



Golf Course Master Plan

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Introduction

McCall Golf Club Golf Course Superintendent Eric McCormick initially contacted me in September of 2019 to discuss the merits of developing a Master Plan for future improvements to the city of McCall's 27-hole golf course facility. Various small projects had been completed over time and Eric was interested in a more comprehensive plan that could be used to guide future efforts. The discussion centered on re-design projects being promoted by the Golf Advisory Committee as well as aging course infrastructure and its impact on his maintenance routines. Upon conclusion of our conversation, we agreed that before they did anything, it would be best to have a plan of attack to address these types of issues in that would help the city and the golf advisory committee identify and prioritize needs.

My first visit to the course was in late October where I spent time touring the course with Eric and discussing the course and facility from the perspective of the grounds department. Understanding when each of the nines were built, it was clear that much of the facility was old and the focus of the master plan would need to be on its infrastructure. We also met with City Manager Anette Spickard to discuss the process and scope. It was a good meeting and I was able to convey the value of having a well thought out plan that responsibly balanced priority needs with ideas for improvements that today's golfer looks for in a round of golf.

Winter settled in soon thereafter, so little was accomplished on the course until spring. In the meantime, a meeting was arranged in Eagle at Ban Burry Golf Club with several of the previous McCall Golf Club Golf Course Superintendents. Their input gave us a better understanding of past renovation efforts over the last 30 years or so including what led to the work. In addition to Eric McCormick, in attendance were Craig Collins (1974-75), Brian Mickles (1981-88), Craig Jackson (1988-90), and Charlie Denham (1991-95). Irrigation consultant Greg Baer was also in attendance. It was a great gathering, and much was ascertained and clarified regarding when specific projects were completed and for what reasons.

The project scope has included analyzing the property and developing a "Master Plan" which consists of this descriptive text and plan illustrating the resulting proposed recommendations. Maps of the existing course were also generated. The goal of the effort is the acceptance of the recommendations as a guide for all future improvements or upgrades to the golf course as a city asset.

At the core of the effort has been an extensive evaluation of course infrastructure and the identification of opportunities for enhancements based on the strengths and weaknesses of its design. Additional value was placed on ways to improve efficiency and or reduce maintenance costs which are continuously on the rise. The resulting

recommendations are a direct result of that analysis of the collected data and reflect the professional conclusions drawn.

Among the surprising things I learned about McCall Golf Club was that the original nine holes were developed in 1928, making the course one of the oldest in the state. The 2nd nine was then added in 1968 with the newer Cedar Nine having been added to round out the 27-hole facility in 1995. It is unknown who may have been responsible for the design or lay-out of the original 9 holes in 1928, but evidence suggests that Bob Baldock was involved in the 1968 addition. Robert Muir Graves was the Architect of record for the Cedar Nine.

With this in mind, we have proceeded with the realization that many aspects and or components of the original 18 holes are possibly quite old and that no comprehensive re-design or renovation effort has ever been carried out. That said, many of the greens have been rebuilt at some point along the way for various reasons, chief among those being severe winter damage. Much of the course infrastructure has well exceeded its life expectancy and is being held together quite well by the existing staff. But majority of it is reaching the point where it will require attention. The Cedar nine is now 25 years old and much of its original infrastructure is reaching the end of its projected first life cycle and will need to be addressed soon. At the core of the final recommendations is the necessary replacement, upgrade, or renovation of those aged elements.

Of interest to many will be recommendations addressing design aspects of the courses. This includes opportunities for design adjustments that will add interest and fun to the round. Playability, shot values, scoring resistance, and aesthetics have each been carefully studied and addressed. Much about the game has changed since the 3 courses were built and adjustments will be needed to elevate the facility to those new standards. Throughout the effort has been a dedication to the diverse skills and abilities of today's golfing public and improving their overall golfing experience.

At the inception of the process a mission statement was developed that identifies the intent and goals of the Master Plan effort. Crafted by the committee this simple statement has allowed the work to remain focused and directed. It is as follows:

Golf Course Master Plan Mission Statement

To provide an excellent outdoor family friendly experience while maintaining championship quality golf conditions at reasonable rates. Excellent service will be provided to encourage the growth of golf for all to enjoy.

Majority of my contact with McCall Golf Club has been with and coordinated by Golf Course Superintendent Eric McCormick. Eric provided valuable information throughout the effort regarding the course and its facilities and he was always helpful when I asked for his input. There is tremendous value in having the golf course superintendent involved with a course master planning process since they are the ones directly tasked to provide a golfing experience that meets the expectations of the customer while adhering to strict budget requirements.

Progress was reported to the Golf Advisory committee and head Golf Professional Allan Morrison, PGA at milestones during the process. Perspective was also solicited by the committee throughout the process. It was a decent size group and meetings were generally well attended. The following committee members participated:

Michael Hayes
Ken Stearns
Suzanne Gebhards
Todd McKenna

Rita Bolli Neal
Kristin Christensen
Kara Jeffus

With a notice to proceed occurring in early November of 2019, little was conducted until early 2020. Much of the effort was carried out over the spring and summer months and included numerous visits to the course and a couple meetings with the Golf Advisory Committee. The ongoing global pandemic slowed the process a little, but with a majority of my work conducted outdoors on the golf course we have been able to get through the season with a few careful gatherings with the group and complete the plan. I believe the group enjoyed their participation and each gained new insight regarding philosophies and principals of course design and renovation as it relates to McCall Golf Club.

This text is intended to further support the final recommendations and can be used as desired by the City, Golf Advisory Committee, or course management to help determine future projects. The hope is that all involved gained an appreciation of the importance of reinvesting in the course as a public asset of the City of McCall.

Time spent on the course has allowed me to gain a comprehensive and intimate understanding of the course, its weaknesses and strengths, its players, and its composition of facilities. Many details have been analyzed and researched and are important aspects of the eventual work and implementation of the recommendations. I have thoroughly enjoyed my time with the people I have met during my visits and the staff has been professional, responsive, and a joy to work with.

A point that I cannot emphasize enough is that no plan of recommendations will satisfy everyone 100%. Throughout the effort it is hoped that individual opinions can remain secondary to the betterment of the course for all players. I alone should bear

responsibility for specific recommendations. This I accept by offering my professional involvement in this project.

Architects Approach & Assessment

McCall Golf Club is to be commended for its dedication to providing the residents and visitors of McCall a fun and enjoyable golfing experience. The facility is a favorite of not only the locals, but many of Idaho's golfing population as evidenced by the success of the numerous highly attended tournaments it hosts yearly which bring players from afar to participate. While things have been difficult for many golf facilities around the country in the past decade, McCall Golf Club has maintained its strong position in the marketplace, signaling that it is doing something correct. This healthy position will allow proactive renovation efforts moving forward to ensure a quality experience for the golfing public.

Good Business -

With that success, comes the responsibility of maintaining the asset. The previously listed mission statement establishes a focus and objectives for course preservation. This is the basis for what I consider a Business Plan for the golf course. As with most successful business operations, the business plan, or in this case the Master Plan is the roadmap by which all endeavors are guided. The master plan identifies individual areas of opportunity or need while considering the entirety of the course. Like a good book, changes to the content within one chapter, or in our case a golf hole, will have bearing on the others. The master plan takes into consideration all aspects of the course that interrelate to form the overall golfing experience. In addition, both the short and long term are weighed into each recommendation made.

The passing of time has had considerable impact on the playing fields of the game. It is likely this will continue. The master plan for McCall Golf Club combines recommendations for the responsible upkeep of the course infrastructure and features based on industry standard life cycles. Value is added with opportunities I have identified for design adjustments that will set the course up for the future enjoyment of the game. Proven and timeless design traits are used to enhance the golfing experience for all players.

Beyond the enhanced golfing experience, recommendations have been made with consideration to the business of market share. With a focus on daily service operations it is easy for facility managers to forget that their course is a business that must be competitive and sustainable economically within the marketplace. As a professional Golf Course Architect, I give due consideration to this and incorporate elements and strategies meant to improve the facilities market position. As stated above, McCall Golf Club is currently doing well within the local market even though new facilities have entered that market over the past 15 years. But McCall Golf Club must remain diligent and moving forward to maintain that position.

As with all business, increasing labor wages will have a significant impact on profitability moving forward. If greens fees are not equally increased, the only alternative will be budget reduction which is already challenged. Currently, 46% of the course maintenance budget is related to labor. Labor provides the detailing necessary to meet the daily expectations of the course management as well as golfers. In golf, great value is placed on consistency by the golfing customer. Throughout the master plan, areas typically requiring high labor have been targeted and opportunities to off-set the increase in costs have been weaved into the final recommendations.

The Courses -

In general, McCall Golf Club is a nice public facility of moderate to short length, is well maintained, and at its core is a sound design and is located within an attractive setting. Its evolution since the original nine holes were constructed in 1928 is obvious from a design standpoint, particularly with the newest 3rd nine having a considerably different feel and look. Golfers feel it provides a pleasurable round and as observed, presents the golfer very few overly penal challenges throughout their round.

The course offers a casual golfing experience and is best suited for middle to higher handicap players, which is a vast majority of the golfing public. Apart from a few shots, the golf holes do not pose an overly difficult challenge for the better golfer. Currently there are no bunkers on the older 18 holes resulting in limited interest off the tees at times. Overall back yardage is very short for the modern game and the low handicap longer players easily overpower most holes. While the scorecard reflects suitable yardages for the forward tees, few actual forward tee areas exist on the older 18 holes. Having been developed 25 years ago, the newer Cedar course provides a more standardized distribution of tee options but can be improved with additional forward positions. Many of the greens still contain areas of severely sloped or dramatically contoured surfaces. This provides some of the greatest challenge to scoring especially as the green speeds increase throughout the season. A round at McCall Golf Club is typically fast paced, but the course can get busy and at times the pace slows.

For some, the attributes identified above translate to “easy” or “uninspiring” golf. The origins of golf suggest it was a game about challenging obstacles as one creatively negotiated their way through the course in the least amount of shots possible on any given day. McCall Golf Club is lacking some of this sporting “spirit” that a percentage of golfers appreciate and look for in the courses they play. Additional interest can be added for those players while not increasing challenge for others.

Like art, the best designed courses stir emotions, stimulate the senses and are a fun experience. Combined, these traits create a memorable and enjoyable golfing experience

which should be the objective of every golf facility. The following are carefully considered areas of focus that have meaningful impact on the quality of that experience:

The Property -

Most of the worlds highly regarded courses are blessed with a great piece of property where attributes related to location, landscape and form come together to the benefit of the golf. A few must rely solely on the creativity of man. McCall Golf Club is routed over and through 2 different and attractive landscapes in a beautiful environment that is nicely suited for golf in the months bracketed by spring and fall. After holes 1-4 of the Birch nine, the holes of the older 18 and holes 1-3 of the newer Cedar traverse over open and generally flat woodland prairie. Aerial photos of the area illustrate these areas appear similar today to how they did in 1928. Original tree groupings remain, combined with trees that were planted to help separate and divide adjacent holes. Shiner creek runs east to west through this area of the property and provides some strategic and penal interest on a few holes.

Topography on the original 18 holes is subtle with majority of the golf features built up from the natural ground. Fairways are routed over the natural grade and feature only slight movement. Most features (greens and tees) are smaller in scale but compliment the width and length of the golf holes. There are no significant changes in elevation on most of the holes and considering its overall shorter length, this portion of the course can be walked easily. The original 18 holes benefit from a "core" type routing configuration where numerous holes are grouped together and are not disrupted by houses or roads which is always preferred.

The remaining holes of the facility extend to the east and south and up into varied and moving hilly terrain that was mostly covered with native trees prior to the development of the land in the mid 90's. The corridors that were cleared for the golf holes are on the narrow side which results in a penal challenge for the less than straight player. Homes populate the perimeter of most of the holes on the Cedar but are generally well hidden from view by the dense trees. The features on the Cedar course are slightly larger in scale and more modern in design and construction than their predecessors. While still not long, the Cedar course was designed to check all the boxes of preferred lengths and directions for the holes while routed in a manner that would provide premium to an adjacent housing development.

The resulting apparent differences are something that the master plan addresses.

Yardage and Par -

To satisfy today's diverse golfing market, courses need to provide a wide variety of yardages to choose from ranging from 7,200 yards down to 4,500. This is now supported by available player distance data for all levels of players. Though this range is ideal, it's not always possible or practical to achieve as it is dependent on what the property allows with the design or budget as longer and larger courses require more land and cost more to develop and maintain.

Most holes on the course do not have adequate area to extend lengths to an appropriate championship yardage from the back markers. By no stretch of the imagination (or of the tees) will the course ever play at a true championship length by today's standards (7,400 yards plus at elevation), nor does it need to. Individual holes do and may with further refinement take on championship characteristics. It is also this architect's opinion that this fact is in no way detrimental to the potential quality or overall success of the course, particularly as a public golfing facility. But it is a fact that must be understood, accepted, and factored into the master plan recommendations.

On the Aspen and Birch nines I am recommending the addition of a new set of tees at the Gold forward position as well as the Silver. This will vastly improve distribution of the players based on known playing abilities. With correct yardages all players are given fighters chance of reaching the greens in regulation. Since this translates to greater enjoyment for those players, this is also an important aspect from a marketing and sales standpoint moving forward.

Establishing actual Silver and Gold teeing areas will alleviate some of the pressure and resulting wear on the existing tees which would then become predominantly used by the Blue and White marker players. With the greater available area, each will be able to be adjusted with greater variance on a day to day basis to help add interest.

Overall yardage on the Cedar course is good, but most holes still require actual tees to be established at gold tee yardages. Other recommendations are made on various holes to improve variety with adjustments to tees including new teeing area, shifts, additions, or bunker adjustments. The most aggressive opportunity is at the 1st hole where the tees are shifted left as they extend forward to allow more golfers the option of attempting the dynamic risk-reward shot of carrying the corner off the tees.

In addition, it is recommended that the available blue tees be used on the longer holes where they are currently being moved forward. This will provide the lower handicap players a few longer holes off the tees as originally intended.

Game Attributes -

McCall Golf Club is comprised of a broad demographic of player abilities with emphasis on mid to higher handicaps. This point has been given due consideration within all recommendations. Two key design traits where this point is applied are playability and resistance to scoring. Along with shot values, these are underlying traits of any good or great golf course and are comprised of many individual design nuances that have been factored into the recommendations within the master plan.

Addressing these traits also requires a balance within the recommendations. While several areas can be made more suitable to the shot making skill level of the average player, other aspects can be folded into the course in terms of strategy and shot selection to maintain or expand challenge for the better player. Slight repositioning of bunkers and reconfiguration of tees for a broader range of yardage options are examples of where these aspects have been addressed and improved. Many similar opportunities are also located at the greens.

As with all successful master plan efforts, there must be an overall dedication to playability. Not to be confused with “ease of play”, playability is best described as the ability of all players to negotiate their way through a round without undue penalty. In making sure that a proper fairness exists, we must be careful not to dampen the sporting spirit one enjoys when playing the course by removing all challenge. While playability is not an overriding concern with the existing course, some areas for improvement remain. Key among those are the areas of excessive slope within many of the older green surfaces which become nearly unplayable for all golfers when the greens hit their stride mid-summer. Within all recommendations care must be taken to do no less than maintain aspects of playability which contributes to the fast pace to a round at McCall Golf Club.

While there are no bunkers on the Aspen and Birch nines, Shiner creek and a few lakes provide interest on numerous holes. Several come into play in a dynamic manner such as Shiner creek on Aspen holes 5 and 7. Others can be looked upon as potentially too challenging and penal such as the ditch crossing in the approach of Birch Par 3 #7 green. Others are for the most part out of play and could be modified to bring them into the hole and create greater interest.

Aesthetics -

Of interest to this architect during a Master Plan analysis is discovering opportunities to further enhance the visual character and styling of the course. These attributes have considerable impact on the golfing experience and helps give a course its own unique identity. While some courses require a heavy hand by the architect, others like McCall

Golf Club rely on the beauty of the native property and setting. With good design, bunker style, tee form, green design/size, landscape and trees, and water features all come into play as each are brought together in composition and presented to the golfer to negotiate. The quality of the design is identified by the consistency, composition, and quality of these elements.

Throughout the 3 courses of McCall Golf Club, Attributes of the Cedar course differ from the older 18 holes. These newer 9 holes differ slightly with larger scale and better overall composition of the features. The existence of bunkers only on the Cedar course also sets that nine apart. Tee form and configuration is also slightly different on the Cedar nine. These differences in tees and bunkers between the original 18 and later 9 holes can be easily addressed in future renovation efforts.

The open character of the holes routed through the open woodland prairie areas also have a different look and feel from the holes that run through the trees and over the varied terrain, but in no way does this detract from the experience. Consistency between the features can be used to insure a good relationship between the holes in each area.

If not well designed or composed, course features will leave little impression on the golfing experience. This translates to an unmemorable experience and leaves the golfer with no lasting impression. The greens on the older holes are very basic in their design with many containing severe slopes rendering areas un-pinnable. These are among the weakest aspects of the course. Improving this aspect will require straightforward design refinement of the features when they renovated to bring them up to current standards and condition. Others will benefit with more aggressive alteration which has been included within the recommendations of this Master Plan. When properly renovated with better overall composition and enhanced design attributes, the holes and features at McCall Golf Club will suggest a higher level of design excellence that all players enjoy.

In select and specific areas of the course more significant design changes have been suggested to address what has been identified as either the weakest aspects of the course or that provide the greatest opportunity for enhancement.

Condition -

Golfers put considerable value on course conditioning when judging their golfing experience. Expectations can range considerably and are typically high with emphasis put on consistency. What most golfers do not understand is what exactly effects course conditioning and the ability to provide the conditions they demand on a consistent

basis. Mother nature has a far bigger role than what most golfers credit, and in most cases, there is nothing that can be done about it.

While many of the green areas on the older 18 holes have been renovated or rebuilt over the years, many remain old and are structurally composed differently hole-to-hole, resulting in a broad range of maintenance challenges. Many of the individual elements of the courses are at a point where they are hitting the end of their anticipated life cycle. Chief among those are bridges and crossings that are near dilapidated and potentially pose a hazard if not addressed soon. The result is areas of the course or features that show wear and tear, are inconsistent in their performance, and have a negative impact on playability as well as aesthetics. Most significantly, these areas also become much more expensive to maintain at the level desired.

The bunkers on the Cedar course are now 25 years old and require refurbishment if they are to be maintained correctly. Majority of the tees are no longer level and need to be regraded and resurfaced. Unlevel tees is one of the traits that bothers players the most. Cart paths in many areas are starting to erode and deteriorate and replacement is needed. Steep areas within many of the green surface reduce the available pin areas resulting in worn out areas over the course of the season. New varieties of turfgrasses are also more resilient to common stresses including the severe winter conditions often experienced in McCall.

As with any industry, standards change as materials improve or are invented. The features and components of the course are 1 to 2 generations behind. When renovated these areas will be brought up to current standards and the result will be greater maintenance efficiency, improved aesthetics, and better consistency in their preparation for play that all will appreciate during their round.

Facilities -

As the facility evolved over the last 90 years, so has the location of the Clubhouse and related amenities. The current clubhouse, while it has some programming weaknesses, appears to serve the needs of the golfers and staff effectively overall. The expansive area of open pavement surrounding the building for cart staging also appears to work well for most situations and daily activities. Improvements to the paving in the future are recommended to enhance the aesthetics and traffic patterns of the area as design standards and specification for all future paving efforts is improved.

McCall Golf Club currently has a limited assortment of practice amenities. Sitting on roughly 6.5 acres of area, the range is undersized for a 27 hole public facility. At 160'

wide the range tee can only provide 18 practice positions. This can be challenging at busy times of the day and for events. This may also hinder revenue that could otherwise be generated through range only use. With a length of 285 yards, most golfers can safely practice with all clubs, but at the elevation of McCall, longer players are limited. Unfortunately, the property is already fully utilized, and no options exist for adding length to the range. An optional design for the holes west of the range has been developed that would allow the tee to be expanded slightly and the addition of a new dynamic practice chipping area or practice putting green. To help off-set the limited size of the range tee and the resulting wear to the turf, a new artificial turf tee line is recommended. Artificial turf materials have improved in recent years and could be a viable solution in this situation.

Putting practice is conducted on the one 6,500 SF practice putting green located adjacent to the parking lot west of the clubhouse. Cart path adjustment were made in 2017 and the green expanded slightly west. This is a good location and while a bit undersized the green is good with all areas of the surface being well suited for practice and warm-up use. Expansion would require reconfiguration of the parking lot to allow the green to be enlarged to the south.

A 6,000 SF putting green located between Aspen hole #1 green and hole #9 tees can be used by golfers for chipping and short pitch practice. The primary function of the green is to supply turf to be used to replace damaged turf on the course putting greens and therefore is generally flat and may be taken out of use when large portions of the turf are removed for use elsewhere. Otherwise, pitching and chipping practice is possible only at the range, but targets are very minimal.

Nice improvements have been made in-house at the maintenance facility and while split into two distinct areas, is of ample size. As the epicenter of the facility, and keeper of the expensive maintenance equipment it is important that this area be up to par.

Golf Course Assets, Infrastructure and Components

Current Life Cycle Analysis

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General Description – Golf Course Aging Assets

A primary component of a comprehensive master plan analysis is the assessment of the existing course infrastructure and components as physical aging assets. A golf course is made up of components and materials that require timely upgrades, replacement and or repairs beyond what is addressed through standard maintenance practices. Golf courses cannot only be maintained and then played, though unfortunately many are and the facility and resulting golfing experience deteriorates. Like other business facilities or holdings, golf course components are assets that have specific life cycles and require management to maintain. These cycles can and should be mapped and projected to be used to develop a long-term management plan for the facility to maintain its integrity.

Golf course components degrade over time in numerous ways. Many components such as tees and bunkers simply wear out from use and recurring maintenance practices. Some mechanical and technological items simply go bad with age. Other components become outdated because newer standards and golfer expectations have been established. Meanwhile the evolution of the game with a broader range of players and increased length by the better players outpacing the configuration, size or durability of certain features or components. All aspects are also exposed to the elements, native to the course location which weighs heavily on their integrity.

Aging of the course can have a significant impact on the golfing experience and eventually its positioning within the marketplace. Old infrastructure often leads to poor or inconsistent conditions. This is realized by golfers during their round and leaves a poor impression on their experience. Newer facilities with new putting surfaces, bunker sand, level tees and consistent maintained conditions throughout set a benchmark that other facilities within the marketplace will be weighed against.

Most importantly failing infrastructure has significant impact on every-day maintenance routines. When features and elements on the course are degraded, maintenance practices required to keep those areas up to a standard conducive to play become inefficient and often excessive. If more time is needed to maintain one area or element on the course, other areas may go unattended.

Though there is a range of acceptable conditions within the marketplace, the objective of all golf course maintenance operations is to provide the most consistent playing conditions possible. While mother nature will always impact conditions, most other inputs can be managed when course managers are given the appropriate tools. Bunkers that drain and don't erode when it rains, grass varieties that are selectively bred to thrive in specific climates, better withstand volumes of play and frequency of

maintenance, and an irrigation system that distributes water efficiently in times of drought and effectively at night when there is no play are things to strive for.

Without replacement or upgrade of the old pieces, a course will be unable to stay relevant or meet the standards desired by the golfers. At the same time, maintenance cost's increase and practices become less and less effective.

McCall Golf Club -

McCall golf club represents a fairly unique situation with 3 nine-hole courses that were constructed over a period of nearly 70 years. The age of the 27 golf holes can be divided into 3 distinct time frames as follows:

Newest Nine Holes - The Cedar course was developed between 1993 and 1995 and is now 25 years old. Components of the infrastructure on these holes have exceeded their initial life cycle time frame. Others are now nearing that milestone. No major renovation efforts have occurred on these holes to date. Sections of irrigation have been added since the original construction to extend watering across golf holes. Other minor adjustments have been made including a slight adjustment to the approach bunker and additional drainage on hole 7. A new forward tee was added on hole 8. Several green surfaces have been re-sodded after winter damage.

All 10 bunkers of McCall Golf Club are located exclusively on the Cedar holes. A more modern design, the Cedar nine contains a greater number of tees that are better distributed out over a greater range of yardage options better suited to golfer demographics of today. This results in 38% more tee surface area than the other 18 holes. Greens are roughly 25% larger overall and do not contain the amount of steep unusable areas within their surfaces that is found on the older holes. These 9 holes were designed by Golf Course Architect Robert Muir Graves, ASGCA.

1968/69 - The 2nd set of 9 holes was developed in 1968 -1969. As an addition to the original 9-hole course these holes were originally routed as its own contiguous loop that started and returned at the original Clubhouse location on Davis Rd. With the addition of the existing clubhouse in 1988 the configuration of holes changed to the current Aspen and Birch loops. These mid age holes (51 years) are currently holes 1, 3, 4, and 9 of the Aspen Course, and Holes 1 - 4, and 9 of the Birch courses.

Several renovation projects have been completed on these holes since its opening. In reaction to severe winter damage in 1979/80, numerous greens were rebuilt between 1981 and 83. Those included Aspen 1 and 4, and Birch hole 1 and 3. The effort included the addition of a 12" layer of local sourced sand placed over gravel and sub-drainage. Aspen 1 green was again rebuilt in 2017 to a new design.

In conjunction with the green re-builds at Aspen 6 and 7, the adjacent pond was enlarged. A new irrigation system was installed in 1996. Asphalt was installed on paths in 1990. Other individual projects have been carried out on various holes to add drainage, replace, or add irrigation and add railroad tie bulkheads at tees. Asphalt patching was completed at a few deteriorated paths.

Original 9 Holes - The original 9-hole course was developed in approximately 1928. This makes the original McCall Golf Club 9-hole course one of the oldest courses in the state of Idaho at more than 90 years old. The original 9-hole routing extended from the original clubhouse location on Davis Avenue and consisted of current holes Aspen 2 and 5 - 8, and Birch 5 - 8.

Stemming from severe winter kill damage in 1979/80, numerous greens on the original course were rebuilt. Included were current Aspen 2 and 4, and Birch 5, 6, 8 and 9. In that effort (1980-1983) current hole 5 Aspen was extended from a par 4 to a par 5 with the relocation of the green complex beyond Shiner Creek.

Again, asphalt was installed on the paths in 1990 with several sections patched since. The irrigation was replaced in 1996 throughout.

No record has been found of what changes or projects that may have occurred on these holes prior to the addition of the 2nd nine in 1968.

Clubhouse - Until 1988 the course started and ended at the original clubhouse location along Davis Ave. Construction of the existing clubhouse required some modification to the adjacent existing holes in the following years. In addition, the putting green was added where it currently resides, and the practice range was developed.

Life Cycle Components Description

Greens

The effect of time on greens is assessed in several ways. The standards for putting conditions on greens today directly relate to physical structure, turf type and surface slope percentages. Over time as capabilities of maintenance practices have improved, golfer's expectations for greens have risen significantly. To meet those market demands, new and improved grass types have been introduced and mowing equipment has been improved significantly. Multiple generations of grasses have been introduced and used since the original benchmark grass variety, Penncross Bentgrass was introduced in the mid 50's. Courses that contain older grass varieties are typically also managing aggressive undesirable grasses (poa annua) within the green surfaces and collars. Though the existence of these invasive grasses is common in golf greens, they do require increased resources to maintain effectively. While suitable in some specific locations and instances, these mixed conditions result in inconsistent and lesser quality putting conditions on most courses. New grass varieties are far denser and resilient and when managed effectively keep invasive varieties from contaminating the surfaces over time. When only one grass type is being managed there is less need for chemical treatments within maintenance routines.

Older greens were designed with the slower green speeds of their time which were the result of higher mowing heights. The result was slopes and movement within the usable (pinnable) areas of putting surfaces ranging from 1% to as much as 5+%. As maintenance standards have improved and green speeds have increased over the last 50 years, acceptable and fair surface slope standards have changed. Acceptable percentage for slopes within usable and pinnable sections of greens are now at .5% - 3% maximum. Unfortunately, this has rendered significant portions of surfaces on older greens unusable. When pin locations are limited to fewer areas within existing surfaces, those areas get too much concentrated use and become worn and stressed.

Over time excessive build-up and layering of sand material from routine topdressing practices. Sand can also build up from adjacent bunker shot blasts, altering the depth of the sand in those specific areas only. This impacts the ability of greens to properly drain or provide a consistent growing profile. Sub-drainage piping (if there is sub-drainage) can become blocked and the green subgrade no longer conveys water effectively resulting in poor turf health related challenges such as diseases. The USGA has established recommended specifications for putting green construction that has been recognized as the industry standard. The intent of the USGA recommendations is to insure proper and consistent green structure and performance on each hole of the facility. This consistency from hole-to-hole allows course managers to apply maintenance routines that are consistent throughout the facility which is the key to great playing conditions and cost efficiency in those practices.

McCall Golf Club – The biggest challenge concerning greens at McCall Golf Club is lack of consistency in their structure and surfaces. This is the result of greens that were built at numerous times and to differing standards of specification and process.

The greens of the Cedar course are now 26 years old but were built to a more modern specification and are consistent green to green. Because they are newer the surface slopes are generally appropriate throughout and support a good variety playable area and pin locations. Originally seeded with an intermediate variety of Bentgrass, surfaces now also contain poa. In general, the surfaces support puttable conditions, but are approaching a point where a resurfacing would be beneficial.

A portion of both the 1968 and 1928 holes were replaced in the early 1980's following a severe winter where the green surfaces did not recover. Replaced over the following 3 years records suggest that most were rebuilt slightly different and by different contractors depending on the year built. The specification use was a slight upgrade from the original greens and contain more sand. Several also included sub-drainage. Surfaces were sodded with one of 3 available Bentgrass varieties when the projects took place, but now also include poa.

The remaining greens are a combination of 1968 and 1928 vintage and it is uncertain what their composition exactly is. Some greens perform better than others and some have sections within that may struggle when other areas do not. It appears the green surfaces are primarily poa with a mix of other Bentgrass varieties that have been inter-seeded over the years.

Majority of the green surfaces on the Aspen and Birch courses contain significant areas of excessive slope that are not suited for playability and pin locations. This reduces what are already small surfaces into even smaller useful areas. Slopes measured on many of the surfaces exceed 4% with many areas above 5%.

Overall, the greens on the Aspen and Birch courses average between 3,500sf and 4,000 sf. This is well below a recommended size for a public facility and when combined with the excessive slopes, results in a focusing of wear and tear on the surfaces over the course of the golfing summer season.

Maintenance staff does a very nice job keeping the greens in good condition each year depending on how they come out of the winter. New greens built to a higher standard and with newer grass varieties would provide superior conditions over a longer period of the season and would be more resilient to the climate. New greens should be slightly larger and contain more suitable surface slopes allowing use to be evenly distributed and managed.

Tees

Tees on the golf course age in numerous ways. In the short term, tee surfaces become rutted and unlevel from the physical wear and tear of play. Most often these can be addressed with maintenance sub-routines on a yearly basis or as they arise if budgets and resources are available. Some might require resodding while others can be addressed with a heavy top dressing and seeding efforts.

In the long term tee slopes and banks will weather, settle, erode down or become compacted and uneven from the physical impact of general use and maintenance practices. Combined with the short term effects over time, the result can be "hilltop" tees or other similar uneven areas that reduce overall area and even result in improper alignment. Par 3 holes are particularly susceptible to this condition as divots from iron play are made and filled repeatedly over time. When at this state, simple re-leveling efforts are not adequate and tees are rebuilt.

In addition, superior construction techniques, newer construction materials and higher expectations have raised current standards. An example is that surfaces can be laser leveled to insure a consistent and even slope while maintaining good surface drainage patterns. New grass types or varieties may have also been introduced that would be more suitable or resilient at low mowing heights and to off-set increased use.

Tee configuration and Yardage Distribution -

Over the past 30 years the variety and number of golfers playing the game has greatly increased. For many older courses this results in the need for more teeing area that is properly distributed at a broader range of yardages. Proper tee distribution provides appropriate playability for all golfers and improved speed of play. In addition, advances in club and ball technology have resulted in the need for additional yardage to be added to the back tee positions in an effort to maintain the intended challenge. Because of this change in golf demographics and numbers, average tee size that is recommended to best distribute wear and tear has increased by approximately 30%. Typical course tee yardages now should range from 4,500 yards at the forwardmost tees to upwards of 7,200 from the tips depending on the elevation and market target of the facility.

McCall Golf Club - Averaging just over 3,000 sf in area, the tees on the Aspen and Birch courses are undersized by a significant amount. Most par 4 and par 5 tees should be approximately 5,000 sf. This results in a focus of use and wear over the course of the season with a majority of players using the same sections as is evidenced by many of the surfaces in need of leveling. Many of the individual tees are properly sized but there simply isn't enough of them to distribute play among. Additional new tees combined with expansion and level of the existing tees is recommended to address both condition and improved playability for a large population of the golfing customer.

Most of the tees on the Aspen and Birch are also raised up off the native ground 3'. This results in steep tee banks that are difficult to traverse by mowers and golfers alike. This additional height is unnecessary and has resulted in many of the tee edges rolling off and loss of available usable surface.

Tees on the Cedar course represent a more modern standard in size and distribution averaging nearly 5,000 in overall area per hole. The par 3 tees are undersized and should be expanded as possible when next addressed for leveling and improvement.

Forward play has been distributed in recent years with the addition of teeing area mowed into the leading edge of several fairways. This has been a positive for a percentage of the golfing public but should be improved and made more permanent with dedicated level teeing areas for each.

Bunkers

Because of their nature, bunkers age swiftly and require significant resources to be maintained to today's standards for play and golfer expectations. Maintenance routines far exceed simple sand raking and include redistribution of the sand as it moves throughout the floor over time, compaction of the sand to provide firm conditions, and perimeter edging. Most require attention beyond these typical maintenance routines within 10 years depending on resources and climate. Design style also has an influence on bunker life cycle. Bunkers that get more use also require greater attention.

Over a period of time sand quality is diminished from dirt contamination from the subgrade and along eroding edges along with grass debris from adjacent edging or mowing. Other contamination builds up over time simply due to their exposure to the open environment and related weather and seasonal change.

Areas above greenside bunkers also suffer from sand blast build-up along the edge and where these areas extend into the collar, transition and green surface grades. This build-up may also result in higher and steeper sand faces over time. In some cases bunkers may contain too much sand that has built up through sand addition or "sweetening" efforts. Excessive sand depth raises bunker floor heights and makes it difficult to provide consistent conditions with fried egg lies more prevalent. Subdrainage pipes may require cleaning to again properly convey drainage from within the bunkers. All these items impact playability and make it difficult to maintain bunkers in a consistent condition over time.

As with other elements, new construction practices and materials provide upgrade opportunities to current standards targeted at reducing the impact of these challenges. Subgrade lining materials are now available that can be used to help preserve new sand for a longer period of time and will greatly reduce erosion and related repair and labor depending on the

location and climate. Rising costs of materials such as bunker sand are a strong consideration for these applications in the long term.

McCall Golf Club – Interesting there are no bunkers located on the Aspen or Birch courses.

The newer Cedar course contains a small number (10) of strategically positioned bunkers. Built in 1993 these have reached their first life cycle limit and require refurbishment in the coming years to maintain their integrity. Sand has been added over time to keep levels suitable for play, but the shapes and edges have altered with the passing of time as all bunkers do. New specifications for bunker construction will improve bunker condition while reducing maintenance requirements. Refurbishment includes new sand, repair of sub-drainage as needed, reestablishment of shape and size, new perimeter grasses with sand build-up removed and the introduction of a liner between the sand and subgrade to help minimize erosion and contamination of the sand.

Cart Paths

Because of their intended use and physical make-up, cart paths wear at standard rates that are then compounded by the frequent irrigating and drying of the course. Asphalt and concrete also ages by the action of freeze and thaw in those related climates. Asphalt has a much shorter life expectancy than concrete but can typically be re-surfaced once. Cart path subgrades are typically not prepared in a manner (compaction and base materials) that would facilitate long life expectancy and structural integrity. Frequent irrigation also speeds up the aging process.

With the overall increase in rounds and broader golfer types, cart use has dramatically increased over time. Older courses are often challenged with the need to add or extend older paths to properly carry this additional traffic. Paths are of greater importance adjacent to Tees and Greens and when properly designed with curbing, pitch and drainage are conducive to carrying drainage away from high traffic use areas. Proper location, relationships and routing is paramount to successful path installation. An aspect often overlooked by golfers is the importance of cart paths for maintenance access, especially in times of poor weather and during the off-season.

McCall Golf Club – Now 30 years old the asphalt paths throughout the course require attention and should be resurfaced. Occasional patching has helped prolong their condition for use, but that practice will no longer sustain usable paths. Their alignment is generally good, but all path locations should be assessed prior to any new path installation work. Clearing of snow and winter use of the paths has also added to the damage and deterioration of the asphalt paths over time.

Curbing for traffic control was used sparingly in key areas along tees and greens in the form of RR ties and timbers. Much of this curbing is also deteriorating and will need to be replaced with something more appropriate when the paths are addressed.

It is recommended that the existing paths be ground, excess material removed, and some be left in place as base material for a new asphalt layer. New paths must be finished flush to adjacent turf grades to ensure drainage run-off patterns are maintained or improved. 8' wide paths will serve both golf cart and maintenance vehicle purposes.

Irrigation System

Various aspects of golf course irrigation systems hit their life expectancy at different rates. The life cycle of an irrigation system also varies with the region, climate, water quality, irrigation practices and quality of original design and install. In regions like McCall we typically see the first life cycle to be between 15 - 20 years. Within that timeframe, exposed mechanical and electrical components such as heads and control systems will need replaced once with computers used by the control system more frequently. Underground components such as pipe and wire have a longer life and often reach the 30-40-year mark depending on the integrity of joints, valves and other potential weak points. Excessive pressure within the lines over time can also stress and shorten the life of pipe. For McCall Golf Club, yearly freeze and thaw can result in issues each year.

Over the last 15 years irrigation practices have changed to meet the demand for better course playability and to reduce water use. A 10 to 12-hour watering window timeframe used to be acceptable, where today the standard is now 6 to 8 hours. A shorter water window allows for better maintenance practices and a reduction in wet conditions in the morning that golfers appreciate. In some locations, off-peak hours pumping power consumption can be had at lower cost rates. Shorter and compressed water windows increase irrigation demand on the golf course at any one time and require larger mainline pipe and pumping systems to distribute that additional higher volume of flow in shorter durations.

A new design with better control translates to improved conditions area by area throughout the golf course. Some systems previously designed with multiple heads on each control station result in difficult conditions to manage and maintain effectively. Greater control on an individual head basis allows staff to water only those areas requiring the water and not adjacent areas that otherwise do not need watering. Water saving and improved playing conditions are the result.

The spacing between adjacent sprinkler heads has a direct correlation to consistent turf conditions. 70' wide spacing that may have been an acceptable standard 25 years ago is no longer standard, particularly where water availability, conservation and cost is relevant.

Current systems are designed with sprinklers rarely greater than 65' apart. This reduces water waste by improving distribution uniformity. As water regulations increase, systems with tighter spacing will be best suited to meet restrictions and better off-set increasing water costs. New pumping systems are more efficient users of power than older systems and financial returns on those efficiencies can be significant. Shorter watering windows may also allow a facility to contract a power use agreement with the local power providers in a shorter window and at the times they provide credit for.

McCall Golf Club –New on the Aspen and Birch courses in 1997 and now approaching 25 years in the ground, repair frequency on pipe, joints and valves is increasing. Increases in the irrigation labor budget should be anticipated in the coming years which may in turn take staff away from other areas.

The system on the Cedar course is approximately 5 years older and requires similar attention. Significant additions were made to the original design to help distribute water out to the limits of the golf holes. These additions were completed with little consideration to the engineering of original design and are not very effective with poor distribution uniformity and hydraulic pressures.

Some aspects of the original design do limit the effectiveness of the watering including the lack of control in fairways with multiple heads on each watering station and the lack of isolation in key areas such as greens and tees. Some of these can and should be addressed in the renovation of those areas or in an eventual irrigation system replacement. A comprehensive master plan specific to the irrigation system should be considered in the coming years to help map out needs in this area.

See separately attached report developed and provided by Baer Irrigation Design.

Drainage Components

The life cycle of drainage components on golf course can vary significantly. While HDPE pipes that have been properly installed may simply need occasional cleaning or clearing through time, corrugated metal pipes that were used most frequently in the past may require replacement earlier. Grate inlets used on the surface within turf also require replacement or renovation sooner due to their exposure with plastic versions needing it earlier. Quite often existing underground drain lines and structures are damaged by subsequent invasive project efforts such as irrigation installs and repairs. Invasive roots can also find their way to lines where trees are present.

Areas that are improperly drained result in wet and poor turf conditions that when left unaddressed can become larger problems. On many courses, the continued development of adjacent property uses might require additional on-course drainage to be installed where previously not necessary. Most drainage projects on golf courses are divided into two classifications and scales. Storm drainage systems help move heavy rain and or flooding events through the course property effectively and reduce damage to the course features and elements during those larger events. Most golf course drainage is intended to remove daily nuisance water from irrigation and typical rain events where it may collect and settle and not move off the areas of play. In this case the addition of drainage consists of the addition of small underground drainage lines, surface inlets and French drains in select troublesome areas to improve playing conditions and to help facilitate effective daily maintenance. In some locations, areas exhibiting issues can be addressed by improving the slope of the ground surface to achieve positive fall to a defined collection point. Poor compacted soils can also compound issues.

McCall Golf Club -

Several locations on the golf course exhibit issues related to poor water and drainage run-off. Most of these are caused by flat grades and or run-off from adjacent properties or areas entering the golf. Some can be addressed with minor grading and others will require the addition of small nuisance water sized subdrainage pipes, like what is found in other previously addressed locations. These issues are not significant, but when addressed will improve conditions for both maintenance and golf play. Examples include the fairway and right rough on Aspen #9, the fairway along the cart path at Aspen #2 and Right of the green on Birch #8. Specific areas requiring the addition of drainage system are identified on the Master plan.

Grass types

With the passing of time new grass types and varieties have been introduced for golf course applications. These new grasses have been developed to provide superior playing conditions often with reduced maintenance requirements and chemical applications. Most have been bred for particular use in specific regions and climates. Other advances in maintenance practices now allow in some cases the use of grasses previously not suited for certain applications. Grass types can also dictate play depending on its texture, need for irrigation and tolerance for potential height of cut. Older courses typically contain a mix of varieties including the grasses originally planted combined with a varied amount of other invasive species or mutated versions over time. These invaders often provide poor playing conditions and are difficult to eradicate without significant impact to play during removal. Selective herbicides are now being developed that can be considered within a program intended to transition to more suitable

turf varieties without course closure. The impact of new grasses on greens and tees was identified above.

McCall Golf Club – Tees, fairways and rough are all a blend of bluegrass, Ryegrass and Poa Annua, typical for this environment and grassed more than 20 years ago. In general, this seems to be a good variety for the fairways and rough on the course and is a good match with the Bentgrass/poa greens. Damaged areas are easily seeded with Ryegrass when repair is needed. Damaged high play areas are sodded with a rye/bluegrass blend or similar which is readily available in the marketplace. Mowing heights are also suitable for the type of play at McCall GC. Green surface grasses were addressed in the section pertaining to greens with new varieties now available that would provide superior playing conditions and ease of maintenance.

Turf health on greens and tees is directly correlated with the usable area in these areas of focused play. As identified above, tees and greens on the Aspen and Birch holes are generally undersized with many of the greens having too few pinnable locations due to excessive slopes within the surfaces. Turf upgrades at these key features can occur when each are renovated.

Lakes and Streams

Depending on how they were constructed, lake and stream banks erode over time. In some natural settings instances eroded edges can be acceptable, but more often this appears unkept in an otherwise maintained landscape. When these elements relate to maintained turf edges they need to be maintained and eventually re-established to insure a suitable appearance and integrity.

Where employed for lake sealing, geomembrane lake liners eventually require replacement to ensure water is not lost and proper water levels can be maintained. Filling lakes with water requires pumping and water costs and should be done only as needed to keep those costs minimal. In addition, there is nothing more unattractive than a dry or exposed muddy lakebed.

Shallow lakes need to be deepened to ensure proper water temperatures which translates to cleaner and healthier water and to control algae growth. Related lake control structures and infrastructure require replacement as they age and lose function or to adapt to changing conditions and governing agency requirements. Storm water and sediment control are key aspects that demand appropriate attention for liability as well as integrity.

McCall Golf Club – The various lakes and ponds located on the property vary in age and purpose. It is believed that several of them were created to provide fill material in the development of the tees and greens during the original construction of each group of holes.

In general, the lakes on the course are simply excavated low areas that receive water either from Shiner Creek or from the irrigation system. None are sealed to fully contain water. The

wetlands and pond located on the Cedar nine receive water from the wastewater treatment facility located east of Hole 6 as surface flow.

The lake located beyond Aspen hole 1 is deeper than the others intended to serve as the irrigation reservoir for the course. This lake is fed from the lake along Birch hole 8 where the well is located. As the irrigation reservoir this lake should be maintained to ensure proper depth with removal of any sediment that might build up over time. TBD

Course Accessories

An often-overlooked component, course accessories, including ball washers, benches, signage, drinking water stations and trash containers can have a significant impact on the presentation of the golf course. These elements should be assessed on a routine basis to insure they are in quality condition and are consistent throughout the course. These elements eventually wear out and should be replaced. Flagsticks, flags, practice green hole pins and range distance or target markers and flags also fall into this category.

As a public facility, information signage should be used to direct traffic, identify locations, and help keep golfers safe where appropriate.

Maintenance Facility

Maintenance efficiency and levels are directly related to the quality of the resources and facilities available. An undervalued asset, the maintenance facility is the center of control and activity from which the care and upkeep of the golf course is conducted from. A dedication to those facilities typically suggests a similar dedication to the course. Labor cost and equipment maintenance and upkeep is affected by the effectiveness and efficiency of the facility. In some cases, the facility is highly visible and should be enhanced accordingly. Most governing agencies have increased regulatory requirements on these facilities and upgrades for safety and environmental requirements should be kept up with.

McCall Golf Club - The current maintenance facility was constructed in 1969 and coincided with the development of the 2nd nine holes. Improvements and upgrades have been made to the facility over time including ongoing efforts this year. Located at the threshold of the course entry, improvement efforts should include screening and beautification. Paving of the yard should be considered.

Crossings and Structures

Physical structures on a golf course can vary from simple bulkhead retaining walls at tees or lake edges to major storm water controls meant to safely and effectively contain or move large events through the property. Others include bridges or culvert type crossings over creeks or drainage ditches. In all cases these are exposed to the environment and can degrade over time. On many courses these structures were not engineered and may be undersized or improper for their application. Failing drainage structure can result in deteriorating condition on the golf course if left over time or can be exposed in an event or happening. Cart and player bridges now must be design for safety and with liability in mind.

McCall Golf Club - Culvert crossings are in use at various locations of the course path network to traverse Shiner Creek and other similar drainage or waterways. Many of the crossings identified are in a state of deterioration and need to be repaired or in most cases replaced with a more suitable structure.

Player and cart timber bridges are also in use on the course in numerous locations and consistent with the culverts, are old and in a state of deterioration. Their integrity and golfer safety is a paramount concern and these should be addressed.

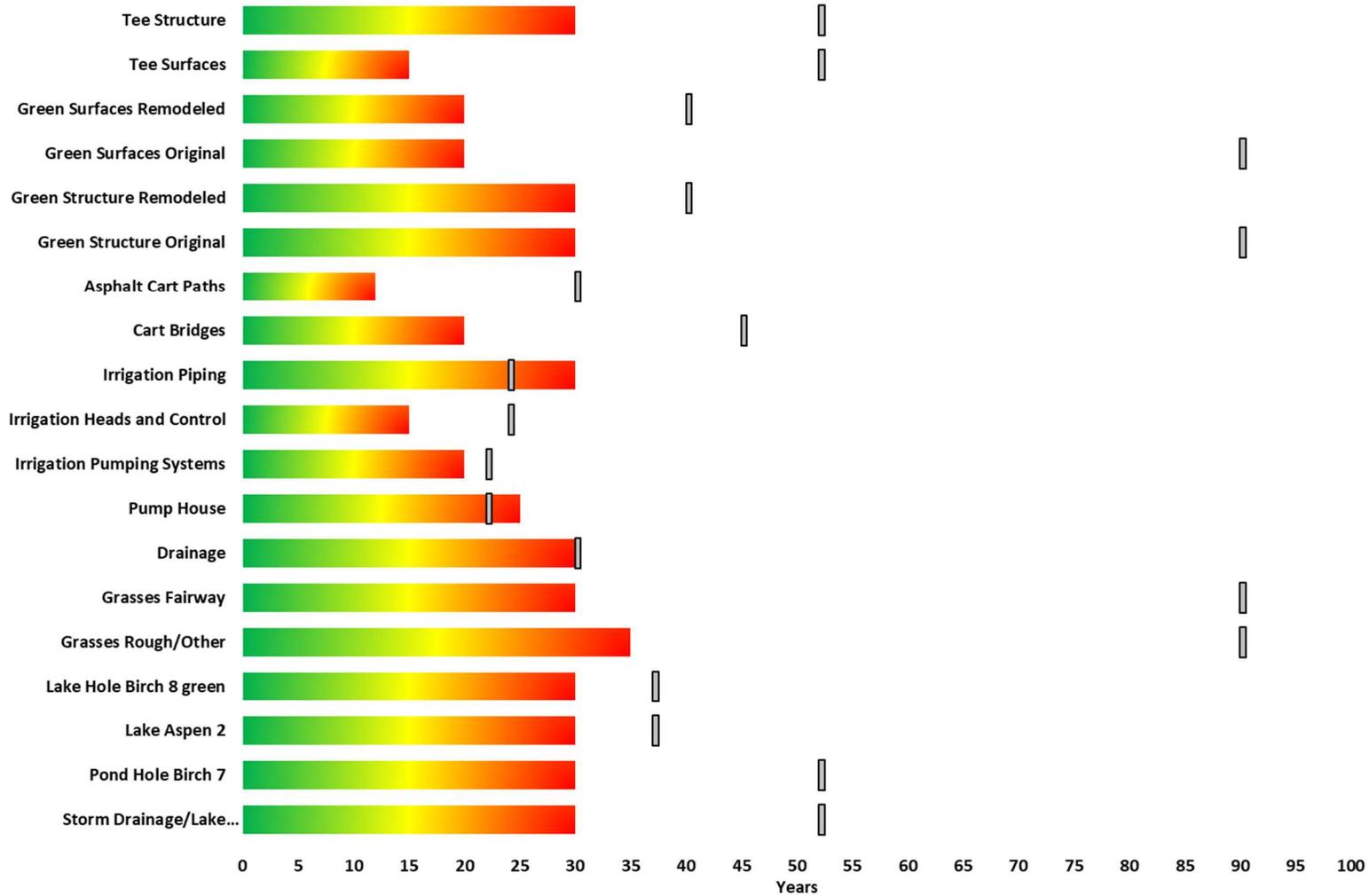
Rail tie and timber bulkheads have been used at various locations including tees that help define and expand the limits of those areas. Several of these will require replacement or removal in favor of other solutions in the coming years. Many are causing awkward and inefficient mowing and edging requirements. Most can be removed when paths and tees are renovated.

Aging Asset Life Cycle Charts

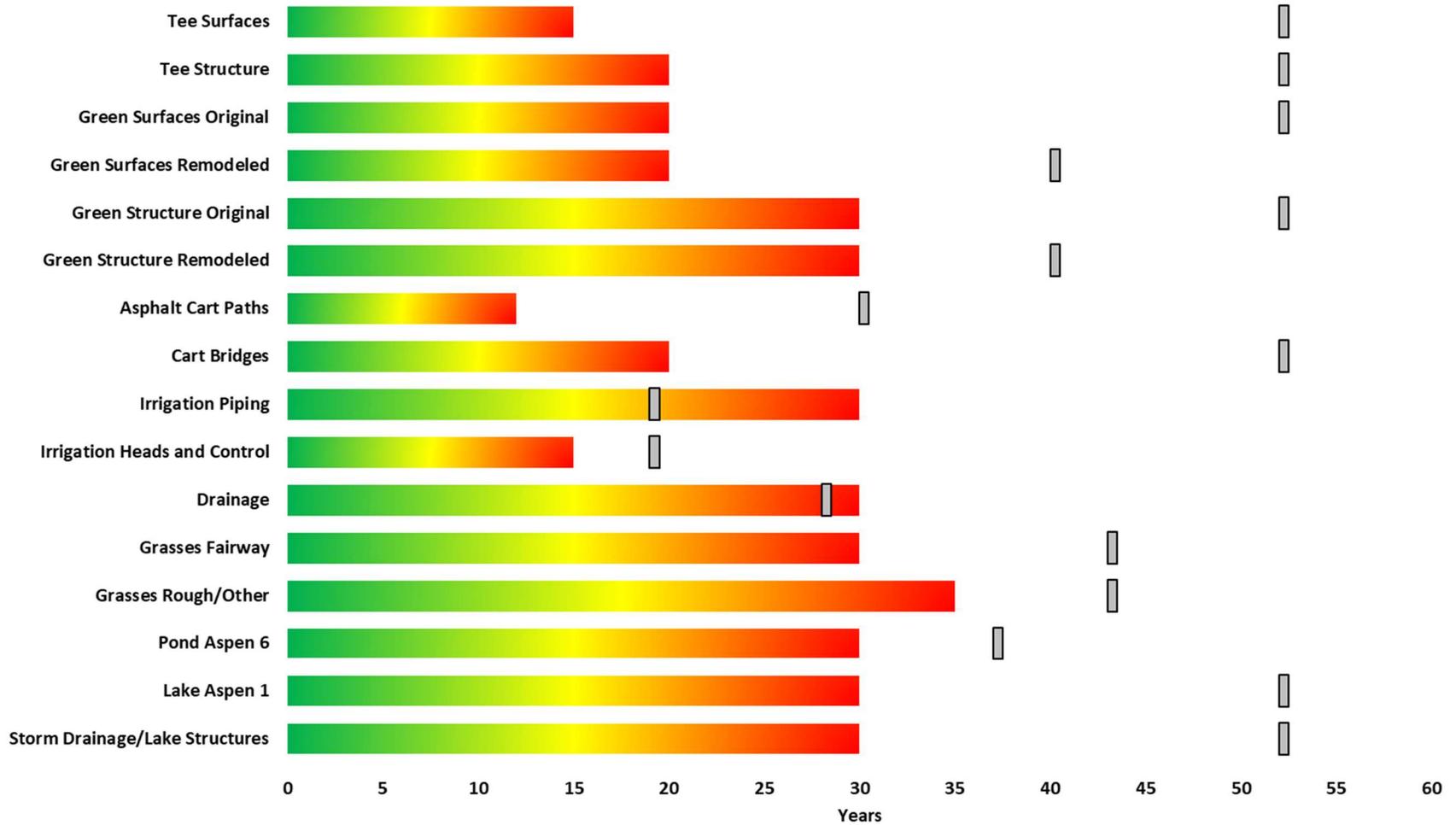
The following charts illustrate the industry standard life cycle expectancy time frames of course features, components and infrastructure compared to the age of these areas on each of the 3 nine hole courses. For purposes of this report, holes of the Aspen and Birch courses have been divided by their date of original construction representing the original early 1928 holes and the 1968 group of nine holes.

- Color transition bars represent the industry standard life cycle time frame for the identified component – New (green) to Red (expired).
- Grey bar represents current age of component at McCall Golf Club.

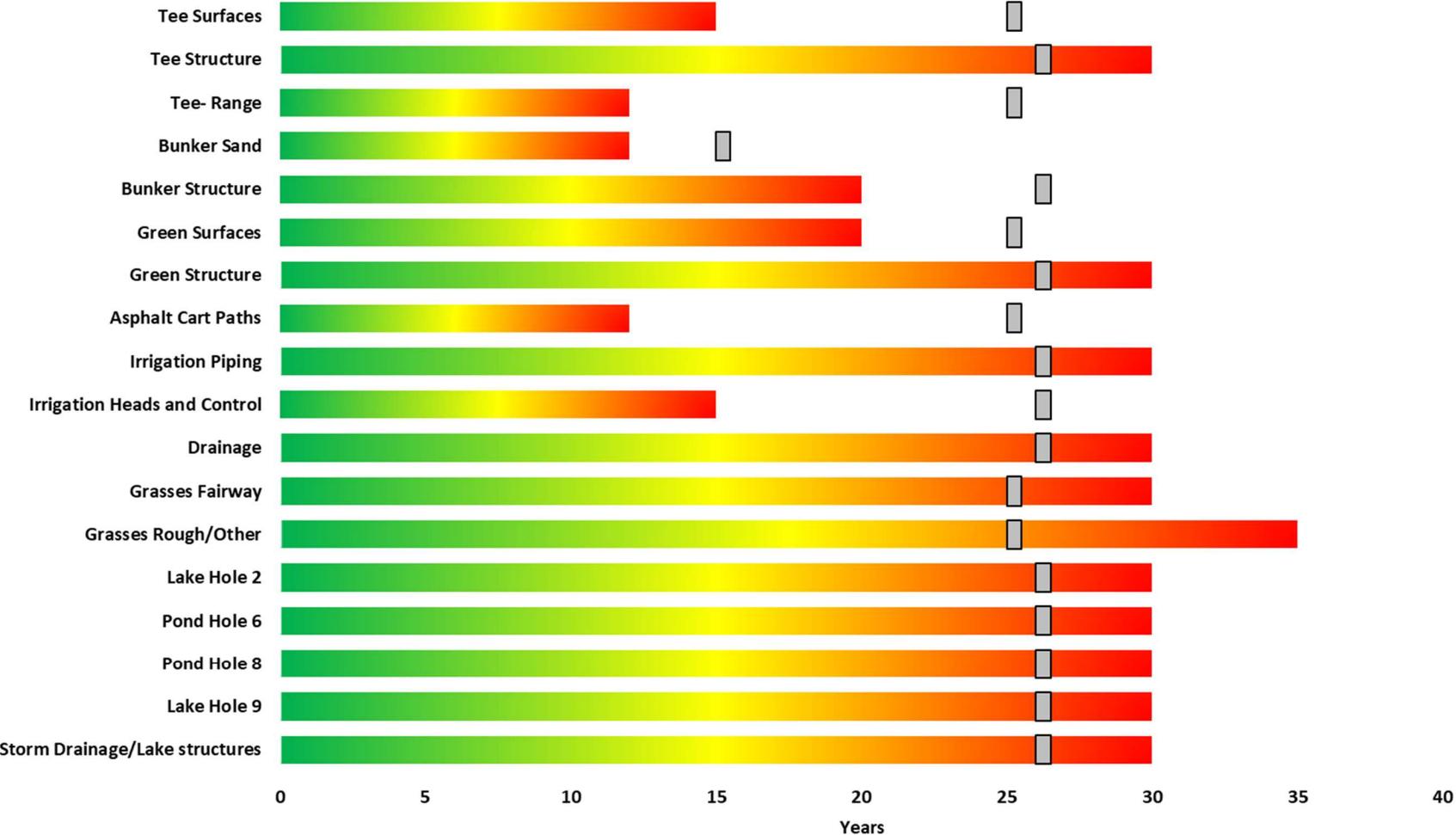
McCall Golf Club - 1928 Original Holes Course Components Life Cycle - Spring 2020



McCall Golf Club - 1968 Golf Holes Course Components Life Cycle - Spring 2020



McCall Golf Club - Cedar Nine Course Course Components Life Cycle - Spring 2020



McCall Golf Club					
Aspen Golf Course Areas Tally					
Hole	Tee (SF)	Fairway (AC)	Bunkers (SF)	Green (SF)	Path (LF)
1	2,341	1.51	0	4,554	1,440
2	4,593	0.33	0	4,109	600
3	3,205	1.44	0	3,594	1,300
4	2,431	1.77	0	3,152	1,235
5	2,911	1.58	0	3,094	1,865
6	4,168	1.10	0	2,420	1,350
7	3,046	1.39	0	2,486	1,210
8	3,030	0.33	0	4,211	700
9	2,512	1.96	0	4,245	1,600
Total	28,237	11.41	0	31,865	11,300
Ave	3,137	1.27	-	3,541	
Practice	18,212	4.79		6,532	400

McCall Golf Club					
Birch Golf Course Areas Tally					
Hole	Tee (SF)	Fairway (AC)	Bunkers (SF)	Green (SF)	Path (LF)
1	1,753	1.58	0	4,945	1,680
2	3,303	1.25	0	4,260	1,200
3	3,818	0.03	0	3,422	1,115
4	5,154	1.06	0	4,089	990
5	1,734	2.28	0	6,065	1,770
6	3,032	2.07	0	2,442	1,350
7	3,082	0.00	0	3,374	768
8	2,614	1.87	0	3,969	1,050
9	3,397	1.76	0	3,721	1,240
Total	27,887	11.90	0	36,287	11,163
Ave	3,099	1.32	-	4,032	



McCall Golf Club					
Cedar Golf Course Areas Tally					
Hole	Tee (SF)	Fairway (AC)	Bunkers (SF)	Green (SF)	Path (LF)
1	4,417	0.77	0	5,109	1150
2	6,399	1.93	9,955	6,204	1710
3	6,231	1.69	1,056	5,351	1700
4	5,622	0.20	2,118	4,516	800
5	4,657	1.06	1,198	4,640	1665
6	3,321	0.14	0	4,130	770
7	4,533	2.12	2,562	5,531	2285
8	5,373	0.13	1,094	4,429	705
9	4,128	1.15	0	4,684	1390
Total	44,681	9.19	17,983	44,594	12,175
Ave	4,965	1.02	1,998	4,955	



Conclusions – Asset Management Analysis

The time frames for the assets identified above are provided as generalizations or averages. Many have additional smaller components or portions that may require attention or replacement sooner. A complete and detailed line item breakdown of each category of course asset and their individual components is recommended prior to the commencement of any project or detailed planning effort.

Based on the finding of this study, combined with observations in the field, the following is a recommended prioritization of the areas requiring attention:

1st Priority Items-

1. Creek culvert and bridged crossings and similar structures.
2. Level and expansion of tees throughout the Aspen and Birch courses. Par 3 holes of Cedar.
3. Bunker Refurbishment Cedar.

2nd Priority Items -

1. Rebuilding of Aspen and Birch Greens.
2. Irrigation system replacement Cedar
3. Asphalt Path Replacement

3rd Priority Items -

1. Irrigation system upgrades Birch and Aspen
2. Drainage improvements in select areas of concern.
3. Lakes and Ponds

These recommendations are strictly based on condition and impact of the assets identified without consideration to design quality and opportunity. In addition, some projects should be completed prior to others due to the invasive nature of the work and impact on the areas to be re-worked. (Example – Irrigation should not be installed prior to the rebuilding of tees or greens.)



General Design Recommendations

Greens

Golfers and industry professionals alike will agree that greens are the most important aspect of a golf course. Courses are weighed first and foremost on the quality of their greens. The finest courses all have very good if not great greens. While that greatness starts with design, many qualify them solely based on their speed, trueness, and consistency. No other area of a golf course is more scrutinized, as it should be.

Because of their importance, greens require careful and thorough analysis in a master plan effort. All aspects are studied and examined to determine their merits and if recommendations for changes might be warranted. The 3 primary areas that contribute to green quality are:

1. Physical composition of the subgrade - soil structure, drainage, USGA vs push-up.
2. Surface quality - turf type, condition, and consistency
3. Overall design - including the surface and as a complex.

Conclusions on the first two areas of study are spelled out in the infrastructure analysis section of this document.

The greens at McCall Golf Club are smaller in size averaging less than 4,000sf on the older Aspen and Birch nines, but a typical 5,000sf on the Cedar. Compounding the challenges related to smaller surfaces on Aspen and Birch is the high percentage of steep slopes that are unusable. Usable pin areas on surfaces range between .5% slope and 3% slope with steeper transitional slopes between. Numerous greens on the older holes exceed 5% with a few greater than 6%. The 4th green on Cedar also exceeds acceptable percentages as it is likely the front portion has settled since the original construction. Otherwise, having been designed and built within the past 25 years by a qualified Golf Course Architect, the Cedar greens exhibit generally sound design attributes.

The biggest concern with the greens is their inconsistent composition from hole to hole and the challenges that result related to maintenance and playability.

There is considerable opportunity to enhance the golfing experience with new designs for many of the greens on the Aspen and Birch courses. New designs would include increased size and more appropriate slopes.



As described in the earlier section, opportunities exist to provide superior putting conditions by replacing the existing failing surfaces with a new Bentgrass turf. Standards for green surfaces continue to be raised with the introduction of new courses within the region or the renovation of greens at existing facilities. Examples of what is possible can be found in nearby facilities and markets. While fine putting conditions and fast speeds can be achieved at times at McCall Golf Club with the current surfaces, it is becoming more and more obvious the old surfaces are less than adequate. The main objective of putting green maintenance, consistency, is no longer possible.

Tees

Tees are currently the weakest of the course's primary features. On the Aspen and Birch nines, physical tees for the recommended Silver and Gold yardages do not exist and should be added to provide an appropriate position for those players to enjoy their round. Tees on the Cedar nine were originally designed by a professional Golf Course Architect only 25 years ago and as configured have served the course well. Few modifications or additions have been identified to improve playability and or yardage distribution on specific holes.

At several holes I have recommended tee adjustments or relocation to provide better alignment with the fairway or to improve separation and safety (Hole #9 Aspen). Some are improved to increase overall tee surface and to provide greater variety of daily yardage options (hole #8 Aspen and Birch, #8 Cedar). Other adjustments are identified to improve the angle of the drive to the landing area or to shift the drive away from growing trees and or adjacent holes (Hole #6 Aspen).

As tees are renovated in the future some can be improved by adjusting their elevation. In naturally flat areas of the property tees should be set lower to the natural grade while maintaining proper view down the hole and of any fairway hazards. Gentle slopes and banks surrounding the tees should also be subtle to ensure easy access for players and maintenance as well as to make them appear less man made. When renovated or added, all tee surfaces are laser leveled to ensure an even surface for play and that they are pitched properly for drainage. In addition, the opportunity arises to instill a more consistent style and character between all 27 holes.

Most of the existing tees are very old and have received little attention over the years. Most are unlevel and should be addressed soon. Additional information about the timely renovation of tees was provided in the previous section.



At several tee areas existing timbers and or railroad ties are creating areas that are difficult to maintain efficiently and should be removed in favor of improved grading during future tee renovation. Where applicable, new path curbing should be introduced where required for traffic control. Many of these timbers are at the end of their life expectancy and are deteriorating. Some may be trip hazards for some golfers.

Bunkers

While greens are the heart of the course, bunkers are what give it character. Three aspects of bunkering are addressed in a master plan, positioning, structure, and styling. As identified in the previous section, the few bunkers located on the Cedar course have received little work to address aging structure since their original construction and are now reaching the end of their life cycle. Providing an acceptable level of consistent playable conditions is becoming a challenge and effective maintenance is not possible. A timely bunker refurbishment effort is recommended at this point that includes rebuilding each bunker with entirely new drainage, subgrade liner and sand. Surrounding turf is removed and replaced to allow the built-up sand blast material to be removed and edges re-established where applicable. Shapes will also need to be re-established. Adjustments in their position or size have also been identified.

This master plan process has provided an opportunity to identify potential locations for bunkers to be introduced on the Aspen and Birch nines. The intent would be to create some added interest in the round, both visually and strategically. Understanding the challenge that bunkers present to the higher handicap golfer, the addition of new bunkers has been well considered. Fairway bunkers are recommended on several holes at distances from the tees that will come into play on the drive for only the longest players. Greenside bunkers are recommended on shorter holes where they are more easily avoided on shorter approach shots

Fairways

The fairways are generally accommodating on each hole. Adjustments to mowing lines are identified on the master plan where changes will improve their form or improve playability. Some are adjusted to compliment tee realignment or the introduction of bunkers.

With the minimal topography within the woodland prairie portions of the facility several fairways exhibit drainage issues. Run-off from adjacent properties also impact several areas including Aspen hole #9. These areas have been identified for future addition of subdrainage.



The following spreadsheet illustrate recommended adjusted size in relation to existing sizes of the primary features of the golf course per the illustrated Master Plan:

McCall Golf Club								
Aspen Golf Course Areas Tally								
Hole	Tees (SF)		Fwy (AC)	Bunkers (SF)		Green (SF)		Path (LF)
	Exist	Prop	Exist	Exist	Prop	Exist	Prop	Exist
1	2,341	3,950	1.51	0		4,554	4,250	1,440
2	4,593	5,525	0.33	0	935	4,109	4,385	600
3	3,205	4,785	1.44	0		3,594	3,594	1,300
4	2,431	3,800	1.77	0		3,152	3,152	1,235
5	2,911	5,100	1.58	0		3,094	4,150	1,865
6	4,168	4,825	1.10	0	900	2,420	3,695	1,350
7	3,046	4,870	1.39	0		2,486	4,155	1,210
8	3,030	6,600	0.33	0		4,211	5,345	700
9	2,512	4,600	1.96	0	1,100	4,245	4,870	1,600
Total	28,237	44,055	11.41	0	2,935	31,865	37,596	11,300
Ave	3,137	4,895	1.27	-		3,541	4,177	
Practice	18,212		4.79			6,532		400

McCall Golf Club								
Birch Golf Course Areas Tally								
Hole	Tee (SF)		FWY (AC)	Bunkers (SF)		Green (SF)		Path (LF)
	Exist	Prop	Exist	Exist	Prop	Exist	Prop	Exist
1	1,753	4,370	1.58	0		4,945	5,575	1,680
2	3,303	3,770	1.25	0		4,260	4,400	1,200
3	3,818	4,450	0.03	0		3,422	3,500	1,115
4	5,154	4,750	1.06	0	750	4,089	4,425	990
5	1,734	4,010	2.28	0		6,065	6,065	1,770
6	3,032	4,400	2.07	0	675	2,442	3,950	1,350
7	3,082	4,545	0.00	0		3,374	4,510	768
8	2,614	4,440	1.87	0		3,969	4,000	1,050
9	3,397	4,550	1.76	0	1,750	3,721	3,800	1,240
Total	27,887	39,285	11.90	0	3,175	36,287	40,225	11,163
Ave	3,099	4,365	1.32	-		4,032	4,469	



McCall Golf Club								
Cedar Golf Course Areas Tally								
Hole	Tee (SF)		FWY (AC)	Bunkers (SF)		Green (SF)		Path (LF)
	Exist	Prop	Exist	Exist	Prop	Exist	Prop	Exist
1	4,417	5,350	0.77	0	850	5,109	NC	1150
2	6,399	7,750	1.93	9,955	2,195	6,204	NC	1710
3	6,231	7,366	1.69	1,056		5,351	NC	1700
4	5,622	8,345	0.20	2,118	1,150	4,516	NC	800
5	4,657	5,500	1.06	1,198	865	4,640	NC	1665
6	3,321	5,145	0.14	0		4,130	NC	770
7	4,533	5,725	2.12	2,562	2,900	5,531	NC	2285
8	5,373	9,586	0.13	1,094	1,250	4,429	NC	705
9	4,128	5,785	1.15	0		4,684	NC	1390
Total	44,681	60,552	9.19	17,983	9,210	44,594	NC	12,175
Ave	4,965	6,728	1.02			4,955	NC	

Grasses

Turfgrass quality has a significant impact on course presentation and play. The current fairway, rough and tee grasses at McCall Golf Club are composed mostly of a Bluegrass/Ryegrass blend and *poa annua*. The ability to provide outstanding fairways is directly related to mowing height and turf type. Newer and improved varieties of these grass types may prove to be more suitable in key areas of play and would allow McCall Golf Club to establish superior turf conditions throughout the season.

The current Bentgrass/*Poa Annua* green surface turf provides adequate playing surfaces. New Bentgrass varieties should be considered in future green renovation efforts to provide superior putting conditions throughout the season.

Though the Superintendent and his staff do a wonderful job of providing good playing conditions, results may only be as good as the turf they have to work with. New varieties of turfgrasses when used on greens and other primary areas of play can provide far superior conditions over a longer range of months while out competing invasive *Poa*.

Turfgrass conversion and change can be a very invasive and time-consuming process and result in considerable hole closure time. When combined with the costs associated with the replacement of large overall turf area, many facilities often choose not to



upgrade their turf. Fortunately, with each passing year new processes and materials are being brought to the market that allow for different approaches to be used that reduce the impact to play and that are often cost effective.

Lakes and Water features

Water is a prominent feature of many of the holes. Shiner creek winds its way nicely through Aspen holes 5 and 7. Recommendations have been made to improve the relationship of the creek to the golf on those holes with design changes during green renovations.

Other shallow ponds, lakes and creeks are spread throughout the woodland prairie portion of the property adding visual interest on several holes, but rarely challenging golf shots. The creek that runs across the approach to Birch #7 is far too penal for a vast majority of players and has been identified for piping.

Other enhancements to water features include expansion of the lake on Aspen hole 5 to extend more prominently along the approach and 2nd landing area. Shiner creek is widened to create small pond areas adjacent to Aspen #5 green and at Aspen #7.

Other lake improvements are solely based on the status and condition of the lake physical make-up and infrastructure. See information in the previous section. Although several water aerification emitters have been replaced or repairs recently, others still require attention.



Yardage and Par

A key exercise in the master plan analysis is the careful examination of distribution of yardage and par. The end goal of the Master Plan is to create as much variety as possible within the round while providing suitable yardages for all levels of golfers. Many of the finest golf courses contain a wonderful assortment of hole types and lengths. Overall yardage at McCall Golf Club is limited and few opportunities for the lengthening of holes exist. Sitting at an elevation of slightly over 5,000 distances play an additional 7% shorter. Most recommendations center on providing the correct and most suitable yardages for the Silver and Gold tee golfer.

The par 3's exhibit a good distribution of yardages. The only yardages missing would be on each end of the spectrum with no truly short or long hole. Direction is also favorable hitting all points on the compass. They are also positioned well within the round. Green and bunker adjustments at several of par 3 greens will help enhance or maintain playability and overall memorability as challenging yet fun golf holes. The greatest opportunity for enhancements is at Aspen hole #7 with an improved green perched along a small pond. Nice tee improvements are suggested at Cedar hole #8 to improve playability on the currently awkward hole.

Par 4's are also well distributed and varied but overall average short. Missing from the round is a short potentially drivable dynamic par 4 (or two). Tee adjustments at Cedar hole #1 will help promote this option for the longer players there. Golfers will now have a clearer look of the inside corner and a drive angle that cuts the corner over the hazard on the inside of the dogleg that is now identified with a new bunker to use as a guide..

The par 5's are generally short, the exception being Cedar hole 7.

Where appropriate, strategic elements are introduced or strengthened to add interest off the tee and again on the often-undervalued 2nd shot. On Cedar Hole #2 the fairway bunkering is repositioned into better strategic positioning while the fairway is re-aligned closer to the lake. The lake on the left of Birch #5 is expanded along the last leg of the fairway as it approaches the green. Improvements are made to Aspen hole #5 where Shiner creek currently crosses before the green that should provide golfers with more options on their approach.



Following are the existing and proposed yardages for each nine-hole course based on the Master Plan recommendations:

<i>Aspen Course - Card of the Course</i>									
Hole	Par	Blue		White		Silver		Gold	
		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1	4	370	370	352	346	341	312	276	270
2	3	192	192	169	165	139	137	60	108
3	4	378	378	353	348	342	310	275	274
4	4	388	388	373	365	320	322	303	300
5	5	458	458	416	415	377	368	304	310
6	4	354	342	326	330	276	272	211	236
7	4	330	317	318	287	296	257	234	217
8	3	201	201	180	180	138	136	68	117
9	4	431	431	420	408	409	375	344	325
Total	35	3102	3077	2907	2844	2638	2489	2075	2157

<i>Birch Course - Card of the Course</i>									
Hole	Par	Blue		White		Silver		Gold	
		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1	4	407	418	399	379	392	333	331	295
2	4	329	329	317	306	305	260	235	228
3	3	149	149	130	132	120	120	90	91
4	4	316	316	296	296	287	276	219	232
5	5	507	507	476	470	453	438	388	367
6	5	471	471	451	447	447	408	383	372
7	3	148	148	134	134	117	117	95	95
8	4	404	404	396	392	324	350	283	287
9	4	400	400	370	370	322	332	296	289
Total	36	3131	3142	2969	2926	2767	2634	2320	2256



Cedar Course - Card of the Course									
Hole	Par	Blue		White		Silver		Gold	
		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1	4	307	304	271	288	241	252	161	186
2	5	521	545	481	481	433	401	360	356
3	4	431	480	399	435	339	369	272	342
4	3	187	187	158	158	131	131	62	130
5	4	369	389	348	352	331	333	288	293
6	3	155	155	132	132	104	104	46	75
7	5	580	615	535	539	492	489	415	432
8	3	193	193	139	174	106	140	46	82
9	4	342	378	318	321	288	290	230	241
Total	35	3085	3246	2781	2880	2465	2509	1880	2137

Trees

With a strong impact on style and character, trees are key contributors to the golfing experience. Their existence or lack thereof determines play as well as aesthetics of the golf holes. Golf courses in general either have no trees, were routed through or among existing trees, or have had trees planted throughout. When golf holes are routed through adjacent housing, trees are an integral part of the course design that the homeowners also enjoy. Trees are most often added to screen adjacent property from view and help contain or frame the golf. They can also help identify the direction a hole turns and suggest the limits of fairways.

As identified, the holes of McCall Golf Club traverse two different landscapes. Where routed through openings from cleared trees the holes are attractive and are suitable from a golf playability standpoint. Some of those corridors are too narrow but little can be done to widen these areas without exposing homes just outside the property.

Trees to be removed have been identified on the plan including along Birch holes 5 and 6. These are either causing too much shade at tees or greens or have a detrimental impact on play. Some are earmarked for removal to break up unattractive formal planting patterns as on Birch #5. New trees are recommended in several location to increase screening between holes, to help direct play visually or to create a more natural stand. Groupings of trees are identified to be added along the right of Birch hole #8 along the lake edge to help identify the hole turn and to screen the pumphouse from view.



A large grouping of trees immediately right of the par 3 Birch #3 hole should be considered for removal to open up views from the clubhouse out and over the golf to the mountains to the north.

In all instances, tree varieties native to the area, or that have been proven to be appropriate to the area over time should be used when adding new trees. No Spruce trees.

Drainage

Poorly draining areas have been identified that challenge both maintenance and golf play. Flat grades, limited watering control and poor soils appear to be at the root of most the issues in these areas. Some are compounded by awkward drainage patterns or heavy traffic use patterns. Many of these areas can be improved with the addition of sub surface drainage. Previous sub-drainage installation efforts have alleviated some of the issues over the years, but additional pipe is needed in a few remaining areas.

While additional sub-drainage will improve some of the areas, other areas will mostly benefit from grade adjustments. To achieve proper drainage run-off on turfed surfaces a slope percentage of 3% is required. While there is minimal regrading and reshaping planned, as areas are renovated, suitable slope and drainage patterns can be instilled, particularly around greens where these issues often arise and where play tends to concentrate. These areas will be planned out on an area by area basis as the budget allows in coming years.

Cart Paths

Cart paths are an unfortunate reality in today's game. While meant to help the player and potentially generate additional revenue, playability and visual character are often sacrificed if poorly routed and left to deteriorate over time. Defined traffic routes can also result in greater turf wear issues when paths are not properly routed and narrow or defined exit and entry locations after tees or before greens are created.

At McCall Golf Club the old asphalt paths provide good access for golfers as well as the maintenance crew along each hole. The latter is an aspect that is often undervalued and not often realized. Several sections of path have been identified for rerouting out of primary areas of play or to a safer alignment. Tee reconfiguration also results in adjacent path rerouting as the tees take precedence. Overall, the asphalt paths are at the end of their life cycle and many sections are on the verge of deterioration and will require attention soon. Numerous top layers have been added over the years and it is now time



for a full removal and replacement so additional build-up and height is avoided. A program of replacing portions of the path system each year until all are replaced is recommended. The effort should include grinding of the old paths, removal of the excess material and installation of new asphalt to meet the existing grade of the adjacent turf to avoid cutting off natural drainage patterns. Re-routing adjustments are illustrated on the Master Plan that should be included at the time of path replacement.

Railroad ties and timbers are currently used as traffic control barriers along paths at various tees and greens that are mostly deteriorating. In many of those locations they are also creating inefficient mowing patterns and requirements adding considerable man hours to those practices. Some are also a trip hazard for golfers. These should be removed in favor of a new treatment where traffic control is warranted during future path replacement efforts.

Clubhouse Interface

The interface where the clubhouse and golf meet are very important and is often overlooked regarding customer experience. Numerous golf elements relate in this interface with the building including starting and finishing holes, practice putting greens, outside services and staging, and all related pathways and access. Additional areas might include the practice range and other similar practice amenities. In addition, services and deliveries at the clubhouse occur. Every golfer and customer interact with this area and therefore it should always be considered a high priority. It is both first and last impression.

Operating 27 holes from one location can add to the complexity of this interface, but McCall Golf Club's configuration works generally well. The amenities within the area are smaller in scale and limited thus reducing the required footprint. Property was fortunately available to the east of the clubhouse and was taken advantage of in the 1995 Cedar Nine addition with only a short ride past the range tee area required.

The relocation of the Clubhouse from the original location on Davis Ave. in 1988 did result in some awkwardness with Birch #3 cutting across the rear of the clubhouse area and cutting off # 9 Aspen as a finishing hole. Efforts to find a way to relocate the hole were unsuccessful. Limited area is available for expansion of any of the elements in the area, but improvements can be made to enhance the cart staging and parking in future paving renovation efforts. In general, large open paved areas tend to be the best and that is what currently exists.



To open attractive views to the north of both the golf holes and mountains in the distance, trees immediately north of Birch #3 tees are recommended for removal. Views from the clubhouse veranda as well as for the prop shop will be greatly improved as the area will be open to the beauty of the property and setting.

Practice Amenities

With less and less time available for the game more golfers are turning to practice facilities for their golf experience. This puts greater value on the range area as an amenity of a golf facility as an added value. Many that love the game often only have brief windows of time to play and hitting balls on the range or chipping around a dynamic practice green area is their desired solution. At public access facilities, revenues generated from practice balls can be significant.

As previously described, the existing practice range is undersized in both overall length and width, translating to a limitation on the number of hitting stations available at any given time. Practice range tees typically need to be an acre in overall size to absorb the wear and tear resulting from the high frequency use and divot damage. As configured, no additional area is available to expand the range either at the tee or to lengthen it overall.

An optional re-routing design for Aspen #1 and Birch #9 has been developed that would provide additional area to widen the range tee while adding a new chipping and pitching green complex in the location of existing Birch #9 green.

The practice putting green is very well situated but is slightly undersized at 6,500 SF. Expansion is only possible by pushing south into the parking lot which would require the removal of several existing parking spaces.

Area is not available within the McCall Golf Club property for a dedicated pitching area as currently configured. The above mentioned optional plan would allow a facility to be added. In addition, several improved targets within the range area could be added to provide golfers additional instructional feedback on their practice routines.

Miscellaneous

Wetland Reduction Cedar Hole #7 - To improve playability of the hole for all golfers, the wetland area right of the 1st landing area is to be pushed out and reduced. Areas currently surrounding the wetland limits are to be reshaped to provide suitable fairway and rough



conditions with positive surface drainage run-off grades. As a designated wetland habitat, all associated approvals and permits will be required from the appropriate governing agencies.

Street Crossings – Golfers cross neighborhood streets several times, but conflicts seem minimal. In each instance the city must ensure adequate traffic control signage is in place warning both golfers and vehicle of the potential conflict.

Maintenance Area – The maintenance Area has continued to evolve with nice improvements made over the years during the off season by the multi- tasking maintenance staff and they are to be commended. The value of the maintenance area is often ignored as it is something that should be out of site and out of mind by all other than the crew itself. Between the two maintenance yard areas there appears to be suitable space and storage facilities, but refinements and upgrades should continue to be made.



Priorities, Implementation and Budget

Bringing it All Together -

Considering the results of the master plan assessment and scope of work identified to be addressed, the following are the priorities recommended at this time:

1. Address failing structures such as culvert crossings and player walk bridges over Shiner Creek.
2. Renovate/refurbish the bunkers on the Cedar Course. Include Master Plan adjustments.
3. Add fairway bunkers Aspen and Birch.
4. Construct Silver and Gold tees to ensure all golfing members are provided a suitable course yardage. Level and adjust remaining tees.
5. Replace irrigation heads and controllers on Aspen and Birch.
6. Renovate and redesign greens on Aspen and Birch using proper specification for putting green construction. Increase size and remove excessive slopes within surfaces.
7. Include design enhancements at greens and tees during renovation of each as identified above.
8. Commence asphalt cart path replacement process, addressing portions each year.
9. Replace irrigation system on Cedar Nine and Practice Range.
10. Add sub-drainage in problematic in-play areas.
11. Add artificial hitting tee line at the practice range.
12. Consider optional routing of Aspen #1 and Birch #9 to facilitate Range widening and new chipping practice complex.

Currently in a healthy position, there is opportunity for reinvestment in upgrades and improvements at McCall Golf Club. By proactively addressing aging course infrastructure, The City of McCall can be confident of maintaining the facilities standing in the market while providing the golfing public with the highest current standards with its courses.

Project Considerations -

Golf improvement projects vary in size, cost, and schedule. All facilities approach these projects in their own way and must determine the best process based on their own set of variables which are often centered on the following:

1. Disturbance to play - How long might the course be taken out of play or in a state of work that impacts enjoyment.



2. Cost – how much can we afford in the short and long term and how are the required funds generated or sourced.
3. Necessity – Are there things that must be addressed – proactive vs reactive
4. Mother Nature – Grass growing windows must dictate when projects must occur to allow reestablishment of playable healthy turf.
5. Seasonal impacts – Months of high play and resulting revenue are often best avoided.
6. Contractor Availability – Quality Golf Course Contractors are key to the success of any golf renovation effort.
7. Return on Investment

Project Implementation –

With 3 nine-hole courses, McCall Golf Club has a considerable advantage when determining how to put together a renovation project. The ability to close one of the courses for larger renovation projects takes considerable pressure off the facility as it can still provide 18 playable holes. While many would point to cost being the primary hurdle to overcome in seeking project approval it is my experience that disturbance to play is quite often the larger concern.

Some facilities are best suited to undertake smaller scale and or targeted scope projects that can be conducted without full closure of the golf course or golf holes. With most of these approaches, golfers simply play through various stages of disturbance on each hole on any given day. This can translate into many years of various levels of impact and disturbance to the course and play. It is also a more expensive option over time and impacts the customers again and again.

Combining scope into larger projects that dictate a closure of the course and completing all the work within a suitable period is often the most cost effective when there is a large scope of work to be completed. Some may close all 18 in one project while others may choose or provide at least nine holes in a two-phase effort.

In all cases green replacement often results in closure of holes for an extended period. Some may choose to establish temporary greens and allow play to continue in that configuration for all or part of a season depending on the climate and grass type.



While holes are closed for green renovation it is recommended that as much other work be completed on those holes as financially feasible. With closed holes the work is much more efficient and can be completed in the shortest time frames, which also translate to the lowest cost. Golfers also appreciate the fact that the work is done and over with.

Other projects such as irrigation system replacement can be completed with only minimal short duration disturbance to play with individual holes being taken out of plan for a few days as the work proceeds.

In all cases, loss of golf revenue should be carefully considered and included in all financial projections.

On the following pages is a categorical breakdown of costs associated with the recommended scope of enhancements and asset management projects. Identified amounts are based solely on conceptual level detail and should not be used for actual construction projection and financial allocations or planning. They are simply meant to identify a Rough Order of Magnitude of costs for anticipated work. Industry standard and recent bid data pricing was used to generalize this estimate.



		McCall Golf Club Master Plan Rough Order of Magnitude Cost Estimate											
		August, 2020											
Recommendation		Unit	Unit Price	Aspen		Birch		Cedar		Practice Facilities		Totals	
				Units	Estimate	Units	Estimate	Units	Estimate	Units	Estimate		
Priority A Projects													
Creek Cart Crossings	EA	\$3,250.00		5	\$16,250	1	\$3,250	1	\$1,625		\$0	\$21,125	
Creek Player Walkbridges	EA	\$750.00		6	\$4,500	0	\$0	1	\$750		\$0	\$5,250	
Bunker Renovation	SF	\$6.85		0	\$0	0	\$0	18,000	\$123,300		\$0	\$123,300	
New Fairway Bunkers	SF	\$10.00		3,000	\$30,000	2,000	\$20,000	850	\$8,500		\$0	\$58,500	
New Silver and Gold Tees	SF	\$4.50		16,000	\$72,000	11,500	\$51,750	14,000	\$63,000		\$0	\$186,750	
Level Tees	SF	\$2.50		25,000	\$62,500	24,000	\$60,000	16,500	\$41,250	7,500	\$18,750	\$182,500	
Priority B Projects													
New Irrigation Controllers	EA	\$6,500.00		13	\$84,500	14	\$91,000		\$0		\$0	\$175,500	
New Irrigation Heads	EA	\$350.00		462	\$161,700	443	\$155,050		\$0		\$0	\$316,750	
Replace Greens	SF	\$12.50		38,000	\$475,000	40,000	\$500,000	0	\$0	6,500	\$81,250	\$1,056,250	
Asphalt Cart Path Replacement	LF	\$2.40		92,000	\$220,800	92,000	\$220,800	100,000	\$240,000	1,600	\$3,840	\$685,440	
Priority C Projects													
Irrigation System Replacement	AC	\$19,000.00		0	\$0	0	\$0	35	\$665,000	6	\$118,750	\$783,750	
Sub-Drainage	LS				\$4,500		\$4,500		\$3,500		\$2,000	\$14,500	
Wetland Hole #7 Cedar	LS				\$0				\$42,000			\$42,000	
Range Tee Artificial Turf Line	LS				\$0						\$20,000	\$20,000	
Weather Station Replacement	LS				\$0							\$1,500	
Clubhouse Cart Staging and Paths	SF	\$3.50										\$55,000	
Totals					\$1,131,750		\$1,106,350		\$1,188,925		\$244,590	\$3,728,115	



Line Item Descriptions

1. **Creek Cart Crossings** – Replacement of existing culvert pat crossings with full span timber bridge cart crossings. Replacement of weathered wood at Cedar Hole#4 bridge.
2. **Creek Player Walkbridges** – Replacement of old walkbridges.
3. **Bunker Renovation** – Full renovation of existing bunkers on Cedar nine including adjustments in design per master plan. Removal of old sand and surrounding sod, reshaping, liner, drainage, new sand and sod.
4. **New Fairway Bunkers** – Addition of new bunkers in fairways per master plan on Aspen and Birch courses.
5. **New Silver and Gold Tees** – Construction of new tees per master plan. Turf removal, dirtwork, shaping, irrigation adjustments, laser leveling, sand cap and new sod.
6. **Level Tees** – Resurfacing and re-leveling of existing tees. Turf removal, minor adjustments, laser leveling and new sod.
7. **New Irrigation Controllers** – Replacement of old controllers with new versions including installation.
8. **New Irrigation Heads** - Replacement of old irrigation heads throughout including installation.
9. **Replace Greens** – Complete rebuild of each green complex to consistent USGA Specification and new turf variety. Includes new bunkers, expansion and relocation and re-sodding per Master Plan.
10. **Asphalt Cart Path** – Cart path replacement to include portions re-routed per the Master Plan. Grinding and removal of excess existing material. New 8' wide asphalt installed over improved sub-base material of previously ground material and level to adjacent grades.
11. **Irrigation System Replacement** – Complete new irrigation system to replace existing on Cedar Nine and Practice Range.
12. **Sub-Drainage** – Allowance for the installation of 4" French drainage and solid pipe to convey excess run-off in key areas to existing systems or out-of-play low points of exit.
13. **Wetland Cedar Hole #7** – Filling of low wetland area and expansion of fairway and rough. Includes allowance for mitigation requirements.
14. **Range Artificial Turf Tee Line** – New high-quality artificial turf along back edge of range over existing concrete. 14 – 15 stations.



15. **Weather Station replacement** – New Irrigation system weather station relocated to more suitable location.
16. **Clubhouse Cart Staging and Paths** – Replacement and slight reconfiguration of paving around Clubhouse and putting green. Grinding and removal of existing old asphalt, minor grade adjustments, new 2.5" asphalt over base material. Curbs in select areas.

Qualifications

1. Quantities are based on conceptual level planning only and should not be used in actual project budgeting. Additional design development required for detailed and accurate project costing.
2. Unit prices shown reflect recent industry standard pricing with consideration to project location and known materials pricing. All subject to change.
3. Pricing reflects a combination of using of local contractors and suppliers as well as specialized Golf Course Contractors for items requiring golf construction and project development experience or to be completed in challenging time frames. Small items can be completed or managed in-house – to be determined.
4. All prices reflect completion of each line item in nine-hole project increments.



Conclusion

At the core of each of the recommendations contained herein is the belief that McCall Golf Club plays a key role in the portfolio of public recreational amenities provided by the City of McCall. Not only does it serve the residents of the city, but those that visit the busy vacation town in the summer months looking to round out their activities. By enlisting the services of a professional golf course architect, course managers have taken the first step towards securing the future of the facility. Assessing the courses infrastructure and design integrity so future improvements can be planned to meet the expectations of the golfing public suggests a healthy dedication to the asset. As with any asset, results are directly related to the condition and quality of the pieces that compose the product.

Up to this point the golf course has served the city and its golfers well, but time marches on and things wear out or new standards are introduced that courses should keep up with. Industry accepted life cycles suggest that the features and materials that make up the golf course are nearing their useful life and may already be impacting the golf experience. This planning effort maps out the timely replacement, renovation and upgrade of aged features and infrastructure. Combined with carefully planned and considered design enhancements, excellent value will be added to a round at McCall Golf Club well into the future. While some may look at any recommendations to alter the existing golf course to be subjective, the key is that each of the suggested enhancements have been thoroughly planned and considered by a professional Golf Course Architect in a manner conducive to a quality effort. One meant to stand the test of time.

I am fortunate to have had the opportunity to assist the city with this exciting next step in their commitment to the betterment of their golf course. With the carefully considered enhancements and improvements that have been recommended herein, McCall Golf Club will not only cement its place in the marketplace, it will continue to be a special place for residents of McCall and golfing public of Idaho for the foreseeable future.

GOLF COURSE ITEMS EXPECTED LIFE CYCLE

HOW LONG SHOULD PARTS OF THE GOLF COURSE LAST?

ITEM	YEARS	ITEM	YEARS
Greens (1)	15 – 30 years	Cart Paths – concrete	15 – 30 years
Bunker Sand	5 – 7 years	Practice Range Tees	5 – 10 years
Irrigation System	10 – 30 years	Tees	15 – 20 years
<i>Irrigation Control System</i>	10 – 15 years	Corrugated Metal Pipes	15 – 30 years
<i>PVC Pipe (under pressure)</i>	10 – 30 years	Bunker Drainage Pipes (3)	5 – 10 years
<i>Pump Station</i>	15 – 20 years	Mulch	1 – 3 years
Cart Paths – asphalt (2)	5 – 10 years (or longer)	Grass (4)	Varies

NOTES: (1) Several factors can weigh into the decision to replace greens: accumulation of layers on the surface of the original construction, the desire to convert to new grasses and response to changes in the game from an architectural standpoint (like the interaction between green speed and hole locations). (2) Assumes on-going maintenance beginning 1 – 2 years after installation. (3) Typically replaced because the sand is being changed — while the machinery is there to change sand, it's often a good time to replace the drainage pipes as well. (4) As new grasses enter the marketplace — for example, those that are more drought and disease tolerant — replanting may be appropriate, depending upon the site.

Component life spans can vary depending upon location of the golf course, quality of materials, original installation and past maintenance practices. We encourage golf course leaders to work with their golf course architect, superintendents and others to assess the longevity of their particular course's components.

The American Society of Golf Course Architects (ASGCA) thanks those at the USGA Green Section, Golf Course Builders Association of America, Golf Course Superintendents Association of America and various suppliers for their assistance in compiling this information.

The materials presented on this chart have been reviewed by the following Allied Associations of Golf:

For more information,
contact ASGCA at
262-786-5960 or
www.asgca.org

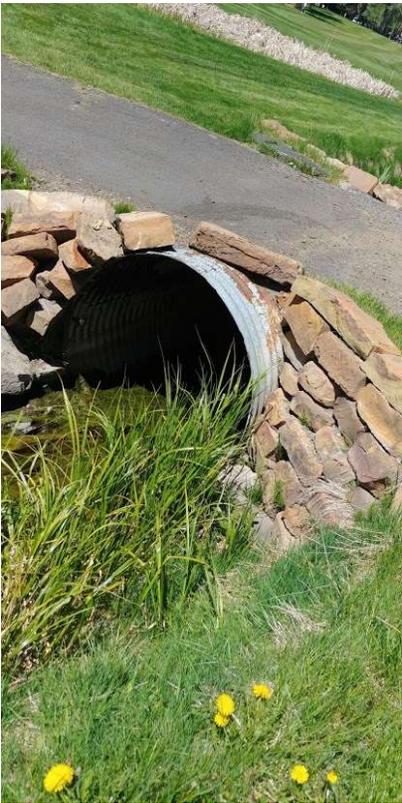


DATA COMPILED BY ASGCA, 125 NORTH EXECUTIVE DRIVE, SUITE 106, BROOKFIELD, WI 53005

Images



Existing cart path
Culvert Crossings
over Shiner Creek.



Cart and player
walking Timber
Bridges over
Shiner Creek with
deteriorating
planks and
possibly stringers.
Needs appropriate
safety curbing.
Path approach
should be
improved.



Old and deteriorating Railroad Ties in use as traffic control curbing along asphalt paths. Result in awkward and inefficient maintenance requirements, poor aesthetics, and are potential trip hazards.



Older deteriorating asphalt paving and paths.



Cart path routed across line of play and in primary view. Ropes required due to poorly draining area beyond path.





Excessively steep tee banks.
Difficult for golfers and mowers to traverse.



Unnecessary and deteriorating railroad tie bulkhead wall creating inefficient mowing requirements and awkward access for golfers.





City of McCall



Basic Irrigation System Analysis

August 2020



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SUMMARY OF FINDINGS

McCall Golf Club located in the mountain resort town of McCall, Idaho is a 27 hole public golf facility and driving range that is generally open for play May through October. McCall Golf Club consists of three nine hole courses known and referenced as the Aspen, Birch and Cedar nines. Aspen and Birch nines are generally a park style layout with homes surrounding the perimeter of the course. The Cedar nine is primarily a links style layout with homes surrounding each individual golf hole. Irrigation demands generally peak at an ET Rate of 0.16" per night between mid July and early August.

The Aspen nine and Birch nine irrigation systems were renovated in 1998. With exception of adding surrounds heads around some of the greens, the irrigation system is largely unchanged. At the time of writing this report, the Aspen and Birch irrigation systems seem to be functioning fairly well with little maintenance and repair required annually.

The Cedar nine hole course and irrigation system was constructed in 1995 and was primarily built around selling real estate. The Cedar irrigation system was constructed on a low budget as a single row irrigation system with sprinklers extending down the center of fairways with sprinklers surrounding the greens and tees. The irrigation system did not allow for adequate turf conditions in the fairways or roughs so the City has added irrigation along the edges of the fairway to expand turf areas out to the tree line. The control system did not have capacity to add any more valves or stations so all new irrigation has been added in a block zone configuration with up to four sprinklers paired to a single station or valve. Homes have since been constructed along each golf hole and have required additional adjustments to the irrigation system to prevent overspray onto adjacent properties. The irrigation system was not installed by a professional golf course irrigation contractor. Signs of poor installation practices are showing in pipe, fitting and sprinkler failure as well as pipe contamination issues.

Water Source and Storage

The golf course has three ground water rights (65-13476, 65-13796 and 65-13119) licensed through the Idaho Department of Water Resources (IDWR). The maximum diversion rate of all water rights combined is 1.81 CFS (812 GPM) with an annual diversion volume of 480 AF. The water rights have beneficial uses including irrigation, irrigation storage, irrigation from storage, recreation storage and diversion to storage. A backup or secondary reuse water supply from the local water plant has also been extended to the golf course.

The ground water rights are delivered via three irrigation wells on site. The primary irrigation well is located near the irrigation pump station between the Aspen and Birch nines and discharges directly into the main irrigation lake. A second irrigation well is located near the driving range tees that is partially piped north between the driving range and Birch hole 9 then daylighted into a small wetland before flowing into a lake on the right of Aspen hole 2. The third irrigation well is piped to and fills a pond east of the golf course along Spring Mountain Ranch Blvd., which overflows through a series of wetlands north of Cedar hole 2 before flowing into the lake right of Aspen hole 2. We were not able to measure the amount of water entering the irrigation lakes however it is highly likely that a percentage of the irrigation water delivered by the wells is lost through percolation, evaporation and transpiration through the wetlands.

There are three irrigation lakes plumbed together near the pump station. The total combined surface area of all three lakes is approximately 1.95 acres. Pond depths are not verified and total storage could not be calculated however we estimate that the ponds store approximately 1.1 million gallons in the top two feet of water. During peak irrigation season the irrigation system uses an average of 550,000 to 600,000 gallons of water per night. Based on this information we can assume that the ponds are capable of storing a minimum of three nights worth of irrigation water without being refilled by the wells.

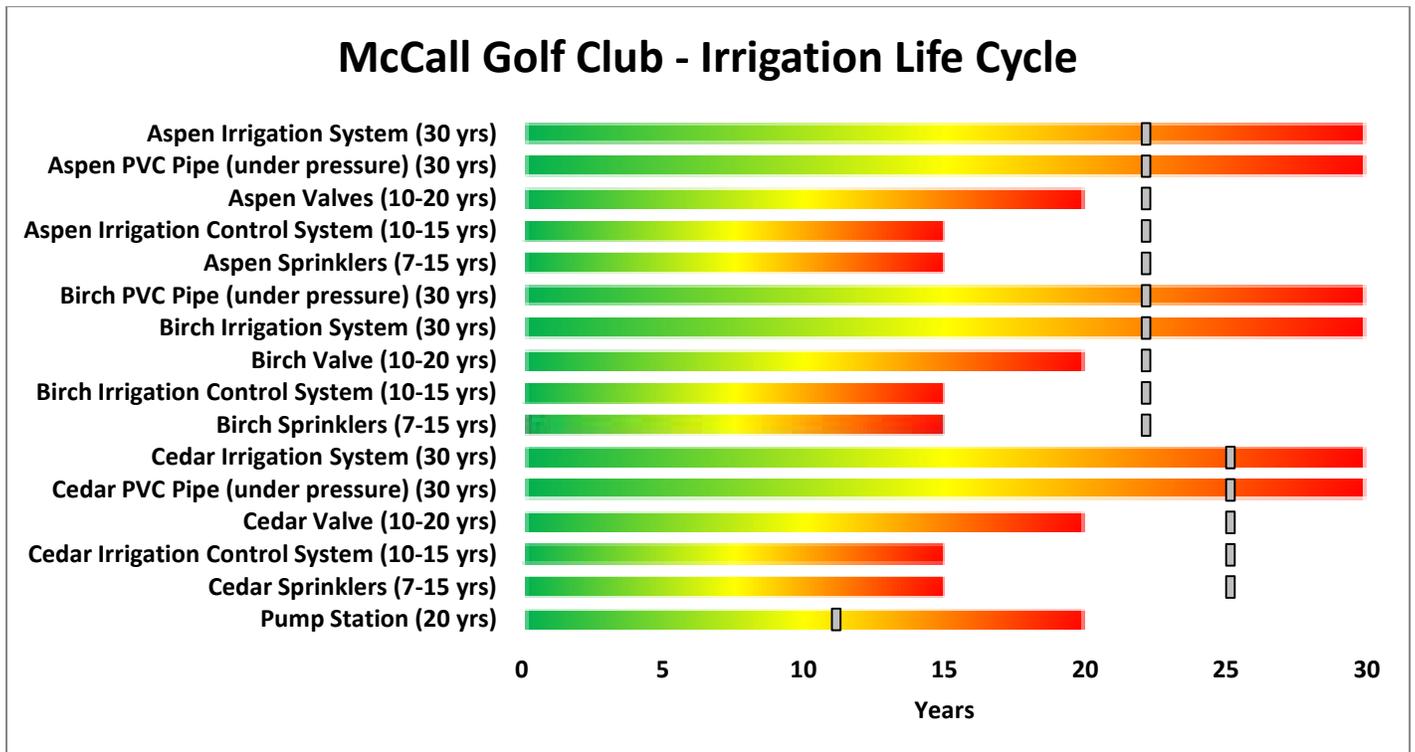
The irrigated area of the golf course is estimated at approximately 120 acres. We estimate that the golf course irrigation system uses approximately 90 million gallons of water per year. Therefore the ground water right annual diversion volume of 480 AF or 156.4 million gallons is adequate for irrigation and recreational water use. During peak irrigation months the ground water delivery is not able to keep up with the irrigation demands and reuse water from the treatment plant is used to supplement recharging the irrigation lake.



Irrigation Life Cycle

Just like all mechanical and electrical systems, irrigation systems have a life cycle. The American Society of Golf Course Architects have provided an independent study on the life cycle of golf course amenities. Within the study, irrigation components including the irrigation control systems (electrical), piping and pump station were evaluated. Depending on the region in which the irrigation system is in operation the overall life cycle varies from 10 to 30 years. In the mountainous northwest where irrigation systems are only utilized approximately 6 months of the year, we typically expect the life cycle of irrigation components to be on the higher side of the ASGCA study. See the ASGCA “Golf Course Items, Expected Life Cycle” exhibit on page 55 of the Golf Course Master Plan report, prepared by David Druzisky.

The life cycle bar for each component group listed below is represented with green, yellow and red. Green represents components that are respectively new with no maintenance required. Yellow represents the period in which products should still function however minimal maintenance may begin to occur. Yellow is also a time period in which budget planning for future replacement of the components or system should be considered. Red represents components that are near or at the end of their expected life cycle and components or system failures begin to increase. Each grey bar represents the respective component age of each category. This is a very high level observation tool to gauge where a system is overall within the average life cycle however, many variables including design, installation, water quality, maintenance and climate may shorten or extend the life of an irrigation system. Using this general observation, many of irrigation components on the golf course have exceeded their expected life cycle.



Pump Station

The irrigation pump station is located central of the golf course on the right side of Birch hole 8. It is powered by 480v, 3 phase power and is located inside of an insulated pump house. It produces a total of 2000 GPM, with approximately 1600 GPM dedicated to the irrigation system and 400 GPM to filling ponds and servicing water fountains in the ponds. The irrigation pump station consists of a Flowtronex pump skid and manifold installed in 1998. A Precision Pumping Systems control panel upgrade was installed in 2009. The pumps consist of a 75 hp, 50 hp and 30 hp vertical turbine pumps with a 10 hp submersible pressure maintenance pump. The 75 hp pump has a Variable Frequency Drive (VFD) that acts like a gas pedal to speed up or slow down the

station as irrigation demands change in the field. The pumps have been serviced since install and there are no sign of any issues with the pumps at the time of inspection.

An older pump station used to be in operation on Cedar but is no longer in use.

Irrigation Control System

The irrigation control system consists of a newly installed Rain Bird Nimubs II central computer with up to date software and original or used Par 16, Par 24 and Par+ controllers in the field.

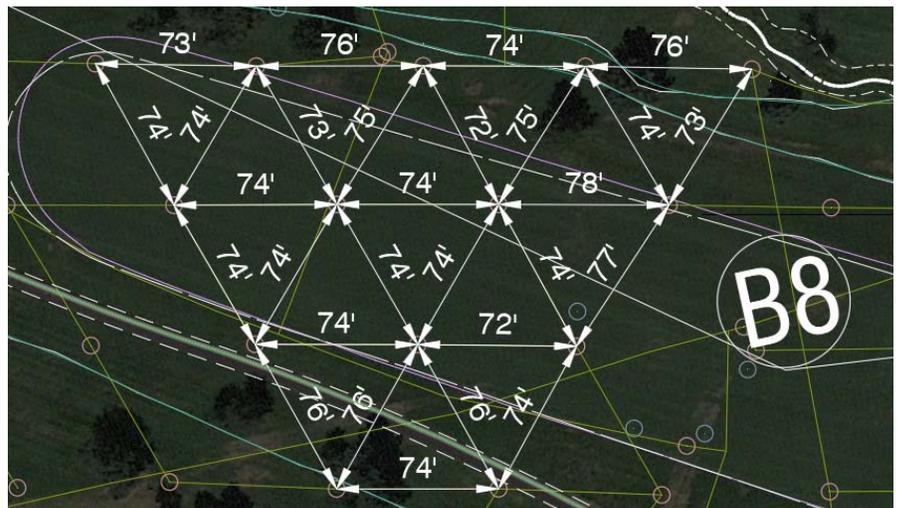
The controllers on Aspen and Birch are original from the 1998 install and are limited to 16 stations or 24 stations per controller. There is no opportunity to increase station capacity in these controllers. As sprinklers or stations are added in the field, if a controller does not have any open stations available then multiple sprinklers in the field are paired together on a single station to make room for new sprinklers. The Par 16 and Par 24 controllers are obsolete and no longer manufactured however there are still service companies that sell refurbished components. The golf course maintenance department has relied on these refurbished components to keep the existing system operational as components have failed in the past.

Controllers on the Cedar course are a mixture of Par 24 and Par+ controllers. The Par+ controllers were purchased used from local courses that were replacing their control system with new product.

Rotors/Sprinklers

Sprinklers on the golf course are primarily original with exception of those that have been added to increase irrigated turf areas or installed to replace failing sprinklers. The sprinklers on Aspen and Birch are all Valve-In-Head (VIH) and a mixture of Rain Bird 700/750 and 900/950 series heads. Aspen and Birch greens, tees and fairways are all wired for single head control whereas, the roughs are double head control with two heads paired to a single station at the controller. Green surround sprinklers have been added to some of the greens on Aspen and Birch. Cedar greens and tees are single head control while there are up to four sprinklers paired together in the fairways and roughs. In some cases, these are paired by control wires spliced together in the field and others sprinklers are grouped together and plumbed in block zones and controlled by a single valve.

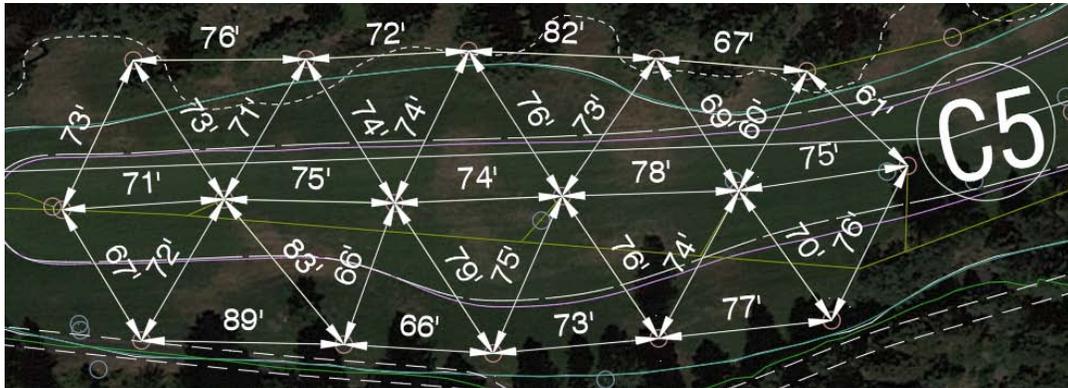
The current sprinkler layout on Aspen and Birch has remained unchanged from the original installation in 1998. Sprinkler spacing on Aspen and Birch is fairly consistent between 72' to 78' equilateral triangulated spacing through the fairways and roughs. Aspen and Birch primarily have single head control and it appears that staff is able to uniformly irrigate the playable areas of the golf course. In evaluating turf quality on Aspen and Birch while on site and via google earth we noticed that turf conditions are fairly uniform and appear to be in good health, as witnessed in the image to the right.



Sprinkler Spacing on Birch hole 8

The original irrigation system on Cedar was installed on a budget, value engineered and generally consisted of a single row of sprinklers down the fairways spaced between 71' to 78' with multiple sprinklers surrounding the greens and tees. The course staff quickly realized that single row coverage was inadequate. To remediate the issue, staff renozzled the original sprinklers to throw further out to the edge of fairway and started adding sprinklers to the edges of the fairways in order to increase playable turf areas. The newly added sprinkler spacing ranges significantly between 67'- 89'. Today, there are sections of fairways with three sprinklers crossing the fairway and in other locations the single row still exists. Additionally, homes are being constructed adjacent to each golf

hole requiring further modification to the irrigation system to prevent irrigation overspray onto adjacent properties. In the image below titled "sprinkler Spacing on Cedar hole 5" you can see the wet and dry areas through the fairway.



Sprinkler Spacing on Cedar hole 5

Groups of up to four sprinklers are paired together on a block zone making it impossible to properly manage irrigation application between single coverage areas, double coverage areas and the various microclimates, topsoils and slopes on the golf course. It is obvious that poor and inconsistent coverage and lack of control makes it impossible to manage the irrigation system and provide uniform playing conditions on Cedar.

Contaminated pipe from construction seems to be a reoccurring headache on Cedar. Debris trapped inside the piping system is migrating to the sprinkler heads and creating "weepers" where the heads can't shut off all the way and continue to leak water until cleaned. Approximately a dozen heads are replaced every year due to contamination.

Piping

The irrigation piping on the golf course is original. The mainline and laterals are Class 200 PVC. The mainline on Aspen and Birch is all gasketed PVC with ductile iron fittings. We were not able to verify if the mainline on Cedar is gasketed or glued or if the fittings are PVC or ductile iron. Very little pipe failure has been observed on the piping system through the years. Lateral fittings are starting to fail at an increased rate. Previous repairs made with slip fixes are a common failure and are being replaced with compression couplers.

There are a wide variety of swing joint makes, models and sizes installed on the golf course. Some failure has been witnessed on the threads of the upper elbow. This could be caused from water hammer, over tightening the fitting, freezing water in the pipe or from movement in the earth such as frost heaving. Fitting failure could be a sign of fatigue in the system.

Valves

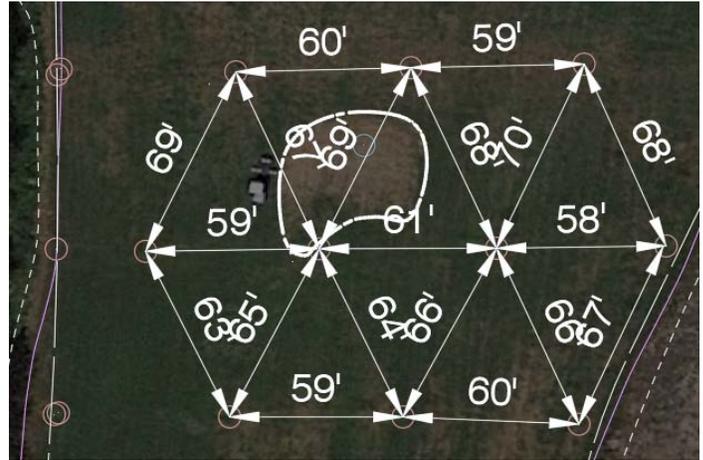
The mainline isolation valves are mechanical joint ductile iron and seem to be working without any issue. The original lateral isolation valves are Buckner brass angle valves. They have been slowly failing over the years and are being replaced with a Leemco Stainless steel lateral angle valve. It appears in evaluating the irrigation as-built and in interviewing the superintendent that adequate isolation is in place on the golf course.

Weather Station

A weather station is located left of Birch hole 9 white tees. The weather station is hard wired into the irrigation system and is communicating with the central control system. A home has been constructed adjacent to the weather station and solar radiation off the windows is affecting the readings. The weather station has been regularly serviced and is currently in good working operation however it is an older obsolete model.

Driving Range

The driving range is unique to the rest of the golf course. Approximately 2/3rd of the range is irrigated while the remaining 1/3rd had an irrigation system but was abandoned 15 years ago. The portion that is irrigated was constructed with typical landscape rotors you might find on residential or light commercial projects. They are not engineered to withstand the climate or pressure demands on a golf course. The sprinkler spacing varies between 60'-70'. Coverage is poor and is apparent in aerial photographs.



RECOMMENDATIONS

Aspen & Birch

The piping system is not showing significant signs of failure. Mainline fittings are holding up well and valves are being replaced as needed to maintain isolation to on the golf course. Lateral piping is holding up although previous repair to slip fixes are common, the repairs are fairly simple and do not require complete irrigation shut down to maintain operation elsewhere on the course. I feel as though the piping system, although near it's typical life cycle has more life to give. No major improvements are recommended at this time.

The existing field satellites are obsolete and in many cases are at or beyond their station capacity. More satellites will become over capacity as additional sprinklers are added to the green surrounds. Without additional station capacity at the satellite, staff will have to start paring sprinklers together to make room for new sprinklers. As sprinklers are paired together, the ability to manage irrigation on individual areas of the golf course diminishes and course conditions will suffer. Finding replacement parts to repair broken controllers will become increasingly more difficult as well. I recommend that existing field satellites be replaced with new higher capacity Rain Bird Par+ES controllers to maintain individual station control and prevent a situation where a satellite failure limits the ability to irrigate until repaired or replaced. New controllers would be compatible with the existing control system and could be phased in as needed or all replaced at once. Grounding should also be replaced with each new satellite.

The sprinklers installed around the greens and tees where topdressing is a common practice are generally set below grade and need to be raised flush with the ground surface. Some sprinklers in the fairways and roughs are slowing tilting or becoming uneven with the finish grade and are leveled as required on an on-going bases by maintenance staff. Ideally, green surround sprinklers are added to all greens on the golf course to improve control on and around the greens. Sprinklers are generally well beyond their expected life cycle. Sprinkler failures are a somewhat common issue and are being repaired as necessary. Although not observed and no actual field testing was performed to verify performance, it is likely that the sprinklers are not operating efficiently due to age and use. Swing joint breaks below the sprinkler are also increasing. I recommend replacing the sprinklers and swing joints on the golf course with new sprinklers and swing joints. This improvement could be implemented all at once or phased in multiple holes at a time over a handful of years. I anticipate that this partial renovation would extend the life of the irrigation system 10-15 years, at which time a full irrigation renovation would be required.

The existing weather station is operational but needs to be relocated to an area unaffected by buildings or irrigation. A location has been identified left of Birch hole 9 tees that will provide accurate weather readings unaffected by buildings, trees or irrigation. Power and communication wire are nearby making the relocation fairly simple.



Cedar

The irrigation on Cedar was never implemented correctly to begin with. A pump station initially planned for Cedar has since been removed, limiting irrigation flow directly to the Cedar 9 and changing how flow is dispersed through the piping system. Additional sprinklers have been added putting more demand on the piping system. The combination of a modified irrigation delivery point and added sprinklers is likely creating low pressure issue and affecting sprinkler performance. Field satellites are obsolete and at capacity. Sprinklers are beyond their life cycle, not spaced uniformly and are paired with up to four sprinklers on an individual station making irrigation management nearly impossible. Contamination in the piping system is continually creating issues at the sprinkler heads.

Unfortunately, the issues that exist on Cedar cannot be easily remediated with a simple sprinkler and control system upgrade. Larger issues exist within the piping system configuration, sprinkler spacing and issues related to the quality of design and install. The only real fix to gain maximum value on the investment is to replace the entire irrigation system on the Cedar including mainline, valves, laterals, sprinklers, swing joints and controls.

Driving Range

The irrigation system at the driving range is more of a commercial or park style system. The sprinklers are a landscape rotor that is not engineered to withstand the higher water pressures in a golf irrigation system or the continuous traffic from maintenance equipment driving over the top of them. The landscape sprinklers are not as efficient with water distribution as a golf rotor. Spacing is not uniform and groups of up to seven sprinklers are paired together on a single block zone exceeding the recommended flow limitations of the piping system. The system demands a lot of labor from staff, taking them away from other responsibilities on the golf course which benefit the patrons.

A new irrigation system should be considered for the driving range including new lateral valves, laterals, sprinklers, swing joints and controllers.

Water Sources

Although there are irrigation wells and a service from the water plant providing irrigation water to the golf course, an existing third water supply could be captured and utilized to reduce water pulled from the ground water wells. An existing water source is discharged from the treatment plant to a pond/wetland near hole 6 on Cedar, runs along holes Cedar 7 and 8 and ends up in a pond south of the tees on Birch 2. This water could be captured and routed to the irrigation pond for use on the golf course. Infrastructure to capture this water supply is mostly in place and little investment may be required to utilize this water and reduce ground water use.

Aspen Estimated Improvement Costs

- 1) Replace Field Satellites (13) @ \$6500 ea = \$84,500
- 2) Replace Sprinklers and Add Green Surround Sprinklers (462) @ \$350 ea = \$161,700

Birch Estimated Improvement Costs

- 3) Replace Field Satellites (14) @ \$6500 ea = \$91,000
- 4) Replace Sprinklers and Add Green Surround Sprinklers (443) @ \$350 ea = \$155,050
- 5) Relocate Weather Station = \$1500

Cedar Estimated Improvement Costs

- 1) Replace Irrigation System @ \$19,000/acre @ 35 acres = \$665,500

Driving Range Estimated Improvement Costs

- 1) Replace Irrigation System @ \$19,000/acre @ 6.25 acres = \$118,750



All of the recommendations herein are based on the limited amount of information collected throughout this process. Field data could be collected to further refine our findings and recommendations. The estimated improvement costs are based on general improvement costs. Should the City decide to explore these recommended improvements an Irrigation Master Plan should be completed to better detail the required improvements and to develop a more accurate Construction Cost Estimate.

Greg Baer, PLA, PIC, CGIA
Principal Irrigation Consultant