MINORITY REPORT
OF THE
UPPER ST. CLAIR
AD HOC DEER COMMITTEE

Sandra H. Conder
June 18, 1998
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SECTION I  WHY BOWHUNTING DOES NOT WORK TO CONTROL DEER POPULATIONS

I do not believe that the majority report will contain any scientific or verifiable evidence showing that bowhunting is a population control measure. There cannot be any because there is none. There is, however, much evidence that it is not effective in spite of the fact that the bulk of the resources of huge governmental agencies are always aimed at promoting hunting in any form.

It is necessary first to understand why you will see so much propaganda aimed at inducing you to permit men who thrive on killing into our parks.

In Pennsylvania, the propaganda comes from the Pennsylvania Game Commission (PGC). The PGC has a 55-60-million-dollar budget every year. About 51% of their revenue comes from hunting license fees and fines; 15% from federal reimbursements for taxes on hunting equipment; 25% from the sale of timber and wood products from the 1,379,003 acres it owns (for each of which it pays $1.20 annually in lieu of taxes to local authorities); 4% from interest income from its $30-$40 million fund; and 6% from other income. In addition to having its own independent funding, it also has its own police force and formulates most of its own laws, although some or all must be approved by the legislature. It is very powerful and at least 7 of the 8 commissioners are members of hunting organizations.

All this power is focused on pleasing its hunting constituency by increasing game, primarily deer. Last year, it spent $2,290,923 for deer food and cover and $2,818,871 for natural propagation of game and wildlife. On the other hand, it spent only $189,258 on its “endangered/threatened/-nongame wildlife research program.”

Nationally, state wildlife agencies have about two billion dollars budgeted annually. Most of this goes to promote hunting which adds another several billion dollars annually to the economy. These agencies also employ the vast majority of wildlife biologists either directly or through research grants to state universities.

Aside from the multitude of hunting magazines, there are two industry periodicals that publish the studies of wildlife biologists. These are The Journal of Wildlife Management and The Wildlife Society Bulletin. Since hunting provides the majority of the funding for these studies, wildlife biologists never set out to prove that hunting doesn’t work. However, that conclusion must be reached whenever research is done on hunting statistics.

Following are the scientific reasons why bowhunting is impractical as well as inhumane. They clearly show that bowhunting has never been shown to reduce deer populations in either general or managed hunting; that bowhunting is hideously cruel in that it leaves the majority of animals wounded; that neither skill, nor tree stands, nor compound bows increase proficiency; that data must be accumulated and carefully reviewed before even attempting to manage deer populations;
that hunting may lead to increased, rather than decreased, populations; and that climate and habitat
are the only long-term factors affecting populations.

At the May 18th ad hoc committee meeting, I was advised to begin preparation of my minority
report to the commissioners even though the pros and cons of hunting had never been discussed
and no vote had been taken by the committee on any recommendation. I offered to compile
hunting information for the following June 3rd meeting. I prepared the following and distributed it
to committee members at said meeting, but it was never discussed.

Relative Impact of Firearms and Archery Hunting on Deer Populations (Appendix A) was
prepared by Langenau and Aho of the Michigan Department of Public Resources. Their purpose
was to “review data on deer hunting impacts and to speculate about topics requiring further
consideration.” To that end, they “requested specific data on deer and deer hunting in 1965, 1970,
1975, and 1980 from wildlife management agencies in Illinois, Indiana, Iowa, Michigan, Minnesota,
Missouri, Ohio, and Wisconsin.”

Their findings:

“The hunters harvested 2,143,210 deer in the United States during 1976. This was only 5%
higher than the harvest in 1969. Thus, the impacts of hunting on deer, through legal
removal during regulated seasons, decreased during these years.” [Reported deer kill by
legal hunting for 48 states in one recent year was 6,189,116, and the population is still
growing.]

“Overall, the number of deer in these states decreased from 1965 to 1970 and then
increased until 1980, at which time deer herds were 52% larger than those in 1965. The
harvest rate, or percentage of deer in the population taken by hunters was 16.7 in 1965,
12.7 in 1970, 14.4 in 1975, and 18.8 in 1980. ... Still, 18.8% is reasonably comparable
with the national figures (Table 1) and not high enough to reduce deer populations.

“Overall, the composition of the deer harvest in the Midwest indicated that the impacts of
hunting on deer were being mitigated. We found no evidence that hunting was reducing the
number of deer in the Midwest, but there may have been impacts at the state or local level.

In the 5 midwestern states with data, archery deer hunters experienced 98 days of hunting
for each deer harvested. This was more than 3 times the 29 hunter-days of firearm hunting
recreation produced by each harvested deer.

“In 1980, 58% of the adult does harvested by bowhunters and 44% of the adult does
harvested by firearm deer hunters were yearlings, as estimated from deer check data. These
1½-year-old does were less important to the deer population than older females. Yearling
does are probably less wary and more vulnerable to hunting than older does. Their
reproductive rate was lower than older does. ... Both archery and firearm harvests included
more buck than doe fawns (63% and 60% respectively). ... Regardless of the reason for the
over-representation of buck fawns in the harvest, this would mitigate impacts of hunting.
“About 16.8% of the hunters using compound bows in 1979 admitted wounding a deer, compared to 14.8% for those using recurve bows. Gladfelter et al. (1983) found that crippling was not related to the type of bow itself. Rather, hunters using compound bows tended to spend more days afield and days hunted were highly related to crippling rate. About 86% of the bowhunters in this area used compound bows in 1980. Twelve percent of these hunters reported that they were sure that they hit and did not retrieve one or more deer. This was identical to reports of hunters using recurve bows. Hunters with compound bows took an average of 1.05 shots at deer, which was more than hunters with recurve or long bows (0.50). However, hunters with compound bows missed more.

“Hunters in tree stands, however, did have different success rates on this Michigan research area. They took the same number of shots at deer as hunters on the ground, but hit and failed to retrieve 5 times as many deer. There were 20 deer hit and not retrieved/100 hunters who always used tree stands, 14/100 for those who sometimes used tree stands, and 4/100 hunters who never used tree stands.

[At the U.S. Naval Ammunition Depot in Crane, Indiana] archery deer hunters reported wounding 139% of the legal archery harvest (114 deer wounded and 82 deer harvested). This ratio of 1.4 was similar to that found on the Michigan research area, where 1.2 deer were reported hit and not retrieved for each deer harvested by bowhunters.

“Despite the existence of localized pockets where intensive deer hunting could lead to over harvest of deer [through rifle hunting] and skewed distributions, we have shown that neither archery nor firearm deer hunting has reduced deer populations on a national, midwestern, or Michigan level.”

Archery Wounding Rates and Shots Per Kill (Appendix B) is a roundup of 19 different studies which included bowhunting wounding rates. Wounding rates ranged from 44 to 68% with an overall wounding rate of 55% and an average of 17 shots per kill.

One of the above cited, Archery Wounding Loss in Texas (Appendix C), by Boydston and Gore of the Texas Parks and Wildlife Department goes into detail and documents data from hunts from 1972 through 1985 on four Texas Wildlife Management Areas. It also discusses archery prowess and other issues relating to bowhunting and calls for research into broadhead arrow efficiency. Some highlights follow.

“Comparable data ... for archery hunting on Texas wildlife management areas indicate a wounding rate of about 50%, or 102% of the legal harvest. ... As these are hunter reported data, it is felt they are conservative.

“Under most hunting conditions, it is generally difficult to shoot a razor-sharp broadhead arrow into a vital area — an absolute must for bow hunting proficiency. Data from Texas wildlife management areas provide evidence that, on the average, 21 shots are made for
every deer killed, or about 10 shots per deer hit. **Shot placement is, for all practical purposes, random.**

“However, there is evidence to indicate that experienced bowhunters wound more deer than neophytes because they get more shots and therefore have [more] opportunity to wound.

“Not all wounded deer die. Undoubtedly many recover. However, almost all abdominally-shot deer die a slow death due to peritonitis.”

*Crippling Losses* (Appendix D) is an article by Aaron Moen, a Cornell professor, published in the June 1989 issue of “Deer & Deer Hunting” magazine. He received 229 responses from hunters in 40 states to a survey of crippling losses experienced by bowhunters and rifle hunters which he then categorized by age, experience, and weapon used to establish patterns where there were any for both the hunters’ estimates of crippling losses and their actual reported losses. His findings:

[years of experience for bow hunters in categories of 30-39 years, 20-29 years, 10-19 years and 0-9 years] “Hunters with more experience estimated higher crippling losses than younger hunters did. Hunters with 10-19 years of experience also estimated a high crippling loss, however.

“Hunter *estimates* described above ranged from as high as 35 to as low as 11% of the legal harvest. What are the numbers reported by hunters using the weapons? ...Bow hunters reported wounding 67 deer per 100 deer harvested. ... While hunters *estimated* that 1.9 times more deer were wounded by bow hunters than by rifle hunters per 100 deer harvested, the ratio based on the number of deer hit, *reported* by bow hunters in this survey, indicates that 6.7 times more deer were hit and not recovered by bow hunters than the number reported by rifle hunters. It is also interesting that the 67 wounded per 100 harvested by bow hunters is very close to the 70% average for seven states cited by Wegner.”

*Nonreporting, Success, and Wounding by South Dakota Deer Bowhunters — 1981* (Appendix E), published in the Wildlife Society Bulletin in 1985, discusses their objectives as “to test alternative bowhunter reporting systems, determine ways to improve estimates of reported bowhunter deer harvest, and measure reported wounding of deer by bowhunters.”

It does so and concludes, “Wounding of deer by bowhunters is occurring at a rate of approximately 1 deer for each deer harvested. If all deer reported HBNR [hit but not retrieved] by resident bowhunters in 1981 resulted in fatality and were added to the reported bowhunter harvest, the resident harvest for the 1981 archery deer season would be 4,236 deer. This number is only 15% of the 1981 deer harvest in South Dakota and does not appear to be a significant biological factor in deer herd management.” [emphasis added]

Adrian Benke, a former bowhunter, reports on bowhunter proficiency in his book, *The Bowhunting Alternative*. He cites a report of shooting proficiency [Gilleland 1973], in which “only 12% of some 500 bowhunters managed to hit a 12-inch target at least three out of five shots at a distance
"However, when deer management has reached the scale such that several states are harvesting well over one hundred thousand deer per year [around 500,000 in PA], are serving hundreds of thousands of hunters, and are generating millions or billions of dollars worth of recreational revenue, it is difficult to argue that this is not big business. Why have wildlife managers avoided the operations research and mathematical modelling techniques that have proven effective elsewhere?

“Certainly it appears that wildlife management problems are more complex and less well defined than traditional business problems (Halter et al. 1972). Wildlife managers must consider a wide variety of factors when making decisions regarding the management of a game population such as deer.

“Appendix 1 contains the basic outline for the summary which Michigan has employed for the past 3 years. The procedure for filling out the form is as follows: first, the biologist is required to define the specific area or population he is describing. The population described may be a district or part of a district. Then he must estimate the initial population in the spring prior to fawning (A). Michigan compiles population estimates from deer pellet group surveys for the districts in our major deer-producing areas; ... Then if the biologist has the information available, he may describe the age and sex composition of the deer population at this point (B). Next he must estimate the production of deer fawns, the input of new animals into the deer population (C). In order to predict the population size just prior to harvest (E), he must estimate the losses between fawn drop in June and October 1
(D). At this point he has estimated the population from which he will be removing animals by his recommendations for legal harvest (F). However, the idea of wildlife management is to leave a sufficient residual population to continue to provide a harvestable surplus and yet to fit into habitat and cultural limitations. Hence, the biologist must balance his recommended legal harvest against his concept of illegal losses and wounding losses (C) to predict the residual population (H). Finally, additional space is provided for recording an assessment of range conditions (I) and special considerations (J) regarding management recommendations.”

All this and more should be done before any harvesting or culling. Yet we are considering allowing Whitetail Management Associates to come into our parks and use them as their private game reserves with absolutely no sound basis on which to base population control.

Without such data, it is unlikely that goals will be met. Worse, efforts to cull the herd could achieve the opposite effect, a population increase. This has been established and is described in the book, Natural History of Deer by Rory Putman, 1988, on page 165:

“Reduction in numbers, by whatever method, of the pest species concerned may seem a clear and logical solution to contain any pest problem, but it is biologically naive. Any reduction in numbers achieved, short of total extermination, is short-lived. Control effort must be repeated year after year, for the natural response of most animal populations to a decrease in their numbers is an increase in productivity: increased reproduction and increased immigration and increased survival. Further, any culling programme is bound to disturb the population and may actually exacerbate the very problem it aims to contain: (i) may be disbursing the pests from the initial area of control into new areas perhaps up to that time relatively free from damage; (ii) by changing the behavior of the individual animals themselves, making them more secretive and elusive and thus more difficult to ‘contact’ in any future cull.”

And again on page 171, he states, “Indiscriminate culling or a cull concentrating on the wrong age — or sex — class of animal, can prove not only expensive but counterproductive.”

Michigan is not alone in incorporating Putman’s advice into its deer management policies. Missouri focuses specifically on urban public areas in Managed hunts to control white-tailed deer populations on urban public areas in Missouri )Appendix G) by Hansen and Beringer.

“Regardless of ownership, one of the first steps taken is to assess population status and set population goals. Deer population monitoring is an important part of this process. We use numerous indices to assess deer population status and the magnitude of the problem (Fig. 1).

“We believe censuses in combination with population modeling provides insight into the dynamics of urban deer populations and the harvest rates needed to achieve population goals. ...On urban areas where deer are a major attraction, we find densities of about 15
deer/km$^2$ are high enough to provide adequate viewing opportunities for the public but low enough to minimize problems with deer.”

This figure equals 38.4 deer per square mile. The Pennsylvania Game Commission currently recommends about 5 deer per square mile for Allegheny County but recommended 12 per square mile a couple of years ago. I submit that the PGC is basing their recommendation on absolutely nothing more than creating an impetus for hunting. Missouri continues:

“Based on information from past managed hunts, doe harvest per hunter (an index of harvest efficiency) tends to be highest for hunts restricted to centerfire rifles (0.48 does/hunter), intermediate for muzzleloading firearms hunts (0.23 does/hunter) and lowest for archery (0.16 does/hunter). If the primary objective is population control, then antlerless-only hunts or hunts in which hunters must take an antlerless deer before taking an antlered deer are most effective. Hunts in which any deer can be taken tend to result in a lower doe harvest per hunter (0.29 and 0.48 does/hunter during centerfire rifle any-deer and antlerless-only hunts, respectively; 0.09 and 0.23 does/hunter during muzzleloading firearms any-deer and antlerless-only hunts, respectively; 0.05 and 0.16 does/hunter during archery any-deer and antlerless-only hunts, respectively).”

This means that it takes 20 hunters to get one doe when any deer is allowed such as has been the case when Whitetail Management Associates has hunted in McCandless and Bethel Park. WMA claims to have killed 175 antlerless (which includes does and yearling males) and 11 antlered deer in McCandless using just 36 hunters for a rate of nearly five does per hunter (assuming all antlerless deer to be does). That’s a phenomenal success rate. How can this be? How can this group of hunters claim they are 10,000% better than bowhunters in other managed urban hunts?

The studies mentioned above have shown that neither compound bows, tree stands, nor hunter experience, makes a significant difference to bowhunter success. Did anyone from outside WMA verify these results by counting and marking each deer?

Wildlife consultant Laura Simon, in testimony before the Connecticut Environment Committee against HB 5856, an act concerning limited Sunday hunting (Appendix H), cites the following arguments against hunting and bowhunting.

“Bow-hunting may be considered “safer” than firearms hunting, yet bow-hunting is one of the most insufficient forms of population control due to its poor efficiency and low hunter success rates. One study conducted by wildlife managers on the Howland Island Game Management Area in New York concluded that ‘100-200 archers per square mile per day would be necessary to achieve a satisfactory deer harvest’ (C.W. Severinghaus, 1963 - see appendix C).”

“One of the disadvantages of archery hunting is that ‘deer struck with arrows can travel 100 yards or so before succumbing to a fatal shot. In developed areas, this could result in fatally-wounded deer dying on adjacent properties.’ (Ellingwood)
Why hasn’t hunting worked either in Connecticut or Pennsylvania or elsewhere? It is simply that deer, like most species, simply respond to their habitat.

Deer are creatures of “edge habitat.” That means that they use wooded areas for cover but must forage for food in areas where sunlight can penetrate to promote plant growth. Before significant expansion of the white man there were relatively few deer, about eight per square mile, because there weren’t many “edge” areas, only those around natural clearings or those cleared by forest fires. According to an article written by Ben Moyer quoting Dave deCalesta, a forest ecologist with the U.S. Forest Service, in the Feb. ‘98 issue of the PA Sportsman magazine (Appendix I), numbers rose in the mid-19th century to about 15 per square mile as edge habitat was created by a combination of timber cutting and clearing for agriculture.

At the end of the last century, however, a combination of extensive logging followed by erosion, large agricultural tracts, and market hunting drove deer nearly to extinction in PA. The PA Game Commission (PGC) reintroduced about 1,200 deer from Michigan in 1906. This occurred just as the logged over areas were coming back as brushy cover, an ideal habitat for deer, and their numbers rose dramatically — to an estimated 50 per square mile by the late 1940s. Since that time, numbers have fluctuated from area to area as habitat has changed. There may be as few as eight per square mile in some northern forested areas.

In the last 30-40 years, about 30% of the land in Southwestern PA has reverted from agriculture to either brushy cover or lush, landscaped developments, both great deer habitat. Also winters have been mild and weak deer have not died from natural causes as they might when there are heavy spring snowfalls. (They can sustain themselves with very little to eat throughout the winter months, but do need nourishment when spring comes.) Predation has probably never played a significant role in adjusting deer populations. Wolves and mountain lions may keep numbers from reaching the maximum, but coyotes, bear, and bobcats have very little effect, if any.

Moyer’s article concludes:

“Deer, and their numbers, are much like a natural pendulum, always in transition, always changing, increasing in some places and declining in others. These cycles have gone on for centuries.

“A tribute fitting the whitetail will be to recognize its adaptability, to understand that deer respond to conditions on the land, and that we see that response through abundance and scarcity. Along the way, the whitetail has learned what is best for itself. It cannot be made to live where it cannot thrive, and it can scarcely be suppressed where conditions are right. This, alone, remains the same.”
SECTION II  EFFECTIVE REMEDIES: GARDENING

Although the only legitimate complaint about deer is that they may be road hazards, my experience indicates that what has a vocal few up in arms in this community is their inability to grow many of their favorite flowers and shrubs.

Gardening is a very labor intensive undertaking anyway. One must till, fertilize, buy or raise seedlings, plant, weed, and battle insects, rabbits, moles, chipmunks, groundhogs, etc. before harvesting and dealing with the surplus of zucchini. Before we resort to something as heinous, and useless, as beginning a long-term program to slaughter wildlife, we should try every other means available and use all our ingenuity to solve the problem ourselves.

In order to present these other means, I produced a booklet for the ad hoc committee detailing effective gardening techniques. My original intent was to compile a comprehensive booklet which could be mailed to every household in Upper St. Clair before the deer forum held April 29th. In order to allow ample time for editing and production, I borrowed heavily (with permission) from a similar booklet produced in Illinois for some sections, added others, and presented it to the committee at the April 1st meeting. I included not only the gardening information, but also methods to reduce deer/motor vehicle collisions and prevent Lyme disease as well as an explanation of deer population dynamics. However, my fellow committee members felt that only gardening information was necessary and edited out every other bit of information.

The result was that I reformatted the gardening information three different ways to give them a choice of options. Ultimately, they did produce a booklet that was distributed at the forum to the 60-70 people who attended. Obviously, such a small distribution is not going to make much of an impact in solving the problems of those who find gardening difficult with deer in the area. I believe it should receive wider distribution at least as part of a township publication if not alone. Also, the gardening solutions should be expanded upon and updated periodically. It is attached hereto in a single column format as Appendix J.

I rewrote the information that was edited out of the gardening pamphlet, added more, and produced a second booklet at my own expense. This booklet, too, was available at the forum. It is attached as Appendix K.

SECTION III  EFFECTIVE REMEDIES: DEER/MOTOR VEHICLE ACCIDENTS

Deer/motor vehicle accidents (DMVAs) were reduced in 1997 to 94 from a high the previous year of 111. This may or may not be a trend, and we would do well to take all precautions to ensure that the number of DMVAs continue to be reduced.

Roadways are often ideal deer habitat. Not only do they provide great edge habitat, but rights-of-way and median strips are the first areas to green up in spring. Plantings of crownvetch and grasses on steep slopes along interstates are a factor, and salts from winter de-icing accumulate in soil next
to the roads. Of course, roads may cross the traditional routes of deer and bisect their feeding, drinking, and sleeping areas.

Yet, studies show that a small percentage of locations account for a high percentage of collisions. There were 406 deer/motor vehicle accidents (DMVAs) in Upper St. Clair from January 1, 1994, through May 22, 1998. Of these, 172 occurred on Route 19 and 31 of those were at the area known as the cloverleaf where Route 19 crosses over McLaughlin Run Road. This is not surprising since there is a lane coming out of Brookside Farms there as well as available water and tulips planted seasonally in a median area. Boyce Road was the scene of 62 DMVAs.

There are also peak periods. When the fall rutting season peaks in November is one. Of the 406 accidents, at least 91 occurred in November and the period of October through January accounted for at least 237, or over half. March and April, when roadsides sprout the first plants in spring, had the next highest totals. Each day all year there are two peak periods, at sunrise and one to two hours after sunset. Traffic volume peaks may account for part of this as well as deer feeding patterns. If Upper St. Clair has tracked accidents by time of day, I am not aware of it.

There are a number of things that can be done to reduce DMVAs. All of the following information should be disseminated throughout the township on a regular, seasonal, and ongoing basis through school PA announcements and bulletins for parents, Cable Channel 7 bulletins, our web site, the library, and in municipal mailings.

- Be particularly aware of the peak seasons mentioned above. Announce them in schools, on our cable channel, and include them in municipal mailings as they occur.

- Watch for other deer if you see one on or near a roadway. Although bucks generally travel alone, does, fawns, and yearlings are often in family groups of two to six deer except during the fawning season of May and June and during the summer when does raise their new fawns.

- Look for eyes reflecting light at night, and use extreme caution.

- Be aware of ideal crossing sites where woodlots for cover are on one side of the road and choice feeding spots are on the other or where the right of way is inclined 16º or more down from the road.

- Know that deer will “freeze” in headlights. Don’t expect them to move. Be prepared to use your horn.

- Have the police continue to keep records of where deer are seen crossing and where accidents have occurred to establish crossing routes. Then consider posting speeds lower in those areas, enforcing current speed limits, clearing brush and foliage back away from the roadway as far as possible to allow better sight lines, and erecting deer crossing signs.

- Install Strieter-Lite® reflectors and advise motorists to turn on headlights at early dusk as well as late dawn to assure maximum efficiency of reflectors.
I was asked by the committee to prepare the following report on the advisability of installing reflectors.

**Preliminary Report on Feasibility of Strieter-Lites Installation in Upper St. Clair**

**May 18, 1998**

Having read several North American studies on the effectiveness of using Strieter-Lite® reflectors to prevent deer from crossing roads at night, I have concluded that they usually are effective in preventing 60%-90% of deer/motor vehicle accidents (DMVAs).

Instances where they did not prove effective were due to a variety of factors. Prior to 1994, reflectors came in two models; sometimes these were installed inappropriately for the location. At other times reflectors were installed upside down or were spaced poorly for the terrain. Poor maintenance, heavy fog, and overgrowth of vegetation were other factors contributing to poor performance. Also, a Utah study that deemed them ineffective was not a study of their efficiency in preventing deer from crossing roads at night, but rather was conducted to see if elk could be prevented from migrating. I’ve been told that a 20-foot cement wall would be more appropriate for this purpose.

On the other hand, at least 14 states and provinces are currently using them and find them effective. British Columbia has consistently reordered reflectors since 1981 and has installed over 36,000 of them; Minnesota has ordered over 25,000 since 1980; and Washington over 10,000 since 1980. Nearby state DOTs that have begun using them more recently include Ohio, New York, Maryland, and Michigan.

Cost of reflectors varies from $2,700 to $3,590 for one mile of roadway depending upon quantities purchased to meet installation specifications. Where roads are wide or reflectors can be set back from the road, fewer are needed. Total installation costs also vary — between $7,000 and $10,000 per mile — depending largely on spacing and type of post used. When approved by a state Department of Transportation, the reflectors are eligible for up to 80% reimbursement from federal funding under the Hazard Elimination Program of the Federal Highway Administration.

I have left a message for a Harrisburg PennDOT employee asking 1) if PennDOT is any closer to approving Strieter-Lite® reflectors and 2) if PennDOT has any policy that would preclude the township from installing them on state roads. I have not yet received a reply, but Mr. Strieter feels that PennDOT would not object to our installing them as they have been installed in other Pennsylvania municipalities.

It is highly likely that Upper St. Clair could best use reflectors in segments shorter than one mile since our terrain often has natural barriers to crossings. Mr. Strieter toured the township in the company of a maintenance department employee on May 4. The employee was very familiar with exact locations of DMVAs and when the incidence was high, they stopped to take a photograph of
the site in order for Mr. Strieter to evaluate site suitability to the reflectors. Copies of these photographs have been sent to the township and to me.

In a recent telephone conversation with Mr. Strieter, he told me that in studying the photographs in conjunction with our accident reports, he feels that there are sites conducive to an installation in spite of our hilly, curving roads. Specifically, he said curve installations will be effective unless a deer is running too fast to stop. Hill installations will be effective unless a deer is immediately over the crest of a hill. Even then, oncoming traffic would eliminate the problem. In view of the fact that dusk and dawn coincide with heavy traffic hours during the months when the majority of DMVAs occur (October through January), we should be able to expect at least a 50%-60% reduction in DMVAs where a high incidence of prior accidents indicates a curve or hill installation is necessary. The reduction should be closer to 90% on straighter, flatter areas.

It should be noted that British Columbia feels that the elimination of two accidents pays for two kilometers of a reflector installation. Of course, most of the cost of DMVAs is borne by the car owner and the insurance company rather than the township. However, reflectors can be considered in the same category as stop lights, signs, or any routine road maintenance, all of which are expensive and provide no financial benefit to municipalities, yet are considered necessary.

Sandy Conder

Following submittal of the above report, I was charged with putting together a comprehensive cost estimate for installing the reflectors on segments of Route 19 and Boyce Road for the following meeting. Since I am not an engineer, I asked Mr. Fred Kunz, P.E., to prepare this information. His letter and estimate are enclosed as Appendix L.

Please note that Mr. Kunz’ estimate is $2,895.20, including a 10% miscellaneous cost to cover unforeseen problems, for one-half mile of roadway along Boyce or Morton roads, and that he estimates that a similar section on Route 19 would cost less since the spacing between the reflector units would be greater. This cost is slightly less than the average cost of installation of Strieter-Lites since Mr. Kunz’ engineering expertise was donated, the township would install the reflectors using township personnel at a lower labor cost than contracted union labor, and it is not foreseen that doubling reflectors at downslopes is required along the proposed segments. Mr. John Strieter has reviewed Mr. Kunz’ estimate and feels that the cost would be significantly less since the labor time needed for each post should actually be a fraction of that allotted.

In the event that you should actually allow bowhunting on the Boyce-Mayview park properties, I strongly urge you not to install reflectors within two miles of the hunted area. Hunting will probably increase DMVAs as it has in Bethel Park, and the only means of determining the effects of hunting and reflectors is to keep the two separate. In the event of hunting, two distinct reflector installations along Route 19 would be preferable, one covering the area including Orr Road and the cloverleaf and the other near the intersection of Boyce Road where 20 DMVAs have occurred.

Following the presentation of my Strieter-Lite recommendation to the committee, I received documents in the mail from Mr. Caswell which superficially presented information contrary to my
findings. I then prepared the document contained herein as Appendix M which indicates that many states and provinces have found the reflectors to be very effective. Should you wish additional information beyond Mr. Kunz’ estimate, the state-by-state summary of reflector installations, and the enclosed contact and reorder lists (Appendix N), I have a three-inch stack of studies and other information that I would be happy to loan the township.

SECTION IV  PREVENTION OF LYME DISEASE

Since first identified in the US in 1975 near Lyme Connecticut, Lyme disease has become a public health problem in some areas of our country. However, no case has been reported from Upper St. Clair, and there have been very few cases reported in Allegheny County in the last 10 years. If you travel to areas where Lyme disease is prevalent, you may want to take precautions and become knowledgeable about how Lyme disease is spread, contracted and treated.

What is Lyme disease and how is it spread?
Lyme disease is an infection caused by a spirochete bacteria (Borrelia burgdorferi). It is spread to animals and humans by the bite of ticks called Ixodes scapularis (formerly called Ixodes dammini) that are infected with the bacteria. The tick has three stages during its two-year life cycle: larva, nymph, and small adult. Larva and nymphs feed on small rodents and other small mammals and birds. Adult ticks feed on larger mammals, such as deer. Nymphs are believed responsible for about 80% of Lyme disease cases among humans; the remaining 20% are due to adult ticks.

Ticks become infected with the disease by feeding on an infected host, usually the white-footed mouse. Migratory birds are believed to be the primary means by which infected ticks are spread from one area of the country to another. It should be noted that even total elimination of deer from an area have not changed the incidence of Lyme disease. A nine-year study in Massachusetts indicated that although deer declined four- to five-fold, the female tick population feeding on deer increased four- to six-fold.

Furthermore, a significant reduction in the number of one herbivore, such as the deer, will very likely lead to an increase in other herbivores, such as mice, to fill the ecological niche. Not only are mice the primary hosts for the nymphal stage of Ixodes scapularis (the stage responsible for most incidences of Lyme disease), but they are also the principal carriers for the newly emerging and deadly pathogen, hanta virus.

Symptoms and treatment of Lyme disease
The early symptoms are flu-like and may be combined with a characteristic skin rash, called erythema migrans, that appears at the location of the bite three days to one month after the bite from an infected tick. As the rash expands, the center may clear, resulting in a bull’s-eye appearance. Lyme disease is easily curable in the early stages by antibiotics. However, it is often difficult to diagnose since symptoms mimic other ailments, and the lab tests for the disease are not completely reliable. Therefore, doctors often prescribe the simple treatment even if unsure of the diagnosis. If left untreated, it is estimated that about 10% of the cases may progress to serious, long-term effects such as arthritis, nervous system abnormalities, and irregular heart rhythm.
A vaccine to prevent Lyme disease has recently received FDA approval and will soon be on the market.

**How to avoid tick bites**

When in areas with heavy concentrations of any kind of tick, the following precautions are helpful.

- When hiking, stay in the middle of trails to avoid vegetation.
- Tuck pantlegs into socks and your shirt into your pants.
- Wear light-colored, unpatterned clothing so ticks can be spotted.
- Do not wear sandals or open-toed shoes.
- Apply repellents according to label instructions.
- Inspect clothing for ticks. Have a companion inspect your back.
- Wash clothing to kill ticks.
- Shower and inspect your body thoroughly. *Ixodes scapularis* is very small, no bigger than the head of a pin, so look carefully.

**To keep ticks away from your home:**

- Keep your woodpile neat, off the ground, and in a sunny area or under cover as they are a favorite harborage for mice and other small mammals which carry infected ticks.
- Clean up gardens and leaves in the fall to dissuade small mammals.
- Clean up the ground around your bird feeder.

**SECTION V IMMUNOCONTRACEPTION WITH PZP, AN EFFECTIVE POPULATION CONTROL METHOD**

Certainly, no one in the township wants to take the chance of increasing the deer herd because of the corresponding increase in complaints it would bring. Since hunting indirectly causes increased reproduction in deer because of the better nutrition of those remaining, it would seem prudent to adopt some other method of reducing the herd population if that is deemed desirable.

Immunocontraception would obviously insure that females do not reproduce. The protein porcine zona pellucida (PZP) stimulates females to produce antibodies that attack the female’s own sperm-attachment proteins thus preventing conception. Immunocontraception of white-tailed deer has been carried out in New York, Maryland, New Jersey, Massachusetts, Connecticut, Ohio, and Virginia and has proven to be as much as 95% effective. White-tailed deer in some of the 17 communities on Fire Island, NY, have been immunized for the past five years. Originally, before the first PZP program, the pregnancy rate was 87%. This has gradually been cut to only 9% and the herds have diminished. Amherst, NY, a suburb of Buffalo, has scheduled a program of immunocontraception with PZP to begin this summer.

PZP has also been used successfully on wild horses and over 90 species of zoo animals worldwide. In February of this year a test utilizing a one-dose system was conducted on horses in Nevada. The results of that test will be known after next spring’s foaling season. If the one-dose system proves
effective, identification of individual deer through paint bullets or distinguishing marks will no longer be necessary.

The FDA has no concerns that PZP will enter the food chain or have any harmful effects on humans. It is classified as an experimental drug only because the developers took great pains to assure that it would be unpatentable so that benefits to wildlife derived from its use could not be restricted. They hold the INAD (Investigational New Animal Drug) permits and will allow other qualified persons to use it. Dr. Paul Curtis was part of one group that applied to use it. They were granted permission, but this was rescinded when their plans mandated the death of deer.

There are other methods of immunocontraception being developed. However, the offer to Upper St. Clair to fund up to $20,000 of the costs of a project stipulates that PZP inoculation must be the method used because of its proven effectiveness and lack of physiological or sociological side effects to deer. It is also far safer than bowhunting because it utilizes only a small dart administered with a blow gun or other device. Program administrators have retrieved 100% of the darts. Dr. Priscilla Cohn, who made the offer, foresees that $20,000 would cover two years of immunocontraception in Upper St. Clair as the cost, assuming a two-dose system, is about $50 per deer. Other costs might include travel expenses for the project overseer and the labor of those who would dart, probably graduate students.

Let me assure you that the offer is valid. Dr. Cohn has already funded $30,000 for the original PZP study on deer. The chief obstacle to be overcome in implementing such a project here is the Pennsylvania Game Commission because they allow only hunting and trapping as deer management methods. However, New Jersey’s game management officials once promised that they would never allow it and even went so far as to ask the New York Legislature to withdraw permission for a PZP project. Five years later New Jersey permitted the use of PZP.

The offer is certainly worth exploring. Dr. Cohn’s offer together with her response to Mr. Caswell’s remarks to the committee regarding PZP are included as Appendix O. Please note that Dr. Cohn does not stipulate that all hunting must be restricted during the test but rather, “that no deer be killed in preparation for this study and that no deer be killed during this study in adjacent areas.” In addition to her fervent desire to prevent pain to animals, her concern is that the killing of vaccinated does would invalidate the results of the project.

SECTION VI COMMUNITY OPINION

Public opinion regarding deer herd management has been elicited through a survey sent to township households in the spring of 1997. According to 1990 census statistics, there are 5,575 households in Upper St. Clair which includes 13,495 adults. Obviously, there are more households now. Surveys returned totaled 1,963, or 35% of the households, but only 14.6% of the adult population.

Question 5 was, “Do you favor a controlled management harvest to reduce the size of local deer population to a more environmentally balanced number?” The question indicates considerable bias since it implies that the current herd level is not environmentally balanced; this has not been, nor
can it be, established. However, in response, 1,224 replied “yes.” That figure constitutes 62% of the respondents, 21% of the USC households, or 9% of the adults.

Question 6 was, “Do you favor limited controlled hunting in the Township-owned lands exceeding 12 acres?” The number replying “yes” was 958 which equals 48% of the respondents, 17% of the households, and 7% of the adults.

Question 2 asked if repellents, fencing, netting, or selective plantings had been used. Amazingly, only 132 had tried the simplest method of abatement, repellents. That is a mere 6% of the respondents and only 2% of the households. It seems absurd that people would rather kill an animal than spend a few dollars and a little time to accomplish the same goal more efficiently. It is no wonder that young people today are increasingly resorting to violence to solve their problems. They are learning such behavior from their elders.

On the other hand, I recently spent an afternoon at a home in Deerfields that abutted a wooded area. A deer wandered across the backyard but never sampled the multitude of impatiens that adorned it. The owners had merely sprinkled used cat litter around the perimeter of the flowerbeds. No, it didn’t smell.

Question 3 asked respondents to indicate whether anyone in their family had had an accident involving deer within the Township. The responses were: one accident, 349; two accidents, 60; more than two, 29; and close calls, 1,686. The total is 2,124 although there were only 1,963 surveys returned; apparently some answered several times although only one response was asked for. The best method of determining a percentage, therefore, is to assume the number of driving residents roughly equals the 1990 census figure for number of vehicles owned by residents, 12,877. Taking the total of 438 accidents, 3% of driving residents have experienced a DMVA. Although only a small percentage, this figure should and can be reduced with community education and the installation of reflectors.

Less than 50% of the respondents indicated that they favored hunting on the survey question. I believe it is considerably less than that. In August 1997 I randomly called and reached 33 people unknown to me who were listed under “H” in the 1995 Upper St. Clair phone directory. I identified myself as an Upper St. Clair resident and asked, “Are you aware that the board of commissioners has voted to explore the options of regular hunting, sharpshooting, or bowhunting.” Of course, most indicated whether or not they were in favor of such methods. Eighteen people, 55%, were against hunting the deer here; eight (24%) had no strong opinion or couldn’t make up their minds; and only seven (21%) were for a hunt. Granted, this is a small sampling, but I can assure you that no one was influenced by me; thus it is probably an accurate indication of opinion.
SECTION VII  HUNTING CONTROLS

Should you adopt the ad hoc committee’s recommendation to invite Whitetail Management Associates to kill our wildlife, there are a number of controls it would behoove you to impose to insure residents’ safety and promote honesty of the hunters.

During the McCandless hunt, the park perimeter was not well posted. Small signs, perhaps half a sheet of 8½” X 11” paper, reading “Hunting in progress” were the only method of warning residents of the danger. Even these were not posted at all park entrances. I suggest that signs with black type at least 3” in height be printed on a brilliantly-colored stock (although not red or yellow which could be confused with “no hunting” signs). These should be posted at 50-foot intervals around the perimeter of the parks to be hunted and remain in place throughout the three-month hunting season. Alternatively, they should be hung and removed on each of the approximately 70 hunting days.

Because competent and successful bowhunters have reported that Whitetail Management Associates recruits “anyone who can climb a tree,” township officials should be present when bowhunters are tested for proficiency.

Township officials should require the records of the criminal and game commission background checks allegedly made on each WMA hunter.

As is normal procedure in managed hunts, hunters should surrender their hunting licenses to a township official before entering the hunt area and should, in turn, be issued a numbered permit to be worn for the day.

At least one township official should be on duty at the hunting site at all times when hunting is in progress in order to:

- remain in communication with all hunt group leaders
- check that all arrows brought into the area are marked with an identifiable number peculiar to individual hunters
- indelibly mark each deer killed
- determine the sex of each deer killed
- determine the age of male antlerless deer killed through the presence or absence of horn buds or spikes
- assure that hunters remain where posted
- remove entrails
- dispatch wounded deer in residential areas or roadways
- collect hunting licenses and issue permits
- insure that no artificial light is used to locate game according to §2310 of the Pennsylvania Game and Wildlife Code

Additionally, it is recommended that any meat to be donated to foodbanks receive governmental inspection to avoid potential lawsuits.