Washington County
Noise Control Task Force
(NCTF)

Final Report

Volume I

Report and Recommendations

Subcommittee report for the
Committee for Citizen Involvement

Representing the
Citizen Participation Organizations
of
Washington County, Oregon

"Promoting the protection of community livability through effective noise control"

July 2005

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Volume I. Report and Recommendations
Volume II Resource Documents

July 2005

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Report and Recommendations of the Washington County Noise Control Task Force (NCTF)

Volume I
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Preface to the Final Report

The Task Force presented its draft report to the Committee for Citizen Involvement on June 15th, 2004. The CCI embraced the draft report, asking that we submit it to the Washington County Board of Commissioners, the Department of Health and Human Services, and to the Sheriff. In addition, the CCI encouraged the Task Force to present the draft and its recommendations to the Citizen Participation Organizations for broader citizen input. Throughout the fall, winter, and spring of 2004-2005, Task Force members made presentations throughout the CPO network, receiving input and letters of support.

On October 12, 2004 at a work session, the county commissioners received a formal presentation of the draft report that had been submitted to them some months previous. In the spring of 2005, the Department of Land Use and Transportation recommended and the Board of County Commissioners approved a noise emphasis in its 2005 Work Plan. The county communications officer was tasked with developing a brochure on noise for the Department of Health and Human Services. He sought out the task force for feedback and guidance at its April 4, 2005 meeting.

In late November 2004, the Sheriff's Office responded to the draft recommendations specific to them. The Sheriff agreed that additional resources and enforcement would be required to make an impact on vehicular noise. The Sheriff provided their perspective on the noise case discussed in the report's "One Complainant's Experience", influencing an evolution of that piece of the report. The Sheriff assessed the potential of citing vehicles with amplified mufflers to the DEQ's Clean Air Station. In their estimation, DEQ lacked the technology to quantify the noise under load. The task force had been lead to understand that they had this capacity. Thus, deputies would still have to appear in court, making enforcement expensive for that priority of violation. The Sheriff's Office indicated if this changed, they would take advantage or any opportunities.

In response to the Sheriff's DEQ assessment, the task force communicated with the Department of Environmental Quality, seeking information on the required technology and its cost. In addition, the Task Force asked Representative Mitch Greenlick to toughen the sanction on amplified mufflers. This resulted in his filing H.B. 2822, at the request of the Washington County Noise Control Task Force. The bill was assigned to the House Transportation Committee, but did not achieve a hearing this session.

Annexation of urban unincorporated parts of the county to adjacent cities became a prominent topic during this past year. On occasion, county staff would suggest that noise management was an "urban service" and that residents would begin receiving noise protection, only after annexation. However, this is inconsistent with **Policy 5, Noise,** at http://www.co.washington.or.us/deptmts/lut/planning/docs/cfp/cfp.htm. It is part of the Washington County's Comprehensive Framework Plan for the Urban/Rural Area.

As the County Commissioners entered into Strategic Investment Program discussions with Intel, the Task Force advocated for county funding the dynamometer equipment needs of the two DEQ Clean Air Stations in Washington County. This would allow for testing, under load, providing quantified evidence of excess noise, thereby reducing deputy time in court while decreasing the illegal amplification of exhaust. News articles indicate that the county approved $579 million in tax breaks over 15 years this past May 17th. Few objections were noted as having been received. The task force received no response to our several requests.

During the summer of 2005, we began to post the report and documents on the web at **www.wcnctf.org**.

Newsweek came out with a cover page article "How to Keep Your Hearing" on June 6, 2005. According to the article, 28 million Americans currently have some degree of hearing loss and the number is projected to hit 78 million by 2030. The need for prevention of hearing loss was pointed out, with Newsweek reporting: "awareness and prevention efforts---community based, state, and nationwide programs---are gaining support around the country as hearing loss is increasingly recognized as a public-health issue." The article reports sound levels above 116 decibels are unsafe for any period of time.

Task Force members are now assessing their future plans. Having achieved a milestone in completing our draft and now final study and having apparently influenced the inclusion of noise into the county work plan, we recognize that this is only the beginning of building an effective noise management system. Projections paint a future of ever higher population and increasing densities. The Task Force encourages the CCI to maintain a standing subcommittee to guide, monitor adequate progress in this area. In addition, task force members understand the need for more advocacy and networking at the regional and state level, seeking collaborative solutions to common problems.

Acknowledgements

The NCTF is a working group of individuals who recognize the impacts of noise on themselves, others, and their communities. We have sought to move from frustration and complaint to a systematic assessment of noise issues, with a focus on supporting our county achieving a modern noise management system. We acknowledge the Oregon State University Extension Services and its staff and CPO Coordinator, Linda Gray. She brought us together and has provided excellent consultation throughout. We acknowledge our respective Citizen Participation Organizations and their umbrella organization, the Committee for Citizen Involvement. Together, they have provided us experiences and opportunities supporting citizen involvement in community issues. We acknowledge ourselves: Robert Bailey, Bridget Beattie, James Edgerton, Peter and Irene Keller, Henry Oberhelman, Kathleen Stevens, and Bill Vosburg. We acknowledge those dear to us who may have learned more about noise than preferred.

Executive Summary

In response to a newsletter solicitation by the OSU Extension Service to Citizen Participation Organization members, interested volunteers began meeting in the fall of 2002. We developed a sense of purpose, direction, and commitment; developing a work plan for the group which has become the Washington County Noise Control Task Force (NCTF). We sought broad representation and formal auspices as a subcommittee of the Committee for Citizen Involvement. This was accomplished in January through March of 2003. We then continued our efforts to identify and consult with key informants and organizations thought to be associated with Washington County's noise complaint and enforcement system. This report is the result of our efforts to date, together with recommendations and related resources.

Throughout 2003-2004, the NCTF met with representatives from the Office of County Council, the Sheriff's Office, Central Dispatch, and the Department of Health and Human Services/Solid Waste Division. The NCTF also conducted field visits, and developed a draft, "where to turn" brochure. We advocated for improved noise mitigation when opportunity arose, with recommendations sent to Metro, DEQ, Port of

Portland, SOLV, Washington County administrative officers and staff, and the Washington County Sheriff. Members also followed aviation developments related to Washington County's Ordinance 609, and the Port of Portland's master planning for the Hillsboro Airport, and the FAR Part 150 study of PDX flight tracks and related noise. More recently, we are weighing re Ordinance 641 to amend the noise ordinance, and Senate Bill 569 related to Mass Gatherings.

If noise pollution management is a component of community protection, quality of life, and livability, Washington County needs to create a basic foundation for effective noise management. Washington County government asserts that protecting livability and promoting quality of life are primary principles and goals. For example, in their 2003 Legislative agenda, they asserted a goal to:

> "Support legislation that balances the demands of a healthy economy and ecosystems through: prevention-driven growth management strategies, dispute resolution options that encourage and facilitate outcome-based community solutions, public and private partnerships, and investments in public facilities and services."

The County Comprehensive Framework Plan for the Urban Area: Policy 5, Noise, summarizes the problems faced and how the county would address noise as the county grew in the early 1980's:

POLICY 5, NOISE:

It is the policy of Washington County to support efforts to control noise and attempt to limit the adverse impacts of noise.

Implementing Strategies

The County will:

a. Comply with Department of Environmental Quality noise standards.
b. Include provisions in the Community Development Code to minimize adverse impacts of noise.
c. Consider noise-generating sources and noise-sensitive land uses in the Community Plan elements of the Comprehensive Plan.
d. Discourage the location of service facilities such as schools, hospitals, nursing homes, public assembly and high-density residential development within the year 2000 LDN55 and LDN 60 contours.
e. Coordinate with the Department of Environmental Quality, Oregon Department of Transportation and the Port of Portland when establishing land use designations near airports.

Summary Findings and Conclusions

Noise is a health hazard which is more serious than usually recognized. Noise is defined as unwanted sound and can result in loss of sleep, general discomfort and a reduction in the quality of life. Major sources include motor vehicle traffic, industrial operations, and rock quarries. Source reduction, buffering, and careful location of noise producing and noise sensitive activities are important methods of controlling this pollutant.

http://www.co.washington.or.us/deptmts/lut/planning/docs/cfp/cfp.htm

If the county had followed Policy 5, Noise, it is doubtful the task force would have arisen.

We assessed Washington County's existing management of noise. We found it leaderless, disconnected, lacking any sense of priority, absent any central coordination, lacking in public-private partnerships, and lacking any prevention strategy. We did not perceive any balancing between the growth, the related increase in noise, and any resulting protection strategy. Until we began our study, only part of the system was maintaining complaint data. We inquired about the county's value system and livability protection. We heard that livability protection values were not evidenced in daily work experience nor were they being communicated down the chain of command.

At the same time, Washington County supports continued industrial and residential growth, and increased density, which has fostered exponential growth in noise pollution over the past several decades. Some staff suggested that this was not a time to compete for scarce resources. Other staff expressed concern taking an enforcement approach to noise would escalate matters and become cost and staff intensive. Neighbor to neighbor communication and mediation were preferred. The NCTF found opportunities for cost-free or low cost partnerships that were not being utilized. We also learned some noisemakers were often perceived as engaging in other criminal behaviors and activities, and therefore not likely candidates for neighbor-to-neighbor communication or mediation.

Washington County administration asserts it does not want to provide urban services to its unincorporated residents and recommends annexation as the way to receive urban services. We found that noise is not just an urban phenomenon and that surrounding rural communities are being inundated with noise from a range of sources and lack protection. Noise as an urban service was not accepted as a positive defense. Noise is a required element of planning that the State of Oregon requires counties make. Washington County's stance has likely fostered a culture of neglect and a failure to protect. Noise is a health, safety, and nuisance issue that requires government as a primary player. Citizens can learn to be noise responsible and good neighbors can mediate. Government, however, has a monopoly on its noise ordinance, government has a monopoly on enforcement of its ordinances, and government has a corporate duty to protect its citizens from known health and safety risks.

Noise Overview

Apart from the sounds of nature, human produced sound is always bound by the technology of the day. Our evolution has provided us with a sense of hearing and sensitized us to a range and intensity of sounds. For millennia, our autonomic response of "fight or flight" evolved and served our survival. In a dense and technologically noisy environment, those autonomic responses have become health risks. The technologies of amplification have gone from percussion drum to concert sound wall in less than a century. All aviation related noise is post 1904. Vehicular noise began about 75 years ago. Boom stereos began appearing in the 1980s. Today, the marketplace makes available pocket bikes for children or stereo gear for water sport enthusiasts. Nearly everyone can access multiple technologies that can produce sound well beyond community standard. It would take thousands of years of evolution for the human body to protectively adapt to these changes.

The Noise Pollution Clearinghouse tracks noise complaints nationally and has organized the large variety of complaints into major categories. Their classification of noise includes: aviation, vehicular, industrial and commercial, stationary amplified, boom cars, barking dogs, auto racetracks, construction, lawn equipment, rail, off-road vehicles and snowmobiles, motorcycles, noises in parks and wilderness areas, outdoor events, gun clubs, watercraft, bars and restaurants, and other. Not all communities experience all categories of

noise. For example, our community lacks large opportunity for some technological uses such as snowmobiles. We also have limited opportunity for jet skis and other watercraft.

Given our population and density, we ranked noise issues specific to our experience of unincorporated Washington County.

Motorcycle noise ranks as a leading offender, with 120-140 decibels of roar having the potential to inflict permanent physical damage to ears of any nearby bystander or bicyclist. Motorcycles number 5 million nationwide. It is estimated fully 50% of motorcycles have illegally altered pipes. Increasingly, motorcyclists are passing through unincorporated communities in their commute. Rural communities complain of weekend and recreational motorcyclists ravaging the countryside with their noise. In the absence of law enforcement and with their high speed of travel, there is little hope of reading a license plate. Oregon's motorcycles are not yet required to pass DEQ for emissions or noise, as in 35 other states. Some riders have been observed wearing earplugs to protect their own hearing. Pocket bikes began appearing in 2004-2005. At full throttle, they can be as loud as a chainsaw.

Boom stereo car noise has increased and drivers appear to find rural and unincorporated roads and communities less prepared and lacking enforcement resource. With an after market amplifier, speakers, and a sub-woofer in the trunk anyone can make their thump/thud presence known for miles. Drivers paint this graffiti over a large canvas of a rural community or unincorporated suburb in a short period of time. As with other excessive noise emissive vehicles such as dump trucks, motorcycles, or flyover aircraft; residents are hard pressed to read a speeding license number. Victims accumulate, mile-by-mile, day-by-day.

Vehicular noise was identified as a leading NCTF concern and is the number one or two top noise concerns nationwide, competing with airport noise. Traffic noise impacts due to vehicle noise are increasing at an alarming rate according to Federal Highway Administration studies. The problem presents itself for a number of reasons. While many drivers are unaware of the noise impact their improperly maintained noisy vehicles create, many vehicle owners are intentionally raising noise emissions hoping to improve vehicle performance or to demonstrate identity, affiliation, or some expression of power. Vehicle sizes, weights, and tire sizes are increasing. Drivers are often protected by efficient sound proofing inside the vehicle interior and together with air conditioning they do not endure the full noise emission impact their own and other vehicles create. Seasonal noise is associated with studded tires. Damage the studs cause increases tire/road interface noise year-round for all vehicles.

The NCTF members and the general public have noticed a marked decrease in vehicle speed limit enforcement over the years and therefore as average driving speeds increase, so too the noise. See the vehicle speed and noise graph in the resource volume. National traffic authorities report drivers becoming increasingly "velocitized" from freeway driving, and after exiting onto arterials and rural roads, continuing at high speeds, evidently unaware of vehicle speed in the enclosed and quieter vehicles. Speeding vehicles reduce safety for all drivers, pedestrians and bicyclists. Counties and cities have been raising speed limits with little consideration given to attendant traffic noise therefore raising average traffic noise levels even further.

Washington County has traffic calming programs for some neighborhood streets and has installed the Verboort Traffic Circle, but there is no such program for arterials that bisect residential neighborhoods. County staff have not expressed any hope for those living near arterials or in other rural areas.

In areas of the county developed before the 1980's, streets were not designed to as modern arterials with sufficient right of way and roadway clearances to minimize impacts on surrounding residential developments. These older streets are substandard for full arterial traffic and were not designed for the posted speed limits, yet they are the only routes for vehicle traffic in many areas. Washington County designated them as full arterials on the county transportation maps, when in reality these streets are *farm to market* or *local street* designation design. Examples include S W Cornell Road, S W Cedar Hills Blvd, S W Barnes Road east, S W Walker Road east, among others.

The NCTF could not determine what the noise threshold was for the law enforcement of vehicle noise in Washington County. In 2003, only 14 citations were issued for excessive noise. Some NCTF members have reported unmuffled exhaust braking in residential areas, but law enforcement is not applied, even if it is the same commercial vehicles observed routinely violating the law. The Sheriff's Office indicates they have a different interpretation of vehicle noise regulations than does the DEQ or that contained in the Oregon Revised Statutes. While the state law outlaws all exhaust braking except for emergency situations and the county ordinance upholds it, the county does not enforce routine exhaust braking as County Counsel argues that truckers might defend themselves by asserting an emergency situation.

There has been a ratcheting up of vehicle noise due to modification of exhaust systems, outlawed by Federal and Oregon statutes. Now, small cars frequently emit as much noise as loud motorcycles and dump trucks with un-muffled compression brakes can emit as much noise as police sirens. The routine noise emissions of motorcycles with un-muffled exhausts have been measured by a committee member to be similar to the noise level of a racing fire engine with exhaust brakes, sirens, and horns blasting simultaneously.

The NCTF found there is currently no particular limit to how much noise moving vehicles are allowed to make on county streets and roads. The NCTF questioned the functioning of the county truck regulatory system. For decades, several NCTF members have tried to work with the county deputies assigned to regulated truck safety and equipment. Balancing the movement of trucking with environmental protection (noise mitigation) is clearly tipped toward truck commerce. Foreseeing the future impacts of increased trucking on a limited street system, the county implemented a 24 hour truck route designation on any street that was called an arterial on the county transportation maps. One third of these streets were arterials, and do not have sufficient roadway rights of way to prevent noise and vibration impacts from all manner and tonnage of 24/7 truck traffic in residential areas.

Despite these occurrences and their attendant frustrations, many mitigation opportunities exist for reducing traffic noise impacts to county residents. Standard techniques such as speed enforcement or reduced speed limits can contribute to noise reduction. Synchronization of traffic lights is another method. A new method and material includes rubberized asphalt, proven to reduce vehicle noise while lasting longer than traditional asphalt. The cost is about the same.

Recreation related noise is represented by watercraft use at Haag Lake, which is subject to specific noise standards promulgated by the State of Oregon Marine Board and enforced through the Sheriff's Marine Patrol (see brochure in resource volume). This stands out as one venue of noise where there appears to be strategy, resource, public education, and a prevention strategy. In other communities and parks (Yellowstone) snowmobile noise has become a national issue. To our north, the whale watching boats are forcing the Puget Sound killer whales to yell at one another. The Grand Canyon National Park is now developing a base line of "quiet" that will become the reference point for determining what noise

intrusions will be allowed. Quiet is being defined as a "natural resource" of the setting. In Washington County, many rural roads attract Metro area motorcyclists looking for an unfettered ride.

Truck compression-braking noise occurs when drivers use engine compression for braking. A compression brake is only legal in an emergency situation in Oregon and it must be adequately muffled if used. One reason given for the need to compression brake is to save on brake lining wear. Many local operators are reimbursed by the trip/load, which encourages speed. This then reinforces the use of compression braking. In rural areas where enforcement is scare, compression braking of landfill trucks moving development soil to "dirt farm" dumping areas has created conflict between communities and government services. In Washington County, the County Counsel discourages enforcement of compression braking. Consequently, deputies are discouraged from wasting resources. Undeterred, offending drivers can create geometric impact on rural communities, day-by-day, mile-by-mile.

"Performance" or amplified muffler related noise has essentially exploded over the past decade. The stereotype occurrence is a young male driver amplifying the exhaust of his late model Honda Civic or Acura. The pipe is about twice to three times the size of the factory exhaust pipe with limited internal muffler baffling, essentially substituting a megaphone at the end of a straight pipe for the factory standard exhaust system. It is thought that performance mufflers add horsepower to the engine. A regular factory muffler is enclosed and baffled through a labyrinth in the muffler. Performance mufflers are typically straight and some have removable noise baffle cores. DEQ is not currently authorized to remove these cores for noise testing. DEQ has said that they would need expensive dynamometers to test these systems "under speed" to effectively detect the noise that is not generated until the vehicle is above 25 mph. Currently, DEQ only has noise equipment to test vehicles at idle. These performance mufflers pass the test at idle. For this reason, the Sheriff's Office is reluctant to have deputies enforce this violation, because the drivers go to DEQ, get the positive test results, then go to court where deputy time and expense continues, and in the face of confusion about a passing noise test. Muffler shops are doing a brisk business installing these after market systems, all of which violate federal and state motor vehicle standards if they raise noise emissions above manufacturer standard emission levels. Vehicles equipped with such muffler modifications can be heard for long distances, in particular at night, and in rural areas.

Aviation related noise has compounded in recent years as what once was a general aviation and fixed-wing Hillsboro Airport has grown to be an active *corporate airport*. Intel flew 100,000 employees in and out of Hillsboro Airport on its own fleet of jets in 2003. Hillsboro Aviation has become the second largest helicopter training school in the nation. The Port of Portland approved the helicopter leases in 1996, with two ten-year renewal options. Noise impact studies were not undertaken. The Port of Portland asserts that the leases were approved in a public meeting (in downtown Portland); therefore surrounding residents and communities had opportunity for input. Current efforts at government, community and business mediation has only yielded the possibility that helicopters might not fly during one national holiday per year. Neighborhoods and nearby communities are now learning how little influence local jurisdictions have once this kind of use is in place. Ground testing of airplane engines represents another aspect of aviation noise, although this is subject to local noise ordinances. The Port of Portland however does not plan to build any ground run up facilities unless and until they are compelled to. PDX over-flights are becoming an increasing concern as the Port of Portland seeks to fan out its flight tracks over a less dense geography. In addition to the Hillsboro Airport, the second busiest airport in the State of Oregon, Washington County has additional airfields and heliports. The Tualatin Valley Basin has become a busy aviation setting and aviation noise is an expanding result. See the Tualatin Valley Livability newsletters in our resource volume for a discussion of these issues. One aviation expert and legislator dubbed the Hillsboro Airport a *poster child* of what an airport, in relation to a community,

is *not* supposed to look like. The residential and industrial build up surrounding an expanding and noisy airport make for inherent conflict. When discussion arose about the Air National Guard flights at PDX, Washington County's representative to the PDX Citizen Noise Advisory Committee offered up the Hillsboro Airport.

Landscape equipment noise has increased with the residential and industrial population explosion of Washington County, assisted by the technological advances in small-engine landscape machinery. Corporate and business parks require ongoing maintenance and high performance mowers, leaf blowers, and weed trimmers are in perpetual use. With the recently mandated density of newer developments, yards are smaller, closer, and landscapes are virtually on top of each other. The cultural space of the West is dramatically changing, and noise is a part of that equation. Hearing damage to operators and bystanders is a risk. See the resource volume for Noise Pollution Clearinghouse articles on landscape equipment related noise pollution.

Industrial refrigeration and industrial/residential heating and air conditioning system noise are on the increase and Washington County has recently required more set back for such residential units. As the hum goes up, more windows close, and the more air conditioning units becomes necessary for each house.

Barking dog noise became so problematic and costly to manage that Washington County developed a "barking dog control" Ordinance 600 in October, 2002. It allows both code enforcement officers and private citizens to enforce the regulation through the Administrative Enforcement Ordinance. Mediation services have been made available and a hearing process when mediation fails. County administration enacted and resourced the barking dog ordinance without it falling victim to annexation politics. Why would dog barking control be any less an urban service than truck, motorcycle, or passenger car traffic on county arterials and streets?

Stationary amplified noise results from restaurants, bars, car lots, special events at golf courses, and at residences when amplified music or voice is played. Special event and after hour noise generation requires variance approval through Washington County Department of Health and Human Services/Solid Waste Division. As our region becomes increasingly dense, demand for outdoor concert and event venues is increasing. Are our noise ordinances refined enough to both support these cultural activities while protecting nearby residents?

Neighbor to neighbor noise runs the gamut and can be as idiosyncratic as one person's wind chime collection. This type of noise includes landscape equipment noise, air conditioning *hums,* stereo blasting, and other sources which emanate noise across property lines. With increased density and increased population, peoples on the west coast now must learn to live in closer proximity than ever before. Washington County encourages residents of unincorporated areas to first try neighbor to neighbor communication. If that is not successful, the county recommends the utilization of mediation services. If one lives west of 185th, contact Hillsboro Mediation Services. East of 185th, residents should contact the Beaverton Mediation Services. Neighbors must exercise their judgment in determining whether it is safe to invite a party to mediation.

Rail noise includes both the steel-on-steel sound of the wheels on the rails and also the high-pressure 110 decibel air horns used at junctions. The Federal Rail Administration is now rolling back hundreds of quiet zones across the United States with their train horn rule. Previous whistle bans were adopted over the years by states and communities but did not restrict horns in the event of emergencies. There are

153,975 public highway crossings nationwide and the train horn rule reinstated blasts at 2,068 of them by December 18th of 2004. Others will have additional time to bring junctions up to FRA safety standards, thereby retaining their quiet zone status. No federal money will be available and it is anticipated it will be difficult for cities and counties to bear the costs at this time. It is estimated that nearly 10 million people are currently affected by train horns. The FRA ruling will add another one half million, although the FRA asserts that they intend to lower the decibel level. A community could retain their quiet zone if they brought the junctions up to FRA safety standards, balancing safety with quality of life as the FRA contends. Critiques say that horns are typically blasted at almost all rail accidents and do not appear to deter the accidents. At the same time, it is estimated that 10 to 20 percent of sleep disturbances nationwide are due to transportation noise. The National Highway Traffic Safety Administration figures indicate that approximately 100,000-car accidents per-year are caused by fatigued drivers. The Noise Pollution Clearinghouse wonders whether transportation system noise such as train whistles which deprive citizens of required sleep are actually contributing to rail accidents rather than preventing them.

Farm animal noise can include roosters crowing or peacocks frightened at night. We learned of one case of possible noise harassment where a neighbor collected upwards of 20 roosters, seemingly in an attempt to annoy a neighbor. In general, farm type animals kept in urbanized areas often contribute to neighborhood noise problems.

The Legal Context of Noise

The federal government became involved in noise pollution under the 1970 Clean Air Act, and later in 1972 with the Noise Control Act. In 1978, the Quiet Communities Act was passed. These empowered the Office of Noise Abatement and Control within the Environmental Protection Agency to develop standards and to offer funding to states. However, this office was de-funded in 1982 and remains dormant. In January 2003, House Bill 475 sought to reestablish the office of The Quiet Communities Act of 2003 (see resource volume). The bill notes that an estimated 28 million Americans are afflicted with hearing loss, and that 10 million of these impairments are at least partially attributed to damage from noise exposure. The bill points out that exposure to excessive noise can lead to sleep loss, psychological and physiological damage, and work disruption. Chronic exposure can lead to cardiovascular disease, learning deficits in children, stress, and diminished quality of life.

The federal government restricts states and local jurisdictions from creating laws more restrictive than federal laws and regulations. Termed federal preemptions, these exclusions pertain to train whistles, aviation noise generated in the air, and interstate trucking. The Washington County Counsel's Office references 49 USC14501, known as the Federal Aviation Administration Authorization Act, as having the effect of deregulating the motor carrier industry. The Code of Federal Regulations (CFR) Title 40, part 202, covers commercial trucking. We have found differences of opinion as to the scope of these preemptions from one jurisdiction to the next, and between one county department and the next, and from state officials to county officials.

Oregon's Department of Environmental Quality was created in 1969, replacing the State Sanitary Authority. It developed noise pollution standards through administrative rulemaking. When the federal Office of Noise Abatement and Control was de-funded, it too became dormant. In 1991, authority and responsibility for vehicle noise emission control and abatement was passed to Oregon cities and counties, but without a specific revenue source.

The federal government and the State of Oregon have assigned the responsibility and authority to develop noise ordinances to the counties and cities. Noise ordinances typically define unacceptable noise types and levels, whether the level is assessed by a noise meter or human ear, which hours and days noises are allowed or restricted, and indicates who must witness the noise. Noise ordinances might exempt some noises, for example, our county ordinance asserts "nothing is intended to unreasonably restrict or regulate forestry, farming, organized athletic or other group activity, or sounds caused by emergency work." Variances to the ordinance are defined, and an application for variance procedure is described. Management of the ordinance, its enforcement, and sanction levels are described. See the resource volume for Washington County's Noise Ordinance. The NCTF analysis of the ordinance can be found on page 34 of this report.

Noise Management in Washington County

Washington County Noise Ordinance

Washington County's noise ordinance is contained in Title 8, within Health and Safety, under Chapter 8.24, Noise Control. See the resource volume for the Noise Ordinance. This ordinance is specific to unincorporated Washington County only and does not apply to cities within Washington County. The cities develop and enforce their own ordinances. This in itself creates confusion in that within our region, we might live in one jurisdiction, work in another, and we might travel through or recreate in still other jurisdictions, all in a day's time. How are we to know which rules apply where? How could prevention education and enforcement help coordinate these disparate efforts that should all have the same goal?

Noise Ordinance Responsibility

Until 1999, the Noise Ordinance was the responsibility of the Office of County Counsel. Due to an increasing workload, ordinance responsibility was transferred to the Department of Health and Human Services, Environmental Health Section/ Solid Waste Division. Solid Waste operates from 8 to 5PM, weekdays. It has a telephone recorder for after hour messages: 503-846-8609. It is not a hotline. No one person is assigned to noise issues.

The NCTF inquired about complaint data and learned staff did not maintain data. We met with several staff to learn that they had never met with other county departments and staff to coordinate noise issues. They did not have any print material to disseminate to the public about where to turn or whom to call when problems arise. The ordinance stipulates that an administrative manual can be developed, but none has been nor is one yet planned. The NCTF got the impression that while noise is accepted as a health issue, the responsibility was transferred to this department without their involvement and without resource. The staff indicated that while the ordinance was assigned to them, they really managed the applications for noise variances and had little capacity to go out on a call. In their estimation, noise complaints should be referred to law enforcement and if the noise was related to land use, then Land use and Transportation, LUT, should be called. Solid Waste has one code enforcement officer who responds to a wide range of environmental issues including illegal dumping. See the resource volume for our consultation with Solid Waste comments.

Complaint Management

We interviewed the director of Central Dispatch. Washington County and the cities of Washington County all contract with Central Dispatch for 911 and non-emergency dispatch services. Metro-West Ambulance manages ambulance services separately. Central Dispatch was surprised to learn of Health and Human Service's responsibility for the noise ordinance. They had not communicated with that department before

about noise complaints. We asked about complaint data and learned that they had only one category: *noise complaint*. The director was uncertain about whether their data management system could pull up noise specific data and it might require intense staff research. We had been hoping to learn about the demography of noise complaints but any such picture is not currently available. When we inquired about developing more discrete complaint categories, we learned that that would have to be approved by the technical advisory committee, made up of law enforcement representatives from all affected jurisdictions.

Noise complaints aren't seen as emergencies and Central Dispatch prefers that complaints come in on their non-emergency number: 503-629-0111. Callers can remain anonymous at this number whereas with 911, the caller telephone number is identified, the call is recorded, and that becomes part of public record. Central Dispatch does maintain a complaint history by address, so a responding officer or deputy can learn what history a particular address has as they approach the location on a call.

Central Dispatch maintains 100 call-in categories, one of which is noise. Central Dispatch and the related law enforcement agencies have developed a level system to triage the priority of calls. Level One is the highest priority and generates a rapid response. Level Four receives response if all other higher priorities are under control. Noise is a Level Four priority, on the level of bicycle theft. Once a call is dispatched to the law enforcement jurisdiction, Central Dispatch looses contact with what happens. Therefore, Central Dispatch cannot now provide a snapshot of noise for the county as a whole, nor can they give us a snapshot of noise in the unincorporated county. In our study recommendation, the Sheriff's Office would manage the dispatch response data. See the resource volume for our consultation with Central Dispatch.

Noise Ordinance Enforcement

Once Central Dispatch turns the complaint over to the Sheriff's Office, it depends on its level of priority, other calls at the time and the staffing available. If the noise complaint is within an enhanced sheriff patrol district, the likelihood of response might be higher than if in the western county area. In western Washington County, west of NW Cornelius Pass and outside of the enhanced districts, 1.5 FTE deputies per shift probably have too much territory to cover to be able to respond to noise complaints.

In response to our request for data, the sheriff's office indicated that this was not readily available and that they would make an effort to research it. Several months later, we learned that data was only available for 2003 and going back further was beyond available resource. In 2003, the Sheriff's Office received 2000 noise complaints. It is not possible to learn how these were informally disposed of or whether they even were responded to. However, they did have record of 38 actual citations. These were all traffic citations. Twenty four citations were issued for *unreasonable sound*. These are violations not related to the functioning of the vehicle itself, e.g. boom stereo noise. Fourteen citations were issued for *unreasonable noise*, for loud and/or faulty exhaust systems. It was beyond resource to learn whether these were cars, trucks, or motorcycles.

We asked whether deputies had a concerned attitude about noise violations and we were told they did have one. Someone stopped for an apparent noise infraction might be found to be associated with other and more serious violations. For this reason, noise violations might get dropped in favor of more serious criminal charges. See the resource volume for Noise Complaint and Citation Data from 2003.

Recommendations

Washington County has grown in population and in density. More vehicles and motorcycles are on the roads. Speeds are up. More planes and helicopters are in the air over the Tualatin Valley than ever before. The marketplace offers ever-noisier products. There are those among us who purposefully amplify their vehicles, motorcycles, or stereos in some conspicuous display, some statement of identity, affiliation, or rebelliousness. Laws are on the books, yet only 38 noise citations were issued for an entire year. A low priority we are told, and this is a time of scarce resources others say. The Oregonian reported that Washington County was enjoying budget surpluses from unexpected revenues. In 2004 and 2005 the county board voted to forgive over several hundred million in development fees and taxes designed to help alleviate community impacts from related business growth. In 2005, the Board of Commissioners, under their Strategic Investment Program, forgave over 500 million in future property taxes for Intel. Noise management has yet to be made a county priority. With this as our context, we make a range of recommendations, appealing to policy makers from all sectors. We need to achieve a coordinated and multi-level approach in protection of our livability and quality of life. We need to begin developing a culture of deterrence for the most egregious noisemakers. We need to work together to balance growth and noise pollution prevention. This will require the development of strategic and written plans. It requires communication bridges between citizens and their government. It will require forging agreements and relationships between county departments and city, regional, and state agencies. It is part of smart growth not yet heard. See the page 31 document, Intervening on Noise, for a discussion of a broad prevention strategy.

What Washington County Should Do

The Noise Pollution Clearinghouse describes the persistent noisemakers:

> "*Ultimately, noise results from incivility; the worst noise from the most egregious incivility. The noisemaker acts like a bully in the schoolyard. He's making noise and doesn't care if it bothers you. Often, noise is used to show one's power and other's powerlessness to stop them. Whether the noise is from a muffler-less motorcycle, or a racetrack, a gun range, nighttime garbage truck pickup, or a teenager's boom box,* our communities need to consistently say that good neighbors keep their noise to *themselves. Bad neighbors, no matter who they are and what power they have, need to be reminded of their incivility at every opportunity."*

Board of County Commissioners

1. County Commissioners can provide their leadership in making noise management and mitigation a priority in accordance with County Goal 5 Policy.
2. We urge the development of a Noise Prevention Coordinator position, possibly within the Department of Health and Human Services. The emphasis of this position should target interdepartmental coordination, resource identification for noise pollution prevention education, and liaison relations with DEQ, Central Dispatch, the Sheriff's Office, and Community Corrections.
3. The existing Noise Ordinance should be opened and revised with community input.
4. An Administrative Manual for the revised Noise Ordinance should be developed, and among other things, to assure meaningful noise data collection and management throughout the system.
5. The Noise Prevention Coordinator or similar person should begin outreaching to other jurisdictions for perspective, resource, and coordination.

6. We encourage your working with our congressional delegation in behalf of House Bill 475, The Quiet Communities Act.
7. We encourage your working with our legislative delegation in behalf of state law change, mandating DEQ testing of motorcycles for noise and emission, enabling DEQ to remove muffler cores during noise tests.
8. Require the development of a Port of Portland Citizen Noise Advisory Committee for Hillsboro Airport. Require that the Port of Portland budget and build a "ground run-up" facility for ground testing of jet engines. This aviation noise is not pre-empted by the FAA.
9. Require additional Washington County representation on the Port of Portland's Citizen Noise Advisory Committee for PDX .
10. Work with the Committee for Citizen Involvement in the development of a Citizen Noise Advisory Committee for unincorporated Washington County. The Citizen Noise Advisory Committee would work closely with the Noise Prevention Coordinator. Membership would include business leaders, health officials, professional acousticians, audiologists and medical practitioners, as well as members from the public active in their Citizen Participation Organizations.
11. Review development fees in relation to affected noise mitigation strategy, building a budget for prevention, monitoring, and enforcement.
12. Mediate with the Port of Portland for minimum elevations for helicopters over Washington County.
13. Limit and where possible, reduce the number of private helipads in Washington County.
14. Provide thorough noise assessments on any application for expansion of additional private airport activities, such as the Apple Valley Airstrip, and assume financial responsibility for any adverse impacts, if approved.
15. Seek to establish an "aggressive driving prohibition" ordinance similar to one recently enacted in Multnomah County. Aggressive driving not only contributes to road rage and other incidents in the county but contributes to noise pollution.

Washington County Sheriff

1. Enforce existing motor vehicle noise emission laws of the State of Oregon. Cite those with the most offensive, obviously illegal vehicles, after a period of public warning and education.
2. Enforcement of existing speed limits is a noise prevention strategy. We further encourage the investigation of the lowering of posted speed limits in areas noise pollution is severe and where there are no other methods available to protect the health of citizens.
3. Educate the traffic deputies about the hazards of vehicle noise pollution and take this education program out on the road to alert citizens and students of the dangers of unregulated, un-muffled vehicle noise emissions.
4. Dedicate more deputies to speed enforcement. Traffic speed has now surpassed drunken driving as the nation's number one cause of vehicle related death. The current number of ten traffic officers with perhaps four on duty at any one time in a county of 400,000 is insufficient to address the growing safety and noise pollution problems being generated by Washington County traffic.
5. Invigorate the truck regulatory patrol office to enforce motor carrier safety and vehicle noise emission regulations. Coordinate safety and inspection policy with other jurisdictions and the state to ensure consistency and reduce confusion. Establish a formal process for citizen input on truck regulatory process, addressing how it is or is not working.

6. Invest in basic sound level measurement equipment so deputies in the field can easily measure vehicle noise emissions and enforce the Oregon vehicle standards. This would eventually create a map of county noise zones, allowing for strategic deployment of resources over time.
7. Enforce the Oregon ORS and Washington County noise ordinance prohibiting the routine use of compression braking devices.
8. Set up a joint study with the District Attorney's office and citizens to investigate the County Counsel's opinion that it is not possible to regulate vehicle noise emissions.
9. Become a partner with the DEQ's Clean Air Stations and forge a process whereby deputies can cite vehicular noise violators in for noise testing. DEQ requires dynamometers for effective noise testing of amplified exhausts. When DEQ is equipped, deputies could cite violators in for a noise test and the owner would be simply required to come into compliance. If the noise is eliminated, it is noted in the DEQ computer and the violation is diverted from fine or court. No deputy time is lost in court. For those individuals cited again, they can do directly to court.
10. We support additional budget resources for the Sheriff's Office, and seek added resource to protect our livability, quality of life, and health and safety.
11. The Sheriff's Office, should explore community partnerships to conduct noise enforcement *stakeouts* in select areas at select times. The message of random enforcement needs to be sent out. Enforcement has been so absent in some areas that noise events are as predictable as night and day.
12. Enforce commercial vehicle identification. Currently it is nearly impossible to identify many commercial vehicles including dump trucks at 50 feet as required by state law. Some lettering is worn, dirty, or non-existent. Other times, lettering is so glitzy that one cannot decipher what the name of the company is. This complicates the identification of commercial vehicles generating excessive noise pollution or driving in an unsafe manner.

The Office of County Counsel

1. Washington County should seek the State Attorney General's guidance about federal preemptions and compression braking trucks not engaged in interstate commerce. The community wants a second opinion. If the County Counsel's opinion is reaffirmed that there is nothing the sheriffs can do, then refer this to the County Commissioners as a matter for congressional advocacy.
2. The Office of County Counsel should explore ordinance language that would prohibit the sale and installation of illegally amplified muffler systems and boom stereo amplification systems in vehicles in Washington County. We support the current proposal to allow deputies to potentially seize noise producing equipment when they have reason to believe the violation might recur after their departure. In addition, the noise ordinance should allow for the court's confiscation of noise producing equipment, upon a repeat violation.
3. Assist the Noise Prevention Coordinator and a Citizen Noise Advisory Committee in revising the Noise Ordinance, and assessing its coordination with other jurisdictions within the county and the Metro region.
4. Similar to the City of Portland, the counsel should investigate the prohibition of certain known illegal devices on vehicles and motorcycles such as after market performance mufflers and straight exhaust pipes. This will make enforcement easier and greatly simplify the sanction process. The federal government permits such device prohibitions.

Department of Land Use and Transportation and Planning Commission

1. LUT needs to review its roadway classification scheme. Despite protests, the department has designated lines on maps to be full arterials without regard to current existing residential neighborhood impacts. In many of these areas, the right of way is insufficient to protect the residents from detrimental effects of vehicle noise and vibration impacts.
2. The current Transportation Plan does not balance existing residential usage versus unmitigated roadway impacts. Code can only be found which speaks about mitigating future impacts by appropriate land use designation. No code can be found that deals with current impacts from improperly designating existing residential streets to be arterials and collectors.
3. Review and modify unlimited 24 hour per day 7 day per week truck route designations on arterials in residential areas. The current system of no restriction and no enforcement fails to protect the health and well being of many Washington County residents. For example there is no restriction and/or enforcement on illegal un-muffled compression brakes being using near residential neighborhoods. Members of the NCTF report such illegal activities not only during daylight hours but often before 6am and after 10pm.
4. Review the Draft Traffic Noise Analysis Manual for Transportation Capital Improvements document. This review should include citizens and medical and health personnel familiar with highway noise pollution and associated impacts. The current document, being drafted by a noise consultant contracted to study a particular project appears more lenient than similar Oregon standards.
5. Review the roadway design and classification system for placement of sidewalks and bicycle lanes. Due to lack of enforcement of posted vehicle speeds and no enforcement of vehicle noise emissions, these areas have been proven to be hazardous to the hearing health of citizens.
6. LUT should address the Transportation Plan for its lack of vehicular noise mitigation.
7. LUT should assess traffic calming strategies for rural and suburban roads under assault from cut-through commuters.
8. LUT officials should make the rounds of the Citizen Participation Organizations with regard to speed studies and posted road speeds. Currently the system is confusing and appears stacked in favor of speeding vehicles at the expense of neighborhood livability. This is not what our community plans spelled out when the plans were approved in the 1980s.
9. LUT should take up standards for dump trucks that would discourage speeding, the use of compression braking, and encourage compliance with applicable laws in areas of dumping,
10. LUT should begin a study to assess the community impacts by activities such as “dirt farming”, and other heavy truck oriented activities which utilize existing rural roads as primary resources. In particular what is the impact when these vehicles are not regulated or inspected, and have faulty exhaust muffling systems or utilize illegal compression braking devices?

Road Operations

1. Implement a demonstration project using rubberized asphalt surface treatment in a residential area of an arterial in the CPO1 area.
2. Work with the citizens and the Oregon Speed Control Board to append additional criteria to be applied when performing speed studies on arterial. The new criteria would take into account noise pollution from increased vehicle speeds due to attendant increased tire and engine noise.
3. Work to establish a coordinated street light control system which will encourage smooth traffic flows instead of endless jackrabbit starts and brake slamming stopping. As vehicle acceleration is

a major cause of arterial noise, smoothing traffic flow will help significantly to reduce associated traffic noise impacts on health of nearby pedestrians and residents.

The Department of Health and Human Services/Solid Waste/Environmental Health

1. Work with the Committee for Citizen Involvement and its Noise Control subcommittee to finalize a community who to call/where to turn brochure for noise in Washington County.
2. Seek grant funds for the development of prevention education curriculum targeting middle school, adolescent, and adult populations.
3. Develop and manage a resource library of noise related documents.
4. Add online education and noise prevention materials to the Washington County website. Include information regarding the illegality of certain noise producing devices.
5. Search among other county health departments for meaningful strategies to mitigate noise and protect public health.
6. Collaborate with health departments in the regional media market on a media campaign about the harmful affects of noise and what individuals can do to prevent risk to their health.

What Individuals Can Do

Individuals can become informed about noise and thereby become more sensitive about their own noise management responsibilities. Whether it is in our vehicle, how we operate it, in our landscaping activities, how we entertain ourselves, or how we behave in our occupations, individuals are a foundation of noise control. As the Noise Pollution Clearinghouse motto indicates: “Good neighbors keep their noise to themselves.”

Individuals would be wise to understand the serious health impacts of excessive exposure to noise and to exposure to high levels of noise. This is especially critical for parents of young children. Individuals need to learn to practice “Safe Sound”.

Individuals can and should, when reasonably safe, accept the responsibility of communicating with neighbors to negotiate and settle noise conflicts.

Individuals can and should include personal noise management among their rules of civility. Individuals in Oregon might take on personal noise management just as they have taken on recycling, or maintaining their environment free of litter. We have recommended that SOLV include a section on noise etiquette in their next edition of the SOLV Oregon Owner’s Guide.

Individuals should engage in community, and work together to protect and nurture community livability. This might be done through involvement in one’s Citizen Participation Organization.

What Communities Can Do

Building on individual effort and coalescing into group action, communities can create Noise Watch zones, helping to identify noise patterns in their neighborhoods or rural communities. Noise Watch might start with a work plan of what to accomplish in the upcoming year. Meeting with the deputies that patrol your area might bring them into a noise partnership.

Prevention education about noise is an issue for schools and other institutions of socialization of our young people. As schools work to prevent the development of bullies, they work to prevent the noisemakers of tomorrow.

The community needs a Citizen Noise Advisory Committee to provide an ongoing bridge of communication between residents, their communities and their government. The Committee for Citizen Involvement or a standing subcommittee might be an ideal venue for this.

The NCTF focused the vast majority of its work at the county level. Nonetheless, it is clear noise pollution is a national if not world wide problem today just as it was in the days of the Clean Air Act of 1970 when noise legislation was enacted at the national level. We have listed some suggestions on how other governmental entities could involve themselves in helping manage this growing health threatening problem.

What Metro Should Do

- Metro should assess its federal transportation granting process and require noise mitigation components for all project applications.
- Metro should develop the position of a noise management coordinator to assist cities and counties in noise management issues such as a region wide public awareness media campaign.
- Metro should develop noise mitigation standards as part of transportation impact criteria for any subsequent Urban Growth Boundary expansions.
- Metro should bring the cities and counties within its jurisdiction together to assess the potential for a coordinated noise ordinance across these multiple jurisdictions. This would streamline prevention education efforts and bring an economy of scale to media, enforcement, and diversion efforts.

What the State of Oregon Should Do

In the past Oregon has been a leader in the establishment of noise pollution legislation and control. Many states still look to Oregon for examples of how to implement programs. Although current funding of DEQ is on hold, all the DEQ laws and legislation are still on the books and in effect.

- As Oregon balances between its environment and economic development, noise mitigation should not be overlooked.
- The DEQ should develop legislation or rule that would allow it to remove removable muffler cores for the purpose of noise testing a vehicle.
- The DEQ should require the Port of Portland to build a “ground run up facility” for jet engine testing at the Hillsboro Airport, proven to mitigate this type of ground noise by 95% at PDX.
- The legislature should take up mandatory testing of motorcycle tailpipe and noise emissions.
- The legislature should take up boom stereo sales and installation as a statewide issue.
- The legislature should take up sales and installation of illegally amplified mufflers.
- The Governor should work with our Congressional delegation in support of H.B. 475, The Quiet Communities Act and similar legislation.
- The Office of Attorney General should provide technical assistance to communities attempting to coordinate state restrictions on un-muffled truck compression braking.
- The Port of Portland is a quasi-governmental corporation historically established to develop and manage port facilities in the Portland region. Since that time, it has also taken up the management of PDX, and in 1968, the Hillsboro Airport. While it is tax-based, voters have little direct feedback on its activity. The Governor appoints its director and commissioners. The Governor is accountable to

the voters for the Port of Portland. The Governor should make director and commission appointments that are sensitive to environmental and community impacts. The Governor should require that any aviation lease proposals have public involvement and noise impact analysis. The Governor should require that the Port of Portland budget and build a ground run-up facility for ground based jet engine testing at the Hillsboro Airport. The governor should assure the balance of community livability protection and economic development.

What the Federal Government Should Do

Congress

Pass H.B. 475, the Quiet Communities Act, and restores a small amount of funding for noise pollution control, re-activating a partnership with the states, and galvanizing community efforts to protect themselves from the health and safety hazards of noise.

The Federal Aviation Administration

It is thought the Federal Aviation Administration restricts local government and communities from setting standards on aviation noise. The FAA should in exchange improve standards to help prevent aviation noise impacts over urban and rural communities. For example, they should require larger helicopter identification numbers on the bottom of the aircraft for easier identification and reporting. The FAA should also develop minimum elevation standards for helicopters, recognizing the health and safety risks associated with helicopter noise and vibration and their more limited emergency landing capacity when compared to fixed wing aircraft. Complaints about helicopter noise were found to be common in Washington County. The FAA should intervene on the Port of Portland's plan and strategy to knowingly violate state law by not mitigating ground run up jet engine testing at the Hillsboro Airport. Their position is that they will do this unless and until somebody asserts jurisdiction. This is a planned violation of the state DEQ noise standard. A facility was built in Portland, against the Port of Portland's inclination. It reduced this ground based noise by 95%.

The Noise Pollution Clearinghouse

Good Neighbors Keep Their Noise to Themselves!

The Noise Pollution Clearinghouse is a private non-profit organization providing research, resource identification, and community development strategies for noise management and mitigation for communities across the United States. The group maintains a website making available the world's largest collection of noise related publications, citations, reports, laws, current and past newspaper articles.

Noise Pollution Clearing House, P.O. Box 1137, Montpelier, Vermont, 05601-1137 888-200-8332.
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Sound & Noise Primer

Sound is created when an object moves; the rustling of leaves as the wind blows, the air passing through our vocal chords, the almost invisible movement of the speakers on a stereo. The movements cause vibrations of the molecules in air to move in waves like ripples on water when the vibrations reach our ears, we hear what we call sound. Noise is defined as *unwanted* sound.

Sound is produced by the vibration of sound pressure waves in the air. The rate of vibration of the sound pressures waves is referred to as the *frequency* of the sound. Pitch is another term used to describe the frequency of a sound source if the sound wave contains primarily a single frequency and has a tonal quality. Other types of sound are more complex in frequency nature and are composed of hundreds of individual sound frequencies. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit, which expresses the ratio of the sound pressure level being measured to a standard reference level.

Sound is composed of various frequencies, but the human ear does not respond to all frequencies. Frequencies to which the human ear does not respond must be filtered out when measuring environmental sound and noise levels. Sound-level meters are equipped with weighting circuits, which filter out selected frequencies. It has been found that the A-scale on a sound-level meter best approximates the frequency response of the human ear. Sound pressure levels measured on the A-scale of a sound meter are abbreviated dBA. Another commonly used scale, the C-weighting scale, is often used when measuring noise emissions that contain low frequency components. While the ear might not hear them as well, the low frequency components typically contain more sound energy and have the ability to physically shake homes, windows, and other structures. For example, the C-weighting scale, commonly abbreviated dBC, is often used when measuring the sound emissions of rock blasting operations. The *linear*, or L-weighted, scale, also referred to as the *un-weighted* scale, is available on some sound-level meters. As the name implies, the linear scale weights all frequency components equally across the measurement range. The linear scale is sometimes used when performing human noise exposure measurements.

In addition to noise varying in frequency, noise intensity fluctuates with time. In the past few years, there has been a definite trend toward the use of the equivalent (energy-average) sound level as the descriptor of environmental noise in the U.S. The equivalent sound level is the steady-state, A-weighted sound level which contains the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a specified period of time. If the time period is 1 hour, the descriptor is the hourly equivalent sound level, $L_{eq}(h)$, which is widely used as a descriptor of noise. An additional descriptor, which is sometimes used, is the L_{10}. This is simply the A-weighted sound level that is exceeded 10 percent of the time.

A few general relationships may be help in understanding sound generation and propagation. First, as already mentioned above, decibels are logarithmic units. Consequently, sound levels cannot be added by ordinary arithmetic means. A chart for decibel addition is shown in Table 1. From this table it can be seen that the sound pressure level from two equal sources is 3 dB greater than the sound pressure level of just one source. Therefore, two trucks producing 90 dB each will combine to produce 93 dB, not 180 dB. In other words, a doubling of the noise source produces only a 3 dB increase in the sound pressure level. Studies have shown that this increase is barely detectable by the human ear.

For noise levels known or desired to an accuracy of +/- 1 decibel (acceptable for most noise analyses):

Table 1. Rules for Combining Sound Levels by "Decibel Addition".

When two decibel values differ by	Add the following amount to the higher value
0 or 1 dB	3 dB
2 or 3 dB	2 dB
4 or 9 dB	1 dB
10 dB or more	0 dB

Secondly, an increase or decrease of 10 dB in the sound pressure level will be perceived by an observer to be a doubling or halving of the sound. For example, a sound at 60 dB will sound half as loud as a sound at 70 dB as shown in Table 2.

Table 2. Decibel Changes, Loudness, and Energy Loss.

Sound Level Change	Relative Loudness	Acoustic Energy Loss
0 dBA	Reference	0
-3 dBA	Barely Perceptible Change	50%
-5 dBA	Readily Perceptible Change	67%
-10 dBA	Half as Loud	90%
-20 dBA	1/4 as Loud	99%
-30 dBA	1/8 as Loud	99.9%

Finally, sound intensity decreases in proportion with the square of the distance from the source. Generally, sound levels for a *point source* such as a single vehicle or machine will decrease by 6 dBA for each doubling of distance. Sound levels for a highway *line source* vary differently with distance, because sound pressure waves are propagated all along the line and overlap at the point of measurement. A long, closely spaced continuous line of vehicles along a roadway becomes a line source and produces a 3 dBA decrease in sound level for each doubling of distance. However, experimental evidence has shown that where sound from a highway propagates close to "soft" ground (e.g., plowed farmland, grass, crops, etc.), the most suitable dropoff rate to use is not 3 dBA but rather 4.5 dBA per distance doubling. This 4.5 dBA dropoff rate is usually used in traffic noise analyses for line source prediction and measurement.

Significance of Time-Weighted Averages (Leq)

The calculation procedure used for computing average noise levels (Leq values) results in high dB events contributing significantly more to the final Leq value than do background low dB conditions. For example, a single 1-second episode of 90 dBA introduced into a 1-hour constant background noise condition of 45 dBA will result in a 1-hour Leq value of 54.9 dBA. A 5-second episode of 90 dBA in a 1-hour background condition of 45 dBA results in a 1 -hour Leq of 61.5 dBA. And a cumulative total of 20 seconds of 90 dBA in a 1-hour background condition of 45 dBA results in a 1-hour Leq of 67.5 dBA.

Even in the context of 24-hour averages, brief noise events have a noticeable effect. A 5-second episode of 90 dBA in a 24-hour background condition of 45 dBA raises the 24-hour Leq to 49.5 dBA. A cumulative total of 20 seconds of 90 dBA in a 24-hour background condition of 45 dBA results in a 24-hour Leq of 54.2 dBA.

Noise Is Not Just Noise

Adapted from Bruel&Kjaer Environment Noise Handbook, 2001

At home and at work, we often hear noise from ventilation or heating systems that is hardly noticeable because it has no prominent features. The noise never stops and has no tone, but if the fan suddenly stops or starts to whine, the change may disturb or even annoy us. Our hearing recognizes information in the sounds that we hear. Information we don't need or want is noise. Noise features that make us listen and take notice are tones or changes in sound level. The more prominent the tone, and the more abrupt the change in sound level, the more noticeable the noise.

Continuous Noise

Continuous noise is produced by machinery that operates without interruption in the same mode, for example, blowers, pumps and processing equipment. Measuring for just a few minutes with hand-held equipment is sufficient to determine the noise level. If tones or low frequencies are heard, sound-level meters that also frequency spectrum can be used for further documentation and analysis.

Intermittent Noise

When machinery operates in cycles, or when single vehicles pass by, the noise level increases and decreases rapidly. For each cycle of a machinery noise source, the noise level can be measured just as for continuous noise. However, the cycle duration must be noted. A single passing vehicle is called an event. To measure the noise of an event, the Sound Exposure Level, (SEL) is measured, combining level and duration into a single descriptor. The maximum sound pressure level may also be used to measure single vehicle pass-by noise emissions. This is the method primarily used in the U.S. to measure in-use vehicle noise emissions.

Impulsive Noise

The noise from impacts or explosions, e.g., from a pile driver, punch press or gunshot, is called impulsive noise. It is brief and abrupt, and its startling effect causes greater annoyance than would be expected from a simple measurement of sound pressure level.

Impulse noises of substantial magnitude (e.g., blasting or sonic booms) often are characterized using unweighted (flat or linear) or C-weighted SEL measures. Annoyance from such sources often involves induced structural vibrations as well as the loudness of the noise event. Unweighted and C-weighted decibel scales have proven more useful than the A-weighted scale for such evaluations. Less intense impulse noises often are characterized using an A-weighted SEL measure.

Oregon law defines "impulse sound" as a sound with either a single pressure peak or single burst (multiple pressure peaks) for a duration of less than one second as measured using unweighted peak dB or measuring dBC using a slow reading sound-level meter.[1]

Tones in Noise

Annoying tones are created in two ways: Machinery with rotating parts such as motors, gearboxes, fans and pumps often create tones. Unbalance or repeated impacts cause vibration that, transmitted through surfaces into the air, can be heard as tones. Pulsating flows of liquids or gases can also create tones,

[1] "Slow"refers to a sound-level meter time-weighting setting. Usually a sound-level meter provides Fast and Slow settings to change the meter reading response time. When using the fast setting, the measurement rises and falls quickly to better track the sound source noise intensity change over time. The slow setting is often used when measuring impulse noise because it has tendency to capture the peak noise level or the brief event and hold it on the display longer thus enabling the operator to better observe and document the event.

caused by combustion processes or flow restrictions. Tones can be identified subjectively by listening, or objectively using frequency analysis. The audibility is then calculated by comparing the tone level to the level of the surrounding spectral components.

Low Frequency Noise

Low frequency noise has significant acoustic energy in the frequency range 8 to 100Hz. Noise of this kind is typical for large diesel engines in trains, ships, and power plants and, since the noise is hard to muffle and spreads easily in all directions, it can be heard for miles. Since the low frequency noise is more annoying than would be expected from the A-weighted sound pressure level measurements, the C-weighted scale is often used when documenting these sound emissions.

Sound and Noise and Relationships

The A-weighted decibel scale begins at zero. This represents the faintest sound that can be heard by humans with very good hearing. Table 3 illustrates the range of sound pressure levels in dBA found in our modern day environment, although sonic booms are not as common today as they were a few decades ago. Sound pressure levels at or above 115 can cause immediate hearing damage. The 140dBA sound pressure level is from an unmuffled motorcycle with straight pipe exhaust. The Relative Loudness column of the table indicates how perceived loudness is doubled with every 10 dBA increase in sound pressure level while the Relative Sound Energy Level increases logarithmically.

Table 3 illustrates the range of sound pressure levels in dBA found in our modern day environment, although sonic booms are not as common today as they were a few decades ago. Sound pressure levels at or above 115 can cause immediate hearing damage. The 140dBA sound pressure level is from an unmuffled motorcycle with "straight pipe" exhaust.[2] The Relative Loudness column of the table indicates how perceived loudness is doubled with every 10 dBA increase in sound pressure level while the Relative Sound Energy Level increases logarithmically.

Table 3. Relative Loudness of noise conditions, dBA scaled, logarithmic view.

Examples of A-Weighted Sound Event Levels and Relative Loudness				
Characterization	**Example Noise Condition or Event**	**Sound Level dBA**	**Relative Loudness (Approx.)**	**Relative Sound Energy Level**
Too loud to compare	Unmuffled Harley Davidson @ 2 feet, Curbside	140	256	100,000,000
Threshold of pain	Surface Detonation, 30lbs of TNT @ 1000 feet	130	128	10,000,000
Possible building damage	Mach 1.1 sonic boom under aircraft @12,000 feet	120	64	1,000,000
Threshold for immediate hearing damage (115)	Peak crowd noise, pro football game, open	110	32	100,000

[2] Modified, un-muffled motorcycles emitting such high dBA noise levels are common throughout the Portland Metro area. A sound pressure level of such high level can cause immediate and non-repairable human hearing damage, in particular, it is thought, in infants and young children. One of the goals or this noise committee work is to educate the county officials and the public on the dangers pedestrians, bicyclists, landscape workers, and motorcyclists themselves are facing due to growing numbers of such loud vehicles traveling everywhere in the county.

	stadium			
	Jet flyover @ 1000 feet	100	16	10,000
Extremely Noisy (95)	Leaf blower @ 5 feet	90	8	1,000
	2 axle commercial truck@20feet, 35mph	80	4	100
Noisy (75)	Vacuum cleaner @ 10 feet	70	2	10
	Ordinary conversation @ 3 feet	60	1	1
Quiet (45)	Suburban area background conditions, day	50	1/2	0.1
	Quiet Suburban area, night	40	1/4	0.01
Very Quiet	Quiet rural area, night, no wind	30	1/8	0.001
	Quiet Country Residence	20	1/16	0.0001
Barely Audible	Rustling Leaves	10	1/32	0.00001
Threshold of Hearing		0	1/64	0.000001

To the non-mathematician type, Figure 1 might be more illustrative of the how sound adds up logarithmically. If ordinary conversion at 2 feet, 60dBA, is used a reference, hopefully it is readily apparent from the graphical bars how much louder 140dBA is heard than ordinary conversation. Each 10dBA increase in sound pressure level doubles the entire previous amount. So if 120dBA is so loud that buildings can be damaged by the emission, 140 dBA is even twice louder.

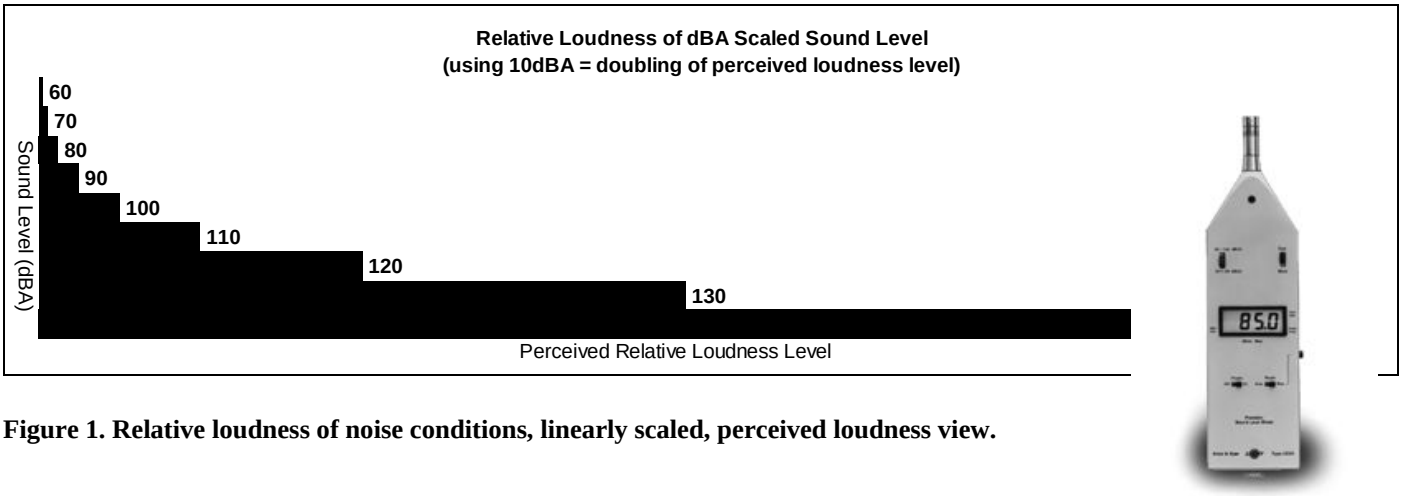

Figure 1. Relative loudness of noise conditions, linearly scaled, perceived loudness view.

Example of Sound Level Meter Suitable for Noise Law Enforcement

The Bruel & Kjaer, **www.bksv.com,** Precision Sound Level Meter Type 2232 pictured here is an nexpensive instrument for making community noise surveys and measurements. The cost is around $1000. It is designed for ease of operation so event the inexperienced user can carry out reliable measurements quickly and effectively.

The Type 2232 is designed to be a tool for environmental health inspectors and other personnel concerned with maintaining acceptable noise levels in industrial and residential locations, or instance police officers

checking domestic noise disturbance calls. Another well known manufacturer of similar high end type sound level meters and acoustical instrumentation is Larson Davis, www.larsondavis.com.

There are many low cost sound meters on the market that are often completely acceptable for documenting community noise events. Radio Shack, www.radioshack.com, retails at less than $50, both analog and digital portable, pocket sized sound-level meter devices. Recently noise data acquisition software products have become available that are capable of turning an ordinary personal computer and any sound level meter with a conditioned AC analog signal output (Radio Shack model 33-2050, cost $30) into an extremely low cost noise data acquisition system. An example of such a system, the Jade 2 is found at www.ptolserv.com. This system supports complete measurement control, noise event recording, and statistical analysis, charting, and reporting capabilities.

Health Impacts of Noise

The World Health Organization's (WHO) definition of health includes total physical and mental well-being, as well as the absence of disease. Along these lines, a 1971 WHO working group stated, "Noise must be recognized as a major threat to human well-being" (Suess 1973). In the words of former U.S. Surgeon General William H. Stewart, "Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere." Our lives are permeated with machines of the modern age in which we live. These machines produce a great deal of mechanical and electronic sound that did not exist when human hearing developed. Our auditory system is very sensitive, but can be damaged easily. Depending on the loudness and duration, noise can cause temporary or permanent damage to the ears. However, loss of hearing is only one consequence of noise. "A wide range of physical, psychological, and social problems is caused by sound that is either unwanted or too loud – even when we like the loud sound or get used to an irritating noise" (Boyd 1992). Noise is not just annoying; it poses a serious threat to us as individuals and as a community.

The peripheral parts of the auditory system include the outer ear (pinna and auditory canal), the middle ear (tympanic membrane and ossicles), and the inner ear (the cochlea). The outer ear's function is to catch vibrations from the air and funnel them through the auditory canal. The eardrum, or tympanic membrane, detects these vibrations and transfers the energy through the ossicles (three small bones known as the hammer, anvil, and stirrup) to another membrane called the oval window. When high-intensity vibrations are being transferred through the ossicles, a small muscle tightens around the stirrup to protect the oval window. However, a very intense level of sound causes vibrations to be transferred before the muscle can tighten. Such impulsive sounds are the most dangerous and can damage much of one's hearing immediately. The vibrations of the oval window are then transmitted to the liquid in the cochlea and pass across about 20,000 tiny hairs called cilia, each of which is sensitive to a different frequency. When a cilium is stimulated, the sensory cell to which it is attached sends electrochemical impulses to the brain through the auditory nerve.

The ear is capable of independent processing, able to analyze the spectral content of complex sounds. This spectral analysis is vital to the identification of different sounds and the learning of their meanings by the brain. However, intense sound or noise can partly or totally inhibit the ear's spectral analysis capability. Acoustic trauma is caused by a single exposure or relatively few exposures to a very intense level of sound (peaking at more than 140-150dB) usually implosive in nature. This can cause damage to the ear drum, ossicles, hair cells, supporting cells, and tissues of the organ of Corti (Ward, Santi et al. 1981). A temporary

threshold shift (TTS), which recovers between exposures, is commonly experienced with sound levels over about 70 to 75 dB. With louder sounds, the cilia bend farther and more rapidly but can stay bent after the noise passes, resulting in a TTS. The effect of TTS is that, after exposure to a loud noise, a given sound has to be louder for you to hear it than it was before your exposure. Although one can recover from TTS after a few hours or days of relative quiet, repeated or prolonged exposure to loud sounds cause the cilia to lose their resiliency; more and more of them essentially snap at the root (Boyd 1992). As more of these cilia become incapacitated over time, a permanent threshold shift (PTS) occurs. Such permanent hearing loss has been well documented. For example, a recent study of New York farmers found significant hearing loss in those who were exposed to acute noise and those with a lifetime exposure to noisy farm equipment (Hwang, Gomez et al. 2001). The initial loss may go undetected because early damage is only in the cilia that detect high frequencies. However, further excessive noise exposure causes hearing loss in the lower frequencies and the person begins to have trouble understanding speech (Gunn 1998).

For most people, sounds at 75dB and less are safe to the ear itself, even for exposures of 8 hours a day over an extended period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) officially considers a 90dB continuous exposure for 8 hours to be "safe," although people whose hearing is more sensitive, one-fourth of the population, will sustain hearing damage at this level (Boyd 1992). Evidence suggests that those undergoing physiological changes or enduring physical stress such as rapid growth or illness may be more susceptible to hearing loss (King and Davis 2003). A level of noise that may not be dangerous to one person could cause hearing damage in another, particularly preadolescents. Many scientists would like a lowering of the permissible level to 85dB. One might incorrectly assume that noises in the community are too quiet to cause any physical damage to the ear. However, it is a fact that lawn mowers, leaf blowers, chain saws and other power tools can be as loud as 130 dBA (League 1996). Unfortunately, many children (who already have an increased susceptibility to hearing damage) are frequently exposed to these noises in their neighborhoods.

Other than noise-induced hearing loss, noise causes numerous psychological, physical, personal, and social problems. Noise is defined as any unwanted sound, regardless of how loud it is. "From a physical standpoint, sound and noise are the same thing. However, when the person hearing the sound defines sound as noise, it can cause negative health effects" (King and Davis 2003). A particular noise does not necessarily have to be loud to cause serious problems; noise decidedly causes stress, which manifests itself in many ways. Our bodies have learned to interpret sudden or loud sounds as indicators of dangerous situations, and automatically respond in preparation for the threat. However, in our modern society, noise does not indicate such danger. "Our bodies still react as if these sounds were always a threat or warning. In effect, the body shifts gears. Blood pressure rises, heart rate and breathing speed up, muscles tense, hormones are released into the bloodstream, and perspiration appears. These changes occur even during sleep" (EPA 1978). When exposed for an elapsed period of time, the effects of noise-induced stress accumulate, poising serious health risks to the victims.

Individuals have various reactions to environmental noise. Some will make mental adjustments like redirecting their anger about noise inward, projecting their anger on the uninvolved, blaming themselves for being bothered by it, or deny there is a problem. "Specific mental diseases that can be precipitated by noise include anti-social behavior, psychosis, hysteria, depression, anxiety disorders and withdrawal" (King and Davis 2003). The effects of noise can be detected early in a person's life; noise can cause delayed development of speech in babies and slowed learning in children: diminished reading acquisition and reduced motivation and cognition (Evans, Lercher et al. 2001; Haines, Stansfeld et al. 2001). The elderly are also vulnerable and show an increased risk of overall functional loss when exposed to excessive noise levels (Balfour and Kaplan 2002). The psychological effects of noise are serious and real. A correlation has been

well documented between noise and increased psychiatric measures such as admissions to mental hospitals (Tarnopolsky, Barker et al. 1978; Hattori 2000). Some people get insomnia while others' sleep is disturbed without them even knowing it. Even if one does not wake up, noise can keep one from entering the much needed rapid-eye-movement (REM) stage; traffic noise, in particular, poses a continuous nocturnal stress (Hecht and Maschke 1997). Several studies suggest that sleep disturbance can be avoided by keeping the nighttime LAeq below 30 dBA for continuous noise like traffic. When dealing with intermittent nighttime noise, especially against a background of relative quiet, the minimum loudness levels should not exceed 45 dBA (Berglund, Lindvall et al. 1999).

The physical problems are numerous, including headaches, intestinal spasms, lower birth weights, higher rate of birth defects, stomach ulcers, and a decreased resistance to infections (Boyd 1992). A study from 2001 showed that children in noisier areas had elevated resting systolic blood pressure and overnight urinary cortisol (a stress hormone). Children from noisier neighborhoods also demonstrated elevated heart rate reactivity to a discrete stressor (reading test) and rated themselves higher in perceived stress symptoms using a standardized index (Evans, Lercher et al. 2001). A recent meta-analysis showed how noise exposure can even contribute to an increased prevalence of cardiovascular disease. There was a significant association between hypertension and both occupational noise exposure and air traffic noise exposure. Air traffic noise exposure was associated with the need to consult a general practitioner, the use of cardiovascular medicines, and angina pectoris. Similarly, van Kempen, Kruize et al. found that road traffic noise exposure increases the risk of myocardial infarction (heart attack) (van Kempen, Kruize et al. 2002). Road noise is a particularly important issue, as it affects many victims unaware of the related health problems. Statistically significant reactions to traffic noise have been found in sleeping problems, and frequent nervousness and irritation, decrease of working quality, increase of psychical tension, increase of blood pressure and pulse frequency, and problems relating to the cardiovascular system (Ising, Dienel et al. 1980; Koszarny 2000).

It is common knowledge that loud sound damages one's hearing and we must be aware of such hazards in our community and work hard to protect ourselves. However, while loud sound causes hearing loss, any noise can cause stress, triggering the body to automatically make physical changes. Serious problems show up when one is exposed to noise for an extended period of time because the effects of noise-induced stress accumulate; the physical indicators of stress rise to a new steady higher state, presenting grave health risks to the victims of noise. In addition to behavioral irregularities, physical impairments and mental diseases develop, damaging the lives of many of our friends. Aside from personal injury, noise is a source of breakdown of communities, being one of the main reasons people move. Unless action is taken to reverse the rising level of noise in our community, the condition of our individual and community health will only deteriorate further.

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What is the Social Psychology of Our Noise?

A society and its members develop ways to communicate. Noise can express celebration, ceremony, individual and collective grief, jubilation, patriotism, spirituality, ecstasy, or torture and fear. The Scottish highland pipes are heard at funerals and parades; the skirling of the pipes was historically used to frighten the enemy in approach to battle. Group noise can have a powerful influence on those involved; rock concert, Mardi gras, gangs of motorcycle riders. General noise and traffic noise are top concerns according to US Census data and have remained priority concerns for over 30 years.

Conspicuous consumption might be described as “keeping up with the Jones’s”. In the current social noise dynamic, there appears to be a *conspicuous amplification.* Young adult males purposefully alter their car exhausts or amplify their car stereos to communicate something. What is the message? Is it related to identity, power, alienation, affiliation? Is it a *gender thing*?

Conspicuous rapid vehicle acceleration communicates a certain type of power. A common pop culture assertion is that people can be measured by their toys: “a boy and his toys”. Women can be observed associated with vehicular noise, perhaps in big powerful SUVs. However, women are conspicuously absent from the boom stereo, amplified muffler, and chopped motorcycle sub cultures. If noise is gender related, does this also show up in political leadership, enforcement, and sanctions against noise makers?

There is a socioeconomic variable to noise. Some noises are more expensive to communicate than others. Aviation noise is expensive to make. Other noise sources such as personalized watercraft and snowmobiles are less expensive. Amplifying your vehicle muffler is relatively cheap.

NASCAR has become the second most popular sport in the United States, following football. It boasts 70 million fans, and 40 million core adherents. It has emerged as the major sports development over the last several decades in the southern United States. With its growing popularity, NASCAR sought a 500-acre track for the Northwestern states. Bellingham, Washington is the winner, although our Port of Portland tried to attract NASCAR to Troutdale. Harkening back to an era when *man and machine* knew each other, NASCAR expresses high speed and technological power---still under the control of a man. Is this a collective expression of freedom in a fast changing and rapidly automating world? Women are increasingly attracted to NASCAR, first as fans.

What motivates 50% of the 5 million motorcyclists across the country to alter their exhaust pipes to produce more noise? When Japanese manufacturers sought to mimic the Harley Davidson motorcycle sound, Harley-Davidson took them to court, asserting the "Harley sound" was proprietary. Although the courts did not agree, what is it about the Harley sound that sells so strongly to the consumer? The Harley demographic is said to be males over 40 with an annual income of $70,000 or more. Is there a developmental variable at work in these groups of citizens? Is this a mid-life expression? Are they looking at a *compensatory amplification?* Is noise making a way of ventilating the stresses and pressures of our workaday world?

Some noise is occupation related. Truck driving is an example of an occupation that is frequently associated with noise. The use of compression brakes might then be called a sub-expression of noise. Is un-muffled compression braking a cost-benefit behavior that saves monetary expense or is there a psychological expression involved? Oftentimes truck drivers are paid by the load. This practice would then reinforce speed, which might reinforce the need for compression braking, and thus, result in more noise. Is the economic argument that a proper muffler would cause additional expense to business a valid one?

The parking lot of a helicopter training school in Hillsboro usually boasts a bumper sticker or two declaring, "I love airplane noise." In an occupation that comes into frequent conflict with the community, such a declaration offers a proactive *defense* of one's activity.

Some suggest that the production of noise is a *rebel yell*, an act of defiance against the confines we might experience in today's complex society, an exhilarating experience of acting out in opposition to regulation or authority. Some speak about the loud motorcycle experience as being allegorical to the *cowboy of the old west*!

Noise is a societal indicator. What can we learn about ourselves by the noise we emit? How can we as citizens and our units of government support "Good neighbors keep their noise to themselves"?

The Politics of Noise

How do politicians and community leaders approach noise and its regulation? More than ever, politicians are expected to balance quality of life with growth, and freedom with regulation. Governments, in part, are in place to provide protection from victimization and health risks. Noise thus presents a challenge. One of

our prominent agency directors recently dubbed aviation noise the *sound of commerce*. Is noise regulation liberal, conservative, or green? Is it an environmental issue or a property rights issue? Do we still retain a *right of repose* at our private residence? Is it a quality of life issue? Is noise regulation anti-development? Is noise regulation bad for business? Will technology come to the rescue if only we don't over-regulate in the short term?

During the administration of President Reagan in the 1980s federal support for noise regulation was de-funded. This largely pulled the plug on state and local noise management efforts which had been initialized in response to Environmental Protection Agency rules. Today, might noise control now be perceived as over-regulating industry and commerce? Is livability itself a liberal or conservative issue? Enforcing health and safety at the community level has historically been embraced by both major parties. Strict enforcement in response to emerging vandalism has been commonly embraced as in the recent case of *tagging*. It might be too early to tell how politicians will position themselves when the growing unregulated noise and livability issue is put before them.

Will adaptations to uncontrolled noise spell broader change in society? The *snout house* phenomenon became news in the City of Portland several years ago when in response to noise, gangs and other variables, homeowners moved from their front yards to their back yards, closing off the front of the house from the public. The City declared an emergency and sought to prevent such social disengagement. *Gated communities* are another strategy that seeks to buffer residents inside from outside impacts.

Are these strategies symptomatic of a lack of noise control? Does government have a stake in managing noise as an avenue to maintain civic connectivity and civic engagement? The best predictor of a low crime rate has been shown to be neighbors knowing neighbors.

In the 1975 US Census, Annual Housing Survey, noise ranked number one of neighborhood problems. In 1985 and 1995, it ranked number two. Traffic, a close cousin to noise, followed noise in all three periods. Is combating neighborhood noise problems considered to be an urban service when it is the number one or two neighborhood problems nationwide? How does government decide which services to provide if limited resources are available? If noise is a top priority problem in the eyes of its citizens is it government's responsibility to prioritize noise management to help improve livability?

Washington County government asserts that maintaining Oregon's quality of life is one of its primary principles. When a Commissioner was asked whether the county had anything resembling a livability work plan, the answer was no, and that the term *livability* was highly subjective. When county staff was asked whether livability principles guided their work efforts, NCTF was told that that kind of value doesn't come down to us.

Intervening on Noise

As the NCTF undertook its investigation of how the noise management system currently works in Washington County, we came across a range of staff attitudes about intervention and noisemaking. The Department of Health and Human Services stressed community education and in the case of neighbor to neighbor noise, direct communication as the optimal medium of resolution. If that did not work, formal mediation was available through county contracts with mediation agencies in Beaverton and Hillsboro. The

Department staff voiced major reluctance at turning the noise complaint process into one that involved investigations, citations, hearings, and fines. For example, the current county noise ordinance has a section that would allow for citizen citations, similar to the barking dog ordinance. However, the county has not instantiated this section of the ordinance, instead requiring that a deputy witness the noise event, and once on site, make their determination how best to resolve the matter. Elmer Dickens, County Counsel, and Pat Garrett of the Sheriff's office supported this approach. Together however, they noted that law enforcement lacks adequate staffing and resources. Given the economy and the state and county budgets, they offered little hope of any new enforcement initiatives.

Yet, in another county ordinance, the Uniform Citizen Ordinance, citizen citation is supported, under the county Sheriff's Enforcement Policy E4-5: Citizen Citation. A citizen can witness an alleged crime or infraction and make a complaint. The sheriff deputy takes the citizen complaint. If there is sufficient identifying information about the individual, and if there is sufficient element of probable cause that a crime or infraction has been committed, the deputy can consult with the County Counsel to prepare an affidavit that the citizen swears to. The alleged perpetrator can then be cited by the Sheriff's Office.

The NCTF wonders if this citizen complaint system could work for citation of offenders of Oregon Revised Statutes infractions related to vehicular noise listed below:

- ORS 811.125 speed racing
- ORS 815.232 unreasonable sound amplification
- ORS 811.492 engine braking
- ORS unreasonable noise

The Noise Task Force also came across evidence of other communities getting strict about noise. Some jurisdictions had moved toward confiscation of boom car stereos upon a third conviction. Other jurisdictions were doubling fines for repeat offenses. Some jurisdictions are really getting creative. In Florida, a judge sentenced boom car violators to having to listen to several hours of an unwanted sound which in this case was classical music! Evidently, recidivism was low.

The NCTF gave intervention some thought, and determined that intervention needs to occur at multiple levels, simultaneously. The Public Health and Public Safety/Crime Prevention concepts of prevention are applicable to thinking about intervening on noise issue issues. A continuum of prevention recognizes that there is a range to a problem, for example noise. There is the absence of the problem; there is the problem (noise); there is repetition of the problem (noise, noise); there is patterned and repeating problem (noise…..). There are then different levels of intervention, based on a short and long range strategy.

Primary prevention of noise and vibration would target preventing the mere occurrence of noise or the excess thereof. This effort is undertaken through prevention education and media campaigns to the general public. Everybody gets the factual information about the health and safety risks associated with excessive noise exposure. Alternatives to noise generation are included. An appeal to manage one's noise is made. Some strategies might target health curricula in high schools when students are learning to drive responsibly.

The SOLV Oregon Owner's Manual is an example of one approach to support positive stewardship of the state, its environment, and our community life. A similar brochure for Washington County noise pollution might help sensitize residents to their own noise control responsibilities.

Secondary prevention targets stopping noise from recurring. This might occur through informal neighbor to neighbor communication, following a noise issue. A more formal *mediation* might occur if neighbor to neighbor communication was not possible or desired, or it had previously failed to resolve the noise issue. For example, the Sheriff's Office could develop a *partnership* with the DEQ's Clean Air Stations whereby a deputy could cite in a vehicle for excessive noise and if the owner of the vehicle brought the noise level to within legal limits, the passing of a noise test would cancel the citation. For an effective partnership, DEQ would need noise testing equipment and dynonometers, and trained personnel. Drivers could avoid fines and hearings by bringing their vehicles into compliance. The community could be one driver closer to a quieter community, and the Sheriff's Office would not be out any deputy time for a frequent hearings. For those that failed to come into voluntary compliance, the Sheriff's Office should *prioritize* deputy time for hearing processes as necessary to resolve the situation.

Secondary prevention might also target at risk groups thought to be associated with the production of noise, and through legislation. It has been estimated that approximately 50% of the 5 million motorcycles across the United States are being driven with un-muffled or illegal exhaust systems. In Oregon, legislation requiring *DE*Q testing of motorcycles for emissions and noise would progressively reduce this problem occurrence in those areas covered by DEQ's Clean Air Stations.

Other examples might be *targeted outreach* to muffler shops engaged in the sale and installation of performance mufflers. Another would be outreach to car audio shops selling and installing *boom car stereo* equipment. A Sheriff's letter reminding trucking firms doing frequent hauling in our community of state and federal noise regulations might also have effect. A program to report *compression braking* trucks (not engaged in emergency stopping) to the Sheriff's Office, on-line, could have a definite impact and would be fairly inexpensive to implement and administer. As the truck identification numbers which are required on the side of all trucks are listed on-line with the Oregon Department of Transportation, the Sheriff's Office could issue a letter of concern to the owner. If persistent complaints come in on the same truck or company, would be time for the Sheriff's Office to perform a *face-to face* visit.

Tertiary prevention targets assistance and relief for victims of excessive noise. Communities might seek relief through negotiated agreements with offending noisemakers, bringing about future noise mitigation and control possibilities.

Tertiary prevention also targets the chronic noisemaker, who through time, persist in their expression of excessive noise. They typically have failed to respond to less formal interventions of communication, mediation, and appear unstoppable without the formal authority of law enforcement and the threat of ongoing sanction. While this is estimated to be a small portion of the population, this fraction is thought to account for the majority of excessive noise. In the absence of enforcement, their numbers grow and the behavior becomes more ubiquitous but in the face of enforcement, their numbers progressively diminish.

Such parallel prevention efforts are required in other arenas of public health: child abuse and neglect; HIV; teen pregnancy; substance abuse; gang tagging and vandalism, and littering. This perspective embraces the concept of *least restrictive and least intrusive*---those that positively respond to prevention education never need a formal intervention. Those that show they will not stop at the informal sanction level, eventually receive a more predictable and serious sanction. *Deterrence* occurs on multiple levels simultaneously. Sanctions in the form of fines would backfill the budgeting of a noise prevention coordinator for Washington County, assuring coordination of effort, collaboration between departments, and ongoing communication with citizens and community organizations.

The multiple level approach to noise intervention limits government intruding on its citizenry, while it protects the community from chronic and persistent noisemakers. It balances government regulation with individual freedom from government regulation. It rests on the principle foundational to many of our laws and ordinances: good neighbors keep their behavior from intruding on the rights of their neighbors. In this case, good neighbors keep their noise to themselves.

There is an economy of scale that can be applied to prevention efforts. Through these multiple levels of intervention, public health issues are more quickly contained, reduced and ultimately eradicated. If the prevention education strategies and the region's noise ordinances were coordinated, an economy of scale would hasten noise reduction. The communities in the metropolitan region would learn similar concepts, across the common *media market*. The concepts that would apply to one's home county would similarly apply to one's county of employment, or county of recreation. This could provide the areas law enforcement with an economy of scale also. If all became parties to DEQ's noise testing program and DEQ maintains records of noise testing, vehicular noise could be substantially impacted due to the coordination of effort. DEQ has the formal testing equipment, law enforcement would not be required to invest and train, deputies would not be called into court, citations would be reduced, hearings avoided, and the burden is put on the owner of the vehicle saving public resources.

The Washington County Noise Control Task Force strongly recommends a noise management system that works simultaneously through the range of preventive approaches. We understand that habitual noisemakers require formal interventions and sanctions. An effective noise management system will require resources and emphasis in all aspects, *simultaneously*.

Washington County Noise Ordinance Analysis

The Noise Control Committee had an opportunity to consult with Elmer Dickens of the County Counsel's Office. Please refer to that consultation in the resource volume. We reviewed the current county noise ordinance and make comment here. The Ordinance is Title 8 HEALTH AND SAFETY, Chapter 8.24 NOISE CONTROL and is available at:
http://ordlink.com/codes/washco/_DATA/TITLE08/Chapter_824_NOISE_CONTROL.html.

FINDINGS 8.24.010

The ordinance was updated in 1999, and last supplemented in 2000. In 1999, the ordinance recognized that "the extent and volume of such noise is increasing" in Washington County, although to date, Washington County government and departments have not developed any noise related actions plans in response to this recognition of increase.

The ordinance recognizes that noise is "detriment to public health, comfort, convenience, safety, welfare, and prosperity of the residents of the county", yet to date Washington County government and departments have not developed any noise related action plans in response to this recognition of this detriment to citizen livability.

The ordinance asserts that the ordinance itself is in "pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the county and its inhabitants." So far, Washington County government and departments have not developed any noise related action plans in support of this pursuance, purpose, or peace and quiet.

DEFINITIONS 8.24.015

The section does not include boats or jet skis.
The section might benefit from identifying a "boom car".
This section might benefit from identification of "performance mufflers", "amplified exhaust systems", "straight piped" motorcycles, "pocket bikes" among more recent technological noise developments.

EXEMPTIONS 8.24.020

While this section asserts that sounds caused by railroads and aircraft are exempted in that they are regulated by federal and state regulations, there is no reference here to trucks using compression braking or un-muffled engine brakes. Yet the County Counsel asserts that this is exempt by federal regulation.

This section, given the pace of technological change, may benefit from referencing whether car alarms are part of "regular vehicular traffic".

VARIANCES 8.24.025

Does Washington County grant variances to itself? If so, what community review would be appropriate? Would a Citizen Noise Advisory Committee review be appropriate? Should an annual report be made available that summarizes variance activities?

Variances take up 50 % of the ordinance. The task force is concerned that more focus is given to variance than to protection.

Should a Citizen Participation Organization be allowed comment on a noise variance within its boundaries? Should this be for variances that exceed certain duration or any variances?

ENUMERATIONS OF ACTS IN VIOLATION 8.24.040

The ordinance would benefit from identifying "boom stereo" systems.

The ordinance would benefit from identifying "performance mufflers", "amplified exhaust systems", "pocket bikes" or in the case of motorcycles, "straight pipes".

Exhaust brakes are identified as a violating act, yet the County Counsel asserts this is beyond county enforcement. This should be clarified through a State Attorney General's opinion. Washington County has signage that identifies this as a violation, yet the deputies say they have been instructed that it is not enforceable. This results in continuous citizen frustration.

ADMINISTRATIVE PROCEDURES 8.24.055

This section states that "The board of commissioners may adopt, by resolution and order, administrative procedures manual. This manual includes, but is not limited to, identifying resources, processes and procedures for compliance with this ordinance and resolution of complaints." The NCTF could find no evidence the county has undertaken any action in this area, nor could we discern that any action was currently planned.

There is no defined data management plan associated with the ordinance complaints, enforcement, or variance processes. The NCTF was alarmed to learn that no data was being collected, and there was no collaboration between departments. Without data collection, the scope, frequency, duration, and demography of noise is lost. This was pervasive to the extent the NCTF actively questioned if this was not intended as part of the county strategy to avoid the provision of county services, and to pressure annexation.

This current situation leaves citizenry uninformed and subject to unwritten procedures. For example, we have undergone multiple rounds of communication about which department was responsible for which noise type. We have undergone multiple rounds with County Counsel about the difference of opinion regarding exhaust braking trucks. After 12 months, we still lack closure. The task force has been told by County Solid Waste staff that mediation services are preferable. The ordinance does not reference mediation services. In that some noise violations might be associated with other criminal behavior, as indicated by a consultation with the Sheriff's Office, mediation services might only be safe in certain circumstances.

The ordinance indicates that a county officer and a private citizen may issue a citation for violation of this chapter. The task force was explicitly told by County Counsel and a representative of the Washington County Sheriff's Office that this section of the ordinance had not been activated and that it was not now the desire of the county to have private citizens issue citations. Yet, the county has a uniform citizen ordinance that does allow a process for a private citizen to lodge a complaint with the Sheriff's Office. If there is adequate identification of an alleged violator, and if there is probable cause of a violation, the county can develop a sworn affidavit that the citizen swears to. This then results in the Sheriff's Office citing the alleged violator.

Given the current practice, a sheriff deputy must witness the noise. Noise is a level 4 complaint, the lowest priority. However, according to the Sheriff, due to budget restraints, it is possible even in the enhanced sheriff patrol district, no deputy will be available to consider complaints. The problem is far worse in western Washington County, where there are approximately 1.5 deputies per shift which leaves the largest expanse of unincorporated Washington County with virtually no enforcement. Therefore, requiring a deputy witness a noise violation leaves communities and citizenry without adequate resource or tools to defend their health and repose in most cases.

VIOLATIONS—PENALTY 8.24.080

The county asserts the most informal and least intrusive intervention possible is preferred. In discussions with the NCTF, various county staff referenced prevention education, neighbor-to-neighbor communication, and mediation services, among others as examples of preferred intervention. Yet the ordinance only cites fines, leaving the impression this is the only available recourse and remedy. This section presents an opportunity to encourage the Sheriff's Office to response with warning letters, and to become a partner with the DEQ's Clean Air Stations, diverting noisy vehicles to DEQ for sound meter testing. There could be additional penalties getting progressively tougher on repeat and callous offenders. An example might include confiscation of boom stereo equipment upon third conviction. Monetary penalties in this section could go to help support the NCTF recommended noise prevention coordinator position.

Noise Education Brochure

[Panel One:]
Sound Advice

What to do when sound is getting you down in unincorporated Washington County

[Panel Two:]
Washington County has always been a place of community. Those of us who have been here awhile can remember when neighbor to neighbor chatting was an every day occurrence.

According to the US Census Bureau, Washington County populations changed 42% between 1990 and 2000.
As life speeds up and more people move from region to region, our sense of community becomes harder to maintain. It's not as easy to know who your neighbors are any more, and getting along can be a challenge. We all have different goals and objectives, and these can sometimes be at crossed purposes. For example, one neighbor may add a heat exchanger to their home to make it more comfortable, but the noise may be bothersome to a neighbor. Both are well intended, but a conflict could arise.
If you find yourself in a conflict with a neighbor over sound, the following five steps may help.

Communicate.
If someone is making noise, communication is your most effective tool. Resolving conflicts sensibly can mean staying on good terms with those around you, maintaining peace, and faster resolution of differences. By communicating, you can retain control of your own decisions and stay empowered. For advice on how to communicate with a neighbor during a conflict, go to http://www.ci.beaverton.or.us/departments/disputeresolution/ and select the "Steps to Resolution" link.

Mitigate.
If communication is not appropriate, or has failed, consider solving the conflict by being creative. Is there anything that could be done to help reduce the noise once it crosses the property line?

Mediate.
Get help from a professional mediation group. Washington County, the cities of Hillsboro, Beaverton, Tigard and others offer highly trained mediators to help resolve conflict. It's paid for by your tax dollars, and often resolves problems that seem insurmountable. For information, contact Hillsboro Mediation Program (503 615-6651) or Beaverton Dispute Resolution (503 526-2523).

[Panel Three:]
Escalate.
If nothing else will work, you may need to consider enforcement. This is only appropriate if there is a law being broken or a code that is not being followed. If enforcement is the right course, look to the organizations below for enforcement of laws or codes. Please remember that this choice takes control out of your hands. Also consider that code enforcement may not be instant. Each organization has a process that

needs to be followed, and this can take time. The purpose of these processes is to guarantee that all parties are equally protected.

Type of Noise	***What to do or who to call***
Construction Noise - No construction noise between the hours of 7PM-7AM without an authorized variance; no construction on Sundays or Holidays	For variances and information on noise ordinance call during regular business hours. Solid Waste & Recycling 503-846-8609 At the time the violation is occurring and the violation is likely to continue for significant time (perhaps hours), call the Sheriff non-emergency dispatch 503-629-0111. It is the Officer's discretion whether to warn, cite, or dismiss.
Train Operations - Whistle Noise and Gate Crossing	All correspondence must be done in writing: Federal Railroad Administrations Dick Clairmont, Regional Administrator 703 Broadway Ave., Suite 650, Vancouver, WA 98660
Truck Operations - Trucks Parked on Residential Property	For commercial rigs parked at private residences, contact the Department of Land Use and Transportation (503-846-8761)
Boom Boxes, Music in Cars,	For information, call the Sheriff Traffic Hotline 503-846-3998, ext. 114 regular business hours.
Animals, barking dogs,	Information and citizen complaint forms available through the Washing County Animal Services. 503-846-7041 1901 SE 24th Ave. Hillsboro, OR 97123
Business Operations: Loud Music (such as a concert or a bar), Crowd Noise, Leaf Blowers (Landscapers conducting their Business), etc.	For notification of rules and regulations (note: this is not a form of citation), call Solid Waste & Recycling at 503-846-8609 during regular hours. At the time the violation is occurring and the violation is likely to continue for significant time (perhaps hours), call the Sheriff non-emergency dispatch at 503-629-0111. It is the Officer's discretion to warn, cite, or dismiss.
Neighbor Issues: - Loud music, radios/television, mowing in the early morning (before 7 AM or after 10 PM), etc.	For notification of rules and regulations (note: this is not a form of citati Solid Waste & Recycling at 503-846-8609 during regular business hour At the time the violation is occurring and the violation is likely to contir significant time (perhaps hours), call the Sheriff non-emergency dispatc 629-0111. It is the Officer's discretion whether to warn, cite, or dismiss.
Other: fireworks (not on the fourth of July)	An informational flyer is available from Tualatin Valley Fire and Rescu Contact the Community Liaison at 503-649-8577

If it's a crime…
If you feel that a crime has been committed, and the above contact information does not seem appropriate, call Washington County Dispatch at 503-629-0111.

As always, if this is an emergency or someone is in danger, call 911.

Participate.
If you feel that you would like to be involved in the processes that make up conflict responses, consider getting involved in your local government. A Citizen Participation Organization is an excellent way to learn how private citizens can make a difference in a community. For more information, call Washington County Extension Services.

"Snowflakes are one of nature's most fragile things, but just look what they can do when they stick together." …Vista M. Kelly

Noise Enforcement Not: One Complainant's Experience

I moved in to my home on five acres six years ago. I was looking forward to escaping from the noisy city. Almost right away, I noticed a dog that barked excessively during the day and night waking me up night after night. I did the "neighborly" thing and took a note to the neighbor's house early in the morning before I left for work. No way would I approach a stranger after dark, down a long driveway on a dead-end road. Even though his place is across from me on the side of a hill, a creek and wetland separate us, and the drive around to his house takes 20 minutes.

A few days later, the neighbor and his friend came over to talk to me about the dog. He said it was young and just needed to get used to the area and it would settle down. He made no effort to shut the dog up. I tried phoning him when the dog was baying non-stop, but he made more excuses for the dog. Then he started inciting that dog and his other dogs to bark as much as possible. This was his response to my attempt to settle this, neighbor to neighbor. I started phoning him every time his dog woke me up. He never shut the dog up, and finally blocked my calls and let it howl throughout the night.

Next, I tried calling the Sheriff's Office. They tried to refer me to dog control, but that did no good in the middle of the night. I finally got them to respond after I educated them about the noise ordinance and the barking dog ordinance. But all the deputy would do was talk to him, which did no good. The neighbor got madder and madder because I sent the deputy, so he started menacing me with firearms. One morning after the deputy had been there, he aimed his headlights at my bedroom window at 4:00 a.m. and started honking, yelling, and shooting a loud gun. The deputy would not respond. At other times, he would crank up his stereo so loud that I could not escape the noise, even shutting myself indoors and turning on the TV to block it. Still the deputy would do nothing more than talk to him, even if I had waited six hours for them to show up.

At some point, after <u>many</u> visits to the neighbor's house, the deputies became such good buddies with him that I felt they were aiding him in his making my life Hell. This guy was always friendly, flattering, and cooperative with the deputies. He was charming. But the deputies never caught on that he was acting. They started joining him in laughing at me. More than once the deputies chastised ME. If they didn't catch the neighbor's dog barking or the stereo blasting, he would tell them I was harassing him for no reason, and they believed him. By being charming and feigning innocence he could get away with anything. He would get even as soon as they left.

I started asking the dispatcher to have the deputy contact me first when they could finally come. I didn't want them to come over five hours later after the noise had stopped. If there was nothing to witness, I did not want the neighbor making me out to be a liar. Usually, this turned out for the best, but one of the last deputies to respond (this after four years of vexation) refused, contacted the neighbor anyway, and was very mouthy to me, saying <u>I</u> could not tell <u>him</u> what to do.

One Sunday morning, the neighbor started hammering on a construction project and had a cement truck make a delivery at 4:15 a.m. I called the deputy, who came up at about 5:00 a.m. They had a wonderful visit, then the Sheriff left and called me to tell me what a wonderful guy my neighbor is!! And that the neighbor had said this was the only time he could get the cement delivered. And next time, the neighbor would be sure to call me and let me know time he has to work on something noisy. Yeah, right! He only harassed me more. No enforcement of the "no construction on Sunday, or before 7:00 a.m. on any day". The guy knows the law; he owns a construction company. He seemed to have the full cooperation of the

Sheriff's Office. I think he really enjoyed getting away with everything. Almost every deputy that ever responded made friends with this guy. Only one ever helped me. But the noise and harassment continued the entire time I've lived here.

When the first threats came, the deputy would not even take a report. I had recordings and caller I.D. When shots were fired at my house and my son was almost hit and my kitchen window was broken and the blinds destroyed and a bullet hit the wall, the deputies still did not seem to take it seriously. The next day, the guy saw me in my garden and shouted, "Take cover!" I did.

This shooting came exactly one week before the deadline the guy was given by the County to get his construction equipment off of the property. I had complained about the noise. I didn't so much mind the trucks there, as long as he drove away soon. But one day, he left one running for two hours. It was disturbing and the diesel fumes were awful. I called the Sheriff's Office, and the neighbor told them he forgot it was running because he was on the phone. But when the deputy left, he let it run another hour. Then, as part of his harassment of me, every time I stepped out my door he would start up a big truck or earthmover, and let it run until I went in.

This guy, with the deputies' help, has robbed me of peace. They became his enablers in his defiant harassment of me. Even the District Attorney would not call me back when I left a message that I did not believe the shooting was an accident, and that my son believed that creep was trying to kill me. He didn't know I wasn't home. My son lived here for a year; the shooting was the last straw for him, and he moved out. He was so sick of the guy yelling at him to shut up every time he was outside talking to his friends. Like most bullies, the guy did it only when no one else was around at his house. He blamed the shooting on his girlfriend's son. She tried to tell me I framed him. My alibi: I was at a meeting that evening, sitting across from the guy's father.

The problem continued and escalated because the deputies would not take a noise complaint seriously and deal with it. Instead they made the problem worse by being flattered and befriended by a charismatic, deceitful, abusive, controlling man, and being allowed "discretion" as to whether or not to enforce the noise ordinance.

Oh, yes, I heard the guy screaming at his girl friend, and I tried to get her help, but she wasn't interested. However, after the night he was slapping her so hard I could hear the smack from my front yard (we are 300 feet apart), she finally left. Thing was, he was always alternating between slapping her around and harassing me. Now he only had me to bully.

He knew I was single, alone, and the only neighbor affected by his noise. I did check, and the neighbors above his driveway said they could not hear him from their location. Both neighbors on the other side of me are extremely deaf.

After my window was shot out, the neighbor rented out his house and moved. But he still comes back occasionally to work on something in his garage. One evening recently, I heard his voice, followed by gunshots, after I parked my car and was walking to my house. Not a .22. Something that sounds like one of those large caliber rifles you hear in deer-hunting season. So, he's still lurking. Still menacing. In his phoned threat, he told me to watch my back, because he WILL get me. The Sheriff wouldn't come out. It's not illegal to shoot guns at all hours here in the in the rural country. Terrorists would have lots of opportunity to practice out here. My neighbor is one.

I truly believe this problem would not exist now if the Sheriff's Office had upheld the noise ordinance from the start, six years ago.