CHASE OAKS

A CITY OF ALLEN PROPERTY

MASTER PLAN

February 2009

WEIBRING WOLFARD GOLF DESIGN

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INTRODUCTION

INTRODUCTION

Chase Oaks Golf Club opened in 1986 and quickly grew in recognition. The Dallas Morning News recognized Chase Oaks as the best private facility in the state of Texas in the early 1990s.

The eighteen hole Blackjack course is a championship layout measuring 6773 yards from the black tees with a USGA Course / Slope Rating of 74.1 / 139. Originally designed by Robert von Hagge and Bruce Devlin, the Blackjack course is challenging because of tree lined narrow fairways and undulating green surfaces requiring quality shot making. In addition, most holes have water that comes into play with the lakes and creeks that meander throughout the property.

The Sawtooth course, though it is only nine holes, is set up so golfers can play from two completely different sets of tees. The Sawtooth course measures 6,016 yards with a USGA Course / Slope Rating of 70.1 / 130. The nine holes are very challenging, requiring delicate shot making and special attention to the creeks that come into play on every hole.

Today, Chase Oaks is a 27-hole public facility previously owned by GGS/Sora Management, a Hawaiian-based real-estate company specializing in hotel and golf course operations. The facility was taken over by Bank of America in early August 2003. On October 15, 2004 the City of Allen assumed ownership of the Chase Oaks Golf Club, although much of the property still remains in Plano. The property was purchased for $5 million from Bank of America with funding generated through the sale of Certificates of Obligation.

Both of the courses combined have had few major renovations over the years. After being originally constructed with Bentgrass greens on the Blackjack course, the facility closed in August of 2001 to undergo reconstruction of the greens. Following the removal of Bentgrass, TiffEagle Bermudagrass was selected, sprigged and later sod was also placed on select holes following poor weather and maintenance.

The tees, fairways, and roughs on both courses are all Tifway “419” Bermudagrass.

GOALS AND OBJECTIVES

GOALS AND OBJECTIVES

- Create a 18 hole championship golf course:
  - That is playable for all skill levels.
  - More fun!
  - Easier to maintain.
  - Holes 1 and hole 18 are closer to the clubhouse for ease of operation.
  - Reduces safety issues on old holes 8 and 17.
  - More “green” elements such as added native for reduced maintenance and less water.
  - Replace the infrastructure as detailed in future sections.

- Create a 9 hole short course:
  - Junior golf friendly.
  - Family friendly.
  - More fun!
  - No forced carries from the average player’s tees.
  - Few bunkers.
  - Quick rounds.
  - Easier to maintain.
  - More “green” elements such as added native for reduced maintenance and less water.
  - Replace the infrastructure as detailed in future sections.

- Create practice areas that support a busy public facility. Practice elements should include:
  - Large chipping and putting areas for golf schools and/or Junior Golf
  - Larger range tee to support a busy 27 holes.
  - Practice areas that mirror the shots needed on the golf course.
  - Replace the infrastructure as detailed in future sections.

COURSE OVERVIEW

PLAYABILITY

GOLF ON THE GROUND

VISIBILITY

ARCHITECTURAL FEATURES

CONDITIONING

SAFETY ISUES

GOLF ON THE GROUND

Forced carries are the nemesis of most average to poor golfers; however, forced carries are not in and of themselves bad golf course architecture. Most of the time there should be optional lines of play that lessen the difficulty of the required carry or eliminate it altogether. Many instances of forced carries on the Blackjack course are the same for all players. All the par threes have forced carries over water. Nine out of the 14 par fours and fives have a bunker or near vertical grass face that eliminates a run up shot making carry shots mandatory for reaching any part of the green. This is a relentless playability component of this golf course and increases the difficulty level more than any other factor.

VISIBILITY

A certain amount of blindness or “mystery” is not a bad thing, and in fact can add to the challenge and intrigue when playing a golf course. However, on a public access or resort golf course, great care should be taken before incorporating blindness into the design of a given golf hole due to safety issues and speed of play.

The Blackjack golf course has blindness on holes 1, 11 and 16 where play areas are not visible. The golf course has water hazards that are not visible on holes 1, 3, 5, 6, 9, 11, 16 and 18. Blind water hazards are never a desirable architectural component.

ARCHITECTURAL FEATURES

As also mentioned in the Golf on the Ground section, there are many steep grass faces located throughout the golf course that create shadowing and framing. These faces were a component of the original design and, at the time, were unique to the North Texas area and probably created a distinctive look. However, these areas are very difficult and labor-intensive to maintain. Left unmanaged, as they are now, they are a distraction and affect playability. They can result in unplayable lies, lies that are not advanceable and eliminate the golf-on-the-ground option through the green. In summary, determining the benefit of the grass faces to the golf course is to weigh their aesthetics against their negative influence on maintenance and playability.

CONDITIONING

On every player survey, course condition is always the most important factor in determining their perception of a golf course. It starts with the greens (most important) but also includes tees, fairways, bunkers, roughs, lake banks, trees and even cart paths. Several aspects of the Blackjack golf course, from the design to the deteriorating bulkheads, make it difficult for the maintenance staff to groom the golf course to the fullest extent. Budget may be a limiting factor, but that is not a specific part of this study. The play areas of the golf course are in good condition, but the little things that aren't taken care of add up and have a significant effect on anyone's perception of the "condition" of the golf course. Several things stand out that deserve mentioning: weed control, tree maintenance, lake banks (bulk-heading and erosion), traffic-worn areas and lack of turf under trees are noticeable and contribute to the general perception of the golf course. Since our master plan process began, the course has made great strides with weed control, lake bank maintenance and creek cleanout projects.

Safety Issues

Hole One

From the first landing area, there are certain portions of the green surrounds that cannot be seen. This could result in a player unknowingly "hitting into" a group on the green.

Hole Seven

The creek erosion has shifted dangerously close to the right green side bunker. This creates a 15 foot drop to the creek bottom one step out of the bunker.

Hole Eight

The existing 8th hole has the housing development on the right handed slice side of the golf hole. The majority of players are right handed and 80% or more of them are prone to slice the ball, this relationship should be avoided if possible. The situation is made worse by a couple of additional factors:

- There is a water hazard (creek) along the left side of the corridor which players will want to avoid.
- The advancement in golf equipment allows most every player to hit the ball further. The landing area has shifted closer to the green to an area of the fairway that is significantly narrower than the original landing area.

It is entirely possible that the only way to remedy this situation is to extensively adjust and/or re-route this golf hole including re-structuring of the existing lakes.

The left side of this fairway is also characterized by severe creek erosion that has been cordoned off to prevent golf carts from going "over the edge".

Hole Fifteen

The walk path along the left side of this hole is not adequately protected from wayward tee shots.

Hole Seventeen

The existing 17th hole is also characterized by the right side housing. The landing area on this hole is very narrow, tilts sharply right to left and combined with the dry creek bed in the trees forces players to aim right. The homes along this fairway, similar to #8, have a minimal set back with no trees for buffering errant golf shots. There are some adjustments and additions that can be made to improve this situation, however the problem will be difficult to completely eliminate without considerable expense.

SCORECARD

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SCORECARD

In general, the distances from the four tee boxes are balanced and are appropriate distances for four levels of play. To support today's technology, the golf course could use a championship distance greater than the 6,773 back tee yardage.

The par fives (514 North, 504 West, 505 South, 512 South) are very similar in distance. The first hole is a par five and is reachable in two shots, which is a negative. The par fours (445 West, 402 East, 403 East, 450 East, 353 West, 420 North, 387 East, 372 East, 417 North, and 408 Northeast) have a nice variety of distances and directions, but are not perfectly balanced. The par threes (187 West, 182 South, 147 West, 165 West) have an acceptable variety of distances, but not much directional variety.

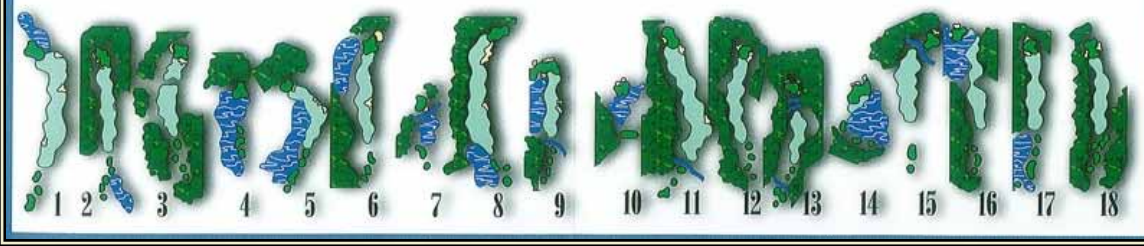
The sequence variety of par threes, fours and fives from hole one to hole eighteen is very good.

Hole	1	2	3	4	5	6	7	8	9	Out		10	11	12	13	14	15	16	17	18	In	Tot	Hcp	Net
Black	514	445	402	187	403	450	182	504	353	3440		147	505	420	387	165	372	512	417	408	3333	6773		
Blue	471	420	381	158	365	426	159	490	338	3208		135	484	382	365	156	351	489	401	381	3147	6355		
White	462	379	351	131	323	396	141	446	313	2945		101	459	337	319	129	331	472	385	359	2895	5840		
Red	422	342	310	87	291	337	110	394	255	2548		100	416	321	267	114	260	455	306	336	2575	5123		
Par	5	4	4	3	4	4	3	5	4	36		3	5	4	4	3	4	5	4	4	36	72		
Handicap M/L	15	1/5	7/3	11/9	5/11	3/1	13/7	9/17	17/13			18/10	6	10/18	2	16	14	4	8	12				

PLAYER INITIALS:

Date: Scorer: Attest:

Golf Associates Asheville, NC (800) 438-8726



WEIBRING WOLFARD GOLF DESIGN

FEATURES

GREENS

TEES

BUNKERS

TREES

LAKES / PONDS

CREEKS

GREENS

The greens were apparently constructed as modified USGA greens, but it is not known for certain. Brad Boroughs, the golf course superintendent, indicates that they are functioning adequately to support the Tiff Eagle bermudagrass. It would be advisable to send core samples to a qualified laboratory to establish a baseline of information to work from. The life expectancy of greens that are constructed and maintained correctly is 25 to 30 years. It is unknown how these greens have been maintained since they were originally constructed.

Typical Chase Oaks green complex

TEES

In general, the tees are too small and crowned with uneven surfaces. It is not known how they were constructed, but it does not appear that they are sand capped. Small native soil tees with high golf traffic are difficult to maintain in good condition.

Typical Chase Oaks tee complex

BUNKERS

The bunkers are in varying degrees of condition, but in general they are in need of rebuilding because of their lack of aesthetic character, poor drainage, uniformity and consistent playability. The 5 to 7 year average life span for bunkers appears to be up for the Blackjack bunkers.

Bunker improvement projects have been discussed previously with the parks department and golf course. We advised the city to delay making any improvements since the master plan included design improvements, bunker relocation and reduction that better mirror a public golf facility. These improvements will help reduce the maintenance costs of the bunkers, which can utilize up to one-third of the maintenance staff labor at a typical golf facility.

TREES

The Blackjack golf course is blessed with many mature trees and wooded areas. Trees provide framing to compliment the golf course and shade for golfer comfort; but left unchecked, framing trees can eventually block play lines and shade can inhibit turf quality. There are just a few areas where trees inhibit flight lines, but there are many areas where shade is overbearing and the playing area's turf is thin or bare.

One of the benefits of having natural tree areas is the aesthetic beauty and habitat that they provide. One of the negatives is the effect they have on speed of play if located near the landing areas. Listed in the hole-by-hole comments are several opportunities for under-brushing wooded areas that would help speed play and allow for more offline shots to be found and advanced in a timely manner.

A maintenance program for underbrush trimming has begun and noticeable changes have taken place on the golf course to improve shade reduction and overgrown areas.

LAKES / PONDS

There are fourteen lakes on the Chase Oaks property. Two of them function as irrigation lakes and are located on holes 6 and 9/14 of Blackjack. Unfortunately, the two irrigation lakes are not connected with any of the other lakes which would increase their storage capacity.

The irrigation lakes are filled with water that is pumped from the creeks combined with drainage runoff. There is a City of Plano water back-up source, but this is an expensive option that is rarely utilized.

In general, the lakes are characterized by shallow depths, poor water quality, and eroded banks. The shallow depths are a result of years of siltation. The poor water quality has been caused by the shallow depths, eroding banks and the lack of natural cleansing elements (aquatic plants). Lake bank erosion is inevitable with the typical north Texas soils subjected to regular flooding. The banks may have been initially constructed with too steep of a slope.

In their current condition, the lakes are not close to their full potential as an aesthetic asset to the golf course.

CREEKS

There are two creeks meandering through the Chase Oaks property. Russell Creek and Rowlett Creek enter the property separately and then connect near the Sawtooth Course. The creeks are characterized by significant bank erosion and they frequently overflow their banks and inundate the golf course. The erosion occasionally results in tree loss and undermining bridge abutments. The erosion has also begun to compromise the stability of several golf course features including cart path, bunkers, tees, greens and fairways. Either the golf features must be moved or the creek banks will require stabilization to protect the features.

INFRASTRUCTURE

IRRIGATION

DRAINAGE

BRIDGES / CREEK CROSSINGS

CART PATHS

IRRIGATION

The irrigation system for both the Blackjack and Sawtooth golf courses is the original system that was installed in 1986. The irrigation heads around all the greens and some tees have been replaced with Toro equipment, and the control system was upgraded about 5 years ago to the Toro Osmac system. All the piping, most of the fairway and rough irrigation heads, and the pump stations are original.

The pump stations support separate portions of the golf courses. The pump station on Blackjack hole six supports about 2/3 of the 27 holes and the Blackjack hole nine station supports the remaining 1/3. The systems are separate and if one pump station goes down, the second cannot be used as emergency support. These pump stations were repaired when the City took over the management of the golf course, but can presently be characterized as fragile. According to superintendent Brad Boroughs, the capacity of the pump stations is not adequate to properly water the entirety of the irrigated area during the heat of the summer. Further study by a qualified pump station supplier would be required to determine if the pump stations could be retrofitted or upgraded to better support the existing irrigation system or if an expanded system is needed.

The existing piping infrastructure is characterized by numerous and consistent breaks and leaks. The 20-plus year old system is approaching the industry standard life expectancy of 25 to 30 years. The existing dependability issues could be the result of mismanagement and/or neglect before the City was involved and should be considered for replacement in future planning. A qualified irrigation designer would be able to determine how much of the existing system, if any, could be retrofitted into the new one.

The existing coverage as described by Brad Boroughs is not “wall to wall” but adequate. All the play areas are covered sufficiently and some of the understory areas have irrigation.

The water source for Chase Oaks is presently Russell Creek. Each irrigation lake has a transfer system that sends creek water to the lake. Brad Boroughs indicated that during the summer of 2005, some reduction of irrigation was required to insure adequate water to keep each lake filled. These transfer systems probably need to be upgraded. There are existing taps into the City of Plano water system for emergency use, but using this option is very expensive. Another water source to supplement the creek source should be in the future irrigation system planning. Multiple irrigation water sources are always a good idea.

DRAINAGE

The Chase Oaks drainage can be characterized by mostly surface flow with a nominal amount of drain basins connected with pipe. Based on historical data from Brad Boroughs, the golf course superintendent and city staff, the golf course drainage does not perform satisfactorily after a flood event. Flood water stays on the golf course for extended periods causing excessive siltation of the play areas and the stoppage of golf play.

There are surface drainage issues on the golf course. Isolated slow drainage or pockets can be caused by settling, poor construction or traffic. They can be exacerbated by runoff from homes which is occurring next to holes 2, 8, 13 and 18.

BRIDGES AND LOW WATER CROSSINGS

Birkhoff, Hendricks and Conway produced a study for Chase Oaks detailing the condition of the bridges for the project. The consulting engineer has addressed safety and structural problems with the existing bridges and low water crossing. The abutments may still need to be looked at for stability and erosion protection.

Some utilities that cross the creek have been retrofitted onto the bridges for support. In some cases, these utilities can be hidden from view by mounting them under the bridge instead of on the sides where they are currently mounted and visible by the golfer.

The low water crossing between holes 8 and 9 functions adequately, but it is not visually a benefit to the golf course. The dumping of concrete onto the creek bank and around the crossing has created an eyesore while not resolving the erosion issues in the area.

CART PATHS

The cart paths are continuous through the entire 27 holes and are 7 to 8 feet wide. They range in condition from poor to good. There is an absence of curbing which allows cart traffic wear and tear near greens and tees.

A significant amount of the cart path appears to have been installed after the initial construction as the cart path is located on top of support mounds and features and not integrated into the golf course shapes. Ingress and egress from cart paths to fairway can be challenging and limited as a result. In addition, the cart paths should be functional but not a visual component of the golf course. In many cases the cart paths are an unnecessary visual distraction.

Several cart paths have been replaced in the past few years to address critical safety issues on the golf course.

MASTER PLAN

General Improvements

- Re-route the Blackjack golf course to resolve hole 8 safety issue, create #1 tee, #18 green visibility from the clubhouse and shift golf features away from creek erosion.
- Re-configure the Sawtooth golf course to allow for Blackjack adjustments, to decrease the forced carries and to create a smaller and shorter golf play option.
- Re-shape, laser level and sand cap all tee boxes. Create formal square tee boxes.
- Re-shape all greens and surrounds, construct per USGA specifications and install ultra dwarf bermudagrass.
- Re-shape and re-construct all sand bunkers; eliminate, add or relocate for strategy and framing.
- Install new irrigation system including pump station.
- Where necessary, re-contour fairway to improve drainage and playability.
- Install carry off drainage to all features and new drain basins.
- Develop a tree planting and removal plan that will reduce shade on features and increase safety.
- Re-work all lakes to create sustainable and aesthetic features.

HOLE BY HOLE IMPROVEMENTS

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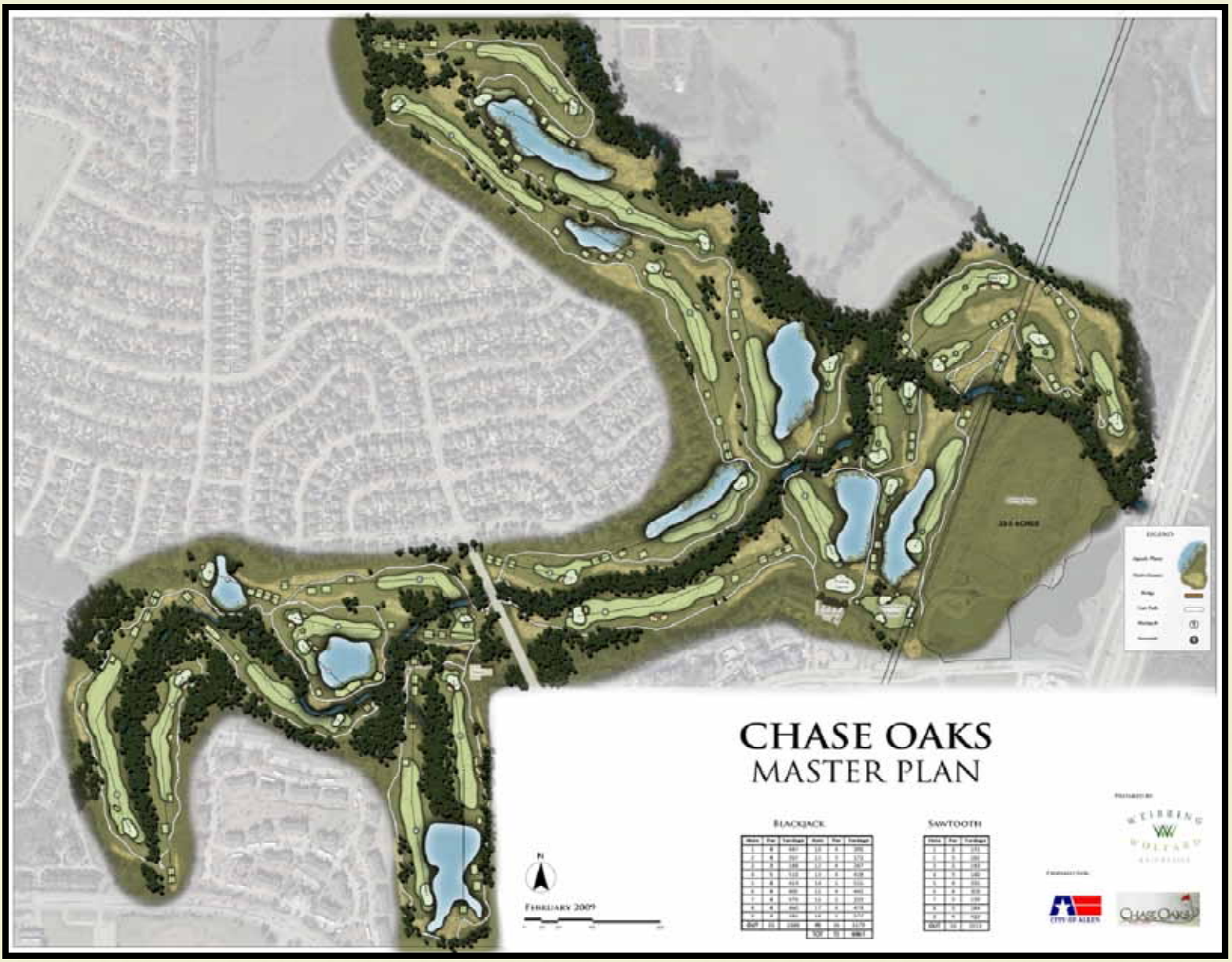
Overall Master Plan



HOLE #1 - BLACKJACK

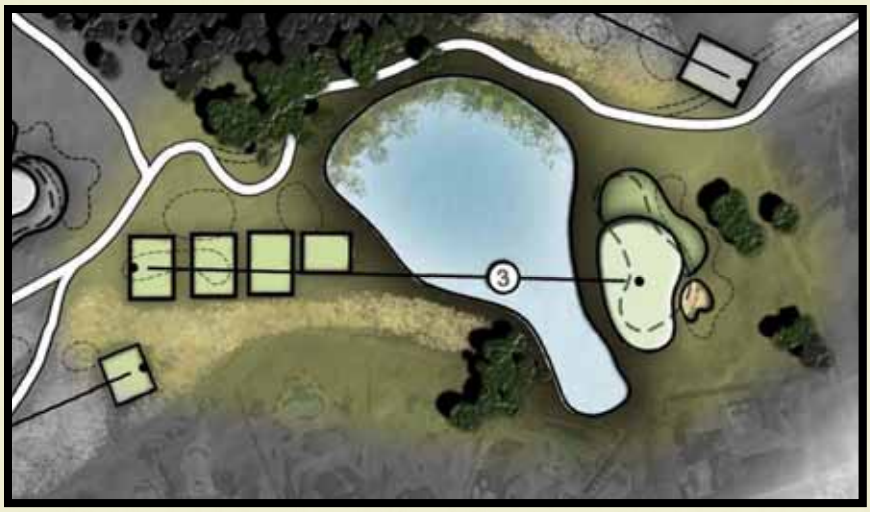
- This is a new hole that will be constructed in the old Blackjack #18 corridor. It will be played in the opposite direction because of the adjustments to the Blackjack #8 hole. The tee complex will be visible from the Pro Shop.

HOLE #2 - BLACKJACK

- This is the original Blackjack #9 hole.
- Trim and/or remove trees to increase sunlight for tee complex.
- Remove mounding and the pump station that is blocking the view of the water hazard from the tee.
- Remove wood bulkheading and naturalize lake bank.

HOLE #3 - BLACKJACK

- This is the original Blackjack #10 hole.
- Shift green to the water for aesthetics and to provide for more “bailout” room behind the green.
- Clean up the concrete pieces below the lake and install another lake overflow.
- Add forward tee left of the lake to reduce the forced carry.

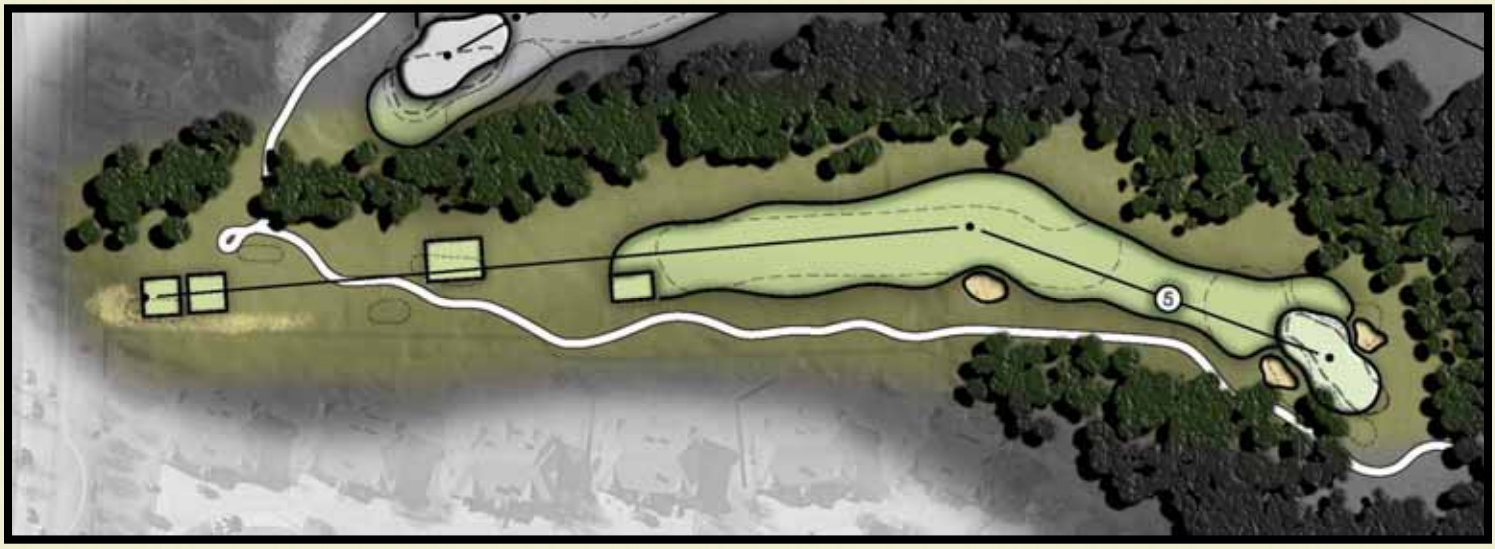


HOLE #4 - BLACKJACK

- This is the original Blackjack #11 hole.
- Move tees back to bring original landing area at the top of the hill back into play as much as possible and to add length for the back tees.
- Extend storm drain left of the landing area to expand landing area.
- Lower landing area to the extent possible (rock) to improve visibility of the entire landing area.
- Underbrush and clean up woods on this hole in the play areas to speed play.

HOLE #5 - BLACKJACK

- This is the original Blackjack #12 hole.
- Shift fairway and landing area left to the extent possible to protect apartments.
- Add trees along right of fairway for apartment screening and safety.

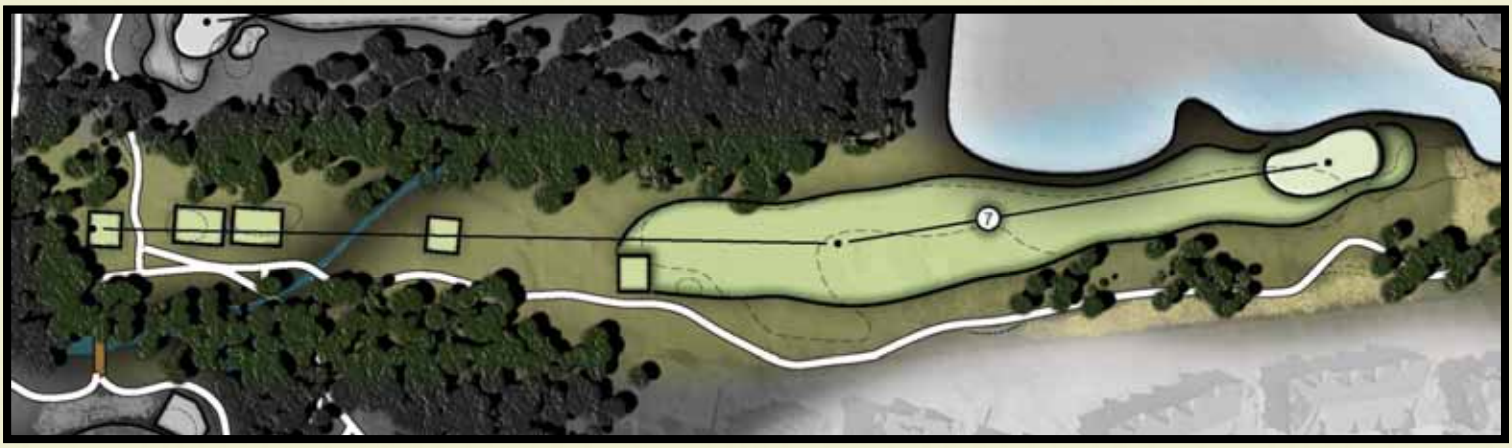


HOLE #6 - BLACKJACK

- This is the original Blackjack #13 hole.
- Extend pro tee back for distance.
- Widen landing area to improve playability and to increase sunlight.
- Consider shifting creek to allow for narrow run-in joining fairway and green. This will also address the creek erosion that is threatening the cart path.

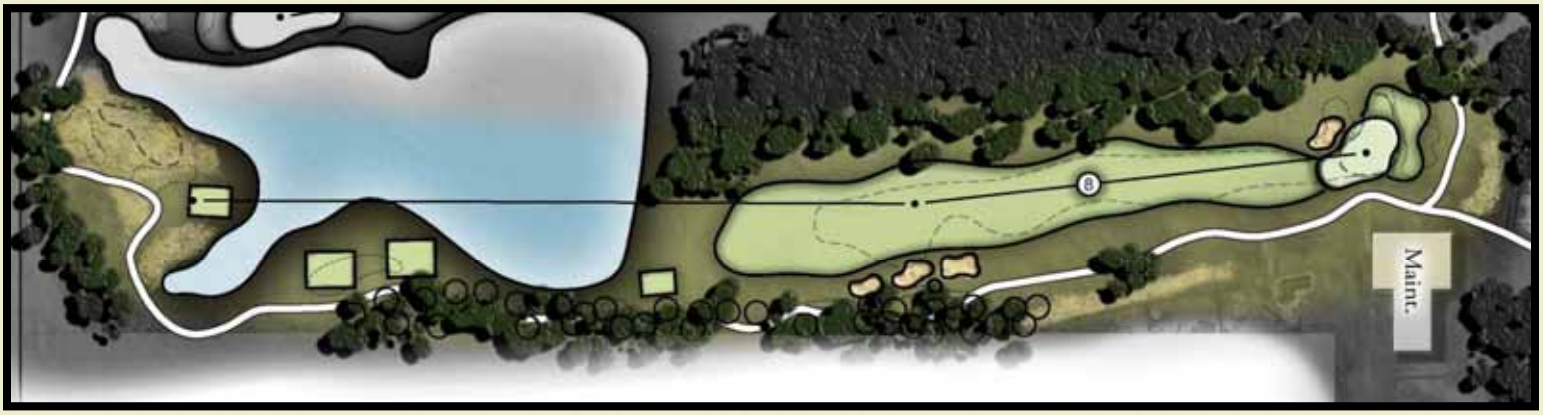
HOLE #7 - BLACKJACK

- This is the original Blackjack #16 hole.
- Add back tee for distance.
- Eliminate rock outcrop in landing area.
- Underbrush along the left side of this hole to speed play.
- Re-locate green area on fairway side of the lake and reduce this hole to a par four to eliminate a forced carry and improve the playability.



HOLE #8 - BLACKJACK

- This is the original Blackjack #17 hole.
- Increase visibility from the tees and aim the tees towards a new, wider landing area.
- Plant large trees directly right of the tees and right of the landing area to prevent ball flight from going right.
- Bunker the right side of the hole to encourage golfers to play away from the right side.
- Remove trees on the left side and expand the fairway left to allow more room to play shots on the left side of this hole.
- Re-shape the fairway with a much larger and more visible landing area that supports a wider shot pattern.

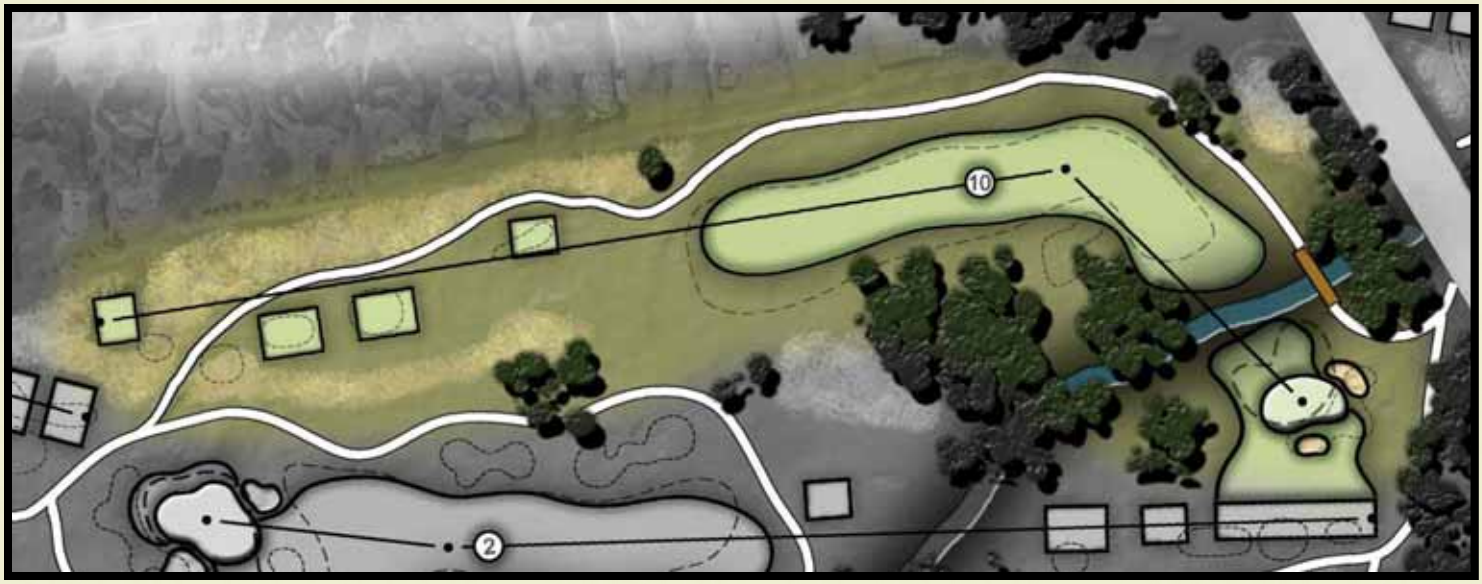


HOLE #9 - BLACKJACK

- This is the original Blackjack #14 hole.
- Adjust lake edge to reduce the “perched” nature of the lake, the lake’s exposure to erosion and to eliminate the force carry for front tee users.

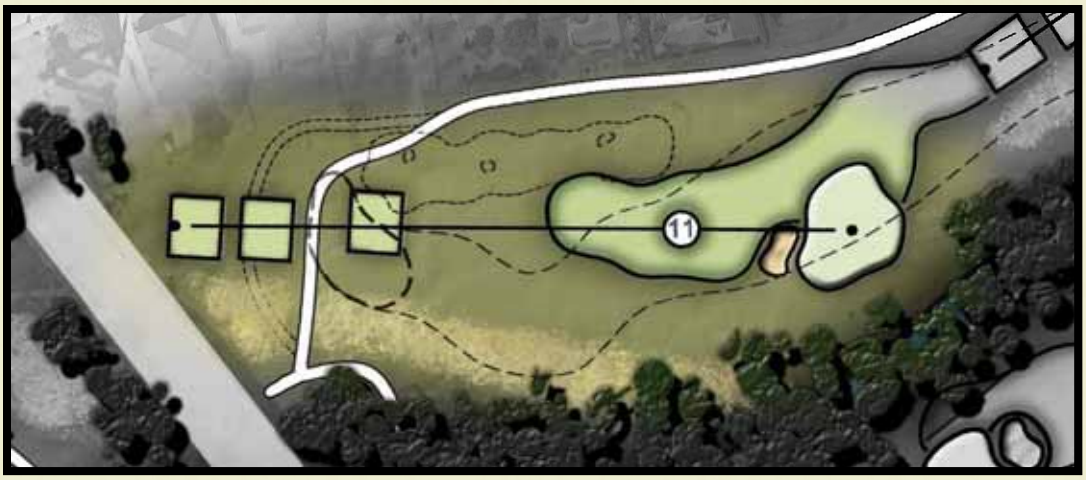
HOLE #10 - BLACKJACK

- This is the original Blackjack #15 hole.
- Plant trees along the left side of this hole to increase protection of the walk path.
- Remove inside fairway bunker to improve playability and allow for fairway shift to the right, away from homes and walk path.
- Install bridge to allow walkers and carts quicker access from the landing area to the green complex.



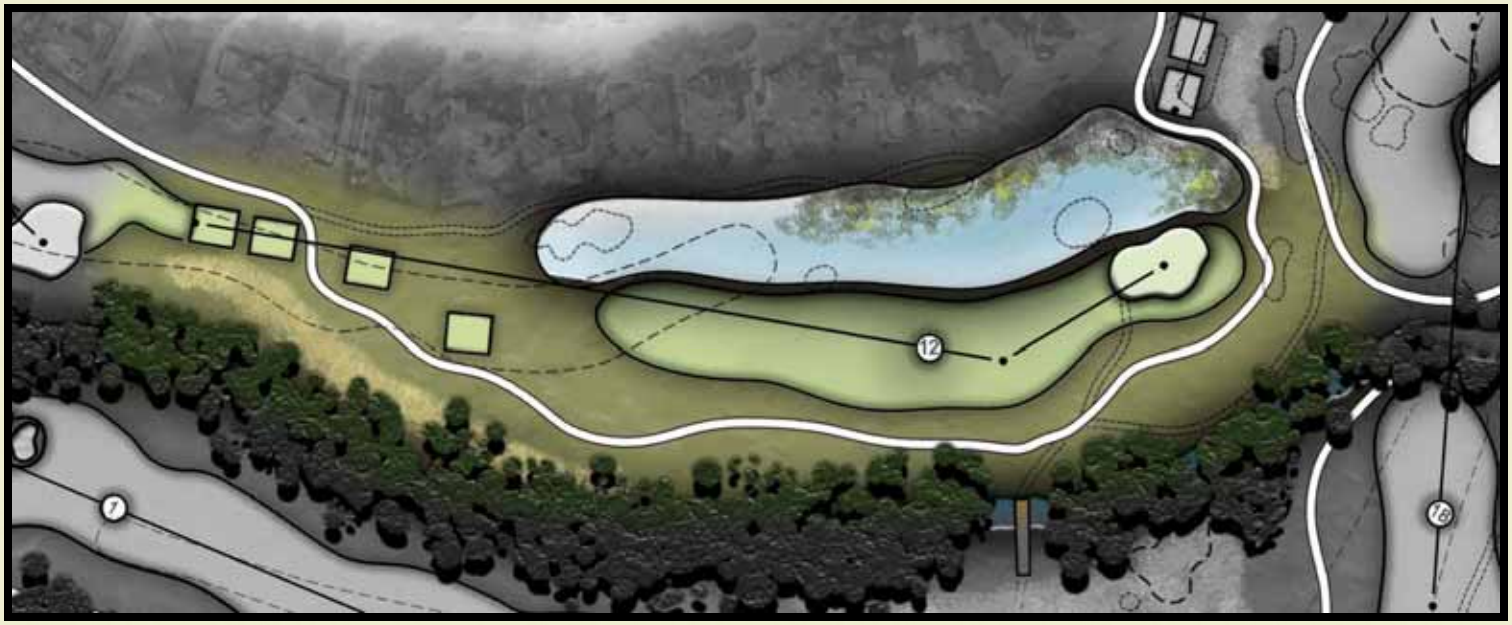
HOLE #11 - BLACKJACK

- This is a new hole in the original Blackjack #8 corridor.
- The installation of a two-way bridge on 15 will eliminate the need for the old #8 to #9 crossing.
- The erosion in this area must still be repaired.



HOLE #12 - BLACKJACK

- This is a new hole in the original Blackjack #8 corridor.
- The lake adjustment should significantly reduce the impact of golf on the homes along the original #8 hole.

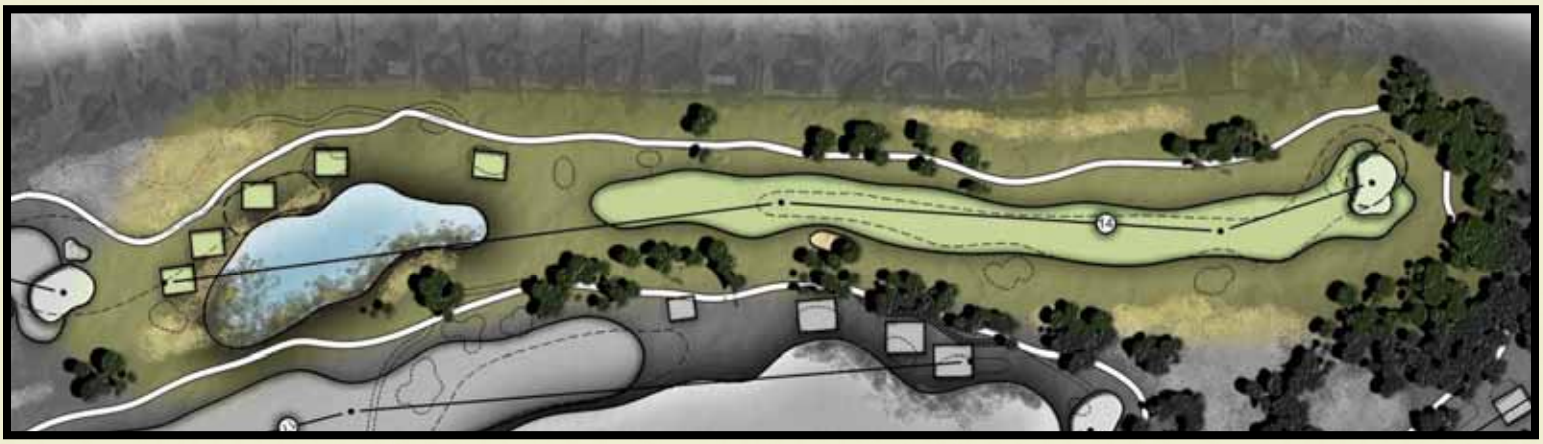


HOLE #13 - BLACKJACK

- This is the original Blackjack #1 hole.
- The hole will be shortened to a par four to eliminate the blind water hazard next to the green.
- Trees should be planted along the left side of this hole to screen the homes and define the corridor of this par four hole.

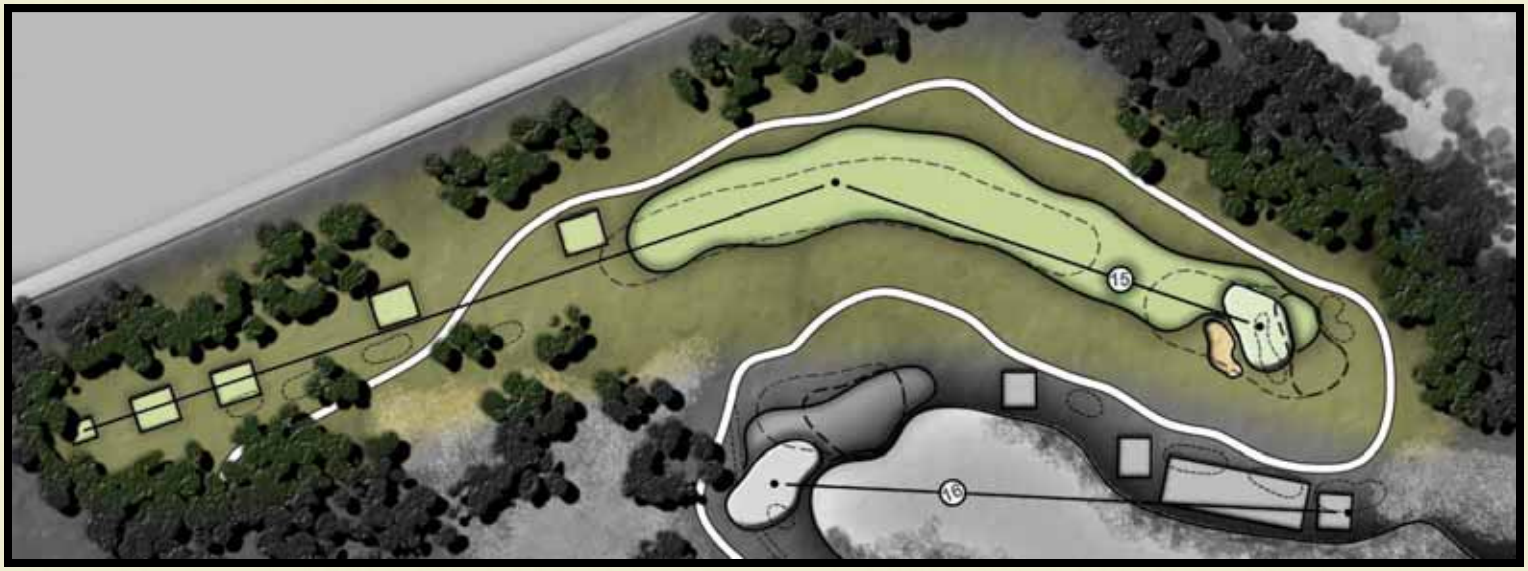
HOLE #14 - BLACKJACK

- This is the original Blackjack #2 hole.
- The tees will be extended back to surround the existing lake to convert this par four to a par five as well as provide an aesthetic and interesting tee shot. There will not be a forced carry from the front tees.



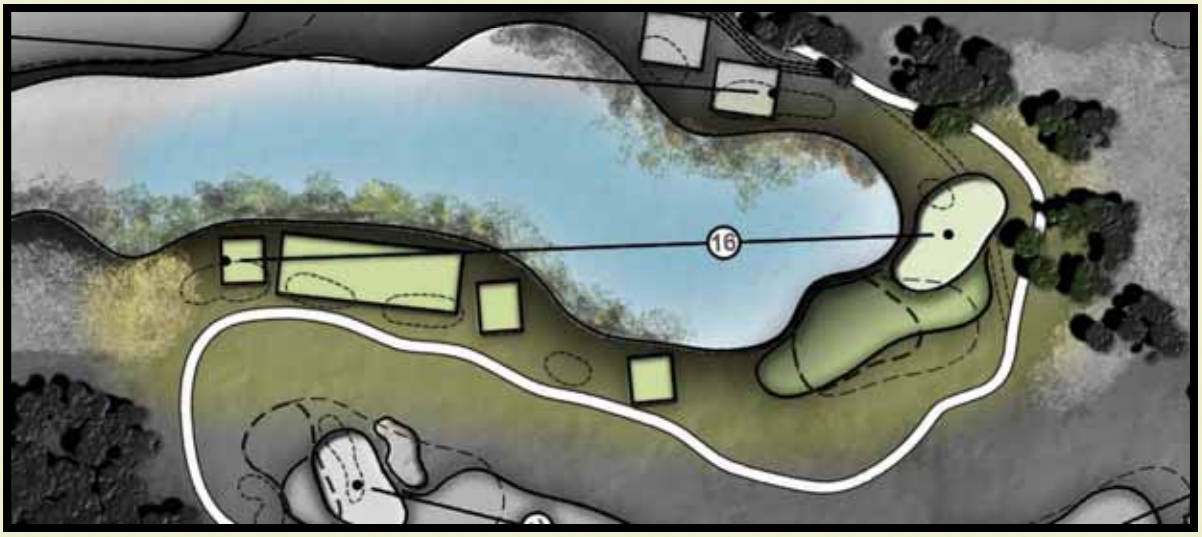
HOLE #15 - BLACKJACK

- This is the original Blackjack #3 hole.
- The pro tee will be extended back for distance.
- Underbrush, trim and select trees for removal to reduce shade for the tees and to highlight existing specimen trees.
- The green will shift away from the creek erosion.



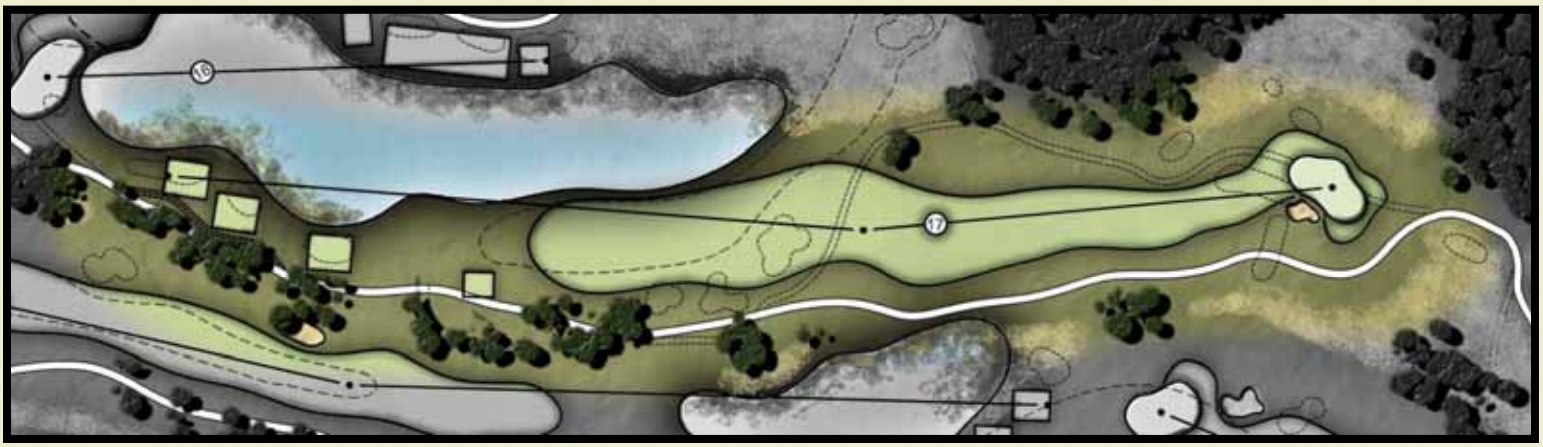
HOLE #16 - BLACKJACK

- This is the original Blackjack #4 hole.
- Shift the tee complex into the lake to reduce the safety from new hole #15.
- Shift green around the lake to increase the distance from #15 tee shot.
- Fill in the corner of the lake to reduce the forced carry and allow for a run-in shot to the right side of the green.



HOLE #17 - BLACKJACK

- This is the original Blackjack #5 hole.
- Shift tees forward to allow for the hole #16 green shift.
- Move the green away from the exposure to creek erosion and locate closer to #18 tees.

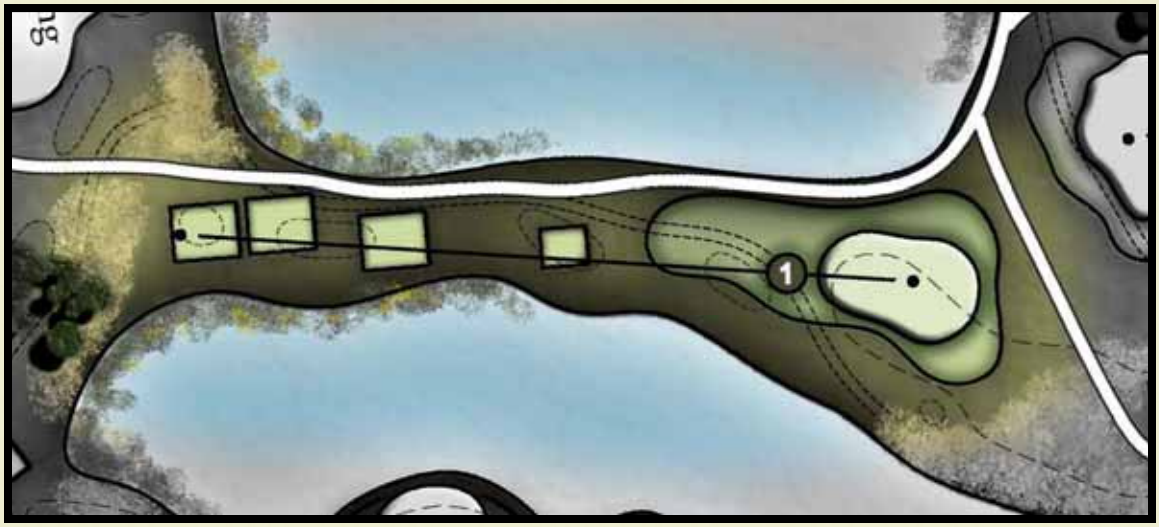


HOLE #18 - BLACKJACK

- This is a new hole which encompasses a portion of the original Blackjack #6 hole and the original Sawtooth #1 hole.
- The pump station and mounding may have to be adjusted to allow for visibility of the water hazard from the tees.
- This finishing hole will be visible from the clubhouse.

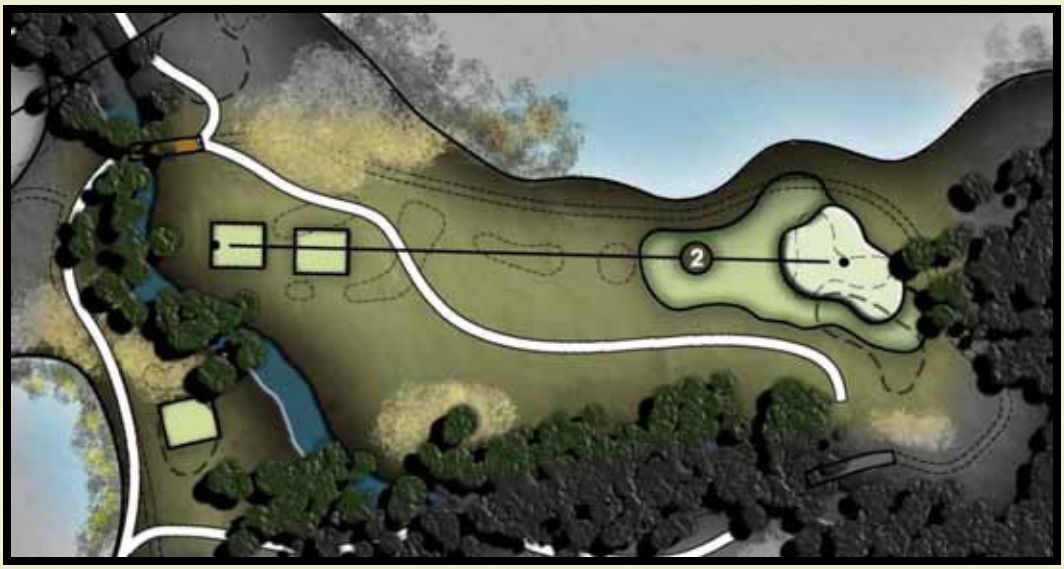
HOLE #1 - SAWTOOTH

- The opening hole is a short par 3 between the existing lakes. The hole will have no bunkering to assist the players to get off and going.



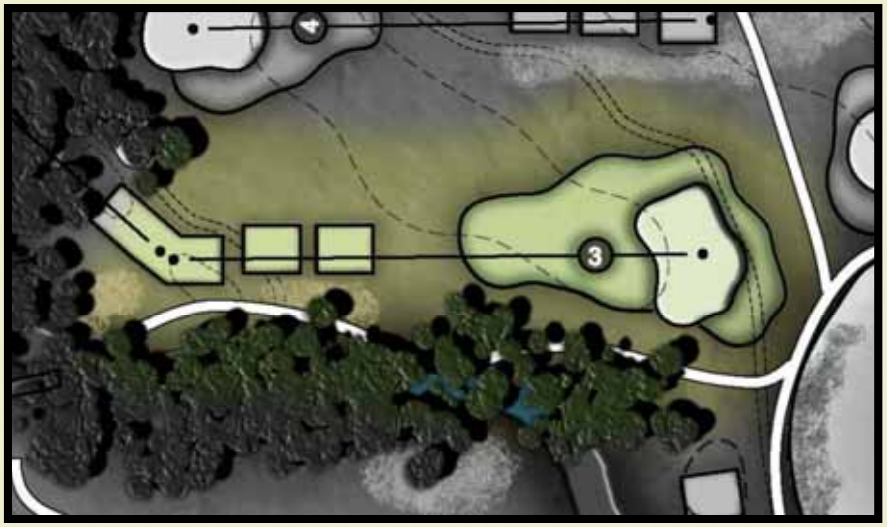
HOLE #2 - SAWTOOTH

- This hole is a longer par 3 from the back tees, which is a forced carry over the creek. The second and third tee boxes do not require a forced carry to ensure easy entry for higher handicap players and juniors.
- The existing bridges can be used for this new hole.



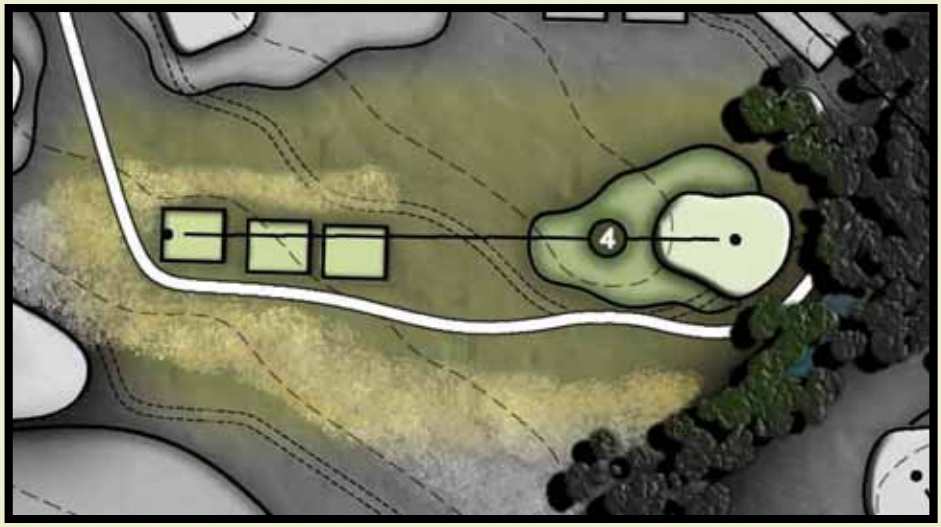
HOLE #3 - SAWTOOTH

- This is a fairly straight forward par three hole, will have no bunkering and a creek to the right.



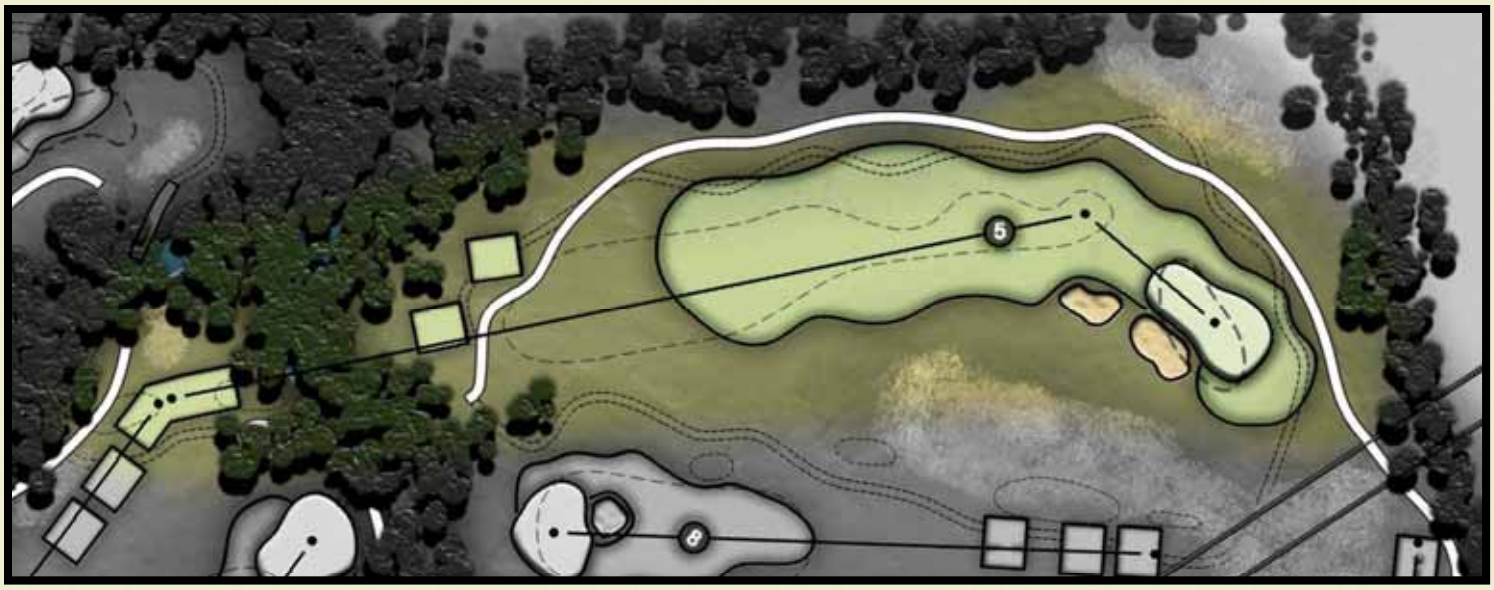
HOLE #4 - SAWTOOTH

- This is one of the shortest holes on the course with no water in play. This hole is a very straightforward par three that can utilize the existing bridges for travel to the next hole.



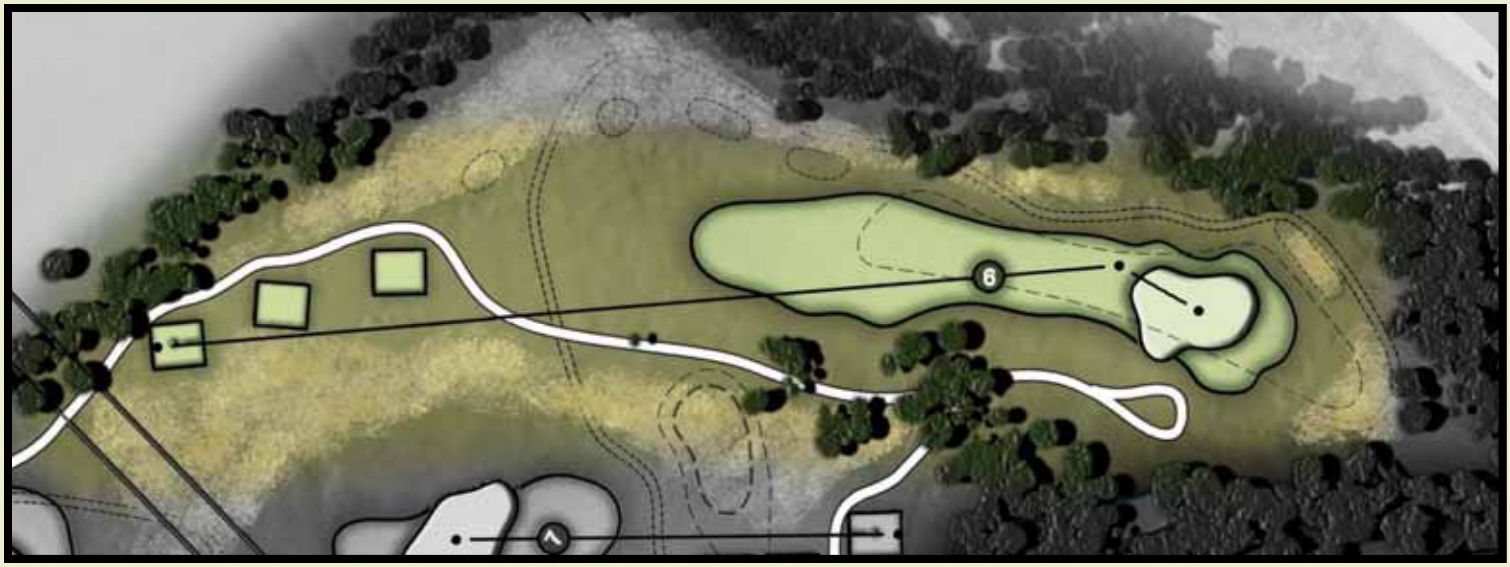
HOLE #5 - SAWTOOTH

- This is a short par 4 hole with an expansive native low area replacing the old lake on this hole. Bunkers and the tall native grasses protect the slight dogleg right. The landing area will be expanded to give players more room to play.



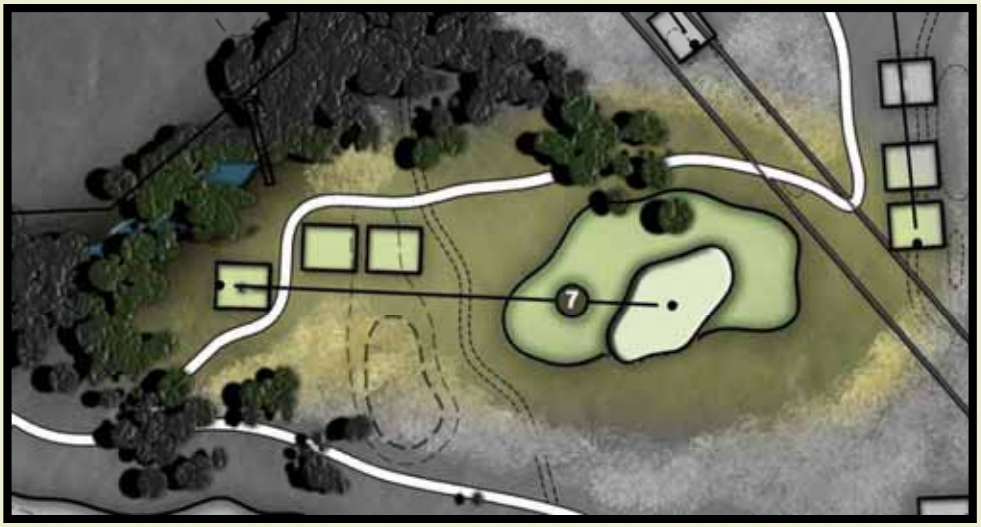
HOLE #6 - SAWTOOTH

- This is the shortest of the par 4 holes on the course that plays downhill. The corridor is narrow at the approach which will put a premium on the tee shot or require a different club selection. The old lake in this area will be replaced by an expansive low setting up the start of the fairway. Native grasses will frame the new corridor, but will be positioned out of play.



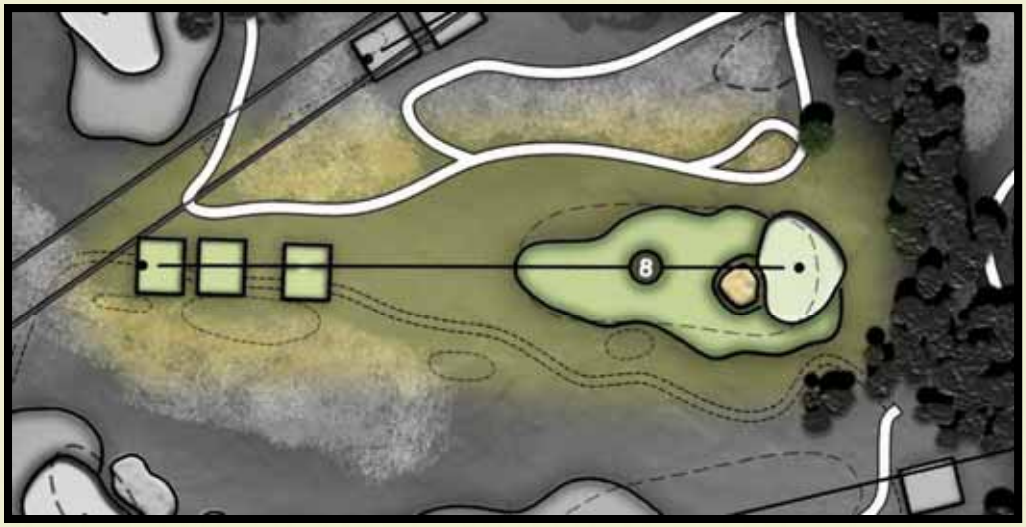
HOLE #7 - SAWTOOTH

- This hole will utilize existing trees to give the back tee locations a “shoot” feel from the first shot. Trees will help define the left side for this short par 3.



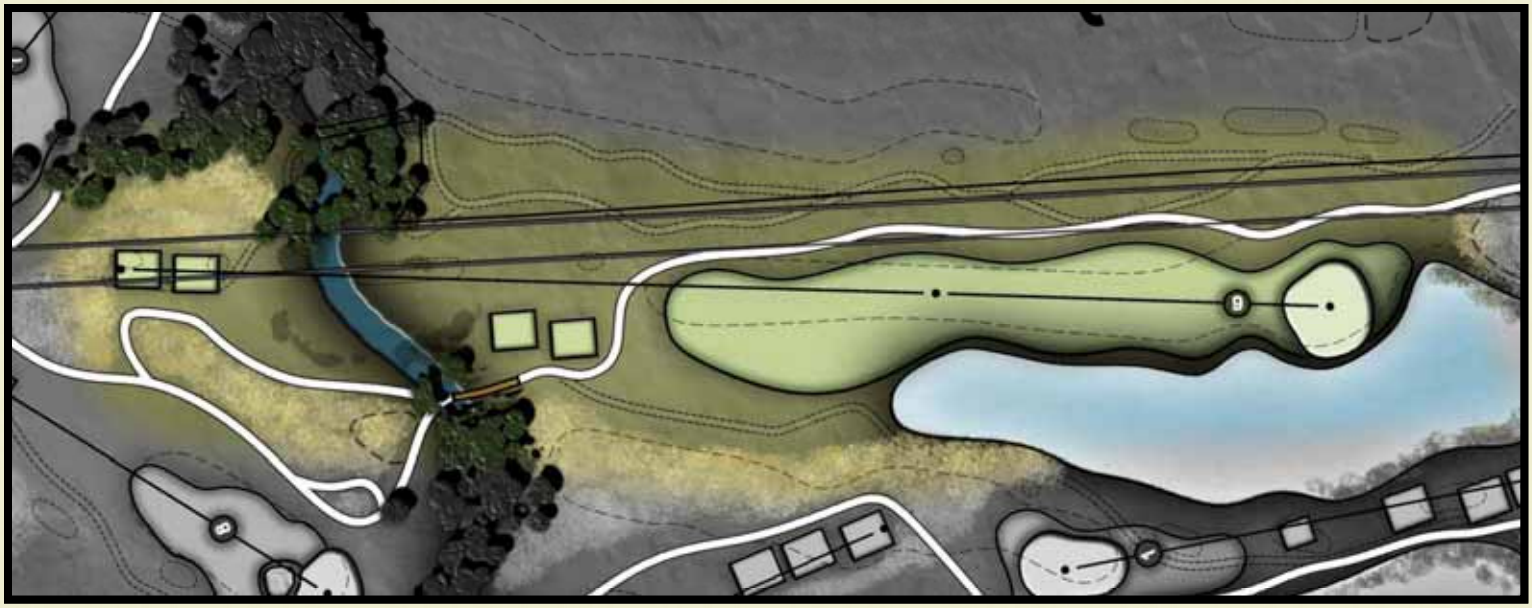
HOLE #8 - SAWTOOTH

- This hole is a medium length par three hole with a nice tree canopy backdrop. A bunker is positioned in the center with ample room to play right, left or over the small pot bunker.



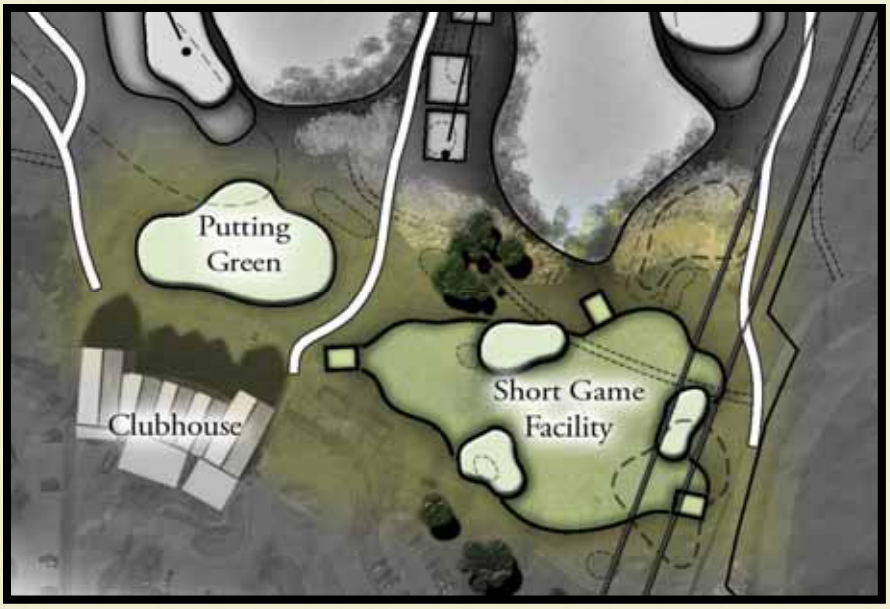
HOLE #9 - SAWTOOTH

- Hole 9 is a longer length par 4 hole with a similar location to the old hole. An effort would be made to make the water visible from the tee shot and eliminate the current blindness of the hazard. The old fairway was very narrow and the landing area will be enlarged to allow for more room to play for higher handicap players.



PRACTICE AREAS

- Expand tee to create a range large enough for 27 holes of golf.
- Re-shape fairway to drain.
- Re-shape target greens for visibility.
- Create a 3 hole short course for chipping and junior golf.
- Re-locate chipping and putting greens for Sawtooth and Blackjack routing changes.



COST ESTIMATES

COST ESTIMATES

1. Mobilization **$50,000 - $70,000**

   This category includes the "move-in" of the golf course contractor, including the set-up of a construction office (trailer, telephone, electricity, fencing, etc.) equipment delivery, relocation of personnel and associated housing. In addition, this category would include any site preparation such as fence and building removal, relocation/removal of trash or other unwanted material, etc.

2. Layout/Staking **$35,000 - $55,000**

   This category includes the golf course contractor's layout of the golf course per the staking plan. The golf contractor will use the established benchmarks along with the tee, turning point and green location stakes provided by the engineer to define golf hole corridors, feature locations and general layout of the golf holes for construction purposes. The golf course contractor will be responsible for maintaining staking throughout the construction process.

3. Erosion Control **$100,000 - $130,000**

   This category includes the silt fence with metal backing, hay bales, silt traps and other erosion control materials used to reduce and/or prevent the excessive movement of soil off of the golf course. These materials would also be used to stabilize slopes surrounding lakes or water features and above slopes prior to the grassing operation. Protecting the golf course perimeter is not included in these numbers.

   It should be noted that the golf course contractor will follow the erosion control plans (SWPPP) and specifications as prepared by the project engineer.

4. Clearing & Grubbing **$40,000 - $60,000**

   This category includes the removal of approximately 150 trees. The trees will be removed, stumps ground if necessary, chipped and buried on the site. Most of the trees needing removal are for installing new drainage which will need to enter the wooded creeks. Most desirable trees in harms way will be relocated utilizing tree spades detailed in the landscaping section. Our desire is to keep all trees possible, but with the volume of earth we will need to shuffle around, some will need to be removed or moved for access, proper tie-ins and newly defined corridors. All trees removed will be replaced on site.

COST ESTIMATES

5. Earthwork **$550,000 – $650,000**

This represents the amount of cut and fill that it would take to make the grading adjustments necessary to add movement, improve the fairway drainage to holes and the estimated amount of material that will be required to raise and expand greens and tees for improved drainage, additional square footage and add target definition. This also includes excavation and placement of lake dirt that needs drying before placement. The additional cost for lake dirt is assumed since the dirt will need drying outside of the lake cavity for a few weeks before placement in the features. Lake edges will be slightly reworked to repair years of varied water depths on new championship holes 3, 7, 18 and new holes 1 and 9 of the short course. The lake on the championship #9 will be slightly altered to either make room for the modified creek location or to ensure the creek does not erode the lake. The lake on #12 will be created nearby to equal the same size of the two nearby lakes that will be eliminated. The irrigation lake on #18 will be de-silted to ensure it is the proper capacity for storage of the irrigation water. The two lakes north of the creek on the short course will become large native grass detention areas and water will be eliminated. The lake on hole 16 will be slightly altered and to reduce earthwork much of the lake will become shallow littoral shelves. All lakes will be built with a 8' depth unless a littoral shelve is built in place of a 8' depth. All littoral shelves will be build with less than 2' of water to encourage aquatic plant growth, which is covered in the landscaping section.

- Cuts and Fills – Dozer Pushed
  63,750 cu yds. @ $2.00/yd = $127,500
- Cuts and Fills – Top Loaded
  63,750 cu yds. @ $3.50/yd = $223,125
- Topsoil Management
  24,000 cu yds. X $3.25/yd = $78,000
- Lake Excavation
  40,000 cu yds. X $4.25/yd = $170,000

It should be noted that the information in this category is based on projected earthwork and estimated soil and rock conditions only, as soil borings, flood study and a detailed cut and fill plan have not been completed.

COST ESTIMATES

6. Lake Construction **$150,000 - $200,000**

The soil at Chase Oaks has an obvious tendency to slough on the lake edges for several reasons. One reason is a constant changing lake depth, which will be resolved by adding automatic fill valves to the new irrigation system. Another method will be to install a durable erosion matting 3' above and below the water surface on all turfed areas. Lake edges that will have a native theme will not need this treatment because of dense plant material above and below the waters edge. We assumed the existing lake overflow systems will be damaged or compromised from construction and have included an allowance for each.

- American Excelsior erosion control fabric:
  13,305 L.F. of shoreline X $9.00/L.F. = $119,745
- Rebuild/repair lake overflows as needed (allowance):
  9 Lakes @ $7,500 each = $67,500

7. Rough Shaping **$350,000 - $425,000**

Rough shaping refines the basic features of the golf course following the earthwork. This phase of construction includes the shaping of 27 greens, 27 tee complexes, putting green, chipping greens, nursery green, lakes, bunkers, fairways, roughs and slopes. The details incorporated during the shaping phase will make the ultimate difference in the finished golf course.

8. Golf Drainage **$350,000 - $400,000**

This category includes the internal drainage on the golf course. Pipe sizes typically utilized for this type of drainage include 4", 6", 8", 10" and 12". More larger sized pipe is included in this estimate for proposed correction of some of the flooding issues at the golf course. A detailed flood study will assist in developing proper pipe sizes. Surface water is typically drained into 12", 18", 24" and 36" round perforated basins with cast iron covers. This is an estimate for this project as a drainage plan has not been prepared.

The golf course drainage is a component of the overall drainage of the site. The golf course drainage should be reviewed by the project civil engineer with the intent of reviewing the impact of the "Development" drainage on the overall golf course drainage and vice versa.

COST ESTIMATES

9.	Feature Construction:		**$1,057,150 - $1,249,175**
	Green Construction	~ 182,700 square feet	$822,150- $959,175
	Nursery Green	~ 10,000 square feet	$30,000 - $40,000
	Tees Construction	~ 155,000 square feet	$80,000 - $100,000
	Bunker Construction	~ 50,000 square feet	$125,000 - $150,000

For the purposes of this construction cost estimate, the above four (4) categories have been combined into one lump sum called Feature Construction. Details of this category include:

USGA greens construction is based on approximately 182,700 square feet comprised of 31 greens

- Nine greens for new short course (51,300 sq. ft.)
- Eighteen greens at the new Championship Course (106,200 sq. ft.)
- Three small short course/chipping greens (8,500 sq. ft)
- Putting green (16,700 sq. ft.)

The greens mix price range includes using 90% sand and 10% peat. The higher estimate includes Kosse Sand from US Silica and the lower price assumes East Texas White Silica Sand. A cost range of $4.50 – $5.25 sq. ft. includes drain tile, gravel and the sand/peat mix. ($822,150 - $959,175)

A nursery green is needed and it is priced with 3” of pea gravel and 8” of sand to save costs.

Tee construction assumes harvesting the old greens mix and using them for a 4” sand cap on the tee surfaces. (155,000 sq. ft. X $.55)

Bunker sand priced is “Easy Out Brown” sand. We feel brown sand may be more appropriate since the course has a tendency to flood. Several white sands are available with similar pricing. Price includes drainage, cleanouts, and 4” minimum sand depths. Bunker liner is not included but is available for an additional $1.25/sq. ft. for a fabric liner. (Bunkers per square foot: $2.75)

COST ESTIMATES

10. Irrigation **$1,900,000 - $2,400,000**

The irrigation system will be completely rebuilt with new pump station, pump station building, wet well, fertigation system, pipe, wire, controllers and heads. This also includes a small electrical allowance ($20,000) if the station were to be relocated nearby. The central control system can be reused with the new system along with most of its components and software.

These items are estimates based on site visits and conversations with EC Design, a reputable TCEQ certified irrigation designer in the state of Texas.

11. Cart Paths and Bridges **$750,000 - $825,000**

This category is comprised of the demo and replacing of cart path only in the disturbed areas throughout the golf course. This work includes grading of the sub-grade, board forming, concrete (3,000 psi with #3 rebar 4" thick), finish out, and back filling along the cart path edges. The demo price includes disposing of the removed cart path on-site by burying. One bridge is shown on the new plan on hole #10. This bridge is a prefabricated Continental bridge (or equal) spanning the creeks similar to existing bridges. If bridges can be moved from abandoned locations, some potential savings can be had. The low water crossing near the 11th tee has been a problem for some time and needs to be re-built. The wood bulk heading is deteriorating and we do not recommend replacement, bulk heading is very expensive to replace and does not add to the playability of the golf course.

New 8' cart path	$21.60 L.F. X 22,500 L.F.	$486,000
Wide Outs (areas greater than 8')	$ 2.70 S.F. X 20,000 S.F.	$54,000
4" X 6" Curbing	$ 6.50 L.F. X 10,000 L.F.	$65,000
4" X 6" Retrofit Curbing	$10.00 L.F. X 5,000 L.F.	$50,000
Cart path Demo	$ 2.50 L.F. X 23,000 L.F.	$57,500
Span Bridges w/concrete abutments	$ 175 S.F. X 160 S.F.	$28,000
New low water crossinghole #11	Allowance	$25,000
Demo bulk heading	Allowance	$15,000

COST ESTIMATES

12. Fine Grading / Seedbed Preparation **$400,000 - $450,000**

This category is comprised of the final grading operation immediately prior to grass planting. Fine grading focuses on light dozer work, tractor/box blade work and hand-raking areas around bunkers, greens, lake slopes and other difficult to access areas. This category also includes rock/debris removal and restoration of disturbed areas. The seedbed preparation phase is generally very labor intensive; and as a result, includes a significant amount of handwork.

Greens	182,700 SF @ $.25/SF	$45,675
Nursery Greens	10,000 SF @ $.20/SF	$2,000
Target Greens	28,000 SF @ $.20/SF	$5,600
Tees	155,000 SF @ $.20/SF	$31,000
Fairways, Roughs	112.5 AC @ $2,500/AC	$281,250
Native Areas	25 AC @ $1,200/AC	$30,000
Bunkers	50,000 SF @ $.60/SF	$30,000

COST ESTIMATES

13. Grassing **$750,000 - $850,000**

Greens grassing assumes utilizing the popular Mini Verde variety on the surface. If another ultra dwarf is selected a potential savings is likely. Tifway 419 was selected for the tees, fairways and roughs. It is extremely difficult to convert to other varieties from 419 due to the aggressive nature of the grass. It is highly recommended to stay with the 419 variety. The native blend will incorporate low water, warm season seeds blended with 3-5 varieties. Final selection will be made to best suit the property based on maintenance needs, soil and water testing. Drill seeding and then Hydro spraying the native is suggested to reduce erosion and ensure a successful grow-in.

Greens – Bermudagrass-Ultra dwarf	182,700 SF @ $.60/SF	$109,620
Nursery Green – Bermudagrass-Ultra dwarf	10,000 SF @ $.60/SF	$6,000
Tees –419 Bermudagrass Sprigs	155,000 SF @ $.25/SF	$38,750
Fairways, Rough – Tifway 419 Sprigs	92.5 AC @ $2,200/AC	$203,500
Tifway 419 Bermudagrass - Sod	20 AC @ $15,500/AC	$310,000
Native seed mix drill seeded with profile hydro spray erosion protection	25 AC @ $4000/AC	$100,000

COST ESTIMATES

14. Landscaping: **$250,000 - $325,000**

This item includes relocating approximately 25 trees from on site. This work should be done before and after the golf construction in the early spring, fall or winter to prevent unnecessary stress from the summer heat. Periods during molting in the spring should also be avoided. This will also help protect desired trees needing relocation due to design changes. We would normally desire to move more trees that are slated for removal but most trees that are ideal for this type of application are planted on steep grades on the sides of mounds. Nursery stock is also included in this estimate. Some trees are needed for target definition and general strategy of the golf hole. Some trees are needed for safety screening to reduce injury of errant golf shots. This estimate also includes aquatic plantings to establish shoreline of lakes and prevent erosion. More aquatic plants will be needed and this will give the course a start and developing more aquatics can come from existing areas in future planning. Establishing native areas is a key component to the design of the golf course and in efforts to reduce long term water usage, native grass plugs are included for areas of key importance that may not be best suited for native seeding as detailed in the grassing section. These areas include areas near the clubhouse, cart path islands, steep hillsides and formal beds. The price for the plugs assumes planting these in-house.

Tree Moving (7” – 12” sizes)	25 @ $375	=	$9,375
Small Cedars	25 @ $225	=	$5,625
Small Nursery Stock Trees/large Cedars	50 @ $325	=	$16,250
Medium Nursery Stock Trees	75 @ $400	=	$30,000
Large Nursery Stock Trees	25 @ $650	=	$16,250
Specimen Nursery Stock Trees	10 @ $1000	=	$10,000
Aquatic Plantings in lakes (.40 spacing X 13,305 LF)	5,322 LF @ $19.00	=	$101,118
Native Grass Plugs (2” planted in-house)	90,000 EA @ $1.25	=	$112,500

CHASE OAKS
A CITY OF ALLEN PROPERTY

COST ESTIMATES

1	Mobilization	$50,000 - $70,000
2	Layout/Staking	$35,000 - $55,000
3	Erosion Control	$100,000 - $130,000
4	Clearing and Grubbing	$40,000 - $60,000
5	Earthwork	$550,000 - $650,000
6	Lake Construction	$150,000 - $200,000
7	Rough Shaping	$350,000 - $425,000
8	Golf Drainage	$350,000 - $400,000
9	Feature Construction	$1,057,150 - $1,249,175
10	Irrigation	$1,900,000 - $2,400,000
11	Hardscape	$750,000 - $825,000
12	Fine Grading/Seed Bed Preparation	$400,000 - $450,000
13	Grassing	$750,000 - $850,000
14	Landscaping	$250,000 - $325,000
	Total	**$6,732,150- $8,089,175**

WEIBRING WOLFARD GOLF DESIGN

Possible Future Range Improvements
Cost Estimates

Practice Range:

The practice range estimates include the tee, fairway, target greens and subsequent infrastructure. The prices assume the work will be done after the major improvements to the golf course. If the work was done at the same time as the other golf improvements a saving will be had for mobilization, temporary irrigation tie-in, erosion control and general increased volume of work preformed at one time.

Mobilization	$10,000 - $20,000
Staking	$ 5,000 - $10,000
Erosion Control	$ 5,000 - $10,000
Shaping	$15,000 - $25,000
Drainage	$10,000 - $15,000
Irrigation 15 acres @ $12,000/acre	$170,000 - $190,000
Finish Work:	
Level and expand range tee 76,000 SF @ $.95/SF	$70,000 - $75,000
Fairways, Roughs Finish Shaping 12.5 AC @ $2,500/AC	$30,000 - $35,000
Grassing:	
Range tee and target greens .20/SF X 104,000 SQ.FT.	$20,000 - $25,000
Fairways and Roughs (419) 12.5 acres @ $2200 per Acre	$25,000 - $30,000
TOTAL	**$360,000 - $435,000**

COST ESTIMATES

Does not include:

1. Contingency
2. Golf Course Design Fees
3. Engineering/Permitting Fees
4. Irrigation Design Fee
5. Golf Course infrastructure
   - Utilities (unless described)
   - Roads
   - Parking Lots
   - Storm Drainage
   - Golf Cart Tunnels/Road Crossings
6. Grow-in
7. Clubhouse
8. Maintenance/Cart Storage Buildings
9. Golf Course Maintenance Equipment and Supplies
10. Golf Course Accessories
11. **Water Source Development**
12. **Tree Trimming**
13. Tree Mitigation
14. Trail Pathway
15. Bridge Demo
16. **Bridge Weirs and Bridge Abutment Repair of Existing Bridges**
17. **Repair of Erosion for Creeks as Needed**
18. **Creek straightening (if any)**
19. **Increased Cost of Fuel and Materials**
20. **Phasing**

Weibring-Wolfard Golf Design, Inc. has used reasonable care in obtaining data and making estimates and projections based on that data. The data has been obtained from services deemed reliable; however, Weibring-Wolfard Golf Design, Inc. does not guarantee the accuracy of such data. The estimates and projections contained herein are submitted by Weibring-Wolfard Golf Design, Inc. without any representations or warranty .