Washoe County Community Services Department

Spanish Springs Sanitary Sewer Collection System

Facility Plan

July 2016

Prepared by:

FARR WEST
ENGINEERING

CONTENTS

WASHOE COUNTY COMMUNITY SERVICES DEPARTMENT

SPANISH SPRINGS SANITARY SEWER COLLECTION SYSTEM FACILITY PLAN
SUMMARY MEMORANDUM

EXECUTIVE SUMMARY

Tables – Executive Summary

Figures – Executive Summary

TM NO. 1 EXISTING AND FUTURE SEWER FLOWS AND MODEL DEVELOPMENT

Tables – TM No. 1

Figures – TM No. 1

Appendices – TM No. 1

TM NO.2 ALTERNATIVES EVALUATION AND PREFERRED PROJECT

Tables – TM No. 2

Figures – TM No. 2

Appendices – TM No. 2

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EXECUTIVE SUMMARY

WASHOE COUNTY COMMUNITY SERVICES DEPARTMENT

SPANISH SPRINGS SANITARY SEWER COLLECTION SYSTEM FACILITY PLAN

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Review By: Brent Farr, P.E.

Date: July 19, 2016

Subject: **Executive Summary**

ES.1 PURPOSE

The Summary Memorandum is the final component of the Washoe County Community Services Department's (County) Spanish Springs Sanitary Sewer Collection System (System) Facility Plan. The Summary Memorandum is made up of two technical memorandums (TMs). These TMs assess existing system capacity, estimate additional wastewater flow created by future development, develop and evaluate infrastructure improvement alternatives, and recommend a preferred project alternative. The TMs include:

- TM No. 1 - Existing and Future Sewer Flows and Model Development
- TM No. 2 - Alternatives Evaluation & Preferred Project

The purpose of TM No. 1 is to evaluate existing and future sewer flows and discuss the development of the collection system hydraulic model. The document incorporates regional land use studies, a previous planning study regarding the conversion of parcels with on-site septic systems to the County maintained System, and hydraulic modeling analysis to provide a basis of understanding upon which improvement project alternatives will be developed. The dual planning horizon for this document is 20 years, or the year 2035, and at the eventual build-out of all unimproved land within Washoe County's current Truckee Meadows Service Area (TMSA) boundary in the Spanish Springs Valley.

The purpose of TM No. 2 is to develop infrastructure improvement alternatives which provide excess capacity in the System in response to increased sewer flows as a result of future development in the Spanish Springs Valley and to recommend a preferred project. The document provides an evaluation of infrastructure improvement alternatives which includes both non-economic and economic components. The non-economic analysis compares the various project alternatives against a diverse set of criteria and subcriteria, and the economic analysis includes planning level cost estimates for each improvement alternative. The most preferred alternative is detailed further as a recommended preferred project.

ES.2 TM NO. 1 - EXISTING AND FUTURE SEWER FLOWS AND MODEL DEVELOPMENT

TM No. 1 combined the sewer flows from existing sewer customers, as of 2015, with flows added by future development and septic to sewer projects. These values are listed in Table ES-1. The Buildout flow scenario represents the development of all 2,500 acres of currently unimproved land in the Spanish Springs Valley. The Buildout + Septic flow scenario represents the Buildout scenario plus sewer flows after all nine phases of the septic to sewer conversion projects are completed. The Buildout + Septic condition represents the maximum potential flow for the System. A third flow scenario using interim growth projections was created to estimate a 20 year flow condition in the year 2035.

In this facility plan, all System capacity evaluations shall be determined on an Equivalent Residential Unit (ERU) basis with an average daily flow of 270 gallons per day (gpd) per ERU. This document normalizes all non-residential connections to the ERU basis for consistency. Buildout and interim growth projection data was provided by the Truckee Meadows Regional Planning Agency (TMRPA).

Table ES-1 –Sewer Flows and ERU Count

Scenario	Average Flow (gpd)	Incremental ERU Count	Total ERU Count
Existing	684,200	4,175	4,175
Buildout	1,568,800	3,303	7,478
Buildout + Septic	2,038,350	1,782	9,260
2035	1,300,200	2,390	6,565*

* Because the 2035 flow scenario will occur prior to Buildout, the Total ERU Count for this flow scenario is calculated by adding the Existing ERU Total to the 2035 Incremental ERU Count only.

Existing System capacity was assessed against a pipe surcharge criterion, a manhole surcharge criterion, and a lift station operational guidance document. TM No. 1 found that the System currently meets the criteria for existing flows with an additional 517 ERUs of capacity remaining. Existing system capacity is anticipated to be exceeded in the year 2025 per current planning estimates.

TM No. 1 also provides a discussion of the City of Sparks (Sparks) *Interlocal Agreement to Provide Sanitary Sewer Service in Spanish Springs Valley* (Agreement) at the existing, Buildout, and Buildout + Septic flow conditions. The Agreement stipulates that Sparks shall reserve 8,495

ERUs of capacity in their sewer interceptors and at Truckee Meadows Water Reclamation Facility for the County's customers in Spanish Springs Valley. The only flow scenario in which the reserved capacity will be exceeded is the Buildout + Septic flow condition by approximately 765 ERU's.

The System was constructed between 1995 and 2008 and does not currently experience any infiltration or inflow from high groundwater or from storm events. Study of flow monitoring data indicates a System average daily flow peaking factor of 2 for peak hour dry weather flows. Table ES-2 provides a summary of System infrastructure for all interceptors 10 inches or greater in diameter.

Table ES-2 – System Assets

Item	Unit	Quantity
10 Inch Pipe	Linear Feet	25,532
12 Inch Pipe	Linear Feet	7,420
15 Inch Pipe	Linear Feet	11,861
18 Inch Pipe	Linear Feet	5,610
Manholes	Each	167
Pebble Creek Lift Station	Each	1

A hydraulic model of the System including all flow scenarios was built using InfoSWMM® by Innovyze®. A digital copy of the model is included with this memorandum for use by the County.

ES.3 TM NO. 2 – ALTERNATIVES EVALUATION AND PREFERRED PROJECT

Using the flow estimates generated in TM No. 1, this memorandum assessed System capacity at the Buildout and the Buildout + Septic flow scenarios. The pipe capacity criterion was exceeded in the southern region of the System during both future flow conditions. Three infrastructure improvement alternatives were developed which increased System capacity to an acceptable standard as determined by the County. These improvement alternatives were evaluated using a non-economic and economic analysis. The non-economic evaluation included a matrix comparison of the following seven criteria:

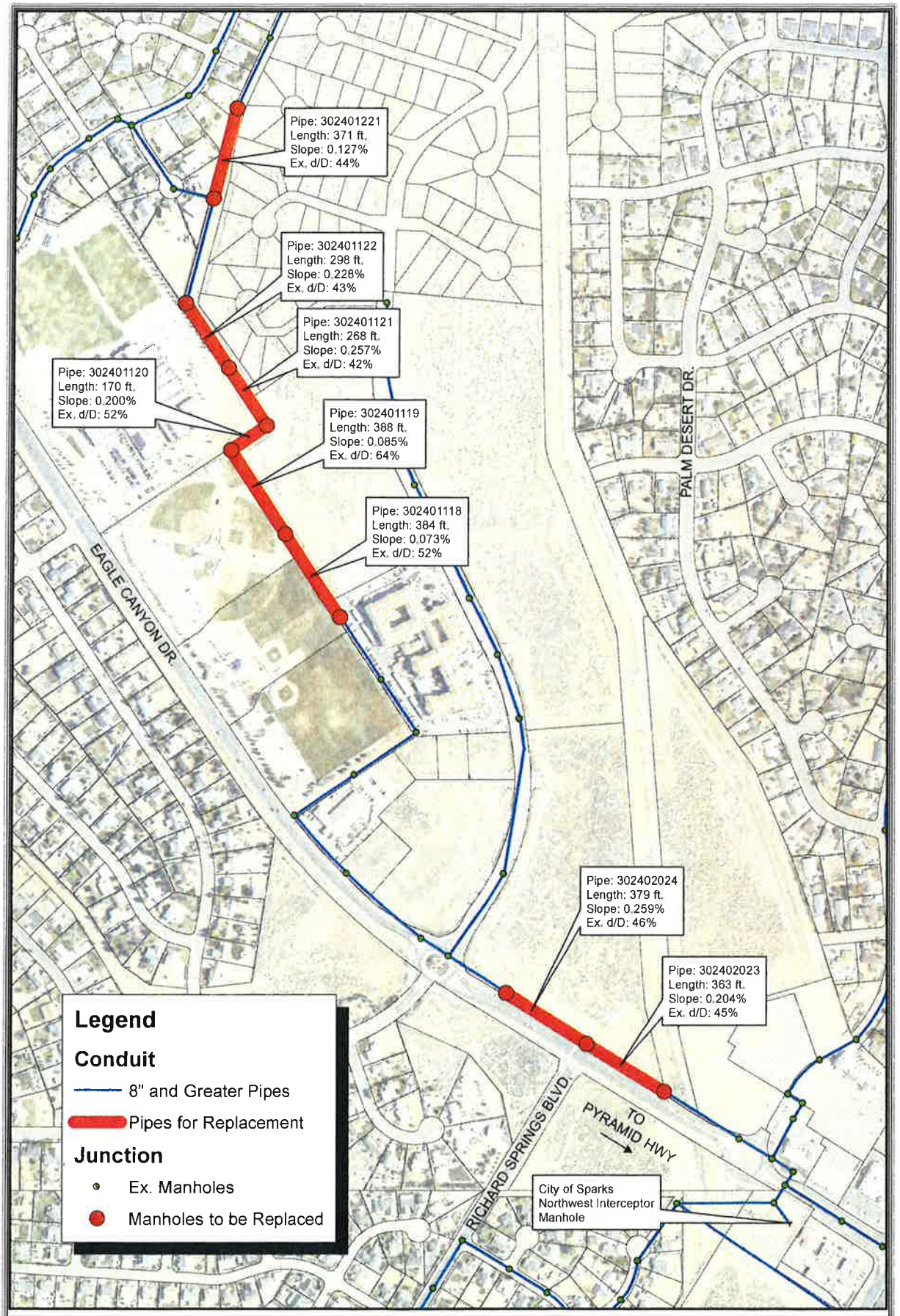
1. Right of Way Requirements
2. Constructability
3. Capacity Criteria
4. Design Criteria
5. Permitting
6. Operations and Maintenance
7. Timing of Improvements

Table ES-3 provides a summary of the evaluation results as well as the planning level cost estimates for each alternative. A figure detailing improvement alternative project 1 is attached to this summary, while figures for the other two projects are shown on Figures 3 and 4 in TM No. 2.

Table ES-3 – Alternative Project Evaluation Results

Alternative	Rank	Score	Construction Cost Estimate ($)
Project 1	1	86.3	568,440
Project 2	2	82.2	828,186
Project 3	3	81.4	858,046

This Facility Plan has concluded that a single improvement project will be required to collect, pump and convey wastewater flows for the Buildout flow condition (7,478 ERUs) in the Spanish Springs service area. Project 1 has been recommended as the most preferred project.



The data contained herein does not represent survey delineation and should not be construed as a replacement for the authoritative source. No liability is assumed by Farr West Engineering as to the sufficiency or accuracy of the data.

N

1 " = 350 '

Figure 2 - Project 1: Meets Buildout Flow Condition

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