PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON

Case No. 07-0508-E-CN

TRANS-ALLEGHENY INTERSTATE LINE COMPANY

Application of Trans-Allegheny Interstate Line Company for a certificate of public convenience and necessity under W. Va. Code § 24-2-11a authorizing the construction and operation of the West Virginia segments of a 500 kV electric transmission line and related facilities in Monongalia, Preston, Tucker, Grant, Hardy, and Hampshire Counties, and for related relief

REBUTTAL TESTIMONY OF KEVIN T. MCLOUGHLIN

January 4, 2008

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kevin T. McLoughlin. My business address is Environmental Consultants, Inc. ("ECI"), 520 Business Park Circle, Stoughton, Wisconsin 53589.

Q. WHAT IS YOUR POSITION AT ECI?

A. I am employed by ECI as a Senior Consultant. ECI is a consulting firm engaged in a broad spectrum of activities in environmentally-related science.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. No. I have not.

Q. PLEASE DESCRIBE YOUR CURRENT RESPONSIBLITIES AND PROFESSIONAL EXPERIENCE.

A. As a Senior Consultant, my practice primarily focuses on electric transmission rights-of-way ("ROW") vegetation management issues and strategy.

Q. PLEASE SUMMARIZE YOUR EDUCATION.

A. I earned a B.S. in Natural Resource Management from the State University of New York ("SUNY") College of Environmental Science and Forestry at Syracuse in 1971. My education also includes an M.S. in Environmental Management from the SUNY College of Environmental Science and Forestry in 1975.

Q. PLEASE SUMMARIZE YOUR PREVIOUS PROFESSIONAL EXPERIENCE.

A. Prior to joining ECI, I served as a System Forester with the New York Power Authority ("NYPA"), where I was responsible for vegetation management along

1,500 miles of 765, 345, 230, and 115 kilovolt ("kV") electric transmission ROW, comprising approximately 20,000 acres. I developed comprehensive ROW vegetation management plans and instituted a geographic information system ("GIS") application for vegetation management. In 2004, the NYPA was awarded the EPA's Pesticide Environmental Stewardship Award for its ROW Vegetation Management Program. In previous roles at the NYPA, I served as an environmental engineer with oversight of the environmental-related aspects of routing, ROW preparation, facility construction, clean-up, restoration and mitigation for various transmission line projects (i.e., 765kV, 345kV and 230kV) under the jurisdiction of the New York Public Service Commission and the Federal Energy Regulatory Commission. For approximately 19 years beginning in 1979, I was the Research Project Manager with the Empire State Electric Energy Research Corporation ("ESEERCO"), where I managed over 20 ROW management research projects while also concurrently under an assignment to the New York Power Pool ("NYPP"). During this time period, I was the Administrator – Land Use and Industrial Waste Management Programs on behalf of the NYPP. In this capacity, I was responsible for regulatory affairs concerning a range of transmission-related environmental issues, including wetlands, endangered species, pesticides, herbicides & wood preservatives, non-point

sources of pollution, and all aspects of integrated ROW vegetation management ("IVM").

Q. PLEASE OUTLINE YOUR SCIENTIFIC RESEARCH EXPERIENCE CONCERNING VEGETATION MANAGEMENT INVOLVING THE USE OF HERBICIDES.

A. During my employment with ESEERCO, we conceived and funded a number of ROW vegetation management research studies that involved the use of herbicides. I was specifically responsible for overseeing the engagement with each of the consulting groups who conducted these studies. Exhibit KTM-1 lists the nine different studies that were prepared under my supervision while employed by ESEERCO.

Q. HAVE YOU PRESENTED OR PUBLISHED THE RESULTS OF YOUR OWN RESEARCH OR OTHER WORK IN THIS AND OTHER AREAS?

A. Yes. I have published or presented four scientific papers on this and related subjects, which are listed on Exhibit KTM-1.

Q. ARE YOU A MEMBER OF ANY PROFESSIONAL ORGANIZATIONS?

A. Yes. I am a member of the International Society of Arboriculture and the Utility Arborist Association. I am also a member of the Society of American Forestersand the American Forestry Association. In 2004, I chaired the

Environmental Concerns in Rights-of-Way Management 8th International Symposium.

Q. HAVE YOU PREVIOUSLY APPEARED AS A WITNESS BEFORE ANY OTHER REGULATORY AGENCIES?

A. Yes. I have testified in various regulatory and legal proceedings on behalf of member systems of the NYPP and/or ESEERCO, as well as for transmission project applications for the NYPA.

Q. WILL YOU BE USING THE SAME TERMS IN YOUR DIRECT TESTIMONY AS SET FORTH IN THE TABLE OF NOMENCLATURE ATTACHED TO THE APPLICATION?

A. Yes. In addition, I may define other specific terms in my rebuttal testimony.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REBUTTAL TESTIMONY.

A. This rebuttal testimony addresses various assertions or concerns throughout the parties' testimonies regarding vegetation management along transmission line ROW, in general, and the TrAIL project, in particular. In my rebuttal testimony, I will also explain why the selective use of herbicides to control and manage vegetation is environmentally compatible and effective. I will also respond specifically to the direct testimonies of Consumer Advocate Division witness Byron R. Harris, Laurel Run Community Watershed Association ("LRCWA") witness Evan Hansen, and intervenor William T. Peterjohn.

Q. PLEASE BRIEFLY DESCRIBE AN IVM PROGRAM.

A. IVM programs are actually a subset of the more widely known and practiced, particularly in agriculture, IPM or integrated pest management. IPM is the sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. IVM takes this basic framework further by defining it as a system of managing plant communities in which managers set objectives, identify compatible and incompatible vegetation, consider action thresholds, and evaluate, select and implement the most appropriate control method or methods to achieve set objectives. The choice of control method or methods is based on their environmental impact and anticipated effectiveness, along with site characteristics, security, economics, current land use and other factors. The key elements in the application of an IVM program for high voltage power line ROW are the twin interconnected objectives of selecting one set of plants (e.g., tall growing trees) to be discouraged, i.e., selectively removed, while concurrently encouraging the growth and development of all the other low growing compatible vegetation (e.g., shrubs, forbs and grasses) that are incapable of reaching heights that would interfere with the overhead conductors. One of the important components of the IVM process is the selective use of herbicides to curtail the growth of undesirable tall growing species while preserving, to the extent practical, the lower growing

vegetation on the ROW to act as a biological deterrent to the future re-establishment of trees. Hence, the attentive implementation of a cost-effective IVM program on high voltage power line ROW meets the objectives of safe and reliable transmission of electric energy in an environmentally compatible manner.

Q. PLEASE DESCRIBE THE KEY COMPONENTS OF AN IVM PROGRAM.

A. After a forested landscape is initially cleared, the natural vegetation type that will ultimately reoccupy the site and dominate the area will be once again tall growing trees. When the cleared area is an electric utility ROW, these resurgent trees can grow too close to the overhead high voltage electric conductors. When this occurs, there is the potential for an electrical discharge from the electric line through the air to the tree and then to the ground. This is known as a "flash-over" or "line to ground fault." The result of a line to ground fault is a line outage, i.e., an instantaneous break in electric service, and a potentially very dangerous situation on the ground in the immediate vicinity of the high voltage discharge. As a matter of public safety and system reliability, therefore, utility ROW vegetation managers have a continuing need to preclude the establishment and subsequent growth of those tree species that are capable of growing into or even close to the electrical lines. Utilities ensure that tall growing species do not interfere with electric lines by committing to a long-term IVM program. The principle components of such a plan are: (1) understanding pest and ecosystem

dynamics; (2) setting management objectives and tolerance levels; (3) compiling treatment options; (4) accounting for economic and ecological effects of treatments; (5) site-specific implementation of treatments; and (6) adaptive management, research and monitoring.

Q. WHY ARE HERBICIDES AN IMPORTANT COMPONENT OF IVM?

A. The appropriate and selective use of herbicides avoids some significant disadvantages that flow from the removal of trees and vegetation by mechanical means. Mechanical methods (e.g., mowing or hand cutting with a chain saw) of tree removal, alone, will physically clear the ROW of tree stems temporarily. These mechanical methods, however, allow trees to physiologically respond by regenerating quickly from the energy reserves contained in their undisturbed root systems. This tree regrowth occurs through such mechanisms as "stump sprouting" and/or in some species "root suckering." This regenerative capacity is characteristic of virtually all hardwood trees, e.g., maple, beech, birch, aspen, oak, ash, cherry, etc., and is particularly pronounced in the juvenile or sapling stage of tree maturation, resulting in the eventual production of many more stems than were originally cut. By drawing upon the food reserves in their undisturbed root systems and through a series of complex compensatory physiological plant responses, the resurgent growth from the remaining portions of the tree (i.e., stump and/or roots) is actually enhanced when a tree stem is severed. The production

within the plant of naturally occurring stimulatory substances, together with the loss of growth inhibitors (caused by the removal of the above ground growth centers), then exert their influence on the remaining vegetative structure to promote excessive new tree growth. These new, more numerous stems, growing much faster than when left uncut (e.g., five to ten feet or more the first year after cutting) makes subsequent tree removal from the ROW more frequent, laborious, hazardous and costly.

Q. WHAT ARE THE ADVANTAGES OF UTILIZING HERBICIDES WHERE APPROPRIATE?

A. The selective application of herbicides to only the tall growing target tree species can, in most instances, eliminate the resurgent tree growth problem because the herbicide when properly deposited on the target species will be translocated throughout the tree (including the root system) and will arrest all future growth and development, i.e., killing the entire target plant and not just temporarily removing the above ground portion. Just as importantly, selectively applying herbicides to the targeted tall-growing species allows the retention of nearly all the desirable low-growing vegetation that will naturally occur on the ROW. The elimination of the tall-growing trees from the ROW will also further encourage the establishment and foster the additional growth and development of all the indigenous low-growing woody shrubs, herbs (e.g., forbs and grasses), ferns, etc.,

by removing the trees that would otherwise begin to directly compete with and eventually "crowd out" the low-growing species over time. With effective and minimally disruptive tree removal, these lower growing desirable plant species will expand their presence into the ROW areas formerly occupied by trees and produce a thick dense plant cover that will discourage the invasion of new tree seedlings and/or the future growth of any remaining tree seedlings. These desirable low-growing plant communities act as the "biological control" in this IPM/IVM scenario by thwarting future tree growth through their collective competition for the available site resources (i.e., sunlight, water, and nutrients) as well as through their sheer physical presence and overwhelming numbers.

Q. IN ADDITION TO THE BENEFITS OF REDUCING THE NEED FOR FUTURE APPLICATIONS OF HERBICIDES OR MECHANICAL METHODS, ARE THERE ANY OTHER INDIRECT BENEFITS OF A SELECTIVE USE OF HERBICIDES?

A. Yes. There may even be some indirect biochemical interactions, called allelopathy, occurring among various plants that result in a chemical competition of sorts between certain lower growing desirable ROW species and some of the undesirable tall growing tree species. Allelopathy has been defined as the influence of one plant on another via the production of natural growth inhibitors. Currently there exists only a limited understanding of this ability of plants to

produce and release phytotoxic substances that can then be translocated to other plants and used to curtail certain critical physiological plant functions such as growth and reproduction. These naturally occurring "herbicides" offer yet another potential beneficial aspect of the biological controls in assisting the ROW vegetation manager to curb the spread of the undesirable tall growing trees.

Q. ARE THERE SPECIFIC BENEFITS TO UTILIZING HERBICIDES FOR SELECTED VEGETATION MANAGEMENT AND CONTROL?

A. Yes. In addition to their immediate benefits to the utility of reducing the undesirable tree population, the low-growing plant communities that are encouraged by the use of herbicides on competing vegetation offer an assemblage of plant species that provide diverse and productive habitat conditions for a wide variety of wildlife, e.g., birds, reptiles, amphibians, insects, and mammals. Managed ROW creates habitats that provide wildlife food and cover values that are remarkably different, and often times surpassing, those of the neighboring forest. Also, this juxtaposition of two different, but complementary plant communities (one perpetually kept in a low-growing condition and the other usually a forest) produces what is known as the "edge effect." This effect enhances wildlife profusion, i.e., abundance and diversity, in the boundary area transition zone (ecotone) between these two distinct habitat types. Some of the new and more numerous wildlife species attracted to these enhanced ROW created

habitats provide yet another beneficial function of further reducing tree establishment and growth through their collective herbivory, e.g., browsing by deer and rabbits on young trees, girdling of tree seedlings by voles, and tree seed predation by mice. The establishment, fostering and preservation of these low growing plant communities on the ROW also serve to reduce, over time, the amount of work required and cost incurred by the utility to maintain the ROW (i.e., reduction in the number of tree stems to treat) each treatment cycle while coincidentally diminishing the amount of herbicide necessary for adequate coverage of the reduced numbers of target species. As a professional vegetation control project manager, it was my experience that the owners of property under and along transmission ROW also saw significant advantages to these reductions in the occurrences and durations of the utility's maintenance activities along those ROW.

Q. IS THE USE OF HERBICIDES FOR VEGETATION MANAGEMENT SAFE FOR LANDOWNERS AND FARM ANIMALS WITHIN OR ADJACENT TO A TRANSMISSION LINE ROW, AND FOR THE GENERAL PUBLIC?

A. Yes. First, the use of all pesticides (including herbicides) by Allegheny Power and/or TrAILCo is subject to regulation under the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA"), which is administered by the U.S. Environmental Protection Agency ("EPA"), and various state statutes. Pursuant to FIFRA

regulations, no herbicide may be marketed, distributed, sold or advertised until the EPA registers it. After many years of product development, advanced toxicology studies and extensive field testing, the pesticide manufacturers submit to the EPA thousands of pages of research data that are compiled into a registration application. From this voluminous registration package, the manufacturer, in cooperation with the EPA, develops a proposed product label that identifies the pest or pests that the product will be effective in controlling and provides complete instructions for the correct use, handling, and disposal of the product as well as other precautionary information required by FIFRA. As stated by the EPA: "[b]y their nature, many pesticides may pose some risk to humans, animals, or the environment because they are designed to kill or otherwise adversely affect living organisms. At the same time, pesticides are often useful because of their ability to control disease-causing organisms, insects, weeds, or other pests. The pesticide label is your guide to using pesticides safely and effectively. It contains pertinent information that you should read and understand before you use a pesticide product." The EPA-approved pesticide label becomes, in effect, the law concerning the application and use of that substance and when it is followed astutely with additional precautionary measures taken as needed on a site-specific basis, risks from the use of herbicides in an IVM program are significantly minimized. Moreover, in an IVM program, the specific choice of treatment

method (including the exact selection of herbicide mix rates) can take into account and accommodate specific land uses on and adjacent to the targeted ROW. Hence, the ROW treatment method selected can be modified to accommodate the concerns of the underlying fee owners and adjacent landowners. The type of application selected can be quite minimally intrusive, e.g., hand cut and stump treatment, whereby the tall growing trees are individually physically cut down by a chain saw operator and, immediately after the severing of the stem occurs, a small deposit of a herbicide is placed by a hand held applicator along just the outside perimeter of the cut stem, i.e., covering the cambium layer, containing the xylem and phloem, the plant's water and nutrient transfer vessels. Such a timely and focused spot application minimizes any chance for exposure to both the general public and others living closer to the ROW. Yet another technique commonly used by utilities to further reduce any risk and/or potential for exposure is to require prior notification of the underlying fee owners or those adjacent to the ROW in advance of scheduled ROW vegetation management work operations. Also, buffer zones between certain sensitive land uses (e.g., organic farms) and environmental features (e.g., streams and other water bodies) can also be employed to further reduce any potential for inadvertent exposure.

Q. IS THE APPLICATION OF HERBICIDES VIA AERIAL SPRAYING CONSIDERED AN IVM TREATMENT TECHNIQUE?

A. Yes, under certain circumstances and in specific ROW areas with the appropriate choice of selective herbicides, the aerial application of herbicides via helicopter is an accepted ROW vegetation management tool for the implementation of an IVM program. One example where aerial spraying can play a positive role in the inauguration of an IVM program on a newly cleared ROW is as a reclamation method. Here, the initial aerial spraying can quickly promote the conversion of the ROW from a crowded tree-filled thicket (i.e., many thousands of stems per acre) to a ROW condition with a much lower density of tree stems (i.e., a few hundreds per acre) and an abundance of grasses. After initially clearing forested areas during ROW preparation, the resurgence of new tree growth (propagating both from the former trees as stump sprouts or in some cases root suckers as well as from the residual soil bank and from airborne seeds of pioneer tree species coming in from the surrounding forest area) can sometimes result in the newly created ROW becoming virtually completely filled with trees, e.g., often more than 10,000 stems per acre. In such ROW situations, the desirable lower-growing species are quickly crowded out by the fast growing trees and only a few grasses are usually able to continue to grow under the thickening canopy cover of tree saplings. A ROW reclamation type program is required in these situations, whereby the entire group of undesirable tree stems need to be treated and/or removed at once in order to give the ROW another chance at naturally developing

lower-growing plant communities. Under these circumstances, aerial or ground broadcast treatments with herbicides targeted for specific species must often be done to control those sections of ROW covered entirely by the target tree species. When selective herbicides are used, i.e., those that do not overtly harm grasses, sedges, and other monocots such as orchids, the targeted trees are effectively controlled and the remaining grasses are able to flourish and other species of plants are able to propagate (seed) into the now more open ROW.

Q ARE THERE OTHER CIRCUMSTANCES IN WHICH AERIAL APPLICATIONS OF HERBICIDES ARE AN EFFECTIVE TECHNIQUE IN IVM?

A. Yes. For example, another type of ROW situation that is appropriate for aerial spraying is where sections of ROW are so remote and in such rough terrain that ground access is very limited. In these nearly inaccessible ROW locations aerial spraying may also serve the purpose of reducing the target tree numbers so that the area becomes more amenable to selective treatment applications with hand held equipment, such as cutting with follow-up stump treatment.

Q. DOES ALLEGHENY POWER'S CURRENT VEGETATION MANAGEMENT PRACTICE FOR ELECTRIC TRANSMISSION LINES REPRESENT A VALID APPROACH TO IVM?

A. Yes. After reviewing its standards and practices for vegetation management and meeting with relevant Forestry personnel, Allegheny Power, in my opinion, conducts its overall electric transmission ROW vegetation management activities under an effective IVM approach. It is my understanding that TrAILCo will adopt and carry out all current or future Allegheny Power practices and standards for vegetation management along the TrAIL ROW.

Q. WOULD YOU SUMMARIZE THE GENERAL CONCERNS OR ASSERTIONS THAT WERE EXPRESSED DURING THE PUBLIC INPUT HEARINGS OR APPEAR IN THE VARIOUS PARTIES' DIRECT TESTIMONIES REGARDING THE USE OF HERBICIDES FOR VEGETATION CONTROL AND MANAGEMENT ALONG THE PREFERRED TRAIL ROW?

A. Yes. The concerns or assertions raised include, among other things, the perceived toxicity of herbicides, where and by what means TrAILCo might apply herbicides along the preferred TrAIL route, whether herbicides will be applied around water sources, residences, streams inhabited by trout, or on pasture or croplands, and how often herbicides would be applied.

Q. EARLIER IN YOUR TESTIMONY, YOU DESCRIBED THE REGULATION AND TESTING OF HERBICIDES AND ALSO EXPLAINED WHY THE APPROPRIATE USE OF HERBICIDES IS SAFE FOR LANDOWNERS, FARM ANIMALS AND THE GENERAL PUBLIC. WOULD YOU BRIEFLY

EXPAND ON THAT ANSWER AND ADDRESS CONCERNS REGARDING THE PERCEIVED TOXICITY OF THESE SUBSTANCES?

A. As I described above, all herbicides that are available to the public and to licensed commercial and industrial applicators such as Allegheny Power and TrAILCo have been rigorously researched and tested prior to being made available for public and commercial use. The manufacturers' labels, which also provide the required framework for safely applying the herbicides, are derived from the rigorous research and testing upon which regulatory approvals are based. One of the EPA's fundamental testing standards and conditions for approval of an herbicide is that a labeled use must be demonstrated in laboratory testing to result in exposures too small to have any measurable effect on test animals. These standards are also substantially conservative. In approving a labeled usage, regulators typically require a one hundred- to several hundred-fold safety margin. For example, if the least measurable effect in the most sensitive test subject species is "x," then regulators will typically register the herbicide as having acceptable exposure amounts of 100 to perhaps 1,000 times less than the least measurable test amount. Careful application procedures, as practiced by Allegheny Power and TrAILCo and which include the significant dilution of selected herbicides before their applications, consistent with manufacturers' labels

and instructions, will further minimize the potential for members of the public and farm animals to be exposed to these approved herbicides.

Q. CAN DIFFERENT TYPES OF HERBICIDES BE MIXED FOR A SINGLE APPLICATION AND, IF SO, DOES THIS RESULT IN A MIXTURE WITH INCREASED TOXICITY?

A. As I testified above, among the advantages of herbicides is the ability to target specific unwanted species with substances designed for those species, and where two or more unwanted types of vegetation are present on a ROW segment, it is economical and less intrusive to combine the necessary substances. Again, any combinations would be done only where allowed and according to the instructions of the manufacturers' label. It is my understanding that manufacturer research and testing of various combinations of the limited group of herbicides currently utilized by Allegheny Power show no decrease in the margins of safety from toxic exposure that are already built in to the underlying approvals and registered usages and application requirements for each of these herbicides.

Q. PLEASE EXPLAIN HOW ALLEGHENY POWER/TRAILCO'S GUIDELINES AND PRACTICES FOR APPLYING HERBICIDES WILL ENSURE THAT THESE SUBSTANCES ARE USED SAFELY.

A. Allegheny Power's guidelines and practices for applying herbicides are extensive. These guidelines not only strictly limit where herbicides are to be utilized, but also

under what weather and other conditions herbicides will be applied. In addition to the buffer zones around ponds, lakes, and flowing water discussed above, buffer zones are also provided for all known sources for domestic or commercial water wells. Buffer zones are required for residences, barns, gardens and farm crops, and a variety of ornamental and cultivated trees. Herbicides are not applied to pasture land or land under cultivation. Moreover, TrAILCo will also work with landowners or other affected third-parties to ensure that additional specific buffer zones are established where the owners of property under the ROW have specific concerns. TrAILCo will also attempt to accommodate specific requests that herbicides not be utilized over a property.

Q. PLEASE DESCRIBE THE SPECIFIC GUIDELINES FOR AERIAL APPLICATIONS.

A. The aerial application of herbicides is performed under a strict and comprehensive set of specifications, terms, and conditions which must be followed by the applying contractor. First, aerial applications may not take place along ROW segments that traverse through more heavily developed areas. Next, the specifications I just referenced include, among other things, minimum helicopter crew sizes, a pre-spray flight with Allegheny Power personnel over each line scheduled for aerial spraying, a defined set of approved helicopter types that may be used, and the use of only an approved set of spraying equipment.

Q. WHAT STEPS ARE TAKEN TO ENSURE THAT HERBICIDES APPLIED AERIALLY DO NOT AFFECT PEOPLE, ANIMALS, OR PLANTS OUTSIDE OF THE TARGETED ROW?

A. Allegheny Power's guidelines for when, where, and how herbicides are to be applied ensure that herbicides reach the ground only where they are directed. Herbicides are not applied when wind conditions exceed five miles per hour. ROW corridors are not sprayed under any conditions at locations where ground clearances are 150 feet or more below the conductors (typically where the linewould cross over a ravine or gully). Helicopters are required to maintain a steady ground speed during operations – approximately twenty five miles per hour – so as to allow the released herbicides to fall to the ground without being unduly dispersed by the downdraft of helicopter blades. In addition to these application specifications, substances such as drift control agents are often mixed with the herbicide to further ensure that the herbicides fall directly on the targeted ROW segments in droplet sizes that are designed to maximize effectiveness and control.

Q. DOES THE APPLICATION OF HERBICIDES POSE A RISK TO GROUNDWATER SOURCES ALONG THE PREFERRED TRAIL ROW?

A. No. First, the application of herbicides in the diluted forms required and in accordance with the strict conditions (regarding location and application methods) followed by Allegheny Power, will protect groundwater sources. Moreover, since

ROW terrain in West Virginia is typically quite dense in groundcover, very nearly all of any application of herbicides will fall on the targeted vegetation rather than falling through to any bare ground. Allegheny Power's application guideline also limit the use of herbicides in bare ground areas to those within its substations and power stations and only selected areas along a transmission ROW where there is no risk of the inadvertent movement of the herbicide away from the targeted terrain. Finally, the types of soil present in most of the Allegheny Power service areas in which the West Virginia Segments will be sited are not highly permeable, which would limit the passage through the soil of any diluted herbicides that might actually reach the ground.

Q. IN GENERAL TERMS, HOW OFTEN ARE HERBICIDES APPLIED TO A TARGETED SEGMENT OF TRANSMISSION ROW?

A. It is important to note that herbicides are not applied to any one ROW segment on a regularly-occurring basis. Following the initial preparation of the ROW for a new electric transmission line, which will be performed by mechanical means, the time between any initial and subsequent applications of herbicides, whether aerially or by hand, will be measured in years and will increase in time as the re-growth of tall trees is discouraged or substantially reduced by the encouragement of the lower growing woody shrubs and other herbaceous vegetation I described above. Again, this is one of the most significant advantages of the appropriate and

selected use of herbicides: it can actually result in the decreased need for herbicide applications and other methods of vegetation management over the long term by encouraging the growth of more desirable vegetation to naturally control unwanted trees. This minimal number of applications, e.g., a treatment cycle of once every four to five years or longer over a several year period, serves to further minimize the intrusion and any risk to landowners, farm animals, wildlife, and the general public.

Q. WILL THE HERBICIDES UTILIZED FOR ROW VEGETATION MANAGEMENT ACCUMULATE OR BUILD UP IN THE SOILS ALONG THE ROW AFTER REPEATED APPLICATIONS?

A. No, they will not. When some pesticides are used repeatedly, they could build-up or begin to accumulate in the environment if their rate of degradation is less than the usage rate. With regard to TrAIL, however, the chances that the herbicides that may be selectively applied along appropriate segments of the TrAIL ROW for vegetation management scenarios could accumulate or build up in the soils are so low as to be practically nonexistent. This is due to a number of factors that are somewhat unique to the application of herbicides in a ROW setting. The most import factor that limits the potential for build up is the rather long period between treatment cycles, as I just described above. Over this extended period of time, the herbicides to be used on the ROW have an ample period to be degraded by a host

of natural processes. Another important factor is that the herbicide usage under IVM is most commonly done in a selective manner so that the entire ROW is not being completely treated in a uniform manner. Only the targeted tall growing plants are sprayed and, hence, the application rate per acre is minimized and only a subsection of the ROW receives an herbicide deposit during any given treatment cycle. Still another important factor that further mitigates the chances of any build-up of herbicides (or other intermediate degradation products of concern) are the label restrictions and other prescribed conditions for their use. Since the rate of degradation is herbicide-specific and also is subject to a host of unique environmental conditions that will influence the way chemicals break down, each individual herbicide label may stipulate certain rates and other conditions that will further limit any opportunity for this particular herbicide product to accumulate under all situations. Finally, one other set of circumstances, insofar as the typical ROW applications of herbicides within an IVM program are concerned, that will further limit even the remote potential for herbicide accumulation is that over time (treatment cycles), the herbicide formulation selected to be used will often change (a different product will be chosen) and the amount to be applied to the ROW will also decrease substantially as both the number of undesirable tree stems requiring treatment are reduced and the mix of species to be treated becomes more limited.

Q. YOU JUST INDICATED THAT A PROPERTY OWNER ALONG THE ROW CAN ASK FOR SPECIFIC BUFFER ZONES BEYOND THOSE PROVIDED FOR IN THE GUIDELINES. ARE THERE OTHER AVENUES AVAILABLE TO A PROPERTY OWNER WHO HAS CONCERNS ABOUT VEGETATION CONTROL PRACTICES?

A. Yes. Allegheny Power currently permits, and TrAILCo will likewise permit, transmission ROW property owners to carry out vegetation control on their property according to the terms and conditions of a Landowner Maintenance Agreement ("LMA"). Under the LMA, the landowner conducts ROW vegetation management according to an agreed set of specifications for which TrAILCo reimburses the landowner based upon the cost TrAILCo would have incurred if TrAILCo had performed the same work using herbicides.

Q. TURNING YOUR ATTENTION TO THE DIRECT TESTIMONIES SUBMITTED BY THE LRCWA, PLEASE RESPOND TO THE CONCERNS EXPRESSED ABOUT THE EFFECT OF HERBICIDES ON LAUREL RUN AND OTHER TROUT STREAMS.

A. LRCWA witness Evan Hansen contends that TrAILCo has not demonstrated that the herbicides that may be used along the TrAIL ROW will not be injurious to animals, humans, or vegetation beyond the ROW. Mr. Hansen's contention appears to be based on the table in his exhibit that purports to summarize the

relative toxicities of the herbicides currently utilized by Allegheny Power. Mr. Hansen also contends that the terms and conditions for Allegheny Power's contract herbicide applicators provide an incentive for the "over-application" of herbicides by penalizing those contractors for herbicide applications that do not achieve targeted vegetation control levels.

Q. DO YOU AGREE WITH MR. HANSEN'S CONTENTIONS?

A. No, I do not. The Allegheny Power herbicide application guidelines and practices that I summarize above provide TrAILCo's framework for the selected application of herbicides that are appropriate to and designed for the vegetation targeted for control and are applied according to or exceeding the precautions required by manufacturers' labels. In my opinion, this framework constitutes a clear demonstration by Allegheny Power, and TrAILCo, that TrAIL's herbicide application practices mitigate the risk of any injury to animals, humans, or vegetation beyond the TrAIL ROW. Mr. Hansen's summary conclusions fail to recognize that herbicides to be used along a ROW, together with the specific application technique to be employed, will be evaluated as to the proximity of their use near streams and other bodies of water. Fundamental to these evaluations are the buffer zone distances reflected in Allegheny Power's application standards. Additional precautionary measures beyond the application protocols reflected in the manufacturer's label such as wider buffer zones depending on site-specific

ROW factors as soil types, slope steepness, and vegetation density. So the first line of defense against any potential water contamination is the selection of herbicide(s) to be used; one that has less aquatic impacts and is less prone to off-site movement, then the technique used to apply the herbicide will be highly selective, i.e., stem specific, and will minimize any chance of drift or off target movement. Finally, the appropriate buffer zones distances can be determined to further limit any chance of inadvertent herbicide entry into water resources. Hence, there should be no impact to the fisheries resource or aquatic habitats from herbicide contamination if no discernable herbicide is able to get into the trout stream as a result of the TrAILCo's selective herbicide applications. Regarding Mr. Hansen's contention that application contractors are incentivized to over-spray, he has ignored the other important terms and conditions of Allegheny Power's arrangements with herbicide application contractors that carry specific penalties for applying herbicides, inadvertently or otherwise, within buffer zones or other prohibited areas.

Q. NEXT, WOULD YOU ADDRESS THE CONCERNS OF INTERVENOR WILLIAM PETERJOHN THAT CLEARING THE TRAIL ROW AND SUBSEQUENTLY APPLYING HERBICIDES FOR VEGETATION MANAGEMENT WILL RESULT IN EXCESSIVE AMOUNTS OF STREAM NITRATE CONCENTRATIONS?

A. The results of the studies referenced by Mr. Peterjohn, specifically the excessive release of nitrates, are highly unlikely to be replicated here when the TrAIL ROW is prepared for construction, followed by subsequent vegetation management. I believe this is the case for two reasons. First, one must realize that these referenced watershed studies performed at both the Hubbard Brook and the Fernow Experimental Forests occurred on very small watersheds of no more than 40 to 60 acres that were initially completely denuded, and then the resulting regenerating vegetation was once again entirely removed by follow-up broadcast herbicide applications. As a result, the water quality results indicating excessive amounts of nitrates were derived from experimental catchment basins (small watersheds) whose ***entire*** surface areas were totally altered. That is, virtually no vegetation was left growing over the entire testing landscape. Since the intended ROW clearing for TrAIL is at a maximum 200 feet wide and the ROW will transect the 12.6 square mile Laurel Run Watershed for 2.4 linear miles, TrAIL's ROW clearing will be limited to approximately 58.2 acres of the entire 8,000-plus acres of the Laurel Run watershed, or less than 1.0% of the entire watershed area. It is quite doubtful that the high nitrate levels reflected in the studies cited by Mr. Peterjohn would have occurred if the same proportion of the test forested areas, only a fraction of an acre (less than ½ acre), had been cleared on these experimental watersheds. Second, the entire TrAIL ROW will not be completely

cleared and then kept vegetation free. Some ROW areas will have residual vegetation left intact after clearing most of the tall growing trees. Soon thereafter, as I noted above, the resurgent vegetation will arise on the formerly cleared ROW and only those species consisting of the tall growing trees capable of achieving heights that could interfere with the safe and reliable transmission of electric energy will need to be removed, and then, not until approximately 4 to 6 years after initial TrAIL construction. The net result of initial clearing and follow-up selective herbicide applications will be a thick and lush ROW plant cover composed of both woody shrubs and a diversity of herbaceous vegetation (forbs, grasses, sedges, ferns, etc.) that will disallow the concentrations of nitrates in the soil and their subsequent release into runoff water, as contended by Mr. Peterjohn.

Q. DOES THE IMPOSITION OF STANDARDS AND CONDITIONS FOR ROW PREPARATION ACTIVITIES AND SUBSEQUENT VEGETATION MANAGEMENT FROM THE PREVIOUS WEST VIRGINIA TRANSMISSION SITING CASES CITED BY CONSUMER ADVOCATE DIVISION WITNESS BYRON HARRIS MAKE SENSE TODAY?

A. While some of them do, I believe that, in some instances, those standards and conditions are now showing their age and are unnecessarily restrictive. In reviewing the 1979 order in Mr. Harris's exhibit, it appears that the Commission's required conditions for herbicide applications were a response to some specific

circumstances in that case that are not present in the TrAIL application. For example, the Commission concluded that the record in that proceeding included evidence of the company's "abuse" of the privilege for aerial applications of herbicides. No party to this proceeding is making a similar allegation regarding Allegheny Power's practices for aerial herbicide applications. In addition, the utility in the 1979 proceeding was criticized for failing to follow selective herbicide application techniques such as basal bark, stump treatments, or manual control methods. By contrast, these selective application techniques will be included in TrAILCo's IVM program for TrAIL. Finally, the herbicides in use in that time period were vastly different than those products that have undergone the far more rigorous testing and regulatory controls of today, as summarized above. The Commission's discussion in the 1979 order of the regulatory actions that were pending at that time regarding 2, 4, 5-T compounds, for example, is indicative of the sea change that has occurred since that time regarding the types of herbicides that are now approved and available for commercial and public uses. Put simply, today's products do not require the buffer zones that were necessary for the far more toxic substances that were in use in the 1979 time frame but, under today's regulatory framework, are no longer in use.

Q. WHAT ARE ADEQUATE BUFFER ZONES?

A. As I have described above, buffer zone distances should be based upon the chemical treatment, i.e., both the specific herbicide mixture to be applied as well as the treatment technique used to make the application. High volume foliar applications often require a 50 foot buffer zone or more around streams, whereas the more highly selective stump application can be as little as 20 feet or less. The exact distances are then often predicated upon the herbicide formulation chosen. For instance, in New York the use of Arsenal (imazapyr) and Accord (glyphosate) in a stump treatment requires a buffer zone of only 5 feet from streams, whereas a high volume foliar application with Tordon K (picloram) and Garlon (trichlopyr) will require a minimum of a 50 foot buffer zone and sometimes more depending upon the thickness of the vegetation in the buffer zone. Buffer zones for aerial spraying are normally even larger than for similar ground applications. Also in New York State, seasonally dry wetlands can be treated selectively with the herbicides Arsenal and Accord by either stump application or low volume foliar. No high volume foliar or other herbicides are allowed in these state protected wetlands. In New York, buffer zones around residential structures are at least 100 feet for all chemical treatments.

The buffer zones contained in Allegheny Power's standards and intended for TrAIL are more than adequate to protect landowners and the general public, in my view. Moreover, the flexibility to adapt buffer zones that may be even more

extensive based on site-specific concerns along the TrAIL ROW further ensures that TrAILCo's application of herbicides will be safe.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

Trans-Allegheny Interstate Line Company
Case No. 07-0508-E-CN
Rebuttal Testimony of Kevin T. McLoughlin
Exhibit KTM-1

Supervised Studies

1. ESEERCO Research Report EP85-38, *Vegetation Dynamics Along Utility Rights-of-Way: Factors Affecting the Ability of Shrub and Herbaceous Communities to Resist Invasion by Trees*, prepared by the Institute of Ecosystem Studies, Millbrook, New York, December 1993.

2. ESEERCO Research Report EP84-8, *Herbicide Residue and Mobility Study: Existing* and *Simulation Model Review, Volume I & 2*, prepared by Arthur D. Little, Inc., December 1987

3. ESEERCO Research Report EP83-15 *Long-Term Right-of-Way Effectiveness*, prepared by Environmental Consultants, Inc., Southampton, Pennsylvania, October 1985

4. ESEERCO Research Report 84-17 *Right-of-Way Treatment Cycles*, prepared by Environmental Consultants, Inc., Southampton, Pennsylvania, 1985

5. ESEERCO Research Report EP80-5 *Cost Comparison of Right-of-Way Treatment Methods*, prepared by Environmental Consultants, Inc., Fort Washington, Pennsylvania, 1984

6. ESEERCO Research Project EP85-5 *Right-of-Way Chemical Treatments Phase I - Site Preparation*, prepared by Tree Preservation Co., Inc. Briarcliff Manor, New York, October 1986

7. ESEERCO Research Project EP91-6 *Vascular Species Richness and Rarity in Wetlands on Electric Power Rights-of-Way in New York State*, prepared by SUNY College of Environmental Science and Forestry at Syracuse, New York, 1997

8. ESEERCO Research Report EP89-44 *Determination of the Effectiveness of Herbicide Buffer Zones in Protecting Water Quality on New York State Powerline Rights-Of-Way*, prepared by Environmental Consultants, Inc., Southampton, Pennsylvania, August 1991

9. ESEERCO Research Report EP90-14 *Development of Natural Growth Inhibitors for Overhead Transmission Rights-of-Way*, prepared by Brooklyn Botanic Garden, Brooklyn, New York, July 1991

Trans-Allegheny Interstate Line Company
Case No. 07-0508-E-CN
Rebuttal Testimony of Kevin T. McLoughlin
Exhibit KTM-1

Scientific Publications

McLoughlin, K.T. 1997. Application of integrated pest management to electric utility rights-of-way vegetation management in New York State. p. 118-126 *In* J. R. William, J. W. Goodrich-Mahoney, J. R. Wisniewski, and J. Wisniewski (eds.) Proceedings of the 6th International Symposium on Environmental Concerns in Rights-of-Way Management, February 24-26, 1997, New Orleans, Louisiana. Elsevier Science Ltd., New York.

McLoughlin, K.T. 2002. Integrated Vegetation Management: The exploration of a concept to application. p. 29-45 *In* J. W. Goodrich-Mahoney, D.F. Mutrie, C.A. Guild (eds.) Proceedings of the 7th International Symposium on Environmental Concerns in Rights-of-Way Management, September 9-13, 2000, Calgary, Alberta, Canada, Elsevier Science Ltd., New York.

McLoughlin, K.T. 2002. Endangered and Threatened Species and ROW Vegetation Management. p. 319-326 *In* J. W. Goodrich-Mahoney, D.F. Mutrie, C.A. Guild (eds.) Proceedings of the 7th International Symposium on Environmental Concerns in Rights-of-Way Management, September 9-13, 2000, Calgary, Alberta, Canada, Elsevier Science Ltd., New York.

Ballard, B. D. , K. T. McLoughlin, and C.A. Nowak 2007. New Diagrams and Applications for the Wire Zone-Border Zone Approach to Vegetation Management on Electric Transmission Line Rights-of-Way. Arboriculture & Urban Forestry 2007 33(6):435-439