

Detroit District
U.S. Army Corps of Engineers

File Number 88-245-003-5

**Department of the Army Permit Evaluation
Homestead - Bayberry Mills/Kuras Properties**

This document constitutes my Environmental Assessment, Public Interest review summary, and, if applicable, my factual and compliance determination according to the 404(b)(1) Guidelines for the work proposed for permit. It was prepared from a generic master document that facilitated consideration of the range of all possible impacts from projects within the purview of the Regulatory Program of the Army Corps of Engineers, in accordance with 33 CFR Part 320, 33 CFR Part 325 Appendixes B and C, and 40 CFR Part 230.

I. Application Processing

A. Name of Applicant: Bayberry Mills (aka Kuras Properties and The Homestead) Robert Kuras.

B. Work Description:

1. The most recent plans showing the proposed work are attached (Encl. 1.). The applicant proposes to fill approximately 3.65 acres and clear approximately 10.16 acres of wetlands to construct an 18-hole golf course adjacent to the Crystal River at Glen Arbor, Michigan. Therefore, the total wetland impact would be approximately 13.8 acres. This alternative will be referred to as the applicant's preferred alternative or "PA". The site in question is bisected by County Road 675 (CR 675). The PA course layout involves 4 holes

north of CR 675, with the remaining 14 holes located south. The area north of CR 675 is located within a river "meander" and the holes, tees, and fairways are located in greater proximity to the riparian corridor than holes south of CR675.

2. In response to comments received and our request to consider less damaging alternatives, the applicant developed alternatives 3(d) and 3(e) that confine the entire golf course to the area south of CR675 (Encl 2a and 2b). These alternatives will be referred to as 3(d) and 3(e). Alternative 3(d) was coordinated with Federal agencies for comment and was obtained (under the Freedom of Information Act(FOIA)) by the Friends of the Crystal River (FOCR), who also provided comments on that alternative. Alternative 3(e) was developed by the applicant in response to those comments and after discussions with U.S. Army Corps of Engineers (USACE) staff. Alternative 3(e) involves the discharge of fill in approximately 4.1 acres of wetland and the clearing of approximately 6.2 acres to create fairways, and the excavation of approximately 1.2 acres of wetland to obtain fill material (a pond would be created). Therefore, the total wetland impact would be approximately 11.5 acres.

NOTE according to the applicant's 29 Jan 2000 letter:

- a. The applicant has not revised the permit request; the PA remains the permit proposal.
- b. The applicant has indicated their Board of Directors would "consider" donation of a 7.5 acre portion of the area north of CR 675, if necessary, to mitigate for plan 3(d). The applicant has an option to buy this property. They specifically, stated "no other part of the 47 acres to the north of CR 675 will be considered for restriction or donation for mitigation"... doing so would not be proportional to the impact of the project."

3. The applicant has indicated that if a permit is not issued, their housing alternative (HA) would be to construct homes on both sides of the CR 675 (Encl.3).
 - a. The applicant has indicated a willingness and ability to construct homes or sell lots for home construction without requiring U.S. Army Corps of Engineers (USACE) authorization. Although conceptual plans have been submitted for this alternative, there is insufficient information to conclusively determine that USACE permits would not be required.
 - b. The potential exists that a limited housing development could occur north of CR 675 without discharges of fill or clearing activities in wetlands. Permits may be required for utilities (backfill) and access, depending on the density and number homes proposed. It appears those residences would be highly marketable.
 - c. Limited housing development could occur south of CR 675 without discharges of fill or clearing activities in wetlands. However, it appears likely that permits would be required for development at the density and locations as suggested by the applicant in his letter of December 21, 1999(Encl.60b).
4. "Clearing" activities proposed by the applicant would consist of two types of actions:
 - a. Mechanized landclearing and other clearing operations involving redistribution of soils and/or additions of fill which require USACE authorization (per 33CFR 323.2(d)).
 - b. Removal of vegetation only, with no redistribution of soils (unregulated activity). USACE is considered to have "control and responsibility" for this type of landclearing per 33 CFR Appendix B(7)(b). For purposes of the Environmental Assessment and the public interest determination,

both types of clearing (a and b) will be considered within the scope of analysis.

c. Acreage for both type a. and type b. clearing are combined, as the ultimate goal of the clearing is to maintain the vegetation within the cleared areas in a quasi-fairway state. The impacts of both types of clearing are substantively the same. Manipulation of the vegetation community would impact various aquatic and other environmental functions.

5. Scope of Analysis: Other work within the scope of analysis for this evaluation but lying outside of direct USACE jurisdiction consists of construction of holes, or portions thereof, on uplands, clearing activities not requiring permits, excavation of uplands within the project site to obtain borrow material and/or to create ponds, grading/reshaping of ridge portions of ridge/swale landforms, and other development of associated uplands, particularly for housing and golf appurtenances.

a. The District has the authority to consider the secondary (indirect) impacts from the proposed golf course. This authority is derived from the NEPA (National Environmental Policy Act) implementation procedures for the Regulatory Program at 33 CFR 325, Appendix B. Part 7(b) of these regulations provides a discussion on determining the scope of analysis under NEPA. Part 7(b)(2) states:

"A district engineer is considered to have control and responsibility for portions of the project beyond the limits of Corps jurisdiction where the Federal involvement is sufficient to turn an essentially private action into a Federal action. These are cases where the environmental consequences of the larger project are essentially products of the Corps permit action."

b. Under NEPA, the District Engineer's review can be extended to the entire project, including portions outside waters of the U.S., if sufficient Federal control and responsibility over the entire project exists. Once the DE has established the scope of

analysis, the project analysis must include the direct, indirect and cumulative impacts on all Federal interests within the purview of NEPA.

c. In this project, discharges of fill in wetlands to create the golf course require a Department of the Army (DA) permit pursuant to Section 404 of the Clean Water Act.

d. Also, while the Corps does not have the authority to directly regulate upland, it can require vegetated buffer zones around wetlands and other waters of the U.S. (Final Notice of Issuance and Modification of Nationwide Permits, Federal Register/Vol.65, No.47/Thursday, March 9, 2000/Pg.12818; and Army Corps of Engineers Standard Operating Procedures for the Regulatory Program.) Vegetated buffers adjacent to waterways and wetlands help maintain the chemical, physical and biological integrity of these aquatic resources. This is the goal of the Clean Water Act, as stated in Section 101, and is applicable to all sections of the act including Section 404. The vegetated buffer requirement is not an attempt to regulate uplands or to mitigate for upland impacts. It is, however, a method to protect and minimize impacts to aquatic habitats and water quality.

e. The HA alternative would likely result in the construction of houses, both north and south of CR675; this could occur without the need for Federal permits.

C. Purpose:

The applicant indicated the project purpose is "to add an 18 hole, championship quality golf course so as to again be competitive in our industry in the Spring and Fall" (see letter dated December 21, 1999). Our interpretation of the project purpose relevant to alternatives in NEPA Regulations (Appendix B, 7.) and Regulations at 320.4(a)(2)(ii), relevant to necessity in the context of 320.4(b)(1), and as defined in the 404(b)(1) Guidelines and subsequent guidance is: **To add a regulation golf course, with associated housing, to the resort to address seasonal and competitiveness issues.**

D. This application for a Department of the Army permit is being reviewed under authority delegated to the District Engineer by the Secretary of the Army and the Chief of Engineers by Title 33, Code of Federal Regulations, Part 325.8, pursuant to Section 404 of the Clean Water Act.

E. History: This application involves activities within a geographic area for which Section 404 authority had been delegated to the State of Michigan. In accordance with the delegation agreement, Section 404 decision authority was returned to the Detroit District, USACE. The following is a chronology of events leading to the submission of an administratively complete application to USACE:

January 1988 - Initial submission of application to the Michigan Department of Natural Resources (MDNR)

July 1988 - First MDNR denial (Encl.4)

February 1989 - Second MDNR denial (Encl.5)

August 27, 1990 - MDNR Contested Case Hearing (Encl.6)

November 1990 - State Natural Resources Commission votes to issue permit (Encl.7).

November 1990 - U.S. Environmental Protection Agency (USEPA) Regional Administrator (RA) Chicago, transfers decision authority to USACE (Encl.8).

1991 - USEPA and MDNR convene independent panel of wetlands experts to review proposal (Encl.9)- panel concludes "...we continue to have misgivings..."

April 1992 - RA reaffirms decision to maintain objection (Encl.10)

April 1992 - USEPA Administrator withdraws RA authority to oversee Michigan's implementation of the Federal 404 program (Encl.11)

May 1992 - USEPA Assistant Administrator withdraws objection and attempts to transfer decision authority from USACE to MDNR (Encl.12)

June 1992 - Friends of the Crystal challenge USEPA decision in District Court - Court rules it is unlawful for USEPA to attempt to revoke USACE authority and to attempt to transfer permitting authority back to MDNR (Encl.13)

July 1993 - Applicant appeals the District Court decision to the Sixth Circuit (Encl.14)

September 1994 - Sixth Circuit affirms District Court decision (Encl.15)

February 21, 1995 - Submission of incomplete application to USACE (Encl.16)

March 8, 1995 - Michigan Governor sends letter to Acting Assistant Secretary of Army (Civil Works) requesting elevation of decision to USACE headquarters (Encl.17a)

March 8, 1995 - Michigan Governor sends letter to the USEPA Administrator requesting support and cooperation with his request to elevate the decision to USACE headquarters. (Encl.18a)

March 31, 1995 - USEPA Administrator responds to Governor "We agree that there is already an extensive record available...we will be pleased to assist the Corps in any way possible with its consideration of this record." (Encl.18b)

April 12, 1995 - Detroit District Regulatory Office Chief, letter to applicant indicated "It is not appropriate to transfer the decision to Corps Headquarters." The letter also requested current plans and alternatives analysis to complete the application for processing and discussed other regulatory guidelines. (Encl.19)

May 10, 1995 - Acting Assistant Secretary of the Army Civil Works, responds to Governor "...no basis for elevating the case...the District will issue a public notice, evaluate all relevant information, and render a final decision." (Encl. 17b)

May 30, 1995 - USACE Detroit District request to applicant to provide up-to-date plans (Encl.20)

June 9, 1995 - second request by USACE Detroit District for plans (Encl.21)

July 24, 1995 - Office of the ASA (CW) sends a fact sheet to USACE Director of Civil Works on the USEPA state or tribal assumption of the Section 404 permit program. (Encl.22)

July 25, 1995 - U.S Senator from Michigan addresses letter to Commander, North Central Division, USACE on behalf of the applicant, requesting information on the status of the application and indicating that any assistance to the applicant would be appreciated. (Encl.23)

August 8, 1995 - Senator from the Senate Committee on Environment and Public Works' Subcommittee on Clean Air, Wetlands, Private property and Nuclear Safety sends letters to USACE Detroit District requesting all documents related to the application for a subcommittee investigation of alleged improper conduct relating to the processing of the application. (Encl.24)

August 23, 1995 - Commander, Detroit District response to Senator Faircloth, letter with enclosures. (Encl.25)

Chronology of events July, 28, 1995 - October 12, 1995. (Encl.26)

November 15, 1995 - Letter from President FOCR to Senator Baucus. Courtesy copy was sent to ACE Headquarters and the Detroit District Office. (Encl.27)

November 17, 1995 - Letter to Regulatory Project Manager addressed project alternatives, project purpose, and economic feasibility. (Encl.28)

November 28, 1995 - Chief, Regulatory Office Detroit District letter to applicant, addressed discrepancies of 1988 Wetland delineation, Memorandum from the Waterways Experiment Station (WES) and delineation done November 7, 1995 by Wetlands Branch at WES. (Encl.29)

December 7, 1995 - Assistant Director of Civil Works North Central Region, letter to President of FOCR in response to courtesy copy of November 15, 1995 letter to Senator. (Encl. 30)

December 12, 1995 - Statement of Understanding signed by President of Friends of Crystal River and applicant. Both parties were in support of an exchange of property between the applicant and The National Park Service. (Encl.31)

1995-1998 (approximate) The applicant, NPS, Environmental group have discussions regarding swap of proposed golf course site with property owned by NPS.

March 7, 1996 - Letter to applicant gives 60 day deadline for application withdrawal. (Encl.32)

April 18, 1996 - Letter to Commander, Detroit District from the former founder and owner of the Homestead. Stated opposition to the proposed exchange of land between the National Park Service (NPS) and the applicant. Inquired about the legal issues of this "swap". (Encl.33)

June 20, 1996 - Application withdrawn because of failure to provide information required to administratively complete file (Encl.34)

May 18, 1999 - receipt of administratively complete application package (Encl.35)

F. Public Involvement: A list of the agencies, interested groups, and the public consulted regarding the PA is attached to the Public Notice, dated May 27, 1999, which expired on June 26, 1999 (Encl.36).

G. Federal, State, Local, and Public Comments Relating to the Activity:

1. Federal Agencies:

a. U.S. Environmental Protection Agency (USEPA):

- (1) June 28, 1999 (Encl.37a)- In response to the public notice (PA), recommended permit denial on the basis of non-compliance with the 404(b)(1) Guidelines. The basis of the recommendation was:
- aa. The applicant has not demonstrated that there are no practicable alternatives available that would have less impact on the aquatic environment.
 - bb. The project site consists of two community types (wooded/swale complex and a conifer swamp) which are rare in lower Michigan.
 - cc. "The project is proposed in an area that we consider to be an aquatic resource of national significance due to the rarity of the habitat types and the close proximity of the site to a National Lakeshore and Lake Michigan."
 - dd. The project will have significant adverse impacts on the water quality of the surrounding wetlands, the groundwater, and the Crystal River.
 - ee. The project is likely to cause degradation of wetland plant communities and wildlife habitat.
 - ff. The proposed mitigation is unsatisfactory in both quality and quantity. The replacement of wetlands should be in kind and the sites should not be fragmented and scattered.
- (2) March 9, 2000 (Encl.37b)- Comments regarding alternative 3(d):
- aa. Confining the project south of County Road 675 would significantly reduce the

direct impacts that the project would have on the Crystal River.

- bb. The proposed alternative increases the acreage of wetland that will be filled, cleared, and otherwise impacted and degraded by the project.
- cc. "alternative "3D" will result in significant degradation of this unique aquatic ecosystem."
- dd. The applicant has not demonstrated that no practicable alternatives exist and the new proposal does not resolve many of the concerns raised in the original objection letter.

b. U.S. Fish and Wildlife Service (FWS):

(1) June 25, 1999 (Encl.38a): Response to the public notice (PA), objected and strongly recommended permit denial, referenced their previous letters dated February 19, 1988, June 24, 1988, and February 7, 1989. The basis of the recommendation was:

- aa. "There appears to be no substantive difference between the currently proposed project and the project reviewed by the Service in this same location in 1988 and 1989."
- bb. Maintained the area contains "globally rare habitats"
- cc. Endangered species- "Our records indicate the endangered piping plover (*Charadrius melodus*), Michigan monkey-flower (*Mimulus glabratus* var. *michiganensis*) and the threatened Pitcher's thistle (*Cirsium pitcheri*) are found in the project area."

- dd. Other specific concerns/recommendations are contained in the appropriate assessment sections below.
- (2) February 29, 2000 (Encl.38b)- Reaffirmed their June 25, 1999 letter, which stated their concerns regarding the PA. Specific concerns regarding proposal 3(d) include:
- aa. Alternative 3(d) would deforest the majority of the site south of County Road 675.
 - 1. Rainfall absorption and storage would be compromised, which could lead to decreases in amounts of sediment and contaminant filtered in that area, affecting the water quality of runoff into the Crystal River.
 - 2. The removal of a larger percentage of trees may increase the likelihood of windthrow in the remaining area, potentially affecting forest habitat.
 - bb. Alternative 3(d) would directly impact approximately 24 acres of wetlands through filling, clearing, and excavation. Fragmentation and disruption of addition wetlands will cause significant degradation and impact on the remaining areas.
 - cc. The pond construction would cause a loss of functions and values provided by the existing wetlands.
 - dd. The benefits derived from moving the golf course away from the Crystal River are negated by the possibility of residential construction in that area.

- ee. The quantity and quality of the proposed mitigation is inadequate.
- ff. The reconfiguration of the course layout for alternative 3(d) results in a number of developments being placed much closer to the boundary of the National Lakeshore property. Direct and Indirect impacts to the Lakeshore resources are of great concern.

- (3) June 12, 2000 (Encl.38c): E-mail in response to the "Issue Paper for the Proposed Golf Course at the Homestead" prepared by Northern Ecological Services on behalf of the applicant, discussed the potential impacts to the Wooded Dune and Swale landforms.

c. National Park Service (NPS):

- (1) June 23, 1999 (Encl.39): Response to the public notice (PA). Stated concerns about possible impacts to Sleeping Bear Dunes National Lakeshore:

aa. Project would be located in wetlands adjacent to the Lakeshore.

bb. The Crystal River should be protected by local and state legislation.

- 1. "...under Michigan law, Part 31, Water Resources Protection, Natural Resources and Environmental Protection Act (PA 451), 1994, "...rivers flowing into, through or out of National Parks or National Lakeshores and wilderness rivers... shall not be lowered in quality..."
- 2. "Section 5(d) of the National Wild and Scenic River Act (Public Law 90-542) requires that, "In all planning for the use and development of water

and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas." In accordance with Section 5(d), NPS has listed the Crystal River on the Nationwide Rivers Inventory.

3. Specific concerns/recommendations are contained in the appropriate assessment sections below.

- (2) Comments regarding alternative 3(d) were incorporated into FWS response

2. Technical support from United States Army Corps of Engineers Waterways Experiment Station (WES):

- a. Technical Support for the Evaluation of the Proposed Homestead Development Along the Crystal River, Michigan by Dr. Richard A. Fischer and Dr. Mansour Zakikhani (June 2000) (Encl.40a)- Investigated riparian corridor and water quality issues.
- b. Further Investigation of the Proposed Homestead Development Along the Crystal River, Michigan Dr. Mansour Zakikhani and Dr. Richard A. Fischer (June 2000) (Encl.40b) - Investigated use and applicability of water quality models.

3. Congressional:

a. Congressman Bart Stupak:

- (1) March 30, 1999 (Encl.41a) - Requested an environmental impact statement and a public hearing on behalf of a constituent. Detroit District responded by letter dated April 13, 1999 (Encl.41b).
- (2) June 25, 1999 (Encl.41c)-Requested a public hearing and an environmental impact

statement on behalf of his concerned constituents.

- (3) November 8, 1999 (Encl.41d)- "Because of the negative public response to this proposed development thus far, as well as the U.S. USEPA, U.S. Fish and Wildlife, Department of the Interior, National Park Service, Michigan United Conservation Clubs, National Wildlife Federation, Sierra Club, and others, I would request that you take into consideration the requests of these concerned citizens when making your decision on the permits." The Detroit District Executive Officer contacted Congressman Stupak's POC, Susan McCathy, by telephone on November 16, 1999 (Encl.41e) and assured her that all factors would be considered in the decision making process.

b. Senator Carl Levin:

- (1) June 24, 1999 (Encl.42a): Encouraged USACE to hold a public hearing because of the proposed project location, potential impacts, and heightened level of concern from the public.
- (2) May 8, 2000 (Encl.42b): "This proposed development would impact a portion of the Crystal River which is adjacent to Sleeping Bear Dunes National Lakeshore. Due to its location within and near a National Park, the Crystal River receives a large amount of recreational use. In addition to use as a recreational area, the river's surrounding wetlands and lowlands constitute habitat for a variety of wildlife." Encouraged USACE to "give full consideration to the comments submitted by the U.S. Fish and Wildlife Service and the National Park Service". Detroit District responded by letter, dated June 2, 2000 "all comments received regarding this proposal will be duly

considered" and "The comments of other Federal agencies...will be given particular weight in their areas of expertise".

c. Senator Bob Graham, letter dated July 30, 1999 addressed to Mr. Joseph W. Westphal, Assistant Secretary of the Army (Civil Works) (Encl.43): Requested general information about the application. Mr. Westphal responded on September 28, 1999 with a status report (Encl. 44).

4. State:

- a. Section 401 Water Quality Certification: Presumed to be waived pursuant to a letter dated 9 July 82 from the District Engineer to the Director of the Michigan Department of Environmental Quality (MDEQ), since 30 days have elapsed since the public notice issuance date and we have received no response.
- b. Coastal Zone Management Act: MDEQ did not respond to the Public Notice. Therefore, we presume that the proposal is consistent under Section 307 of the 1972 Coastal Zone Management (CZM) Act, and that CZM Certification has been obtained or waived pursuant to the letter dated 9 July 82 cited above.
- c. Goemaere-Anderson Wetland Protection Act 1979 P.A. 203: MDEQ indicated that pursuant to an order of the State of Michigan's Natural Resources Commission, a permit for construction of the on-site golf course, some 31 homes, and an open space reserve was authorized and can be issued by the MDEQ, formerly the Michigan Department of Natural Resources (MDNR), under authority of the Goemaere-Anderson Act, as of May 31, 1992. Under the terms of the permit authorized, all construction and enhancement wetlands shall be constructed in accordance with mitigation plans designed by Johnson, Johnson, and Roy, Inc. If fill reductions to the project as approved by the Michigan Natural

Resources Commission are proposed by the MDEQ or the applicant and agreed to by both parties, the mitigation plan may also be changed, subject to MDEQ approval, to reflect mitigation ratios not less than 2:1 for wetland fill on holes 1 and 18 and 1:1 all other wetland fill. All construction and enhancement of mitigation wetlands shall be certified as being constructed and functioning as intended prior to opening of the golf course for operation.

d. State Historic Preservation Officer (SHPO):

- (1) June 25, 1999 letter (Encl.45): Recommended an archaeological survey on the project site prior to any dredging or earth removal.

District's response, October 21, 1999 (Encl.46):

- aa. "In accordance with our regulations, the evidence must set forth **specific reasons** for the need to further investigate within the permit area."
 - bb. Informed SHPO of General Condition 3 on all individual permits which requires of a permittee, "If you discover any previously unknown historic or archaeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found."
- (2) RELATED -- The Little Traverse Bay Band of Odawa Indians, letter dated June 9, 1999 (Encl.47): Requested potential impacts upon "any cultural resources that may exist there" be assessed prior to the issuance of a permit; recommended a phase 1 archaeological site survey, historic background investigation and land use history be conducted. Their position "is based on the topographical and hydrological

characteristics of the proposed project area".

The District responded via letter dated June 17, 1999 (Encl.48): "The general information contained in your letter is not sufficient to warrant further investigation. We request any additional, specific information you wish to submit." A copy of the relevant part from 33 CFR Part 325 Appendix C- Procedures for the Protection of Historic Properties to clarify the information requirements was provided.

- (3) RELATED -- William Rastetter, Tribal Attorney Grand Traverse Band of Ottawa and Chipewa Indians, letter dated June 25, 1999 (Encl. 49): Requested a "review of the cultural significance" in order to assess the impact, if any, on the Tribe's treaty rights (Treaty of Washington 1839, 7 Stat.491).

5. Local:

- a. Support: City of Granville, Mayor James R. Buck, June 22, 1999, letter in response to the public notice (PA) (Encl.50) - Indicated "the course would be a great addition to the area" and "proper steps can be taken to insure the value of the Crystal River."

b. Objection:

- (1) Leelanau County Planning Commission, June 23, 1999 response to the public notice (PA)(Encl. 51): Requested denial of the application. Enclosed a summary of a June 22, 1999 meeting in which they unanimously voted to recommend denial of the application. Reasons cited for the recommendation:

- aa) The proposed golf course is poorly designed and is in conflict with the principal goal of the Leelanau County General Plan.
 - bb) The development would destroy the balance of environmental protection and economic development.
 - cc) The development would compromise the environmental quality of the area in terms of the wetlands and the river and could cause ground water contamination.
 - dd) Conflict between the public use of the river for canoeing, kayaking, and fishing, and the private use of a golf course.
 - ee) The applicant could seek alternative, less damaging options to construct a golf course.
- (2) Leelanau County Drain Commissioner, June 22, 1999 response to the public notice (PA)(Encl. 52): "The Crystal River would certainly be negatively impacted by any uncontrolled stormwater runoff and the filling of wetlands will cause change to the hydrology of the drainage basin."

6. Public:

- a. Support: In response to the public notice (PA), we received 211 letters of support (Encl.53). Of these letters, 157 were individually written and 54 were a form letter. The groups and organizations providing written comments include Consumers Energy (21 Jun 99), Leelanau Conservation District (25 Jun 99), and the Traverse City Area Chamber of Commerce (25 Jun 99). The following general points were offered for consideration:

- (1) The project would have positive economic effects on the community.
 - aa. The golf course will extend the seasonal operation of the Homestead Resort. This will provide more employment for the area residents and also increase tourism during the otherwise slower season. The increased tourism will contribute to neighboring businesses, allowing them to extend their seasons as well.
 - bb. The project would increase the property value in the area.
- (2) The applicant has proven himself to be environmentally sensitive by designing the project to ensure protection of the Crystal River and the surrounding area.

b. Opposition/Concern: In response to the public notice (PA), we received 821 letters and cards of objection and/or concern and various petitions with a total of 91 signatures (Encl.54). Of these letters, 337 were individually written by concerned individuals, 21 were from various groups and organizations, and approximately 463 were some type of a prepared form letter or card. The groups and organizations which provided written comments include: Allegan Conservation District (25 Jun 99), Crawford-Roscommon Conservation Club (24 Jun 99), Elk-Skegemog Lakes Association (20 Jun 99), Dept of Fisheries and Wildlife-Michigan State University (3 Jun 99), Friends of the Cedar River Watershed, Inc. (15 Jun 99), Friends of the Crystal River (29 Jun 99), Friends of the Earth (June 11, 99), Friends of the St. Joe River (21 Jun 99), Great Lakes Environmental Center (15 Jun 99), Lake County Riverside Property Owners Assoc., Inc (24 Jun 99), Michigan Environmental Council (7 June 99), Michigan Environmental Protection Foundation (11 May 99), Michigan Lake & Stream Associations, Inc. (24 Jun 99), Michigan Land Use Institute (23 Jun 1999),

National Wildlife Federation (24 Jun 99), Northern Michigan Environmental Action Council (26 May 99), Oakland Outdoors Video Magazine (24 Jun 99), Pere Marquette Watershed Council, Inc. (23 Jun 99), St. Joseph County Conservation & Sportsman Club Inc. (25 Jun 99), Tip of the Mitt Watershed Council (7 Jul 99), Trout Unlimited (22 Jun 99).

The following general points were offered for consideration:

- (1) The proposed development has not been shown to be the least destructive practicable alternative.
 - aa. Residential subdivision with a golf course is not a water dependent business venture. The project could easily be built on an alternative upland site.
 - bb. There is property available in the area that could be purchased for the purpose of construction. In addition to the available land, the applicant owns several hundred acres in the area.
 - cc. The applicant's claims that his existing business needs an on-site golf course to remain competitive in the industry seem to be unfounded. He first claimed this in 1988 and remains in business today, despite the lack of an on-site 18 hole golf course.
- (2) The proposed development would have substantial adverse impacts on the environment.
 - aa. The loss of wetland and forest habitat would impact wildlife in the area and decrease the value of the remaining wetland habitat along the park boundary. A continuous riparian zone

along the river is very important for species such as migratory birds, wood ducks, minks, and long-tailed weasels.

- bb. Water quality will be at risk. Maintenance of a golf course requires large amounts of insecticides, herbicides, and fertilizers. The permeability of the soils in the area and the sinuosity of the stream at the project site heightens the risk to surface and groundwater, the Crystal River, and Lake Michigan.
- cc. Altasid, an insecticide that is included in the maintenance plan of the course, is toxic to fish and may also be toxic to other species. There is also a risk of contamination being passed up the food chain.
- dd. Construction of the project will put the Crystal River and nearby wetlands at risk of severe sedimentation.

(3) The project would be contrary to the public's best interest.

- aa. The Crystal River is valuable for recreational activities such as kayaking and swimming. A private golf course will infringe on the rights of the public to use the river.
- bb. The environmental impacts of the project will also affect Lake Michigan and the National Lakeshore. These areas are currently valued for their natural, serene state and are used by the public for that reason.
- cc. The economic success of the area surrounding the proposed project heavily relies on tourism that is

attracted to the area because of the pristine nature of the environment. Therefore, while the project would be economically beneficial for the applicant, it would be to the detriment of the rest of the community.

c. Public response to Alternative 3(d): *Joint Comments of Environmental Groups on Alternative 3(d)*, March 27, 2000(Encl.55)- Submitted on behalf of the following nine organizations: Friends of the Crystal River, the National Wildlife Federation, the Michigan United Conservation Clubs, the Michigan Environmental Council, the Mackinac Chapter of the Sierra Club, the Tappan of the Mitt Watershed Council, the Friends of the Cedar River Watershed, the Three Lakes Association, and the Northern Michigan Environmental Action Council. The main points of the submittal:

- (1) There are still many issues that the applicant has not sufficiently addressed (PA) which are not addressed in 3(d).
 - aa. The Pesticide Root Zone Model (PRZM) is flawed.
 - bb. Conflict of recreation use of the Crystal River.
 - cc. It has not been demonstrated that use of the site, or any portion of it, is the least destructive practicable alternative.
- (2) Housing North of County Road 675:
 - aa. The alternative of high-density housing along the river would not have less impact than the golf course.
 - bb. "The applicant cannot impermissibly segment one aspect of the project from another." The golf course and the

housing are one project, wherever they are arranged on the site and must be treated as one project.

cc. the proposed mitigation is inadequate and may compound the overall adverse impacts of the project.

dd. "Preservation of the area north of CR 675 is the only effective mitigation proposal which has been suggested in the record."

H. The applicant was furnished copies of all substantive comments. Some of the major points found within letters transmitting comment/objection letters (See USACE letters dated August 10, 1999 and November 2, 1999, and March 15, 2000 (fax) and April 7, 2000 (Encl.56)):

1. The Federal agency comments regarding the PA were provided to the applicant via letter dated November 2, 1999 (Encl.56b). It was specifically requested that the following issues be addressed:

a. Alternatives analysis, including alternatives that were available at the time of market entry.

b. Water quality impacts.

c. Recreational use conflicts.

d. Adverse impacts to the National Lakeshore.

e. Net benefits of the mitigation package.

f. Threatened/Endangered species.

2. November 2, 1999 -(Encl.56c) Requested the concerns cited in the FOIC submittal (see Encl.54) be specifically addressed, as the overall position of those opposing the project was synopsised in their letter.

- a. "It is particularly important you respond regarding project alternatives and impacts, the uniqueness of the project site, water quality (including permit conditions and their enforceability), riparian habitat loss, and recreational use conflicts."
- b. Directed the applicant to identify an example(s) of existing courses which have utilized similar low intrusion/minimal fill designs within comparably sensitive sites, courses which employ comparable turf grass management plans, and their success and difficulties.

3. Alternative 3(d) comments were provided to the applicant via fax dated March 15, 2000 (Encl.56d).

4. April 7, 2000-Letter forwarding *Joint Comments of Environmental Groups on Alternatives 3(d)* (Encl.56e):
The applicant was advised that the submittal raised substantive concerns, which would weigh heavily in the final decision on the permit application. The letter identified specific issues of particular importance:

- a. Permanent preservation of the area north of County Road 675.
- b. Relocation of holes 12 and 13 off sensitive wetland areas closest to County Road 675.
- c. Relocation of holes 1 and 14 out of the riparian corridor.
- d. Elimination of the driving range.
- e. Elimination/reduction of housing.
- f. Elimination/relocation of the pond near holes 12 and 13.

The letter also stated "In the event you feel your previous responses sufficiently address all or part of the enclosed comments and/or you wish to have

materials generated during or contained within the record prior to our direct permit involvement considered, I request you to refer me to the specific document(s). I further request you specifically identify what portion or section of the document you feel is pertinent. There has been a large volume of material, some of which is complex and some of which has been supplemented or superceded, generated during the extensive history of your proposed development. It is incumbent upon you to identify the specific parts of the record you wish to have considered."

I. The applicant responded to the objections/comments and submitted the following:

1. September 29, 1999 - Submitted MDNR interoffice communications dated June 24, 1988 (Encl.57a), June 27, 1988 (Encl.57b), June 27, 1988 (Encl.57c), and July 6, 1988 (Encl.57d), the MDNR "Findings of Fact- Interpretations of Law-Alternatives Assessments" document dated July 6, 1988 (Encl.57e), the MDNR Administrative Law Record dated February 2, 1989(Encl. 57f) and the Final Determination of Natural Resources Commission dated November 14, 1990 (Encl.57g).
2. November 15, 1999 letter (Encl.58a): Suggested all of the questions posed in the objections/responses had been previously addressed "by our firm and the State of Michigan's Department of Environmental Quality". "To be certain that you and other agency officials in your agency are fully aware of these facts, I have reviewed the State's files, selected those documents I believe to have been used by the State when answering these questions, had them duplicated and enclosed for you." Submitted two boxes (Encl 58b and 58c) containing a total of 48 items.
3. November 15, 1999 letter (Encl.59): Addressed the marketability and costs associated with off-site alternatives. Enclosed documents, written to Rodney Walton of U.S. USEPA in October 1990, and included data and letters from various organizations, which supported an on-site golf course.

4. December 1, 1999 letter (Encl.60a): Provided a letter to inform our office that a formal response would be sent for review and inclusion into the record. The focus of the new response would be the issues that weren't previously addressed.
5. December 21, 1999 (Encl.60b), identified and responded to three issues that they viewed as "new matters".
 - a. Resource Quality- The resource quality of the area was evaluated by the National Park Service in 1961 to determine the land to be included in the National Lakeshore property boundary. At that time, the project site was not included. The resource quality of the site is being exaggerated by some groups and federal agencies.
 - b. Project Purpose- The applicant provided data from research done by numerous analyses comparing the market and competitive conditions of the resort industry and the relationship of on-site vs. off-site golf courses. The applicant maintained that, in order to remain competitive in the industry, their project purpose is "to add an 18 hole, championship quality golf course so as to again be competitive in our industry in the Spring and Fall".
 - c. Alternatives- All the alternatives suggested could not be considered a "practical alternative" due to economic unfeasibility, unavailability, and/or the inability to support a "championship quality" golf course. "When appropriate to do so , we will address our suggestions as to alternates with you. They will not include the preservation of the area we own north of County Road 675 with permanent deed restrictions as that would take all economic value of our property from us by rendering the entire project economically infeasible."

- d. The letter addressed remaining issues as being "previously raised matters... Therefore, rather than again responding to each of these previously raised and addressed matters and conclusions we ask that you refer to the record's disposition of them."
6. December 24, 1999 (Encl.61a)- Submitted alternative 3(c) which would confine the golf course to the south side of CR 675.
 7. January 5, 2000 (Encl.61b) - Submitted a Wetland Functional Analysis for 3(c), prepared by Northern Ecological Services (NES).
 8. January 28, 2000 (Encl.62a) - Submitted Alternative 3(d), asked that the alternatives analysis continue "with a focus on the plan submitted with our application and plan 3(d) rather than 3(c).
 9. January 28, 2000 (Encl.62b)- Letter regarding alternative 3(d) and the clearing of wetlands, mechanized and non-mechanized, involved with that alternative.
 10. January 28, 2000 (Encl.62c)- Submitted 4 proposals for compensatory mitigation of alternative 3(d).
 - a. Creation and Restoration: Create 2.2 acres portrayed on 3(d) and acquire an additional 6.8 acres of impacted wetlands within the Glen Lake Watershed or within the Regional Landscape ecosystem for restoration.
 - b. Creation and Preservation: Create 2.2 acres portrayed on 3(d) and acquire and preserve an acceptable number of acres within the Glen Lake Watershed or within the Regional Landscape ecosystem.
 - c. Creation and Banking: Create the 2.2 acres portrayed on 3(d) and acquire 6.8 acres in a mitigation bank.

- d. Donation: Disregard the creation of the 2.2 acres portrayed in 3(d) and donate land or funds for the acquisition of land to a mutually acceptable conservancy.
- 11. January 29, 2000 (Encl.63)- Addressed the impracticality of containing the entire project south of the County Road.
 - a. From a perspective of costs, logistics, and existing technology, the Board of Directors does not believe that to be a practicable alternative capable of fulfilling the project purpose.
 - b. The Board's willingness to formally act on this alternative was driven solely by its interest in expeditiously ending this 13 year regulatory review.
 - c. Discussed fair market value of the 47 acres north of the CR (includes the 39.5 acres owned by applicant and 7.5 acres on which they have an option to purchase). Submitted an appraisal of the property.
 - d. The applicant would be willing to purchase and donate the 7.5 acre parcel on which they have an option to buy; no other portion of the 47 acres would be considered for restriction or donation in order to mitigate the PA or 3(d).
- 12. January 29, 2000 (Encl.64) - discussed the eligibility of the Crystal River (or a portion of the river) for inclusion on the Nationwide Rivers Inventory. Enclosed a January 29, 2000 letter to Mr. William Schneck of NPS which requested documents regarding this issue under the Freedom of Information Act.
- 13. February 11, 2000 (Encl.65) -
 - a. Discussion of application of the 404(b)(1) Guidelines and the Draft Regulatory Guidance letter "project Purpose/Alternatives Analysis

(June 18, 1992)

- b. Discussion of discrepancy with application of Guidelines to MDNR actions (Tournament Players Course, Dearborn, Michigan and Robertson golf course)
 - c. Provided a cost analysis of on-site vs. off-site course development dated October 29, 1990.
14. February 18, 2000 (Encl.62d): Submitted documents and plans regarding the clearing, grading, and cut and fill calculations for 3(d).
15. Responses to comments received on Alternative 3(d) and/or USACE letter dated April 7, 2000.
- a. Northern Ecological Services, Inc. - March 13, 2000 (Encl.66a) Provided a response to a letter from Bob Jones (Encl.66b) which was obtained via Freedom of Information Act (FOIA).
 - b. Northern Ecological Services, Inc. - March 15, 2000 (Encl.67), response to USEPA letter dated March 9, 2000. Main points:
 - (1) The applicant's version of the history of alternative recommendations (south of CR 675) was given.
 - (2) The applicant is unconvinced as to the viability of alternative 3(d). The applicant has not "formally offered" any alternative to the PA.
 - (3) Referred to the May 8, 1992 USEPA conditional withdrawal decision document to dispute the current USEPA position(s).
 - (4) Suggested the USACE has no regulatory authority over clearing, cutting of

trees or pond construction and comments pertinent to these activities are "inappropriate for consideration". Also suggested the ridge and swale is a landform, which is not regulated.

- (5) Claimed the "Federal agencies" ... "previously expressed approval of 30 Acres of wetland fill" in association with location of the course south of CR675.

Note: The USACE letter of June 24, 1988 was quoted in support of this statement. At the time that letter was written, the USACE was not aware of any specific proposal or of the area of potential impact. While NES is correct in stating that the USACE opinion at that time was that the location of the course is more crucial than acreage impacted, neither a final or even preliminary judgement was made that a fill area of 30 acres would be in compliance with Federal guidelines and regulations.

- (6) Soil erosion and sedimentation control issues were addressed.
- (7) Referred to *Hydrology of the Glen Lake - Fisher Lake - Crystal River System* dated July 14, 1989 and prepared by Arthur W. Gosling (a hydraulic engineer/hydrologist) and its "conclusions" that the "operation of the golf course will not effect" the quantity or occurrence of surface water, the quantity and location of groundwater or the water quality of the Crystal River.
- (8) Results from a "SCI-GROW analysis for the newly revised list of pesticides at

The Homestead Golf Course", dated March 15, 2000, prepared by Environmental & Turf Services, Inc. was referenced and submitted.

- (9) Cited the Ellis and Rieke "studies" as not anticipating "any significant transport" of nitrogen, phosphorus and potassium "in surface water flows" due to their being "aggressively taken up by turf, bound to thatch, and adsorbed to soils". Further suggested excess nutrients would be eliminated by denitrification, adsorption, and plant uptake. Also suggested the turf management plan and stormwater design would minimize offsite migration.
 - (10) Disputed that ridge/swale wetlands could not be created; suggested forested wetland creation/restoration could compensate for project impacts.
 - (11) Suggested the USEPA conclusion regarding "significant adverse impacts" was not consistent with the MDNR record and findings and the USEPA headquarters findings for the original plan, and that (3e) would reduce the area which "abuts" the Crystal River.
- c. Northern Ecological Services, Inc. - April 21, 2000 (Encl.68a)- Compared impacts of alternative 3(e) to the PA, asserted the *Joint Comments of Environmental Groups on Alternative 3(d)* (public) are "opinions...offered by individuals or groups without professional expertise and in all cases are without site specific scientific study", endorsed water quality studies done by the applicant, addressed the hydrologic characteristics of the site and defended the groundwater models used to determine the effects on water quality.

- d. Kuras, April 24, 2000 (Encl.68b) - Addressed the following issues raised in the *Joint Comments of Environmental Groups on Alternative 3(d)* submittal:
- (1) Recreational Use of the Crystal River: Irrelevant because 3(d) involves no conflict with the current use of the Crystal River.
 - (2) Seasonality: The modern resort marketplace and trends demand a multiplicity of facilities and must appeal to families and groups with diverse interests - It is incorrect to conclude the Homestead is a "beach resort"
 - (3) Discussed interpretation of Graph 1 in his letter of December 1999 - the correct interpretation of the graph is "demand at the Homestead is substantially more seasonal than it is at the other resorts."
 - (4) Referred to the Doud letter of May 3, 2000 and the Homestead's January 29, 2000 regarding preservation of the area north of CR 675.
- e. Stuart Cohen (water quality consultant on behalf of the applicant), April 24, 2000 (Encl.68c): Supported the claim that construction and operation of a course could occur and "yet not release any measurable amount of pesticide or fertilizer into the water". The main points were:
- (1) Provided a reprint of *Water Quality Impact by Golf Courses*, published in the *Journal of Environmental Quality* (1999), which concluded the following:

aa. "Widespread and/or repeated water quality impacts by golf courses are not happening at the sites studied. None of the authors of the individual studies concluded that toxicologically significant impacts were observed, although HAL's (health advisory levels), MCL's (maximum contaminant levels), or MAC's (maximum allowable concentrates) were occasionally observed."

bb. "There are major data gaps in this review, particularly in the midcontinent area."

Note: Water quality monitoring results at 36 golf courses were reviewed. Analysis included pesticide, metabolite, solvent, and NO3 in surface and groundwater.

- (2) Disputed that the course would be built on saturated soils; mean depth to groundwater will be greater than 6 feet (2-3 x what was assumed in PRZM runs).
- (3) A screening level model of pesticide transport to groundwater (SCI-GROW) was run and "none of the pesticides proposed for the golf course exceeded lifetime drinking water Health Advisory Levels.
- (4) PRZM was not utilized to estimate fertilizer transport to water, rather other specialists "formulated a nitrogen fertilization plan" and developed "the phosphorus program in a manner that would ensure excess phosphorus is not applied."

Additionally, the letter:

- (1) Cited Jerri-Anne Garl (1989) as indicating "Overall, pesticide application if performed properly should pose a significant threat to surface water bodies if dicamba will not impact aquatic life at the leaching concentration of 20 ppb."
 - (2) Asserted "there was adequate use of site-specific data."
 - (3) Asserted the thatch layer tends to retard pesticide transport and the "highly bioactive" root zone promotes degradation.
 - (4) Asserted "Basically, migration in ground water is rarely an issue."
 - (5) Indicated they "found no detections of solvents in the studies cited."
 - (6) Provided, as an attachment, the results of a SCI-GROW analysis along with a conclusion "None of the pesticides modelled exceeded their lifetime drinking water Health Advisory Levels."
- f. Walker (golf course designer), April 25, 2000 (Encl.68d)- Discussed the goals and results of the alternative 3(e) design, suggested 3(e) is not contiguous to the Homestead, offered his professional opinion that amenities such as parking and the driving range could not be reduced or eliminated, and the design could not be reduced in length or area, reconfigured, due to marketing appeal and safety considerations. Also indicated "I have been involved in the design of more than 130 golf course projects in the past 28 years, and 95% of those projects included housing, typically 150 to 400 units for reasons of

economic viability. The ones which did not include housing were in some cases, owned by a private club or a municipality." He also stated his opinion that eliminating housing should not be considered because it "would not add sufficient land for relocating any hole as it simply does not provide for adequate space."

- g. Deems (attorney on behalf of the applicant), April 28, 2000 (Encl.68e): Disputed FOIC's characterization of the *Conditional Withdrawal of USEPA Objection to Michigan Issuance of a State Wetlands Permit for Homestead Resort* (May 8, 1992), the 1992 Federal District Court decision by Judge Enslen, and the applicability of *Sylvester v U.S. Army Corps of Engineers*.
- h. Zimmerman (attorney on behalf of the applicant), May 3, 2000 (Encl.68f): Addressed the Legal Issues Memorandum submitted by Olson Noonan and Bzdok. Topics included: consideration of the housing and golf course as independent actions, authority to require, and reasonableness of requiring, a conservation of the area north of CR 675 as mitigation, and USACE jurisdiction with respect associated housing and dredging within wetlands to create a pond(s). The following quotations are excerpted from this document:

(1) "Notwithstanding the fact that the proximity of the housing development to the golf course is beneficial to the golf course, the two projects are logically separable and each can exist without the other."

(2) "...the golf course and housing development are separate projects that, while complimentary and beneficial to each other, can stand alone."

- i. Doud (accountant on behalf of the applicant), May 3, 2000 (Encl.68g): Provided comments related to business and financial matters. Addressed issues of project purpose, alternatives, mitigation (preservation of the area north of CR 675). Submitted a Confidential Business Information Affidavit.
- j. Shirley Debelack, June 10, 2000 (Encl.68h) - Submitted an article from the Michigan Environmental Law Journal, "Administrative Limitations of Army Corps of Engineers Authority Over Upland Areas" by Saulius K. Mikalonis, and asked that it be included in the record as a response to the "Joint Comments of Environmental Groups on Alternative 3(d)" submittal by FOGR.

II) Environmental Setting:

A. Description of the Area:

Leelanau County is located in northwest Lower Michigan and is bounded on 3 sides by Lake Michigan. The County possesses over 100 miles of shoreline and four islands: North and South Fox and North and South Manitou Islands. The region is heavily glaciated resulting in high topographic diversity, and many lakes and streams. The overall scenic beauty and recreational opportunities attract vacationers from all over the Midwest. Services industries related to recreation and tourism are the area's largest employer.

Major land uses include the Sleeping Bear Dunes National Lakeshore, which dominates the area of the county in which the proposed work is found. Elsewhere in the county, lakefront residential and specialty fruit orchards are major landscape features. At least two of Michigan's major resorts, the Homestead and Sugarloaf are found in the county.

Property values vary greatly, with Lake Michigan shoreline and inland lake and stream waterfront property commanding top dollar. The value of waterfront property is increasing

disproportionately to non-waterfront. Non-waterfront property values are significantly less and decrease with increasing distances from the water. Property values near the National Lakeshore are raised by the attractiveness of that feature to tourists and recreational users.

Leelanau County had a population of approximately 16,500 according to the 1990 census. The population in Glen Arbor Township was listed at 644. During the summer vacation season the population increases substantially.

B. Waterway Characteristics:

The proposed worksite is located on the Crystal River which begins as the outlet of Glen Lake and flows approximately 15 miles into Lake Michigan. The river flows across a parallel series of ridges and swales that create distinct "meanders". At one time, Glen Lake was likely a bay off Lake Michigan. A combination of lake level changes and deposition of sand bars at the mouth of the bay eventually resulted in the separation of the bay from the lake. An aerial photo of the area (Encl.69) clearly shows the parallel, crescent shaped series of ridges. Areas between the ridges are termed swales. Water often collects in these swales and either flows laterally to the river or ponds before evaporation or infiltration to groundwater. In many areas, the surface elevation of the swales intersects the groundwater table and wetland conditions exist.

Water quality in the Crystal River is excellent. The river supports a warm water fishery with seasonal migrations of salmonid species. We are not aware of a resident trout fishery in the river.

The river is very popular for recreation, with approximately 3,700 canoes and kayaks being rented during the summer of 1997. Additional trips are taken by privately owned watercraft. The river is also popular with float tubers and wading fishermen.

C. Project Area:

The proposed worksite is bisected by CR 675. The PA would locate 4 holes north of the road with the remaining 14 located

south. The land to the north of CR 675 (excluding what was previously sold) contains approximately 47 acres and has about 14,000 feet of river frontage. The applicant owns 39.5 acres of it and has an option on an additional 7.5 acres. The proposed worksite also includes 182 acres south of CR 675.

The area north of CR 675 is highly accessible and visible to tourists and residents of the area. This site is bounded by two main thoroughfares, M-22 and CR 675, and the river is heavily used in this area. There are at least two locations where the river and its natural corridor are highly visible and provide two of the more scenic areas in the region. The scenic value of these areas is particularly important because of the ridge-swale landscape and the natural, unspoiled river corridor. These vistas rival most any now contained in the National Lakeshore.

The most unique and valuable natural resource in the region is the Dunes, significant examples of which are contained in the Lakeshore. The Dune-swale and/or ridge-swale feature is also a natural resource with unique and valuable qualities. The proposed worksite, particularly that north of CR 675, is a notable, readily accessible and highly visible (from major highways and a well traveled portion of the river) example of this habitat which is major asset to the Lakeshore; many question that it was not included in the National Lakeshore boundaries when originally defined.

An extensive description of the riparian corridor and its functions and values is contained in *Technical Support for the Evaluation of the Proposed Homestead Development Along the Crystal River, Michigan* by Fischer and Zakakini of the U.S. Army Corps of Engineers Waterways Experiment Station. That site description is incorporated by reference.

Letters from the FWS and the USEPA also contain descriptions of the project area; those descriptions are incorporated by reference.

FWS also submitted an e-mail which discusses the site characteristics (Encl.38c). That e-mail is hereby incorporated by reference. "...there were once 90-95 WD&S (wetland dune and swale) complexes in the Great Lakes region, 70 of which occurred in Michigan. Only 40 of these retain significant undisturbed

natural character. The Crystal River WD&S complex is one of these."

An extensive description of geologic processes, vegetative communities, habitat values, and development pressures is contained in *A Survey of Wooded Dune and Swale Complexes in Michigan*, prepared by Comer and Albert of the Michigan Natural Features Inventory, May 1993 (Encl.70). The report describes these natural communities as "globally rare" and "limited to the Great Lakes region of North America", but "not considered to be globally imperiled". The project site is part of a dune-swale or ridge-swale complex associated with the Crystal River that is one of 70 sites in Michigan which are described in the report. The following are select quotes from that document:

p10-"Because the process responsible for the development of Wooded Dune and Swale Complexes are directly related to very large bodies of fresh water and post-Pleistocene geology, their occurrences are limited to the Great Lakes region in North America."

p11-"Because they contain a unique assemblage of physiographic, soil, and vegetative components, and provide a high quality habitat for numerous shoreline animal species, the Wooded Dune and Swale Complex is considered a distinct natural community in Michigan (MNFI 1990)."

p36-"Land ownership of the highest quality complexes in Michigan is split between Federal, state, and private sectors. Four high quality complexes are found within the Sleeping Bear Dunes National Lakeshore."

p58-"6. Crystal River (Leelanau Co.) - Located at Glen Arbor, this 580 acre complex lies between Glen Lake and Lake Michigan, with the Crystal River flowing through, and between beach ridges. County road 675 cuts across the complex, and several other roads pass along several beach ridges. Intensive residential and commercial development occurs at Glen Arbor, along the north shore of Glen Lake, and on the Lake Michigan shoreline. Portions of the complex are part of the Sleeping Bear Dunes National Lakeshore. A transect

was taken on National Lakeshore property in section 23.

The beach ridges of this complex are generally low, ranging from .5 to 1 m high. Swales in this complex are somewhat wide, ranging from 9 to 59 m wide; averaging 39 m. Organic matter depth in the swales is quite variable, from 8 to 150 cm. The pH of the organic matter and sub-soils from the swales ranged from 5.91 to 6.31. Most swales in August were saturated, with standing water (5 cm deep) in just one swale.

Prior to European settlement, this complex probably contained more white pine (*Pinus strobus*) and Eastern hemlock (*Tsuga canadensis*) than it does today. Today, hemlock and White pine are still abundant on the low ridges and in the swales, but Northern white cedar (*Thuja occidentalis*) and American ash (*Fraxinus americana*) are dominant, along with Tamarack (*Larix laricina*), Balsam fir (*Abies balsamea*) and Red maple (*Acer rubrum*). Alder buckthorn (*Rhamnus alnifolia*), Swamp rose (*Rosa palustris*), Northern bugle weed (*Lycopus uniflorus*), sedge (*Carex leptalea*), and Small bishop's cap (*Mitella nuda*) are all abundant in the swales. A total of 87 species of vascular plants and mosses were noted along the transect. State special concern Blanchard's cricket frog (*Acris crepitans blanchardi*) has been found in and around the Crystal River within this complex.

Road construction and residential development have caused significant degradation to this complex. However, remaining undeveloped portions retain a high natural quality. Recent proposals to develop a golf course within this complex would clearly cause significant degradation to the complex as a whole. Other more suitable locations for the golf course can and should be found."

Comer and Albert ranks the Crystal River complex #14 on Table 3b. (pg.37) - Michigan Wooded Dune and Swale Complexes, Northern Lakes Huron/Michigan - Low Dunes. Table 3e. is a listing of high quality sites within each Wooded Dune and Swale Complex sub-type ranked in order of protection priority. The mechanism for establishing these ranking priorities attempts to incorporate significant

biological factors and known disturbances into the ranking process. The primary ranking factor in determining the priority list is the Element Occurrence Rank, which incorporates significant hydrological alterations and other human-caused disturbances, along with more general characteristics of complex size and species diversity.

III. Environmental Impacts of the Proposed Action

A. Identified Physical Impacts

1. Effects on Water Quality

Opponent's position:

The river will be contaminated by nitrogen and phosphorus, degrading the "excellent" water quality and herbicides and insecticides will poison aquatic life. The high water table, thin organic layers, sandy, permeable soils, and intensive irrigation done on golf courses would result in a high risk to water quality. There will be a "dramatic degradation of water quality".

The independent panel of experts convened by EPA and the state determined: "it is unlikely in our view that the stream water quality, as it now exists, can be completely maintained."

The impacts would be "severe" as the river is vulnerable due to the close proximity of the river to the golf course, the slow current (low mixing and flushing), and "oligotrophic" or low nutrient condition.

PRZM is a "screening-level model" and not appropriate for predicting impacts. PRZM results "depend more on the assumptions it uses than any site specific data". Those assumptions are flawed because they overestimate both dilution while in groundwater and mixing upon discharge to the river. PRZM does not model organic solvents. The model was applied to fairways, but not greens and tees, which receive higher applications; they disputed the claim that greens and tees would be less vulnerable because of the greater depth to groundwater.

From FOCR submittal Joint Comments on 3(d):

1. "We agree with the commenting agencies that alternative 3d, while better than the applicant's original proposal in terms of recreational impacts on the Crystal River, would still cause an unacceptable disruption of aquatic resources."

2. "By building high density housing along the river, the applicant would be doing nothing meaningful to offset the impacts that the golf course would have on the river and the ridge-and-swale community. In fact, the housing would only make those impacts worse."

3. "...most of the project site has a shallow water table, not just the areas delineated as wetlands." "...much of the area south of County Road 675 is hydrologically connected to the Crystal River, and that the whole site shares an aquifer with the residential portion of Glen Arbor." "...the applicant has not done any work to investigate groundwater flow and how the course might create risks to the river or to drinking water."

Federal agency positions:

EPA:

The PA will have significant adverse impacts on the water quality of the surrounding wetlands, the groundwater, and the Crystal River.

Confining the project south of the County Road 675 would significantly reduce the direct impacts that the project would have on the Crystal River.

"alternative "3D" will result in significant degradation of this unique aquatic ecosystem."

FWS:

Alternative 3(d) would deforest the majority of the site south of County Road 675. Rainfall absorption and storage would be compromised, which could lead to decreases in amounts

of sediment and contaminant filtered in that area, affecting the water quality of runoff into the Crystal River.

The benefits derived from moving the golf course away from the Crystal River are negated by the possibility of residential construction in that area.

The reconfiguration of the course layout for alternative 3(d) results in a number of developments being placed much closer to the boundary of the National Lakeshore property. Direct and indirect impacts to the Lakeshore resources are of great concern.

WES Findings:

Pesticide impacts:

1. "the golf course is located in a very sensitive ecological area; any improper application of the pesticides may have negative impacts on water quality."
2. "unforeseen factors such as improper application of pesticides" could impact the water quality of the Crystal River." WES quoted a 1989 statement by Ms. Jerri-Anne Garl that "Overall, pesticide application if **performed properly** (emphasis by WES) should not pose a significant threat to the surface water bodies if dicamba will not impact aquatic life at the leaching concentration of 20 ppb." Note: It is understood that dicamba is no longer included in the golf course management plan; the importance of this statement is the overall significance of "proper" application.
3. "there were many assumptions used to develop the PRZM and if one or some of these assumptions do not match the dynamic conditions of the site and pesticide application, there may be negative impacts."
4. "Although, the model application by Biospheric Inc. shows that there will not be any major water quality impact from the proposed golf course on Crystal River, the model results (concentration numbers) can not be evaluated thoroughly unless the

model simulations will be repeated with the enhanced model(s) and updated data." Because they do not have the original digital data from the site to perform an independent test using the PRZM, they cannot confidently support any statements suggesting that there will not be any water quality impacts at the site as a result of either the PA or 3(d).

5. "If the project is implemented, there must be a plan to check the proper application of pesticides, and a monitoring program to control probable impacts on the local water quality."

Housing versus Golf Course in the riparian zone:

1. Housing construction will disrupt soil that likely will runoff into adjacent wetlands and the river channel.
2. Lawns associated with homes will likely be treated with fertilizers, herbicides and pesticides. The use of these chemicals typically is not regulated under conditions used at most golf courses.
3. There is potential for movement of wastewater from septic systems into wetlands (and groundwater) and the river channel.
4. Housing, roads, and driveways will increase the amount of impervious surface area potentially impacting surface water quality entering wetlands and the Crystal River.
5. The PA and 3(e) "may" have similar impact on the water quality of the Crystal River. Housing north of CR 675 "may" cause more water quality problems because of unregulated use of fertilizers, herbicides, and pesticides by homeowners, and the potential for discharge of waste products from septic systems at each housing unit.

Applicant's positions:

The Homestead has a history of "sensitivity to natural resources"; the site offers few challenges for controlling runoff and sedimentation; Leelanau County has issued a Soil Erosion Permit under the authority of State law.

Site conditions are not conducive to heavy runoff; impervious surfaces and less control over individual actions associated housing alternatives (HA) would have a greater impact on runoff and water quality

Alternative 3(e) would have less exposure to surface water and groundwater than the PA and reduced potential for water quality impacts.

The applicant and or his consultants have stated the following:

1. Numerous experts were hired who "concluded that there would be no material adverse effect on surface or groundwater", their reports were "submitted to all agencies and approved by several" and "were challenged in litigation and upheld"
2. A Journal of Environmental Quality study supports that water quality is not a significant concern (see below)
3. The SCI-GROW analysis, with worst case scenario assumptions, "found" the course "will cause no degradation of groundwater quality" (see below)
4. The Reike and Ellis "studies" did not anticipate "significant transport" of nitrogen, phosphorus or potassium in surface water flows .

Northern Ecological Services, on behalf of the applicant- Suggested excess nutrients would be eliminated by denitrification, adsorption, and plant uptake. Also suggested the turf management plan and stormwater design would minimize offsite migration.

Stuart Cohen, water quality consultant, on behalf of the applicant - Stated that construction and operation of a course

could occur and "yet not release any measurable amount of pesticide or fertilizer into the water". His main points were:

1. Provided a reprint of *Water Quality Impact by Golf Courses*, published in the *Journal of Environmental Quality* (1999), which concluded the following:
 - a. "Widespread and/or repeated water quality impacts by golf courses are not happening at the sites studied. None of the authors of the individual studies concluded that toxicologically significant impacts were observed, although HAL's (health advisory levels), MCL's (maximum contaminant levels), or MAC's (maximum allowable concentrates) were occasionally observed."
 - b. "There are major data gaps in this review, particularly in the midcontinent area."
 - c. Note: Water quality monitoring results at 36 golf courses were reviewed. Analysis included pesticide, metabolite, solvent, and NO3 in surface and groundwater.
2. Disputed that the course would be built on saturated soils; mean depth to groundwater will be greater than 6 feet (2-3 x what was assumed in PRZM runs).
3. A screening level model of pesticide transport to groundwater (SCI-GROW) was run and "none of the pesticides proposed for the golf course exceeded lifetime drinking water Health Advisory Levels.
4. PRZM was not utilized to estimate fertilizer transport to water, rather other specialists "formulated a nitrogen fertilization plan" and developed "the phosphorus program in a manner that would ensure excess phosphorus is not applied."
5. Additionally:
 - a. Cited Jerri-Anne Garl (1989) as indicating "Overall, pesticide application if performed properly should not pose a significant threat to surface water

bodies if dicamba will not impact aquatic life at the leaching concentration of 20 ppb."

- b. Asserted "there was adequate use of site-specific data."
- c. Asserted the thatch layer tends to retard pesticide transport and the "highly bioactive" root zone promotes degradation.
- d. Asserted "Basically, migration in ground water is rarely an issue."
- e. Indicated he "found no detections of solvents in the studies cited."

The following are points in Rieke's 1987 *Grassing and Fertilizer Programs for the Homestead*:

1. "We have been clearly instructed to design the nutrient and pesticide plans to have no adverse impact on water quality which we believe we have done."
2. "Strongly encouraged" that a "qualified course superintendent be hired" to "maintain a quality course" because of the emphasis on environmental protection and modest fertilization.
3. Proper irrigation, fertilization, and other management practices were necessary to support excellent quality turf.
4. The soils are susceptible to nutrient leaching; "properly designed and followed nitrogen fertilization programs can minimize any leaching potential"
5. If phosphorus sorption capacity of soils is exceeded, it would move to the water table where it "moves laterally more readily and could reach the river if this occurs close to the river"
6. Irrigation is "essential to maintain healthy, quality, actively growing turf on the sandy soils existing on this site"; healthy turf is important for uptake of nutrients that might otherwise be leached; "on the other hand, excessive irrigation can contribute to leaching of nutrients, particularly nitrogen". "...it will be necessary to practice irrigation to prevent application of too much or too little water."

7. "Fertilizer program recommendations are based on our instructions to produce a plan with maximum environmental sensitivity"
8. Close monitoring of soil, environmental, and climatic conditions and modification of fertilization methods, rates, and timing adjustments are essential.
9. "Monitoring of the nutrients in the river should be done regularly, perhaps monthly". He believes the differences between nutrient concentrations upstream and downstream of the course "will not be measurable, but this documentation is necessary".
10. Regarding the conversion of a forested or natural area - "we know that agricultural and residential land uses will lead to an increase in nitrates." B.G. Ellis, a soil scientist at Michigan State University, "expects some increase in nitrates on this site, but does not feel the level will be significant meaning that they will be below the federal standard (10 ppm) for safe drinking water if fertilized properly." This will be dependent upon the "conservative" fertilization program.
11. "The high organic matter content in the topsoils will likely undergo some decomposition, somewhat more where drainage is installed." "There will be some release of nitrogen" and "there could be some movement of nitrates into the ground water from this source." This condition should stabilize in about 2 years.

Findings:

a. Construction Impacts:

There will be an unavoidable release of sediments at the point of disturbance and for a limited radius around it downstream. This will cause increases in turbidity during storm events.

All project-associated excavated, graded, and filled areas would be subject to erosion, thereby causing negative impacts to water quality until the areas are stabilized.

With appropriately enforced state and local controls, the adverse construction impacts would be temporary and minor.

Due to the nature of the sediments, the swiftness of the water current patterns velocity, turbidity and contaminants should return to ambient levels following project completion.

In summary, the proposed activities would cause minor temporary degradation of water quality.

b. Operational Impacts:

The proposed work would adversely impact an area that filters rainfall, runoff, groundwater, and floodwaters that would otherwise directly enter the waterway, and would replace it with a new source area for runoff pollutants. Pollutants from this area may include lawn fertilizers, herbicides, pesticides, road salt, oil, grease, and septic runoff/leachate. This would cause a long-term negative impact on water quality.

Reductions of riparian vegetation along the waterway would cause major adverse impacts to water chemistry, temperature, and turbidity.

Failure of septic systems would result in very serious, and very likely significant, adverse impacts to water quality. This is the most significant potential impact.

The project could have adverse impacts to groundwater quality as a result of leaching of nutrients and pesticides. It is possible the increased nutrients could eventually be discharged to the Crystal River, a sensitive waterbody.

The adverse impact of even a small reduction in the Crystal River's water quality would be significant due to the high profile and value of the River's water quality (i.e. the river is heavily used and enjoyed by the public for recreational and aesthetic purposes, and is adjacent to NPS land).

The distance between cleared and/or fertilized areas and surface waters, most notably the river, is a significant factor in determining the potential magnitude of the impact. Greater distances result in less potential for impact. Clearing and fertilization within the riparian zone, particularly within 100 feet of the river would have the greatest potential impact; those impacts could reach a significant level.

Inclusion of substantial riparian buffers and avoidance of the most sensitive area, the area north of CR 675, would reduce, but not eliminate the potential for significant impact substantially.

The proposed fertilization and overall turf management plan are dependent upon activities that would be difficult to monitor and enforce. Furthermore, the potential for and magnitude of the impact is sensitive not only to assumptions of management plans and models and to the specific actions of those who implement the plan, but it is also dependent upon environmental

and climatic conditions which not only can, but are likely to be variable.

The applicant has indicated a willingness to make course management adjustments to address water quality issues that may arise from the project. Implementation of those adjustments could result in a reduction of the quality of the course. Implementation would be strongly resisted if this were the case, as the applicant's marketing plan and overall goals and objectives of the course are dependent upon providing a high quality turf and course.

Residential development would result in unmonitored, uncontrolled, activities (e.g. lawn fertilization, septic system failure, etc) that would have a significant impact if residences were constructed and clearing were to occur within the riparian area.

Although it is not possible to determine the actual magnitude of the impacts based on the available information, the relative impacts of the alternatives can be compared. Arranged from most damaging to least:

1. Residential development north of CR 675 - Due to the proximity of the river, the adverse impact has the potential to be significant. There does not exist sufficient information to make a reasonable judgement as to the magnitude of the impacts.

2. PA- Impact is potentially significant, slightly less than adverse impact than above because there is an additional degree of control and regulation. There does not exist sufficient information to make a reasonable judgement as to the magnitude of the impacts.

3. 3(e); proposed mitigation (including conservation of 7.5 acres north of CR 675); residential construction on remainder of area north of CR 675 - Impact slightly reduced, yet still potentially significant. There does not exist sufficient information to make a reasonable judgement as to the magnitude of the impacts.

4. 3(e); permanent conservation of approximately 45 acres north of CR 675 (Note this was rejected by the applicant)- Potential for significant adverse impacts minimal, primarily due to the avoidance of the most sensitive portion of the site.

Elimination of hole and tee located in riparian area south of CR 675 could further minimize adverse impacts

2. Shoreline Erosion and Accretion Effects:

The proposed work would not have a substantive impact on this consideration.

3. Effects on Flood Hazards and Floodplain Values:

The proposed work could affect floodplain values such as floodwater storage, natural floodplain vegetation, pristine qualities, etc. As such, the work would be contrary to Executive Order 11988.

4. Effects on Navigation

The bridges associated with the PA would be constructed so as to allow passage of canoes and kayaks.

Safety issues associated with golfing across the river are treated in the Safety section below. This safety hazard would adversely impact recreational navigation.

5. Water Supply and Conservation

Opponents:

Pesticides used on the course would impose risks on the drinking water of Glen Arbor residents.

"...most of the project site has a shallow water table, not just the areas delineated as wetlands. ...much of the area south of County Road 675 is hydrological connected to the Crystal River, and that the whole site shares an aquifer with the residential portion of Glen Arbor. ...the applicant has not done any work to investigate groundwater flow and how the course might create risks to the river or to drinking water."

Applicant's position:

Stuart Cohen, water quality consultant on behalf of the applicant -

1. A screening level model of pesticide transport to groundwater (SCI-GROW) was run and "none of the pesticides proposed for the golf course exceeded lifetime drinking water Health Advisory Levels.
2. In *Water Quality Impact by Golf Courses*, published in the *Journal of Environmental Quality* (1999), concluded: "Widespread and/or repeated water quality impacts by golf courses are not happening at the sites studied. None of the authors of the individual studies concluded that toxicologically significant impacts were observed, although HAL's (health advisory levels), MCL's (maximum contaminant levels), or MAC's (maximum allowable concentrates) were occasionally observed."

From Reike 1987 --Regarding the conversion of a forested or natural area - "we know that agricultural and residential land uses would lead to an increase in nitrates." B.G. Ellis, a soil scientist at Michigan State University, "expects some increase in nitrates on this site, but does not feel the level would be significant meaning that they would be below the federal standard(10 ppm) for safe drinking water if fertilized properly."

Findings:

Based primarily upon a lack of documented evidence of golf course fertilization and management operations adversely impacting drinking water quality, there is a low probability that a significant adverse impact would occur.

The potential can be minimized if a strict monitoring program is implemented.

B. Identified Biotic Impacts

1. Effects on Aquatic Biota

Note: Public and Federal Agency comments as well as the applicant's positions regarding water quality were detailed in Section III.A.1. Those comments are also being considered at this point due to the relationship between water quality and aquatic biota. Only positions unique to this section are being introduced at this point.

Opponent's position: The proposed work would adversely impact a trout stream and fishery.

Federal Agency positions:

EPA: Confining the project south of the County Road 675 would significantly reduce the direct impacts that the project would have on the Crystal River.

Applicant's position: The Crystal river is not a trout fishery.

Findings:

Adverse impacts to water quality, which are detailed in that specific section above, would adversely impact aquatic biota. If water quality impacts were to become significant, impacts to aquatic biota would be significant.

Increases in nutrients due to the project would increase algae growth, causing a shift in the rest of the aquatic community.

Some benthic communities, sedentary life stages, and eggs would be directly buried by removed by subject to smothering from sedimentation due to the proposed activity

The turbidity caused by runoff from the construction site may reduce photosynthesis, clog gills of fish and other animals, reduce visibility for sight feeding animals, and may cause fish to relocate from the immediate area until work is completed. That impact would be temporary.

The river does not provide a substantive trout fishery, except during fall and spring salmonid runs. It is unlikely the proposed course would disrupt or reduce the productivity of this fishery.

Elimination of riparian fringe, and shoreward site vegetation would result in an overall decrease in productivity and nutrient export capabilities for the aquatic food web.

Alterations of the riparian corridor (housing or golf course construction) would reduce contributions to the aquatic food chain. Mitigation plans that insure protection of the riparian corridor would minimize the potential impact to the food chain.

Strict monitoring and implementation of water quality protections would be essential to minimize the potential adverse impacts to aquatic biota. Reference is made to enforcement difficulties and championship quality "purpose" conflicts associated with this requirement.

In summary, the project could have significant, long term, negative impacts on the aquatic biota if significant water quality impacts are realized. The same relative ranking of alternatives as discussed in the water section also apply to this section.

Preservation of the area north of CR 675, including protection from unregulated clearing and other development resulting from potential residential use of this area, would be a considerable action to minimize impacts.

2. Effects on Terrestrial Biota

Opponent's position: There were numerous comments regarding general adverse impacts to the diversity and population size of terrestrial biota.

Applicant's position: The worksite does not provide high quality habitat.

Federal Agency positions:

FWS Position: The removal of a larger percentage of trees may increase the likelihood of windthrow in the remaining area, potentially affecting forest habitat.

WES Findings:

"There has been an increase in the interest of making golf courses more suitable as wildlife habitat, and many courses in North America have been specially managed to provide habitat diversity, although their

ability to support faunal communities similar to native habitats is questionable (Terman 1997)."

"The loss of riparian habitat on the proposed site may appear insignificant because of the relatively small amount of acreage proposed for conversion. However, the loss of habitat along the Crystal River would create a fragmented riparian corridor leading to a break in continuity that many organisms require for movements among habitats."

"Due to the relatively undisturbed habitat present on the site, the juxtaposition of both upland ridges and wetland swales, and the proximity of open water in the Crystal River, any clearing or development within the proposed site would substantially reduce or eliminate suitable habitat for many species of plants and animals."

"Clearing of riparian habitat along the Crystal River in the proposed site would fragment the existing riparian corridor, and reduce habitat quality and quantity for numerous plant and animal species. However, without quantitative inventory data from the site, it is not known what specific species would be affected."

Findings:

We concur with and adopt the WES findings for this consideration.

Construction along the shoreline would eliminate/alter habitat for amphibious animals and other organisms that require the natural land-water transitional habitat

A variety of organisms would be displaced from their habitat by impacts of the proposed construction and resulting use.

Housing development would have a greater impact than a golf course development.

The newly created landscaped upland would furnish habitat for those few species adapted for life under these conditions.

At the fill borrow site, terrestrial plants and habitats would be destroyed by excavation operations. Depending on reclamation or stabilization of the site, at least some of the original habitat values would be recovered over time. In summary, the project would have major, long term, negative impacts on the terrestrial biota.

The relative impacts of the alternatives arranged from most damaging to least:

1. HA- residential development north of CR 675-Due to the proximity of the river, the adverse impact would be significant.
2. PA- Impact also significant, and of the same order of magnitude as above.
3. 3(e); proposed mitigation (including conservation of 7.5 acres north of CR 675); residential construction on remainder of area north of CR 675 - Impact slightly reduced, remaining significant.
4. 3(e); permanent conservation of approximately 45 acres north of CR 675 (Note this was rejected by the applicant)- Potential for significant adverse impacts minimal, primarily due to the avoidance of the most sensitive portion of the site. This alternative would provide a substantial compensatory mitigation benefit.

Elimination of hole and tee located in riparian area south of CR 675 could further minimize adverse impacts.

3. Effects on Wetlands

Opponent's position:

The applicant's mitigation proposals are inadequate, and could even cause more damage than they would attempt to mitigate.

"Preservation of the area north of the road is therefore the only effective mitigation proposal which has been suggested in the record."

Applicant's position:

"none of the wetlands which would be impacted by alternative 3c [early version of 3(e)] are considered to be anything more than low or moderate function wetlands;

"habitats are likely to be improved" as a result of the PA's mitigation proposal.

NES - Disputed that the site is a "wooded dune and swale complex which is a wetland type that is not only rare in the State of Michigan but, in the Great Lakes region as well". Described the wetland types on the project site as "primarily scrub-shrub and forested wetland", "common", and "the most abundant in the state".

Gosling - Due to the size and productivity of the groundwater aquifer, hydraulic characteristics would not be "altered to cause any vegetation changes"

Findings:

The value of the wetlands is enhanced significantly by their association with uplands in an "globally rare" landform. The value and significance of this landform is discussed in detail in the "Effect on Conservation and Overall Ecology" section below.

The actual impact to the wetlands themselves may be significant, independent of their being a part of a ridge-swale complex. However, on a relative scale, the loss of the ridge-swale habitat and/or the riparian habitat are several orders of magnitude greater than the actual loss of wetlands, when considered independently of their landscape position and function. In the interest of concentrating this evaluation on significant issues that have been clearly identified, a detailed analysis of the issue of wetland values and impacts is deferred.

The following findings are identified for consideration at this point:

Adverse wetland impacts include those wetlands lost to filling and those impacted by clearing (both regulated and unregulated).

The wetland impact of the PA is 3.65 acres filled and 10.16 acres cleared for a total wetland loss of 13.81 acres.

The wetland impact of the 3(e) is 4.1 acres filled and 6.2 acres cleared for a total wetland loss of 10.3 acres.

The recognized wetland functions which would be affected as a result of the project are: runoff filtration and purification, food chain production, general habitat and nesting, rearing and resting sites for aquatic and terrestrial species. Wetland values adversely affected include significant uniqueness, heritage, and recreation attributes and values.

The PA would result in the conversion of 6.63 acres of upland to 4.81 acres of emergent/submergent and 1.82 acres of scrub/shrub wetland, restoration of 0.28 acres of former wetland, and conversion of 2.23 acres of cedar bog wetland to an emergent/submergent wetland. The applicant also proposed to donate some 900 feet of river frontage, the wetlands related thereto and 1.6 acres of uplands for preservation and to place a deed restriction on an additional 76 acres of uplands and wetlands for preservation.

Due to the associated loss of a unique landform, it is clear that the benefits of onsite wetland creation would be greatly outweighed by other environmental considerations.

The preservation of approximately 7.5 acres of mixed upland and wetland would not compensate for the loss of wetland functions and values alone, without factoring in the additional weight attributable to the loss of the associated unique landform.

The proposed compensatory mitigation for the PA, which includes alterations of the dune or ridge-swale landform, would compound rather than offset the adverse impacts to wetlands; the landscape position (i.e. being part of a unique landform) of the wetland is a major ecological attribute of the wetland.

In summary, at a minimum, the project would have major, long term, negative impacts on wetlands, considered independent of their surroundings/landscape position. It is not anticipated that those losses would be significant without factoring in the loss of the ridge-swale habitat/landform association.

4. Effect on Conservation and Overall Ecology:

Opponent's position:

The applicant's proposal imposes risks on resources that should be inviolate: the Crystal River, the Sleeping Bear Dunes National Lakeshore, a globally significant type of wetland community, and the drinking water of Glen Arbor residents.

Federal agency positions

EPA:

The project site is a "wooded dune and swale complex which is a wetland type that is not only rare in the State of Michigan but, in the Great Lakes Region as well", has "significant undisturbed natural character", and is "one of the only complexes in Michigan in which free flowing river winds along the dunes"

"alternative "3d" will result in significant degradation of this unique aquatic ecosystem."

FWS:

The benefits derived from moving the golf course away from the Crystal River are negated by the possibility of residential construction in that area.

The reconfiguration of the course layout for alternative 3(d) results in a number of developments being placed much closer to the boundary of the National Lakeshore property. Direct and indirect impacts to the Lakeshore resources are of great concern.

Follow-up e-mail regarding the NES "position paper" sent to David Gesl from Jenny Wilson on June 12, 2000:

"...there were once 90-95 WD&S (wetland dune and swale) complexes in the Great Lakes region, 70 of which occurred in Michigan. Only 40 of these retain significant undisturbed natural character. The Crystal River WD&S complex is one of these."

"Most significantly, from our perspective, the applicant's report states that they will be impacting 5.7 acres of ridge and swale landform. We strongly disagree with that figure. The applicant will be impacting the majority of the 200 or so acres they own. There will be little of the original vegetation left undisturbed and much of the landform will be reconfigured (through grading and filling). Thus we would place the significance of their impacts closer to 34% of the Glenn Arbor complex (200 acres of the 580 acre complex), 7.5% of the total WD&S in Leelanau Co and almost 100% of the ridge/swale landform owned by the applicant."

"The rigor with which the regulatory agencies pursue avoidance, minimization and mitigation of these impacts should be commensurate with the scarcity of the resource and our ability to meaningfully replace it. Since the geologic formation necessary to adequately replace these wetlands cannot likely be recreated and due to the extreme difficulty of replacing coniferous forested wetlands, we must place a higher significance on avoidance of impacts to the extent that it is within the Corps' authority to regulate those impacts."

NPS:

"We recognize the significance of this property and have gone on record during proposed land exchanges in 1992 and 1995 stating that the Crystal River ecosystem is a valuable riverine resource."

"We strongly support a natural resource preservation area and wildlife corridor in the Crystal River area."

Applicant's position:

Refer to NES letter dated March 15, 2000 and the "Issue paper" dated March 13, 2000:

Disputed that the site is a "wooded dune and swale complex which is a wetland type that is not only rare in the State of Michigan but, in the Great Lakes region as well". The landform on the property is ridge-swale not dune and swale and otherwise disputed claims regarding the significance, character, and rarity of the site. "The matrix of uplands and wetlands, mix of upland and development, nor proximity to this amount of water frontage are not new or uncommon in Michigan or in virtually any other state"

Described the wetland types on the project site as "primarily scrub-shrub and forested wetland", "common", and "the most abundant in the state".

The project would impact "approximately 0.7% of the Glen Arbor ridge swale landform and only 0.2% of the landform in Leelanau County, insignificant by any standards."

Suggested the ridge-swale is a landform, "landforms" are not regulated; 404 authority applies only to wetland fills.

Refer to the applicant's December 21, 1999 letter -

"...we noted that the National Park Service ("NPS") evaluated the resource quality of all of the land in our area, characterized those lands which should and should not be included in the Sleeping Bear Dunes National Lakeshore (the "Lakeshore") and advised the Congress of the United States accordingly. Clearly, the NPS had the opportunity to characterize our property so as to assure its inclusion in the Lakeshore. It did not do so."

"When the Lakeshore was created in the 1960's, our property wasn't characterized by the NPS so as to be included in the Lakeshore, presumably because it

wasn't among "the best lands here". By 1992, it was a "valuable riverine resource" but wasn't "more important ecologically" than former farm land or, according to other NPS statements, suitable for "a worthwhile trade." But, by June 23, 1999, it was strongly for a "...a natural preservation area..." and, within five days, was considered to be made up of "globally rare habitats" and "an aquatic resource of national significance".

"...the NPS stated that it "...recognize(d) the significance of this property..." That was in 1992, some 31 years after NPS had the lead role in characterizing the resource quality of land and establishing the Lakeshore boundaries. Please note that this characterization is not in the NPS General Management Plan or Land Protection Plan and came about only in response to a community initiative to exchange our property for a portion of a former farm owned by NPS."

"...Superintendent Miller said he was not persuaded that the Crystal River land was "more important ecologically" than the former farm land NPS would have given up to obtain it."

"the federal agencies also sought to justify their change in the characterization of the resource qualities of our property by referencing the NPS's putting of a portion of the Crystal River on the Nationwide Rivers Inventory ("NRI"), a step suggesting eligibility for inclusion in the National Wild and Scenic River System. ...the NPS had previously attempted to study the Crystal River for inclusion in the National Wild and Scenic Rivers system, met with substantial public opposition and dropped its attempt."

"...the DEQ found and ALJ affirmed...the Crystal River system cannot be characterized as "wilderness"...The Crystal River does not qualify for designation under the Natural Rivers Act, 1970 PA 231."

Offered this quote from U.S. EPA's May 8, 1992 findings - "Review of the existing decision record, Federal Agency comments, and natural resource recognition lists and programs does not indicate that the site or the Crystal River possess any wetland or other natural resource value that would warrant Federal withdrawal of decision authority from the State of Michigan for reasons of national resource value (Emphasis added)."

The Michigan National Features "Inventory" report "should have been done only if authorized by the DEQ... It should have been done in accord with established procedures for resource evaluations... And, it should have been done, if properly authorized and conducted, in public". "...the DEQ reviewed this "report" thoroughly and rejected it in its entirety". NOTE: This statement refers to the "Statement of the Proposed Homestead Golf Course and Homestead Plan", dated February 8, 1989.

The following information and quotations (obtained from A Survey of Wooded Dune and Swale Complexes in Michigan, by Comer and Albert of the Michigan Natural Features Inventory, May 1993) are among the information being considered at this point in the assessment:

The Comer and Albert report describes these natural communities (dune-swale/ridge-swale) as "globally rare" and "limited to the Great Lakes region of North America", but "not considered to be globally imperiled".

"Because the process responsible for the development of Wooded Dune and Swale Complexes are directly related to very large bodies of fresh water and post-Pleistocene geology, their occurrences are limited to the Great Lakes region in North America."

"Because they contain a unique assemblage of physiographic, soil, and vegetative components, and provide a high quality habitat for numerous shoreline animal species, the Wooded Dune and Swale Complex is considered a distinct natural

community in Michigan (Michigan National Features Inventory 1990)."

"Four high quality complexes are found within the Sleeping Bear Dunes National Lakeshore."

"Road construction and residential development have caused significant degradation to this (the Crystal River) complex. However, remaining undeveloped portions retain a high natural quality. Recent proposals to develop a golf course within this complex would clearly cause significant degradation to the complex as a whole. Other more suitable locations for the golf course can and should be found."

The Crystal River complex ranks 14 on Table 3e.- Michigan Wooded Dune and Swale Complexes, Northern Lakes Huron/Michigan - Low Dunes. Table 3e. is a listing of high quality sites within each Wooded Dune and Swale Complex sub-type ranked in order of protection priority. The mechanism for establishing these ranking priorities attempts to incorporate significant biological factors and known disturbances into the ranking process. The primary ranking factor in determining the priority list is the Element Occurrence Rank, which incorporates significant hydrological alterations and other human-caused disturbances, along with more general characteristics of complex size and species diversity.

Findings:

Implementation of the proposed activity would impact upon the ecological balance and integrity of valuable resources: wetlands, migratory bird stopover and foraging point, globally rare habitat limited to the Great Lakes region and of national and international significance.

Although the entire site is clearly of high quality and significance, the value of the portion north of CR 675 is substantively higher than that south of CR 675. This area is readily visible from vehicles traversing two (2) heavily traveled public roads. CR 675 and M-22 are the two main thoroughfares providing tourist and other visitor access to the area. More significantly, the north portion of the property is adjacent to a section of the river that is heavily canoed and

kayaked, therefore, the public has ready access adjacent to the area north of CR 675. The south area is visible along one of the main roads, CR 675, but not M-22. Further, access to and views of this site are limited to a short stretch of the river and to hiking or foot traffic.

The values of the landform would be reduced significantly by residential or golf course development.

The proposed project would change an area that now supports a variety of species into one that would support considerably less diversity.

The proposed work would degrade or foreclose the prospect of preservation of an area of high natural heritage value.

The proposed work would not effect Federally listed endangered or threatened species. Piping plover and Pitcher's thistle are species that inhabit beaches and lakefront dunes, neither of which are found at the proposed work site. The Michigan monkey flower is associated with springs and seeps; USACE is not aware of any such features on the site and the topography of the site (low relief) provides extremely low potential to support seeps or springs.

In summary, the project would have major, long term, negative impacts on conservation and the overall ecology. Those impacts would be significant.

The negative impacts would be reduced greatly if the both the area north of CR 675 and the area south were placed under a permanent conservation restriction which insured that residential or other development were not to occur. Protection of the north portion would have a greater relative impact.

-Such a restriction would be considered favorably as mitigation because of the threat that unregulated activities (residential development) would pose.

-In order for the "preservation" to be considered adequate to mitigate the adverse impacts of alternative 3(e), the entire area north of CR 675 would have to be protected (approximately 45 acres). A mitigation ratio of not less than

12:1 would be required, but it must include, or result in the effective protection of the entire potentially developable area.

- Preservation of the area north of CR 675 reduces the adverse impact of golf course development. Additionally, this preservation would reduce the consideration of conservation and overall ecology to a "not significant" level.

C. Identified Social Impacts

1. Visual Aesthetics

The PA, 3(e), and/or any construction of homes on the site is not be consistent with the present natural condition of the area. The value of this condition is heightened by:

1. The importance of tourism to the area
2. The unique visual resource which the undeveloped river corridor provides to kayakers, canoeists, float tubers, fishermen, and auto travelers using two main thoroughfares.

The proposed worksite includes at least two vistas (where the natural, relatively unspoiled river abuts roadways) which are recognized among the more scenic in the area. Their quality equals or exceeds many scenic areas in the National Lakeshore. These areas are both located north of CR 675, and their scenic attributes would be substantively reduced by golf course or housing construction. Preservation of the area north of CR 675 would be a potential benefit of heavily weight.

The scenic value of the area south of CR675 is substantively less than that north, primarily due to the lack of the river or other surface water.

The natural river corridor presently serves as a high quality, high value resource to canoeists, kayakers, and float tubers who use the river.

The PA, 3(e), and/or any construction of homes north of CR 675 would have a significant adverse impact on visual aesthetics.

2. Noise

Construction activities would increase ambient noise for a period of approximately 1-year.

The project would have little or no long-term effect on noise.

3. Effects on Recreation

Opponent's positions:

Much of the public opposition to the project focuses on its impacts on public recreation in the Crystal River basin and the National Lakeshore.

The project's appropriation of the river itself for a golf course water hazard will drastically impair visitor experiences on the river by ruining the aesthetics of their trip and putting them in danger of being hit by a golf ball. To avoid this, most people will probably avoid the river altogether.

Roughly 1¼ million people visit the Sleeping Bear Dunes National Lakeshore each year. The river is widely used by these visitors and local residents for canoeing, kayaking, swimming, and fishing. The sheer number of people that will be directly affected by the project must be considered in the public interest review.

Federal Agency Comments:

FWS/NPS:

"Canoeists who begin their trip within the Lakeshore and float through a natural wetland area would have a very different and difficult experience when they reach the golf course. Open areas in the trees to allow for unimpeded golf shots would provide full views of the course from the river. ...If the golf course is constructed, these river users would be subjected to a safety hazard from flying golf balls... The golf course may cause some canoeists and kayakers to stop using the river or to cut their trip short."

Applicant's position:

The proposed tees in the PA, which involve directly hitting the golf ball over the Crystal River, would only be used by low the handicap or expert golfers, who comprise a low percentage of the golfing public. Therefore, the recreational use conflict is reduced because the number of golfers using those tees would be minimal.

Findings:

The applicant's position fails to recognize that these two conflicting uses of the river - golf and canoeing - would both be at their peak during the same time periods, particularly summer weekends and holidays. The loss of aesthetic value and the obvious danger associated with using the Crystal River as a water hazard (see the following section on safety) will infringe on the public use and enjoyment of the river.

The project's effect on recreation is significant, long term, and negative. Preservation of the area north of CR 675 minimizes the overall adverse impacts associated with golf course development and eliminates the recreational use conflict. This action is essential to reduce the adverse impact to a less than significant level.

4. Effects on Safety

Opponent's position:

1. There is a significant safety threat posed to waterway users as a result of golf holes, which allow the opportunity to hit across the waterway.
2. "The applicant's claim that almost no one will use the tees that play over the river - begs a question: then why is crossing the river necessary for the course to be of championship quality?"
3. Golf and canoeing will both be at their peak during the same time periods, particularly summer weekends and holidays.

4. The Park Service's numbers for canoeists and kayakers do not reflect the total number of people floating down the Crystal; they only measure the rentals from two businesses on the river, and do not count anyone who brings their own boat.
5. FOCCR attorney John Noonan took pictures of the River every three minutes during Labor Day Weekend to illustrate the heavy recreational use of the waterway. See exhibit 1 of "Joint Comments of Environmental Groups on Alternative 3(d).

Federal Agency Comments

WES - "Because the Crystal River is used by a large number of canoeists during the summer months, and two of the tee boxes would have golfers teeing off either across the channel or directly upstream, there is a major safety concern associated with recreationists being hit by golf balls."

FWS/NPS - In 1998, approximately 3,700 canoes and kayaks were rented for use on the Crystal River by two liveries operating under National Park Service commercial use licenses. In addition, local residents and visitors with their own watercraft use the river, and fisherman sometimes wade the stream. ...If the golf course is constructed as proposed (three holes propose to use the river as a water hazard, with golfers actually hitting over the river, and other holes or fairways are adjacent to the river), river users would be subjected to a safety hazard from flying golf balls."

Applicant's position:

Portions of the PA, which involve directly hitting the golf ball over the Crystal River, would only be used by low handicap or expert golfers. Therefore, the recreational use conflict is reduced because the number of golfers using those tees would be minimal.

Robert Walker, April 25, 2000 - "Plan 3(e) is "tighter" than I would like it to be. That means

that setbacks from adjoining roads and distances between tees, greens and fairway centerlines have been minimized and can not, in light of concerns for public safety, be reduced further. ...I concluded that I could neither recommend nor endorse relocating Holes No. 12 and 13, eliminating the driving range or eliminating the housing. Relocating Holes No.12 and 13 would, in my professional opinion, introduce a level of risks for golfers and motorists which neither I, nor in my view, any other responsible professional would accept as public safety is a concern we and, I trust, you share."

Finding's:

Canoe rentals alone result in a mean of approximately 40 trips down the river per day based on a 3-month period. There are approximately 60 foursome starts on average per day. The high number of river and golf course users suggests a high probability of safety hazard.

The applicant has expended substantial time (at least 12 years) and resources resisting the alternative of confining the course to the south side of CR 675. This resistance was, at least in part, motivated by a determination to incorporate the Crystal River as a water hazard. These facts conflict with the applicant's position that these holes are being expected to appeal to a very limited segment of the golfing public.

The applicant asserts that safety considerations are one of the factors that precludes further alteration of the course, recognizing that golf balls are a legitimate hazard. In consideration of the potential number of river users vs. the number of golfers on a given summer day, the relative threat to river users is approximately the same. To further this logic, it would be a similar safety hazard to have two fairways cross as to have a golfball hit across the river. This is clearly not acceptable, particularly to the golfing public. It is even more unacceptable to subject the public, using a public waterway for purposes for which it has been extensively used historically, to those dangers.

The PA includes hole 18 which locates all tee boxes on the opposite side of the river as the hole, and holes 1 and 17 with

the "expert tee" only across the river. Figure 2. of the WES report is a photograph of the tee box at hole 1. It is clear that drives pose a significant safety hazard to other users of the river.

The PA's effect on public safety is significant, long term, and negative. Alternative 3(d) eliminates this significant safety hazard.

5. Designated Historic, Cultural, Scenic, and Recreational Values

Opponent's position:

a. "We agree with the commenting agencies that alternative 3d, while better than the applicant's original proposal in terms of recreational impacts on the Crystal River, would still cause an unacceptable disruption of aquatic resources."

b. "By building high density housing along the river, the applicant would be doing nothing meaningful to offset the impacts that the golf course would have on the river and the ridge-and-swale community. In fact, the housing would only make those impacts worse."

c. "Both Studley and the Fish and Wildlife Service concluded that, at a minimum, the area north of the county road needs to be preserved under some kind of conservation plan if the wetland fills are permitted south of the road for the golf course."

Findings:

The up-dated National Register of Historical Places was checked. No known Registered Historical sites will be affected by the proposed work.

The proposed work will not affect an area designated under the Federal Wild and Scenic Rivers Act, or being considered for such designation.

The proposed work would not **directly** affect areas designated as Natural Landmarks, National Rivers, National

Wilderness Areas, National Seashores, National Recreation Areas, National Lakeshores, National Parks, National Monuments, archaeological resources, including Indian religious or cultural sites.

The project would have a major secondary adverse impact on the Sleeping Bear Dunes National Lakeshore. Previous sections have detailed various adverse impacts, some significant, to regional resources and attributes that are integrally related to National Lakeshore resources and public use and enjoyment of them.

The adverse impact of even a small reduction in the Crystal River's water quality would be significant due to the high profile and value of the River's water quality (i.e. the river is heavily used and enjoyed by the public for recreational and aesthetic purposes, and is adjacent to NPS land).

The proposed worksite has recognized attributes which would qualify it as a significant park resource, had it been included. The actual and relative value of the area north of CR 675 has been discussed in detail in earlier sections. Conservation of this area, and transfer to the NPS would be have significant public benefits which would weigh heavily in mitigating adverse impacts to other environmental considerations.

We know of no applicable or affected state, regional, or local land use classification due to historic, cultural, scenic, or recreational values.

6. Land Use Patterns

The proposed project is consistent with the existing zoning for the area. This reflects the local land use considerations.

The project has received a commitment for permit issuance from the state. This reflects the state's land use determination.

There is a national land use issue associated with the proposed work because of the proximity of the National Lakeshore. As discussed earlier, the PA would create a safety hazard to those canoeing, kayaking, float tubing, and fishing the Crystal River. Many of those users use the river because it passes through the Lakeshore immediately upstream the proposed worksite. The PA would result in a reduction in use and enjoyment the river for such purposes and would result in a reduction in use of the Lakeshore. This constitutes an adverse impact to land use at the national level.

Adverse impacts can be minimized if the golf course is confined to the area south of CR 675 and the area north is protected by conservation easement.

7. Economic Effects

Opponent's position: " The economy of the area is primarily based on tourism. The applicant's estimation of the project's economic benefits fails to account for the harm the project will do to natural features that now play such an important role in the economy. The applicant's claim that the economic future of Glen Arbor rested in this project's ability to combat a seasonal employment problem has been disproven. Over 20 businesses have either started or expanded since the application was first filed."

Findings:

The contractor, equipment supplier, and other commercial enterprises would benefit from the proposed work.

The applicant's and neighbors' property values would increase as a result of the proposed work.

Increased use of the area by those attracted by golf would benefit local businesses.

The local tax revenues and community services would benefit.

The proposed work would provide the applicant with an expansion/improvement in their interests, which would result in private economic gains.

Due to the safety concern and the likely reduction in canoe rental demand, liveries would experience economic losses.

In summary, the project's effect on economics would be long term, and both positive and negative. The net impact would likely be positive. Alternatives which eliminate the proposed use of the river as a water hazard or which would result in the preservation of natural conditions north of CR675 would eliminate the identified adverse impacts.

8. Food and Fiber Production

No impacts would be expected.

9. Mineral Needs

No impacts would be expected.

10. Energy Conservation and Development.

No impacts would be expected.

11. Consideration of Property Ownership.

The applicant has a right to reasonable private use of the property, subject to the rights and interests of the public in the waters of the United States, including federal navigation servitude and federal regulation for environmental protection. The project would further the applicant's investment backed expectations regarding development of the parcel.

D. Cumulative Effects

For the purpose of this application review, the geographic area for which cumulative effects are being reviewed is the Great Lakes region.

The development activities epitomized by this application are residential and recreational development of dune-swale and ridge-swale landforms. Within this region, projects impacting these areas include numerous individual residential development projects for second or vacation homes. State and/or Federal permits are often not required.

Dune-swale and ridge-swale habitats are recognized as "globally rare" and "limited to the Great Lakes region of North America". The rarity of this habitat and the threats to its continued existence are detailed in Comer and Albert. Development pressure upon the remaining examples of this landform/habitat is heavy and increasing. A large portion of this development pressure is unregulated and the overall public interest is not a consideration in their loss. Conservation and protection of remaining, relatively intact examples is a consideration which is worthy of heavy weight in the decision process.

E. General Criteria:

1. The relative extent of the public and private need for the proposed structure or work: The proposed work primarily satisfies private needs. The public needs of the proposed work are minimal and could be met at other sites not involving wetlands or landforms of national significance.

2. Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the object of the proposed structure or work: There are alternative sites which could have been used to accomplish the object of the proposed work.

3. The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited: The proposed work would have a permanent impact by eliminating natural features which are rare and unique. The benefits may or may not be permanent, depending upon future economic conditions and the future popularity of golfing.

F. Alternatives: The following alternatives have been considered:

Issue the permit as proposed.

Issue the permit with modifications.

Issue the permit with special conditions.

Deny the application. (Consider the no action alternative.)

IV. There are significant impacts on the quality of the human environment associated with the applicant's preferred alternative, and for alternative 3(e)(with the mitigation that the applicant has proposed). Therefore, preparation of an environmental impact statement would be required prior to a decision to issue a permit for either of these alternatives. Alternative 3(e) with mitigation that includes permanent preservation of the area north of CR 675 reduces the impacts of the golf course/residential development below the significant threshold. If such a decision is made, the portions of this document constituting the Environmental Assessment adequately address the relative magnitude of the expected impacts of the proposed project within our mandatory scope of analysis. The

range of possible impact magnitude included no impact, minor impact, major impact, and significant impact as the term significant is defined in regulations implementing NEPA.

V. 404(b)(1) Guidelines Compliance Evaluation:

The effects of the proposed discharge of dredged or fill material into the waters of the U.S. have been evaluated according to the Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, promulgated in Title 40 CFR 230 pursuant to Section 404 of the 1977 Clean Water Act.

Factual Determinations in light of Subparts C-F of the Guidelines have been set forth under appropriate impact assessments above.

Testing: Subpart H of the Guidelines requires testing of the extraction site of the discharge material for contaminants except under certain circumstances. In this case, testing is not required because the source of the fill material would be a combination of onsite borrow and commercial purchase. There is no evidence to suggest or reason to believe the fill source is contaminated. These include the existence of prior test results, scientific research and/or experience that indicates that contaminants are not present in the material to be discharged. Testing may also be omitted if the discharge site is adjacent to the extraction site and subject to the same sources of contaminants, and materials at the two sites are substantially similar. Testing may also be omitted if constraints are available to reduce contamination to acceptable levels, and if the potential discharger is willing and able to implement such constraints.

REFERENCES:

1. Joint USACE and USEPA Memorandum to the Field, Subject: Appropriate Level of Analysis Required for Evaluating Compliance with the Section 404(b)(1) Guidelines Alternatives Analysis, August 23, 1993

2. Draft Regulatory Guidance Letter, Subject: Project Purpose/Alternatives Analysis, dated June 18, 1992.
3. Permit Elevation, Old Cutler Bay Associates, October 1990.

FLEXIBILITY IN ANALYSIS:

Applicant's position: The flexibility principals discussed in the USACE/USEPA memorandum to the field dated 23 Aug 93 should apply to the PA and 3(e).

Findings:

1. The following excerpts from the USACE/USEPA memorandum to the field dated 23 Aug 93 are considered:
 - a. "this memorandum describes the flexibility afforded by the Guidelines to make regulatory decisions based on the relative severity of the environmental impact of proposed discharges of dredged or fill material into waters of the United States."
 - b. "Minor impacts are associated with activities that generally would have little potential to degrade the aquatic environment and include one, and frequently more, of the following characteristics: are located in aquatic resources of limited natural function; are small in size and cause little direct impact; have little potential for secondary or cumulative impacts; or cause only temporary impacts."
 - c. "It is not appropriate to consider compensatory mitigation in determining whether a proposed discharge would cause only minor impacts for purposes of the alternative analysis required by Section 230.10(a)."

d. "Projects which may cause more than minor impacts on the aquatic environment, either individually or cumulatively, should be subjected to a proportionately more detailed level of analysis to determine compliance or noncompliance with the Guidelines."

2. As detailed in the assessment sections above, the impacts associated with the PA and alternative 3(e) are not minor, therefore flexibility is not warranted.

PROJECT PURPOSE:

The applicant has defined the overall project purpose as "to add an 18 hole, championship quality golf course so as to again be competitive in our industry in the spring and fall".

In a letter to the applicant dated 2 Nov 1999 (Encl.56b), the overall project purpose was defined as "to add a golf course to the resort to address seasonal and competitiveness issues". That letter also indicated the following was not included in the definition of the overall purpose:

1. 18 holes at project site
2. "championship quality"
3. associated housing
4. contiguous to existing resort

As a result of the analysis below, the appropriate overall project purpose is: **To add a regulation golf course, with associated housing, to the resort to address seasonal and competitiveness issues"**

DISCUSSION:

18 Holes at the project site

Opponent's position: The applicant has not shown an 18 hole golf course is required (9 holes may be sufficient).

Applicant's position: Required to make project viable. 9-hole courses are not competitive with 18-hole, resort courses and are unprofitable to marginally

viable. "Land costs alone would make this alternative economically infeasible.." A 9-hole course would not "stimulate spring and fall occupancy". It would be "far more prudent from an economics perspective" to use the property (both north and south of CR 675) for housing than a 9-hole course. (See Doud 3 May 2000)

Findings:

1. It is reasonable to accept that the applicant's market demands an 18-hole course. However, considering the applicant's desire to be considered a golf destination, and the fact many golf destinations offer multiple courses (See Doud Affidavit dated May 24, 2000 which states his company "provides professional services to 4 destination resorts in Northern Michigan which offer a total of 15 on-site, 18-hole golf courses"). It is also reasonable that a 9-hole course at this site (with a greater potential for housing) with or without an 18 hole course offsite could be considered. Confining the project purpose to 18 holes on the proposed site unduly limits consideration of alternatives.
2. According to USACE guidance, "it is not a particular applicant's financial standing that is the primary consideration for determining practicability, but rather characteristics of the project and what constitutes a reasonable expense for these projects that are most relevant to practicability determinations."

Championship quality

Opponent's position: The project's main opponent, FOCR, indicated the need to add a "high quality" golf course to the resort was "not in dispute".

Applicant's position:

1. A championship quality and on-site resort course is required to draw "lower handicap

golfers who play more rounds and spend more per round". "data on existing golf courses in Northern Michigan shows that on-site, championship quality golf courses draw more golfers throughout the year, stimulate spring and fall occupancy, have a greater chance of profitability" and meet the applicant's stated project purposes. (See Doud 3 May 2000).

2. "In summary, there were 12 major four-season resorts with which we competed. All had at least one golf course. On average, each had 1.58 golf courses. More than half were adding at least one more golf course, most of which were championship quality."

Discussion: For a similar permit action, the Old Cutler Bay Associates Permit Elevation concluded the "basic" project purpose should include a "regulation" golf course. It rejected the inclusion of "championship" quality or specific designer requirements in the basic purpose. The 1992 Draft Regulatory Guidance Letter stated an example "overall" project purpose of "to construct a viable upscale residential community with an associated regulation golf course in the south Dade County area", which was derived from Old Cutler Bay elevation.

Findings:

1. Championship quality has not been defined and is a highly subjective measure. The April 25, 2000 submission by Robert Walker, which discussed planning criteria for the golf course, was carefully considered.
2. The size of the site is a primary determining factor as to the potential to design for quality.
3. The applicant has failed to demonstrate that further reducing housing could not increase space to be utilized to boost the quality of

the course. The applicant has not offered conclusive evidence for the appropriate balance point, and we can not determine this point.

4. The applicant did not demonstrate that offsite alternatives could not satisfy the requirement for "championship quality". Furthermore based on the overall size of the sites and the limited restraints offered (lack of wetlands or other significant features) offsite alternatives would appear to offer equal or greater opportunity to satisfy the applicant's "championship quality" and "associated housing needs" than the proposed site.
5. The applicant has not demonstrated a "championship quality" golf course could not constructed on the south side of CR 675.
6. The overall project purpose should include "regulation", but further expanding the project purpose to "championship" is not justified.

Associated Housing

Opponent's position:

1. Housing is not crucial to the financial viability of golf course construction. The number of houses now being proposed would not offer a substantial financial contribution relative to the cost of course construction.
2. "Agreed" that "having sites for residential use as an integral part of the development would be an economic plus". Suggested an offsite course could be more profitable because it might offer more opportunity to develop associated housing. The eight sites that FOICR identified as alternatives offered potential for more housing sites and no wetlands to "hinder" development.

Applicant's position:

1. Housing adjacent to the course is necessary to "attract debt and equity capital, reduce the overall investment in and dependency on golf operations, lower the breakeven point and increase the likelihood of being acceptably profitable" (See Doud 3 May 2000).
2. "The cost of the project, without the offsetting revenue from housing to the North and South of County Road 675, makes such a project economically infeasible."
3. "The plan for upland residential development to the South of County Road 675 has been cut by about half (15 homes verses 31 homes) to further reduce the utilization of uplands and minimizes wetland impacts."
4. From Walker's April 25, 2000 letter: "I have been involved in the design of more than 130 golf course projects in the past 28 years and 95% of those projects included housing, typically 150 to 400 units for reasons of economic viability. The ones which did not include housing were, in some cases, owned by a private club or a municipality."

Findings:

1. It is reasonable that housing is an element associated with and potentially crucial to course development. However, the applicant has not demonstrated a specific level of housing necessary based upon specific economic or industry standards.
2. When a site is constrained by size and/or natural features, it is reasonable that there may be a trade off between associated housing and course quality. The applicant has not offered conclusive evidence for the appropriate balance point, and we can not determine this point.

3. The overall project purpose should include "associated housing" for reasons of cost.
4. According to USACE guidance, "it is not a particular applicant's financial standing that is the primary consideration for determining practicability, but rather characteristics of the project and what constitutes a reasonable expense for these projects that are most relevant to practicability determinations."

ONSITE/OFFSITE REQUIREMENTS:

Opponent's position:

According to "Resort Golf Course Location Survey, Feasible and Prudent Alternative Locations for the Homestead Proposed Golf Course and Housing Development, Alternate Use of the Homestead's Proposed Golf Course Site" dated September 1989 by Brandon Rogers:

1. The added value of a course is not dependent on the proposed location.
2. Rogers utilized "a list of the top 25 resort golf courses" as listed in the 1989 GOLF DIGEST ALMANAC. He determined seven (7) of the courses were adjacent to the resort, with the remaining 18 courses located between 0.6 and 7 miles away. Eight (8) of the courses were over 2.5 miles from the resort. He pointed out that all resorts listed provided shuttle transportation.
3. Rogers identified eight (8) "off premises" alternative sites for the golf course based upon the following criteria derived from an American Hotel/Motel Association document:

- a. resort is a destination
 - b. course is with 10 miles of resort
 - c. not in a metropolitan area
 - d. adequate roads are available
 - e. traffic problems/congestion not present
 - f. "topflight" golf course
4. Extra costs caused by duplication of services does not appear relevant when in any location a quality full service clubhouse at the course would be needed.
 5. Shuttle service would have to be provided whether the course is located at the proposed site or any other location.
 6. The proposed site is not contiguous to the resort, other than for a common property line. Guests would be required to drive or be shuttled to the proposed site.
 7. The resort presently utilizes shuttle services to its existing 9-hole course, restaurants, condos, beach, pools, tennis facilities, etc.

Additionally, the following was suggested:

1. Four other Michigan resorts (competitors of the Homestead), Boyne Mountain, Garland, Shanty Creek, and Tree Tops utilize non-contiguous courses.
2. The Homestead has "off-site golf package" arrangements with existing offsite courses
3. The "Palmer site" is a primary alternative

with the following characteristics:

- a. Less than 2 miles from the resort, compared to almost 1 mile for the proposed site.
- b. No wetlands present to restrict course or housing construction.
- c. Actively marketed to the applicant through 1994 and owners "actively considering various approaches to divesting [them]selves of the land" through 1997 (see attachment 21 of FOIC submittal, Encl.54).

Applicant's position:

1. An on-site course, which the applicant defines as "contiguous", is "necessary with associated housing to be acceptably profitable".
2. Contiguous courses "do at least 1½ to 2 times the volume of non-contiguous courses" and "profitability is far more likely with a contiguous course" (See Doud 3 May 2000).
3. Market analysis shows that golfers would not visit a resort that does not have an "on-site" course.
4. "Uncontested data in the record also shows that resort golfers wanted to play and did play 18 hole, championship quality on-site courses far more frequently than they did any type of off-site course. The same data shows that resort golfers played these courses in spring, summer, and fall and did not play off-site courses with anything approaching the same frequency in the spring and fall." Note: This statement refers to the "record" prior to USACE processing.

5. The applicant insists alternatives confined to the area south of CR 675 (alternatives 3(d) and 3(e)) are not "on-site" courses.
6. "Your agency, in its letter of June 24, 1988, acknowledged that an on-site course is required."

Findings:

1. There has not been a demonstration the course must be contiguous to the site nor otherwise on-site. The Rogers report, particularly the examples of existing, nationally recognized off-site resort courses, strongly supports that off-site courses should not be rejected solely because of being "non-contiguous". Those courses are presumed to be practicable.
2. Based on Roger's analysis of the "top 25 resort courses", specifically that 18 of the 25 courses are located up to 7 miles away, with 8 being between 2.5 and 7 miles away, it is reasonable to consider sites located up to 7 miles from the resort as practicable. Note: All eight of the sites specifically identified by FOICR are located within this distance.
3. The applicant has identified that 3(e) is not an on-site alternative. This site differs from the PA only in that it does not share a common boundary with the main resort. Both the PA and 3(e) alternatives require driving or shuttle service from nearly all locations on the Homestead property. There is no conclusive or compelling evidence in the record to support that a common property line is the crucial factor determining if a course is on-site. It is even less plausible that a common property line would influence the attractiveness of the course to any segment of the public. The need to drive or shuttle is a reasonable standard to determine if a course is considered on or off site. Because of this

need to travel to the PA (also note the clubhouse is not adjacent to the resort), the PA is an off site course.

4. The applicant has not overcome the presumption the adverse project impacts could not be avoided through use of an offsite course.
5. The applicant has not demonstrated that neither the Palmer site nor the other seven alternative sites should be considered located too far from the resort.

MITIGATION/ALTERNATIVES:

The following is a summary of the mitigation sequence as required by the February 10, 1990 Memorandum of Agreement by the EPA and the Corps as it pertains to the proposal and, if applicable, its alternatives.

Avoidance

1. The Resort's existing golf facilities are sufficient:

Opponent's position: The existing golf academy, 9-hole, par 3 course, and golf packages at nearby courses have satisfied competitive demands and a course is not required.

Applicant's position:

- a. The existing facilities and programs are "amenities" but were not expected to nor did they resolve the spring and fall competitive issues. Revenue figures and the July-August distribution (65%) were offered in the Affidavit submitted with Doud's 3 May 2000 letter.
- b. "...as a result of 13 years of regulatory reviews and litigation, been forced to try the "no action" alternative a second time.

Again, it has not worked as competition is becoming more severe, not less. Low occupancies and attendant losses in spring and fall have, therefore, continued to be a problem."

Findings:

- a. It is appropriate to defer to the applicant's judgement that additional golf facilities, either offsite or onsite, 18 hole or 9 hole are a legitimate purpose and need.
- b. According to USACE guidance, "it is not a particular applicant's financial standing that is the primary consideration for determining practicability, but rather characteristics of the project and what constitutes a reasonable expense for these projects that are most relevant to practicability determinations."

2. Offsite locations (SEE offsite location discussion under project purpose above):

Applicant's additional positions:

- a. A determination by the Corps that the PA is unacceptable would not be consistent with "other cases processed in Michigan by the federal agencies" (e.g. "Ford Motor Land" a.k.a. Tournament Players course in Dearborn, Michigan)) which the applicant suggests are comparable proposals and environmental circumstances.
- b. The applicant discusses their alternatives analysis in their letter dated December 21, 1999. That discussion is summarized in Table 5 on page 21 of that letter. See findings discussion below.

c. "18 Hole course, confined to or primarily within uplands." would not meet his project goal of "championship quality nor regulation length with housing located only to the North of County Road 675" and "would have little, in any, impact on Spring and Fall occupancy. The plan for residential development to the North of County Road 675 has not been changed."

Findings:

a. The Ford Motor Land golf course/wetland development (a.k.a. Tournament Players course in Dearborn, Michigan) differs significantly from the matter at hand for the following reasons:

- i. That was a state of Michigan action in which Federal Agencies provided comments. USACE did not have permit or veto authority regarding that action.
- ii. The resources associated with that application were significantly different. The Ford Motor Land development was adjacent to the Rouge River, which has a heavily developed watershed and poor water quality.
- iii. The presence of NPS land and the heavy recreational and tourism use of the Crystal River and surrounding area significantly elevate the value of the resources in the Homestead case.

b. The applicant verbally indicated that the resort operates at a loss but that the overall profitability of the resort is heavily dependent upon land and property

sales. The issue of profitability is complex and includes consideration of the applicant's financial standing, or investment, or market share, items that the Old Cutler Bay Associates permit elevation identified as "cumbersome" and "not necessarily material to the objectives of the Guidelines".

- c. The applicant's financial standing is not the primary consideration for determining practicability.
- d. The proposed discharge would occur in a special aquatic site, a wetland. The fundamental, essential, or irreducible activity or use to which the special aquatic site would be put after discharging dredged or fill material is residential and recreational development, which clearly does not require access or proximity to or siting within wetlands to take place. Therefore, it is presumed that there are practicable alternatives to achieve the overall project purpose that do not involve special aquatic sites, and that all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site have less adverse impact on the aquatic ecosystem.
- e. Discussion of the applicant's alternatives analysis summary (Table 5 of December 21, 1999 letter):
 - i. The Table focuses on 4 sites that the applicant identified, including the PA site and 3 sites identified by others.
 - ii. One of those sites "A" was rejected on the basis of its small size. This elimination is valid.

- iii. The Palmer site was rejected because it "does not meet the project purpose", as defined by the applicant. Based on the information at hand, the applicant's basis for this determination is that the site is not "contiguous" to the Homestead. The inclusion of "contiguous" in the project purpose has been rejected, therefore, the Palmer site would meet the overall project purpose as defined by USACE in the discussion above.
- iv. The Palmer site was ranked below the PA (designated "D" on Table 5) on the basis of costs. The extensive potential for upland residential and housing development on the Palmer site creates a substantial doubt on the legitimacy of this relative ranking. The applicant's statement's regarding the significance of real estate and construction sales to the economics of the resort and their relative importance compared to operating revenues substantially reduces the validity of rejecting this alternative based on cost.
- v. The Palmer site was ranked below the PA on the basis of technology. Any argument this alternative should be considered "not practicable" based on the factors used to determine this ranking must be rejected. Though it may be a greater challenge to solve the shortcomings of this site, it is clearly practicable.
- vi. The Palmer site was ranked below the PA on the basis of logistics. With the exception of the visibility

factor, the logistics factors listed in Table 5. could be overcome (road quality, accessibility) or are not significant (distance) based on what we have believe to be acceptable to the industry (shuttle or drive to the course from the resort) nationally and possibly statewide. The visibility factor is not one that could reasonably be given overriding or even heavy weight in the Federal decision process.

- vii. Based upon the preceding discussion, the Palmer site was clearly a practicable alternative in the context and standards of the 404(b)(1) Guidelines at the time of market entry. The fact it was actively marketed to the applicant supports that it was readily available. Although the alternative analysis appropriately focuses on what is available at the point of market entry, the Palmer site may still be available.
- viii. The applicant made a conscious business decision to acquire the Crystal River site rather than the Palmer site, which was clearly available and actively marketed to the applicant between 1987 and 1994 (Encl.71).
- ix. There may be additional alternatives, some of which have been identified in Table 5 and/or in public comments that would also be considered practicable. However, further detailed analysis of such alternatives is not justified in light of the identification of the

Palmer site as a practicable alternative.

Minimization (relocating holes 12 and 13, elimination and/or reduction of housing, elimination of driving range)

Applicant's position:

1. "...tees, fairways and greens have, wherever possible, been located to make maximum utilization of uplands, minimize wetland fills and minimize the effect of the fills on undisturbed uplands, wetlands, vegetation, and habitats. Largely, this was done by designing as many features as possible to run parallel to rather than across wetlands and to be at the end of wetlands not at the midpoints. We believe this, combined with the fact that none of the wetlands more closely associated with the Crystal River would be impacted, minimizes the loss of wetland value."

2. From Walker's April 25, 2000 letter:

- a. Alternative 3(e) "will appeal to less skilled golfers" and a far greater percentage of less skilled golfers want to practice immediately before playing. "If a range is not available, I believe those golfers will choose an alternative location which offers an on-site range."
- b. The golf course routing process "does not present the opportunity to simply "unplug" practice areas, housing units or other components of a plan and "plug in" golf holes shifted from other areas."
- c. Relocating holes 12 and 13 would introduce an unacceptable "level of risk for golfers and motorists"

d. "eliminating the housing would not add sufficient land for relocating any hole as it simply does not provide for adequate space."

3. From Doud's May 3, 2000 letter:

- a. This is "imprudent", the range is necessary to offer "practice and playing opportunities" to increase drawing power and to add a profit center.
- b. This is "imprudent", housing has already been reduced from "several hundred units to 15 or 20", "the cumulative capital costs of this project are unlikely to be recovered even with the sale of the land to the north of CR675 at fair market value" and the development of housing and operation of a course.

Findings:

1. The applicant has failed to demonstrate that the adverse impacts of the PA have been minimized.
2. The applicant has failed to demonstrate that the adverse impacts of the alternative 3(e) have been minimized.
3. The driving range can either be reduced in size, moved to another location, or eliminated from the proposal to increase the potential upland available to further reduce wetland impacts.
4. An existing driving range/golf academy is present within the Homestead complex. Inclusion of an additional driving range on site appears to duplicate this facility.
5. The added value of an adjacent driving range is highly suspect. The applicant would have

the option of balancing that added value with the cost of the alternative of purchasing and locating the range on adjacent property.

Compensation

Note: The applicant submitted 4 proposals for compensatory mitigation of alternative 3(d) with his letter of January 28, 2000.

- e. Creation and Restoration: Create 2.2 acres portrayed on 3(d) and acquire an additional 6.8 acres of impacted wetlands within the Glen Lake Watershed or within the Regional Landscape ecosystem for restoration.
- f. Creation and Preservation: Create 2.2 acres portrayed on 3(d) and acquire and preserve an acceptable number of acres within the Glen Lake Watershed or within the Regional Landscape ecosystem.
- g. Creation and Banking: Create the 2.2 acres portrayed on 3(d) and acquire 6.8 acres in a mitigation bank.
- h. Donation: Disregard the creation of the 2.2 acres portrayed in 3(d) and donate land or funds for the acquisition of land to a mutually acceptable conservancy.

Mitigation proposals involving restoration and creation of wetlands to compensate for wetland values:

Opposition and Federal Agency positions: The proposed compensation is inadequate and expected to compound rather than offset the adverse project impacts.

Findings:

1. As detailed in the impacts assessment sections above, this form of mitigation would not be expected to offset the most significant adverse impacts.
2. Fully concur with opposition and agency commentors.

As proposed by the applicant (preservation of 7.5 acres north of CR 675 and/or creation of wetlands):

Findings: As detailed in the impacts assessment sections above, this form of mitigation would not be expected to offset the most significant adverse impacts.

Permanent preservation of the area north of CR 675

USFWS position: The benefits derived from moving the golf course away from the Crystal River are negated by the possibility of residential construction in that area.

Opponent's position:

1. FOICR - "the housing plan for north of the county road would cause **similar impacts to those from the golf course;** therefore, preservation north of the road is necessary to avoid making matters - already bad because of the golf course plan- even worse."
2. FOICR - Preservation of the area north of the road is therefore the only effective mitigation proposal that has been suggested in the record.

Applicant's position: According to Doud (3 May 2000) this is "unprofitable and imprudent" and "the cumulative capital costs incurred for this project must be recovered as much as possible". This alternative was rejected as being excessive

in cost and not justified based upon project impacts.

Findings:

1. The following excerpts from the USACE/USEPA memorandum to the field dated 23 Aug 93 are considered:
 - a. "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences (emphasis added)."
 - b. "Even where a practicable alternative exists that would have less adverse impact on the aquatic ecosystem, the Guidelines allow it to be rejected if it would have "other significant adverse environmental consequences". 40 CFR 230.10(a). As explained in the preamble, this allows for consideration of "evidence of damages to other ecosystems in deciding whether there is a "better" alternative." Hence, in applying the alternatives analysis required by the Guidelines, it is not appropriate to select an alternative where minor impacts on the aquatic environment are avoided at the cost of substantial impacts to other natural environmental values."
2. The PA would result in a significant degradation of aquatic resources.
3. Alternative 3(e) also results in significant degradation of aquatic

resources. Inclusion of mitigation, as proposed by the applicant (preserving 7.5 acres north of CR 675 and/or creation of wetlands on and off site), results in substantial residential development north of CR 675. This will also result in a significant degradation of aquatic resources.

4. Denial of both the PA and 3(e), or exercise of an offsite alternative would likely result in residential development of the area north of CR 675(HA). That development 1) could likely be accomplished without the need for USACE or other Federal permits, and 2) is otherwise capable of being done (i.e. is highly marketable). In this scenario, development north of CR 675 would result in a significant, yet unregulated, degradation of aquatic resources.
5. The relative ranking of these three alternatives, in descending order of adverse impact is as follows:
 - a. PA
 - b. 3(e), with proposed mitigation
 - c. Offsite, upland alternative, and the resulting development north of CR 675
6. The combination of a mitigation plan which results in the permanent restriction and preservation of the area north of CR 675 and 3(e) protects the most valuable and sensitive portion of the property and is appropriate mitigation for wetland fills, pond construction, and wetland clearing south of CR675. This alternative combination is less damaging than any alternative which would result in development north of CR 675 (including denial of the permit

on the basis of offsite alternatives with the eventual unregulated development north of CR 675).

CONCLUSIONS/Section 404(b)(1) Compliance/Non-Compliance Determination:

1. The PA and alternative 3(e) fail to comply with the 404(b)(1) guidelines because:

There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, and the alternative does not have other significant adverse environmental consequences. The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem.

The proposed discharge would result in significant degradation of the aquatic ecosystem under 230.10(b) or (c).

There does not exist sufficient information to make a reasonable judgement as to whether the proposed discharge would comply with the Guidelines.

2. Alternative 3(e) would comply with the 404(b)(1) guidelines, if the applicant were to place a permanent conservation/preservation restriction on the approximately 45 acres located north of CR 675. If all options for golf course development on this site are denied, unregulated housing construction, both south and, more significantly, north of CR675 will cause environmental damage that is more significant than if a golf course is constructed south of CR675 and north of CR675 is preserved.

Section 404(b)(1) compliance summary matrix.

PA = Applicant's preferred alternative. D = No action (denial).
 3(e)/apm= confining the course to the area south of CR675 with the applicant's proposed mitigation. 3(e)/cons= confining the course to the area south of CR675 with conservation of at all areas north of CR 675 under applicant's ownership and/or option (approximately 46 acres). Where only a P is shown, it indicates that all alternatives meet compliance criteria for that item. An unknown is a noncompliance; this would be designated with a U in the DOES NOT COMPLY column.

	MEETS CRITERIA	DOES NOT COMPLY
1. The applicant must overcome the presumption that a practicable, less environmentally damaging alternative site, outside special aquatic sites, exists. <u>If the project is water dependent, OR is not in a special aquatic site, enter only N/A (not applicable).</u>		PA 3(e)/apm
2. There must be no alternative that is practicable, is less damaging to the aquatic ecosystem, and has no other significant, adverse environmental effects.	3(e)/cons	PA 3(e)/apm
3. The discharge must not violate state water quality standards or Clean Water Act Section 307 toxic effluent standards or bans.	All	
4. The project must not jeopardize the continued existence of an endangered species.	All	
5. The project must not cause or contribute to significant* adverse effects on municipal water supplies, plankton, fish, shellfish, wildlife, special aquatic sites, or other aspects of human health or welfare.	3(e)/cons	PA 3(e)/apm
6. The project must not cause or contribute to significant* adverse effects on life stages of aquatic life and other wildlife dependent on aquatic ecosystems.	3(e)/cons	PA 3(e)/apm
7. The project must not cause or contribute to significant* adverse effects on ecosystem diversity, productivity, or stability.	3(e)/cons	PA 3(e)/apm
8. The project must not cause or contribute to significant* adverse effects on recreational, aesthetic or economic values.	3(e)/cons	PA 3(e)/apm
9. All appropriate and practicable steps,		

to minimize potential adverse effects of
the discharge on the aquatic ecosystem,
must be taken.

3(e)/cons | PA
| 3(e)/apm
|

*If project does not comply due to this, explain if this determination
differs from conclusion regarding an EIS, Section IV. above.

Robert J. Davis
Lieutenant Colonel, U.S. Army
District Engineer

Prepared by:

David Gesl
Project Manager
Regulatory Office
Date: July 5, 2000

Enclosures

1. Presently proposed plan, dtd. /
- 2a. Alternative 3(d) plans
- 2b. Alternative 3(e) plans
3. Housing Plans (from December 21, 1999 ltr.)
4. First MDNR denial, dtd. July 1998
5. Second MDNR denial, dtd. 17 Feb 89
6. MDNR contested case hearing, 27 Aug 90
7. NRCS Final Determination, 14 Nov 90
8. EPA letter to Col. Kanda, 21 Nov 90
9. Report of Independent Ad Hoc Panel, Sep 91
10. EPA memorandum, 13 Apr 92
11. EPA memorandum, 16 Apr 92
12. EPA statement, 8 May 92
13. Court Document
14. Court Document
15. Court Document
16. Kuras to Col. Buck w/application, 21 Feb 95
- 17a. Gov. Engler to Zirschky, 8 Mar 95
- 17b. Zirschky response to Engler, 10 May 95
- 18a. Gov. Engler to Browner (EPA) (cc Col. Buck), 8 Mar 95

18b. Browner to Gov. Engler, 31 Mar 95
19. Mannesto to Kuras, 12 Apr 95
20. Mannesto to Kuras, 30 May 95
21. Mannesto to Kuras, 9 Jun 95
22. Davis to Genega, 24 Jul 95
23. Sen. Abraham to Col. Craig, 25 Jul 95
24. Sen. Faircloth to Gesl, 8 Aug 95
25. Col. Buck response to Sen. Faircloth, 23 Aug 95
26. Chronology of events
27. Jones (FOCR) to Sen. Baucus, 15 Nov 95
28. Kuras to Gesl, 17 Nov 95
29. Mannesto to Kuras, 28 Nov 95
30. Lt. Col. Nash to Jones, 7 Dec 95
31. Statement of Understanding, 12 Dec 95
32. Col. Buck to Kuras, 7 Mar 96
33. Huey to Col. Buck, 18 Apr 96
34. Col. Buck to Kuras, 20 Jun 96
35. May 18, 1999 new application
36. Public Notice, 27 May 99
37a. EPA to Col. Davis, 28 Jun 99
37b. EPA March 9, 2000
38a. FWS to Col. Davis, 25 Jun 99
38b. FWS to Col. Davis, 29 Feb 00
38c. E-mail form FWS
39. NPS to Gesl, 23 Jun 99
40a. WES Document, June 2000
40b. Wes Document, June 2000
41a. Rep. Stupak to Lt. Col. Haid, 30 Mar 99
41b. Lt. Col. Powell response to Rep. Stupak, 13 Apr 99
41c. Rep. Stupak to Lt. Col. Davis, 25 June 99
41d. Rep. Stupak to Lt. Col. Davis, 8 Nov 99
41e. Conversation Record, 16 Nov 99
42a. Sen. Levin to Gesl, 24 Jun 99
42b. Sen. Levin, 8 May 00
43. Sen. Graham to Westphal, 30 Jul 99
44. Westphal response to Sen. Graham, 28 Sep 99
45. Conway (SHPO) to Gesl, 25 Jun 99
46. Mannesto response to Conway, 21 Oct 99
47. Andrews to Gesl, 9 Jun 99
48. Mannesto response to Andrews, 17 Jun 99
49. Rastetter to Gesl, 25 Jun 99
50. Mayor Buck to Gesl, 22 Jun 99
51. Hayes to Gesl, 23 Jun 99
52. Lively to Gesl, 22 Jun 99

53. Letters of Support

Groups:

Consumers Energy (21 Jun 99)
Leelanau Conservation District (25 Jun 99)
Traverse City Area Chamber of Commerce (25 Jun 99)

Individuals:

Albertini, P.& C.(22 Jun 99)
Alexander, J.(22 Jun 99)
Alterman, I.(22 Jun 99)
Anderson, A.(28 Jun 99)
Anderson, B.(21 Jun 99)
Arnell, R.(23 Jun 99)
Barnes, L.& E.(21 Jun 99)
Barnes, L.(rcvd.24 Jun 99)
Bath, C.(23 Jun 99)
Baxter, D.& E.(2 Jul 99)
Baxter, W.(24 Jun 99)
Bedells, D.(25 Jun 99)
Bell, M.(22 Jun 99)
Benham, D.(22 Jun 99)
Benjamin, J.(23 Jun 99)
Benjamin, M.(28 Jun 99)
Berlacher, A.&F.(24 Jun 99)
Betzig, R.& S.(24 Jun 99)
Blashill, J.(25 Jun 99)
Bond, G.(28 Jun 99)
Bryce, R. (rcvd.23 Jun 99)
Buchanan, R.& J.(24 Jun 99)
Buhler, M.(22 Jun 99)
Burgan, D.(rcvd.28 Jun 99)
Burgan, P.(rcvd.28 Jun 99)
Burns, J.(24 June 99)
Bussey, R.(24 Jun 99)
Butty, T.(22 Jun 99)
Cares, C.(23 Jun 99)
Cherry, E.(22 Jun 99)
Christenson, D.(23 Jun 99)
Cochran, P.(25 Jun 99)
Cohen, A.(21 Jun 99)
Cook, G.(22 Jun 99)
Cook, W.(24 Jun 99)
Daray, M.(25 Jun 99)
Dean, S.(22 Jun 99)
Debelach, M.(24 Jun 99)

Debelack, M.(18 Jun 99)
DeCourcy, K.(20 Jun 99)
Dennos, M.& B.(25 Jun 99)
Deters, J.(22 Jun 99)
Dobson, N.(23 Jun 99)
Dobson, S.(21 Jun 99)
Domka, B.(25 Jun 99)
Doster, D.(23 Jun 99)
Durnea, M.(21 Jun 99)
Durst, J.& C.(22 Jun 99)
Dyksterhouse, K.(22 Jun 99)
Eberhart, R.(22 Jun 99)
Eberhart, R.(24 Jun 99)
Egbert, L.(25 Jun 99)
Elsholg, E.(21 Jun 99)
Feeley, H.& J.(21 Jun 99)
Fetzer, W.(25 Jun 99)
Fisher, A.(23 Jun 99)
Fisher, J.(22 Jun 99)
Ford, G.(22 Jun 99)
Ford, S.(24 Jun 99)
Freemen, B.& E.(22 Jun 99)
French, D.(23 Jun 99)
French, W.(23 Jun 99)
Gartland, T.& K.(24 Jun 99)
Gherlan, A.& I.(21 Jun 99)
Giller, T.(rcvd.28 Jun 99)
Gilvydis, J.& D.(22 Jun 99)
Giza, G.&P.(26 Jun 99)
Gordon, F.& Mrs.(23 Jun 99)
Greenan, J.(21 Jun 99)
Hagan, J.(25 Jun 99)
Henry, L.(24 Jun 99)
Herald, J.(24 Jun 99)
Herzog, D.(24 Jun 99)
Hillard, H.& G.(25 Jun 99)
Hippie, E.(23 Jun 99)
Hirth, D.(23 Jun 99)
Hobart, C.& C.(23 Jun 99)
Irwin, W.(22 Jun 99)
Jardin, C.(22 Jun 99)
Jencha, C.& J.(21 Jun 99)
Kaiser, J.& M.(24 Jun 99)
Kalter, J.(rcvd.31 Jun 99)

Kausler, G.& B.(25 Jun 99)
Keeney, G.(21 Jun 99)
Kemp, M.& D.(24 Jun 99)
Kern, S.(21 Jun 99)
Kerstiens, D.& K.(21 Jun 99)
Kimber, D.(21 Jun 99)
Klingaman, T.(24 Jun 99)
Kluzak, W.(23 Jun 99)
Kouchnerkavich, S.(25 Jun 99)
Kroeger, W.(21 Jun 99)
Lackey, T.& J.(21 Jun 99)
Lark, P.(22 Jun 99)
Lautner, D.(21 Jun 99)
Lawrence, L.(rcvd. 24 Jun 99)
Lewis, D.(24 Jun 99)
Lewis, L. (24 Jun 99)
Lysaght, L.& P.(24 Jun 99)
MacLachlan, B.(24 Jun 99)
Mattson, S.(23 Jun 99)
Maurer, P.(24 Jun 99)
McKenzie, C.(24 Jun 99)
McNier, L.(24 Jun 99)
Medlin, A.& V.(22 Jun 99)
Morris, L.(24 Jun 99)
Murphy, T.(21 Jun 99)
Nichols, T.& S.(24 Jun 99)
Orringer, M.& S.(24 Jun 99)
Owyang, C.& J.(22 Jun 99)
Padgitt, D.(21 Jun 99)
Padgitt, J.(22 Jun 99)
Palazzolo, S.(22 Jun 99)
Payne, S.(25 Jun 99)
Peppler, W.& H.(23 Jun 99)
Petrosky, C.(25 Jun 99)
Phillips, T.(23 Jun 99)
Quick, B.(23 Jun 99)
Quick, R.(23 Jun 99)
Reddicliffe, V.(23 Jun 99)
Reinhard, R.(22 Jun 99)
Richmond, G.& D.(23 Jun 99)
Roache, T.(24 Jun 99)
Roth, B.(24 Jun 99)
Rudyhut, M.(22 Jun 99)
Saxon, E.& A.(22 Jun 99)

Semple, D.(rcvd. 28 Jun 99)
 Shearer, K.(24 Jun 99)
 Sherdian, M.(21 Jun 99)
 Simon, M.(22 Jun 99)
 Spink, G.& J.(23 Jun 99)
 Stander, D.(21 Jun 99)
 Stanz, T.22 Jun 99)
 Stimac, M.(22 Jun 99)
 Stolz, D.(21 Jun 99)
 Stover, B.(24 Jun 99)
 Svera, J.& S.(22 Jun 99)
 Tanis, J.(25 Jun 99)
 Tatham, C.(22 Jun 99)
 Thelan, B.(23 Jun 99)
 Thomasma, T.(21 Jun 99)
 Troeger, T.(22 Jun 99)
 VanRenterghem, J.(22 Jun 99)
 Varva, D.(28 Jun 99)
 Vredevoogd, B.& P.(22 Jun 99)
 Wagner, M.(26 Jun 99)
 Washington, D.& J.(21 Jun 99)
 Watson, W.(26 Jun 99)
 Weadock, T.(30 Jun 99)
 Whitfield, M.(23 Jun 99)
 Wickland, S.(22 Jun 99)
 Woller, J.(22 Jun 99)
 Wurm, S.(26 Jun 99)
 Wynns, J.(25 Jun 99)
 Zerschling, A.(25 Jun 99)
 Zerschling, K.(25 Jun 99)
 54 form letters
 54. Letters of Opposition
 Allegan Conservation District (25 Jun 99)
 Crawford-Roscommon Conservation Club (24 Jun 99)
 Organizations and Groups:
 Elk-Skegemog Lakes Association (20 Jun 99)
 Dept of Fisheries and Wildlife-Michigan State Univ. (3 Jun 99)
 Friends of the Cedar River Watershed, Inc. (15 Jun 99)
 Friends of the Crystal River (24 Jun 99 & 27 Mar 00)
 Friends of the Earth (June 11, 99)
 Friends of the St. Joe River (21 Jun 99)
 Great lakes Environmental Center (15 Jun 99)

Lake County Riverside Property Owners Assoc., Inc (24 Jun 99)
Michigan Environmental Council (7 June 99)
Michigan Environmental Protection Foundation (11 May 99)
Michigan Lake & Stream Associations, Inc.
Michigan Land Use Institute (23 Jun 1999)
National Wildlife Federation (24 Jun 99)
Northern Michigan Environmental Action Council (26 May 99)
Oakland Outdoors Video Magazine
Pere Marquette Watershed Council, Inc. (23 Jun 99)
St. Joseph County Conservation & Sportsman Club Inc. (25 Jun 99)
Tip of the Mitt Watershed Council (7 Jul 99)
Trout Unlimited (22 Jun 99)
Individuals:
Abdoo, G. (undated)
Aleseche, A. (23 Jun 99)
Alkema, H. & G. (24 Jun 99))
Alton, B. & C. (9 Jun 99)
Anderlik, R. (4 Jun 99)
Anderson, P. (undated)
Anderson, G. (28 Jun 99)
Arbaugh, J. (20 Jun 99)
Ari, C. (21 Jun 99)
Armbrecht, C. (9 Jun 99)
Baker, L. (undated)
Balazy, T. (1 Jul 99)
Barry, P. (24 Jun 99)
Barton, W. (undated)
Battle, C. (undated)
Battle, G. (5 Jun 99)
Battle, J. (undated)
Battle, M. (undated)
Bearud-Neal, S. (28 Jun 99)
Beddingfield & Yarrow (23 Jun 99)
Bender, P. & N. (20 Jun 99)
Bennett, C. (22 Jun 99)
Benzel, M. (24 Jun 99)
Beordsler, L. (23 Jun 99)
Beutek, M. (19 Jun 99)
Bieke, J. (21 Jun 99)
Blom, M & P. (23 Jun 99)
Bloom, C. (24 Jun 99)
Bloom, C. (24 Jun 99)

Blozoow, A. (20 Jun 99)
Bonnette, S. (24 Jun 99)
Boyer, J. (undated)
Brown, S. (undated)
Burpee, M. (24 Jun 99)
Burrows, B. (24 Jun 99)
Buswinka, J. & T. (20 Jun 99)
Byl, R. (22 Jun 99)
Bzdok, C. (8 Jun 99)
Cantrick, G. (23 Jun 99)
Capps, R. & K. (23 Jun 99)
Carlson, J. (undated)
Carlson, C. (undated)
Carr, R. (12 Jun 99)
Cepela, F. (undated)
Chapman, A. (20 Jun 99)
Childs, K. (17 Jun 99)
Chmielewski, J. (28 Jun 99)
Christiansen, R. & B. (21 Jun 99)
Clark, A., H., B., & G. (21 Jun 99)
Coffer, J. (undated)
Cole-Misch, S. (22 Jun 99)
Comer, F. & S. (22 Jun 99)
Conn, M. (undated)
Corilter, C. (21 Jun 99)
Corn, T. (8 Jun 99)
Cox, P. (21 Jun 99)
Crane, F. (22 Jun 99)
Crane, S. (23 Jun 99)
Crequa, L. (25 Jun 99)
Croom, A. & D. (Jun 99)
Crouch, C. (21 Jun 99)
Cruden, B. (18 Jun 99)
D'Onofrio, S. (24 Jun 99)
Daloisio-Bundy, N. (24 Jun 99)
Daniels, J. (21 Jun 99)
Davis, N. (undated)
Dean, J. (18 Apr 99)
Dean, J. (8 Jun 99)
Denison, H. (undated)
Derrick, E. (24 Jun 99)
Dewey, D. (undated)
Diehl, P. (21 Jun 99)
Driker, E. & E. (22 Jun 99)

Duff, J. (20 Jun 99)
Dunbar, J. & B. (23 Jun 99)
Early, D. (undated)
Eckbert, H. (16 Jun 99)
Elkins, S. (22 Jun 99)
Elling, E. (undated)
Engle, C. (undated)
Erickson, M. (21 Jun 99)
Fay, S. (undated)
Ferrier, L. (21 Jun 99)
Fitzgibbon, M. (11 Jun 99)
Flowers, M. (undated)
Flowers, R. (1 Jul 99)
Ford, T. (17 Jun 99)
Ford, J. (21 Jun 99)
Foreman, C. (20 Jun 99)
Forrest, J. & L. (8 Jun 99)
French, M. (23 Jun 99)
Frenchi, M. (undated)
Funke, T. (22 Jun 99)
Gardner, C. & R. (Jun 99)
Garrett, R. (7 Jun 99)
Gedda, T. (undated)
Gerald, D. (undated)
Gilmore, B. (9 Jun 99)
Gorrell, G. (24 Jun 99)
Graham, J. & R. (24 Jun 99)
Greer, M. (28 Jun 99)
Griggs, J. (10 Jun 99)
Griggs, P. (10 Jun 99)
Gross, R. (13 Jun 99)
Gross, H. (20 Jun 99)
GRW (24 Jun 99)
Grzyh, P. (21 Jun 99)
Guznam, E. (25 Jun 99)
Hacker, R. & I. (20 Jun 99)
Hackett, A. (8 Jun 99)
Hagerman, R. (25 Jun 99)
Haley, G. (25 Jun 99)
Haley, S. (23 Jun 99)
Halsig, M. (undated)
Halsted, D. (2 Jun 99)
Harlow, A. (22 Jun 99)
Hart, C. (undated)

Hawblitzel, K. (21 Jun 99)
Hayduk, D. (Jun 99)
Heidtke, J. (20 Jun 99)
Heins, A. (20 Jun 99)
Heiser, R. (undated)
Henry, A. (24 Jun 99)
Highsmith, B. (undated)
Hindman, D. (1 May 00)
Hipp, M. (25 Jun 99)
Hirsch, R. (22 Jun 99)
Hojnacki, K. (21 Jun 99)
Holmes, G. (6 Jun 99)
Hood, B (undated)
Hotaling, M. (24 Jun 99)
Hughes, L. (18 Jun 99)
Hummel, R. & G. (20 Jun 99)
Hurley, S. (15 Apr 99)
Hurlin, S. & K. (15 Jun 99)
Israel, J. & K. (21 Jun 99)
Jehle, G. (22 Jun 99)
Jewell, K. (14 Jun 99)
Johnson, M. (21 Jun 99)
Johnson, K. (undated)
Johnson, L. (23 Jun 99)
Johnson, D. (23 Jun 99)
Johnstone, S. (22 Jun 99)
Jones, B (20 Jun 99)
Jones, D. (15 Jun 99)
Jones, S. (24 Jun 99)
Jun 99)
Kadlec, R. (Jun 99)
Karamanian (undated)
Kenny, S. (24 Jun 99)
Key, B. & L. (25 Jun 99)
Keyes, G. (8 Jun 99)
King, S. (28 Jun 99)
Knapkiewicz, D. (28 Jun 99)
Koch, G. (28 Jun 99)
Kornegger, L. & M. (21 Jun 99)
Korycinski, C. (24 Jun 99)
Kovats, D. (25 Jun 99)
Kramp, M. (24 Jun 99)
Krett, R. & L. (25 Jun 99)
Kropf, R. (25 Jun 99)

Kwiecinski, I. (23 Jun 99)
Lambech, J. (19 Jun 99)
LaPrad, C. (22 Jun 99)
Latimer, R. (21 Jun 99)
Lattimore, S. (8 Jun 99)
Lecci, C. & J. (19 Apr 99)
Leggat, K.- 4 cards (Jun 99)
Leonard, N. (21 Jun 99)
Lesperany, J. (undated)
Lidey, C. (24 Jun 99)
Lien, K. (24 Jun 99)
Lifsey, B. (21 Jun 99)
Linderosa, B. (29 Jun 99)
Lindfors, B. (24 Jun 99)
Lindsey, L. (25 Jun 99)
Ling, D. & K. (25 Jun 99)
Listello, E. (20 Jun 99)
Litch, E. (22 Jun 99)
Litch, S. (22 Jun 99)
Lomako, K. (undated)
London, A. (23 Jun 99)
Losee, B. (undated)
Lyons, M. (6 Jun 99)
MaChute, M. (22 Jun 99)
MacKenzie, J. (undated)
MacKenzie, R. (undated)
Macrae, M. (24 Jun 99)
Makara, A. (20 Jun 99)
Maksymowicz, D. & A. (23 Jun 99)
Maple, F. (23 Jun 99)
Marks, D.T. (8 Jun 99)
Mather, M. (25 Jun 99)
McCandless, R. (23 Jun 99)
McCarel, C. (21 Jun 99)
McClure, P. (4 Jun 99)
McElligatt, E. & W. (19 Jun 99)
McElliptt (20 Jun 99)
McElroy, R. (undated)
McElroy, T. (25 Jun 99)
McGillivray, M. (21 Jun 99)
McKane, B. (4 Jul 99)
McKane, M. (18 Jun 99)
McLean, M. (21 Jul 99)
Mead, C. & D. (7 Jun 99)

Meaton, J. (23 Jun 99)
Melstrom, R. (11 Jun 99)
Merrill, P. (21 Jun 99)
Mervenne, J. (19 Jul 99)
Meske, J. (23 Jun 99)
Messing, M. (9 Jun 99)
Meyer, A. (20 Jun 99)
Meyers, P. (21 Jun 99)
Michniewicz, B. (21 Jun 99)
Mihalko, J. (21 Jun 99)
Miller, G. (undated)
Millies, J. & L. (25 Jun 99)
Mook, T & T (14 Jun 99)
Moroski-Browne (23 Jun 99)
Morris, J. (21 Jun 99)
Moscow, R. (22 Jun 99)
Motycka, B. (23 Jun 99)
Muhr, G. (24 Jun 99)
Murphy, P. (15 Jun 99)
Neal, S. (24 Jun 99)
Neall, J. (21 Jun 99)
Needham, L. (20 Jun 99)
Neff, D. (25 Jun)
Neff, A. (23 Jun 99)
Nowakowski, J. (24 Jun 99)
Nowinski, B. (17 Jun 99)
O'Connell (14 Jun 99)
O'Connor, R. (8 Jun 99)
O'Donoghue, K. (28 Jun 99)
Obata, M. (undated)
Oriel, P. (undated)
Patterson, J. (16 Jun 99)
Payne, D. (22 Jun 99)
Payne, H. (22 Jun 99)
Payne, T. (28 Jun 99)
Penrose, C. (23 Jun 99)
Perreault, R. (20 Jun 99)
Persha, T. & K. (undated)
Pestle, P. (24 Jun 99)
Peyton, H. (3 Jun 99)
Phelps, D. (4 Jun 99)
Phrury, M. (1 Jun 99)
Plath, A. (23 Jun 99)
Price, D. (22 Jun 99)

Proule, R. (20 Jun 99)
Prystash, R. (28 Jun 99)
Reelitz, J. & D. (29 Jun 99)
Reichard, D. (23 Jun 99)
Reid, T. (undated)
Reisig, M. (23 Jun 99)
Reisig, J. (23 Jun 99)
Renfrew, J. (10 Jun 99)
Rhoades, B. (5 Jun 99)
Richard, R. (20 Jun 99)
Robinson, G. (Jun 99)
Roduisu, M. (21 Jun 99)
Rogers, A, (7 Jun 99)
Rosewarne, P. (22 Jun 99)
Roth, J. & E. (undated)
Rust, F. (6Jun 99)
Sarkezz, G. & J. (23 Jun 99)
Schluckebeir, K. (24 Jun 99)
Schlueter, G. (10 Jun 99)
Schwartz, E. (22 Jun 99)
Seel, B. (24 Jun 99)
Seiferlein, A. (23 Jun 99)
Sell, R. & S. (11 Jun 99)
Sell, R. & S. (23 Jun 99)
Senior, M. (undated)
Servis, J. (24 Jun 99)
Sharry, M. (20 Jun 99)
Shaw, S. (21 Jun 99)
Shilts, J. (24 Jun 99)
Smith, A. (undated 99)
Sommerstorfer, H. (21 Jun 99)
Steele, M. & T. (4 Jun 99)
Stepek, S. (undated)
Stephenson, W. (23 Jun 99)
Stotzer, J. (15 Jun 99)
Sutherland, R. (24 Jun 99)
Sutherland, S. (29 Jun 99)
Taylor, J. (22 Jun 99)
Taylor, G. (undated)
Thatcher, K. (4 Jun 99)
Thatcher, B. (5 Jun 99)
Theiss, S. (8 Jun 99)
Theiss, V. (15 Jun 99)
Thiel, P. (23 Jun 99)

Thomas, D. (23 Jun 99)Thompson, D. (20 Jun 99)
Thompson, G. (10 Jun 99)
Tituskin, S. & S. (16 Jun 99)
Tituskin, E. & W. (16 Jun 99)
Tropman, J. (undated)
Tyler, J. (21 Jun 99)
Tyron, M. (undated)
Unreadable (23 Jun 99)
Van Arsdale, J. (undated)
Van Zoeren (22 Jun 99)
Van Zoeren, T. (22 Jun 99)
Van Zoeren, J. & C. (18 Jun 99)
VanDemark, A. (19 Jun 99)
Vandenbelt, M. (22 Jun 99)
Wade, S. (24 Jun 99)
Waite, L. & M. (20 Jun 99)
Wall, S. (21 Jun 99)
Walton, M. (8 Jun 99)
Warne, N. (22 Jun 99)
Warren, S. (20 Jun 99)
Watson, M. (23 Jun 99)
Weaver, R. (14 Jun 99)
Weber, M. (22 Jun 99)
Weeks, J. (5 Jun 99)
Weese, B. (undated)
Weese, B. (23 Jun 99)
Wehue, E. (22 Jun 99)
Welsh, P. (22 Jun 99)
Whear, A. (undated)
Whippen, W. (23 Jun 99)
White, M. (22 Jun 99)
Whittaker, R. (22 Jun 99)
Wouldiams, S. (undated)
Williams, R. (22 Jun 99)
Wilson, B. (22 Jun 99)
Winkleman, E. (1 Jun 99)
Winters, K. (23 Jun 99)
Wise, P. (24 Jun 99)
Wolfe, W. (8 Jul 99)
Wozniak, L. (24 Jun 99)
Yard, B. & E. (20 Jun 99)
Yokich, C. (21 Jun 99)
Zemenick, C. (undated)
Zimmerman, M. (22 Jun 99)

Zock, H. (19 Jun 99)
approximately 463 cards/letters

55. FOCR submittal, 27 Mar 00
56. Mannesto to Kuras, 10 Aug 99
- 56b.Col.Davis to Kuras, 2 Nov 99
- 56c.Col.Davis to Kuras, 2 Nov 99
- 56d.Facsimile Gesl to Kuras, 15 Mar 00
- 56e.Col.Davis to Kuras, 7 Apr 00
- 57a.MDNR - Venman to Howard, 24 Jun 88
- 57b.MDNR - Zugger to Hall, 27 Jun 88
- 57c.MDNR - Hay to Wolverton, 27 Jun 88
- 57d.MDNR - Wolverton to Hall, 6 Jul 88
- 57e.MDNR - "Findings of Fact", 6 Jul 88
- 57f.MDNR - Administrative Law Record, 2 Feb 89
- 57g.NRCS - "Final Determination", 14 Nov 90
58. Debelack to Gesl, 15 Nov 99
59. Debelack to Col.Davis w/encl., 15 Nov 99
- 60a.Debelack to Gesl, 1 Dec 99
- 60b.Kuras and Debelack to Col.Davis w/encl., 21 Dec 99
- 61a.Kuras and Debelack to Col.Davis w/encl., 24 Dec 99
- 61b.Debelack to Col.Davis w/encl., 5 Jan 00
- 62a.Kuras and Debelack to Gesl w/encl., 28 Jan 00
- 62b.Kuras and Debelack to Gesl, 28 Jan 00
- 62c.Kuras and Debelack to Gesl w/encl., 28 Jan 00
- 62d.Kuras and Debelack to Gesl w/encl., 18 Feb 00
63. Kuras and Debelack to Col. Davis w/encl., 29 Jan 00
64. Kuras and Debelack to Col. Davis w/encl., 29 Jan 00
65. Kuras to Gesl, 11 Feb 00
- 66a.NES to Col. Davis, 13 Mar 00
- 66b.Jones to Col. Davis, 8 Feb 00
67. NES to Col. Davis w/encl., 15 Mar 00
- 68a.NES to Col. Davis w/encl., 21 Apr 00
- 68b.Kuras to Col. Davis, 24 Apr 00
- 68c.Cohen to Col. Davis w/encl., 24 Apr 00
- 68d.Walker to Col. Davis, 25 Apr 00
- 68e.Deems to Col. Davis, 28 Apr 00
- 68f.Zimmerman to Col. Davis w/encl., 3 May 00
- 68g.Doud to Col. Davis w/encl., 3 May 00
- 68h.Debelack to Gesl w/encl., 10 Jun 00
69. aerial photo
70. A Survey of Wooded Dune and Swale Complexes in Michigan
prepared by Comer and Albert, May 1993
- 71a.Kuras to Palmer, 27 Jun 87
- 71b.Palmer to Kuras, 24 May 94

71c.Kuras to Palmer, 10 Jun 94
71d.Palmer to Edwards, 19 Jun 99

Reference Materials used in Compiling this Assessment include:

USGS topo quad for Maple City
NOAA Chart No.14912
Endangered Species List
National Register of Historical Places
USDA aerial photography dated 1991
USDA soil survey for Leelanau County, MI, dated 1973
COE aerial photography 13-15 through 13-19, dated 3 Nov 89
Michigan State Atlas
Site Investigation
Ground Photography
Register of Natural Landmarks
Wild and Scenic Rivers Act
404(b)(1) Guidelines
Fish and Wildlife Service Wetland Inventory Maps
Census Data
Department of the Interior National River Inventory
Wetland Evaluation Technique Volume I: Literature Review
and Evaluation Rationale