

Feasibility of Emergency Repair of the Home Depot Siphon

Sponsored by the
Grandview Irrigation
Company
in conjunction with the
Colorado Water Conservation Board

May 2022

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Feasibility Study GIC Ditch Company Emergency Siphon Repair Project

Introduction (Need for the Project)

The Grandview Irrigation Company (GIC), located in Fremont County, operates the GIC Ditch for the benefit of the shareholders by providing direct flow irrigation water. Water deliveries are made in the 600-acre service area from shares owned by GIC in the Canon City Hydraulic & Irrigating Ditch Company and Canon City Oil Creek Ditch Company. Water started leaking into the Home Depot parking lot located on our easement at 141 Mackenzie Av, Canon City from GIC's underground 48-inch siphon pipe. It was determined that some of the pipe joints were compromised and leaking.

Project Sponsor

The GIC is a mutual ditch company and a non-profit corporation registered within the State of Colorado. There are 54 shareholders and 64,795 shares of stock. The GIC has the power to set annual assessments to be paid by the shareholders, the power to cut off water deliveries to shareholders that fail to pay their assessments, and the power to offer stock for sale to pay back assessments. The GIC articles of incorporation and by-laws are included in Appendix A.

Project Service Area and Facilities

The GIC provides irrigation water to a 600-acre service area in Fremont County. The head gate for the GIC Ditch is located at Longitude 941860.199, Latitude 373129.958 and extends southeast approximately 3 miles. Irrigated acreage within the service area is primarily used for cattle ranching, hay and small truck farms. Hay crop is used as cattle feed or is sold. A map of the service area attached as Appendix B.

Hydrology and Water Rights

The source of water for the Company is 597.75 shares owned on the Canon City Hydraulic Irrigating Ditch Company (CCHIDC) Priority #17 (96cfs) and 136 shares owned on the Canon City Oil Creek Ditch Company (CCOCDL), Priority #20 (14.2cfs) and Priority #34 (19.4cfs). The water shares diverted per year at the GIC headgate are 7883.128 AF.

Project Description and Alternatives

The purpose of this project is to provide a means for the GIC to continue providing irrigation water to shareholders while minimizing the occurrence of future failures of their siphon structure. Three alternatives were considered:

1. The no-action alternative.
2. Repair 35 leaking joints determined to be leaking.
3. Repair 35 leaking joints and an additional 95 joints where the caulking is failing.

Alternative No. 1 was considered unacceptable since it means the GIC could not deliver water to its shareholders.

Alternative No. 2 was not selected because the engineers determined that an additional 95 joints would, in time, fail causing more damage to the parking lot and down time of the siphon.

Alternative No.3 was selected as being the most efficient. If the weak joints are repaired now the company would not be faced with future damage to the siphon causing flooding of the parking lot and additional repairs to the entire system. The engineers were certain the failure of the additional joints would occur. If this were to happen during the irrigation season crop failures would occur as well.

Photos, Video and Description of Siphon Damage are included in Appendix C

The estimated cost of the completed project is \$350,000. The cost breakdown is summarized in Table 1.

Table 1. GIC Ditch Company – Siphon Breach Project - Cost Estimate

Item	Quantity	Unit	Unit Price \$	Amount \$
Dewater and film interior of pipe	1	Job	2950	\$ 2,950
Repair 35 Joints	35	Job	3000	\$105,000
Dewater and Film joints	2	Job	3500	\$ 2,000
Repair leaks on additional joints	1	TM	200000	\$200,000
Fill and pack excavation site in parking lot	1	TM	15000	\$ 15,000
Repair Monitoring System	1	TM	10000	\$ 10,000
Engineering	1	TM	12050	\$ 12,050
Legal	1	TM	3,000	\$ 3,000
Total				\$350,000

Implementation Schedule

The breach was identified in November 2021 and the siphon was shut down. During the month of November Marine Divers Solution inspected the siphon with a robot. The inspection was incomplete as we found the pipe to be half full of water at various intervals. When the camera went underwater we could not determine the status of the joints in that section. As MDS was actively involved in a project on Hoover Dam, they were unable to come back to our project until April 2022. At that time MDS re-inspected the pipeline in which the caulking in some joints had deteriorated and fallen out. They also observed an additional 95 joints which showed signs of eminent failure. Materials were ordered and the repairs were completed by May 3, 2022. The construction costs for the joint repairs totaled \$309,950. Further inspection of the water monitoring system to determine leakage of the siphon revealed failure of that system due to debris in the monitoring pipes. To this point in time, GIC has not found a solution to repairing the monitoring system.

The Home Depot excavation has been filled but no asphalt has been applied to date.

Permitting

Siphon is underground within our easement, permitting was not necessary.

Institutional Considerations

Entities that are, or may be, involved in the design, construction, and financing of the project include:

GIC; financing, construction and project management.
Colorado Water Conservation Board (CWCB); financing.

The GIC will be the lead for the financing, design, and construction of the project and will be the entity entering into contracts and agreements with the various entities for the services provided by each.

Financial Analysis

The GIC is applying for a loan from the CWCB in maximum amount of \$350,000, The actual or estimated amounts by entity are given in Table 2.

Table 2. Sources of Funding

Entity	Grant	Loan	Percent Participation
CWCB	\$0	\$350,000	100%
GICDC	\$0	\$0	0%
Totals		\$350,000	\$350,000

The GIC will cover any costs that exceed the estimated project cost.

The GIC is requesting a 30-year loan from the CWCB in the amount of \$350,000. The standard agricultural lending rate would be 1.9%, resulting in annual payments of \$15,314.88. To this would be added \$3,500 per year for the first 10 years to fund the emergency reserve account, for a total annual cost of \$18,814.88. Table 3 is a summary of the financial aspects of the project. Annual assessments will increase from \$.85 per share to \$1.14 per share with an Emergency Loan of \$350,000. This represents an annual assessment increase of \$0.29, or \$2,286.11 per acre-foot, based on average annual diversions 7883.128 acre-feet.

Table 3. Financial Summary

Project Cost	\$350,000
Loan Amount	\$350,000
CWCB Loan Payment Amount, including 10% loan reserve	\$18,814.48
Number of Shareholders	54
Number of Shares of Stock	64,795
Current Assessment per Share	\$.85
Future Assessment per Share	\$1.14

Credit worthiness: GIC had two previous loans with CWCB, Phase I and Phase II of the siphon, each were 30-year loans. CWCB merged the two loans into one and GIC has never faulted on any payments. GIC has 6 remaining payments of \$11,380.49 to complete the original siphon project loans.

Alternative Financing Considerations: GIC will be requesting a bridge loan from Sunflower Bank to cover costs until this loan is approved.

Collateral: As security for the CWCB loan the GICDC can pledge assessment income, and the project itself.

Economic Analysis

The economic benefit of the project is considerable. The estimated value of property affected to be \$5.5 million, within the 600-acre service area. The short-term value of potential damage to this property in the event the GIC Siphon is not repaired is estimated as \$1 million.

Social and Physical Impacts

Colorado agriculture is spread across 38,900 farms and ranches on nearly 32 million privately owned acres. Agriculture in Colorado contributes **\$47 billion annually** to our economy and employs more than 195,000 people. We are an agricultural state.

Conclusions

1. The GIC Ditch Company is an incorporated entity in the State of Colorado with the ability to enter into a contract with the CWCB for the purpose of obtaining a Construction Fund loan.
2. Rights-of Way easements are adequate for the construction of this project.
3. The project would provide for the continued delivery of irrigation water to shareholders.
4. The total estimated cost of the project is \$350,000 and this will be financed, by assessment increases.
5. GIC Ditch Company is eligible for a loan from the CWCB Emergency Infrastructure Repair Account because the project is necessary to avoid unreasonable risk of injury or damage to human health or well-being or to property or crops, and because the emergency condition is not the result of negligence in the operation or maintenance of the infrastructure.
6. The project is technically and financially feasible.

Appendix A

Articles of Incorporation By-Laws

Appendix B

Map of Area

Appendix C

**Photos, Video & Description of
Siphon Damage
Marine Diver Solutions Email
(will be forwarded separately)**

Appendix D

CWCB Loan Application CWCB Memorandum of Loan Approval

Appendix E

Financial Statements and Budgets 2019-2021

Appendix F

**Original As Built Plans w/Craig
Ulman's notes**

