
Facility Assessment

For

Hillcrest Aquatic Center

Brookings, South Dakota

November 18, 2019



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Executive Summary

Statement of Understanding

The City of Brookings, South Dakota, retained USAquatics, Inc to conduct a facility assessment and recommendations for the Hillcrest Aquatic Center.

Overall, the aquatic facility is in good condition and a valued asset to the Brookings community. In collaboration with city staff, there are some needed replacement, upgrades, or improvements for the aquatic facility. Also, there are some operating systems that are nearing the end of their useful life cycle. We have identified elements of replacement, upgrades, or improvements for consideration of the Brookings community and have included them in this report with probable associated costs.

The existing outdoor aquatic facility consists of:

- Parking lot on the South side of the facility with walkways to the facility entrance, including bicycle parking pad. The Bathhouse consists of admissions, women's, men's and family change rooms, concessions, and mechanical room for the main pool and wading pool.
- The main pool is an ell shaped pool with a 50meter length, with the shallow area in the ell of the pool. At the end of the 50meter length is a diving well with one- and three-meter boards and a drop slide on the East side of the well. The pool area has ample deck space for shade elements and lounging chairs.
- South of the main pool is a wading pool, fenced off from the main pool, with direct access by users, without requiring access through admissions. The wading pool is rectangular with one water drop feature in the center and entry ramp on the Southwest corner.
- Water slides, one body and one tube, and a plunge pool are on the Northeast side of the facility, isolated from the rest of the aquatic center. To access this area, patrons must walk around the deep end of the 50-meter pool or through a maze around the tanning area. There is a mechanical room for this pool, which is located between the main pool and plunge pool.
- To the West of the facility, on a lower level, is a free-form leisure pool, with various water play features, a splash pad. This pool area has landscaping, ample decks for walking and lounging, and shade amenities. There is a separate mechanical room that services the leisure pool and splash pad. Also, in this area is the concession stand that services the entire facility.

Process

Tom Schaffer, USAquatics, performed a facility walk-thru with Payton Schultz, CPO, Brookings Parks and Recreation, on Thursday, October 10, 2019. During the walk-thru, Payton and Tom discussed aspects of the facility such as pool structure conditions, daily and routine maintenance, and operating equipment. Payton was very informative with standard operating procedures, chemical use, and operational likes and concerns. Notes and photos were taken during the walk-thru for assessment of the operating systems for the pools, as well as assessment of the pool structures. Meet with Parks and Recs staff including Stacy Claussen and Josh Bauman.

Scope

- Visit the facility to assess and document facility conditions, including;
 - Photos
 - Operating systems and pool structures
 - Facility review
- Review code and regulatory requirements, including;
 - Jurisdictional codes
 - Federal VGB and ADA regulations
- Review and evaluate information provide by owner, including;
 - Drawings of existing facility
 - Daily operating records
 - Operational costs and revenues.
- Provide final recommendations including rough order of magnitude cost estimating

Hillcrest Aquatic Center

City of Brookings

Criteria

- State, or jurisdictional, health and safety regulatory issues
- Americans with Disabilities Act
- Virginia Graham Baker Act
- Standard industry practices
- General facility safety and conditional concerns

Deliverables

- A report of findings with conclusions and recommendation
- Probable cost estimate for recommendations

Assessment

(1) Site

- The Hillcrest Aquatic Center is in a great location within Hillcrest Park. Access to the facility is from 15th Avenue or off 5th Street which enters the parking lot. The parking lot is between the aquatic center, on the North and the tennis courts on the South. There is a crosswalk and sidewalks on 6th Street.
- The parking lot appears to be in good condition. There is designated ADA parking and access from the parking lot to the aquatic facility appears to meet ADA requirements. This parking lot does fill on occasions and there is an overflow parking lot to the East of the facility. If there is future expansion to the park or aquatic facility, more parking should be considered. If the parking lot is expanded, we recommend providing a better drop off arrangement that would include a dedicated drop off lane. B^ud. drop off and parking could also be considered if or when parking is expanded.

(2) Buildings

- The main bathhouse consists of admissions, office, lifeguard area, women's and men's change rooms, located on the South side of the building with access from the parking lot with walks and bicycle parking. The fixture counts in the change rooms are adequate for the main pool. In the middle of the bathhouse is the mechanical area which houses mechanical systems for the building as well as the operating systems for the main pool and wading pool. On the North side of the building is a staff office and family (special needs) change room. The main bathhouse was renovated in 2005 and appears in good condition. The building gets an ice blast about every three years.
 - *We recommend the addition of canopies or awnings on the South and West side of the admissions area. This would provide shade on the South and West and signage on the canopies or awnings would better direct patrons to admissions.*
- The concessions building consists of women's, men's and family (special needs) change rooms, concessions and prep area, and lifeguard, storage and mechanical area. This building services the leisure pool and splash pad area and is located on the Northeast side of the leisure pool. This building was constructed in 2005 and is in good condition.
- The leisure pool and splash pad have a mechanical building which houses the operating systems for both the leisure pool and splash pad. This building was constructed in 2005 and is in good condition.
- The plunge pool has a mechanical building which houses the operating systems for the plunge pool, and all waterslides. This building was also constructed in 2005 and is in good condition. On the South side of the plunge pool is a shade structure which appears to be in good condition.

(3) Main Pool

- The main pool is an ell shaped pool consisting of an 8 lane by 50-meter area that is 3ft-9in to 12 ft deep and a shallow ell area that is 2ft to 3ft 6in deep. The shallow area has a set of 'dropped in' stairs and two sets of grab rails and recessed steps. The 50-meter area has five sets of grab rails with recessed steps. The deep end of the 50-meter area has one 1-meter diving board and one 3-meter diving board, and a drop slide. There are three elevated lifeguard chairs.



- The pool structure was recently painted (completed after the swim season and prior to our facility walk-thru). The pool is repainted about every three years. The pool structure appears in good condition and with maintaining the pool finish and expansion joints, could stay in service for years.
- The three main drain covers are date stamped and must be replaced every 7 years. Payton will record the date on the covers for compliance.



- Federal law requires two means of ADA access to pools with a perimeter of over 300 linear feet. The main pool has more than 300ft of perimeter appears to comply with this requirement.



- There are ample decks around the main pool, with one shade element off the shallow water area on the East, and two shade elements to the West of the deep-water area. The decks provide areas for lounge chairs and circulation. The decks and deck drainage appear to be in good condition. Expansion joints should be caulked, as needed, to prevent differential movement and toe stubbers.
- The pool perimeter has a stainless-steel recirculation system that delivers filtered water back to the pool and removes surface water via surface weirs. This recirculation system was installed on the existing pool structure in 1984. The recirculation system incorporates a two-tiered gutter system with surface water entering the lower gutter via the surface weirs and bather displaced water entering the upper gutter via rim overflow. The upper gutter is an open trough, with no grating over it. The two concerns with this gutter type are that, one, the weirs do not allow total rim flow and act only as occasional area surface skimming, like a skimmer pool, and two, the open gutter is a safety concern for bathers.
 - *We have experienced these concerns with other facilities, and we recommend removal of the upper gutter, welding shut the weirs and covering the gutter with grating. This will create a surge gutter that rim flows, for much better surface tension and surface contaminant removal. The other benefit is that with grating over the gutter, this will provide a healthier and safer gutter for patrons. Although most of the stainless steel appears in good condition, there are some areas that need reconditioning, which can be performed when the recirculation system is upgraded. Refer to drawing on Page 17 showing modified gutter.*
- The pool does offer some aquatic amenities, a consideration for an added amenity would be to *add an aquatic climbing wall* on the West side of the diving well.
- The filter system, that filters water for both the main pool and wading pool, is a sand media, vacuum filter. This filter type only removes particulate down to about 25 microns and is temperamental to backwash. Payton reports that he backwashes the filter once a week. The filter incorporates a twopump system to operate. By today's standards, this filter system is not an efficient way to filter pool water, either by quality or by cost efficiency. Besides the above concerns, the filtration system is nearing the end of its useful life cycle, as well as the two recirculation pumps. There a couple of recommendations with respect to filtration. One, is that the filter system, by many codes and standards, should only filter one body of water, not two. There is a valid concern with respect to cross contamination with one filter on two bodies of water. Two, the filter system should be replaced with a much more efficient filter system, that being a regenerative media filtration system. This a pressure filter system, in lieu of a vacuum filter system, that filters down to one micron in particulate removal. Also, this filter system utilizes a single pump and motor controlled by a variable frequency drive. This filter will require cleaning about once a month instead of once a week, using about 1/50 of the amount of water to clean the filter as opposed to backwashing a sand filter. The operating cost is about 55 to 60 percent less than a comparable sand media filter.

- *We recommend replacement of the filtration system for the main pool, in the near future, with regenerative media filtration system.*



- Since we are recommending welding shut the surface weirs of the gutter, for rim flow, the existing vacuum sand filter can be converted to surge/balance tank. This will allow for storage of bather displaced water, and the surge tank will fill by gravity, in lieu of pump suction, making this much safer with respect to anti-entrapment.
 - *We recommend converting the existing filter to a surge/balance tank, in the near*

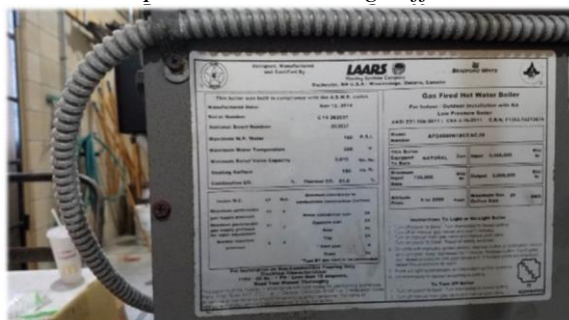


future.

- The chemical treatment system consists of solid chlorine, fed via an Accu-Tab erosion feeder, and acid for pH control, via a peristaltic metering pump. The chemical monitoring and feeding are controlled by a BECS System 3, ORP and pH controller.
 - Payton report that he has no concerns with the treatment system, however, *we would recommend up-grading the controller to a current system, that is more state of the art, with respect to monitoring and feeding with IT connectivity.*



- Chemical Storage: Chlorine agents and pH agents are highly reactive, whether in a liquid, solid, of gas form. *We strongly recommend that these chemicals be separated, as stored in separate areas with physical barriers or stored in separate rooms.*
- The pool heater is a low efficient, open combustion, LAARS direct fired pool heater. Open combustion meaning that combustion air must be provided by the air in the mechanical room. There is often not enough air in the room for proper combustion, and any vapors from off gassing are sucked into the combustion chamber of the heater. This situation causes condensation and corrosion in the heater.
 - *We recommend replacing the heater with a high efficient, sealed combustion, pool heater or a high efficient condensing boiler with heat exchanger.*



(4) Wading Pool

- The wading pool is fenced off from the main pool and accessible directly, without controlled access via the admission area. The wading pool is isolated from the rest of the aquatic areas and cannot be monitored from the main aquatic area, resulting in a safety concern. The other concern with this pool is the possibility of cross contamination with the main pool. Fecal accidents are more likely in this type of pool, and with the limited control of this pool, fecal contamination and/or a crypto outbreak could likely force closer of both pools.
 - *We recommend removal of the wading pool.* We further understand that the wading pool is a free amenity for users but lacks controlled access and monitoring.
 - If the city wants to provide a free aquatic amenity, *we recommend removal of the wading pool and replacement with a splash pad, similar to the splash pad next to the leisure pool.* This splash pad would have its own operating system and with no standing water, would not require any lifeguarding.



(5) Plunge Pool

- The plunge pool and waterslides were constructed in 2005. The pool structure appears to be in good condition. The waterslides consist of one open flume slide and one enclosed tube slide. The water slides appear to be in good condition, as well as the tower, supports and stairs. Decks around the pool are adequate and the shade structure appears to be in good condition.



- Recirculation is via the main drains and surface skimmers.
 - The main drains should be checked for expiration dates to comply with VGB.*
- In review of the operating system, Payton reports that there are no concerns with the system. The filters are piggy backed and are high rate sand media filters. The filters have single lever linkage and Payton reports that the valves are properly linked. The filters are properly sized for appropriate turnover of the plunge pool. The pool operator reports that he backwashes the filters once a week.



- The chemical treatment system is the same as the main pool, including the chemical controller, a BECS System 3.
 - We would recommend an upgrade to a current system with modern capabilities such as IT connectivity.*



- Chemical Storage: Chlorine agents and pH agents are highly reactive, whether in a liquid, solid, or gas form. *We strongly recommend that these chemicals be separated, as stored in separate areas with physical barriers or stored in separate rooms.*
- The pool heater is a Lochinvar EnergyRite, high efficient with a sealed combustion chamber.



- In our opinion, the only concern with the plunge pool and waterslide area is the location. It is isolated from the rest of the aquatic facility and off the deep end of the main pool. The activities associated with this amenity are more leisure/recreational oriented and a better location for this amenity would be next to the leisure pool. In review of an aerial map, it appears that there would be room for this amenity Northwest of the leisure pool and East of the mechanical room for the leisure pool. The existing location of the waterslides has 'curb appeal' from 6th Street. Relocating this amenity to the Northwest area of the facility would retain the 'curb appeal'. This would be a better location for not only patrons, but also for lifeguard staff and maintenance staff.
 - *We recommend relocating the plunge pool and water slides.* Relocating this amenity would also allow for a better orientation for a possible expansion and addition of an indoor aquatic facility.



- If the plunge pool and waterslides are relocated, *we would recommend a deeper water area, connected to the plunge pool, that could facilitate the drop slide, jump platforms and aquatic climbing wall.* The usage of the drop slide would be better suited for this area rather than having it on the 50-meter pool.

(6) Leisure Pool

- The free form, zero depth entry, leisure pool, with water play elements is a great amenity to the aquatic facility. The pool was constructed in 2005 and appears to be in good condition with a few exceptions. The pool wall, on the South side, does need reconstruction work. It appears that the pool was constructed with a cold joint about a foot down from the pool rim. This joint is spalling and deteriorating.



- We recommend this joint be reconstructed to preserve the longevity and performance of the pool structure. The quartz aggregate pool finish is in OK to poor condition. In other words, some areas appear OK and other areas show wear and spalling. There also a few patched areas. The expansion joint in the pool floor and wall needs routine maintenance to ensure longevity and to remain watertight. A new quartz aggregate finish is not an immediate need, however, if the reconstruction of the pool wall is completed soon, we would recommend a new pool finish at the same time. If the City opts to operate the pool 'as is' for the 2020 swim season, this work could be scheduled to be completed in the fall of 2020, so it does not interrupt a swim season.*



The water play elements appear to be in fair condition. There is rust showing on some areas of the play elements. Also, some of the steps show delamination of the coating.

- We recommend sandblasting and recoating rusting areas and delaminated steps.*

If the above described work is completed in the fall of 2020, the City would have an opportunity to add additional water play elements. This may attract additional patrons to the facility.

- If the City proceeds with rehabilitation work, we recommend the addition of water play elements.*
- The recirculation system consists of a grated concrete gutter around the perimeter of the pool and floor inlets. The main drains are part of the recirculation system and should be checked for expiration dates to comply with VGB. Water from the gutters and main drains gravity flow to the surge tank located on the East side of the mechanical room. The water play elements also receive water from the surge tank and distribute water to the individual play elements, via a dedicated pump and motor.

- The filtration system consists of dual, high rate sand media filters, with single lever linkage. Payton reports that these filters are in good working order. The pool operator reports that he backwashes the filters once a week. These filters should provide adequate service for filtering pool water for several years.
 - *When these filters need replacement, in the future, we would recommend upgrading the filtration system to a single regenerative media filter. Again, the regenerative media filtration system will provide better quality of pool water at less operational costs.*



- The chemical treatment system is the same as the main pool, including the chemical controller, a BECS System 3.
 - *We would recommend an upgrade to a more modern system.*



- The pool is heated with dual, high efficient, direct fired pool heaters with sealed combustion chambers. Payton reports that the combustion air intake gets plugged with moths as the intake air piping is located close to night lighting.
 - *We recommend relocating the air intake and adding a larger intake cover to increase the cross-sectional area. Staff reports that the city is working with the heater vendor to resolve this issue.*



(7) Splash Pad

- The splash pad was also constructed in 2005 and is also a great amenity to the facility. The pad appears in good condition and Payton reports there are no concerns with the pad and water play elements.



- Since there is no standing water, the recirculated water is contained in a buried storage (surge) tank located on the Southeast corner of the mechanical room, adjacent to the surge tank for the leisure pool. The water play elements also receive water from the surge tank and distribute water to the individual play elements, via a dedicated pump and motor.
- The filtration system consists of single, high rate sand media filter, with a port type dial valve. Payton reports that the filter is in good working order and that he backwashes the filter once a week. The filter should provide adequate service for filtering pad water for several years.



- The chemical treatment system consists of liquid chlorine for chlorine demand and acid for pH control. There is a chemical controller on this system as well. Since the recirculated water is from and to the surge tank, the filtered water is not adequately exposed to sun light and UV rays from the sun. Payton reports that he does have combined chlorine problems with the splash pad. Many codes and standard practices require the addition of a UV (ultraviolet light) system to enhance the disinfection process.

- *We recommend the addition of a UV disinfection system to the splash pad. The existing liquid disinfection would remain, as it is needed for as a disinfection residual. The UV system would eliminate the combined chlorine issue. We would also recommend upgrading the chemical controller when adding the UV system.*
- The pad is heated with a single, high efficient, direct fired pool heaters with a sealed combustion chamber. Payton reports that the heater is in good condition with no operational concerns.

(8) Other Amenities (within the fenced area of the aquatic facility)

- There is a dedicated sun/tanning area between the main pool and plunge pool.
- There is a shaded observation area between the bathhouse and leisure pool. The observation area is on the same level as the bathhouse and appears to be in good condition.
- Additional shade elements and decks are located South of the splash pad with connecting walkways.
- A sand play area is located South of the Leisure Pool mechanical building.
- The landscape area to the South of the Leisure Pool provides a great aesthetic background to this area of the facility and provides a buffer to the backyards of the residents to the South. A solid white composite fence also separates the facility from the backyards of the residents.
- On the North side of the aquatic facility, there is a masonry wall with landscaping that screens the facility from the busy 6th Street traffic.

(9) Facility Information

- Staff reports that daily attendance is not taken but estimates attendance averages about 400 per day. If the aquatic facility is open 90 days out of a possible 100 days, or 90%, the estimated total seasonal attendance would be 36,000.
- Revenue for the 2019 operating season were \$132,761 for Swimming fees and \$22,055 in concession receipts for a total of \$154,816. If the attendance was 36,000, this results in an average of \$4.30 per attendee.
- Expenditures for the 2019 season were \$90,516 for operating costs, \$210,939 for payroll, labor burden, and insurance, and capital expenses of about \$60,000. The total for expenditures was \$361,455. Again, if the attendance was 36,000, this results in a cost of \$10.04 per attendee.
- Given the above numbers, simple math would suggest that the facility is subsidized at a cost of \$206,639. There maybe other factors involved in the revenue of the facility, but on the surface, this appears to be a heavy subsidy. **Note, staff reports that this was the lowest revenue/attendance season in the past five years, and it was likely weather related.**
- Staff has also noted that program usage includes lessons in the mornings prior to opening, and 1 or 2 special events at the facility. The swim team uses the facility daily for practice with no associated fee. SDSU uses the facility for water aerobic classes from 5:30 to 6:15AM, Monday through Friday. SDSU does not pay a fee, but the uses pay via a daily fee, membership or punch card.

(10) Pool Operations

We have reviewed the operational daily log sheets provided by staff and have the following comments.

50meter (main pool)

- Free available chlorine appears to be maintained between 3.8 and 5.0ppm, which is good.
- There appears to be no combined chlorine, which is great.

- pH appears to be maintained between 7.4 and 7.6, which use to be the ideal range. The new trend is to lower the pH and maintain between 7.2 and 7.3. This will provide greater user comfort, it is better for the operating system, and since chlorine is pH dependent, a lower pH will result in less chlorine demand, meaning using less chlorine and cost savings.
- We recommend cyanuric acid, a chlorine stabilizer, not to exceed 30ppm. Levels above 30ppm retard oxidation and will influence the probes in the chemical controller, usually resulting in false monitoring/readings and false feeding of chemicals.
- The saturation index appears to be about a +.3 on average. Lowering the pH by lowering the set point on the chemical controller, while maintaining the same temperature, alkalinity and hardness, would likely change the saturation index to +.1

Wading Pool

- Since the wading pool shares the same operating system as the main pool, there are no log records for this pool. However, if the wading pool was removed or had its own operating system, the chemical demand on the main pool would be reduced.

Plunge Pool

- Free available chlorine appears to be maintained between 2.2 and 3.4ppm, which is OK for this pool. Maintaining FAC about 4ppm would be better.
- There appears to be no combined chlorine, which is great.
- pH appears to be maintained between 7.4 and 7.6, which use to be the ideal range. The new trend is to lower the pH and maintain between 7.2 and 7.3. This will provide greater user comfort, it is better for the operating system, and since chlorine is pH dependent, a lower pH will result in less chlorine demand, meaning using less chlorine and cost savings.
- Cyanuric acid is not used on this pool. Given the small volume of water in this pool, we agree that cyanuric acid would be of no value in this pool.
- The saturation index appears to be about a -.1 on average. This is likely due to the lower alkalinity level. We note that the pool operator adds bicarb to raise the alkalinity level. This is the correct procedure, however if the pool used CO₂, which is an acid, to lower the pH value, CO₂ will also raise alkalinity. Given the small volume of water, this may not save much on the cost of chemicals and would only be recommended if the pool and waterslides were relocated as the feed equipment could be factored into the relocation costs.

Leisure Pool

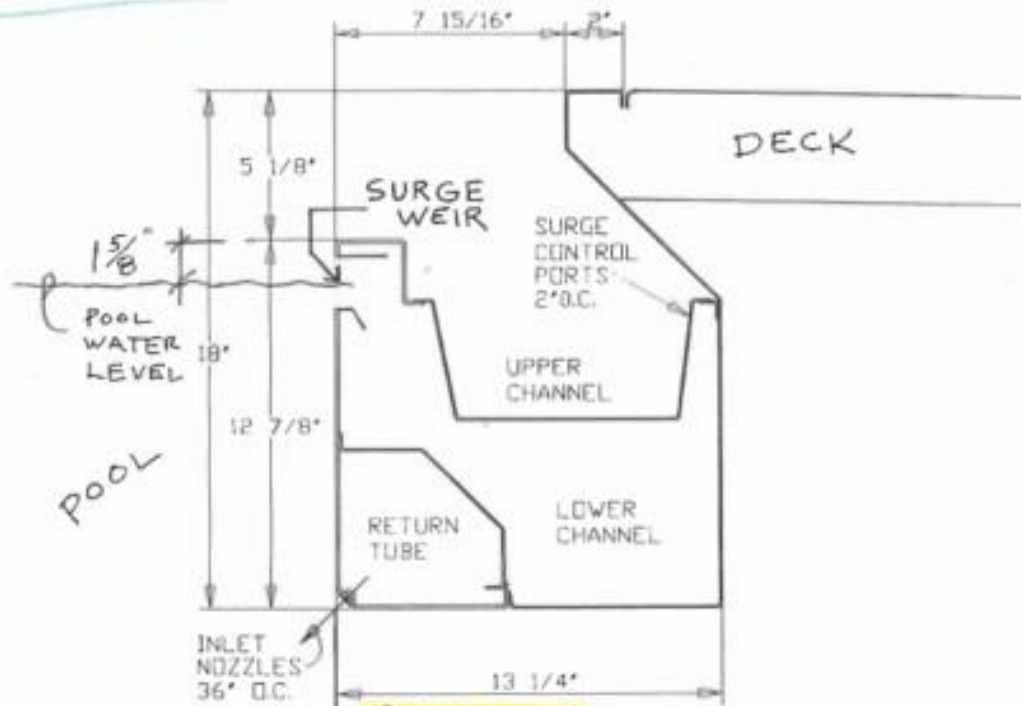
- Free available chlorine appears to be maintained between 2.5 and 5.0ppm, which is good.
- There appears to be no combined chlorine, which is great.
- pH appears to be maintained between 7.2 and 7.8, which is in the acceptable range, but not ideal. We note that the alkalinity is low, and low alkalinity will result in pH bounce, making it difficult to maintain ideal pH levels. Again, the new trend is to lower the pH and maintain between 7.2 and 7.3. This will provide greater user comfort, it is better for the operating system, and since chlorine is pH dependent, a lower pH will result in less chlorine demand, meaning using less chlorine and cost savings. However, with low alkalinity, this would be very difficult.
- The cyanuric acid levels are low. We have no concern with this, as we are not a proponent of stabilizers, as they retard oxidation, and because of the use and bather loads, this is a pool that needs good oxidation.
- The saturation index appears to be constantly low, sometimes as low as -1.4. This is likely due to the low alkalinity levels. This pool requires much make-up water and if the source water is low in alkalinity, this

would explain the low alkalinity in the pool water. We note that the pool operator uses large amounts of bicarb to raise the alkalinity. Payton reports that raising the alkalinity is a constant battle. This pool may benefit from the use of CO₂ which will both lower pH and raise alkalinity. Maintaining a higher alkalinity level will also eliminate the pH bounce making it easier to control ideal pH levels. A constant low saturation index will negatively affect bather comfort and the operating system, especially the pool heaters.

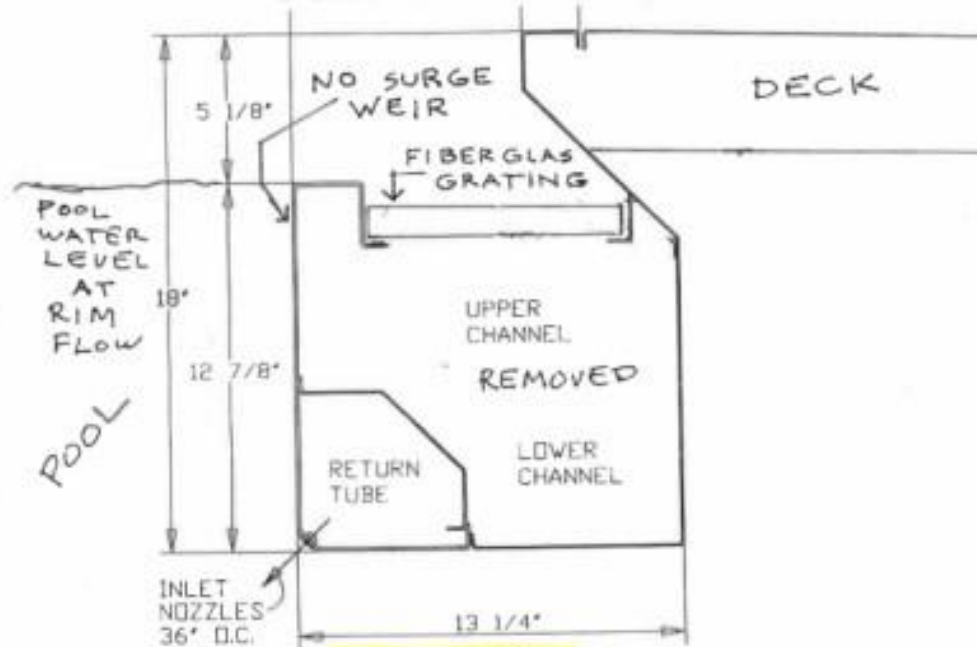
Modified Gutter Example



Project: Hillcrest Aquatic Center, Brookings, SD
Subject: Gutter Modification, 50 Meter Pool
Date: 11/18/2019



**EXISTING
SCRS SYSTEM**



**MODIFIED
SCRS SYSTEM**

Probable Cost Estimates of recommendations.



Probable Cost Estimate

Date: 11/18/2019
Project: Hillcrest Aquatic Center
Option: Facility Assessment

Description	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5
Re Area					
1 Site					
Expand parking and add a drop off lane					\$ 150,000
2 Buildings					
Add Canopies to Admission area				\$ 30,000	
Ice Blast Building Note: every two to three years		\$ 10,000			
3 Main Pool (50meter)					
Pool repainting Note: every two to three years		\$ 40,000			
Alterations to perimeter stainless steel recirculation system			\$ 40,000		
Add aquatic climbing wall					\$ 40,000
Installation of new regenerative media filtration system			\$ 215,000		
Convert existing filter to surge/balance tank			\$ 20,000		
Upgrade Chemical Controllor		\$ 7,500			
New high efficient pool heater		\$ 38,000			
Separate chlorine and pH chemicals	\$ 6,000				
4 Wading Pool					
Wading pool demolition	\$ 20,000				
Splash Pad to replace wading pool				\$ 200,000	
5 Plunge Pool					
Upgrade Chemical Controllor		\$ 7,500			
Relocation of plunge pool and waterslides					\$ 350,000
Option: Deepen plunge pool & add climbing & jump platforms					\$ 145,000
Separate chlorine and pH chemicals	\$ 6,000				
6 Leisure Pool					
Reconstruct cold joint	\$ 36,000				
Maintenance of expansion joint		\$ 3,500			
Refinish quartz aggregate pool surface			\$ 125,000		
Refurbish rusting areas & delaminated steps of play elements	\$ 8,000				
Option to add water play elements, Allowance					\$ 60,000
Installation of new regenerative media filtration system				\$ 155,000	
Upgrade Chemical Controllor		\$ 7,500			
Relocate combustion air intake	\$ 3,000				
7 Splash Pad					
Add UV System	\$ 28,000				
# Pool Operations					
Convert pH feed to CO2 \$3,500 Each Pool		\$ 3,500	\$ 3,500	\$ 3,500	
Sub-Total of Recommendations:	\$ 107,000	\$ 117,500	\$ 403,500	\$ 388,500	\$ 745,000
Soft Costs at 20%	\$ 21,400	\$ 23,500	\$ 80,700	\$ 77,700	\$ 149,000
Total Probable Costs including Soft Costs	\$ 128,400	\$ 141,000	\$ 484,200	\$ 466,200	\$ 894,000

