



Falcon Creek Golf Course
Environmental Management Plan
McGuire AFB, New Jersey Sep 07





Falcon Creek Golf Course Environmental Policy

**In concert with the
McGuire AFB mission,
we pledge to employ
only those management practices
that minimize or eliminate the potential
for negative impacts to the environment
and the surrounding community,
ensure compliance with all appropriate regulations,
and to constantly reevaluate our processes
to achieve the highest standards
of environmental excellence.**

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. AFI 32-7064 requires a GEM Plan as part of the Integrated Natural Resources Management Plan (INRMP).

The primary tenets of the GEM Program are to minimize or eliminate potential negative environmental impacts, 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 Compatibility Quotient

Actual ECQ	57
Potential ECQ	76

Final environmental challenges

The following environmental challenges were identified during the GEM Plan process:

- Water quality & stormwater management
- Airfield criteria violations
- Wetlands & floodplains
- Threatened & endangered species
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Proposed greens renovation project
- Water conservation/long term supply
- Environmental restoration program (ERP) sites

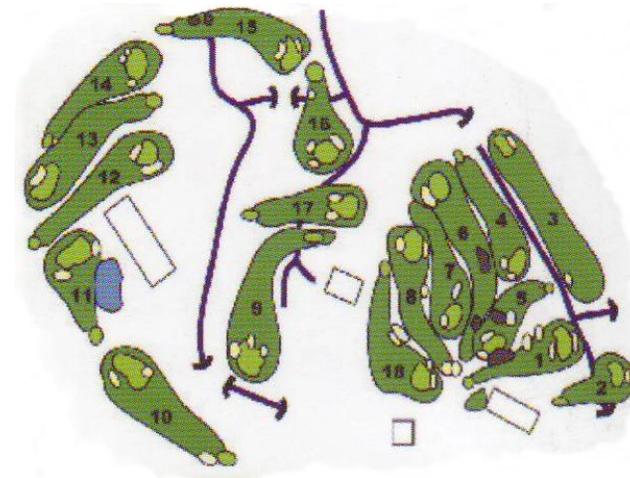
Where do we go from here?

The true measure of a successful GEM program is how well is it executed in the field each and every day. The installation golf and environmental staffs should continue to analyze, document, monitor, evaluate, revise, and implement changes based on lessons learned. The GEM Plan should be updated annually and revised during the next INRMP iteration update. The entire GEM process can be found on the regularly improved AFCEE GEM program website (<http://www.afcee.brooks.af.mil/ec/golf/>).

Analysis

Course details

Architect	Unknown
Year constructed	1955/1969
Climate	Humid mid-latitude
Average annual rainfall	44 inches
Average growing season	230 days
Winds/Prevailing Direction	West northwest/southwest
Total Facility Acreage	120
Par	35-36-71
Yardage/Rating/Slope	Blue/6764/72.6/122 White/6434/70.6/118 Red/5384/70.7/118
Turfgrass	Kentucky
Tees-	bluegrass/perennial ryegrass/fescue
Fairways-	Kentucky bluegrass/perennial ryegrass/fescue
Greens	Creeping bentgrass
Roughs-	Kentucky bluegrass/perennial ryegrass/fescue
Irrigation water source	Potable (city water)



Creek Course Layout

Falcon

Course description

Like many of the facilities in the U.S. Air Force golf program inventory, the Falcon Creek Golf Course at McGuire AFB, New Jersey is a tale of two faces. The initial nine holes were constructed in 1955 and is very different in appearance and design from the other. The second nine was added in 1969.

The older holes suffer from the same maladies as many of the older U.S. Air Force golf layouts – small, push-up greens that are difficult to maintain due to poor surface and internal drainage and inappropriate soils. All things considered, the course is still a lot of fun to play as it winds through the New Jersey Pinelands that is crisscrossed with creeks and streams. The course is scheduled for new greens in 2008 courtesy of architect Stephen Kay.



Falcon Creek Golf Course Aerial Photo

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 beauty that is the New Jersey Pinelands is evident here at the 15th hole at Falcon Creek Golf Course.

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
90-100%	Advanced (Green)
70-89%	Showing progress (Yellow)
69% or less	Getting started (Red)



Hard to beat being the first one on the course on a perfect day....



The golfing experience is improving at Falcon Creek Golf Course.

Overall Management Philosophy & Documentation				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Has installation environmental and golf 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 identified environmental challenges available, used in the environmental management decision-making process, and is it posted for customers?			✓
5	Are environmental challenges and their management method, target, and objective, and overall golf course GEM program goals evaluated at least annually and are they regularly communicated to employees, customers, management, and the local community?			✓
6	Are written records of water quality monitoring activities, results, and control measures collected and readily available?	✓		
7	Is there an inventory of bird and mammal species 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 considered prior to their use as part of the course environmental management planning process?	✓		
10	Are records of pest treatments and their effectiveness maintained and used to guide future pest control decisions?	✓		
	Point totals for each column	6	2	2

Safety, Training, & Awareness				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are all golf course employees familiar with the GEM program and are they trained on the importance of environmental compliance with the goals and objectives of the program as it applies to their specific duties?			✓
2	Are all appropriate employees trained to be familiar with U. S. Air Force, federal, state, and OSHA regulations that apply to the storage, handling, and disposal of all chemicals potentially used on the property?	✓		
3	Are all employees aware of the potential risks to human health and the environment of chemical use, storage, and disposal?	✓		
4	Do all maintenance employees receive documented training on their work duties that may adversely impact on- and off-site water quality and wildlife species and their habitats?	✓		
5	Is a current copy of Material Safety Data Sheets (MSDS) for all chemicals used anywhere on the golf course property maintained and readily available for use by regularly trained employees?	✓		
6	All employees receive regular, documented training on all potential OSHA issues associated with their specific duties?	✓		
7	Are all golf course pesticide applicators active participants in a respiratory and/or pulmonary testing program?	✓		
8	Are all pesticides, fertilizers, and other chemicals 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 planned or recently completed spraying of any chemical or fertilizer that may potentially be hazardous to human health or general public safety?		✓	
10	Are key staff members trained regarding water quality and conservation issues pertinent to the course and their particular duties?		✓	
	Point totals for each column	6	2	2

Compliance				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are the fuel storage/delivery area and associated equipment managed in accordance with federal, state, and local regulations?		✓	
2	Are installation environmental staff members regularly consulted on pertinent course management discussions and plans?	✓		
3	Are there golf course staff meetings where environmental management issues are regularly discussed with all employees?	✓		
4	Do the director of golf and the superintendent attend all internal and external ESOHCAMP in-briefings and out-briefings?	✓		
5	Do the director of golf and/or the superintendent coordinate their input on the various management plans that affect or include the golf course with installation environmental staff?		✓	
6	Have all environmental challenges been physically identified and mapped to aid the golf staff's daily management efforts?		✓	
7	Has appropriate impact analysis (NEPA) been performed on all proposed actions on or affecting the golf course property?	✓		
8	Are oil containers used to collect old oil in good condition and correctly labeled?	✓		
9	Has the golf course staff assisted the installation environmental staff with the required Golf course Environmental Management Plan requirements?	✓		
10	Were there less than two major golf course facility-related findings during the last official ESOHCAMP visit?	✓		
Point totals for each column		7	3	0

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 pest populations that notify management include findings into a report or guide for future use?			✓
2	Are there written pest profiles of common pest species with a variety of potential control measures including cultural, biological, physical, and mechanical controls prior to treating the problem on the course?	✓		
3	Are there established, documented, and utilized aesthetic and functional thresholds for effective management of pests that may also reduce chemical use?	✓		
4	Is there a specially designed pesticide mixing area where all mixing is performed by appropriately trained personnel?		✓	
5	Has a current list of all pesticides and other chemicals stored or used at the golf facility recently been provided to the appropriate Fire Department(s)?	✓		
6	Is there a written, readily available, and regularly updated Integrated Pest Management Plan for the entire golf course 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); - the pest or purpose for which the pesticide was applied; and the date and place of application.	✓		
9	Is the chemical storage structure/area properly located, well ventilated, fire resistant, and locked with access limited to select personnel?		✓	
10	Are there designated and documented "no spray" areas around pond, river, stream, or lake edges and have they been communicated to pesticide applicators?		✓	
Point totals for each column		6	3	1

Pollution Prevention				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there designated and documented "minimally-maintained" or natural vegetative buffer areas around pond, river, stream, or lake edges and have they been communicated to mower operators and pesticide applicators?		✓	
2	Is there a readily available copy of the Installation Spill Plan that includes the golf course facility and is there a spill containment kit at each required location with spill containment procedures in place?	✓		
3	Does the chemical storage area have a sealed metal or concrete floor and are all liquid 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 appropriate pallets or shelves to keep them off the floor?	✓		
6	Do all golf facility employees regularly receive documented and approved HAZCOM and safety and health training?	✓		
7	Are grass clippings removed from equipment with blowers or 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?	✓		
10	Are appropriate quantities of fertilizers applied during weather conducive to reducing the potential for leaching and runoff?	✓		
	Point totals for each column	7	1	2

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 appropriately designated and mapped 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 irrigation system flow meters been installed to monitor water use and detect potential waste?	✓		
6	Has the entire golf course facility property been examined for landfills, critical habitats, threatened or endangered species, wetlands, floodplains, and historical/cultural resources or other environmentally sensitive features?	✓		
7	Are employees encouraged to minimize their trips around the course to conserve on the use of fossil fuels and minimize potentially harmful exhaust emissions?	✓		
8	Do the restaurant and/or snack bar utilize reusable plates and silverware for use by customers throughout the facility’s operating hours?		✓	
9	Have the annual maintenance practices for the officially designated “minimally-maintained” or natural areas been coordinated with the installation Bird/Wildlife Aircraft Strike Hazard (BASH) officer and installation environmental management personnel?			✓
10	Are all motorized golf course equipment regularly checked for excessive air polluting emissions?	✓		
	Point totals for each column	6	3	1

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 equipment wash or wastewater kept from directly entering surface water and are they recycled or allowed to filter through a vegetative area?	✓		
3	Are outdoor irrigation of non-golf course landscape areas regularly monitored and maintained for leaks and efficient performance?		✓	
4	Has the golf course staff coordinated with the installation’s environmental staff on potential storm water management planning requirements?			✓
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, natural, or water feature areas?	✓		
6	Are all water feature maintenance tasks coordinated with the installation Bird/Wildlife Aircraft Strike Hazard (BASH) officer and installation environmental management personnel?		✓	
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 that pass through the golf course such as streams or creeks regularly monitored both upstream and downstream of the course for overall water quality?	✓		
9	Does the facility have an approved written and readily available Drought Management Plan if, or when irrigation restrictions may be required by the community or the installation?			✓
10	Is there a comprehensive, up to date, and readily available written Water Feature Management Plan for the entire golf course facility?			✓
	Point totals for each column	5	2	3

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 such as Integrated Pest Management, Tree Management, and Hazard Communication?		✓	
3	Are green, tee, and fairway mowing heights maintained at reasonable levels that do not unduly stressing turf or requiring additional chemical inputs?	✓		
4	Are there regular and documented procedures in place to continually improve overall course soil health such as topdressing, organic amendments, aeration, and drainage improvements?	✓		
5	Is there an up to date and readily-available map of the course's "hot spots", or those areas requiring special care or regular attention?			✓
6	Is all maintenance equipment maintained and cleaned in a manner that minimizes or eliminates the potential for spreading of pest or disease contamination?	✓		
7	Has there been a complete examination of all aspects of the golf course facility operation (including the snack bar and grill, clubhouse, pro shop, cart storage facility, and maintenance complex) for potential negative environmental impacts?	✓		
8	Is contour mowing used to conserve fuel and increase playability and aesthetics?	✓		
9	Have all playing surfaces been inventoried and mapped to identify potentially challenging soil types?			✓
10	Are soil tests and/or plant tissue analysis used to determine nutritional requirements?	✓		
Point totals for each column		7	1	2

Customer Relations & Education				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are the course manager and superintendent involved in an on-going and documented customer environmental management educational program?			✓
2	Is there a highly visible location at the course or clubhouse where golf course environmental management notices and informational messages are regularly posted for the education and enjoyment of customers?			✓
3	Do the course manager and superintendent actively communicate with customers to determine their points of view?	✓		
4	Is there documented, regular communication by course management with installation civil engineering, environmental, and leadership on GEM program issues or concerns?			✓
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 around or near recycled or otherwise non-potable water?	✓		
8	If applicable, have areas of the course been designated "Environmentally Sensitive Zones" per USGA rules?	✓		
9	Are course staff members regularly trained on how to improve their dealings with customers?	✓		
10	Are there clinics provided to teach beginning golfers the basics of the game to include the rules as well as the environmental challenges faced by the golf staff at their facility?		✓	
	Point totals for each column	4	2	4

Miscellaneous Special Projects & Activities				
#	Environmental Compatibility Indicator	Yes	Partial	No
1	Are there project(s) planned and funded for execution in the near future that would demonstrate the compatibility of the course's management methods with GEM program initiatives?			✓
2	Are there project(s) 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?			✓
4	Are there regular field trips hosted at the course for local students or other community groups?			✓
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 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	3	0	7

ECQ Summary

#	Environmental Compatibility Quotient Category	Yes	Partial	No
1	Overall Management Philosophy & Documentation	6	2	2
2	Safety, Training, & Awareness	6	2	2
3	Compliance	7	3	0
4	Pesticide Use, Storage, & Handling	6	3	1
5	Pollution Prevention	7	1	2
6	Conservation Practices	6	3	1
7	Water Resources	5	2	3
8	Maintenance Practices	7	1	2
9	Customer Relations & Education	4	2	4
10	Miscellaneous Special Projects & Activities	3	0	7
	Composite point total/response percentage	57	19	24

Sep 07 - Falcon Creek Golf Course, McGuire AFB, NJ

- Actual ECQ (# of “Yes”) = 57 (“Red” Getting started)

- Potential ECQ (Actual ECQ plus “Partial”) = 76 (“Yellow” Showing progress)

* = Category requires improvement or attention

Environmental challenges

One of the important results of the GCEBA process is the identification of potential environmental challenges to be addressed in the long-term GEM Planning process. After determining the relative significance and validation of each potential environmental challenge, the installation golf and environmental staffs should determine the set of final challenges that will be actively managed in the GEM Plan. Armed with the list of final environmental challenges, the golf staff should determine the best management approach that satisfies the goals of the golf facility from the course playability and customer satisfaction perspectives. Then the golf staff's preferred management approach should be coordinated with the installation's environmental staff for refinement, coordination, and approval.

Ultimately, the combined environmental and golf staff team should proceed toward implementing the GEM Plan prescribed best practices. The entire process can be viewed at the AFCEE GEM website (<http://www.afcee.brooks.af.mil/ec/golf/>).

FINAL ENVIRONMENTAL CHALLENGES

The following final environmental challenges were identified during the GEM Plan process:

- Water quality & stormwater management
- Airfield criteria violations
- Wetlands & floodplains
- Threatened & endangered species
- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Proposed greens renovation project
- Water conservation/long term supply
- Environmental restoration program (ERP) sites



Many areas of the course have been removed from regular care by designating them “minimally-maintained” and allowing the superintendent and his staff to focus on the condition of the actual playing areas.

Image has been removed due to the perceived potential threat to security.

Falcon Creek Golf Course Environmental Challenges



The course crosses several small to medium moving water bodies.

WATER QUALITY & STORMWATER MANAGEMENT

Of the three manmade ponds on McGuire AFB, two are considered permanent water bodies. Both of these are located on the golf course in the northeast portion of the installation and drain to South Run.

Driver/requirement

- Clean Water Act

Objective

Continue to assist installation environmental restoration professionals with the study and monitoring of the site.

Management Practices

- Continue work with CEV to ensure golf course operations do not hamper water quality or storm water management

Target

Meet with CEV annually or more if needed to assess conditions and corrective actions.



A major waterway bisects the outward nine at Falcon Creek.



Aircraft operations are integral to the golfing experience.

AIRFIELD CRITERIA VIOLATIONS

The golf course is located at the northeastern end of the main runway at McGuire AFB. The 15th and 16th holes are within the clear zone which usually requires that a waiver to the airfield criteria be maintained.

Driver/requirement

- AFI 32-7063, Airfield Installation Compatible Use Zones, (AICUZ); UFC 3-260-1, Airfield & Heliport Planning & Design

Objective

Continue maintenance of all airfield criteria waivers and coordination and communication with airfield managers.

Management Practices

- Meet with civil engineering to coordinate clear zone requirements and golf course impact
- Mow all minimally-maintained areas adjacent to the airfield in accordance with 7-14” requirement

Target

Coordinate with civil engineering annually to access clear zone issues related to golf course operations.



The flying mission is the most important activity at McGuire AFB.



McGuire's wetlands are abundant at Falcon Creek.

WETLANDS & FLOODPLAINS

Seven different delineated wetlands occur on or near the golf course facility. These wetlands are variously classified as palustrine forested, palustrine open water, palustrine scrub-scrub, and palustrine emergent wetlands types and are between 0.13 and 22.48 acres in size. Much of the inward nine holes are surrounded by these delineated wetlands. Golf course management must continually monitor maintenance activities in these areas.

Driver/requirement

- Clean Water Act, Section 401 & 404
- Executive Order 11990, Protection of Wetlands
- New Jersey Freshwater Wetlands Protection Act

Objective

Never violate Section 404 requirements as a result of golf course management practices.

Management Practices

- Establish appropriate fertilizer and pesticide application buffers along all delineated wetlands
- Coordinate in advance all maintenance practices within wetland boundaries, if any, with installation environmental management personnel
- Continue compliance with Pinelands Comprehensive Management Plan requirements

Target

Within 45 days of approval of management approach by the environmental staff, conduct training with appropriate maintenance personnel.



Along with the bog turtle, the bald eagle is federally-listed as a threatened species on McGuire AFB.



This map depicts threatened or endangered species occurrence.

THREATENED & ENDANGERED SPECIES

There are several listed protected species that have the potential to occur on McGuire AFB installation property. Since the golf course is such a natural area, many of these species can probably be found on or near Falcon Creek Golf Course. The INRMP mentions the northern pike snake, timber rattle snake, the Northern harrier, clustered bluets, and Greene’s rush as state listed protected species and the bald eagle and bog turtle as federally listed threatened species. A general mention of the potential for “grassland nesting bird population” should be most notable for golf course management considerations.

Driver/requirement

- Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)
- Endangered & Non-game Species Conservation Act (New Jersey Statute Ann. 23:2A-1 to 13)
- Endangered Plant Species List Act (New Jersey Perm. Statutes 13:1B-15.151 to 15.158)

Objective

Ensure that no golf course management practice will be harmful to any of the species listed in the INRMP.

Management Practices

- Meet with civil engineering to access changes to INRMP and potential impact from golf course operations

Target

Coordinate with civil engineering annually to review INRMP and golf course impact.



A KC-10 takes off just behind this worker on the 15th green.

BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH)

Although the Falcon Creek Golf Course is not mentioned in the INRMP as a source of BASH concerns for McGuire AFB, the golf course is located in close proximity to the airfield. Any occurrence of unwanted bird species on the golf course should be communicated to installation BASH managers.

According to the INRMP, “McGuire AFB currently holds a USFWS Depredation Permit to authorize the taking of nuisance species to lessen the danger of bird/wildlife strikes with aircraft. However, depredation permits are not required for killing English house sparrows (*Passer domesticus*), European starlings (*Sturnus vulgaris*), common pigeons or rock

doves (*Columba livia*), and mute swans (*Cygnus olor*). In addition, 50 CFR 21.43 excludes the need for a depredation permit for red-winged blackbirds (*Agelaius phoeniceus*), rusty blackbirds (*Euphagus carolinus*), brownheaded cowbirds (*Molothrus ater*), common grackle (*Quiscalus quiscula*), and American crows (*Corvus brachyrhynchos*) when concentrated in such numbers and manner as to constitute a health hazard or other nuisance.”

Driver/requirement

- 305th Air Mobility Wing, Bird Aircraft Strike Hazard (BASH) Reduction Plan. 305th Air Mobility Wing Special Plan 127-15, 1996
- AFI 90-212,

Objective

Continue to assist installation environmental and airfield management professionals with BASH concerns.

Management Practices

- Coordinate with civil engineering to review current BASH Plan
- Mow all minimally-maintained areas in accordance with airfield management criteria
- Actively participate on the BASH working group

Target

Coordinate with civil engineering annually to review the BASH Plan.



Falcon Creek's greens will be renovated to USGA specifications.

PROPOSED GREENS RENOVATION PROJECT

As a result of an initiative of the Air Force Golf Program Manager, Eric Sudy, the Falcon Creek Golf Course is on the greens renovation schedule. During the site visit, the renovation project kickoff meeting was supposed to occur. The redo of the Falcon Creek greens is highly needed and will reduce inputs from pesticides to labor hours.

Driver/requirement

- Poor drainage and high maintenance requirements
- Better conditions will increase total number of rounds and move the facility toward a profitable bottom line.

Objective

Provide daily input into greens construction process as required to secure a quality product.

Management Practices

- Assist civil engineering and installation project management team with construction-related issues

Target

Continue supporting installation team until construction project is complete.



This new facility could provide a long term irrigation supply.

WATER CONSERVATION/LONG TERM SUPPLY

According to the INRMP, “McGuire AFB obtains its water supply from four deep wells (1,010 to 1,100 ft.) in the PRM System (USAF 1994). The base has a permit from NJDEP to withdraw up to 4 million gallons per day. Because of the continued drawdown of the PRM aquifer, the state has asked McGuire AFB and other federal facilities and municipalities in the region using the aquifer to reduce water consumption. In June 2001, McGuire AFB completed a study of its water supply requirements. The potable water needs of the base decreased slightly for a few years after 2001 and have since stabilized up to the present to just over 400 million gallons per year. Even though potable water needs have been reduced through conservation and other efforts, the current State-imposed restrictions preclude adequate withdrawal in order to meet McGuire’s mission.”

All efforts to reduce potable water use on the golf course should be initiated immediately to assist the installation in their water conservation initiative.

Driver/requirement

- Long term ability of the installation to perform its mission

Objective

Continue to assist installation environmental water resource management professionals with their conservation efforts.

Management Practices

- Work with CE to explore "gray" water options along with golf well options

Target

Meet with CE annually to assess water needs and track long term solutions for water usage.



Irrigation controls are state of the art at Falcon Creek.



There are several restoration program sites on the golf course grounds.

ENVIRONMENTAL RESTORATION PROGRAM (ERP) SITES

According to the INRMP, “OU 6 is composed of sites SS-25 and SS-26. Site SS-25 includes former entomology shops (Buildings 3207, 3208, and 3205). Site SS-26 is the former golf course pesticide mixing shop. These sites will be further investigated primarily for groundwater contamination from pesticides, herbicides, various inorganics (such as arsenic and lead), and other substances.”

The site is considered medium risk with potential impacts to soils and groundwater. The proposed schedule for the site calls for a feasibility study/record of decision in 2007 with long term monitoring expected to last until 2030.

Additionally, the INRMP includes “Golf Course Landfills OU includes LF-02 (Landfill No. 4, approximately 18 acres), LF-19 (Landfill No. 5, approximately five acres), LF-20 (Landfill No. 6, approximately 5.5 acres), and WP-21 (Waste Water Treatment Plant Sludge Disposal Area, approximately one acre). Located on the eastern side of McGuire AFB, all of these sites are located within the same geographic area and share similar groundwater concerns.”

Driver/requirement

- CERCLA/RCRA

Objective

Ensure there is no additional contamination as a result of golf course management procedures.

Management Practices

- Continue to manage pesticide use and storage to best ability given budgetary restrictions
- Work with CEV to assist as needed to support restoration program

Target

Meet with CEV annually to review golf related restoration projects and/or requirements.

GEM Plan goals & objectives

Goals are defined as actions or results that should be accomplished in the next year. A detailed description of these should be inserted here.

- Continue SVB involvement as Squadron representative on base environmental working group
- Continue golf course involvement in base EMS program which covers all aspects of the course operations
- Continue working course pesticide program which has been identified as a significant aspect for the base environmental working group

Objectives are defined as actions or results that are desired to be accomplished prior to the next INRMP update.

- Solve golf course pesticide usage and storage issue as identified in 2007 ESOCAMP inspection

GEM Plan best practices

Best practices are defined as any action, method, practice, or result that has proven its value and worth over time. The GEM program has been designed to create a body of scientific data to share with all U.S. Air Force installation golf and environmental staff members.

- Business Flight Chief designated as squadron representative for EMS and base environmental working group

Please see the AFCEE GEM program website (<http://www.afcee.brooks.af.mil/ec/golf/>) for more information.



Conclusion

The Civil Engineering Squadron’s unit environmental coordinator program should provide the key oversight to assist in improving the ability of the golf and environmental staffs to work together to better support the McGuire AFB mission. In addition, conserving precious water supplies through the application of science, engineering, and demonstrated environmental stewardship may be the only other major issue facing the McGuire AFB environmental and golf staff members.



This wonderful sculpture adorns the clubhouse entry landscape.



The clubhouse snack bar can handle a large lunch time crowd.

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 within the limited budget and support of the mission.



Lowered walls limit the new cart storage facility's utility.



The maintenance complex area is out of compliance and is unsafe.



This new facility could provide a long term irrigation supply.



Recycling is conducted facility-wide.



Maintenance equipment fuel tanks may be out of compliance.



Tree care is a huge task for the golf staff to perform.



The inward nine features open spaces and natural landscapes.



Clubhouse has proven to be oversized and difficult to maintain.



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Please visit our Golf course Environmental Management (GEM) Program website:
<http://www.afcee.brooks.af.mil/ec/golf/>