US Army Corps
of Engineers
Chicago District

AN INITIAL APPRAISAL REPORT:

A PROPOSED MARINA IN EVANSTON

Prepared by:

Planning Branch

Chicago District

U.S. Army Corps of Engineers

April 26, 2004

US Army Corps
of Engineers
Chicago District

Presented By:

- Philip Bernstein

Chief, Planning Branch

- David Wallin, Ph.D.

Regional Economist

US Army Corps
of Engineers
Chicago District

AGENDA

- Introduction/Objective
- Survey of Demand for Marina Slips
- Attitudinal/Perceptions Survey of Area Residents
  RE: Impacts of Proposed Marina
- Conceptual Plan (Rough Sketch of Proposal) of Harbor/Marina
- Evaluation of Traffic Impact Study of Proposed Marina
- Investigation of Selected Environmental Issues
- Comment on Revenue Estimates and Project Financial Feasibility
- Conclusions / Recommendation

US Army Corps
of Engineers
Chicago District

INTRODUCTION/OBJECTIVE

• Request via letter by the Mayor of Evanston for a preliminary independent, unbiased study to investigate the…

- Environmental

- Engineering

- Economic

feasibility of a proposed marina along the City's shoreline.

-Formal enumeration of tasks from Steering Committee April 2004

US Army Corps
of Engineers
Chicago District

INTRODUCTION/OBJECTIVE (Continued)

- This presentation is the Corps' response in the form of an initial appraisal report to briefly survey/summarize key issues/circumstances to aid subsequent municipal decision-making.
- This is a top-line, early stage report identifying only the most important findings.
- The initial appraisal is only the first of many steps in the process:
  - Initial Appraisal
  - Feasibility Study
  - Engineering Plans and Specifications
  - Construction

US Army Corps
of Engineers
Chicago District

SURVEY OF DEMAND FOR MARINA SLIPS

- Objective: - To determine incremental **POTENTIAL DEMAND** for wet slip space present/ prospective recreational boat owners at a possible harbor/marina at Evanston.

  - Specifically, to determine degree of interest in renting wet slips there, and…

  - To determine/estimate willingness to pay, in current dollars, slip rental fees.

US Army Corps
of Engineers
Chicago District

SURVEY OF DEMAND FOR MARINA SLIPS (Continued)

- Qualified Respondents:

  - Sub-Sample #1: Registered recreational boat owners who resided within a 30 mile travel distance of Evanston.

  - Sub-Sample #2: Study area residents (heads of households) who were non-boat owners and who resided in study zip code areas with relatively high concentrations of boat owners.

US Army Corps
of Engineers
Chicago District

SURVEY OF DEMAND FOR MARINA SLIPS (Continued)

- Sample Design:

  - Sub-Sample #1:
    - An area probability (systematic random) sample drawn from Illinois list of recreational boat-owner registrants.
    - Sample Size: 800
    - Expected Margin of Error: 4-6% at 95% level of confidence.

US Army Corps
of Engineers
Chicago District

SURVEY OF DEMAND FOR MARINA SLIPS (Continued)

- Sample Design (Continued):

  - Sub-Sample #2:
    - Same sample type as previously noted, drawn from a telephone universe of listed/unpublished residential numbers using Random Digit Dialing (RDD) in study zip code locations.
    - Sample Size: 400
    - Expected Margin of Error: 5-7% at 95% level of confidence.

US Army Corps
of Engineers
Chicago District

SURVEY OF DEMAND FOR MARINA SLIPS (Continued)

- Extrapolation Based on Key Survey Findings:
  (NOTE: Potential demand estimates here are based on mid-point approximations of error ranges of the extrapolations)

- Boat Owners: **275**

  - Stated that renting slip space at Evanston would represent incremental demand.
  - Owned 20+ foot boats.
  - Expressed interest in current Chicago Park District (CPD) slip rental pricing schedule – ($1,700 -$3,600/season)

US Army Corps
of Engineers
Chicago District

SURVEY OF DEMAND FOR MARINA SLIPS (Continued)

- Non-Boat Owners: **90**
  - "Very Interested" in renting a slip in a new marina in Evanston.
  - Expressed buying preference for 20+ foot boat length.
  - "Very Interested" in cited CPD slip rental pricing schedule.
- Combined Estimated Range of Total Potential Demand for Evanston Wet Slip Rental
  - **350-375**

US Army Corps
of Engineers
Chicago District

SUMMARY EVALUATION OF SURVEY OF DEMAND FINDINGS

On balance, viewed in isolation (apart from the determinations of other project initial appraisal studies), the findings of this study sustain the conclusion that there is sufficient **DEMAND POTENTIAL** to support investment in a **continued evaluation** of the feasibility of a lake-front harbor/marina in Evanston.

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA

- Objectives: - To determine Evanston residents' perceptions of the environmental/economic impacts of a possible prospective marina site on the City's lake front.

- Note: Perceptions / impressions of the surveyed respondents should not necessarily be equated with supportable factual data in any given situation.

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

- Objectives: - To elicit perceptions from qualified respondents on these specific **environmental** issues:

  - Water Quality Impacts
  - Fuel (Oil/Gas) Impacts
  - Parking Issues
  - Aesthetic Changes to Lake Front
  - Silt Build-Up
  - Traffic Congestion
  - Noise Level Impacts
  - Water Circulation

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

- Objectives: - To elicit perceptions from qualified respondents on these specific **economic** issues:
  - Taxes Imposed on Marina Operations
  - Boat Fees/Assessments
  - Security Services Cost
  - Facility/Ground Expenses

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

- Qualified Respondents: - Male/Female heads of households who were residents of Evanston for at least the last 12 months.

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

- Sample Design: -
  - A probability (systematic random) sample was drawn using Random Digit Dialing (RDD) of residential telephone listings of subscribers domiciled in Evanston.
  - Sample Size: 400
  - Expected Margin of Error: 5-7% at the 95% confidence level.

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings

- Opposition to the proposed lakefront harbor/marina, on environmental grounds, was the dominant view among survey respondents. Those who oppose tend to hold their views/attitudes strongly.

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings (Continued)

- Specifically, the following potential problem areas, associated with the proposed marina, registered substantial pluralities in the survey response counts:

- Parking
- Traffic Congestion
- Higher Noise Levels
- Oil/Gas Discharge
- Impaired Water Quality

As follows…

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings (Continued)

Potential Problem Area	% Perceived as Problem	% Perceived as Serious Problem
Parking	82.0	66.5
Traffic Congestion	84.5	65.5
Higher Noise Levels	77.3	50.0
Oil/Gas Discharge	77.5	46.3
Impaired Water Quality	55.3	29.5

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings (Continued)

- The highest response totals, in the "oppose" market segment, came from survey respondents with this profile description:
  - Women, when compared to men – 59.8% / 40.2%
  - Homeowners, when compared to renters – 83.2% / 16.8%
  - Non-Boat Owners, when compared to boat owners – 88.6%/11.4%

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings (Continued)

- "Oppose" market segment profile description (East of Ridge subset):

  - Live within three (3) blocks of the Lake, when compared to those who live three (3) to six (6) blocks from the Lake or over six (6) blocks from the Lake – 47.6% / 33.3% / 19%

  -Live south of Church Street, when compared to those who live north of Church Street- 60.3% / 39.7%

Subset = 194 respondents

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA

Key Findings (Continued)

Opposition by Quadrant

NW 28.6

NE 11.0

SW 24.7

SE 37.5

Defined by Ridge (N / S) and Church (E / W)

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings (Continued)

- There is, however, no blanket, unequivocal opposition to Evanston lake front development/expansion. The following development options registered substantial "in favor" pluralities:

  - Expansion of Beaches – 60.5%

  - More Parks and Green Space – 74.2%

US Army Corps
of Engineers
Chicago District

ATTITUDINAL/PERCEPTONS SURVEY OF AREA RESIDENTS RE: IMPACTS OF PROPOSED MARINA (Continued)

Key Findings (Continued)

• From an economic perspective, the proposed project is viewed more favorably, with the following attendant advantages, recognized by respondents, as potential positive accruals for the undertaking:

- Contribution to City Revenues Through Taxes/Fees – 71.8%

- Stimulus to Local Business - 55.5%

-Creation of jobs in Evanston – 59.3%

US Army Corps
of Engineers
Chicago District

SUMMARY EVALUATION OF THE PERCEPTONS SURVEY FINDINGS

On balance, viewed in isolation (apart from the findings of other feasibility studies currently in process), the findings of this survey of Evanston residents, only, do not appear to support investment in a continued evaluation of the feasibility of a lakefront harbor/marina in Evanston.

US Army Corps
of Engineers
Chicago District

CONCEPTUAL PLAN (ROUGH SKETCH) OF PROPOSED HARBOR/MARINA

Based on preliminary marina wet slip demand data, a layout was prepared detailing breakwater and slip configurations, and adjacent parking accommodations.

US Army Corps
of Engineers
Chicago District

CONCEPTUAL PLAN (ROUGH SKETCH) OF PROPOSED HARBOR/MARINA (Continued)

- The Chicago District is currently working on the design of a similar small boat harbor for Whiting, Indiana, of approximately the same size. One Whiting design is for a harbor with capacity for 378 boats. This is very close to the projected demand for the Evanston marina.

- Therefore, this design was modified slightly, relocated to the Calvary Cemetery location, and used as the conceptual plan for the preliminary Evanston Harbor design.

US Army Corps
of Engineers
Chicago District

Concept Drawing

US Army Corps
of Engineers
Chicago District

CONCEPTUAL PLAN (ROUGH SKETCH) OF PROPOSED HARBOR/MARINA (Continued)

- The rubble mound breakwaters for the harbor will have a crest height of 15 feet above the Low Water Datum (LWD), with a crest width of 20 feet.

- The harbor will extend lake-ward for about 650 feet, will extend along the shore for about 1,300 feet, and will have an area of approximately 19 acres.

US Army Corps
of Engineers
Chicago District

CONCEPTUAL PLAN (ROUGH SKETCH) OF PROPOSED HARBOR/MARINA (Continued)

- The design calls for lake-fill to create a parking lot immediately lake-ward of the current shore. This parking lot will extend into the lake for approximately 65 feet, and will be approximately 1,400 feet long (with a total area of about 2 acres).
- This parking lot should accommodate approximately 310 automobiles.

US Army Corps
of Engineers
Chicago District

CONCEPTUAL PLAN (ROUGH SKETCH) OF PROPOSED HARBOR/MARINA (Continued)

- **No cost estimate based upon a detailed engineering design was developed for this plan**

US Army Corps
of Engineers
Chicago District

EVALUATION OF THE TRAFFIC IMPACT STUDY OF THE PROPOSED HARBOR/MARINA

Study Design

- An analysis of the impact of marina traffic on the normal traffic patterns in the vicinity of the harbor was completed by an independent contractor, the Northwestern University Transportation Program staff of the Civil Engineering Department.

US Army Corps
of Engineers
Chicago District

EVALUATION OF THE TRAFFIC IMPACT STUDY OF THE PROPOSED HARBOR/MARINA (Continued)

Study Design (Continued)

- The analysis was performed using standard traffic engineering traffic simulation assignment tools (CORSIM - FHA) software packages) as well as road capacity analysis (HCS) procedures.

- Both models are in wide use in the United States

US Army Corps
of Engineers
Chicago District

EVALUATION OF THE TRAFFIC IMPACT STUDY OF THE PROPOSED HARBOR/MARINA (Continued)

Study Design (Continued)

•First the Base Case traffic conditions were evaluated, and then, 2 future "with harbor traffic conditions" were evaluated.

• #1 the worst-case conditions – the Worst Day Peak hour base traffic volumes with the worst-case marina traffic superimposed on this peak base traffic volume.

• #2 expected conditions – the most likely marina traffic superimposed on the Worst Day Peak hour base traffic

US Army Corps
of Engineers
Chicago District

Table 1. The (%) of the total **365** BERTHED boats are expected to be used

Month	**Sun**	**Mon**	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**
May	45	5	10	15	10	35	50
Ju-Aug	60	10	15	**25**	15	55	**65**
Sept	45	5	10	15	10	35	50
Oct	25	5	10	10	10	20	30

Boat Use Distribution

Source: Westrec Inc., February, 2004

US Army Corps
of Engineers
Chicago District

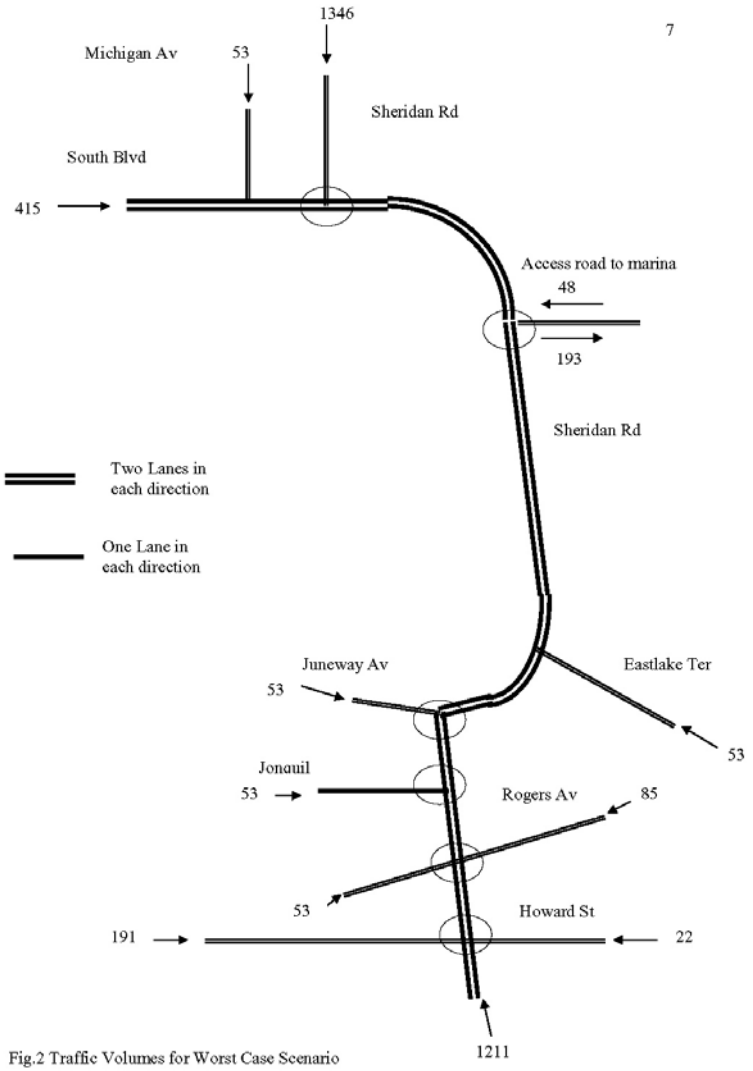

Fig.2 Traffic Volumes for Worst Case Scenario

Traffic Network Modeled

US Army Corps
of Engineers
Chicago District

Table 2. DELAYS (Seconds): **Delays (seconds) per vehicle at each intersection as produced by CORSIM**

Intersection	Base case	Worst Case Scenario	Most Likely Scenario
Sheridan-Howard	12.82	12.88	12.85
Sheridan-Rogers	6.85	7.90	7.13
Sheridan-Jonquil	4.14	4.88	4.77
Sheridan-Juneway	9.72	9.80	9.76
Sheridan-South Blvd	19.14	20.12	19.61
Sheridan-Marina Access Road	-	2.84	2.04

US Army Corps
of Engineers
Chicago District

Table 3: HCS Level-Of-Service Results

Intersection	Base case	Worst Case Scenario	Most Likely Scenario
Sheridan-Howard	B	B	B
Sheridan-Rogers	B	B	B
Sheridan-Jonquil	A	A	A
Sheridan-Juneway	B	B	B
Sheridan-South Blvd	C	C	C
Sheridan-Marina Access Road	-	A	A

A = 05 second delay; B = 5-15 second delay; C = 15-25 second delay

US Army Corps
of Engineers
Chicago District

TRAFFIC STUDY FINDINGS

- Marina generated traffic demand delay time increase is negligible under the **worst case**

- The 'Level of Service' is unchanged by additional traffic

- No traffic signal is warranted at the marina ingress / egress

- Marina generated traffic demand results in statistically identical delay times as those computed for the **most likely** scenario

- Example: for the most heavily traveled intersection (Sheridan & South Blvd.) the average delay per vehicle increased from **19.14** seconds to **20.12** seconds for the **worst** scenario

US Army Corps
of Engineers
Chicago District

TRAFFIC STUDY FINDINGS (Continued)

- An estimate of increased/decreased air emissions was also made for the peak one hour of traffic interaction. For the most likely scenario, for 1.5 vehicles/boat, estimates were calculated for three contaminants (hydrocarbons [HC]; carbon monoxide [CO] and nitrous oxide [NO].
- Readings are given in grams/mile:

  HC – decreased 0.06 grams/mile (from 0.50 to 0.44)

  CO – increased 3.64 grams/mile (from 37.53 to 41.17)

  NO – increased 0.24 grams/mile (from 1.94 to 2.18)

US Army Corps
of Engineers
Chicago District

TRAFFIC STUDY FINDINGS (Continued)

- Increases in noise pollution should be commensurate with the increase in traffic delays and the increase in base traffic load. Because the increase in traffic delays was found to be negligible, and the increase in traffic load was marginal, it follows that increases in noise pollution would also be expected to be insignificant.

US Army Corps
of Engineers
Chicago District

SUMMARY EVALUATION OF TRAFFIC STUDY

The independent contractor concluded: “Therefore, we do not expect any impacts, spatial or temporal, due to the attracted traffic by the proposed marina.”

Obviously, no impacts are expected during those times that the marina is not operational.

US Army Corps
of Engineers
Chicago District

INVESTIGATION OF SELECTED ENVIRONMENTAL ISSUES

Summary Commentary

- Several aspects were examined and reviewed pertaining to concerns relating to recreational boating and marinas. To illustrate the wide range of this initial exploratory investigation, the subjects/issues addressed are enumerated below:

  - Clean water and clean marina legislation

  - State and county clean marina programs

US Army Corps
of Engineers
Chicago District

INVESTIGATION OF SELECTED ENVIRONMENTAL ISSUES (Continued)

Summary Commentary (Continued)

- Subjects/issues addressed in initial exploratory investigation:

  - Marina operators' support of the clean marina programs

  - Potential pollution and related problems at marinas

  - Management measures and best management practices

US Army Corps
of Engineers
Chicago District

INVESTIGATION OF SELECTED ENVIRONMENTAL ISSUES (Continued)

Summary Commentary (Continued)

- Subjects/issues addressed in initial exploratory investigation:
  - USEPA benefit analysis of clean marinas (1995)
  - Aesthetics
  - Traffic delays

US Army Corps
of Engineers
Chicago District

INVESTIGATION OF SELECTED ENVIRONMENTAL ISSUES (Continued)

Summary Commentary (Continued)

- The conclusions drawn from this preliminary investigation are summarized, in large part, in the following quotation from the report: "There are many convergent factors marshaled towards protecting water quality and the environmental values of water bodies and which are focused directly towards boaters and marinas.

US Army Corps
of Engineers
Chicago District

INVESTIGATION OF SELECTED ENVIRONMENTAL ISSUES (Continued)

Summary Commentary (Continued)

- "In addition to the legislative requirements, boaters and marina operators have come to realize, particularly through education, that clean water significantly benefits boaters by enhancing the recreational boating experience."

US Army Corps
of Engineers
Chicago District

COMMENT ON REVENUE/COST ESTIMATES AND PROJECT FINANCIAL FEASIBILITY

- At this early reconnaissance study stage of project development, neither benefit/cost nor collateral financial analyses have been prepared. If, after such preparation, it is determined that the proposed project meets requisite standards for federal participation, then a cost sharing arrangement becomes relevant.

US Army Corps
of Engineers
Chicago District

COMMENT ON REVENUE/COST ESTIMATES AND PROJECT FINANCIAL FEASIBILITY (Continued)

- At this preliminary juncture, it would appear that the annual slip rental revenues could fully fund debt service in the amount of $21,000,000 if….

    1. The estimated potential slip demand is achieved
    2. The city maintains its AAA credit rating

- Note: No additional sources of revenue are assumed in the above

US Army Corps
of Engineers
Chicago District

CONCLUSIONS

- There are environmental concerns associated with a small boat harbor/marina development, but there are legislative safeguards in place to encourage (in some instances mandate) clean marina programs.

- Perceptions about transportation impacts have not been validated by the independent contractor's scientific investigation.

- From an economic perspective, the demand potential has now been documented and is affirmative. Viewed from an engineering perspective, the "Conceptual Plan" represents an early stage "can be done" assessment.

US Army Corps
of Engineers
Chicago District

RECOMMENDATION

- The Corps of Engineers acted as a consultant to the Evanston City Council
- In that capacity, it is recommended that:
  - Support programs and related commensurate funding be authorized by the City to continue and intensify evaluation of the feasibility of a lake-front harbor/marina in Evanston.

US Army Corps
of Engineers
Chicago District

New Study Requirements

- Any new work on this project requires a matching cost share from the local sponsor (Sec 107, River and Harbor Act, 1960)
- A portion of that cost share is required in cash
- A portion can be 'work in kind'
- All federal funding must be obtained through Congressional input: USACE will NOT budget for recreational projects

US Army Corps
of Engineers
Chicago District

Availability of All Documents

- Effective April 22, all documents prepared for this initial appraisal were accessible at the following website:

- http://www.lrc.usace.army.mil
- PowerPoint presentation to City of Evanston Steering Committee, April 22
- Survey of Demand, Marina Slips
- Attitudinal / Perceptions Survey of Evanston Residents
- Preliminary Appraisal Report
- Traffic Impact Analysis and Evaluation
- Investigation of Selected Environmental Issues

Questions / comments should be sent to the Corps through the website 'query' form, and will be promptly responded to.