to make minor modifications or amendments to the GDP in order to address final engineering, architectural and design issues, and to ensure compliance with federal, State and County regulations, laws and ordinances.

where it has been operating for over 16 years, to Spotsylvania County. During the aforesaid 16 year period, the Applicant has trained over 25,000 persons for a variety of security clients, including without limitation U.S. agencies such as: the Department of State, Justice Department, and Department of Defense; several large U.S. private companies; foreign companies; and State and local government agencies.

Corporations trained include those holding contracts with the agencies listed above and those employing professionals traveling to high-risk areas. Applicant does not permit “open classes” for attendance by the general public or host competitions. Clients attending training programs learn basic and advanced skills in tactical medicine, vehicle operation, small arms tactics, and individual protective measures. A representative sample of teaching topics is provided below:

Tactical Medicine

- Hemorrhage control
- Airway management
- Self aid / Buddy aid
- Tourniquet use
- Pressure dressings
- Needle decompression
- Treatment of sucking chest wound
- Treatment of burn and blast injuries
- Patient carries

Small Arms Tactics

- Weapons manipulations
- Weapon qualification
- Electronic sites
- Use of barricades
- Shooting in depth
- Team movement
- Reactions to contact
- Known distance firing
- Weapon concealment
- Close confrontational shooting

Vehicle operation

- Hard surface driving
- Broken and unimproved roadway
- Off road driving
- Threshold breaking
- Traction control
- Vehicle weight transfer
- Swerve to avoid
- Line theory
- Traction transition
- Barricade breaching
- Convoy operations

Individual Protective Measures

- Hand to hand combat
- Route analysis
- Surveillance detection
- Attack recognition
- Hostage survival
- Communication
- Use of night vision goggles
- Land navigation
- Conduct of personal security details

The Applicant’s Project includes the use of the Property (as described herein) totaling approximately 69.9846 acres of land. The Property is situated in a mostly rural and undeveloped area located in the Berkeley magisterial and voting districts. It is further located along Jefferson Davis Highway, north of the intersection of Coach Four Lane and Route 1, and south of the intersection of Morris Road and Route 1. The Property is bordered on the West by vacant agricultural land. There is a residence and Route 1 bordering the property to the East. Further, there is vacant land and the “Matta River Estates” located to the West of the Project, and vacant agricultural land and a residence is located to the immediate North of the property. There are also

commercial uses, such as the CDS Tractor Trailer Training center, an auto body shop, numerous auto sales facilities, and a strip mall containing Food Lion, Family Dollar and other retail uses located along Route 1 to the North of the aforesaid adjacent parcels.

Section 23-6.22.1 of the County's Zoning Ordinance states that the purpose of the I-2 zoning district is to "provide locations for medium and heavy industrial uses." The Applicant anticipates that the Project will initially be a "medium intense" development plan and generally include a modular office with parking area, maintenance buildings and an existing one story metal building to support the training activities, all which are generally shown and depicted on the GDP. Phase-1 Max build-out of the Project will also include five (5) firing ranges, a rally track, and a scenario area, all as generally shown on the GDP. The firing ranges will include a minimum of 20 foot high earthen berms or HESCO² like barriers for the entire perimeter of the range, all as generally shown on the GDP. Additionally, the impact areas will include a layer of impact sand for bullet capture. Further description of the range design is found in Section XIII. The rally track will consist of dirt and unimproved surfaces and will be utilized for security training scenarios. The Applicant will also contract with Dominion Raceway for additional driver training activities. The outdoor operations operating hours for the facility are proposed as from 8:00 am to 10:00 pm, Monday through Friday; and 9:00 am to 5:00 pm on Saturday; and 10:00 am to 4:00pm on Sunday, including certain other limitations all as provided more particularly in the attached proffer statement.

The Phase-2 Max build-out of the Project will include generally the construction of a two story training/office facility, another one story office building, a partially enclosed shoot house, an additional range, and an additional scenario training area, all as shown on the GDP. Commencement of build out is dependent on market situations and government requirements. The two existing one story metal buildings currently on the Property will remain and be used for training, maintenance and storage spaces.

The Phase-1 Max build-out will support current operations and provide for a daily load of 50 students per day. The Phase-2 Max build-out will support a daily load of 90 students per day. Further description of student throughput and operational examples can be found in Exhibit B.

The GDP reflects approximately 61.39 acres of open space accounting for 87.72% of the Property. This exceeds the 10% open space minimum required by the I-2 district. The Project also includes significant buffering areas, including large sections of wooded areas along the southern, western and northern borders of the Property. In addition, plantings for sound and visual screening will be specifically located along the property lines adjacent to Parcels 63-A-37B, 63-A-37A and 76-A-2A, all as generally shown on the GDP.

Adjacent properties consist of a combination of agriculturally zoned properties with residences and vacant properties. The Applicant's proposal will be compatible with existing uses in the area, including the commercial and agricultural uses. The Project will also include appropriate buffering, including extended 50 foot buffers along the portion of the Property

² HESCO is made of a collapsible wire mesh container and heavy duty fabric liner, and used as a blast wall against explosions or small-arms

fronting Jefferson Davis Highway (Route 1) and 50 foot buffers along adjacent properties 63-A-37B, 63-A-37A and 76-A-2A.

As described below, the Applicant's proposal conforms to the policies established by the County's Comprehensive Plan (the "Comp Plan"). As noted above, the Project will be a medium intense industrial use with traffic patterns not occurring during peak AM or PM hours, and will include extensive buffering, safety and noise mitigation measures. Furthermore, the proposal will result in minimal impacts on public facilities and services, including no impacts to schools and parks, and minimal impacts to the immediate transportation network.

In addition, the Project will generate positive economic development opportunities, including new jobs, lodgings, food, real estate and sales tax revenues. In this regard, the Applicant retained distinguished economist Stephen S. Fuller, Ph.D., who is a University professor and the Director of the Stephen S. Fuller Institute and the Dwight Schar Faculty Chair in the Schar School of Public and Government at George Mason University in Arlington, Virginia. Dr. Fuller's report, dated July 2017, and titled "The Economic and Fiscal Impact of the Proposed Team Crucible Training Complex on Spotsylvania County, Virginia", a copy of which is provided with this application ("Economic & Fiscal Report", attached as Exhibit F), states, in relevant part, the following:

- The proposed Team Crucible Training Complex in its initial phase would generate both positive economic and fiscal benefits for Spotsylvania County. These benefits will be generated by the construction spending required to prepare the site for initial operations and by future construction spending to buildout the site for expanded operations by Team Crucible and to provide office space for other federal security contractors at a future time and be measured by increased job and income growth to the benefit of residents and businesses located in Spotsylvania County.
- The initial construction spending of \$1.1 million would contribute a total of \$1.7 million to the County's economy during the construction period, generate \$341,000 in new wage income for workers residing in the County and support a total of 7.3 full-time, year-round equivalent jobs locally and elsewhere. These economic benefits would be achieved exclusively during the construction period.
- These positive construction impacts are complemented by the annual operating outlays by Team Crucible and by the per diem spending of trainees enrolled in security training programs on-site. In its initial stage, Team Crucible estimates an annual operating budget totaling \$940,000. This budget provides for four full-time, regular on-site employees supplemented by 20 contract trainers. This level of operations would support 2,650 daily visits (trainee days) annually on-site generating per diem local spending for accommodations and meals totaling \$363,000. At this initial scale, the total impact of operations outlays, including trainee expenditures, would contribute \$1.9 million to the County's economy each year, generate \$538,000 in new local labor income for workers residing in the County and support a total of 12.5 full-time, year-round equivalent jobs beyond those employed at the Training Complex.

- The buildout proposal for this site provides for the expansion of Team Crucible’s Training Complex by 12,000 square feet and the addition of 40,000 square feet of office space that would be available to other federal security contractors. This added capacity for Team Crucible would accommodate up to 10,000 daily visits (trainee days) annually and requires annual operating outlays totaling \$5.3 million. This scale of operation would include 15 full-time regular employees on-site with up to an additional 75 contract trainers. Inclusive of the annual flow of trainees and their spending for accommodations and meals (not including other personal outlays for retail and incidentals), the buildout proposal would generate \$6.7 million in annual (recurring) spending directly to the benefit of the local economy. This direct spending, reflecting a composite multiplier of 1.511, would contribute a total of \$10.1 million to the County’s economy, generate \$2.2 million in new wage income for County residents working within the County, and support a total of 65 jobs of which 39 full-time, year round equivalent jobs would be held by County residents.
- Complementing the positive income and employment benefits that would accrue to Spotsylvania County, its resident workers and businesses, Team Crucible’s proposed Training Complex has been shown to generate a positive fiscal benefit to the County in its initial stage of operation (+\$15,823.40) with its net fiscal benefit increasing at the full buildout scale of operations (+\$63,681.50).
- The net fiscal benefit of Team Crucible’s proposal is conservative as its revenue impacts are underestimated by design (they reflect non-residential revenue flows that incorporate tax exempt uses) and they reflect non-residential public expenditure demand (for County provided services) that assume access to services that would not be required to support Team Crucible’s daily functions. These economic and fiscal benefits are summarized in the following table.

Economic and Fiscal Impacts of the Proposed Team Crucible
Training Complex on Spotsylvania County
(in millions of 2016 dollars)

Phases	Direct Outlays	Total Output	Personal Earnings	Jobs Supported
Initial proposal				
Construction	\$1.100	\$1.687	\$0.341	7.3
Operations	\$0.904	\$1.375	\$0.291	8.5
Trainee Spending	0.363	0.538	0.110	4.0
Total Operations	\$1.267	\$1.913	\$0.401	12.5
Buildout				
Construction	\$5.500	\$8.436	\$1.704	36.3
Operations	\$5.319	\$8.087	\$1.709	49.8
Trainee Spending	1.370	2.023	0.413	15.3
Total Operations	\$6.689	\$10.11	\$2.122	65.1

Fiscal Impacts

Jobs	Revenues	- Expenditures	=	Fiscal Impact
Initial				
24	\$31,805.96	\$15,982.56		\$15,823.40
Buildout				
90	\$88,778.60	\$59,934.60		\$28,844.00
295	\$260,136.80	\$196,455.30		\$63,681.50

Dr. Fuller also provided the following additional information in response to County comments:

- The economic impact analysis in the report describes how the spending by Team Crucible would enlarge the County’s economy. The beneficiaries of this economic activity would depend on what businesses are in a position to capture this new business and then actively market for it. Hotels and restaurants that want this business and reach out to welcome this business will be more successful than ones that wait to see if this new business will come to them.
- In the economic analysis, the spending of trainees was included up to their per diem level. What was excluded from the analysis was potential spending beyond the per diem levels that would take place for necessity goods, retail and recreation services, and transportation services. The limitation of trainee spending to per diem only results in the likely under-estimation of these economic benefits on local businesses. This is a conservative analysis.
- If adjacent properties were rezoned for commercial use, their value would be enhanced by the presence of the proposed facility. If adjacent properties remain as zoned agricultural with residential houses, property values would not be affected by the proposed project. See Exhibit H letter regarding Crucible’s effect on property by Christian P. Kaila, MAI, SRA.
- If the market in the County is strong for development, the values of vacant land will rise; market pressures and zoning would have a much greater impact than adjacent land use.

II. Comprehensive Plan

Future Land Use Map

This rezoning and SUP application is consistent with the goals and guidance provided in the County’s Comprehensive Plan (“Plan”). The Plan’s Future Land Use Map classifies the

Property as part of the “Employment Centers” designation. The Employment Centers Land Use category is intended to encourage “new office and industrial development within the County, with the focus on larger scale office complexes, industrial users, and business parks.” The Comp Plan also encourages the rezoning of land to industrial/office uses in areas designated for Employment Center uses, consistent with this Project. According to the Comp Plan, “both light and heavy industrial uses are appropriate and should be encouraged within the Employment Center category with the careful consideration of their location and transition to adjoining properties.”

From a transportation improvements perspective, the Project will improve Jefferson Davis Highway (Route 1) in this area. The Applicant is proposing to make improvements accessing the site from Route 1, including deceleration and acceleration tapers into and out of the Property, all as shown on the GDP.

This Project furthers multiple objectives of the Comp Plan, including achieving residential/commercial tax rate goals and creating local jobs. Projects that generate new jobs and positive tax revenues as compared to County costs are encouraged under the Comp Plan, and further assist the County in meeting its 70% (residential) to 30% (commercial) mix tax revenue goals. Accordingly, the Project is in line with the County’s tax revenue goals as it will generate additional tax revenues and local jobs.

This Project addresses the following Guiding Principles and Policies as outlined in Chapter 1 of the Comp Plan:

A. Spotsylvania County is a “business friendly” community and local job creation is a priority.

1. Encourage business investment in the County and promote the relocation of federal and state agencies to the County, providing more opportunities for Spotsylvania County residents to work in the County.

3. Encourage the rezoning of land to industrial/office uses in areas designated for Employment Center uses and the revitalization of older, underperforming commercial, office, and industrial developments.

B. Spotsylvania County is fiscally sustainable.

1. Achieve a 70/30 mix of residential to commercial/industrial development (based on assessed value), and the annual growth of the industrial and commercial tax base at a rate greater than 2%.

b. Consider proactively rezoning certain areas to promote business development.

c. Diversify the non-residential tax base by encouraging a wide variety of businesses to locate in the County.

2. Development projects seeking increased residential density and/or non-residential intensity should address impacts that are specifically attributable to the proposed development.

- a. Each development proposal should include sufficient information to fully evaluate its impacts.

This Project also addresses the following Employment Center Land Use Policies, as outlined in Chapter 2 of the Comp Plan:

11. Encourage the retention and expansion of existing business operations as well as the attraction of new businesses and investment; and
12. Encourage a balance of uses within the Employment Center category to include light industry, heavy industry and office uses.

Primary Development Boundary

The Comp Plan's Future Land Use Map establishes a Primary Development Boundary (the "PDB"). The Comp Plan states that public water and sewer will be provided to properties within the PDB, and denser development will also be permitted in such locations. The Property is located within the PDB, supporting the proposed density and the Property's utilization of public utilities.

Notwithstanding the foregoing, public water and sewer is approximately 2,000 feet away from the site, and thus it is not feasible (at this point), to extend utilities to the site. Thus, during Phase-1 Max buildout of the Project, the Project will be served by well and septic systems, all as noted on the GDP.

III. Land Use

As noted above, the Applicant proposes rezoning the Property from A-2 to I-2. As required by the County's rezoning application packet, please note the following features:

- a) Uses. The Property is currently undeveloped. As noted above, the Applicant will use the Property as a security training facility, which is considered "Industry - Type III" and is permitted with a SUP under Section 23-6.22.4 (12) of the County Ordinance.
- b) Maximum Lot Coverage and Floor Area Ratio (FAR). The total area tabulation of the Property is 3,048,529 square feet. The maximum FAR is 1.5 and the proposed square footage for the facility at final buildout is 46,724 square feet or 0.015 FAR.
- c) Buffering from Adjoining Properties, Access Plan, Landscaping and Screening. All landscaping, access and buffering for the site will be in conformance with the requirements of the applicable sections of the Ordinance regarding the proposed use, all as depicted on the GDP. The project will be accessed via Jefferson Davis Highway (Route 1).
- d) Maximum Height of Buildings. The maximum height of any building on the Property shall not exceed applicable County Ordinance requirement for I-2 uses. The proposed building height for this use will be within County Ordinance limits, as depicted on the GDP.

- e) Special Amenities. Approximately 87.72% of the Property will be maintained as open space. The open space will be used for stormwater management facilities, buffering and natural areas, as shown on the GDP.
- f) By Right: The Property is currently zoned A-2 and potentially has access to public utilities. Thus, the Property could yield ten (10) single family detached dwelling units, creating higher demand on schools, emergency services, and road infrastructure.

IV. Cultural Resources

Based on review of the Comp Plan and information from the Virginia Department of Historic Resources and the United States Department of the Interior, the Property does not have any cultural resources. However, upon survey of the Property after purchase, it was noted that a cemetery does exist. The Applicant has already taken measures (including fencing the cemetery area) to ensure that the cemetery is not disturbed during the proposed build out as well as once operations begin. The cemetery will remain buffered and access will be allowed in accordance with applicable State law. Additionally, the Property is not located in the County's Historic Overlay District.

V. Fire and Rescue

The proposal will have minimal impact on the County's fire and rescue facilities. Thornburg Fire and Rescue Station 8, located less than one mile north of this site, will provide the Property with quick access to emergency services. The Applicant conducts annual internal fire inspections to confirm all fire safety practices and preparation measures. Further, the Applicant coordinates with local fire and rescue to familiarize County emergency response resources with Applicant's facilities and practices. These annual inspections and coordination with County services bolsters our organic fire response mechanisms while creating a stronger transition capability should fire and rescue resources be required.

Applicant met with the Emergency Management Division Chief and other Fire, Rescue and Emergency Management ("FREM") officials on August 9, 2017. Applicant discussed the design characteristics and activities proposed for the facility. Roads are designed to provide FREM response vehicles access to all developed areas of the facility (as shown on GDP). Applicant agrees that coordination with local FREM is always a good practice for the safety of our clients and employees and the safety of any responding FREM personnel. Applicant expects to continue the dialog and provide an emergency management plan for their comment and documentation. Applicant further expects to hold annual review/training sessions to prepare for a response should the FREM be amenable and available.

VI. Schools

This project will have no impacts on schools.

VII. Parks and Open Space

This project will have no impacts on County park services and the open space percentage for the site is 87.72%, all in accordance with applicable County ordinances.

VIII. Housing

Impacts on existing residences in the vicinity of the Property will be mitigated through appropriate buffering design, operations safety and sound mitigation measures, as discussed in more detail below. The open space areas will provide buffering along some property lines. Furthermore, as depicted on the GDP, transitional screening areas will buffer the proposed development from existing residential uses, including 50 foot buffers along adjacent properties 63-A-37B, 63-A-37A and 76-A-2A.

Additionally, Applicant retained a professional and local real estate appraisal firm known as the Appraisal Group of Fredericksburg. Professional appraiser, Christian P. Kaila, MAI, SRA prepared a value impact analysis of the properties adjacent to the Applicant's current site in Stafford County. Mr. Kaila's task was to identify any loss of property value on the subject properties that may be attributed to Applicant's operations or presence in Stafford County over the past 16 years. Mr. Kaila concluded that the proposed facility in Spotsylvania County, like in Stafford County, would not have any effect on surrounding or nearby property values in a negative (or a positive) manner. In fact, his conclusions were that the Applicant's proposed facility would simply be a non-factor as to value impacts, and the greater factor to property values is typically location. Meaning the more rural a property, typically the lower the value, whether close to the proposed facility or beyond a mile away from the facility. We have included his report with this application and is attached hereto and marked as Exhibit H for your review.

IX. Water and Sewer

As noted above, the Property is located within the PDB, but given the distance of existing utilities, it is not feasible during the Phase 1 Max build-out of the Project to extend public utilities to the said site. Thus, the Applicant plans to utilize well and septic systems for the Phase 1 Max build-out of the Project. The Applicant will construct the Phase 2 Max buildings as it relates to public water and sewer per county code.

X. Environment

The project's design will minimize the impact to the natural topography and vegetation located on the Property. While there are both wetlands and RPAs on the site, they are limited in area, and Applicant intends to utilize low impact development methods to address surface water and storm water management matters to the extent reasonably practical and feasible. The general lay of the Property has three topographic highs where the development will be implemented and two topographic lows between them. When the Property was purchased, the low area nearest the front portion of the Property had a culvert pipe lying adjacent to the crossing and a gravel ford was in use for passing. The owner replaced the existing pipe and stabilized the crossing to minimize future erosion that had been present in the condition when purchased. Going from the next topographic high to the back portion of the Property will have two proposed crossings, one in the Phase 1 Max buildout for the 500 meter gun range and a second in the Phase 2 Max

buildout to the scenario area. Both of these crossings are placed in locations that minimize any wetland disturbance and are outside of the RPA limits to reduce impacts.

XI. Lead Mitigation

Understandably, the potential for lead migration from the range areas needs to be addressed. To address this issue, the Applicant plans on developing and implementing an Environmental Stewardship Plan (ESP) prepared by a recognized expert in this field according to Environmental Protection Agency (“EPA”) guidelines. Additionally, the high concentration of clay soil in this portion of Virginia and on the Property makes this an ideal location for the proposed activity because the clay protects the groundwater and makes reclamation a less intrusive process. Sand traps with a clay base ensure that bullet containment is handled appropriately. The Applicant’s plans for using lime on the range floor maintains an EPA recommended pH level that further mitigates any possibility of lead migration to areas other than planned, as demonstrated in Best Management Practices for Lead Outdoor Shooting Ranges, EPA-902-B-01-001, Revised June 2005. Well-designed range areas will slow runoff ensuring water and particulates are maintained in the check dams, as shown in the GDP. The Applicant will continue its long held practice of recording the number of rounds expended to support planned reclamation efforts. The Applicant’s activities are regulated by local and State authorities and are subject to review/audit from time to time.

All range facilities will be designed to follow Best Management Practices for Lead Outdoor Shooting Ranges, EPA-902-B-01-001, Revised June 2005 (“EPA Manual”), to mitigate lead migration. Applicant hired Metals Treatment Technologies, LLC (MT2) to review their plans and conformance to the EPA Manual. MT2 has provided an environmental impact letter, attached hereto as Exhibit C, detailing key design features, which the Applicant will provide. These design features include:

- Application of lime on range floor and other areas, based on periodic measurements keep pH levels above 6.5, thus reducing the potential for lead to leach into the environment
- Designed grading to promote sheet flow to slow water leaving range directed to drainage swales;
- Maintaining grass in drainage swales and installing granular limestone check dams;
- Water retention structures designed to either enhance infiltration, which will be lined with limestone cobbles, or evaporation based on a professional engineer’s design; and;
- Regular accounting of accumulated bullets to assist in determining timing of periodic lead reclamation activities

The partially enclosed Shoot House will be covered to prevent precipitation from entering it and thus prevent migration of lead particulates. Lead decontamination techniques will also be implemented in the Shoot House to reduce environmental and health impacts. These techniques include the use of bullet traps to capture projectiles and periodic cleaning using High-Efficiency Particulate Air (HEPA) vacuums and wet wipe cleaning of walls and flat surfaces.

For purposes of Proffers to address environmental matters, please see attached Proffer Statement.

XII. Sound Mitigation

Applicant has retained Institute of Noise Control Engineering (INCE) Board Certified, National Technical Specialist for Acoustics and Vibration sound expert Erich Thalheimer of WSP USA, Inc. to verify that the proposed design will minimize the effects of noise. Mr. Thalheimer has been a part of the project design since inception and noise mitigation efforts of the Applicant since 2012. His study, entitled "Crucible Spotsylvania Acoustical Assessment" and dated March 22, 2018 is attached hereto as Exhibit D. Sound mitigation will include 20 foot high earthen berms around the perimeter of the ranges. Additionally, 10 foot earthen berms or ballistic walls will be constructed internal to the 20 foot earthen berms. Based on the berm heights of 10 and 20 feet line of site to any neighbors is impossible. This provides for additional measures of safety as well as greatly limits noise. Scenarios involving loud noise outside of the range will be limited to daylight hours without exception, to commence only after 8:00 a.m. Monday through Friday, and after 9:00 a.m. Saturday and 10:00 a.m. on Sunday and to end before nautical twilight. Simulated IED locations are confined to scenario areas defined on the GDP and will be buried to direct sound in an upward direction. Additional measures to mitigate noise include internal walls, vegetation on earthen berms, weekend/night time cut off, caliber limitation, burying IEDs, and prohibition of high explosives.

XIII. Range Design & Safety

Weapons will be stored onsite. Weapon storage meets Department of Defense Manual Number 5100.76 "Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives" ("DOD Manual"). Located in a separate controlled area, ammunition storage will also meet requirements defined in the DOD Manual. Applicant's proposed security plan was briefed to the federal government and preliminarily approved March 7, 2017. Spotsylvania FREM also reviewed Applicant's current ammunition storage and location and plans for our proposed site.

The range design follows the protocols in the National Rifle Association 2012 Range Source Book. Physical safety design measures include 20 foot perimeter earthen berms, 10 foot internal ballistic walls terminating in earthen berms so as to reduce lead disturbance if maintenance is required, 3 percent grade toward the impact area, storm drain drop inlets, and signs and high visibility ground marking lines on the long range to indicate "no shoot zone" (see GDP). The impact area will be lined with sand and topped with horizontal bullet catchers. The entire property line will be protected by a minimum eight foot chain link fence with "No Trespassing" signs every 100 feet. The break in the long range berms will have "live fire in progress" signs for approach and indicated "no shoot zones" to protect against lateral bullet escapement. Operational safety design features include a complete range safety operations and procedures manual. Among the procedures for range operations are a one instructor to four students ratio maintained on the range, all targets placed against backstop, and a prohibition of backward falling steel plates. Targets used will include wood target stands, pneumatic turning targets, steel targets, and mechanized moving targets.

The proposed Shoot House location is identified on the GDP. Currently there is no requirement for a shoot house in Applicant's operations plan. Because Applicant's clients have had the need in the past, Applicant may have the opportunity to provide that training to a client. Should that opportunity present, Applicant will design and construct a shoot house to meet those stated requirements. Known design characteristics include: capable of 5.56mm, 9mm, .40 cal, .45cal, and similar assault team shoulder fire weapons and pistols; 60 feet by 40 Feet, one story (includes viewing platform); open air (the overhead cover will not be connected to the walls to allow for ventilation but covered to protect against rain); and provide 360 degree ballistic protection. As with Applicant's flat ranges, building design will be to allow access for lead reclamation and periodic cleaning.

Scenarios will incorporate simulated attacks on trained students, to include pyrotechnic and/or pneumatic improvised explosive device simulators, blank fire weapons, and marker rounds (non-lethal training force on force rounds). Scenario areas are limited to the indicated areas on the GDP. There will be no live fire in scenario areas.

We have provided a Range Safety Review analysis, which is attached hereto and marked as Exhibit E.

The design of the range is a result of collaboration from the following individuals:

- Ernie Gillespie, USMC retired: Founder and Co-Owner of Radio Reconnaissance Technologies, Inc., a veteran owned small business specializing in tactical Signals Intelligence training and equipment and parent company of Team-Crucible LLC. Mr. Gillespie retired from the United States Marine Corps in 1990 as a Major having held Enlisted, Warrant Officer, Limited Duty Officer and Commissioned Officer ranks. During his time in the Marine Corps, Mr. Gillespie participated and led many range operations, to include controlled live fire exercises with 2nd Tank Battalion firing 90mm main guns, .50cal M2 machine guns and .30cal coaxial guns. As a plank holder of the Joint Special Operations Command (JSOC), Mr. Gillespie participated in dynamic range operations at the highest level. He then put those skills to practice as the Special Operations Officer of 2nd Radio Battalion where Mr. Gillespie provided guidance and assistance to Fleet Marine Forces Atlantic (FMFLant) and the 2nd Marine Expeditionary Force (MEF) during the establishment of the Maritime Special Purpose Force's (MSPF) range operations. In addition to range operations, Mr. Gillespie is familiar with the actual implementation of range designs having served as the Assistant Officer in Charge of a USMC Mobile Training Team (MTT) responsible for the site selection and construction management of the primary known distance range and live fire range for the Mauritania Naval Security Force, Mauritania, West Africa. Mr. Gillespie has owned and operated wheeled and tracked heavy equipment for over 20 years, including; excavators, track loaders, and bulldozers.
- John Garman, CPP: Team-Crucible President; 2003 NRA certified Law Enforcement Firearms Instructor for Tactical Handgun; 2003 Diplomatic Security Service Protective Security Operations Instructor 2003, Certified Protection Professional ASIS International 2007.

- **Erich Thalheimer: WSP** Mr. Thalheimer a degreed mechanical engineer who has spent his entire 30+ year career in the field of acoustics, noise and vibration control. Mr. Thalheimer is Board Certified by the Institute of Noise Control Engineering (INCE). He currently serves as the National Technical Specialist for Acoustics and Vibration for the engineering giant WSP USA, Inc. (formerly known as Parsons Brinckerhoff). Mr. Thalheimer has performed many hundreds of environmental, transportation, infrastructure and site development projects. Over two dozen of those projects have involved shooting ranges and firearms noise control including several appearances as an expert witness in related legal proceedings. Mr. Thalheimer lectures extensively, has published over two dozen technical papers, and is a recognized leader in the greater acoustics industry.
- **Jacob Polling, INCE – WSP:** Mr. Poling is an acoustics and noise control consultant based in WSP's Minneapolis, Minnesota office. Mr. Poling graduated from Columbia College Chicago with a B.A. in Acoustics and has 7 years of experience conducting noise and vibration assessments for a wide variety of highway, transit and rail, power generation, and construction projects. Mr. Poling is a certified advanced user of the FHWA's Traffic Noise Model and Datakustik's Cadna-A Noise Model.
- **Rob Greene, INCE Bd. Cert. – WSP:** Mr. Greene is a Vice President and Senior Engineering Manager in WSP's range, California office. Rob serves the Transportation Research Board's Noise and Vibration Committee, and committees for Historic Preservation and Intercity Rail. Rob has substantial experience in federal and state courts as an expert witness in acoustics, including cases involving small arms sound impacts and hearing protection. He is professionally recognized for his contributions to environmental acoustics and community noise solutions. He is Board Certified by the Institute of Noise Control Engineering and is a licensed Acoustical Consultant by the County of Orange, California. Rob holds a bachelor's degree in Environmental Science and has over four decades of experience in acoustics, environmental impact analysis, and acoustic measurement systems.
- **Doug Anderson, PhD – WSP:** Dr. Anderson is a PhD geophysicist with almost 50 years' experience, 37 of which is in assessing and controlling the vibration and air overpressure effects of explosive use. He is based in WSP's Philadelphia, Pennsylvania office. In the mid-1980s, he originated and developed the mine/quarry blast vibration control method known as "signature hole" or "seed wave", which reduces vibration using destructive interference. He is now heavily involved in analysis of blasting for tunneling and shaft sinking as well as demolition and implosions. He is internationally recognized for his research, and has over 30 refereed publications.
- **David Andrews, M2T:** Mr. Andrews has over 30-years' experience providing a wide range of environmental services including site assessment and remediation, feasibility studies, permitting, strategic planning, project management, and regulatory interaction. He has been with MT2, LLC since 2008 and has managed a wide variety of firing range projects, including design and implementation of EPA BPMs, writing Environmental

Stewardship Plans, completing Safety evaluations, and performing reclamation/recycling efforts, soils stabilization, and remediation/closures. Since joining MT2, he has completed evaluations and construction on over 500 outdoor and indoor firing ranges for Federal, State and Municipal agencies as well as numerous club and privately owned facilities. Mr. Andrews holds a PhD in Engineering Geology from Syracuse University, a MS in Geology from Boston College, BS in Biology, with a minor in Geology from St. Lawrence University.

- Lorin Kramer, Kramer One: Mr. Kramer is a nationally recognized expert in shooting range design. He has designed firing ranges in twenty-eight states. Mr. Kramer was a guest speaker for the National Rifle Association's Range Development & Operations Conferences from 1993 through 2009, participating in sixty-three conferences throughout the nation. He was a Range Technical Team Advisor and the Western Regional Supervisor for the National Rifle Association from 1991 through 2009. Mr. Kramer is an architect licensed to practice in Virginia. He has been qualified as an expert witness in shooting range design and safety.
- David Richardson: Civil Engineer, Webb and Associates

XIV. Transportation

The Property abuts Jefferson Davis Highway, which is a four-lane public road classified as a major collector road. Access to the Property will be provided from Jefferson Davis Highway. Roads constructed within the project will be private and will be maintained by the Applicant.

The project will generate 506 VPD of overall trips on a daily basis, including 85 during a.m. peak hours and 78 during p.m. peak hours. Neither a County traffic impact analysis nor VDOT 527 analysis is required for this project as it is projected to generate minimal impacts based on VDOT traffic generating models.

Per the "Rt 1 Entrance Analysis" dated January 9, 2017 conducted by Webb and Associates, a left turn lane is not required. Per Applicant's discussions with VDOT, a 200' Taper for deceleration and a 48' Taper for acceleration will be required and constructed during the complete build out of the project.

XV. Economic Development

As noted above, the proposed project will generate a positive economic development and tax revenue return. Dr. Fuller's report is attached and marked as Exhibit F.

XVI. Community Meeting

Pursuant to County requirements, the Applicant and its representatives held a community meeting on January 17, 2017 at Dominion Raceway to introduce and discuss the project with surrounding property owners. We addressed questions from members of our community and

incorporated those comments into this revised narrative, GDP and Proffer Statement. Exhibit G attached hereto provides a list of attendees.

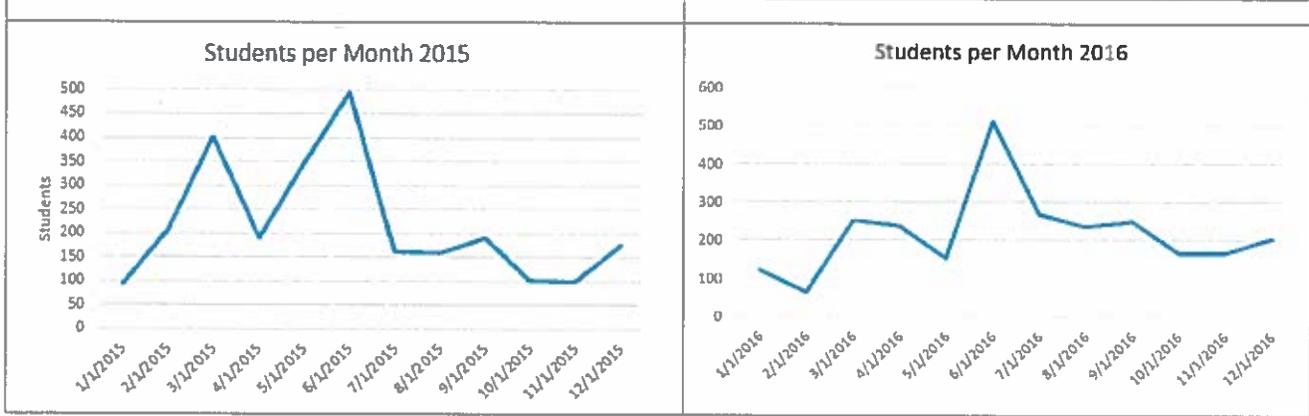
Since the community meeting, Applicant has also held numerous meetings with neighbors to address their concerns.

EXHIBIT A

Generalized Development Plan

Annual Statistic Analysis of Crucible Student numbers and activity 2015 and 2016

2015		2016	
Average Student per day (when students present)	14.90909	Average Student per day (when students present)	13.66146
Days present in 2015	176	Days present in 2016	192
Total Weekend days Firing 2015	6	Total Weekend days Firing 2016	4
Weeks with training	42	Weeks with training	45
Average trainees per week	62.47619	Average trainees per week	58.28889
Average trainees per Month	218.6667	Average trainees per Month	218.5833



April 2015

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
March 30	31	1	2	3	4	5
		10x combat/ve Scenarios	10 x Scenarios in town	10x Scenarios in town 1x pistol	1x rifle	1x med
6	7	8	9	10	11	12
		2x rifle/pistol 20x rifle/pistol	2x rifle/pistol 20x rifle/pistol	2x med		
13	14	15	16	17	18	19
3x lecture 10x rifle/pistol	3x lecture 10x rifle/pistol (night)	3 x med 10x rifle/pistol (night)	3x rifle/pisto 10x rifle/pistol (night)	10x scenario		
20	21	22	23	24	25	26
14x rifle/pistol	14x rifle/pistol (night)	14x rifle/pistol (night)	14x rifle/pistol (night)	14x scenario		
27	28	29	30	May 1	2	3
	20x rifle/pisto			1x rifle/pistol		

CRUCIBLE ACTIVITY BY DAY

Numbers given are students present for training

Med = Medical training inside
Rifle/pistol = live fire lecture & training
Scenario = "point ball" and pyrotechnics
Scenario in town = benign walk around

April 2016

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
March 28 4x Lecture 4x rifle/pistol & med	4x Lecture	4x Lecture	4x Driving	4x Driving	4x Scenario in town	
4	5	6	7	8	9	10
10x rifle/pistol	10x rifle/pistol (night)	10x rifle/pistol (night)	10x rifle/pistol (night)	10x scenario 4x rifle		
11	12	13	14	15	16	17
10x Combatives	10x Combatives	10x Combatives 4x rifle	10x pistol 4x rifle	10x rifle/pistol	10x rifle/pistol	10x rifle/pistol
18	19	20	21	22	23	24
4x rifle/pistol	1x lecture 4x rifle/pistol (night)	1x combatives 4x rifle/pistol (night) 20x rifle/pistol 4x rifle	1x rifle 4x rifle/pistol (night) 20x rifle/pistol	4x scenario 4x rifle		
25	26	27	28	29	30	May 1
4x rifle	4x rifle	4x rifle	4x rifle	4x rifle		

CRUCIBLE ACTIVITY BY DAY

Numbers given are students present for training

Med = Medical training inside
 Rifle/pistol = live fire lecture & training
 Scenario = "paint ball" and pyrotechnics
 Scenario in town benign walk around

April 2017

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
March 27	28	29	30	31	1	2
		4x rifle	4x rifle 4x rifle	4x rifle		
3	4	5	6	7	8	9
10x rifle/pistol 1x pistol	10x rifle/pistol (night) 1x machine gun 20x rifle pistol	10x rifle/pistol (night) 1x rifle 20x rifle pistol	10x rifle/pistol (night) 1x shotgun 20x rifle pistol	10x scenario		
10	11	12	13	14	15	16
10x med & rifle pistol						
17	18	19	20	21	22	23
4x rifle			4x rifle	4x rifle	4x rifle	
24	25	26	27	28	29	30
	4x pistol	4x rifle	4x rifle			
May 1	2	3	4	5	6	7
10x driving	10x driving	10x driving	10x driving	10x driving scenario		

CRUCIBLE ACTIVITY BY DAY

Numbers given are students present for training

Med = Medical training inside
 Rifle/pistol = live fire lecture & training
 Scenario = "paint ball" and pyrotechnics
 Scenario in town benign walk around

Fictitious Training -April

2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						1
2	20x rifle / pistol	3	20x rifle / pistol	4	20x rifle / pistol	5
						6
						7
						8
9	10x driving	10	10x driving 4x rifle	11	10x driving 4x rifle	12
						13
						14
						15
						16
						17
						18
						19
						20
						21
						22
23	10x rifle/pistol	24	10x rifle/pistol (night) 20x rifle/pisto	25	10x rifle/pistol (night) 20x rifle/pistol	26
						27
						28
						29
						30

CRUCIBLE FUTURE FORECAST

Numbers given are students present for training

Med = Medical training inside
 Rifle/pistol = live fire lecture & training
 Scenario = "paint ball" and pyrotechnics
 Scenario in town benign walk around

With no way to predict the future, Crucible expects 2018 to follow the pattern set by 2015 - 2017. Activity represented above is fictional, based on past events.

Current Operations Descriptions Initial Build

Looking backward from 2015 to 2017 and projecting it forward, Crucible expects to see similar business activity based on current contract awards and option years. Provided is a best guess based on conversations with contracting officers.

Students typically arrive the night before training in their personal vehicles and lodge in a nearby hotel. Each day they arrive 30 minutes prior to training to prepare for the day. Students are given a one hour lunch to go out into town and eat or are welcome to "brown bag" in the classroom. On days when low light training is required, the day is shifted to a later start to allow for training to continue as the sun sets. Most low light training takes about 2 hours to execute. Students typically return home after the final day of training. Below is a short narrative of a typical day of training.

Each day begins at 8:00am with lecture in the classroom preparing the student for the day ahead. New equipment is issued and any equipment used the day before is inspected and prepared for the day. A lecture covering the day's learning objectives is presented and students move to the practical portion of their training. Medical students move to the patient assessment areas, drivers move to the driving surface, and weapons students move to the range.

After the base lecture is presented, students are then taught in their respective practical application areas each technique required to meet the government statement of work. After this presentation by the instructors, students are then provided time to practice the techniques under the supervision of the instructors. Instructors provide feedback to the students and once students show comprehension of the techniques, the instructor moves to the next presentation, and so on. Students are provided breaks for water and lunch throughout the day.

Around 4:30pm, practical exercises are concluded, students return to the classroom and return their equipment, clean up from the day. The instructors review the day's activities and prepare the students to return the next day or provide paperwork to conclude the training.

Operations Descriptions Ultimate Buildout

Phase two follows the training model above. It is our experience that larger throughput numbers can be a result of larger deployments of our forces. This can lead to more consecutive days of training (Initial Build training is 3 to 10 days consecutive) and more consistent numbers in each class in order to meet deployment requirements. Requirements can include, immunizations, medical records review, weapon qualifications, physical fitness testing, identification badging, etc. Also, increased troop deployment means our current contracted efforts can see increase in frequency. Below is a fictitious month of training that our phase two operations could support.

Fictitious Phase two Schedule April

20XX

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 12x drive 4x Lecture 2x Lecture	2 12x drive 4x Lecture 2x Lecture 20x rifle/pistol	3 12x drive 4x Lecture 2x Rifle / Pistol 20x rifle/pistol	4 12x rifle / pistol 4x Driving 20x rifle/pistol	5 12x rifle / pistol 4x Driving	6 12x Lecture 4X Scenario in town	7 7x Lecture
8 12x rifle / pistol 7x pistol 15X Driving 15x off road 15x pistol	9 12x rifle / pistol 7x rifle 15X Driving 15x rifle 15x off road	10 12x rifle / pistol (night) 7x rifle / pistol 15X Driving 15x off road 15x pistol	11 12x scenario 7x Medical 15X Driving 15x rifle 15x off road	12 7x Medical 45X scenario	13 7x Medical	14 7x Medical
15 10X Driving 10x rifle 10x pistol 10x pistol 10X offroad 15x pistol	16 10X Driving 10x rifle 10x pistol 10x pistol 10X offroad 15x rifle	17 10X Driving 10x rifle 10x pistol 10x pistol 10X offroad 15x rifle/pistol	18 10X Driving 10x rifle 10x pistol 10x pistol 10X offroad 15x rifle/pistol	19 10X Driving 10x rifle 10x pistol 10x pistol 10X offroad 15x rifle/pistol	20 15x lecture	21
22 15x driving 10x pistol	23 15x driving 10x rifle	24 15x driving 10x rifle/pistol	25 15x scenarios 10x rifle/pistol	26 10x Scenarios	27	28
29 15x driving	30 15x driving	15x driving	15x lecture	15x lecture	15x pistol	

Counts above represent a month of training that includes 966 student days

Med = Medical training inside
 Rifle/pistol = live fire lecture & training
 Scenario = "point ball" and pyrotechnics
 Scenario in town = benign walk around

With no way to predict the future, Crucible can only offer historical numbers when student throughput was high. Activity represented above is fictional, based on past events.

EXHIBIT C

Environmental Impact Letter

EXHIBIT D

Sound Analysis

EXHIBIT E

Range Safety Review

EXHIBIT F

Fiscal Impact Analysis entitled “The Economic and Fiscal Impact of the Proposed Team Crucible Training Complex on Spotsylvania County, Virginia”, dated July 2017, prepared by Stephen S. Fuller, Ph.D.

EXHIBIT G

List of community meeting attendees

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EXHIBIT H

Real Estate appraisal of properties adjunct to the Applicant's current operations.

Analysis of Property Loss References regarding the proposed Crucible Property in Spotsylvania County

The article published by Realtor.com, *The Neighborhood Features That Drag Down Your Home Value-Ranked*, by Yuning Pan, March 28, 2016, stated that living near a shooting range decreased home sale prices by 3.7%. This conclusion is based on the analysis of the median sale price of homes within the area code that the shooting range was located compared to the median sale price of all homes in the same county. However, the author cautioned the reader to "Keep in mind the difference between causation and correlation: Does having a cemetery or shooting range in the neighborhood cause home prices to drop? Or are these businesses drawn to the area because of cheap real estate?" Shooting ranges are typically developed in less populated areas that would have lower property values than other more populated areas within a county. This could easily explain why their analysis indicated the properties near a shooting range sold for 3.7% less than the median sale price of homes for the entire county. The proximity to a shooting range was not the likely cause of the lower home sale prices, but its location within a less populated area is the likely cause. This would be the result for the Crucible facility in Stafford County if this methodology is utilized. The Crucible facility is located in one of the most rural areas of Stafford County which is the greatest distance of any area in Stafford County from the employment markets of the Washington DC metropolitan area. This results in the zip code containing the Crucible facility having lower sale prices than other zip codes in Stafford County because these other areas have more convenient access to the Washington DC metropolitan employment markets. Our analysis compared the sale prices of residential lot sales and home sales within 1 mile of the Crucible facility with residential lot sales and home sales beyond 1 mile but in the same area code as the Crucible facility. This minimized any effect on sale prices resulting from location because all of the sales were from southern Stafford County with all of the properties utilizing Warrenton Road (U. S. Route 17) to access Interstate 95. Our analysis showed the residential lots and homes that sold within 1 mile of the Crucible facility sold for the same price as comparable properties beyond 1 mile of the facility.

The article published by the Brighton News, *Waterford Gun Club noise hurts property values, county rules*, by Gail Geraghty, June 28, 2012, stated that a professional real estate appraiser hired by the neighbors of a gun range had "performed a statistical analysis resulting in a 7.5% loss of property value for the Howes' (the neighbor) 175-acre property and any other property within a 1.5-mile radius". However, there is no explanation of the statistical analysis methodology to determine if the conclusions are creditable. The only discussion of what the appraiser had done to form his opinion of value loss stated "the appraiser experienced the gunfire noise on several occasions and the intermittent gunfire is definitely a distraction and minimizes the peace and quiet enjoyment of the subject property." If the appraiser's opinion of the diminution of value for properties within 1.5 miles is based on these property visits and the appraiser's "gut opinion", this conclusion is unsubstantiated. The article included significant discussion of the real estate assessments within the county. The appraiser's analysis would not be creditable if it is based on the county's real estate assessments because tax assessments are not reliable indications of market value for individual properties. In fact, the article states that the result of the tax appeal by the Howes was the town of Waterford would likely reassess all real estate because it was currently significantly below market value and therefore don't meet state

valuation requirements. The last time a real estate reassessment had been conducted was 2001: eleven years before this tax appeal.

The Property Value Impact section of Appendix D from the Virginia Department of Environmental Quality Environmental Impact Review of the proposed firing range on Old River Trail in Powhatan County was prepared by the residents surrounding the proposed firing range site. They estimated a possible 25% diminution of value if the proposed firing range is constructed. However, this is their unsubstantiated opinion that is not based on any statistical analysis, just their arbitrary opinion.

The last article was published in the Daily Progress, *Gun range proponents: it's a safe place to shoot; opponents: It'll lower home values*, by Pat Fitzgerald, August 13, 2015. In the article, a neighbor of the proposed gun range in Greene County, Virginia states that "the proposed gun range would lower property values by 30 percent." As above, this is an unsubstantiated opinion that is not based on any statistical analysis, just this individual's arbitrary opinion.

By:

Christian P. Kaila, MAI, SRA
General Certified Real Estate Appraiser
6320 Five Mile Centre Park, Suite 323
Fredericksburg, Virginia 22407
(Spotsylvania County)
August 16, 2017

Effect of Crucible's Stafford Facility on Property Values for Adjoining Property Owners

For: Spotsylvania County Board of Supervisors Public Hearing and Crucible

My name is Chris Kaila. I live on Teal Wing Cove in Spotsylvania County, where I have lived since 1979. I am a licensed General Certified Real Estate Appraiser and Real Estate Broker. I have practiced real estate brokerage and appraising in the Fredericksburg area for over 30 years. I am the principal appraiser of my firm which employs 5 residential and 5 commercial appraisers. I hold the MAI and SRA designations from the Appraisal Institute and a Masters Degree in Real Estate from VCU. I am a past President of the Fredericksburg Area Association of Realtors and past REALTOR of the year.

It is my opinion the proposed Crucible facility in Spotsylvania County would not affect property values in a negative (or a positive) manner to adjoining property owners. This opinion is based on analysis of residential land sales and improved residential sales within a mile of the existing Crucible facility in southern Stafford County compared to sales beyond a mile. My opinion is also based on the continued residential development that is occurring within close proximity to the existing Crucible facility.

The current Crucible facility is located at 60 Jack Ellington Road, Fredericksburg, Virginia 22406 in Stafford County. Agricultural zoned land sales from within 1 mile of the subject were analyzed and compared to agricultural zoned land sales from surrounding Stafford County beyond 1 mile. This identified 15 arm's length land sales within 1 mile of the Crucible facility since 1999. However, 9 of these sales occurred during the housing bubble and subsequent financial crisis in the mid to late 2000s that resulted in volatile property value escalations followed by decreases which makes comparisons during this period difficult. Furthermore, most of these sales occurred prior to Crucible's full expansion of the Stafford facility. The six remaining land sales from April 2013 through May 2015 were identified as creditable sales for comparison. They range in size from 3.00 acres (3 sales) to 13.40 acres.

These 6 land sales were compared to 18 sales in southern Stafford County beyond 1 mile of the Crucible facility. These ranged in size from 1.00 acres to 21.37 acres, which brackets the sales within 1 mile. These comparable sales occurred from June 2012 to January 2017, which also brackets the time period for the sales within 1 mile, and is a period of relatively stable land values in the immediate area. This analysis showed no significant decreased (or increased) value for land sales within 1 mile of the Crucible facility compared to land sales beyond 1 mile. The attached Graph 1 illustrates the support for this conclusion because the data points for the sales within 1 mile of the Crucible facility (red dots) fall within the range of data points for the sales beyond 1 mile (blue dots) based upon the sale price per square foot of each sale. If the Crucible facility affected land values, the data points within 1 mile (red dots) would have been significantly below the data points beyond 1 mile (blue dots), which they were not.

One of the land sales within 1 mile of the Crucible facility actually adjoins the Crucible facility. It contained 9.61 acres and sold for a price per acre that is comparable to similar sized parcels beyond a mile to spite having inferior access to public roads via a private access easement. Two of the 3.00 acre parcels within 1 mile of the Crucible facility adjoined this 9.61 acre parcel and

sold for a price per acre that is comparable to similar sized parcels beyond a mile to spite their close proximity to the Crucible facility.

Recent improved residential sales within 1 mile of the Stafford County Crucible facility were also compared to sales from southern Stafford County beyond 1 mile of the Crucible facility. Research identified 14 arm's length sales within 1 mile of the subject; however, their improvements varied significantly in style and age. The most abundant age and style was new or recently built colonial style homes with a full basement and attached garage (8 sales). These ranged in age from new to 18 years old, on sites from 3.00 acres to 4.21 acres, and occurred from June 2013 to May 2017, a period of relatively stable property values in the immediate area. These were compared to 14 sales from south Stafford County beyond 1 mile of the Crucible facility. They were all colonial style homes on full basements with attached garages and ranged in age from new to 6 years old, on sites from 3.00 acres to 4.25 acres, and occurred from July 2013 to July 2017. Therefore, all of the properties were very similar except for their proximity to the existing Crucible facility. This analysis showed no decrease (or increase) in improved residential property values within 1 mile of the Crucible facility compared to improved sales beyond 1 mile of the Crucible facility. The attached Graph 2 illustrates the support for this conclusion because the data points for the sales within 1 mile of the Crucible facility (blue dots) fall within the range of data points for the sales beyond 1 mile (red dots) based upon the sale price per square foot of above grade gross living area for each sale. If the Crucible facility affected improved values, the data points within 1 mile (blue dots) would have been significantly below the data points beyond 1 mile (red dots), which they were not. Furthermore, the average sale price per square foot of gross living area for both the sales within 1 mile and beyond 1 mile of the Crucible facility were \$145 per square foot.

The recent development that is occurring within a mile of the existing Crucible facility in south Stafford County provides additional support that this facility does not adversely affect the desirability of residential properties. New home construction and sales have continued in several subdivisions within a mile of the subject, most of these sales being directly down range of the rifle range on the Crucible facility. A new ranch style home was built and sold in 2016 on a 3.00 acre parcel that is almost adjacent to the Crucible facility. It sold after being listed for two months for \$170.83 per square foot of above grade gross living area, which is higher than several similar ranch style homes that sold in south Stafford County beyond a mile of Crucible.

In conclusion, the mass analysis of sale prices of residential land sales and improved residential sales in south Stafford County within 1 mile and beyond 1 mile of the existing Crucible facility indicates this facility has not decreased (or increased) property values within its immediate neighborhood. The conclusion of this statistical analysis is supported by antidotal evidence that the Crucible facility has not affected residential development within the immediate neighborhood as new residential properties that sell for comparable prices as similar properties elsewhere in south Stafford County continue to be built, some almost adjacent to the Crucible facility and others directly down range of the facility's rifle range. Stafford and Spotsylvania Counties are similar markets for real estate and the conclusion concerning the effect on market values would also apply to a location in Spotsylvania County. I have examined the proposed location at 6116 Jefferson Davis Highway to confirm this conclusion. Therefore, based on my market research, if

a Crucible facility were located at 6116 Jefferson Davis Highway in Spotsylvania County, real estate value would not be affected either in a negative or positive manner.

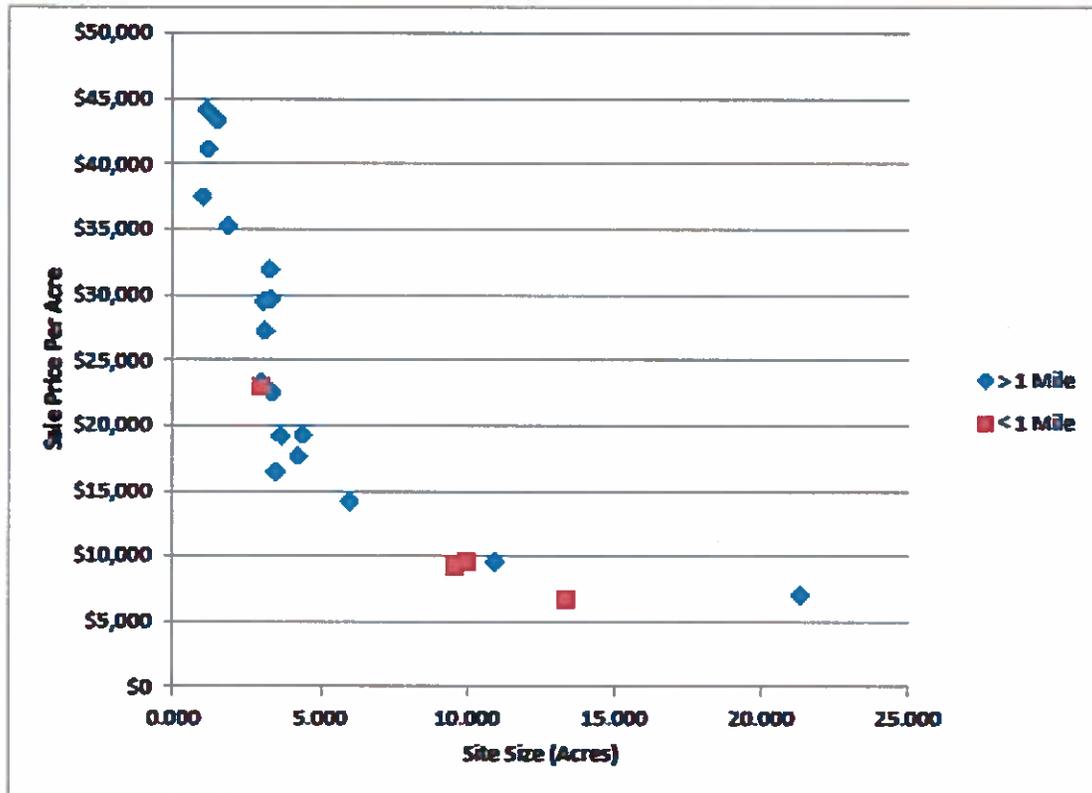
The appraiser also interviewed several agents who have extensive experience in selling properties in the areas around the Stafford Crucible facility. The following is a summary of interviews.

1. Chris Burns. Chris is the Sales Manager for Atlantic Builders. He has sold approximately 60 new homes in Stafford County, with several subdivisions with a few miles of the Crucible facility. According to Chris, the Crucible facility has not been mentioned as a consideration. Home sale prices in that area have been consistently increasing in the area with no negative influence.

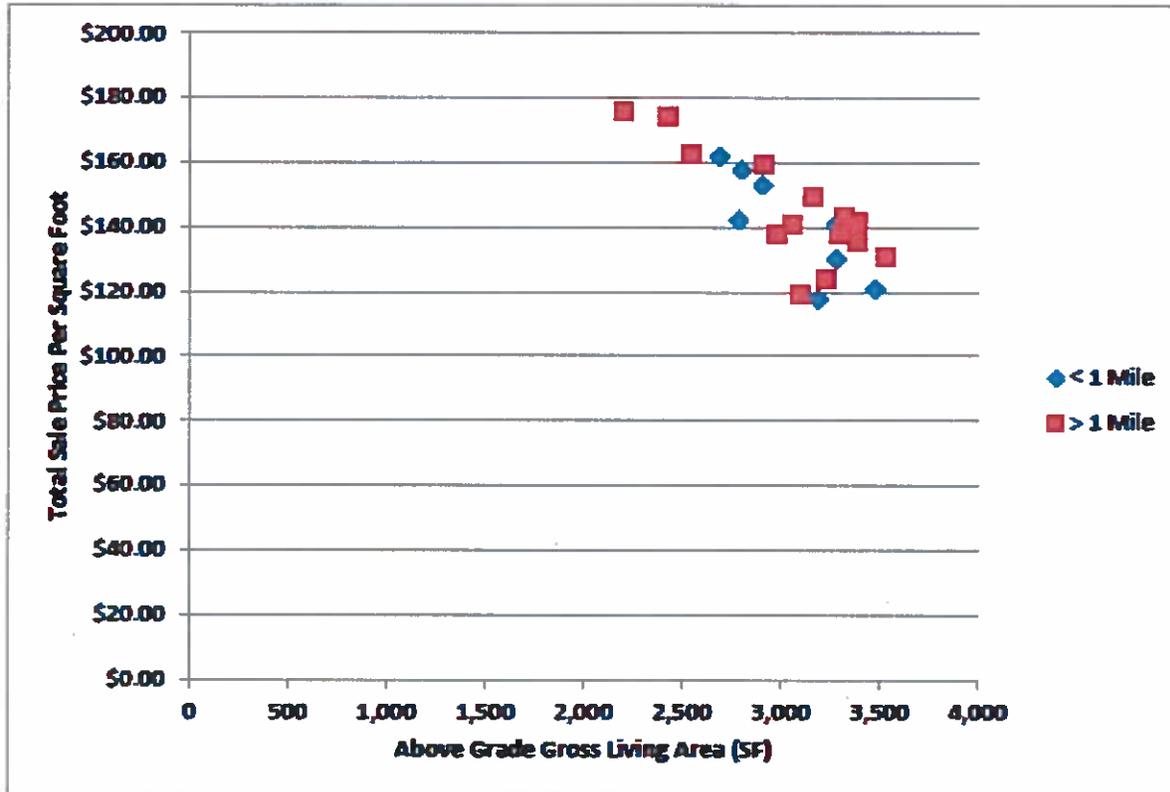
2. Beverly Sala. Beverly has been selling homes in Stafford County for 30 years and has only recently retired in the last couple of months. She has represented builders and developers in the Crucible facility areas – specifically in Sherwood, Wateredge Estates, and others. Beverly stated that the Crucible facility has never come up. There has been no negative influence. No one even seems to know it exists there.

3. Sherry Bailey. Sherry is another experienced agent who has sold properties in Stafford County for over 30 years. Sherry is also a member of the Planning Commission for Stafford County. Sherry stated no one has ever brought up the Crucible facility as a negative factor in buying or selling real estate in the Crucible area. Sherry stated that more people were concerned about the lack of FIOS internet service in that area, and the Crucible facility was never even mentioned.

Graph 1: Sale Price per Acre vs. Site Size (Acres) for land sales within 1 mile (red dots) and more than 1 mile (blue dots) of Crucible Facility



Graph 2: Sale Price per Square Foot of Above Grade Gross Living Area vs. Above Grade Gross Living Area (SF) for Improved Residential Sales within 1 mile (blue dots) and more than 1 mile (red dots) of Crucible Facility



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