



DEPARTMENT OF ADMINISTRATIVE SERVICES

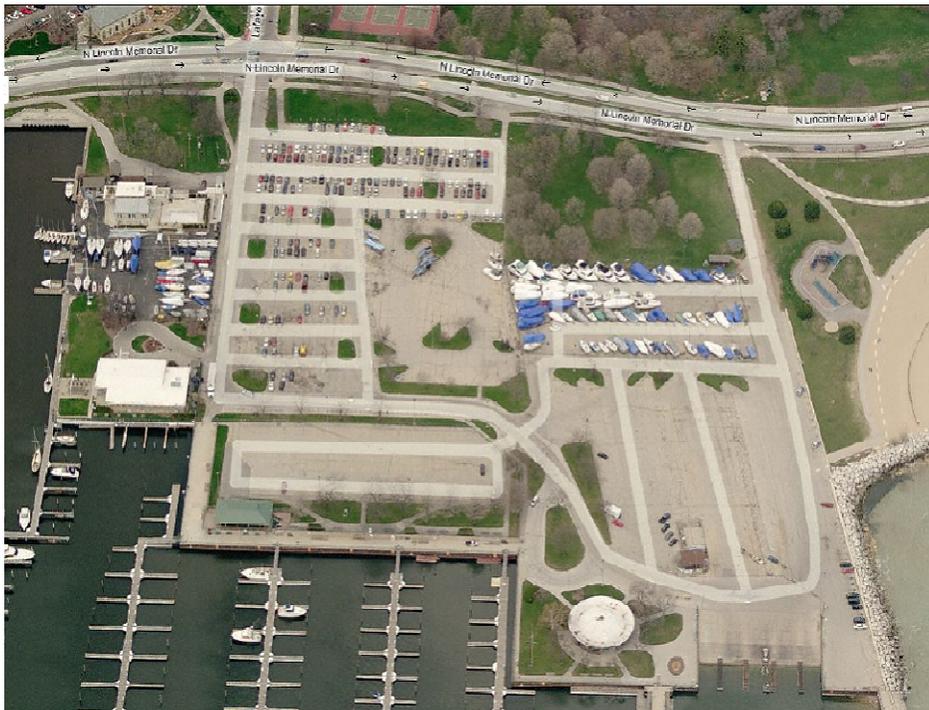
MILWAUKEE COUNTY

FINAL REPORT

McKinley Marina North
Phase 1: Site Investigation and Conceptual Design

Milwaukee County Project No. WP276011

September 13, 2013



Submitted By:



The Sigma Group, Inc.
1300 W. Canal Street
Milwaukee, WI 53233
(414) 643-4200

Email: ccarr@thesigmagroup.com

Marek Landscaping, LLC
820 East Knapp Street
Milwaukee, WI 53202
(414) 272-0242

Email: mike@mareklandscaping.com

TABLE OF CONTENTS

1. INTRODUCTION
2. EXISTING SITE INVESTIGATION
 - 2.1 Existing Site Topography
 - 2.2 Existing Site Infrastructure
 - 2.3 Existing Geotechnical Evaluation
 - 2.4 Existing Hydraulics and Lake Level
 - 2.5 Existing Building Facilities
 - 2.6 Existing Site Use
3. STAKEHOLDER AND PUBLIC INPUT
 - 3.1 User/Interested Group Identification
 - 3.2 Stakeholder Meeting #1
 - 3.3 Stakeholder Meeting #2
 - 3.4 Public Meeting
4. STORM WATER BMP EVALUATION
5. BOAT WASH BMP EVALUATION
6. CONCEPTUAL FRAMEWORK PLAN
 - 6.1 Overall Review
 - 6.2 Concept A
 - 6.3 Concept B
 - 6.4 Concept C
 - 6.5 Consolidated
7. RECOMMENDED SITE PLAN
 - 7.1 Basis of Design
 - 7.2 Site Requirements
 - 7.3 Facility Requirements
 - 7.4 Infrastructure Requirements
 - 7.5 Project Phasing
 - 7.6 Construction Cost Estimate
 - 7.7 Funding Opportunities
 - 7.8 Permit Requirements

FIGURES

1. Existing Site Survey
2. Proposed Site Utility Plan
3. Concept A Framework
4. Concept B Framework
5. Concept C Framework
6. Consolidated Plan Framework
7. McKinley Marina North Site Plan Illustration
8. McKinley Marina CAD Site Plan and Phasing
9. Cost Estimate Details

APPENDICES

- A. Limited Facility Condition Review
- B. Lake Michigan Water Level Info
- C. Miller Geotechnical Report
- D. Stakeholder Meeting and Survey Results
- E. DNR Boat and Creel Count
- F. Consolidated Framework Table

1. INTRODUCTION

In spring of 2013, Milwaukee County retained The Sigma Group and Marek Landscaping to complete a site investigation and conceptual design for McKinley Marina North. The primary goal was to create a recommended site plan that improved access and traffic flow along with providing improved storm water management to Lake Michigan. McKinley Marina, along Lake Michigan in the City of Milwaukee, consists of buildings, boat launches, boat washes, dry dock storage, boat maintenance facilities, vehicle parking, and pedestrian areas. *See Figure 1 for Site Survey.* The Milwaukee Yacht Club holds a master lease with the County for the south area of the site, and although the parking areas and utilities are maintained by the County, the buildings and grounds of the leased area is maintained by the Yacht Club. The parking and utility service to the Yacht Club has been evaluated in this report, but no evaluation of the Yacht Club building or on site pavement is included.

The first phase of the scope included an existing site investigation, compiling stakeholder and public input on the site, and evaluating stormwater and boatwash Best Management Practices (BMPs). This information obtained was used to create three site design concepts, which were vetted by both Milwaukee County Staff and the key stakeholders. The three site design concepts were evaluated individually by the design team and Milwaukee County staff to create a consolidated site plan that took into account all aspects of the varying uses on site. The consolidated site plan was then detailed further to a final recommended plan to move forward with design, along with preliminary cost estimates for the project. Because of the project size, it was broken into phases for the County to spread out proposed costs over several years.

This project report is a compilation of the site investigation, conceptual design analysis, and final plan recommendation for McKinley Marina North.

2. EXISTING SITE INVESTIGATION

2.1 Existing Site Topography

The 11-acre site predominantly consists of asphalt parking lot and access drives which drain internally to a storm sewer system on the parcel. *See Figure 1 for Site Survey.* The site is very flat and has many areas with standing water due to lack of drainage infrastructure and deteriorated condition of the asphalt. The asphalt pavement on site is in poor to failing condition, and in most locations has met its useful life. The asphalt has a thickness varying from 3"-5" with stone underlay, including an area towards Lincoln Memorial Drive that has a concrete underlay based on existing geotechnical borings. The asphalt parking area on the far southeast corner of the site serving the north marina slip tenants is in satisfactory condition, and it has approximately 3-5 years of useful life remaining.

2.2 Existing Site Infrastructure

The site has an extensive system of private utilities that serve the various County owned buildings and facilities on site. Milwaukee County also provides water and sanitary service to the Milwaukee Yacht Club.

Electrical Service

The electrical service is fed from the north side of the site with an overhead line that steps down to transformers and underground feeds across the site on the west side of the Yacht Club. From this location, underground services to various buildings and site lighting are routed across the site. The County stubbed an underground primary electric line when Lincoln Memorial Drive was completed, and it is recommended that new services be fed from this underground line and the overhead infrastructure should be removed to maximum extent possible.

Lighting

The parking lot contains an array of large light poles that provide a significant lighting level for the site, along with pedestrian level lighting along the boardwalk on the east side of the site. Although the lighting is functioning for the site, it is not appropriate and efficient for the site use, and should be replaced with any improvement projects at the site. The existing precast/aggregate light posts are in good condition and are salvageable, so consideration should be given to retrofitting with more efficient fixtures.

Natural Gas

The site has gas and communication on the site that feeds the existing buildings. Unless use changes significantly on site, the existing gas is sufficient for the development on site.

Communications

Additional communication and data feeds to the County building and the Yacht Club should be considered to improve data service to the area. Wi-Fi is provided from the yacht club to its users; however Wi-Fi is not currently available to north slip tenants and would be consistent with other slip rentals in the region.

Storm Sewer

The storm system on site has miscellaneous inlets located in the parking lot with two outfalls to Lake Michigan. The system does not have enough inlets for the large area of parking lot. There are no permanent water quality improvements that serve the parking lots. Storm sewer improvements on site to provide more capacity

and provide improved water quality and quantity. These will be required by the County's stormwater permits for any future improvement project.

Some of the existing infrastructure may be utilized in upgrades. However the realignment and grading of the site will require replacement and upgrades in general. Overall runoff volumes should be reduced through the implementation of stormwater BMP's.

There is an existing stormwater BMP on the northwest corner of the site that was installed recently by the County for storm water quality improvements. The existing stormwater BMP is in good condition and should be protected and/or expanded during future improvement. It is designed to serve upland (Lafayette Hill and Lincoln Memorial Drive storm sewers).

Sanitary Sewer

The existing sanitary sewer is a gravity system that flows north and discharges to an existing lift station on the North side of LMD in a line that is directly in line with the east fence line of the current dry sail storage area. In addition to the onsite buildings, the sanitary sewer serves the existing fish cleaning station on site. The waste from the fish cleaning station has caused back-ups on site and has been a continuing maintenance issue for the County causing backups to other buildings on site. There have also been backups in the winter when fish cleaning is minimal, possible caused by cooking grease in the lines. Although the existing sanitary pipe system is in good condition, the existing fish cleaning station grinder pump and respective sewer lateral should be updated as a part of any improvement project on site.

2.3 Existing Geotechnical Evaluation

The existing pavements that compose the surface of the site typically consist of 3 to 6 inches thickness of Hot Mix Asphalt (HMA) over 6 to 20 inches thickness of dense graded aggregate base. An exception is the westernmost parking lot (boring B1) where the asphalt is underlain by 4.5 inches of Portland Cement concrete as discussed in the "Site Topography" Section. Soils below the aggregate base typically consist of sandy to gravelly stiff clay fill with asphalt and brick chunks, and occasional soft and very stiff zones. The thickness of the clay fill is approximately 5 to 9 feet at the western edge of the property, increasing to approximately 10 to 12 feet at the eastern edge. At boring B2, the clay fill is interbedded with fine grained, medium dense sand. Below the clay fill is loose to medium dense, fine grained sand. Ground water was measured at depths ranging from 5 to 10 feet at boring completion.

The clay soils that comprise the soil subgrade beneath existing pavements generally provide fair to poor support to pavements, and will soften upon exposure to water or disturbance. They also have substantial potential for frost heave. The clay soils are NOT suitable for infiltration of storm water. Relatively deep excavations into the sandy soils below the clay may not be stable, particularly below the ground water table.

Conventional spread footings can be used to support light buildings or structures. Miller Engineers and Scientist's recommend that these have at least 42" of final cover for frost protection and be proportioned for not more than 2,000 psf allowable soil bearing stress. The diameter of shallow caisson foundations supporting light poles should be selected so they do not require excavation below the ground water table into sand soils. Their depths should be sufficient to resist frost heave effects but also avoid bearing over on soft soil layers that are present at some locations and depths. Meeting these criteria may be problematic at some locations due to localized soil conditions, and may require specific alternative solutions. For the more typical conditions, caisson foundations bearing on stiff clay or medium dense sand may be proportioned for end bearing up to 5,000 psf and lateral resistance of 2,000 psf.

Where final pavement grades are close to or slightly above existing grades, it may be advantageous to grind in place the existing asphalt pavement and mix it with the top half of existing aggregate base course. This can be graded and compacted to provide the base for new asphalt or concrete pavements. Similarly, the west lot existing pavement consisting of an asphalt overlay on top of Portland Cement Concrete (PCC) can be pulverized in place. The alternatives to dense graded aggregate base consisting of virgin crushed stone or crushed PCC are included in the pavement section recommendations in this report.

2.4 Existing Hydraulics and Lake Level

For the past decade, Lake Michigan water levels have been below average, and at the time of the site investigation work much of the Midwest was in drought condition. These factors resulted in water levels being in a position to beat the 1964 historic low water level (see *Lake Michigan – Huron Average Annual Historic Water Levels and Histogram* attachment). However, the prolonged low water levels experienced prior to and during the site investigation will not last and will rise in the future (see *Water Levels in Recent Geologic Time* attachment). Therefore, a calm high water level of 581.0' International Great Lake Datum (IGLD) is recommended for design of any coastal structure with an additional foot of water level allowance due to storm surge. Independent of storm surges, seiches on Lake Michigan often range from 0.5 to 1.0 feet in the Milwaukee area and may need to be considered.

2.5 Existing Building Facilities

The project team completed a limited inspection and review of existing conditions of the existing building facilities on site. The review did not include the existing Yacht Club that has its own lease and provides maintenance on its building facilities. The review was limited to visual observations of the building exterior/roof, interior finishes, HVAC, electrical and plumbing systems. The purpose of this review was to determine the building use, general construction and identify any significant deterioration of building materials and systems. The report memo included in Appendix B, but below is an overview of the results of the limited inspection:

Building	Use	Year Constructed	Construction Type	General Condition
Fish Cleaning Station	Fish Cleaning	1986	Open structure Steel and wood framing	Building in satisfactory condition Major issue with sewage service
Round Building	Concessions Restrooms Marina Office	1960 New roof and restroom in 2011	One story with mezzanine Wood columns and beams Heated by gas fired units	Building in satisfactory condition Air handling approaching useful life
North Marina Restroom	Meeting Space Restroom Showers Laundry	2005	Two story Wood and steel framed Exterior stone with wood beams	Good Condition Minor maintenance issues with building
Storage Buildings (3)	Marina supply storage Wood Shop	Unknown At least 30 years old	Wood framing Asphalt shingle roof Some with heaters	Buildings in satisfactory condition
Water Building	Water services with valves	Unknown	Wood Construction Concrete slab on grade	Buildings in satisfactory condition

2.6 Existing Site Use

The study area is the McKinley Marina North, which is used for many functions but predominantly supports boat launching, marina access and parking. The parking on the site is not only used for onsite boating uses (Marina, Yacht Club, boat launch), but also provides parking for general park use and adjacent areas including the beach, coffee shop, and tennis courts. In addition, because this area is a part of the large Lakefront, the area also has supplemental use for activities that involve the entire Lakefront area.

Although the site does have some flexibility the following is the overall existing parking count on site.

Parking Type/Use	Number of Spaces
General Park	170
McKinley Beach/Breakwater	45
Yacht Club	132
North Marina	142
Boat Parking	101
Boat Storage	64
Total	654

McKinley Marina North is unlike any other marina in the area because of its mix of uses and its importance to the overall Milwaukee lakefront. All of the existing uses were taken into account when evaluating future improvements at the site

3. STAKEHOLDER AND PUBLIC INPUT

McKinley Marina is a key public destination along the Milwaukee lakefront. Due to its use by a large and diverse population from within Milwaukee County and the surrounding area it was determined early on that stakeholder input into the site planning process was imperative.

The design team, along with Milwaukee County staff, made a significant effort to ensure that the stakeholder and public input was actively sought out and used as a key element informing the team on what improvements were needed and desired by those who use the site on a regular basis. The process that the team employed to ensure both the availability of information and a pathway for feedback back to the team is described below.

3.1 User/Interested Group Identification

The team (consultants and county staff) identified as many user groups as possible that had either direct ties to the McKinley north site or had a possible interest in the planning for future improvements. These groups were essentially divided into various sub groups defined by their use or role in servicing the site. These included:

- 1) User groups who are located on or have direct use of the site
 - a. McKinley Marina Management Staff (County Parks employees)
 - b. Milwaukee Yacht Club
 - c. Milwaukee Area Sails and Trails (MAST)
 - d. North Slip Tenants
 - e. Charter Fishing Groups

- 2) Groups that provide service to the site or are responsible for public safety on the site
 - a. Milwaukee County Sheriff Staff
 - b. Milwaukee Fire Department Staff
 - c. Milwaukee Police Department Staff
 - d. Wisconsin Department of Natural Resources Staff

- 3) Neighborhood groups that have demonstrated a strong interest in lakefront planning activities in the area in the past
 - a. Preserve Our Parks
 - b. Park People
 - c. Clean Marina Program

Very early in the planning process, representatives of these groups were invited to attend a meeting to openly discuss the scope, schedule and nature of the planning process to help in shaping the recommendations that the team would ultimately bring to the County. Other groups were also identified but the team determined that those groups would be asked to participate in the planning process at subsequent stages in the process.

3.2 Stakeholder Meeting #1

On Tuesday, February 5, 2013, stakeholder meeting #1 was held at the Milwaukee Yacht Club. Representatives of those groups identified in task 1 were invited to attend this session. Virtually all of these groups attended this meeting. (Sign-in Sheet - Exhibit XX.2)

In that meeting, representatives from the County and the design team described the intent and the process being undertaken to the group followed by a solicitation for comments. A copy of the presentation is included in this report (Exhibit XX.3). The agenda for that presentation included:

- 1) Opening comments by County Staff
- 2) Description of the project intents and limits
- 3) Schedule
- 4) Description of the planning process
- 5) Open discussion and comments

The discussion quickly identified several common themes and areas of concern which were documented in meeting minutes (Exhibit XX.4). These included:

Site Improvements / Utilization

- 1) Replace or repair the pavement
- 2) Improved or increased lighting
- 3) More restrooms
- 4) Maintain/improve fish cleaning station

Traffic / Circulation

- 1) Improved circulation/traffic flow
- 2) Additional entry/exit to the lot
- 3) Decrease pedestrian/auto conflict
- 4) Improved traffic signalization

Parking

- 1) Increased parking
- 2) Increased/improved parking at the roundhouse
- 3) Better separation of MYC and general parking

4) Improved/increased parking for pavilion

Following the stakeholder meeting all information collected was circulated amongst members of the planning team for verification to ensure that these notes accurately recorded the information shared by stakeholders. This information was then used as a basis for the first newsletter (Exhibit xx.5) which was distributed via an online service (Constant Contact) on March 7, 2013 to 555 individuals identified as users of or individuals interested in McKinley Marina. Of those 555 email addresses 49 were returned as undeliverable (either blocked by the user or an inactive or incorrect email address). Of those successfully delivered through the system, 294 individuals opened the newsletter between March 7 and April 12, 2013.

After distribution of the information gathered in stakeholder meeting #1, the team broadened the list of stakeholders and potentially interested groups to include nearby businesses, neighborhood groups, water quality specialists, relevant city/county/agency staff members, etc. to increase the information available to the design team that might influence the planning process and final recommended plan (Exhibit xx.6).

3.3 Stakeholder Meeting #2

On Wednesday, April 17, 2013, stakeholder meeting #2 was held at the Milwaukee Yacht Club. Representatives from those groups invited to stakeholder meeting #1 and those groups identified in task 4 were invited to attend this meeting (Sign-in Sheet - Exhibit xx.7). Those who had not been invited to stakeholder meeting #1 were provided a copy of Newsletter #1 to provide them with background information on the process to-date.

The format of this meeting began as an "open house" meeting with three stations scattered around the meeting room with both a design team member and a county staff member present at each station. As individuals entered the meeting room they were invited to visit any of the three stations to speak with the team members there and learn more about the progress of the project to-date. Illustrations of three concept plans and a "Consolidated" plan were located at each of the three stations. As described in other sections of this report, these plans incorporated various elements identified through the planning process as needed/required improvements and/or desired amenities by site stakeholders.

Once all attendees had the opportunity to speak with team members one-on-one, the entire group was brought together for a brief presentation (Exhibit xx.8). The agenda for that presentation included:

- 1) Opening Comments
- 2) Where We Are To-Date
- 3) Stakeholder Meeting #1 Comments
- 4) Options
 - a. A – Close to Existing
 - b. B – Match Existing W/ Improvements
 - c. C – Match Existing W/ Improvements Plus Additions

d. D – Consolidated Plan

5) Wrap Up and Open Discussion

6) Going Forward

Discussion followed with a variety of comments and suggestions from the attendees which were used by the design team to further refine the proposed site plan. Those comments were recorded in meeting notes (Exhibit xx.9).

Following the second stakeholder meeting all information collected was circulated amongst members of the planning team for verification to ensure that these notes accurately recorded the information shared by stakeholders. This information was then used as a basis for the second newsletter (Exhibit xx.10) which was distributed via an online service (Constant Contact) on April 29, 2013 to 573 individuals identified as users of or individuals interested in McKinley Marina. Of those 573 email addresses 58 were returned as undeliverable (either blocked by the user or an inactive or incorrect email address). Of those successfully delivered through the system, 254 individuals opened the newsletter between April 29 and May 10, 2013.

3.4 Public Meeting

On Thursday, June 6, 2013, a public meeting was held in the McKinley Marina North Pavilion building. The latest version of the conceptual site plan was presented along with a description of the design and public involvement process (Exhibit xx.11). The agenda for that presentation included:

- 1) Opening welcome and comments by County staff
- 2) Brief summary of the prior planning process steps
- 3) The proposed plan
- 4) Specific plan details
- 5) Comments from the public

Approximately 30 individuals attended in addition to County staff and planning team members.

Prior to the formal presentation, county staff and planning team members were available for one-on-one conversations and explanations of the proposed plan and how it was arrived at.

Following the formal presentation, comments were received from those in attendance. Those comments were documented and, where appropriate, will be incorporated into the design before project completion.

As in prior stages, after the public meeting, a summary series of comments and illustrations were distributed in the form of a third newsletter (Exhibit xx.12) through the online service that had been utilized previously (Constant Contact). This newsletter was distributed on June 18, 2013 to 584 email addresses. Of those, 231 individuals opened the newsletter by June 24, 2013. 58 of these emails were returned as undeliverable (either blocked by the user or an inactive or incorrect email address). The newsletter also included a link to a location on the

Milwaukee County Parks website where a larger version of the proposed site plan was available for individuals to either view or download. As of June 24, 2013 54 individuals had clicked through the newsletter link to that website.

We experienced a high rate of opening and review when compared to other similar outreach campaigns.

The stakeholders were supportive, gave informed and thoughtful feedback, and have had a huge hand in shaping the plan. On several occasions during meetings they expressed gratitude for having been so directly involved and listened to.

4. STORM WATER BMP EVALUATION

A key aspect of the project planning process was to improve the stormwater quality of the runoff from McKinley Marina North. The existing site is directly riparian to Lake Michigan, and with its significant amount of impervious paved area, there is a great opportunity to reduce pollution from stormwater run-off from the parking lots on site.

Evaluation of the proper technologies to use on site is imperative for its efficiency and function for stormwater treatment. The basis of the design team's evaluation was the "Milwaukee County- Parking Lot Stormwater Management Design Guidelines, June 2011." Using the guidelines as the design driver, along with the geotechnical report and site characteristics, the team evaluated the BMP practices that would be most successful for the site.

When the team reviewed the Design Guideline, specifically the BMP matrix, it was concluded that water quality improvement BMPs would be the driver for the project, as peak flow and volume reduction were not important as the site is directly riparian to Lake Michigan. Although not specifically listed in the guidelines under water quality improvements, permeable pavers and bioretention basins were also considered for water quality improvement BMPs. The following technologies were evaluated for use on the site along with a breakdown of the technology and applicability:

- Filter Systems
- Hydrodynamic Separators
- Floatable Control
- Catch Basin with Sump
- Grassed Swale
- Filter Strip
- Bioretention Infiltration Basin
- Permeable Pavements

The filter systems and hydrodynamic systems were eliminated from consideration on site because of the large upfront costs and future maintenance requirements. The remaining technologies provide improved water quality treatment efficiencies and were easily incorporated to the overall site plan layout. The results of the evaluation include the following technologies for storm water BMP installation on site in some manner:

- Catch Basin with Sump
- Grassed Swale
- Biofiltration Infiltration Basin
- Permeable Pavements

5. BOAT WASH BMP EVALUATION

Boat Wash water from marinas is a key issue when designing a marina for improving water quality adjacent to the site in Lake Michigan. Along with the stormwater from the parking lots, it is a key contributor to water pollution in the marina specifically associated with heavy metals and other toxins from boat wash activities. Boat washing activities occur under two scenarios in most marina activities: washing boat for day launches before they leave the marina, heavy washing of boats at beginning and end of boating season for maintenance and storage. Day launchers typically wash boats for invasive species protection and residue removal, while the heavy washing at the end of the season usually involves a more thorough, higher pressure wash. This more seasonal boat washing produces a larger discharge of metals (from bottom paint), oil and grease, and antifreeze, along with potentially invasive organisms. This material can be treated in a number of ways as indicated in the table below, but it is imperative, to wildlife and aquatic organisms that the wash water does not discharge directly to the waters of Lake Michigan. Signage, with clear instructions and the reason for using it should be included in the facility.

The project team involved the *Clean Marina Program* during the stakeholder process along with consultation with other reference guides. The results of this work were the following options for boat wash/wash water treatment: on site recycling, on site containment and ship waste off site, on site pretreatment and discharge to sanitary sewer.

System	Pros	Cons	Initial Costs
On Site recycling	Reduced Water Demand Eliminates Discharge	Most Expensive Heavy Operation/ Maintenance Commitment	\$100,000
On Site Storage and Removal	Cost Effective on small systems No on site treatment used	Maintenance Commitment Waste Costs and Buildup	\$25,000

On Site Pretreatment and Discharge to Sanitary Sewer	Cost Effective on Large Systems Reduced Maintenance and Operation	Permit required from local sewer authorities Minimal Operation/Maintenance Required	\$50,000
--	--	--	----------

One of the key goals for the design of McKinley Marina-North (and all other County facilities) is to create a design that is sustainable and does not cause excessive future maintenance and operation headaches. When evaluating the boat wash system options, serviceability along with economy were the key factors in determining the boat wash BMP recommendation for the site. The team is recommending that the project utilize a pretreatment system to filter solids and discharge the rest of the washwater to the sanitary sewer for final treatment before discharge to Lake Michigan. A pretreatment settling tank or sump that will separate solids from boat wash water is the simplest and most failsafe system for the site. The settling tank would need to be cleaned by a sewer vacuum truck an estimated 3-4 times per year basis. The waste solids would be shipped to a landfill, or MMSD, for waste management.

In order to eliminate stormwater discharge to the sanitary sewer during rain events either a canopy for the boat wash or a bypass drain is suggested. This can drain to a separate onsite bioremediation cell, or to one of the adjacent bioswales.

An optional feature that can be considered is a replaceable prefilter for the washwater that is destined for the sump and sewer. This can be synthetic, organic, or compost based media that filters the largest solids for collection and disposal at the surface in a shallow gutter. This may be particularly practical when more routine washing is anticipated and would minimize the collection of vegetative and animal deposits in the sump system.

It may be practical to include two separate boat wash facilities one that handles more intense renewal cleaning and is connected to the sanitary sewer, and one that is intended for routine/daily boat cleaning that drains to a bioremediation cell. These cells can be designed to remediate and or separate the occasional metals, or hydrocarbons that may incidentally come off in the washing process. In either case this would relieve congestion and encourage use if the simpler lower maintenance wash bay(s) were located near or at the tie down area. This could be as simple as just a high pressure hose with drainage water draining to the adjacent bioswale. Boats that have ablative paints (mostly sailboats) that are typically cleaned off in volumes only seasonally would be directed by signage to wash in the designated wash bay.

The system will need to be permitted by the City and MMSD during the final design phase of the project.

6. Conceptual Framework Plans

6.1 Overall Review

Three Framework Plans were generated based on preliminary stakeholder feedback. Each of the three "A", "B", and "C", was founded in the premise that we would fill the most basic gaps of the current site as determined by the site managers, emergency management, and law enforcement, facility users, and public while building a matrix of priorities. "A" was the simplest and "C" includes the most improvement in terms of uses, amenities, stormwater quality, habitat, and aesthetics/beatification. "A" would be the least expensive, "B" the middle, and "C" the most expensive. With budget constraints forecasted by the County and our Design Team, even "C" might be considered pared back as the design approach was still relatively simple and amenities kept modest. All three plans were assigned cursory phasing strategies to allow for multiyear construction schedules.

All three framework plans were aimed at responding to the stakeholder input gathered from the meetings and design charrette as well as improving conformance with national standards for marina facilities as published by SOBA (States Organization for Boating Access).

6.2 Concept A

Plan "A" framework focused on improved drive lanes and way finding, improved parking lot organization, pavement replacements, necessary utility upgrades, very basic stormwater design (only meeting current state requirements), a boat wash station, it included few or no additional uses. It is more or less a pavement replacement plan. *See Figure 3 for Concept A Framework.*

6.3 Concept B

Plan "B" framework included the design drivers from "A" and added a new fish cleaning station, restrooms, improved staging area at boat launch, new dockage, a drop-off circle near A-D docks at the SE corner, an unimproved boardwalk at A-D docks (same as is current), more stormwater improvement capacity, as well as ecological enhancement areas adjacent to the project site. This plan added the highest priority improvements along with the Plan "A" objectives. *See Figure 4 for Concept B Framework.*

6.3 Concept C

Plan “C” framework included the design drivers from “B” and added a pedestrian bridge across Lincoln Memorial Drive to aid in easing pedestrian/auto congestion at the intersection, expanded ecological enhancements, improved playground area, a deli, ship shop, and rental building, improved pedestrian connections through all of the public areas of the site, including the marina overlook terrace at A-D dock, a kayak launch at McKinley Beach, harbor master’s office improvements, better year round function, and up-to-date marina and beach facilities. *See Figure 5 for Concept B Framework.*

6.3 Consolidated

After reviewing the three concepts the County and the consulting team compiled the highest priorities and the stakeholder feedback on each of the “A”, “B”, and “C” framework plans into one “Consolidated Plan”. It included parts from the marked up versions of A, B, and C, notes from the stakeholder meetings, and public official’s input. This framework plan was used as the base to create the recommended site plan for the project. *See Figure 6 for Consolidated Framework.*

7. RECOMMENDED SITE PLAN

7.1 Basis of Design

As the team progressed from conceptual design through the initial site investigation and stakeholder input the team was able to develop a basis of design for the project. As the deliverable was only a 30% site plan, objective criteria was not required and instead the team formed larger criteria to shape the final site plans. *See Figure 7 for McKinley Marina North Site Plan Illustration.* The following are the key criteria for the basis of design:

- Provide an improved circulation for both vehicles and pedestrians on site.
- Provide a clearer separation between the parking area of the separate uses on site.
- Provide some additional parking on site, although most of the parking issues are a result of lack of organization of the existing parking lot.
- Provide an improved boat wash area to treat wash water prior to discharge into Lake Michigan.
- Provide stormwater quality improvement on site for the large parking areas to at least meet the 40% TSS reduction as specified by code with a goal of exceeding requirements. Our team also wants to design in anticipation of increased standards.

7.2 Site Requirements

The recommended site plan met all the requirements of the basis of design by achieving the key goals of the project which is a better organized site plan that provide water quality stormwater improvements. The key element of the recommended site plan is a revised access drive that provides a more direct route from the entrance off Lincoln Memorial Drive into the site towards the boat ramp; flanked by stormwater BMP's, and improved parking layout. The pedestrian and bike access to the site follows the overall layout of the access road to provide a more direct route to the primary amenity which is the breakwater and beach area. The main drive provides specific areas where access to other areas of the site is required including: Yacht Club, North Slip, McKinley Beach, and General Parking. Signage off the main access drive will be critical for people entering the marina to access the correct area for them to reach their destination. Stormwater management has been planned throughout the site with bioretention areas planned adjacent to the parking lot and access drives. The stormwater treatment has been designed in a way that almost all of the paved areas will be treated before overflowing to the storm sewer and eventually Lake Michigan. *See Figure 8 for McKinley Marina CAD Site Plan and Phasing.* The following are some of the key design elements that are included in the recommended site plan:

- Improvements at the intersection of the Lincoln Memorial Drive and the main access drive. The preliminary site plan includes modifications to the signal and additional lanes to allow better egress from the site and improved pedestrian flow. The addition of a northbound exit lane will allow for congestion mitigation at peak flow.
- A plaza at the entry to the site to provide improved amenities for pedestrians, market space, and places to meet.
- Direct routing of all traffic through site.
- Delineated parking for the different uses and areas on site.
- Pedestrian connectivity throughout the site including wayfinding signage, controlled crossings, and more direct paths to destinations.
- More efficient boat launch and boat parking areas to provide a more intuitive traffic pattern.
- Additional boat parking and more oversized spots for larger rigs.
- Relocating and screening the boat storage on site.
- Public beach parking and access
- New restrooms, ship shop, deli, and rental building adjacent to McKinley Beach.
- Boat staging, tie down, and washing facilities.
- Marina overlook plaza.
- Better loading and drop off areas.
- Beautification with more consistent finishes, furnishings, and landscaping.

7.3 Facility Requirements

The recommended site plan not only includes site improvements but also facility improvements and new buildings. Although the primary two County buildings on site Marina Pavilion and Roundhouse are in good condition, additional building needs are required on the site to support the best use.

- Construction of a new centralized gate house to control access to the boat launch area.
- Adding a new building for restrooms and rentals at McKinley Beach. New restrooms at the beach area are needed, and rentals will help bring more people to the area.
- New vendor buildings at the Plaza to support the pedestrian activity in the area and provide storage for the County.
- New Fish Cleaning Station in a centralized location further away from the boat loading area.
- Proposed dinghy storage closer to the boat launch.

7.4 Infrastructure Requirements

In order to support the recommended site and facility changes, new infrastructure will be required throughout the site. Any infrastructure that has approached its useful life or that will need be upgraded should be replaced as a part of the project. Because the project is broken up into phases, infrastructure improvements need to be completed for the master development at the beginning of the first phase including new utility stubs to future buildings and amenities. *See Figure 2 for Proposed Site Utilities.* The following is a list of infrastructure improvements that are part of the recommended site plan:

- New storm sewer and inlets throughout the entire site possibly including new outfalls to Lake Michigan.
- New grinder pumps at fish cleaning station including new lateral to main sanitary sewer line and new sanitary lateral to future restrooms and vendor booths.
- Minor upgrades to water loop including new water lateral to future restrooms and vendor booths.
- New primary electric service to site via existing stub.
- New high efficiency/low pollution lighting in the parking lot and pedestrian areas.
- New boat wash system(s) with pretreatment, settling tanks, and sanitary sewer connections.
- Upgrades to existing telephone and data service to the site.

7.5 Project Phasing

Because of the size and complexity of the full development on site, the project was broken into phasing. The phasing was based on feedback from the County, and the ability to add specific uses and destinations without impacting work completed in prior phases. McKinley Marina Improvement is considered the primary phase to complete most of the work on the project with additional specific details in future phases. Below is a breakdown of the phases of the project along with items included in the phase. See *Figure 8 for McKinley Marina CAD Site Plan and Phasing*.

Phase	Work Included
McKinley Marina Improvements	Pavement and Curbing Stormwater Improvements and Landscaping Gatehouse Boat Wash Intersection Improvements Fish Cleaning
Lincoln Memorial Plaza	Pavement and Landscaping Rental Buildings Dockwall Improvements
Beach House and Restroom	New Beach House including Restrooms Kayak Launch Boardwalk
Break Water Amenity	Courtesy Dockage Improved Access to Government Pier
Lincoln Memorial Addtl. Parking	Pavement and Curbing Landscaping
North Marina Parking Lot and Access Improvements	Parking Lot and Curbing Amenities at Riverwalk

7.6 Construction Cost Estimate

The team assembled a construction cost estimate for the main project and future phases for the master plan build out. The construction cost estimate was based on recent bid information received by the County and the design team. The construction cost estimates included a 15% construction contingency for the actual work but did not include any soft costs for engineering and construction administration. The County needs to add these costs in as they look at total project costs for budgeting purposes. A detailed cost estimate is included in Figure 9, but below is a summary of the overall costs of the primary project and future phases including construction contingencies:

Phase	Construction Cost Estimate (Includes 15% Contingency)
McKinley Marina Improvements	\$ 3,400,000
Lincoln Memorial Plaza	\$ 625,000
Beach House and Restroom	\$ 575,000
Break Water Amenity	\$ 375,000
Lincoln Memorial Addtl. Parking	\$ 75,000
North Marina Parking Lot and Access Improvements	\$ 145,000

7.7 Funding Opportunities

Throughout the project the design team and the County looked to engage public and private entities that may be interested in providing funding to support the project. There was significant amount of interest from these groups to become involved in the project and fund specific parts of the project that supported their group's goals and interests. The following groups were identified for possible funding and/or grants:

- Fund for Lake Michigan
- Wisconsin Coastal Management
- Wisconsin Department of Natural Resources
- Sea Grant Institute
- Wisconsin Clean Marina
- USEPA
- Fish and Wildlife Foundation
- MMSD Green Infrastructure
- Sustain our Great Lakes
- WDNR Urban Nonpoint Source & Stormwater Management Grants

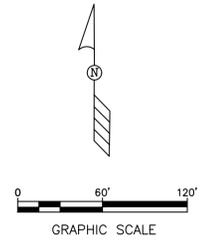
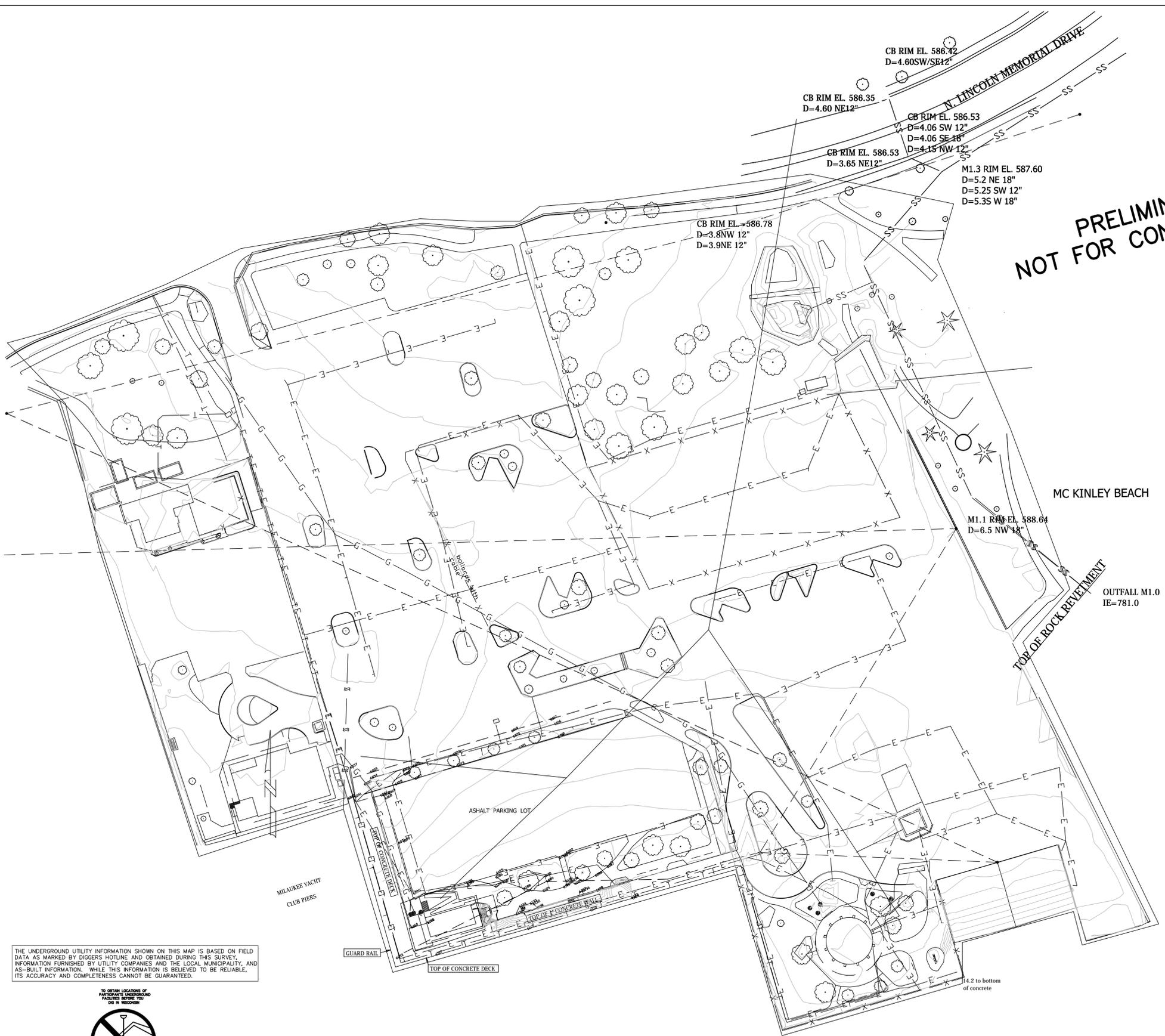
7.8 Permit Requirements

The project will require a significant amount of regulatory permitting because of its location adjacent to Lake Michigan in the City of Milwaukee. The exact details of the permit requirements are not known at this time, but the following is a list of permit requirements that may be needed:

- City of Milwaukee Site Plan and Zoning
- City of Milwaukee/MMSD Stormwater Permits
- WDNR and Corps of Engineer Waterway Permits

- Corps of Engineer Breakwater Easement Impacts Approval
- WDNR Urban Nonpoint Source & Stormwater Management Grants

File: N:\milwaco\13637 Mckinley Marina\060 CAD\C - Civil\500 Production - Civil Plans\500-Site Survey\3127-500-A.dwg



**PRELIMINARY
NOT FOR CONSTRUCTION**

LEGEND

- | | |
|---------|--------------------------|
| --- | SECTION 1/4 SECTION LINE |
| --- | PROPERTY LINE |
| --- | EASEMENT |
| -x-x-x- | CHAIN LINK FENCE |
| ~~~~~ | TREE LINE |
| OH | OVERHEAD UTILITY LINE |
| E | ELECTRIC |
| T | TELEPHONE |
| FO | FIBER OPTIC |
| CTV | CABLE TV |
| SAN | SANITARY SEWER |
| FM | FORCE MAIN |
| ST | STORM SEWER |
| W | WATER MAIN |
| G | GAS |
| --- | EXISTING CONTOUR |
| ○ | MANHOLE |
| ⊠ | CATCH BASIN |
| ● | CATCH BASIN (ROUND) |
| ⊙ | ROOF DRAIN |
| ⊕ | HYDRANT |
| ⊕ | WATER VALVE |
| ⊕ | GAS VALVE |
| ⊕ | UTILITY POLE |
| ⊕ | GUY WIRE |
| ⊕ | GAS METER |
| ⊕ | ELECTRIC METER |
| ⊕ | UTILITY PEDESTAL |
| ⊕ | TRAFFIC SIGNAL |
| ⊕ | LIGHT POLE |
| ⊕ | SOIL BORING |
| ⊕ | MONITORING WELL |
| ○ | IRON PIPE FOUND/SET |
| ● | REBAR FOUND/SET |
| ⊗ | CHISELED CROSS FOUND/SET |
| ⊕ | PK NAIL FOUND/SET |
| ⊕ | SPIKE/NAIL |
| ⊕ | MONUMENT |
| ⊕ | BENCHMARK |
| ⊕ | SIGN |
| ○ | DECIDUOUS TREE |
| ⊕ | CONIFEROUS TREE |
| ○ | BUSH |
| ⊕ | POST |

GENERAL NOTES:

1. BEARINGS BASED ON WISCONSIN STATE PLANE COORDINATE SYSTEM.
2. VERTICAL DATUM IS CITY OF MILWAUKEE DATUM. TO CONVERT TO NGVD 1929 ADD 580.603. BENCHMARK IS SOUTHWEST FLANGE BOLD ON HYDRANT IN NORTHEAST QUADRANT OF W. OREGON STREET AND S. 3RD STREET WITH AN ELEVATION OF 12.93.
3. FEMA FLOODPLAIN INFORMATION DIGITIZED FROM FIRM PANEL 55079C 0093 E DATED 9/26/2008. BASE FLOOD ELEVATION FOR SITE IS 584 (NGVD) OR 3.4 (CITY DATUM).

THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD DATA AS MARKED BY DIGGERS HOTLINE AND OBTAINED DURING THIS SURVEY, INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY, AND AS-BUILT INFORMATION. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.



CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE
NO SERVICE 06/01/2010
REQUIRES MIN. 3 WORK DAYS
NOTICE BEFORE YOU DISOLVE
MILW. AREA 259-1181

MCKINLEY MARINA
MILWAUKEE, WISCONSIN

SITE SURVEY

NO. REVISION DATE BY

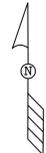
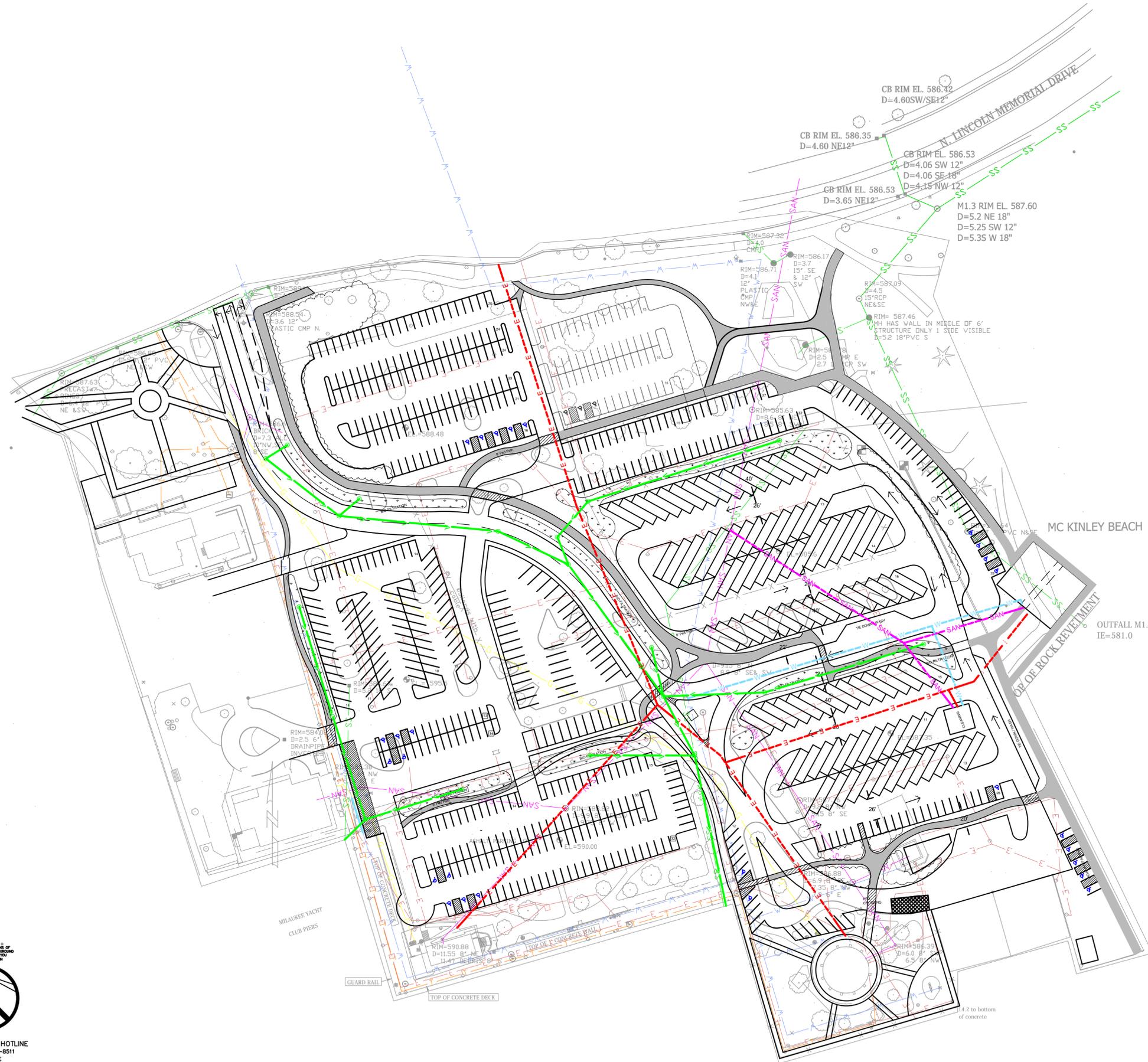
DRAWING NO. 3127-500-A.dwg
DRAWN BY: AEK
DATE: 01-08-13
PROJECT NO: 3127
CHECKED BY:
APPROVED BY:
SHEET NO.:

FIGURE 1

File: N:\milwco\13637 Mckinley Marina\060 CAD\C - Civil\500 Production - Civil Plans\506-Utility Plan\Concept\13637-Concept Utilities.dwg



CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE
WE STRIKE UNEMPLOYED!
REQUIRES MIN. 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE
MILW. AREA 259-1181



LEGEND	
— SAN	EXISTING SANITARY SEWER
— SS	EXISTING STORM SEWER
— E	EXISTING ELECTRICAL SERVICE
— T	EXISTING TELEPHONE SERVICE
— G	EXISTING GAS SERVICE
— W	EXISTING WATER SERVICE
— W	PROPOSED WATER SERVICE
— W	PROPOSED STORM SERVICE
— SAN	PROPOSED SANITARY SERVICE
- - - E	PROPOSED ELECTRIC SERVICE

SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210



**MCKINLEY MARINA
1750 N LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN**

CONCEPT UTILITY PLAN

NO. REVISION DATE BY

DRAWING NO. 13637-Concept Utilities.dwg
DRAWN BY:
DATE:
PROJECT NO:
CHECKED BY:
APPROVED BY:
SHEET NO.:

FIGURE 2



LEGEND:

- DESTINATIONS
- PRIMARY VEH.
- PEDESTRIAN
- SECONDARY VEH.
- BIO-REMEDIATION
- LANDSCAPE BUFFER
- SPECIAL MARINA USE
- PUBLIC ACCESS POINTS

2010(High Res) NAT CLR

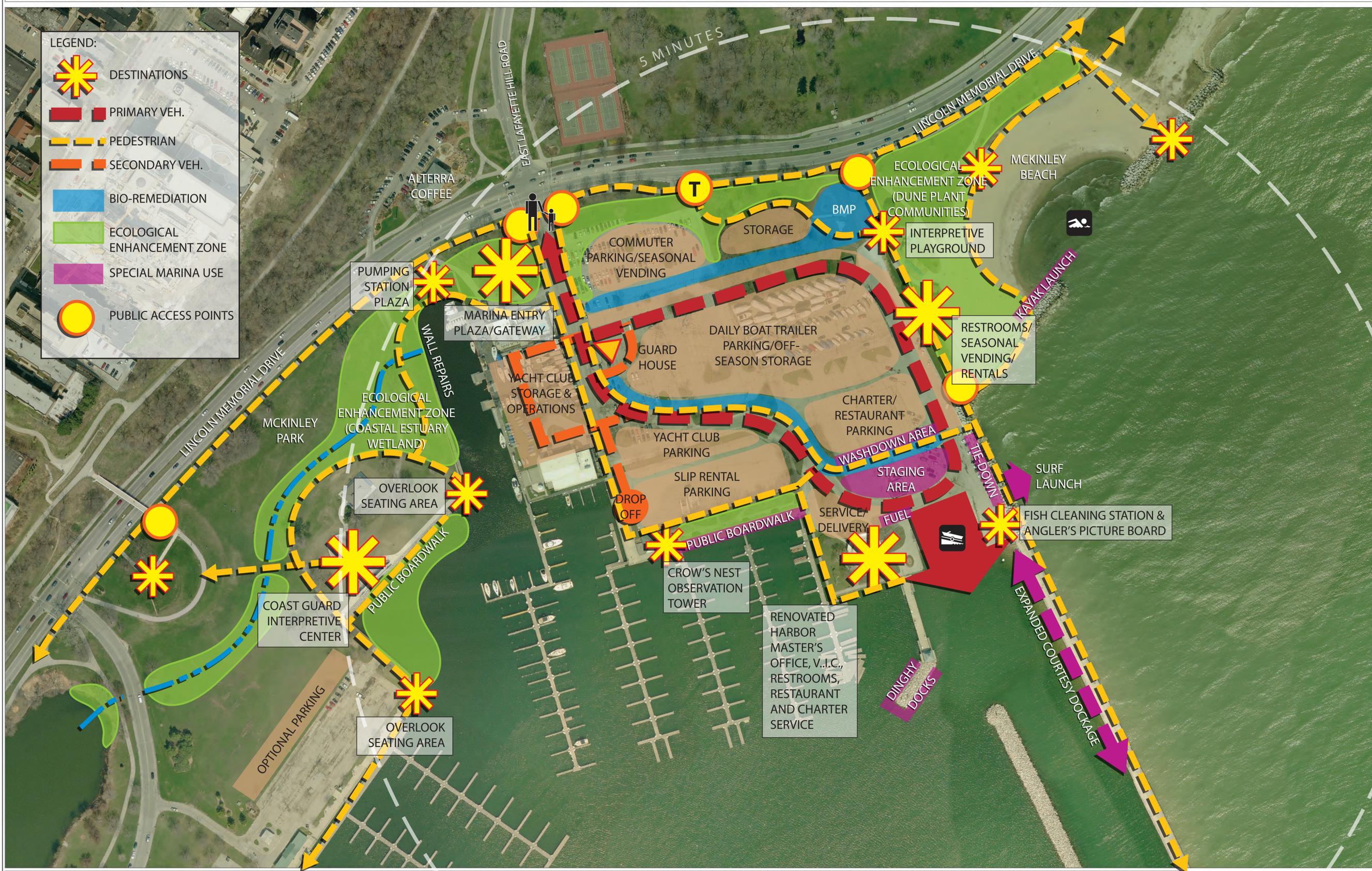
- Red: Band_1
- Green: Band_2
- Blue: Band_3



1:1,200

DISCLAIMER: This map is a user generated static output from the Milwaukee County Land Information Office Interactive Mapping Service website. The contents herein are for reference purposes only and may or may not be accurate, current or otherwise reliable. No liability is assumed for the data contained herein either expressed or implied by Milwaukee County or its employees.

Notes
Enter Map Description



LEGEND:

- DESTINATIONS
- PRIMARY VEH.
- PEDESTRIAN
- SECONDARY VEH.
- BIO-REMEDIATION
- ECOLOGICAL ENHANCEMENT ZONE
- SPECIAL MARINA USE
- PUBLIC ACCESS POINTS

0.0 0 0.02 0.0 Miles
 ©MCMALIS

THIS MAP IS NOT TO BE USED FOR NAVIGATION

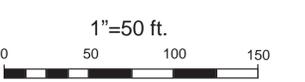
DISCLAIMER: This map is a user generated static output from the Pinellas County Land Information Office Interactive Mapping Service website. The content herein are for reference purposes only and may or may not be accurate. Content or otherwise remains the liability assumed for the data delineated herein, either expressed or implied by Pinellas County or its employees.

1:1,200
 Notes
 Enter Map Description



ALTEIRA ON THE LAKE
 LINCOLN MEMORIAL DR
 FOUNTAIN PLAZA
 OAK LEAF TRAIL
 WALL REPAIR/ MOD
 VENDOR BOOTHS &/OR STORAGE
 YACHT CLUB BOAT HOUSE
 SEASONAL TRUCK ACCESS (TURF PAVE)
 POTENTIAL BOAT WASH BMP
 WALL REPAIR/ MOD
 MCKINLEY PARK (FUTURE WATERFRONT WALKWAY)
 OPTIONAL OVERFLOW PARKING AT EXPANDED CENTER LOT

REINFORCE MARITIME PLAY THEME
 MCKINLEY BEACH PARKING LOT
 DUNE PLANT COMMUNITY TO REDUCE SAND MIGRATION
 STONE KAYAK LAUNCH
 PROPOSED MCKINLEY BEACH HOUSE (RESTROOMS, DELI, RENTALS)
 EMERGENCY VEHICLE ACCESS
 TIE DOWN/WASH
 BOARDWALK
 BIOFILTRATION SWALE
 FISH CLEANING STATION (FUTURE)
 TIE DOWN/BOAT WASH
 CHARTER PARKING
 MAKE-READY AREA
 CURRENT FISH CLEANING STATION (CONSIDER RELOCATING)
 LOADING ZONE
 DINGHY STORAGE
 COURTESY DOCKS
 POTENTIAL CANOPY STRUCTURE

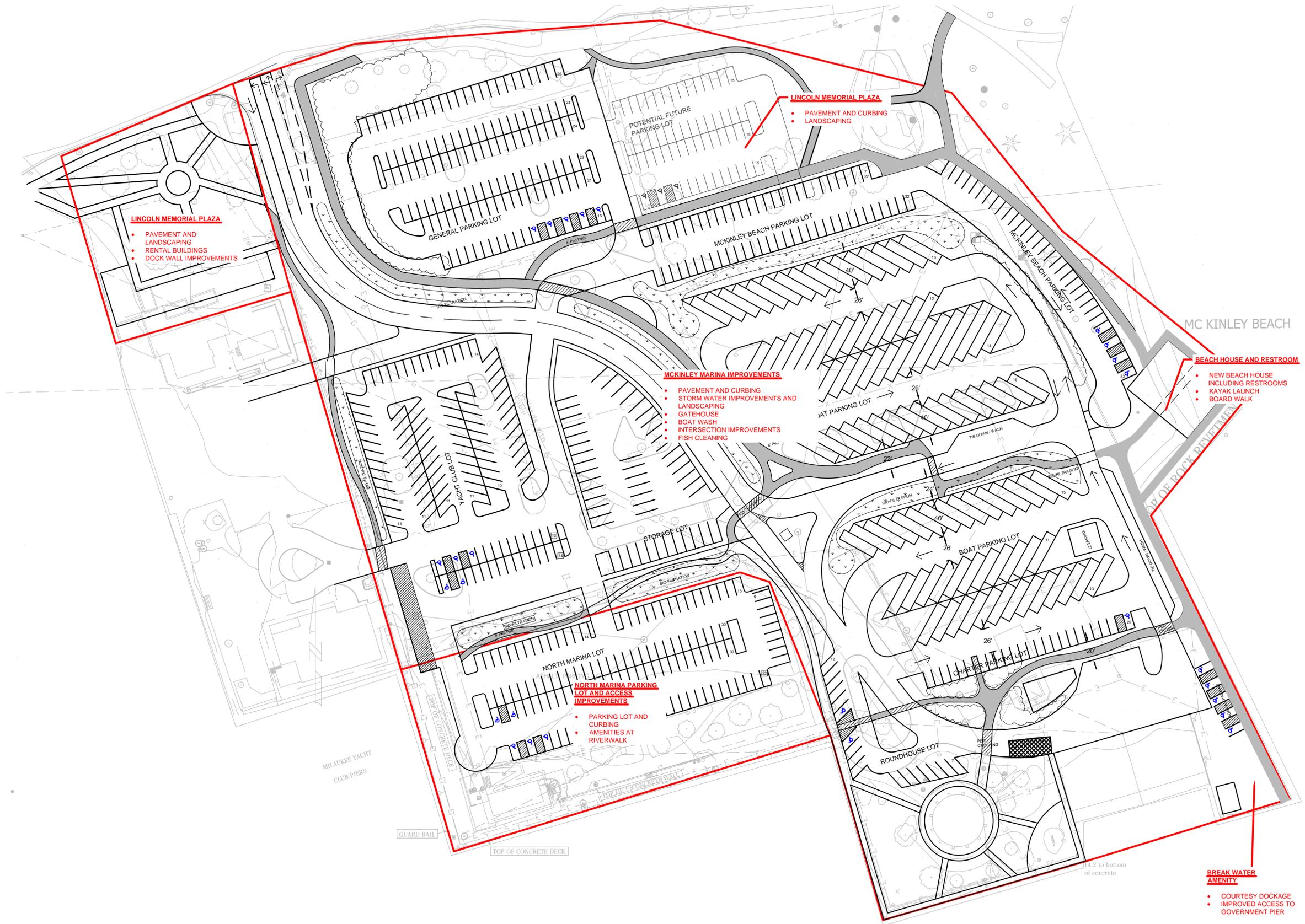


SITE PLAN FOR MCKINLEY MARINA NORTH

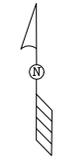
File: N:\milwco\13637 Mckinley Marina\Report\Internal Draft\Figures\8 Phasing Plan\13637-Phasing.dwg



CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE
NO SERVICE GUARANTEED
REQUIRES MIN. 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE
MILW. AREA 259-1181



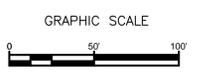
SIGMA GROUP
Single Source. Sound Solutions.
www.thisigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210



MCKINLEY MARINA
1750 N. LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN

SITE PHASING PLAN

NO. REVISION DATE BY



DRAWING NO. 13637-Phasing.dwg
DRAWN BY: TPM
DATE: 5-07-13
PROJECT NO: 13637
CHECKED BY: CTC
APPROVED BY: CTC
SHEET NO.:

FIGURE 8

Preliminary Cost Opinion
McKinley Marina - North

Updated September 2013

McKinley Marina Improvements

Item	Unit	QTY	Unit Cost	Cost	
General Conditions					
Erosion Control	LS	1	\$25,000	\$25,000	
Miscellaneous Dewatering	LS	1	\$10,000	\$10,000	
Temporary Fencing and Security	LS	1	\$25,000	\$25,000	
Temporary Roads	LS	1	\$2,500	\$2,500	
Temporary Traffic Control	LS	1	\$2,500	\$2,500	
<i>Subtotal</i>				<i>\$65,000</i>	\$65,000
Site Clearing and Demolition					
Pavement Demolition [pulverize, reuse]	SY	55,556	\$1	\$66,667	
Clearing and Grubbing, Vegetation	LS	1	\$25,000	\$25,000	
Miscellaneous Site Demolition	LS	1	\$50,000	\$50,000	
Utility Abandonment and Removal	LS	1	\$25,000	\$25,000	
<i>Subtotal</i>				<i>\$166,667</i>	\$166,667
Earthworks					
Master Grading (1 ft over whole site)	CY	26,782	\$5	\$133,909	
<i>Subtotal</i>				<i>\$133,909</i>	\$133,909
Storm Sewer					
12" Dia. RCP	LF	1,200	\$50	\$60,000	
24" Dia. RCP	LF	500	\$60	\$30,000	
36" Dia. RCP	LF	300	\$70	\$21,000	
48" Dia. RCP	LF	175	\$90	\$15,750	
Storm Manholes & Catch Basins	EA	20	\$3,500	\$70,000	
Storm Outfalls to Lake	EA	2	\$10,000	\$20,000	
<i>Subtotal</i>				<i>\$216,750</i>	\$216,750
Sanitary Sewer					
Miscellaneous Adjustments	LS	0	\$5,000	\$0	
Fish Cleaning Pump Improvements	LS	1	\$75,000	\$75,000	
Stub Service to Future Bathrooms	LF	200	\$60	\$12,000	
<i>Subtotal</i>				<i>\$87,000</i>	\$87,000
Water Service/ Fire Protection					
Misc. Adjustments	LS	1	\$5,000	\$5,000	
Close water loop	LS	1	\$10,000	\$10,000	
Stub Service to Future Bathrooms	LF	250	\$50	\$12,500	
<i>Subtotal</i>				<i>\$27,500</i>	\$27,500
Dry Utilities					
Lighting Roads and Lots	POLE	25	\$3,500	\$87,500	
Light Controller and Cabling	LS	1	\$50,000	\$50,000	
New Site Electrical Service	LS	1	\$100,000	\$100,000	
Telecommunications	LS	1	\$50,000	\$50,000	
Gas Services	LS	1	\$0	\$0	
<i>Subtotal</i>				<i>\$287,500</i>	\$287,500

Storm Water Biofiltration Areas				
Excavate Biofiltration Areas	CY	2,652	\$5	\$13,259
Liner Material	SF	23,000	\$2	\$40,250
6" PVC Drain Underdrains	LF	1,000	\$6	\$6,000
Washed Gravel Base	CY	700	\$20	\$14,000
Engineered Soil Mix	CY	2,652	\$30	\$79,552
Seed and Plantings	LS	1	\$75,000	\$75,000
<i>Subtotal</i>				<i>\$228,061</i>

\$228,061

Pavement				
18" Concrete C&G (External)	LF	10,500	\$14	\$147,000
Asphalt Paths (3")	Ton	1,200	\$75	\$90,000
Asphalt Lots:	SF	279,103	See Below	
Base Aggregate Dense Under Lots (6")	Ton	9,071	Reuse	
Asphalt Pavement Lots (3.5")	Ton	6,105	\$75	\$457,903
Asphalt Roadway:	SF	63,201	See Below	
Base Aggregate Dense Under Roads (9")	Ton	3,081	Reuse	
Asphalt Pavement Roads (5")	Ton	1,975	\$75	\$148,127
Detectable Warning Fields	EA	30	\$350	\$10,500
Pavement Markings	LS	1	\$15,000	\$15,000
<i>Subtotal</i>				<i>\$868,530</i>

agg
pave

\$868,530

Landscaping				
Trees and Shrubs	LS	1	\$150,000	\$150,000
Topsoil, Seed, Mulch	LS	1	\$20,000	\$20,000
<i>Subtotal</i>				<i>\$170,000</i>

\$170,000

Other				
New Fish Cleaning Station	LS	1	\$150,000	\$150,000
Gatehouse	LS	1	\$200,000	\$200,000
Fencing at Storage	LF	850	\$70	\$59,500
Ammenities (Bike Racks, Benches, Etc.)	LS	1	\$15,000	\$15,000
Site Signage	LS	1	\$25,000	\$25,000
Dumpster Enclosures	LS	1	\$15,000	\$15,000
Boat Launch	LS	1	\$50,000	\$50,000
Boat Wash BMP	LS	1	\$75,000	\$75,000
Intersection Improvements	LS	1	\$100,000	\$100,000
<i>Subtotal</i>				<i>\$689,500</i>

\$689,500

Total Base Construction Costs				\$2,940,416
Construction Contingency (15%)				\$441,062
TOTAL CONSTRUCTION COSTS				\$3,381,478

Lincoln Memorial Plaza

Misc. Grading	LS	1	\$5,000	\$5,000
Asphalt Pavement	Ton	500	\$75	\$37,500
Base Aggregate	Ton	500	\$20	\$10,000
Rental Buildings	LS	1	\$250,000	\$250,000
New Dock Wall	LF	120	\$2,000	\$240,000

Total Base Construction Costs				\$542,500
Construction Contingency (15%)				\$81,375
TOTAL CONSTRUCTION COSTS				\$623,875

North Parking Lot and Access Improvements

Misc. Grading	LS	1	\$15,000	\$15,000
Pavement Demolition [pulverize, reuse]	SY	4,550	\$1	\$4,550
Asphalt Pavement	Ton	896	\$75	\$67,214
Base Aggregate	Ton	0	\$20	\$0
New Paths	LS	1	\$25,000	\$25,000
Ammenities (Bike Racks, Benches, Etc.)	LS	1	\$15,000	\$15,000

agg
pave

Total Base Construction Costs				\$126,764
Construction Contingency (15%)				\$19,015
TOTAL CONSTRUCTION COSTS				\$145,779

Beach House and Restroom

Restroom and Beach Building	LS	1	\$500,000	\$500,000
-----------------------------	----	---	-----------	-----------

Total Base Construction Costs				\$500,000
Construction Contingency (15%)				\$75,000
TOTAL CONSTRUCTION COSTS				\$575,000

Lincoln Memorial Additional Parking

Misc. Grading	LS	1	\$15,000	\$15,000
Base Aggregate Dense Under Lots (6")	Ton	659	\$20	\$13,180
Asphalt Pavement Lots (3.5")	Ton	444	\$75	\$33,267

agg
pave

Total Base Construction Costs				\$61,447
Construction Contingency (15%)				\$9,217
TOTAL CONSTRUCTION COSTS				\$70,664

Break Water Amenity

Breakwater Feature	LS	1	\$250,000	\$250,000
Courtesy Dockage	LS	1	\$75,000	\$75,000

Total Base Construction Costs				\$325,000
Construction Contingency (15%)				\$48,750
TOTAL CONSTRUCTION COSTS				\$373,750

Total Master Plan Costs				\$4,496,127
Construction Contingency (15%)				\$674,419
TOTAL MASTER PLAN COSTS				\$5,170,546

APPENDIX A
Limited Facility Condition Review

Limited Facility Condition Review
McKinley Marina
Milwaukee, WI

As part of our overall site review, we have completed a limited condition review of the seven structures on the site. Our review was limited to visual observations of the building exterior/roof, interior finishes, and HVAC, electrical and plumbing systems. The purpose of this review was to determine the building use, general construction and identify any significant deterioration of building materials and systems.

Our site visit took place on January 18, 2013. At the site we met with Eric Lesch, Marina Manager for the facility. Photographs of typical conditions along with a site plan are attached.

Our observations were as follows.

BUILDING #1: Fish Cleaning Station

Use – Fish cleaning

Building Age – 1986 according to Eric Lesch.

General Construction – Open structure with steel and wood framing. Concrete slab on grade.

General Condition – The structure was in overall satisfactory condition. Roof shingles were in good condition. Steel columns and wood trim are in need of painting. Some minor rust was noted on steel columns.

The Marina Manager reported no deficiencies with this building other than the drain for the fish waste getting plugged frequently and may be too small of drain.

BUILDING #2: Concession Building

Use – Concessions, restrooms, and marina office

Building Age – 1960's according to Eric Lesch. New roof and remodeled restrooms in 2011. Exterior repainted in 2011.

General Construction – One story structure with mechanical mezzanine. The structure is primarily supported by glu-lam wood columns/beams. Exterior doors and windows were for the most part original wood construction. The building is heated only by two gas-fired air handling units in the mezzanine.

General Condition – The building was in overall satisfactory condition. The Marina Manager reported no major issues. We did note that the two air handling units appeared to be original and have exceeded their average useful life. Above average maintenance can be expected until replacement.

BUILDING #3: North Marina Restroom Facility

Use – Restrooms, showers, laundry room and social room.

Building Age – 2005 according to Eric Lesch

General Construction – Two story structure. Wood and steel framed structure. Some exterior stone and wood glu-lam beams. Heat and cooling at lower level. Ventilation only at Level 2 in social room.

General Condition – In good condition with exception of some isolated areas of peeling paint and corrosion at Level 2 steel railing and structural steel beams supporting Level 2 exterior deck area. Exterior glu-lam wood beams were weathered and is in need of re-sealing.

BUILDING #4: Storage Building

Use – Storage of supplies for marina (i.e. batteries, cleaning supplies).

Building Age – Unknown. Based on our experience, building appears to be at least 30 years old.

General Construction – Wood framed with wood siding and cedar shake roof. Wood floor. Building is heated with an electric wall unit heater. Building is supported on concrete blocks.

General Condition – In general satisfactory condition with exception of cedar shake roof which displayed some deterioration and was moss covered. Some deterioration at wood siding and trim.

BUILDING #5: Storage Building

Use – Storage and wood shop

Building Age – Unknown. Based on our experience, building appears to be at least 30 years old.

General Construction – Wood framed with wood siding and wood floor. Asphalt shingle roof. Building is heated with old gas-fired heater.

General Condition – Overall in fair condition. Wood roof structure at wood shop had moisture damage. Exterior siding had significant deterioration. Roof was in satisfactory condition.

Gas-fired heater appeared to be at least 30 years old and past its average useful life.

BUILDING #6: Storage Building

Use – Storage of lawn mowers, oil, gasoline, lubricants, etc.

Building Age – Unknown. Based on our experience appears to be at least 30 years old.

General Construction – Wood framed with wood siding and wood floor. Cedar shake roof.

Milwaukee County
McKinley Marina
January 2013

No heat in building.

General Condition – Overall in satisfactory condition. Minor deterioration of wood siding noted.

BUILDING #7: Water Service Building

Use – Water service and storage. Two water services – one appears abandoned.

Building Age – At least 20 years old according to Eric Lesch.

General Construction – Wood framed with wood siding. Concrete slab on grade floor. Cedar shake roof. No heat in building.

General Condition – Overall in satisfactory condition.

Please contact us with any questions.

Sincerely,

THE SIGMA GROUP

Thomas M.R. Lamb, P.E., LEED® AP
Senior Project Engineer



Photo 1: Building #1—Fish cleaning station



Photo 2: Building #1 Fish cleaning station—
Weathered wood



Photo 3: Building #1—Fish cleaning station
Rusted steel column



Photo 4: Building #2—Concession Building



Photo 5: Building #2—Concession Area



Photo 6: Building #2—Original Air Handling Unit



Photo 7: Building #3—North Marina Restroom Facility



Photo 8: Building #3—Restroom



Photo 9: Building #3—Weathered exterior wood beams



Photo 10: Building #3—Peeling paint and corrosion on exterior steel beams



Photo 11: Building #3—Peeling paint and corrosion on steel railing



Photo 12: Building #3—Social Room



Photo 13: Building #4—Storage Building



Photo 14: Building #4—Deteriorated cedar shake shingles



Photo 15: Building #4—Typical exterior deterioration - Isolated areas

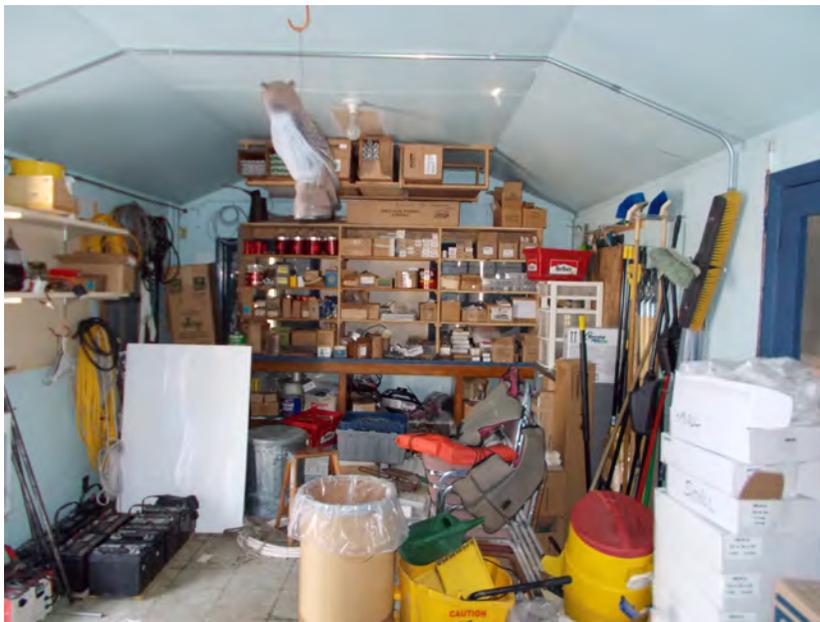


Photo 16: Building #4—Interior



Photo 17: Building #5—Storage Building



Photo 18: Building #5—Typical exterior deterioration



Photo 19: Building #5—Interior



Photo 20: Building #5—Heater



Photo 21: Building #5—Wood Shop



Photo 22: Building #5—Wood Shop roof deterioration



Photo 23: Building #6—Storage Building

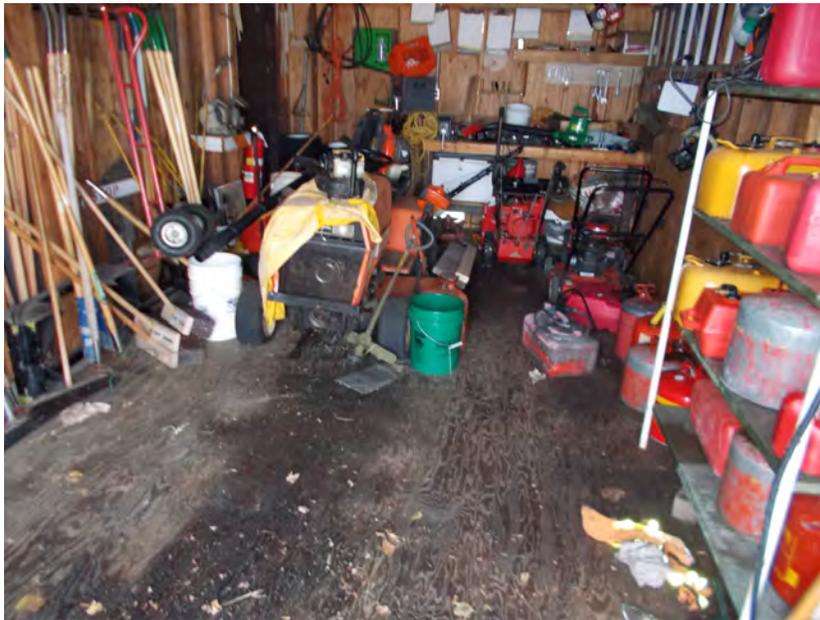


Photo 24: Building #6—Interior



Photo 25: Building #7—Water Service Building

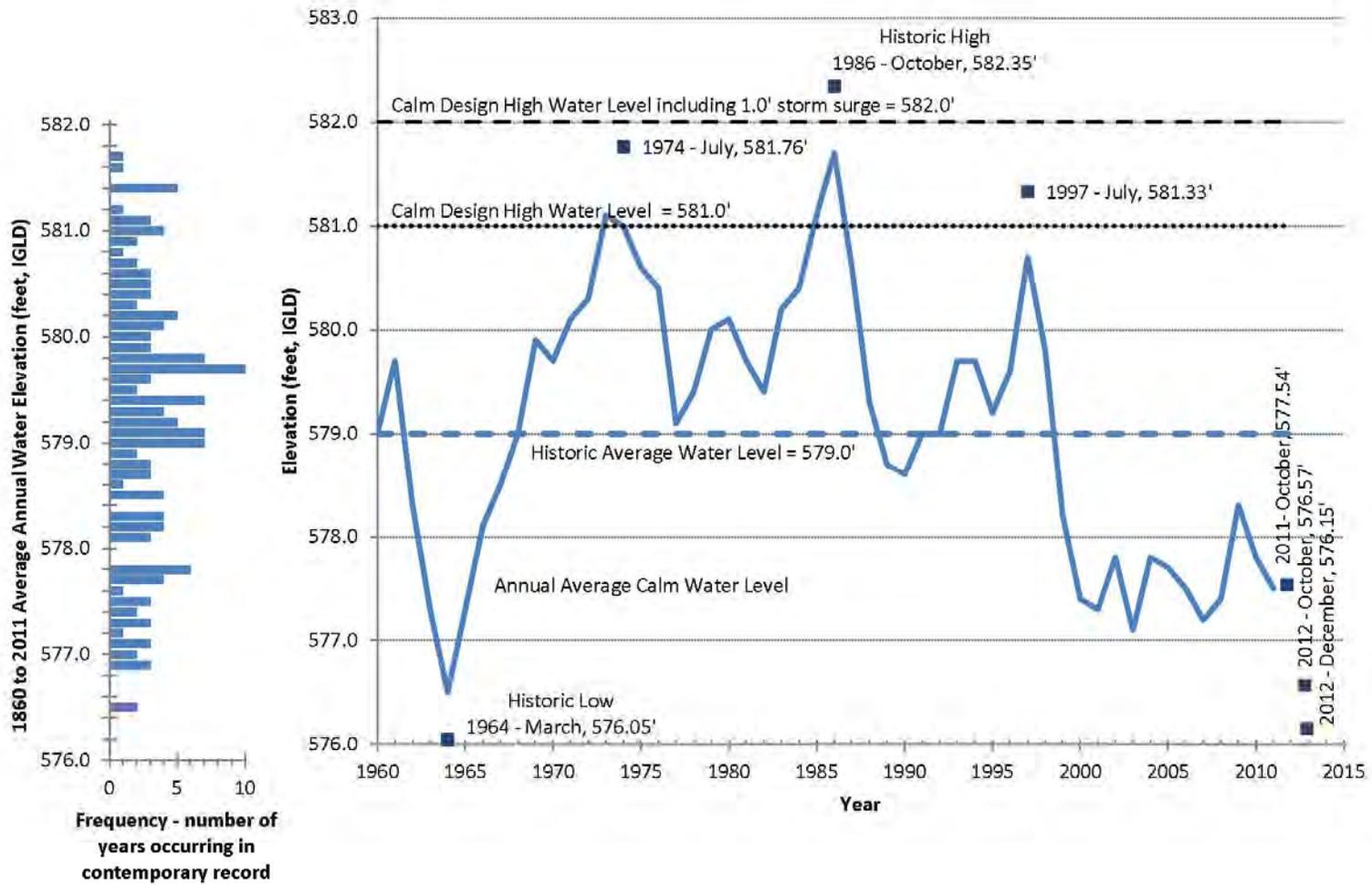


Photo 26: Building #7—Interior

APPENDIX B
Lake Michigan Water Level Info

Lake Michigan - Huron

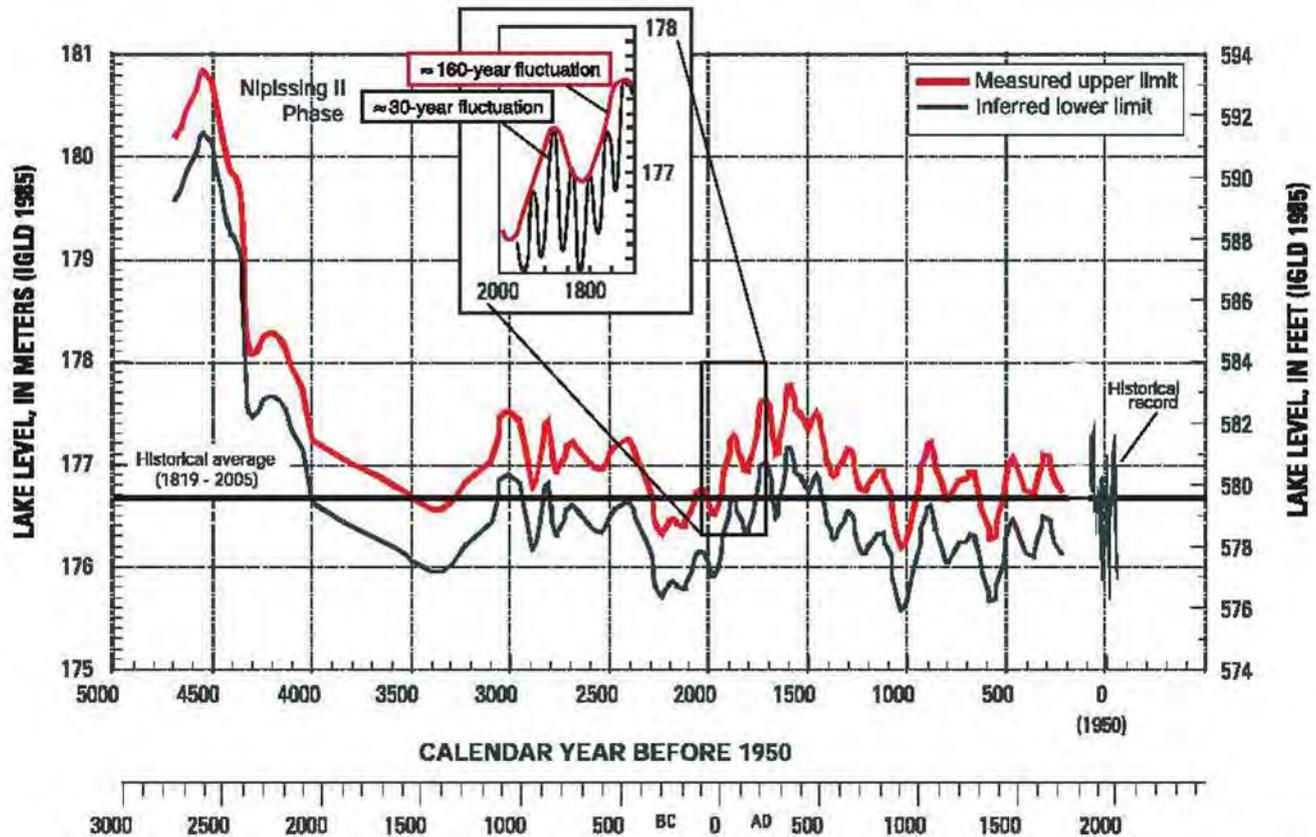
Average Annual Historic Water Levels and Histogram
(Based on USACE records)



Lake Michigan Water Levels in Recent Geologic Time

Lake-Level Variability and Water Availability in the Great Lakes:

U.S. Geological Survey Circular 1311, Wilcox et al., 2007



Hydrograph of late Holocene lake level and historical lake level for Lake Michigan-Huron. The red line is interpreted from beach-ridge studies, whereas the lower black line is an inferred lower limit using the range of the historical record as a guide.

APPENDIX C
Miller Geotechnical Report

February 6, 2013

12-19237 50-100

Mr. Robert Peschel, PE
The Sigma Group
1300 W Canal Street
Milwaukee, WI 53233

Subject: **Geotechnical Exploration Report**
McKinley Marina
N Lincoln Memorial Drive
Milwaukee, Wisconsin

Dear Mr. Peschel:

This report summarizes the soil and ground water conditions at the subject site and provides recommendations for design and construction.

PROJECT DESCRIPTION

The Sigma Group provided a description of the project, which was in the preliminary design phase, at the internal kick-off meeting on January 4, 2013. It is our understanding that the project will consist of re-designing the layout of the Marina parking lots, which will include reconstruction or replacement of the existing pavements and parking lots. The site is presently used for public parking lots and as boat storage for the Marina. The topography is gently sloped, with surface runoff east towards Lake Michigan.

SCOPE OF EXPLORATION

The field work was performed on January 16, 2013, using a Mobile B53 truck-mounted drilling rig. Five (5) soil borings were advanced, each to a depth of 15 feet. The locations of the borings are shown on the *Boring Location Plan* in the Appendix. Borings were staked by Miller Engineers & Scientists and elevations will be surveyed by The Sigma Group. All collected soil samples were screened for the presence of organic vapors using a portable photo-ionization detector (PID) as a relative indication of potential petroleum contamination. The PID readings (included on boring logs) showed no indication of petroleum contamination, so no samples have been analytically tested.

Temporary ground water observation wells were installed in three of the soil borings (B1, B3, and B4) to allow ground water table monitoring. The wells consist of 2" diameter PVC pipe with a 10' screen at the bottom. A steel flush mount cap was placed level with the pavement to allow for future ground water level readings. We understand that these will be abandoned at some time in the future by The Sigma Group. This can be accomplished by removing steel cap, pulling out the PVC pipe, and then filling the holes with bentonite chips. At that time *Well/Drillhole/Borehole Abandonment* forms (3300-5) should be forwarded to the Wisconsin Department of Natural Resources (WDNR).

After ground water level measurements were made in borings B2 and B5, they were backfilled with bentonite "hole plug" in accordance with the *Wisconsin Administrative Code Chapter NR 141.25. Well/Drillhole/Borehole Abandonment* forms (3300-5) were forwarded to the Wisconsin Department of Natural Resources (WDNR) and copies are included in the Appendix.

SUBSURFACE CONDITIONS

Existing pavements on-site typically consist of 3 to 6 inches thickness of Hot Mix Asphalt (HMA) over 6 to 20 inches thickness of dense graded aggregate base. An exception is the westernmost parking lot (boring B1) where the asphalt is underlain by 4.5 inches of Portland Cement concrete.

Soils below the aggregate base typically consist of sandy to gravelly, stiff clay fill with asphalt and brick chunks and occasional soft and very stiff zones. The thickness of the clay fill is approximately 5 to 9 feet at the western edge of the property, increasing to approximately 10 to 12 feet at the eastern edge. At boring B2, the clay fill is interbedded with fine grained, medium dense sand. Below the clay fill is loose to medium dense, fine grained sand. Ground water was measured at depths ranging from 5 to 10 feet at boring completion.

CONCLUSIONS AND RECOMMENDATIONS

Where final pavement grades are close to or slightly above existing grades, it may be advantageous to grind in place the existing asphalt pavement and mix it with the top half of existing aggregate base course. This can be graded and compacted to provide the base for new asphalt or concrete pavements. Similarly, the west lot existing pavement consisting of an asphalt overlay on top of Portland Cement Concrete (PCC) can be pulverized in place. The alternatives to dense graded aggregate base consisting of virgin crushed stone or crushed PCC are included in the pavement section recommendations in this report.

The clay soils that comprise the soil subgrade beneath existing pavements generally provide fair to poor support to pavements, and will soften upon exposure to water or disturbance. They also have substantial potential for frost heave. The clay soils are NOT suitable for infiltration of storm water. Relatively deep excavations into the sandy soils below the clay may not be stable, particularly below the ground water table, and may "quicken" with minor amounts of disturbance.

Based on our understanding of the type of construction planned and the data obtained from field exploration, we make the following recommendations.

Site Preparation and Grading

1. All deposits of organic topsoil, and any loose/soft subgrade should be stripped from the proposed construction site. The upper foot of soil exposed below structures and pavements should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density prior to placing fill. Clay soil should not be allowed to vary more than 3% of the Optimum Moisture Content prior to casting footings, slabs, or placing aggregate base course.
2. Any fill in areas of buildings, structures, pavements, or walks should consist of compacted granular material conforming to *Envelope A* (in the Appendix) provided

- the contours of the underlying clay soil do not trap any water that has infiltrated. Otherwise, stiff clay should be used.
3. All fill should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density and should be free of frozen, organic, or corrosive materials. Fill materials should also be free of oversized pieces which may prevent uniform compaction and create concentrated stresses on proposed structures, or interfere with grading. Fill should be placed in lifts of 12 inches or less and compacted to provide uniform support to structures and pavements.
 4. Permanent surface grades should be designed to provide adequate surface drainage away from buildings. A minimum of 5% slope for the first 10 feet is recommended. We recommend a minimum slope of 1% in parking lot pavements and at least 2% crown slopes in drives.

Foundations

Conventional spread footings can be used to support light buildings or structures. We recommend these have at least 42" of final cover for frost protection and be proportioned for not more than 2,000 psf allowable soil bearing stress.

The diameter of shallow caisson foundations supporting light poles should be selected so they do not require excavation below the ground water table into sand soils. Their depths should be sufficient to resist frost heave effects but also avoid bearing over on soft soil layers that are present at some locations and depths. Meeting these criteria may be problematic at some locations due to localized soil conditions, and may require specific alternative solutions. For the more typical conditions, caisson foundations bearing on stiff clay or medium dense sand may be proportioned for end bearing up to 5,000 psf and lateral resistance of 2,000 psf

Underground Utilities

1. Buried water bearing utilities should be located below frost depth. Unless insulated in accordance with Wisconsin Administrative Code SP382.3, sanitary sewers should have at least 3 1/2 feet of protective overburden in areas where snow is not cleared and at least 5 feet where snow is cleared. Water supply lines should have at least 6 feet of soil cover, unless protected by insulation.
2. Bedding material for conduits should be selected and placed in accordance with the recommendations of the pipe manufacturers and in accordance with Chapter 8.43 of *Standard Specifications for Sewer and Water Construction in Wisconsin*.
3. Utility trench backfill **under structures and pavements should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density** from 1 foot above the top of the conduit on upward. Trench backfill should be placed in lifts of 12 inches or less. Excavated soils may be used for trench fill if practical, but site soils may be difficult to compact if not near the optimum moisture content (ASTM D698). In that case, we recommend granular material conforming to *Envelope A*, be used for utility trench backfill or granular material described in Table 37, Chapter 8.43.4, *Standard Specifications for Sewer and Water Construction in Wisconsin*.

Storm Water Management

Low permeability clay typically comprising the top five to ten feet of soils on this site is **not suitable** for storm water infiltration.

Pavement Considerations

After removal of any unsuitable or soft surficial soils, the underlying clay subgrade of the site is expected to have a modulus of subgrade reaction (K) of approximately 60 pci and a soil support value (S) of 4.5 if prepared in accordance with the **Site Preparation and Grading** section. Any fill that will be placed under paved areas should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density. Clay subgrade should be maintained within 3% of the Optimum Moisture Content during and after compaction and until gravel base course is placed to avoid subgrade volume change.

Asphalt Pavement

Based on the information above we recommend the following flexible pavement sections:

Drives and Parking	Light Traffic – 2x10 ⁵ ESALs (E-0.3)			Medium Traffic – 5x10 ⁵ ESALs (E-1)		
HMA Thickness (inches)	3.5	3.5	3.5	4	4	4
12.5 mm max aggregate surface mix (inches)	1.75	1.75	1.75	1.75	1.75	1.75
25 mm max aggregate binder mix (inches)	1.75	1.75	1.75	2.25	2.25	2.25
Base Type*	A	B	C	A	B	C
Base Thickness	13.5	9.5	7	15.5	10.5	7.5
Total Section Thickness (inches)	17	13	10.5	19.5	14.5	11.5

**Base types are: A – crushed gravel, B – mixture of milled Asphalt Concrete (AC) and gravel, or C – mixture of pulverized in place AC and Portland Cement Concrete (PCC).*

Granular base course should consist of crushed stone conforming to WisDOT 1 1/4" Gradation, Section 305, compacted to at least 95% of the Modified Proctor (ASTM D1557) Maximum Dry Density. Asphalt and gravel mixtures and pulverized AC and PCC should be compacted likewise. Asphalt concrete binder and surface courses should meet the requirements of Section 315 of the *State of Wisconsin Standard Specifications for Highway Construction*.

Flexible pavements are not recommended for areas where trucks will turn frequently or be parked, or in areas where other high point loads are expected (such as where dumpsters will be stored). Asphalt pavement may deform and fail prematurely under sustained high load areas. We recommend that concrete pavement be placed in areas that will be subject to heavy, concentrated loads.

Concrete Pavement

Based on the previously mentioned subgrade reaction value (K) of 65 pci and the Wisconsin Concrete Pavement Association Design Guide, for a 35-year design life the following rigid pavement section thicknesses are recommended for high point load traffic areas:

Truck Parking and Turning Areas	Light Traffic (2×10^5 ESALs)	Medium Traffic (5×10^5 ESALs)
Concrete Pavement	6 inches	7 inches
Aggregate Base Course*	6 inches	6 inches

*Aggregate base course may consist of crushed gravel, milled AC and gravel, or milled AC and pulverized PCC.

CONSTRUCTION CONSIDERATIONS

We recommend that the exposed subgrade be proof-rolled before placement of any new base materials in order to locate any soft areas. Soft soils should be removed and replaced in accordance with our recommendations for *Site Preparation and Grading*.

Trench/excavation spoil, heavy equipment, and heavy vibrating machinery should not be permitted within a lateral distance of the depth of the trench/excavation or 3 feet, whichever is greater. We anticipate that the sidewalls of excavations, and any utility line excavations to depths greater than 4 feet below surrounding grades, may cave to 1 vertical to 1.5 horizontal or flatter. Excavation safety is the excavation contractor's responsibility and should be conducted in strict adherence to OSHA and other applicable codes.

Special precautions should be taken for earthwork during winter months. Footings or fills should not be placed on frozen soils. Exposed subgrade soil should be adequately protected with insulating blankets or hay.

CLOSURE

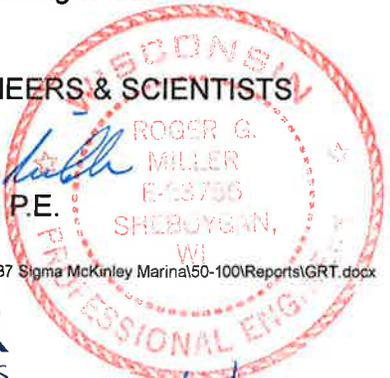
This report was prepared for the exclusive use of our client and project design professionals for evaluation of the site and for design and construction planning purposes only. Our recommendations are applicable only to the project as described and conditions disclosed by our borings. It was not prepared for uses or parties other than those specifically named or for applications other than those enumerated herein. For purposes or uses other than those specifically named, this report may contain information that is insufficient or inaccurate.

We appreciate participating in this project with you. Please call if you have any questions or comments pertaining to our work.

Prepared by,

MILLER ENGINEERS & SCIENTISTS


Roger G. Miller, P.E.
Chairman


ROGER G.
MILLER
E-13756
SHEBOYGAN,
WI


Tony Oxley, E.I.T.
Project Engineer

I:\DATA\2012\19000\12-19237 Sigma McKinley Marina\50-100\Reports\GRT.docx

MILLER
ENGINEERS
SCIENTISTS

2/6/2013

Project No. 12-19237

Appendix

General Conditions–Soil Report

General Conditions–Data Collection

Site Location Map

Boring Location Plan

Classification of Soils for Engineering Purposes

General Notes

Final Logs

Gradation Analysis

Envelope A, Granular Fill

Well/Drillhole/Borehole Abandonment Forms (3300-5)

I:\DATA\2012\19000\12-19237 SIGMA MCKINLEY MARINA\50-100\REPORTS\IGRT.DOCX

General Conditions – Soil Report

This report has been prepared to aid in the evaluation of this property for the intended use described herein, and to assist in the design or planning of this project. In the event any changes in the design as outlined herein, or changes in the vertical position or horizontal location of the facility are planned, the conclusions and recommendations contained in this report shall not be considered valid unless such changes are reviewed and the conclusions of this report modified in writing by Miller Engineers & Scientists, hereinafter referred to as “THE ENGINEER”, who prepared this report.

The analysis and recommendations submitted in this report are our opinions based on the data obtained and subsurface conditions noted from the field investigation described at the locations indicated on the accompanying map and/or diagram. This report does not reflect any variations which may occur between, beyond, or below the depths of these test pits or borings. The nature and extent of such variations may not become evident until excavation and construction begin. If variations then appear evident, it will be necessary for a re-evaluation of the recommendations of this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations.

This soil and foundation engineering report has been prepared for this project by Miller. This report is only for the purposes stated in the contract and may not be sufficient to prepare an accurate bid. The Engineer is responsible for the conclusions and opinions contained herein based on the supplied data relative only to the specific project and location outlined in this report. In the event conclusions or recommendations are made by others, such conclusions or recommendations are not the responsibility of the Engineer.

It is recommended that the Engineer be retained to review designs, plans, and specifications using the conclusions of this report to determine whether any change in concept may have any effect on the validity of the recommendations contained in this document. If the Engineer is not retained for this review, Miller assumes no responsibility for misinterpretation or misapplication of these recommendations or for their validity in the event changes have been made in the project and/or design content. Review of the design, plans, and specifications will be noted in writing by the Engineer upon the Client’s request.

There is the possibility that variations in soil conditions will be encountered during construction. In order to permit correlation between soil data in this report and the actual soil conditions encountered during construction, it is recommended that the soil and foundation engineer be retained to perform periodic review during the excavation and foundation construction phases of the work. The soil and foundation Engineer assumes no responsibility for construction compliance with the design concepts, specifications, or recommendations unless he has been retained to perform on-site review during the course of construction.

As a part of the above review, it is recommended that the Engineer review all areas where fills are to be placed, and test and approve each class of fill material to be used. The fills should be tested by performing grain-size analyses (ASTM D421, D422, or D1140) and by performing laboratory control-moisture density (proctor) tests (ASTM D698 or D1557) on representative samples prior to their delivery and placement. The fills should be field tested for degree of compaction. Fills receiving foundation structures such as footings, slabs-on-grade, frost walls, or piers should be tested for bearing capacity.

The presence of our field representative, if such services are required by the Client, will be for the sole purpose of providing record observations and field soils testing,. Our work does not include supervision, management, or direction of the actual work of the Contractor, his employees, or agents. The Contractor for this project should also be advised. The Contractor should be informed that neither the presence of our field representative nor the observation and testing by our firm shall excuse him in any way for defects discovered in his work. It is understood that our firm will not be responsible for job or site safety.

This report was prepared in accordance with generally accepted soil and foundation engineering practices and makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of the agreement between the Engineer and his Client, included in this report. The report has not been prepared for uses or parties other than those specifically named, or for uses or applications other than those enumerated herein. The report may contain insufficient or inaccurate information for other purposes, applications, building sites, or other uses.

I:\DATA\Masters\Word\REPORTS\Geotech Reports\General Conditions Soil Report.doc

Soil Sampling Methods

Field sampling techniques were employed during this exploration to obtain the data presented in the Boring Logs, and in the report, in accordance with ASTM D420, D1452, D1586 (where applicable), and D1587 (where applicable).

During soil exploration with a drilling rig, sampling is typically accomplished by driving a “standard” split barrel tool (“split spoon”) of 2-inch outer diameter into undisturbed soil with a 140-pound weight falling 30 inches. The sum of the number of blows required to advance the tool in two successive 6-inch increments following 6 inches of seating are recorded on the Boring Logs under “N” column. This comprises the Standard Penetration Test (SPT), details of which are prescribed by test method ASTM D1586. When this same tool is used during manual sampling, a smaller weight is dropped and -less height is used. In that case, the specific information is recorded on the field logs and is converted to SPT “N” values shown on the Boring Logs in the report according to the ratio of the actual energy used during manual sampling to the SPT energy-per-blow.

Sampling in cohesive soils may also be performed by hydraulically pushing steel sharpened-edge thin walled tubes into undisturbed soil. Tubes were advanced below the tip on the lead auger in the boring to retrieve a relatively undisturbed sample, in accordance with ASTM D1587. The tubes are equipped with pressure-releasing ports to allow water to escape as the tube is advanced. The sampling methods are indicated by symbols on the Boring Logs.

Samples were brought to the surface, examined by the drilling foreman, and sealed in containers (or sealed in the tubes) to reduce loss of moisture. They were returned to our laboratory for classification per ASTM D2487 methods. Some samples were subjected to tests as described in the text of the report.

A field log was prepared for each boring by the drilling foreman during on-site operations in order to record field occurrences, sampling intervals, and ground water observations. The field logs and laboratory test data sheets are available for inspection at the Engineer’s office. They are not included in this report because they do not represent the Engineer’s final opinions or interpretations.

A Boring Log of each test pit or boring was prepared by the writer of the report or the Engineer’s staff. Each Boring Log contains the writer’s interpretation of field conditions or changes in substrata between recovered samples based on the field data received along with the laboratory test data obtained following the field work or on subsequent site observations. The Boring Logs were prepared by assembling and analyzing field and laboratory data. Therefore, the Boring Logs contain both factual and interpretive information. Our opinions are based on the Boring Logs, not the field logs.

The Boring Logs list boring methods, sampling methods, depths of sampling, amounts of recovery in sampling tools, indications of the presence of subsoil types, and ground water level observations. Results of laboratory tests are arrayed on the Boring Logs at the appropriate depths below grade. The horizontal lines on the Boring Logs which designate the interface between successive layers represent approximate boundaries. The transition between strata in some cases may actually be gradual or variable.

We caution that the Boring Logs alone do not constitute the report, and as such they should not be excerpted from the other appendix exhibits nor from any of the written text. Without the written report it is possible to misinterpret the meaning of the information reported on the Boring Logs. If the report is to be reproduced for bidding or reference purposes, the entire numbered report and appendix exhibits should be bound together as a separate document or as a reference section of a specification booklet, including all maps.

Pocket penetration tests taken in the field or on samples examined in the laboratory are listed on the Boring Logs in a column marked "pp". These tests were performed only to indicate relative stiffness in consistency between successive layers of cohesive soil. It is not recommended that the listed values be used to determine allowable bearing capacities. Soil strength and bearing capacities were interpreted in the report by the Engineer and considered field and laboratory testing methods as described in the text of the report.

Ground water observations were made with tape measurements in the open drill holes by field personnel at the times and dates stated on the Boring Logs. Fluctuations commonly occur in the ground water level due to variations in rainfall, seasonal temperature, nearby site improvements, underdrainage, wells, severity of winter frosts, overburden weights, and the permeability of the subsoils. Because variations can be expected, final designs and construction planning should allow for the need to temporarily or permanently dewater excavations or subsoils.

I:\DATA\Masters\Word\REPORTS\Geotech Reports\Soil Sampling Methods.doc

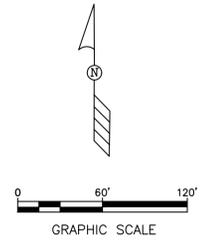
Site Location Map



File: N:\milwaco\3127 Mckinley Marina\060 CAD\C - Civil\500 Production - Civil\500 Site Survey\3127-500-A.dwg



**PRELIMINARY
 NOT FOR CONSTRUCTION**



LEGEND

---	SECTION 1/4 SECTION LINE
---	PROPERTY LINE
---	EASEMENT
-x-x-x-	CHAIN LINK FENCE
~~~~~	TREE LINE
OH	OVERHEAD UTILITY LINE
E	ELECTRIC
T	TELEPHONE
FO	FIBER OPTIC
CTV	CABLE TV
SAN	SANITARY SEWER
FM	FORCE MAIN
ST	STORM SEWER
W	WATER MAIN
G	GAS
---	EXISTING CONTOUR
○	MANHOLE
⊠	CATCH BASIN
⊙	CATCH BASIN (ROUND)
●	ROOF DRAIN
⊕	HYDRANT
⊕	WATER VALVE
⊕	GAS VALVE
⊕	UTILITY POLE
⊕	GUY WIRE
⊕	GAS METER
⊕	ELECTRIC METER
⊕	UTILITY PEDESTAL
⊕	TRAFFIC SIGNAL
⊕	LIGHT POLE
⊕	SOIL BORING
⊕	MONITORING WELL
○	IRON PIPE FOUND/SET
●	REBAR FOUND/SET
⊗	CHISELED CROSS FOUND/SET
⊕	PK NAIL FOUND/SET
⊕	SPIKE/NAIL
⊕	MONUMENT
⊕	BENCHMARK
⊕	SIGN
○	DECIDUOUS TREE
⊕	CONIFEROUS TREE
⊕	BUSH
⊕	POST

- GENERAL NOTES:**
1. BEARINGS BASED ON WISCONSIN STATE PLANE COORDINATE SYSTEM.
  2. VERTICAL DATUM IS CITY OF MILWAUKEE DATUM. TO CONVERT TO NGVD 1929 ADD 580.603. BENCHMARK IS SOUTHWEST FLANGE BOLD ON HYDRANT IN NORTHEAST QUADRANT OF W. OREGON STREET AND S. 3RD STREET WITH AN ELEVATION OF 12.93.
  3. FEMA FLOODPLAIN INFORMATION DIGITIZED FROM FIRM PANEL 55079C 0093 E DATED 9/26/2008. BASE FLOOD ELEVATION FOR SITE IS 584 (NGVD) OR 3.4 (CITY DATUM).

● Boring Location  
 ● Boring with Temporary Groundwater Level Observation Well (10' Screen)

THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD DATA AS MARKED BY DIGGERS HOTLINE AND OBTAINED DURING THIS SURVEY. INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY, AND AS-BUILT INFORMATION. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.



CALL DIGGERS HOTLINE  
 1-800-242-8511  
 TOLL FREE  
 HIS SERVICE IS AVAILABLE  
 24 HOURS A DAY, 7 DAYS A WEEK  
 NOTICE BEFORE YOU EXCAVATE  
 MILW. AREA 259-1181

PROJECT TITLE  
 LOCATION  
 ADDRESS  
 ACAD, WISCONSIN

**SITE SURVEY**

NO. REVISION      DATE      BY

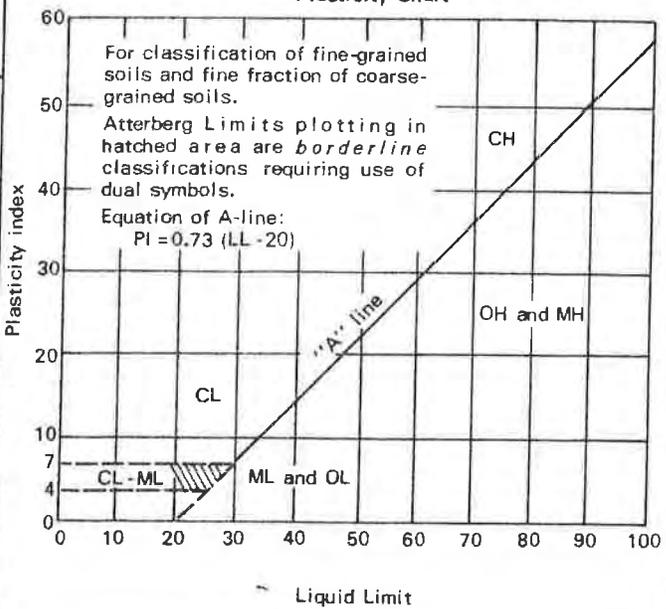
DRAWING NO. 3127-500-A.dwg  
 DRAWN BY:  
 DATE:  
 PROJECT NO:  
 CHECKED BY:  
 APPROVED BY:  
 SHEET NO.:

**C001**

# CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

ASTM Designation: D 2487 – 69 AND D 2488 – 69

(Unified Soil Classification System)

Major divisions		Group symbols	Typical names	Classification criteria		
Coarse-grained soils More than 50% retained on No. 200 sieve*	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3  Not meeting both criteria for GW  Atterberg limits below "A" line or P.I. less than 4  Atterberg limits above "A" line with P.I. greater than 7  Atterberg limits plotting in hatched area are <i>borderline</i> classifications requiring use of dual symbols	
		Gravels with fines	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines		
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures		
		Gravels with fines	GC	Clayey gravels, gravel-sand-clay mixtures		
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean sands	SW	Well-graded sands and gravelly sands, little or no fines	Classification on basis of percentage of fines Less than 5% pass No. 200 sieve . . . . . GW, GP, SW, SP More than 5% pass No. 200 sieve . . . . . GM, GC, SM, SC 5 to 12% pass No. 200 sieve . . . . . <i>Borderline</i> classifications requiring use of dual symbols	
			SP	Poorly graded sands and gravelly sands, little or no fines		
		Sands with fines	SM	Silty sands, sand-silt mixtures		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3  Not meeting both criteria for SW  Atterberg limits below "A" line or P.I. less than 4  Atterberg limits above "A" line with P.I. greater than 7  Atterberg limits plotting in hatched area are <i>borderline</i> classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures		
			ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
Fine-grained soils 50% or more passes No. 200 sieve*	Silts and clays Liquid limit 50% or less	OL	Organic silts and organic silty clays of low plasticity	<b>Plasticity Chart</b>  For classification of fine-grained soils and fine fraction of coarse-grained soils. Atterberg Limits plotting in hatched area are <i>borderline</i> classifications requiring use of dual symbols. Equation of A-line: $PI = 0.73 (LL - 20)$  		
		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts			
		CH	Inorganic clays of high plasticity, fat clays			
	Silts and clays Liquid limit greater than 50%	OH	Organic clays of medium to high plasticity, organic silts			
		Pt	Peat, muck and other highly organic soils			
		Highly organic soils				

*Based on the material passing the 3 in. (76 mm) sieve.

# LOG OF TEST BORING GENERAL NOTES

## SYMBOLS

### Descriptive Soil Classification

#### GRAIN SIZE TERMINOLOGY

Soil Fraction	Particle Size	U.S. Sieve Size
Boulders.....	Larger Than 12"	Larger Than 12"
Cobbles.....	3" to 12"	3" to 12"
Gravel: Coarse.....	3/4" to 3"	3/4" to 3"
Fine.....	4.76mm to 3/4"	#4 to 3/4"
Sand: Coarse.....	2.00mm to 4.76mm	#10 to #4
Medium.....	0.42mm to 2.00mm	#40 to #10
Fine.....	0.074mm to 0.42mm	#200 to #40
Fines.....	Less Than 0.074mm	Smaller Than #200
Silt.....	0.005mm to 0.074mm	Smaller Than #200
Clay.....	Smaller Than 0.005mm	

(Plasticity characteristics differentiate between silt and clay.)

#### COMPOSITION TERMINOLOGY (ASTM D2487)

##### Primary Constituent:

##### Gravel

with sand...>=15% sand  
with silt.....5-12% silt  
with clay.....5-12% clay  
silty.....>12% silt  
clayey.....>12% clay

##### Sand

with gravel....>=15% gravel  
with silt.....5-12% silt  
with clay.....5-12% clay  
silty.....>12% silt  
clayey.....>12% clay

##### Fines (Silt or Clay)

with gravel....15-29% gravel  
gravelly.....>=30% gravel  
with sand.....15-29% sand  
sandy.....>=30% sand

#### RELATIVE DENSITY COHESIONLESS SOILS

Term	"N" Value
Very Loose.....	0-4
Loose.....	4-10
Medium Dense.....	10-30
Dense.....	30-50
Very Dense.....	over 50

The penetration resistance, N, is the summation of the number of blows required to affect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test (ASTM 1586).

#### CONSISTENCY COHESIVE SOILS

Term	pp (tons/sq. ft.)	"N" Value
Very Soft.....	0.00 to 0.25	<2
Soft.....	0.25 to 0.50	2-4
Medium.....	0.50 to 1.00	4-8
Stiff.....	1.00 to 2.00	8-15
Very Stiff.....	2.00 to 4.00	15-30
Hard.....	over 4.00	>30

#### PLASTICITY

Term	Plasticity Index
None to slight.....	0 to 4
Slight.....	5 to 7
Medium.....	8 to 22
High to Very High.....	over 22

### DRILLING AND SAMPLING

CS--Continuous Sampling  
RC--Rock Coring: Size AW, BW, NW, 2" W  
RQD--Rock Quality Designator  
RB--Rock Bit  
FT--Fish Tail  
DC--Drove Casing  
C--Casing: Size 2 1/2", NW, 4", HW  
CW--Clear Water  
DM--Drilling Mud  
HSA--Hollow Stem Auger  
FA--Flight Auger  
HA--Hand Auger  
SS--2" Diameter Split-Barrel Sample  
2ST--2" Diameter Thin-Walled Tube Sample  
3ST--3" Diameter Thin-Walled Tube Sample  
PT--3" Diameter Piston Tube Sample  
AS--Auger Sample  
PS--Pitcher Sample  
NR--No Recovery  
VS--Vane Shear Test

### LABORATORY TESTS

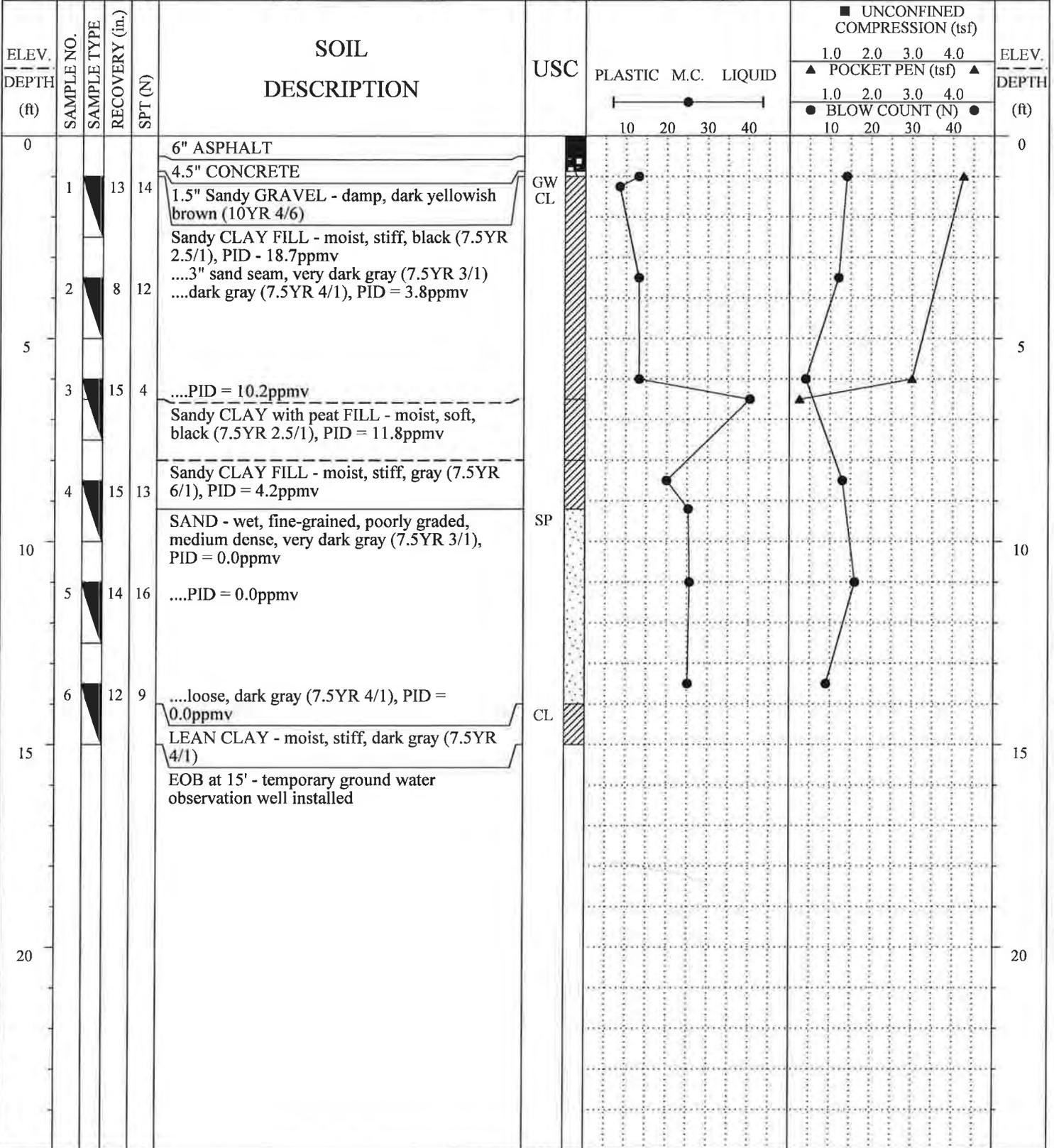
pp--Penetrometer Reading, tons/sq.ft.  
qu--Unconfined Strength, tons/sq. ft.  
MC--Moisture Content, %  
LL--Liquid Limit, %  
PL--Plastic Limit, %  
PI--Plasticity Index, %  
SL--Shrinkage Limit, %  
LI--Loss on Ignition, %  
D--Dry Unit Weight, lbs./cu. ft.  
pH--Measure of Soil Alkalinity or Acidity  
FS--Free Swell, %  
HNu--ppmv as Benzene  
TLV--ppmv as Hexane  
TPH--Total Petroleum Hydrocarbons, ppm

### WATER LEVEL MEASUREMENTS

▼--Water Table Interpretation

Note: Water level measurements recorded in notes on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

Project: <b>McKinley Marina</b>	Job No: <b>12-19237</b>	Boring No: <b>B1</b>
Client: <b>The Sigma Group</b>	Drilled By: <b>M&amp;K Environmental</b>	Elevation: <b>~588.5</b>
Location: <b>Milwaukee, WI</b>	Drilling Begun: <b>1/16/13</b>	Drilling Completed: <b>1/16/13</b>
SAMPLE TYPE <input checked="" type="checkbox"/> 1" Geoprobe <input type="checkbox"/> No Recovery <input checked="" type="checkbox"/> Grab Sample <input type="checkbox"/> Auger Sample <input type="checkbox"/> 3" Shelby Tube <input type="checkbox"/> 2" Split Spoon		



GEOLOG 19237 GINT.GPJ MILLR_ENG.GDT 2/4/13 14:50

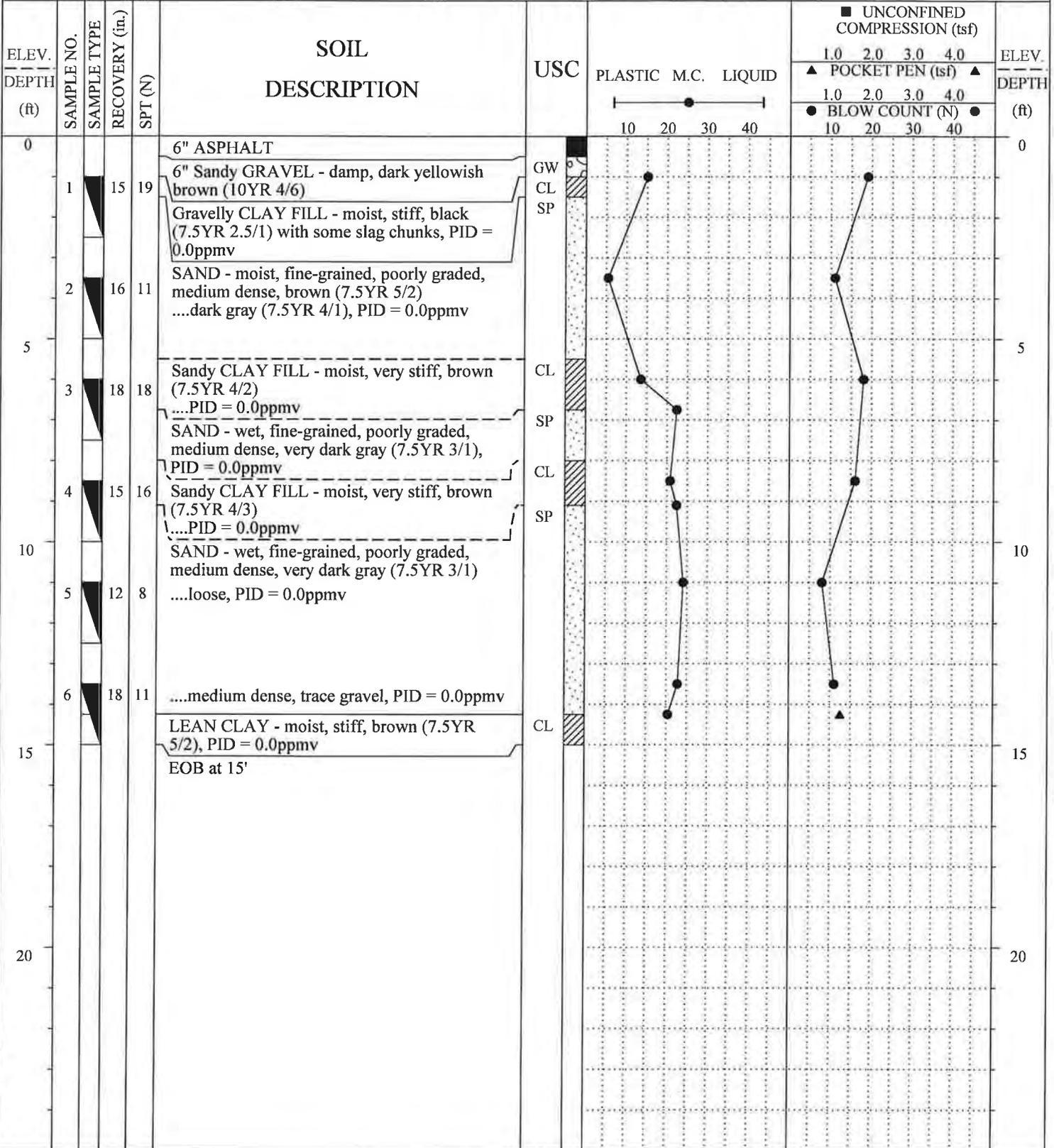
**MILLER ENGINEERS SCIENTISTS**

Date: <b>1/16/13</b>	Time: <b>14:30</b>	<b>7.7</b> ft.	_____ ft.
Date: _____	Time: _____	_____ ft.	_____ ft.
Date: _____	Time: _____	_____ ft.	_____ ft.

Water Level Cave-in Depth Borehole Abandonment  
 Date: **1/16/2013**  
 Material: **observation well**

Crew: **M, T & T**  
 Rig: **B53**  
 Method: **rotary HSA**

Project: <b>McKinley Marina</b>	Job No: <b>12-19237</b>	Boring No: <b>B2</b>
Client: <b>The Sigma Group</b>	Drilled By: <b>M&amp;K Environmental</b>	Elevation: <b>~585.5</b>
Location: <b>Milwaukee, WI</b>	Drilling Begun: <b>1/16/13</b>	Drilling Completed: <b>1/16/13</b>
SAMPLE TYPE <input checked="" type="checkbox"/> 1" Geoprobe <input type="checkbox"/> No Recovery <input checked="" type="checkbox"/> Grab Sample <input type="checkbox"/> Auger Sample <input type="checkbox"/> 3" Shelby Tube <input type="checkbox"/> 2" Split Spoon		



GEOLOG 19237 GINT.GPJ MILLR_ENG.GDT 2/4/13 14:50

**MILLER ENGINEERS SCIENTISTS**

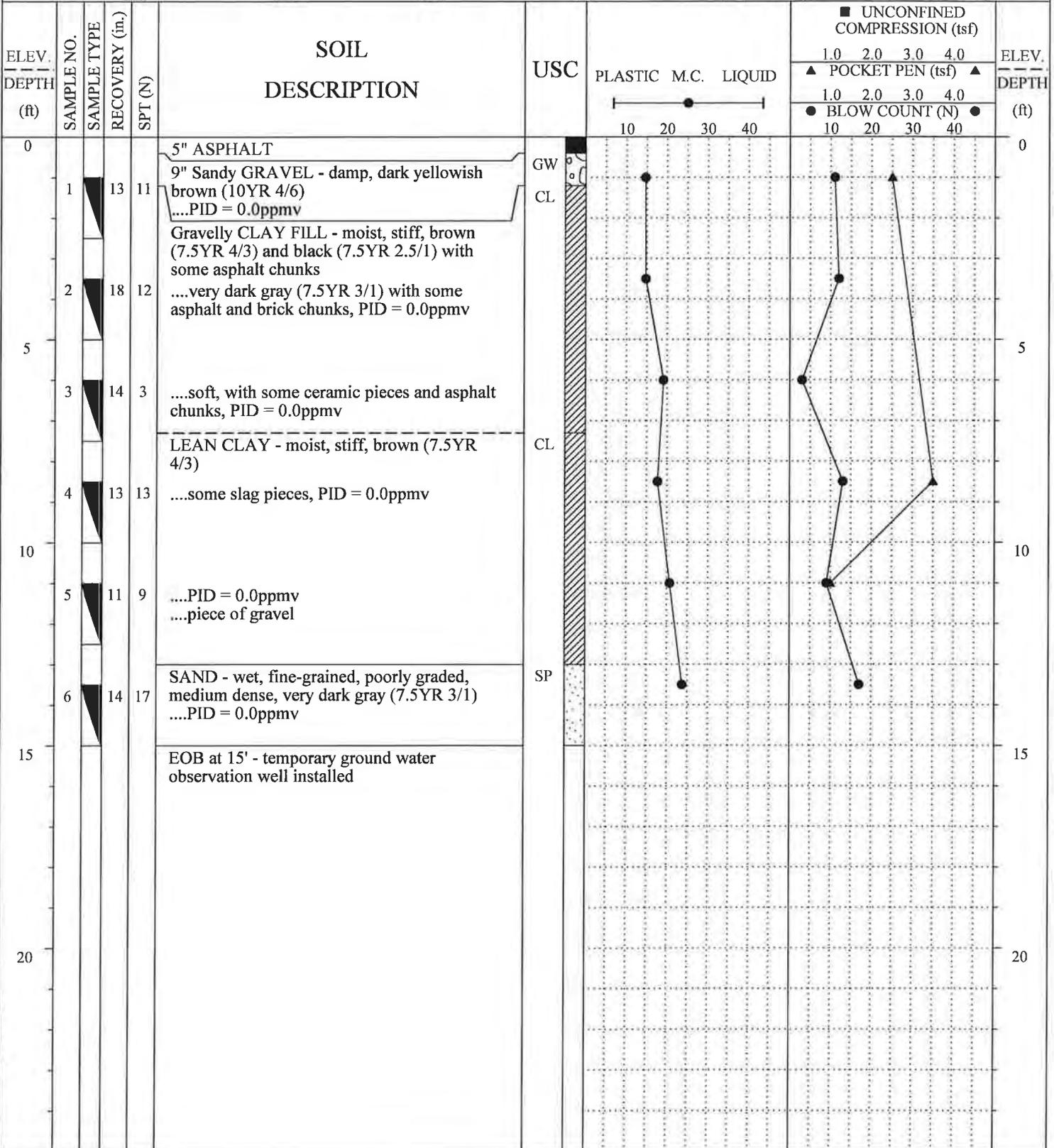
Date	1/16/13	Time	10:10	5.5	ft.	6	ft.
Date		Time			ft.		ft.
Date		Time			ft.		ft.

Water Level	Cave-in Depth	Borehole Abandonment
		Date: 1/16/2013
		Material: bentonite

Crew:	M, T & T
Rig:	B53
Method:	rotary HSA

Project: <b>McKinley Marina</b>	Job No: <b>12-19237</b>	Boring No: <b>B3</b>
Client: <b>The Sigma Group</b>	Drilled By: <b>M&amp;K Environmental</b>	Elevation: <b>~590.0</b>
Location: <b>Milwaukee, WI</b>	Drilling Begun: <b>1/16/13</b>	Drilling Completed: <b>1/16/13</b>

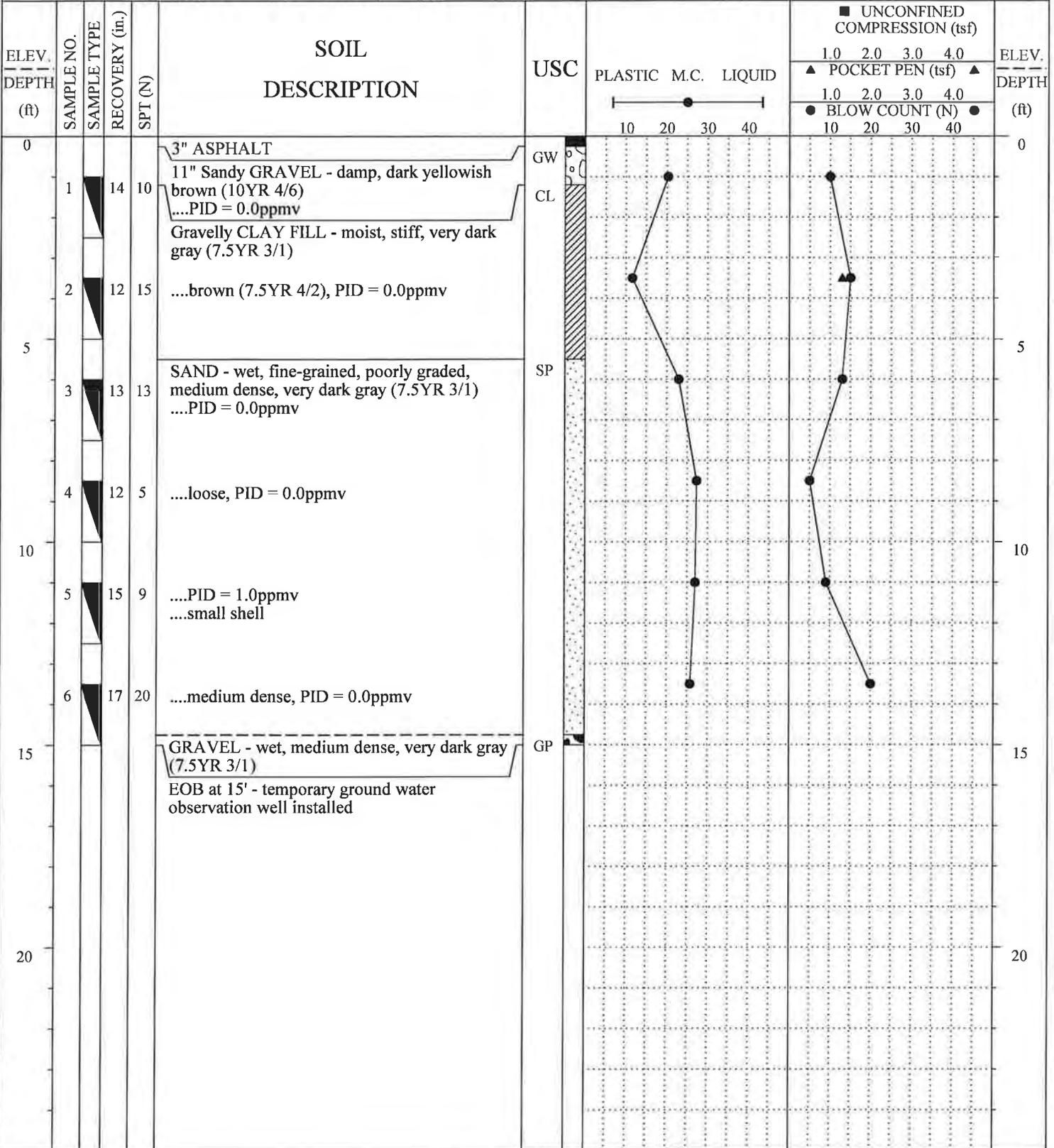
SAMPLE TYPE  1" Geoprobe  No Recovery  Grab Sample  Auger Sample  3" Shelby Tube  2" Split Spoon



GEOTLOG 19237 GINT.GPJ MILLR_ENG.GDT 2/4/13 14:50

<b>MILLER ENGINEERS SCIENTISTS</b>	Date <b>1/16/13</b> Time <b>14:20</b> <b>9.9</b> ft. _____ ft.		Water Level	Cave-in Depth	Borehole Abandonment	Crew: <b>M, T &amp; T</b>
	Date _____ Time _____ ft. _____ ft.				Date: <b>1/16/2013</b>	Rig: <b>B53</b>
	Date _____ Time _____ ft. _____ ft.				Material: <b>observation well</b>	Method: <b>rotary HSA</b>

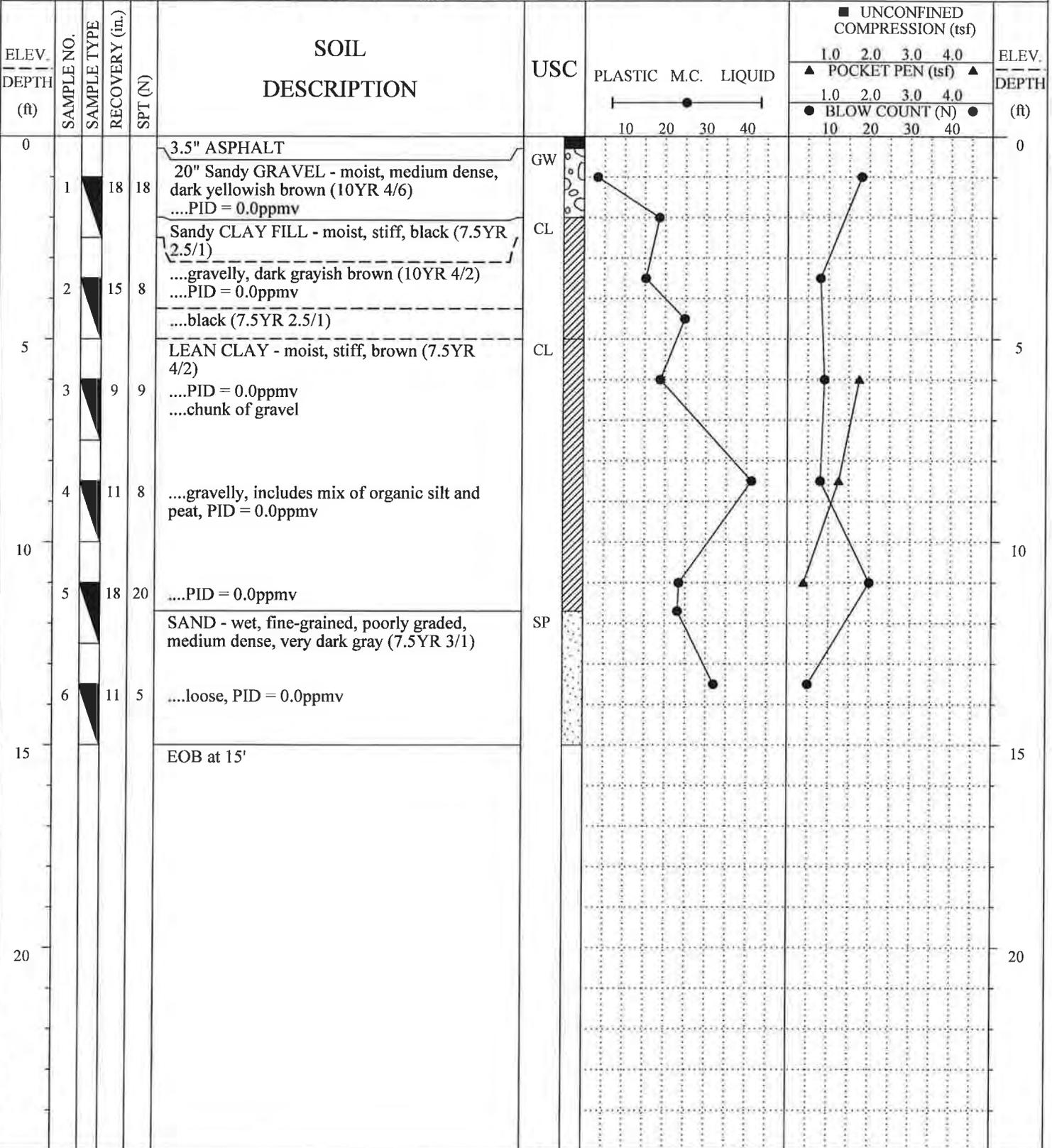
Project: <b>McKinley Marina</b>	Job No: <b>12-19237</b>	Boring No: <b>B4</b>
Client: <b>The Sigma Group</b>	Drilled By: <b>M&amp;K Environmental</b>	Elevation: <b>~585.5</b>
Location: <b>Milwaukee, WI</b>	Drilling Begun: <b>1/16/13</b>	Drilling Completed: <b>1/16/13</b>
SAMPLE TYPE <input checked="" type="checkbox"/> 1" Geoprobe <input type="checkbox"/> No Recovery <input checked="" type="checkbox"/> Grab Sample <input type="checkbox"/> Auger Sample <input type="checkbox"/> 3" Shelby Tube <input type="checkbox"/> 2" Split Spoon		



GEOLOG 19237 GINT.GPJ MILLR_ENG.GDT 2/4/13 14:50

<b>MILLER ENGINEERS SCIENTISTS</b>	Date <b>1/16/13</b> Time <b>13:05</b>		Water Level	Cave-in Depth	Borehole Abandonment	Crew: <b>M, T &amp; T</b>
	Date _____	Time _____	_____ ft.	_____ ft.	Date: <b>1/16/2013</b>	Rig: <b>B53</b>
	Date _____	Time _____	_____ ft.	_____ ft.	Material: <b>observation well</b>	Method: <b>rotary HSA</b>

Project: <b>McKinley Marina</b>	Job No: <b>12-19237</b>	Boring No: <b>B5</b>
Client: <b>The Sigma Group</b>	Drilled By: <b>M&amp;K Environmental</b>	Elevation: <b>~587.0</b>
Location: <b>Milwaukee, WI</b>	Drilling Begun: <b>1/16/13</b>	Drilling Completed: <b>1/16/13</b>
SAMPLE TYPE <input checked="" type="checkbox"/> 1" Geoprobe <input type="checkbox"/> No Recovery <input checked="" type="checkbox"/> Grab Sample <input checked="" type="checkbox"/> Auger Sample <input type="checkbox"/> 3" Shelby Tube <input type="checkbox"/> 2" Split Spoon		



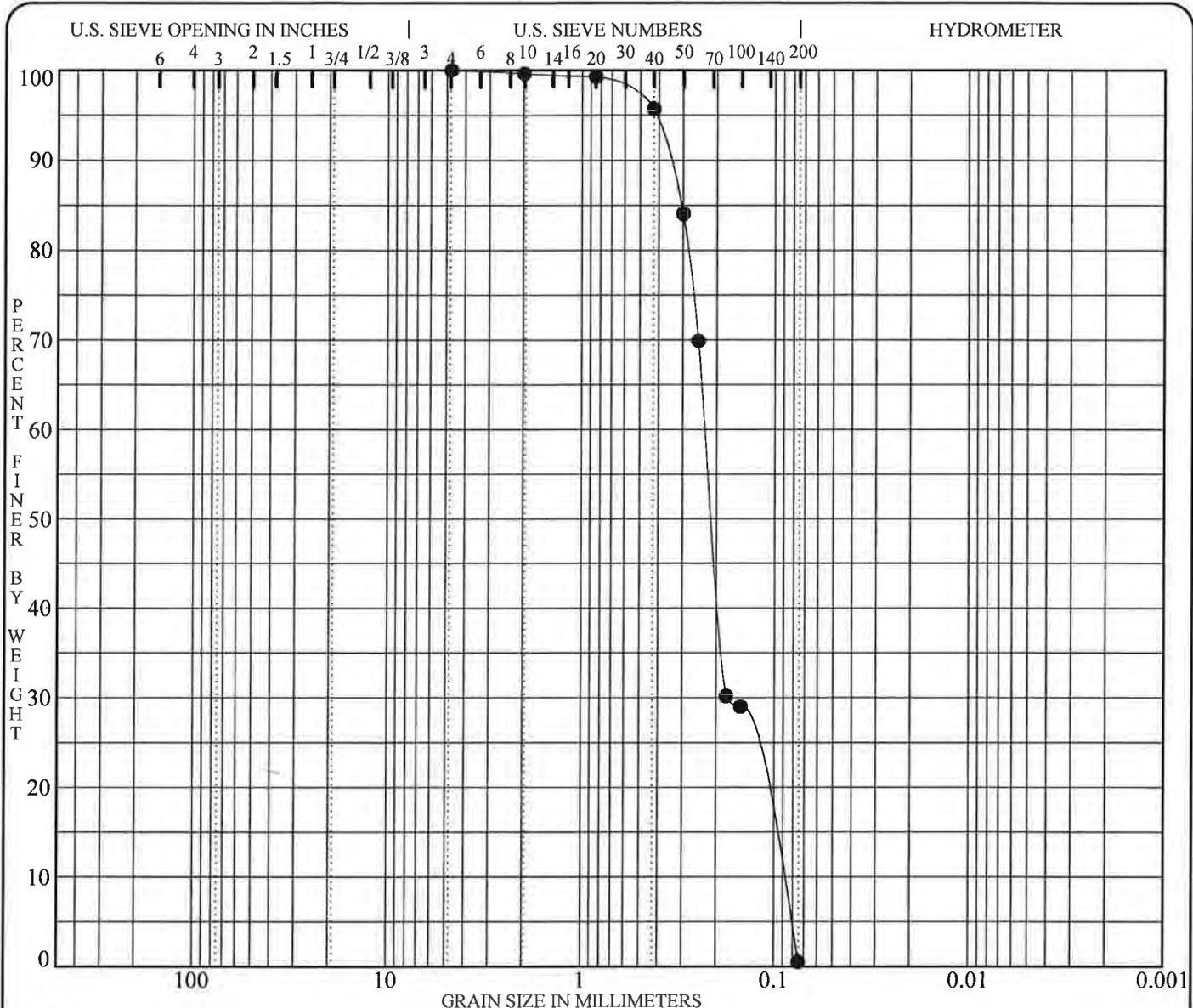
GEOLOG 19237 GINT.GPJ MILLR_ENG.GDT 2/4/13 14:50

**MILLER ENGINEERS SCIENTISTS**

Date: <b>1/16/13</b>	Time: <b>14:15</b>	<b>8.5</b> ft.	<b>9.5</b> ft.
Date: _____	Time: _____	_____ ft.	_____ ft.
Date: _____	Time: _____	_____ ft.	_____ ft.

Water Level	Cave-in Depth	Borehole Abandonment
		Date: <b>1/16/2013</b>
		Material: <b>bentonite</b>

Crew: <b>M, T &amp; T</b>
Rig: <b>B53</b>
Method: <b>rotary HSA</b>



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification					MC%	LL	PL	PI	Cc	Cu
● B4-3	<b>POORLY GRADED SAND(SP)</b>									<b>1.39</b>	<b>2.4</b>
LAB ID: B4											
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay			
● B4-3	4.75	0.23	0.174	0.0944	0.0	99.5	0.5				

CLIENT : The Sigma Group  
 PROJECT : McKinley Marina

JOB NO.: 12-19237  
 TEST DATE: 1/18/13  
 SOURCE: Boring B4  
 SAMPLED BY: Miller Eng.  
 TESTED BY: TRO  
 REVIEWED BY: RGM

**MILLER**  
**ENGINEERS**  
**SCIENTISTS**

**GRAIN SIZE ANALYSIS**  
**ASTM D422**

GRAFSIEV 19237 GINT GPJ MILLR_ENG_GDT 1/18/13 09:23

# GRADATION ANALYSIS

CLIENT: The Sigma Group  
PROJECT: McKinley Marina

JOB NO.: 12-19237

LAB ID: B4  
SPECIFICATION:  
SAMPLED BY: Miller Eng.  
SPECIMEN IDENTIFICATION: B4-3

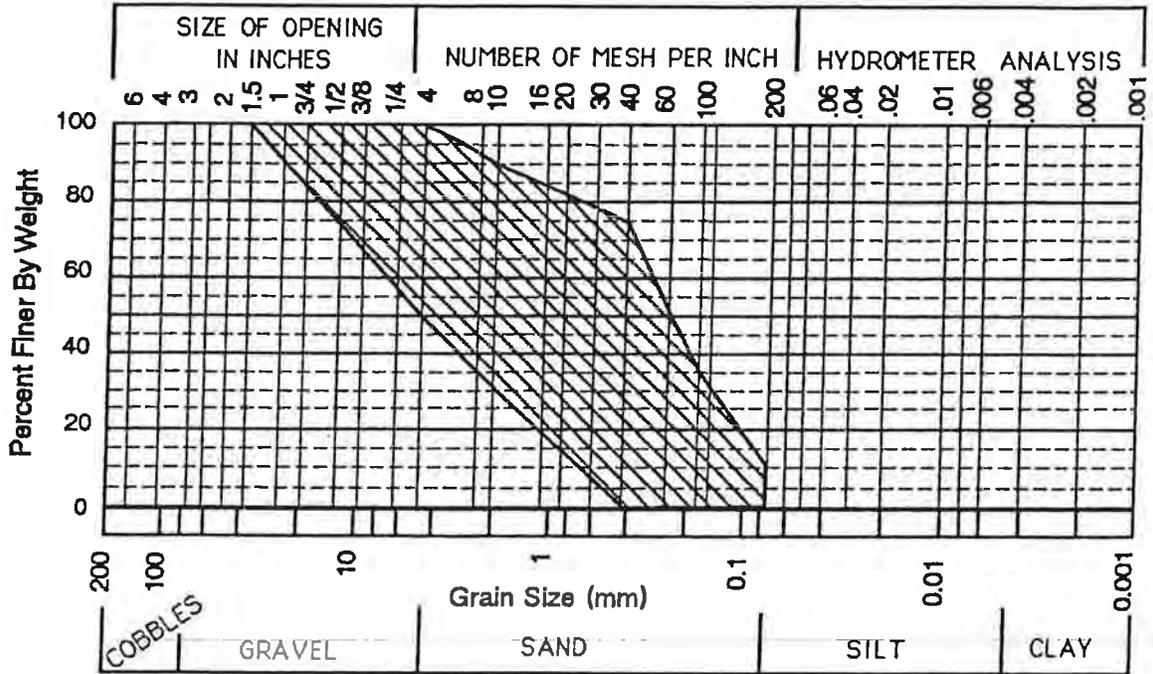
TEST DATE: 1/16/2013  
TESTED BY: TRO  
REVIEWED BY: RGM  
SOURCE: Boring B4

TOTAL WEIGHT OF SAMPLE (g): 61.67

## SIEVE TEST ANALYSIS (ASTM D422)

SIEVE SIZE	%FINER	REQUIRED SPECS	
		MIN	MAX
#200	0.5		
#100	29.0		
#80	30.2		
#60	69.9		
#50	84.0		
#40	95.7		
#20	99.3		
#10	99.6		
#4	100.0		

# STRUCTURAL GRANULAR FILL ENVELOPE "A"



**SIEVE**

**PERCENT FINER**

1 1/2"	100%
#4	50 - 100%
#10	30 - 90%
#40	0 - 75%
#100	0 - 35%
#200	0 - 10%

# Informational Use Only

State of Wisconsin  
Department of Natural Resources

Route to:

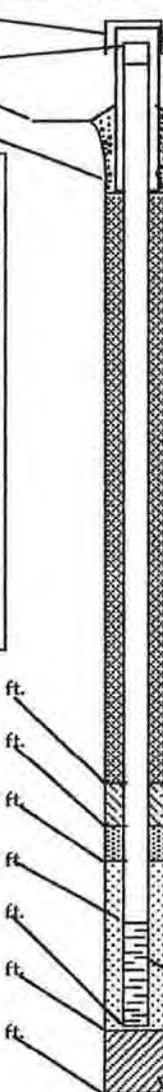
Watershed/Wastewater  **Remediation/Redevelopment**

Waste Management  **Other**

Form 4400-113A

Rev. 6-97 2

Facility/Project Name <b>Mc Kinley Marina</b>	Local Grid Location of Well N. _____ ft. E. _____ ft. S. _____ ft. W. _____ ft.	Well Name <b>B1</b>
Facility License, Permit or Monitoring No. _____	Grid Origin Location (Check if estimated: <input type="checkbox"/> ) Lat. _____ Long. _____	Wis. Unique Well No. _____ DNR Well ID No. _____
Facility ID _____	St. Plane _____ ft. N. _____ ft. E. S/C/N _____	Date Well Installed <u>1/16/2013</u> m m d d y y v v v v
Type of Well _____	Section Location of Waste/Source 1/4 of ne 1/4 of Sec. <u>32</u> , T. <u>7</u> N, R. <u>22</u> E W	Well Installed By: (Person's Name and Firm) <b>Mike Mc Ardle</b> <b>M&amp;K Environmental &amp; Soils Drilling, LLC</b>
Well Code _____	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	
Distance Well Is From Waste/Source Boundary _____ ft.		

<p>A. Protective pipe, top elevation _____ ft. MSL</p> <p>B. Well casing, top elevation _____ ft. MSL</p> <p>C. Land surface elevation _____ ft. MSL</p> <p>D. Surface seal, bottom _____ ft. MSL or <u>0 0 0</u> ft.</p> <p>12. USCS classification of soil near screen:          GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>          SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>          Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 5 0          Hollow Stem Auger <input checked="" type="checkbox"/> 4 1          Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1          Drilling Mud <input type="checkbox"/> 0 3 None <input checked="" type="checkbox"/> 9 9</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No          Describe _____</p> <p>17. Source of water (attach analysis):          _____</p>	 <p>1. Cap and lock? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Protective cover pipe:          a. Inside diameter: _____ in.          b. Length: _____ ft.          c. Material: Steel <input checked="" type="checkbox"/> 0 4          Other <input type="checkbox"/>          d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No          If yes, describe: _____</p> <p>3. Surface seal: Bentonite <input type="checkbox"/> 3 0          Concrete <input type="checkbox"/> 0 1          Other <input type="checkbox"/></p> <p>4. Material between well casing and protective pipe:          None _____ Bentonite <input type="checkbox"/> 3 0          Other <input type="checkbox"/></p> <p>5. Annular space seal:          a. Granular Bentonite <input type="checkbox"/> 3 3          b. _____ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 3 5          c. _____ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 3 1          d. _____ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 5 0          e. <u>.55</u> Ft³ volume added for any of the above          f. How installed: Tremmie <input type="checkbox"/> 0 4          Tremmie pumped <input type="checkbox"/> 0 2          Gravity <input checked="" type="checkbox"/> 0 8          a. Bentonite granules <input checked="" type="checkbox"/> 3 3          b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> 3 2          c. Bentonite chips _____ Other <input type="checkbox"/></p> <p>7. Fine sand material: Manufacturer, product name &amp; mesh size          American Materials #40 -60          a. _____          b. Volume added: <u>.34</u> Ft³</p> <p>8. Filter pack material: Manufacturer, product name &amp; mesh size          American Materials #35-45          a. _____          b. Volume added: <u>1.2</u> Ft³</p> <p>9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 2 3          Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4          Johnson Screen _____ Other <input type="checkbox"/></p> <p>10. Screen material: Schedule 40 pvc          a. Screen type: Factory cut <input checked="" type="checkbox"/> 1 1          Continuous slot <input type="checkbox"/> 0 1          b. Manufacturer Johnson Screen Other <input type="checkbox"/>          c. Slot size: <u>0.1</u> in.          d. Slotted length: <u>1 0</u> ft.</p> <p>11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 1 4          Other <input type="checkbox"/></p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Michael P. Mc Ardle Firm: M&K Environmental & Soils Drilling, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be

# Informational Use Only

State of Wisconsin  
Department of Natural Resources

Route to:  Watershed/Wastewater  Waste Management  
 Remediation/Redevelopment  Other

Form 4400-113A Rev. 6-97 2

Facility/Project Name <b>Mc Kinley Marina</b>	Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name <b>B4</b>
Facility License, Permit or Monitoring No.	Grid Origin Location (Check if estimated: <input type="checkbox"/> ) Lat. _____ Long. _____	Wis. Unique Well No. _____ DNR Well ID No. _____
Facility ID	St. Plane _____ ft. N. _____ ft. E. S/C/N	Date Well Installed <u>1/16/2013</u> m m d d y y v v v v
Type of Well Well Code <u>1</u>	Section Location of Waste/Source 1/4 of <u>ne</u> 1/4 of Sec. <u>32</u> T. <u>7</u> N, R. <u>22</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: (Person's Name and Firm) <b>Mike Mc Ardle</b>
Distance Well Is From Waste/Source Boundary _____ ft.	Location of Well Relative to Waste/Source <input type="checkbox"/> Upgradient <input type="checkbox"/> Sidegradient <input type="checkbox"/> Downgradient <input checked="" type="checkbox"/> Not Known	<b>M&amp;K Environmental &amp; Soils Drilling, LLC</b>

<p>A. Protective pipe, top elevation _____ ft. MSL</p> <p>B. Well casing, top elevation _____ ft. MSL</p> <p>C. Land surface elevation _____ ft. MSL</p> <p>D. Surface seal, bottom _____ ft. MSL or <u>0 0 0</u> ft.</p> <p>12. USCS classification of soil near screen:                  GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>                  SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>                  Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 5 0                  Hollow Stem Auger <input checked="" type="checkbox"/> 4 1                  Other <input type="checkbox"/> _____</p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1                  Drilling Mud <input type="checkbox"/> 0 3 None <input checked="" type="checkbox"/> 9 9</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                  Describe _____</p> <p>17. Source of water (attach analysis):                  _____</p>		<p>1. Cap and lock? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Protective cover pipe:                  a. Inside diameter: _____ in.                  b. Length: _____ ft.                  c. Material: Steel <input checked="" type="checkbox"/> 0 4                  Other <input type="checkbox"/> _____                  d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                  If yes, describe: _____</p> <p>3. Surface seal:                  Bentonite <input type="checkbox"/> 3 0                  Concrete <input type="checkbox"/> 0 1                  Other <input type="checkbox"/> _____</p> <p>4. Material between well casing and protective pipe:                  Bentonite <input type="checkbox"/> 3 0                  Other <input type="checkbox"/> _____</p> <p>5. Annular space seal:                  a. Granular Bentonite <input type="checkbox"/> 3 3                  b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 3 5                  c. _____ Lbs/gal mud weight . . . . Bentonite slurry <input type="checkbox"/> 3 1                  d. _____ % Bentonite . . . . . Bentonite-cement grout <input type="checkbox"/> 5 0                  e. <u>.55</u> Ft³ volume added for any of the above</p> <p>f. How installed:                  Tremmie <input type="checkbox"/> 0 4                  Tremmie pumped <input type="checkbox"/> 0 2                  a. Gravity <input checked="" type="checkbox"/> 0 8                  Bentonite granules <input checked="" type="checkbox"/> 3 3</p> <p>6. Bentonite seal:                  b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> 3 2                  c. _____ Bentonite chips _____ Other <input type="checkbox"/> _____</p> <p>7. Fine sand material: Manufacturer, product name &amp; mesh size                  a. American Materials #40-60 _____                  b. Volume added: <u>.34</u> Ft³</p> <p>8. Filter pack material: Manufacturer, product name &amp; mesh size                  a. American Materials #35-45 _____                  b. Volume added: <u>1.2</u> Ft³</p> <p>9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 2 3                  Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4                  Johnson Screen _____ Other <input type="checkbox"/> _____</p> <p>10. Screen material: Schedule 40 pvc                  a. Screen type: _____ Factory cut <input checked="" type="checkbox"/> 1 1                  Continuous slot <input type="checkbox"/> 0 1                  b. Manufacturer _____ Other <input type="checkbox"/> _____                  c. Slot size: <u>0.1</u> in.                  d. Slotted length: <u>1 0</u> ft.</p> <p>11. Backfill material (below filter pack):                  None <input checked="" type="checkbox"/> 1 4                  Other <input type="checkbox"/> _____</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Mike Mc Ardle Firm: **M&K Environmental & Soils Drilling, LLC**

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 291, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be

# Informational Use Only

State of Wisconsin Department of Natural Resources **Route to:** Watershed/Wastewater  Remediation/Redevelopment  Waste Management  Other  Form 4400-113A Rev. 6-97 2

Facility/Project Name <b>Mc Kinley Marina</b>	Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W. ft. _____	Well Name <b>B3</b>
Facility License, Permit or Monitoring No. _____	Grid Origin Location (Check if estimated: <input type="checkbox"/> ) Lat. _____ Long. _____	Wis. Unique Well No. _____ DNR Well ID No. _____
Facility ID _____	St. Plane _____ ft. N. _____ ft. E. S/C/N _____	Date Well Installed <u>1/16/2013</u> m m d d y y v v v v
Type of Well Well Code <u>1</u>	Section Location of Waste/Source <u>1/4 of ne</u> 1/4 of Sec. <u>32</u> T. <u>7</u> N, R. <u>22</u> <input type="checkbox"/> E <input checked="" type="checkbox"/> W	Well Installed By: (Person's Name and Firm) <b>Mike Mc Ardle</b> <b>M&amp;K Environmental &amp; Soils Drilling, LLC</b>
Distance Well Is From Waste/Source Boundary _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	

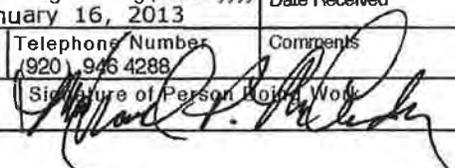
<p>A. Protective pipe, top elevation _____ ft. MSL</p> <p>B. Well casing, top elevation _____ ft. MSL</p> <p>C. Land surface elevation _____ ft. MSL</p> <p>D. Surface seal, bottom _____ ft. MSL or <u>0 0 0</u> ft.</p> <p>12. USCS classification of soil near screen:                  GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>                  SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>                  Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 5 0                  Hollow Stem Auger <input checked="" type="checkbox"/> 4 1                  Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1                  Drilling Mud <input type="checkbox"/> 0 3 None <input checked="" type="checkbox"/> 9 9</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                  Describe _____</p> <p>17. Source of water (attach analysis):                  _____</p>		<p>1. Cap and lock? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Protective cover pipe:                  a. Inside diameter: _____ in.                  b. Length: _____ ft.                  c. Material: Steel <input checked="" type="checkbox"/> 0 4                  Other <input type="checkbox"/></p> <p>d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                  If yes, describe: _____</p> <p>3. Surface seal: Bentonite <input type="checkbox"/> 3 0                  Concrete <input type="checkbox"/> 0 1                  Other <input type="checkbox"/></p> <p>4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 3 0                  None _____ Other <input type="checkbox"/></p> <p>5. Annular space seal:                  a. Granular Bentonite <input type="checkbox"/> 3 3                  b. _____ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 3 5                  c. _____ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 3 1                  d. _____ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 5 0                  e. <u>.55</u> Ft³ volume added for any of the above</p> <p>f. How installed: Tremmie <input type="checkbox"/> 0 4                  Tremmie pumped <input type="checkbox"/> 0 2                  Gravity <input checked="" type="checkbox"/> 0 8                  Bentonite granules <input checked="" type="checkbox"/> 3 3</p> <p>6. Bentonite seal:                  b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> 3 2                  c. _____ Bentonite chips _____ Other <input type="checkbox"/></p> <p>7. Fine sand material: Manufacturer, product name &amp; mesh size                  a. American Materials #40 -60 _____                  b. Volume added: <u>.34</u> Ft³</p> <p>8. Filter pack material: Manufacturer, product name &amp; mesh size                  a. American Materials #35-45 _____                  b. Volume added: <u>1.2</u> Ft³</p> <p>9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 2 3                  Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4                  Johnson Screen _____ Other <input type="checkbox"/></p> <p>10. Screen material: Schedule 40 pvc                  a. Screen type: Factory cut <input checked="" type="checkbox"/> 1 1                  Continuous slot <input type="checkbox"/> 0 1                  Other <input type="checkbox"/></p> <p>b. Manufacturer <u>Johnson Screen</u> Other <input type="checkbox"/></p> <p>c. Slot size: <u>0.1</u> in.</p> <p>d. Slotted length: <u>1 0</u> ft.</p> <p>11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 1 4                  Other <input type="checkbox"/></p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Mike Mc Ardle Firm: M&K Environmental & Soils Drilling, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 293, 295, and 299, Wis. Stats., and ch. NR 111, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis., and NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295 and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

<input checked="" type="checkbox"/> <b>Verification Only of Fill and Seal</b>		Route to:	
		<input type="checkbox"/> Drinking Water <input type="checkbox"/> Watershed/Wastewater <input type="checkbox"/> Remediation/Redevelopment <input type="checkbox"/> Waste Management <input type="checkbox"/> Other: _____	
<b>1. Well Location Information</b>		<b>2. Facility / Owner Information</b>	
County <b>Milwaukee</b>	WI Unique Well # of Removed Well <b>B2</b>	Facility Name <b>Mc Kinley Marina</b>	
Latitude / Longitude (Degrees and Minutes) _____ 'N _____ 'W		Facility ID (FD or PWS)	
Method code(see instructions)		License/Permit/Monitoring #	
1/4   1/4 1/4 <b>ne</b>	Section <b>32</b>	Township <b>7 N</b>	Range <b>22 E</b>
Well Street Address		Original Well Owner	
Well City, Village or Town		Present Well Owner	
Subdivision Name		Mailing Address of Present Owner <b>1750 N. Lincoln Memorial Drive</b>	
Reason for Removal From Service <b>Project completion</b>		City of Present Owner <b>Milwaukee</b>	State <b>WI</b>
WI Unique Well # of Replacement Well		ZIP Code <b>53202</b>	
<b>3. Well / Drillhole / Borehole Information</b>		<b>4. Pump, Liner, Screen, Casing &amp; Sealing Material</b>	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Borehole / Drillhole	Original Construction Date (mm/dd/yyyy) <b>January 16, 2013</b> If a Well Construction Report is available please attach	Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (specify): _____		Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated formation <input type="checkbox"/> Bedrock		Screen removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.) <b>na</b>	Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Lower Drillhole Diameter (in.) <b>6"</b>	Casing Depth (ft.) <b>na</b>	Was casing cutoff below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Was well annular space grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	Depth to Water (feet) <b>11.0 est</b>	Did material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
If yes, to what depth (feet)?		Did material settle after 24 hours? If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>5. Material Used To Fill Well / Drillhole</b>		If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>bentonite chips</b>	From (ft.) Surface	To (ft.) <b>15'</b>	No. Yards, Sacks Sealant or Volume (circle one) <b>1 bag</b>
		Mix Ratio or Mud Weight	
<b>6. Comments</b>		Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____	
<b>7. Supervision of Work</b>		Sealing Materials <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Clay-Sand Slurry (11 lb./gal.wt.) <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Bentonite-Sand Slurry " " <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Bentonite Chips	
Name of Person or Firm Doing Filling & Sealing <b>M&amp;K Environmental &amp; Soils Drilling, LLC</b>	License #	Date of Filling & Sealing (mm/dd/yyyy) <b>January 16, 2013</b>	Date Received
Street or Route PO Box 216	City Glenbeulah	State WI	ZIP Code 53073
Telephone Number (920) 946 4288		Comments	
Signature of Person Doing Work 		Date Signed <b>January 16, 2013</b>	
DNR Use Only		Noted By	

Notice: Completion of this report is required by chs.160, 281, 283, 289, 291-293, 295, and 299, Wis., and NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295 and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

<b>Verification Only of Fill and Seal</b>	<b>Route to:</b> <input type="checkbox"/> Drinking Water <input type="checkbox"/> Watershed/Wastewater <input type="checkbox"/> Remediation/Redevelopment <input type="checkbox"/> Waste Management <input type="checkbox"/> Other: _____
-------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>1. Well Location Information</b> County: <b>Milwaukee</b> WI Unique Well # of Removed Well: _____ Latitude / Longitude (Degrees and Minutes): _____ 'N _____ 'W Township: <b>7 N</b> Range: <b>22 E</b> Section: <b>32</b> Well Street Address: _____ Well City, Village or Town: _____      Well ZIP Code: _____ Subdivision Name: _____      Lot #: _____ Reason for Removal From Service: <b>Project completion</b> WI Unique Well # of Replacement Well: _____	<b>2. Facility / Owner Information</b> Facility Name: <b>Mc Kinley Marina</b> Facility ID (FID or PWS): _____ License/Permit/Monitoring #: _____ Original Well Owner: _____ Present Well Owner: _____ Mailing Address of Present Owner: <b>1750 N. Lincoln Memorial Drive</b> City of Present Owner: <b>Milwaukee</b> State: <b>WI</b> ZIP Code: <b>53202</b>										
<b>3. Well / Drillhole / Borehole Information</b> <input type="checkbox"/> Monitoring Well      Original Construction Date (mm/dd/yyyy): <b>January 16, 2013</b> <input type="checkbox"/> Water Well      If a Well Construction Report is available please attach: _____ <input checked="" type="checkbox"/> Borehole / Drillhole Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (specify): _____ Formation Type: <input checked="" type="checkbox"/> Unconsolidated formation <input type="checkbox"/> Bedrock Total Well Depth From Ground Surface (ft.): _____      Casing Diameter (in.): <b>na</b> Lower Drillhole Diameter (in.): <b>6"</b> Casing Depth (ft.): <b>na</b> Was well annular space grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes, to what depth (feet)?      Depth to Water (feet): <b>11.0 est</b>	<b>4. Pump, Liner, Screen, Casing &amp; Sealing Material</b> Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Screen removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Was casing cutoff below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Did material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Required Method of Placing Sealing Material: <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Screened & Poured <input type="checkbox"/> Other (Explain): _____ Sealing Materials: <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Clay-Sand Slurry (11 lb./gal.wt.) <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Bentonite-Sand Slurry " " <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Bentonite Chips For Monitoring Wells and Monitoring Well Boreholes Only: <input type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry										
<b>5. Material Used To Fill Well / Drillhole</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Material</th> <th style="width: 15%;">From (ft.)</th> <th style="width: 15%;">To (ft.)</th> <th style="width: 20%;">No. Yards, Sacks Sealant or Volume (circle one)</th> <th style="width: 15%;">Mix Ratio or Mud Weight</th> </tr> </thead> <tbody> <tr> <td><b>bentonite chips</b></td> <td>Surface</td> <td><b>15'</b></td> <td><b>1 bag</b></td> <td></td> </tr> </tbody> </table>	Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight	<b>bentonite chips</b>	Surface	<b>15'</b>	<b>1 bag</b>		
Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight							
<b>bentonite chips</b>	Surface	<b>15'</b>	<b>1 bag</b>								

**6. Comments**

---

<b>7. Supervision of Work</b>				<b>DNR Use Only</b>	
Name of Person or Firm Doing Filling & Sealing <b>M&amp;K Environmental &amp; Soils Drilling, LLC</b>		License #	Date of Filling & Sealing (mm/dd/yyyy) <b>January 16, 2013</b>	Date Received	Noted By
Street or Route <b>PO Box 216</b>		Telephone Number <b>(920) 946 4788</b>		Comments	
City <b>Glenbeulah</b>		State <b>WI</b>	ZIP Code <b>53073</b>	Signature of Person Doing Work 	
				Date Signed <b>January 16, 2013</b>	

APPENDIX D  
Stakeholder Meeting and Survey Results

DRAFT

McKinley Marina North Phase 1:  
Site Investigation and Conceptual Design



SIGN IN SHEET

Name	Email Address	Phone#
DAN COUILLARD	DANCOUILLARD@YAHOO.COM	414 403 6921
MIKE MAREK	mike@mareklandscaping.com	414.305.6565
JIM GOULLE	Jim@PARKPEOPLEMIKE.ORG	414-273-7275
ROB PESCHEL	rpeschel@thesigma-group.com	643 4210

McKinley Marina North Phase 1:  
Site Investigation and Conceptual Design



SIGN IN SHEET

Name	Email Address	Phone#
JOHN NELSON	JOHN.NELSON@MILWAUKIE.MILWAUKEE.COUNTY.WI.GOV	414 257-7777
Don Dittberner	Don.Dittberner@milwaukie.com	414-516-5161
DANIEL HUGHES	DANIEL.HUGHES@MILWAUKIE.MILWAUKEE.COUNTY.WI.GOV	(414) 454-4084
Sean Hayes	Sean.Hayes@milwaukie.com	414 278 4891
ROBERT WINCEK	bob@glscclub.com	414.217.9752
Bryan Hagan	bhagan@wi.rr.com	414-943-1243
Russ Whitford	velocel192@sbcglobal.net	414-313-4348
Ken Quant	kquant@wi.rr.com	414 719-5368
Dan Chapot	Dan@CHAPOTLANDSURVEYS.COM	414.221.8268
Chris Carr	ccarr@thesigma-group.com	414-643-4163
DANIEL BELL	DBELL@MILWAUKIE.GOV	414 935-7150
BRIAN SMITH	bsmith@milwaukee.gov	414-286-8943
Jill Organ	jill.organ@milwaukie.com	414/257-4773

DRAFT

# WELCOME!!

Stakeholder Meeting # 1 – February 5, 2013



## Agenda

- Opening Comments
- Project Scope
  - Description of Project Intent and Limits
- Schedule
- Road Map – Process
  
- Break
  
- Discussion from Invitation
- Wrap Up and Open Discussion

Stakeholder Meeting # 1 – February 5, 2013



## Project Location



Stakeholder Meeting # 1 – February 5, 2013



## Project Scope (Limits)



Stakeholder Meeting # 1 – February 5, 2013



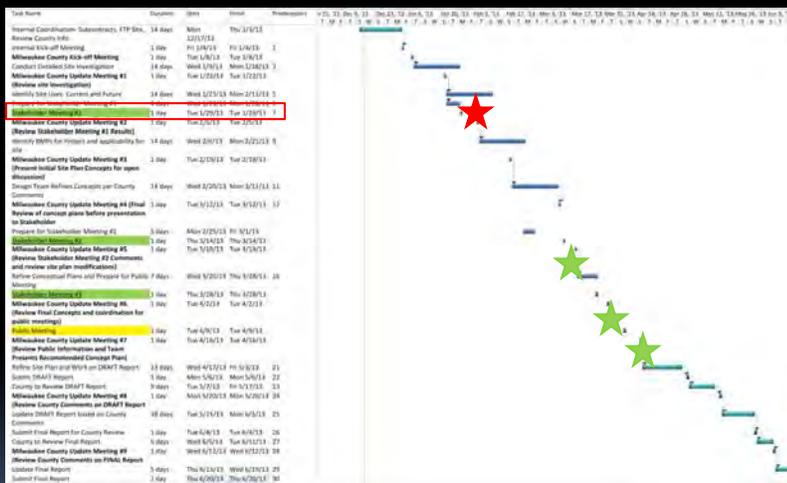
# Project Scope

“Reconstruction of 11 acres of paved surfaces at McKinley Marina using best management practices to address the unique water pollution challenges of an active marina. The project area consists of boat launches, boat washes, dry dock storage, boat maintenance areas, vehicle parking, and pedestrian areas.”

Stakeholder Meeting # 1 – February 5, 2013



# Project Schedule



Stakeholder Meeting # 1 – February 5, 2013



## Project Road Map – Process: Milestone Meetings

### Total of Three

#1 – Gathering Information (today)

#2 – Sharing Alternative Plan Ideas (3/14 tentative)

#3 – Finalizing The Plan and Budget (4/16 tentative)

### Final Presentation

Final Plan and Budget (5/2 tentative)

### Construction Documents , Bidding and Construction

TBD

Stakeholder Meeting # 1 – February 5, 2013



## Project Road Map - Process

- Document Existing Conditions
- Stakeholder Meetings
- Newsletter
- User Surveys
- Alternative Plans & Budgets
- Final Plan & Budget
- BMPs
- Potential Funding Sources

Stakeholder Meeting # 1 – February 5, 2013





## Project Road Map – Process: Newsletter & Surveys

### Newsletters

Basic progress information about plan, schedule, future meeting dates, etc.

Distributed to members of your various groups.

We expect the first to be ready by week of 2/18.

### Surveys

Continuation of information gathering.

Distributed to members of your various groups.

Responses will be used in design process.

Stakeholder Meeting # 1 – February 5, 2013



## Project Road Map – Process: Plans & Budgets

### Scope of Services (from Milwaukee County RFP)

Develop alternative conceptual designs and preliminary cost estimates.

Consider site layouts that improve pedestrian access, pedestrian safety, traffic flow, parking access, boat storage access, storm water quality.

Consider site layouts that fit into the general lakefront theme and with other Milwaukee / lakefront amenities including the McKinley Marina, Art Museum, Lake Park Light House, Bradford Beach, etc.

Stakeholder Meeting # 1 – February 5, 2013



## Project Road Map – Process: Plans & Budgets



Stakeholder Meeting # 1 – February 5, 2013



## Project Road Map – Process: Example “BMPs”

BMPs = Best Management Practices

## Stormwater Best Management Practices

Stakeholder Meeting # 1 – February 5, 2013



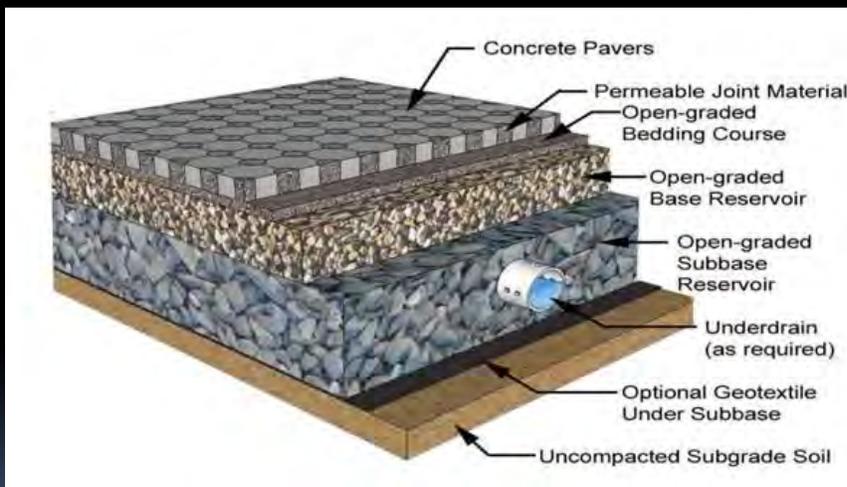
## Project Road Map – Process: Example “BMPs”



Stakeholder Meeting # 1 – February 5, 2013



## Example “BMPs”



Stakeholder Meeting # 1 – February 5, 2013



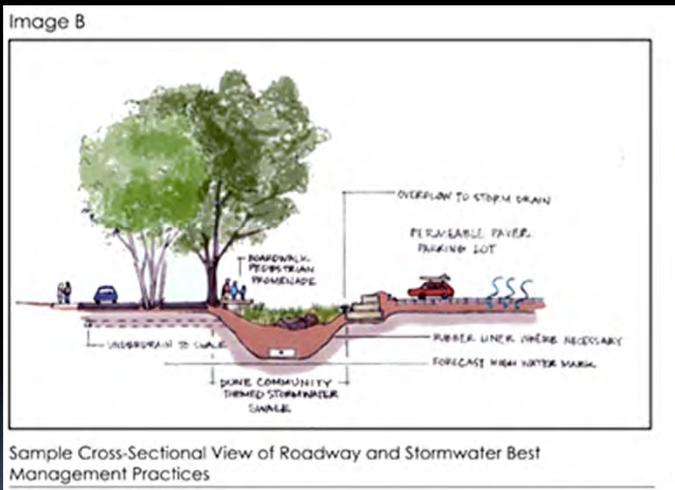
## Example "BMPs"



Stakeholder Meeting # 1 – February 5, 2013



## Example "BMPs"

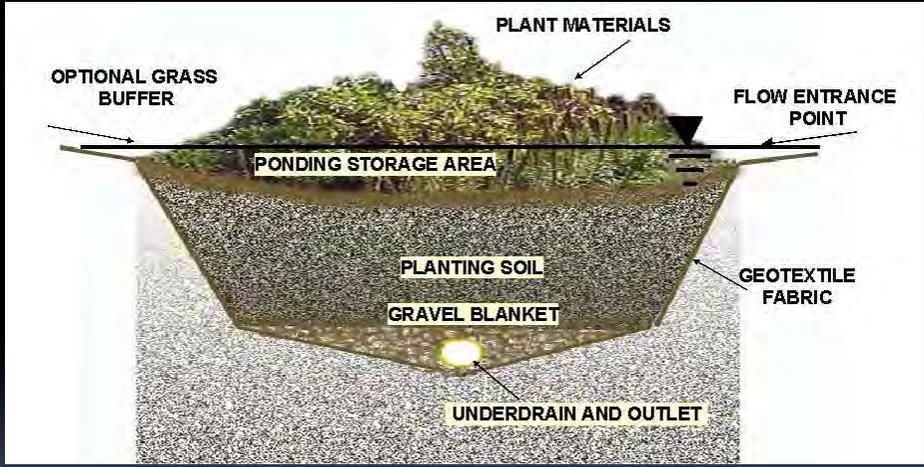


Sample Cross-Sectional View of Roadway and Stormwater Best Management Practices

Stakeholder Meeting # 1 – February 5, 2013



### Example "BMPs"



Stakeholder Meeting # 1 – February 5, 2013



### Example "BMPs"



Stakeholder Meeting # 1 – February 5, 2013



## Example "BMPs"



Stakeholder Meeting # 1 – February 5, 2013



## Project Road Map – Process: Potential Funding Sources

- Fund for Lake Michigan
- DNR – Urban Non Point Source Pollution Grant
- DNR - Clean Water Fund
- MMSD – Green Infrastructure Grant
- Wisconsin Coastal Management
- Great Lakes Restoration Initiative
- Public/Private Partnership
- Others?

Stakeholder Meeting # 1 – February 5, 2013





## STAKEHOLDER MEETING # 1 MINUTES

FEBRUARY 5, 2013

Attendees: See Sign-In Sheet (NOTE: a few individuals did not sign in)

### PRESENTATION:

1. Brief opening comments by MKE County staff. K Haley welcomed participants and provided a brief description of scope and objective. S Hayes provided brief description of task itself. (Slides 1- 5)
2. E Purcell briefly described project schedule with some emphasis on stakeholder involvement items. (Slides 6&7)
3. M Marek described Process (Slide 8)
4. M Marek described existing site/conditions (Slide 9)
  - a. Survey
  - b. Borings
  - c. Aerial mapping
  - d. Utilities
  - e. Building condition survey
  - f. Prior studies
  - g. Historic MYC information
  - h. Lake levels
5. E Purcell described stakeholder involvement process (Slides 10 & 11)
  - a. Meetings and anticipated dates
  - b. Newsletter
  - c. Surveys
  - d. Email address access/use
    - i. Letter from County
6. M Marek described Plan & Budgeting process (Slides 12 & 13)
7. M Marek described County BMP program and options (Slides 14 – 21)
8. M Marek described potential funding sources for project (Slide 22)

### COMMENTS FROM STAKEHOLDER GROUPS:

1. John Nelson – MKE County Safety & Security
  - a. Access/egress concerns – would like to see a second exit from lot
  - b. Improved lighting for better security
2. Dan Dittbernez (?) - MKE Sherriff
3. Dan Hughes – MKE Sherriff
  - a. Additional public restrooms – possibly located near McKinley Beach – demand has increased in past few years
  - b. Increased parking capacity – possible parking deck?
  - c. Concerns about traffic flow patterns, volume and congestion

# McKinley Marina North Phase 1: Site Investigation and Conceptual Design



4. Bob Wincek – Great Lakes Sports Fishermen
  - a. Access/egress concerns relative to major events and closures of Lincoln Memorial Drive
  - b. Long term plans for fish cleaning station
    - i. GLSF has financial investment in the station for prior improvements
    - ii. Suggested looking at the fish waste to fertilizer option
  - c. Reef Point Marina in Racine is a good example of a similar site becoming a major focal point of the community along the lakeshore.
  - d. Roundhouse needs better/increased parking nearby
  - e. Overall additional parking would potentially increase the size of fishing tournaments currently held at McKinley.
5. Brian Hagan – Milwaukee Yacht Club  
Don Chaput – Milwaukee Yacht Club
  - a. Parking lot condition is a major concern
  - b. Traffic flow and congestion, circulation patterns and pedestrian/traffic conflict at MYC gate
  - c. Better definition of MYC parking vs. public parking in lot (MYS pays MKE County for 100 dedicated spaces) – significant lack of control on those spaces.
  - d. Sewer system issues and impact on MYC facilities
  - e. Desire for a general “greening” and upgrade of the site and appearance
  - f. Boat/trailer movement in and out of MYC site must be considered in the plan process.
  - g. Movement of supplies and gear from parking lots to slip locations is challenging and must be considered/improved in plan process.
  - h. Handicap access for MYC site is poor.
  - i. General club access during lakefront events (marathons, walks, holidays, etc.)
6. Ken Quant – MAST  
Russ Whitford - MAST
  - a. Pavilion access and use by MAST members – this is their primary meeting location – ease of access for members who dock in center, south and at SSYC should be considered.
  - b. Increased parking for Pavilion use
  - c. Is there an option for adding limited HVAC systems to the Pavilion?
  - d. Dinghy dock for Pavilion use and general use by north slip tenants and guests
  - e. Dinghy storage needed
  - f. Movement of supplies and gear from parking lots to slip locations is challenging and must be considered/improved in plan process.
  - g. Restroom availability/access for Pavilion use – very difficult for ADA compliance
  - h. Picnic area along secured lot gets little to no use. Is there a real need for it?
  - i. Access to Government Pier
  - j. Have concerns about pavement concepts and the ROI for the use of pavers or permeable pavement solutions.
  - k. Attention should be focused on boat cleaning areas.

# McKinley Marina North Phase 1: Site Investigation and Conceptual Design



7. Dan Bell – Milwaukee Police Department
  - a. Concerned about traffic choke points (LMD entry)
  - b. Pedestrian/vehicle conflicts at multiple locations on site
  - c. Desire for a second exit point from lot
8. Jim Goulee – Park People
  - a. Maximize public parking
  - b. Second exit from lot would provide relief to egress issues
  - c. Lane congestion at intersection problematic
  - d. Presence of Alterra has increased both pedestrian and vehicle traffic in area.
  - e. Is a pedestrian bridge over LMD an option?
9. Brian Smith – Milwaukee Fire Department
  - a. Access and egress concerns for oversize fire/rescue vehicles and rescue boat trailers
  - b. Pedestrian lighting concerns.

Having trouble viewing this email? [Click here](#)



## The Latest Information About Planning For The Future At McKinley Marina

**March 2013**

**Dear Edward,**

Welcome to our newsletter. This is a periodic update on the progress of planning for improvements at McKinley Marina. We hope that you'll participate in the process and, please, let us know what you think about what you read here in this newsletter. Send your thoughts and comments to: [mckinley@fasiam.net](mailto:mckinley@fasiam.net).

**Please pass this on to members of your organization and ask them to subscribe to this newsletter if they would like updates sent directly to their email.**

## Site Assessment

The existing conditions analysis illustration is created for the purpose of identifying current existing site conditions, opportunities and constraints. The illustration below is an example of how that document will look. It is intended to illustrate and accurately describe the area and identify the major features within the marina. Analysis, which is now complete, consisted of a compilation of several existing references along with field reconnaissance and survey work. These findings will be incorporated into a complete existing conditions document.

### [Join Our Mailing List](#)

Please join our mailing list or pass this on to your friends and associates who may be interested in the future of McKinley Marina. Simply drop us an email at [mckinley@fasiam.net](mailto:mckinley@fasiam.net).

### Stakeholder Meetings Schedule

Tentative Dates Include:

**March 26, 2013 (tentative)**  
**April 23, 2013 (tentative)**

### Comments From The First Stakeholder Meeting





excel file of broadened list



# WELCOME!!

Stakeholder Meeting # 2 – April 17, 2013



## Agenda

- Opening Comments
- Where We Are To Date
- Stakeholder Meeting #1 Comments
- Options
  - A – Close to Existing
  - B – Match Existing W/ Improvements
  - C – Match Existing W/ Improvements Plus Additions
  - D – Consolidated Plan
- Wrap Up and Open Discussion
- Going Forward

Stakeholder Meeting # 2 – April 17, 2013



## Project Location



Stakeholder Meeting # 2 – April 17, 2013



## Project Scope (Limits)



Stakeholder Meeting # 2 – April 17, 2013



## Project Road Map – Process: Existing Conditions



- Survey
- Borings
- Aerial mapping
- Utilities
- Building condition survey (county structures)
- Prior studies: Lakefront & east side
- Historic MYC information
- Lake Levels (historic)
- Other misc.info.

Stakeholder Meeting # 2 – April 17, 2013



## Stakeholder Meeting #1 Top Comments

### Site Improvements / Utilization

1. Replace or repair the pavement
2. Improved or increased lighting
3. More restrooms
4. Maintain/improve fish cleaning station

### Parking

1. Increased parking
2. Increased/improved parking at the roundhouse
3. Better separation of MYC and general parking
4. Improved/increased parking for pavilion

### Traffic / Circulation

1. Improved circulation/traffic flow
2. Additional entry/exit to the lot
3. Decrease pedestrian/auto conflict
4. Improved traffic signalization

Stakeholder Meeting # 2 – April 17, 2013



### Newsletters

Distributed on 3/7 to 555 individual email addresses.

294 unique individuals opened between 3/7 and 4/12.

Summarized process, stakeholder meeting #3, comments, initial planning ideas and next steps.

Next newsletter will follow this meeting with similar summary information.

Stakeholder Meeting # 2 – April 17, 2013

### Design Charrette

Stakeholder Meeting # 2 – April 17, 2013

### Design Charette

Stakeholder Meeting # 2 – April 17, 2013

### Design Charette

Stakeholder Meeting # 2 – April 17, 2013

### Design Charette

Stakeholder Meeting # 2 – April 17, 2013

### Design Charette

Stakeholder Meeting # 2 – April 17, 2013

### Option A (Close to Existing)

**Key Plan Elements**  
 Improved Boat Launch  
 Improved Parking and Circulation  
 Improved Pedestrian / Auto Conflict  
 Improved Stormwater Mgmt. (sitewide)

Stakeholder Meeting # 2 – April 17, 2013

### Option B (Matching Existing w/ Improvements)

**Key Plan Elements**  
 All options included in "A" plus ...  
 New Fish Cleaning Station  
 Public Restrooms  
 Improved Staging  
 Dockage  
 Drop Off  
 Ecological Area  
 Stormwater Management (sitewide)

Stakeholder Meeting # 2 – April 17, 2013

### Option C (Matching Existing w/ Improvements)

**Key Plan Elements**  
 All options included in "A and B" plus ...  
 Pedestrian Bridge  
 Play Area  
 Deli/Ship Store/Rentals  
 Improved Pedestrian Connections  
 Harbor Master's Office Improvements  
 Stormwater Mgmt. (sitewide)

Stakeholder Meeting # 2 – April 17, 2013

### Consolidated Plan – (Includes Key Elements From Each Option)

**Key Plan Elements**  
 Improved Boat Launch  
 Improved Parking and Circulation  
 Improved Pedestrian / Auto Conflict  
 Improved Storm water Mgmt. (sitewide)

**Opportunities For Future**  
 New fish cleaning station  
 New Restrooms  
 Additional courtesy docks  
 Pedestrian Bridge  
 Play Area

Stakeholder Meeting # 2 – April 17, 2013

# DISCUSSION

Stakeholder Meeting # 2 – April 17, 2013

### Moving Forward

- Gather information from today's meeting
- Incorporate into planning process
- Public meeting (date TBD) with more detailed plan and budget
- Final report to Milwaukee County documenting process, plan, budget and potential funding sources

Stakeholder Meeting # 2 – April 17, 2013

## STAKEHOLDER MEETING # 2 – April 17, 2013

### COMMENTS FROM OPEN DISCUSSION FOLLOWING PRESENTATION

In chronologic order as expressed by attendees

- 1) Strong concern expressed re: turning movements into and out of lot at Lincoln Memorial Drive and Lafayette Hill intersection.
- 2) Parking lot is the largest single issue followed by expansion of boat trailer parking area.
- 3) Proximity of fish cleaning station to boat cleaning area and associated security concerns.
- 4) Majority of fishing activity begins around 0330 in the morning.
- 5) Question raised regarding long term boat storage on site. Response – no clear decision yet. Goal is more efficient storage and a better aesthetic solution to current arrangement.
- 6) Question raised regarding “flex space”. Use of that area: MYC, storage???
- 7) Second statement expressing concern regarding the location of the fish cleaning station.
- 8) Comment expressing desire for a second entrance/exit to/from the site.
- 9) Comment raised regarding the scale of the fishing boat staging area. Comment also raised regarding the scale of the area relative to pleasure boats use of the site.
- 10) Comment raised stating that for many, this is one of the first locations they may encounter of the City of Milwaukee and that this should be planned as a picturesque and interesting “first view” for those individuals. Improvements need to address significant needs of the site.
- 11) Comments from DNR personnel regarding water impact:
  - a. Pavement options
    - i. Permeable
    - ii. Pavements directed to BMP’s
    - iii. Hard pavements
    - iv. Some site & usage limitations that will/may impact pavement options
    - v. Limited use of permeable vs. hard pavements since protection of downland areas is not the concern on this site but one of cleaning water before it enters lake.
    - vi. Consideration of weight loads on pavement must be taken into account
    - vii. First cost vs. Life cycle costs
- 12) If a pedestrian bridge is incorporated into site it should be planned to accommodate bicycles as well.
- 13) Turning lanes/signalization options should also be considered.
- 14) A bike lane in and out of site could be incorporated into primary drive/entryway.
- 15) Transit stop option should be accounted for if opportunity arises in future for that option.
- 16) Boat wash station should be connected to the sanitary system. It might also incorporate a settling basin but must allow storm water through and not route it into the MMSD’s collection system. Smart Storm Water Management approach should be looked at. An actuated valve system might be another option to consider.
- 17) All site infrastructure systems need to be addressed as part of this process.
- 18) Dingy storage needs to be included but in an appropriate location for ease of access.



**The Latest Information About Planning  
For The Future At McKinley Marina**

**April 2013**

**Dear Edward,**

Welcome to our newsletter. This is a periodic update on the progress of planning for improvements at McKinley Marina. We hope that you'll participate in the process and, please, let us know what you think about what you read here in this newsletter. Send your thoughts and comments to:  
[mckinley@fasiam.net](mailto:mckinley@fasiam.net).

**Please pass this on to members of your organization and ask them to subscribe to this newsletter if they would like updates sent directly to their email.**

## Consolidated Plan

Throughout the planning process the design team prepared three alternative concepts for evaluation.

These plans were based on a three tier approach.

- Option A - Close to Existing
- Option B - Match Existing with Improvements
- Option C- As Above with Additional Enhancements

The design process incorporated comments generated during Stakeholder Meeting #1 which focused on Site improvements, Traffic/Circulation and Parking Improvements.

### [Join Our Mailing List](#)

Please join our mailing list or pass this on to your friends and associates who may be interested in the future of McKinley Marina. Simply drop us an email at [mckinley@fasiam.net](mailto:mckinley@fasiam.net).

### Meeting Schedule

**Tentative Dates  
Include:**

**May xx, 2013 (tentative)**

### Stakeholder Meeting #2

Our second stakeholder meeting was held on Wednesday April 17, 2013 at the Milwaukee Yacht Club.

The design team met in March during a design charette working through the basis elements of each of the three options.



Once the three option plans were prepared they were reviewed by Milwaukee County Parks leadership for consistency with Park policies and for long term maintenance objectives while also being evaluated for their responsiveness to stakeholder comments and desires.

The best elements of each plan was then taken and incorporated into a "Consolidated" plan addressing stakeholder concerns as well as County long term site objectives.



**Specific elements of that plan include:**



Groups represented included:

Milwaukee County Parks Department

Milwaukee County Architecture and Engineering

Milwaukee Yacht Club

Great Lakes Sports Fishermen

McKinley Anchorage & Mooring Association

The Fund for Lake Michigan

The Clean Marina Program

The Wisconsin Department of Natural Resources

The Sea Grant Institute

## Comments From Stakeholder Meeting #2

Stakeholder comments on the Consolidated Plan were very positive but encouraged further review of:

Additional entry and exiting options to and from the site.

Additional signalization options at the intersection of Lincoln Memorial Dr. and Lafayette Hill Rd.

Additional review of options and systems for the boat cleaning areas/operations.

1. Improved site circulation and parking.
2. Separation of general parking from yacht club and north slip tenant parking.
3. Improved boat and trailer storage.
4. Improved boat staging and wash down areas.
5. Improved fish cleaning station.
6. Possible relocation of fish cleaning station for easier access o trailer parking area.
7. Storm water management improvements throughout the site.
8. Additional restrooms.
9. Drop off areas for north slip tenants and for the "Roundhouse" - Marina managers office.
10. Reduce pedestrian/auto conflicts at Lincoln Memorial Drive and Lafayette Hill Rd.

The design team will now take those comments made at stakeholder meeting #2 and further refine the plan with more detailed documents. These revisions will be presented at our next public meeting which will occur during the month of May.

***If you have any additional comments you'd like to share with the planning team, please contact us through the link below.***

[Forward this email](#)



This email was sent to epurcell@concord-cc.com by [mckinley@fasiam.net](mailto:mckinley@fasiam.net) | [Update Profile/Email Address](#) | Instant removal with [SafeUnsubscribe™](#) | [Privacy Policy](#).

Middleton Construction Consulting, LLC. | 330 East Kilbourn Avenue | Suite 565 | Milwaukee | WI | 53202

Significant review of the various options for pavements within the site: Permeable vs. non-permeable; First costs vs. Life cycle costs.

Bike lanes in and out of the site.

Dinghy storage and access.

Evaluation of all utilities and infrastructure within the site.





**Open House and  
Public Presentation  
Planning For The Future Of  
McKinley Marina**

**May 2013**

Greetings from the McKinley Marina Planning Team,

We'd like to invite you to join us on **Thursday June 6, 2013** for a public presentation of the recommended plan prepared for McKinley Marina. This meeting will run from **5 pm to 7 pm** at the Milwaukee County Parks/McKinley Marina Pavilion located in the fenced parking area for North Slip tenants at McKinley Marina.

Various illustrations of the vision for the future for McKinley Marina will be available for your review.

At 5:45 there will be a formal presentation describing the issues at the site, solutions considered to mitigate these and the final recommended plan.

No RSVP is needed, please simply join us.

We look forward to seeing you on **June 6th at 5pm**. If you have questions, please do not hesitate to contact us.

**[Join Our Mailing List](#)**

Please join our mailing list or pass this on to your friends and associates who may be interested in the future of McKinley Marina. Simply drop us an email at [mckinley@fasiam.net](mailto:mckinley@fasiam.net).

McKinley Marina North Phase 1:  
Site Investigation and Conceptual Design



SIGN IN SHEET

June 6, 2013

NAME

EMAIL ADDRESS

JIM SMITH JDSMITH1974@G-MAIL.COM

DEAN LARKIN ~~PPERRI~~ dplarkin@execpc.com

BOB PESCHER rpesche@thesigmeagroup.com

J MARK GREENE MARK112648@AOL.COM - MAMA

STEVE NIKOLAS STEVEN@ZABBST1.COM

MIKE TRAPPMANN CARDKILLER73@AOL.COM

Nancy Plata nancyplata@hotmail.com

Bob DeVorse devorser@hotmail.com

Quinn DeVorse

Tom Neubauer tomneubauer76@gmail.com

Gordie Bennett sustainability@milwaukeecounty.com

John Strassman JOHN.STRASSMAN@GMAIL.COM

Dan Hutchison dan.P.Hutchison@gmail.com

Bob Wilcek bob@glsfcub.com

Sandra Schindler-Hutchison S.SCHINDLER.HUTCHISON@gmail.com

BRYAN HARTSOCK BRYAN.HARTSOCK@WISCONSIN.GOV

CARL BECKER carlhecker@wi.rr.com

Bud Metzger BUDM@TDS.NET

Dawn McCarthy ~~contact~~ contact@hwtm.org

~~Shel & Danni~~

Ronise Hermsen lhermsen@wi.rr.com

Ken Quant

Mark Linda Cretser cretselx@yahoo.com

Craig Cornelius craig-cornelius@att.net

Sharon Gayan sharon.gayan@wi.gov

Wayne Lueders wlueders@foley.com

BRIAN READ Brian@southwindmarine.com

Dee & Pleasants dpleasants@juno.com

Margaret Joburg mjoburg@zen.co.uk

JOHN LILLEGREN JOHN@LAKEFRONTCAM.COM

Mark Mittag Mark.Mittag@gmail.com

Max Strycker MSTRYCKER@GMAIL.COM

McKinley Marina North Phase 1:  
Site Investigation and Conceptual Design



SIGN IN SHEET

June 6, 2013

NAME

EMAIL ADDRESS

STEVEN SIDER STVSIDR@AOL.COM

DAN NELSON NELIE@N-5.COM  
Barry Stuart bsstuartmke@yahoo.com

Paul Hinkfuss hinkfuss@gmail.com

Scott H. Campbell Campbell@execpc.com  
CAPT. GARY DAVIS 414-587-4552

# WELCOME!!

Public Meeting – June 6, 2013



## Agenda

- Opening Comments
- Where We Are To Date
- Stakeholder Engagement
- Final Recommended Plan
- Wrap Up and Open Discussion
- Going Forward

Public Meeting – June 6, 2013



## Project Location



Public Meeting – June 6, 2013



## Project Scope (Limits)



Public Meeting – June 6, 2013



## Project Road Map – Process: Existing Conditions



- Survey
- Borings
- Aerial mapping
- Utilities
- Building condition survey (county structures)
- Prior studies: Lakefront & east side
- Historic MYC information
- Lake Levels (historic)
- Other misc.info.

Public Meeting – June 6, 2013



## Stakeholder Meeting #1 Top Comments

### Site Improvements / Utilization

1. Replace or repair the pavement
2. Improved or increased lighting
3. More restrooms
4. Maintain/improve fish cleaning station

### Parking

1. Increased parking
2. Increased/improved parking at the roundhouse
3. Better separation of MYC and general parking
4. Improved/increased parking for pavilion

### Traffic / Circulation

1. Improved circulation/traffic flow
2. Additional entry/exit to the lot
3. Decrease pedestrian/auto conflict
4. Improved traffic signalization

Public Meeting – June 6, 2013



### Newsletters



McKinley Marina North Phase 1  
Site Investigation and Conceptual Design

**NEWSLETTER #1** PARKS

The Latest Information About Planning For The Future At McKinley Marina March 2013

**Dear Edward,**  
Welcome to our newsletter. This is a periodic update on the progress of planning for improvements at McKinley Marina. We hope that you'll participate in the local and state process. Let us know what you think about what you would like to see in this newsletter. Send your thoughts and comments to [edward@mcmarina.com](mailto:edward@mcmarina.com)

**Please pass this on to members of your organization and ask them to subscribe to this newsletter if they would like updates sent directly to their email.**

**Site Assessment**  
The existing conditions (natural resources) is completed.

**Stakeholder Meetings Schedule**  
Contact: Dana Hubler

**Join Our Mailing List**  
Please join our mailing list or pass this on to your friends and colleagues who may be interested in the future of McKinley Marina. Simply fill in an email of [edward@mcmarina.com](mailto:edward@mcmarina.com)

Distributed on 3/7 to 555 individual email addresses.  
294 unique individuals opened between 3/7 and 4/12.  
Summarized process, stakeholder meeting #1, comments, initial planning ideas and next steps.  
Next newsletter will follow this meeting with similar summary information.

Public Meeting – June 6, 2013



### Design Charette



Public Meeting – June 6, 2013



### Option A



### Option B



### Option C



Public Meeting – June 6, 2013



### Consolidated Plan – (Includes Key Elements From Each Option)



**Key Plan Elements**

- Improved Boat Launch
- Improved Parking and Circulation
- Improved Pedestrian / Auto Conflict
- Improved Stormwater Mgmt. (sitewide)
- New Fish Cleaning Station
- Public Restrooms
- Improved Staging Dockage

Public Meeting – June 6, 2013



### Stakeholder Meeting #2



Public Meeting – June 6, 2013



### Newsletters



McKinley Marina North Phase 1  
Site Investigation and Conceptual Design

**NEWSLETTER #2** PARKS

The Latest Information About Planning For The Future At McKinley Marina April 2013

**Dear Edward,**  
Welcome to our newsletter. This is a periodic update on the progress of planning for improvements at McKinley Marina. We hope that you'll participate in the process and please let us know what you think about what you read here in this newsletter. Send your thoughts and comments to [edward@mcmarina.com](mailto:edward@mcmarina.com)

**Please pass this on to members of your organization and ask them to subscribe to this newsletter if they would like updates sent directly to their email.**

**Consolidated Plan**  
Throughout the planning process the design team produced three alternative concepts for evaluation. These ideas were based on a three tier approach:  
Option A - Close to Existing  
Option B - Limited Building with Improvements

**Join Our Mailing List**  
Please join our mailing list or pass this on to your friends and colleagues who may be interested in the future of McKinley Marina. Simply fill in an email of [edward@mcmarina.com](mailto:edward@mcmarina.com)

**Meeting Schedule**  
May 14, 2013 (Sat) - Stakeholder Meeting #2

Distributed on 4/29 to 573 individual email addresses.  
260 unique individuals opened between 3/7 and 6/1.  
Summarized process, stakeholder meetings #1 and 2 comments, initial planning, alternative plans, consolidated plan and next steps.  
Next newsletter will follow this meeting with similar summary information.

Public Meeting – June 6, 2013



### Stakeholder Meeting #2 Top Comments

*"...for many, this is one of the first locations they may encounter of the City of Milwaukee and that this should be planned as a picturesque and interesting "first view" for those individuals."*

Public Meeting – June 6, 2013




### Stakeholder Meeting #2 Top Comments

#### Site Improvements / Utilization

1. Location of fish cleaning station.
2. Boat wash station should have easy access and should be tied to sanitary system.
3. Long term boat storage.
4. Flex storage space.
5. Future site infrastructure needs should be included in this project.
6. Dinghy storage should be included and in a location that is easy to use and access launch ramp.

#### Site Circulation / Parking

1. Major concerns about easy of egress from site at intersection of Lincoln Memorial Drive. Potential addition of another turning lane and modification of the signal sequencing and timing.
2. Bike lane in and out of site should be considered.
3. Parking is the single largest use of site followed by boat/trailer storage.

Public Meeting – June 6, 2013





Improved Boat Launch  
Improved Parking and Circulation  
Improved Pedestrian / Auto Conflict  
Improved Stormwater Mgmt. (bikeway)  
New Fish Cleaning Station  
Public Restrooms  
Improved Staging  
Dockage

SITE PLAN FOR MCKINLEY MARINA NORTH

Public Meeting – June 6, 2013




### Entry and Plaza

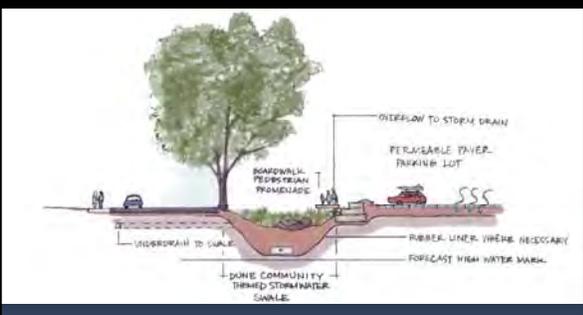
- New Plaza
- Rental/Market Space
- Improved Intersection
- Main Pedestrian Thoroughfare
- Potential Future Parking



Public Meeting – June 6, 2013




### Road and Pedestrian Path Cross Section



Labels in diagram:  
 OVERFLOW TO STREET DRAIN  
 PERMEABLE PAVED PARKING LOT  
 SIDEWALK / PEDESTRIAN PROMENADE  
 UNDERDRAIN TO CURB  
 DUNE COMMUNITY THICKED STORMWATER SWALE  
 RUBBER LINER WHERE NECESSARY  
 FORECAST HIGH WATER MARK

Public Meeting – June 6, 2013



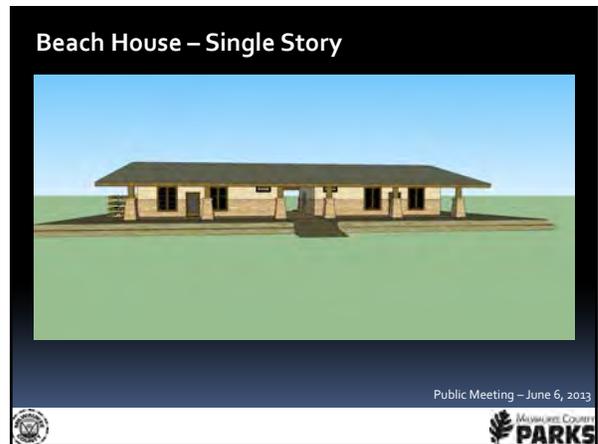
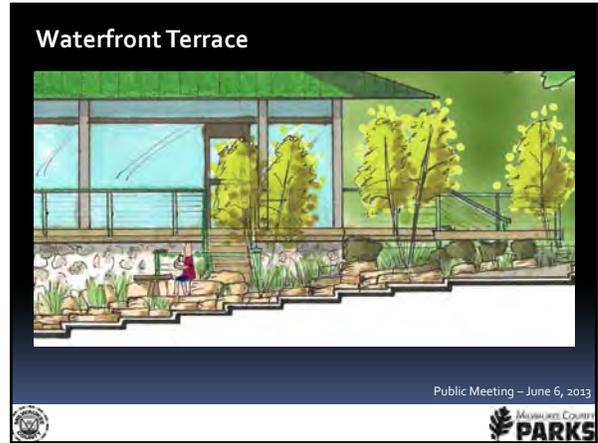

### MYC, Boat Storage and North Slip Parking

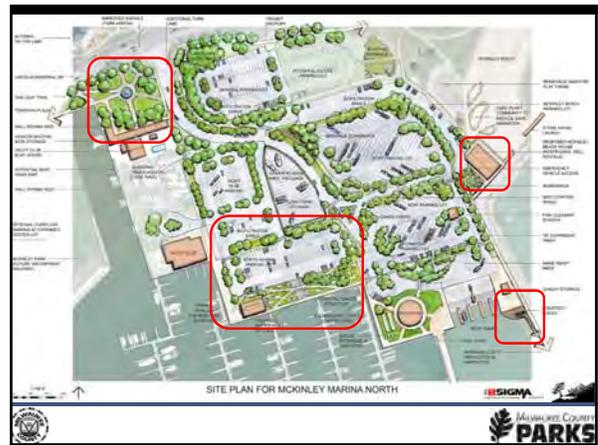
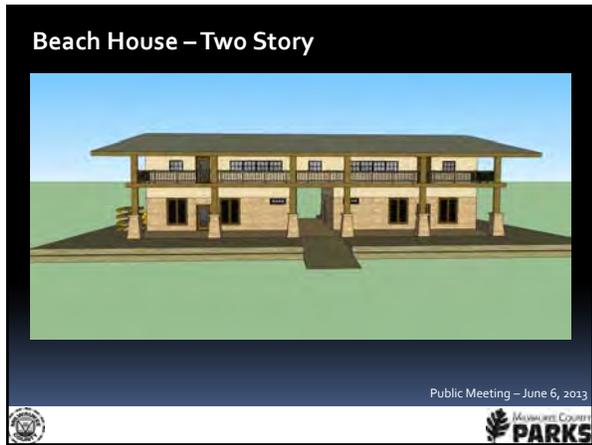


- Screened Boat Storage
- Improved Yacht Club and Slip Parking
- Pedestrian Connection to Boardwalk
- Waterfront Terrace

Public Meeting – June 6, 2013





**PUBLIC MEETING – June 7, 2013**  
**COMMENTS FROM OPEN DISCUSSION FOLLOWING PRESENTATION**

As expressed by attendees

[SH notes]

- Consider parking for people visiting the pizza hut building, near the pizza hut building, but not interfering with slip tenant parking.  
Consider a drop off near the pizza hut building separated from the slip tenant parking.  
Several comments on the fish cleaning station location. Many did not like the location.
  - Possibly provide carts to take coolers to the station
  - Possibly provide a few temporary "fish cleaning only" car parking spots.
- Send out a PDF of the proposed plan for comments.
- Too many trees may create security problems.
- Send out storm water treatment amounts.
- Slip tenants like the security of the existing retaining wall near the pizza hut bldg.
- Maybe add a space for cops to be near LMD on busy nights / events.
- Is there enough close parking for guest to the marina slips?
- A more square long term storage area, with multiple entry/exits may work best.
- Give people a week or more to respond to the final newsletter / PDF.
- Many positive comments on how the team did a good job trying to incorporate comments from previous meetings.

[C notes]

- Suggestion for further review of dry storage area layout
- Suggestion for further review of guardhouse location
- Suggestion for further review of fish cleaning station location
- Has the team developed information on the anticipated improvement to water quality in the marina as a result of this work? Does it actually make a difference?
- Provide a dedicated location for County Sherriff Deputies near LMD portion of parking lot
- Is there adequate parking for charter fishing customers?
- What is parking count and how does that compare to present number?
- Dry storage area would be more useful in a rectangular/square shape with at least two entry points
- One comment regarding the number of trees and if that creates a security problem due to sight lines, etc.



members were present to answer questions and/or explain plan details. ([Click here for a link to the plan](#))

A brief presentation was made to the group about the process that the planning team had undertaken, stakeholder engagement, plan alternatives and how suggestions from the stakeholders had been incorporated into the proposed plan.

After the presentation, the floor was opened to discussion and questions from the audience. Comments from that meeting are shown to the right .

The planning team will use these comments, provided by the public, to guide the revisions to the final documents.

This conceptual planning process will then conclude with a final report of the process, the plan and the budget



which will then be submitted to the County.

2. Are there adequate parking spaces for charter fishing customers?

3. Are there adequate parking spaces for north slip tenants and their guests?

4. Do we actually know what the likely improvement will be to water quality in the marina as a result of this project?

5. How does this plan change the parking space count in the lot?

6. Will the increased amount of landscaping create any security issues?

7. Consider revisions to the proposed layout of:

- .. The dry storage area
- .. Fish cleaning station location
- .. Parking/drop-off for McKinley Pavilion building
- .. Addition of a dedicated location for County Sherriff staff towards the front area of the parking lot

[Forward this email](#)

 SafeUnsubscribe™

 Trusted Email from  
Constant Contact®

Try it FREE today.

This email was sent to [epurcell@concord-cc.com](mailto:epurcell@concord-cc.com) by [mckinley@fasiam.net](mailto:mckinley@fasiam.net) |

[Update Profile/Email Address](#) | Instant removal with [SafeUnsubscribe™](#) | [Privacy Policy](#).

Middleton Construction Consulting, LLC. | 330 East Kilbourn Avenue | Suite 565 | Milwaukee | WI | 53202

APPENDIX E  
DNR Boat and Creel Count

Table 1. Number of days McKinley was creeled per month from 2000-2012.

	March	April	May	June	July	Aug	Sept	Oct
2000	6	12	18	16	19	17	11	12
2001	6	11	16	17	18	18	12	11
2002	7	9	16	18	17	18	8	8
2003	3	8	17	18	17	18	7	7
2004	5	6	14	15	19	19	6	9
2005	4	5	13	16	18	17	6	6
2006	5	10	14	16	18	18	9	10
2007	3	10	11	17	17	18	7	8
2008	3	5	14	17	18	18	6	6
2009	2	7	12	17	17	18	5	6
2010	4	5	13	16	18	18	5	6
2011	4	6	12	17	18	17	5	6
2012	3	6	9	11	12	11	6	6

SITECODE MCKINLEY	MONTH								
	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	TOTAL
	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
YEAR									
1991	.	10	107	301	332	189	54	6	999
1992	3	10	105	282	388	434	83	4	1,309
1993	0	12	65	221	369	306	101	5	1,079
1994	1	11	244	291	453	293	74	32	1,399
1995	1	11	99	347	623	251	95	15	1,442
1996	1	8	53	240	381	488	106	26	1,303
1997	2	48	73	282	381	403	144	42	1,375
1998	1	31	136	260	487	364	179	36	1,494
1999	51	16	166	257	346	276	131	21	1,264
2000	15	34	73	212	375	112	72	24	917
2001	0	40	86	355	555	380	227	7	1,650
2002	4	18	102	458	635	566	149	40	1,972
2003	0	46	67	306	404	559	90	44	1,516
2004	8	14	33	229	514	407	168	32	1,405
2005	3	49	120	287	370	276	66	24	1,195
2006	16	29	125	158	447	287	145	44	1,251
2007	5	58	59	301	447	460	172	74	1,576
2008	0	19	94	169	537	409	83	12	1,323
2009	2	40	37	202	506	282	94	50	1,213
2010	18	26	201	315	634	421	95	46	1,756
2011	2	11	129	475	286	391	108	53	1,455
2012	7	24	158	278	367	147	111	28	1,120

SITECODE MCKINLEY	MONTH								
	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	TOTAL
	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
YEAR									
1991	.	0.83	8.23	18.81	20.75	9.45	5.40	0.50	10.09
1992	0.60	0.77	8.08	16.59	22.82	22.84	7.55	0.40	12.47
1993	0.00	1.20	3.42	13.81	21.71	18.00	9.18	0.50	10.18
1994	0.14	1.22	13.56	19.40	25.17	17.24	7.40	2.91	13.32
1995	0.17	1.22	5.50	20.41	34.61	15.69	9.50	1.25	13.60
1996	0.14	1.00	2.94	14.12	21.17	27.11	11.78	2.36	12.29
1997	0.33	4.36	4.87	20.14	60.87	21.21	13.09	3.50	50.98
1998	0.20	2.82	7.16	14.44	32.47	21.41	17.90	4.00	14.37
1999	7.29	1.60	8.74	15.12	23.07	19.71	13.10	2.10	12.39
2000	7.50	3.09	4.56	14.13	22.06	7.47	8.00	4.00	10.08
2001	0.00	5.00	5.06	20.88	30.83	21.11	18.92	0.70	16.02
2002	1.00	2.00	6.38	25.44	39.69	31.44	18.63	4.44	20.12
2003	0.00	5.75	3.94	17.00	23.76	31.06	12.86	6.29	15.96
2004	4.00	2.00	2.36	15.27	27.05	22.61	28.00	3.56	15.61
2005	0.75	9.80	9.23	19.13	28.46	21.23	11.00	4.00	15.93
2006	4.00	4.14	8.93	11.29	27.94	15.94	16.11	4.40	13.60
2007	1.67	5.80	4.92	20.07	26.29	25.56	24.57	10.57	17.71
2008	0.00	3.80	6.71	9.94	29.83	24.06	13.83	2.00	15.38
2009	1.00	5.71	4.11	12.63	33.73	18.80	18.80	8.33	16.17
2010	4.50	6.50	15.46	19.69	39.63	23.39	19.00	9.20	21.68
2011	0.50	1.83	14.33	26.39	31.78	21.72	21.60	10.60	19.66
2012	2.33	4.00	17.56	25.27	33.36	14.70	18.50	4.67	18.06

Season Launch Passes Sold.

Season passes are also sold at South Shore and Bender Parks. Passes are valid at all 4 launch sites.

Numbers listed were sold from McKinley Marina

<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>
449	437	406	366

Launch Revenues Daily and Seasonal Launches.

2012 Launches increased because of no ice and warm temperatures in Spring and people launched all year.

<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>
\$108,763.81	\$98,271.58	\$97,044.59	\$86,420.91

Slip Tenants Docks A through D

162 rentable slips minus 6 Law enforcement slips equals 156 slips available for rent.

<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>
151	151	152	156

Storage Revenues Summer Winter and Trailer Storage

2012 Winter Storage Affected by low water could not store 11 boats that usually store with McKinley Marina.

<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>
\$46,262.04	\$55,270.64	\$69,010.12	\$57,274.80

APPENDIX F  
Consolidated Framework Table

## Options A, B, & C Leading to Consolidated Framework Plan:

	Option A	Option B	Option C	Consolidated Framework Plan
<b>Destination Areas</b> <ul style="list-style-type: none"> <li>Marina Entry/Plaza</li> <li>Fish Cleaning Station</li> <li>Deli/shop</li> <li>Gov't Pier Entrance</li> </ul>	Established Main Destination Areas	Added Ecological Areas outside of Marina Parking Lot	Added Surf Launch and Interpretive Playground	A,B, & C: Ecological Enhancement Zone (Coastal Estuary Wetland) refined & simplified
<b>Facilities &amp; Enhancements</b> <ul style="list-style-type: none"> <li>Maintain/Improve Fish Cleaning Station</li> <li>Guardhouse</li> <li>Additional Restrooms</li> <li>Courtesy Dockage</li> <li>Improved Lighting</li> <li>Special Marina Use</li> </ul>	<ul style="list-style-type: none"> <li>Guardhouse located near entrance</li> <li>Established location of restrooms, Deli, &amp; Rental Building</li> </ul>	<ul style="list-style-type: none"> <li>Guardhouse relocated closer to Boat Launch</li> <li>Washdown area separate from marina, near beach parking</li> <li>Fish cleaning station relocated and improved</li> <li>Coast Guard shelter/plaza</li> </ul>	<ul style="list-style-type: none"> <li>Courtesy Dockage</li> <li>Dinghy Dockage</li> <li>Yacht Club area wall repairs</li> <li>Washdown area relocated near boat launch</li> <li>Observation tower</li> </ul>	A, B, & C <ul style="list-style-type: none"> <li>Expanded Courtesy Dockage</li> <li>Consolidated marina use near Boat Launch</li> <li>Additional restrooms in Deli/Rental Building</li> <li>New/relocated fish cleaning station</li> <li>Option B guardhouse location with Option C roundabout for circulation</li> </ul>
<b>Vehicular Traffic Flow</b> <ul style="list-style-type: none"> <li>Improved circulation/flow</li> <li>Decreased pedestrian/auto conflicts</li> <li>Improved traffic signalization</li> </ul>	Primary vehicular flow diagonally cut through site	Improved primary vehicular flow and enhanced secondary vehicular flow	<ul style="list-style-type: none"> <li>Refined curvilinear primary traffic flow</li> <li>Additional exit/entrance proposed</li> <li>Turnaround area around for improved circulation around guardhouse</li> </ul>	B & C <ul style="list-style-type: none"> <li>Primary flow used from Option C</li> <li>Secondary vehicular configuration incorporated from Option B</li> <li>Improved existing entrance with additional turn lane and turn signals</li> </ul>
<b>Pedestrian Flow</b> <ul style="list-style-type: none"> <li>Decreased pedestrian/auto conflicts</li> <li>Public Access Points</li> </ul>	<ul style="list-style-type: none"> <li>Established access points at entrance</li> <li>Lot access along primary entrance road</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrian paths along periphery of marina</li> <li>Private Pavilion area and section of boardwalk</li> </ul>	<ul style="list-style-type: none"> <li>Access integrated throughout marina</li> <li>Public Pavilion &amp; Boardwalk</li> <li>Direct connections through lot</li> <li>Pedestrian bridge over Lincoln Memorial Drive</li> </ul>	C <ul style="list-style-type: none"> <li>Pavilion Area open to public access</li> <li>Pedestrian paths integrated throughout parking lot, along biofiltration swales</li> </ul>
<b>Best Management Practices (BMPs)</b> <ul style="list-style-type: none"> <li>Utilize biofiltration swales to decrease lot runoff into lake</li> <li>Provide boat wash areas for invasive species removal</li> <li>Create ecological communities for further enhancement of lakefront use and enjoyment</li> </ul>	<ul style="list-style-type: none"> <li>Biofiltration swales introduced</li> <li>Boatwash</li> </ul>	<ul style="list-style-type: none"> <li>Biofiltration swales refined</li> <li>Boatwash</li> <li>Environmental corridor through McKinley Park connecting marina to lagoon</li> <li>Harbor master's office BMP's</li> <li>McKinley Beach dune planting communities</li> </ul>	<ul style="list-style-type: none"> <li>Biofiltration swales further refined</li> <li>Boatwash</li> <li>Coastal estuary wetlands in McKinley park added, environmental corridor to lagoon removed</li> <li>Refined dune planting community area</li> </ul>	C <ul style="list-style-type: none"> <li>Biofiltration swales further refined</li> <li>Boatwash</li> <li>Refinement of dune planting communities and coastal estuary areas</li> <li>Integrated biofiltration swales and pedestrian paths</li> </ul>
<b>Parking Areas</b> <ul style="list-style-type: none"> <li>Designated parking for               <ul style="list-style-type: none"> <li>boaters,</li> <li>yacht club members,</li> <li>slip tenants,</li> <li>beach goers,</li> <li>charter fishermen,</li> <li>roundhouse restaurant</li> <li>seasonal storage</li> </ul> </li> </ul>	larger shared parking areas	<ul style="list-style-type: none"> <li>Increased separation of parking use</li> <li>Future parking improvements – overflow for trucks and trailers outside of marina parking lot</li> </ul>	<ul style="list-style-type: none"> <li>Increased separation of parking use</li> <li>Storage access from main drive becomes secondary access off commuter lot</li> </ul>	B & C <ul style="list-style-type: none"> <li>Centralized Flex-Space/Storage</li> <li>increased/improved roundhouse parking,</li> <li>Clear separation of MYC, pavilion, boat, BMP areas and public parking</li> </ul>