

Water Conveyance Facility Safety Management Plan TEMPLATE

*For Compliance with the
Water Conveyance Facilities Safety Act of 2010
as Enacted by Utah House Bill 60*

Disclaimer: This template is intended to assist canal and irrigation companies in complying with the requirements of the Water Conveyance Facilities Safety Act of 2010 as enacted by Utah House Bill 60. This template is based on an actual safety management plan developed for the Strawberry High Line Canal Company; however, all confidential information pertaining to that canal company has been removed from this template. While it is anticipated that this template will serve as a valuable tool and example for others, following this template does not guarantee full compliance with the Act because each water conveyance facility has its own unique set of conditions, scenarios, and areas of concern. You should obtain competent legal and technical advice in connection with any safety management plan prepared. The use of this template shall not create or impose any liability whatsoever on any of those entities which helped prepare it or helped make it publically available.

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STRAWBERRY HIGH LINE CANAL COMPANY

Water Conveyance Facility Safety Management Plan

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A	Slope Instability Findings (16 pages)
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**COMPLIANCE WITH THE
WATER CONVEYANCE FACILITIES SAFETY ACT OF 2010**

73-10-33(3) A management plan shall include at least the following:

<u>DESCRIPTION</u>	<u>LOCATION</u>
(a) A GIS coverage or drawing of each potential risk location of a water conveyance facility	Figures 1a through 1e
(b) An evaluation of any potential slope instability that may cause a potential risk	Page 8
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(h) Identification of each municipality or county through which water is conveyed or delivered by the water conveyance facility	Figure 1
(i) A statement concerning whether storm water enters the water conveyance facility	Page 9
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(j) (ii) Identification of the points at which any storm structures introduce water into the water conveyance facility and the anticipated flow that may occur at each structure	Page 9 & Figure 4
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EXECUTIVE SUMMARY

The Water Conveyance Facilities Safety Act of 2010, as enacted by Utah House Bill 60, requires the owner of a water conveyance facility that has a potential risk location to adopt a safety management plan no later than May 1, 2013. This document is based on information provided by the company and its engineers and consultants, and to the extent that such information is sufficiently complete and accurate, this document fulfills the requirements of the Act.

The Strawberry High Line Canal Company has been delivering irrigation water for southern Utah County in the Strawberry High Line Canal, and its various laterals, continually since 1916. Since that time urban and residential areas have expanded. Because of the proximity of residential areas to the canal, and other factors, three reaches of the Strawberry High line Canal have been designated as potential risk locations.

A slope instability evaluation was performed on October 20, 2010, and seven areas of concern were identified. Of these findings, five will be resolved using existing funds and resources. The other two findings require large scale projects that are beyond the current scope of available resources. A plan has been developed to implement these projects over the next several years.

Eleven locations where storm water enters the canal have been documented, and a plan will be implemented to eliminate all of these storm water entry points.

An emergency response plan has been distributed to the following public entities: Payson City, Salem City, Santaquin City, and Utah County.

It is anticipated that the implementation of the policies and procedures described in this management plan will ensure the continuous delivery of irrigation and secondary water while minimizing the risks to residents and infrastructure in southern Utah County.

Under the Act, the preparation and proper use of this document neither limits nor enlarges a person's right to sue for damages in the event of a water conveyance facility failure or accident and therefore, adequate insurance coverage is still necessary. It does, however, reduce the likelihood of such an occurrence and is therefore in the best interests of both the company and the public. This document may not be used as evidence in any civil litigation on the issues of negligence, injury, or the calculation of damages.

This document is a **confidential document** and should not be disclosed to anyone except as needed to implement it or if required by the Utah Division of Water Resources or the Utah Board of Water Resources. If this document is provided to the Division or the Board, it also becomes a "**protected**" document under the Utah Government Records Access and Management Act and cannot be disclosed to others except in accordance with the terms of that Act. The emergency response plan prepared in connection with this document is also a confidential document and is a protected document in the hands of a state or local governmental entity.

1.0 INTRODUCTION

1.1 Statement of Purpose

The purpose of this management plan is to fulfill the requirements of 2010 House Bill 60—the Water Conveyance Facilities Safety Act—and to document the strategy used by the Strawberry High Line Canal Company (SHLCC) for safe water delivery in the Strawberry High Line Canal system. By implementing the measures in this management plan, the SHLCC will be able to effectively manage the risks associated with open water conveyance, and thus protect the population and infrastructure within the canal service area.

1.2 Background

1.2.1 Organization

In 1905 the U.S. Bureau of Reclamation (BOR) sponsored the Strawberry Valley Project, which was the first major transmountain diversion of water from the Colorado River Basin into the Bonneville Basin. The main feature of the project was the construction of Strawberry Dam which impounded Strawberry Reservoir. Strawberry Reservoir was later enlarged by the construction of Soldier Creek Dam. Other components of the project included the Strawberry Tunnel, the Spanish Fork Diversion Dam, and the Strawberry High Line Canal.

The SHLCC was officially organized and incorporated in 1916 to administer the delivery of water from the Strawberry Valley Project to areas west of the Spanish Fork River in southern Utah County. The company administration consists of nine directors who serve three-year terms, with three directors being elected each year. A president and vice president are selected from among the directors and serve a one-year term, but may be reelected for multiple terms. There are seven full-time employees.

1.2.2 Service Area

The SHLCC provides irrigation and residential secondary water for farmers and residents in an area of approximately 35 square miles in southern Utah County, including the communities of Salem, Payson, Santaquin, and Genola.

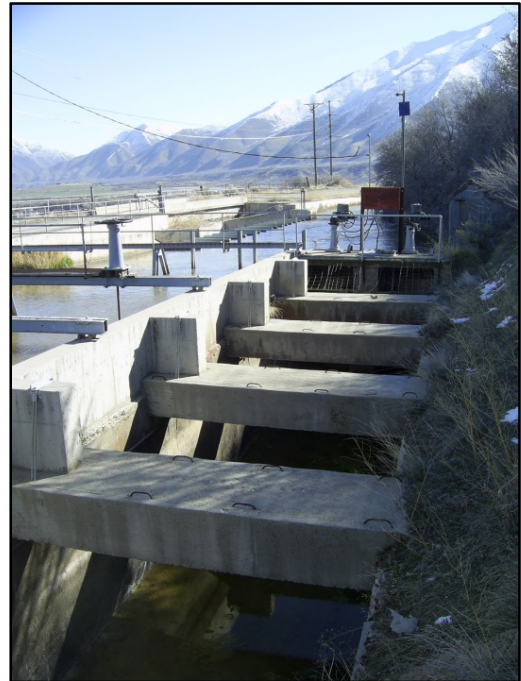
1.2.3 Water Supply

The SHLCC delivers approximately 39,500 acre-feet of water from the Strawberry Valley Project (SVP), plus an additional 6,500 acre-feet from the Central Utah Project (CUP). The company also has rights to approximately 3,000 acre-feet of well water and approximately 6,000 acre-feet of water from Spanish Fork and Payson Canyons. In addition, at the present time, the company uses approximately 1,800 acre-feet of a return flow right. The CUP, well water, Spanish Fork and Payson Canyons, and return flow water are used to supplement the SVP water. The total average annual water delivery is 56,300 acre-feet, of which 3,500 acre-feet is provided as residential secondary water

1.3 Conveyance Facility

The Spanish Fork Diversion Dam diverts water into the Strawberry Power Canal, which is 3.3 miles in length and ends at the Spanish Fork Power Plants near the mouth of Spanish Fork Canyon. The main Strawberry High Line Canal begins where the Strawberry Power Canal ends and extends 17.6 miles in a southwesterly direction.

There are numerous laterals that branch off from the main canal and convey water throughout the service area. Most of the laterals are enclosed conveyance systems; however, three laterals near the end of the main canal are open channels: Lateral 30 begins 2,590 feet upstream from the canal intersection with State Road 141, and runs for 8.0 miles in a northerly direction; Lateral 31 begins just upstream from the canal intersection with State Road 141, runs for 1.6 miles in a southerly direction, and terminates at the Ewell Ponds; Lateral 34 begins at the end of the main canal and runs to the northwest for 3.8 miles.



Head of the Strawberry High Line Canal.

The initial diversion capacity of the canal is 300 cubic feet per second (cfs), but the average flow for an irrigation season is 150 cfs. During the five-year period between 2005 and 2009, the peak flow in the canal was 230 cfs.

In the main canal and open laterals there are seven different channel types, and Table 1 shows the total length of each type (note: channel types are not always contiguous). Table 2 lists the components on the main canal that are used to clean, manage, distribute, measure, or subdivide water along the course of the canal system, as well as periphery structures used for transportation or utility conveyance.

Table 1. Summary of channel types.

Description	Length (ft)
MAIN CANAL	
Open Channel, Lined with Earth	47,185
Open Channel, Lined with Concrete	35,450
Open Channel, Lined with Synthetic Liner	1,450
Concrete Box, Open	4,715
Concrete Box, Covered	3,085
Tunnel, Concrete	465
Inverse Siphon, Concrete	455
LATERALS	
Open Channel, Lined with Concrete	70,920
Total Length	163,725

Table 2. Summary of canal components.

Component	Quantity
Diversion, Head Gate	77
Trash Rack, Manual	1
Check Structure	9
Measuring Device, Flume	5
Spill Point, Gated Drain	2
Spill Point, Overflow	2
Inlet Pipe, Storm Water	1
Inlet Pipe, Surface Water	1
Inlet Pipe, Tail Water	1
Inlet Pipe, Well Water	4
Inlet Pipe, Tank Drain	2
Inlet Ditch, Surface Water	1
Piped Overpass, Surface Water	1
Piped Underpass, Surface Water	2
Gated Underpass, Surface Water	1
Bridge, Concrete	22
Bridge, Metal	9
Bridge, Culvert	1
Utility Crossing	28
Reservoir, Secondary Water	3
Reservoir, Irrigation Water	1

Figure 1 is a plan view of the entire canal system and shows the position of the canal relative to the communities in southern Utah County. Figure 1a through Figure 1e show additional details of the main canal, including channel types and components.



Trash rack at the entrance to an inverse siphon section.

1.4 Conveyance Facility Failure

Any water conveyance facility is potentially dangerous because failure of the facility can cause a sudden and continuous discharge of water, and when this occurs in a populated area, the result can be disastrous. Failure is defined as an incident that causes water to be discharged from the facility at any location other than operational release points, or a discharge at an operational release point that exceeds the capacity of the discharge device. In addition, the facility, or conditions caused by the facility, may contribute to catastrophic land movement even if failure does not occur.

A canal system has the potential to fail by either a breach in the embankment, or by embankment overtopping. Identified sources of failure typically fall into one or more of the following categories: 1) natural disasters, 2) environmental factors, 3) facility deficiencies, or 4) human actions. These four sources of failure are further discussed below.

1.4.1 Natural Disasters

Natural disasters that can adversely impact a canal include landslides, floods, mudslides, wild-fires, and earthquakes. A landslide through the canal profile can destroy an entire section of canal, but less dramatic events, such as a small slide that fills the canal with debris, can be just as damaging. Floods or mudslides can convey excess water, soil, or debris over long distances and deposit them in the canal system. Wildfires may not directly impact the canal, but can increase the severity of floods and mudslides. The possible damage from earthquakes ranges from small fissures in the canal or canal structures, to complete destruction of the facility.

1.4.2 Environmental Factors

Environmental factors are actions or events that have altered the condition or integrity of the canal system, including changes made by humans, animals, and plants. These alterations introduce features into the canal system that were not accounted for in the original design.

As residential and commercial development expands, utility lines (water, natural gas, etc.) are installed through the canal profile. Pipelines installed beneath the canal can create a pathway for water seepage, and pipeline leaks or breaks can create extensive subsurface flows that may go undetected. Water and land use in areas adjacent to the canal can adversely affect the canal by altering the water table, increasing soil moisture content, or weakening adjacent banks and slopes. Construction work or other land clearing activities can increase the chance that precipitation events will lead to floods or mudslides.

Vegetation on or near the canal embankment can create a path for water to begin piping through the embankment. Woody vegetation is especially of concern because the roots of some species are capable of extending great distances and naturally seek areas of high moisture content. Dead vegetation can produce holes and crevices as roots decompose.

Animal damage may affect the canal embankment directly, or alter conditions adjacent to the canal so that other environmental factors or natural disasters impact the canal to a greater degree.

The animal burrows of muskrats, rabbits, prairie dogs, and other burrowing animals are the most common problem. Livestock or wild animals that have access to the canal tend to persistently tread in the same location, which weakens these points, and grazing can alter adjacent landscapes. Animal carcasses can even block control points or check structures.



Animal watering point on the uphill side of the Strawberry High Line Canal.

1.4.3 Facility Deficiencies

Canals have built-in structural components to regulate flow and accommodate fluctuating water levels. These include embankment freeboard, overflows, spill points, and check structures. If any of these components becomes damaged or otherwise ceases to function properly, there is an increased risk of failure due to overtopping of the embankment.

In addition, facilities deteriorate over time, and when structures or components are not properly maintained, or replaced when their life span has been reached, there is an increased risk of canal failure due to structural breakdowns.

1.4.4 Human Actions

Improper management of the canal system is a human action that may contribute to failure due to overtopping. Water deliveries must be balanced with water usage; however, water usage may vary significantly because of irrigation phases, harvest cycles, weather, and other factors. A lapse in operational maintenance can contribute to failure through plugged trash racks, debris accumulation at check structures, or improperly functioning gates or other control structures.

Intentional damage to the canal, such as vandalism, sabotage, or terrorism, can lead to failure due to breach of the embankment or overtopping. This type of illegal activity is difficult to prevent, but is extremely rare.

1.5 Historical Incidents

The Strawberry High Line Canal has been in operation for more than 90 years, and while there have been instances of facility failure, the planning, response, and ingenuity of employees and shareholders has kept the negative impacts to a minimum. Proper operation and maintenance of the canal system has ensured that environmental factors, facility deficiencies, and human actions have rarely led to facility failure. The most significant events have all been caused by natural disasters.

1.5.1 Spring Lake Mudslide

In August, 2001, the “Mollie” Fire burned approximately 8,000 acres on Dry Mountain near Payson and Santaquin. The following year, on September 12, 2002, a large rainfall event triggered a mudslide that crossed the canal near Spring Lake, caused the canal to overtop, and deposited mud and debris in homes and on roads below the canal. Subsequently, a smaller mudslide occurred, but did not cross the canal. In both of these instances, the quick response of maintenance personnel kept damage from the canal to a minimum, in spite of the major impact from the mudslides.

1.5.2 Landslides

Many of the areas traversed by the canal are susceptible to landslides, and the covered concrete box sections installed during the original construction were meant to reduce the likelihood of failure. In 2004 and 2005 two additional sections near the head of the canal were upgraded to covered concrete boxes.

In the 1970s a small landslide occurred at a covered concrete box section near Spring Lake. The canal did not fail, but was left suspended across a small chasm. Many small, natural springs exist in this area, and maintenance personnel determined that the landslide was at least partially due to the presence of water from these springs. In response to the landslide, material was imported to fill the void, and drains were installed to allow water to drain below the canal. No additional incidents have occurred at this location.

2.0 IDENTIFICATION OF POTENTIAL RISKS

2.1 Potential Risk Locations

2.1.1 Definitions

Section 73-10-33(1) of House Bill 60 provides the following definitions:

“Potential risk” means a condition where, if a water conveyance facility fails, the failure would create a high probability of:

- 1) causing loss of human life; or
- 2) causing extensive economic loss, including damage to critical transportation facilities, utility facilities, or public buildings.

“Potential risk location” means a segment of a water conveyance facility that constitutes a potential risk due to:

- 1) location;
- 2) elevation;
- 3) soil conditions;
- 4) structural instability;
- 5) water volume or pressure; or
- 6) other conditions.

2.1.2 Designation of Potential Risk Locations

For the purpose of risk determination, the main canal has been divided into six different reaches, as shown in Table 3, and reaches 1, 3, and 5 have been designated as potential risk locations. All other reaches and laterals are designated as low risk. Figure 2 shows the geographic position of the three potential risk locations.

Table 3. Risk determination reaches of the Strawberry High Line Canal.

Reach	Length (ft)	Start of Reach	End of Reach
1	3,595	Head of canal	South of Spanish Fork, the second head gate downstream from the head of the canal
2	8,485	End of Reach 1	East of Salem, canal intersection with 9600 South Street
3	24,345	End of Reach 2	Southwest of Salem, canal intersection with 1600 West Street (Elk Ridge Road)
4	5,545	End of Reach 3	Southeast of Payson, canal intersection with Goosenest Drive
5	27,365	End of Reach 4	Southwest of Payson, 1,600 feet downstream of canal intersection with State Road 198
6	23,470	End of Reach 5	Northeast of Genola, 3,145 feet downstream of canal intersection with State Road 141

Reach 1 has been designated as a potential risk location because it is located on a steep slope and is in close proximity to houses and roads.

Reach 3 has been designated as a potential risk location because of its proximity to residential areas in Salem, and because most of the canal in this reach is earth lined.

Reach 5 has been designated as a potential risk location because of its proximity to roads and residential areas in Payson. The western section of this reach is not in a dense residential area, but has been affected by past events including landslides, wildfires, and mudslides.

The Bureau of Reclamation has designated the first 12.8 miles of canal, from the head of the canal to the canal intersection with State Road 198, as an urbanized reach under their Urbanized Canal Program. Thus, the area of concern to the BOR is a longer canal section than what has been designated herein. It includes the low risk locations of reaches 2 and 4, and the potential risk locations of reaches 1, 3, and 5 (except for the final 1,600 feet of Reach 5).

2.2 Slope Instability Evaluation

On October 20, 2010, a slope instability evaluation was performed for the potential risk locations, using the *Slope Stability and Land Use Inspection Sheet*, a copy of which is found in Appendix E. Seven areas of concern were documented as findings and these are summarized in Table 4. Appendix A contains the completed inspection sheets for each finding. Figure 3 shows the geographic location of the seven findings.

Table 4. Summary of slope instability findings.

No.	Location	Items of Concern
2010-01	N40°5.413' W111°37.696'	Water content on the uphill slope; hole in the concrete liner
2010-02	N40°1.479' W111°38.317'	Excavation and soil removal on the downhill slope
2010-03	Payson (approximately 2,400 feet of canal length)	Urban development and embankment alterations on the downhill slope
2010-04	N40°1.789' W111°42.991'	Water content on the uphill slope from a surface water source
2010-05	N40°1.198' W111°43.176'	Water content on uphill slope from a surface water source
2010-06	N40°1.414' W111°43.018'	Historical landslide area with subsurface water accumulation
2010-07	Salem (approximately 2,200 feet of canal length)	Earthed-line canal section on a steep slope near urban development

Findings 2010-02 and 2010-06 require regular monitoring but no action at this time. Findings 2010-01, 2010-04, and 2010-05 can be resolved using existing maintenance resources. Actions taken on these five findings will be documented in the Elements Management Software, and updates will be added to the inspection sheets in Appendix A.

The resolution of Findings 2010-03 and 2010-07 requires substantial planning, design, construction, and capital investment that are beyond the scope of the existing budget and resources. Section 3.4 describes the process for implementing the long-term improvements and upgrades necessary for the proper resolution of these findings.

2.3 Storm Water Management

Eleven locations have been identified as storm water entry points into the canal, and these points have been numbered consecutively beginning from the head of the canal, as shown in Figure 4. Table 5 lists the location of each point as well as the name of each governmental agency that has responsibility for storm water management within the area from which storm water drains into the canal.

Table 5. Storm water entry points on the Strawberry High Line Canal.

No.	Latitude/ Longitude	Location	Responsible Agency
1	N40° 3.384' W111° 37.779'	East of Salem, 11,590 feet downstream from the head of the canal, east end of the covered concrete box where 9600 South Street approaches the canal	Utah County
2	N40° 3.348' W111° 37.878'	East of Salem, 12,075 feet downstream from the head of the canal, west end of the covered concrete box where 9600 South Street approaches the canal	Utah County
3	N40° 2.844' W111° 38.394'	East of Salem, west side of the bridge that crosses the canal at 600 East Street	Utah County
4	N40° 2.450' W111° 39.204'	Southeast of Salem, both sides of the bridge that crosses the canal at Woodland Hills Drive	Salem City
5	N40° 2.324' W111° 39.818'	In Salem, west side of the bridge that crosses the canal at 500 East Street	Salem City
6	N40° 2.020' W111° 40.367'	South of Salem, both sides of the bridge that crosses the canal on Loafer Canyon Road	Salem City
7	N40° 1.664' W111° 41.506'	Southwest of Salem, both sides of the bridge that crosses the canal at 1600 West Street	Utah County
8	N40° 1.588' W111° 42.591'	Southeast of Payson, both sides of the bridge that crosses the canal at Goosenest Drive	Payson City
9	N39° 59.975' W111° 44.379'	In Spring Lake, west side of the bridge that crosses the canal at 12680 South Street	Utah County
10	N39° 59.573' W111° 45.267'	South of Spring Lake, east side of the bridge that crosses Highway 198	Utah County
11	N39° 59.227' W111° 45.874'	Northeast of Santaquin, east side of the canal tunnel beneath Interstate 15	Santaquin City and UDOT

Storm water entry points 1 and 2 are on the east and west end of a covered concrete box section and the drainage area at this location consists of exposed soil with scattered vegetation of grass

and brush. Points 3 through 10 are all located next to bridges, and the drainage areas for these points consist of paved roads, residential areas, and pasture. The dimensions of the drainage areas and the anticipated flows at these ten storm water entry points have not been determined because it is anticipated that these points will be eliminated.

Point 11 is a pipe that collects water from a drainage area of approximately 5 acres. In this area, the precipitation total for the six-hour, 25-year storm event is 1.59 inches, as measured and calculated at Weather Station 42-7686 (Santaquin Chlorinator). Because of the small drainage area, land use, and soil conditions, the estimated peak discharge at Point 11 as a result of the 25-year storm is less than 1 cfs, which is an insignificant proportion of the total canal flow. Section 3.4.2 details what the SHLCC will do to address these storm water entry points.

2.4 Other

Even though it is not directly related to slope stability, one facility deficiency was documented using the *Slope Stability and Land Use Inspection Sheet*, and is identified as Finding 2010-08 in Appendix A. The problem relates to the floor of the canal tunnel under Interstate 15, which was constructed at too high of an elevation and thus causes the water level in the canal to rise above the designed freeboard. Although the tunnel is in a low risk location, the effects are propagated upstream into Reach 5, which is a potential risk location. During peak flow periods the water level at the end of Reach 5 rises above the concrete liner. A 24-inch storm water entry pipe, which is located just upstream from the tunnel, further increases the risk of failure. Section 3.4.3 details what the SHLCC will do to address this issue.



The elevation of the tunnel floor is approximately 18 inches above the downstream canal.

3.0 MAINTENANCE AND IMPROVEMENT PLAN

3.1 Introduction

This section outlines regular monitoring and maintenance activities that the SHLCC will perform to help ensure the safe and efficient operation of the canal system. It also outlines what the SHLCC plans to do to address the slope instability, storm water, and other issues identified in sections 2.2, 2.3, and 2.4 that require significant capital improvements or further consultation with other agencies or organizations.

3.2 Monitoring Activities

3.2.1 Visual Inspections

The SHLCC has and will continue to visually inspect the canal frequently throughout the irrigation season. Visual inspections will look for seepage, potential slope stability problems, the proper functioning of trash racks, gates and other structures, and any other issues that may occur during normal operation. Special attention will be given to the three canal reaches identified as potential risk locations to identify problems quickly.

3.2.2 Inspection Procedures

3.2.2.1 *Preseason Inspection*

The SHLCC will inspect the full length of the canal before water is turned in at the beginning of the season. Special attention will be given to areas of concern noted in this Safety Management Plan as well as those identified during the previous year's post season inspection.

3.2.2.2 *Irrigation Season Inspection*

During the irrigation season the SHLCC will monitor the flow of water in the canal on a regular basis; inspection frequency will vary depending upon the volume of water in the canal.

Flow less than 170 cfs

- Ditch riders will inspect their assigned section of the canal twice daily.
- The maintenance foreman or a maintenance crewmember will inspect the main canal daily.

Flow between 170 cfs and 200 cfs

- On the day of the initial increase to 170 cfs, and on days with subsequent increases within the 170-200 cfs range, the maintenance foreman or a maintenance crewmember will monitor essential check points as the water advances through the system.
- Ditch riders will inspect their assigned section of the canal twice daily.
- The maintenance foreman or a maintenance crewmember will inspect the main canal daily.
- The maintenance foreman or a maintenance crewmember will inspect the potential risk locations and slope instability areas twice daily.

Flow greater than 200 cfs

- The office staff will notify the maintenance crew and request approval prior to water delivery above 200 cfs.
- The maintenance foreman or a maintenance crewmember will perform a walking inspection of the canal within 48 hours of the flow reaching 200 cfs or greater.
- On the day of the initial increase to 200 cfs, and on days of subsequent increases over 200 cfs, the maintenance foreman or a maintenance crewmember will monitor essential check points as the water advances through the system.
- The maintenance foreman or a maintenance crewmember will perform a bi-weekly walking inspection of the potential risk locations.
- The maintenance crew will have daily communication with the office staff regarding flow conditions and canal capacities.
- Ditch riders will inspect their assigned section of the canal twice daily.
- The maintenance foreman or a maintenance crewmember will inspect the main canal daily.
- The maintenance foreman or a maintenance crewmember will inspect the potential risk locations and slope instability areas twice daily.

3.3 Maintenance Activities

3.3.1 Annual/Semi-Annual Inspection

The SHLCC will thoroughly inspect the canal at least twice a year. One inspection will take place after the irrigation season when the canal is empty and the other will take place in the spring before water is diverted into the canal. The purpose of these inspections will be to assess the overall structural stability and function of the canal and will identify areas of erosion, sediment deposition, or other undesirable conditions. Observational notes, pictures and GPS locations will be taken and recorded to identify conditions that require further monitoring, maintenance or remedial action.

3.3.2 Erosion Control

If the interior of the canal or slopes above or below the canal show signs of erosion, steps will be taken quickly to identify the cause and prevent further erosion; action will be expressly implemented if the canal is in operation.

3.3.3 Vegetation Control

The SHLCC will continue to remove any woody shrubs or trees that are growing too close to the canal, taking particular care to control vegetation in the three potential risk locations.

3.3.4 Debris Removal and Dredging

Over the years, a fair amount of sediment and other debris has accumulated in the canal. The SHLCC has identified areas of accumulation and has removed this material from the canal. Sediment and debris removal will now be done on a regular basis.

3.3.5 Trash Racks, Gates and Other Structures

The SHLCC will continue to clear debris from trash racks, gates and other control structures regularly. These structures will also be tested on a regular basis to identify deficiencies and repair problems.

3.4 **Canal Improvement Plan**

Section 2 identified several deficiencies in the three potential risk locations. Of the seven slope instability findings, two require regular monitoring but no action at this time, and three others can be resolved using existing maintenance resources. The following sections address all other deficiencies and outline the actions that the SHLCC will take to address them.

3.4.1 Slope Instability

As noted in Section 2.2, two slope instability issues were found that require significant canal improvements to alleviate the potential risks posed at these locations. The following sections outline what the SHLCC plans to do to address these issues.

3.4.1.1 *Finding 2010-03*

Note: In the original document this paragraph consists of a detailed description of the nature and extent of this finding.

Note: In the original document this paragraph contains a description of the process that will be used to resolve this issue, including the anticipated timeline and funding source.

3.4.1.2 *Finding 2010-07*

Note: In the original document this paragraph consists of a detailed description of the nature and extent of this finding.

Note: In the original document this paragraph contains a description of the process that will be used to resolve this issue, including the anticipated timeline and funding source.

3.4.2 Storm Water

It is the policy of both the SHLCC and the BOR that storm water not be discharged into the canal system. One exception is at Peteeneet Creek in Payson where the canal was designed to accept storm water or spring runoff from the creek. However, the infrastructure at this location allows the creek water to bypass the canal and be discharged into a ditch below the canal. There is also a gated drain in the canal at this location.

As noted in Section 2.3, storm water enters the canal in eleven other locations. Ten of these are at road crossings where surface water flows into the canal. The remaining entry point is a pipe that collects and discharges runoff from a commercial area in Santaquin and from a short section of Interstate 15.

The SHLCC will work with local governments to eliminate all storm water entry points and to establish guidelines so that all future developments, or changes to infrastructure, will include the proper management of storm water.

3.4.3 Other

As noted in Section 2.4, the tunnel under Interstate 15 creates problems that propagate upstream into the potential risk location of Reach 5. During normal operation, the SHLCC monitors this situation frequently to make sure it does not cause a serious threat, but would prefer a permanent solution. The SHLCC will discuss this issue with the Utah Department of Transportation (UDOT) and request that modifications be made to the structure so that it can function properly in relation to the upstream canal.

3.5 Implementation Schedule

The issues and deficiencies identified above have been prioritized based on factors such as the level of risk, the required resources, the need to coordinate with other agencies, and the amount of planning and design required. Based on these factors, an implementation schedule has been developed with a timeline of eight years to fully complete this work. Table 6 lists the estimated completion date for each item.

Table 6. Estimated completion date for canal improvements.

Issue	Estimated Completion Date
Slope Instability Finding 2010-01	March 2011
Slope Instability Finding 2010-05	June 2011
Slope Instability Finding 2010-04	November 2011
Storm Water Entry Points 1 & 2	April 2012
Storm Water Entry Points 3 through 10	November 2013
Storm Water Entry Point 11	April 2014
Slope Instability Finding 2010-07	November 2016
Other – Interstate 15 Tunnel	November 2017
Slope Instability Finding 2010-03	March 2019



County roads that are built without a curb and gutter allow storm water to enter the canal.

4.0 POTENTIAL FUNDING SOURCES

4.1 Introduction

The canal safety statute requires that a canal management plan identify any potential sources of financing available to fund necessary canal maintenance and improvements. This section discusses various sources of revenue available to the SHLCC to pay for necessary actions.

4.2 Internal Funding

The SHLCC assesses annual fees to shareholders that are sufficient to pay for recurring operation and maintenance activities. Additional revenue can be generated through shareholder action via majority vote. The SHLCC will use these internal funds to address the slope stability findings, as identified in section 2.2, which do not require significant canal improvements.



In 2004 external funding was used to upgrade this section of canal to a covered concrete box.

4.3 External Funding

Several state and federal funding sources are available to help finance canal improvement projects, and these are summarized in Table 7. The Revolving Construction Fund administered by the Utah Board of Water Resources is an excellent funding source that the SHLCC has used for past canal improvements and upgrades. External funding will be necessary to complete the significant upgrades identified by slope stability findings 2010-03 and 2010-07.

Table 7. Potential federal and state funding sources for canal improvement projects.

Agency:	U.S. Department of Agriculture
Program:	Rural Development Fund
Purpose:	Water supply and wastewater disposal projects for rural communities
Type:	Grants and loans
Agency:	U.S. Bureau of Reclamation
Program:	WaterSMART Program
Purpose:	Achieve a sustainable water strategy; conserve and use water more efficiently
Type:	Grants (cost-share)
Agency:	U.S. Bureau of Reclamation
Program:	Water Conservation Field Services Program
Purpose:	Identify and implement water conservation practices
Type:	Grants (cost-share)
Agency:	Natural Resources Conservation Service
Program:	Conservation Innovation Grants
Purpose:	Development and adoption of innovative conservation approaches
Type:	Grants (cost-share) and technical assistance
Agency:	Natural Resources Conservation Service
Program:	Agricultural Water Enhancement Program
Purpose:	Promote water conservation; improve water quality on agricultural lands
Type:	Grants (cost-share) and technical assistance
Agency:	Utah Board of Water Resources
Program:	Revolving Construction Fund
Purpose:	Conserve or protect present water supplies; develop new water; flood control
Type:	Loans

4.4 Canal Improvement Funding Plan

The SHLCC will pursue a combination of federal and state sources to finance the two canal improvement projects discussed in section 3.4.1, since both projects are beyond the scope of internal resources. The goal is to fund and complete both projects within the next five to eight years. The SHLCC will also work closely with local governments and UDOT to ensure that the storm water and other issue discussed in sections 3.4.2 and 3.4.3 are adequately addressed.

5.0 LIABILITY INSURANCE

5.1 Introduction

The canal safety statute requires the facility owner to identify any “proof of insurance coverage or other means of financial responsibility against liability resulting from failure” of the water conveyance facility. This section includes a summary of the liability insurance obtained by the SHLCC. Appendix B contains a scanned copy of the declarations pages of its two insurance policies.

5.2 Summary of Liability Insurance Coverage

The SHLCC has two insurance policies to cover liability associated with its business: (1) a General Liability insurance policy and (2) a Commercial Excess Follow Form insurance policy. A summary of the coverage provided by these policies is provided in Table 8.

Table 8. Limits of Insurance.

Item	General Liability Coverage	Commercial Excess Follow Form Coverage	Total
Each Occurrence	\$	\$	\$
Damage to Premises Rented to You	\$	\$	\$
Medical Expense	\$	\$	\$
Personal and Advertising Injury	\$	\$	\$
General Aggregate	\$	\$	\$
Products – Completed Operations Aggregate	\$	\$	\$

5.3 Future Adjustments to Insurance Coverage

The SHLCC has engaged a consultant to conduct a study a hypothetical failure of its canal system. This study will essentially be a flood inundation study that identifies the area likely to be inundated as well as the anticipated water depths if the canal were to fail at certain critical (densely populated or highly developed) locations. This study will help the SHLCC estimate potential damages caused by a failure and determine whether or not their liability coverage is adequate. This study will be completed in 2011.

FIGURES

<u>NO.</u>	<u>TITLE</u>
1	The Strawberry High Line Canal (Master Frame).
1a	The Strawberry High Line Canal (Frame 1).
1b	The Strawberry High Line Canal (Frame 2).
1c	The Strawberry High Line Canal (Frame 3).
1d	The Strawberry High Line Canal (Frame 4).
1e	The Strawberry High Line Canal (Frame 5).
2	Potential risk locations of the Strawberry High Line Canal.
3	Slope instability findings on the Strawberry High Line Canal.
4	Storm water entry points on the Strawberry High Line Canal.

Note: In the original document each of these nine figures is an 11" x 17" map. In this template these maps have been reduced in size to 8½" x 11". In addition, Figures 1b, 1c, 1d, and 1e have been omitted from this template, since Figure 1a (Frame 1) is an adequate demonstration of the 5 frames in this map set.

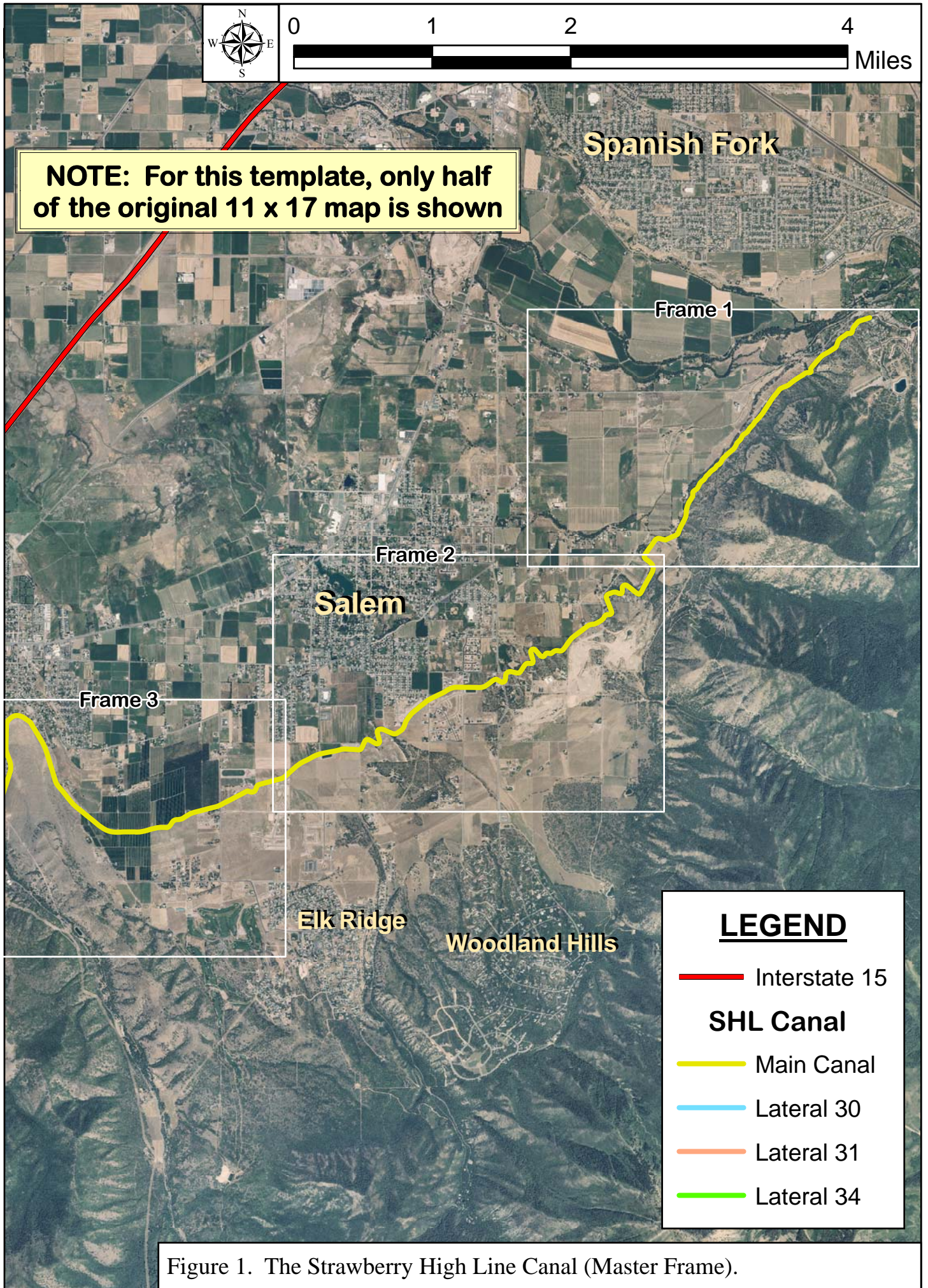
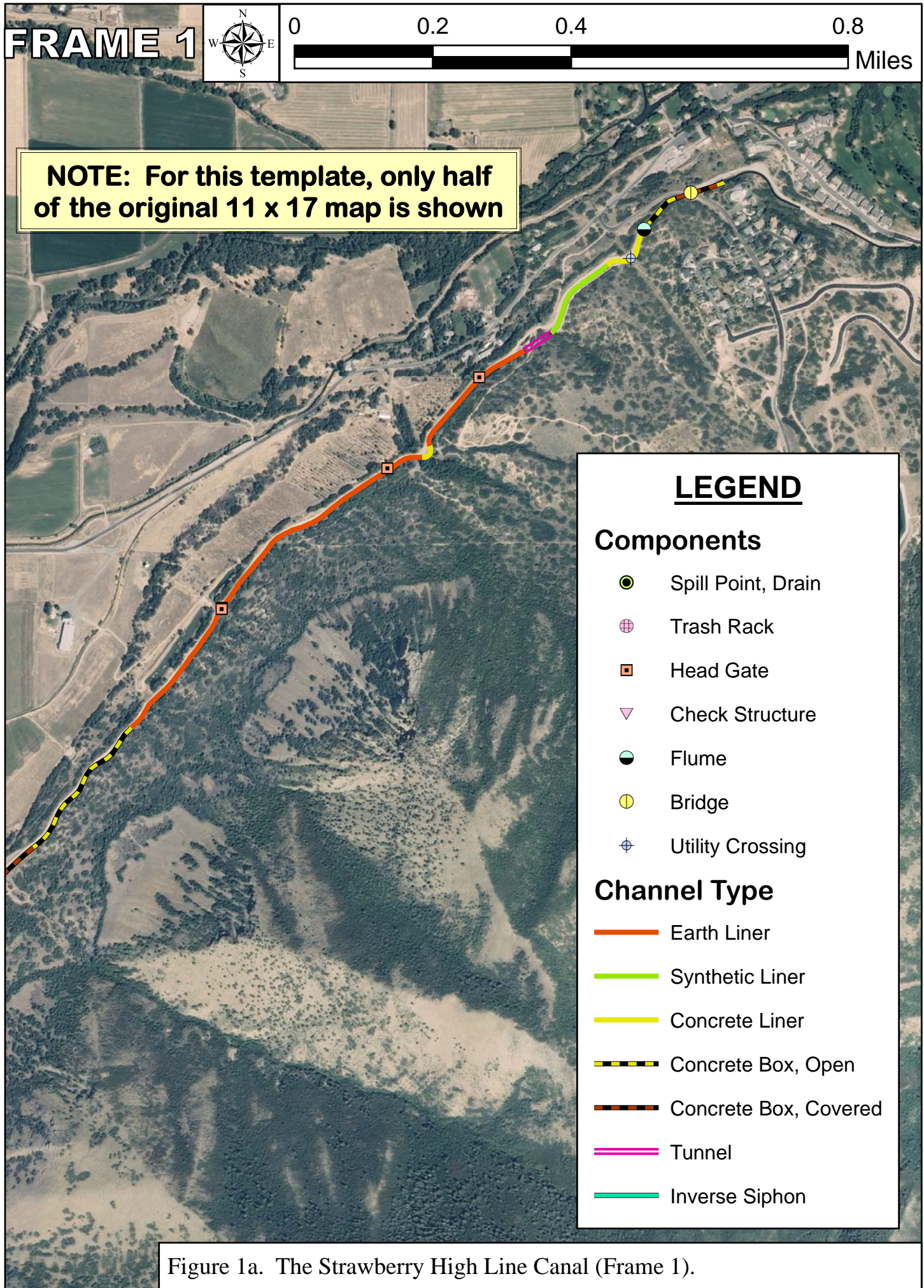


Figure 1. The Strawberry High Line Canal (Master Frame).

FRAME 1



NOTE: For this template, only half of the original 11 x 17 map is shown



LEGEND

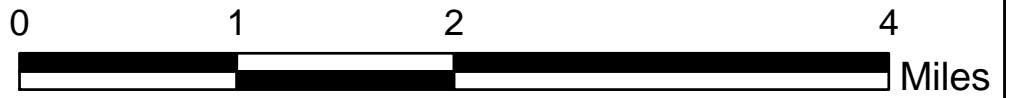
Components

- Spill Point, Drain
- Trash Rack
- Head Gate
- Check Structure
- Flume
- Bridge
- Utility Crossing

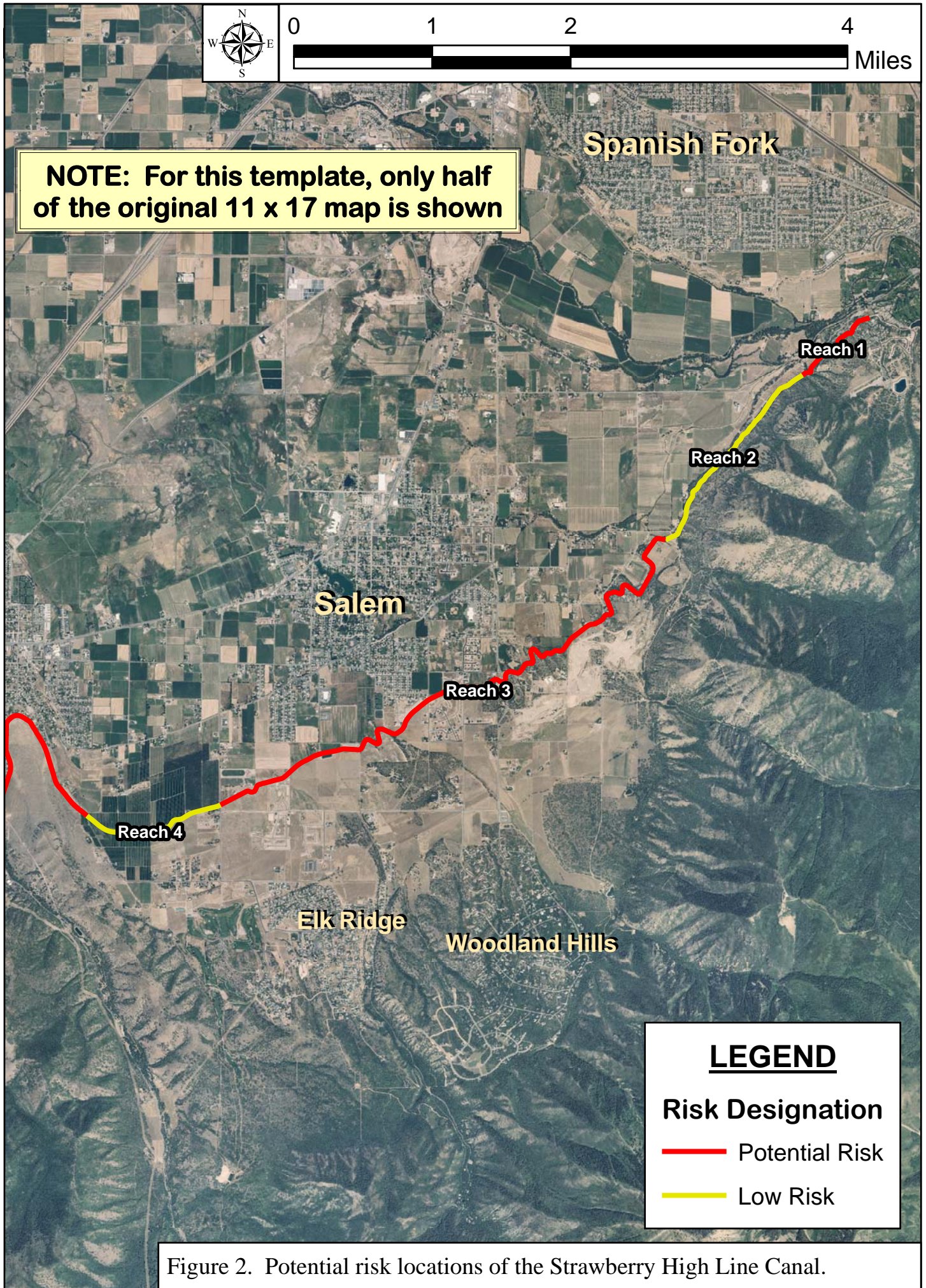
Channel Type

- Earth Liner
- Synthetic Liner
- Concrete Liner
- Concrete Box, Open
- Concrete Box, Covered
- Tunnel
- Inverse Siphon

Figure 1a. The Strawberry High Line Canal (Frame 1).



NOTE: For this template, only half of the original 11 x 17 map is shown



LEGEND

Risk Designation



-  Potential Risk
-  Low Risk

Figure 2. Potential risk locations of the Strawberry High Line Canal.

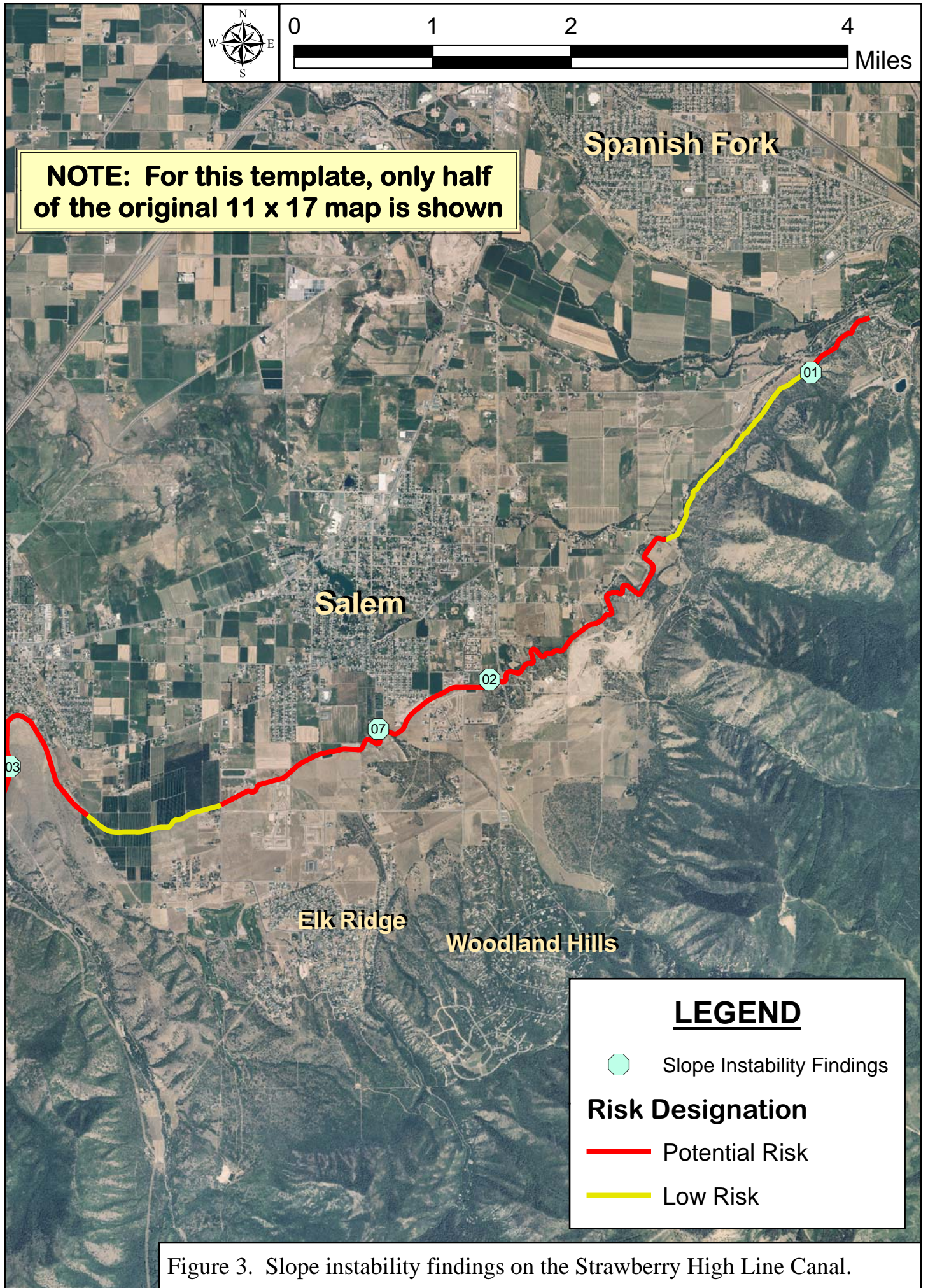
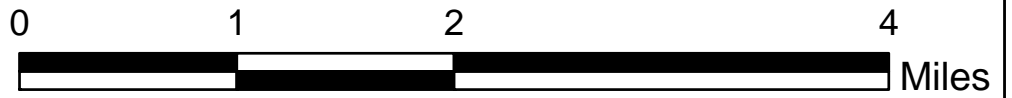


Figure 3. Slope instability findings on the Strawberry High Line Canal.



NOTE: For this template, only half of the original 11 x 17 map is shown

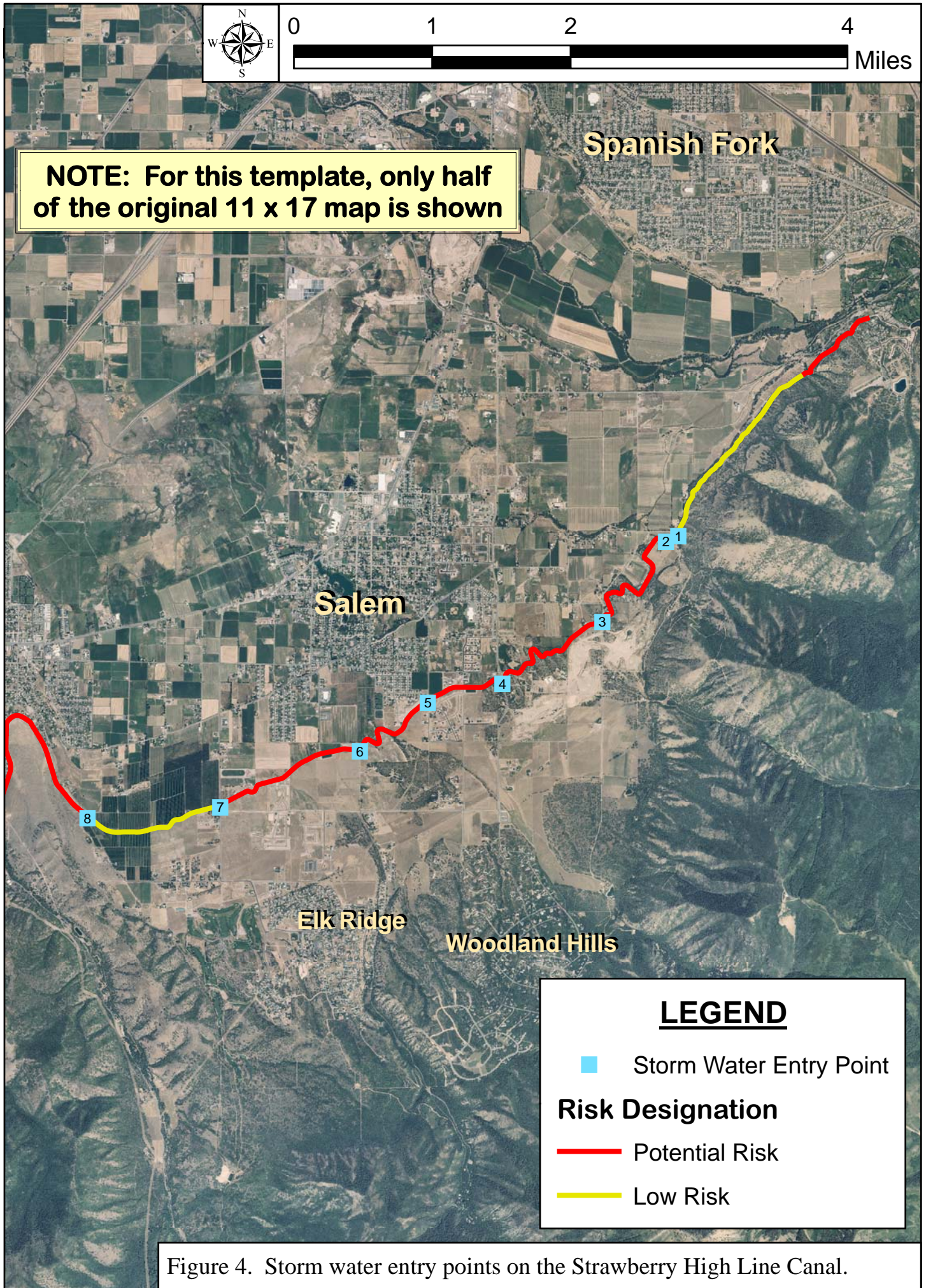


Figure 4. Storm water entry points on the Strawberry High Line Canal.

APPENDIX A

Slope Instability Findings (16 pages)

Note: The documented findings from the slope instability evaluation performed by the SHLCC have been omitted from this template. However, in order to demonstrate the use of the *Slope Stability and Land Use Inspection Sheet*, one example finding from a different canal is included herein (2 pages).

SLOPE STABILITY AND LAND USE INSPECTION SHEET

Use this sheet to record findings during visual inspections of slopes (not canal embankments). Use a separate sheet for each finding.

Date of Inspection <i>December 25, 2010</i>	Finding No. <i>2010-25</i>	Noticeable Items of Concern (check all that apply)
Location / Canal Reach / Length <i>1,000 feet downstream from the head of the canal (N41°34.413', W110°06.696').</i>		<p style="text-align: center;">LAND MOVEMENT</p> <input type="checkbox"/> Historical slide area; existing slope failure area <input type="checkbox"/> Settlement; subsidence; slumping; bulging <input type="checkbox"/> Cracks; openings; depressions; sinkholes <input type="checkbox"/> Lateral movement; displacement; fault movement <input type="checkbox"/> Dead or dying vegetation; tilted trees <input type="checkbox"/> Surface erosion; debris accumulation <input type="checkbox"/> Other _____
Observations <i>There is a significant amount of standing water in a field on the downhill side of the canal. The canal in this section has a concrete liner. The part of the liner that is visible above the water level is in very good condition; there are no cracks or other damage, and the joint seals all appear to be intact.</i>		<p style="text-align: center;">WATER CONTENT</p> <input checked="" type="checkbox"/> Spring; seepage; flowing water; standing water <input type="checkbox"/> Wet or saturated area; wetland; wetland vegetation <input type="checkbox"/> Intermittent water accumulation; irrigation tail water <input type="checkbox"/> Drainage area; signs of prior water flow <input type="checkbox"/> Other _____
Response (check all that apply) <input type="checkbox"/> Immediate mitigation action required <input checked="" type="checkbox"/> Additional analysis or investigation <input type="checkbox"/> Periodic monitoring or surveillance <input type="checkbox"/> Develop and implement improvements <input type="checkbox"/> Other _____		<p style="text-align: center;">HUMAN ACTIONS</p> <input type="checkbox"/> Urban development or expansion; construction <input type="checkbox"/> Land clearing or grubbing; soil removal; excavation <input type="checkbox"/> Vegetation removal; animal over-grazing <input type="checkbox"/> External loading (houses, sheds, fill material, etc.) <input type="checkbox"/> Recreational activities (cycling, motor biking, etc.) <input type="checkbox"/> Utility conveyance structures or facilities <input type="checkbox"/> Water use (watering lawns, washing cars, etc.) <input type="checkbox"/> Other _____
Details (list additional information, response actions, monitoring frequency, etc.) <i>Additional analysis is needed to determine if the standing water in this field is coming from the canal, or if there is another source, such as a water pipeline. If no other source is identified, the canal will need to be drained, so that the concrete liner can be fully inspected.</i>		

FINDING NUMBER 2010-25

Attach images (including before and after photographs of response actions)



Standing water approximately 150 feet from the canal (pictured from the west side canal road).

APPENDIX B

Proof of Insurance Coverage (2 pages)

Note: In the original document this appendix contains photocopies from an actual insurance policy: a signed and dated declarations page, and a summary of the limits of insurance.

APPENDIX C

Emergency Response Plan (2 pages)

Note: The Water Conveyance Facilities Safety Act of 2010 requires that an emergency response plan include how a first responder can, in the case of an emergency: 1) contact the facility owner, and 2) obtain information about the facility. The emergency response plan that follows meets these basic requirements. However, some irrigation companies prefer to include additional information. The U.S. Bureau of Reclamation has a very good template for the development of a more comprehensive emergency response plan.

EMERGENCY CONTACT INFORMATION FOR STRAWBERRY HIGH LINE CANAL COMPANY

HIGH LINE SERVICE AREA:

The Strawberry High Line Canal Company (SHLCC) service area begins at the mouth of Spanish Fork Canyon and the main canal runs southwest on the outskirts of Spanish Fork, Salem, and Payson cities. The canal continues to run west-southwest, crossing under I-15 and through north Santaquin and out to Genola. The SHLCC also serves the West Mountain area. Pipelines, ponds and open ditches are located throughout the SHLCC service area.

Please see the SHLCC service area map on the next page for more detailed information.

For emergencies within the High Line service area, please contact the following individuals:

During normal business hours please contact the SHLCC OFFICE at (801) 465-4824

Office hours are seasonal:

APRIL – SEPTEMBER

M-F 8:00 AM – 5:00 PM

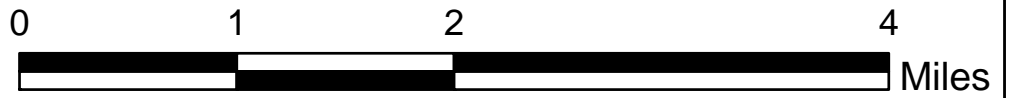
SAT 8:00 AM – 12:00 PM

OCTOBER – MARCH

M-F 9:00 AM – 5:00 PM

After hours, please contact the following individuals:

<u>NAME</u>	<u>RESPONSIBILITY</u>	<u>CONTACT INFORMATION</u>
JAMISON THORNTON SHLCC General Manager	Coordinate and Notify Operators	Cell Phone Home Phone
JAY STAHELI Maintenance Foreman	Mobilize Equipment	Cell Phone Home Phone
DAN ELLSWORTH President, Board of Directors	Overall Coordination	Cell Phone Home Phone



NOTE: For this template, only half of the original 11 x 17 map is shown

Spanish Fork

Salem

Elk Ridge

Woodland Hills

LEGEND

 Service Area

SHL Canal

 Main Canal

 Lateral 30

 Lateral 31

 Lateral 34

The Strawberry High Line Canal Service Area

APPENDIX D

**Full text of the
Water Conveyance Facilities Safety Act of 2010 (4 pages)**

WATER CONVEYANCE FACILITIES SAFETY ACT OF 2010

As Enacted by Utah House Bill 60

UTAH CODE AMENDED:

Title 63G: General Government

Chapter 2: Government Records Access and Management Act

Section 305: Protected records.

63G-2-305. Protected records.

The following records are protected if properly classified by a governmental entity:

(60) in accordance with Section **73-10-33**:

- (a) a management plan for a water conveyance facility in the possession of the Division of Water Resources or the Board of Water Resources; or
- (b) an outline of an emergency response plan in possession of the state or a county or municipality.

UTAH CODE ENACTED:

Title 73: Water and Irrigation

Chapter 10: Board of Water Resources - Division of Water Resources

Section 33: Management plan for water conveyance facilities.

73-10-33. Management plan for water conveyance facilities.

(1) As used in this section:

- (a) “Board” means the Board of Water Resources created by Section **73-10-1.5**.
- (b) “Conservation district” means a conservation district created under Title 17D, Chapter 3, Conservation District Act.
- (c) “Division” means the Division of Water Resources created by Section **73-10-18**.
- (d) “Facility owner or operator” means:
 - (i) a water company as defined in Subsection **73-3-3.5(1)(b)**; or
[Note: 73-3-3.5(1)(b) - “Water company” means any company, operating for profit or not for profit, in which a shareholder has the right to receive a proportionate share, based on that shareholder’s ownership interest, of water delivered by the company.]
 - (ii) an owner or operator of a water conveyance facility.
- (e) “Management plan” means a written document meeting the requirements of Subsection (3).
- (f) “Potential risk” means a condition where, if a water conveyance facility fails, the failure would create a high probability of:
 - (i) causing loss of human life; or
 - (ii) causing extensive economic loss, including damage to critical transportation facilities, utility facilities, or public buildings.
- (g) “Potential risk location” means a segment of a water conveyance facility that constitutes a potential risk due to:
 - (i) location;
 - (ii) elevation;
 - (iii) soil conditions;
 - (iv) structural instability;

- (v) water volume or pressure; or
 - (vi) other conditions.
 - (h) (i) “Water conveyance facility” means a water conveyance defined in Section **57-13a-101**.
[Note: 57-13a-101(1) - “Water conveyance” means a canal, ditch, pipeline, or other means of conveying water.]
 - (ii) “Water conveyance facility” does not include:
 - (A) a pipeline conveying water for industrial use, or municipal use, within a public water system as defined in Section **19-4-102**;
 - (B) a natural channel used to convey water for use within a water conveyance facility; or
 - (C) a fully piped, pressurized irrigation system.
- (2) (a) For a water conveyance facility that has a potential risk location, the board or division may issue a grant or loan to the facility owner or operator, and the facility owner or operator may receive state money for water development or water conveyance facility repair or improvements, only if the facility owner or operator promptly adopts a management plan in accordance with this section.
- (b) For a management plan to be considered to be promptly adopted for purposes of this Subsection (2), the facility owner or operator shall:
- (i) adopt the management plan by an affirmative vote of the facility owner or operator's board of directors, or persons occupying a similar status or performing similar functions before receiving money under Subsection (2)(a);
 - (ii) (A) adopt the management plan as described in Subsection (2)(b)(i) by no later than:
 - (I) May 1, 2013, for a water conveyance facility in operation on May 11, 2011; or
 - (II) for a water conveyance facility that begins operation after May 11, 2011, one year after the day on which the water conveyance facility begins operation; or
 - (B) (I) adopt the management plan as described in Subsection (2)(b)(i); and
 - (II) provide written justification satisfactory to the board as to why the facility owner or operator was unable to adopt a management plan during the time period provided in Subsection (2)(b)(ii)(A); and
 - (iii) update the management plan adopted under Subsection (2)(b)(i) no less frequently than every 10 years.
- (3) A management plan described in Subsection (2) shall include at least the following:
- (a) a GIS coverage or drawing of each potential risk location of a water conveyance facility identifying any:
 - (i) existing canal and lateral alignment of the canal facility;
 - (ii) point of diversion;
 - (iii) bridge;
 - (iv) culvert;
 - (v) screen or trash rack; and
 - (vi) spill point;

- (b) an evaluation of any potential slope instability that may cause a potential risk, including:
 - (i) failure of the facility;
 - (ii) land movement that might result in failure of the facility; or
 - (iii) land movement that might result from failure of the facility;
 - (c) proof of insurance coverage or other means of financial responsibility against liability resulting from failure of the water conveyance facility;
 - (d) a maintenance and improvement plan;
 - (e) a schedule for implementation of a maintenance and improvement plan;
 - (f) an emergency response plan that:
 - (i) is developed after consultation with local emergency response officials;
 - (ii) is updated annually; and
 - (iii) includes, in the case of an emergency, how a first responder can:
 - (A) contact the facility owner or operator; and
 - (B) obtain information described in Subsection (3)(a);
 - (g) any potential source of financing for maintenance and improvements under a maintenance and improvement plan;
 - (h) identification of each municipality or county through which water is conveyed or delivered by the water conveyance facility;
 - (i) a statement concerning whether storm water enters the water conveyance facility; and
 - (j) if storm water enters the water conveyance facility:
 - (i) an estimate of the maximum volume and flow of all water present in the water conveyance facility as a result of a six-hour, 25-year storm event;
 - (ii) on the basis of information provided in accordance with Subsection (4), identification of the points at which any storm structures introduce water into the water conveyance facility and the anticipated flow that may occur at each structure; and
 - (iii) the name of each governmental agency that has responsibility for storm water management within the area from which storm water drains into the water conveyance facility.
- (4) A private or public entity that introduces storm water into a water conveyance facility shall provide the facility owner or operator with an estimate of the maximum volume and flow of water that may occur at each structure that introduces storm water into the water conveyance facility.
- (5) (a) A facility owner or operator of a water conveyance facility shall provide a municipality or county in which is located a potential risk location of the water conveyance facility an outline of the information provided in Subsection (3)(f).
- (b) A facility owner or operator shall give notice to the planning and zoning department of each municipality and county identified in Subsection (3)(h) outlining the information provided in Subsections (3)(f), (i), and (j).
- (c) An outline of information provided under this Subsection (5) is a protected record under Section **63G-2-305**.

- (6)
 - (a) The division may provide information and technical resources to a facility owner or operator of a water conveyance facility, regardless of whether the water conveyance facility has a potential risk location.
 - (b) In providing the information and resources described in Subsection (5)(a), the division may coordinate with efforts of any association of conservation districts that may provide similar information and technical resources.
 - (c) The information and technical resources described in Subsection (5)(a) include:
 - (i) engaging state and local water users in voluntary completion of a management plan;
 - (ii) developing standard guidelines, checklists, or templates that may be used by a facility owner or operator;
 - (iii) using conservation districts as points of contact with a facility owner or operator;
 - (iv) providing training to help a facility owner or operator to adopt a management plan; and
 - (v) assisting, at the request and under the direction of, a facility owner or operator with efforts to adopt or implement a management plan.
- (7)
 - (a) A facility owner or operator of a water conveyance facility that has a potential risk location shall provide the board or division upon request:
 - (i) written certification signed under oath by a person authorized to act for the board of directors or persons occupying a similar status or performing similar functions, certifying that the management plan complies with this section; and
 - (ii) an opportunity to review a management plan.
 - (b) A management plan received by the board or division under this section is a protected record under Section **63G-2-305**.
- (8) The board shall report concerning compliance with this section to the Natural Resources, Agriculture, and Environment Interim Committee of the Legislature before November 30, 2013.
- (9) The division and board may make rules, in accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, concerning the requirements of this section.
- (10) This section does not:
 - (a) create a private right of action for a violation of this section; or
 - (b) limit, impair, or enlarge a person's right to sue and recover damages from a facility owner or operator in a civil action for a cause of action that is not based on a violation of this section.
- (11) The following may not be introduced as evidence in any civil litigation on the issue of negligence, injury, or the calculation of damages:
 - (a) a management plan prepared in accordance with this section;
 - (b) the failure to prepare or adopt a management plan in accordance with this section; or
 - (c) the failure to update a management plan in accordance with this section.

APPENDIX E

FORMS

- 1. Slope Stability and Land Use Inspection Sheet (2 pages)**
- 2. Sample Letter to municipalities requesting storm water information (1 page)**

SLOPE STABILITY AND LAND USE INSPECTION SHEET

Use this sheet to record findings during visual inspections of slopes (not canal embankments). Use a separate sheet for each finding.

Date of Inspection	Finding No.	Noticeable Items of Concern (check all that apply)
Location / Canal Reach / Length		<p style="text-align: center;">LAND MOVEMENT</p> <ul style="list-style-type: none"> <input type="checkbox"/> Historical slide area; existing slope failure area <input type="checkbox"/> Settlement; subsidence; slumping; bulging <input type="checkbox"/> Cracks; openings; depressions; sinkholes <input type="checkbox"/> Lateral movement; displacement; fault movement <input type="checkbox"/> Dead or dying vegetation; tilted trees <input type="checkbox"/> Surface erosion; debris accumulation <input type="checkbox"/> Other _____ <p style="text-align: center;">WATER CONTENT</p> <ul style="list-style-type: none"> <input type="checkbox"/> Spring; seepage; flowing water; standing water <input type="checkbox"/> Wet or saturated area; wetland; wetland vegetation <input type="checkbox"/> Intermittent water accumulation; irrigation tail water <input type="checkbox"/> Drainage area; signs of prior water flow <input type="checkbox"/> Other _____ <p style="text-align: center;">HUMAN ACTIONS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Urban development or expansion; construction <input type="checkbox"/> Land clearing or grubbing; soil removal; excavation <input type="checkbox"/> Vegetation removal; animal over-grazing <input type="checkbox"/> External loading (houses, sheds, fill material, etc.) <input type="checkbox"/> Recreational activities (cycling, motor biking, etc.) <input type="checkbox"/> Utility conveyance structures or facilities <input type="checkbox"/> Water use (watering lawns, washing cars, etc.) <input type="checkbox"/> Other _____
Observations		
Response (check all that apply)		
<ul style="list-style-type: none"> <input type="checkbox"/> Immediate mitigation action required <input type="checkbox"/> Additional analysis or investigation <input type="checkbox"/> Periodic monitoring or surveillance <input type="checkbox"/> Develop and implement improvements <input type="checkbox"/> Other _____ 		
Details (list additional information, response actions, monitoring frequency, etc.)		

Attach images (including before and after photographs of response actions)

Date

Public Works Director
City of _____ or _____ County
Address
_____, Utah 84###

Dear Sir or Madam:

The Water Conveyance Facilities Safety Act of 2010, as enacted by House Bill 60, requires that municipalities and canal companies work together to mitigate the potential risk posed by storm water discharge into canal systems. Specifically, the law requires that public entities analyze the storm water expected to result from a six-hour, 25-year storm event, and provide the canal company with an estimate of the maximum volume and flow.

Our records indicate that the following structures introduce storm water into the _____ Canal, and that the storm water drainage areas are within the realm of your jurisdiction. We hereby request that you provide us with an estimate of the maximum volume and flow of storm water for each location.

<u>Structure</u>	<u>Location</u>
Pipe/ditch/drain/other	Street address/location description
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If any of these locations are not within your jurisdiction, or if you have additional questions, please call me at ###-####. We look forward to working with you to ensure that the canal system, which provides so many benefits to members of the community, can continue to operate in a safe and efficient manner. Thank you for your assistance.

Sincerely,

Manager
_____ Canal Company