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## **USGA GREEN SECTION TURF ADVISORY SERVICE REPORT**

**FROSTY VALLEY COUNTRY CLUB**  
Danville, Pennsylvania

June 18, 2008

**PRESENT:** Sean Duffy, Green Committee Chairman (briefly)  
Larry McClure, Green Committee Member  
Tom Prough, Director of Operations  
Tom Height, Golf Course Superintendent  
Darin Bevard, USGA Green Section



## INTRODUCTION

The following report is offered to summarize the major points of discussion during our full-day visit to Frosty Valley Country Club on Wednesday, June 18, 2008. This report will include observations, suggestions and recommendations made during our tour of your facility.



This image illustrates the need for tree removal. The trees are hiding the golf course as well as the wonderful views that are available around the golf course. Evergreen trees need to be removed throughout the golf course to provide better playability and appearance for the golf course.

Nine years have passed since we last visited Frosty Valley Country Club. Since our last visit, significant improvements have been made on the golf course. Moss populations on greens have been eradicated. Additionally, tree management programs have been implemented in an effort to improve the appearance and playability of the golf course. Frosty Valley has too many trees, especially evergreens. More aggressive tree removal will improve the golf course in the long term. We will have more details on potential tree management programs later in this report.

On putting greens, turfgrass populations were healthy. The combination of creeping bentgrass and *Poa annua* is performing well. Options for increasing creeping bentgrass populations over time in your putting greens as well as your fairways were discussed. Overall, you have a good balance of turfgrasses in all of your fine turf areas that have adapted over time. You can take advantage of natural gains that occur in creeping bentgrass during the summer season to promote higher bentgrass populations.

Frosty Valley is at a point where overall agronomic conditions are fairly stable. Thus, other aspects of the golf course need to be evaluated to provide potential improvement. Tree management programs mentioned above could clearly make a good golf course better. Additionally, upgrading infrastructure such as your irrigation system and potentially your golf course maintenance facility are considerations. A golf course architect could offer suggestions regarding bunker renovation and additions while also helping to develop tree management programs. Our goal is to offer programs and information that will help with decisions that need to be made if golf course improvements are to be continued. With those thoughts in mind, we offer the following suggestions and recommendations for your consideration.

### TREE MANAGEMENT

Usually, our reports start with discussions of agronomic topics and issues. While those topics will certainly be covered later in this report, the potential to improve the golf course and the golf experience at Frosty Valley through selective tree removal is immense. When we first walked out on the Practice green to begin the visit, the most striking aspect of the golf course was the over-planting of trees. The views of the surrounding areas of the golf course including the mountains are nearly completely blocked by the trees that have been planted over time. Your golf course is located in a beautiful setting that cannot be seen because of trees. Additionally, the golf course itself is hidden by walls of trees throughout the property. It is not for us to decide whether trees should be removed or will be removed. The one thing we do possess is a wealth of experience in dealing with other golf courses similar to yours as well as those considered to be some of the best in the world. Regardless of the golf course, a good tree management program that includes tree removal, pruning and, yes, tree planting provides the best possible conditions for the golfers. Some may disagree, but we believe in the long term that the golf course will be better in terms of playability and turfgrass quality with far fewer trees. The trees should accent the golf course. Currently, in many areas at Frosty Valley, it seems the golf course is simply there to accent the trees. Significant tree removal is needed. Several different aspects of your tree management program will be discussed.

1. **Overall Philosophy.** You have a beautiful piece of property and an attractive golf course. It would be nice to be able to see it from various vantage points throughout the

property. Additionally, you have a unique, scenic setting that surrounds your golf course, but is invisible because of the trees. Your trees are actually having more impact on fairway mowing patterns in fairways, rough maintenance and playability than many seem to realize. This reduces shot values by limiting the variety of shots that can be played to recover from errant shots. Too many trees throughout your property will prevent any of your trees developing into specimens. Tree management programs should focus on agronomic issues first and playability and aesthetic issues second. While some may like separation between golf holes as provided by tree lines, your property simply is not large enough to allow this to be practical. Trees should be an asset to your golf course, not a detriment.

2. **Agronomic Issues.** Fortunately, your trees are not providing significant agronomic problems as it relates to the greens. The one exception is the Thirteenth green where significant clearing and tree removal has been performed. However, there are several green complexes and tee complexes that have small 6-8 foot trees planted around them that will eventually create agronomic problems. The area of your Eighteenth tee immediately comes to mind. When the several small evergreens that have been placed in this area mature, sunlight penetration and air movement for the Eighteenth tee will be greatly restricted. The small trees should be removed now while they are still small. There is simply no reason for them in their current location. In fact, there are many small evergreen trees planted throughout the property that should not be allowed to mature. Remove them now before they can create airflow and sunlight penetration problems for your greens, fairways and tees.



Are all of these trees truly necessary? The evergreen amongst the hardwoods should be removed to improve the appearance of the golf course in this area and to encourage development of the hardwoods that are present.

3. **Competing Trees.** It is difficult to know where to start on this topic. There are so many instances of spruce and white pine trees competing with more desirable hardwood



trees throughout the golf course, that it is amazing. The evergreen trees should be removed in favor of the hardwoods. Fortunately, in many cases, the hardwoods are just now reaching a point where they are being impacted by the evergreen trees. If the evergreen trees are removed in the near future, the hardwoods will continue to develop. There are many instances where evergreen trees surround hardwood trees that should be the focal point of your tree plantings. To the right of the Second fairway there are two under story crimson king maples planted in the tree line. They should be removed. They will never mature to be an attractive tree and you already have a natural tree line in place. Plantings of this type throughout the golf course should be eliminated in favor of the larger trees.

When too many trees are planted in a given area, the result will be unattractive and unhealthy trees. While there are many examples of this throughout the property, one instance that immediately comes to mind is just down the hill from your Sixteenth green. There is a large hybrid poplar that is coming to the end of its life span, growing into the side of a smaller, specimen oak. This poplar tree has no impact on the playability of any golf hole. Aesthetically, it is unappealing. It should be removed (carefully) so that the oak is highlighted and can continue developing into a specimen tree.

4. **Playability.** The playability of the golf course is being negatively affected by over planting of trees. On virtually every golf hole, the play of the hole is to hit the golf ball down the middle of the hole and hope that it doesn't go into the trees. If the ball goes into the trees, the player has one option generally; chip out sideways. Isn't that exciting? With fewer trees and properly placed trees, shot values are improved. When a ball goes into the trees, the player may have several different options. Do you chip out? Do you try to advance the ball up the fairway? Can you hit a recovery shot to the green?

Allowing players to use their skills to hit certain shots should be an important part of playing the golf course. Some believe tree removal makes the golf course easier. We frequently hear this argument time after time and it simply is not true. If you clear cut the golf course, it will be easier. However, proper selective tree removal actually causes handicaps to increase. Why? Because in many instances, with fewer trees, golfers try to play the shot that they *can* hit instead of the shot they *should* hit. Instead of using a single stroke to chip the ball back out into the fairway, more aggressive lines of play are chosen which often results in multiple strokes being used to escape a problem situation. With any tree removal, there will be individual shots that become easier. However, as a whole, the golf course does not become easier.

In addition to trees that impede the line of play, there are many situations where trees create a double-hazard situation for your bunkers. Worst yet, there are trees that block balls from entering bunkers. Remember, the bunkers were put there to protect the golf hole. The trees came later. While there may be the need to modernize the placement of

some of your bunkers, and to add additional fairway bunkers to increase interest, the trees should not pose a double-hazard situation or prevent the intended hazard from doing its job.

5. **Aesthetics.** The other negative impact of the over planting of trees on your golf course is aesthetics. As we have mentioned above, you have some wonderful views of surrounding areas that are quite scenic, not to mention the elevation changes that are present on your golf course. The bottom line is that you will find removal of evergreen trees, to open-up views of the golf course and to highlight hardwood trees, will provide a nicer appearance. There is a beautiful golf course and a beautiful piece of property hidden behind all of those trees. Again, the golf course should be the focal point when you are standing on your Practice green, not the trees. For comparison, look at the picture located in the foyer of your clubhouse. This picture shows a golf course with far fewer trees and much better views of the property and surrounding area. This picture is not a bad template.

6. **Specific Examples.** The volume of tree work that is needed at Frosty Valley prevents us from listing every individual example where we recommended tree removal. However, there are some specific examples that help to point out the type of work that is needed. Perhaps some time in the future a tree visit could be conducted to specifically recommend tree removal. At the current time, Frosty Valley is not ready for that type of visit. There are simply too many trees to get specific.



The view does not get any better than this. Unfortunately, if the tree plantings on this golf hole are allowed to mature, this view will be lost. Every white pine and spruce on the right side of the hole should be removed.

**A. Fifth Hole.** Currently, the planting of spruce trees to the right of the Fifth hole have not grown tall enough to block all of the views of the mountain off in the distance. They are growing. In our opinion, virtually every spruce and white pine tree to the right of the Fifth hole should be considered for removal. There may be some exceptions. However, there are enough hardwoods in this area to provide separation and penalty for errant shots without blocking views of the golf course and beyond.



The arrows point to three nearly perfect maples that are being hidden and encroached upon by two white pines. Remove the white pines.

**B. Sixth Green.** To the left of the Sixth green, there are three virtually perfect maple trees. They are still at a point where the white pines and spruces that have been planted in between them are not altering their shape. This will not last much longer. The evergreens should be removed to highlight these maples. They are beautiful trees and should be the focal point in this area. This is one example where competing evergreen trees can potentially ruin specimen hardwoods.



C. *Tenth Hole*. All of the white pine trees lining the left side of the Tenth hole should be removed to expose the natural mountainside. They are simply not needed. Healthy rough in this area can do the same to provide as much penalty as these white pine trees. Again, it will offer more shot variety rather than simply chipping out from behind a tree because of an unplayable lie. We recommend removing all of these trees.

On the right side of the Tenth hole, six (if we remember correctly) maple trees have been planted between the new bunker and the right side of the green. At least two of these trees will interfere over time with a shot played from your new bunker to the green. This is certainly a good area to have some trees. Perhaps half of these trees can be spaded and moved elsewhere. The number there is simply too many for this area. There are several areas of the golf course which have multiple, small hardwood trees planted in a small area. These trees will not mature properly. These trees should be removed with a tree spade and placed in other areas.

The burning bush that surrounds the Tenth tee should be removed. It makes the area look unkempt and detracts from the view of the golf course, which should be the focal point of the hole.

D. *Between Eleventh and Fifteenth Holes*. There is a large grove of trees, primarily composed of maples and spruces, between the Eleventh and Fifteenth holes. The maples all appear to be very nice trees. However, they will not be nice trees for much longer if the spruces are allowed to encroach upon their development. Again, the evergreen trees should be removed in favor of the hardwood trees in our opinion. The evergreens simply provide a wall of green with no filtered views of the golf course.

E. *Seventeenth Hole*. The spruce on the right side of the Seventeenth hole that prevents balls from entering the first bunker should be removed. Let the hazard do its job by removing the tree or, consider eliminating the bunker. Additionally, at the end of the cart path running from the Seventeenth tee to the Seventeenth fairway, a white pine should be removed to allow better traffic flow and to expose the maples that have been planted behind it. In fact the second white pine should also be eliminated. Again, hardwood trees are being hidden and will eventually be ruined by interference from evergreen trees. You simply have too many trees in a given area in this case.

F. *Eighteenth Hole*. Spruces along the left hand side of the golf hole that are either unneeded or encroaching upon hardwoods trees need to be removed. Additionally, the white pines and spruces planted inside the cart path between the

tee and the fairway should be removed as well. These trees likely only penalize the high handicapper. In fact, many of the tree plantings penalize the golfer that least needs to be penalized. Removing these trees will open-up a view of the Eighteenth hole all the way to the green.

Additionally, the small Christmas trees that have been planted behind the Eighteenth tee should be removed. When they mature, they will cause an agronomic problem.



The pines and spruce inside the cart path to the right of the fairway should be removed. Removal of these trees will provide a much better look for the golf hole, and players will be able to see most of the green complex from the tee.

These are just a number of examples of what you should try to accomplish with your tree programs. Obviously, there are some that will disagree with these recommendations and perhaps the club will decide that this is not a direction they want to go. We believe this would be a mistake. You have a gem of a piece of property that will only be enhanced by allowing more views of it. The first step in accomplishing this goal will be tree removal.

7. **Tree Planting.** The other part of your tree management program that needs to be studied closely is tree planting. Focus on planting high quality hardwoods. Additionally, do not be afraid to incorporate unique trees such as hickories or chestnuts into the landscape. You already have several of these beautiful trees throughout the property. High quality maples, beech trees and different varieties of oaks, focusing upon saw tooth and white oaks, will all add character to the golf course over time. Keep in mind trees that develop very quickly are generally low quality trees and are a short term investment. We recommend you invest for the long term. Avoid hybrid poplars and Bradford pears or similar trees. As we toured the golf course, many of the hybrid poplars are already declining. Many of the Bradford pears that have been planted are approaching the point where their growth habit will cause them to break apart. Unfortunately, with Bradford pears, when they achieve a size that will allow them to have an impact on the golf course, their structure generally breaks down. They simply are not a high quality tree. In fact, several Bradford pears had already failed structurally around the golf course. More will have a similar fate.

The other issue that needs to be looked at is “memorial tree plantings.” Mr. Height indicated forty memorial gardens are scattered about the golf course. While these are certainly a worthwhile endeavor, they provide increased maintenance in areas that basically take resources away from management of your playing surfaces. While this is a sensitive issue, over time, your memorial gardens should continue to be reduced in number.

A better option for memorial tree plantings is to establish a list of trees you wish to establish and the location at which you wish to establish them. When someone wishes to plant a tree in memory of a loved one, they make a donation to allow the next tree on the list for the golf course to be planted. A plaque can be placed near the tree (not on it) for the memorial. In this way, the memory of the person is served and so is the golf course. This allows desirable trees to be planted in the proper locations over time.

### LONG RANGE PLANNING

A Long Range Plan needs to be developed at Frosty Valley Country Club. Infrastructure items such as your maintenance facility and aging irrigation system will need to be addressed. The Long Range Plan helps to prioritize these issues to allow improvements to the golf course to proceed in an organized fashion over time.

As part of your Long Range Plan, we believe you should employ the services of a golf course architect to help develop a Master Plan for the golf course. Bear in mind that the goal is not to change the character of the golf course at Frosty Valley. The goal is to enhance that character. An architect can help with relocation and design of bunker complexes to suit the modern game. Additionally, as you remove trees that are

encroaching upon the fairway corridors on the golf course, creative bunkering can be added to add strategy to the golf course. Too many of the bunkers at Frosty Valley are simply located to catch errant golf balls. They add very little strategy to the game. For example, the "fairway bunker" down the right side of the Thirteenth hole is really only a ball trap. It really does not make the player think about how they wish to play their second shot on the Thirteenth hole. Such a bunker should be brought closer to the fairway. There are many opportunities to improve existing fairway bunkers and to add a few new ones to add strategy as well as aesthetic appeal to the golf course. An architect should be used to develop a plan for the golf course. Again, the golf course does not need major changes. Rather, enhancements to the existing golf course to improve overall strategy, appearance and playability are needed.

## GREENS

1. **Fertility.** The greens appear to be a bit on the lean side in terms of nitrogen fertility. Bird droppings were providing a significant growth response on the greens. This is an indicator that slightly increasing nitrogen fertilizer inputs will enhance the color and density of the greens. Spoonfeeding applications of nitrogen (and other nutrients) through your sprayer will probably provide the best results. Applying approximately 1/8 of a lb. of actual N /1,000 sq. ft. every 7-10 days should provide good results. Additionally, research clearly shows anthracnose disease is encouraged by lower nitrogen fertility. Conversely, when 1/10 of a lb. of actual N /1,000 sq. ft. was applied on a 7-day interval with an ammonium sulfate source, anthracnose infection was reduced by up to 72 percent before a fungicide was even applied. Mr. Height indicated that your spoonfeeding programs would be initiated soon after our visit. The greens will be better for it.
2. **Growth Regulation.** Growth regulator applications to the greens were also discussed. As we toured the golf course, we were actually impressed with creeping bentgrass populations in the greens. Over the course of the summer, creeping bentgrass populations will naturally increase. Creeping bentgrass simply tolerates the environmental conditions of the summer better than *Poa annua*. Depending upon the condition of the greens in the late summer, you may consider taking advantage of growth regulator applications to maintain the increases in creeping bentgrass populations that occur naturally over the summer, and build upon them. The use of growth regulators, Cutless or Trimmit, will help in this capacity. Applications of 8-12 oz. of actual product /acre can be applied on a 14-21 day interval. Tankmixing with a soluble nitrogen fertilizer will enhance uptake and help to limit any discoloration that may occur. However, discoloration in the fall with Trimmit or Cutless is usually low.

As far as timing, once summer stress is reduced in mid to late August, applications of these growth regulators can be initiated. They can continue on the interval listed above

until the first hard frost occurs. As long as you continue to mow your greens on a regular basis, these applications should be continued.

3. **Localized Dry Spots (LDS).** LDS problems are common on greens. Coatings of organic acids that increase in thickness during repeated wetting and drying cycles promote water repellency in soils. When this occurs, it can be difficult to rewet the soil profile. If you truly have a water repellent soil, the use of wetting agents is probably the best option to manage this condition. However, there are other issues to consider.

First, check the coverage of your irrigation heads. Be sure that short range and long range nozzles are performing properly and that the heads are rotating properly. While this may sound very basic, we repeatedly see instances where LDS is a product of poor irrigation coverage or program problems rather than water repellency.

In order to manage LDS, hand watering is a must. The use of small solid tines on your aerator to provide channels for water infiltration into the putting green profile is also beneficial. Various wetting agents are available to address LDS problems or at least alleviate their symptoms. Older products such as SurfSide can still be effective. Additionally, products such as Primer, Cascade, Tricure, etc. can be used. Different superintendents prefer different wetting agents. Consider experimenting with different wetting agents, according to label directions, to see the results provided. No single wetting agent is perfect for all situations.

One other topic discussed regarding your LDS problems is the benefit (or lack thereof) of deep, infrequent irrigation. Keep in mind that deep is a relative term. If your roots only extend 2-3 inches into the soil profile during the summer months, applying irrigation that wets the soil profile to 6 inches is not going to provide a great benefit. In fact, you are wasting water. As the top 2-3 inches of soil dry down, it will be necessary to re-apply. Obviously, as the summer progresses, more water needs to be applied to maintain turfgrass health. Excessive irrigation is as bad as drought stress.

4. **Aeration Programs.** The switch to straight sand topdressing as part of your aeration programs is excellent. Mr. Height indicated that 1/2 inch coring tines are used during the spring and fall. One recommendation you may consider is to utilize 1/2 inch coring tines on quadratine spacing. This tighter aeration spacing allows significantly more organic matter to be removed and replaced with new sand topdressing. Healing time is no different than when standard 2 inch by 2 inch core aeration is utilized. However, surface area impacted more than triples. Perhaps the use of 1/2 inch coring tines on closer spacing is something that can be done to further enhance your efforts to incorporate additional sand into the upper portion of the soil profile.



**5. Internal Drainage.** During our visit, the potential installation of internal drainage for your greens was discussed. In our travels, the installation of drainage by both Existing Greens Drainage (XGD) and Golf Preservations has provided tremendous improvement in the quality of greens. This internal drainage installation enhances the benefits of regularly used programs such as drill-and-fill and deep tine aeration by providing somewhere for water to go once it reaches the bottom of the green cavity. This is especially important during the heat of the summer when thunderstorms or other rain events can wreak havoc on turfgrass health on putting greens. We recommend that you at least experiment with installation of this drainage on a couple of greens to see the results provided.

During our visit, Mr. Height indicated there are several greens he believes will immediately benefit from drainage installation. Two of the greens are reconstructed greens while the others are original greens for the golf course. In our opinion, installing the drainage in one of the reconstructed greens as well as one of the original greens on the golf course will allow the drainage benefits to be evaluated effectively. Many courses that we work with have installed this type of internal drainage with great benefit. We believe the greens at Frosty Valley will benefit as well.

## FAIRWAYS

**1. Ninth Fairway Grow-in.** The Ninth fairway is actually progressing well. While some washouts have occurred, they can be fixed once the surrounding soil is stabilized by the turfgrass. There are two main needs for the Ninth fairway. More frequent mowing and fairly aggressive fertility.

We recommended that the fairway be mowed with a rotary mower set to its lowest effective height of cut. Mowing the grass lower and more frequently will encourage better density. A rock picking party will also greatly benefit this fairway and save some wear and tear on your fairway mowers (as well as some golf clubs once the hole is opened) when your reel mowers are used on this fairway.

Nitrogen fertilizers can be applied from a variety of sources to supply approximately 3/4 to 1 lb. of actual N /1,000 sq. ft. on a monthly basis. Slow-release synthetic and organic sources can be used. When weather conditions allow, readily-available nitrogen sources should also be used to promote top growth. In the short term, soil nutrient status will probably be a concern judging by the "topsoil" that is in place.

With regular mowing and good fertilization, we are confident the Ninth fairway will be very playable by late summer or early fall.

2. **Grass Populations.** Overall, you have a good balance of grasses in the fairways. Judging by the texture and density of the turfgrass, these grasses have adapted over time on your fairways. Significant populations of *Poa annua* are present. They are intermingled with creeping bentgrass and even some perennial ryegrass. These grasses should provide good playing conditions throughout the growing season. There may be some challenges with *Poa annua* populations during July and August. However, no major renovation of fairway grasses is necessary unless you want to provide more uniform playing conditions and appearance. With that being said, growth regulator programs in your fairways could be geared towards promoting the creeping bentgrass populations that are already present. While your fairways are in good condition, creeping bentgrass is a more reliable turf in terms of resisting environmental stresses than *Poa annua*. Thus, programs that can be used to promote creeping bentgrass with minimal impacts on playability should be a consideration.

3. **Growth Regulators.** As we mentioned with the greens, a fall growth regulator program utilizing Cutless or Trimmit should be considered for your fairways to promote creeping bentgrass. This type of program may be used on a season-long basis once you see the results provided in the fall and potentially next spring. We do not recommend changing growth regulators during the growing season prior to the onset of environmental stress and summer heat. Rather, continue with current programs and allow the natural shift in turfgrass populations to occur over the summer months. Creeping bentgrass populations will increase at the expense of *Poa annua* without a more aggressive growth regulator program. During the late summer and fall, Cutless or Trimmit can be incorporated into your growth regulator programs.

For fairways, we generally see higher rates of these growth regulators applied on a slightly longer interval. Generally, 12-16 oz. of actual product is applied per acre on a 21-day interval. Again, wait until weather conditions break and are favorable for cool-season turfgrass growth in mid to late August. Cutless has generally provided less discoloration than Trimmit over time. Both of these growth regulators provide an excellent growth response for creeping bentgrass over *Poa annua*. These growth regulator programs are one tool that you can use to promote creeping bentgrass in your fairways without hindering playability. While you will never gain a pure stand of creeping bentgrass without a complete renovation, you can improve your fairways dramatically.

4. **Second Approach.** The current design of your irrigation system dictates that the approach/fairway on the Second hole must be shifted to the left towards the wooded area. From a playability and design perspective, this fairway should be significantly shifted to the right as you play the golf hole. Unfortunately, your irrigation system does not allow for turfgrass to be maintained at fairway height in this area. The single-row of heads is located in the middle of the current approach. Thus, for Mr. Height to apply adequate

water on the uphill side of the Second approach, the downhill side becomes saturated and excessively wet. If changes are made to your irrigation system to provide upgrades or replacements, fairway contours and shapes need to be reevaluated. In many instances, the design of your irrigation system in conjunction with over planting of trees has dramatically changed fairways contours over time.

### GENERAL RECOMMENDATIONS

1. **Irrigation System.** The situation with the Second approach provides a nice segway into this topic. While your irrigation system is only fifteen years old, it was designed with cost efficiency rather than water use efficiency in mind. Additionally, the 1993 time frame of renovation was just on the cusp of the change from standard single-row irrigation to double-row irrigation. Now, double-row irrigation is a minimal design approach for golf courses. Triple and quadruple-row systems to water fairways and rough separately are now routinely installed. The irrigation system at Frosty Valley is outdated considering the expectations for golf course maintenance today. In addition to fairway irrigation, two sets of irrigation heads around putting greens are now standard. This allows the greens and rough to be irrigated separately. The putting greens require far less water than your green surrounds to be healthy. Compromising the health of the greens to maintain the green surrounds does not make agronomic sense. Thus, there will be times when the quality of your putting green surrounds deteriorates because water is withheld to benefit the greens.

The bottom line is that your golf course will be better maintained and will provide better playability with a more efficient irrigation system. The irrigation technology that is now available provides options to water the entire golf course from tree line-to-tree line. In terms of overall coverage, there will not be much more that can be done in the future. Upgrading your system in the next several years will serve the golf course well into the future.

2. **Bunker Renovation.** The reconstruction and relocation of the fairway bunker on the right side of the Tenth hole provides a glimpse of what could be accomplished with a bunker renovation program. The addition of fairway bunkers at Frosty Valley could provide greater interest for the golf course provided they are properly placed with strategy in mind.

3. **Stream Banks.** Mr. McClure indicated there is a desire to engage in stream bank restoration throughout the golf course. This ties in well with your efforts to become certified by the Audubon Cooperative Sanctuary Program. The biggest challenge with stream bank restoration can be the overall cost. In many localities, grants are available to aid in stream bank restoration. Generally, you need to determine the regulatory authority that has jurisdiction over the water bodies that ultimately accept flow from your streams.

In your case, this would be the Susquehanna River Basin Commission. This may be a good place to start to determine whether your property is eligible for grants from the state or other agencies. If resources are available and grants can be obtained, reestablishing a more natural appearance for your stream banks will be a big plus for the golf course.

For the record, the USGA is a supporter of the Audubon Cooperative Sanctuary Program. While it takes significant amounts of time and planning for initial certification, the fact is, ACSP is an excellent public relations tool that can allow the surrounding community to learn more about the programs that are implemented at golf courses to benefit the environment and local wildlife. It can also be a great education experience for the actual golf course. Oftentimes, rare or unusual species of plants, birds or other animals are discovered during the certification process. Remember, the ACSP is not designed to monitor activities on your golf course. Rather, the goal of the program is to provide direction for the golf course to be as environmentally friendly as possible while still maintaining the playing conditions expected by your members.

#### CONCLUSION

Frosty Valley has a great deal of potential. Agronomically, your existing golf course is about as good as it is going to be without major regrassing. However, developing an aggressive, but well thought out tree management program can allow the appearance and playability of the golf course to be enhanced. If such a program is coupled with bunker renovations that will include adding well-placed strategic fairways bunkers to provide challenge to the golf course, we believe the members at Frosty Valley will be amazed with the improvement. The final piece to the puzzle may be an upgrade to the irrigation system in the next several years so that the best possible turfgrass conditions can be maintained throughout the golf course.

On your fairways and greens, the use of growth regulators to enhance creeping bentgrass populations will help to shift turfgrass populations in favor of this grass at the expense of *Poa annua*. The goal is to provide a gradual transition, over time. Turfgrass populations on your fairways and greens are healthy and well adapted for your area. However, they can be enhanced over time.

This concludes our summary of the major points of discussion during our visit and tour of your golf course. If any questions arise concerning this visit, our report or any other area, please feel free to call our office. We are here to help. We look forward to working with you again in the future and seeing how things progress.

Frosty Valley Country Club

June 24, 2008

Sincerely,



Darin S. Bevard  
Agronomist

DSB:m

Tom Height, Golf Course Superintendent

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