

# Sustainability Certification Workbook for Golf Facilities & Amenities



The step-by-step guide for golf facilities owners and managers interested in getting their entire golf facility Certified by Audubon Lifestyles and earning the Seal of Sustainability from the International Sustainability Council.





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*A journey of 1000 miles starts with a single step, so the saying goes. That is the same philosophy that our Sustainability Programs are based on.*

*Over the past couple of decades many programs have been created that all have a focus on getting people to “save the earth” where they live, work and play. While that is certainly a laudable goal, the fact of the matter is that most of these programs are so complicated and so expensive that the vast majority of people do not participate in them.*

*What we are focusing on are the ten most important actions that people can take at home or at their places of business that will truly make a difference. We believe that this approach is more easily understood and that the proposed actions are keys to improving the quality of the environment in cost effective and meaningful ways.*

*It has been said that in many cases it is the first few actions taken that make the biggest difference and the last few are the most expensive and least beneficial. Becoming Certified by Audubon Lifestyles, and earning the Seal of Sustainability from the International Sustainability Council as demonstrated by taking the ten actions outlined in this program workbook might just be a single step, but when one thousand individuals take those same measures we truly create a meaningful journey toward improving the quality of the environment, and gain the monetary rewards associated with being more sustainable at the same time.*

*We are trying to save the earth, one person, one place at a time please join us in this journey!!*

*R. Eric Dodson*



*Executive Director*



## **The Sustainable Golf Facility Program**

The Sustainable Golf Facility Program is a voluntary program that sets the bar for sustainably sited, designed, constructed and managed golf facilities. Not every facility will choose the path toward sustainability, but those that do will become leaders in the industry that stand the test of time.

The basic objective of The Sustainable Golf Facility Program is to reduce the consumption of non-renewable resources, minimize waste, create healthy, productive environments, and inform the public, residents, guests, clients and employees about the benefits of sustainably managed golf facilities.

Through participation in the program, ISC-Audubon is able to assist golf facility managers, staff, and planners who desire to manage and operate their golf facilities sustainably. The program is geared toward assisting those seeking to become local, regional, national and international models of sustainability by incorporating sustainable principles, concepts, and management strategies.

Everyone has responsibilities for the future of our planet. This includes responsibilities at home, work, and in society in general. It is incumbent on each of us to take positive actions toward the common goal for being socially, environmentally and economically responsible where we live, work and recreate.

A Sustainable Golf Facility is managed by using practices that preserve limited and costly natural resources, reduce waste generation, and help prevent air, water, and soil pollution. The goal is to minimize environmental impacts and maximize value received from dollars expended.

As defined by the ISC-Audubon Sustainable Golf Advisory Council, A Sustainable Golf Facility is an economically sound business that provides safe, healthy and enjoyable environments for all employees, members, visitors, and guests. A sustainable golf facility is sited, designed, and constructed in ways that enhance the local community, and reduce or eliminate its impact on natural resources. It is managed in ways that provide balance between optimum playing conditions for golfers, and good stewardship of the natural environment. Management strategies are based upon scientifically sound site specific best practices that improve the quality of all life on the site, regionally, and beyond. Through outreach and education a sustainable golf facility is a champion and advocate of sustainability.

Striving for and ultimately achieving the Seal of Sustainability from the International Sustainability Council (ISC), and becoming Certified by Audubon Lifestyles means that the golf facility is setting the new standard for excellence. Certification coupled with the Seal of Sustainability indicates that the facility has adopted and put into place recognized Best Management Practices that equal environmental superiority, social responsibility, and economically vitality.

Golf Facilities that complete the requirements of the Sustainable Golf Facility Program become global examples of excellence not only regarding the facility itself, but in regard to the actual golfing experience.





## PLATINUM MEMBER

### Take the first Step!

Only Platinum Members can participate in the Sustainable Landscapes Programs.

As a non-profit, public interest organization, we rely exclusively on private donations, philanthropic grants, and membership dues. Your membership is put to work immediately to advance the tenets of sustainability and environmental protection, and we are deeply grateful for your support.

In addition, Platinum Membership provides a number of online resources to assist with sustainable living, and was created to help foster sustainability by working with, and providing educational resources to individuals, businesses, organizations, universities, government entities, municipalities, communities, neighborhoods, and virtually anyone seeking assistance in balancing the triple bottom line of people, profit, and planet.

Our ability to reach our organization's mission and vision depends on your participation.

#### **Platinum Membership Benefits**

- Listed on the Audubon Network for Sustainability as a Platinum Member with business logo, reciprocated link, contact information, map and address information, and business description.
- Ability to use the Platinum Member Logo on all marketing, sales and promotional, and educational materials
- New Members Packet include: ISC-Audubon Platinum Member vehicle and front door stickers and decals, computer mouse pad, co-written thank you letter from ISC-Audubon and Platinum Member Certificate for framing and display.
- Coauthored Press Release Announcing Platinum Membership distributed worldwide
- Multiple Subscriptions to SustainAbility Newsletter
- Platinum Membership is the first step in gaining Chartered ISC Member Designation and earning additional recognition by the International Sustainability Council.
- The knowledge that you are contributing to helping ISC-Audubon to continue in our mission, and receive the recognition that you are doing just a little bit more!

Please join with us today and make a positive contribution toward being socially, environmentally and economically responsible where you live, work and recreate.

Learn more about the benefits of membership by visiting:  
[www.isc-audubon.org/join.html](http://www.isc-audubon.org/join.html)

## TEN Requirements for Sustainable Golf Facilities & Amenities

1. Provide Green Techniques in Hardscaped Areas
2. Mix and Load Responsibly
3. Store and Handle Pesticides & Fertilizers Responsibly
4. Be Environmentally Responsible at the Fuel Island
5. Manage the Equipment Wash Areas Correctly
6. Provide Clean, Organized and Safe Working Conditions
7. Provide Education and Social Opportunities
8. Be Environmentally Responsible in Amenity Buildings and Areas
9. Providing Environmental Stewardship on the Golf Course
10. Use Technology and Innovation

Golf Course Superintendents are responsible for the irrigation, mowing, fertilization, pesticide application and general upkeep of the golf course grounds. The maintenance area is where pesticides are loaded into application equipment, mowers and other pieces of equipment are serviced, and pesticides, fuel, fertilizer, and cleaning solvents are stored. This is where pollution of soil, surface water, or ground water is most likely to occur.

Contamination can occur when pesticides are spilled, containers or equipment cleaned and the rinsewater dumped on the ground or discharged into surface water, or improperly cleaned containers are stockpiled or buried. Proper management of the maintenance area is an important part of responsible chemical and pesticide use. Poor handling and disposal practices at these sites can lead to serious environmental problems, expose the ownership to extensive legal liability for contamination and cleanup, including penalties and fines, and can create a poor public image for the golf course.

Management practices should be implemented at these maintenance areas that will prevent the contamination of soil, surface water, and ground water by the materials stored and handled at these sites, and then continued forward with the same level of responsibility applied for the management of the golf course landscapes.

### What Are the Benefits?

When landscapes require excessive amounts of water, energy, labor, and other resources, environmental and economic costs outweigh many of the natural benefits of landscapes. In contrast, a Sustainable Landscape feature healthier, longer-lived plants that rely less on chemical pesticides and fertilizers, minimize water use, and reduce waste generation and disposal. They also require less maintenance and alleviate groundwater and air pollution problems.

### Use Sustainable Practices and earn Recognition

Sustainable landscaping practices incorporate beautiful plants, shrubs, and trees and reduce maintenance costs while at the same time protect the environment. Using sustainable landscape maintenance practices also makes good business sense. Using the Sustainable Golf Course Landscapes Program as a guide will reduce resource depletion, reduce waste, and pollution problems while also improving the health of the landscape in an aesthetically pleasing and cost-effective manner.



# Frequently Asked Questions about the Sustainable Golf Facility Program and the Sustainability Certification Workbook for Golf Facilities & Amenities.

## How is this program different from other golf certification programs?

Most existing certification programs focus primarily on water and wildlife, but do not capture the social and economic values associated with managing a truly sustainable golf facility. The Sustainable Golf Facility Program fills the gap between environmental certification programs and what it means to be truly sustainable for the entire golf facility.

Additionally, the Sustainable Golf Facility Program should be seen as a complement to environmental certification programs, and can even be seen as a logical next step for golf facilities that have already been certified by credible third-party



organizations. Through the program, facilities that are already certified by credible third-party organizations receive extra-credit towards completing the requirements of the Sustainable Golf Facilities Program and can be applied during the sustainability rating process. That said, being certified by other organizations or participating in another environmental certification program is not a requirement to participate in the Sustainable Golf Facility Program or for ultimately becoming Certified by Audubon Lifestyles, and earning the Seal of Sustainability from the International Sustainability Council.

## Is Audubon Lifestyles affiliated with any other Audubon Society?

Audubon Lifestyles is an independent non-profit organization unaffiliated with any other Audubon society. Operating with the main purpose of benefiting society, we deliver and promote sustainable programming, services and certifications that are cost effective and reduce risk. Our goals are to link together individuals, businesses, universities, communities and other non-profit organizations to create a unified team approach to foster and promote the concepts associated with sustainability. Audubon Lifestyles was founded upon the International Sustainability Council's Principles for Sustainability, and believes that the most natural way to achieve success, and to foster sustainability is by working to balance the triple bottom line of people, profit, and planet.

## Is an on-site visit required to verify the Audit?

Although we highly encourage an on-site verification visit from an ISC-Audubon representative or third party verifier, such as a Planit Green Partner, it is not a requirement. One of the challenges that face businesses everywhere (especially in our current economic environment) is lack of financial support. In many cases it may be impossible for a facility to cover the costs associated with an on-site visit, and therefore it is not required at this time—however this may change in the future in order to maintain certification.

## We don't have a feature outlined in the workbook. Do we still qualify for certification?

Yes. We recognize that each golf facility is unique and that not all facilities will have all 10 Criteria Sections outlined in the workbook. If the facility seeking Certification does not have a certain feature at their location then simply make a note of that for our reviewers, and move to the next section.

## **Is ISC-Audubon part of the Golf Course industry and why should that make a difference?**

In short, the answer is “No. We are not a part of the golf course industry”.

ISC-Audubon is an independent not-for-profit organization that was created to advocate sustainable living and lifestyles. We implement our mission through various programs that we have created and offer them to anyone that is interested in becoming more economically, environmentally and socially sustainable. Our programs have been created under the review of The International Sustainability Council (ISC) as set forth under the Principles of Sustainability.

We have subjected our programs to scrutiny by an additional not-for-profit organizations who are viewed as world leaders in sustainability.

We believe that this is important for a number of reasons. First is the issue of transparency and the fact that we don't work in a vacuum or act in ways that are self serving. Secondly, when we grant certification, that recognition is not coming from within the industry being certified. We think that this is extremely important to the credibility of any Certification Program. What value does a certification have from an entity that is part of the same industry being certified? We believe that this is sort of like having the “fox guard the chicken coop.” The public and governmental regulators are looking for brands that they can trust and we believe having certification from an entity that was created to facilitate sustainability and that is not directly connected with the golf industry (for example) is much better for the golf industry and for the sustainability movement in general.

## **In each of the Ten Criteria Sections there are sub sections. Are those the requirements? If not what are those?**

The text listed on each page of the Criteria Sections is intended to be educational in nature, and not viewed specially as the requirements for certification. It is not a requirement that a golf facility do each and every suggested management practice outlined in the text in this workbook. Under each one of the Ten Criteria Sections are methods, and management practices upon which a landscape may meet that criteria, and should be viewed as opportunities upon which to meet certification.

For example, on Criteria Section #9 titled “Provide Amenities for Humans and Wildlife”; one of the suggested items outlined in that section is to “Provide for Birds”, and under which describes ways upon which one might be able to provide for birds. Specifically, “Providing for Birds” is not the requirement that must be met in order to meet certification requirement for that section, but “Providing for Humans and Wildlife” is.

In other words, if you installed bat houses, or created a butterfly garden, or provided habitat specific to reptiles and amphibians (other kinds of non-bird wildlife), then that would meet the requirements of that section even though those forms of wildlife are not specifically listed in the text of that section.

## **What specifically is required for Certification?**

In order to earn Certification and the Seal of Sustainability, ISC-Audubon must feel confident that certain items have been achieved and that the overall objectives for each section have been met. At the bottom of each section is a list of required verification items under the heading “What is Required for Certification”. Each of the items listed under each section should be submitted to ISC-Audubon for review.

Additionally, the following items are required for certification:

- The Golf Facility applying for certification is only available to Platinum Members.
- A completed Natural Resource and Golf Facility Survey must be included with the submittals for certification
- Completed the Golf Facility Checklist
- All Verification Requirements in this Workbook must be met and submitted to ISC-Audubon
- A map of the site with all of the requested features depicted must be submitted for review. A map can be hand drawn, or digitized, or a combination of both.

## **Is there recertification process?**

Golf Facilities must resubmit the Golf Facility Checklist, and the Natural Resources and Golf Facility Survey every three years.

# Provide Green Techniques in Hardscape Areas

*Offers: Water Conservation, Water Quality, Financial Savings, Aesthetic Value*

## **Parking Area Considerations**

'Greening' the surface parking lot involves planting trees, providing good quality soil and generous landscaped areas, enhancing pedestrian and cycling infrastructure, managing stormwater on-site, reducing the urban heat island effect, and using sustainable materials and technologies.

- Locate surface parking behind or beside buildings, away from primary street frontages and street corners.
- Parking spaces should not be located between the front facade line of buildings and a street edge.
- Divide larger parking areas both visually and functionally into smaller parking courts.
- Organize parking spaces and rows to provide consolidated soft landscaped areas and opportunity for on-site storm water management.
- Position parking rows perpendicular to the main building entrance to assist safe pedestrian movement toward the building.
- Limit the length of parking rows to a maximum of 200 feet (20-23 contiguous spaces typical). Longer rows should include landscaped breaks, such as islands, with shade trees.
- To reduce potential vehicle and pedestrian conflicts related to vehicles moving in and out of parking spaces, where possible, avoid locating parking along major drive aisles, street access driveways or in front of building entrances and service areas. Use landscaped islands and medians for separation. Note: Exceptions might include parking lots on small/narrow sites or disabled parking and short-term loading spaces where proximity to building entrances is important.
- Locate and provide accessible parking spaces in accordance with applicable disabled parking laws where appropriate.

## **Stormwater Management Considerations in Hardscape Areas**

- Manage rainwater and snowmelt on-site with designs that encourage infiltration, evapotranspiration and water re-use.
- Minimize the extent of impermeable surfaces within the parking lot.
- Apply a "treatment train" approach
- Use permeable paving for parking spaces, drive aisles, overflow parking, snow storage areas and other hard surfaces in the parking lot
- Plant trees, shrubs and other absorbent landscaping throughout the parking lot to provide shade and places for water uptake
- Create bio-retention areas, such as swales, vegetated islands and overflow ponds
- Include catch basin restrictors and oil/grit separators as appropriate
- Incorporate opportunities to harvest
- Rainwater (active or passive) from rooftops and other hard surfaces for landscape irrigation
- Where installed, bio-retention areas should be appropriately designed and located to filter, store and/or convey the expected storm water flows from surrounding paved areas
- Include a perforated subdrain, check dams and overflow catch basins as required to manage excess water
- Ensure overland flow routes and storm water inlets and outlets are clear of debris and snow piling.

## **Roadways**

Roadways associated with a golf courses should be constructed without curb and gutter design when possible, and vegetated swales should be used to direct water flow away from the roads. curb and gutter design should be avoided around the clubhouse or other buildings. The pervious paving of parking lots can substantially decrease stormwater runoff from a site. This not only reduces nonpoint source pollution but also may save money by reducing the size and complexity of stormwater treatment facilities.

While some development codes require curb-and-gutter systems, it is strongly suggested that a variance or waiver be sought on the grounds of improved stormwater management and pollutant load reduction.

## Lighting

- Lighting should create an identity for the parking lot, enhance adjacent streets and pedestrian environments and be appropriate to the location, context and scale of the areas being lit.
- Select different luminaries with a coordinated appearance to light pedestrian pathways, parking spaces, drive aisles, building and site entrances and other relevant parking lot features.
- Balance the need for safety and security with the reduction of energy consumption and light pollution:
  - ensure all parking spaces and circulation routes are well-lit
  - install lighting that is appropriately scaled to its purpose, i.e. avoid “over lighting”
  - direct light downward and avoid light overspill on adjacent properties, streets and open spaces
  - use energy-efficient fixtures and bulbs
  - incorporate opportunities for off-grid power generation, e.g. solar, wind, etc.
- Provide pedestrian-scaled lighting, such as bollards or lower-scale pole fixtures along pedestrian routes.
- Consider lighting elements for their aesthetic and design value, not simply their lighting function or ease of maintenance.
- Coordinate the location of lighting with pedestrian clearways, tree planting and other landscaping.

## Surfaces

- Install decorative paving or a change in paving material/color to emphasize edges, pedestrian routes and crossings, entrances, loading areas and other special features within the parking lot.
- Where possible, install surfaces containing recycled or sustainable material.
- Limit the use of dark, impervious surfaces within the parking lot:
  - use light-colored materials, such as concrete, white asphalt or light-colored pavers, in the hardscape to reduce surface temperatures and contribution to the urban heat island effect
  - install permeable/porous pavement, such as open-jointed pavers, porous concrete/ asphalt, or turf/ gravel grids, as appropriate to parking lot use and conditions  
Note: Permeable paving should be installed in all overflow parking areas and is encouraged for use in snow storage areas and hardscape surrounding trees. Consider turf grids/grassy pavers for areas of low traffic or infrequent use.
- When installing porous/permeable paving material, follow manufacturer specifications for minimum and maximum slopes.
- Install perforated subdrains below permeable paving, as required, to store, filter or convey water to additional stormwater facilities.
- If permeable pavement or pavers are planned for use along driveways leading to public streets or other heavily traveled routes, the surface material and base course must be selected, designed and certified to withstand the anticipated traffic loading stresses and maintenance impacts.
- Permeable pavements should be subject to an ongoing maintenance program (e.g. sweeping, annual vacuuming). Sand should not be used for winter maintenance, unless otherwise specified by the product manufacturer.

## What's Required for Certification?

*please provide the following*

- Map depicting all Hardscape locations
- Two example photos of green techniques used in the hardscape

# Mix and Load Responsibly

*Offers: Water Conservation, Water Quality, Financial Savings, Durability*

## Locating Mixing and Loading Activities

Use extreme caution when handling concentrated chemicals. Spills could result in an expensive hazardous waste cleanup. It is important to understand how mixing and loading operations can pollute vulnerable ground water and surface water supplies if conducted improperly and at the wrong site. Locate operations well away from ground water wells and areas where runoff may carry spilled pesticides into surface water bodies. If these areas cannot be avoided, protect wells by properly casing and capping them, and use berms to keep spills out of surface waters. Areas around public water supply wells should receive special consideration and may be designated as wellhead protection areas. Before mixing or loading pesticides in such areas, consult with state and local government officials to determine if special restrictions apply.

## Mixing and Loading BMPs

- Locate operations well away from ground water wells and areas where runoff may carry spilled pesticides into surface waterbodies.
- An open building must have a roof with a substantial overhang on all sides
- The sump should be small and easily accessible for cleaning.
- Ensure that workers always use all Personal Protective Equipment (PPE's) required by the pesticide label.
- Any material that collects on the pad must be applied as a pesticide or disposed of as a (potentially hazardous) waste.
- Clean up spills immediately!

## Fertilizer Loading

Load fertilizer into application equipment away from wells or surface waterbodies. A concrete or asphalt pad with rainfall protection is ideal, as it permits the easy recovery of spilled material. If this is not feasible, spread a tarp to collect spillage. Where dedicated facilities are not available, loading at random locations can prevent a buildup of nutrients in one location. It is not recommended to load fertilizers where pesticides and other chemicals are mixed because of the potential for cross-contamination. Fertilizers contaminated with pesticides may cause turf damage or generate hazardous wastes. Many pesticide carriers are hydrocarbon based and they may react with oxidizers in spilled fertilizer materials.

Clean up spilled material immediately. Collected material may be applied as fertilizer. The area can be cleaned by sweeping or vacuuming (or by using a shovel or loader, if a large spill), or by washing down the loading area to a containment basin specially designed to permit recovery and reuse of the washwater. Washwater generated should be collected and applied to turf areas only. Discharging this washwater directly into waterbodies, wetlands, storm drains, or septic systems should never occur.

## Pesticide Containers

Pesticide containers should be cleaned immediately upon emptying. Containers should be properly cleaned by pressure-rinsing or triple-rinsing and the rinse water dumped into the sprayer as part of the make-up water. Non-rigid bags should be shaken clean so that all dust and material falls into the application equipment. The clean containers should be stored in a clean area, out of the rain and weather, until they can be disposed of or recycled. Storing the containers in large plastic bags is one popular option to protect the containers from collecting rainwater. The cleaned containers should be recycled in counties where such a program is available, or they may be taken to a landfill for disposal.

## Pesticide Loading and Mixing

Loading of pesticides and mixing with water or oil diluents should be done over an impermeable surface (such as lined or sealed concrete) so that spills can be collected and managed. Use of a Mix and Load Center is strongly encouraged.

## The Mix and Load Center

The purpose of a Mix and Load Center is to provide a place where the operator can perform all operations where pesticides are likely to be spilled in concentrated form, or where even dilute formulations may be repeatedly spilled in the same area, over an impermeable surface. Such a surface should provide for easy cleaning and recovery of spilled materials.

To minimize the risk of pesticides accumulating in the environment from repetitive spills, most golf course developers construct a permanent mixing and loading facility with an impermeable surface (such as sealed concrete) so that spills can be collected and managed.

In its most basic form, a Mix and Load Center consists of a concrete pad treated with a pesticide-resistant sealant and sloped to a liquid-tight sump where all of the spilled liquids can be recovered. When considering a Mix and Load Center, it is important to assess the level of training and supervision required by the staff using the center, so that it is operated safely and responsibly. Even the best-designed facility cannot prevent environmental contamination if it is not properly managed.

The Mix and Load Center, should be designed to provide a place where spill-prone activities can be performed over an impermeable surface that can be easily cleaned and permits the recovery of spilled materials. Where feasible, the facility should



be close to the pesticide storage building to reduce the potential for accidents and spills when transferring pesticides to the mixing site. Do not build new facilities on potentially contaminated sites, since subsequent efforts to clean up previous contamination may mean relocating the Mix/Load Center.

It is very important that wherever feasible, a Mix and Load Center should be located away from wells or surface waterbodies and above floodplains. The first principle of Mix and Load Center management is that any material that collects on the pad must be applied as a pesticide or disposed of as a (potentially hazardous) waste. Because any water, including rain, that collects on the pad must be used as a pesticide or disposed of as a (potentially hazardous) waste, an open building must have a roof with a substantial overhang (minimum 30° from vertical, 45° recommended) on all sides to protect against windblown rainfall.

The Mix and Load Center sump should be small and easily accessible for cleaning. There must be a way to pump liquid in the sump to a sprayer or to storage tanks. Immediate application in accordance with the label instructions is usually the preferred method of handling both spills and rinsate. If rinsate storage tanks are used, there should be at least one tank for each group of compatible pesticide types. This allows rinsate to be saved and used as makeup water the next time that type of material is applied.

## What's Required for Certification?

*please provide the following*

- Photo of the outside of the Mix and Load Center
- Photo of the inside of the Mix and Load Center
- Location of Mix and Load Center depicted on Map

# Store and Handle Pesticides & Fertilizers Responsibly

*Offers: Water Conservation, Water Quality, Soil Health, Human Health*

The primary goals of storing and handling chemicals properly is to ensure the safety of employees and to reduce impacts on soil, groundwater, surface water, and wildlife. Also, cleanups resulting from accidental spills and contamination are costly.

Store chemicals in a secure building so only authorized employees have access. The floor should be impervious and have a curb, sump, and/or lip to contain any spilled materials. Proper ventilation is extremely important. Provide secondary containment that will hold a larger volume of chemical than the largest container or tank used.

Store chemicals in their original containers with the original labels. Organize chemicals so that labels are clearly visible and separate different kinds of chemicals (herbicides, fungicides, insecticides) to avoid contamination or misapplication. Before chemical application, ensure equipment is properly calibrated and not leaking. Be aware of valves and overflowing tanks.

Always store, mix, handle, and dispose of chemicals according to label directions. All storage, mixing, and chemical clean-up areas should be located away from areas of possible surface, ground, and well-water contamination. Mix and apply chemicals only when weather conditions are appropriate.

Maintain a current material safety data sheet (MSDS) for each chemical on site. Communicate safe chemical application policies with employees. Have an on-site emergency response plan in case of an uncontained spill, and know how to contact the proper authorities.

## Benefits of storing, handling, selecting, and applying chemicals properly:

- Protects surface and ground water quality.
- Protects air quality from chemical drift.
- Prevents soil contamination.
- Saves expensive chemicals through spill prevention, or by containment and reuse when appropriate
- Protects beneficial organisms and wildlife.

Before you select and use chemicals on your golf course, evaluate your current chemical use and determine where and how you might make reductions. Integrated Pest Management (IPM) is a widely accepted management system that you should consider if you are not already using it. IPM integrates genetic, biological, cultural, and chemical controls to keep pest populations (insects, fungal diseases, and weeds) below an established tolerable level; for example, threshold (or tolerable) levels for putting greens are much lower than for fairways and roughs. IPM also considers physical factors affecting chemical mobility, including soil properties, topography, drainage, and the location of surface waters. IPM typically results in a more efficient use of chemicals, benefiting both your budget and the environment.

## **Fertilizer Storage and Handling**

The proper storage of fertilizer is important at a golf facility. Take care when storing fertilizer to prevent the contamination of nearby ground water and surface water. Fertilizer bags are often damaged in handling, sometimes even before they reach the golf course. Any spillage exposed to rain threatens nearby ground water or surface water. In addition, fertilizers are often oxidizers and may pose a serious fire threat to a maintenance area, especially where fuels and other hydrocarbons are present.

## Fertilizer Storage and Handling BMPs

- Always store nitrogen-based fertilizers separately from solvents, fuels, and pesticides, since many fertilizers are oxidants and can accelerate a fire. Ideally, fertilizer should be stored in a concrete building with a metal or other type of flame-resistant roof.
- Always store fertilizer in an area that is protected from rainfall. The storage of dry bulk materials on a concrete or asphalt pad may be acceptable if the pad is adequately protected from rainfall and from water flowing across the pad. Even where not required, secondary containment is a sound practice.
- Sweep up any spilled fertilizer immediately.

## **Pesticide Facility**

The Pesticide Storage Facility is one of the most important buildings on a golf course. Few other functional spaces offer the potential for such expensive liability, either for chemical contamination of the environment or for exposure to golf course workers. Proper thought and care in the design, construction, and operation of this facility can greatly reduce liability exposure, while failure to do so can greatly increase the likelihood of costly governmental or civil liability.

### Pesticide Storage

Design and build pesticide storage structures to keep pesticides secure and isolated from the surrounding environment. Store pesticides in a roofed concrete or metal structure with a lockable door. Locate this building at least 50 feet from other structures (to allow fire department access and space for a water curtain to protect adjacent structures). Keep pesticides in a separate facility, or at least in a locked area separate from areas used to store other materials, especially fertilizers, feed, and seed. Do not store pesticides near burning materials, near hot work (welding, grinding), or in shop areas. Do not allow smoking in pesticide storage areas.

An eyewash station and emergency shower should be provided. Provide a space for a written pesticide inventory and the MSDS (Material Safety Data Sheet) files for the chemicals used in the operation on site. Do not store this information in the pesticide storage room itself, although copies may be kept there for convenience.

When designing the facility, keep in mind that temperature extremes during storage may reduce safety and affect pesticide efficacy. Provide appropriate exhaust ventilation and an emergency wash area. The emergency wash area should be located outside the storage building. Local fire and electrical codes may require explosion-proof lighting and fans. The light/fan switch should be located outside the building so that both are on before people enter and until they have left the building.

BMPs for pesticide storage often address the ideal situation of newly constructed, permanent facilities. However, the it is encouraged to apply these principles and ideas to existing facilities, and to portable or temporary facilities that may be used on leased land where permanent structures are not practical.

### Pesticide Storage BMPs

- Store pesticides in a roofed concrete or metal structure with a lockable door.
- Construct floors of seamless metal or concrete sealed with a chemical-resistant paint.
- Equip the floor with a continuous curb to retain spilled materials.
- Do not store pesticides near burning materials or hot work (welding, grinding), or in shop areas.
- Provide storage for PPE where it is easily accessible in the event of an emergency, but not in the pesticide storage area.
- Provide adequate space and shelving to segregate herbicides, insecticides, and fungicides.
- Use shelving made of plastic or reinforced metal. Keep metal shelving painted.
- Provide appropriate exhaust ventilation and an emergency wash area.
- Always place dry materials above liquids, never liquids above dry materials.
- Never place liquids above eye level.

## **What's Required for Certification?**

*please provide the following*

- List of all Pesticides and Fertilizers used at the Facility
- MSDS and where they are located on Map
- Photo of inside the Pesticide Facility
- Photo of outside the Pesticide Facility

# Be Environmentally Responsible at the Fuel Island

*Offers: Water Quality, Soil Health*

## Fueling Islands

Design and manage fuel-dispensing areas to prevent soil and water contamination. Place fuel pumps on concrete or asphalt surfaces. Fuel pumps with automatic shutoff mechanisms reduce the potential for overflows and spills during fueling. Do not locate the pumps where a spill or leak would cause fuel to flow onto the ground, or into a storm drain or surface waterbody.

In general, underground tanks with volumes over 110 gallons and above-ground tanks with volumes over 550 gallons must be registered with the appropriate governmental agency and located within secondary containment systems.

## Fuel Island Containment

The first line of management is to minimize the possibility of a discharge and the need for disposal. For rainfall, if the containment volume is adequate, the evaporation of accumulated rainfall is often sufficient. Critical levels at which discharge is considered should be established for each facility and the levels marked on the containment wall. This prevents the frequent and unnecessary discharge of small volumes.

Secondary containment structures should always be used for above-ground fuel tanks over 550 gallons. The best practice is for these structures to be roofed to keep out rainfall. Building the containment structure so that it is tall rather than wide will also help with minimizing rainfall accumulation by reducing the amount of surface area of the structure. If the structure is not roofed, then water that accumulates must be managed properly. If the structure has a discharge port, make certain that it is closed and locked except when uncontaminated rain water is to be drained.

While secondary containment may not usually be required for smaller tanks, it is still a good practice. Also, a roof and containment for diesel engines is a good idea.

The best option is to have no discharge port and to use a portable sump pump to remove water when it is necessary. A discharge port invites the possibility that it may be left open when a leak occurs. If the containment structure has a discharge port (not recommended), make certain that it is closed and locked except when uncontaminated rainwater is to be drained. If a discharge port is used, a spring-loaded valve is the best way to prevent the port from being inadvertently left open. Only clean water may be discharged, to a grassy swale or other approved site. No discharge should ever be permitted directly into a waterbody.

If the containment volume is adequate, evaporation of accumulated rainfall will often be sufficient. Critical levels at which discharge is considered should be established for each facility and the levels marked on the containment wall. This will prevent frequent and unnecessary discharge of small volumes.

The water to be discharged must always be checked for contamination. This can be done by looking for an oil sheen, observing any smell of fuel or oil, or through the use of commercially available test kits. Never discharge any water that is contaminated. Contaminated water must be treated on site using commercially available treatment systems, or discharged to an off-site treatment system directly or by being transported by tanker truck to a treatment facility. Never discharge to a sewer system without written permission from the utility.

If the water is not contaminated, it can be discharged to a stormwater system, retention area, or grassed swale. Do not discharge it during a rain event, since the added flow may cause it to run-off to a sensitive area.



## Fuel Storage BMPs

- Fuel storage and pump areas should be located on impervious surfaces with secondary containment.
- Locate fuel storage areas beneath a roof or use completely enclosed secondary containment structures to minimize infiltration of stormwater.
- If there is a spill, impervious surfaces are typically graded toward storm drains, directing the spills to surface waters. To prevent this consider using storm drain covers on nearby storm drains when fueling.
- Install fuel pump break-away valves to minimize the potential for a spill.
- Keep absorbents nearby to clean up minor fuel splatters or drips on site. Do not hose down the fueling area at any time.



## Portable Gas Containers

- Always avoid spilling gasoline or allowing evaporation.
- Use an easy to handle gasoline container size so you can pour slowly and smoothly.
- Use a spout or funnel when pouring gasoline into the equipment.
- Avoid overfilling the lawn equipment gas tank. Special nozzles with an automatic stop device keep the gasoline from pouring until the nozzle is inserted into the tank, stopping flow when the tank is full, and sealing the container when the nozzle is removed from the equipment gas tank. These inexpensive nozzles are available at most hardware stores.
- Close the gasoline container cap or spout and vent hole after pouring. Also remember to recap the equipment gas tank.
- Try to transport and store the gasoline container and power equipment out of direct sunlight and in a cool place.

## What's Required for Certification?

*please provide the following*

- Photograph of Fuel Island
- Photograph of Spill containment
- Photograph of Oil & Fuel Spill Kit

# Manage the Equipment Wash Areas Correctly

*Offers: Water Conservation, Water Quality, Financial Savings, Durability*

The first rule of equipment washing is not to wash any equipment unnecessarily. Clean equipment over an impervious area and keep it swept clean to prevent rain from carrying pollutants off the pad. Grass covered equipment should be brushed or blown with compressed air before being washed. Dry material is much easier to handle and store or dispose of than wet clippings. It is best to wash equipment with a bucket of water and a rag, using only a minimal amount of water to rinse the machine. Spring-operated shutoff nozzles should be used. Freely running hoses waste vast amounts of water, and water can harm the hydraulic seals on many machines.

Some local governments may require a closed recycling system for washwater, but even when not a requirement the use of a well designed system may be considered a best management practice.

Be cautious in operating closed loop equipment where maintenance activities are involved, because the filters can concentrate traces of oils and metals that are washed off the engines and worn moving parts. In some cases, the concentrations of these substances can become high enough that the filters must be treated and disposed of as hazardous waste. Ask the recycling system manufacturer or sales representative for information about filter disposal. The contractor who handles oil filters, waste oil, and solvents can probably handle these filters, too.

- Do not discharge washwater to surface water directly, or indirectly through ditches and storm drains.
- Construct a roof over the wash pad to prevent clean rainwater from being collected into a filtering system.
- Minimize detergent use and use only biodegradable, phosphate-free detergents.
- Handle water used to clean pesticide equipment in its own system.
- Washing equipment on a pesticide loading pad will contaminate clippings and other debris.
- Research local requirements for washwater treatment.

Wash areas may be regulated as industrial waste facilities. Washwater systems with an overflow pipe must connect the overflow either to a sanitary sewer or to a specially designed and permitted treatment system such as a separate drainfield, or contain the discharge and have it hauled and disposed of by a licensed contractor. The overflow should not discharge to the ground, a storm drain, or a surface waterbody.

At the very minimum, wash water should be directed to a location where water can spread out and be filtered, away from any environmentally sensitive areas. This type of system is not appropriate for water used to wash the inside and outside of pesticide equipment. That water should be collected and handled according to pesticide label instructions.

Constructing an impervious wash pad to divert water to a collection system is another option. The collected water could connect to a sanitary sewer for off-site treatment or be treated on-site in a closed loop system and reused. Closed loop systems can be designed to treat pesticide equipment wash water. The type of system appropriate for the course will depend on the volume of water generated, contents of the wash water, and the potential for pollution in the surrounding area.

## Washwater Recycle Systems

Washwater recycle systems are the preferred choice at many golf facilities. These systems reduce or eliminate contaminated discharges to surface or ground water, or to Publicly Owned Treatment Facilities. These systems require somewhat significant capital costs up front, for engineering, purchasing and installation of the equipment. However, water conservation, along with the additional monetary benefits of cost savings associated with lowered water bills and sewer connection fees make these systems a wise investment choice. Water conservation is achieved by piping the wash water through a purification system and reusing it. Therefore, there is no need to purify the wash water to meet drinking water or surface water quality standards.

There are many types of systems varying in complexity. All systems must comply with any federal, state, or local water quality regulations and obtain any necessary authorizations.

Washwater can contain organic material such as grass clipping and soil as well as soaps, oil residue, fertilizer, and pesticide residue. These materials can degrade water quality and should never be allowed to flow directly into surface water. There are many options for washing sites.

Minimally, washwater should be directed to a location where water can spread out and be filtered, away from any environmentally sensitive areas. This type of system is not appropriate for water used to wash the inside and outside of pesticide equipment. That water must be collected and handled according to pesticide label instructions.

Constructing an impervious wash pad to divert water to a collection system is another option. The collected water could connect to a sanitary sewer for off-site treatment or be treated on-site in a closed loop system and reused. Closed loop systems can be designed to treat pesticide equipment washwater. The type of system appropriate for the course will depend on the volume of water generated, contents of the washwater, and the potential for pollution in the surrounding area.

There are many types of systems varying in complexity. All systems must comply with any federal, state, or local water quality regulations and obtain any necessary authorizations.

Always try to minimize the volume of water used when washing equipment. Conserve water by using nozzles that produce high-pressure spray at a low volume. Keep an air hose nearby to blow off equipment before washing. Consider using the clippings in compost .

#### Equipment Wash Area BMPs

- Do not wash equipment unnecessarily.
- Clean equipment over an impervious area, and keep it swept clean.
- Brush or blow equipment with compressed air before, or instead of, washing.
- Use spring shutoff nozzles.
- Use a closed-loop recycling system for washwater
- Recycle system filters and sludge should be treated and disposed of as hazardous waste.
- Do not discharge wash water to surface water directly, or indirectly through ditches and storm drains.
- Construct a roof over the wash pad to prevent clean rainwater from being collected into a filtering system.
- Minimize detergent use and use only biodegradable, phosphate-free detergents.
- Handle water used to clean pesticide equipment in its own system.
- Washing equipment on a pesticide loading pad will contaminate clippings and other debris.
- Research local requirements for wash water treatment.



## What's Required for Certification?

*please provide the following*

- Photographs of Wash Area
- Photograph of Washwater Recycling System *(if applicable)*

# Provide Clean, Organized and Safe Working Conditions

*Offers: Financial Savings, Durability, Human Health, Human Wellbeing*

Providing a clean and sanitary place of employment which is free from recognized hazards that could cause death or serious physical harm to employees, guests, and visiting contractors is an often overlooked but highly important component of any sustainable golf facility.

Effective housekeeping can eliminate workplace hazards and help get a job done safely and properly. Poor housekeeping can frequently contribute to accidents by hiding hazards that cause injuries. If the sight of paper, debris, clutter and spills is accepted as normal, then other more serious health and safety hazards may be taken for granted.

Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly; maintaining halls and floors free of slip and trip hazards; and removing of waste materials (e.g., paper, cardboard) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is also a basic part of accident and fire prevention.

Effective housekeeping is an ongoing operation: it is not a hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing accidents.

## Effective housekeeping results in:

- reduced handling to ease the flow of materials
- fewer tripping and slipping accidents in clutter-free and spill-free work areas
- decreased fire hazards
- lower worker exposures to hazardous substances (e.g. dusts, vapours)
- better control of tools and materials, including inventory and supplies
- more efficient equipment cleanup and maintenance
- better hygienic conditions leading to improved health
- more effective use of space
- reduced property damage by improving preventive maintenance
- less janitorial work
- improved morale
- improved productivity (tools and materials will be easy to find)



## **Personal Safety**

When operating powerful tools, maintenance workers should wear personal protective equipment (PPE) such as face shields, hearing protectors, safety footwear, hard hats and insulated gloves.

### Hand Tools

All hand tools should be checked for damage or defects before use. Damaged handles should be repaired or replaced, and all cutting tools should be kept sharp.

### Power Lawnmowers

The mower should be properly inspected before starting. In most cases slopes and hills should be cut diagonally, rather than sideways, for better balance. Speeds should be reduced on slopes and when making sharp turns to prevent tipping and rollovers.

Striping in the Maintenance Facility, easy access to fire extinguishers, and eyewash stations should always be provided.

## Facility Grounds

Roadways should be kept clean and free of obstacles, and in good repair and clearly marked.

All parking areas should be kept free from loose lumber, trash, large stones or bricks, vehicle parts, excessive vehicle fluid spills. Fluid spills should be cleaned up using absorbent and disposed of properly. Trucks and equipment should be pulled into designated stalls as far as possible so as to provide free travel on roads.

Walkways should be in good repair, clean, and free of obstacles.

## Inside the Buildings, Facilities, and Repair Shops.

The floor of every area of the facility should be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage should be maintained and false floors, platforms, mats, or other dry standing places should be provided. Where practicable or appropriate, waterproof and slip proof footwear should be worn by employees.

- All garage areas should be kept free from obstacles and trip hazards.
- Floors and passageways should be kept free from protruding objects, storage of equipment, pallets of products, and uncovered openings in the floor. Parts and equipment should be placed in designated and/or marked areas so that walkways are not blocked. Ice, grease, debris, and excessive water should be kept clear from all walking surfaces.
- Fire hoses, extinguishers, eye wash stations, and showers should be kept free from obstruction or blockage by any item which could hamper or prevent someone from obtaining it in an emergency.
- Unnecessary tools and equipment should be picked up and stored when not in use.
- Superintendents should establish designated areas for spare parts, salvage material, debris, sand, gravel, topdressing etc. These areas should be maintained neat and orderly as practicable and free from hazards to employees.
- Roof areas should always be maintained, clean, and free of material. No material should be evident on roof vents. If material is stored on or close to vents or stacks, the material should be removed.

## Solvents and Degreasers

Solvents and degreasers are generally flammable and toxic and should be stored in lockable metal cabinets in an area away from ignition sources and with adequate ventilation. Do not store near an area where welding or other similar activities are performed. Never store with pesticides or fertilizers. An inventory of the solvents stored and the MSDS sheets for these materials should be kept on the premises, but not in the solvent storage area. Any emergency response equipment recommended by the manufacturer of the solvent should be kept accessible to the storage area, but not inside the area itself.

Solvents and degreasers should be used over a collection basin or pad that can collect all used material. The collected material should be stored in marked containers until it can be recycled or legally disposed of. There are a number of private firms that provide a service that includes solvent wash basins that drain into recovery drums. These drums are then picked up and the contents recycled or properly disposed of. Solvents should never be allowed to drain onto pavement or soil, or discharged into storm drains, sewers or septic systems, even in small amounts. Routine discharge of even small amounts of solvents can result in the accumulation of contaminants in soil or ground water over time, with serious environmental and liability consequences.

## What's Required for Certification?

*please provide the following*

- One Photo of Maintenance Facility Work Area
- One Photo of Maintenance Break Room
- One Photo of Flammables Storage
- One Photo of the an eyewash station on site

## Provide Education and Social Opportunities

*Offers: Social and Recreational Opportunities, Outreach and Education, Wildlife Conservation*

Due to urbanization and land development, wild animals are displaced from their habitats and have adapted well to living near humans. It should come as no surprise, and is rather quite common to encounter wildlife on a regular basis in our communities. Because of diminishing wildlife habitat, conflicts are inevitable and will occasionally arise between humans and wild animals. In the past, many animal control agencies responded to these situations by picking up and relocating or euthanizing trapped wildlife. We now recognize that these past practices simply do not work. Trapping and relocation of healthy wildlife is no longer considered as a recommended or viable alternative. Wild animals are territorial and like species will simply take over the area vacated by the relocated or deceased animal. Communities and neighborhoods should learn to respectfully co-exist with wildlife.

The processes of urbanization not only destroy, degrade and fragment habitat for wildlife, but also create new habitats that may benefit certain species in unexpected ways. Areas of native vegetation that once supported many species are reduced in size and modified over time by changes to disturbance regimes and invasion by weeds and feral animals. Wildlife populations that persist in these habitat patches are often isolated from each other by a hostile combination of roads, housing and domestic pets, leading to an increased probability of local extinction. Conversely, public and private gardens and planted street trees can support a surprising diversity of native amphibians, reptiles, birds and mammals. Interactions between humans and wildlife in urban areas include observation, provision of food and shelter, and even competition for resources such as fruit and vegetables in backyard gardens. In general, many humans enjoy the presence of native animals until they cause a perceived nuisance or potential danger to human safety. We need to better understand the ecology of wildlife in modified urban habitats, and also consider human behavior and education, if we are to successfully conserve a proportion of the biological diversity within our urban environments.

Communities should work to promote habitats that will have the food, cover, water, and living space that all wildlife require by following these guidelines:

- Maximize open space and make an effort to protect the most valuable wildlife habitat areas of a landscape.
- Provide water, and design stormwater control impoundments to benefit wildlife.
- Use native plants that have value for wildlife as well as aesthetic appeal.
- Provide bird-feeding stations and nest boxes for cavity-nesting birds like house wrens and bluebirds.
- Educate residents about wildlife conservation, using, for example, information packets or a nature trail through open space.
- Ensure a commitment to managing urban wildlife habitats.

### Providing for Birds and Wildlife

Birds are the animals that most often come to mind when people think about animals they see in their community. Many people have bird feeders in their yards and these feeders can be important to birds, especially when there are limited natural food sources, like during migration, periods of drought, or in the winter.

Shrubs, annuals, perennials, native and cultivated plants can all be used to attract such birds. If it is possible, grow plants that provide seeds and fruits for all seasons.

Once birds have become accustomed to visiting a landscape, they will return with regularity. When the winter months roll around, natural food will become scarcer, so it is more important during those months to provide plenty of seed, fruits or suet during those times to keep your feathered friends around the landscape.

When it is at all possible, a water supply should be included into any landscape. This is easily accomplished by the inclusion of a birdbath, which gives birds and other wildlife the water they need and enjoy.



## Trails

Trails provide non-motorized and recreational opportunities for walkers, bicyclists, joggers, hikers and birdwatchers. They are the string that physically connects landscapes, parklands, neighborhoods, schools, and businesses. In addition to providing recreation, trails foster an appreciation and respect of nature.

Trails should be designed and constructed in an environmentally sensitive manner to reduce soil compaction, erosion, and runoff to protect sensitive areas from degradation. Trails should be developed based on site assessments that consider natural features, aesthetics, and their linkage possibilities, and can be natural or comprised of a covering such as bark, shell, or stone/gravel, or be asphalt or gravel.

## Public Education and Community Outreach

Public education plays an important part in any community. Well-planned education and outreach activities can help generate understanding and support for the environmentally friendly management strategies taking place within the community .

Human communities, whether clusters of homes, towns, cities, or other collections or networks of people are part of the natural environment. We live among, and are deeply connected to, the many streams, rivers, lakes, meadows, forests, wetlands, and mountains that compose our natural environment and make it the beautiful and livable place so many of us value. More and more often, human communities realize that the health and vibrancy of the natural environment affects the health and vibrancy of the community and vice versa.

## Using Environmental Signage to Promote Environmental Awareness

Environmental awareness provides people with the knowledge, and addresses how their community has integrated environmental values into the fabric of the community. this awareness fosters stewardship activities that can include joining environmental groups, purchasing environmentally friendly goods and services, or performing specific behaviors, such as recycling household waste, taking used motor oil to collection centers, and using public transportation.

Environmental awareness and values also describes the different ways community members value the environment. They might appreciate the role of wetlands in protecting the quality of their drinking water supply or the role of trees in reducing their home heating bills by providing summertime shade. They might also value the environment for the recreation opportunities it affords or simply the way it makes them feel.

Mounting environmental education signs is a simple way to educate the public about the environmental attributes of a landscape and the special features of a site. They also can be used to protect areas of special concern or to provide direction or instruction.



## What's Required for Certification?

*please provide the following*

- One Photograph of a Outreach Effort (benches, birdbox, hiking trail), etc.
- One Example of a Education Opportunity (signage, newsletter, website, etc.)

# Be Environmentally Responsible in Amenity Buildings and Areas

*Offers: Water Conservation, Energy Efficiency, Outreach and Education, Wildlife Conservation*

## “Greening” the Clubhouse

The concept of sustainable development can be traced to the energy (especially fossil oil) crisis and the environment pollution concern in the 1970s. [The green building movement in the U.S. originated from the need and desire for more energy efficient and environmentally friendly construction practices. There are a number of motives to building green, including environmental, economic, and social benefits. However, modern sustainability initiatives call for an integrated and synergistic design to both new construction and in the retrofitting of an existing structure. Also known as sustainable design, this approach integrates the building life-cycle with each green practice employed with a design-purpose to create a synergy amongst the practices used.

Green building brings together a vast array of practices and techniques to reduce and ultimately eliminate the impacts of new buildings on the environment and human health. It often emphasizes taking advantage of renewable resources, e.g., using sunlight through passive solar, active solar, and photovoltaic techniques and using plants and trees through green roofs, rain gardens, and for reduction of rainwater run-off. Many other techniques, such as using packed gravel or permeable concrete instead of conventional concrete or asphalt to enhance replenishment of ground water, are used as well.

While the practices, or technologies, employed in green building are constantly evolving and may differ from region to region, there are fundamental principles that persist from which the method is derived: Siting and Structure Design Efficiency, Energy Efficiency, Water Efficiency, Materials Efficiency, Indoor Environmental Quality Enhancement, Operations and Maintenance Optimization, and Waste and Toxics Reduction. The essence of green building is an optimization of one or more of these principles. Also, with the proper synergistic design, individual green building technologies may work together to produce a greater cumulative effect.

## Selling Environmentally Friendly Products in the Clubhouse

Strictly speaking, eco-friendly products still have an impact on the environment, but the impact is greatly reduced when compared to conventionally produced products. In some cases, eco-friendly products may even have a positive benefit, depending on how the company does business. Many such products are also aimed at lifestyle changes which benefit the environment, so even if the product itself is not totally neutral, the actions undertaken by the consumer after buying the product are beneficial.

Selling and promoting products that are environmentally friendly encourages golfers, and others to engage in activities at home that can also be friendly to the environment, as in the case of things like carpooling, gardening, composting, and recycling. The golf course clubhouse is a great location to educate guests, members, and others about ways modify their lifestyles, reducing the amount of resources they use by living more efficiently.

## The Dining Facility

A “sustainable” restaurant can mean many things: an establishment that serves local food, organic food, sustainable seafood, or a combination of these. Green goes beyond the type of food on the menu. It includes the farms it comes from and even the plate it's served on.

The restaurant industry consumes a surprisingly large portion of our resources. It accounts for 33 percent of the electricity used by retail outlets in the US, ranking behind only health care and food retailing. Every year, the average eatery uses 300,000 gallons of water and generates 150,000 pounds of garbage.



The Green Restaurant Association's certification system rates individual eateries in seven environmental categories: Energy, Water, Waste, Disposables, Chemical & Pollution Reduction, Sustainable Food and Sustainable Building Materials in a point-system presented in a label not unlike those providing nutritional information.

To learn more visit [www.dinegreen.com](http://www.dinegreen.com)

## Equestrian Facility

As equestrian amenities become more popular at communities and resorts worldwide, real estate developers are discovering that a truly sustainable equestrian amenity involves a comprehensive approach from beginning to end.

Effective land planning decisions guide where an equestrian facility might best be located; on site design decisions work within the context of existing ecosystems and, and sustainable design and construction supports sustainable facility operations and best management practices for the amenity.

Participation in the Audubon Lifestyles sustainable Equestrian Facility Program is recommended. For all types of Equestrian Facilities.



### Locker Rooms and Restrooms

- Encourage water conservation.
- Repair leaking toilets, faucets, and showers. If an entire toilet unit must be replaced, consider water-saving models.
- Consider installing timer faucets.
- Install water-saving shower heads and fixtures.
- Retrofit toilets to reduce the water used in flushing. Displacement devices and water-saving diaphragms are available.

### Use Sustainable Landscaping Practices in locations beyond the Golf Course

There are varying definitions but sustainable landscaping should include an attractive environment that is in balance with the local climate and requires minimal resource inputs, such as fertilizer, pesticides and water. Sustainable landscaping begins with an appropriate design that includes functional, cost efficient, visually pleasing, environmentally friendly and maintainable areas.

### Recreational Trails

In most cases, recreational trails are used for nonmotorized recreational pursuits such as walking, cycling, horse riding. However, in some circumstances, trails can be designed for use by small wheeled vehicles such as motorised wheelchairs to enable access for people with mobility impairments.

### Other Locations to Consider

- Tennis Courts
- Aquatics/Spa
- The Shooting Club
- Marina

## What's Required for Certification?

*please provide the following*

- Proof of environmentally responsible actions taking place in any TWO of the opportunity areas listed in this section.

# Providing Environmental Stewardship on the Golf Course

*Offers: Water Quality, Biological Diversity, Water Conservation, Financial Savings, Aesthetic Value*

Obviously the golf course and greater landscape is the most significant feature at the facility. We recognize that there are many opportunities to participate in environmental stewardship in the golf course, and also recognize the importance of others organizations who promote sound environmental education and conservation on the golf course. To follow are select Environmental Education Programs that we recognize as meeting the objectives of sound environmental stewardship on the golf course. Previous or current participation in one of the following programs is a requirement of becoming a Certified Audubon Lifestyles Sustainable Golf Facility.

## **The Audubon Lifestyles Golf Course Landscapes Program**

When landscapes require excessive amounts of water, energy, labor, and other resources, environmental and economic costs outweigh many of the natural benefits of landscapes. In contrast, Audubon Lifestyles Golf Course Landscapes feature healthier, longer-lived plants that rely less on chemical pesticides and fertilizers, minimize water use, and reduce waste generation and disposal. They also require less maintenance and alleviate groundwater and air pollution problems.

Sustainable landscaping practices incorporate beautiful plants, shrubs, and trees and reduce maintenance costs while at the same time protect the environment. Using sustainable landscape maintenance practices also makes good business sense. Using the Audubon Lifestyles Golf Course Landscape Workbook as a guide will reduce resource depletion, reduce waste, and pollution problems while also improving the health of the landscape in an aesthetically pleasing and cost-effective manner.

### TEN Requirements of an Audubon Lifestyles Landscape

1. Select Proper Turf and Manage it Correctly
2. Fertilize Appropriately
3. Water and Irrigate Responsibly
4. Provide Adequate and Appropriate Filtered Drainage
5. Create Water Efficient and Region Friendly Plant Beds
6. Manage Trees and Shrubs Responsibly
7. Manage Water Features Responsibly
8. Control Pests Responsibly
9. Provide Amenities for Humans & Wildlife
10. Use Technology and Innovation

The Audubon Lifestyles Golf Course Landscape Program is available as a benefit to all Platinum Members of Audubon Lifestyles and the International Sustainability Council. To learn more about this program and the specific requirements contact us at: (727) 733-0762 or visit the programs website at: [www.audubonlifestyles.org](http://www.audubonlifestyles.org)

## **The GEO Programs for Golf**

The Golf Environment Organization (GEO) is an international non-profit dedicated to helping the global golf industry establish leadership in environmental enhancement and corporate responsibility. Bringing clear insight, cutting edge guidance and golf's most constructive, credible and comprehensive certifications, [golfenvironment.org](http://golfenvironment.org) is a one-stop-shop for sustainable golf solutions.

All golf facilities can provide an ecologically rich, healthy and stunning golf landscape; maximize the natural and cultural assets of their site; and minimize resource consumption to ensure a net-positive environmental and business impact.

Golf's environmental drive is gaining momentum around the world. For many reasons, ranging from saving money, meeting member and customer expectations, setting a course apart, meeting government requirements, professional distinction, to the big-picture—protecting the planet.

To learn more or to participate in the GEO Program for Golf visit: [www.golfenvironment.org](http://www.golfenvironment.org)

## The Audubon Cooperative Sanctuary Program for Golf

The Audubon Cooperative Sanctuary Program for Golf Courses is an award winning education and certification program that helps golf courses protect the environment and preserve the natural heritage of the game of golf. The program helps golf officials enhance the valuable natural areas and wildlife habitats that golf courses provide, improve efficiency, and minimize potentially harmful impacts of golf operations.

Golf courses work toward certificates of recognition in six categories. Audubon International provides each golf course with one-on-one assistance in devising an appropriate environmental plan.

- Environmental Planning: Each club generates a written plan outlining their goals and proposed projects. It provides a useful tool for clubs to monitor their progress in meeting their goals.
- Wildlife and Habitat Management: Management of non-play areas is crucial to providing habitat for wildlife on the golf course. Emphasis is given toward maintaining the best possible habitat for the course considering its location, size, layout, and type of property.
- Outreach and Education: Gaining the support of golfers for an environmental program is an invaluable asset. Focus is placed upon generating public awareness through education. Recognition of tasks well done continually reinforces the worth of the program.
- Chemical Use Reduction and Safety: A comprehensive and responsible program to control pests will ensure a healthy environment for both people and wildlife. Managing turf areas with environmental sensitivity requires educating workers and members about plant management, pesticide application, and use of fertilizers.
- Water Conservation: Consumption of previous water resources remains an issue at most golf courses. Attention is directed toward irrigation systems, recapturing and reuse of water sources, maintenance practices, and turfgrass selection.
- Water Quality Management: Questions about the impact of golf course chemical use on the water quality of lakes, streams, and groundwater sources abound. Strategies are devised to monitor water quality, protect wetlands, reduce erosion, filter runoff, and, if warranted, improve conditions.



## The Audubon Signature Program for Golf

The Audubon Signature Programs provide environmental planning assistance to new golf developments. The program helps golf courses and developers design for the environment so that both economic and environmental objectives are achieved. Once construction is complete, involvement in an Audubon Signature Program ensures that managers apply sustainable resource management practices in the long-term stewardship of the property.

To learn more, or to join either of these programs visit: [www.auduboninternational.org](http://www.auduboninternational.org)

## What's Required for Certification?

*please provide the following*

- Proof of participation in any ONE of the programs listed

# Use Technology and Innovation

*Offers: Water Quality, Energy Savings, Resource Management, more...*

We recognize that there are numerous ways to incorporate green technologies into any landscape. This is your opportunity to showcase the unique innovation and green technology strategies employed in your landscape.

## **Potential Technology & Innovation Projects for Landscapes**

### Fertigation

Fertigation is a landscaping and gardening practice in which water-soluble materials are added to the water used for irrigation. Classically, fertigation supplies nutrients in the form of fertilizers, although it can also be used to deliver soil amendments and a variety of other materials, including chemicals to cope with pests and plant diseases.

This technique can reduce fertilizer application costs by eliminating high operational requirement. It may also improve nutrient efficiency by applying them closer to when the plant needs them. Fertigation is becoming widely accepted in the industry due to the fact that a properly designed system will perform accurately, is now economical, easy to install, saves time, labor and most importantly, will save you money. A proper system will eliminate waste, sludge and residues. It allows one to "fine tune" fertility levels, and will monitor the rates of fertilizer being applied. A good system will also address the reduction of fertigation water runoff.

### Xeriscaping

An added benefit of Xeriscape landscapes is less maintenance. A well-designed landscape can decrease maintenance by as much as 50 percent through reduced mowing, once-a-year mulching, elimination of weak, un-adapted plants, and more efficient watering techniques.

### Rain Gardens

Rain gardens are becoming and increasingly popular landscape feature. A rain garden is a natural or dug shallow depression designed to capture and soak up stormwater runoff from roofs and other impervious areas such as driveways, walkways, and even compacted lawn areas. They can be used as a buffer to shoreline areas to capture runoff from the landscape before it enters a lake, pond, or river. The rain garden is planted with suitable trees, shrubs, flowers, and other plants allowing runoff to soak into the ground and protect water quality.

In addition to adding beauty to the landscape, rain gardens also help protect water quality by reducing stormwater runoff. Stormwater runoff is considered one of the main sources of water pollution on the planet. A rain garden will allow the runoff generated on the landscape to infiltrate into the ground and help to reduce potential water quality problems.

### Rainwater harvesting

Rainwater harvesting or "living water" harvesting involves collecting and storing rainwater for future use and it has become a common practice in many parts of the world that receive dry, humid weather and very little rainfall. Now, it is gaining popularity again in North America, particularly in British Columbia. In B.C., residents are using rainwater harvesting as a sustainable water source for household use, organic farmers are using it to grow supposedly healthier plants and crops, and commercial green houses and public buildings are recognizing its water-conserving benefits as well.

### Using Pervious or Permeable Pavers

Permeable Pavers help protect the quality of our water supplies. They reduce the amount of storm water runoff entering our natural waterways and carrying with it contaminants and pollutants. Pervious and permeable pavers allow rain water to naturally drain into the surface through the voids in the pavers. This promotes the infiltration of rainwater and also helps to recharge the groundwater.

Using permeable pavers within a landscape also means less storm water runoff, which means that our streams and riverbeds are less likely to flood as often. This also means that there will be a reduction in the rate of the erosion of riverbanks and streambeds.

### Using Non-Potable Water to Irrigate such as Reclaimed Water and Effluent

Reclaimed water is an important component of wise water management. Reclaimed water is derived from domestic wastewater and small amounts of industrial process water or stormwater. Using reclaimed water has multiple benefits such as; it costs less than drinking water, it reduces fertilizer use, as some nutrients like nitrogen and phosphorus remain, it reduces stress on drinking water supplies, and it reduces disposal into waterways, which can help reduce nutrient loads in bays and rivers.

### Composting

Compost is organic material that can be used as a soil amendment or as a medium to grow plants. Mature compost is a stable material with a content called humus that is dark brown or black and has a soil-like, earthy smell. It is created by: combining organic wastes (e.g., yard trimmings, food wastes, manures) in proper ratios into piles, rows, or vessels; adding bulking agents (e.g., wood chips) as necessary to accelerate the breakdown of organic materials; and allowing the finished material to fully stabilize and mature through a curing process.



Yard trimmings and food residuals together constitute 23 percent of the U.S. municipal solid waste stream. That's a lot of waste to send to landfills when it could become useful and environmentally beneficial compost instead. Composting offers the obvious benefits of resource efficiency and creating a useful product from organic waste that would otherwise have simply been sent to the landfill.

### There are Many Opportunities for Innovation and Technology at a Golf Facility

- Incorporating Eco-friendly & Sustainable Design concepts
- Using salt tolerant turf grasses in coastal areas
- Using rain collection techniques such as rain barrels, and catch basins
- Using Weather Stations
- Creating Stormwater Planters
- Soil Moisture Sensors
- Recycled Lumber
- Green Roofs
- French Drains
- Investing or participating in Carbon Sequestration Projects
- Incorporating products that reduce erosion

### **What's Required for Certification?**

*please provide the following*

- One Photograph of Innovation or Technology Used
- Description of the Innovation or Technology

## Workbook References/ More Information

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9. U.S. Environmental Protection Agency National Pollutant Discharge Elimination System. Pollution Prevention/Good Housekeeping for Municipal Operations: Spill Response and Prevention. /  
<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=107>



# The Sustainable Golf Facility & Amenities Certification Application

Contact Name \_\_\_\_\_

Property Name \_\_\_\_\_

Lawn Care Provider \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

City, State, Zip \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

Email address \_\_\_\_\_

Website Address \_\_\_\_\_

## Documentation Requirements

- Platinum ISC-Audubon Membership
- Completed Natural Resource and Landscape Survey
- Certification Requirements of this Workbook have been met
- Map of the Site with Requested Features Depicted

**The Sustainable Golf Facility Program is free for ISC-Audubon Platinum Members.** Platinum Membership fees include a one-time registration fee of \$250 (first year membership included), and then only \$100 annually. Maintaining Platinum Membership is required in order to retain certification. To begin participation in the program mail, fax or email this application form with Platinum Membership (if applicable) registration fee (check or credit card). Membership applicable for one location only.

- We are already a Platinum Member and wish to submit this application for free
- I would like to become a Platinum Member. Please add the cost of membership (\$250) with this certification request and mail me a new Member packet today!

Name on Card \_\_\_\_\_

Credit Card Number \_\_\_\_\_

Exp. Date \_\_\_\_\_

By signing below you indicate that all photographs, and documentation submitted, and that all information submitted is accurate to the best of your knowledge.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Print Name \_\_\_\_\_

Please mail this completed registration form, with required verification documentation and photographs to:  
**ISC-Audubon — 35246 US Hwy 19 #299, Palm Harbor, FL 34684**