CITY OF POLK CITY

Notice of Work Session Meeting
Polk City
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March 23, 2015 | 5:30 pm
City Hall - Council Chambers
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1. Conceptual Aquatic Center Study and Design | Polk City | IA

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CONCEPTUAL AQUATIC CENTER STUDY AND DESIGN

POLK CITY, IOWA

JEO CONSULTING GROUP, INC.
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POLK CITY DEVELOPMENT CORPORATION:

Director **John Calhoun**

JEO Project No. 140473

CONCEPTUAL AQUATIC CENTER STUDY AND DESIGN
FOR
POLK CITY, IOWA

PART 1 - INTRODUCTION:

1.01 General

JEO Consulting Group, Inc., hereinafter referred to as JEO, was retained by the Polk City Development Corporation to evaluate the potential for constructing an aquatic center within the City of Polk City, Iowa. JEO's scope of services includes evaluating neighboring existing facilities and local demographics in an effort to determine market size and potential membership numbers, all in an effort to assist in the preparation of a conceptual design.

This report will attempt to identify any surrounding competing facilities, and will then look at the market size for a potential new aquatic center based on regional data from similar facilities as well as the demographic information for Polk City and the immediate surrounding area. From here, an estimated patron-ship is determined in order to drive the concept plan according to a sustainable framework and then recommendations on amenities and size are established.

Next, a potential site is investigated in detail and following this, historical financial information from similar sized facilities is examined to determine some expense factors that can be applied toward this project. In addition, income factors are determined that help predict the financial future of a proposed facility.

A proposed conceptual layout of the potential improvements is provided along with an explanation on preliminary sizing of the proposed components. There is also an opinion of cost for the layout, along with anticipated expense and income generation. Finally, these values are compiled and compared side by side utilizing 10 and 20 year investigation periods and breaking it down to average equivalent annual cost.

PART 2 - EXISTING FACILITIES WITHIN POLK CITY AND IN THE SURROUNDING COMMUNITIES:

Polk City is located in Central Iowa, in northwestern Polk County, approximately 16 miles north from downtown Des Moines, Iowa. Polk City does not have an indoor nor outdoor swimming pool open to the public.

Several surrounding communities do have outdoor aquatic centers / swimming pools. Brief summaries of these facilities are provided.

2.01 Prairie Ridge Aquatic Center (Ankeny, Iowa)

This existing outdoor swimming pool is located in Ankeny, Iowa, approximately 5.4 miles from the center of Polk City, Iowa. According to the City of Ankeny website, the pool features heated water, a zero depth entry, 150 LF & 140 LF water slides, a kiddie slide, a water walk, ground geysers, lap swimming, and a splash park, bathhouse, deck space and parking.

2.02 Cascade Falls Aquatic Center (Ankeny, Iowa)

It is the largest municipal aquatic center in Iowa at 20,000 square feet. The existing outdoor swimming pool is located in Ankeny, Iowa, which is approximately 5.69 miles from the center of Polk City. According to the website, the pool features heated water, a flow-rider surf machine, five slides including a drop slide and a swirl bowl, 8 lap lane lap area, zero-depth pool with water play features, bathhouse, deck space and parking, and 640-foot Lazy River with a wave generator.

2.03 Woodward Golf & Rec (Woodward, Iowa)

This existing outdoor swimming pool is located in Woodward, Iowa, which is approximately 12 miles from the center of Polk City. From aerial photography, the pool appears to have a general swimming area and one diving board.

2.04 Urbandale City Swimming Pool (Urbandale, Iowa)

This existing indoor swimming pool is located in Urbandale, Iowa, which is approximately 9.28 miles from the center of Polk City. From interior pictures, the pool appears to have 5 lap lanes and two diving boards.

2.05 Northwest Aquatic Center (Des Moines, Iowa)

This existing outdoor swimming pool is located in Des Moines, Iowa, which is 9.6 miles from Polk City. The pool features a water slide, a zero depth entry, a water mushroom and a shaded swim area.

2.06 Slater Municipal Pool (Slater, Iowa)

This existing outdoor swimming pool is located in Slater, Iowa, which is approximately 9 miles from the center of Polk City. From aerial imagery. The facility appears to have a main swimming pool, including six (6) lap lanes, general swimming area with a narrow zero depth entry ramp, diving well, shade structures, night lighting, grassed areas, bathhouse, pergola concession's eating area, pool mechanical equipment area, and an open flume slide with prefabricated runout.

PART 3 - MARKET SIZE, POPULATION/DEMOGRAPHICS & PATRON-SHIP:

3.01 General

Reviewing demographics can be an important factor during the concept stages of development of an aquatic center. Demographics can be used to help determine the anticipated service area of an outdoor pool and anticipated patronage. Market size is loosely defined as the geographical area from which a sustained patronage for a certain amenity can be, more or less, expected.

One item that should be clearly stated is that for communities with the size and population density of Polk City it is generally understood that the anticipated patronage in conjunction with the accepted entrance fees are rarely adequate to generate enough income for the facility to function unsubsidized. Instead, most outdoor aquatic centers in small communities are typically designed to include the desired features and subsidization for operation is worked into the budget from the beginning.

In JEO's experience, market size can vary considerably depending on the size, density and location of a community in relation to surrounding communities and their respective densities, size and location, etc. For an outdoor, municipal aquatic center with the features identified in this report, in a location in the rural Midwest, previous experience has shown that the typical maximum market size for similar facilities is limited to an approximate 5-mile radius around the facility. This radius is largely driven by convenience of transportation routes and travel patterns for those who would most frequent an aquatic center.

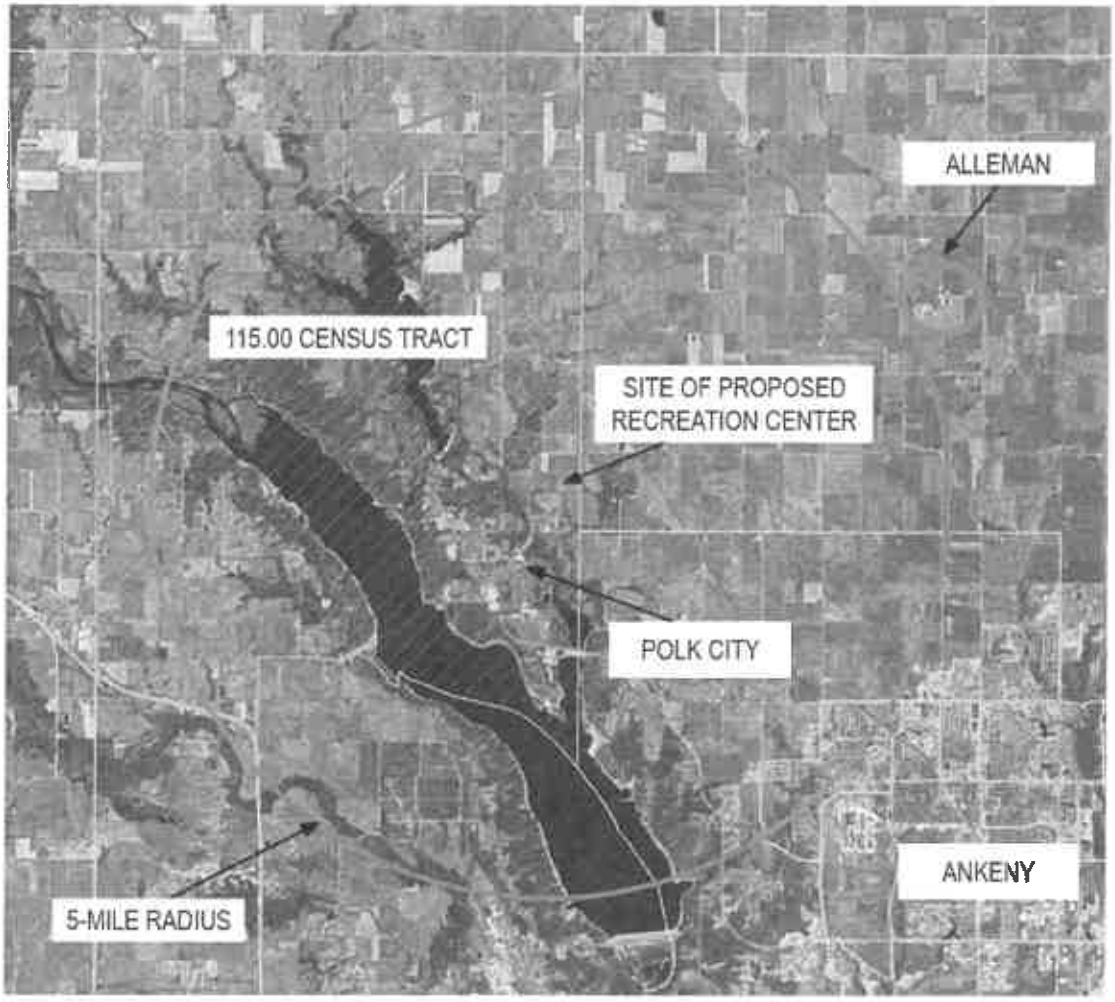
3.02 Market Size and Population

For the purposes of this report, the market size for a conceptual aquatic center will be assumed to be the population within Polk City, and those living within the surrounding 5-mile radius of the city, including the rural inhabitants. No other communities fall within this service area radius, however, it is assumed that the populations from nearby communities that do not have an outdoor swimming pool would also be included in this market area. The only rural community to be included in this study is the City of Alleman.

The writers of this study understand that typically, when a new aquatic center is first constructed, the market area is considerably larger. Personnel at new facilities note that this draw, within a few years, typically subsides and the majority of patrons are from within the community itself and/or the remaining from within the 5-mile radius.

For this report, the populations of the market area have been analyzed based on information gleaned from the census data from the U.S. Census 2010 Decennial Census. The following figure portrays the areas included in the market area for this report.

Figure 3.1 – Market Area Map



The 5-mile boundary radius shown in the above figure in red contains an area of roughly 78.5 square miles. The total population within this area was primarily determined by collecting the population of the sole census tract that that primarily falls within the radius (i.e. tract 115.00). Although a portion of the tract falls outside the radius, much of this area is made up of rural agricultural land. In addition, Polk City would still be the closest aquatic center for these residents. It should also be noted that the entire east half of the 5-mile radius area also encompasses a rural, agricultural land with a few people to account for in this calculation.

As mentioned above, the population for the community of Alleman was also included in this calculation given its proximity to the proposed aquatic center and lack of their own facility. The result is a current Market Size of approximately 5,669 people. This information is further tabulated in the following table.

Table 3.1 – 5-Mile Radius Population Determination

	CENSUS TRACT/LOCALITY	
	115.00	Alleman
Total Population	5,237	432
Total Population in Market Area	5,669	

Source: 2010 US Bureau Decennial Census

3.03 Demographics and Historical Population

For this report, population projections were developed by using the cohort-component projection method. Three data points are needed to make this calculation: birth rate, death rate and net migration. This study utilized the birth rate and death rate of Polk County. The net migration was then inferred from predicting the 2010 population using data from 2000 by subtracting the predicted population by the observed population. The resulting difference (positive or negative) is the net migration (see equation below):

Population Projection- Natural Change

$$POP_{2000} + (POP_{2000} \text{ X Birth Rate}_{2000} \text{ X } 10) - (POP_{2000} \text{ X Death Rate}_{2000} \text{ X } 10) = POP_{PRED\text{-}2010}$$

Population Projection- Net Migration

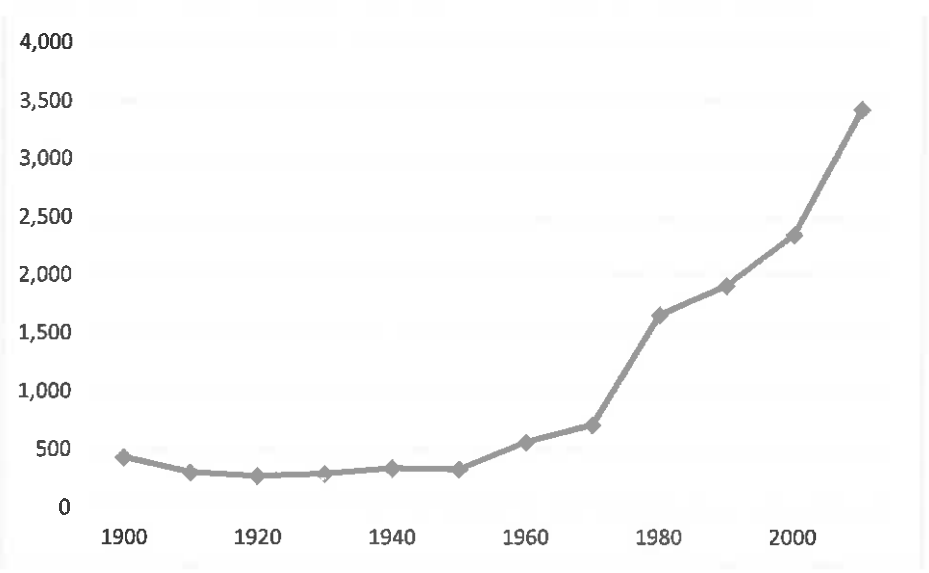
$$POP_{PRED\text{-}2010} - POP_{OBS\text{-}2010} = \text{Net Migration}_{2010}$$

This method of population was applied to the primary market or tract 115.00. Alleman's population is too small to accurately infer a migration rate. A composite population change was used for the secondary market determine its 2015 and 2020 population growth figure.

A. **"Primary Market"**

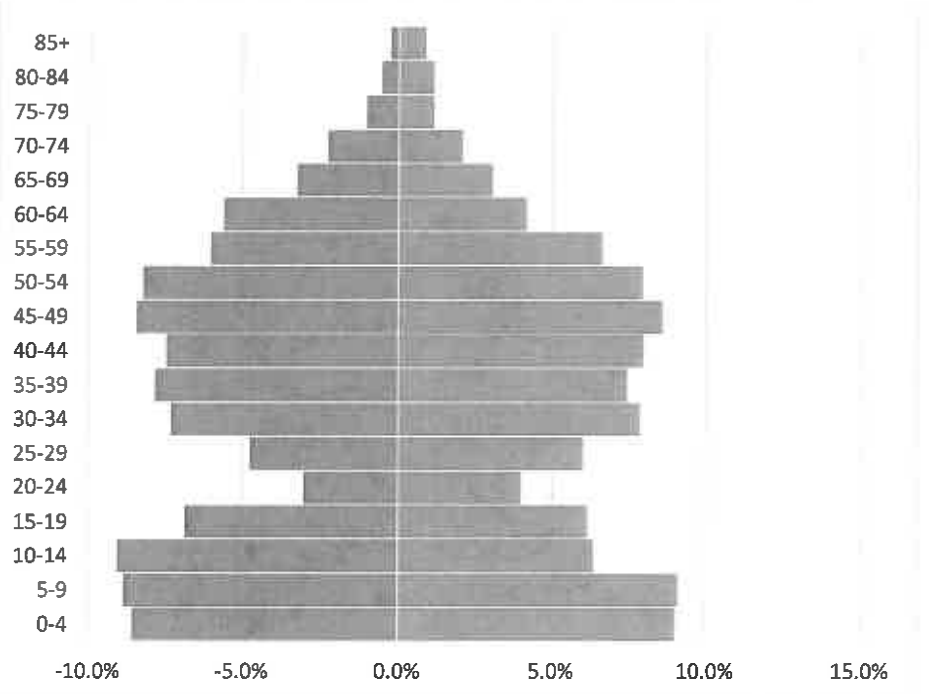
For this report, the "Primary Market" will consist of the population from Census Tract 115.00 with a total 2010 population of 5,237. As mentioned above, the demographic generalities and historical population from Polk County will be utilized to develop conclusions and predictions for the previously defined "primary market sector". Historically, Polk City has demonstrated continued growth since 1920. It wasn't until the 1970s that Polk City began to see the exponential growth that continues today.

Figure 3.2 – Polk City Historical Population



A second important factor to consider is the makeup of the population in terms of age or cohort. The chart below demonstrates the 2010 breakdown of the Tract 115.00 by five-year age groups or cohorts:

Figure 3.3 – Tract 115.00 by Cohort Breakdown (2010)



The above chart portrays the age cohort distribution within the total population of Tract 115.00 which encompasses all of Polk City and additional area northwest of the community. From the distribution, it is evident that the young, dependent cohorts are (less than 19 years old) and those in middle age (30-54) account for the majority of the area's population (i.e. families). The low share of both male and females age 20-29 can be explained by outmigration to college and other opportunities elsewhere.

When calculating the population projection out to the years 2015 and 2020, the net migration rate played a significant role in the growth of the primary market. Remember, birth rate, death rate and net migration are the three key factors in predicting future growth or decline. In setting up the population projection the study used data from 2000 to predict the 2010 population using only the birth and death rate for Polk County. Then the predicted 2010 population was subtracted from the observed 2010 population resulting in the net migration figures.

The chart below shows the natural birth rate only account for 3.81% of the growth during the 2000-2010 period while net migration attributed 41.7% of the growth. This same pattern of growth was applied to the same cohorts to forecast growth for 2015 and 2020.

Table 3.2 – Tract 115.00: Natural Growth vs Net Migration

	2000	2010	
	OBSERVED	PREDICTED	OBSERVED
Population	3,599	3,736	5,237
Growth/Decline		NATURAL (BIRTHS-DEATHS)	MIGRATION
- Persons		137	1,501
- % of Change		3.81%	41.7%
TOTAL		45.5%	

Keeping the birth rate, death rate and net migration constant through each five-year period yielded positive growth for the primary market with a 19.4% increase in 2015 over 2010 and 16.1% increase in 2020 over 2015. As such a total of 2,024 are expected to enter the primary market by 2020 and be counted in the next decennial census.

Table 3.3 – Tract 115.00: 2015 & 2020 Projection

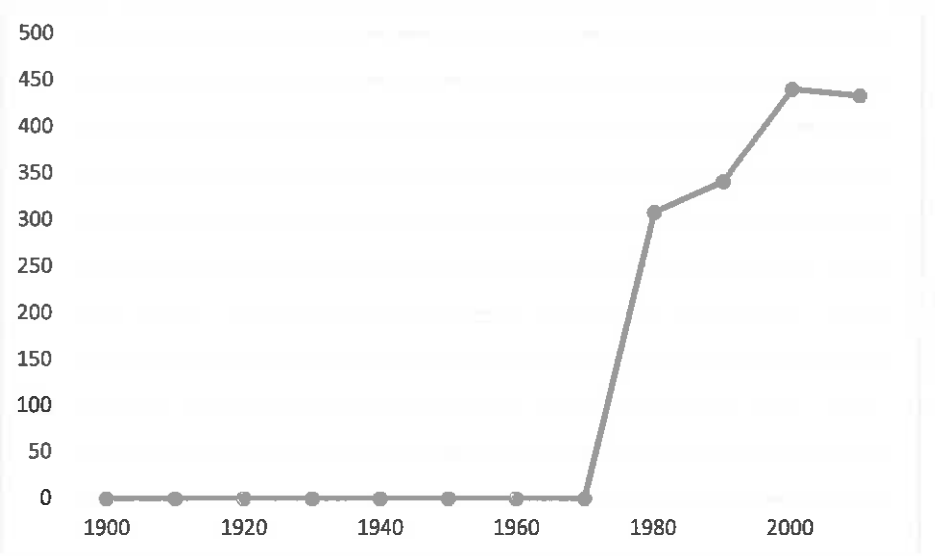
	2010	2015	2020
Population	5,237	6,252	7,261
Change		19.4%	16.1%

B. **"Secondary Market**

For this report, the "secondary market" will consist of the population of the City of Alleman with a total 2010 population of 432 people. As mentioned above, the demographic generalities and historical population from Polk County will be utilized to develop conclusions and predictions for the previously defined "secondary market". However, a composite change in population will be applied to forecast Alleman's growth out to 2015 and 2020.

Alleman did not collect a decennial census until 1980 so little historical population data is available for the municipality. Since then it has exhibited slow, but steady growth with a slight drop between 2000 to 2010 census (see Figure below).

Figure 3.4 –Historical Population for Alleman



While Alleman exhibited a positive natural growth of 5.9% during the 2000-2010 period, the total predicted population exceeded the observed population. This means net migration was negative and saw a decline of -7.5% which resulted in a net decline of -1.6% during this ten-year period. These rate of decline were applied to the observed 2010 population to calculate the 2015 and 2020 forecasts

Table 3.4 – Alleman 2015 & 2020 Projection

	2010	2015	2020
Alleman	432	429	425

C. Population and Demographics Conclusions

The following conclusions have been made for the Market Area for this report:

- Generally, the population for the Primary Market area has shown steady growth, especially since the 1980s. A majority of the growth can be attributed to positive migration to the area.
- Polk City/"primary market area" is the population center of the Market Area and growing at a rapid rate compared to the other communities in the study area.
- Alleman/"secondary market area" showed a slight decline in population exhibiting minimal impact to the total Market Area population.
- The general conclusion from the above analysis is that currently and for the foreseeable future, the population in the Market Area will be at or close to 7,686 people.

Table 3.5 – Market Area Population Projection

	CENSUS TRACT/LOCALITY	
	115.00	Alleman
2010	5,237	432
2015	6,252	429
2020	7,261	425
Total	7,686	

3.04 Anticipated Membership

A goal of this report is to provide a conservative estimation for the anticipated membership for a facility similar to what is being considered for the community. From investigations of existing facilities of similar scope, JEO estimates that approximately one (1) in every three (3) households within the "primary market" (i.e. Tract 115.00) that contains the aquatic facility will become patrons of the facility. Recall the definition of a household, as defined by the U.S. Census Bureau, is a group of two (2) or more people who reside together and who are related by birth, marriage or adoption. Therefore, the anticipated membership as estimated by the one (1) in three (3) household figure above only estimates the quantity of total memberships from within the "primary market". It does not define the type of membership. That being said, with a projected 2020 population of 7,261 and current persons per household figure of 2.79, the total number of households in the primary market approximately 2,603. Dividing 2,603 by three (3), the estimated membership from residents within the "primary market" is approximately 868 memberships. A summary of this information is included in a following table.

For the remaining population in the Market Area (i.e. the "secondary market") that approximately 1 in every 20 households will become patrons of the facility. The total 2020 population figures were divided by the number of person per household and then divided again by twenty (20), the estimated membership from the secondary market. The total of secondary market memberships is approximately 7 members.

Table 3.6 – Membership Estimation

Market Area Sector	Market Area Population (2020)	Persons / Household (2010)	Resulting Households	Statistical: Memberships / Household	Resulting Total Memberships
Tract 115.00	7,261	2.79	2,603	3	868
Alleman	425	2.86	149	20	7
Total	7,686		2,752		875

Therefore, a conservative estimate for total membership of a new facility is approximately 875 memberships. Once again, the writers of this study want to again emphasize that when planning for an outdoor aquatic center, for communities with similar size and population density, that it is generally understood that the anticipated patronage in conjunction with the accepted entrance fees are rarely adequate to generate enough income for the facility to function unsubsidized. Instead, most outdoor aquatic centers in similar communities are typically designed to include the desired features and subsidization for operation is worked into the budget from the beginning.

PART 4 - AMENITIES AND SIZE RECOMMENDATIONS

The following section describes JEO's recommendations on the size and amenities of a new outdoor aquatic center based on past experience, and market analysis. For each of the recommendations, generic descriptions of the individual components are typically included. It should be noted that these components are extremely customizable and only generic features have been represented. Items such as slides, play features, final layout, etc. are shown to provide perspective and are for planning purposes only.

The report may not explicitly state the means, but every new pool should be designed to be completely ADA compliant.

It is important to note that any new pool must meet all design standards as established by the Iowa Department of Public Health (IDPH) in the document titled "SWIMMING POOLS", and as amended July 8, 2009 (SP-2009). Further, all new facilities described will also meet the design standards/guidelines that were adopted by the United States Department of Justice on May 15, 2012.

4.01 Amenities and Size

Based on the anticipated membership estimations, there are several amenities that JEO recommends to be considered for inclusion on a concept aquatic center.

- Zero Depth Entry
    - A zero depth entry is essentially a term referring to how patrons will enter the pool. Traditionally, this has been accomplished with ladders. However, in the recent past, there has been a trend to allow users to enter the pool as if it were a beach with a constantly sloped entry across a certain area that gradually slopes down, increasing in water depth. This area of aquatic centers is extremely popular for all ages of patrons, especially the very young or elderly for a variety of reasons.

    - Given the anticipated membership, the recommended starting point for a zero depth entry size for this project is approximately 3,000 to 4,000 square feet. At this range of size it would allow for approximately 200 to 275 patrons in the zero depth area.

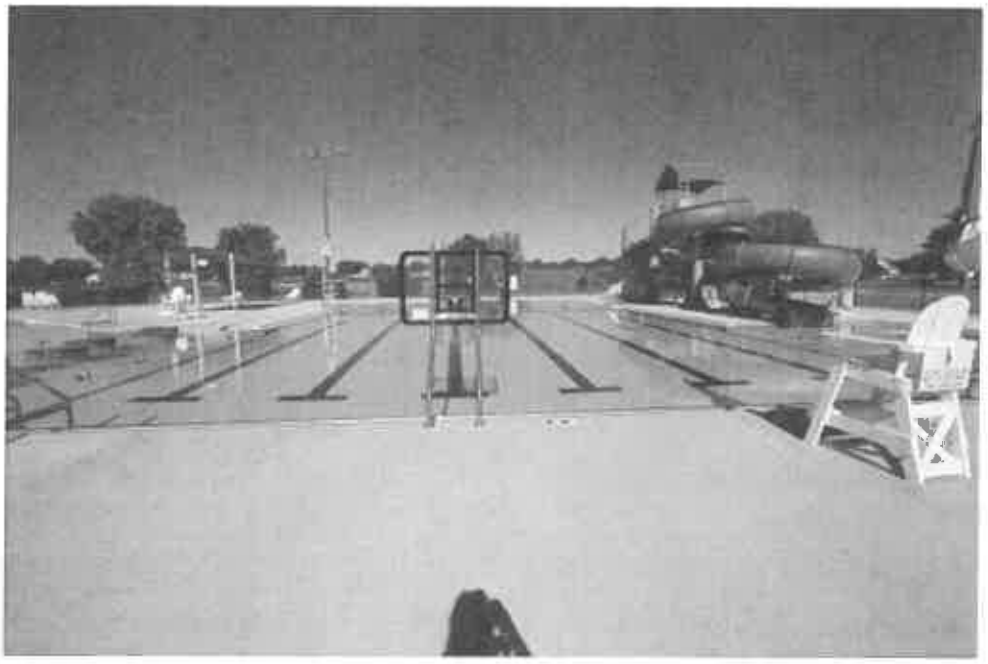
- Water Spray Features in Zero Depth Entry
  - For a facility of this size, adding water spray features in portions of the zero-depth area is a very popular trend and rates highly with patrons. Water spray features come in every imaginable shape and size, though generally speaking, the features are constructed of metal or plastic and are either flush with the floor (such as a ground geyser) or extend up anywhere from 24" to 24'. The features have varying flow rates and pressures to accommodate different user groups. For facilities of the similar size to this, it would be estimated that a complete water play structure with several individual spray features be considered. These structures typically operate on between 200 and 600 gpm and requires a few hundred square feet of shallow zero depth area. Play features in the zero depth will have no effect on patron loading.

- Water Walk
  - A water walk is a play feature that is commonly found in aquatic centers of similar size. It consists of a system that allows for younger pool patrons to attempt to cross a certain portion of the pool by jumping from floatation devices while holding onto cargo netting overhead. Typically, the water depth is approximately 36" to 48" deep and the span is typically 20' to 30' for the crossing. Most facilities limit crossing in one direction and the feature requires a guard when in use. When not in use, the floatation devices can be removed and the area can be used for general swimming/leisure.

  - Given the anticipated facility size, the recommended water walk would span an area of the pool that would be 42" deep with an approximate length of 30' by a width of approximately 10'. The resulting footprint is approximately 300 square

feet. The pool area required for this feature would provide for approximately 20 patrons.

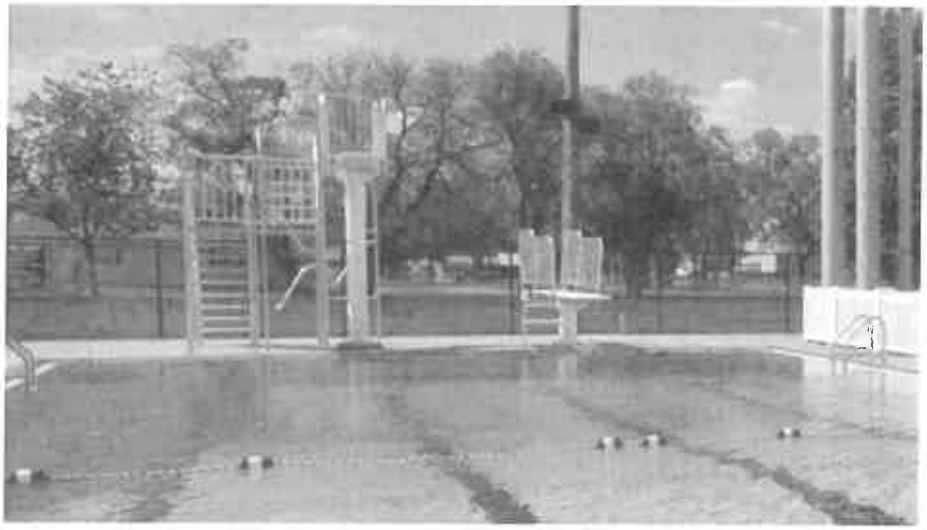
- Lap Lanes / General Swimming Area
  - For outdoor aquatic centers, often times, portions of the lap lanes can often also be utilized for general or leisure swimming areas. Commonly, lap lanes are 7' wide by either 25-yards or 25-meters long. Lap lane water depths typically range from 3'-6" to 5'-0" deep. This depth typically meets the majority of competitive swim team depth requirements.
  - For the general or leisure swimming, the lap lane area is typically allotted. General or leisure swimming is often a popular area for teenagers and young adults. When the lap lanes are in use, leisure swimming will not be permitted in this area.
  - Given the community size and anticipated patronage, it is recommended to have a lap lane/general swimming area with six (6) lap lanes that are 25-meters long. This would result in a footprint of approximately 3,700 square feet.
  - At 3,700 square feet, this would account for approximately 250 patrons.



- Diving Well with Diving Stands
  - A diving well is a term used to describe the area of a pool that has been designed and constructed for pool patrons to dive from a diving stand into the pool. The diving well is typically 10'-0" to 12'-6" deep. For this concept facility, the diving well would be a dedicated location adjacent to the deeper end of the lap lane area.
  - The current recommendation is to provide one (1) 3-meter diving stand and one (1) one-meter diving stand. At the deepest end of the well, the pool water would be 12'-6" deep and would remain at that depth for approximately 16'-6". From

that location, the floor would rise at a 1 to 3 slope until reaching the 5'-0" depth, which would take another 22'-6". In total, the diving well would be approximately 38'-0" long by 32'-0" wide. This would result in a footprint of approximately 1,200 square feet.

- At 1,200 square feet, this would account for approximately 60 patrons. However, regulations require an area reduction of 300 square feet per diving stand. The resultant square footage would be 600 square feet and the patron loading is approximately 30 patrons.



- Waterslide(s) Complex and Plunge Area
  - A large waterslide or waterslide complex is recommended for a facility of this size. The slide/slide complex should be incorporated into the original design but the actual implementation of the slide could be accomplished in the future or as an alternate bid item. The main reason to plan for the slide at the beginning is to ensure adequate recirculation for the slide plunge location as well as for providing means of egress, adequate space for pumping equipment and space for the slide complex itself.
  - For a project of this scope, it would be recommended to design around a tower structure that would be approximately 30 feet tall, providing for a 150 linear foot ride. The slide tower would be designed to handle two (2) separate flumes but both would terminate in a similar location in the pool. The anticipated termination location would be in a dedicated plunge pool which is adjacent to the lap lanes. The recirculation in the area of the plunge pool would be increased to provide a quicker turnover rate, per regulation requirements.
  - The current recommendation is to provide a dedicated plunge pool which is 30'-0" long by 25'-0" wide. This would result in a footprint of approximately 750 square feet.
  - At 750 square feet, this would account for approximately 50 patrons. However, regulations require an area reduction of 300 square feet for each water slide

which terminates in the swimming pool. Therefore, the resulting patron loading is reduced to approximately 10 patrons.

- Shaded Deck Area with Lighting and other features
  - All new swimming pools should be provided with plenty of "deck" space around the swimming pool(s). Typically, approximately 12 to 15 feet of deck space around the perimeter of the pool provides adequate space for both walking and lounging. Deck space should be of a solid surface that prevents tripping hazards and yet is slip resistant.
  - For a facility such as the described, it would be recommended to provide approximately 15 feet of deck around the entirety of the pool. This area is recommended to contain fabric style shade shelters for a good portion of the deck area. The fabric provides UV protection for patrons sitting below, but still allows for light to penetrate. When considering the quantity of deck space, it is important to consider the amount of patrons whom enjoy the atmosphere of the aquatic center and not just the patrons entering the pool itself. Many parents and guardians prefer to lounge and read books, monitor children etc. from the sidelines.
  - With adequate planning, shade shelters on the deck (and accompanying boundary devices) can provide for sheltered areas in which patrons can consume food and beverages as well.
  - Per Iowa regulations, deck space does not have an effect on patron loading.
- Bathhouse / Administrative Area
  - A bathhouse is a requirement for all aquatic centers. It serves many purposes, including but not limited to ensuring that all patrons meet the entry requirements for age and pay. Bathhouses also provide a base for the facility personnel to monitor the facility and administer aid if necessary. Further, many bathhouses contain the locker and sanitation facilities required for aquatic facilities. The bathhouse shown in the picture below not only contains the above mentioned features, but the left side provides for an area that patrons can consume food

and beverages in a covered location. Further, the area on the right contains the mechanical equipment that is recirculating the pool water.

- One important feature of a bathhouse/administrative area is to ensure that the managing staff has a viewpoint to see the critical locations of the pool itself. The counter window on the pool side of a bathhouse aids in this effort.
- For the Polk City facility, it is recommended to provide locker facilities in the new bathhouse. The locker facilities are utilized by patrons to store personal belongings while at the facility. In addition to locker facilities it is also important to include adequate storage space for pool and administrative equipment.
- Given the anticipated patron loading and facility size, it is recommended to plan for inclusion of a dedicated concessions area. The concessions would likely consist of prepackaged food that would not require special licensing. Preliminarily, the concessions side would be conditioned to a measure to allow for its use for 75% of the year to allow for the facility to double as concessions for neighboring soccer fields.
- Given the requirements, it is estimated that this administrative/bathhouse/ concessions structure would need to be approximately 2,500 to 3,000 square feet.

- Mechanical Building
  - A dedicated mechanical building is preliminarily planned for the northwest corner of the facility. The mechanical building will typically be placed near the deepest end of the pool (diving well) to allow for efficient piping configurations, which result in the most cost effective design.
  - The mechanical building is typically constructed of materials similar to the bathhouse to create a visual continuity and appeal. The mechanical building will likely be unconditioned but still will contain a roof

- Spray Pad
  - For a facility of this size, adding a spray pad area is a popular trend and rates highly with patrons. A spray pad is an aquatic playground that contains various at-grade and above-grade features that spray water and are installed on a sloped concrete pad that has no sitting water. The spray features come in several shapes and sizes and are generally constructed of metal or plastic. Iowa does not provide for specific patron loading on spray pads, but this report has included an estimate for planning purposes of approximately 70 patrons.

- Due to the close proximity to the pool it is recommended that the spray pad utilize a recirculation system which is located in the mechanical building. Per regulations the spray pad will require a separate pump and disinfection system.

- Parking
  - According to common sources, providing one (1) parking stall for every 100 square feet of water surface is a general rule of thumb. At approximately 9,000 square feet in the main pool, that would equate to approximately 90 parking stalls if the facility were fully built out; five (5) of these stalls should be ADA stalls.
  - In addition to the 90 parking stalls required for the aquatic facility, additional parking is recommended to accommodate the proposed soccer fields. At this time the total recommended parking stall count is approximately 480 parking stalls; fifteen (15) of which will be ADA stalls.
- Community Center
  - The committee responsible for commissioning this report is interested in the planning and inclusion of a community center in conjunction with a proposed aquatic center. The committee envisions the community center space to be a fully conditioned, 'four (4) season' facility that would be available to local constituents, groups, committees, etc. Preliminarily, it is envisioned that the space would be rented on a 'first come, first serve' basis, and the center would be managed and operated by the Parks & Recreation department of Polk City.
  - Aesthetically, the exterior of the facility would match the proposed bathhouse of the aquatic center. Additionally, the facility would have large, full-wall height glass doors along the pool side façade of the building with anticipation of these being opened during activities/rental occurrences.
  - The facility would contain an admission's counter/lobby, event room(s) with modular wall panels, storage for tables/chairs, restrooms and kitchen space, with an approximate total build out square footage of 4,500 square feet.

4.02 Summary of JEO Recommendations

The previous section provides a brief summary on each of the recommended features for the concept aquatic center. Combining the above recommendations into a single facility, the estimated patron loading is provided below:

Table 4.1 – Patron Loading

Main Pool Total Area is 9,338 sq. ft.		
	Sq. Ft.	Patrons
Total Shallow Area Patrons(< 5 ft):	8,122	
Area Reduction (300 sq. ft. per each slide) for 2 Water Slides:	600	
Resulting Shallow Area Patrons (1 patron/15 Sq. Ft.):	7,522	501
Deep Area (>5 ft):	1,216	
Area Reduction (300 sq. ft. per diving board) for 2 Diving Boards:	600	
Resulting Deep Area Patrons (1 patron/20 Sq. Ft.):	616	31
Total Main Pool Patrons:		532
Spray Pad Area is 1,000 sq. ft.		
	Sq. Ft.	Patrons
Total Shallow Area Patrons(< 5 ft):	1,000	
Reductions:	0	
Resulting Shallow Area Patrons (1 patron/15 Sq. Ft.):	1,000	70
Total Spray Pad Patrons:		70
Facility Total Patron Load:		602

Per State regulations the following bathhouse fixtures shall be provided based on patron loading. The following table presents the minimum total bathhouse fixtures that will be required for the concept aquatic facility. The required fixture count is highlighted

Table 4.2 – Bathhouse Fixtures Required

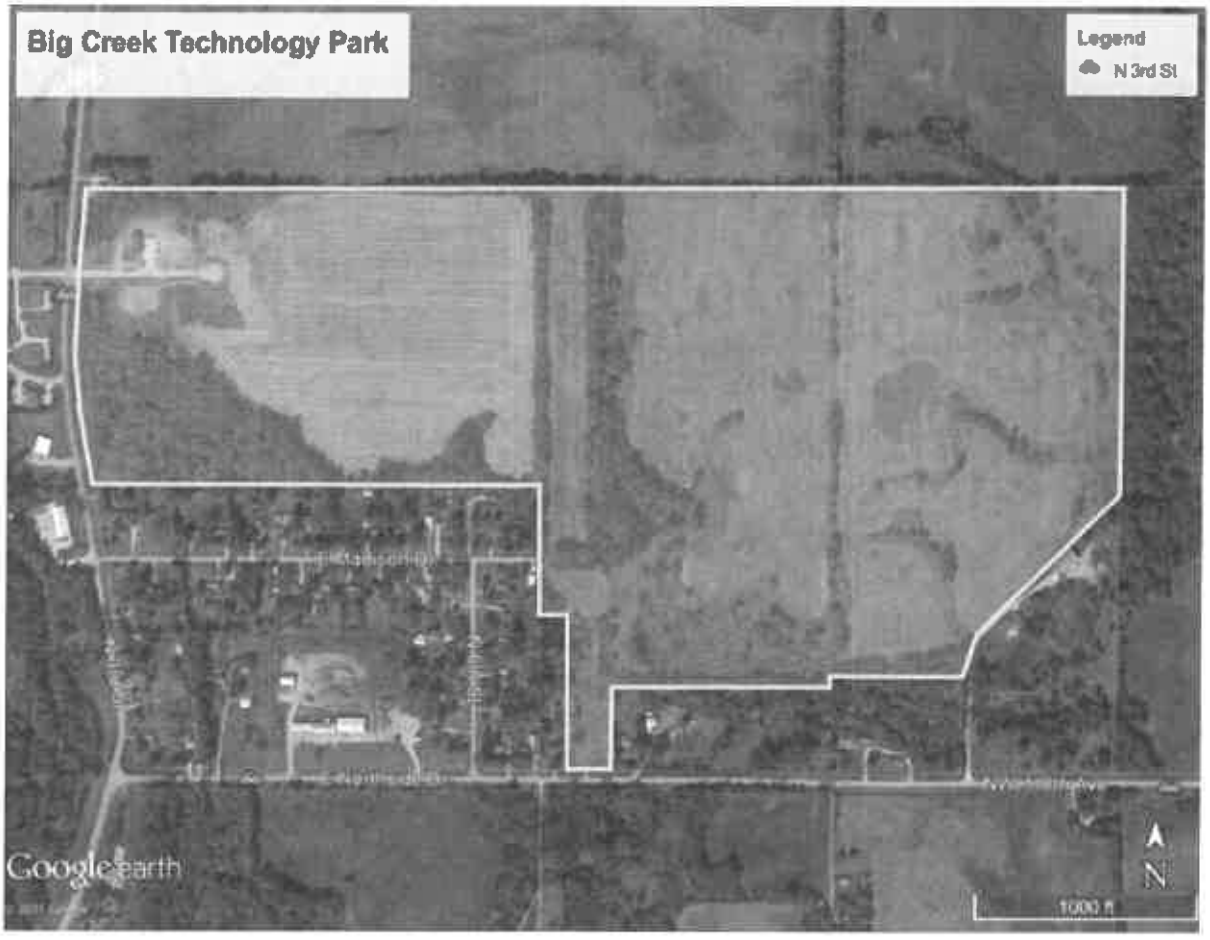
Patron Load	Male				Female		
	Showers	Toilets	Urinals	Lavatories	Showers	Toilets	Lavatories
1 - 100	1	1	1	1	1	1	1
101 - 200	2	1	2	1	2	3	1
201 - 300	3	1	3	1	3	4	1
301 - 400	4	2	3	2	4	5	2
401 - 500	5	3	3	2	5	6	2
501 - 1000	**6**	**3**	**4**	**2**	**6**	**7**	**2**

PART 5 - SITE SPECIFIC

5.01 BIG CREEK TECHNOLOGY PARK

As part of this report, JEO was to evaluate the implementation of a proposed aquatic center at a site located northeast of downtown Polk City, locally referred to as the Big Creek Technology Park (BCTP), and determine its feasibility as a location for the proposed aquatic center.

The following figure shows an outline of the future complete build out of the BCTP. From a quick glance, it is evident that the site will require extensive infrastructure upgrades prior to the implementation of any improvements, much less an aquatic center. Preliminary information provided to the writers of this study indicates that infrastructure improvements are in the planning stages and includes roads, trails, utilities, etc.



PART 6 - SIMILAR FACILITY FINANCIAL SUMMARY AND POLK CITY ANTICIPATED FINANCIALS

As part of this report, the anticipated financials from the proposed improvements are to be determined. In order to determine this, historical expense financials from similar facilities are first evaluated. Four (4) recently constructed facilities from the Midwest are portrayed below, including descriptions on what is included on each facility:

- Facility "A":
  - The new outdoor facility in a rural community in the Midwest was completed in 2012 and contains a zero depth entry, six (6) lane 25-meter lap pool, diving well for 1-meter and 3-meter diving, 42" diameter open-flume 100 linear foot long waterslide, water walk, multi-level water play structure, ground geysers, fabric shade shelters and concessions area. The new bathhouse contains an admission and management area, lifeguard break room, first aid room, individual women's showers, storage rooms, vending area, chemical, electrical and mechanical rooms, and a new parking lot with circular drop-off.
- Facility "B":
  - The new outdoor facility in a rural community in the Midwest was completed in 2006 and contains a zero depth entry, six (6) lane 25-meter lap pool, diving well for 1-meter and 3-meter diving, medium sized waterslide, water walk, multi-level water play structure, fabric shade shelters and concessions area. The new bathhouse contains an admission and management area/vending area, family dressing room, chemical, and a new gravel parking lot.
- Facility "C":
  - The new outdoor facility in a rural community in the Midwest was completed in 2012 and contains a zero depth entry, four (4) lane 25-meter lap pool, diving well for 1-meter diving, smaller sized waterslide, water play features in the zero depth, fabric shade shelters and concessions area. The new bathhouse contains an admission and management area/vending area, family dressing room, chemical, and a concrete parking lot. Many existing park elements were relocated with this project including a 40'x60' shade shelter and a large dry-playground.
- Facility "D":
  - The new outdoor facility in a rural community in the Midwest was completed in 2014 and contains a zero depth entry, six (6) lane 25-meter lap pool, 1-meter and 3-meter diving boards, one (1) open-flume waterslide and one (1) speed slide, water walk, water play structure, ground geysers, fabric shade shelters and concessions area. The new bathhouse contains an admission and management area, lifeguard break room, first aid room, individual women's showers, storage rooms, vending area, chemical, electrical, and mechanical rooms, and a new parking lot with a circular drop-off.

The following table provides a tabular summary of each facility's features and financials, along with analysis of the expenses versus operational parameters:

Table 6.1 – Similar Facility Expenses Financial Summary

Facility:	A	B	C	D	A-D Average
Community Population:	3,491	4,512	730	4,465	3,300
Year Constructed:	2012	2006	2012	2014	2,011
Total Flow Rate (gpm):	2,850	2,118	995	3,350	2,328
Total Volume (gallons):	263,000	250,000	131,000	274,000	229,500
Water Surface Area (sq. ft.):	7,983	7,994	4,180	8,308	7,116
Patron Loading (max):	500	500	200	500	425
Expenses Breakdown:	2014				
Total	$101,742	$92,968	$31,013	$168,880	$98,651
Annual Total Expenses / Total Flow Rate:	$35.70	$43.89	$31.17	$50.41	$40.29
Annual Total Expenses / Total Volume:	$0.39	$0.37	$0.24	$0.62	$0.40
Annual Total Expenses / Water Surface Area:	$12.74	$11.63	$7.42	$20.33	$13.03
Annual Chemicals / Total Flow Rate:	$3.70	$2.35	$2.37	$2.91	$2.83
Annual Salaries / Total Volume:	$0.25	$0.17	$0.13	$0.38	$0.23

It is important to note that the following conclusions:

- The average annual total expenses per total flow rate for the three facilities was $40.29 per gpm.
- The average annual total expenses per total volume for the three facilities were $0. 40 per gallon.
- The average annual total expenses per water surface area for the three facilities was $13.03 per square foot.

The above values will be utilized in later sections of this report when determining the anticipated operations and maintenance cost of the proposed facilities.

The next item to determine is the anticipated revenue generated by the new facility. As mentioned in a previous section of this report, the anticipated revenue generated from this value will be based on the anticipated quantity of memberships (875) and daily admissions.

However, consider that for smaller to mid-size municipalities, that most pool admission rates are limited to the industry wide rate structures for similar sized facilities in neighboring communities. Therefore, a different approach to determine the anticipated revenue can be taken. Consider the following table which tabularizes the four (4) recently constructed facilities and their corresponding 2014 income values:

Table 6.2 – Similar Facility Incomes Financial Summary

Facility:	A	B	C	D	A-D Average
Community Population:	3,491	4,512	730	4,465	3,300
Year Constructed:	2012	2006	2012	2014	2,011
Total Flow Rate (gpm):	2,850	2,118	995	3,350	2,328
Total Volume (gallons):	263,000	250,000	131,000	274,000	229,500
Water Surface Area (sq. ft.):	7,983	7,994	4,180	8,308	7,116
Patron Loading (max):	500	500	200	500	425
Income Breakdown:	2014				
Total:	$32,660	$60,279	$13,923	$71,943	$44,701
Expenses Breakdown:	2014				
Total:	$101,742	$92,968	$31,013	$168,880	$98,651
Annual Total Income / Population:	$9.36	$13.36	$19.07	$16.11	$14.48
Annual Total Income / Total Flow Rate:	$11.46	$28.46	$13.99	$21.48	$18.85

It is important to note that the following conclusions:

- The average annual total income per total population for the three facilities was $14.48 per person.
- The average annual total income per total flow rate for the three facilities was $18.85 per gpm.

The above values will be utilized in later sections of this report when determining the anticipated operations and maintenance cost of the proposed facilities.

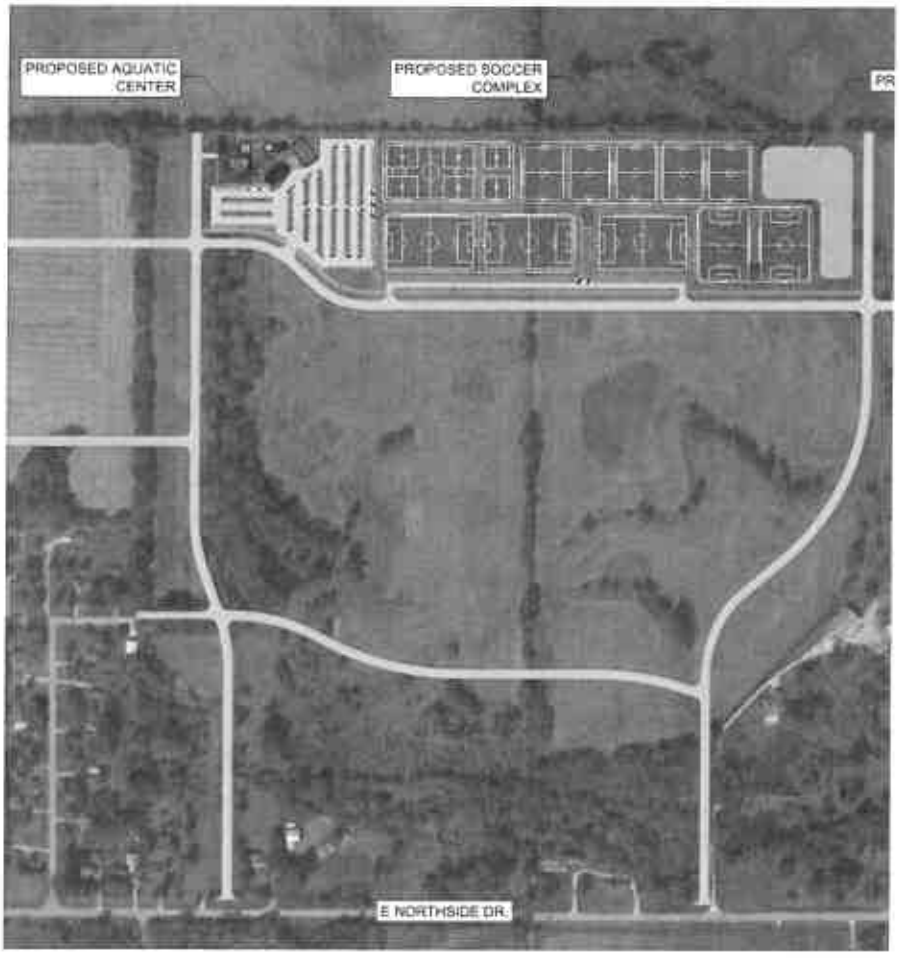
PART 7 - TOTAL SITE BUILD-OUT AND AQUATIC CENTER LAYOUT CLOSER LOOK

7.01 GENERAL

This section of the report contains a potential layout that considers the total recreation build out of the BCTP, as well as a closer look at one (1) potential layout for the proposed aquatic center with parking.

7.02 TOTAL RECREATIONAL SITE BUILD-OUT

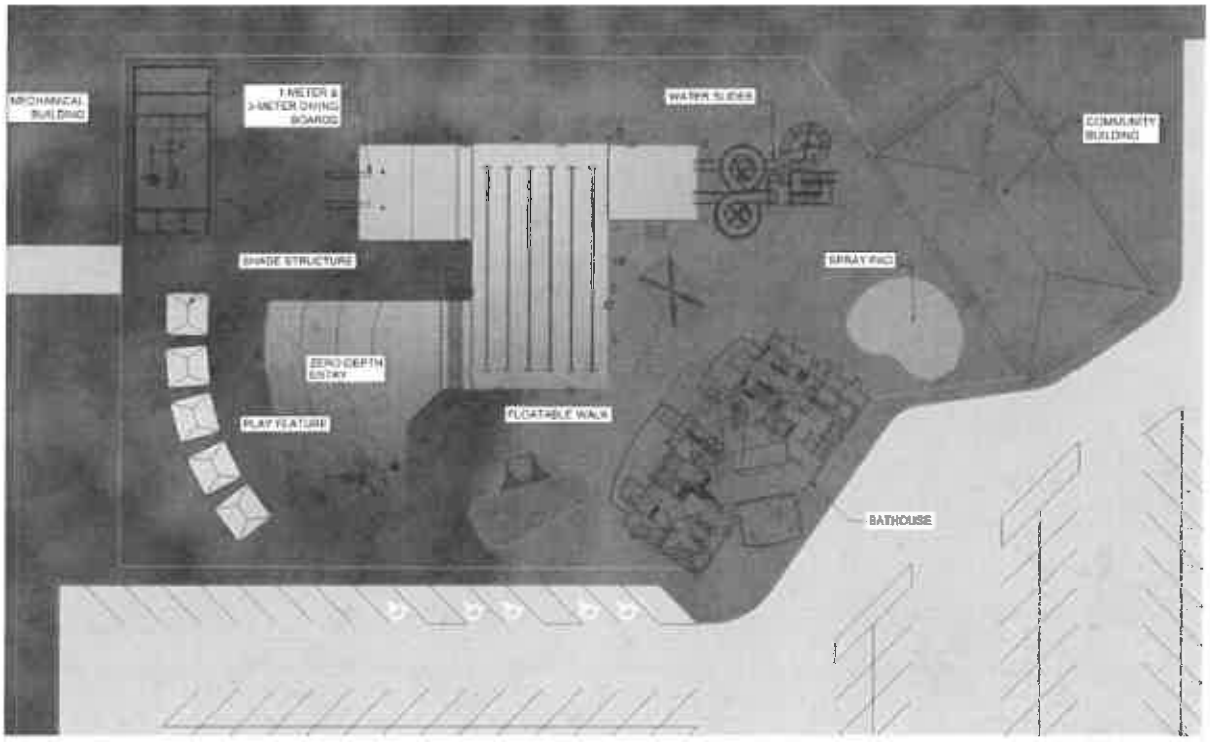
This first layout contains the total build out of the BCTP site that pertain to recreational opportunities, including the proposed aquatic center and soccer complex. The aquatic complex is described in detail in the next section of this report. This layout assumes that the major infrastructure upgrades to the area have been completed in advance of implementation of either the aquatic center or soccer complex. The following figure is not to scale but contains spatial figures showing representative locations of the various recommended components:



A cost estimate for the total recreational site build-out was not part of the scope of this project. The above information has been provided for the convenience of the reader of this report.

7.03 PROPOSED AQUATIC CENTER LAYOUT

This layout contains a proposed possible layout of the proposed aquatic center. The aquatic complex recommended components are described in further detail following the figure. Once again, this layout assumes that the major infrastructure upgrades to the area have been completed in advance of implementation of the aquatic center, including all parking, site utilities (to within 100' feet of the site), any major demolition, flood protection (if necessary), pedestrian trails, etc. The following figure is not to scale but contains spatial figures showing representative locations of the various recommended components:



Note the following for this option:

- Main pool:
  - A 3,380 square foot zero depth entry with in-pool water spray features;
  - A 300 square foot zone for the water walk system;
  - A 3,700 square foot zone that contains six (6) 25-meter lap lanes.
  - A 1,220 square foot zone for the diving well which will contain a 1-meter and a 3-meter diving stand.
  - A 750 square foot zone for the slide plunge pool.
  - Miscellaneous:
    - The main pool will be fitted with two (2) means of ADA access/egress;
    - One would likely be a handicapped chair lift and the other steps into the pool;

- Water Slide Complex:
    - The water slide complex will consist of a galvanized steel slide tower designed for the inclusion of two (2) 42" diameter open body flume fiberglass water slides.
- Administrative / Concessions Building:
    - The building will be positioned as shown to provide a view of majority of the swimming pool. The building will consist of an administrative area, and a large area geared towards men's and women's restrooms and locker rooms, a family changing/rest room, first aid room, guards' break room, etc. In addition, there is an area planned for concessions area with a counter window for serving.
- Mechanical Building:
    - A dedicated mechanical building is preliminarily planned for the northwest corner of the facility. The mechanical building will typically be placed near the deepest end of the pool (diving well) to allow for efficient piping configurations, which result in the most cost effective design.
    - The mechanical building is typically constructed of materials similar to the bathhouse to create a visual continuity and appeal. The mechanical building will likely be unconditioned but still will contain a roof
- Parking & Drop-Off
    - No provisions included for this project opinion of cost;
- Spray Pad:
    - Spray pad geared towards younger patrons, with an approximate footprint of 1,000 square feet.
- Community Center:
    - A separate fully conditioned, 'four season' building for the community center is planned for the east portion of the layout. The large sliding glass doors would open onto the facility's splash pad and would also be able to view the majority of the main swimming pool.
- Miscellaneous
    - The deck around the main pool will be concrete and will contain fabric style shade shelters.
    - The entire facility will be surrounded by a 6' to 8' tall security fencing system.

Preliminarily, the cost for this improvement option is provided in the following table:

Table 7.1 – Opinion of Cost

POLK CITY AQUATIC CENTER W/ COMMUNITY CENTER TOTAL BUILDOUT					
Group A - Aquatic Center W/ Parking					
Item #	**Description**	**Unit**	**Quantity**	**Unit Price**	**Total**
1.	Mobilization, Bonding & Insurance	LS	1	$440,000	$440,000
2.	Site Demolition	LS	1	$0	$0
3.	Excavation/Dirtwork/Etc	LS	1	$50,000	$50,000
4.	Bathhouse Building	LS	1	$750,000	$750,000
5.	Mechanical Building- Pool & Chemical Equipment, Etc.	LS	1	$160,000	$160,000
6.	Main Swimming Pool	SF	9,600	$200	$1,920,000
7.	Concrete Deck	SY	1,900	$75	$142,500
8.	Fabric Shade Structures	LS	1	$120,000	$120,000
9.	Water Walk	LS	1	$30,000	$30,000
10.	Zero Depth Play Features and Recirc Equip	LS	1	$110,000	$110,000
11.	Site Fencing	LS	1	$40,000	$40,000
12.	Utilities (Assuming Water/Sewer/Elec Exist W/in 100')	LS	1	$50,000	$50,000
13.	Sidewalks	SF	4,000	$5	$20,000
14.	Site General and Landscaping	LS	1	$100,000	$100,000
15.	Water Slide Tower W/ Dual 42" Open Body Flume Slides	LS	1	$400,000	$400,000
16.	Slides' Recirculation Equipment, Etc.	LS	1	$44,000	$44,000
17.	Exterior Lighting, PA, Security, Sound, Etc.	LS	1	$125,000	$125,000
18.	Spray Pad	LS	1	$250,000	$250,000
19.	Pavement - Parking, Drop-Off, Etc.	LS	1	$0	$0
20.	Pedestrian/Bike Trail	LS	0	$0	$0
				Group A Construction Subtotal:	$4,752,000
				Contingency (10%, rounded):	$475,000
				Group A Construction & Contingency Total:	$5,227,000
				Administrative and Legal Overhead: (1%, rounded):	$53,000
				Engineering & Construction Oversight Overhead: (11%, rounded):	$575,000
				Group A Project Total:	**$5,855,000**
Group B - Community Center					
1.	Mobilization, Bonding & Insurance	LS	1	$80,000	$80,000
2.	Community Center	LS	1	$750,000	$750,000
3.	Utility	LS	0	$0	$0
3.	Parking	LS	0	$0	$0
				Group B Construction Subtotal:	$830,000
				Contingency (10%, rounded):	$83,000
				Group B Construction & Contingency Total:	$913,000
				Administrative and Legal Overhead: (1%, rounded):	$10,000
				Engineering & Construction Oversight Overhead: (15%, rounded):	$137,000
				Group B Project Total:	**$1,060,000**
				Group's A & B Project Total (2014 Prices):	**$6,915,000**

For this layout, it is estimated that the new facility would have approximately 4,100 gpm of total pumping flowrate, approximately 9,600 total square feet of water surface, and a total estimated

water volume of 350,000 gallons. The estimated operational and maintenance (O&M) cost for this option is also included. Note that the following O&M expense factors that are utilized in the following table

The three (3) different 'expense' factors were taken from other existing facility's financial and operation records applied toward the estimated design parameters of this Option that were described previously. The average and maximum of the three (3) resultants is then provided to show a spectrum of the potential O&M costs that such a facility would have.

Table 7.2 – Anticipated O&M Expenses

TOTAL AQUATIC CENTER BUILDOUT W/ PARKING & COMMUNITY CENTER			
	ESTIMATED	O&M 'EXPENSE' FACTOR	RESULTING ESTIMATED ANNUAL 2014 O&M COST
Total Pumping Rate (gpm):	4,100	$40.29	$165,204
Volume (gallons):	350,000	$0.40	$141,034
Water Surface Area (sq. ft.):	9,600	$13.03	$125,091
		AVERAGE OF RESULTS (ROUNDED):	$143,800

Refer to the following table for an estimation of the total annual income generated by this style of a facility, based on the income factors determined in a previous part of this report for this option:

Table 7.3 – Anticipated Income

POLK CITY AQUATIC CENTER W/ COMMUNITY CENTER TOTAL BUILDOUT			
	ESTIMATED	O&M 'INCOME' FACTOR	RESULTING ESTIMATED ANNUAL 2014 INCOME
2020 Projected Population:	7,686	$18.20	$139,885
Total Pumping Rate (gpm):	4,100	$18.85	$77,273
		AVERAGE OF RESULTS (ROUNDED):	$108,600

Utilizing the two (2) averages determined in the two (2) previous tables, it is anticipated that this Option would operate at a $35,200 deficit annually.

7.04 10 & 20 YEAR FINANCIALS

The following table is a compilation of the capital costs and associated O&M costs for the proposed layout. Two (2) scenarios are analyzed; the first scenario determines the average annual equivalent cost for each option assuming an interest rate of 4% over a loan period of 10 years, and the second scenario determines the average annual equivalent cost assuming an interest rate of 4% over a loan period of 20 years.

Table 7.4 – 10 & 20 Year Financials

Option No.	2014 Capital Cost	Est. Annual O & M	At 4.0% Interest Over 10 Years:			At 4.0% Interest Over 20 Years:		
			Present Worth of O&M	Total Present Worth	Average Annual Equivalent Cost	Present Worth of O&M	Total Present Worth	Average Annual Equivalent Cost
1	$6,915,000	$143,800	$1,166,347	$8,081,347	$996,357	$1,954,289	$8,869,289	$652,618