

Data Submitted (UTC 11): 9/8/2019 4:00:00 AM

First name: Chuck

Last name: Maxcy

Organization:

Title:

Comments: My comments and objections are in the attached file.

Vested Interest

Let me start by saying I have an extreme vested interest in this project because my home, located on Jonas Mountain is the closest to the proposed range at approximately ~5400'. I bought the property back in 2013 for several reasons. It's surrounded by USFS on 3 sides so I didn't have to worry about anyone building around me. It's a remote area by choice, away from town, I can't see my neighbors and it is extremely quiet which was a huge reason why we bought it. This gun range could have a major impact on the quality of our life. The home went under contract in late 2017 prior to any notification of the proposed gun range. Construction started in January of 2018 and completed in Dec 2018. It has been and is the perfect place for our retirement home and living here has been exactly what we wanted.

I also want to state I'm a US Navy Veteran, NRA Life Member and strong 2nd Amendment Supporter. I hunt and I'll fire a few rounds for target practice every now and then. I don't mind the occasional gun going off and I expect to hear and have heard some during the different hunting seasons but that's a few rounds here and there and on most days, we hear nothing. What my wife and I and the rest of the folks up here on the mountain don't want to hear is constant barrage from a gun range operating dawn to dusk 7 days a week. Nothing in the Conway & Owen report or draft decision report can ensure we won't.

My Back Ground

As I stated previously in my scoping comments I was in US Navy aircraft weapon systems acquisition, engineering, design, development, integration and testing including various types of ordnance from

simple chaff, flare to precision guided munitions i.e., JDAM, SDB, Air to Ground and Air-to-Air missiles, Maverick, Hellfire, Harpoon, SLAM, SLAM-ER, JSOW, AIM-9X; rockets including APKWS and various torpedo testing on underwater ranges. One of our test facilities I oversaw was an enclosed 100- yard firing tunnel for

testing crew served weapons including small arms 5.56, 7.62, 300NM up to aircraft gun systems like the H-60 M60 machine gun or, M240 machine gun or GAU-16/A machine gun or GAU-17/A Minigun and the F-18 M61A1/A2 20mm Gatling Gun and F-35 25mm GAU-22/A Gatling gun and other aircraft with two FN Herstal HMP400 50 cal gun pods. (we positioned the aircraft in front of the tunnel with tie downs and fired the guns in that tunnel facility). I also taught in-flight weapon system mission planning and operator end game engagement tactics at CONUS and OCONUS forward deployed sites.

Background is provided because I know a little about weapon testing over the past 38 years in DoD and Active Duty so I have some major concerns when I heard about the proposed gun range ~5400' from my home.

Prime example is a fairly regular daily shooter we have off Fire Road 296 for the past few months. He's

~4,192 away at the "shooter site" in the picture below and it's quite loud at our home. We've been up to the site so I know where it's at. His normal routine is usually 50 rounds firing an assumed 5 round magazine 10 times. Usually lasts about $\frac{1}{2}$ hour and he does this around ~18:00 - 19:00 during the week and other times during the weekend. If he misses a day or two, he'll fire off enough rounds to make up for it. Only ~1,200 feet closer than the proposed range and it's beyond annoyance level.

Excerpt from CONWAY & OWEN WEBSITE

Since its founding in 2004, Conway & Owen has upheld the highest level of engineering standards and ethics while providing accurate and reliable design services. Our principal-involved team approach to engineering solutions has ensured that hundreds of clients realize their ultimate project vision. Our markets have included Corporate/Commercial Office, Data Center, Higher Education, K-12, Government/Municipal, Healthcare, Hospitality, Industrial, LEED/Sustainability, Mixed-Use, Retail, Sports and Recreation.

Conway & Owen utilizes a principal-involved team approach to achieve our mission. Each team consists of mechanical, electrical, audio-visual, and acoustical design engineers working together consistently to promote better communication and coordination. Team members are involved with their projects from design through

construction. Conway & Owen is professionally licensed in 33 states.

The Acoustical Engineering expertise listed:

[middot] Room Acoustics

[middot] Sound Isolation

[middot] Mechanical Noise Control

There are no engineering references to any background in weapons or ordnance testing expertise on sound pressure levels, shock wave, ground effects, air absorption, weather, wind, temperature inversion etc. in an outdoor gun range environment. At best I'd say they had a very limited idea of what they were up against especially in a quiet rural setting and the scope of the requirements needed to do a thorough detailed report that could be backed up by sound (no pun intended) procedures and data collection are not there especially after reading their report.

Let's start with their firearms choices:

They reference 3 weapons used as the baseline of their report:

Page 3 / TABLE 1 AVERAGE SOUND PRESSURE LEVELS GENERATED IN THE MUZZLE DIRECTION

FIREARMTYPE SOUND PRESSURE LEVEL (SPL) AT 32.8 FT.

Rifle (Mauser 96, 6.5 mm cart.)126 dBA

Shotgun (12 ga., 2.75" shell)127 dBA

Pistol115 dBA

32.8' (10m) was chosen for SPL collection.

Calculations are normally sampled within 180o radius from muzzle direction i.e. 0o / 45o / 90o / 135o / 180o at ~Xm.

Not sure how many folks use a Mauser 96 regularly since they were manufactured between 1896 to 1937. The report listed a shotgun but no make or model type is provided only the gauge and shell size and a pistol is listed

with no other identification on the type, make or caliber.

The SPLs listed are low compared to any standard firearms chart that is readily available. Even a suppressed 22 pistol is louder than 115 dBA.

Who determined or who recommended the weapons selection used and who approved it?

My assumption would be someone not familiar with gun range operation and the significant variations of firearms in use or someone may have handed over the data to use for the predictive simulation testing for whatever reason.

Can we assume that based on the firearms listed in Table 1 that no firearm will be used or allowed on the range that will be louder than those used for the predictive sound test?

The Union County Gun Club rules allow up to .300 Win. Mag and in one document (Human Environment, Exhibit A) you list a 50 BMG. These types of calibers have a significantly higher dBA than anything tested or listed in the Conway & Owens report. The 50 BMG is in the ~170 dB to 180 dB range at 1m so at 32.8' (10m) it would be 150 dB - 160 dB level.

If the plan is to allow larger calibers than those used on the Conway & Owen Report than a best case/worst case range of all firearms "ALLOWED" on the range would have to be used in any predictive sound level simulation modeling and by not doing so renders this report, its results and any decision made based on this report pretty much useless.

How many Monte Carlo runs were used to model the predictive sound levels or were they even used?

From a definition standpoint: Monte Carlo simulations are used to model the probability of different outcomes in a process that cannot easily be predicted due to the intervention of random variables. In this case it would be the environment. It is a technique used to understand the impact of risk and uncertainty in prediction and forecasting models.

In any testing using modeling simulation you need to be very accurate or you end up with garbage in = garbage out (remember this).

Below are some average rifle, shotgun and pistols SPLs at sea level. Note the detailed variety:

Peak dB SPL of Various Firearms (5 Studies) (Compiled by James E. Lankford, 3/18/14)

RIFLESCALIBERdB SPLpk

Winchester Model 70 (w/BOSS)7mm Magnum166.5
4Remington Model 742.30-06163.6
2Savage Model 110 (22" barrel).30-06163
Remington 742 carbine (18" barrel).30-06162.6
4Steyer-Daimler Mannlicher.270161.9
Remington 742 std (22" barrel).30-06161.6
4Browning X-Bolt.30-06161.4
4Rossi Trifecta.243160.6

4Winchester 94.30-30160.5
Ruger Model 1.45-70160.1
Thompson/Center Encore.50 (black powder)159.7
4Winchester 70 XTR7mm Mauser159.2
M147.62 X 51mm (.308)159.0
Colt AR-155.56 X 45mm (.223)158.9
Auto-Ordnance Tommy Gun (w/comp).45 ACP151.0
4Marlin 917 VS.17 HMR147.1
4Rossi Trifecta.22LR143.8
4Ruger 10/22.22LR143.4
4Mossberg 702.22LR143.0
2Marlin Model 60.22LR141
4Remington 514.22LR139.6

PISTOLSCALIBERdB SPLpk

1Smith & Wesson 586.357169
4Ruger GP 100.357168.8
4Colt Anaconda.44165.7
3Italian starter pistol 314.22 blank165.3
4Ruger GP 100.38164.7
2Smith & Wesson 686(.357).38164
2Glock 179mm163
1Sig Sauer P2289mm160
4Colt Anaconda.44159.2
1Colt 1911-1A.45 ACP159
1Glock 22.40159
3Smith & Wesson K-22.22LR158.1
.22 short155.1
.22 blank147.8
4Smith & Wesson LR CTG.22LR157.9
4Ruger MK.22LR157.5

Ruger Bearcat (4" barrel).22LR154.0
 SHOTGUNSCALIBERdB SPLpk
 4Remington 11-87 turkey12 ga. (3" ammo) w/choke161.5
 Remington SP-10 magnum10 ga. (3.5" ammo)161.4
 4Remington 11-87 turkey12 ga. (3" ammo) w/o choke161.0
 2Beretta Gold Match AL39112 ga. (hunting ammo)161
 12 ga. (target)159
 Remington 11-78 slug12 ga. (3" ammo)160.1
 4Remington 87012 ga. (2.75" ammo)159.7

4Rossi Trifecta20 ga. (2.75" ammo)159.1
 4New England SBI.410 (3" ammo)157.5
 Remington 11-87 turkey12 ga. (3" ammo)156.0
 Remington 11-87 field12 ga. (3" ammo)156.1
 12 ga. (2.75" ammo)152.7
 4Remington 87012 ga. (2.75" ammo)155.2
 4Pietro Beretta20 ga. (2.75" ammo)154.2
 4Mossberg 183KE.410 (3" ammo)151.9
 4Mossberg 183KE.410 (2.75" ammo)151.8
 Mossberg pump20 ga. (2.75" ammo)150.0
 Mossberg bolt.410 (3" ammo)149.1
 .410 (2.75" ammo)150.0

SOURCES:

Data from: "Auditory Risk to Unprotected Bystanders Exposed to Firearm Noise." Flamme, G. et.al. J Am Acad Audiology. 22: 93-103, 2011. Measures made 1 m left of shooter.

1 Data from Fig. 2: "Assessment of Noise Exposure for Indoor and Outdoor Firing Ranges." Murphy, W. & Tubbs, R. J. Occupat. & Environ. Hygiene. 4: 688-697, 2007. Measures made 1 m left of shooter near mannequin.

2 Data from: "Estimates of auditory risk from Outdoor Impulse Noise II; Civilian Firearms." Flamme, G. et.al. Noise & Health, 11: 45, 231-241, 2009. Measures made at shooter-side.

3 Data from: "Comparison of Impulse Noise levels Generated by a .22 Caliber Starter Pistol and a .22 Revolver." Sondergaard, J. et.al. Presented at 11th International Congress on Noise as a Public Health Problem (ICBEN) 2011, London, UK. Measures made 5 cm left of ear-skull.

4 Data from: "Auditory Risk Estimates for Youth Target Shooting." Meinke, D. et.al. International Jo. of Audiology. 53: S16-S25, 2014. Measures made near left ear of shooter.

The following calculations were completed using sound levels above with the Inverse Square Law:

The most similar RIFLE listed in the table above to the Conway & Owen Report Mauser 96 / 6.5mm would be a .30 06 and using the lowest dB in the chart it measures 161.4 dB which would be 141 dB at

32.8 feet or a +15 dB difference than listed in Table 3 in the Conway & Owen Report. A significant error.

The 12 Gauge SHOTGUN listed in the table above using the 2.75" shell measures from 152.7 dB would result in a 132.7 dB at 32.8' which is a +5.7 dB difference than listed in Table 3 in the Conway & Owen Report to 159.1 dB would result in a 139.1 dB at 32.8' which is a +12.1 dB difference than listed in Table 3 in the Conway & Owen Report. A significant error.

The PISTOL listed in Conway & Owen Report states no make or caliber of gun used. Using the smallest caliber listed in the table above (22 blank) the range is 154 dB would result in a 134 dB at 32.8' which is

+19 dB difference than the 115 dB listed in Conway & Owen Report to a (22LR)158.1 dB which result in a

138.1 dB which is +23.1 dB difference than the 115 dB listed in Conway & Owen Report. A significant error.

LOUDNESS:

What does all the above mean?

Doubling of the volume (loudness) should be sensed as a level difference of +10 dB. Basically: +10 dB is the level of twice the perceived volume or twice as loud (loudness) in psychoacoustics [minus] mostly sensed.

+20 dB gain change should give about the ratio of 4 (four times) for sensed volume and loudness

+30 dB gain change should give about the ratio of 6 (six times) for sensed volume and loudness

That's why the errors listed are significant i.e., the noise level errors are ~2 to ~4+ times louder than listed.

Decibels are also logarithmic so a doubling of sound intensity yields a 3 dB increase. If you had 2 shooters shooting identical rifles each at 150 dB you'd have 153 dB

[middot] 150 dB to 150 dB you have a multiple of 2, if you take the log of 2 you get .301.

o Since this is decibels you multiply that times 10 and get ~3 so 150 dB +150 dB = 153 dB

[middot] This continues so if I have 4 sources (shooters) at 150 dB sources all firing at once you have the potential of 156 dB. ($4\log = .602 \times 10 = \sim 6$ dB gain).

This doesn't seem to be accounted for, that I can find in the report which appears to be based on one firearm at a time which isn't practical for any gun range. You'll have multiple shooters and various SPLs.

The Conway & Owen sites Annoyance Levels from two odd sources:

1. British Building Research Establishment (Reference 1) states that "Annoyance is less likely to occur at a mean shooting noise level (mean SNL) below 55 dBA and highly likely to occur at a mean shooting noise level (mean SNL) above 65 dBA. The likelihood of annoyance at levels within this range will depend upon local circumstances." These values are measured with a fast response on the sound level meter.

2. Reference 2 provides sound level regulations that are utilized in Norway, Sweden, Finland, and Denmark. These sound levels are very similar to the 55-65 dBA range noted above.

a. Reference 4 provides a conversion for any measurements taken on the sound level meter using an impulse response weighting. This reference equates the 55-65 dBA (F) range to approximately the range from 60 dBA (I) to 70 dBA (I).

Criteria for A-weighted sound level from the World Health Organization for assessment of annoyance to sources of environmental noise in residential areas. Criteria for maximum sound levels are for protection against disruption of sleep. Actual sound levels should not exceed the criterion levels to avoid serious or moderate annoyance. 1

World Health Organization Noise Impact Table

Impact characterization	16-h / daytime Average sound level (dB)	8-h / nighttime Average sound level (dB)	Approximate day-night average sound level (dB)	Nighttime maximum sound level (dB)
Serious annoyance	55	45	55	60
Moderate annoyance	50	40	50	56

Note: This is noise annoyance levels in a residential / urban area not rural which is quieter and out lined in a US EPA Noise Abatement Report³ listed below.

The baseline noise level of agricultural and rural-residential land is approximately 30 dBA, whereas commercial use and urban areas have an average baseline noise level between 60 and 70 dBA.²

The U.S. EPA Office of Noise Abatement report clearly indicates that the level of DNL=55 dBA is applicable to an urban residential-background and must be normalized to the specific-environments under consideration to obtain an acceptable level of correlation between DNL and community response. Without background normalization, correlation is very poor based on the analysis presented in the levels document and elsewhere. This is no surprise since a level of DNL=55 dBA cannot be expected to be satisfactory at the same time in both a very quiet rural area and a noisy urban residential setting. Schomer³ suggests that an adjustment of 10 dBA should be subtracted for quiet rural environment and perhaps another 5 dBA if the project is newly introduced into such a long-standing quiet setting.

This is important because the Conway & Owens report states:

Because the Union County Shooting Range will be located in a rural setting, it is recommended that the lower end of the annoyance criteria be selected. The result is a project threshold criterion of 55 dBA or 60 dBA (l).

Conway & Owens background annoyance criteria is related to "Urban-Residential Environments" i.e., per their website again:

Corporate/Commercial Office, Data Center, Higher Education, K-12, Government/Municipal, Healthcare, Hospitality, Industrial, LEED/Sustainability, Mixed-Use, Retail, Sports and Recreation.

This is in opposition to what the U.S. EPA Office of Noise Abatement recommends for rural areas. 55 dBA is applicable to an urban residential-background and must be normalized to the specific- environments under consideration.

Background sound levels have to be measured before the noise source can be assessed and this was clearly never done.

As you can see above, we're actually located outside what is considered a rural setting up in the mountains. We're rural-remote which is even quieter than the agricultural and rural-residential land. There's an occasional car that goes by but otherwise silence which is why we moved here.

Bottom Line: The Conway & Owen report is incorrect in their acceptable noise level assessment for a rural setting based on WHO and EPA regulations. They're annoyance levels are based on an urban- residential setting.

References:

1Criteria for assessment of noise annoyance

World Health Organization / Guidelines for Community Noise

2CalTrans Study

3P. D. Schomer, "Criteria for assessment of noise annoyance", Noise Control Eng. J.,53(4), 132-144, (2005).

Three other flaws in the Conway & Owen Report:

1. Page 3 / TABLE 1 AVERAGE SOUND PRESSURE LEVELS GENERATED IN THE MUZZLE DIRECTION

FIREARMTYPE SOUND PRESSURE LEVEL (SPL) AT 32.8 FT.

Rifle (Mauser 96, 6.5 mm cart.)126 dBA

Shotgun (12 ga., 2.75" shell)127 dBA

Pistol115 dBA

Not a representative sampling of firearms calibers that would be used on a gun range. Garbage in - Garbage out

2. Page 3 / Table 2 MINIMUM REQUIRED SOUND ATTENUATION

FIREARM TYPEATTENUATION REQUIRED AT PREDICTION LOCATION 1ACTUAL ATTENUATION
REQUIRED BASED ON PROVIDED LANKFORD TABLEINFORMATION

Rifle66 dB86 dB

Shotgun67 dB77.7 dB to 84.1 dB

Pistol55 dB79 dB to 83.1

1Attenuation necessary to reduce SPL to 55 dBA max

[middot] dB listed is at the 60 dBA max not 55 dBA

This should read: 1Attenuation necessary to reduce SPL to 60 dBA max (Rifle 126 dB - 55 dB = 71 dB required not 66 dB listed).

Note: The 55 dBA max level that is again for a residential / urban environment not a rural environment. Garbage in - Garbage out.

If a 50 BMG is allowed on the range, the dB level is in the ~170 dB to 180 dB range at 1M so at 32.8' (10m) it would be 150 dB - 160 dB level.

[middot] It would take +95 dB to +105 dB attenuation to reduce SPL to 55 dBA max.

3. Page 4 / CALCULATIONS AND OBSERVATIONS

Results of predicted sound levels in dBA at Location 1 through Location 13 are listed in Table 3 for the proposed rifle and pistol ranges. Figure 1 maps these locations.

Table 3 color code basis:

Levels below 55 dBA would not be expected to produce annoyance and these values are highlighted in the table with a green color. On the other hand, annoyance response to levels above 65 dBA would be expected and these values are indicated with a red color. Levels between 55 dBA and 65 dBA form an uncertainty range and are identified with an orange color.

Quick summary of the Conway & Owen Report in my opinion:

Based on just the three flaws listed, this renders the rest of the report is irrelevant. I have no idea what the capabilities of the simulation modeling used is or what other programs it has been used on that can be verified. It may well be accurate for the dBA levels used for the simulation, however the predicted sound levels shown in Table 3 would be significantly higher because the dBA levels used in the computer simulation are inaccurate.

The so-called annoyance levels listed in the report are for residential / urban environments and not rural or rural-remote.

Bottom line: This report wouldn't hold up in any court and any decision favorable to the gun range based on the results in this report would be in premature at best due to the errors in the annoyance levels sited and the limited scope of the firearms testing it's based on.

EA Report:

Paragraph: 1.9.1 Key Issues

Issue #1: Impacts of noise created by shooting from a single concentrated point. The concern is that the proposed target range would produce a constant or continuous sound of gunshot in the immediate area thereby impacting local residents, recreational users of the national forest and potentially wildlife. This issue is addressed through the conduct of a predictive sound assessment and live firing demonstrations. To further address the issue, measures to mitigate noise (e.g., earthen berms) will be implemented, as needed, if the action alternative is selected.

Used as part of the approval decision: This issue is addressed through the conduct of a predictive sound assessment and live firing.

Paragraph: 3.5.1 Noise Affected Environment

The spatial boundaries of the analysis extend from the proposed range site outwards to an approximately two-mile radius - the distance at which gunfire can be differentiated and has an impact. It is important to note that they recognize the 2-mile distance, but show private properties 1 mile from the Forest Service lands on one of the figures and lists the number of houses within $\frac{1}{12}$ mile of the proposed range on the Action/No Action Summary Table.

Live Fire Tests: Two separate live fire tests were conducted by the Forest Service at the proposed project site on

November 8 and December 11, 2018. Both tests included two firing periods and listeners stationed at specific locations including the proposed site, along Jonas Mountain Road, on Fain Branch Road, and at points on the A.T. (second test only). Listeners were asked to provide descriptions of ambient conditions and gunfire heard with a comparison to common sound sources. Draft live fire test reports are provided in the Resources Report for the Human Environment in the Appendix C (Nutter and Associates, 2019c). This approach was limited in that it could not account for the proposed sound mitigation measures and is subjective in interpretation of the results.

The sound mitigation measures are not described in any detail and there's no assurance sound mitigation measures "shall be implemented" and must be effective to meet the levels listed in Table 3.

[middot] Where on Jonas Mountain Road were the noise levels predicted since the road is 0.4 miles or 2,112' long were these noise levels predicted to be?

[middot] Was Williams Drive considered in the report?

- There's 3 homes on Williams Drive and I'm the closest to the range and that's roughly

~1,153' closer than where Jonas Mountain road meets Williams Drive.

[middot] Can you guarantee the levels listed in Table 3 (if they were accurate to begin with) will not be exceeded?

[middot] Can you guarantee if the levels listed in Table 3 are exceeded that attenuation steps will be implemented in a timely manner to ensure the levels in Table 3 are complied with?

Frequently Asked Questions

Union County Target Range Project Updated October 30, 2018

How will you measure the impact of noise from the target range?

Noise impacts are an important focus of the Environmental Assessment being conducted by the USDA Forest Service. A "Shooting Range Noise Acoustical Analysis" report was developed to better understand the predicted firearms noise. The intent of the report is to predict sound levels that may be experienced in surrounding areas due to gunfire that would occur during typical use of the range. This study uses well-referenced and industry standard scientific modeling to predict sound levels based on features such as firearm types, terrain, distance, and the direction and design of the range. This analysis will be used to further examine areas identified as having potential noise impacts that could possibly create a state of annoyance for a typical listener. Further studies will

include live-fire acoustical analysis. The date and time of the live-fire acoustical analysis will be provided to all who comment on the project with their contact information, and will also be posted on the project webpage. The acoustical analysis is available for public viewing on the project page under Project Documents - Supporting. The project web page is: <https://www.fs.usda.gov/project/?project=54559>.

This is misleading and inaccurate. This specifically states above: Further studies will include live-fire acoustical analysis. No live fire "acoustical analysis" was ever completed... see below:

Gun Range Live Fire Testing

Testing conducted on the range at two different occasions was conducted using people at various locations who were asked to state if they "heard" anything and if they did how loud was it. The "live-fire acoustical analysis" stated in the FAQ above was never done.

This is qualitative testing which is also subjective as stated previously in my response and which was acknowledge Paragraph: 3.5.1 Noise Affected Environment yet used it anyway as part of the basis of the decision.

Qualitative Testing:

From a data analysis requirement, qualitative testing is raw data in words. Essentially ongoing, involves using the observations/comments to come to a conclusion.

From a data interpretation requirement, the conclusions are tentative (conclusions can change), reviewed on an ongoing basis, conclusions are generalizations. The validity of the inferences / generalizations is the reader's responsibility.

Basically, the gun range live fire testing using a very small variety fire arms did not replicate any real- world live fire gun range simulations in a best-case or worse-case scenario so the results of those test are meaningless and based on opinion of the people used at different locations. Opinions that can be dependent upon the observers want or need for the gun range i.e., one's perspectives, beliefs, discoveries, desires, and feelings or just the basics in the individual's hearing capabilities, which way they were facing or what they were doing during the test. Not one acoustical measurement was made let alone documented including weather conditions: temperature; wind speed and direction; relative humidity and cloud cover. This is not acoustical analysis.

Stated in the Draft Response to Comments:

The live firing demonstration was an out of scope activity, completed for informational purposes only, and does not represent actual firing conditions of the proposed range

This statement alone nullifies any references to Live Fire Testing listed in any document yet the live fire test was used to resolve one of the key issues concerning the impact of noise. Specifically:

EA Paragraph: 1.9.1 Key Issues

Issue #1: Impacts of noise created by shooting from a single concentrated point. The concern is that the proposed target range would produce a constant or continuous sound of gunshot in the immediate area thereby impacting local residents, recreational users of the national forest and potentially wildlife. This issue is addressed through the conduct of a predictive sound assessment and live firing demonstrations.

Stated in the FAQ statement, "Further studies will include live-fire acoustical analysis" and this was clearly never done. If the live firing demonstration was an out of scope activity and completed for informational purposes only and does not represent actual firing conditions of the proposed range then it cannot be used or referenced in the decision-making purpose.

Bottom line: This report wouldn't hold up in any court (which is where it's probably headed) and any decision favorable to the gun range based on the results of this report would be in premature at best due to the errors and the limited scope of the firearms testing it's based on.

Quantitative Testing:

Quantitative testing is based on stated objectives, focused, outcome-oriented, specific, testable requirements in a controlled to the best degree possible environment, using as large a sampling as possible to come to a reasonable conclusion that has the solid data acquisition and hard detailed data based on fact to support or deny the stated objectives and the requirements.

Quantitative testing gives context not opinion.

Proper "quantitative testing" using experts in gun range analysis and noise abatement using calibrated acoustical data collection systems based on national standards and combined with proper computer simulation modeling (which should match fairly closely if done right) was never done, should have been done and needs to be done.

This type of testing, had it been done properly would provide the county with the legal standing they would need if the results favored the required outcome because there would be verifiable data backing that up.

Summary:

The Conway & Owen report is misleading. It has a very limited firearms sampling; it is non-representative of the variety of firearms used on a typical gun range and the sampling levels used are flawed.

The Conway & Owen report has many errors in their acceptable noise level assessment for a rural, rural-remote setting as described in detail above.

Live Fire Gun Testing

[middot] No acoustical data measurements were collected[hellip] period.

[middot] Acoustical data measurements should have been collected with calibrated digital programmable sound level meters operating to ANSI S1.4 standards for Type 1 meters, and measurements should have been made according to national standards. (ANSI S12.9)

[middot] A variety and type of firearms "ALLOWED" on the range should be tested.

[middot] All measurements collected should have been done over a variety of environmental conditions during Spring, Summer, Winter, Fall and recordings should include normal noise levels at all areas selected for measurement as a baseline.

[middot] Acoustical measurements should be collected at the range on the type of firearms "ALLOWED" during a live fire test and should have been used as the baseline for the Conway & Owens Report.

1.

* Acoustical data measurements collected at the various outlying locations should be compared to the final report from Conway & Owens and these results should complement each other if done correctly.

Bottom Line: The data that was used, how it was collected, analyzed and the Project Report of results doesn't provide or meet the basic minimum requirements needed to make an informed decision on moving forward with this gun range at this time.

Respectfully, Chuck Maxcy

I'd also like to point out that a specified timeline was made for comments/objections on the Draft decision. Any formal documentation or revisions to documentation the Draft decision was based on and were filed or submitted after the Draft decision could invalidate that decision but would also require the comments/objections time line to be extended accordingly.