Woodlawn Golf Course
Environmental Baseline Assessment
Ramstein AB, Germany Jul 04

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Executive Summary

U. S. Air Force GEM Program

The U. S. Air Force Golf Course Environmental Management (GEM) program is a proactive Air Force Center for Environmental Excellence (AFCEE) initiative to foster a better understanding of the environmental challenges facing our golf courses worldwide. Armed with the support and approval of the Air Force Services Agency golf program, AFCEE's goal is to facilitate the creation of an environmentally friendly golf course facility while supporting the installation mission.

The primary tenets of the GEM Program are to minimize or eliminate potential negative environmental impacts, attain and maintain daily compliance with all appropriate regulations, and constantly examine all aspects of golf course management to achieve the highest standards of environmental excellence.

GEM Program process

There are five steps in the GEM program process.

- Analysis
- Documentation
- Implementation
- Evaluation
- Revision

Environmental challenges

The following environmental challenges were identified during the GCEBA process:

- Forestry management
- Installation Restoration Program (IRP) Site
- Wetlands
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Environmentally protected areas

Where do we go from here?

Once the environmental challenges are identified, it is paramount that the golf course staff should determine their preferred management approach in the context of their ongoing, long-term goal of providing the best golfing experience for their customer's dwindling recreation resources.

Armed with this well-conceived, golf facility-based management approach, the golf staff should then coordinate with the environmental staff to ensure that there is consistency and compatibility with installation-wide natural resource and environmental management goals and objectives.

Finally, the staff should proceed with the next steps in the GEM Program process documented in this study.

Introduction

The golf course environmental baseline assessment (GCEBA) is the initial step in the process of creating a successful ecosystem-based Golf Course Environmental Management (GEM) Plan.

The intent of the program is to provide an efficient, customer-driven management tool that will free up course managers and superintendents to devote more of their efforts to caring for their customers and the golf course. Properly designed and implemented, the GEM Plan will keep the entire golf facility in compliance with the constantly changing environmental requirements while contributing to the installation's vital recreational opportunities.

Trees define all of the holes at Woodlawn Golf Course.

Environmentally protected areas are signed to minimize golfer traffic.

Goal of the GEM Program

The goal of the U. S. Air Force GEM program is to facilitate the creation of an environmentally friendly golf course facility for its customers while supporting the installation mission. The Air Force Center for Environmental Excellence (AFCEE) is dedicated to helping to identify ways that more rounds can be played on better-conditioned courses while minimizing or eliminating negative impacts to the environment. In most cases, the U. S. Air Force's golf courses are being managed compatibly with the environment. The GEM program is the vehicle to document our successes while communicating directly with our customers, commanders, and local community.

The 8th hole's water hazard is one of the few installation water bodies.

GEM Program Process

Efficient implementation is the most important aspect of any initiative where practices and procedures are examined and may undergo significant change. This is especially true of the GEM Plan process. The latest requirements for the GEM Plan components are described and outlined on the AFCEE golf course environmental management program website: http://www.afcee.brooks.af.mil/ec/golf/. Detailed explanations and directions for completing the GEM Plan will be delineated in AFCEE's proposed handbook ***Golf and the Environment, Guidelines for the 21st Century***.

The GEM Program is derived from many diverse environmental regimes such as the National Environmental Policy Act, the Environmental Compliance Assessment and Management Program, and the ISO 14001 environmental management system. There are five basic steps in the implementation of the GEM Program process:

- Analysis
- Documentation
- Implementation
- Evaluation
- Revision

Attractive and well kept golf facility entry signage and landscaping greets the customer and provides a great first impression.

Woodlawn GC demands accurate play!

Analysis

Experienced environmental managers realize the importance of assembling all of the data relevant to a problem prior to determining its best solution. Analysis is the first and most important task of the golf course environmental baseline assessment (GCEBA) and the GCEBA is the initial step in the process of creating an ecosystem-based Golf Course Environmental Management (GEM) Plan. Properly completing the GCEBA is paramount to the long-term compatibility of an installation's golf course management practices with the GEM Program, and more importantly, the U. S. Air Force's natural resource and environmental management goals and objectives.

GCEBA COMPONENTS

The GCEBA is comprised of the following components:

- Site visit, interviews, and data collection
- Course specific analysis
- Miscellaneous facility review
- Environmental compatibility quotient checklists
- Identification of environmental management challenges
- Summary report

Documentation

It is not enough just to know how to create a successful golf course environmental management program. There must be a written record documenting existing site data, maintenance practices, pesticide applications, and other historical golf course activities. By documenting what we know, we will be able to determine how to make better decisions in the future. The completed GEM Plan will assist in the daily management of the course while providing a convenient vehicle to communicate to commanders and customers alike the environmental issues that challenge us on our golf course as well as our plans to deal with them. In order to reach the environmental stewardship goals set by the U. S. Air Force, we must consistently employ only those management practices that minimize or eliminate potential negative impacts to the environment.

GEM PLAN COMPONENTS

The GEM Plan will be comprised of the following components:

- GCEBA report
- Map of the entire golf course facility grounds depicting locations of the significant environmental management challenges and the golf course facilities
- Booklet that describes the environmental management challenges on the GEM Plan map
- Specific practices that will be employed by the golf course staff to deal with each environmental management challenge after coordination with and approval by the installation environmental staff
- Compilation of best management practices employed at the golf course in their implementation of the GEM program recommendations

Implementation

Positive and decisive action is the only true measure of the success of a GEM Program. By implementing new practices, whether to knowingly improve the course's role in the environmental stewardship of the installation or to just try new ideas to determine their value will the golf staff and golfers benefit. The Woodlawn staff should adopt the GEM Program Environmental Policy and immediately begin finding ways to minimize or eliminate any and all negative impacts to the environment.

Evaluation

In order to ensure the highest quality of customer service and environmental stewardship, there must be continual self-evaluation and improvement. There also should be consistent, on-going measurement of the reduction or elimination of environmental impacts the newly implemented practices have on the course. For example, documenting the reduced use of inputs such as fertilizers, pesticides, and irrigation can be used to demonstrate the increased environmental stewardship of the golf course management practices as well as the overall value of the GEM Program. It is important for U. S. Air Force golf courses to show improvement over time. This can be easily accomplished by regularly evaluating golf course maintenance methods, practices, and management approaches to day-to-day issues and changing when appropriate.

Revision

The very nature of a superior GEM program implies that all documents be regularly maintained to represent the most current conditions. U. S. Air Force golf course managers and superintendents should be constantly looking for ways to improve their environmental stewardship. Acting on lessons learned is right behind initial implementation as the most important aspect of a successful GEM Program. The GEM Plan should be kept as current as possible at all times. Ideally, it should be completely updated at least every three years.

Course Specific Analysis

One of the most pragmatic and enjoyable tasks in the GCEBA process is the course specific analysis. From a general overall description of the course to the details of the course's history and makeup to the various observations on the way the course plays, looks, and is managed, the course specific analysis sets the stage for the rest of the GCEBA report. It is comprised of the following tasks:

- Course description
- Course details
- Miscellaneous facilities examination

The recently completed clubhouse is an attractive start to one's round.

Course description

Established in 1955, the heavily forested and narrow Woodlawn Golf Course requires its customers to hit it straighter than any other U.S. Air Force facility. Located in the heart of Kaiserslautern approximately 1.5 hour drive from Frankfurt, the 18-hole layout demands accuracy throughout the round. The facility also features one of the U.S. Air Force's greatest clubhouses and friendliest staffs. Superintendent Dan Petersen and his staff usually have the course in tip-top condition explaining Woodlawn's role as the golfing jewel of the U.S. Air Forces in Europe command.

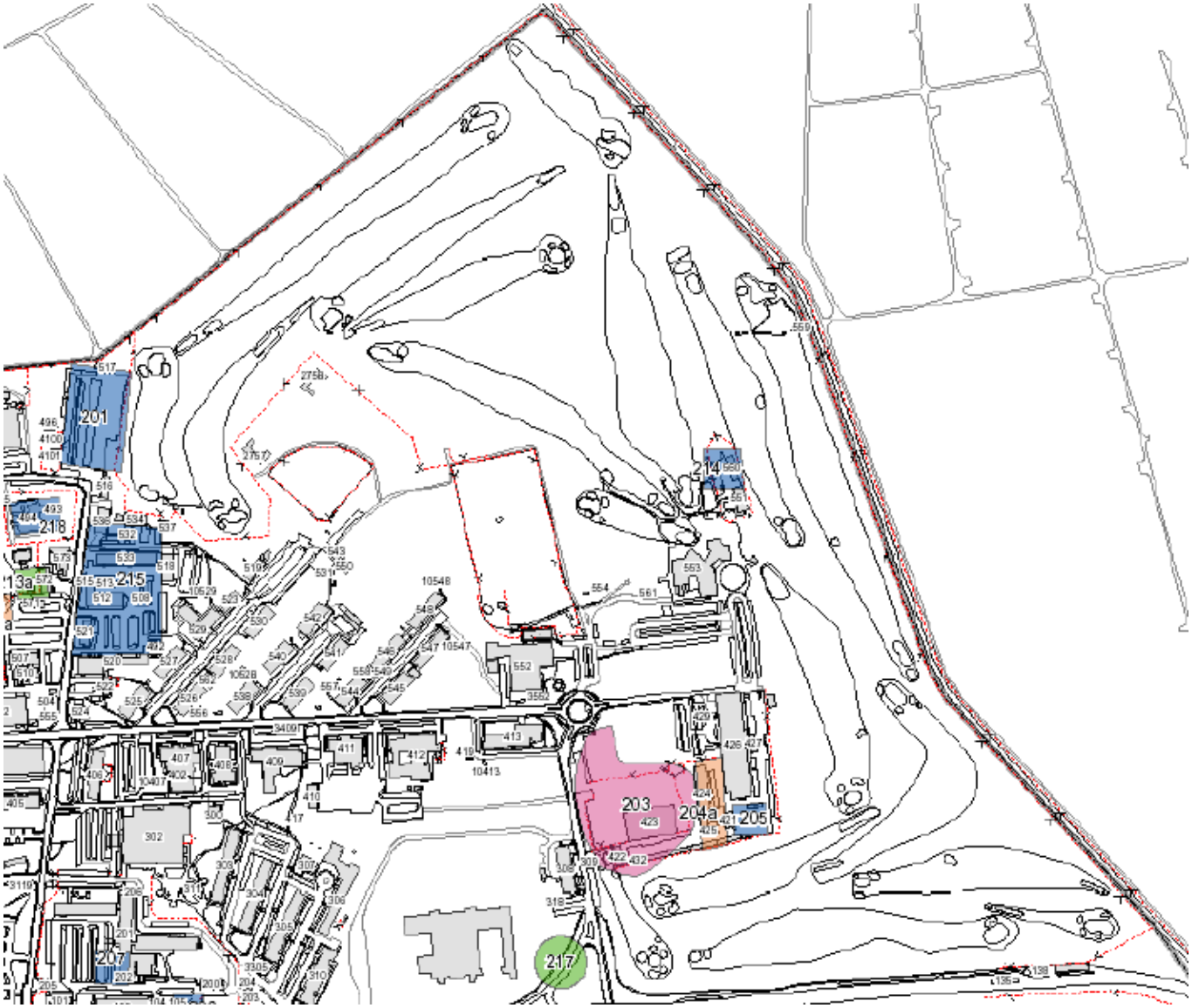
During the site visit, it was obvious that interim Manager, Brian Roush, had ably assumed the position as the installation leadership continued their search for a replacement while also maintaining his role as the USAFE golf program manager.

Everything at Woodlawn Golf Course is topnotch. From the smoothly rolling greens and the smiling, helpful staff to the tasty steaks, it is obvious that customer satisfaction is the primary consideration at Ramstein Air Base.

Course details

Architect		Unknown (Civil Engineers)
Year constructed		1955 front/1957 back
Climate		Temperate
Average annual rainfall		43 inches
Average growing season		Year round
Total Facility Acreage		160 acres
Par		36-35-71
Yardage/Rating/Slope		Grey- 6044/67.2/122
		Teal- 5691/66.2/119
		Maroon- 5089/68.4/119
Golf course manager		Brian Roush
Superintendent		Dan Petersen
Turfgrass	Tees-	Bluegrass
	Fairways-	Bluegrass/Poa
	Greens	Bentgrass/Poa
	Roughs-	Mix

The reachable par 5, 11th tee shot must first negotiate trees on all sides.



Woodlawn Golf Course

Miscellaneous Facility Review

Although the course is primary to the enjoyment and eventual return of most of Woodlawn' customers, the support facilities play a huge role is the overall success of the operation. This section of the GCEBA will examine the following facilities for their aesthetic, functional, and environmental values:

- Clubhouse/pro shop/snack bar
- Maintenance complex
- Practice areas
- Pesticide mixing and storage
- Cart storage facility
- Infrastructure

A huge patio offers outdoor dining opportunities.

Extremely attractive and highly functional, the snack bar offers great food and a place to unwind for Ramstein's hardworking Airmen.

Clubhouse

Construction of the new clubhouse was completed in Jun 03. One of the finest anywhere, the facility features a large pro shop, a snack bar, steak house, administrative offices, locker rooms, club storage and rental, kitchen, and special events room. Expertly furnished and nicely maintained, this facility should continue to exceed customer expectations well into the future.

Maintenance complex

The maintenance complex is a collection of uniquely different structures and storage buildings each with its own interesting and compelling history of how and where it came into existence and present location. In other words, the complex is a typical U.S. Air Force discombobulation greatly in need of replacement and updating. Thankfully, Superintendent Dan Petersen is an understanding and patient manager. In all fairness, the complex has been studied and a needs assessment, at least a preliminary one, was recently completed. Unfortunately, the so-called "rate of return" did not match requirements thereby eliminating the project from consideration. The maintenance complex is the only element of Woodlawn GC lacking potential world-class stature.

Interior storage and workspace is somewhat limited.

Maintenance complex could be greatly improved with a new facility.

Many rather expensive pieces of equipment must be stored outside.

The driving range features 20 all-weather stations.

Practice areas

A driving range complete with all-weather hitting stations, a practice sand bunker, a chipping green, and a practice putting green. The putting green is suffering from design flaws that make it difficult to maintain. The driving range is slightly undersized requiring a net on poles to keep most of the balls inside the designated area.

Pesticide mixing and storage

The pesticide mixing and storage area is poorly sited and well away from the maintenance complex. Although the facility is properly signed, locked, and explosion proof, there are no showers within 100 feet. Relocation to the proposed new maintenance complex is imperative for long-term operational efficiency and maximum safety.

The storage facility is located between the driving range and the clubhouse nearly 150 yards from the maintenance complex.

Cart storage facility

The cart storage facility is amply sized to accommodate the Woodlawn GC fleet. Well-organized and clean, the facility is located among the other myriad of structures that comprise the maintenance complex.

The cart storage facility is neat and organized.

Brick cart paths are the standard at the Woodlawn Golf Course.

Infrastructure

This section examines important elements of a quality golf course that are difficult to group into another category. The brick cart paths are in good to excellent condition. The parking areas are in excellent condition and are adequately sized to satisfy the regular demands of Woodlawn's customers. Landscape development attempts have been relatively successful and should be continued where appropriate. There is a site amenity group near most teeing areas and the course signage is satisfactory but could be improved.

Determining the Baseline (ECQ)

The following is a brief compilation of some of the responses in each of the ten Environmental Compatibility Quotient (ECQ) categories obtained in an interview with the superintendent and the manager conducted during the site visit.

ECQ Categories

- Overall Management Philosophy & Documentation
- Safety, Training, And Awareness
- Compliance
- Pesticide Use, Storage, & Handling
- Pollution Prevention
- Conservation Practices
- Water Resources
- Maintenance Practices
- Customer Relations & Education
- Miscellaneous Special Projects & Activities

Key to checklist responses

- **Yes** = Practice is complete or ongoing and can be verified.
- **Partial** = Practice has been initiated but needs further attention and improvement.
- **No** = Practice is not in place.

ECQ Checklists

The Environmental Compatibility Quotient (ECQ) checklists are a convenient method of assessing the overall performance, implementation, and completeness of an installation's Golf Course Environmental Management Plan. The checklists can be used in many ways including:

- As an analytical tool while compiling a Golf Course Environmental Baseline Assessment like this one.
- As a self-assessment tool for the golf course manager or superintendent.
- As an award nomination evaluation by a Golf Course Assessment Team (GCAT).

The 18th leaves a positive and lasting final impression.

Interpreting the ECQ

The ECQ compiled for an installation's course is a snapshot of the overall performance and compliance with the GEM Plan. There are two measures obtained as a result of using the ECQ checklists to determine the status or quality of the environmental management program: 1) determining the actual and; 2) potential environmental compatibility quotients.

- **Actual ECQ-** the total percentage of "Yes" responses for all ten checklists. This number represents the current level of the golf course management practice compatibility with the environment
- **Potential ECQ-** the total percentage of "Yes" responses plus the total percentage of "Partial" responses for all ten checklists. Maybe the most significant measure; the potential ECQ represents a level of compatibility that could be reached by finalizing or fully implementing a particular practice or procedure.

ECQ Scoring Scale

Percent Responses Yes or Partial per Category	Level
93-100%	Advanced
83-92%	Getting there
73-82%	Showing progress
63-72%	Early stages
Less than 62%	Just started

Narrow fairways and taxing roughs complicate the golfing experience.

Excessive shade is a major challenge for the maintenance staff.

Overall Management Philosophy & Documentation

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Has management demonstrated that the environment is an important part of their responsibilities by initiating the GEM Planning process?	✓		
2	Has the golf course adopted and posted an Environmental Policy?		✓	
3	Is the GEM Plan underway or completed, available, and updated regularly?		✓	
4	Is a map of the property highlighting environmental opportunities or constraints such as water features, sensitive landscapes, threatened or endangered species habitat, special management zones, etc. used in the environmental management decision-making process and is it posted for customers?		✓	
5	Environmental goals, objectives, issues, projects, and progress are evaluated at least annually and are regularly communicated to employees, customers, management, and the local community?	✓		
6	Are written records of water quality monitoring activities, results, and control measures readily available?		✓	
7	Is there an inventory of bird and mammal species documented, maintained, and readily available?		✓	
8	Is there a general understanding of how course management practices may positively enhance or adversely impact the environment?	✓		
9	Are the environmental impacts of pest control measures such as leaching and runoff potential, toxicity to non-target organisms, soil absorption capacity, pesticide persistence, water solubility, and effects on soil microorganisms and non-target species considered as part of the course management planning process?	✓		
10	Are records of pest treatments employed and their effectiveness maintained and used to guide future pest control decisions?	✓		
	Point totals for each column	**5**	**5**	**0**

Safety, Training, & Awareness

#	Environmental Compatibility Indicator	Yes	Partial	No
1	All employees are familiar with the overall GEM Plan and are trained on the importance of environmental compliance with the goals and objectives of the program?		✓	
2	All appropriate employees are trained to be familiar with U. S. Air Force, federal, state, and OSHA regulations that apply to storage, handling, and disposal of chemicals used on the property?	✓		
3	All employees are aware that chemical use, storage, and disposal and their potential risks to human health and the environment?	✓		
4	All employees are trained to understand that poor management practices may adversely impact worker health, on- and off-site water quality, local soil health, and wildlife species and their habitats?	✓		
5	A current copy of all Material Safety Data Sheets (MSDS) for all chemicals used anywhere on the golf course property is maintained and readily available for use by employees?	✓		
6	All employees receive regular, documented training on all potential OSHA issues?	✓		
7	Are all golf course pesticide applicators active participants in a local respiratory and pulmonary testing program?			✓
8	Pesticides, fertilizers, and other chemicals are stored on appropriate shelving in an approved storage facility?	✓		
9	Are golfers notified in the pro shop and on the first and tenth tees about the day's planned or recently completed spraying of any chemical or fertilizer that may be hazardous to human health and safety?	✓		
10	Are key staff members trained regarding water quality and conservation issues?	✓		
	Point totals for each column - Response percentage	**8**	**1**	**1**

Compliance

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Is fuel storage/delivery managed in accordance with federal, state, and local regulations?	✓		
2	Are installation environmental staff members included in on-going course management discussions and plans at scheduled meetings?			✓
3	Are there regularly scheduled golf course staff meetings to discuss environmental management issues?		✓	
4	Does the director of golf and the superintendent attend ESOHCAMP in-briefings and out-briefings?		✓	
5	Does the director of golf and/or the superintendent coordinate with installation environmental staff on the various management plans that affect or include the golf course?		✓	
6	Have all necessary permits been secured and/or updated and their requirements satisfied in a timely manner?	✓		
7	Has appropriate impact analysis (NEPA) been performed on all proposed actions on or affecting the golf course property?	✓		
8	Are containers used to store used oil in good condition, not leaking, and clearly labeled?	✓		
9	Has the golf course staff has submitted their proposed management approach to the identified environmental challenges to the installation environmental staff for coordination and review?			✓
10	Were there less than two major golf course facility-related findings during the last official ESOHCAMP visit?	✓		
	Point totals for each column - Response percentage	**5**	**3**	**2**

Pesticide Use, Storage, & Handling

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there trained scouts on staff other than the superintendent to monitor turf and plant health and pest populations regularly using a process to notify management of pest problems and organized into a report or guide so that they can be used for future pest control solutions?	✓		
2	Are there written pest profiles of common pest species with a variety of potential control measures pre-evaluated including alterations in cultural management, biological, physical, and mechanical controls prior to treating the problem on the course?		✓	
3	Are there established and documented aesthetic and functional thresholds for all managed areas to effectively manage pest populations and reduce chemical use?			✓
4	Is there a specially designed pesticide mixing area where all mixing is performed by appropriately trained personnel?	✓		
5	Has a list of pesticides and other chemicals stored or used at the golf facility been provided to the appropriate Fire Department(s)?	✓		
6	Is there a written Integrated Pest Management Plan readily available and updated in use at the facility?	✓		
7	If personal protective equipment is required for pesticide use, storage, or handling, is it available for use by trained individuals?	✓		
8	Are written and readily available records maintained of all applications of pesticides made by certified applicators, including the following? - the quantity of each pesticide used - the chemical or common name of the active pesticidal ingredient(s) (not the product name) - the pest or purpose for which the pesticide was applied --the date and place of application.	✓		
9	Is the chemical storage structure/area locked, well ventilated, fire proof, and access is limited to select personnel?	✓		
10	Are food storage and prep areas properly cleaned to reduce the likelihood of pest infestations and required pesticide applications?	✓		
	Point totals for each column - Response percentage	**8**	**1**	**1**

Pollution Prevention

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there designated "no-mow" areas (other than ponds) and "no spray zones" and buffer areas around pond, river, stream, or lake edges and have they been communicated to mower operators and pesticide applicators?	✓		
2	Has the Installation Spill Plan been amended to include the golf course facility and is there a spill containment kit at each required location and are spill containment procedures in place?		✓	
3	Does the chemical storage area have a sealed metal or concrete floor and are all pesticides handled over an impermeable surface?	✓		
4	Does the chemical storage area have a lip along the edges to contain spills?	✓		
5	Are liquid products stored below dry products and are dry materials stored on pallets or shelves to keep them off the floor?	✓		
6	Have all the golf facility employees regularly received documented and approved HAZCOM and safety and health training?	✓		
7	Are grass clippings blown off equipment with compressed air instead of or prior to washing?		✓	
8	Are gasoline, motor oil, brake and transmission fluid, solvents, and other chemicals used to operate or maintain equipment and vehicles prevented from directly or indirectly entering water bodies?	✓		
9	Has the watershed in which the course resides and contributes runoff to been identified and mapped to aid the golf course staff in the management of their facility?			✓
10	Are appropriate quantities of fertilizers applied during weather conducive to reducing the potential for leaching and runoff?	✓		
	Point totals for each column - Response percentage	**7**	**2**	**1**

Conservation Practices

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are recycling containers conveniently provided for customer and employee use throughout the golf course facility?		✓	
2	Are there officially and appropriately designated minimally maintained areas on the golf course facility grounds?	✓		
3	Has the irrigation system or its components recently been upgraded to reduce inefficiency, malfunction, and overall water use?		✓	
4	Has all "non-target" irrigation (ponds, natural, or out of play areas, etc.) been eliminated or minimized?	✓		
5	Have flow meters been installed to monitor water use and detect potential waste?			✓
6	Has the entire golf course facility property been examined for critical habitats, threatened or endangered species, wetlands, floodplains, and historical/cultural resources?	✓		
7	Are employees encouraged to minimize their trips around the course to conserve on the use of fossil fuels?			✓
8	Does the snack bar utilize reusable plates and silverware for use by customers throughout the facility's operating hours?	✓		
9	Have all potential "no-mow" area maintenance practices been coordinated with the installation BASH officer and environmental management personnel?			✓
10	Are all motorized golf course equipment checked regularly for excessive air polluting emissions?	✓		
	Point totals for each column - Response percentage	**5**	**2**	**3**

Water Resources

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are water features regularly monitored for algae, erosion, excessive aquatic plant growth, fish kills, and sedimentation?	✓		
2	Are wash and wastewater kept from making direct contact with surface water and are they recycled or allowed to filter through a vegetative area when cleaning and maintaining equipment?	✓		
3	Outdoor irrigation of non-golf course landscape areas are regularly monitored and maintained for leaks and efficient performance?	✓		
4	Has the golf course staff coordinated with stormwater management planning requirements from the installation's environmental staff?			✓
5	Have part circle irrigation heads been installed where possible to preserve water resources and reduce maintenance while minimizing potential negative impacts to surrounding minimally maintained areas?	✓		
6	Are all water feature maintenance tasks coordinated with the installation natural resource manager and bird/wildlife aircraft strike hazard officer?	✓		
7	Has the irrigation system been completely checked for proper water distribution in all irrigated areas and are water leaks fixed in a timely manner?		✓	
8	Are moving water bodies such as streams or creeks that pass through the golf course regularly monitored for water quality both upstream and downstream of the course?	✓		
9	If required, does the facility have a Drought Management Plan written, ready, and available if, or when, irrigation restrictions may be instituted and required by the community or the installation?			✓
10	Are water quality problems immediately reported to supervisors or regulatory agencies (if required) for appropriate action?	✓		
	Point totals for each column	**7**	**1**	**2**

Maintenance Practices

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Is there a written, regularly updated, and readily available Golf Course Maintenance Plan?	✓		
2	Does the Maintenance Plan include individual plans to include Integrated Pest Management, Tree Management, Hazard Communication, Drought Management, Water Feature Management, and a Site-Specific Spill Prevention Response Plan?		✓	
3	Are green, tee, and fairway mowing heights maintained at reasonable levels without continually stressing turf or maximizing chemical inputs?	✓		
4	Are there regular procedures in place to continually improve soil health such as topdressing, organic amendments, aeration, and drainage?	✓		
5	Is there a map of the course's "hot spots" requiring special care or regular attention?			✓
6	Is all maintenance equipment maintained and cleaned in a manner that eliminates the potential for spreading of pest or disease contamination?	✓		
7	Has there been a complete examination for potential negative environmental impacts of all aspects of the golf course facility operation including the snack bar and grill, clubhouse, pro shop, and maintenance complex?	✓		
8	Is contour mowing used to conserve fuel and increase playability and aesthetics?	✓		
9	Have all playing surfaces been inventoried and mapped for soil types including soil structure, nutrient levels, organic content, compaction, and water infiltration?			✓
10	Are soil tests and plant tissue analysis used to determine nutritional requirements?	✓		
	Point totals for each column - Response percentage	**7**	**1**	**2**

Customer Relations & Education

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are the course manager and superintendent involved in a regularly updated, documented, and on-going customer educational program?		✓	
2	Is there a conveniently located and highly visible place at the course or clubhouse where golf course environmental management notices and informational messages are regularly posted for customers?	✓		
3	Do the course manager and superintendent actively communicate with customers to determine and document their points of view?	✓		
4	Is there active and regular communication with the golf management staff, civil engineering, environmental management, the Services manager, and commanders by course management?	✓		
5	Does the golf staff regularly survey their customers on how they rate the various elements of the golf course facility?	✓		
6	Is there consistent and attractive signage around the course and grounds that would increase the awareness of the average golfer to the environmental management practices employed?		✓	
7	Are there signs appropriately located to warn golfers of hazards when drinking reclaimed or otherwise non-potable water?	✓		
8	Are there interpretive signs posted to highlight key habitats or have appropriate areas been designated "Environmentally Sensitive Zones" per USGA rules?	✓		
9	Are course staff members trained regularly on how to improve their dealings with customers?	✓		
10	Are there clinics provided to teach beginning golfers the basics of the game and to teach all levels of golfers the rules of the game?	✓		
	Point totals for each column	**8**	**2**	**0**

Miscellaneous Special Projects & Activities

#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there projects planned and funded for the near future that would demonstrate the compatibility of the course's management methods with protection of the environment?	✓		
2	Are there projects planned and funded to reduce the course's potential negative environmental impacts?		✓	
3	Are there tournaments or other events planned that may educate customers on the environmental challenges faced by the golf staff at this installation?	✓		
4	Are there regular field trips for local students or other local community groups hosted at the course?			✓
5	Are there projects planned to eliminate or minimize a potential erosion problem?	✓		
6	Does the course have a native tree installation program complete with planting plan and maintenance schedule?	✓		
7	Are any of the local schools or universities involved in educational or research activities at your course?	✓		
8	Are there special facility-wide recycling programs underway?	✓		
9	Is your course an active participant in the USAF Golf Environmental Management Program?	✓		
10	Has your facility been nominated by your MAJCOM for the golf course environmental management award in the last 3 years?			✓
	Point totals for each column	**7**	**1**	**2**

ECQ Summary

#	Environmental Compatibility Quotient Category	Yes	Partial	No
1	Overall Management Philosophy & Documentation	5	5	0
2	Safety, Training, & Awareness	8	1	1
3	Compliance	5	3	2
4	Pesticide Use, Storage, & Handling	8	1	1
5	Pollution Prevention	7	2	1
6	Conservation Practices	5	2	3
7	Water Resources	7	1	2
8	Maintenance Practices	7	1	2
9	Customer Relations and Education	8	2	0
10	Miscellaneous Special Projects & Activities	7	1	2
	Composite point total/response percentage	**67**	**19**	**14**

GCEBA Results

✳ **Woodlawn Golf Course, Ramstein AB, Germany**
- **Actual ECQ (# of "Yes") = 67 "Early stages"**
- **Potential ECQ (Actual ECQ plus "Partial") = 86 "Getting there"**

Conclusion

Ramstein's Woodlawn Golf Course is a wonderful facility. From the almost palatial clubhouse to the demanding, yet playable 18-holes, Airmen stationed nearby have one of the U.S. Air Force's best appointed recreational resources. Superintendent Dan Petersen and his staff have fashioned an extremely well maintained course despite the difficulties of being surrounded by a dense, tall forest where they have little to no control. Considering there are still areas with excessive shade and minimal air circulation, the course is excellent.

Manager Brian Roush is well equipped to handle the demands of his customers for a long, long time. The new clubhouse has one of the best pro shops observed anywhere. The steak house should continue to draw fans during the evening hours and the full service snack bar does a vibrant breakfast and lunch. All in all, there should be no worries about the future of Woodlawn Golf Course and Ramstein AB.

Observations

- Need to compile and document actions already taken to create "continuity" document
- Utilize installation environmental management geographic information system and civil engineering digital aerial photographs for mapping requirements
- New clubhouse interior should be appointed with a location to present environmental information to customers
- Expanded training for all employees a must to completely realize GEM goals
- Ensure employee's health is prime consideration
- Consider using AFCEE for on-site golf course environmental management training
- Business tempo makes it difficult to train much of the staff at one time
- Ensure ECAMP results continue to be outstanding
- Further reduce solid waste streams from clubhouse operations
- Increase communication with customer on conservation practices that are already in place
- Continue building relationships with installation natural resources manager and other environmental professionals
- Provide detailed input to the scheduled update of installation integrated natural resources management plan (INRMP)

- Increase training and involvement of staff on integrated pest management procedures
- Compile written pest profiles of common pest species
- Continue to involve installation youth through rules and instruction clinics
- Initiate Earth Day environmental awareness golf tournament
- Educate customers about the benefits of an environmentally friendly golf course
- Demonstrate dedication to “growing” the great game of golf to young airmen, other installation non-golfers, and youth through regular, year round activities.

Areas needing improvement

The ECQ Summary on the previous page highlights the following areas for relative improvement at Altus AFB:

- Overall Management Philosophy & Documentation
- Compliance
- Conservation Practices

The gallery

This section of the report will be where some of the more revealing photographs (of the literally hundreds taken during the site visit) of pests, maintenance practices, and other areas where improvements may be made to create the best possible golf facility.

The ants that created this mound may be protected under German law.

Teaching kids the game of golf is one of Woodlawn’s primary goals.

Foot traffic is wearing out the turf on the par 3, 3rd tee.

Driving range net is in need of repair.

The starter "shack" is located in close proximity to the 1st tee.

Pathway to new parking area is beginning to erode.

This area is signed and managed as an environmentally sensitive area.

The left side of the 13th teeing area suffers from lack of sunlight.

Maintenance equipment uses the wash rack by the clubhouse.

Equipment fuel tanks are located off the 1st hole near the post office.

Improving the course is a constant proposition at Woodlawn.

Maintenance staff uses turf nursery for repairing a green on the course.

Looking back from behind the 18th green.

Regular green rolling improves playability and customer satisfaction.

Environmental challenges

One of the important results of the GCEBA process is the identification of significant environmental challenges to be addressed in the long-term GEM Planning process. Ideally, the golf staff will address each issue from the best way to satisfy the goals of the golf facility and acceptable levels of course playability and customer satisfaction. The golf staff's preferred management approach for these issues should then be coordinated with the installation's environmental staff for refinement, coordination, and approval.

The GEM Plan would then consist of the environmental challenges, the approach to their management, a map showing where these challenges occur on the golf course, a booklet that describes the mapped challenges, goals and objectives for future years, and a set of best management practices.

The following environmental challenges were identified during the GCEBA process at Woodlawn Golf Course, Ramstein AB, Germany:

- Forestry management
- Installation Restoration Program (IRP) Site
- Wetlands
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Environmentally protected areas

The trees of Woodlawn influence both playability and maintainability.

FORESTRY MANAGEMENT

According to the INRMP, forested areas of Woodlawn Golf Course are under the ownership and management of the State Forest Department (Forstamt Kaiserslautern). A commercial forest inventory is maintained by the Bundesforstwaltung, and was last updated in 1994. Air Force Instruction (AFI) 32-7064, Integrated Natural Resources Management, along with the USAFE supplement to the Instruction, state that installations must develop an urban forest component plan to the INRMP, and that such plan should satisfy the criteria for "Tree City" status as designated by the National Arbor Day Foundation. The installation currently does not have an urban forest inventory or plan.

Coordination with German officials is necessary before removing leaf litter in forest areas, such as may be found in groves of trees on semi-improved grounds between buildings. The Ramstein Golf Course manager regularly negotiates with the local Forstmeister on removal of forest leaf litter in certain areas within the golf course grounds. In forest areas where a player's golf balls tend to leave the fairway, the golf course managers periodically remove the leaf litter to assist the golfer in finding and playing the ball.

Recently, many trees have been selectively removed on the course.

INSTALLATION RESTORATION PROGRAM SITE

There is a IRP site nearby the 3rd teeing area that is scheduled for cleanup. No addtional information was collected. Inquiries as to the status should be made.

This water feature connects the pond on the 8th with the environmentally sensitive area on the 9th.

WETLANDS

The 8th hole pond and its outfall area in the direction of the 9th tee is potentially the only area of the golf course facility grounds that could qualify as a wetlands or sensitive landscape biotope. These surface waters are among the few located on the installation. Maintenance practices in close proximity should be coordinated with installation environmental staff to ensure compliance with local laws and regulations. Pesticide and fertilizer application buffers should be considered if they have not been already.

BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH)

Although the BASH Plan does not mention the golf course as a potential source of difficulties for the flying mission at Ramstein AB, one of the installation's surface waters is the pond at the 8th hole. Current management practices appear to be working well as no waterfowl was observed during the site visit. Any proposed changes to the current practices probably should be coordinated with installation flight safety office and natural resources manager. The golf course's primary function is to support the mission and doing whatever it takes to minimize or eliminate potential impacts or risk is paramount.

An aerator increases aesthetics while improving water quality.

Sensitive landscapes require special treatment by golfers and the staff.

ENVIRONMENTALLY PROTECTED AREAS

There are at least two areas on the course that are designated, signed, and managed as environmentally protected. The first is just to the left of the 2nd teeing area. The second is near the 9th teeing area. There is a potential for selected important animal and plant species occurring in these areas. Superintendent Dan Petersen is wise to discourage foot traffic in these areas by golfers by making them lateral water hazards. Further investigation and inquiry with installation natural resources manager to determine if continuing with current designation and maintenance practices is necessary.

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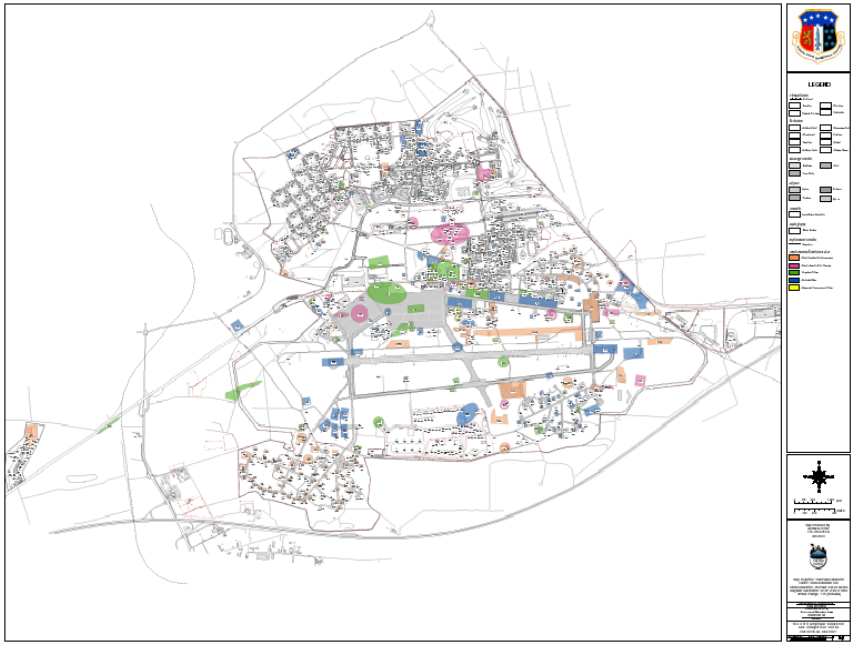

Environmental restoration areas on Ramstein AB.

Air Force Center for Environmental Excellence
Technical Directorate
Environmental Science Division

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http://www.afcee.brooks.af.mil/ec/golf/