

Summer 2013

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Acoustic Fish Deterrents

U.S. ARMY CORPS OF ENGINEERS

Building Strong®

ANS Control Technology:

Acoustic Fish Deterrents –
Continuous Wave and Pulsed
Pressure Wave.

Targeted Species: This Control may be effective for fish of the ANS of Concern – CAWS¹, namely: alewife (*A. pseudoharengus*), bighead carp (*H. nobilis*), black carp (*Mylopharyngodon piceus*), blueback herring (*Alosa aestivalis*), inland silverside (*Menidia beryllina*), northern snakehead (*Channa argus*), ruffe (*Gymnocephalus cernuus*), sea lamprey (*Petromyzon marinus*), silver carp (*H. molitrix*), skipjack herring (*A. chrysochloris*), threespine stickleback (*Gasterosteus aculeatus*), and tubenose goby (*Proterorhinus marmoratus*).



USGS researchers and their associates observe Asian carp.

Selectivity: This Control was developed to specifically target fish and is generally non-selective among fish species. There is no information on its effects on aquatic invertebrates.

Developer/Manufacturer/Researcher: The main manufacturers of seismic technology are Bolt Technology, Sercel, and Ion Geophysical Corp²; currently the only developer of water gun technology is Bolt Technology. The U.S. Geological Survey (USGS) Illinois Water Science Center is evaluating the effects of sound technology on physical structures in water, e.g. lock and dams, and to accurately map the pressure gradients generated from water gun operation. The USGS Great Lakes Science Center and USGS Upper Midwest Environmental Sciences Center are completing research to evaluate the use of water guns to alter fish behavior, including evaluations as potential barriers to the movement of Asian carp.

Brief Description: There are two general types of acoustic fish deterrents: continuous wave and pulsed wave. These deterrents use sound/pressure waves (noise) to influence the behavior of or injure aquatic organisms. The Controls presented in this fact sheet have the potential to be lethal if the organism is close to the source of the pressure wave, though most are not considered lethal for animals located at distance from the sound source. Acoustic fish deterrents can be stationary or semi-portable. The compressor required to operate the larger pulsed pressure wave water guns for any length of time weighs about 3,000 lbs, however smaller configurations have been used experimentally in the CAWS.

It has been shown that underwater ensonification at the resonant frequency of the lung can damage and even kill aquatic organisms. This is due to the resonance of the wave creating disturbances within air-filled cavities, which leads to tissue damage. For fish, the most vulnerable to underwater sound are

¹ For a complete list of the 39 specific ANS of Concern – CAWS, please see Table 1 of the main report.

² Manufacturers and products mentioned are examples only. Nothing contained herein constitutes an endorsement of a non-Federal entity, event, product, service, or enterprise by the U.S. Army Corps of Engineers or its employees.

those with swim bladders. Carp fit into this category and thus are expected to be sensitive to underwater sound at the resonant frequency of the swim bladder.

The use of underwater ensonification could be effective in controlling carp movement within restricted waterways, where the sound could not be avoided. If the swim bladder of the Asian carp is susceptible to specific frequencies, this approach may have the advantage of specifically targeting carp and not affecting other species.

Continuous Wave – Continuous wave sonar uses high intensity, low-frequency sonar waves generated from a Low Frequency Active (LFA) sonar source array. The LFA sonar source array is a set of acoustic transmitters that produce sound that is irritating to fish. Continuous wave sonar was originally developed by the United States Navy to identify submarines (Tyler 1992), but is now being tested to determine if it can be used as a deterrent or as part of a fish guidance system or barrier.

Pulsed Pressure Wave - Pulsed pressure waves are high intensity sound/pressure waves generated by a sound source (hydro gun, air gun, blast explosive) to irritate, harm, or kill aquatic organisms. A hydro gun produces sound waves using a pneumatically- or hydraulically-powered piston. In contrast, an air gun produces sound waves by the explosive release of high pressure air directly into the surrounding water. Blast explosives (e.g. primacord), on the other hand, send a concussive shock wave through the water. Hydro guns produce shorter, cleaner implosive pressure waves which produce higher frequencies than the air gun. Air guns are superior for oil exploration as they produce more low frequency waves and deep penetration of the water column (Hutchinson & Detrick 1984). Since output pressures are dependent on input air pressure, very low operating pressures at a sub-lethal level may motivate fish to move from the direction of the source. The pressure gradient surrounding a gun will be dependent on the input pressure to the gun – that is, a given gradient of constant pressure will be further from a gun fired at 2,000 PSI vs. the same gun fired at 1,000 PSI. Similarly, a given pressure gradient may be further from a large gun than a small gun even if operated at the same pressure. Air guns and hydro guns may be fired in repeated bursts. Blast explosives are less suited for continuous application due to the chronic need to reset charges and the possible release of toxic residues.

Prior Applications:

Continuous Wave – The effects of continuous wave sonar have been widely studied on marine mammals and fish; however, its use as a fish deterrent is a new approach in freshwater.

Pulsed Pressure Wave - Air guns were developed in the 1960s and are used for a variety of purposes, including marine petroleum exploration and as a fish deterrent in both freshwater and marine environments. Hydro guns were developed in the 1980s for the same purposes and are presently being studied in the Chicago Sanitary and Ship Canal by USGS. The USGS is studying the effects of water guns to alter the behavior of invasive Asian carp as a means to inhibit movement (e.g. to herd fish toward commercial fishing nets) and stop dispersal (i.e. to create a barrier). Initial studies will determine the effects of different sound wave frequencies on various age classes of Asian carp, at a range of distances from the sound source. The magnitude of the sound wave will be measured in order to quantify fish response to sound impacts. Initial and delayed lethality will be assessed, as well as

sub-lethal evading behaviors (Asian Carp Regional Coordinating Committee 2011). Blast explosives are commonly used at construction areas to protect fish near work zones (Keevin & Hempen 1997).

General Effectiveness: The response of fish to loud noises ranges from no response, short term avoidance (moving away from the sound source), long term avoidance (altering behavior to avoid the sound), physiological damage (hearing loss), and even death (tissue disruption). A variety of factors including frequency of pressure waves, intensity, duration, and distance from acoustic source influences effectiveness (Popper 2003; Halvorsen et al. 2011).

Continuous Wave – The LFA sonar source array has been shown to have a non-lethal behavioral effect on rainbow trout. However, the results varied with different groups of trout, suggesting developmental and or genetic impacts on how sound exposure affects hearing (Popper et al. 2007).

Pulsed Pressure Wave – The effectiveness of pulsed pressure waves is mixed—incidental observations during blasting operations indicate that individual blast explosions are not very effective in “scaring” fish from the blast zone for long periods of time (Ferguson 1962; Nix & Chapman 1985; Falk & Lawrence 1973; Keevin & Hempen 1997), and the sound of the air gun had little effect on the day-to-day behavior of the resident fish and invertebrates in a marine environment (Wardle et al. 2001). However, the pulsed pressure waves are lethal to adults, eggs and larvae, although larval fish are less sensitive than those in which the swim bladder has developed (California Department of Fish and Game 2002). The lethality of pulsed pressure waves varies with fish size, species, orientation of the fish relative to the shock wave, amount and type of explosive, detonation depth, target depth, water depth, and bottom type (Wright 1982).

Operating Constraints The repeated use of these technologies may have a deleterious effect on canal walls and underwater structures, would impact navigation, and may present safety issues, possibly requiring public access restrictions. Considerations include the quantity of explosives that could be used safely in one session, water flow and turbidity in the vicinity of explosives placement, navigation blockage, and safety issues. The repeated use of explosives could result in an accumulation of explosive residue that may impact water quality downstream of the treatment area.

Cost Considerations: Both Controls may require the armoring and shoring of canal walls and underwater structures to withstand repeated shock waves.

Continuous Wave –

Implementation: The LFA sonar source array is being tested experimentally. If successful, full implementation would involve the development of a land-based project site for mounting and operating this Control.

Planning and design activities in the implementation phase may include research and development of the technology, modeling, site selection, site-specific regulatory approval, plans and specifications, and real estate acquisition. Design will also include analysis of this Control’s impact to existing waterway uses including, but not limited to, flood risk management,

natural resources, navigation, recreation, water users and dischargers, and required mitigation measures.

Operations and Maintenance: This Control would require maintenance of mechanical devices, electricity, and monitoring of equipment and fish populations.

Mitigation: Design and cost for mitigation measures required to address impacts as a result of implementation of this Control cannot be determined at this time. Mitigation factors will be based on site-specific and project-specific requirements that will be addressed in subsequent, more detailed, evaluations.

Pulsed Pressure Wave –

Implementation: The water gun is being tested experimentally. If successful, full implementation would involve the development of a land-based project site for mounting and operating this technology. The USGS is exploring different methods to also deploy the gun from mobile locations. The implementation cost of this Control depends on the quantity and type of blast explosives used, as well as possible long-term effects of blast explosives in the body of water and surrounding areas. If hydro guns are used there wouldn't be any residues remaining.

Planning and design activities in the implementation phase may include research and development of the technology, modeling, site selection, site-specific regulatory approval, plans and specifications, and real estate acquisition. Design will also include analysis of this Control's impact to existing waterway uses including, but not limited to, flood risk management, natural resources, navigation, recreation, water users and dischargers, and required mitigation measures.

Operations and Maintenance: This Control would require maintenance of mechanical devices and monitoring of equipment, surrounding infrastructure, and fish populations to gauge the effect of repeated pressure waves.

Mitigation: Design and cost for mitigation measures required to address impacts as a result of implementation of this Control cannot be determined at this time. Mitigation factors will be based on site-specific and project-specific requirements that will be addressed in subsequent, more detailed, evaluations.

Citations:

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LIFE IS AN ADVENTURE
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EXECUTIVE SUMMARY



Heritage Harbor Ottawa is being developed in the finest tradition of America's most iconic and memorable resort communities. The developer's vision for the resort is focused on developing a community with a broad spectrum of attractive homes, timeless architecture, walk-able neighborhoods, and a premium marina; with dining, events, activities, adventure and amenities. Heritage Harbor has adopted elements of Traditional Neighborhood Development (TND) not only for the improved "livability" found in "TND" communities but also as a way to increase the diversity of development options available. Heritage Harbor embraces "new urbanism", "pocket neighborhoods", and "traditional neighborhood development" as a way to create a community that will resonate with multiple generations of clientele.

Heritage Harbor Ottawa is a master-planned marina resort community in Ottawa, IL. The site consists of 142 acres which includes a 32 acre marina with deep water access to the Illinois Waterway. The resort development is approved for as many as 900 residential units in a mix of detached and attached homes. The marina has a designed capacity for up to 460 boat slips with very high quality marina amenities.

We believe that Heritage Harbor is a unique development—as a master-planned marina resort in the Midwest. Indeed, it is even more unique among the paucity of resorts in the state of Illinois. It is that fact, along with its very close proximity to the huge Chicago metro area that encouraged us to develop such a resort. The unique opportunity to assemble a 142 parcel, all on water, in a quaint and wonderful town like Ottawa—that is compelling as a second home, a getaway stay, or a retirement opportunity—that makes the resort unique and valuable. This project was not meant as a replacement or a competitor to resorts in warmer climates—it was designed for those who want accessibility for use, affordability, and for those who wanted a resort lifestyle without driving for days or experiencing the hassle of air travel. Being on water brings value, and the year-around allure and activity of the Illinois Waterway creates interest and intrigue. We know that water proximity is just as important to non-boaters as it is to boaters.

It is our view that Chicago metro residents are uniquely deprived and in short supply of easy-to-access resort and second home opportunities. Partly because they are blocked by Lake Michigan to the east, and forced through a tiny and ugly funnel neck in order to get to good opportunities in Western Michigan; and then difficulty-of-access and over-crowding in the popular destinations in Wisconsin. We believe that accessibility drives value, especially in these times of limited time off, and, in the case of retirees, the ability to stay in close proximity to friends, family, and sometimes complex healthcare requirements. The much less congested corridors of travel leading to Ottawa, and the close proximity of I-80 and I-39, and the calm of Starved Rock Country, even during the peak season, make it a very attractive offering for tourists, boaters, second home buyers and retirees.

While our initial entry into the market was disadvantaged by opening in 2008, it is apparent that the market is improving nicely. We have maintained, nurtured and furthered the brand promise, and we are now poised for great results.

EXECUTIVE SUMMARY

Heritage Harbor is uniquely positioned to offer a unique resort lifestyle to boaters, residents and guests. Ottawa, Illinois is a historic river town with an abundance of recreational opportunities including Starved Rock State Park along with the Illinois, Fox and Vermillion Rivers. The community is located less than ninety minutes from downtown Chicago, Rockford, Bloomington, Peoria and only two hours from Champaign-Urbana. The Starved Rock Country area is recognized and well-regarded as a “getaway” location for people in Illinois and throughout the Midwest. The combination of recreational amenities and accessibility make Ottawa an ideal location for a premier resort community.

As resort developers and “place creators”, Heritage Harbor is developing a memorable riverfront resort community. Heritage Harbor has already constructed one of the finest marinas in the Midwest. The developers have established a strong brand and a reputation for delivering an upscale resort lifestyle. Through hard work, strong leadership, diligent planning and continuous innovation, Heritage Harbor Ottawa continues to build a very attractive marina resort community.

The Heritage Harbor Ottawa development plan includes extensive community amenities, such as walking and biking trails, outdoor parks and picnic areas, a yacht club, recreational facilities, a 32 acre marina, a dry stack boat storage facility, various commercial components with planned space for retailers, multiple food and beverage opportunities, a boutique style hotel with meeting and conference space. Phase I development is currently underway in multiple locations within the resort parcel: the Harbor Town, Heron’s Landing and the West Peninsula.

Heritage Harbor Ottawa is a community that will be built in multiple phases over the next several years. The developers have remained fully committed to the resort development despite the real estate market challenges experienced over the past six years. The developers have continued to expand the marketing, staffing, and infrastructure for the resort development. Due to this continued investment and commitment, Heritage Harbor has earned year over year growth over the past five years. Through hard work, strong leadership, diligent planning and continuous innovation, Heritage Harbor Ottawa continues to build the best marina resort community in the Midwest.



OWNERSHIP & MANAGEMENT

Tom Heimsoth – Co-Owner & Managing Partner

The initial and driving force for the project is Tom Heimsoth. Tom has been investing in real estate for many years. He has been involved in real estate in the Chicago suburban area and he owns several high quality riverfront properties and farms throughout North Central Illinois. Tom is the retired Chairman and CEO of Resource Information Management Systems, Inc. in Naperville, IL. His company produced software for the insurance industry. Tom sold his interest in this business several years ago and now resides in Ottawa, IL. Tom is a graduate of Illinois State University and has actively participated in alumni support and fundraising for the school. He supports and participates in multiple nonprofit organizations. Tom and his wife Pete (Sandra) live in Ottawa.

Mike Sitterly – Co-Owner

Mike Sitterly is Tom's partner at Heritage Harbor. Mike is a successful businessman residing in Spring Valley, IL with his wife Nancy. He was the owner of Western Sand and Gravel Company and its related subsidiaries for many years. In 2006, Mike sold the aggregate mining business to Lafarge. He is semi-retired and his son now runs the ready-mix division of the business which was retained for continued operation in the Ottawa/Utica/Spring Valley area.

Management at Heritage Harbor

Alex Genova, CPA - Chief Financial Officer

With almost 20 years of experience in real estate, Alex started his real estate career in 1989 with JM Genova and Associates, a brokerage firm located in Scottsdale, AZ, that specialized in luxury resort and hotel sales. Also associated with the Horn Company Homes of Las Vegas, Alex's experience expanded to residential and commercial development. After relocating to the Midwest in 1999, Alex joined CBRE, the world's largest commercial real estate firm network, initially focusing on property management and asset management in Northern Indiana. Alex then shifted into a Commercial Real Estate Broker and new business development role, and became involved in all areas of commercial leasing, sales and investment properties.

Richard Bridges - Vice President of Strategic Development

Rich joined Heritage Harbor in 2009 after twelve years with Chicago's most successful residential builder/developer and six time JD Power Award winner, Lakewood Homes. Rich was the Regional Vice President of Sales & Marketing where he was responsible for sales, marketing, training and management for Lakewood's Homes and also Lakewood's Active Adult division which included Grand Haven in Romeoville, IL. Grand Haven earned a national award for Active Adult Communities from the National Association of Homebuilders. Rich and his sales and marketing teams earned numerous NAHB & SMC achievement awards throughout his tenure with Lakewood Homes. Rich brings more than twenty five years in new home development, sales, marketing and management to the Heritage Harbor team.

Tammy Barry - Director of Sales & Marketing

Tammy has been a part of the development team since its inception back in 2006. With comprehensive experience in the development of niche markets, Tammy fosters expansion of the Heritage Harbor brand through her community involvement and event planning. Beyond sales and marketing, Tammy's realm of experience includes Management of Fortune 100 clients in the wireless industry and General Management in the hospitality industry. Tammy has a strong, dedicated work ethic that has been labeled as "the person to get a project done efficiently". As a natural leader that believes strongly in the community of Starved Rock County, she thrives on the idea of 100% customer satisfaction among all homeowners and visitors to Heritage Harbor.

Jeremy Fowler - Harbor Master

Jeremy joined Heritage Harbor in 2013 after leading fourteen boating seasons at the Alton Marina in Alton, IL. The Alton Marina is a five-anchor marina on the inland waterways. He has many years of experience in all areas of marina operations, and operational knowledge of various innovative marina technologies. Jeremy gained critical experience working in an intergovernmental role at the Alton Marina, as it is privately operated, municipally owned and under the jurisdiction of the United States Army Corps of Engineers and United States Coast Guard. He was the first representative of a recreational marina chosen to join the Department of Homeland Security's Port Security Team for St. Louis Harbor. Jeremy is a veteran of the United States Marine Corps, where he was trained as a small craft operator, is an Illinois certified Firefighter, and maintains currency with the National Incident Management System training standards. He is passionate about boating, and lives in the Ottawa area with his family.

TARGET MARKET

Market data is now indicating that recovery is under way in certain resort locations and expected in “locations proximate to major metropolitan areas and other exceptional projects” in 2014 according to RCLCO’s 2013 advisory report. Their report indicates that “owners of and investors in vacation residential properties that have not yet begun to recover should begin to experience stronger demand in the near term. Resort developments should ensure that residential offerings, amenities, and other programs are up and running and aligned with what today’s target market demands, and speed to market is likely now of the essence for projects that are proposed or in early stages of development.”

The comprehensive Economics Research Associates (ERA) market study commissioned for Heritage Harbor still guides the marketing and product development strategy. The study identifies the target markets and preferred market positioning of the resort development. The following groups remain the most receptive demographic groups for Heritage Harbor.

- **Enterprising Professionals** – 41,200 in Primary (2%); 13,600 in Secondary (3%) This market is home to young, highly educated, working professionals. Either single or recently married, Enterprising Professionals are singularly young, with a median age of 32 years. Household income exceeds expectations and their median net worth is growing, now at \$132,000.
- **Up and Coming Families** – 35,600 in Primary (2%); 26,000 in Secondary (6%) –Up and Coming Families represent Tapestry’s second highest growth market, with an annual household growth rate of 5 percent. They are young, affluent families with small children. They are located in suburban outskirts of mid-size metropolitan areas (populations greater than 250,000).
- **Silver and Gold** – 2,700 households in Primary (0.1%); 540 households in Secondary (0.1%) The wealthiest, and almost the oldest, seniors—predominantly retired, with a median age of 58 years. Half of the households are comprised of married couples without children.
- **Prosperous Empty Nesters** – 31,200 in Primary (2%); 6,600 in Secondary (1%) Over half of the householders are aged 55 years or older. Well educated and experienced, Prosperous Empty Nesters are enjoying the transition from child rearing to retirement. The median age of this population is 46 years. Prosperous Empty-Nesters are active physically and financially.
- **Rural Resort Dwellers** – 600 Households in Secondary Market (0.1%) Rural Resort Dwellers live in rural non-farm areas throughout the United States. About 40 percent of Rural Resort Dwellers are married with no children living at home. Typical of areas with rustic appeal, the housing inventory features single-family homes with a significant inventory of seasonal housing.
- **Senior Sun Seekers** – 2,700 in Primary (0.1%); 1,100 in Secondary (0.2%) With a median age of 51.5 years, this market boasts one of the oldest populations. This is one of the fastest growing markets; their annual household growth rate is 2.3 percent. This is one of the best markets for seasonal housing, behind Silver and Gold and Rural Resort Dwellers.

TARGET MARKET

The overall buying preferences for second home prospects has also been studied recently by Kelsey & Norden. Their survey looked at the most desired amenities for second home buyers. Heritage Harbor is currently capable of delivering a majority of the most preferred amenities with the capability to add more.

The Kelsey & Norden survey stated the following findings:

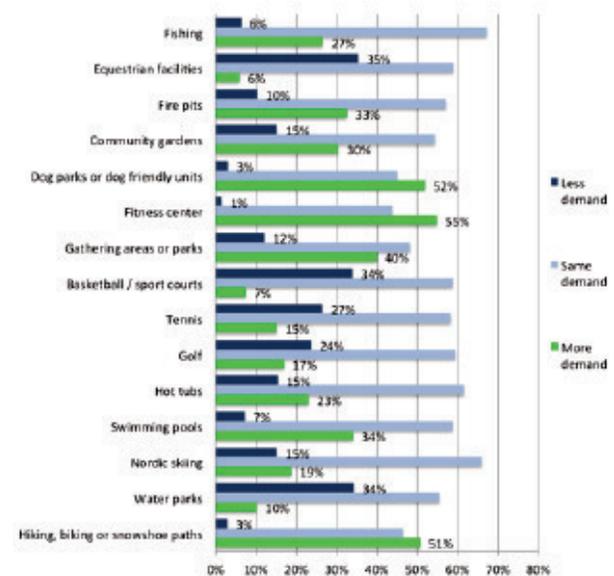
“Our 2010 Consumer Survey identified the trend that many Gen X respondents don’t see their resort property as a place for vacation but rather “an extension of their regular lives, a second home where they are connected to a community of like-minded friends and can provide their kids an alternative experience to their urban or suburban neighborhoods.” Our 2012 sales specialists confirmed this trend of increased use in their responses to the question, “You say that the makeup of your typical buyer has changed since 2007, how has it changed?” The increasing demand for specific amenities supports this change in perspective and desire for more frequent use. Amenities that are associated with regular “day-to-day” use, such as trails, dog parks, fitness centers, gathering areas/parks and community gardens are in more demand.”

Heritage Harbor is well researched, well positioned and ready to accelerate development as the market continues to strengthen. The resort development team has protected and strengthened the overall Heritage Harbor resort brand while creating the Starved Rock Country regional branding premise that will optimize the development opportunities. The master-planned resort offers valuable flexibility for future development which will allow Heritage Harbor to optimize the development strategy for every parcel within the resort. The following pages will provide an overview of the current development strategies being developed.

Building upon the initial market research developed by ERA and utilizing research focused specifically on resort development and buyer preferences, Heritage Harbor has continued to develop products and amenities to meet this pending demand. We believe we are very well positioned to optimize this development opportunity. Some of the significant data points include:

- Second-home owners are typically baby boomers, nearly half of whom were seeking a waterfront alternative to their primary residences in the suburbs, according to the National Association of Realtors. Couples in their 50’s and 60’s say they have two considerations at the top of their list when looking for a second home, a family retreat and a future primary residence. Forbes.com reported that 11 percent of those aged 55 to 64 said they planned to buy a different home within the next three years, and that folks who had moved as part of a retirement plan were happier than those who stayed put.
- Those who made short-distance moves, staying near family and friends, were the happiest of all. Sales of vacation homes are picking up as low prices pull buyers off the fence. But with travel costs rising and consumers still uncertain about the economy, many buyers are snapping up properties closer to home.
- The shift in buying habits...reflects the changing portrait of the typical vacation-home buyer. In the recent past, the vacation home market was led by families looking for places with attractions for children as well as adults. But a growing number of buyers are older and seeking vacation homes that transition into retirement homes.
- A recent survey by HomeAway Inc. found that the most popular markets among vacationers in 2012 are those that can be reached in a drive of four hours or less from home. That makes those markets good investment opportunities for the 91% of vacation-home buyers who plan to rent their properties when they aren’t using them. This trend is expected to continue into the foreseeable future. “People want to stay within driving distance because they’re more able to maintain the homes, they have better networks in place and friends and family nearby to use and sustain the homes,” said Jon Gray, vice president of HomeAway.com, a website that lists vacation rentals.

How has consumer desire for the following amenities changed in the last 12 months?



RESORT BRANDING OVERVIEW



The Heritage Harbor Development Team is focused on continuing to develop the premier resort community in the Midwest, dedicated to creating memorable stays for guests and attractive ownership opportunities for our customers. We believe that Heritage Harbor residents and guests will discover and embrace meaningful life values by participating in activities at the resort and throughout this region now branded as Starved Rock Country. We believe that the inclusion of multiple generations of residents and guests will enrich the life and social experiences for all participants. We also believe that this interaction of multi-generational/multi-cultural tourism and second home development will create enduring economic and social benefits for Ottawa and LaSalle County.

Heritage Harbor is well-positioned due to the concentration of zip codes with \$150,000+ median net worth to the northeast (Chicago and suburbs). Considering previous experience with resort and second home markets and demographic dynamics discussed (drive time, median household income, and median net worth), market studies have concluded that Heritage Harbor's strongest market would lie to the northeast in the Chicago metro area and suburbs. Heritage Harbor's secondary market consists of remaining zip codes within a two hour drive.

On-going market research continues to show that the tourism, resort development, second home and vacation home ownership opportunities for the resort are significant. The proximity to Chicago and the other population centers in Illinois provides the developers with a very critical market advantage. As a second home/vacation home community, a hospitality related business and tourism venue, Heritage Harbor has had to think creatively about how best to orient prospects to the location.

Primary target markets are Chicago and the suburbs and our secondary markets are places like Champaign, Rockford, Bloomington, Peoria, and beyond. Too frequently, people from those areas either don't recognize the area or they will tend to confuse Ottawa, IL with Ottawa, Canada. The developers recognized that they had to find a better way to "paint the picture" for prospects. Heritage Harbor Ottawa, with a resort and lifestyle emphasis, has created the brand name "Starved Rock Country" in order to align with Starved Rock State Park—the most recognized destination in the area. "Starved Rock Country" is an understandable brand name and location identifier that already resonates with potential visitors. It also speaks to the authentic and unpretentious appeal that the area holds for people familiar with the area.

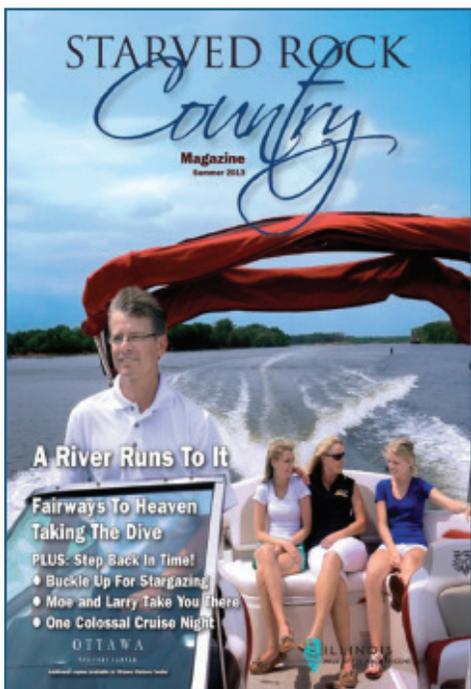
More than 2.5 million visitors per year visit this iconic state park. Of the \$31 billion generated for the state's economy in 2012, La Salle County contributed nearly \$169 million. Most of the potential visitors for our resort are already familiar with Starved Rock and most adults in Northern and Central Illinois have fond memories of the area. In the minds of many, the entire region is "Starved Rock Country" to them. The brand resonates with people for a variety of reasons.



RESORT BRANDING OVERVIEW

In early 2010, Heritage Harbor Ottawa established StarvedRockCountry.com, Starved Rock Country LLC., and a related social media presence in anticipation of a larger branding effort. Various local businesses and tourism groups have already begun to develop and promote the brand while encouraging other constituents to promote the Starved Rock Country brand as well.

In 2013, Heritage Harbor awarded the publishing and promotion rights to Starved Rock Country to The Times of Ottawa (owned by the Small Newspaper Group). Their mission is to shine a spotlight on this region for tourism, events and overall economic development. As described by the Times Publisher, John Newby:



Starved Rock Country is an economic development arm/brand being built by The Times to promote the Starved Rock region of the State of IL. This region-wide collaborative branding effort will be carried initially by a new full-color, perfect-bound magazine entitled "Starved Rock Country".

The dramatic expansion of this brand beyond the magazine includes several new family oriented events such as our Starved Rock Country Concert Series, Starved Rock Country Marathon, Starved Rock Country Golf Championship, and Starved Rock Country Outdoor Sport & Travel Expo along with a host of other events to help spur and drive tourism and visitors to the region.

A new e-commerce solution (www.SHOPStarvedRockCountry.com) has been introduced where visitors and residents alike can purchase items, book hotels and B&B as well as making restaurant reservations all on one simple platform.

The effort is such that as the economic vitality of the region improves, so will the business climate throughout the region.

The Starved Rock Country regional branding being developed is perfectly aligned with the growing outdoor sports and recreation trends in our society and we believe these trends align well with the amenities we can deliver at Heritage Harbor. As the regional branding continues to strengthen and expand opportunities for resort development in this region, the resort based real estate market is evolving. New trends are being established and new preferences are being uncovered. We believe that Heritage Harbor aligns well with these new market dynamics.

NEIGHBORHOODS

Like many master planned resort communities, Heritage Harbor made the decision to focus on a strategic plan that focuses on selling value-added parcels within our resort to guest developer/builders, partnering with other developers and also developing certain projects independently. This balanced approach to the overall real estate sales opportunities will enhance the development velocity which will enhance the overall value of the TIF entitlement.

Our development strategy is focused on seeking guest builders and developers who would be able to purchase single family and multi-family lots along with commercial sites while working with our sales and marketing team to meet demand from our prospect database. We also seek local and regional builders interested in taking down individual single family home sites for speculative home building opportunities within our resort community. Heritage Harbor brings enhanced value to guest builder/developers by sharing product plans, market research, pricing recommendations, sales and marketing assistance, and even product development and entitlement.

Heritage Harbor formulated a strategic plan to create development opportunities for guest developers who would be able to create unique projects within our resort that would be focused on hospitality, residential real estate, mixed use, commercial, or senior living/active adult development. We also provide financial plans and pro-forma analysis to prospective builder/developers in order to illustrate a performance model that will help assure them of success.

Neighborhoods currently in development include:

- The West Peninsula – Traditional Neighborhood Development residential programming featuring luxury cottages and carriage homes, villa condominiums, three distinct luxury townhome offerings, and diverse collection of resort-inspired custom single family residences.
- The Cottages at Herons Landing – A waterfront cottage enclave. This very successful second home cottage neighborhood will be completely sold out by 2015. This “resort within the resort” offers cottage owners the option of placing their cottage in rental management and the rental opportunity has been phenomenally successful in the market place.
- The Cottages at River Row – This is a small “pocket” neighborhood being developed on the West Peninsula as a more exclusive extension of the Cottages at Heron’s Landing. A pool and pool house will be at the center of this collection of seven cottage homes and five carriage homes.
- Harbor Town – Harbor Town is currently under development as the vibrant center of resort life at Heritage Harbor. Harbor Town is already home to the marina operations and our harbor pool. The existing waterfront restaurant will be undergoing a significant improvement and expansion in conjunction with the development of the Inn at Heritage Harbor. Additional development will include The Boat Lofts dry stack boat storage facility, East Bay Lofts mixed use product, along with other significant resort amenities.

Future neighborhoods will include:

- Pilot’s Point – Pilot’s point is the prime waterfront residential development parcel available on the West Peninsula. The Pilot’s Point Condominium product will feature iconic waterfront architecture with capacity for as many as 150 residential units in two or three buildings. This neighborhood site is ready for development.
- The East Peninsula – Across the Harbor mouth from Pilot’s Point sits the East Peninsula. This site is surrounded by the Harbor and the Illinois Waterway. The product script will be very similar to the Pilot’s Point Condominium with some differentiation in order to enhance the exclusivity of each project type.

Additional branded neighborhoods will be introduced for upscale apartments near Harbor Town, Active Adult-targeted residential programming at the Northwest corner of the resort, the future large hotel overlooking the mouth of the harbor, and the assorted other products offered in the product portfolio.

PRODUCT TYPES

CUSTOM HOMES & HOMESITES

Heritage Harbor offers potential buyers the opportunity to select from traditional neighborhood sites or premium waterfront sites. The resort community has been designed to foster a sense of community and a reverence for the outdoor spaces. With walking paths and scenic overlooks, front porches and back decks; Heritage Harbor eagerly embraces a traditional neighborhood streetscape design in a waterfront resort setting. Traditional neighborhood home sites are available from \$90,000 and waterfront walk-out basement home sites are available from \$125,000. Custom home and lot packages are available from the mid \$300's to the \$700's and more.



THE COTTAGES AT HERON'S LANDING

These quaint waterfront cottages feature three unique floor plans with prices starting in the mid \$100,000s. The Energy Star rated home designs have been created to utilize sustainable and energy efficient components. One and two bedroom model floor plans are available, ranging from 560-1100 square feet.



The COTTAGES AT RIVER ROW

These luxury custom cottages will be the next 'evolution' of vacation cottage design at Heritage Harbor. Twelve custom cottage homes and carriage homes are being developed to surround the West Peninsula Swimming Club. These architecturally stunning cottages will be offered from the mid \$200,000's to the low \$300,000's.



THE HERITAGE SERIES RESORT INSPIRED COACH HOMES

These Cape Cod and Nantucket inspired coach homes feature architecture perfect for coastal living. The Heritage Series offer two unique floor plans with prices starting in the low \$200's.



THE WEST HARBOR LOFTS

Designed with comfort, entertaining and adventure in mind, the West Harbor Lofts are four-story townhomes overlooking the harbor. These townhomes include a tandem garage, 2 bedrooms, 2.5 bathrooms, flex space, outdoor patio and rooftop deck. Prices start at \$270,000.



OTTAWA

A Marina Resort Community

PRODUCT TYPES

CUSTOM HOMES & HOMESITES



THE ROW COTTAGE HOME SERIES TOWNHOMES

These homes represent a classic waterfront architectural style that would be right at home in historic towns from Hannibal, Missouri to Savannah, Georgia.



THE ADVENTURE SERIES RANCH & CAPE COD TOWNHOMES

Embracing waterfront living, these townhomes feature coastal architecture, roof characteristics and nostalgic front porches. Two 'Cape Cod' inspired floor plans are available, with prices starting in the low \$300's.



FLITE SERIES

To be completed by the end of the year, in collaboration with a high profile, Chicago-based design firm. These contemporary waterfront townhomes offer stunning views of the river with private courtyards and open floor plans. Prices starting in the low \$400's.



VACATION RENTALS

Heritage Harbor's Cottage at Heron's Landings are available for nightly rental – ideal for a weekend retreat or summer vacation. Heritage Harbor offers homeowners a myriad of rental management opportunities and will be growing the inventory of vacation rental units.

Some current offerings include:

- Huck Finn Hideout – 1 bedroom, 1 bathroom, sleeps up to four guests. Rates start at \$139 per night.
- CAL's Cottage – 1 bedroom, 1 bunk room, 1.5 bathrooms, sleeps up to six guests. Rates start at \$159 per night.
- Lazy Days Resort – Deluxe two bedrooms, 2.5 bathrooms, sleeps up to six guests. Rates start at \$199 per night.

