

TALKING ROCK RANCH
Phase 1

SEWER COLLECTION SYSTEM
DESIGN MEMORANDUM

Prepared For:

Harvard Investments
7600 East Doubletree Ranch Road, Suite 210
Scottsdale, Arizona 85158

Prepared By:

SHEPPARD-WESNITZER, INC.
1146 W. Highway 89A, Suite B
P.O. Box 3924
Sedona, Arizona 86340
Phone: (520) 282-1061



Introduction

This analysis examines the design of the sewer collection system that will primarily be a low-pressure sewer system for Phase I of the Talking Rock Ranch Subdivision in Williamson Valley, Arizona. The project site is located in portions of Sections 11, 15, 16, 21, 22, 28 and 33, Township 16 North, Range 3 West, Gila and Salt River and Meridian, Yavapai County, Arizona. The project is generally located in the southern portion of Williamson Valley and straddles the Williamson Valley Road. As a result of the large changes in elevation, it is not cost-effective to construct a gravity sewage collection system.

This Design Memorandum will address the low-pressure sewer system design for the portion of the project that is within Phase I and the pumping station located to the South and West of Phase I that will deliver sewage to the Wastewater Treatment Facility. Estimates of the number of expected lots and force mains from portions of the overall project that have yet to be laid out are included in the Phase I design where applicable. These systems also use low-pressure sewer lines that will pump to lift stations) and then force mains to the Wastewater Treatment Facility. The Phase I construction plans will be submitted concurrently with this memorandum.

System Analysis

The system was designed using the map for the project with the objective of providing sewer service to each of the lots in this phase of the project. The analysis was run using the computer design program developed by Environment One Corporation of Niskayuna, New York. It employs their flow velocity and friction head loss versus pumps in simultaneous operation spreadsheet. The design criteria for the software calculation program is based on the *Hazen-Williams* formulas for determining pipe sizes (calculations for Cross Sectional Area, Velocity and Friction Loss) to create minimum flow velocities of ^{2.0} 2.0 feet per second or higher. At these velocities scouring is assured. Pipe sizes are based on the I.D. of the pipe type selected and the "C" factor selected in the design form. This analysis is based on a "C" factor of ¹³⁰ 130 a design flow rate of 235 gallons per day per dwelling and SDR11 Polyethylene pipe.

11/27/02 150 OK

C Factor - 8000