

## **Falls Park Loss Control Special Review June 18, 2018**

This report follows the drowning on March 18, 2018, of a five-year-old girl, M.Z., at Falls Park. It presents the steps taken by the City of Sioux Falls to review the incident; the response of law enforcement and other City personnel; previous risk-management reviews and changes; and a discussion of options and recommendations for additional changes to manage the drowning risks inherent at Falls Park.

### **1. The drowning on March 18, 2018**

The facts stated here are drawn from written reports of first responders, and are not based on any independent investigation. M.Z. was visiting Falls Park with her family on Sunday, March 18, 2018. There was still ice on the Big Sioux River, but water was flowing over the falls. M.Z. and her family were first-time visitors to Falls Park. Her family included her mother and two sisters. A friend of M.Z.'s mother and her two children accompanied the family. All members of the party visited the observation tower for a view of the park and the falls. M.Z. and one of the other children saw foam that was approximately 20-30 feet high accumulated near the narrowing of the river by the Overlook Café, north of the pedestrian bridge across the river, and wanted to touch it. After leaving the observation tower the children were on the rocks on the west side of the river, downstream from the pedestrian bridge. One of the children touched the foam to see how it felt and to "grab a handful." He was about 6-8 feet away from M.Z. when he saw her reach out to touch the foam and then fall forward into the foam. No one else in the party reported seeing her fall.

Several people called 911. Metro Communications reported at 12:00 noon that someone had fallen into the water. Sioux Falls Fire Rescue was dispatched at 12:02:18 and arrived at Falls Park at 12:06:09. Two fire fighters entered the water and located M.Z., who was unresponsive. She was removed from the water about nine minutes after SFFR arrived at Falls Park. Another firefighter started CPR and continued until paramedics arrived, when additional lifesaving measures were undertaken en route to Avera McKennan Hospital, where patient care was transferred to Avera staff. M.Z. was pronounced deceased at 1:00 p.m.

### **2. Other drownings at Falls Park**

Since 1982, there have been eight other drownings at Falls Park:

- June 11, 1982            nine-year-old boy drowned while wading about 20 feet below falls
- September 11, 1983    escaped inmate drowned trying to cross the river at night
- June 5, 1985            22-year-old man drowned downstream from the Overlook Café
- April 26, 1997         43-year-old transient drowned; he may have been fishing
- June 23, 1997         13-year-old who was fishing drowned trying to save fishing pole
- May 29, 1999          26-year-old fell into river from rocks above the falls and drowned
- March 14, 2013        two rescuers, ages 16 and 28, died trying to save a boy who others thought fell into the river just downstream from the Overlook Café

There have been many other rescues involving people stranded on rocks or swimming in the river below the falls.

### **3. Falls Park**

Falls Park is one of 80 parks, in addition to nearly 28 miles of River Greenway Bike Trail along the Big Sioux River, maintained by Sioux Falls Parks & Recreation. The City's park system consists of over 3,100 acres of parkland. Falls Park is approximately 123 acres and is open year-round. Vehicle access is provided at two locations on Falls Park Drive and another location on Weber Avenue. The Big Sioux River drops approximately 100 feet within the park. Native quartzite rock formations exist on both sides of the river and form the outcroppings over which the Big Sioux River falls. An average of 7,400 gallons of water per second flow over the falls. In the spring when the snow is melting and during heavy rains the water flowing through Falls Park can be swift. Pursuant to ARSD 41:04:02:49(4), the waters of the Big Sioux River from Falls Park Drive to Sixth Street are a no swimming zone.

Falls Park was the recipient of significant capital improvements during the last three decades that turned the park into a tourist destination and substantially increased visitor traffic. Today Falls Park includes five parking lots, public restrooms, a five-story observation tower and Visitor Information Center, an old horse barn that is currently the home of Stockyards Ag Experience, the remains of the Queen Bee Mill, and a number of permanent sculptures. The River Greenway Bike Trail runs through Falls Park. The Falls Overlook Café, which is located in a restored hydro-electric plant on the east bank of the river below the falls, is open during the summer months and is operated privately pursuant to a management contract. An estimated 700,000 people per year visit Falls Park.

Three full-time employees and 18 seasonal Parks & Recreation employees are regularly present for maintenance, but there are no park rangers assigned to Falls Park or any other City park. The Visitor Information Center is operated and staffed by the Sioux Falls Convention and Visitors Bureau, which is part of the Sioux Falls Area Chamber of Commerce. The Sioux Falls Police Department patrols Falls Park on a regular basis on foot, in patrol cars, on motorcycles, or on bicycles. There are currently five officers dedicated to park patrol, and other patrol officers may also go through the park. School Resource Officers are also assigned to park patrol during the summer months when school is not in session. Falls Park is open from 5 a.m. to 12 a.m. every day.

The park contains a series of walking paths with several viewing platforms with walls and railings for safety and interpretive information. A pedestrian bridge located just upstream from the Overlook Café provides access to both sides of the river. The river is not fenced, but handrails and fencing are installed on the walk path stairs, and guardrails are located along the walk path in several locations.

### **4. Incident review processes**

After the drowning on March 18, 2018, the City undertook a review of the incident, including the actions of first responders and steps that the City could take to lessen the risk of a similar

incident in the future. Participants in the process included the Parks Director, Park Operations Manager, Police Chief, Fire Chief, Emergency Manager, Risk Manager, as well as others in the police and fire departments, lawyers in the City Attorney's office, outside risk managers and claims administrators, and outside counsel. The group reviewed the reports of first responders, the history of other drownings and rescues at Falls Park, previous steps taken to address the risk of drowning or other water-related injury within the park, steps taken by other governmental entities with similar rivers and falls, and options that might reduce the risk in the future. The group also considered other risks at Falls Park unrelated to the drowning on March 18, 2018, which are the subject of ongoing review, but beyond the scope of this report. The review process did not identify any concerns with the response of Sioux Falls Fire Rescue or the Sioux Falls Police Department on March 18, 2018. The review process did identify the presence of a significant natural accumulation of foam in the river just downstream from the Overlook Café as a contributing factor to the drownings in 2013 and 2018. Recommendations from the review process are discussed below.

The City followed a similar process following the incident in 2013 when two people drowned trying to rescue a third who appeared to have fallen into the river. As a result of that process, the City changed and added warning signs throughout Falls Park. The signs are located at each entrance. They warn of the dangers of slippery rocks and turbulent water, and advise that children should be actively supervised and swimming is prohibited. The City also added anchor points in the rock formations at multiple locations throughout the park to be used by first responders to attach rescue or safety lines. For reasons discussed below, the City considered but did not act to provide flotation or other rescue devices in the visitors center and the Overlook Café. The City also concluded that neither additional fencing nor the use of dedicated park rangers was warranted. First responders were concerned that additional fencing could impede rescue efforts and the City was concerned it would be difficult and unsightly to implement due to the terrain, ineffective if it could be easily circumvented, and costly if constructed to preclude all access to the river throughout Falls Park. The use of additional dedicated police officers assigned to the parks ("parks officers") was rejected as costly and ineffective given that being on the rocks near the river is not illegal, leaving officers without enforcement authority.

Within the last 10 years, safety reviews of Falls Park have been conducted in 2008, 2009, 2010, 2011, 2012, 2014, 2015, and 2017, by a loss control consultant for Safety Benefits, Inc., under contract with the South Dakota Public Assurance Alliance.

In 2016, the City participated in a loss control training exercise conducted by the South Dakota Public Assurance Alliance, a risk pool in which the City participates. The training exercise was not a risk management audit or inspection, but yielded recommendations for operations and hazard identification, none of which related to the conditions or location of the March, 2018 drowning. The State's former Risk Manager, who participated in the training exercise, indicated that the City practiced "great risk management."

## **5. Responsive measures considered, but not recommended**

The participants in the current review process considered, but do not recommend, the following possible steps:

**a. staffing Falls Park with parks officers**

The primary concern here is what authority a parks officer would have to restrict access to the rocks adjacent to or in the river. No ordinance, state statute, or regulation makes that unlawful. Moreover, Parks & Recreation employees have not previously been given enforcement authority. Parks officers without authority to act are unlikely to be effective and may be counterproductive. In addition, it would not be practical or cost-effective for a parks officer to be located in Falls Park during all of the hours the park is open, nor would it be possible for a parks officer to effectively police all 123 acres of the park, especially when the park is divided by the river.

**b. installing permanent fencing**

Except for some walk paths and the walled viewing areas, there is no fencing to keep people off the rocks or out of the river. It would require approximately 4,298 feet of fence to create a perimeter around the falls and the river within Falls Park. The City is not aware of any other governmental entity that has fenced a similar area. Fencing the entire area would detract from the scenic beauty of the falls, which is one of the reasons people visit Falls Park, and although a deterrent, would not prevent anyone willing to climb over it or walk around it. Given the frequency with which visitors sit, stand, or walk on the rocks, including for selfies and photographs, perimeter fencing would be a dramatic change. It would also make access to the river more difficult for first responders. Although parts of the river could be fenced, it is difficult to identify the areas that present the most risk (other than as recommended below), and a partial fence would be easier to circumvent.

**c. placing rescue devices in the park**

The City could place life rings, life jackets, or rescue poles at certain locations in the park, but first responders question their effectiveness due to the risks and dynamics of the falls which may lead to those who are untrained in search and rescue potentially endangering the person being rescued. For example, a person who is safe on the rocks could reach out for a life ring, a life jacket, or a rescue pole causing him to slip and fall into the water. First responders would rather have the endangered person safe on the rocks until they can coordinate rescue efforts. The rescue devices would also be subject to theft and vandalism, and determining where to place them would be problematic. The anchor points located in the park are known to first responders, but not advertised to the general public because of concern that they could be obstructed

**d. diversion dam gate control**

The City manages the amount of water flowing through the falls by periodically limiting discharges into the natural channel of the Big Sioux River during spring runoff and other peak flow times. The City has no data suggesting that further efforts in this area would be effective in reducing drownings, and any changes beyond the current management plan would be subject to approval by the Army Corps of Engineers and FEMA Flood Plain management.

**e. storage of anti-foam chemical**

In the 2013 rescue resulting in two drownings, an antifoam chemical provided by the South Dakota Department of Game, Fish, & Parks was used with poor results. SFFR has identified a similar product, Siloxane, that is environmentally friendly, locally available, and maintained by Water Reclamation for its use. The product is intended to reduce the amount of foam, but would be effective, if at all, only as long as it was continually injected into the water upstream from the foam. The City has no experience with the effectiveness of Siloxane in the falls under extreme water and foam conditions, and no data guaranteeing its effectiveness. SFFR would need to provide pumping equipment to inject the chemical into the river. It is unlikely that it could be deployed rapidly enough and in sufficient quantities to be effective in a rescue.

**f. adoption of formal Falls Park closure policy**

The City could adopt a formal closure policy for Falls Park to prevent access during times when the water is especially high, flooding is occurring, or extreme foam is present downstream from the pedestrian bridge. In the past when the water level has been high, the City has installed temporary barricades in some locations, issued warnings to the public through various media, and assigned park staff or police officers to keep people out of the park, but no formal written policy has been adopted. A formal written policy is not recommended because closure would be difficult to enforce, overly restrictive, and unnecessary if the recommendations in this report are adopted.

**6. Recommendations**

The drowning on March 18, 2018, revealed the need to address the risk created by the build-up of foam in the river upstream from the pedestrian bridge and the Overlook Café. It is clear from the incident reports that M.Z. and others that day were attracted to the foam and that it obscured the edge of the rocks in relation to the river, including the steep drop. As noted on existing signage, the rocks are slippery when wet. Foam builds up naturally at that location at certain times when the water flow is greater and the river more turbulent. The existing site conditions are shown on the drawing and photographs marked as Exhibit A. There are several methods of managing the risk the foam presents.

**a. construction of lower falls viewing area**

The City should build a lower falls viewing area with an accessible pathway, two viewing platforms, and a safety railing. The viewing platforms and railing along the walkway would allow visitors to view the area of rapid water, including the foam when it builds up, while deterring them from being on the rocks. The proposed improvements are shown on Exhibit B. The grassy area with trees north of the improvements should also be fenced to deter visitors from walking or climbing on the rocks in that area. The estimated cost of the improvements is \$250,000 to \$300,000. Construction could be started in 2018 in time to be completed by April 1, 2019. The impacted area would be fenced during construction and not accessible until the project is complete.

**b. additional signage**

Two additional warning signs with the same language as the 10 signs already in place should be placed at entrances to Falls Park. The City's signs have been reviewed and praised by multiple risk managers. One should be added on the east bank near Falls Park Drive for those entering the park from the bike trail on the north side, and one should be added adjacent to the horse barn. Several signs should also be added in the area of the proposed new viewing areas and walkway. These signs should warn visitors that foam if present may obscure the edge of the rocks and that the railing and viewing platform walls should not be crossed. As development south of the upper falls occurs, additional signage may be necessary at the south end of Falls Park.

**c. third-party risk assessment**

Even though Falls Park has been part of a risk management training exercise and is reviewed annually by the City's Risk Manager, the City should consider retaining a third-party consulting firm to conduct an on-site formal risk assessment of Falls Park. The City could issue a request for proposals from Bickmore Risk Services, Willis Group, Travelers, Alliant Loss Control, and any other known loss control consultants who could provide a formal risk assessment. The risk assessment could be completed in 2018 in time for recommendations to be considered and implemented before the spring of 2019.

**d. consider removing low head dam**

There is a low head dam in the Big Sioux River downstream and around the bend from the Overlook Café. The State of South Dakota has recognized the drowning hazards created by low head dams on the Big Sioux River. The most recent drownings at Falls Park are not related to the low head dam downstream from the pedestrian bridge, but removing the dam could lower the water level in the area where the foam builds up and, if so, might both reduce the risk of drowning for someone who enters the river upstream from the dam and make it easier for rescuers in that location. The City should work with the State to assess the feasibility, cost, and consequences of removing the dam.

**e. consider using various technology**

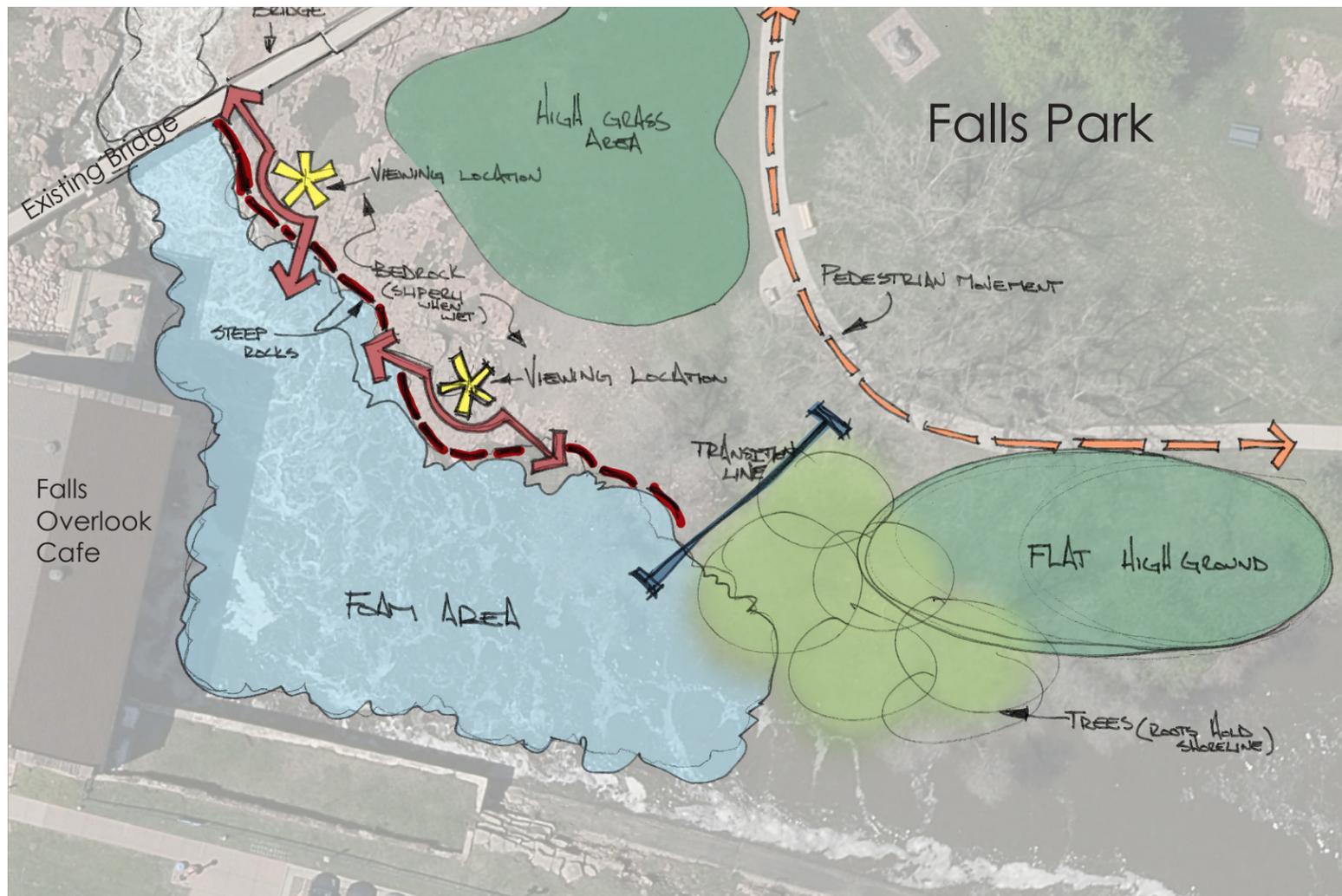
Various electronic technology should be further considered and evaluated, like geo-fencing, sensor-activated voice warning messaging, near field communication technology, a safety video for the visitors center, a downloadable visitors app that would address safety, and the Axis Intrusion Detection System, which is an infrared detection system that would create an invisible perimeter around the falls and sound an alarm when breached. Although such a system might be impractical for Falls Park due to the number of visitors, which would require narrowing the detection zone to reduce unnecessary activations, it and other evolving technologies may in the future provide more effective warnings than are presently provided by the City's warning signs.

## 7. Conclusion

Falls Park has been transformed into an attractive tourist destination. Part of its attraction, however, are dangerous natural conditions presenting risks that, while always present when the water is flowing, are greater sometimes than others. Implementing the recommendations in this report should further effectively reduce the risks created by extreme conditions without diminishing the natural beauty of the park, imposing undue financial burden on the taxpayers, or obscuring the need for personal responsibility and due care by visitors.

James E. Moore  
WOODS, FULLER, SHULTZ & SMITH P.C.

**Disclaimer:** By authoring and presenting this report to the City Council, counsel is not offering any legal advice, and neither the City nor counsel intends a waiver of the attorney-client privilege beyond the content of this report.



Approximate foam height

Bedrock is very slippery when wet

Steep drop off at river's edge



View of the South Area (bedrock area)

Flat grass area on top

Dirt side slope (trees holding bank)



View of the North Area (sloped bank)



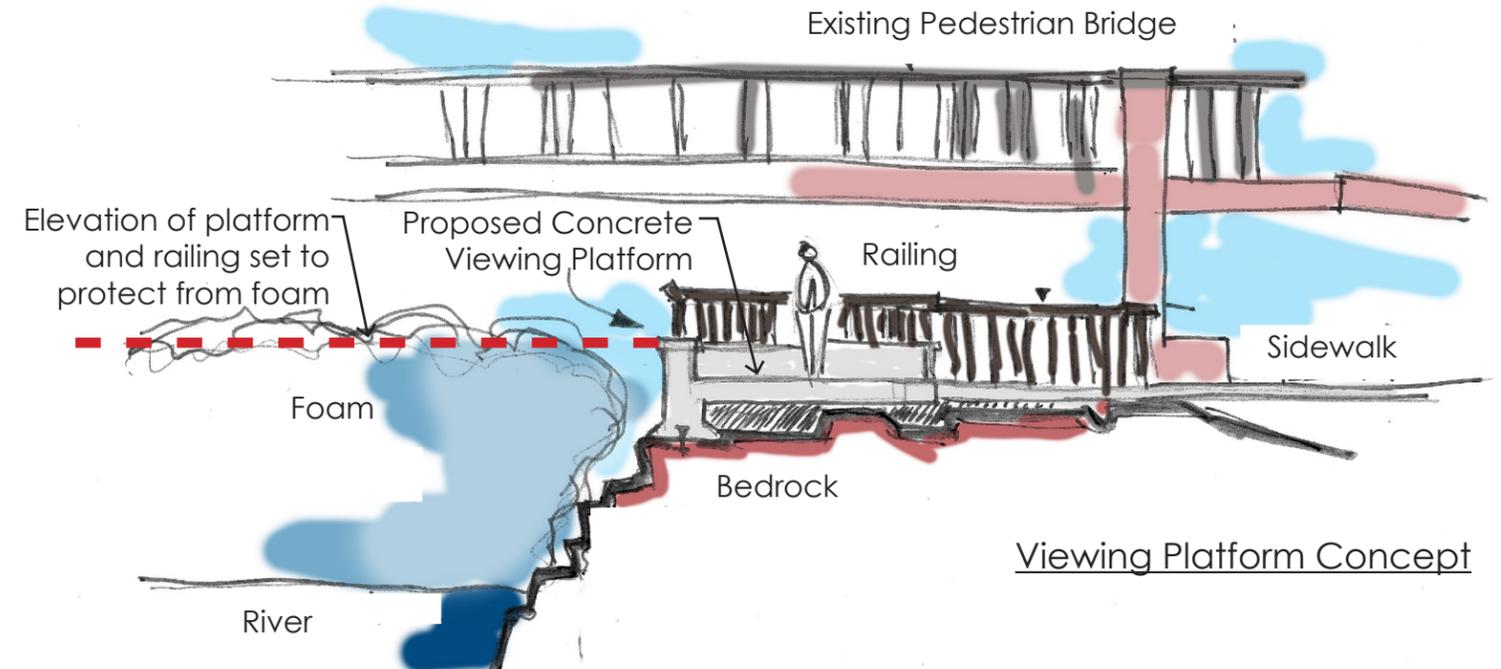
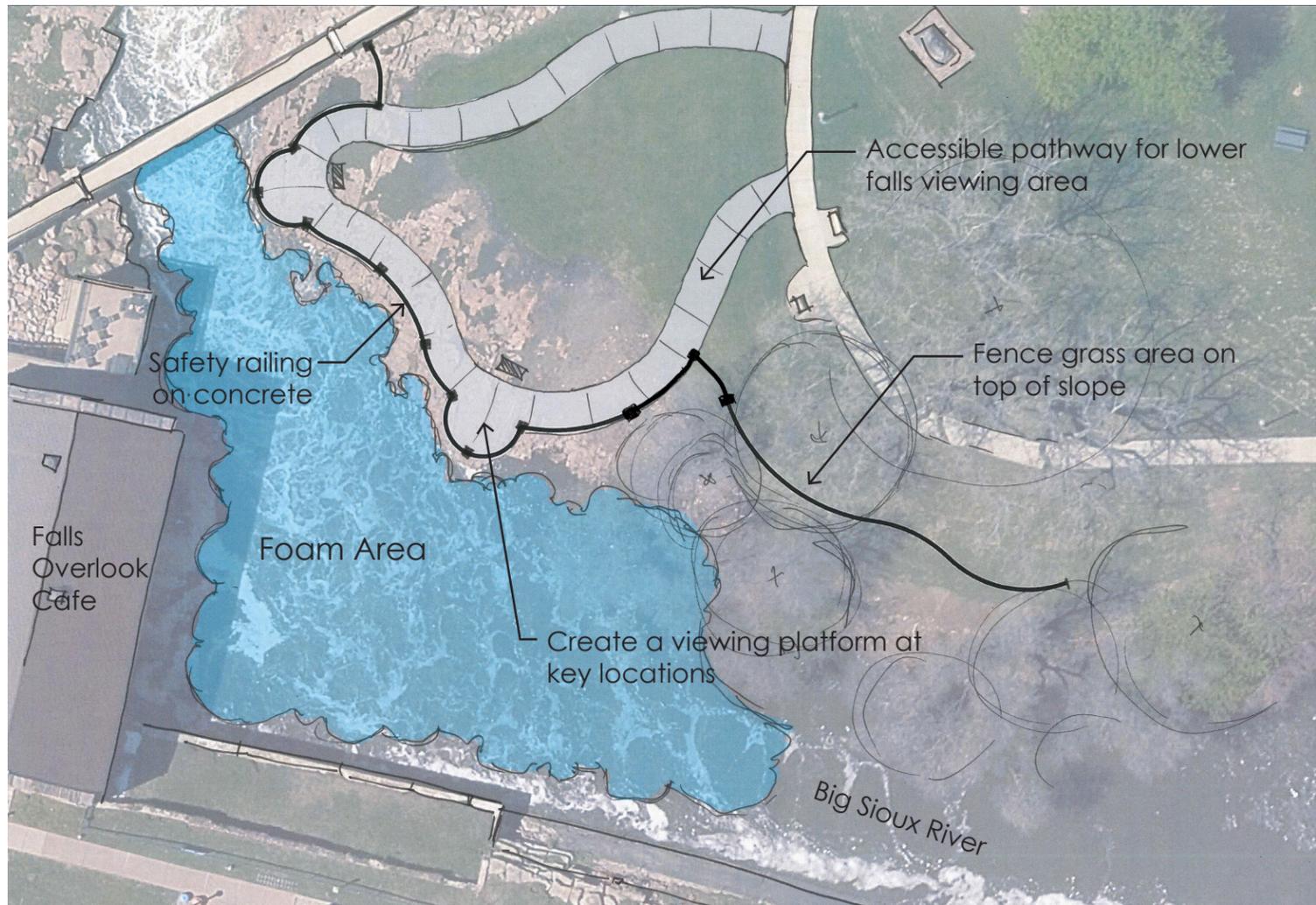
Foam at Rock Edge

# Falls Park - Lower Falls Viewing

Issues & Opportunities

## EXHIBIT A

# Proposed Improvements (Safely Embrace the Situation)



## Preliminary Construction Cost Estimate

Falls Park Sidewalk  
Sioux Falls, SD  
SEI No. 18159



June 5, 2018

## Project Timeline

Project Introduction: 06/19/18  
Council Approval: 07/10/18  
Construction Start: 10/01/18

- Concrete and general site work to be completed in the fall of 2018
- Railing to be manufactured and installed during the winter of 2018 and early spring of 2019
- Temporary construction fencing will remain in place until permanent railing is installed, preventing access to the area until the project is complete

Project Completion: 04/01/19

**Note:** The impacted area will be fenced off during construction, and will not be accessible by the public until after the project is complete.

	Item Total
General Items	\$192,480.00
Removals	\$6,000.00
Grading	\$3,780.00
Erosion Control	\$8,023.20
Surfacing	\$25,200.00
Signage	\$4,200.00
Lighting	\$12,000.00
Irrigation	\$1,800.00
<b>Base Bid Construction Total</b>	<b>\$253,483.20</b>

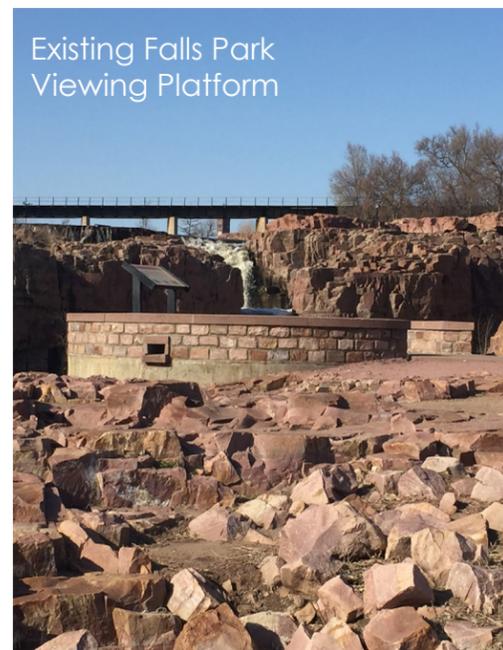
\* All Construction Costs include 20% Contingencies

Design and Construction Admin \$45,627

**Total Project Cost \$299,110**

## Project Reasoning / Goals

- People are attracted to this area to view the natural beauty of the lower falls and the volume of water that flows through it.
- Create a safe way for visitors to experience the area, by constructing viewing platforms that include safety railing, accessible pathways, and warning signs.
- Utilize interpretive signage to inform people about the natural danger and history of this location.



Existing Falls Park Viewing Platform

Safety Railing Mounted to Pathway

# Falls Park - Lower Falls Viewing

Proposed Improvements

## EXHIBIT B



June 2018