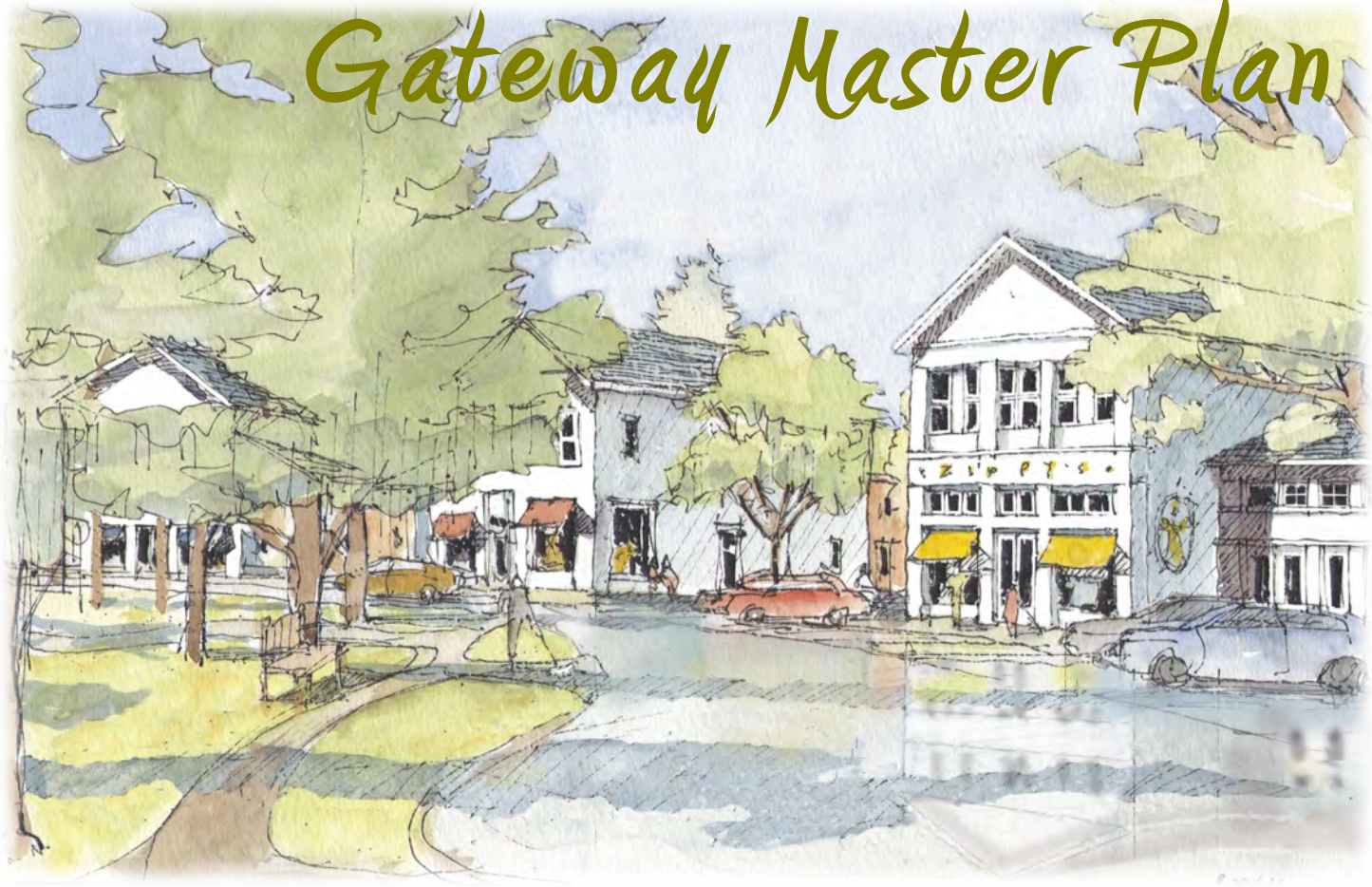


The Village of Interlochen

Gateway Master Plan



Adopted by Green Lake Township

February 11, 2013

As a Component of the Green Lake Township Master Plan

Sponsors

This master plan has been made possible by the generous support of Green Lake Township, in conjunction with the Northwest Michigan Council of Governments and the Village of Interlochen Downtown Development Authority.

Special Support

The planning team is appreciative of the many contributions from the community and the Green Lake Township officials and staff including:

The Green Lake Township Trustees: Marvin Radtke, Sherry West, David Bieganowski, Patrick McDonald; ***The Green Lake Township Planning Commission:*** Chris Hintz, Patrick McDonald, Liz Disbrow, Hugo Karle, Gerard Jackowski, Sara Kopriva, Jon Schuster; ***The Village of Interlochen Downtown Development Authority:*** Paul Biondo, Barry Bialik, Brian Postma, David Pennington, Patrick McDonald, Bob Allard, Sarah Bourgeois; ***Green Lake Township Supervisor*** Paul Biondo; ***Green Lake Township Zoning Administrator*** Krysti Baker; and ***Green Lake Township Planner*** Leslie Sickterman.

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APPENDIX

Site Conditions Investigation – Base Maps



Introduction

Northwest Michigan is considered one of America's most attractive destinations. The Sleeping Bear-Leelanau area was recently rated *"the most beautiful place in America"*, out-doing even Aspen, the Grand Tetons and Maui, Hawaii. The region has a relatively strong economy and has also experienced steady population growth during the past decade, even while the state as a whole lost population to the sunbelt. However, much of the new development, especially in the Traverse City area, has been built in a haphazard suburban form that has become too common in many areas of the country. If left unchecked, this sprawl will spoil the region's unique natural beauty, and eventually become unsustainable.

1

The historic Interlochen Village is located in the direct path of this sprawl. The township's new water system, combined with a possible sanitary sewer treatment plant, will likely accelerate the growth, especially for commercial development. Located just 15 miles from both the Sleeping Bear and Traverse City areas, Interlochen is at a critical threshold. It can seek to maintain its "up-north" forested character, similar to the Leelanau region, or allow for conventional growth, similar to the US31 Chum's Corners commercial corridor. Suburban highway commercial growth is market-driven and difficult to restrain. This is self evident at the US31-M137 gateway, where two of the corners have been developed with strip commercial shopping centers.

The township has recently approved an exemplary town center on the southeast corner of the US31-M137 gateway study area. Except for the gas station and supermarket, this proposed town center is undeveloped. Many of the fast food restaurants, hotels, banks, and pharmacies which have been built or may be built at the gateway corner should be located in the southeast quadrant. This study recommends that the gateway's northeast and southwest US31-M137 quadrants be developed as two mixed-use traditional neighborhoods, primarily made up of various types of residential typologies, a civic use, and a small amount of commercial.

In addition to the gateway town center, the Township's Interlochen Streetscape Design Plan (prepared by others) proposes two additional separate village clusters over half a mile south of the gateway area along M137. While these second and third centers are more central to the community, and historically based, they represent a conundrum. Visitors to the gateway's supermarket and restaurants will need to drive to many community buildings such as the library, community center, school and township hall. Ideally, some of the proposed new community uses would be dispersed into the gateway neighborhoods. A library, for example, is a natural complement to restaurants and neighborhoods.



During the gateway planning workshop, there was overwhelming support for grouping all new community buildings including the township hall, elementary school, community building and library together, in the study area south of the US131-M137 gateway town center. Gibbs Planning Group recommends that the township reconsider this sentiment.

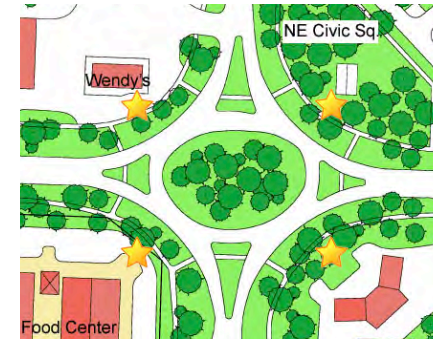
Maintaining the prized “up-north” character for the Interlochen gateway village will involve an extraordinary confluence of public policy, planning, community support and progressive property owners. Interlochen’s gateway, and the township as a whole, faces an especially daunting challenge in placemaking due to its lack of Great Lakes frontage. Most of the region’s sought after communities including: Empire, Frankfort, Suttons Bay and Leland offer prime waterfront locations. Glen Arbor’s successful traffic calming of a state highway (including on-street parking and sidewalks) and its adaptation of an arts character represents a model worth further examination. Sound planning and design based on the traditional practices recommended in this plan have proven to successfully accommodate market real estate demands, while creating desirable communities. This plan attempts to illustrate how the Interlochen gateway can be developed into two sustainable neighborhoods offering a variety of residential, commercial and civic uses that will enhance the surrounding areas.

2



The planning team initially did not seek to recommend a traditional neighborhood or a roundabout at the US131-M137 intersection. However, local residential developers and preliminary market analysis indicated a pentup demand for compact walkable residential neighborhoods. The township has a large inventory of vacant large-lot subdivisions. Offering an alternative smaller lot in a village setting makes sense. These homes can appeal to young families, empty nesters, retirees, and second home buyers. Quality multifamily and rental dwellings are also becoming a post-recession alternative for many. The plan accommodates the work-at-home population and artists with a variety of live-work and artist bungalows.

The US31-M137 roundabout was proposed to alleviate traffic congestion and to enhance Interlochen's placemaking. This is in response to the initial purposes for the gateway plan: to establish a gateway identity for Green Lake Township. One of the most frequently asked questions of the planning team was, is there a historic Interlochen Village? It should be noted that the author was not in favor of the roundabout option. However, the vast majority of the workshop participants, as well as MDOT and Grand Traverse County Road Commission staff, generally supported the concept. This plan is not dependent on the roundabout, and an alternative is proposed. The plan does recommend significant civic art at the intersection, and its reforestation with evergreen trees.



Purpose & Goals:

This plan is intended to assist the township in creating a market-based sustainable town center. The township sought a conceptual plan for the Interlochen gateway that would allow for enhancement of the crucially important gateway to the Interlochen business district. In addition to the gateway treatments called for in the Enhancement Plan, the gateway area should incorporate a design of internal streets and building placement that is a natural extension of the village but reflective of the US31 highway corridor.

The gateway master plan seeks to:

1. Establish a street and circulation plan for the gateway area;
2. Determine appropriate block size and building dimensions to best create a walkable extension of the village;
3. Be practically and economically feasible for the expected end users, including appropriate service access to buildings, suitable tenant spaces and dimensions, and adequate parking;
4. Address parking needs for the area;
5. Address pedestrian circulation and connections to surrounding uses in a complete streets program;
6. Create a welcoming entrance to the Interlochen business district;
7. Enhance the potential usability and land values for the properties; and
8. Aid in future approvals for individual developments proposed within the gateway district. The realization of this conceptual plan will encourage the property owners within the two crucial quadrants of the gateway to re-imagine the potential for their property, and to know exactly what the Township expects of them and what framework they must work within.

The plan is intended to translate the general vision for the entrance to Interlochen village into a tangible design that will benefit the potential of and reflect the rich character and charm of Interlochen. The conceptual development plan will also be consistent with the other adopted plans of the Township. Realizing the gateway concept plan will be a needed push toward the goal of creating the envisioned gateway experience at the Interlochen Corners, and promoting and enhancing the business and quality of life for the whole village area. If necessary, the conceptual development plan will include some proposed changes to the approved PUD for the southeast quadrant as well.



M137 looking north towards US31.

Process

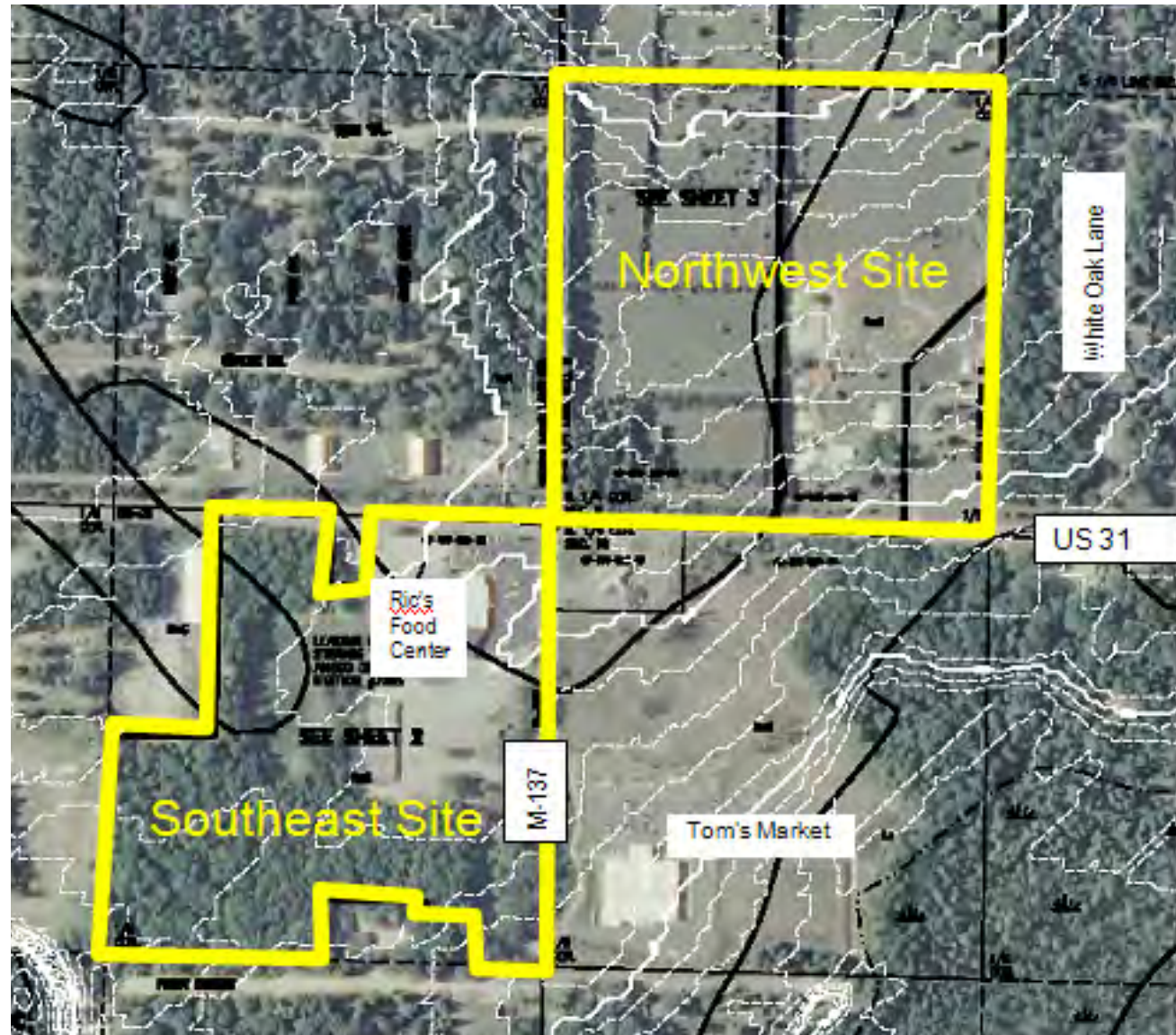
The gateway plan is based on a retail market study, an analysis of the site's existing conditions, and a public planning workshop in May 2011. More than 80 residents and stakeholders, including many business and property owners, participated in the workshop. To the best of our knowledge, property owners of the northeast 40 acres did not attend the workshop or contact the planning team. During the workshop, alternative designs and plans were presented for public comment daily, and new revised plans were created in response to those discussions. In addition, individual meetings were conducted with property owners, residents, township, county and state staff, and Green Lake Township's planning commission, board and Downtown Development Authority.

Key Gateway Master Plan Recommendations

- Create two walkable neighborhoods offering a variety of housing types and civic spaces
- Expand the Interlochen business gateway to all corners of the US 31-M137 intersection
- Create a range of civic squares, parks and greens that can accommodate future civic buildings
- Preserve and expand upon the area's natural character
- Replicate the character of Interlochen State Park and the Center for the Arts
- Add on-street parking to promote walkability and future retail
- Provide a variety of commercial venues for artists, work-at-home and incubator employment centers.



Gateway Master Plan



Existing Conditions



Existing Conditions



Existing Conditions



Existing Interlochen Village Commerce



Interlochen State Park & Interlochen Center for the Arts



★ Proposed Civic Art Location

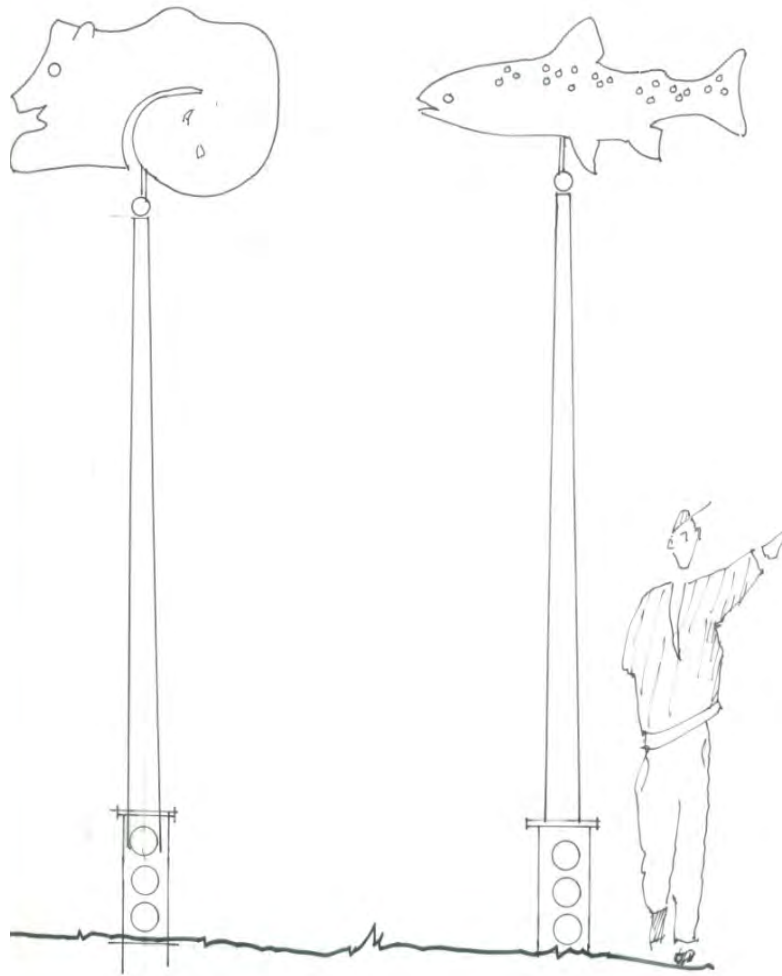
Gateway Alternative - A



12

★ *Proposed Civic Art Location*

Gateway Alternative- B



1. Moving Wildlife Sculpture



2. Stone Monuments & Welcome Sign

Gateway Civic Art Alternatives



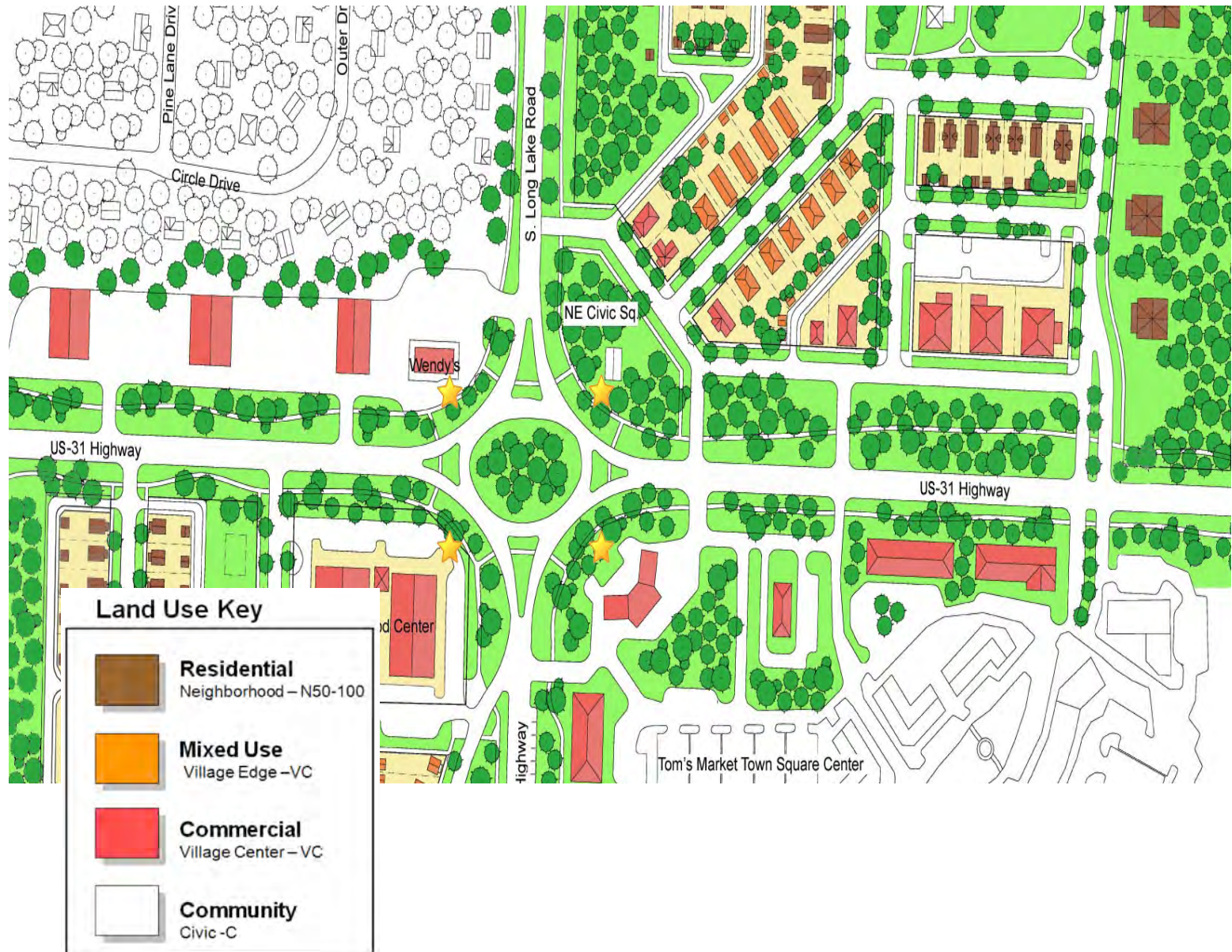
North East Neighborhood Master Plan



North East Neighborhood Detail Plan



North East Neighborhood View Looking Northeast



US 31 with Alternative Roundabout



South West Neighborhood Master Plan

Commercial Expansion



South West Neighborhood Detail Plan



South West Neighborhood Looking Southwest



Bungalow Courts



Bungalow Courts



Crystal Mountain Resort

NW Michigan Building Typologies



NW Michigan Building Typologies



NW Michigan Building Typologies



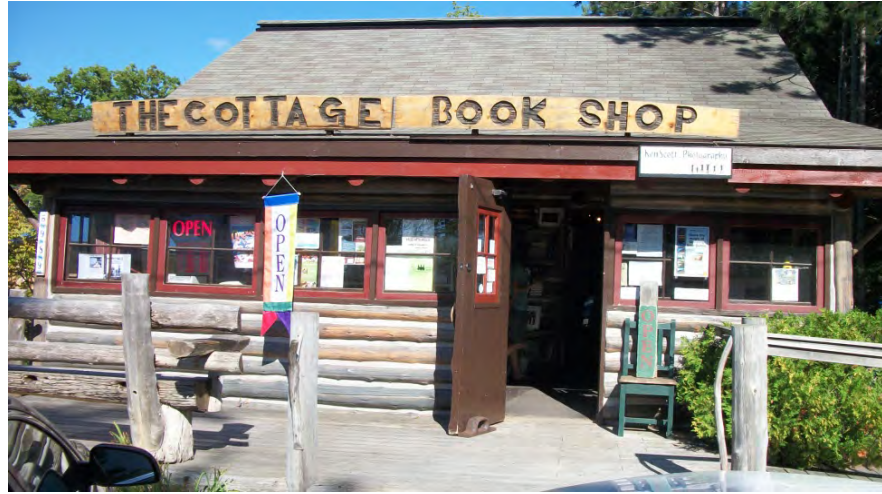
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NW Michigan Historic Civic Structures



Suttons Bay



Glen Arbor & Glen Haven



Landscape & Site Details



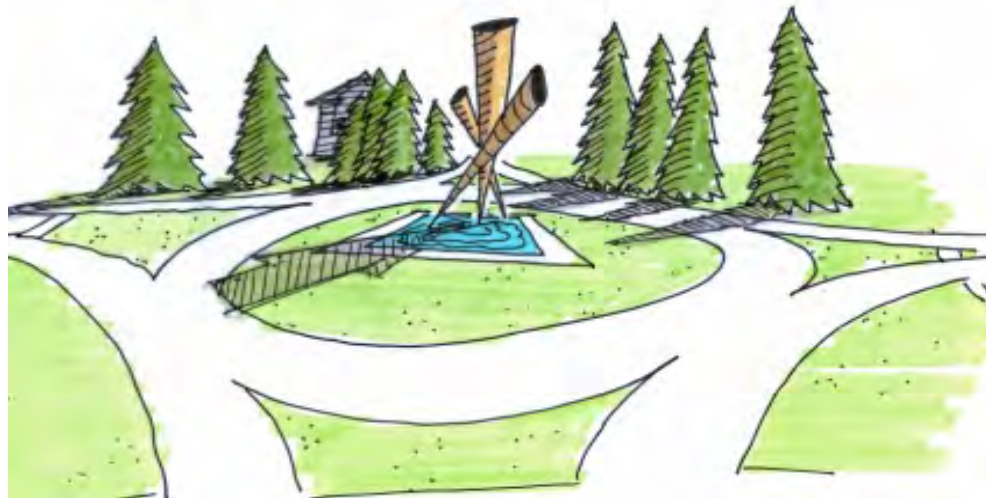
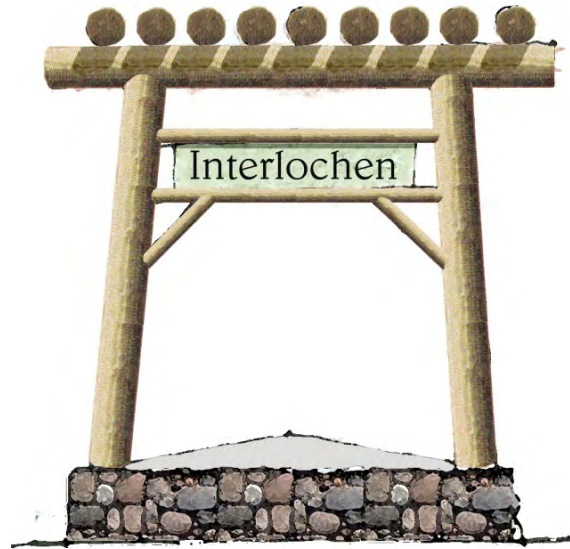
Landscape & Site Details



NW Michigan Art Centers



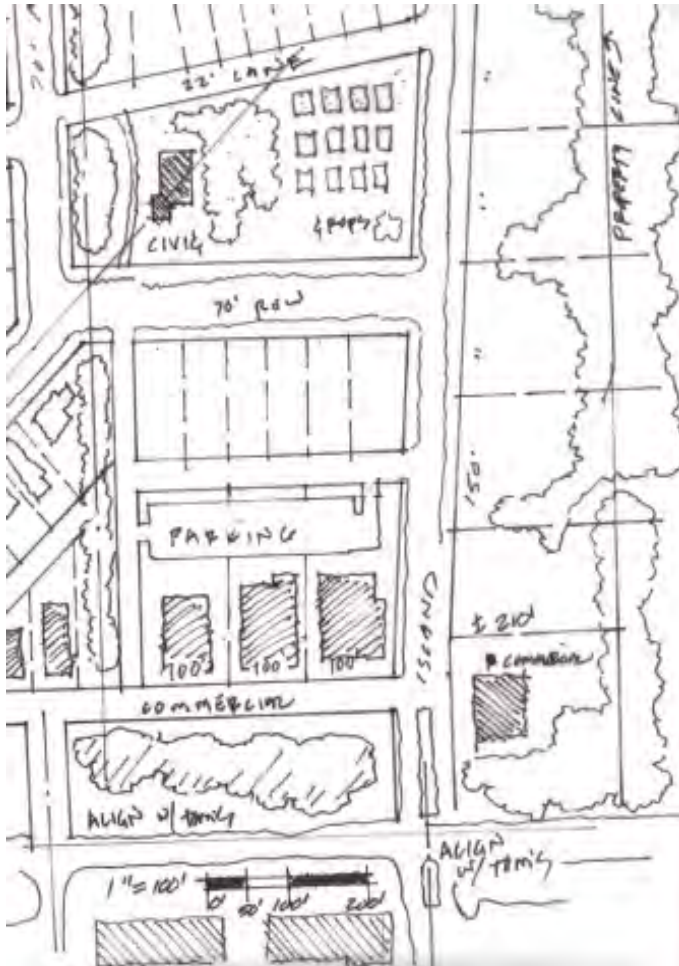
*Michigan Traffic Calming & On-Street Parking
Along State Highways*



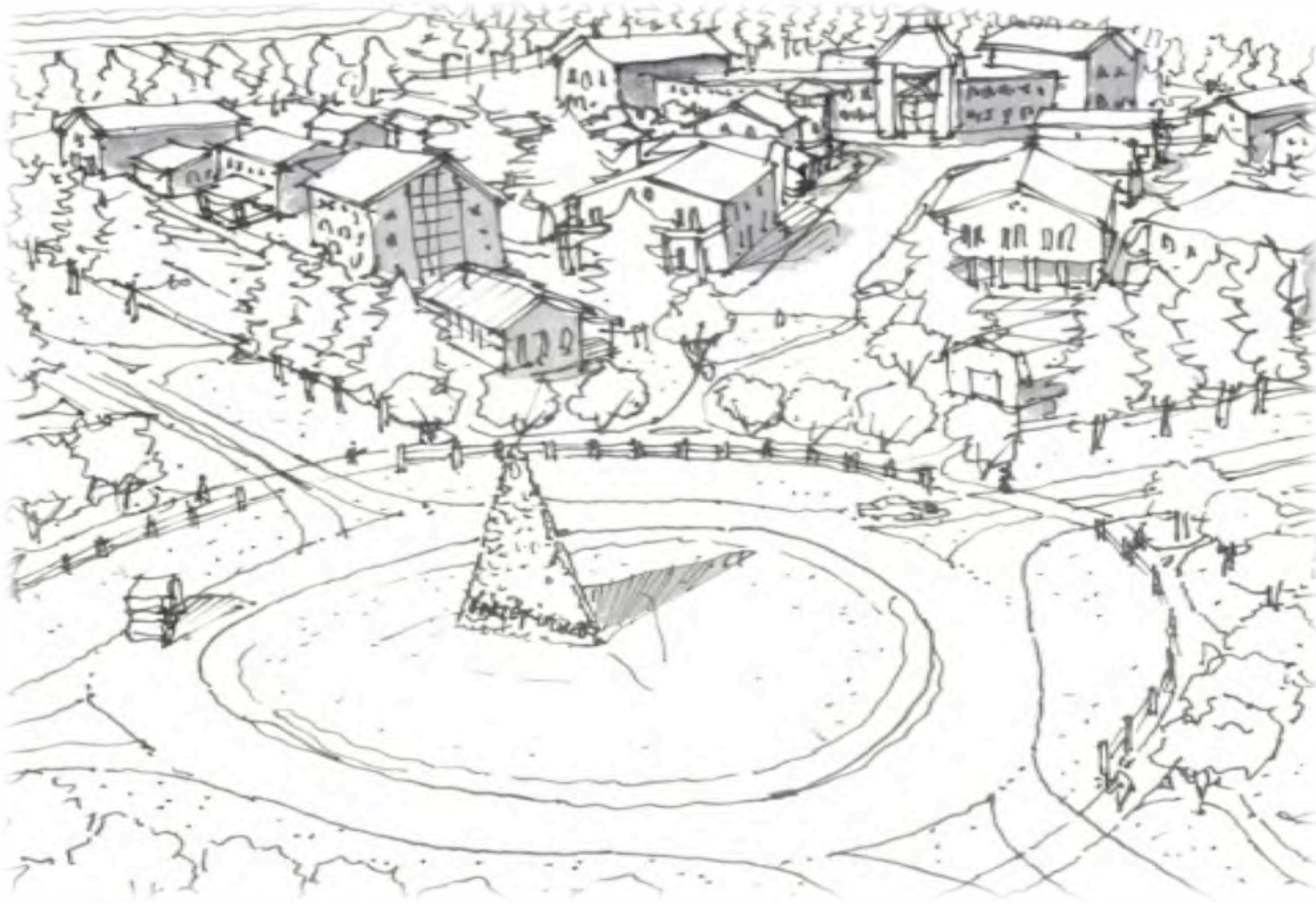
Workshop Alternative Sketches



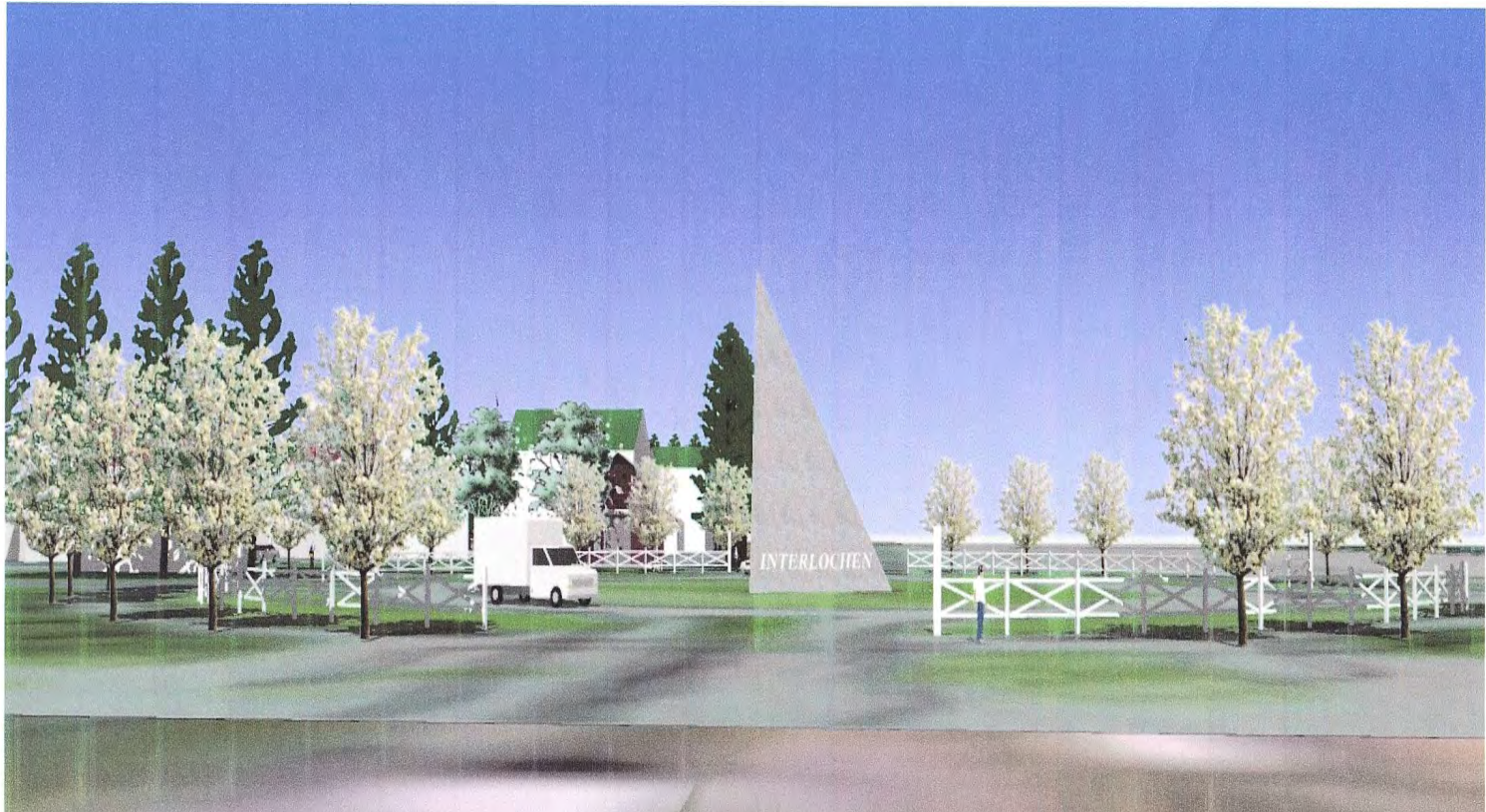
Workshop Alternative Sketches



Workshop Alternative Sketches



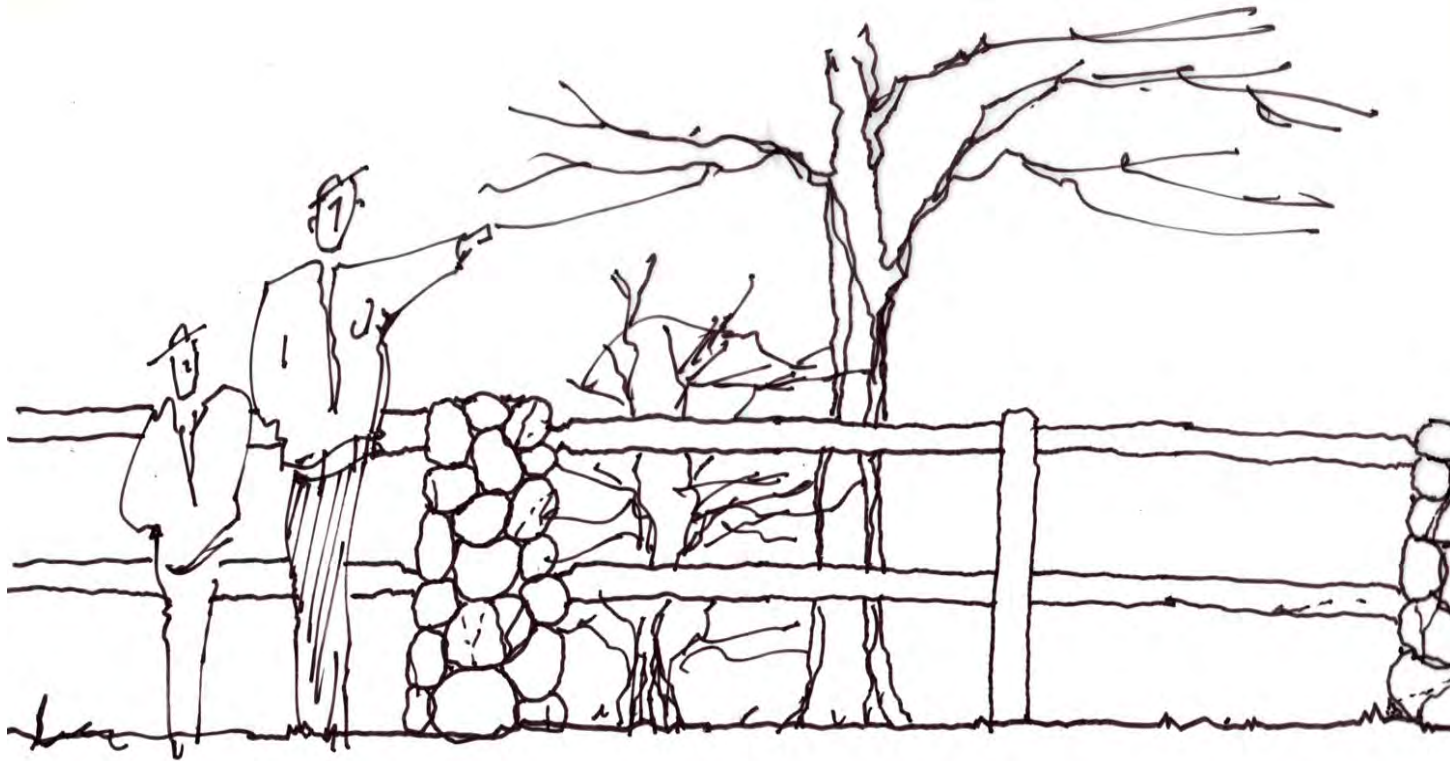
Workshop Alternative Sketches



Workshop Alternative Sketches



Workshop Alternative Sketches



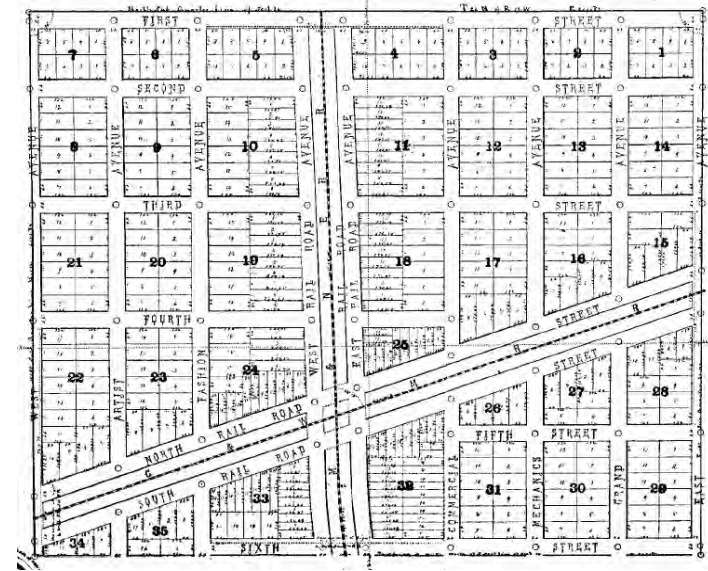
Workshop Alternative Sketches



Workshop Alternative Sketches



Workshop Alternative Sketches



Historic Interlochen Images



Historic Interlochen Images

Green Lake Township Retail Market Study

Gibbs Planning Group, Inc.

March 1, 2011

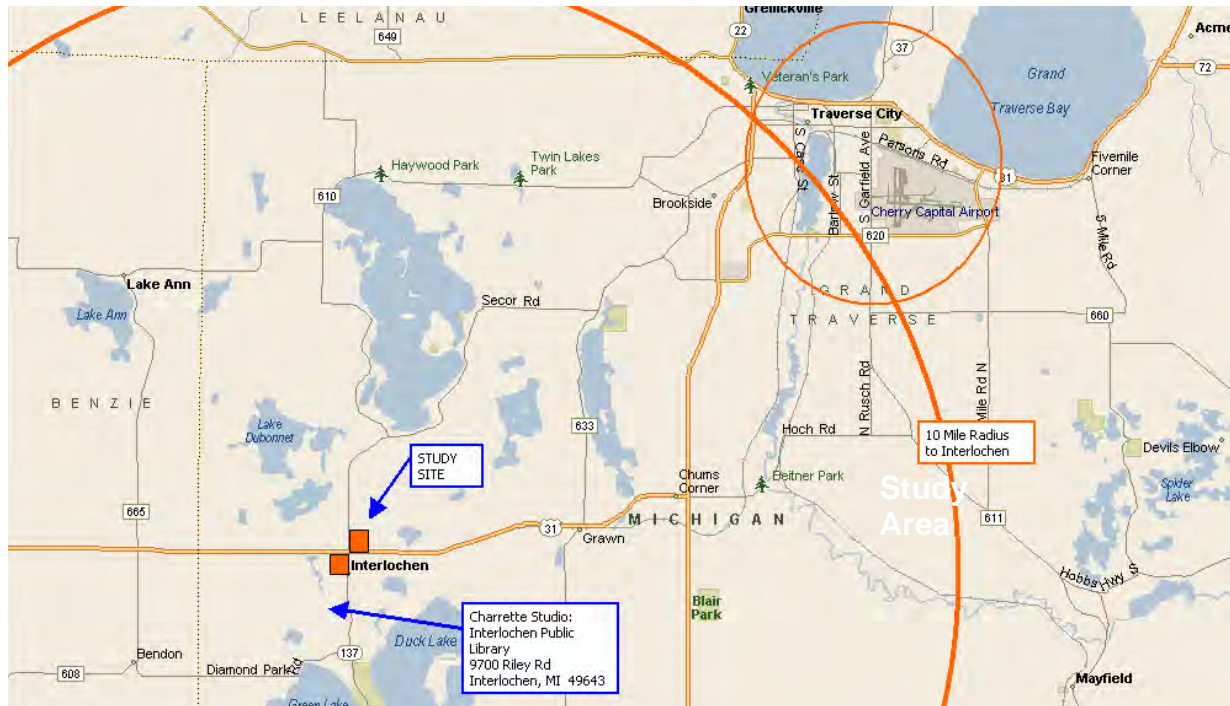


Figure 1: Green Lake Township is located in the Michigan Lower Peninsula's northwest region, nine miles southwest of Traverse City.

EXECUTIVE SUMMARY

This study finds a demand for 45,700 square feet of additional retail and restaurant in the Green Lake Township trade area. The trade area's 17,200 residents and thousands of visitors in the area generated approximately \$266 million annually in retail-restaurant sales, of which the Township's businesses could capture \$9.1 million. The balance of spending occurred in Traverse City and other locations outside of the trade area, the internet and in catalogs. This increased sales revenue could be gained by capturing the spending potential of the area's tourists and the Interlochen Center for the Arts, as well as local residents.

In contrast to the State of Michigan, the Township's trade area is projected to have an annual population growth rate of 0.7%. The region's growth, coupled with projected two percent annual average household income increases, will

Village of Interlochen Gateway Master Plan

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Gibbs Planning Group, Inc.

Adopted by Green Lake Township February 11, 2013

likely result in a slight increase in supportable retail, to an estimated 48,500 square feet in 2015. These additional sales could be gained through the development of new retailers and shopping destinations. Existing businesses could also increase their market share with the adoption of modern merchandising and business practices. Leasing, property ownership, access to capital and numerous other factors could be responsible for limited commercial growth and a market not meeting its demand potential.



Figure 2: The Interlochen Center of the Arts is located just three miles south of the study area. The center hosts dozens of well-attended events that draw thousands of visitors to Interlochen, in addition to its secondary school, summer camp and 300 faculty and staff. (Image source: Interlochen Center of the Arts web site).

2010 Supportable Retail summary:		
Drug Store	11,900 sf	1 Pharmacy
Restaurants	17,300 sf	5-8 Restaurants
Apparel	3,800 sf	2-5 Stores
Electronics/Appl.	3,400 sf	1-2 Stores
Grocery	2,200 sf	1 Store
Home Furnishings	1,800 sf	1-2 Stores
Sporting Gds/ Books	4,600 sf	1-2 Stores
Misc. Retail	700 sf	1 Store
Total	45,700 sf	10-22 Stores

2015 Supportable Retail summary:		
Drug Store	12,400 sf	1 Pharmacy
Restaurants	18,200 sf	6-9 Restaurants
Apparel	4,100 sf	3-6 Stores
Electronics/Appl.	4,200 sf	1-2 Stores
Grocery	2,400 sf	1 Store
Home Furnishings	1,900 sf	1-2 Stores
Sporting Gds/ Books	4,600 sf	1-2 Stores
Misc. Retail	700 sf	1 Store
Total	48,500 sf	12-24 Stores

Primary Trade Area

The primary trade area extends approximately 8-10 miles (see map below) and is estimated to account for 55-60% of the residents, workers and visitors shopping in the subject site. All of the Township's 5,000 residents, the Interlochen State Park and the Interlochen Center for the Arts are located within the primary trade area. The Center for the Arts is an internationally renowned academy and summer camp that includes 475 high school students, 3000 summer camp students and over 300 staff. The Township has an opportunity to significantly service the restaurant, lodging and retail needs of the primary trade area, especially the Interlochen Center for the Art's students, staff, visitors and the State Park's campers.

The primary trade area reaches to:

- Long Lake and Lake Ann to the north
- Maple City Road-County Road 669 to the west
- Thompsonville to the southwest
- Buckley to the southeast
- Highway 37 to the east

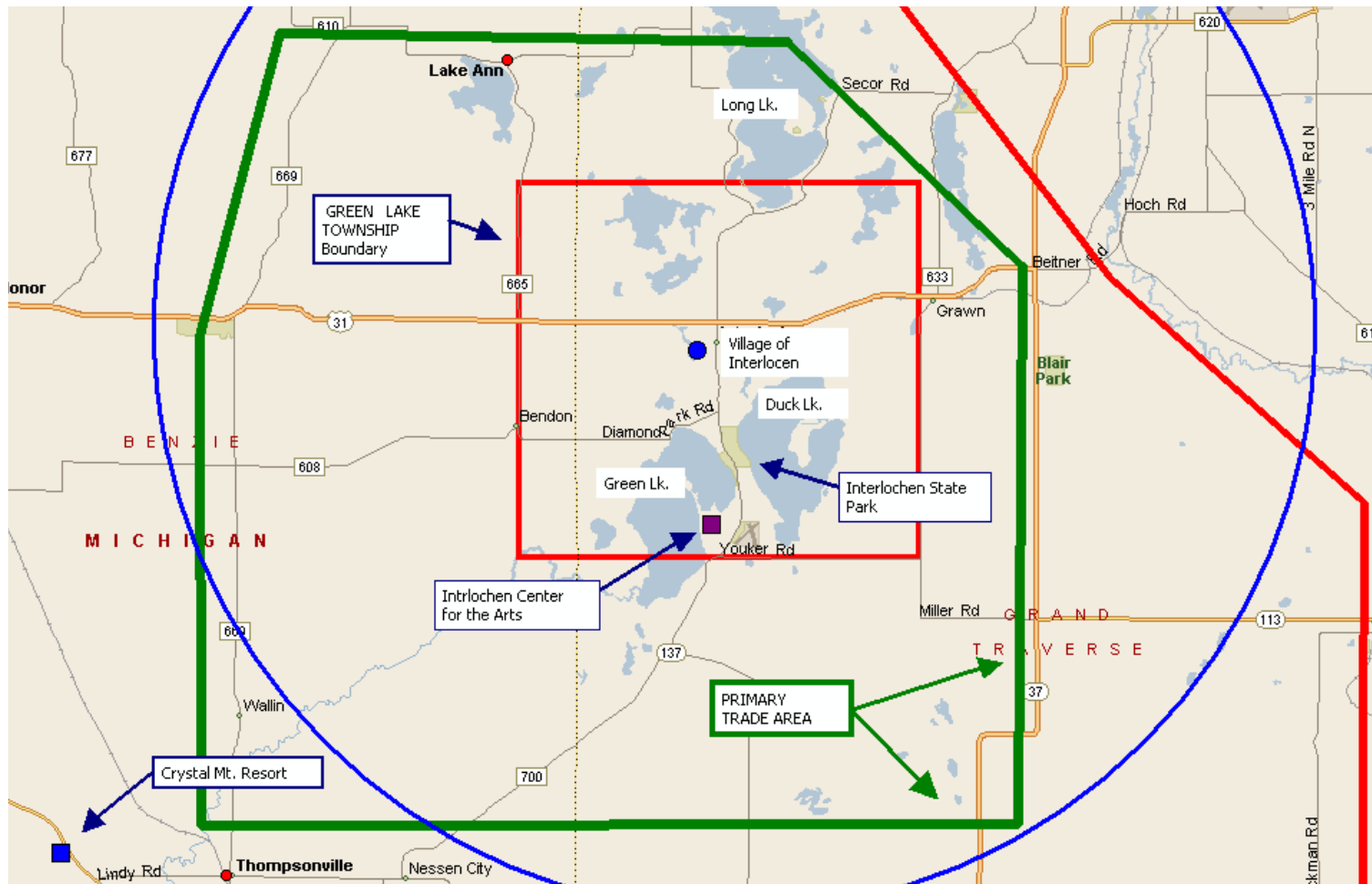


Figure 3: The study area's primary trade area is shown above, inside the green lines. Green Lake Township's boundary is shown within the red lines.

The total trade area's northeast boundary parallels the primary trade area to the east and extends 20 miles west to Lake Michigan. Traverse City's broad selection of restaurants, retailers, and shopping centers, in addition to its lively downtown, forms a critical mass that reduces the likelihood of people driving west away from the City.

[illegible]

Village of Interlochen Gateway Master Plan
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Gibbs Planning Group, Inc
Adopted by Green Lake Township February 11, 2013

The total trade area includes:

- Benzonia
- Crystal Mountain Ski & Golf Resort
- Frankfort
- Glen Arbor
- Honor
- Sleeping Bear Sand Dunes National Lakeshore Park

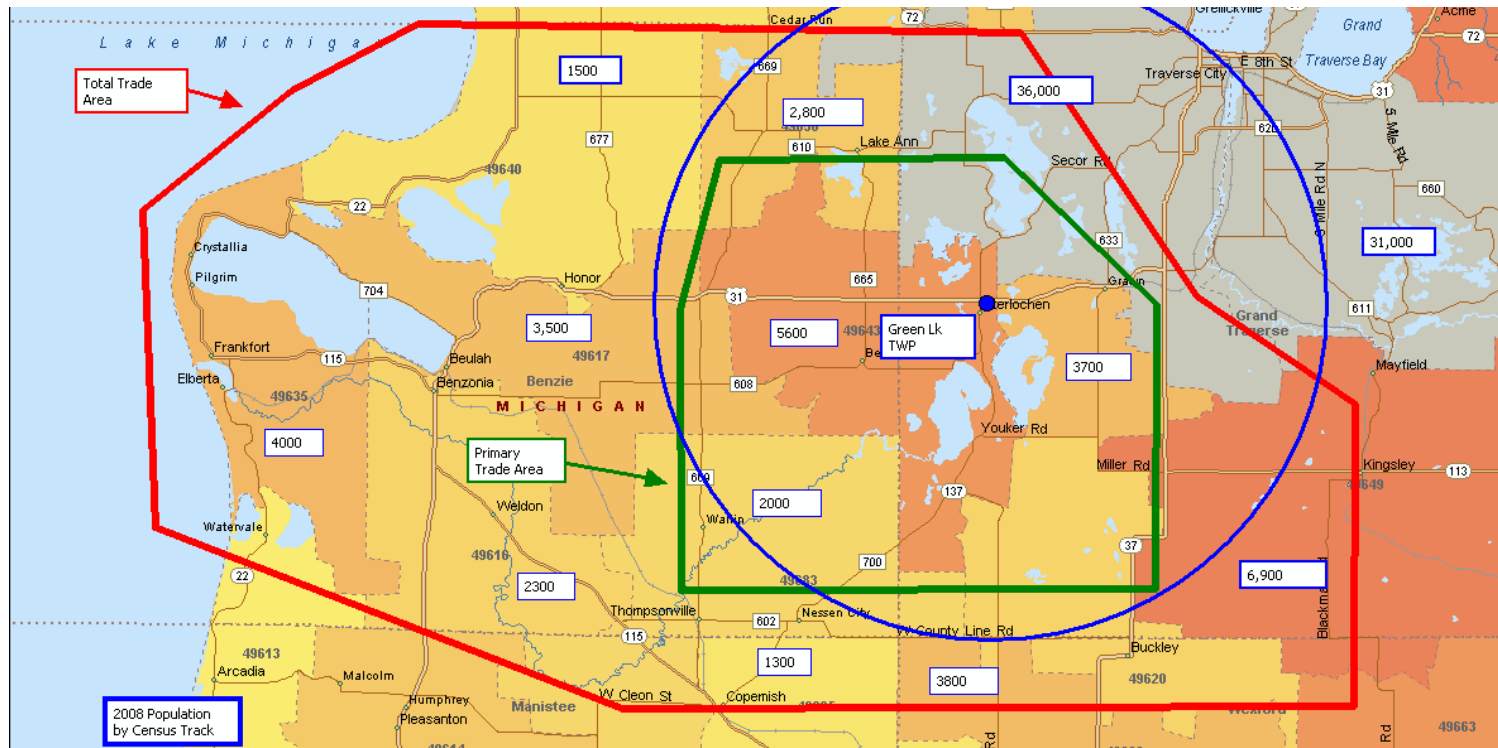


Figure 5: Map of the study area's 2008 population per U.S. Census tracts. Green Lake Township's estimated primary trade area lies within the green lines above. The orange line delineates the total trade area.

Demographic Characteristics

Using data from ESRI and Claritas, GPG obtained the population and demographic characteristics for the defined trade areas, as well as for Grand Traverse County. The primary trade area has an estimated 2010 population of 17,200 people, which is projected to grow to 17,770 people by 2015 (0.7% annual growth). The total trade area includes a population of 42,600 persons. The projected growth in the area is significantly stronger than the State of Michigan, which is losing population.

The number of households in the primary trade area is currently estimated at 5,680. Of these households, 54% are made up of 2-3 persons, while 20% have only one person. The primary trade area's median household income is \$52,400; total trade area household incomes are \$52,000. These incomes are slightly lower than both state and national incomes. Only 28% of the households have one or less vehicles, but 50% own three or more vehicles.

The table in Figure 6 presents and compares the demographic characteristics found in the defined trade areas:

Figure 6: Demographic Characteristics Table

Green Lake Twp. Demographic Characteristics	Primary Trade Area	Total Trade Area	Michigan	U.S.
2010 Population	17,200	42,600	10,104,600	311,212,900
2015 Population	17,770	43,350	10,039,300	323,209,400
2010-2015 Projected Annual Growth Rate	0.66%	0.35%	-0.13%	0.76%
Persons Per Household 2010	2.58	2.55	2.53	2.59
2010 Median Household Income	52,400	52,000	54,720	54,440
2010 Per Capita Income	21,955	22,570	26,265	26,740
% Households w. incomes \$75,000 or higher	19.30%	20.70%	20.60%	22.90%
%White	95.60%	95.90%	79.00%	71.90%
% Hispanic	1.80%	1.80%	4.30%	16.20%
Median Age	38.4	40.7	37.8	37.0
% White-Collar Employed	53.60%	54.70%	59.60%	51.60%



Figure 7: Photos from the websites of Crystal Mountain (left) and Sleeping Bear National Seashore (right).

Employment

The primary trade area includes over 8,500 employees, with almost 55% working in white collar and service positions. The retail trade employs 14%, while 10% work in manufacturing. Only 2% of the primary trade area workers are employed in agriculture. The region suffers from a high unemployment rate of 10.8% in Grand Traverse County and 14.7% in Benzie; the State of Michigan's unemployment is 10.6% (December 2010). More than 80% of workers drive alone with 12% car pooling and one percent walking to work. Forty percent of workers commute 25 minutes or longer to their place of employment, and 30% commute less than 20 minutes.

Background

Gibbs Planning Group, Inc. (GPG) has been retained by the Village of Interlochen Downtown Development Authority to conduct a preliminary retail market analysis for the intersection of Highways M-137 and US 31. This study is intended to assist the DDA and the GPG planning team with the master planning of 80 acres located at the intersection of US 31 and M-137.

Methodology

To address the above issues, GPG conducted a series of informal interviews with local residents, businesses, Township staff and officials, property owners, and real estate developers. GPG also completed an evaluation of most major existing shopping centers and retail concentrations in and around the defined trade areas. These interviews and field evaluations were conducted during the months of January to February 2011. During this evaluation, GPG thoroughly drove the trade areas, visiting and evaluating most resorts, downtowns and shopping center retail concentrations.

demographic characteristics of the trade area, the existing and known planned retail competition, and traffic and retail gravitational patterns, GPG developed this qualitative retail assessment for the Green Lake Township area.



Figure 9: The 80 acre study area is located at the intersection of U.S. 31 and M-137 in Green Lake Township (inside the yellow lines above). The site is approximately nine miles southwest of Traverse City. (Image source Google Earth)

Assumptions

These projections are based on the following assumptions:

- No other major retail will be developed within eight miles of the subject site, including the proposed expansion of the Gateway development (Tom's Supermarket) adjacent to the subject site. Note that the closing of

existing retailers and shopping centers located within the trade area could potentially increase the supportable commercial described by this study.

- The region's economy will stabilize at normal or above normal ranges of employment, inflation, retail demand and growth.
- Development of infill retail or that of a new neighborhood/convenience center will be planned, designed, built, and managed as a walkable town center, to the best practices of The American Planning Association, The Congress for the New Urbanism, The International Council of Shopping Centers, and The Urban Land Institute.
- Parking and visibility in the proposed commercial developments will meet or exceed industry standards.
- The findings of this study do not take into account local, regional, or state governmental policy or zoning restrictions.

Limits of Study

The findings of this study represent GPG's best estimates for the amounts and types of retail tenants that should be supportable in the Green Lake Township area by 2015. Every reasonable effort has been made to ensure that the data contained in this study reflect the most accurate and timely information possible and are believed to be reliable. It should be noted that the findings of this study are based upon generally accepted market research and business standards. It is possible that the study area could support lower or fewer quantities of retailers and restaurants yielding fewer or increased sales revenues than indicated by this study, depending on numerous factors, including respective business practices and the management and design of the study area.

This study is based on estimates, assumptions, and other information developed by GPG as an independent third party research effort with general knowledge of the retail industry, and consultations with the client and its representatives. This report is current as of February 18, 2011, and GPG has not undertaken any update of its research effort since such date.

This report may contain prospective financial information, estimates, or opinions that represent GPG's view of reasonable expectations at a particular time. Such information, estimates, or opinions are not offered as predictions or assurances that a particular level of income or profit will be achieved, that specific events will occur, or that a particular price will be offered or accepted. Actual results achieved during the period covered by our prospective financial analysis may vary from those described in our report, and the variations may be material. Therefore, no warranty or representation is made by GPG that any of the projected values or results contained in this study will be achieved.

INTERLOCHEN VILLAGE CENTER

Summary of Site Conditions & Development Investigation

Gourdie Fraser, Inc., 123 Front Street, Traverse City, Michigan 49686

APRIL 29, 2011

GFA PROJECT NO. 11061



SOUTHWEST QUADRANT (PARCEL 07-016-010-02)

Site Access

The parcels within the southwest quadrant of the investigation are currently occupied by the Interlochen Plaza, anchored by Ric's Market as well as other commercial buildings that appear mostly vacant. Access to these properties currently exists along U.S. 31 (Principal Arterial Road) to the north and M-137 (Major Collector Road) along the east side. Approximate locations of right-of-way lines and widths are shown on the attached maps (found in the Appendix). Commercial driveways are in place which are aligned with the other commercial developments on the opposite sides of M-137 (Tom's Food Market Site) and U.S. 31. Access for any new developments will be constructed through the MDOT right-of-way permitting process. Another potential access to the site may be from First Street which runs along the south side of the site.

Curb cuts and access locations will likely be preferred by MDOT to remain at the current locations which are coordinated with the other commercial properties on the opposite sides of the roadways. Roadway design practices generally require driveways and approaches to either be aligned, or be a minimum of 300 feet apart if offset. In addition, geometric enhancements such as additional turn lanes, curbing and deceleration/acceleration tapers may be required for access construction.

58 Storm Water Management

The existing commercial site has large areas of impervious surface and appears to have an underground storm water collection system which leads to a detention/retention basin on the west side of the site. In general, the soil types at the site appear to be of the classification Rubicon Sand (RwB) which is granular and well drained. Soil conditions appear to be such that a stormwater management system can be planned and constructed to support new development on the site.

Storm water management planning and construction will be through a permit from the Grand Traverse County Drain Commissioner's office in accordance with their published design standards. It is anticipated that any new construction will require a stormwater management system which provides water quality improvements as well as detention volume. Storm water quality improvements may include practices such as rain gardens, bio-swales, sediment fore bays, mechanical devices and constructed wetlands.

Wastewater Systems

An improved on-site wastewater collection and treatment system was constructed in 2004 to replace lagoons that were previously used at the site. The newer utilized septic tanks and drain fields with their approximate locations are shown on the map. Based on plans and calculations obtained from the Grand Traverse County Health Department, the system currently has a capacity of approximately 18,000 gallons per day. This would equate to approximately 75 residential equivalent units (REUs).

The current system could be utilized to support new development at the site for up to this number of REUs. It is anticipated that the system could also potentially be expanded with other improvements to the treatment system and collection system components. In addition, a wastewater study is currently in progress by Green Lake to determine options and feasibility for a centralized wastewater system to service the Interlochen Improvement District which includes the parcels in this investigation.

Water Supply

Based upon County Health Department records obtained, on-site water supply wells exist on the site to supply average daily demands of approximately 16,000 gallons per day. Based upon the apparent aquifer conditions in the general area it is anticipated that water supply wells could be constructed to support redevelopment of the site as needed. One known contaminated site is identified near the corner of U.S. 31 and M-137 and appears to be an existing underground storage tank which is no longer in use. Future water well development would need to comply with MDEQ requirements for isolation distance from this site.

Other potential sources of water supply for this site may include the municipal well system developed by Green Lake Township near the Tom's development, which has significant existing capacity and may have potential for expansion. In addition, a water supply study is currently in progress by Green Lake to determine options and feasibility for a centralized water supply system to service the Interlochen Improvement District which includes the parcels in this investigation. It is anticipated that this study will provide more details on the potential for service from the current well system and other sources.

NORTH EAST QUADRANT (PARCELS 07-016-005-00 & 07-016-005-10)

Site Access

The parcels within the southwest quadrant of the investigation are currently occupied by the now closed 'Fun Country' amusement center and a residence which currently exist along U.S. 31 (Principal Arterial Road) to the south and South Long Lake Road (Major Collector Road) along the west side. Approximate locations of right-of-way lines and widths are shown on the attached maps (found in the Appendix). The vast majority of the properties to the north are currently vacant. Driveways are in place along U.S. 31. Access for any new developments will be constructed through the MDOT right-of-way permitting process for U.S. 31. Access from South Long Lake Road would be pursued through permits from the Grand Traverse County Road Commission.

Curb cuts and access locations will likely be preferred by MDOT and the Road Commission to be aligned and coordinated with the other commercial properties and streets on the opposite sides of the roadways, such as future construction on the Tom's Plaza to the south of U.S. 31. Access points would likely need to be aligned with Innwood West, Toni Trail, and Wendy's to the west of the site across South Long Lake Road. In addition, connectivity through the existing residential subdivision to the east may be pursued through the out lot which connects with White Oak Lane. Roadway design practices generally require driveways and approaches to either be aligned, or be a minimum

of 300 feet apart if offset. In addition, geometric enhancements such as additional turn lanes, curbing and deceleration/acceleration tapers may be required for access construction.

Storm Water Management

In general, the soil types at the site appear to be of the classification Rubicon Sand (RwB) which is granular and well drained. Soil conditions appear to be such that a stormwater management system can be planned and constructed to support new development on the site.

It is anticipated that any new construction will require a stormwater management system which provides water quality improvements as well as detention volume. Storm water quality improvements may include practices such as rain gardens, bio-swales, sediment fore bays, mechanical devices and constructed wetlands.

Wastewater Systems

Due to the soil conditions of the subject properties, it is anticipated that an on-site wastewater system can be permitted and constructed to support development on the subject parcels. One scenario would be to construct a system similar to that which exists in the southwest quadrant or Interlochen Plaza site. However, a number of treatment technologies are available depending upon the scope and magnitude of the development. Due to the location, an on-site system would utilize a groundwater discharge. In addition, a wastewater study is currently in progress by Green Lake to determine options and feasibility for a centralized wastewater system to service the Interlochen Improvement District which includes the parcels in this investigation.

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Water Supply

Based upon County Health Department records obtained, on site residential water supply wells exist on the site. Based upon the apparent aquifer conditions in the general area it is anticipated that water supply wells could be constructed to support redevelopment of the site as needed. No known contamination sites were found during our investigations of these parcels.

Other potential sources of water supply for this site may include the municipal well system developed by Green Lake Township near the Tom's development which has significant existing capacity and may have potential for expansion. In addition, a water supply study is currently in progress by Green Lake to determine options and feasibility for a centralized water supply system to service the Interlochen Improvement District which includes the parcels in this investigation. It is anticipated that this study will provide more details on the potential for service from the current well system and other sources.

Appendix

