DESIGN ANALYSIS REPORT FOR PUEBLO ALTO / MILE HI GSI PILOT PROJECT CONCEPTUAL DESIGN

DECEMBER 7, 2023

Prepared for:

Prepared by:

Bohannan Huston

DESIGN ANALYSIS REPORT

FOR

PUEBLO ALTO / MILE HI GSI PILOT PROJECT

CONCEPTUAL DESIGN

DECEMBER 7, 2023

Prepared for:

CITY OF ALBUQUERQUE DEPARTMENT OF MUNICIPAL DEVELOPMENT

ONE CIVIC PLAZA, ROOM 7057

ALBUQUERQUE, NM 87102

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EXECUTIVE SUMMARY

This design analysis report presents the results of the hydrologic and hydraulic analysis of the Pueblo Alto and Mile Hi neighborhoods. The analysis was performed using a combined two-dimensional rain-on-grid model covering the subject neighborhoods. Off-site flows were included for the existing conditions analysis based on the results of previous studies completed for the area. Based on the assumption of future upstream drainage infrastructure improvements, a future conditions analysis that did not include offsite flows was also simulated. For existing and future conditions, the 2-, 10-, and 100-year return events were analyzed.

Results of the analyses were used to inform the conceptual design of green stormwater infrastructure (GSI) and drainage improvement projects as pilot projects for the area. Proposed project elements include underground storage systems and stormwater bumpouts. The project locations and layouts were based on maximizing available space within the City of Albuquerque's rights-of-way. No design storm is applicable for this project as the purpose, from a stormwater perspective, is to maximize the storage volume and infiltration capacity with various stormwater solutions as a pilot project. The proposed improvements were incorporated into the analysis to determine the anticipated level of flood reduction.

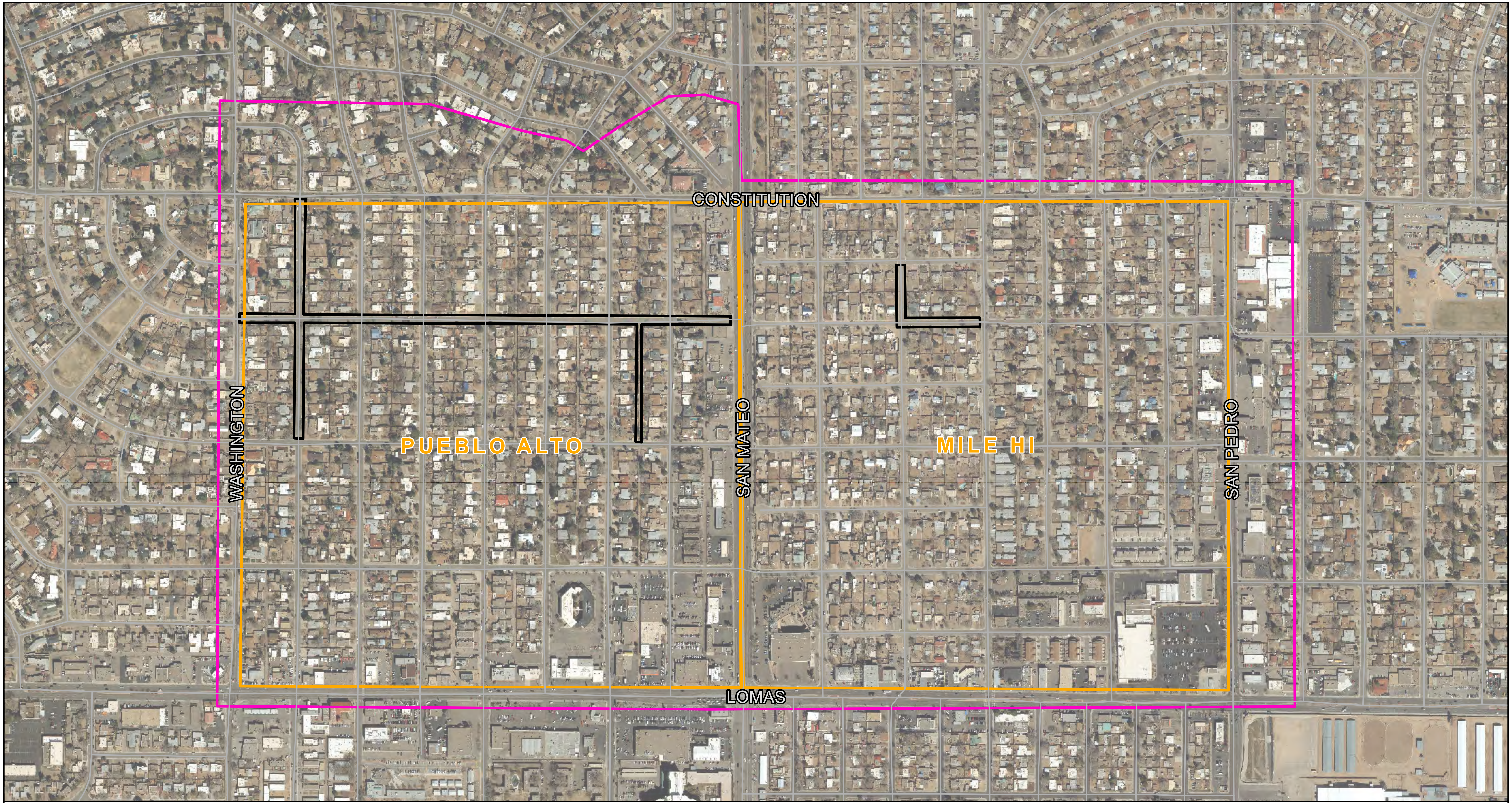
Beyond the direct impacts on flood reduction, additional factors for the proposed projects were evaluated. The feasibility of the proposed pilot projects was evaluated with consideration of public input, NMED permitting requirements, subsurface soil conditions, and maintenance considerations. Cost estimates were prepared for each pilot project area. The projects were divided by location and each location qualitatively evaluated with a variety of influencing factors. This evaluation will be used by the City of Albuquerque to inform future phases of design.

1 INTRODUCTION

Bohannan Huston, Inc. (BHI) was contracted by the City of Albuquerque (COA) to conceptually design green stormwater infrastructure (GSI) improvements in pilot project areas in the Pueblo Alto and Mile Hi neighborhoods of Albuquerque ("study area") (Figure 1). Analysis for supporting the conceptual design of pilot projects was based on a combined two-dimensional (2D) rain-on-grid hydrologic and hydraulic (H&H) model with limits covering both neighborhoods.

The study area has historical flooding issues resulting from both local topography and inadequate drainage infrastructure. The topography of the neighborhood forces water to collect in streets and increase in depth until the curb is overtopped and private yards are flooded. Storm drains and inlets throughout the neighborhood do not have sufficient capacity to convey stormwater flows from major events away from these low areas. Additionally in the Mile Hi neighborhood, upstream runoff from the neighborhoods east of San Pedro Drive flows in the streets from east to west combining with local flows to cause significant flooding issues in the northwest quadrant of the neighborhood.

This report summarizes the approach used to perform the H&H analyses, results of the analyses, elements and considerations of the conceptual design, and resulting impact of the proposed projects. The analysis required to evaluate the existing problem areas served as the basis for evaluating proposed solutions to be conceptually designed. Additional considerations beyond the impact on flooding were also considered, and recommendations for final design are also discussed in the following sections.



Model Extent
Neighborhood
Pilot Project Area

N

0 250 500 1,000 Feet
1 in = 500 ft

Pueblo Alto/Mile Hi
GSI Pilot Project
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Figure 1
Project Area

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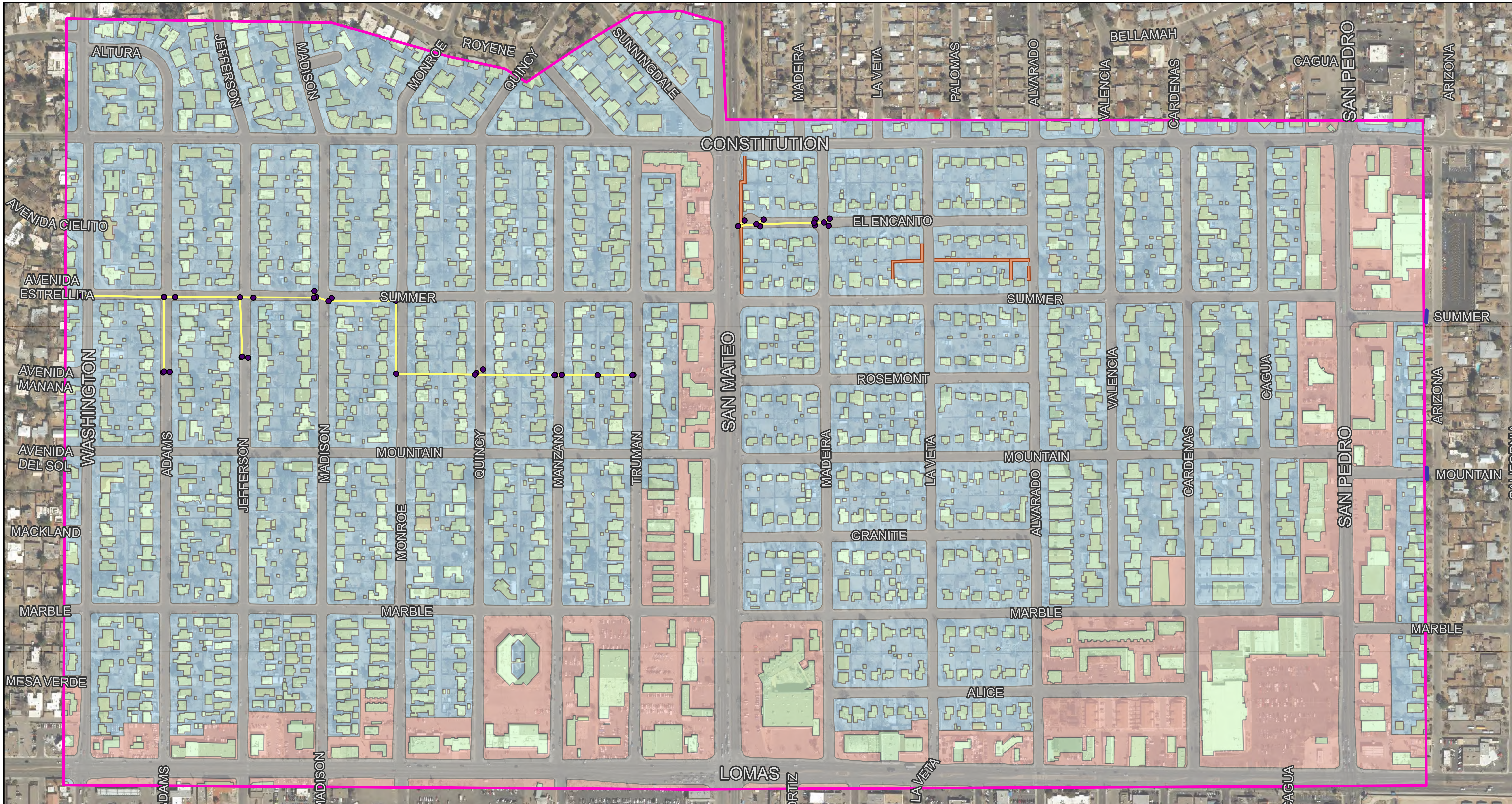
2 HYDROLOGIC AND HYDRAULIC ANALYSIS

A 2D rain-on-grid hydraulic model was developed for the area of interest using Autodesk InfoWorks ICM (v. 2024.1 Ultimate). The area of interest covers both the Mile Hi and Pueblo Alto neighborhoods. Based on the topography, the model limits were delineated beyond the neighborhood areas to capture flow paths entering and leaving the area of interest. This model used a combined approach for H&H analysis by simulating overland and storm drain flows for runoff resulting from precipitation falling on the modeling domain as well as inflows from beyond the study area. Four different analysis scenarios were included:

- **Existing Conditions**
  - Includes external inflow hydrographs further discussed in Section 2.1.5.
- **Future Conditions, No GSI Improvements**
  - Assumes future regional storage and/or storm drain improvements are constructed upstream of study area, so no external inflow hydrographs are included.
- **Proposed Conditions**
  - Includes external inflow hydrographs further discussed in Section 2.1.5.
  - Includes conceptually designed improvements further discussed in Section 3.
- **Future Conditions, With GSI Improvements**
  - Assumes future regional storage and/or storm drain improvements are constructed upstream of study area, so no external inflow hydrographs are included.
  - Includes conceptually designed improvements further discussed in Section 3.

2.1 MODEL INPUTS

The types of input data required for the modeled simulations are topographic data, a computational mesh, land cover areas for both H&H parameters, precipitation intensity hyetographs, inflow hydrographs, storm drain network elements, boundary conditions, and simulation parameter controls. Modeling inputs required for the analysis were delineated within the modeling domain as shown in Figure 2. The modeling inputs shown were maintained for the proposed conditions analysis with the addition of infiltration zones, mesh level zones and storm drain network elements as discussed in Section 5.



Node
Conduit
Wall
External Boundary Condition
Model Extent

Land Cover Categories
Building Footprint
Commercial
Residential
Road/Sidewalk

N

0 200 400 800 Feet
1 in = 400 ft

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Figure 2
Model Inputs

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2.1.1 TOPOGRAPHIC DATA

The basis of the 2D model is topographic data used to represent the underlying terrain. A bare earth digital elevation model (DEM) was obtained from the Mid-Region Council of Governments (MRCOG) 2018 Light Detecting and Ranging (LiDAR) project for the model basis. The data is reported to meet US Geological Survey Quality Level 2 (QL2), which has a vertical accuracy requirement of 10 cm and supports a DEM cell size of 1 m. The MRCOG 2018 dataset has known accuracy issues that vary throughout the region. To verify the accuracy within the study area, BHI performed a series of checks between the data and 39 surveyed control points. The results of those checks verify that the portion of the DEM within the study area meets QL2 requirements.

2.1.2 COMPUTATIONAL MESH

The modeling domain covers the two neighborhoods between San Pedro Drive and Washington Street from east to west, and between Lomas Boulevard and Constitution Avenue from south to north. The total modeling domain is approximately 400 acres. Within the defined domain, InfoWorks ICM creates a mesh that consists of a network of triangles as defined by a minimum/maximum triangle size as well as an optional maximum height difference across individual triangles. The elevation of each triangle vertex is defined by the point at which it is spatially referenced to the DEM so that the mesh approximates the underlying terrain by representation at the triangle vertices.

To capture greater detail where required in the proposed project locations and in the street/sidewalk corridors, a maximum triangle area of 50 square feet was used. This produced triangles with approximately 5-foot sides. Additionally, breaklines were delineated at the gutter line, based on the DEM, and were used in the mesh generation to force one edge of the triangle to follow the gutter line. This resulted in a triangle face alignment with the gutter line, which better represents hydraulic conditions controlled by the curb and gutter throughout the study area. The maximum triangle area used throughout the modeling domain is 300 square feet. This produced triangles with approximately 12-foot sides.

Walls were generally not included in the computational mesh. This approach is generally conservative as it allows for more flows to reach streets and downstream areas, whereas including walls would retain flows to backyards. However, based on field review of modeling results, several private/backyard walls in the Mile Hi neighborhood and the wall alongside the east side of San Mateo Boulevard between Summer Avenue and Constitution Avenue were included. These walls were observed to be made of impermeable materials and would re-direct/detain surface runoff. Within the computational mesh, a line feature represents these walls and hydraulicly controls overland flows so that no flow will pass through that location until flooding depths reach 3-feet. This depth was set based on engineering judgement and the assumption that the walls are not designed to detain significant depths of water. When flooding depths along the wall exceed 3-feet, the model assumes that the wall has failed, and it is removed from the simulation.

Building footprints from the COA 2012 dataset were used to represent building features within the model. Buildings were raised in the computational mesh by an elevation of 4-feet above the DEM. This allows for the buildings to obstruct and redirect overland flows, while precipitation that falls on buildings is generated as runoff.

2.1.3 LAND COVER

Bernalillo County parcel data was used as the basis for land cover delineation within the modeling domain. The parcels were merged such that each block was represented by a polygon feature. Each polygon was categorized as either commercial or residential. The space between the parcels was categorized as representative of the combined road and sidewalk area. Manual modifications were made to the polygon boundaries so that the road/sidewalk region is delineated at the back of sidewalk as identified from the 2020 MRCOG aerial imagery. Land cover polygons are shown in Figure 2.

2.1.3.1 *Hydrologic Parameters*

The land cover features are included as Infiltration Zones in the model and were assigned infiltration rates per Chapter 6 of the *COA Development Process Manual* (DPM) (2020). Because building footprints are being independently considered in the model, the percent impervious outlined in the *COA DPM* (2020) Table 6.2.10 were reduced as summarized in Table 1, below. The percent impervious for each category was determined through calculations of building footprints relative to overall area for representative parcels. Based on the percent impervious adjustments, the area weighted infiltration loss rate was calculated assuming that all pervious surfaces are of a condition consistent with the land treatment category “B” described in the *COA DPM* (2020) Table 6.2.9. Category “B” is defined as “Irrigated lawns, parks and golf courses with 0 to 10% slopes. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes greater than 10% and less than 20%”. The area weighted infiltration loss rate is also summarized in Table 1. Initial abstractions were not accounted for in the hydrologic parameter inputs in the model, as a conservative measure.

Table 1 – Land Cover Categories and Hydrologic Parameters

Category	Percent Impervious	Loss Rate (in/hr)
Residential	25%	0.623
Commercial	80%	0.166
Road/Sidewalk	100%	0.040
Building Footprints	100%	0.040

2.1.3.2 *Hydraulic Parameters*

Flow routing throughout the modeling domain is computed for each computational mesh element with the excess rainfall and external inflows being conveyed between elements. Friction losses are calculated based on the definition of roughness regions. Each roughness region is assigned a Manning's "n" value. The same land cover regions discussed in the previous section were used as the roughness regions and Manning's "n" values were assigned as outlined in Table 2, below.

Table 2 – Land Cover Categories and Hydraulic Parameters

Category	Manning's "n" Value
Residential	0.10
Commercial	0.08
Road/Sidewalk	0.017
Building Footprints	0.017

2.1.4 PRECIPITATION

The 2-, 10-, and 100-year return period, 24-hour duration precipitation events were modeled. The *COA DPM* (2020) prescribes use of the 24-hour duration precipitation (storm) event. No design storm is applicable for this project, as the purpose from a stormwater quantity perspective is to maximize the storage volume and infiltration capacity with various stormwater solutions as a pilot project. Therefore, the 2-year and 10-year events were evaluated in addition to the typical 100-year event to estimate the project impact on smaller and more frequent storms. The 100-year event will be used during future design phases for demonstrating no adverse impact as a result of the proposed project and for sizing erosion protection as needed.

Point precipitation frequency estimates for these events were obtained at the centroid of the modeling domain from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Server (PFDS). The NOAA Atlas 14, Volume 1, Version 5 estimates are included in Appendix A. The depths and peak intensities for the design rainfall events are summarized in Table 3, below. The project area falls in both Zones 1 and 3, as defined in the *COA DPM* (2020), with San Mateo Boulevard being the dividing line between the zones. As such, the precipitation depths and intensities used for this project fall between those listed in Table 6.2.8 of the *COA DPM* (2020) for Zones 1 and 3.

Table 3 – Design Rainfall Depths and Peak Intensities for 24-hour Design Event

Return Period	Depth (in)	Intensity (in/hr)
2-year	1.26	0.053
10-year	1.83	0.076
100-year	2.71	0.113

Hyetographs for the design events were generated in the US Army Corps of Engineers (USACE) Hydrologic Engineering Center's Hydrologic Model System (HEC-HMS) (software v. 4.10). HEC-HMS was used to create a meteorologic model of a "Frequency Storm" with an intensity duration of 5 minutes and an intensity position of 25% for each return period. No area-reduction factor is required based on the size of the modeling domain. Section 6-2(A)(1) of the *COA DPM* (2020) prescribes that the peak intensity be set 12-hours into the storm. However, to simultaneously time the incorporation of offsite inflows (discussed in Section 2.1.5) the peak intensity was set 6-hours into the storm using an intensity position of 25%, consistent with that reference study.

The hyetographs were extracted from the HEC-HMS results and manually entered as rainfall events in InfoWorks ICM. The intensity specified in these hyetographs is directly applied to individual elements for each computational time step, the infiltration rate is applied to the computed depth of water on the mesh element, and the excess precipitation is routed through the modeling domain.

2.1.5 EXTERNAL INFLOWS/PREVIOUS STUDIES

The *San Mateo to Moon Mini Drainage Management Plan* (SMMDMP) prepared by Smith Engineering Company for AMAFCA in November 2017 included drainage analysis of a larger study area that encompasses the modeling domain delineated for this project.

Applicable excerpts from the *SMMDMP* (2017) are included in Appendix B. The existing conditions H&H analysis completed for the *SMMDMP* (2017) identified deficiencies in the storm drain capacities in the vicinity of the study area. To account for these deficiencies in the SMMDMP analysis, flow divides were used to route flows as either street flooding or through storm drains based on assumptions of controlling inlet capacity or downstream storm drain capacity. Within the HEC-HMS model created for the *SMMDMP* (2017), diversions were used at major street intersections to divert street bypass flows and storm drain flows as determined by the analysis.

The street bypass flow junctions at the San Pedro Drive/Summer Avenue and San Pedro Drive/Mountain Road intersections were identified as the key locations of contributing overland flows upstream of the modeling domain for this project. To account for these street bypass flows, hydrographs were obtained from the existing conditions analysis results of the *SMMDMP* (2017) and included as inflows to the modeling domain. Further discussion of the application of boundary conditions is in Section 2.1.7.

Hydraulic analysis for the *SMMDMP* (2017) included a high-level rain-on-grid analysis of the study area in the USACE's Hydrologic Engineering Center's River Analysis System (HEC-RAS) (v. 5.0.3). The analysis included hydraulic modeling of excess precipitation applied to each subbasin with 50-foot grid cells to approximate flood depths. Subbasins did not include routing of flows between modeling domains. The level of detail of the *SMMDMP* (2017) analysis is not comparable to the methods in this study and no direct comparisons of results are applicable.

2.1.6 STORM DRAIN NETWORK ELEMENTS

InfoWorks ICM uses the Environmental Protection Agency's (EPA) Storm Water Management Model (SWMM) v5.1.15s engine to compute storm drain hydraulics for the modeled scenarios. Inputs for the storm drain network require defining properties for inlets, manholes, and conduits. Only storm drain networks with direct impacts to the proposed project locations were included in the analysis (Figure 3).

Existing storm drain systems in both the Mile Hi and Pueblo Alto neighborhoods were included in the model as necessary based on preliminary model results and *SMMDMP* (2017) conclusions. The *SMMDMP* (2017) analysis concluded that the main interceptor storm drains within the studied area are at full capacity during "heavy rainfall events". The San Mateo Boulevard storm drain network is included in the *SMMDMP* (2017) analysis and was assumed to not have any additional conveyance capacity for any of the simulated events. Based on this assumption, it was not included in the model.

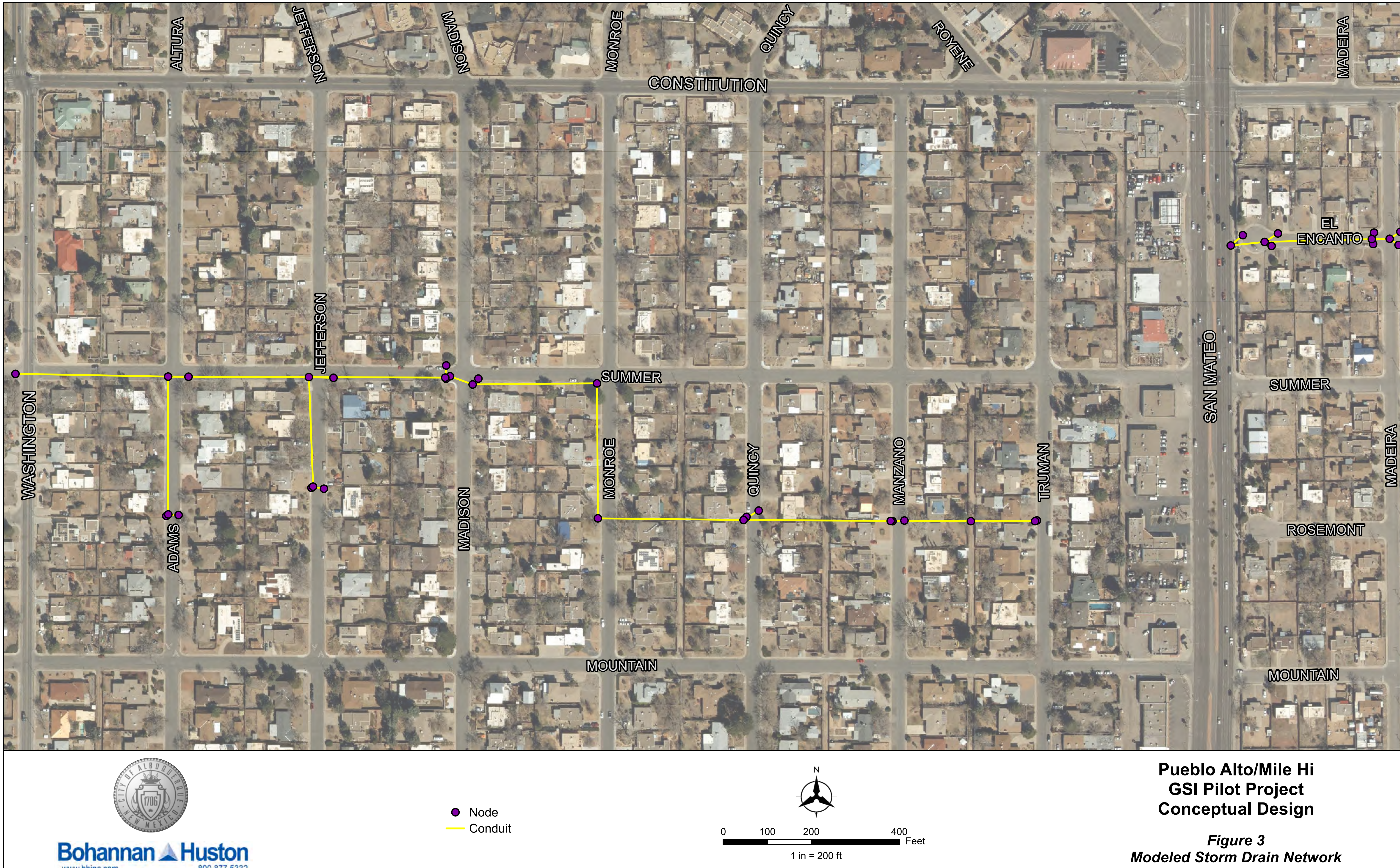

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Figure 3
Modeled Storm Drain Network

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The storm drain network in Mile Hi along El Encanto Place was included in the model. Pipe sizes and materials were obtained from the COA storm drain GIS data. No record drawings were available for the system. Pipe inverts were set based on an assumption of a minimum of 2-feet of cover and a minimum slope of 0.5%. Inlets to the network were measured in the field and included based on DEM elevations at the inlet locations. The connection of the El Encanto Place storm drain network to the San Mateo Boulevard network was modeled as a constant tailwater elevation of 5,230 feet as determined from assumptions of the pipe network relative to existing ground elevations. Multiple analyses to determine the sensitivity of the storm drain capacity to this assumption were completed and it was determined that the assumed tailwater elevation did not have significant impact on modeling results of interest for this project.

The storm drain network in Pueblo Alto beginning at Truman Street and continuing west and north through the neighborhood was included to the downstream modeling domain extents at Washington Street. The pipe sizes, materials, and invert elevations were collected during BHI's topographic surveys of the area in November 2018 and April 2023. At the downstream end of the modeled portion of the storm drain network, a constant tailwater elevation of 5,210 feet was assumed based on relative grades along Washington Street. Multiple analyses to determine the sensitivity of the storm drain capacity to this assumption were completed and it was determined that the assumed tailwater elevation did not have significant impact on modeling results of interest for this project.

2.1.7 BOUNDARY CONDITIONS

Inflows from upstream of the modeling domain, as discussed in Section 2.1.5, are included in the simulation by introducing the hydrographs obtained from the *SMMDMP* (2017) HEC-HMS model results at the modeling domain boundary along a closed cross section at the applicable streets. The peak discharges from the inflow hydrographs are summarized in Table 4, below.

Table 4 – Inflow Boundary Conditions

Inflow Location	Peak Discharge (cfs)		
	2-year	10-year	100-year
Summer Avenue	17	41	93
Mountain Road	109	202	368

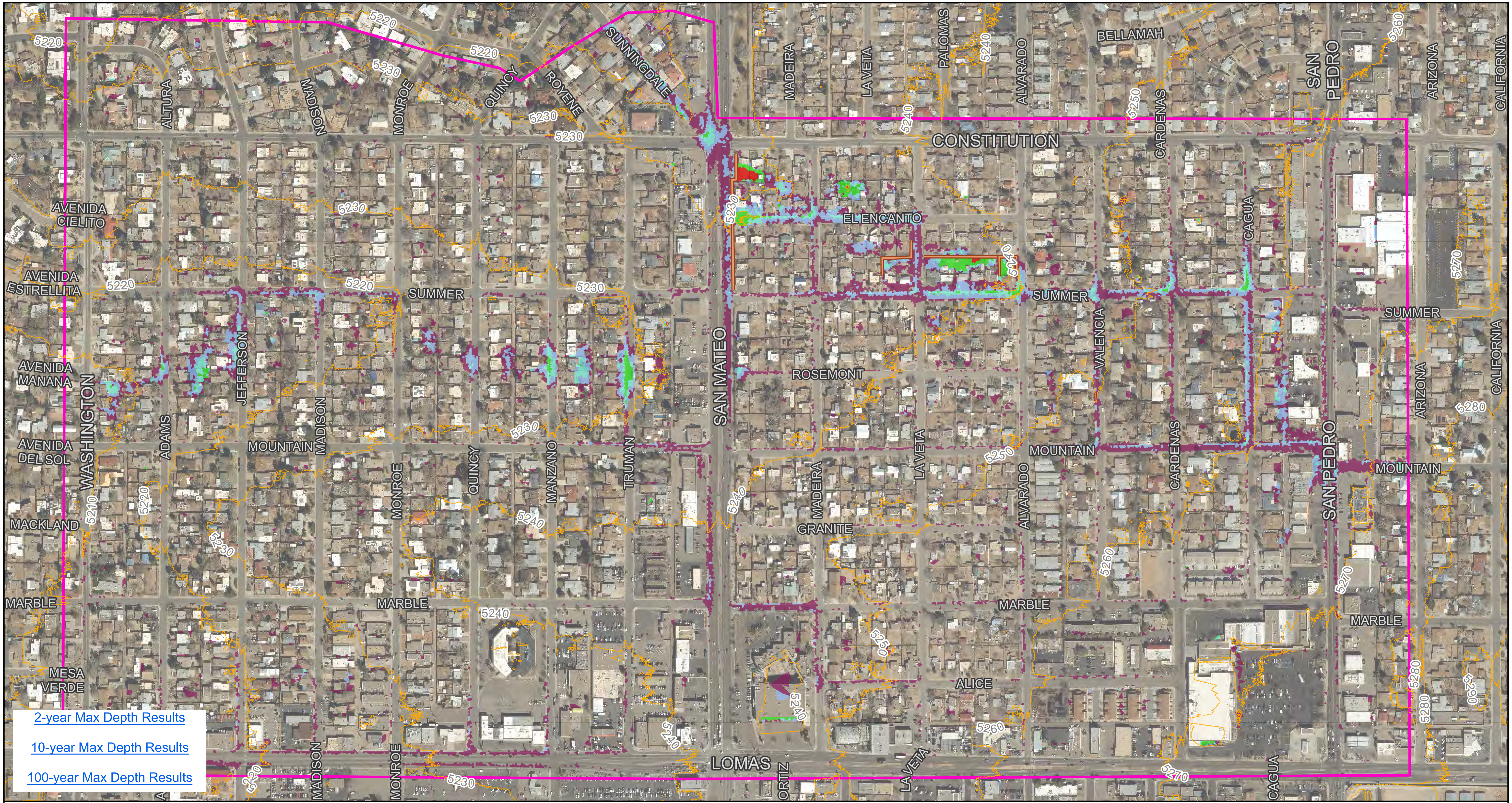
Along the boundary of the modeling domain, the simulations allow for overland flows to leave the model based on calculated normal depth at each mesh element. A rating curve relating flow rates to normal depths is calculated by the software for each mesh element along the boundary, and as the depth in the cell is reached the corresponding flow rate is discharged from the modeling domain. At the modeled downstream end of the storm drain networks, the captured flows are discharged from the modeling domain.

2.1.8 SIMULATION PARAMETERS

The modeled scenarios were run for a duration of 12 hours. Computational time steps were set to 10 seconds for all simulations. The default and/or recommended values for calculation tolerances and stability controls were used.

2.2 MODEL SIMULATIONS AND RESULTS

Simulations of the 2-, 10-, and 100-year return period 24-hour duration precipitation events were included for existing and future conditions. Depth results maps for the project areas are included in Figure 4 through Figure 9. Additional modeling results are included in Appendix C.



Walls
Model Limit

Max Depth (in)
3 - 6
6 - 9
9 - 12
12 - 18
18 - 24
> 24
Contours (10')

N

0 200 400 800 Feet
1 in =400 ft

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Figure 4
Existing Conditions Results
Study Area

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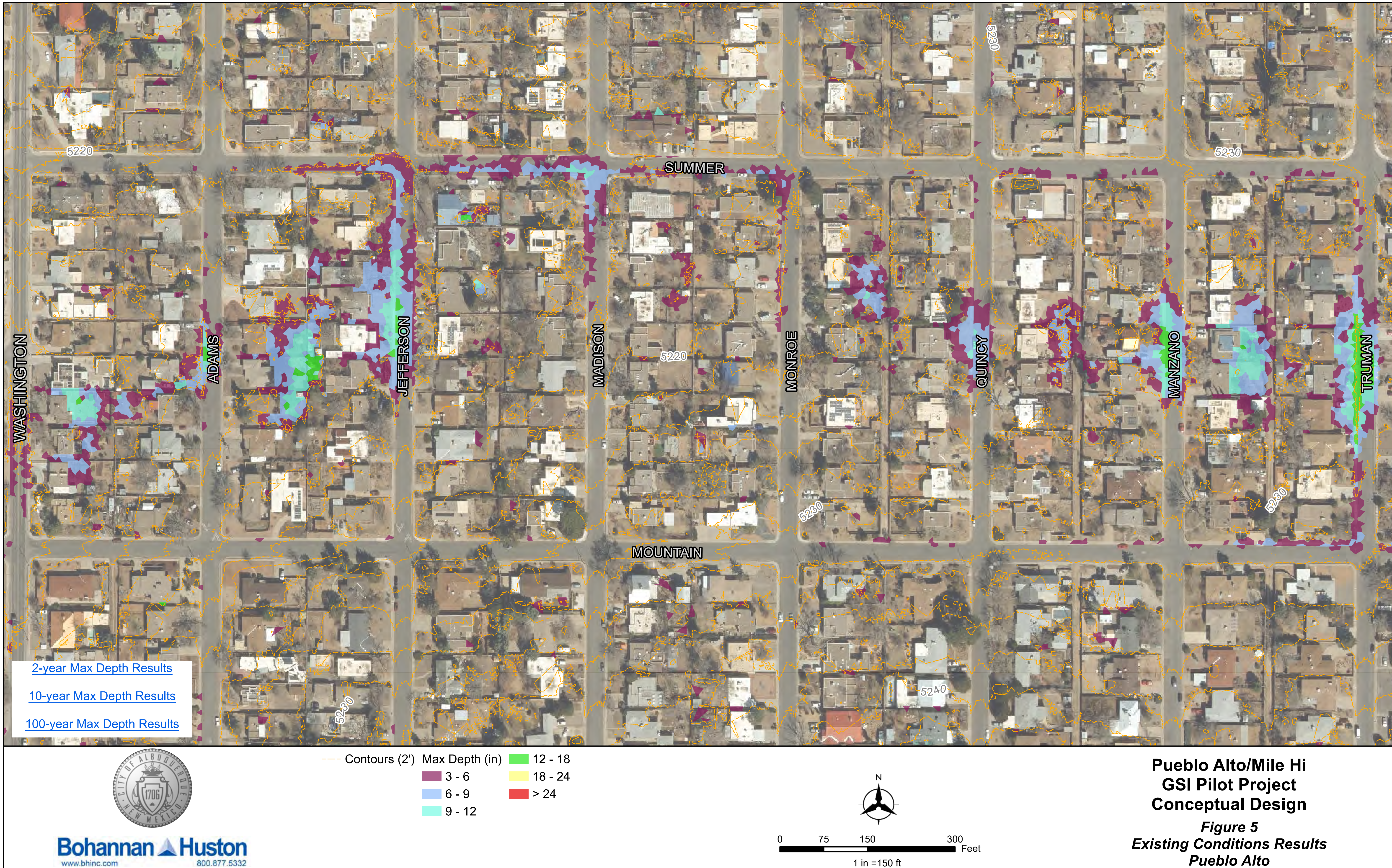

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Figure 5
Existing Conditions Results
Pueblo Alto

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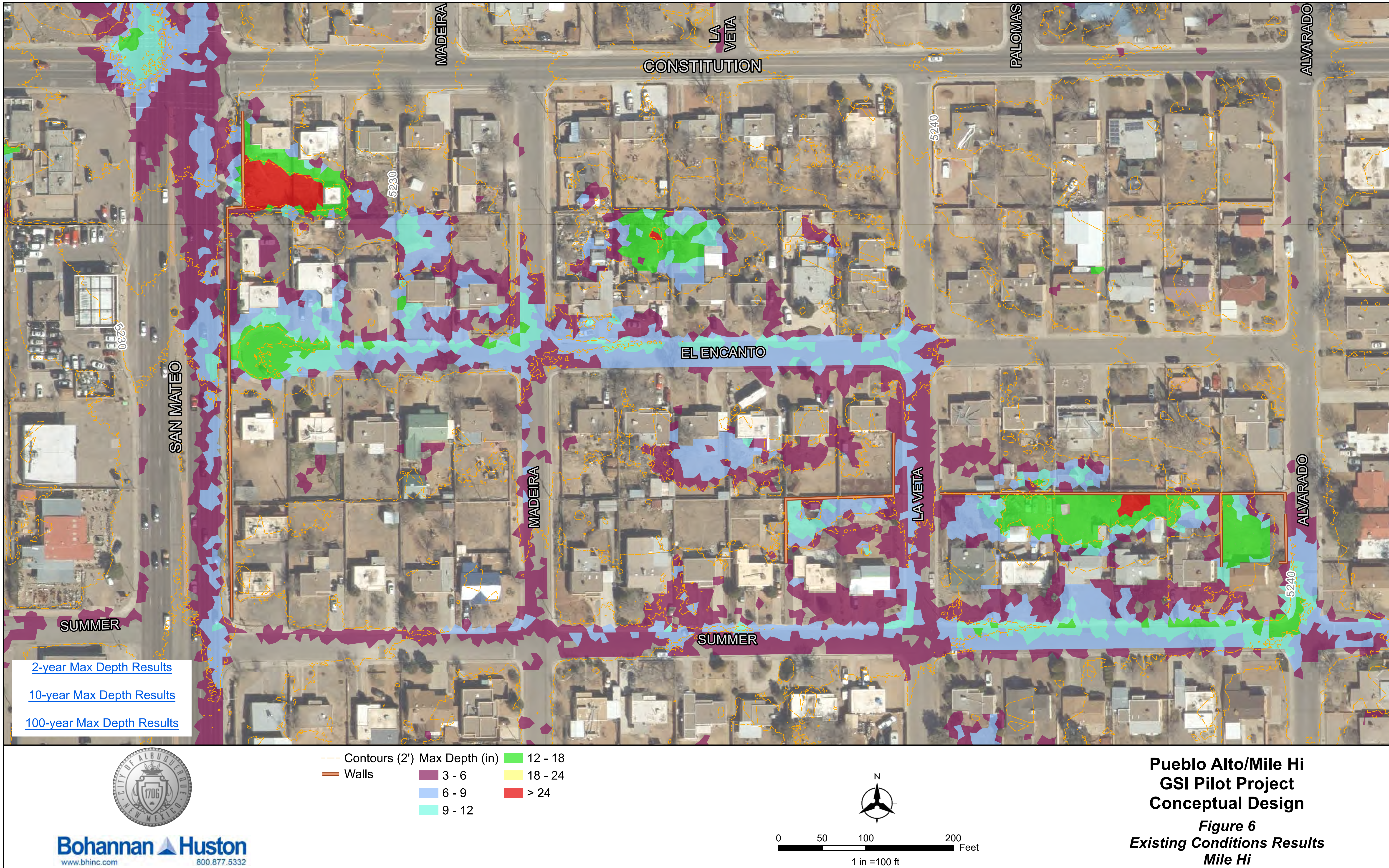

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Figure 6
Existing Conditions Results
Mile Hi

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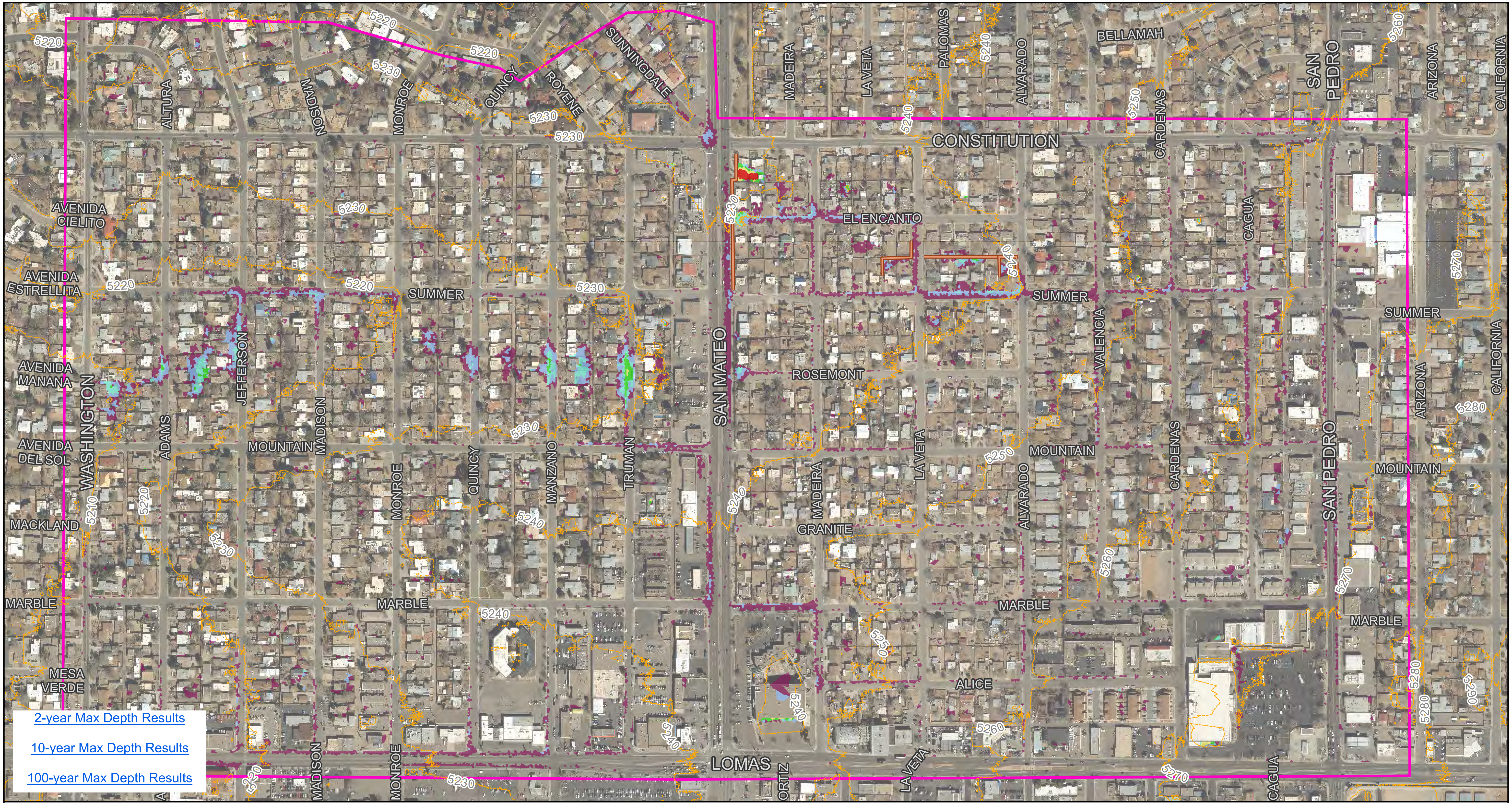

Contours (10')
Walls
Model Limit

Max Depth (in)
3 - 6
6 - 9
9 - 12
12 - 18
18 - 24
> 24

N

0 200 400 800 Feet
1 in =400 ft

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Figure 7
Future Conditions Results
Study Area

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Contours (2')

Max Depth (in)

- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 18
- 18 - 24
- > 24

N

0 75 150 300 Feet

1 in =150 ft

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Figure 8
Future Conditions Results
Pueblo Alto

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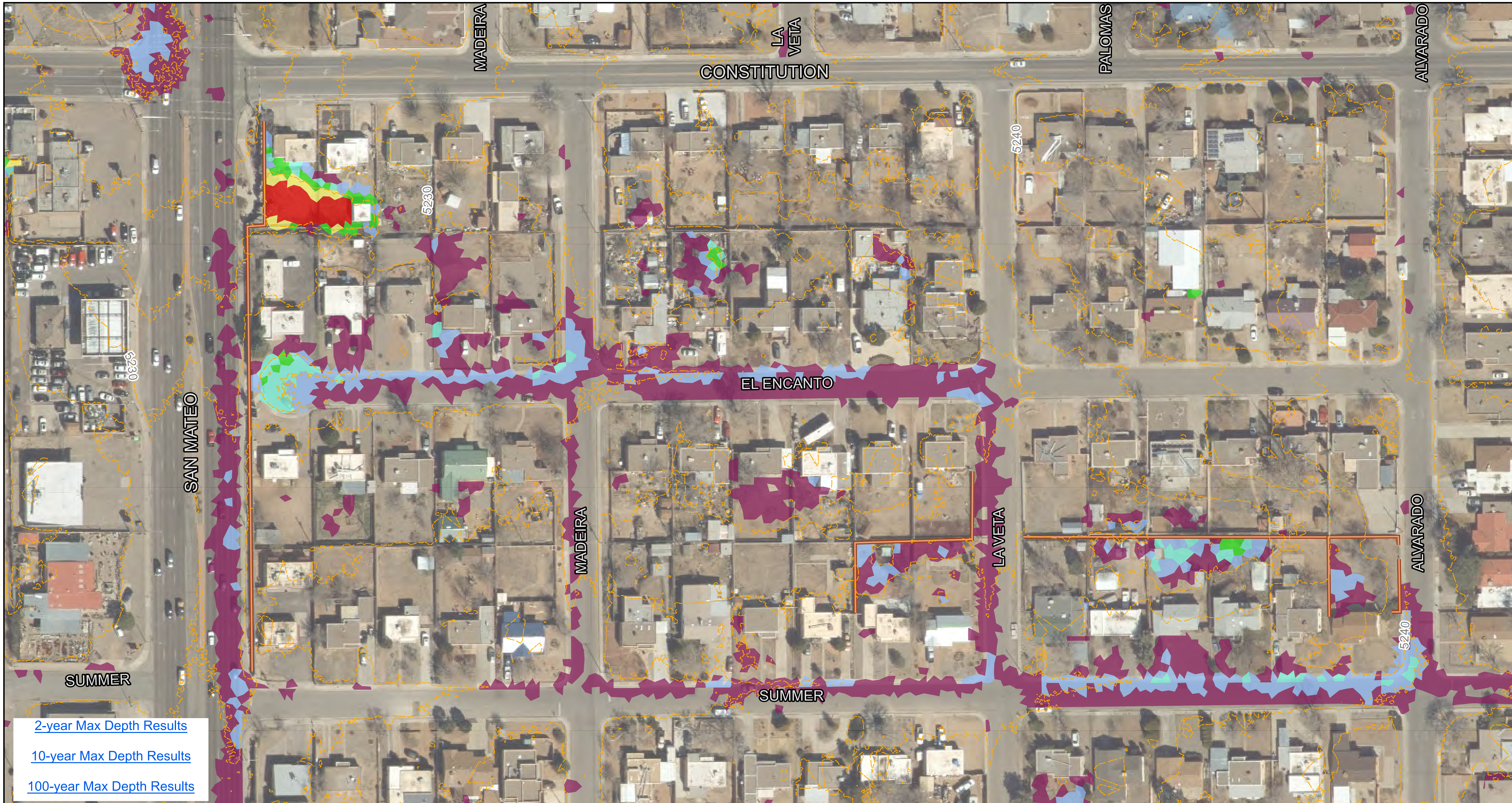

Contours (2')
Walls
Max Depth (in)
3 - 6
6 - 9
9 - 12
12 - 18
18 - 24
> 24
Bernalillo County Road

0 50 100 200 Feet
1 in =100 ft

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Figure 9
Future Conditions Results
Mile Hi

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3 CONCEPTUAL DESIGN

The proposed GSI and drainage improvements for the pilot project areas consist of underground storage chambers and stormwater bumpouts. The improvements were designed to optimize the use of the available space within existing COA rights-of-way (ROW) for improvements within the pilot project areas. In May 2023, a subsurface utility survey was conducted by High Mesa Consulting Group to inform proposed improvement layouts. Determination of which elements are to be recommended to be progressed to final design is one purpose of this concept phase and not all elements discussed in this report may be included in future phases of the project. The 30% Design Plans showing these elements are included in Appendix D.

3.1 STORMWATER BUMPOUTS

As shown in Figure 10, stormwater bumpouts are pervious areas that extend from the curb line toward the center of the roadway. Bumpouts provide a depressed area for runoff to accumulate and infiltrate, reducing stormwater volumes and peak flows downstream. They also provide water quality treatment through the collection of sediment/debris and biofiltration. The conceptual design for this project includes stormwater bumpouts on one side of the road while maintaining two travel lanes, as shown in Appendix D.

Figure 10 – Stormwater Bumpout Details

3.2 UNDERGROUND STORAGE

Preliminary layouts for the underground storage and infiltration systems were developed to maximize the storage volume provided within the pilot project areas, while minimizing utility conflicts and ensuring the systems are constructable and maintainable. For conceptual design, 84-inch diameter corrugated metal pipes (CMPs) were proposed for the underground storage systems. These systems would be connected to the existing storm drain network and to proposed inlets. The underground storage systems would provide short-term (approximately 24 to 48 hours) storage of excess runoff, reducing flooding. After the peak flows pass through the existing storm drain network, the underground system would drain via infiltration and release of stored water into the storm drain network.

The *SMMDMP* (2017) included a high level volume analysis resulting in an approximation of how much storage volume is required in corridors to allow the existing storm drains to function at capacity. The conclusions are included in Appendix B (Figure 4.1). The Mile Hi neighborhood is included in the “San Mateo Corridor” which requires 22 acre-feet. The Pueblo Alto neighborhood is included in the “Washington Corridor” which requires 9 acre-feet. The underground storage chambers proposed with this pilot project would provide a portion of the larger detention requirements for the area. As currently designed, the underground storage has a volume of approximately 4.7 acre-feet.

4 FEASIBILITY ASSESSMENT

4.1 COMMUNITY OUTREACH

This phase of the project included continuation of community outreach from the study phase. Groundworks Studio has prepared the *Community Outreach Report*, provided as Appendix E.

4.2 NMED PERMITTING REQUIREMENTS

As part of this project, the potential need for injection well permitting by the New Mexico Environmental Department (NMED) was investigated. New Mexico Administrative Code Section 20.6.2.5 defines injection wells as having depths greater than their largest surface dimension. None of the improvements proposed in the conceptual design would qualify as injection wells under this definition, so no injection well permitting requirements are anticipated.

4.3 SUBSURFACE SOIL CONDITIONS

A geotechnical engineering firm, Geo-Test, Inc., was hired as a subconsultant to evaluate subsurface drainage conditions in the proposed project areas. The *Geotechnical Engineering Services Report* is included as Appendix F. To support the analysis, ten (10) exploratory borings were drilled to a depth of 15-feet throughout the proposed project areas. The collected soils were analyzed, and a variety of soil classifications were reported, ranging from clean relatively coarse grained non-plastic sands to fine grained high plasticity clay.

In general, the soil types present would support the feasibility of stormwater infiltration system drainage to subsurface in-situ soils. Relatively thick lenses of clay were encountered sporadically and were identified as being areas where infiltration areas should be avoided as the resulting saturation of these soils could have impact on nearby structures. However, at the level of investigation completed for this report, no consistent soil profile could be established, and additional geotechnical investigations will be required to ensure optimum subsurface drainage design for project elements.

4.4 MAINTENANCE CONSIDERATIONS

As with all drainage infrastructure, GSI and underground storage systems require recurring maintenance to function as intended. Typical maintenance requirements associated with the proposed improvements are summarized below and will be the responsibility of COA. Based on coordination to date, after the construction contractor warranty period ends, underground storage systems will be maintained by COA Department of Municipal Development, Storm Drainage Maintenance, and landscape and irrigation within stormwater bumpouts will be maintained by COA Solid Waste Department, Clean Cities Division. Storm Drainage Maintenance is responsible for maintenance of the existing storm drains, detention ponds, water quality features, and other drainage infrastructure throughout the COA. Clean Cities Division is responsible for maintenance of landscaped medians, among other responsibilities that are relevant to maintaining stormwater bumpouts (including trash removal).

4.4.1 UNDERGROUND STORAGE SYSTEMS

Underground storage systems, whether constructed from CMP, as proposed for this project, or when consisting of concrete vaults or high density polyethylene (HDPE) chambers require similar inspection and maintenance. Recurring maintenance consists primarily of the removal of sediment and debris/trash. Underground storage systems should be designed to isolate sediment and debris and thus maintenance operations to one portion of the system and/or include pre-treatment to capture the majority of sediment and debris before it enters the system. Pre-treatment for the systems proposed for this project would be provided by the proposed stormwater bumpouts (further described below) and water quality manholes at major inflow locations. Access by means of standard size manhole grates would be provided at both ends of each proposed underground storage system to allow for inspection and maintenance predominantly from the surface.

The frequency of inspections for underground storage systems is highly dependent on site-specific conditions including sediment loads, land use, and amount of paved areas within the contributing drainage basin. Systems should be inspected every six months during the first year after installation and after significant storm events. At a minimum, annual inspections are recommended.

Maintenance of both water quality manholes and the storage pipes/chambers to remove accumulated sediment and debris/trash would be accomplished by means of a vactor truck, to which COA Storm Drainage Maintenance has access. Pre-treatment provided by stormwater bumpouts and water quality manholes will reduce the frequency with which routine maintenance is required.

4.4.2 STORMWATER BUMPOUTS

Maintenance of stormwater bumpouts consists of weed removal (particularly the first few years after installation), sediment and trash removal, plant trimming, irrigation system repair, and minor erosion repair. Stormwater bumpouts should be inspected following significant storm events. Inspections should include trash removal, determining if sediment has accumulated in an amount requiring removal (and sediment removal if necessary), and determining if any minor erosion is in need of repair. Plant maintenance will be dependent on the type and age of plantings, and the frequency of which will generally be aligned with other landscapes maintained by COA Clean Cities Division. Part of the function of proposed stormwater bumpouts is to capture sediment and debris/trash, and so the need for their removal is anticipated. The frequency of sediment and debris/trash removal requirements will be dependent on location within the pilot project, as well as land use and amount of paved area in the contributing drainage basin.

It is important that weed control be conducted without the use of herbicides, as overflow from the stormwater bumpouts will enter the storm drain system, which ultimately drains to the Rio Grande.

5 CONCEPTUAL DESIGN HYDROLOGIC AND HYDRAULIC MODELING

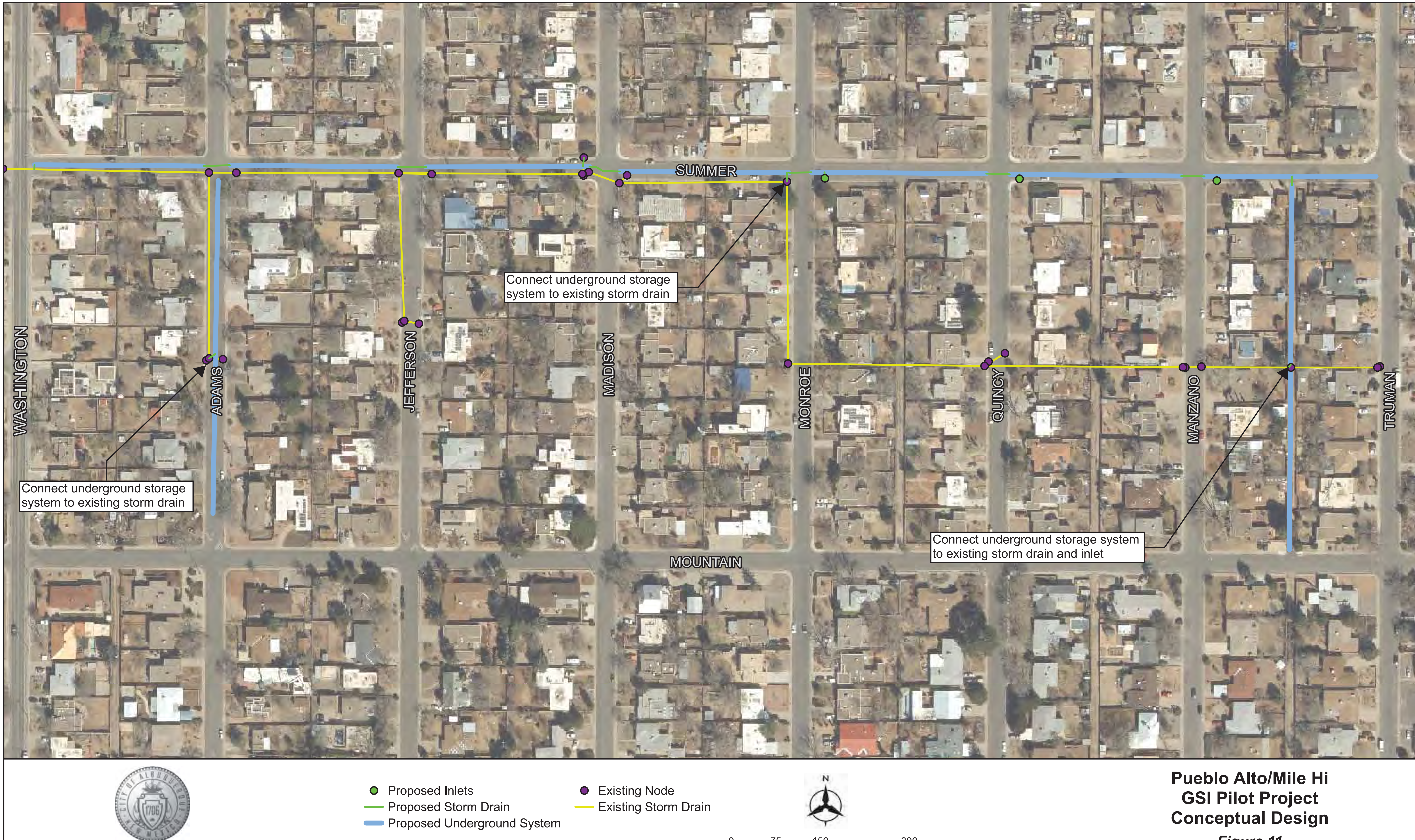
The existing and future conditions H&H models discussed in Section 2 were modified to include conceptual design infrastructure discussed in Section 3.

5.1 UNDERGROUND STORAGE

The underground storage systems were included in the model as storage nodes with properties defined by a stage-storage relationship based on the calculated storage volume and the height of the system. The storage nodes are connected to the existing storm drain system and new inlets as shown on the 30% Design Plans, included in Appendix D, and in Figure 11. Existing and new inlets capture surface flows from the 2D mesh and divert runoff to the underground storage system which are interconnected to disperse stormwater storage throughout the network.

In the Pueblo Alto area, as each tank fills, water is conveyed to the next downstream tank through an orifice connection in the model's storm drain network. The orifices are set at the crown of the storage system to maximize storage volumes. At the downstream end of the system, near Washington Street and Summer Avenue, a low-flow bleed pipe connects the downstream-most tank back to the storm drain system.

The underground system in La Veta Drive receives flows from the new inlets as shown in the 30% Design Plans (Appendix D). These flows are diverted to the underground storage system that infiltrates the retained volume into the surrounding area. No low-flow pipe connection was achievable in this area due the existing downstream storm drain configuration. The existing storm drain begins at the intersection of El Encanto Place and Madeira Drive, approximately 425-feet west, where the invert elevation is about 5-feet higher than the proposed underground storage system invert elevation.



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Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 11
Proposed Underground System
Pueblo Alto

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Author: molivas

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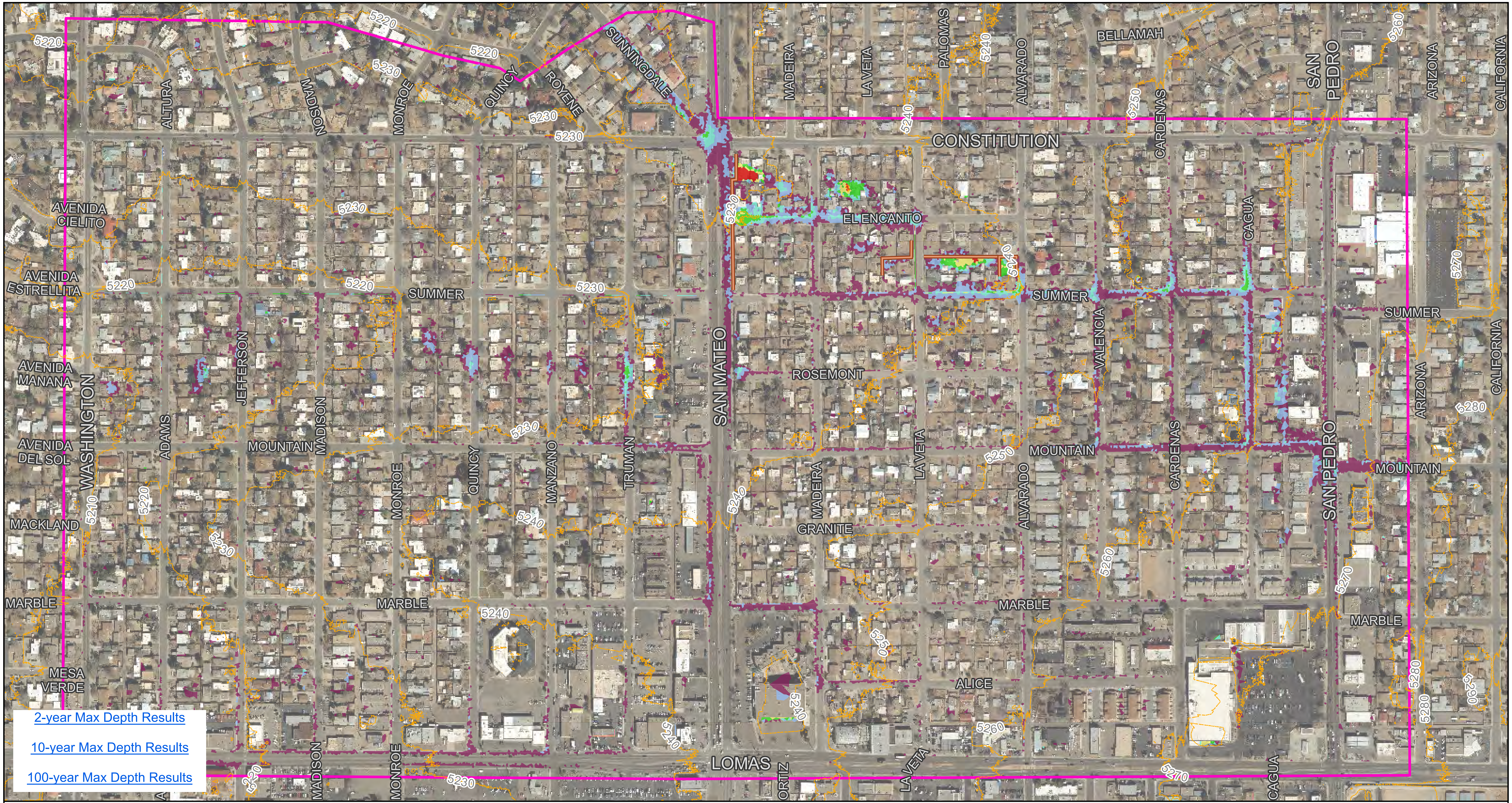
5.2 STORMWATER BUMPOUTS

The stormwater bumpout footprints were included in the InfoWorks ICM modeling software to adjust mesh elevations and infiltration parameters as required to represent the bumpouts in the model. The approximate bumpout toe of slope, as shown in the 30% Design Plans, was added to the model as a Mesh Level Zone effectively lowering the mesh elevations covered by the floor footprint by 0.75-feet. Additionally, the extents of the bumpout were set to be an infiltration zone with the same infiltration rate as the residential parcels (Table 1). No additional grading modifications to the existing terrain are included at this phase in the project.

Runoff in the street enters the bumpouts at the level flush with the existing street grades and the collected runoff is infiltrated through the defined infiltration zone. In the modeling domain, proposed inlets were placed at the grade level with the bumpout floor and allowed for continuous unregulated discharge from the 2D mesh. Proposed inlets accept approximately the same peak inflows as existing. During future phases of design these model elements will be updated to reflect the further progressed design including parameter definition for inlet type and invert elevations.

5.3 RESULTS

Simulations of the 2-, 10-, and 100-year return period 24-hour duration precipitation events were included for proposed and future conditions, with GSI improvements. Depth results maps for the project areas are included in Figure 12 through Figure 17. Additional modeling results maps are included in Appendix C.



Contours (10')
Walls
Model Limit

Max Depth (in)
3 - 6
6 - 9
9 - 12
12 - 18
18 - 24
> 24

N

0 200 400 800 Feet
1 in =400 ft

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Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 12
Proposed Conditions Results
Study Area

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Contours (2') Max Depth (in)

- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 18
- 18 - 24
- > 24

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N

0 75 150 300 Feet
1 in =150 ft

Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 13
Proposed Conditions Results
Pueblo Alto

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Author: molivas

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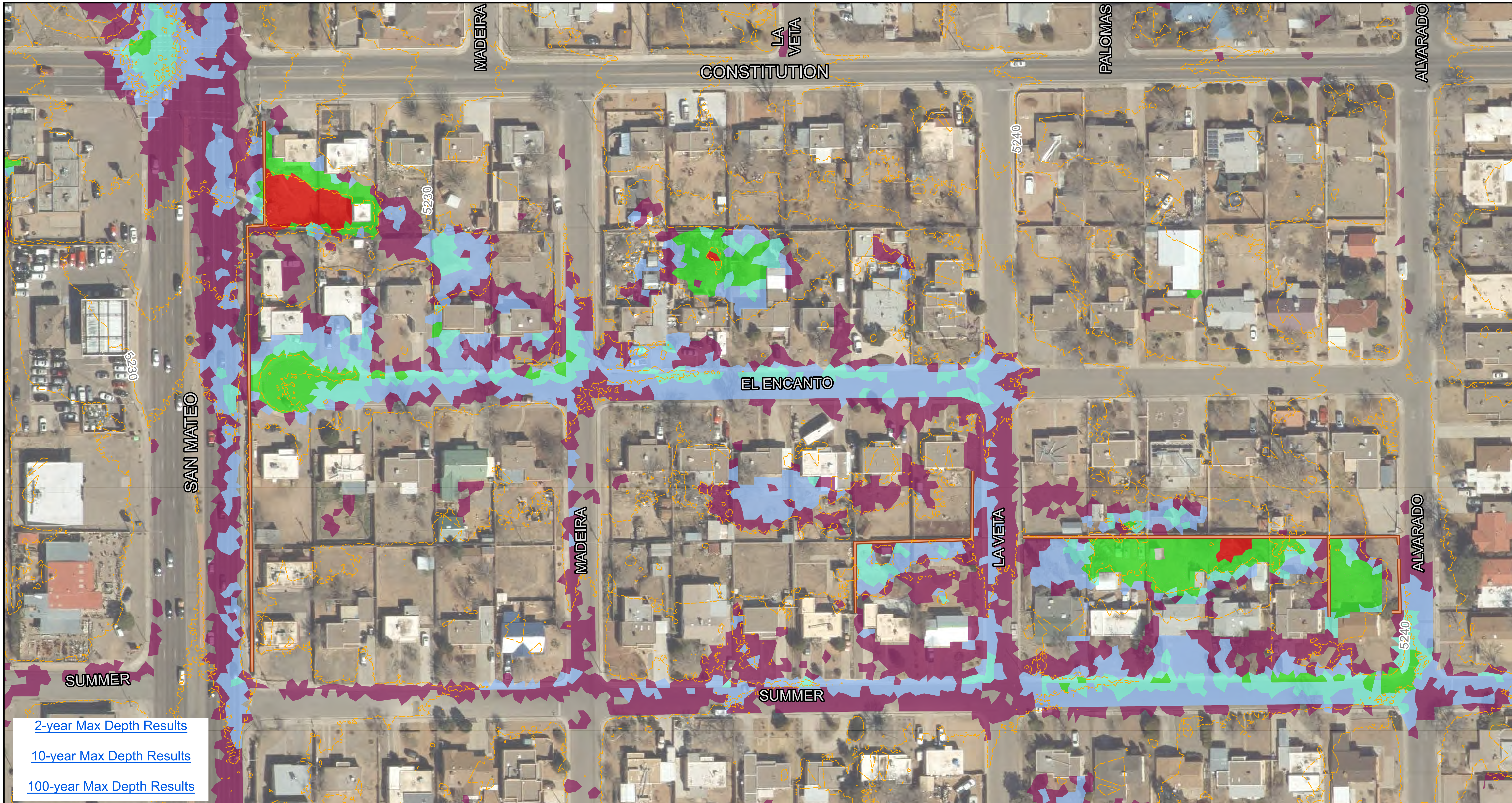

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Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 14
Proposed Conditions Results
Mile Hi

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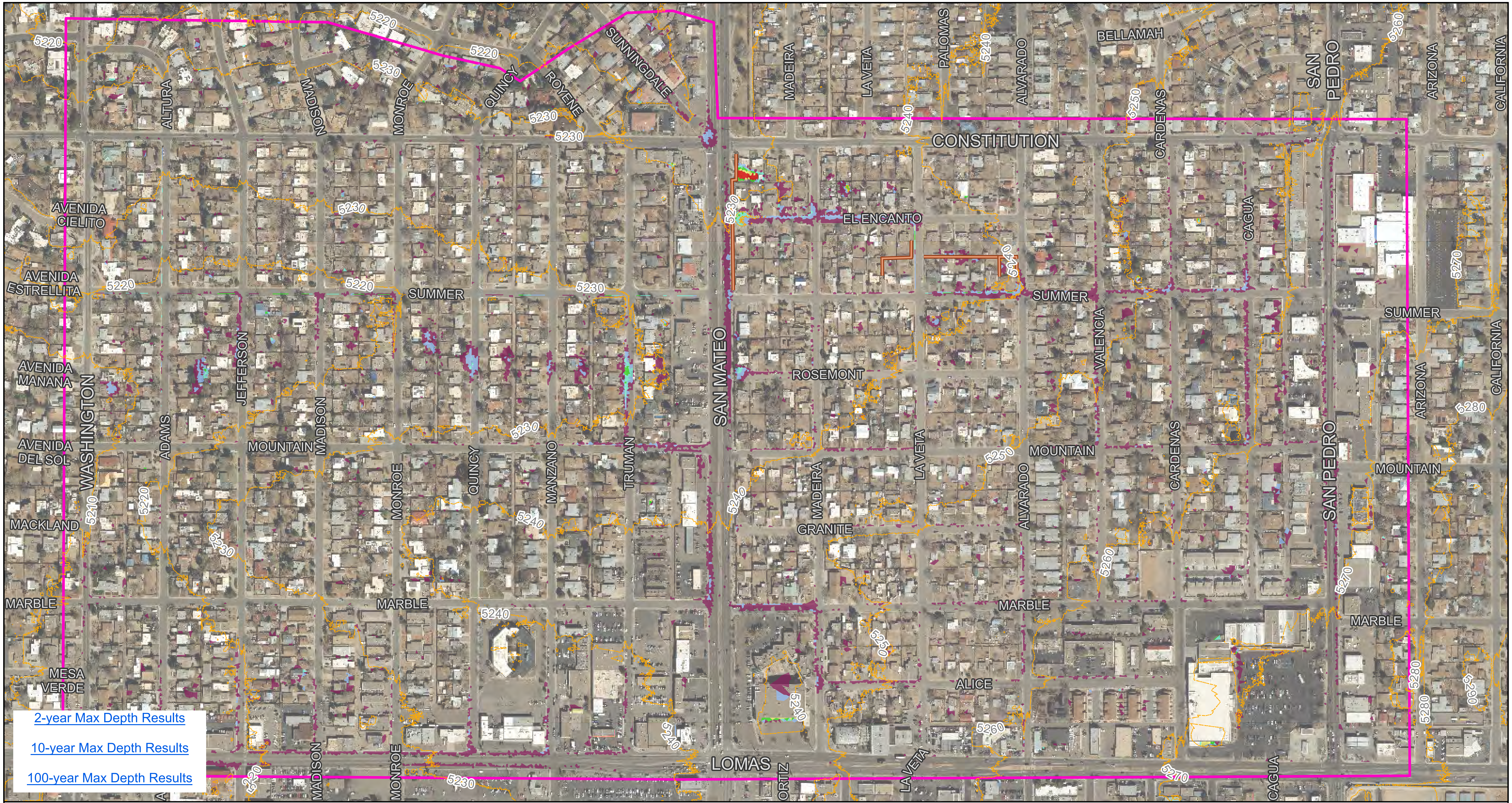

Contours (10')
Walls
Model Limit

Max Depth (in)
3 - 6
6 - 9
9 - 12
12 - 18
18 - 24
> 24

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N

0 200 400 800 Feet
1 in =400 ft

Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 15
Future Conditions with Improvements Results
Study Area

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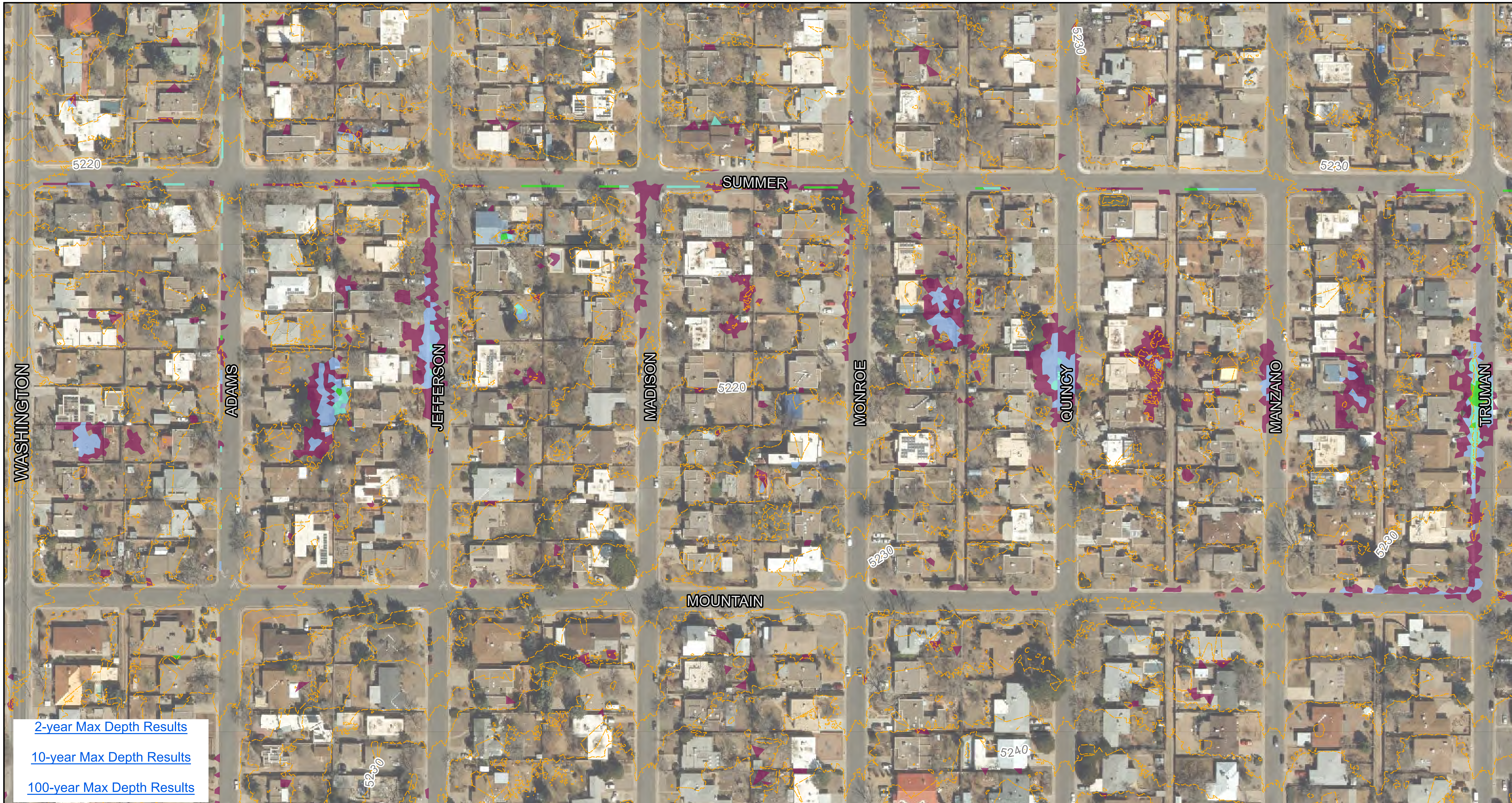

Contours (2')
Max Depth (in)
3 - 6
6 - 9
9 - 12
12 - 18
18 - 24
> 24

N

0 75 150 300 Feet
1 in =150 ft

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Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 16
Future Conditions with Improvements Results
Pueblo Alto

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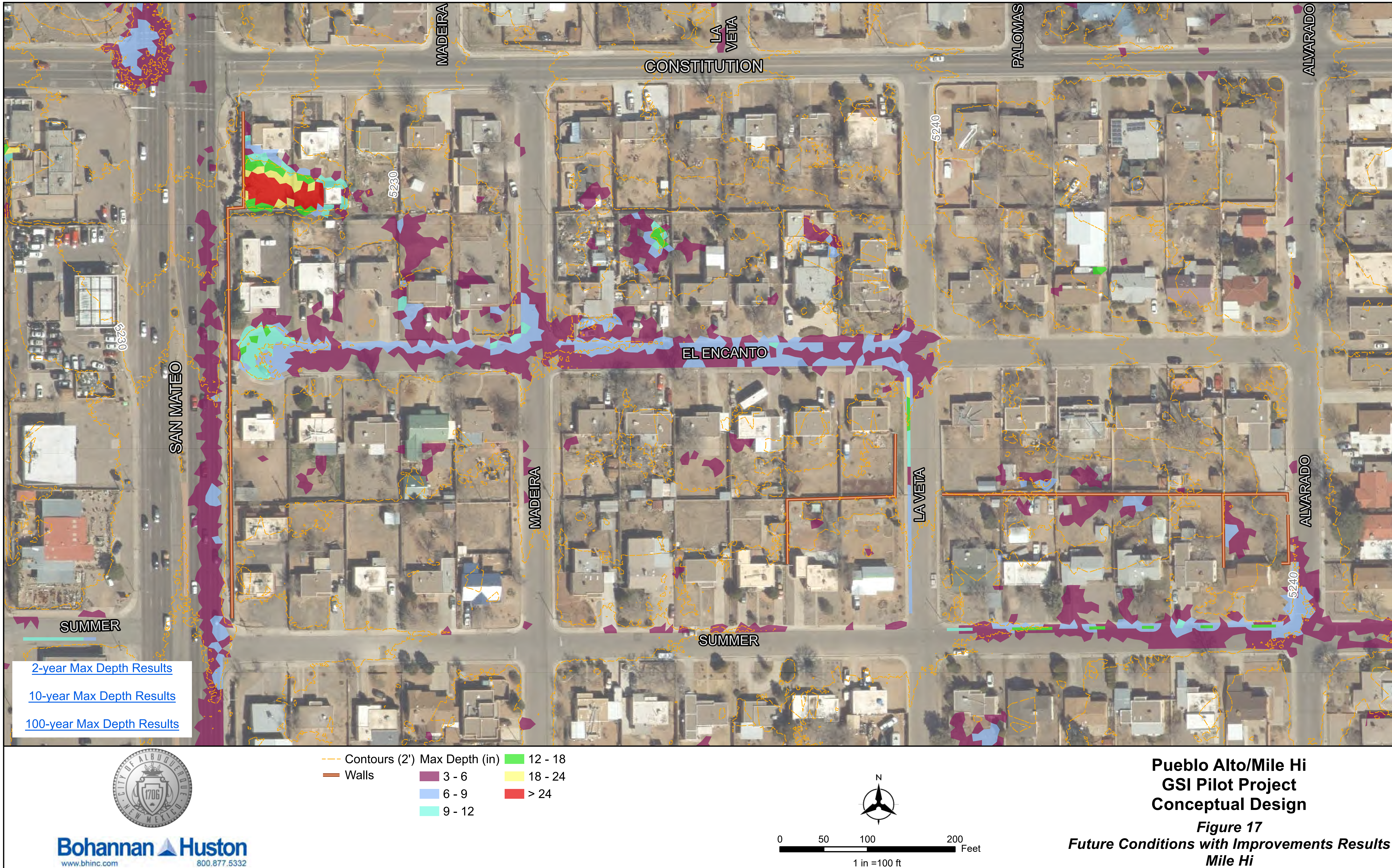

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Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 17
Future Conditions with Improvements Results
Mile Hi

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5.4 UNDERGROUND SYSTEM PHASING ANALYSIS

Various configurations of the underground storage system in the Pueblo Alto neighborhood were modeled to determine the difference in impact (i.e., flooding reduction) for informing phasing options. The configurations modeled were based on modifications made to the base configuration shown in the 30% Design Plans (Appendix D). Only the existing conditions 2-year return event was modeled for the configurations listed below, as modeling described above indicates the flood reduction benefits of the proposed systems are relatively minor for the 10-year and larger storm events.

- Base Configuration without Adams system
- Base Configuration without Alley system
- Summer system Only
- Base Configuration without Summer system
    - Alley system connects to existing storm drain network at existing inlet in alley.
    - Adams system connects to existing storm drain network as shown in 30% Design Plans.
- Base Configuration of Summer system East of Madison Only
- Summer system West of Madison Only
    - Summer system connects to existing storm drain network at manhole in Summer/Madison intersection.

To quantify the differences in flood reduction, modeling results were extracted from the model at key locations for comparison. Results were extracted from ICM using Network Results Lines that quantity hydraulic results at mesh element faces aligned with the designated line. Similarly, at Network Results Points, hydraulic results are extracted from the mesh element that contains the point. Peak flow rates and depths are summarized at areas of interest along with a comparison to existing conditions results in Figure 18.

Results Type	Location	Existing Conditions	Conceptual Design			Without Adams			Without Alley			Summer Only			Summer (Washington to Madison)			Summer (Madison to San Mateo)			Without Summer		
		Results	Results	Dif*	% Dif*	Results	Dif*	% Dif*	Results	Dif*	% Dif*	Results	Dif*	% Dif*	Results	Dif*	% Dif*	Results	Dif*	% Dif*	Results	Dif*	% Dif*
Results Lines Peak Flow Rate (cfs)	Adams W	13.7	0.4	13.3	97%	8.9	4.8	35%	0.4	13.3	97%	8.9	4.8	35%	8.8	4.9	35%	8.6	5.1	37%	2.8	10.9	80%
	Jefferson W	14.7	2.5	12.1	83%	3.4	11.3	77%	2.5	12.1	83%	3.3	11.3	77%	3.2	11.5	78%	7.8	6.8	47%	10.2	4.5	31%
	Summer/Jefferson NS-E	21.4	2.1	19.3	90%	2.4	19.0	89%	2.1	19.3	90%	2.4	19.0	89%	2.5	19.0	88%	13.7	7.7	36%	17.1	4.3	20%
	Summer/Jefferson EW-S	24.0	6.2	17.8	74%	6.2	17.8	74%	6.2	17.8	74%	6.2	17.8	74%	6.2	17.8	74%	10.9	13.2	55%	14.2	9.8	41%
	Summer/Madison NS-W	21.0	1.0	20.0	95%	1.2	19.8	94%	1.0	20.0	95%	1.3	19.7	94%	0.6	20.3	97%	0.0	21.0	100%	5.3	15.7	75%
	Alley E	9.6	2.1	7.5	78%	2.1	7.5	78%	8.7	0.8	9%	8.7	0.8	9%	8.8	0.8	9%	8.7	0.9	9%	3.5	6.1	63%
Results Points Max Depth (ft)	Adams	1.01	0.08	0.9	92%	0.83	0.2	18%	0.08	0.9	92%	0.84	0.2	17%	0.08	0.9	92%	0.69	0.3	32%	0.63	0.4	38%
	Jefferson	1.18	0.69	0.5	42%	0.87	0.3	26%	0.83	0.4	30%	0.88	0.3	25%	0.73	0.5	38%	0.89	0.3	25%	1.10	0.1	7%
	Manzano	1.19	0.57	0.6	52%	0.57	0.6	52%	1.19	0.0	0%	1.19	0.0	0%	1.19	0.0	0%	0.96	0.2	19%	0.64	0.6	46%
	Truman	1.65	1.23	0.4	25%	1.25	0.4	24%	1.63	0.0	1%	1.63	0.0	1%	1.63	0.0	1%	1.63	0.0	1%	1.47	0.2	11%

*"Dif" and "% Dif" columns calculate the difference and percent difference from existing to proposed for each scenario.

Results Point
Results Line

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N

0 75 150 300 Feet
1 in =150 ft

Pueblo Alto/Mile Hi
GSI Pilot Project
Conceptual Design

Figure 18
Phasing Analysis Results

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Author: molivas

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6 COST ESTIMATES

Cost estimates were prepared for the four general project locations in accordance with ASTM E2516-11, to a Class 3 level. At the COA's direction, Summer Avenue was divided at Madison into two subprojects (east and west). Unit prices, where applicable, are based on the COA Engineer's Estimated Unit Prices for Contract Items 2023, increased by 30% to account for continued uncertainty in construction bid prices. Underground storage system costs are based on material cost information provided by manufacturers, increased to account for installation costs. Landscape costs (consisting of GSI plantings, mulch, etc. and irrigation) were provided by Groundwork Studio and are based on recent COA projects. The miscellaneous category includes lump sum project costs (i.e., mobilization and demobilization, construction staking and surveying, and traffic control). A contingency of 30% is included for each project location to account for the uncertainty associated with the current level of design. Final design and construction phase professional services were assumed to each be 10% of the construction subtotal with contingency. Total costs for major categories of the proposed projects are summarized in Table 5. Detailed estimates are included in Appendix G.

Table 5 – Cost Estimate Summary

Item	Summer Ave.		Adams St.	Alley	La Veta Dr. & Summer Ave.	Item Total
	West	East				
Roadway	$310,622	$514,776	$522,532	$16,407	$151,018	**$1,515,355**
Underground Storage	$678,912	$932,714	$465,830	$423,000	$758,686	**$3,259,142**
Landscaping	$111,230	$205,470	$111,150	$15,830	$174,590	**$618,270**
Miscellaneous	$140,000	$208,000	$138,000	$59,000	$138,000	**$683,000**
Subtotal:	$1,240,764	$1,860,960	$1,237,512	$514,237	$1,222,294	**$6,075,767**
Contingency:	$372,229	$558,288	$371,254	$154,271	$366,688	**$1,822,730**
Subtotal w/ Contingency:	$1,612,993	$2,419,248	$1,608,766	$668,508	$1,588,982	**$7,898,497**
Final Design Phase Professional Services:	$161,299	$241,925	$160,877	$66,851	$158,898	**$789,850**
Construction Phase Prof. Services:	$161,299	$241,925	$160,877	$66,851	$158,898	**$789,850**
Total before NMGRT:	$1,935,591	$2,903,098	$1,930,520	$802,210	$1,906,778	**$9,478,197**
NMGRT @ 7.625%:	$147,589	$221,362	$147,203	$61,169	$145,392	**$722,715**
LOCATION TOTAL:	**$2,083,180**	**$3,124,460**	**$2,077,723**	**$863,379**	**$2,052,170**	**$10,201,000**

7 PILOT PROJECT EVALUATION

Due to the size and estimated cost of the overall project as shown on the 30% Conceptual Plans (Appendix D), a comparative evaluation of potential pilot project sub-locations has been prepared to inform prioritization and phasing decisions by COA. Weight assigned to each consideration (drainage benefit, cost, etc.) was determined in conjunction with COA staff. The evaluation incorporates the following considerations:

- Drainage Improvement/Benefit – Informed by the H&H modeling of proposed conditions described in Section 5, locations are scored based on the flow and depth reductions they provide at the areas where existing flooding is most severe. This consideration is given the highest weight, as improving drainage conditions within the subject neighborhoods is the main purpose of this project.
- Cost – Informed by 30% level cost estimates described in Section 6. This consideration is weighted highly, as a lower cost project can be implemented more quickly by COA.
- Utility Cost Share Potential – Locations with existing underground utilities that are more likely to require replacement or rehabilitation due to their age and assumed condition, and thus present a greater opportunity for pavement replacement costs to be shared with utility owners, are scored higher.
- Implementable On Own – Some portions of the proposed underground storage systems will be most effective when interconnected with other existing and proposed underground drainage infrastructure (both storm drain pipes and storage systems). This consideration is an assessment of how significantly the system function would be negatively impacted if it were installed on its own.
- Encroachments – Encroachments in the case of this project are private improvements within COA ROW. Potential locations where are fewer encroachments are scored higher.
- Maintenance Complexity – COA maintenance of the proposed improvements will be critical for them to function as intended. Larger underground storage systems, such as that proposed at the La Veta Drive location, are scored lower as they are generally more difficult to maintain. Stormwater bumpouts at each location will require similar maintenance and thus did not impact scoring.

A weighted average was computed for each project location based on the assigned scores and category weights as shown in Table 6.

Table 6 – Pilot Project Evaluation

Location	Drainage Improvement/ Benefit	Cost	Utility Cost Share Potential	Implementable On Own	Encroachments	Maintenance Complexity	Weighted Average
Weight:	**35%**	**25%**	**10%**	**10%**	**10%**	**10%**	**100%**
All Conceptual Design	5	1	3	5	2	3	**3.3**
Summer Ave. (Washington to Madison)	5	4	2	5	4	3	**4.2**
Summer Ave. (Madison to San Mateo)	5	3	2	4	4	3	**3.8**
Adams St. (Mountain to Constitution)	3	4	3	5	2	3	**3.4**
Alley (Mountain to Summer)	4	5	0	5	5	3	**4.0**
La Veta & Summer Ave.	3	3	1	5	4	2	**3.0**

Notes:

1. Scoring on scale of 0 to 5 (5 being greater benefit, less issues, etc.)

8 CONCLUSION

This design analysis report summarizes the hydrologic and hydraulic analysis completed for the Pueblo Alto/Mile Hi GSI Pilot Project Conceptual Design. Based on this analysis, the proposed improvements were conceptually designed and evaluated. The evaluation of improvements included a feasibility assessment, incorporation of the design into the H&H analysis, and cost estimate creation. The results of the evaluations were quantified to assist in informing COA's assessment of the pilot projects. BHI requests COA's direction on if the projects in their entirety, or portions of the proposed improvements, should proceed to final design.

APPENDICES

APPENDIX A – NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATE DATA

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, USA*
Latitude: 35.0921°, Longitude: -106.5862°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	**2**	**5**	**10**	**25**	**50**	**100**	**200**	**500**	**1000**
5-min	**0.176** (0.151-0.207)	**0.229** (0.195-0.269)	**0.307** (0.261-0.360)	**0.367** (0.311-0.429)	**0.450** (0.380-0.525)	**0.514** (0.432-0.600)	**0.582** (0.485-0.678)	**0.653** (0.541-0.760)	**0.749** (0.615-0.873)	**0.825** (0.673-0.963)
10-min	**0.269** (0.230-0.316)	**0.348** (0.297-0.409)	**0.467** (0.398-0.547)	**0.559** (0.474-0.653)	**0.685** (0.578-0.799)	**0.783** (0.657-0.913)	**0.886** (0.738-1.03)	**0.994** (0.823-1.16)	**1.14** (0.935-1.33)	**1.26** (1.02-1.47)
15-min	**0.333** (0.286-0.391)	**0.431** (0.368-0.506)	**0.579** (0.493-0.678)	**0.693** (0.587-0.810)	**0.849** (0.716-0.990)	**0.970** (0.815-1.13)	**1.10** (0.915-1.28)	**1.23** (1.02-1.44)	**1.41** (1.16-1.65)	**1.56** (1.27-1.82)
30-min	**0.449** (0.385-0.526)	**0.581** (0.495-0.682)	**0.780** (0.664-0.913)	**0.933** (0.790-1.09)	**1.14** (0.964-1.33)	**1.31** (1.10-1.52)	**1.48** (1.23-1.72)	**1.66** (1.37-1.93)	**1.90** (1.56-2.22)	**2.10** (1.71-2.45)
60-min	**0.556** (0.476-0.651)	**0.719** (0.613-0.844)	**0.965** (0.821-1.13)	**1.16** (0.978-1.35)	**1.42** (1.19-1.65)	**1.62** (1.36-1.89)	**1.83** (1.53-2.13)	**2.05** (1.70-2.39)	**2.35** (1.93-2.75)	**2.60** (2.12-3.03)
2-hr	**0.645** (0.545-0.777)	**0.826** (0.698-0.996)	**1.09** (0.921-1.32)	**1.31** (1.10-1.56)	**1.60** (1.33-1.91)	**1.84** (1.53-2.19)	**2.10** (1.72-2.49)	**2.36** (1.93-2.80)	**2.73** (2.20-3.24)	**3.03** (2.42-3.61)
3-hr	**0.687** (0.585-0.822)	**0.873** (0.741-1.04)	**1.14** (0.972-1.36)	**1.36** (1.15-1.62)	**1.66** (1.39-1.97)	**1.90** (1.59-2.25)	**2.15** (1.79-2.55)	**2.42** (1.99-2.87)	**2.80** (2.28-3.32)	**3.11** (2.51-3.69)
6-hr	**0.799** (0.685-0.950)	**1.01** (0.864-1.20)	**1.30** (1.11-1.54)	**1.53** (1.31-1.81)	**1.84** (1.56-2.17)	**2.09** (1.76-2.46)	**2.35** (1.97-2.77)	**2.61** (2.18-3.08)	**2.99** (2.47-3.51)	**3.29** (2.70-3.87)
12-hr	**0.882** (0.764-1.02)	**1.11** (0.964-1.29)	**1.41** (1.22-1.63)	**1.64** (1.42-1.90)	**1.96** (1.68-2.26)	**2.20** (1.88-2.54)	**2.46** (2.09-2.83)	**2.72** (2.30-3.14)	**3.08** (2.57-3.55)	**3.37** (2.79-3.89)
24-hr	**1.01** (0.884-1.16)	**1.26** (1.11-1.45)	**1.58** (1.39-1.81)	**1.83** (1.60-2.10)	**2.18** (1.89-2.49)	**2.44** (2.12-2.78)	**2.71** (2.35-3.09)	**2.99** (2.57-3.40)	**3.36** (2.87-3.83)	**3.66** (3.11-4.16)
2-day	**1.06** (0.930-1.20)	**1.33** (1.17-1.50)	**1.66** (1.46-1.88)	**1.92** (1.68-2.17)	**2.27** (1.99-2.56)	**2.54** (2.21-2.87)	**2.82** (2.45-3.19)	**3.11** (2.68-3.51)	**3.49** (3.00-3.95)	**3.78** (3.24-4.29)
3-day	**1.15** (1.03-1.28)	**1.43** (1.28-1.60)	**1.78** (1.59-1.98)	**2.05** (1.82-2.28)	**2.41** (2.14-2.68)	**2.69** (2.38-2.99)	**2.97** (2.62-3.31)	**3.26** (2.87-3.63)	**3.64** (3.19-4.06)	**3.94** (3.43-4.40)
4-day	**1.24** (1.13-1.36)	**1.54** (1.40-1.69)	**1.89** (1.71-2.08)	**2.17** (1.97-2.38)	**2.55** (2.30-2.80)	**2.84** (2.55-3.11)	**3.13** (2.80-3.43)	**3.42** (3.05-3.75)	**3.80** (3.38-4.18)	**4.09** (3.63-4.51)
7-day	**1.41** (1.29-1.54)	**1.76** (1.60-1.92)	**2.14** (1.95-2.34)	**2.44** (2.22-2.66)	**2.84** (2.58-3.09)	**3.14** (2.84-3.42)	**3.43** (3.10-3.75)	**3.72** (3.36-4.06)	**4.10** (3.69-4.48)	**4.38** (3.92-4.80)
10-day	**1.57** (1.43-1.71)	**1.94** (1.78-2.12)	**2.38** (2.18-2.59)	**2.72** (2.49-2.96)	**3.18** (2.91-3.45)	**3.52** (3.21-3.83)	**3.87** (3.51-4.20)	**4.21** (3.81-4.57)	**4.65** (4.19-5.06)	**4.98** (4.47-5.43)
20-day	**1.96** (1.79-2.15)	**2.44** (2.22-2.67)	**2.96** (2.70-3.24)	**3.36** (3.06-3.67)	**3.86** (3.52-4.23)	**4.23** (3.84-4.63)	**4.59** (4.16-5.01)	**4.93** (4.46-5.38)	**5.35** (4.83-5.85)	**5.66** (5.09-6.19)
30-day	**2.36** (2.15-2.56)	**2.92** (2.67-3.18)	**3.52** (3.21-3.82)	**3.96** (3.61-4.30)	**4.52** (4.11-4.90)	**4.92** (4.46-5.33)	**5.29** (4.80-5.74)	**5.65** (5.12-6.13)	**6.08** (5.50-6.60)	**6.39** (5.76-6.94)
45-day	**2.88** (2.64-3.13)	**3.57** (3.28-3.88)	**4.26** (3.90-4.63)	**4.75** (4.35-5.16)	**5.35** (4.90-5.81)	**5.76** (5.27-6.27)	**6.14** (5.62-6.68)	**6.48** (5.92-7.05)	**6.87** (6.27-7.48)	**7.12** (6.50-7.74)
60-day	**3.32** (3.04-3.61)	**4.10** (3.77-4.47)	**4.89** (4.50-5.33)	**5.46** (5.02-5.94)	**6.15** (5.65-6.69)	**6.62** (6.08-7.20)	**7.05** (6.47-7.68)	**7.44** (6.83-8.11)	**7.89** (7.24-8.61)	**8.18** (7.51-8.93)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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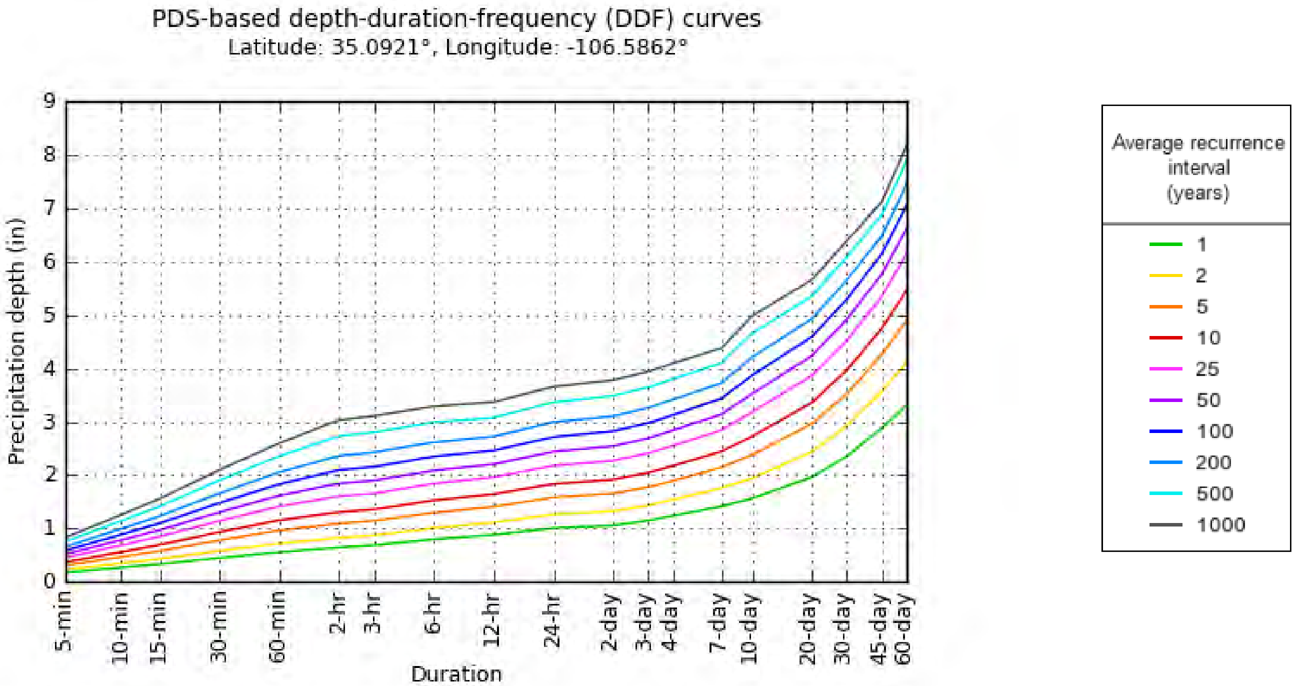
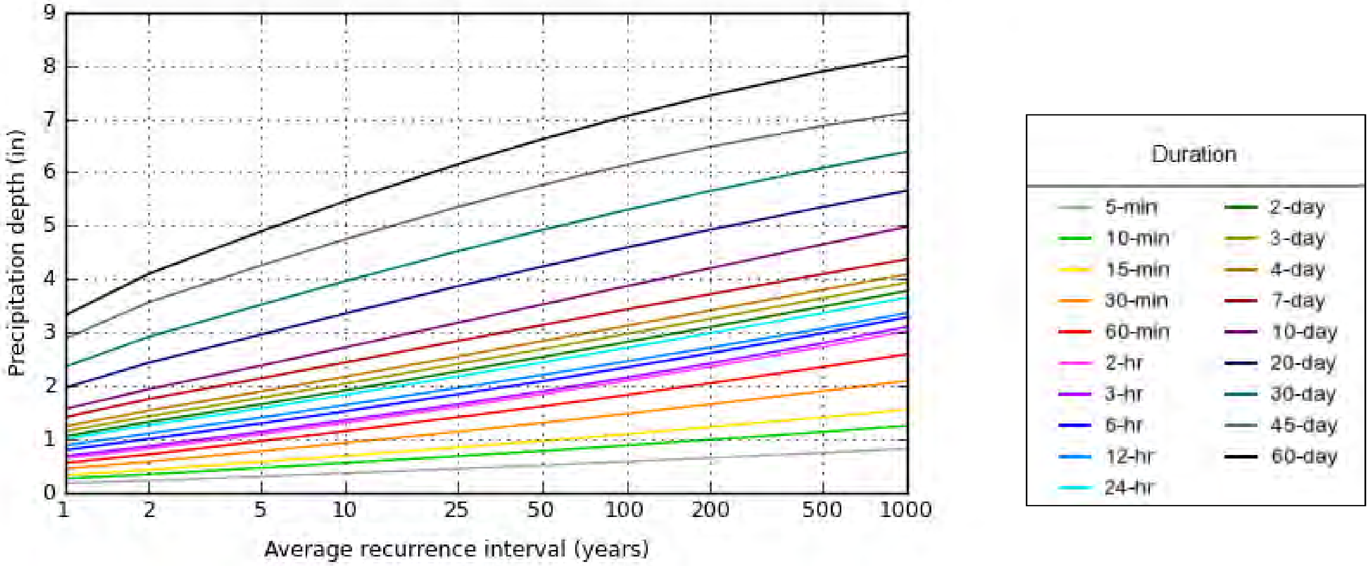
PF graphical





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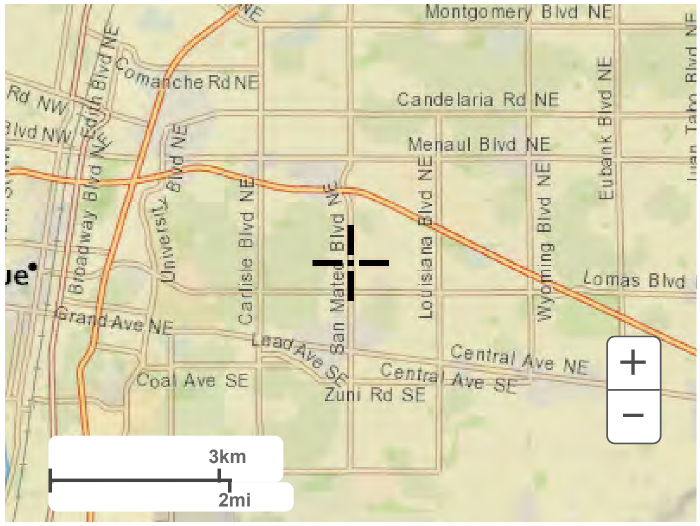
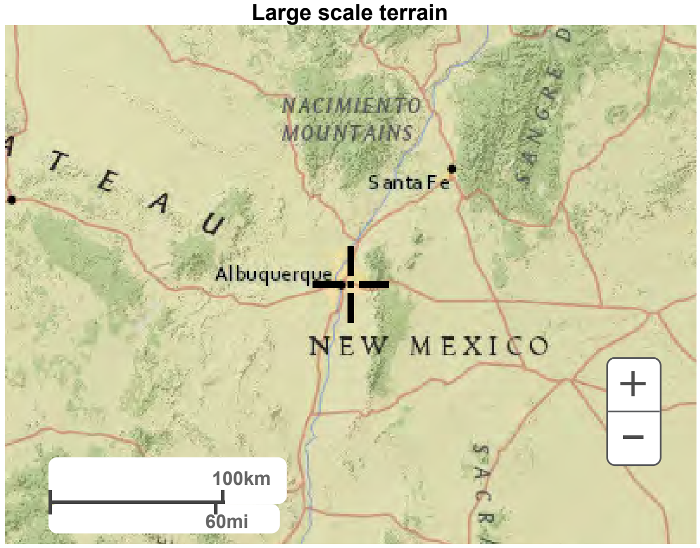
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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National Weather Service
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APPENDIX B – SMMDMP EXCERPTS

FINAL
SAN MATEO to MOON MINI

DRAINAGE MANAGEMENT PLAN

Volume 1

Prepared for:
Albuquerque Metropolitan Arroyo Flood Control Authority

Prepared by:

Smith Engineering Company

November 2017

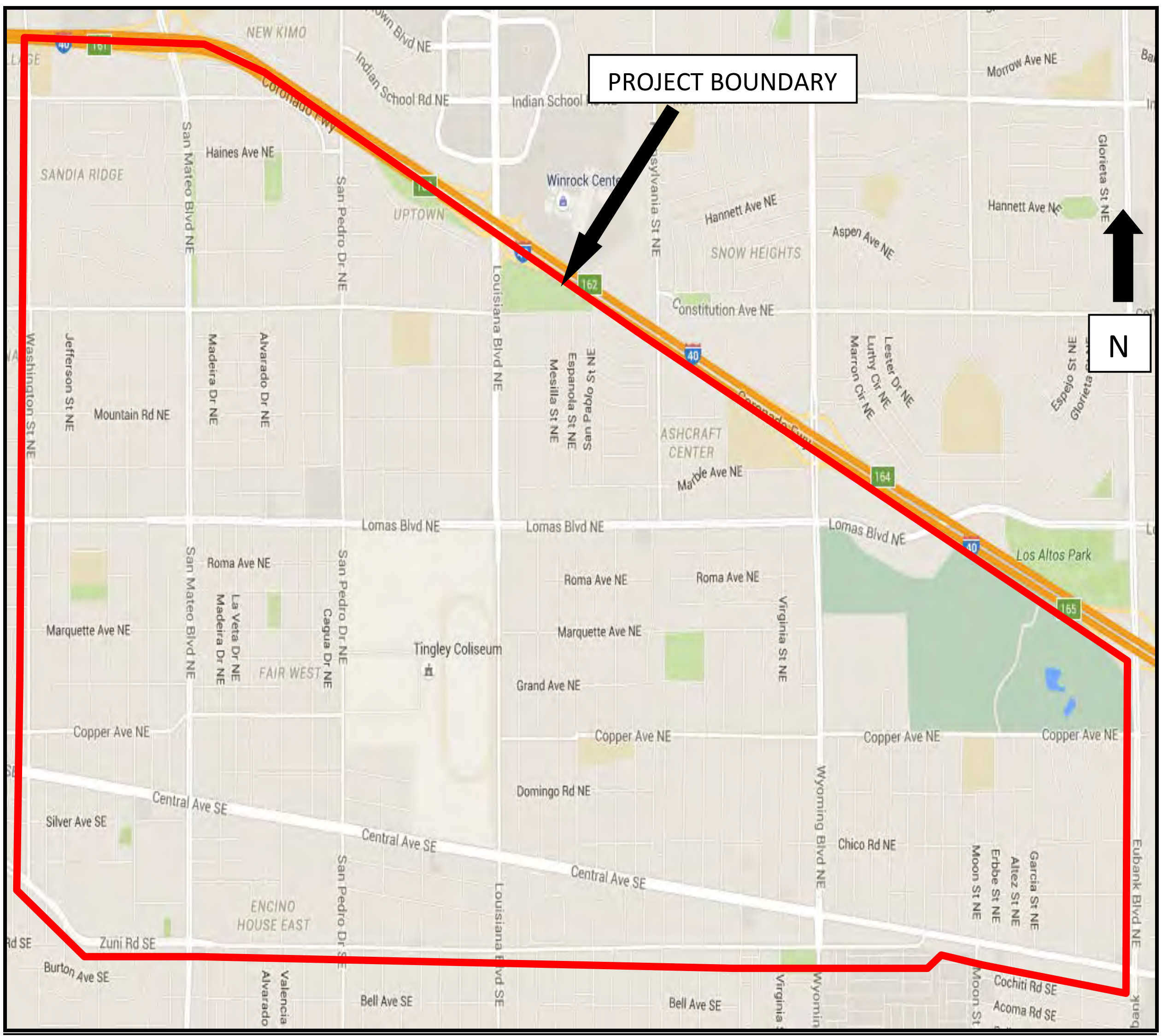
SEC Project. No. 115115

SECTION 1. GENERAL PROJECT INFORMATION

1.1 Description and Purpose of Project

The Albuquerque Metropolitan Arroyo and Flood Control Authority (AMAFCA) authorized Smith Engineering Company (Smith) to prepare a drainage management plan for the San Mateo to Moon basin. The purpose of the management plan is to analyze existing drainage conditions, determine deficiencies and develop proposed improvements. While the master plan is titled San Mateo to Moon Mini Drainage Management Plan, the true western boundary of the basin ends at Washington St. NE. This modification of the basin boundary was requested by AMAFCA. **Figure 1.0** below shows the Washington to Moon basin project vicinity map.

Figure 1.0 Washington to Moon Basin Vicinity Map



1.2 Field Observation

Smith conducted field observations to verify basin and subbasin boundaries and inspect drainage structures. **Appendix 1** contains annotated photographs.

SECTION 2. EXISTING HYDROLOGIC AND HYDRAULIC ANALYSES

2.1 Basin Description and Drainage Issues

Drainage Basin Description

The total basin area is approximately 4.5 square miles of fully developed urban land characterized by commercial and residential development and several City of Albuquerque parks. The basin has an extensive storm drain network and three detention ponds located in the Expo NM grounds. The infrastructure contains new and old systems with record drawings ranging from the 1960s to 2014. The basin generally drains from east to west. The large diameter interceptor storm drains are generally located in north-south direction streets; however, the conveyance capacity of these large diameter storm drains is limited due to the mild south to north slopes that rarely exceed 1%. Due to mild slopes, the interceptor storm drains often flow under pressure and drain at a slow rate. The east-west subbasin slopes range from 1-3% and the surface runoff drains to the interceptor storm drains faster than these storm drains can convey.

This conflict in timing of the pressure flow storm drain hydrographs and the surface hydrographs creates a significant drainage problem. Once flowing under pressure, assuming the storm drain hydraulic grade lines are at the grate elevations, these interceptor storm drains cannot capture additional surface runoff. Therefore, surface runoff accumulates as it flows west and creates flooding during heavy rainfall events. The five main interceptor storm drains that drain from south to north are listed below. The systems annotated with CW are those that convey offsite flows into the study basin from the southern adjacent Campus Wash Basin.

- Moon St. Storm Drain System
- Wyoming Blvd. Storm Drain system
- Dallas St. Storm Drain System - CW
- Alcazar St. Storm Drain System (Expo NM Storm Water Relief Phases 1&2) - CW
- San Pedro Dr. - Central Heights Storm Drain - CW
- San Mateo Blvd. Storm Drain System - CW

Figure 1.1 shows the layout of the existing storm drain network.

2.5 Hydrologic Modeling Parameters and Assumptions

2.5.1 Rainfall Distribution

The study basin is located within the USDA Natural Resources Conservation Service (NRCS) previously the Soil Conservation Service (SCS) Type II rainfall distribution area as defined by the NRCS. Please refer to **Appendix 4** for Type II boundaries.

However, AMAFCA dictated that the 25% Frequency Storm Distribution be adopted within the HEC-HMS program. It places most of the rainfall in a short period at 25% of the storm duration, or at 6-hours for a 24-hour storm.

2.5.2 Areal Reduction Factors

No areal reduction factors were necessary since the basin is less than 10 square miles.

2.5.3 Point Rainfall Data

Point rainfall data for the 2-yr., 10-yr. and 100-yr. return period storms for various durations were obtained from NOAA Atlas 14 website. **Appendix 4** contains the printouts from the NOAA Atlas 14-point rainfall data results. **Table 2.2** (**Appendix 4**) contains the point rainfall depth data.

2.5.4 Soils Data

Soils data were obtained from the NRCS Web Soil Survey website. **Appendix 4** contains the detailed soils report from the NRCS site. The soils report indicated that the predominant Hydrologic Soil Groups (HSGs) are HSG “A” and “B”.

2.5.5 Runoff Curve Number Rainfall Loss Method

The SCS Runoff Curve Number (CN) method was adopted to approximate rainfall initial abstraction and infiltration losses. The CN rainfall loss method simulates initial abstraction and infiltration as a combined CN value. The NRCS **Table 2-2a** (included in **Appendix 4**) was adopted for CN selection in urban areas. Sensitivity analyses were conducted to ensure that unit peak discharges (cfs/acre) were within the range of values presented in the City of Albuquerque Development Process Manual. Results are documented in **Table 2.3.1**, **and 2.3.2** within **Appendix 4**. The following assumptions were applied to select CN values:

1. Parks were assigned a CN of 49 assuming “fair” cover conditions.

2. Impervious areas were assigned a CN of 98.

3. An average lot size of 1/8th acre was assumed after sampling average lot sizes for several homogenous residential subbasins which is conservative as a few areas have larger lot sizes.

4. Residential areas were assigned a CN of 80.

Table 2.4 (**Appendix 4**) contains the subbasin areas and CNs assigned to all land treatment types.

2.5.6 Time of Concentration (T_c), Lag Time (T_L) and Travel Time (T_T) Computations

The NRCS TR-55 T_c method was adopted. A water course may have up to three sub reaches that comprise the longest flow path. The upper overland flow reach, then a shallow concentrated flow reach followed by a channel reach. The time of concentration (T_c) for the watercourse equals the summation of travel times (T_t) from each sub-reach. **Appendix 4** contains the TR-55 description and procedures. The various reaches and their physical characteristics were determined from the topographic data and field observation. **Table 2.6** summarizes the input, calculations and T_c for all subbasins. The T_c flow paths are documented on **Figures 3.1 and 3.2** which are included digitally. There were several subbasins that were entirely pervious (grassy fields) such as those delineated on the Los Altos Golf Course south east of Lomas Blvd. & Wyoming Blvd. The parameters for these basins were changed to reflect the appropriate friction factors.

Appendix 4 contains the reference pages that describe the lag time concept and method from National Engineering Handbook, May 2015, Chapter 15. Manning's Roughness Coefficients "n" assumptions were obtained from: NRCS TR-55, by experience and by review of "n" value tables by Chow, 1959 (copies include in **Appendix 4**). The NRCS Unit Hydrograph Lag Time Method (T_L) was applied to the T_c to compute the unit hydrograph Time to Peak (T_p). Note that Lag Time = 0.6 T_c. Since this hydrologic analysis implements the use of split hydrographs (discussed in the next section) the procedure applied with subbasin T_c is discussed in the next section to set the context of discussion.

2.5.7 Split Hydrograph Method

When subbasins are relatively homogeneous in terms of land use and Runoff Curve Numbers (CNs), an areal weighted CN approach may be acceptable where CNs vary by 10 or less. When non-homogeneous land use types occur and a where CNs vary by greater than 10, the subbasin runoff is more accurately simulated with spilt hydrographs as described here. For a mixed land use subbasin such as one comprised of commercial and residential, the split hydrograph method simulates the quick response, high runoff volume, and peak rate of the impervious area and the slower response and less runoff volume and peak rate from the residential area more accurately. The split hydrograph method is even more important when the impervious part of the subbasin is near the subbasin outlet.

The original subbasin is subdivided into the impervious subbasin area and the pervious subbasin area. These subdivided subbasin hydrographs are combined to simulate the final subbasin hydrograph.

<u>Impervious Area Assumptions and Computations for Split Hydrographs</u>

1. Measure the impervious area.
2. Assume fast travel times for impervious areas and therefore assume a minimum T_c of 12 minutes.
3. Assume CN of 98 as prescribed by NRCS **Table 2-2a** (included in **Appendix 4**) for impervious areas.
4. The pervious part of the subbasin is assigned the computed T_c and assigned a weighted CN based on CN values presented in NRCS **Table 2-2a** (included in **Appendix 4**).
5. Simulate the pervious and impervious hydrographs and combine at a junction.

Table 2.4 (**Appendix 4**) contains the subbasin areas and CNs assigned to all land treatment types. For these subbasins the following procedure was used for T_c calculations. Typically, the computed T_c was applied to the pervious part of the subbasin while the minimum T_c of 12 minutes was applied to the impervious part of the subbasin. Several impervious subbasins were sampled for their longest flow paths. In all cases the computed T_c fell below the minimum requirement of 12 minutes primarily due to very short flow path lengths. As a result, no further T_c calculations were performed for the remaining impervious subbasins of similar size and flow path lengths. There were some instances where impervious subbasins were of large enough size that T_c computation had to be performed. These subbasins are documented on **Table 2.6** in **Appendix 4**.

2.5.8 Channel Routing

HEC-HMS channel routing experience from other urban drainage analyses has shown that with short and moderately steep routing reaches, little if any attenuation occurs by routing. Therefore, hydrographs were not routed.

2.5.9 Computation Time Increment for HEC-HMS Models

The computation increment assumed within a HEC-HMS model may make a significant difference in model peak discharge results particularly for large drainage basins. Guidance on computation intervals was found in a Digital Engineering Library (McGraw-Hill, a copy included in **Appendix 4**) and summarized here.

The computation time increment is typically based on T_c and the following equation:

$$T_c / 5 \;<=\; \text{computation time increment} <= T_c / 3$$

The computation time increment was selected as 4 minutes based on this inequality.

2.5.10 Campus Wash Hydrographs

Review of the Campus Wash Drainage Management Plan (2008) clearly indicated that several 100-yr. 24-hr. storm inflow hydrographs must be imported into this study. Note that the Campus Wash study only simulated the 100-yr. 24-hr. storm. **Table 2.1** (**Appendix 4**) presents a summary of the Campus Wash hydrograph inflow locations, drainage areas and hydrologic summary. The Campus Wash hydrographs inflow locations are illustrated on **Figure 2.0 and Figures 2.1 and 4.1** (included digitally).

The Campus Wash hydrographs generated with AHYMO_97 have a time to peak of about 1.6 hours for the100-year storm which creates a disparity when combining those hydrographs within

HEC-HMS that will generate hydrographs with a peak located at about 6 hours (the 25% frequency distribution for the 24-hr. storm).

Therefore, the AHYMO_97 hydrographs were shifted in time so that the peaks coincided at 6 hours to match the HEC-HMS hydrograph peaks. Hydrographs for the 2-yr. and 10-yr. storms are not available from the Campus Wash study and would be very difficult to recreate in the Campus Wash AHYMO_97 model as numerous divide hydrograph values were based on the 100-year hydrographs, and therefore this effort was beyond the scope of this study. Therefore, a procedure was developed to synthesize the 2-yr. and 10-yr. hydrographs which are included **Appendix 4.**

2.5.11 Flow Divides

Flow divides become a critical hydrologic component particularly in an urban environment that has storm drain infrastructure. This requires an accounting of the flow divide quantity and direction or outfall.

Three primary factors govern flow divides for hydrographs:

1. The total hydrograph.
2. Total inlet capacity - inlet capture capacity was assumed to be 5 cfs per inlet as recommended by AMAFCA based on experience from data accumulated over numerous study reports and design projects
3. Downstream storm drain capacity.

Once all locations of all infrastructure components are known, either inlet capacity or storm drain capacity will control the flow divide value. For example, if the hydrograph peak discharge is 30 cfs, the inlet capacity is 20 cfs and storm drain capacity is 50 cfs, the inlet capacity will govern the flow divide. All hydrograph values less than 20 cfs will be divided into the storm drain and all hydrograph values greater than 20 cfs will bypass the inlet(s) and remain as surface flow.

2.6 Existing Conditions Modeling Results

Task B summarized the deficiencies in the hydraulic capacity of the interceptor storm drains. In summary, after the Campus Wash hydrographs were imported into HEC-HMS, no capacity remained within the Dallas, Alcazar, San Pedro and San Mateo storm drains. Therefore, no surface runoff hydrographs could be diverted into these interceptor storm drains. Consequently, the surface runoff hydrographs accumulated from the east to the west. The flow accumulation across the basin was documented with analysis points and these are presented in **Figure 2.1** and **Figure 4.1** (included digitally).

Based on the existing conditions analysis, an inundation map was prepared. HEC-RAS 2D was utilized to generate inundation depths and limits for the watershed. The procedure is described in the flow chart below.

Legend

- 23T ANALYSIS POINTS
- EXISTING STORM DRAINS
- SUBBASIN ID
- FLOOD HAZARD BOUNDARY
- LO-2 SUBBASIN BOUNDARY/ID

N

NOT TO SCALE

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
29	OUTFLOW FROM SAN PEDRO NORTH POND INTO CENTRAL HEIGHTS SD PLUS SD INLFOW FROM CAMPUS WASH PLUS L1.2	233	CENTRAL HEIGHTS SD AT FULL CAPACITY AT 132 CFS UNTIL SAN PEDRO AND CONSTITUTION. EXCESS OVERLFOW FROM SAN PEDRO SPILLS WEST ON ROMA AND ADDS TO BASIN 29	CENTRAL HEIGHTS STORM DRAIN SYSTEM
29.1	SURFACE OVERFLOW FROM NORTH SAN PEDRO POND PLUS BASIN 29	292	NO SD. OVERLAND BYPASS INTO BASIN 28	
30	OVERLAND BYPASS FROM AP 24 PLUS BASIN L2 AND SD INFLOW FROM SAN PEDRO PONDS	434	CENTRAL HEIGHTS SD AT FULL CAPACITY **(132 CFS*)** FROM SAN PEDRO PONDS. BYPASS ALL FLOWS OVERLAND WEST TO BASIN 27	
31	LSPN-1 PLUS SD INFLOW FROM SAN PEDRO PONDS	27	CENTRAL HEIGHTS SD AT FULL CAPACITY **(132 CFS*)** FROM SAN PEDRO PONDS. BYPASS ALL FLOWS OVERLAND WEST TO BASIN 26	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
32	OVERLAND BYPASS FROM AP 26, BASIN LSPN-2A, PLUS LSPN-2 PLUS SD INFLOW FROM SAN	369	CENTRAL HEIGHTS SD AT FULL CAPACITY **(132 CFS*)** FROM SAN PEDRO PONDS. BYPASS ALL FLOWS OVERLAND WEST TO BASIN 24	CENTRAL HEIGHTS STORM DRAIN SYSTEM
33	OVERLAND BYPASS FROM AP 27, BASIN LSPN-3A, PLUS LSPN-3, PLUS INFLOW FROM SAN	94	CENTRAL HEIGHTS SD AT FULL CAPACITY **(132 CFS*)** FROM SAN PEDRO PONDS. BYPASS ALL FLOWS OVERLAND WEST TO BASIN 19	
34	OVERLAND BYPASS FROM AP 28, BASIN LSPN-4A, PLUS LSPN-4, PLUS SD INFLOW FROM SAN PEDRO PONDS	305	CENTRAL HEIGHTS SD AT FULL CAPACITY **(132 CFS*)** FROM SAN PEDRO PONDS. BYPASS ALL FLOWS OVERLAND WEST TO BASIN 17	
35	CENTRAL HEIGHTS SD INFLOW PLUS 15 CFS FROM BASIN LSPN-5	147	OUTFALL OF CENTRAL HEIGHTS SD. INFLOW FROM LSPN-5 RESTRICTED BY INLETS	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
20	OVERLAND BYPASS FLOW FROM AP 16 PLUS BASIN 39	308	NO STORM DRAINS. SURFACE FLOW TO BASIN 38	SAN PABLO OUTFALL
20.1	OVERLAND BYPASS FROM BASIN 40 PLUS 34	113	SAN PABLO OUTFALL RESTRICTED BY OUTFALL 57 CFS PIPE CAPACITY. DIVERT 113 OVERLAND TO BASIN 32	
21	OVERLAND BYPASS FROM AP 20.1 PLUS BASIN 32	141	NO SD. BYPASS FLOWS OVERLAND TO BASIN 31	
24	OVERLAND BYPASS FLOWS FROM AP 20 PLUS BASIN 38	358	NO SD. BYPASS FLOWS OVERLAND TO BASIN L2	
25	OVERLAND BYPASS FLOWS FROM BASINS 41, 40A, 37 PLUS BASIN 36	241	NO SD. BYPASS FLOWS OVERLAND TO BASIN LSPN-2A	
26	BASIN 35	61	NO SD. BYPASS FLOWS OVERLAND TO BASIN LSPN-2A	
27	BASIN 33	28	SD INLETS PLUGGED. BYPASS FLOWS OVERLAND TO BASIN LSPN-3A	
28	OVERLAND BYPASS FROM AP 21 PLUS BASIN 31	198	SD INLETS PLUGGED. BYPASS FLOWS OVERLAND TO BASIN LSPN-4A	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN SUMMARY OF ANALYSIS POINTS FOR EXISTING CONDITIONS

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-	Comment	STORM DRAIN SYSTEM
10	OVERLAND BY PASS FROM AP 6&7 PLUS BASIN LO-1	379	DOWNSTREAM **DALLAS SD AT FULL CAPACITY DUE TO INLFOW HYDROGRAPH (274 CFS * ASSUMES PRESSURE FLOW) FROM THE CAMPUS WASH STUDY.** ALL SURFACE FLOWS AT AP 10 BYPASS OVERLAND TO LO-2 AND NOT ADDED TO COLLECTOR SD ON COPPER	DALLAS-PENNSYLVANIA STORM DRAIN SYSTEM
11	OVERLAND BY PASS FROM AP 8 PLUS BASN L3	120	SURFACE FLOW FROM L3 PLUS OVERLAND BYPASS FLOW FROM AP8. THERE ARE NO EXISTING STORM DRAINS AT AP8	
12	OVERLAND BY PASS FROM AP 9 PLUS BASIN 43 PLUS CAMPUS WASH SD INFLOW	140	ALL SURFACE FLOWS BYPASS OVERLAND TO 42 BECAUSE OF CHOKE POINT AT THE OUTFALL. **THE OUTFALL IS AT FULL CAPACITY DUE TO THE WYOMING SD DISCHARGE OF 189 CFS***	
13	BASIN 41	71	ALL SURFACE FLOWS BYPASS OVERLAND TO 40 BECAUSE OF CHOKE POINT AT THE OUTFALL CREATED BY THE WYOMING SD SYSTEM. THIS SYSTEM IS CONNECTED TO THE SAME OUTFALL MH AS THE WYOMING SYSTEM THEREFORE WYOMING SYSTEM GOVERNS WITH 189 CFS*	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN SUMMARY OF ANALYSIS POINTS FOR EXISTING CONDITIONS

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
14	OVERLAND BYPASS FROM AP 10 PLUS BASIN LO-2 PLUS CAMPUS WASH SD FLOW	468	**DALLAS SD AT FULL CAPACITY DUE TO INFLOW HYDROGRAPH (274 CFS) FROM THE CAMPUS WASH STUDY.** ALL SURFACE FLOWS AT AP 14 BYPASS OVERLAND TO LO-3	DALLAS-PENNSYLVANIA STORM DRAIN SYSTEM
15	OVERLAND FLOW FROM AP11 PLUS BASIN 45 PLUS CAMPUS WASH SD FLOW	134	**DALLAS SD AT FULL CAPACITY DUE TO INFLOW HYDROGRAPH (274 CFS) FROM THE CAMPUS WASH STUDY.** ALL SURFACE FLOWS AT AP 15 BYPASS OVERLAND TO LO-6	
16	OVERLAND FLOW FROM AP 12 PLUS BASINS 42 &44 PLUS CAMPUS WASH SD INFLOW	239	**DALLAS SD AT FULL CAPACITY DUE TO INFLOW HYDROGRAPH (274 CFS) FROM THE CAMPUS WASH STUDY.** ALL SURFACE FLOWS AT AP 14 BYPASS OVERLAND TO 20	
17	SD INFLOW FROM CAMPUS WASH	274	DALLAS SD OUTFALL	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN SUMMARY OF ANALYSIS POINTS FOR EXISTING CONDITIONS

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
6	OVERLAND BYPASS FROM AP 1, LWE-1	152	ADD 56 CFS OVERLAND BYPASS FROM AP 1 WYOMING STORM DRAIN UNDER CAPACITY. BYPASS 152 WEST OVERLAND TO LO-1	WYOMING STORM DRAIN SYSTEM
7	SD FLOW FROM AP 6, LWE-2	59	DIVERT 60 CFS FROM LWE-2 INTO WYOMING SD DUE TO GOVERNING INLET CAPACITY. BYPASS EXCESS OVERLAND TO LO-1	
8	SD FLOW FROM AP 7, LWE- 3	56	DIVERT 70 CFS FROM LWE-3 INTO WYOMING SD DUE TO GOVERNING INLET CAPACITY. BYPASS EXCESS SURFACE WEST TO L3. 189* CFS ASSUMES PRESSURE FLOW	
9	SD FLOW FROM AP 8 AND TOTAL SURFACE FLOW FROM LWE-4, M7,46	96	WYOMING SD CAPACITY RESTRICTED BY DOWNSTREAM CHOKE POINT AT OUTFALL. ALL FLOWS DIVERTED WEST OVERLAND TO 43 . **189* CFS ASSUMES PRESSURE FLOW**	
13.1	AP 6 - AP 9	---	WYOMING SD CAPACITY RESTRICTED BY DOWNSTREAM CHOKE POINT AT OUTFALL. ALL FLOWS DIVERTED WEST OVERLAND TO 43 . **189* CFS ASSUMES PRESSURE FLOW**	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN SUMMARY OF ANALYSIS POINTS FOR EXISTING CONDITIONS

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr) cfs	Comment	STORM DRAIN SYSTEM
1.1	M1	0	TOTAL FLOW FULLY CAPTURED AT STORM DRAIN AND ADDED TO AP 1	MOON STORM DRAIN SYSTEM
1	AP 1.1 SD FLOW , M2	56	NOT ENOUGH INLETS FOR 100% CAPTURE OF SURFACE FLOW. ADD 108 CFS OUT M2 TO SD AND 56 CFS BYPASSES WEST OVERLAND AND ADDS TO LWE-1	
2	AP 1 SD FLOW , M3A	0	TOTAL FLOW FULLY CAPTURED AT STORM DRAIN	
3	AP 2 SD FLOW, M3B	0	SURFACE FLOW FULLY CAPTURED AT STORM DRAIN	
4	AP 3 SD FLOW, M3C	0	SURFACE FLOW FULLY CAPTURED AT STORM DRAIN	
5	AP4 SD FLOW PLUS OVERLAND Q M5	0	MOON SD OUTFALL. 10 CFS RUNOFF FROM M5 DOES NOT ENTER THE SD SYSTEM. SD & SURFACE FLOWS COMBINE AT PONDING AREA BEFORE ENTERING THE I-40 CHANNEL THROUGH BOX CULVERTS	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
48	OVERLAND BYPASS FROM AP 41 PLUS BASIN 100	223	SMALL DIAMETER STORM DRAIN IN SUMMER AVE. IS SEVERELY UNDERSIZED	ADDENDUM 1 AREA
49	OVERLAND BYPASS FROM AP 40 PLUS OVERLAND BYPASS FROM AP48	649	NO STORM DRAIN AVAILABLE	
50	OVERLAND BYPASS FROM AP 36, 37, 38, 39 PLUS 101,102,103,104, & CW180	1089	BYPASS AS A RESULT OF INSUFFICIENT INLETS AND STORM DRAIN CAPACITY	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
41.1	OVERLAND FLOW FROM AP 34.1, AP 42,PLUS CAMPUS WASH SD INFLOW PLUS BASINS 9 & 16	506	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON CONSTITUTION	SAN MATEO STORM DRAIN SYSTEM
42	OVERLAND FLOW FROM AP 35.1, 50% OF BASINS 12&13 PLUS BASIN 14	140	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE. FLOWS	
43	OVERLAND BYPASS FROM BASIN 11 PLUS BASIN 10	0	SE CORNER OF INDIAN SCHOOL AND SAN MATEO. FLOW GOES OUT OF SYSTEM	
43.1	50% OVERLAND FLOW FROM BASINS 12 & 13 PLUS 9A	60	FLOW DRAINS OUT OF SYSTEM WEST ON INDIAN SCHOOL AND OUT TO I-40 CHANNEL	
44	CAMPUS WASH SD INFLOW PLUS BASIN 8	556	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE.BYPASS FLOWS OVERLAND INTO BASIN 7	SAN MATEO STORM DRAIN SYSTEM ALONG SUNNINGDALE TO OUTFALL
45	OVERLAND BYPASS FLOW FROM AP 44 , CAMPUS WASH SD INFLOW PLUS BASINS 6&7	606	DIVERSION AT AP 45 IS 50 CFS BASED ON INLET CAPACITY. BYPASS EXCESS OVERLAND TO BASIN 3	
46	OVERLAND BYPASS FLOW FROM AP 45,PLUS CAMPUS WASH SD INFLOW PLUS BASINS 3,4 & 5	686	DIVERSION AT AP 45 IS 70 CFS BASED ON DOWNSTREAM PIPE CAPACITY. BYPASS EXCESS OVERLAND TO BASIN 1	
47	*OUTFALL AT I-40 CHANNEL*	1585	*OUTFALL OF SAN MATEO SD PLUS ALL EXCESS OVERLAND BYPASS FLOW DRAINS UNDER THE BRIDGE AT INDIAN SCHOOL AND SUNNINGDALE AND DRAINS TO THE NORTH END OF THE COMPLEX WHERE IT DRAINS INTO A PONDING AREA BEFORE GETTING INTO THE I-40 CHANNEL*	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN SUMMARY OF ANALYSIS POINTS FOR EXISTING CONDITIONS

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
38	OVERLAND BYPASS FLOW FROM AP 30, PLUS CAMPUS WASH SD INFLOW PLUS BASIN 27	491	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON LOMAS	SAN MATEO STORM DRAIN SYSTEM
39	OVERLAND BYPASS FLOW FROM AP 31.1, CAMPUS WASH SD INFLOW PLUS BASIN 25	135	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON MARBLE	
40	OVERLAND FLOW FROM AP 32.1, PLUS CAMPUS WASH SD INFLOW PLUS BASINS 20, 21,22,23	466	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON MOUNTAIN	
41	OVERLAND FLOW FROM AP 33.1, CAMPUS WASH SD INFLOW PLUS BASIN 18	161	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON SUMMER	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
31.1	OVERLAND BYPASS FROM AP 31 PLUS BASIN 26	94	NO SD. BYPASS FLOWS OVERLAND TO BASIN 25	SAN MATEO STORM DRAIN SYSTEM
32.1	OVERLAND BYPASS FROM AP 32 PLUS BASIN 24	402	NO SD. BYPASS FLOWS OVERLAND TO BASIN 22	
33.1	OVERLAND BYPASS FROM AP 33 PLUS BASIN 19	128	NO SD. BYPASS FLOWS OVERLAND TO BASIN 18	
34.1	OVERLAND BYPASS FROM AP 34 PLUS BASIN 17	338	NO SD. BYPASS FLOWS OVERLAND TO BASIN 18	
35.1	OVERLAND FLOW FROM LSPN -5 PLUS BASIN 15	87	NO SD. BYPASS FLOWS OVERLAND TO BASIN 14	
35.2	BASIN 13	15	NO SD. BYPASS FLOWS OVERLAND TO BASIN 12	
36	OVERLAND AND SD INFLOW FROM CAMPUS WASH, BASIN 30 PLUS 28A	150	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON MARQUETTE	
37	OVERLAND BYPASS FLOW FROM AP 29.1, CAMPUS WASH SD INFLOW PLUS BASIN 28	338	SAN MATEO STORM DRAIN AT FULL CAPACITY DUE TO INFLOW CAMPUS WASH HYDROGRAPH OF 797 CFS. ASSUME SD TO BE UNDER PRESSURE AND BYPASS ALL FLOWS WEST ON ROMA	

SAN MATEO TO MOON MINI DRAINAGE MASTER PLAN SUMMARY OF ANALYSIS POINTS FOR EXISTING CONDITIONS

Analysis Point	CONTRIBUTING BASINS	OVERLAND BYPASS WEST Q (100 Yr-24Hr)	Comment	STORM DRAIN SYSTEM
18	OVERLAND BYPASS FROM AP 14 PLUS BASIN LO-3	580	ALL FLOWS BYPASS OVERLAND TO LO-4. NO EXISTING STORM DRAINS	ALCAZAR STORM DRAIN SYSTEM AND RACETRACK POND
19	OVERLAND BYPASS FLOW FROM AP 15 PLUS BASINS LO-5 & LO-6	155	DIVERT 35 CFS INTO CENTRAL HEIGHTS STORM DRAIN. DIVERSION LIMITED TO INLET CAPACITY ON MARQUETTE.BYPASS EXCESS OVERLAND TO LO-7	
22	OVERLAND BYPASS FLOW FROM AP 18 PLUS LO-4	666	CUMULATIVE OVERLAND FLOW AT COPPER & LOUISIANA UPSTREAM OF RACETRACK POND. **THE ALCAZAR SD IS AT FULL CAPACITY DUE TO CAMPUS WASH INFLOW HYDROGRAPH (412 CFS) THEREFORE NO FLOWS CAN BE ADDED INTO ALCAZAR SD FROM AP 22. CAMPUS WASH INFLOW VOLUME IS 47.3 AC-FT WHICH FILLS THE RACETRACK POND TO THE MAX**	
22.1	INFLOW HYDROGRAPH FROM CAMPUS WASH STUDY	412	90 " SD OUTFALL INTO RACETRACK POND	ALCAZAR STORM DRAIN SYSTEM AND RACETRACK POND
23	OVERLAND BYPASS FLOW FROM AP 19 PLUS LO-7	5	OVERLAND FLOW AT MARQUETTE & LOUISIANA UPSTREAM OF THE RACETRACK POND. 200 CFS CAPACITY GOVERNED BY INLETS	
23.1	SD FLOW INTO RACETRACK POND FROM AP 23	0	North ALCAZAR 66 " SD OUTFALL INTO RACETRACK POND	
23.2	LO-8	40	DIVERT 30 CFS INTO CENTRAL HEIGHTS STORM DRAIN. DIVERSION LIMITED TO INLET CAPACITY ON MARQUETTE.BYPASS EXCESS	
23T	TOTAL OVERLAND FLOW FROM AP 22, OVERLAND BYPASS FROM AP 23 AND 23.2	711	TOTAL SURFACE FLOW ALONG LOUISIANA THAT PONDS DUE TO LACK OF CAPACITY IN ALCAZAR SD AND RACE TRACK POND	

SAN MATEO TO MOON MINI DRAINAGE MANAGEMENT PLAN

FIGURE 2.1

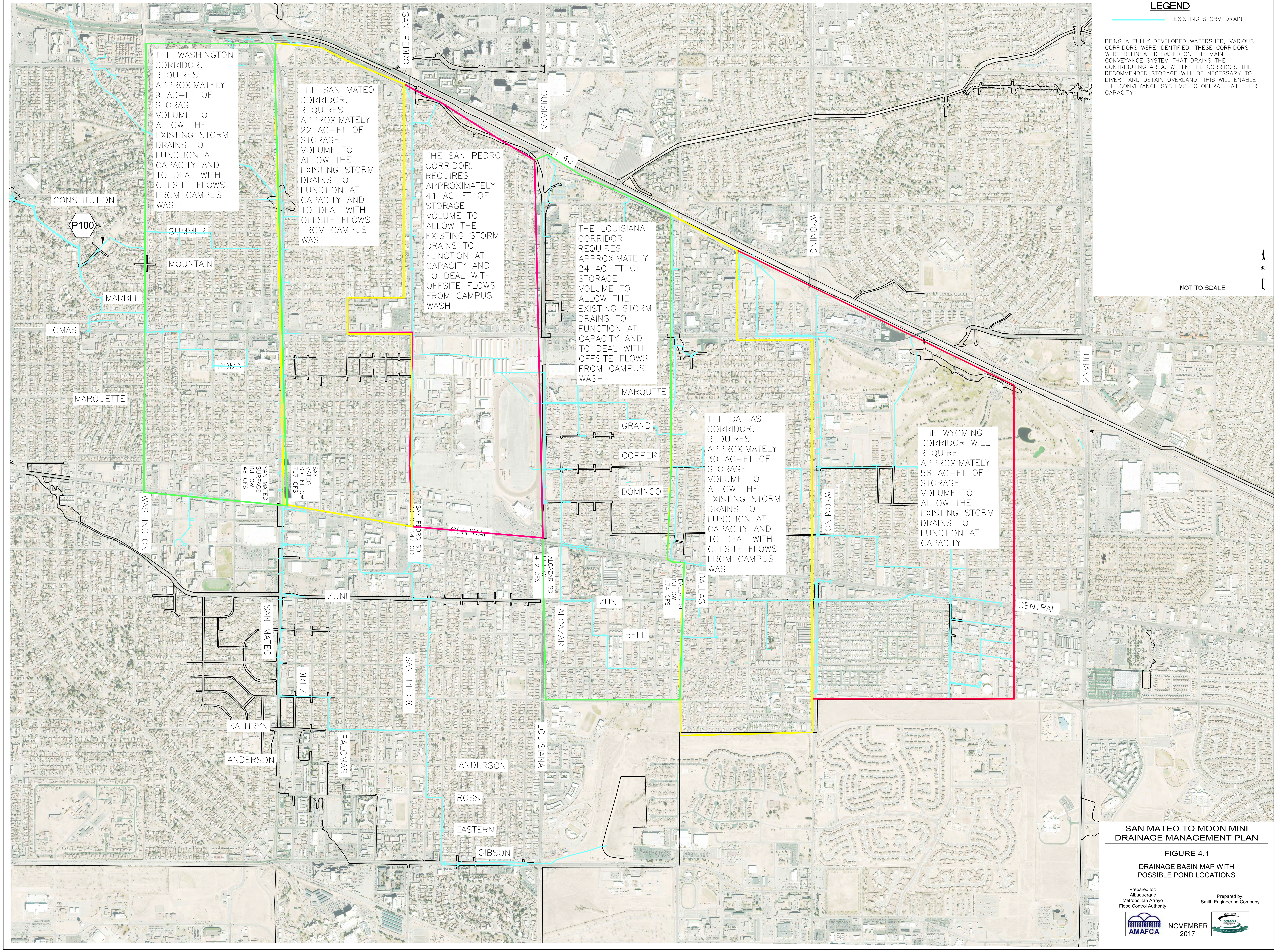
EXISTING CONDITIONS DRAINAGE BASIN MAP

PREPARED FOR: ALBUQUERQUE METROPOLITAN ARROYO AND FLOOD CONTROL AUTHORITY

AMAFCA

NOVEMBER, 2017

PREPARED BY: SMITH ENGINEERING COMPANY



LEGEND

EXISTING STORM DRAIN

BEING A FULLY DEVELOPED WATERSHED, VARIOUS CORRIDORS WERE IDENTIFIED. THESE CORRIDORS WERE DELINEATED BASED ON THE MAIN CONVEYANCE SYSTEM THAT DRAINS THE CONTRIBUTING AREA. WITHIN THE CORRIDOR, THE RECOMMENDED STORAGE WILL BE NECESSARY TO DIVERT AND DETAIN OVERLAND. THIS WILL ENABLE THE CONVEYANCE SYSTEMS TO OPERATE AT THEIR CAPACITY

NOT TO SCALE

SAN MATEO TO MOON MINI DRAINAGE MANAGEMENT PLAN

FIGURE 4.1

DRAINAGE BASIN MAP WITH POSSIBLE POND LOCATIONS

Prepared for:
Albuquerque Metropolitan Arroyo Flood Control Authority

Prepared by:
Smith Engineering Company

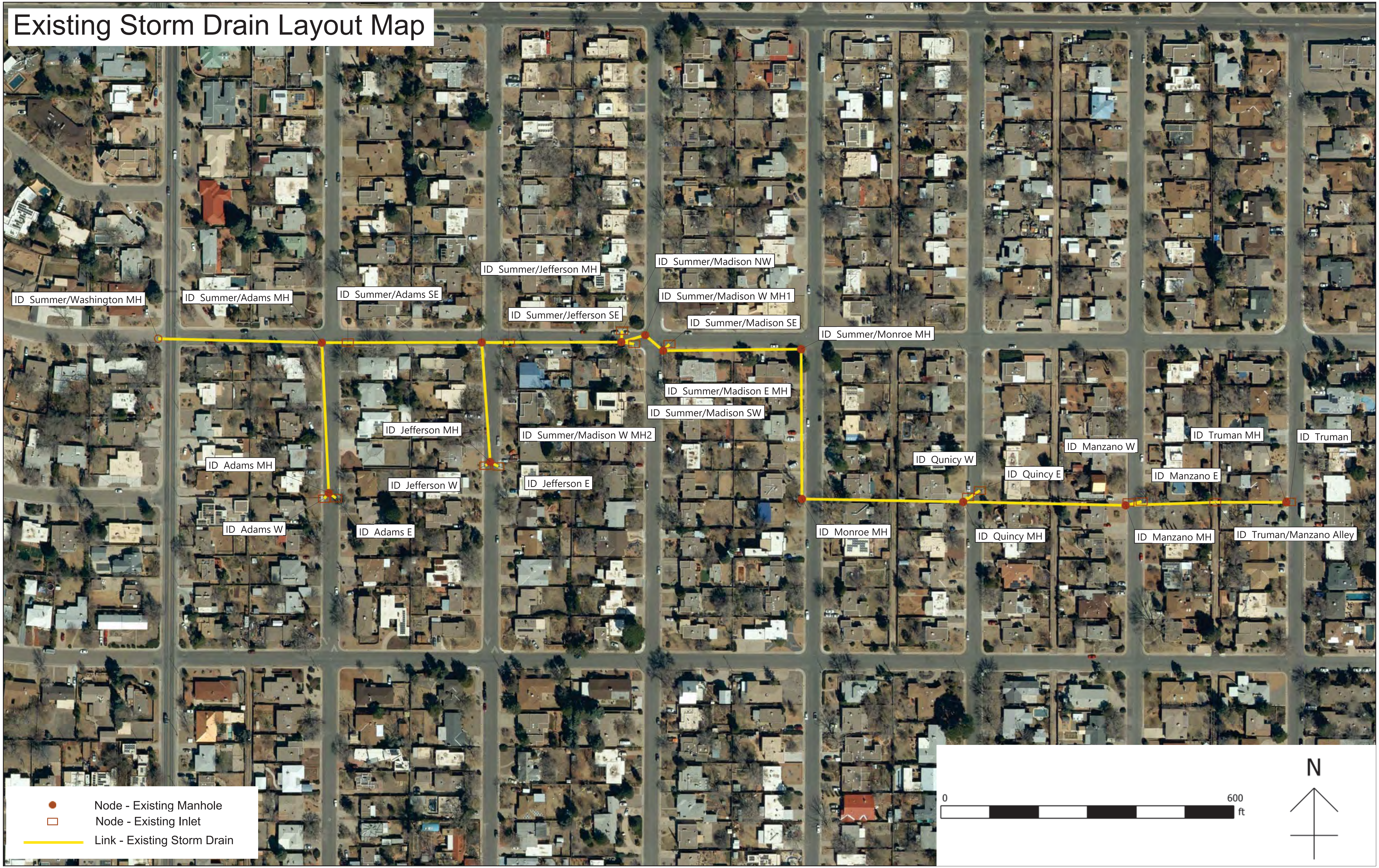
AMAFCA

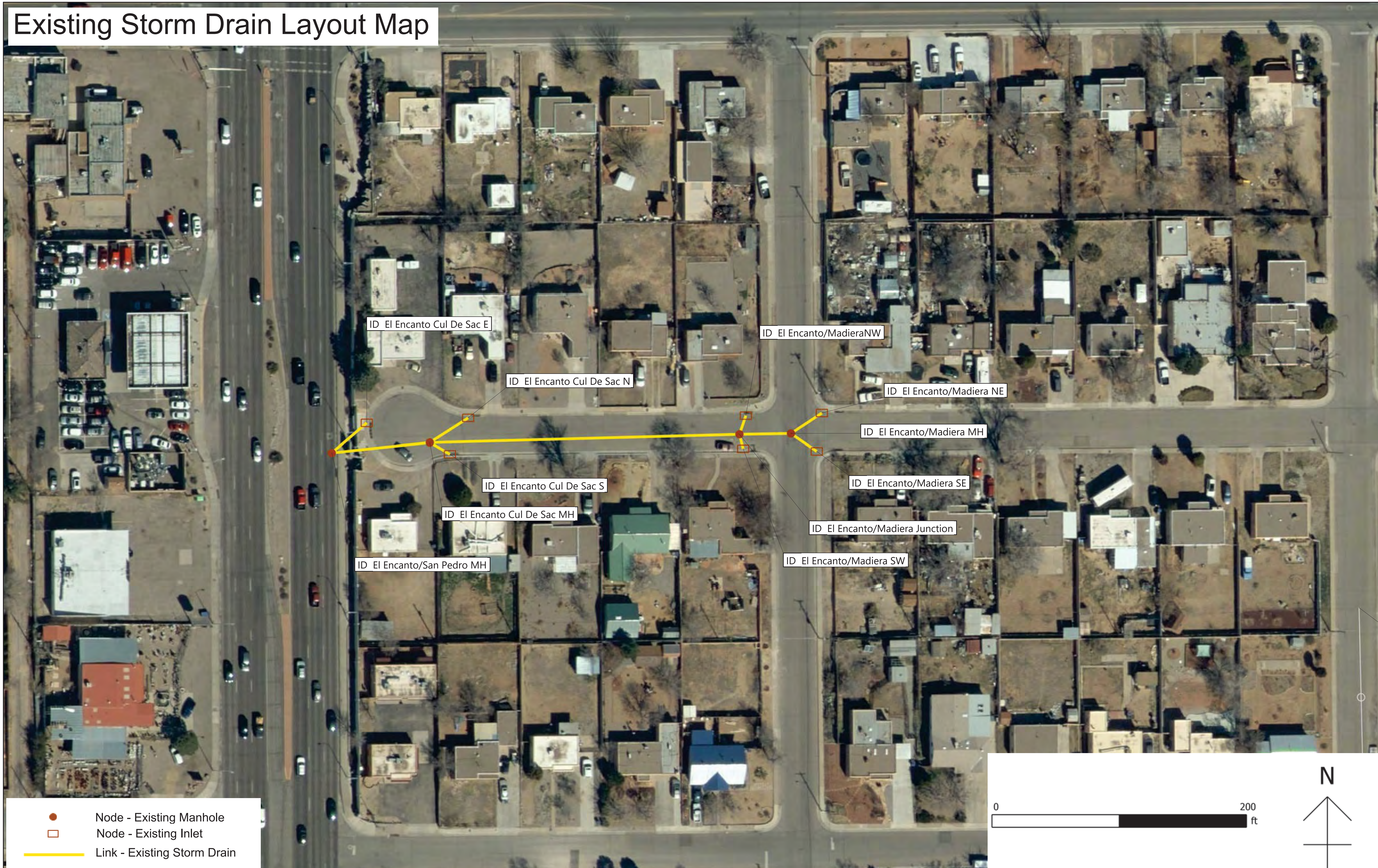
NOVEMBER 2017

Q:\SEC---PROJECTS\115115 AMAFCA SMMMDMP\ENGINEERING\Task D - Development of Options\FIGURE 4.0A.dwg May 25, 2016 - 3:31pm Saved By: chrisn

APPENDIX C – HYDROLOGIC AND HYDRAULIC ANALYSIS MODELING RESULTS

Existing Storm Drain Layout Map





Existing Storm Drain Layout Map
ID El Encanto Cul De Sac E
ID El Encanto Cul De Sac N
ID El Encanto/MadieraNW
ID El Encanto/Madiera NE
ID El Encanto/Madiera MH
ID El Encanto Cul De Sac S
ID El Encanto/Madiera SE
ID El Encanto Cul De Sac MH
ID El Encanto/Madiera Junction
ID El Encanto/San Pedro MH
ID El Encanto/Madiera SW
Node - Existing Manhole
Node - Existing Inlet
Link - Existing Storm Drain
0
200
ft
N

Existing Conditions (no GSI Improvements) Node Results

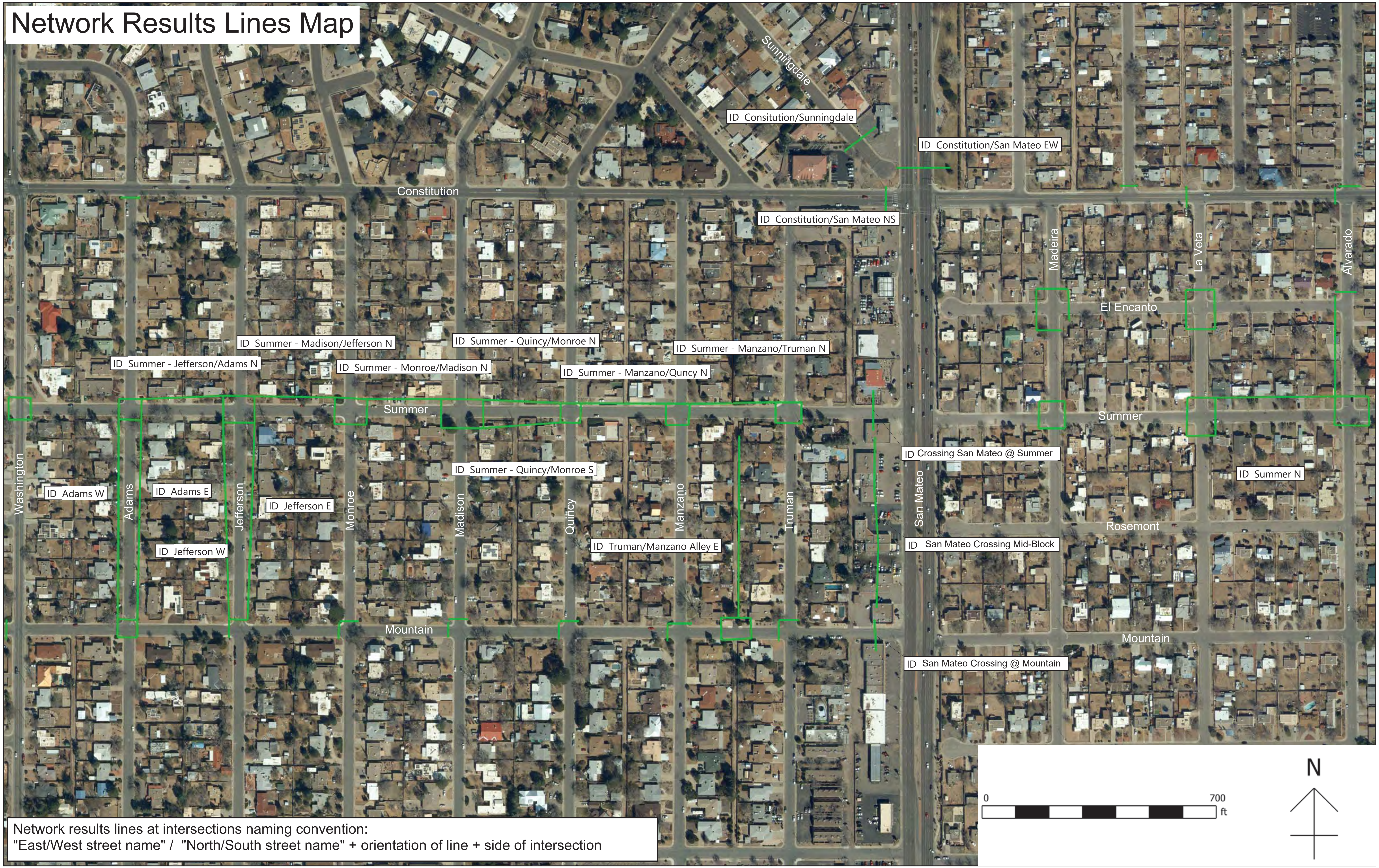
Node ID (Inlets Only)	Cumulative flow from 2D zone (cfs)*						Cumulative flooding onto 2D zone (cfs)					
	100-yr		10-yr		2-yr		100-yr		10-yr		2-yr	
	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon
Adams E	3.8	3.2	5.0	3.7	2.6	2.6	2.8	1.1	0.6	0.6	0.5	0.5
Adams W	-9.7	5.7	8.1	5.4	4.8	4.7	9.7	4.7	4.7	3.8	3.8	3.7
El Encanto Cul De Sac E	20.0	20.1	19.8	19.2	19.1	15.5	0.1	0.1	0.1	0.1	0.1	0.1
El Encanto Cul De Sac N	11.3	11.1	10.7	10.6	10.6	10.0	0.0	0.0	0.0	0.0	0.0	0.0
El Encanto Cul De Sac S	-4.1	-4.0	-3.8	-8.4	-6.4	-6.2	4.1	4.0	3.8	8.4	6.4	6.2
El Encanto/Madiera NE	8.5	8.7	9.1	8.9	8.6	3.6	0.1	0.1	0.0	0.0	0.0	0.0
El Encanto/Madiera SE	9.3	9.0	9.3	2.9	3.0	0.9	0.0	0.1	0.0	0.1	0.1	0.1
El Encanto/Madiera SW	-4.3	-4.0	-3.6	-2.8	-1.9	0.0	4.3	4.0	3.6	2.8	1.9	0.0
El Encanto/MadieraNW	17.4	17.5	19.9	12.1	15.2	14.7	0.1	0.3	0.4	0.1	0.1	0.1
Jefferson E	3.4	3.8	3.3	3.7	-2.8	-2.8	2.8	2.8	2.9	2.9	2.8	2.8
Jefferson W	8.8	8.5	8.7	8.2	7.2	7.8	0.0	0.0	0.0	0.0	0.0	0.0
Manzano E	6.2	5.6	5.8	5.9	5.7	5.1	0.0	0.0	0.0	0.0	0.0	0.0
Manzano W	6.7	6.4	7.1	6.9	7.4	6.5	0.0	0.0	0.0	0.0	0.0	0.0
Quincy E	5.5	5.5	4.8	4.8	3.8	4.4	0.0	0.0	0.0	0.1	0.0	0.0
Qunicy W	11.1	10.0	9.9	10.6	7.4	6.5	1.8	1.8	1.7	4.8	1.5	3.2
Summer/Adams SE	7.4	7.4	3.5	3.5	1.5	1.5	0.0	0.1	0.0	0.0	0.1	0.1
Summer/Jefferson SE	-2.0	-2.0	1.7	1.8	2.0	2.0	2.0	2.0	1.1	1.1	0.0	0.1
Summer/Madison NW	-2.8	-2.4	-1.4	-1.3	3.0	-1.9	2.8	2.4	1.4	1.3	0.6	1.9
Summer/Madison SE	-5.0	-4.9	-4.0	-4.0	-3.5	-3.9	5.0	4.9	4.0	4.0	3.5	3.9
Summer/Madison SW	6.7	6.6	7.6	7.6	8.5	8.2	0.0	0.0	0.0	0.0	4.4	1.8
Truman	12.3	12.8	13.5	13.4	13.9	13.7	0.0	0.0	0.0	0.0	0.0	0.0
Truman/Manzano Alley	-3.3	-3.3	-3.0	-3.0	-2.2	-2.2	3.3	3.3	3.0	3.0	2.2	2.2

*Flow from 2D zone is "net" flow

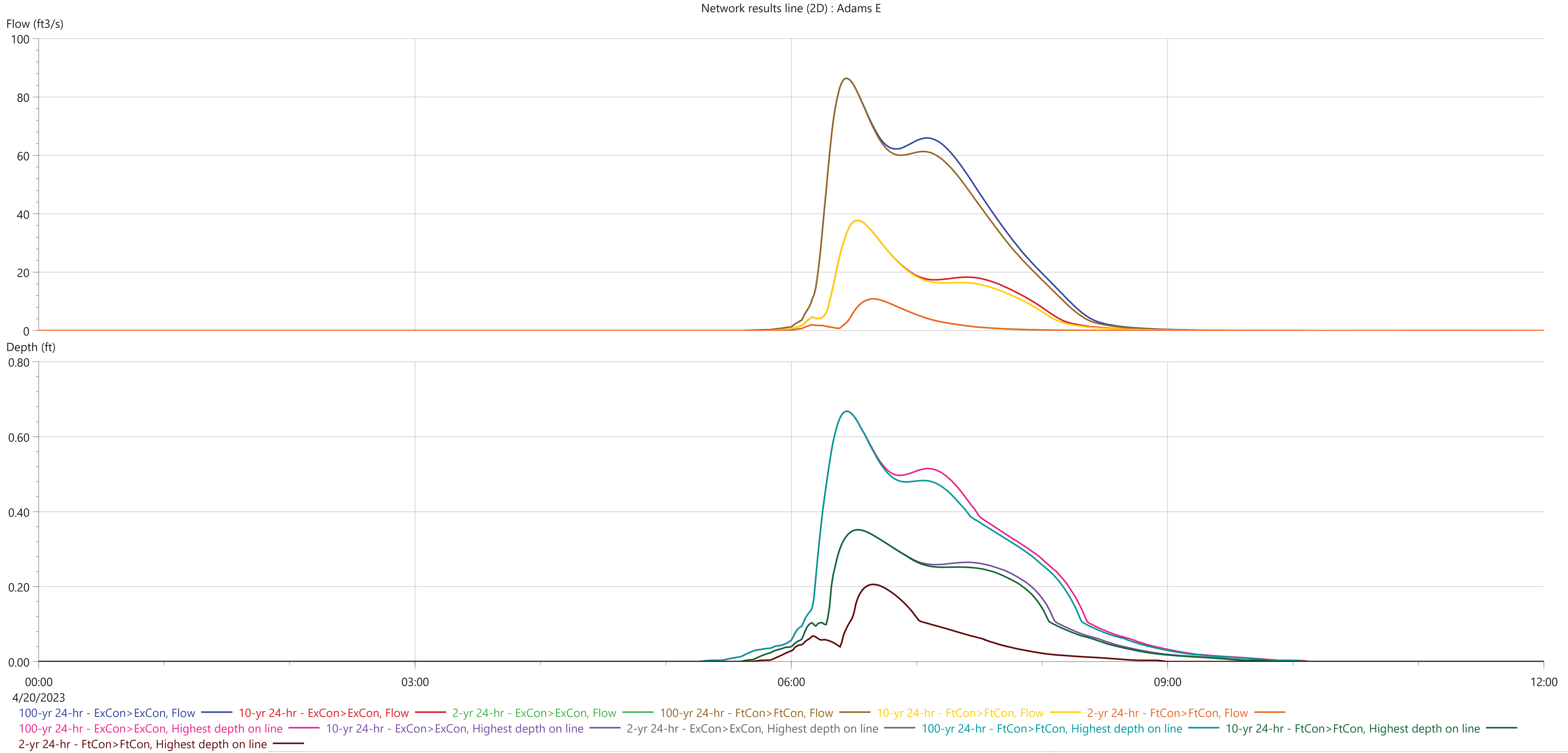
Existing Conditions (no GSI Improvements) Node Results

Node ID (Inlets Only)	Cumulative flow from 2D zone (ft^3)*						Cumulative flooding onto 2D zone (ft^3)					
	100-yr		10-yr		2-yr		100-yr		10-yr		2-yr	
	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon	ExCon	FtCon
Adams E	7473	7979	7480	6908	2136	2112	1140	734	336	337	37	39
Adams W	-12989	-12600	-8968	-8968	-10403	-9817	19403	19058	15113	15051	14086	13599
El Encanto Cul De Sac E	102667	56198	76266	40361	53792	26715	193	384	13	435	334	10
El Encanto Cul De Sac N	131872	63530	111892	50718	87495	38936	0	0	0	0	0	0
El Encanto Cul De Sac S	-12412	-8866	-11528	-7092	-9204	-4742	12731	9266	11903	7421	9652	4764
El Encanto/Madiera NE	50978	27438	40615	24989	35040	12133	2	5	1	1	1	1
El Encanto/Madiera SE	32055	16617	21583	4654	6552	1327	0	1	0	3	1	2
El Encanto/Madiera SW	-9965	-4404	-5535	-653	-875	10	9999	4441	5581	665	887	0
El Encanto/MadieraNW	112671	57082	98112	48235	81037	45312	3	3	4	4	6	9
Jefferson E	-11447	-11186	-9245	-9082	-7418	-7124	12951	12608	10593	10417	7653	7367
Jefferson W	52919	51731	43560	42269	26776	26132	0	0	0	0	0	0
Manzano E	31830	30938	26890	26402	20392	19662	0	0	0	0	0	0
Manzano W	30345	29818	27250	26785	20054	19155	0	0	0	0	0	0
Quincy E	17693	17258	15310	14673	10072	9617	2	2	3	3	3	4
Qunicy W	11233	10664	8478	7979	922	611	2377	2420	2895	2938	3744	3548
Summer/Adams SE	23615	21181	5736	5214	1929	1930	2	3	4	4	7	6
Summer/Jefferson SE	-8417	-7634	-1372	-813	3645	3504	10111	9345	3063	2521	28	31
Summer/Madison NW	-12221	-11075	-6289	-5713	-762	-760	12580	11417	6628	6045	880	835
Summer/Madison SE	-27852	-26877	-20484	-19662	-13536	-13083	29838	28843	22333	21512	14500	14003
Summer/Madison SW	45860	43807	33371	32147	19731	19233	0	0	0	0	14	2
Truman	79787	79153	68341	67873	57928	57515	7	6	7	7	7	9
Truman/Manzano Alley	-8408	-8079	-7061	-6838	-4439	-4191	8954	8585	7632	7372	4845	4561
*Flow from 2D zone is "net" flow												

Network Results Lines Map



Network results lines at intersections naming convention:
"East/West street name" / "North/South street name" + orientation of line + side of intersection



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	86.390	383571.952	0.000	0.668
10-yr 24-hr - ExCon>ExCon	0.000	37.732	137639.576	0.000	0.352
2-yr 24-hr - ExCon>ExCon	0.000	10.846	25138.459	0.000	0.206
100-yr 24-hr - FtCon>FtCon	0.000	86.368	363685.280	0.000	0.668
10-yr 24-hr - FtCon>FtCon	0.000	37.714	130534.172	0.000	0.352
2-yr 24-hr - FtCon>FtCon	0.000	10.868	25166.478	0.000	0.206

Existing Conditions (without GSI improvements) results from Network Results Lines

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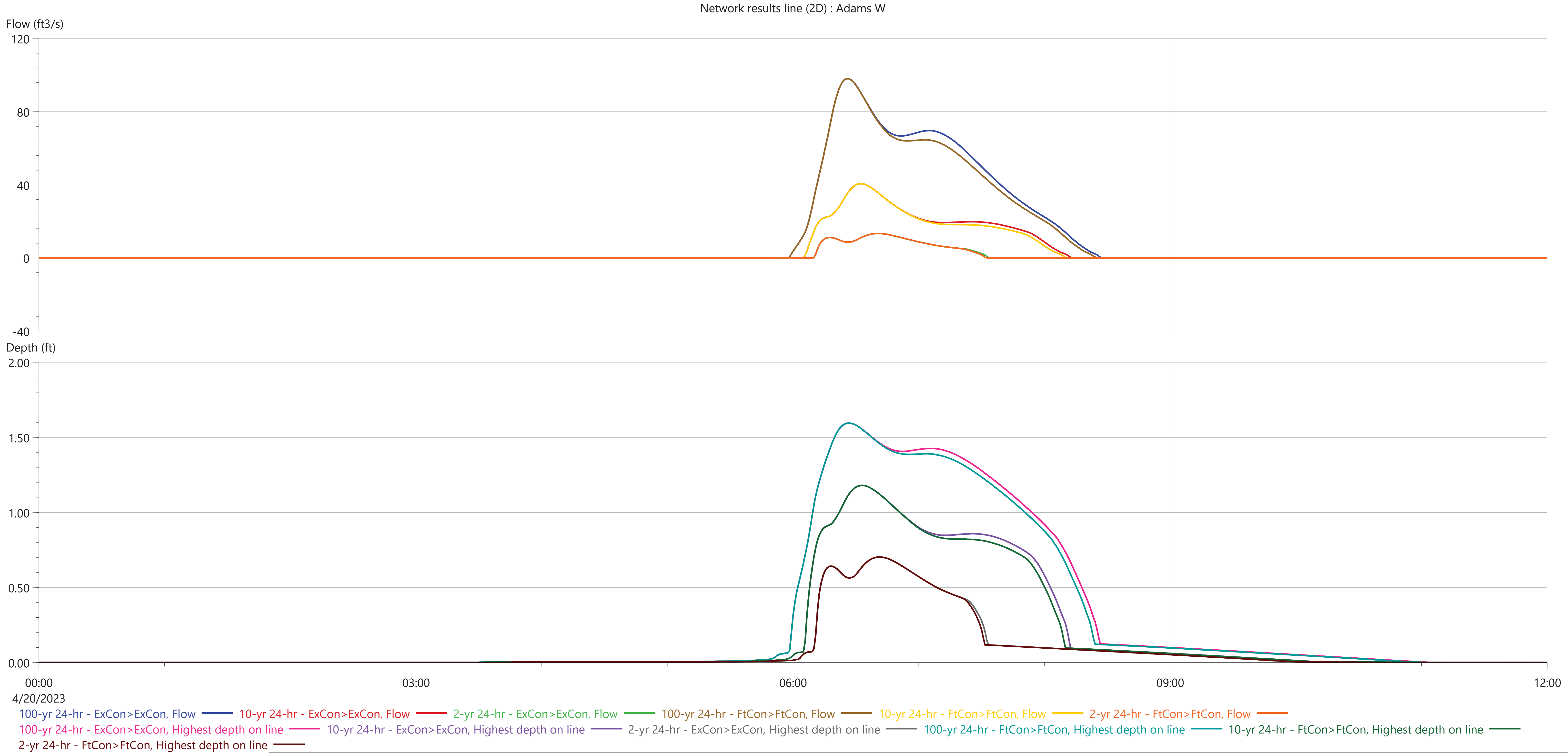

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	98.101	429651.198	0.000	1.595
10-yr 24-hr - ExCon>ExCon	-0.064	40.627	159451.552	0.000	1.179
2-yr 24-hr - ExCon>ExCon	-0.088	13.378	42539.174	0.000	0.702
100-yr 24-hr - FtCon>FtCon	0.000	98.079	408442.818	0.000	1.595
10-yr 24-hr - FtCon>FtCon	-0.064	40.619	152663.674	0.000	1.179
2-yr 24-hr - FtCon>FtCon	-0.088	13.383	42171.898	0.000	0.703

Existing Conditions (without GSI improvements) results from Network Results Lines

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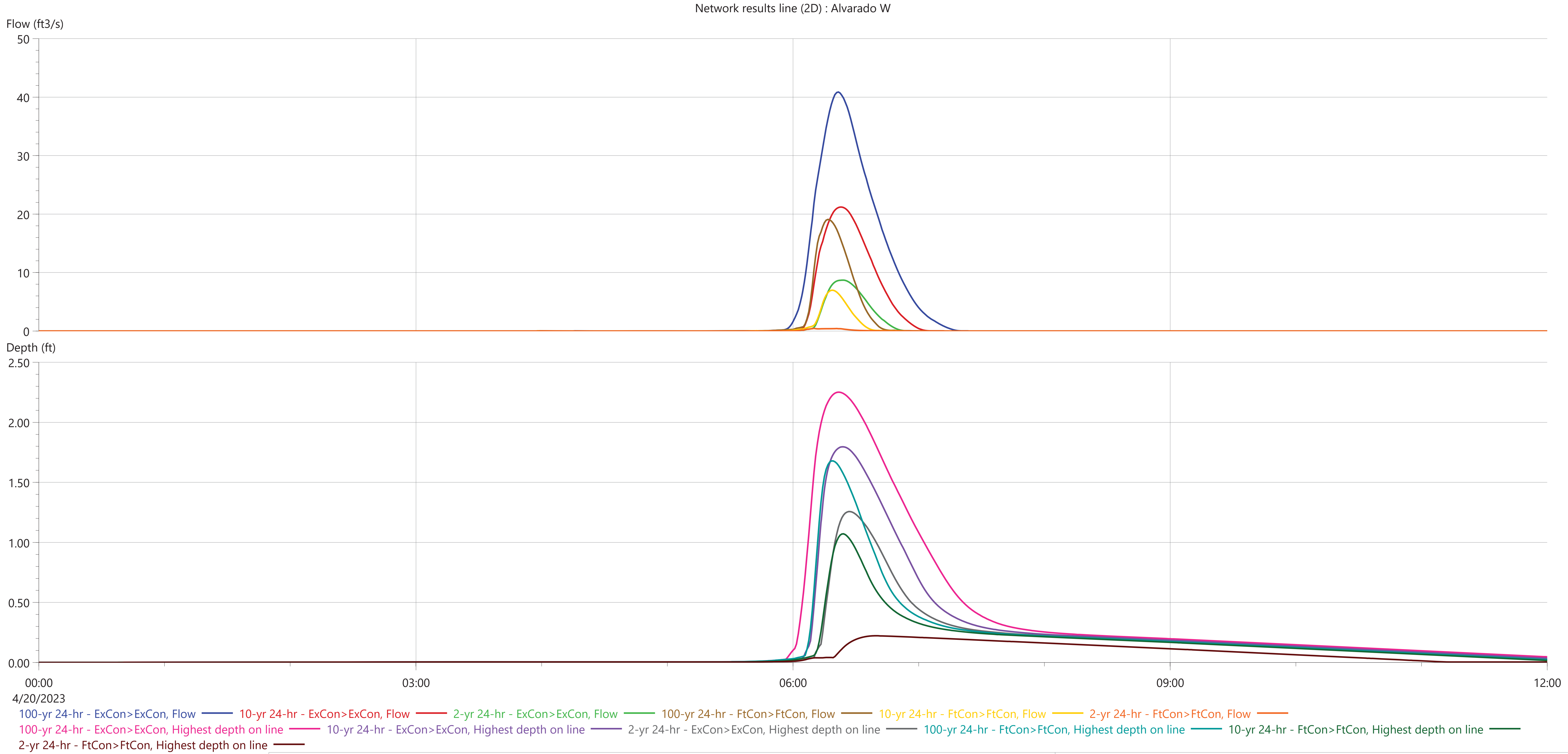

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	40.877	78688.570	0.000	2.251
10-yr 24-hr - ExCon>ExCon	0.000	21.199	36294.827	0.000	1.796
2-yr 24-hr - ExCon>ExCon	0.000	8.706	12091.842	0.000	1.257
100-yr 24-hr - FtCon>FtCon	0.000	19.087	22336.299	0.000	1.678
10-yr 24-hr - FtCon>FtCon	0.000	6.965	6653.490	0.000	1.071
2-yr 24-hr - FtCon>FtCon	0.000	0.449	619.934	0.000	0.222

Existing Conditions (without GSI improvements) results from Network Results Lines

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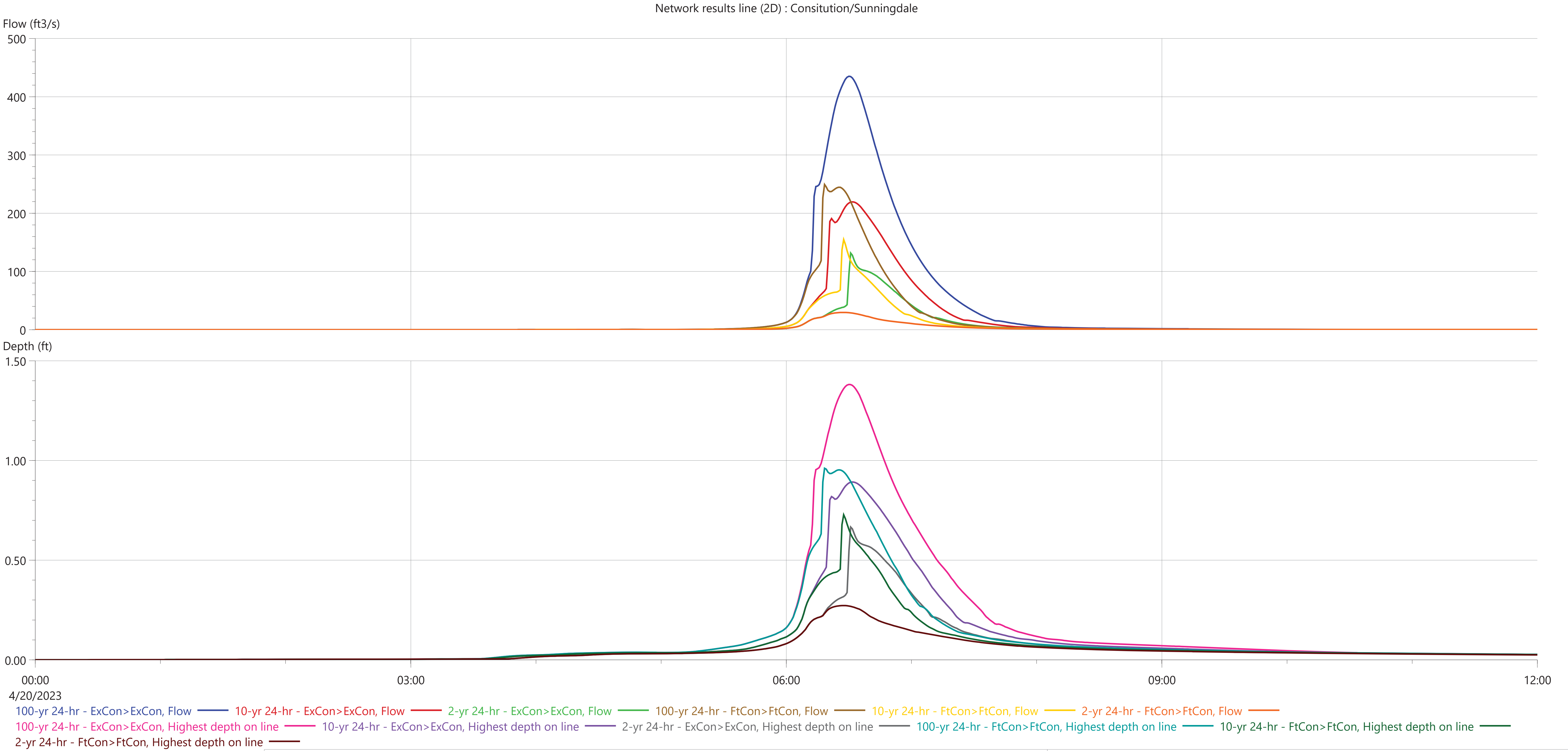
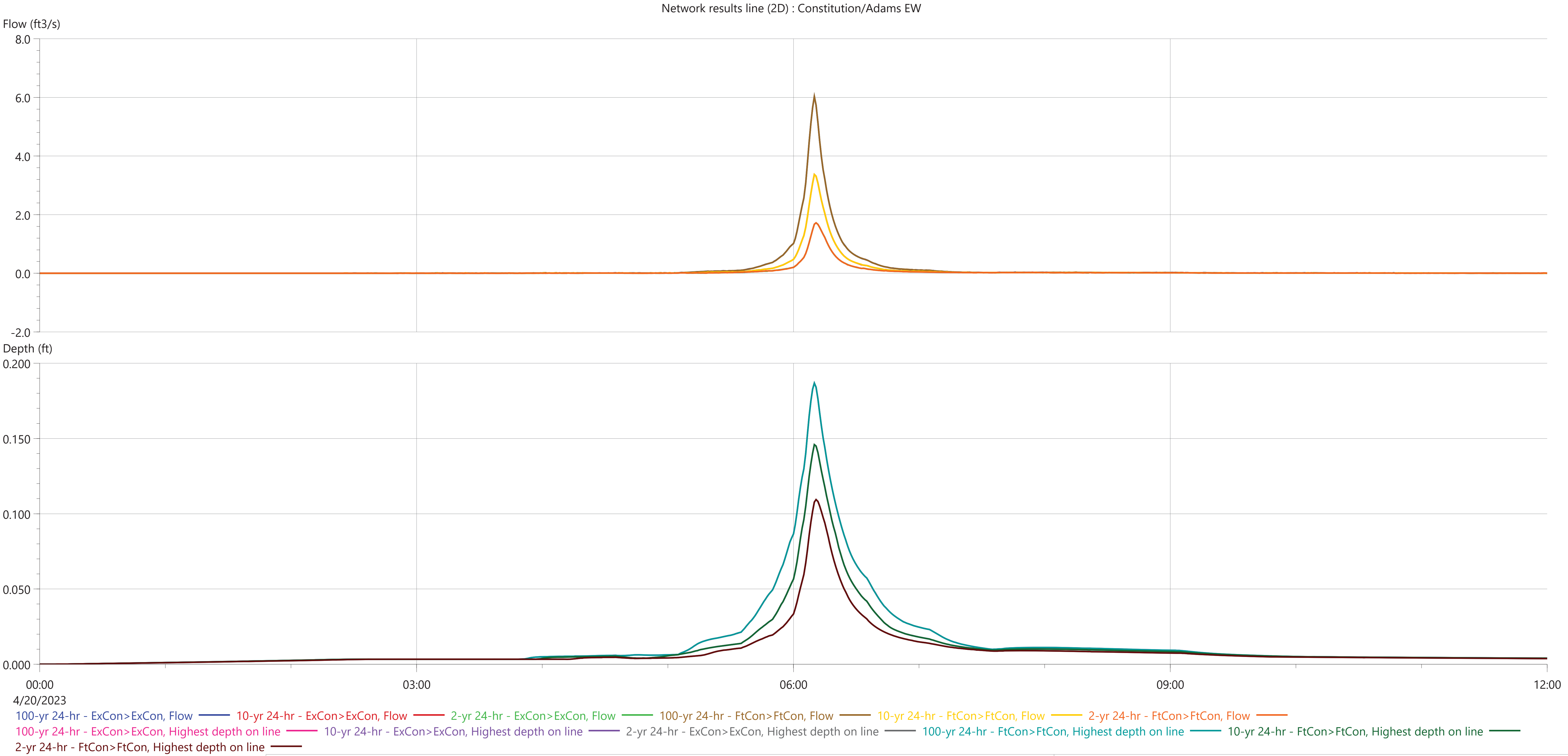


	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	435.063	1106878.783	0.000	1.382
10-yr 24-hr - ExCon>ExCon	0.000	219.532	549530.798	0.000	0.892
2-yr 24-hr - ExCon>ExCon	0.000	131.560	243425.101	0.000	0.666
100-yr 24-hr - FtCon>FtCon	0.000	249.321	522262.168	0.000	0.961
10-yr 24-hr - FtCon>FtCon	0.000	154.780	249930.182	0.000	0.727
2-yr 24-hr - FtCon>FtCon	0.000	29.744	91568.407	0.000	0.272

Existing Conditions (without GSI improvements) results from Network Results Lines

Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	6.030	6075.086	0.000	0.187
10-yr 24-hr - ExCon>ExCon	-0.001	3.368	3511.583	0.000	0.146
2-yr 24-hr - ExCon>ExCon	0.000	1.719	1968.934	0.000	0.109
100-yr 24-hr - FtCon>FtCon	-0.003	6.030	6067.501	0.000	0.187
10-yr 24-hr - FtCon>FtCon	-0.001	3.368	3512.865	0.000	0.146
2-yr 24-hr - FtCon>FtCon	0.000	1.719	1967.900	0.000	0.109

Existing Conditions (without GSI improvements) results from Network Results Lines

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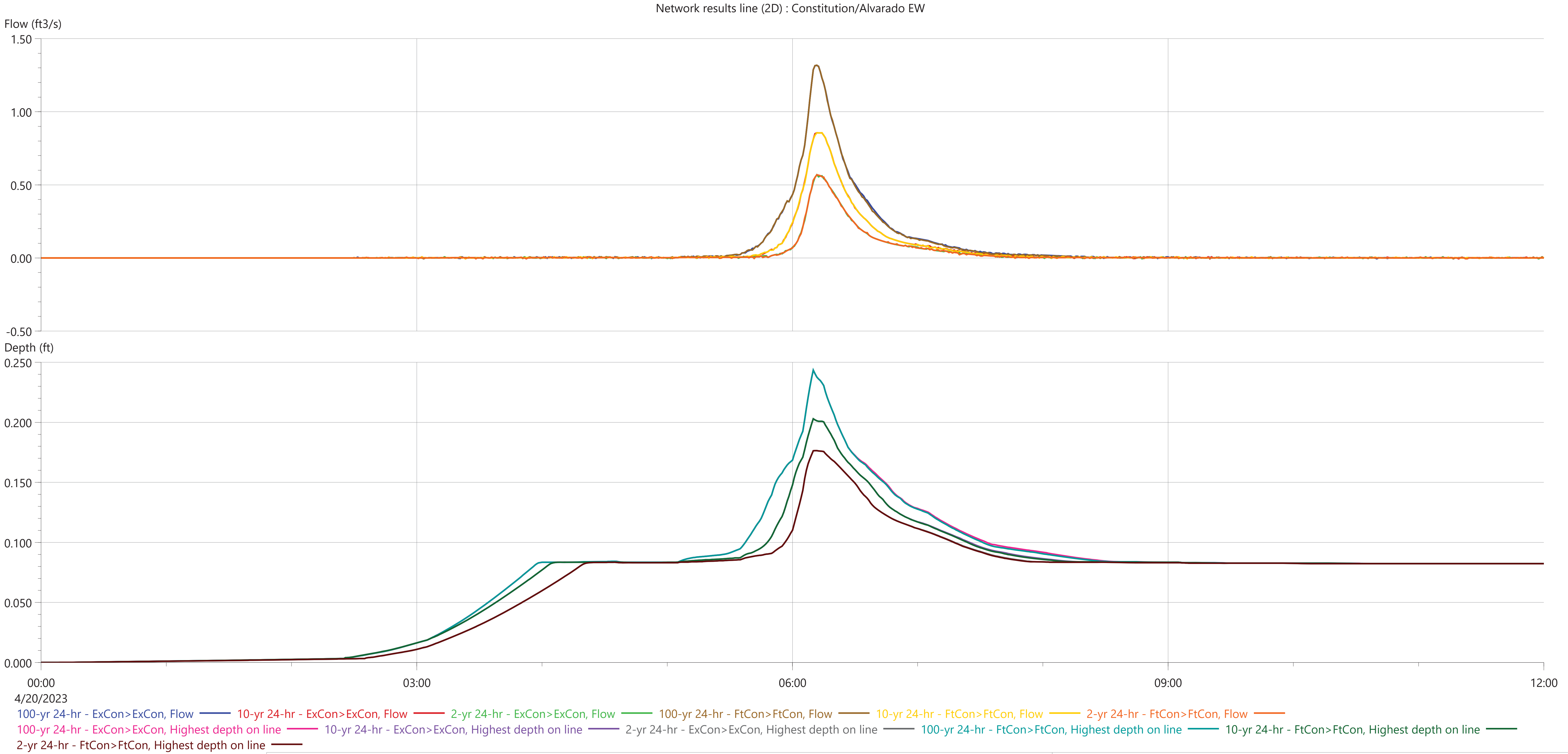

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.005	1.316	2575.094	0.000	0.243
10-yr 24-hr - ExCon>ExCon	-0.005	0.856	1648.802	0.000	0.203
2-yr 24-hr - ExCon>ExCon	-0.005	0.569	1040.545	0.000	0.176
100-yr 24-hr - FtCon>FtCon	-0.005	1.318	2546.034	0.000	0.243
10-yr 24-hr - FtCon>FtCon	-0.005	0.856	1642.048	0.000	0.203
2-yr 24-hr - FtCon>FtCon	-0.005	0.569	1032.606	0.000	0.176

Existing Conditions (without GSI improvements) results from Network Results Lines

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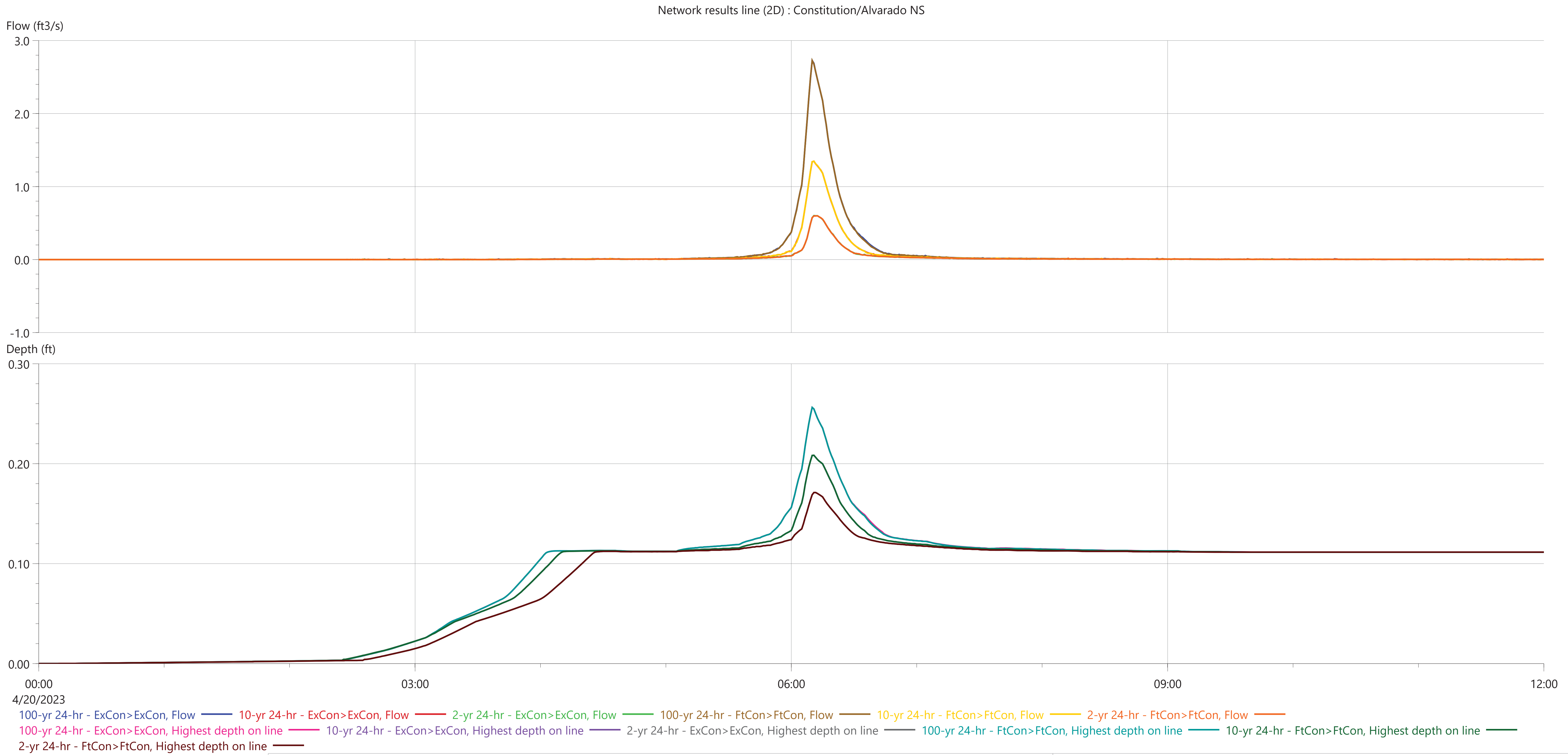

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.000	2.727	3142.441	0.000	0.256
10-yr 24-hr - ExCon>ExCon	-0.000	1.348	1638.912	0.000	0.208
2-yr 24-hr - ExCon>ExCon	-0.000	0.601	813.601	0.000	0.171
100-yr 24-hr - FtCon>FtCon	-0.000	2.727	3129.046	0.000	0.256
10-yr 24-hr - FtCon>FtCon	-0.000	1.348	1636.442	0.000	0.208
2-yr 24-hr - FtCon>FtCon	-0.001	0.599	812.363	0.000	0.171

Existing Conditions (without GSI improvements) results from Network Results Lines

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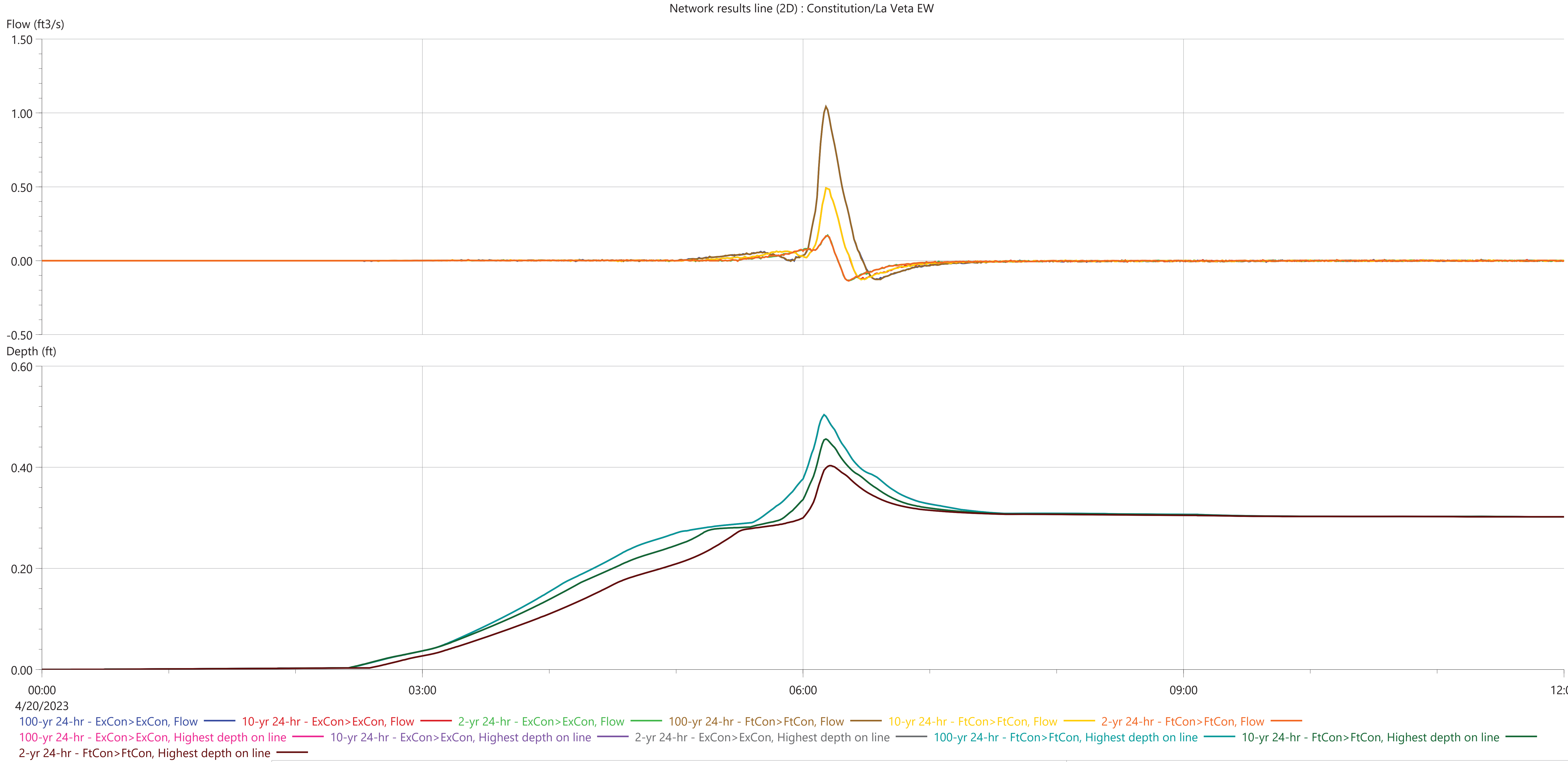

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.126	1.043	683.390	0.000	0.504
10-yr 24-hr - ExCon>ExCon	-0.126	0.492	211.717	0.000	0.456
2-yr 24-hr - ExCon>ExCon	-0.133	0.173	-13.324	0.000	0.403
100-yr 24-hr - FtCon>FtCon	-0.127	1.043	680.323	0.000	0.504
10-yr 24-hr - FtCon>FtCon	-0.128	0.492	214.502	0.000	0.456
2-yr 24-hr - FtCon>FtCon	-0.137	0.167	-4.998	0.000	0.403

Existing Conditions (without GSI improvements) results from Network Results Lines

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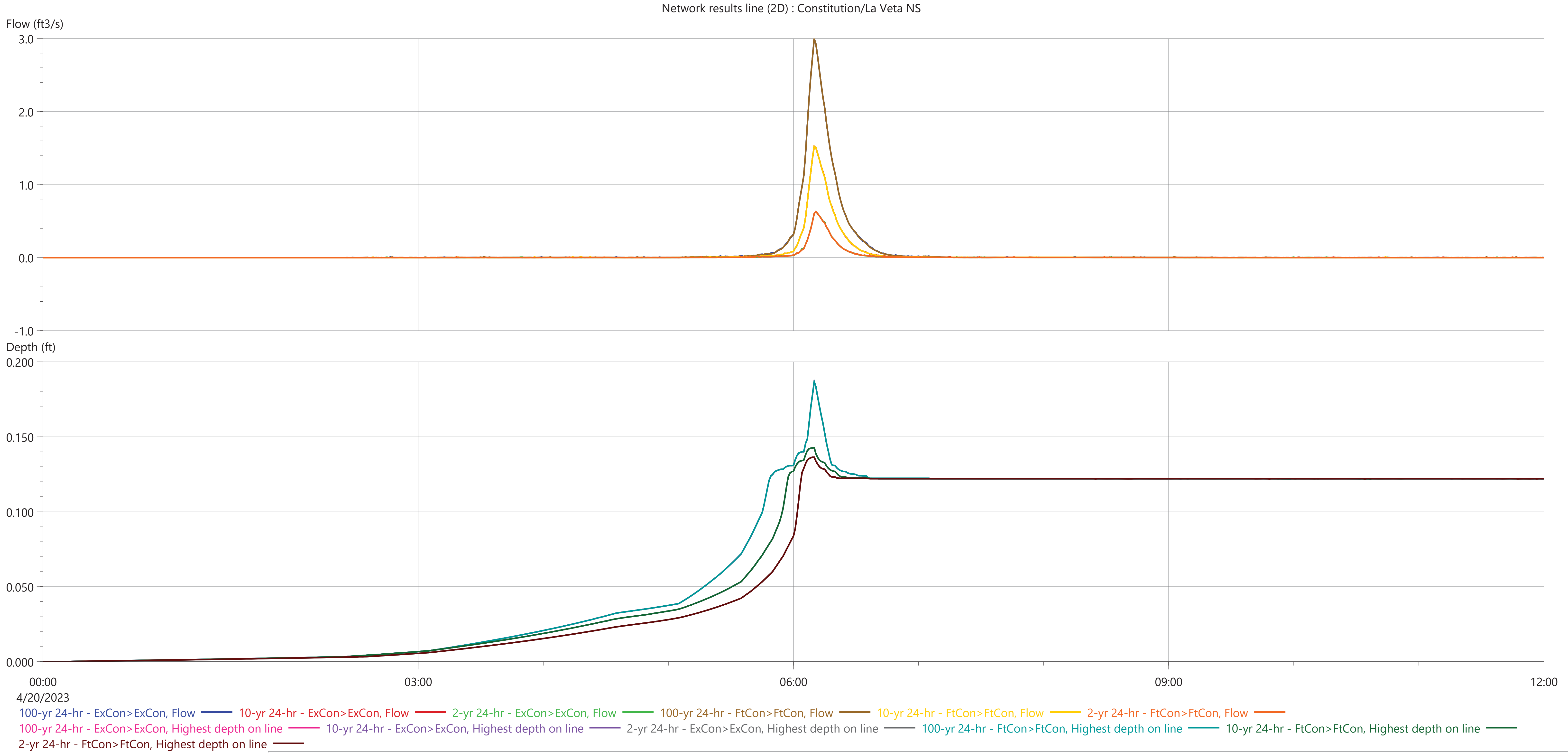

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.000	2.999	2813.626	0.000	0.187
10-yr 24-hr - ExCon>ExCon	-0.000	1.524	1351.060	0.000	0.143
2-yr 24-hr - ExCon>ExCon	-0.000	0.631	554.619	0.000	0.136
100-yr 24-hr - FtCon>FtCon	-0.000	2.999	2806.711	0.000	0.187
10-yr 24-hr - FtCon>FtCon	0.000	1.524	1346.748	0.000	0.143
2-yr 24-hr - FtCon>FtCon	-0.000	0.631	550.976	0.000	0.136

Existing Conditions (without GSI improvements) results from Network Results Lines

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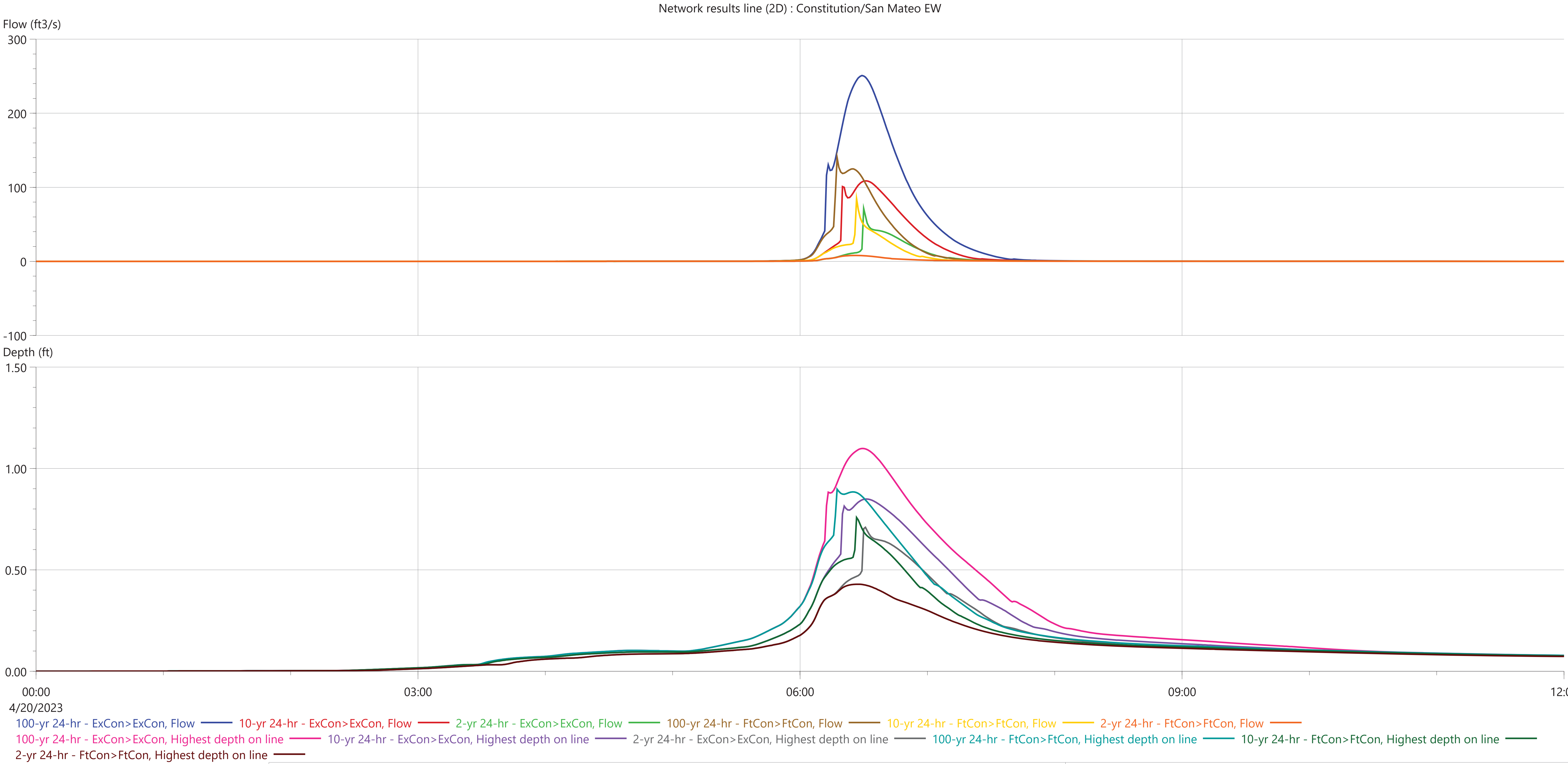

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.006	250.780	548184.223	0.000	1.098
10-yr 24-hr - ExCon>ExCon	-0.006	108.725	228838.834	0.000	0.849
2-yr 24-hr - ExCon>ExCon	-0.008	71.309	80012.979	0.000	0.710
100-yr 24-hr - FtCon>FtCon	-0.009	140.058	218952.039	0.000	0.898
10-yr 24-hr - FtCon>FtCon	-0.006	84.538	82542.768	0.000	0.758
2-yr 24-hr - FtCon>FtCon	-0.006	7.998	19044.213	0.000	0.429

Existing Conditions (without GSI improvements) results from Network Results Lines

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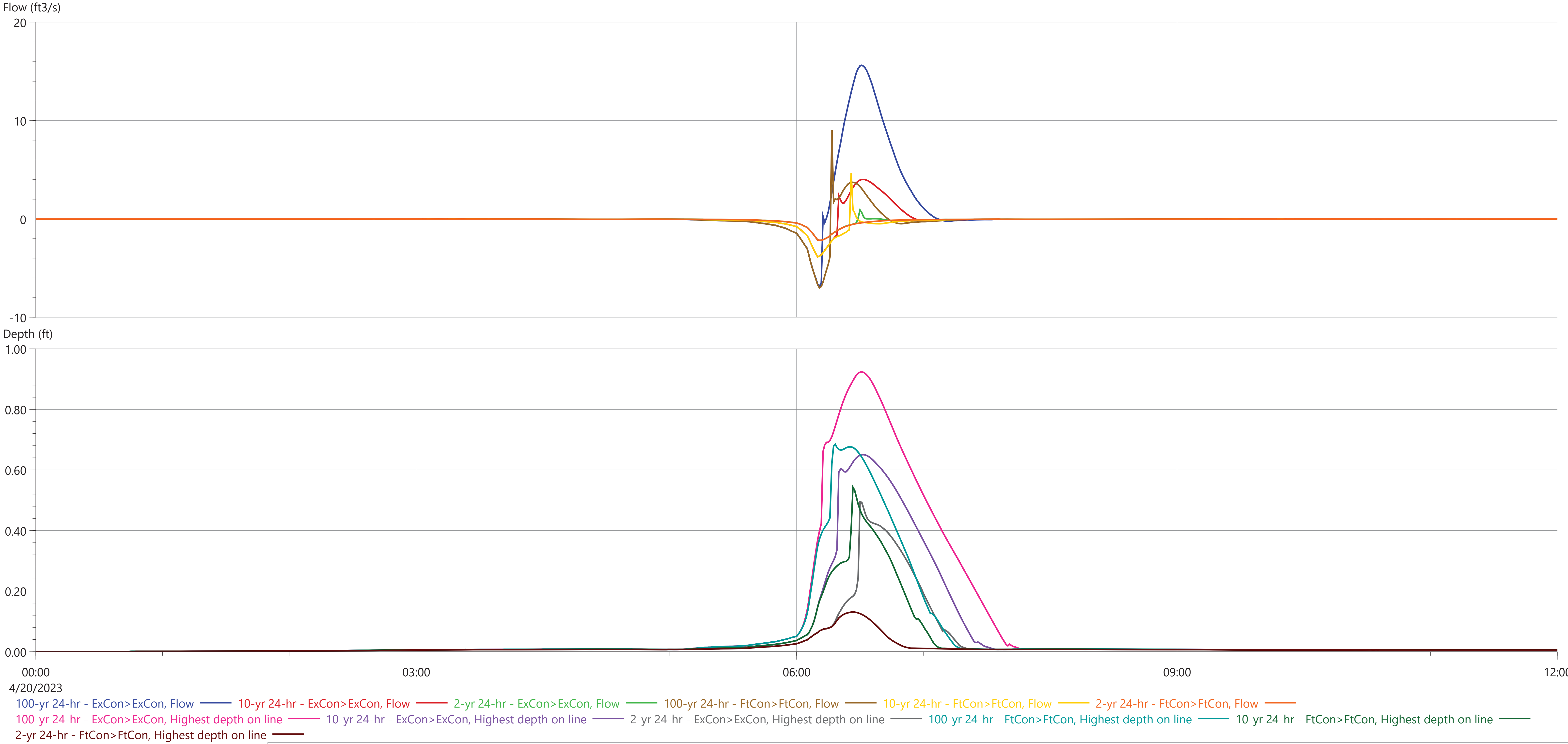
Network results line (2D) : Constitution/San Mateo NS



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-6.852	15.625	17673.245	0.000	0.924
10-yr 24-hr - ExCon>ExCon	-3.842	4.016	827.434	0.000	0.651
2-yr 24-hr - ExCon>ExCon	-2.168	0.901	-3100.059	0.000	0.495
100-yr 24-hr - FtCon>FtCon	-6.997	9.030	-2802.881	0.000	0.684
10-yr 24-hr - FtCon>FtCon	-3.842	4.648	-4949.464	0.000	0.543
2-yr 24-hr - FtCon>FtCon	-2.168	0.000	-3363.793	0.000	0.130

Existing Conditions (without GSI improvements) results from Network Results Lines

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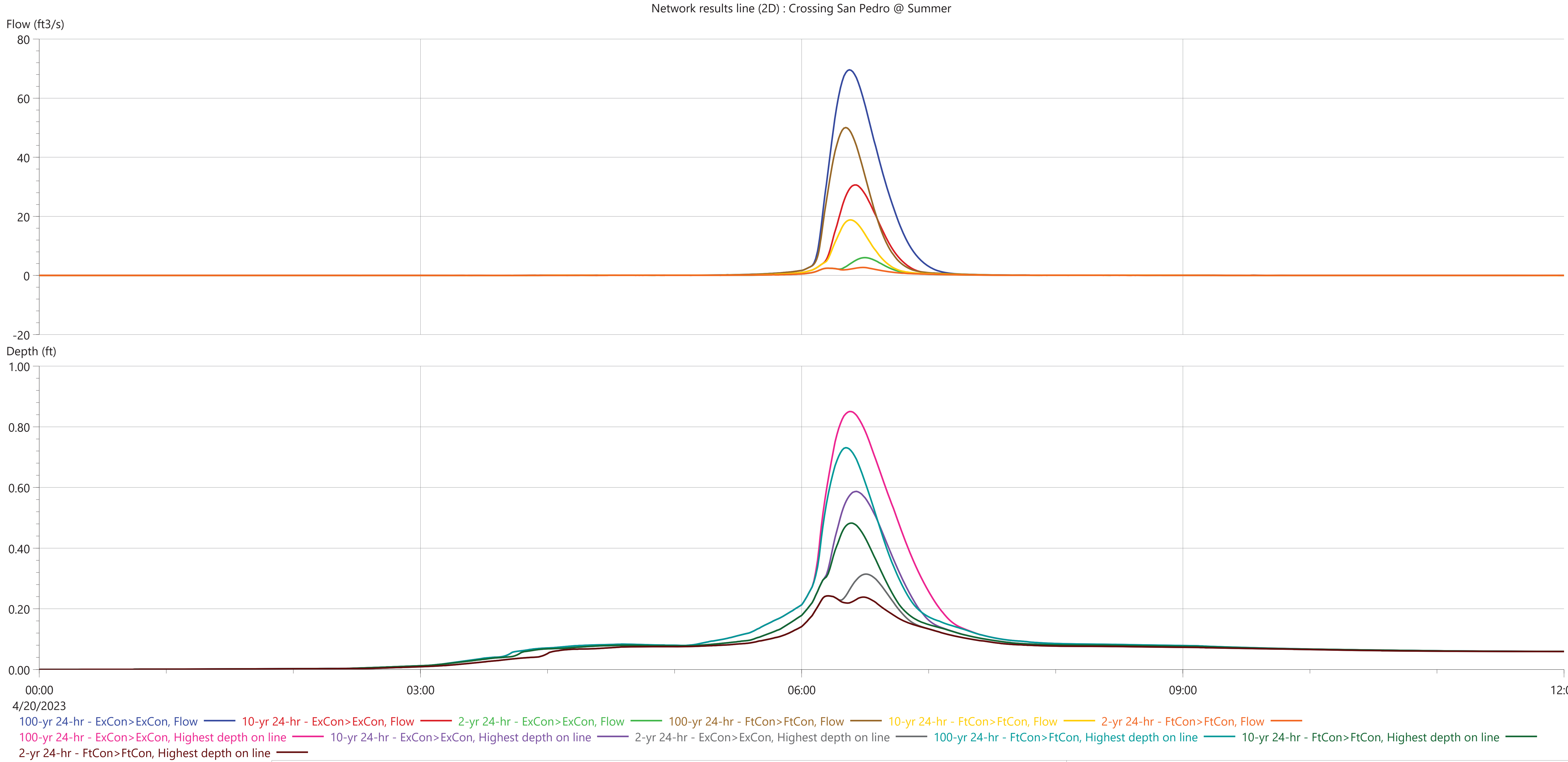

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.027	69.606	118020.954	0.000	0.850
10-yr 24-hr - ExCon>ExCon	-0.022	30.600	46413.468	0.000	0.587
2-yr 24-hr - ExCon>ExCon	-0.022	6.055	10689.074	0.000	0.314
100-yr 24-hr - FtCon>FtCon	-0.021	50.059	72624.343	0.000	0.731
10-yr 24-hr - FtCon>FtCon	-0.022	18.770	26933.525	0.000	0.482
2-yr 24-hr - FtCon>FtCon	-0.021	2.712	7121.384	0.000	0.243

Existing Conditions (without GSI improvements) results from Network Results Lines

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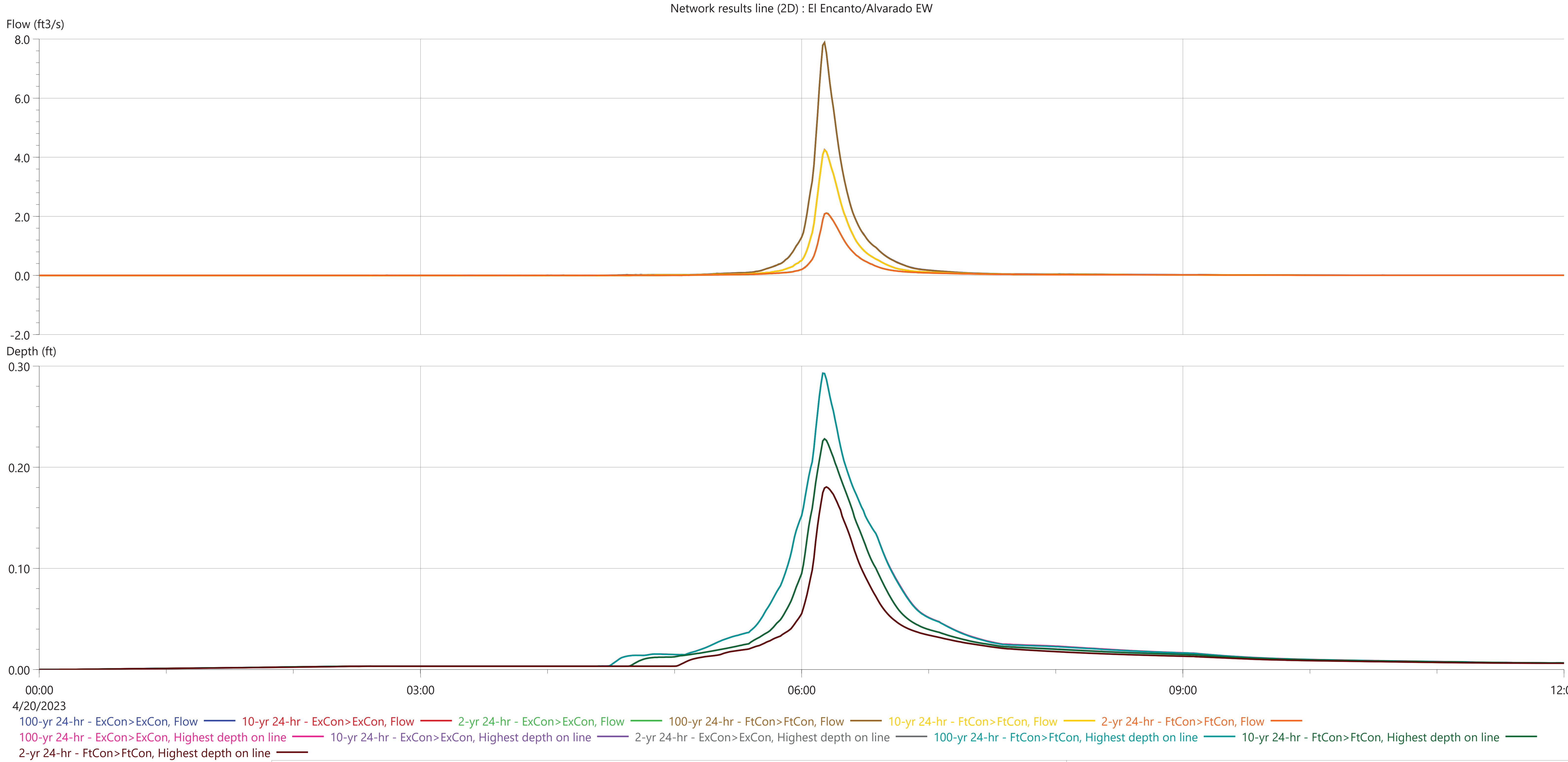

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.004	7.883	9266.034	0.000	0.293
10-yr 24-hr - ExCon>ExCon	-0.004	4.251	5266.211	0.000	0.228
2-yr 24-hr - ExCon>ExCon	-0.001	2.111	2846.927	0.000	0.180
100-yr 24-hr - FtCon>FtCon	-0.002	7.883	9247.467	0.000	0.293
10-yr 24-hr - FtCon>FtCon	-0.004	4.244	5262.498	0.000	0.228
2-yr 24-hr - FtCon>FtCon	0.000	2.109	2847.834	0.000	0.180

Existing Conditions (without GSI improvements) results from Network Results Lines

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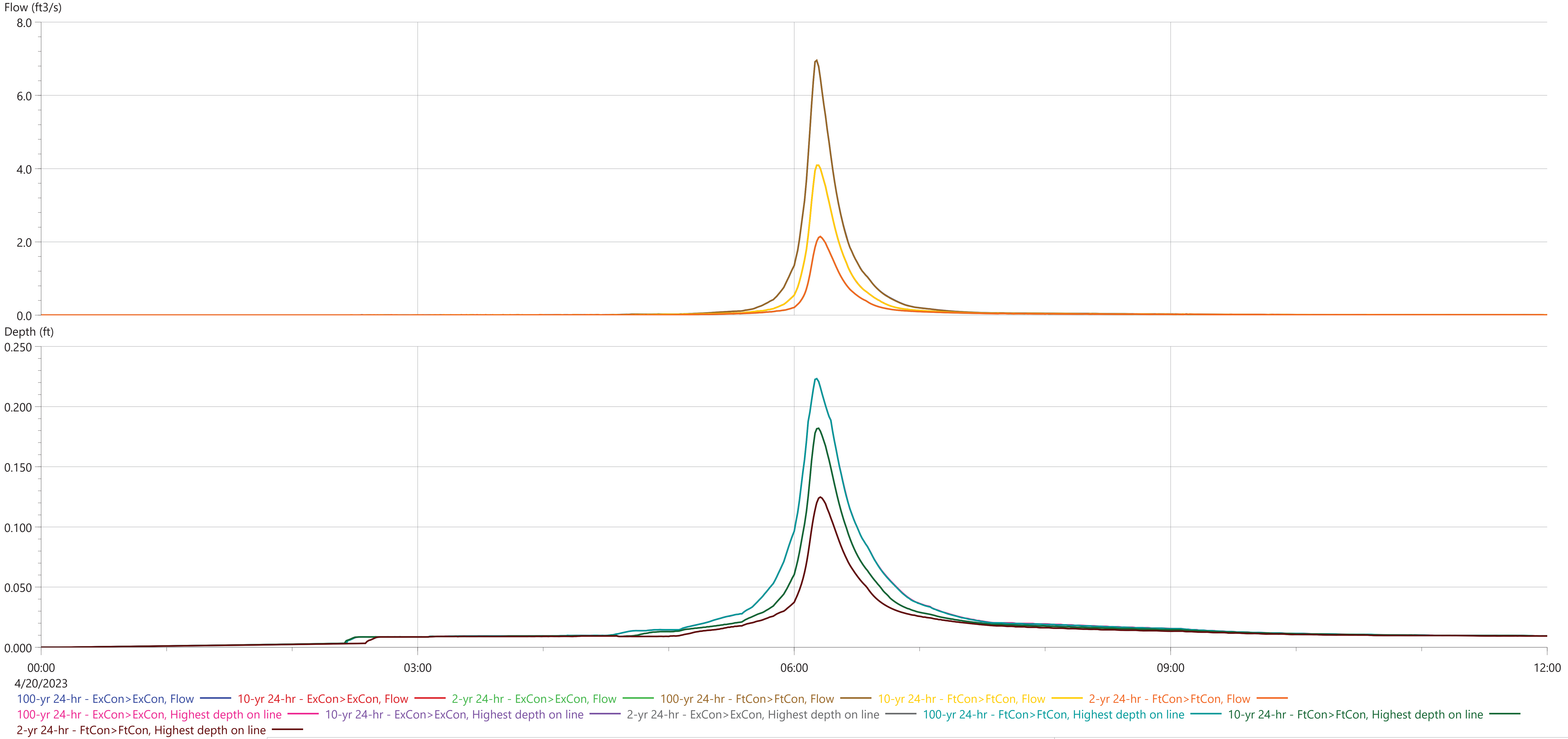
Network results line (2D) : El Encanto/Alvarado NS



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	6.947	9301.688	0.000	0.223
10-yr 24-hr - ExCon>ExCon	0.000	4.094	5541.775	0.000	0.182
2-yr 24-hr - ExCon>ExCon	0.000	2.140	3098.663	0.000	0.125
100-yr 24-hr - FtCon>FtCon	0.000	6.958	9285.833	0.000	0.223
10-yr 24-hr - FtCon>FtCon	0.000	4.094	5535.590	0.000	0.182
2-yr 24-hr - FtCon>FtCon	0.000	2.147	3095.398	0.000	0.125

Existing Conditions (without GSI improvements) results from Network Results Lines

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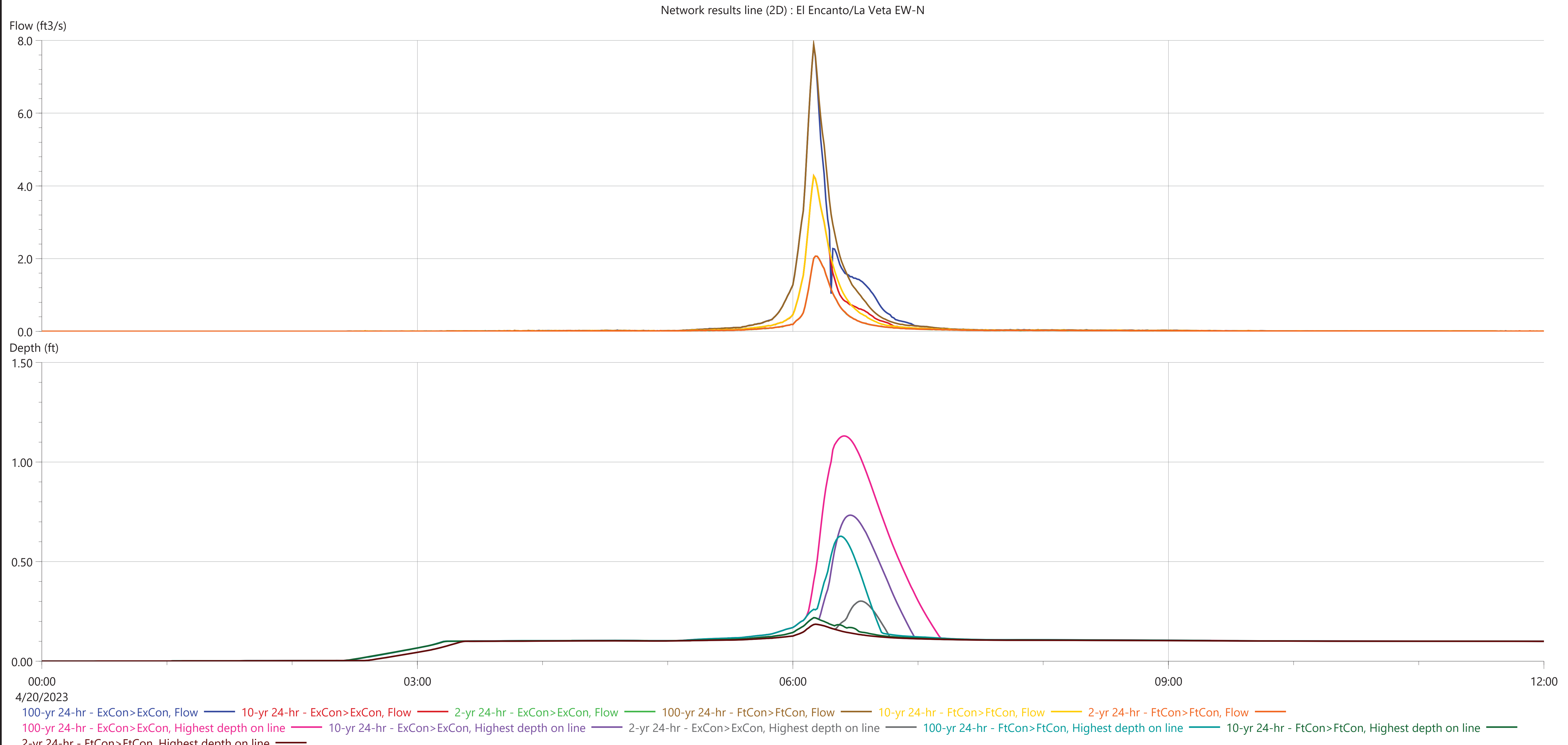

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	7.869	8556.022	0.000	1.131
10-yr 24-hr - ExCon>ExCon	0.000	4.275	4776.623	0.000	0.734
2-yr 24-hr - ExCon>ExCon	0.000	2.066	2595.263	0.000	0.302
100-yr 24-hr - FtCon>FtCon	0.000	7.887	8587.841	0.000	0.627
10-yr 24-hr - FtCon>FtCon	0.000	4.273	4775.109	0.000	0.218
2-yr 24-hr - FtCon>FtCon	0.000	2.066	2592.487	0.000	0.185

Existing Conditions (without GSI improvements) results from Network Results Lines

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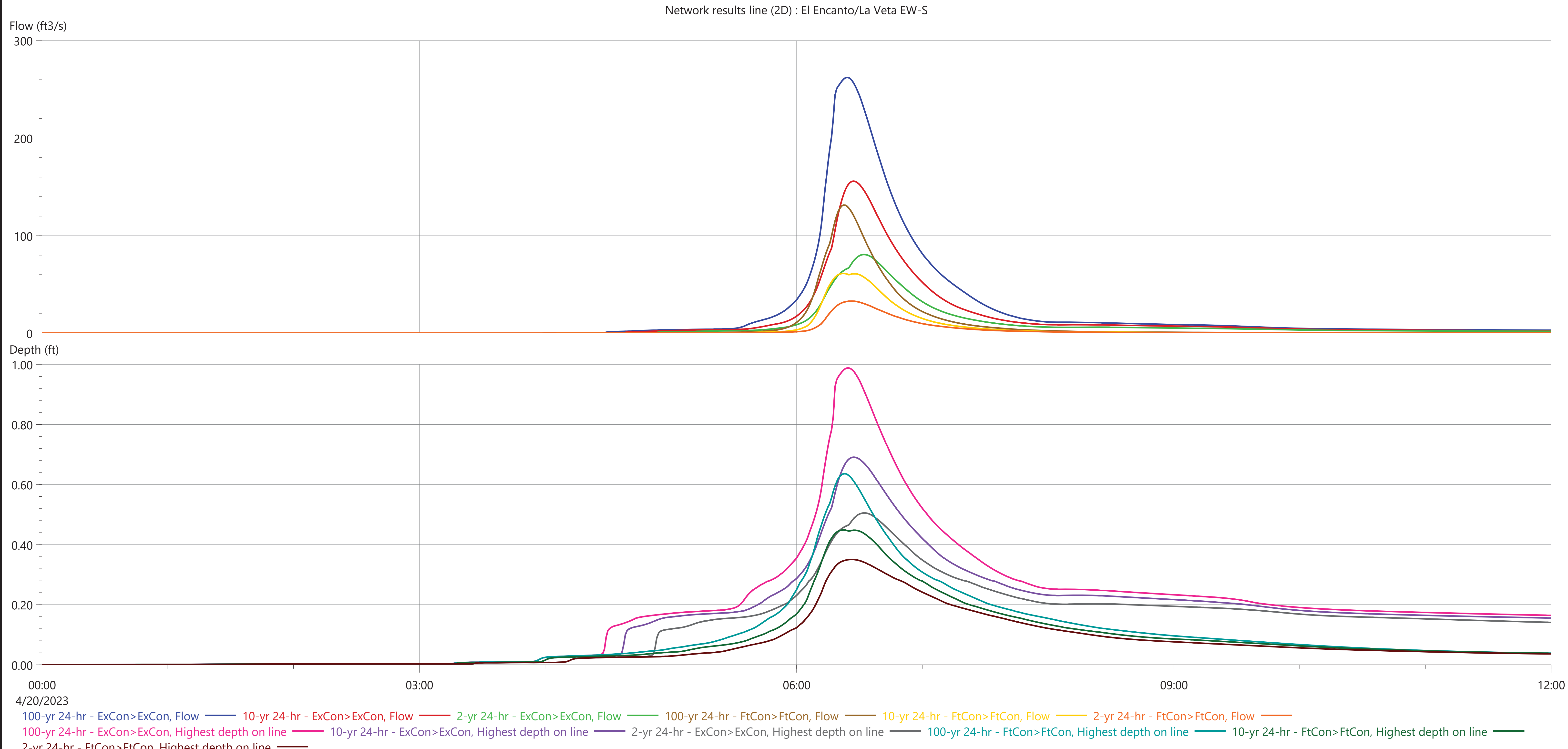

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	262.273	816536.690	0.000	0.988
10-yr 24-hr - ExCon>ExCon	0.000	155.792	503165.231	0.000	0.691
2-yr 24-hr - ExCon>ExCon	0.000	80.641	298382.738	0.000	0.505
100-yr 24-hr - FtCon>FtCon	0.000	131.393	288792.849	0.000	0.636
10-yr 24-hr - FtCon>FtCon	0.000	61.219	162578.139	0.000	0.449
2-yr 24-hr - FtCon>FtCon	0.000	32.898	90000.720	0.000	0.351

Existing Conditions (without GSI improvements) results from Network Results Lines

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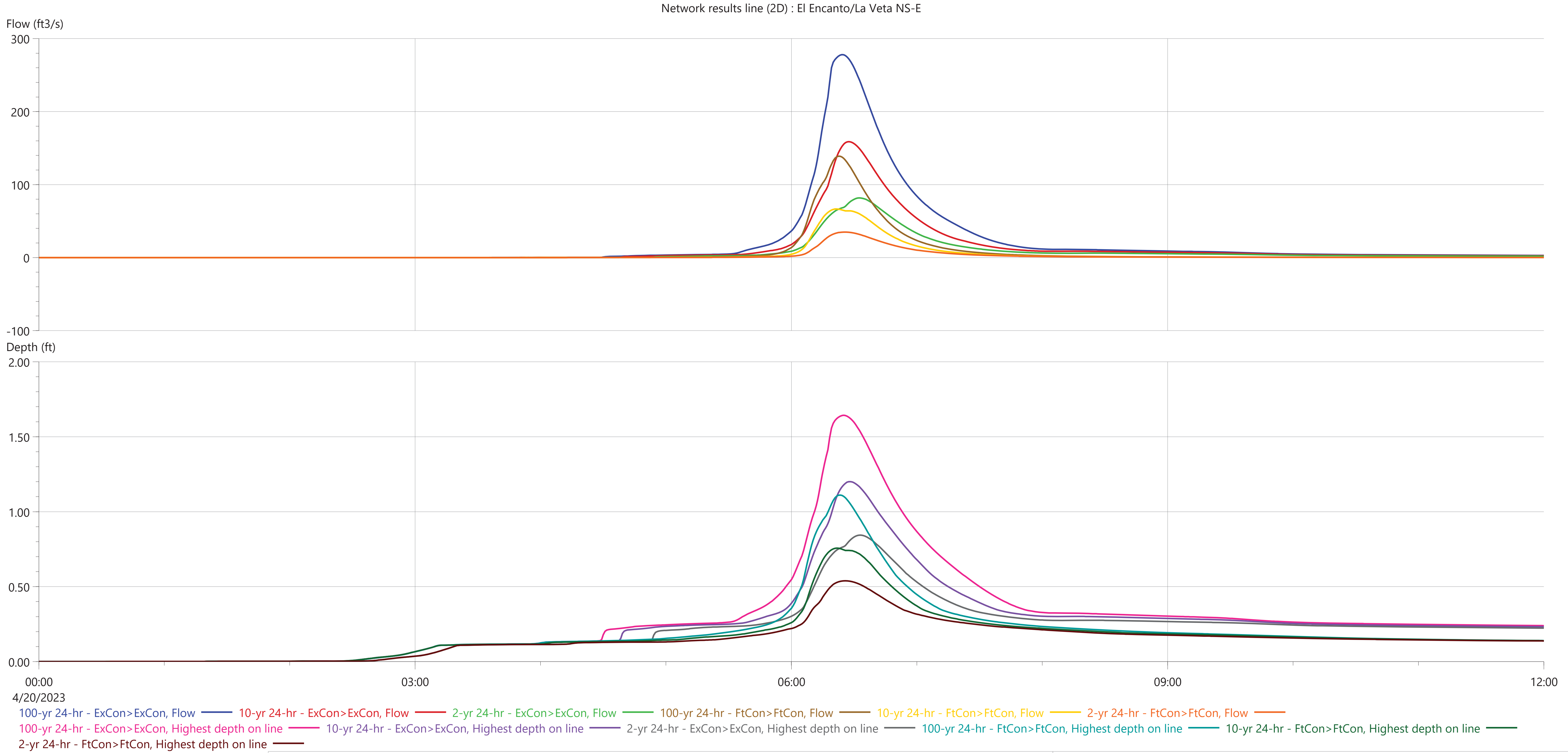

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	278.024	857281.259	0.000	1.643
10-yr 24-hr - ExCon>ExCon	0.000	158.799	519257.705	0.000	1.201
2-yr 24-hr - ExCon>ExCon	0.000	81.691	306813.947	0.000	0.843
100-yr 24-hr - FtCon>FtCon	-0.006	138.868	317919.488	0.000	1.111
10-yr 24-hr - FtCon>FtCon	0.000	66.656	179012.783	0.000	0.757
2-yr 24-hr - FtCon>FtCon	-0.001	34.920	98729.332	0.000	0.539

Existing Conditions (without GSI improvements) results from Network Results Lines

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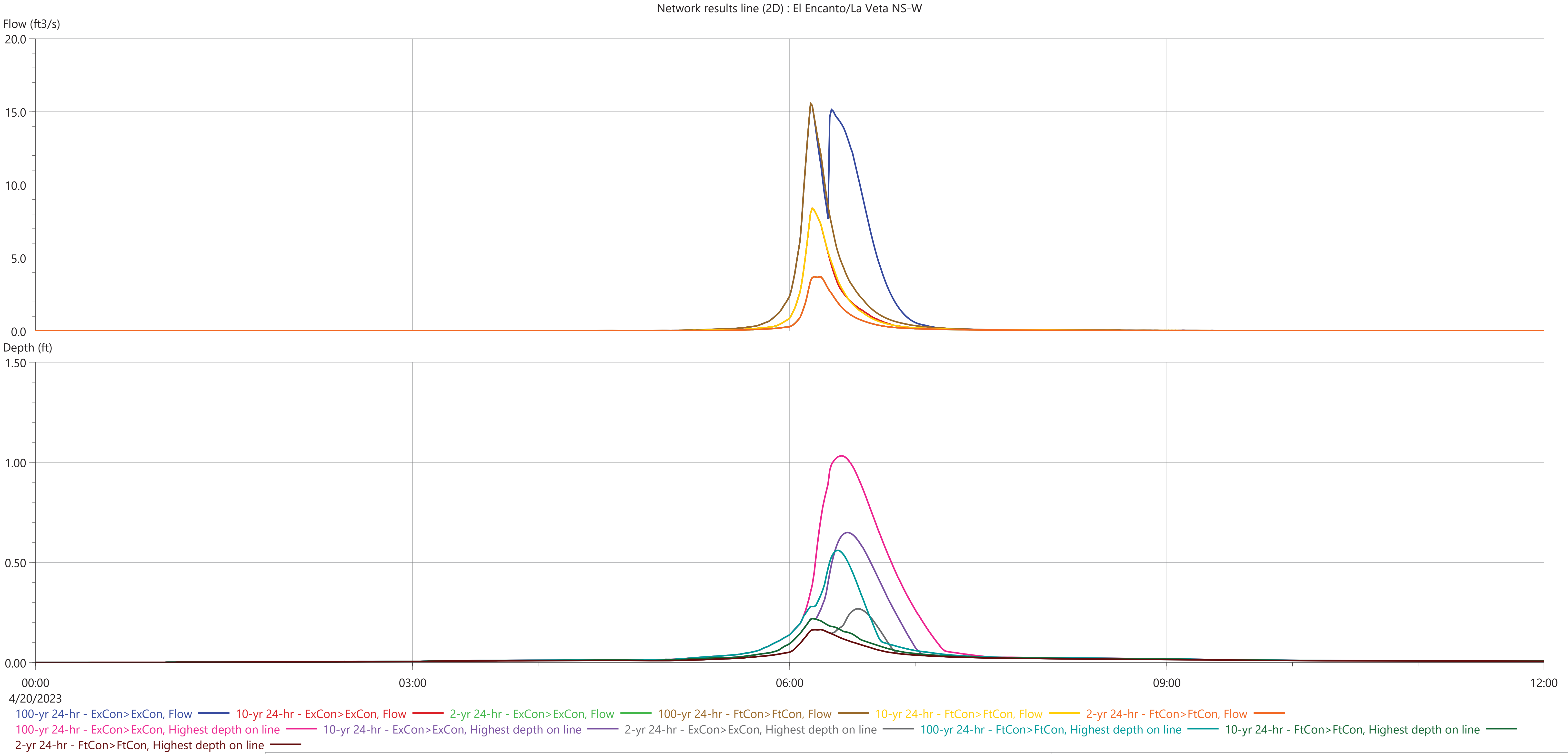

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	15.516	31146.152	0.000	1.033
10-yr 24-hr - ExCon>ExCon	0.000	8.391	10774.216	0.000	0.650
2-yr 24-hr - ExCon>ExCon	0.000	3.724	5617.238	0.000	0.268
100-yr 24-hr - FtCon>FtCon	0.000	15.565	19099.483	0.000	0.560
10-yr 24-hr - FtCon>FtCon	0.000	8.392	10770.005	0.000	0.219
2-yr 24-hr - FtCon>FtCon	0.000	3.724	5617.991	0.000	0.164

Existing Conditions (without GSI improvements) results from Network Results Lines

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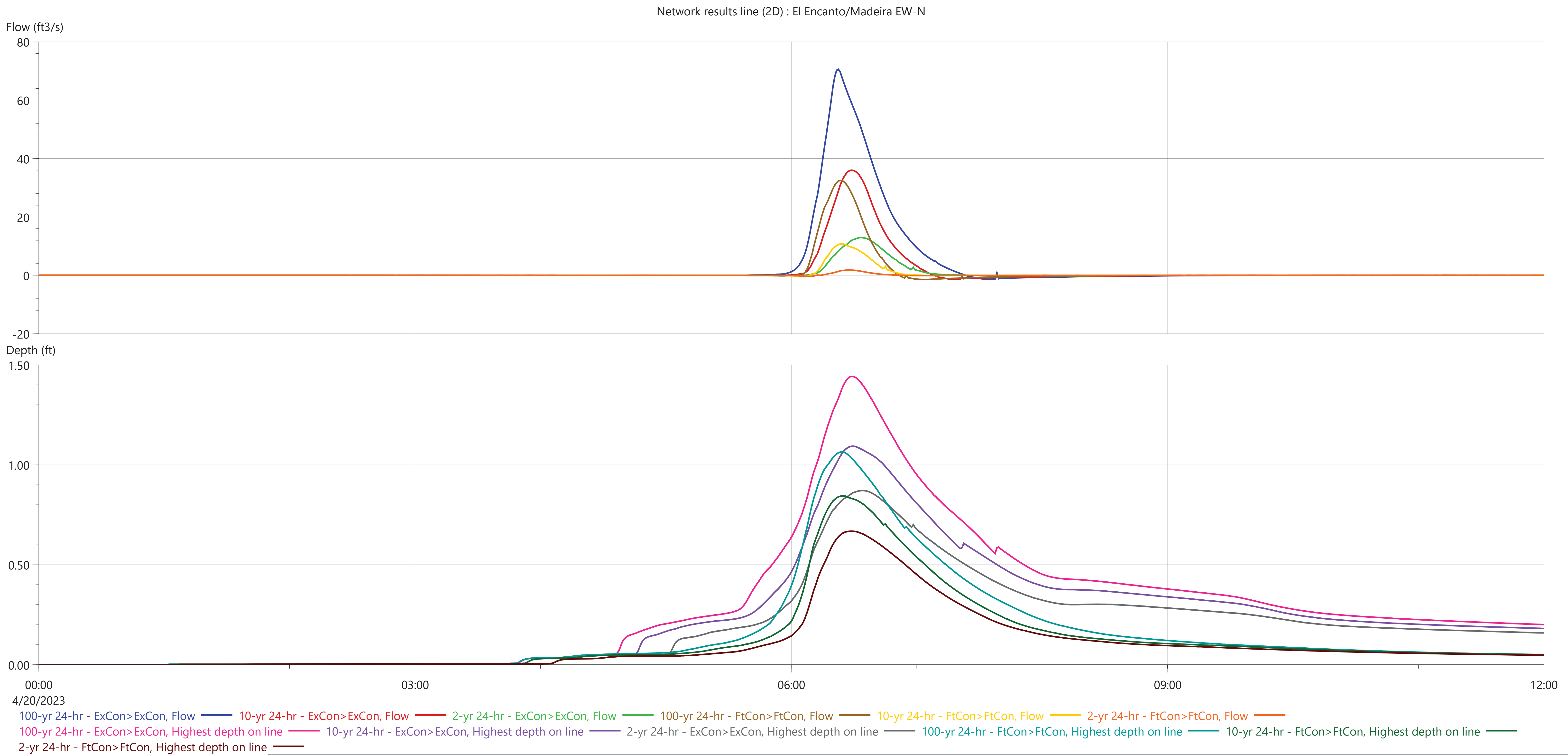

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-1.318	70.569	121453.670	0.000	1.442
10-yr 24-hr - ExCon>ExCon	-1.431	35.965	55181.398	0.000	1.093
2-yr 24-hr - ExCon>ExCon	-0.085	12.930	22007.127	0.000	0.872
100-yr 24-hr - FtCon>FtCon	-1.443	32.501	40260.859	0.000	1.065
10-yr 24-hr - FtCon>FtCon	-0.282	10.732	14010.041	0.000	0.845
2-yr 24-hr - FtCon>FtCon	-0.356	1.785	1460.011	0.000	0.667

Existing Conditions (without GSI improvements) results from Network Results Lines

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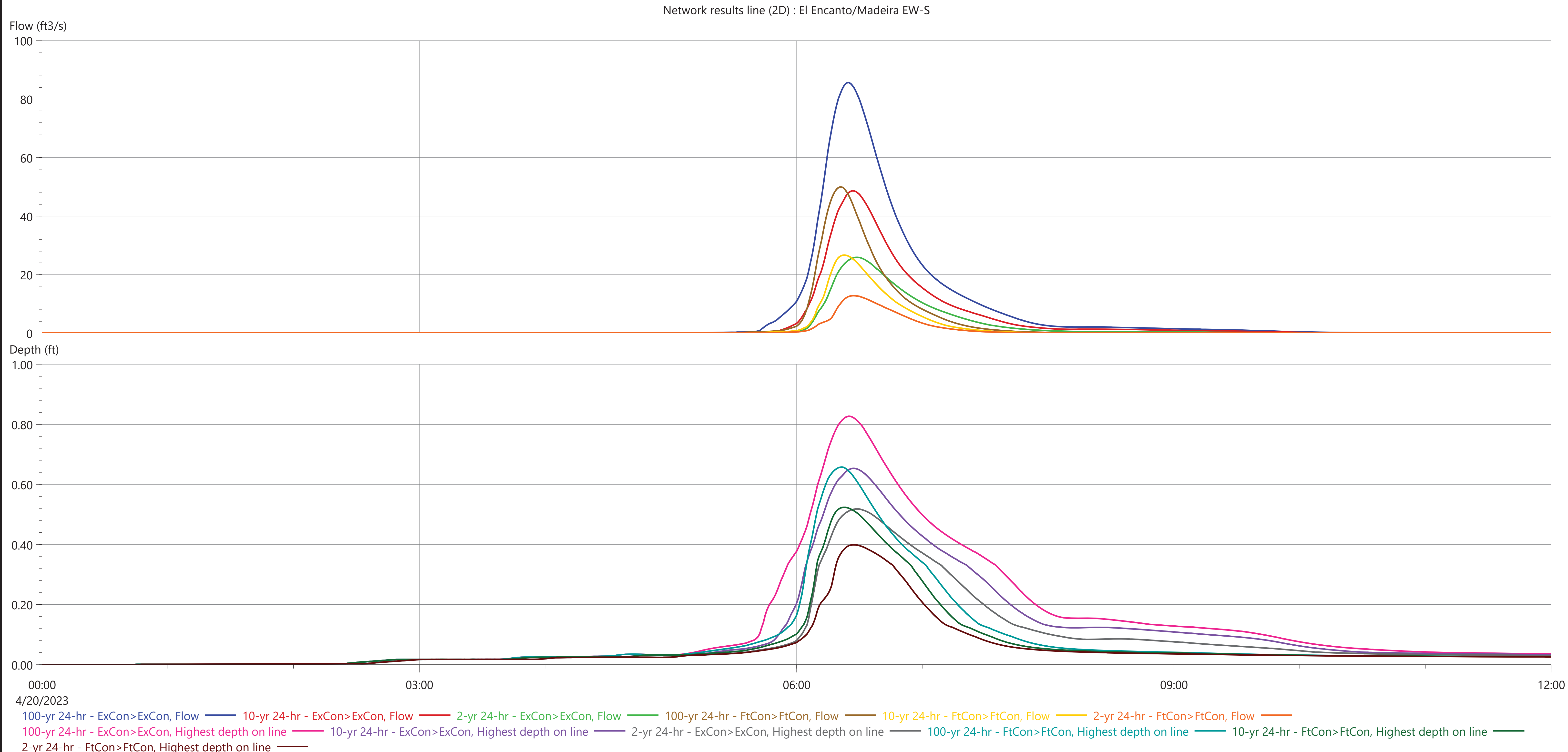

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	85.668	238757.235	0.000	0.827
10-yr 24-hr - ExCon>ExCon	0.000	48.650	136463.665	0.000	0.653
2-yr 24-hr - ExCon>ExCon	0.000	25.901	74584.198	0.000	0.518
100-yr 24-hr - FtCon>FtCon	0.000	49.954	103015.806	0.000	0.658
10-yr 24-hr - FtCon>FtCon	0.000	26.654	57442.575	0.000	0.524
2-yr 24-hr - FtCon>FtCon	0.000	12.786	29194.407	0.000	0.399

Existing Conditions (without GSI improvements) results from Network Results Lines

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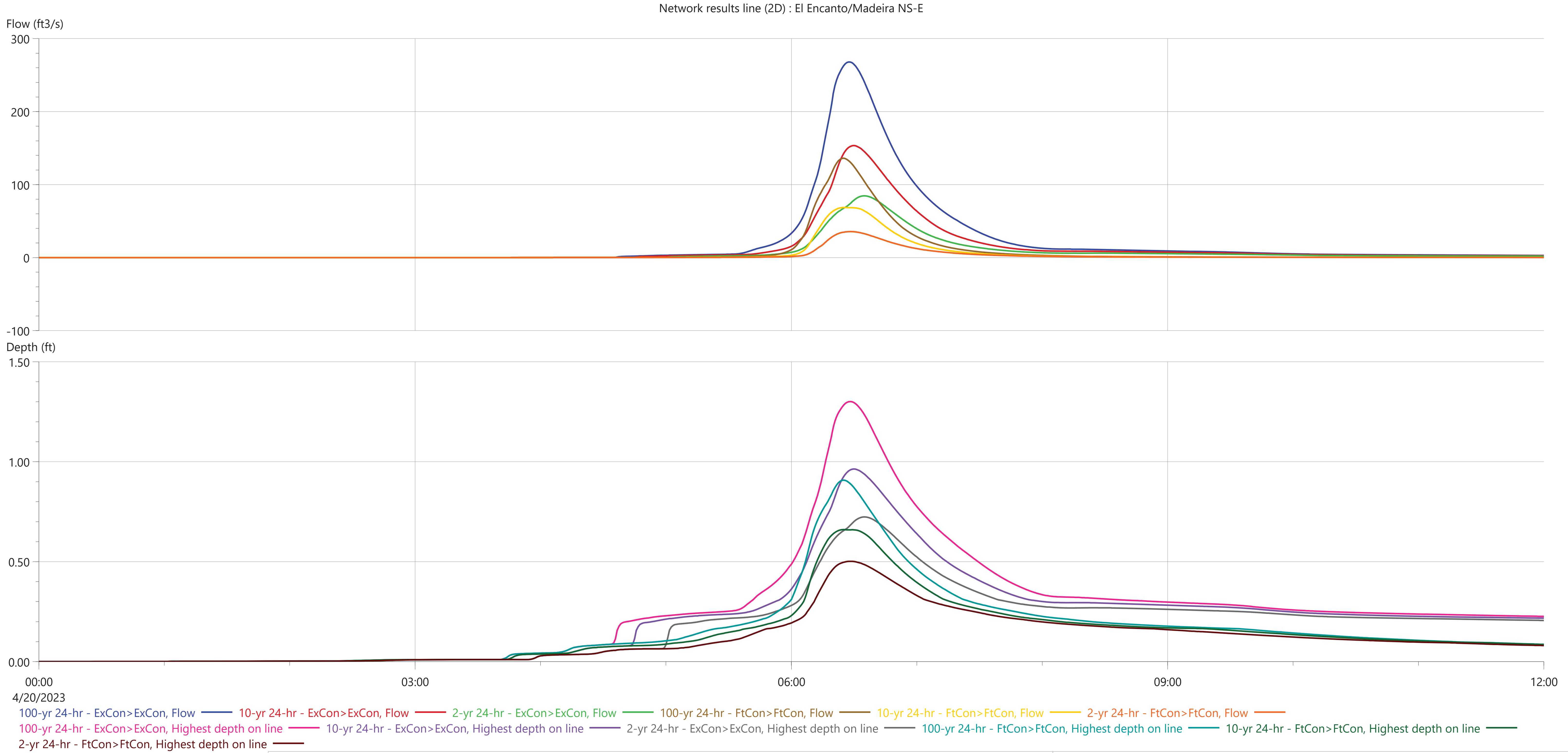

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.000	267.984	870815.018	0.000	1.301
10-yr 24-hr - ExCon>ExCon	0.000	153.428	530672.806	0.000	0.963
2-yr 24-hr - ExCon>ExCon	-0.004	84.614	318289.318	0.000	0.724
100-yr 24-hr - FtCon>FtCon	-0.004	136.182	332413.948	0.000	0.908
10-yr 24-hr - FtCon>FtCon	0.000	68.624	191743.671	0.000	0.661
2-yr 24-hr - FtCon>FtCon	-0.005	35.592	103600.804	0.000	0.501

Existing Conditions (without GSI improvements) results from Network Results Lines

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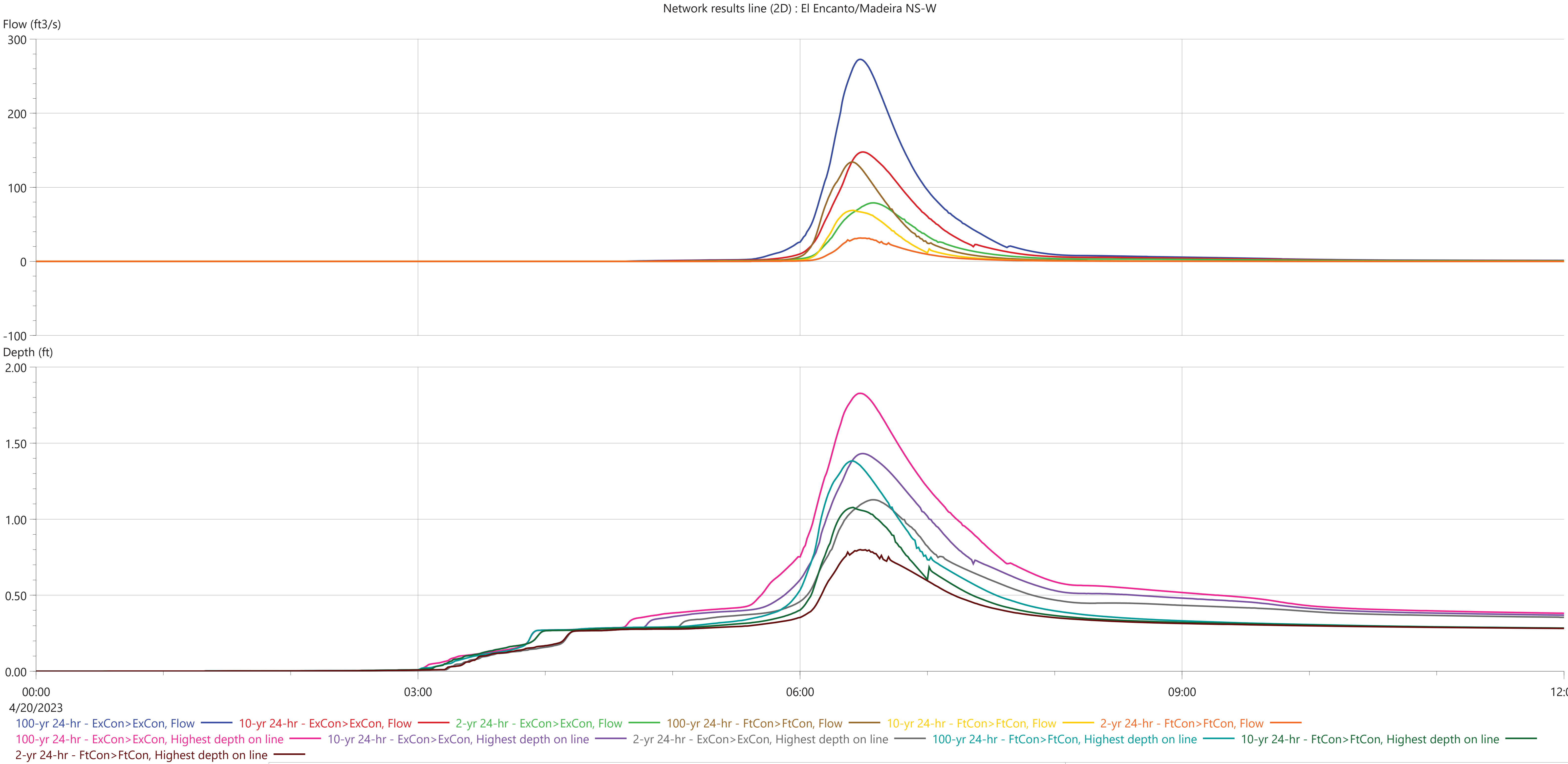

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	272.708	804939.349	0.000	1.828
10-yr 24-hr - ExCon>ExCon	-0.004	147.673	457354.126	0.000	1.431
2-yr 24-hr - ExCon>ExCon	-0.005	79.014	249474.322	0.000	1.127
100-yr 24-hr - FtCon>FtCon	-0.005	134.009	303365.110	0.000	1.382
10-yr 24-hr - FtCon>FtCon	-0.006	68.935	159367.399	0.000	1.077
2-yr 24-hr - FtCon>FtCon	-0.004	31.609	75297.937	0.000	0.799

Existing Conditions (without GSI improvements) results from Network Results Lines

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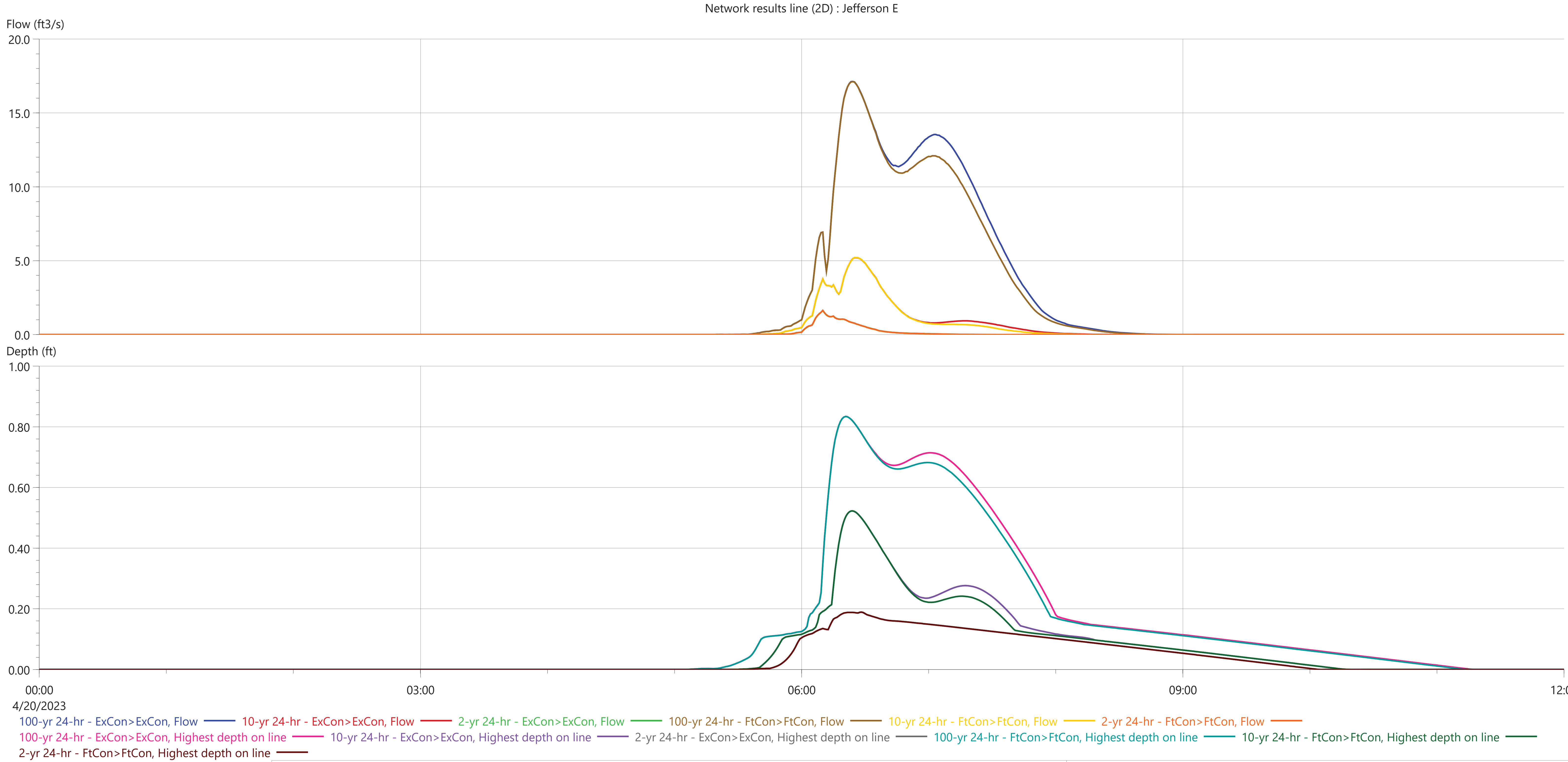

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	17.131	69067.306	0.000	0.834
10-yr 24-hr - ExCon>ExCon	0.000	5.203	12402.061	0.000	0.522
2-yr 24-hr - ExCon>ExCon	0.000	1.637	2084.785	0.000	0.189
100-yr 24-hr - FtCon>FtCon	0.000	17.119	64262.270	0.000	0.834
10-yr 24-hr - FtCon>FtCon	0.000	5.210	11705.080	0.000	0.522
2-yr 24-hr - FtCon>FtCon	0.000	1.637	2085.919	0.000	0.189

Existing Conditions (without GSI improvements) results from Network Results Lines

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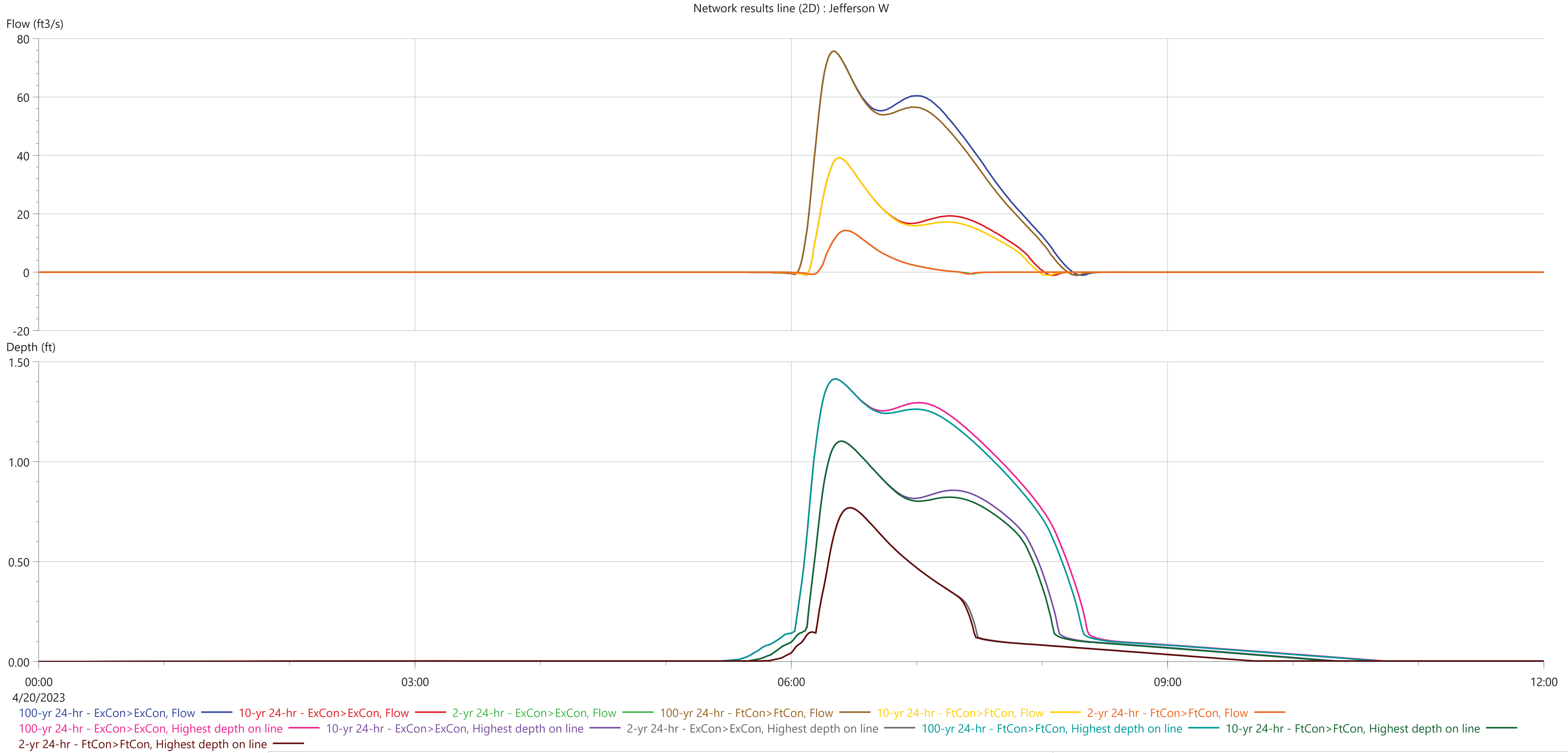

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-1.035	75.650	331380.235	0.000	1.414
10-yr 24-hr - ExCon>ExCon	-1.057	39.202	126874.790	0.000	1.103
2-yr 24-hr - ExCon>ExCon	-0.753	14.281	23025.707	0.000	0.769
100-yr 24-hr - FtCon>FtCon	-1.044	75.668	314193.005	0.000	1.414
10-yr 24-hr - FtCon>FtCon	-1.056	39.197	119678.910	0.000	1.103
2-yr 24-hr - FtCon>FtCon	-0.751	14.315	23043.682	0.000	0.770

Existing Conditions (without GSI improvements) results from Network Results Lines

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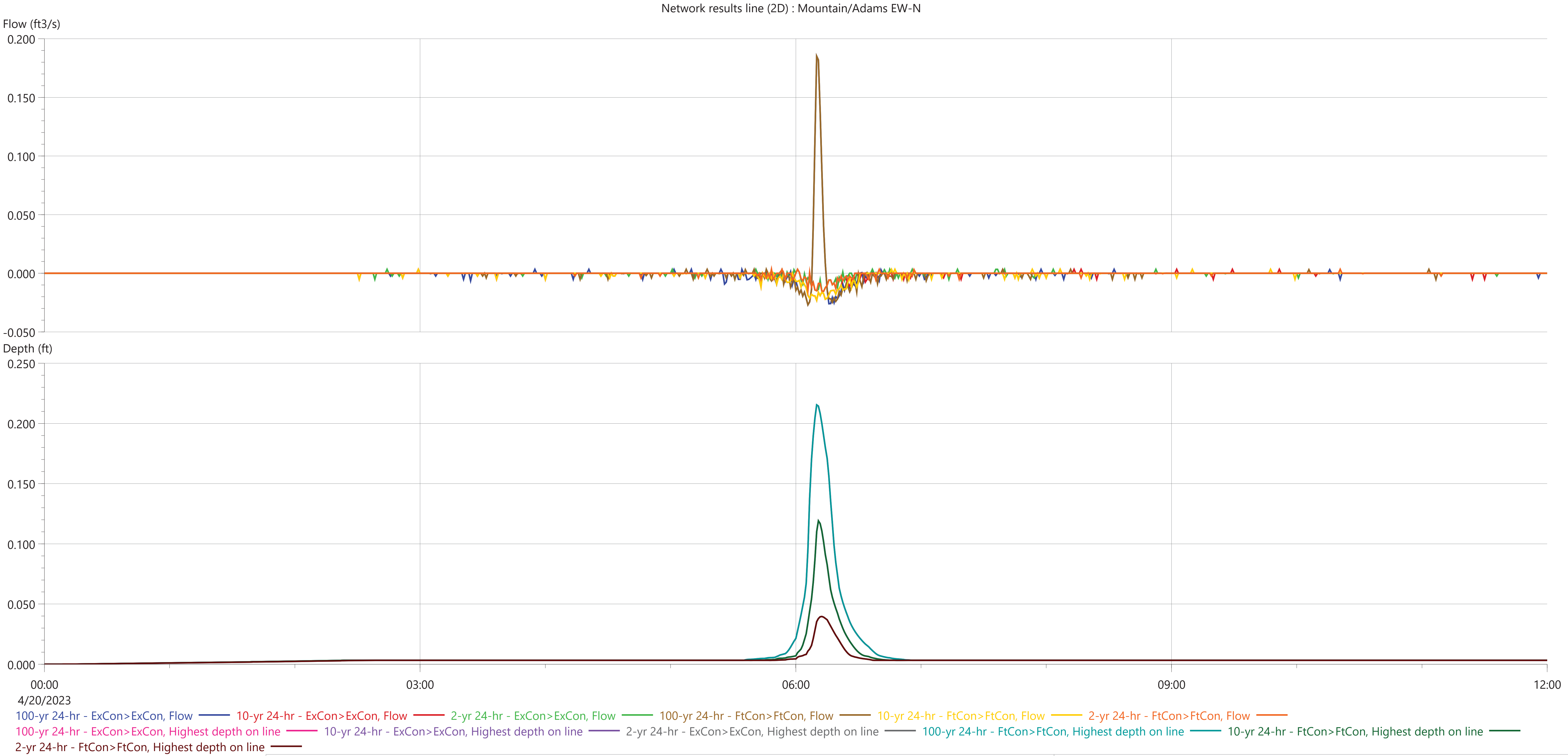

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.027	0.185	6.044	0.000	0.215
10-yr 24-hr - ExCon>ExCon	-0.023	0.003	-32.828	0.000	0.119
2-yr 24-hr - ExCon>ExCon	-0.015	0.003	-14.367	0.000	0.040
100-yr 24-hr - FtCon>FtCon	-0.027	0.185	5.195	0.000	0.215
10-yr 24-hr - FtCon>FtCon	-0.023	0.003	-34.537	0.000	0.119
2-yr 24-hr - FtCon>FtCon	-0.015	0.003	-15.249	0.000	0.040

Existing Conditions (without GSI improvements) results from Network Results Lines

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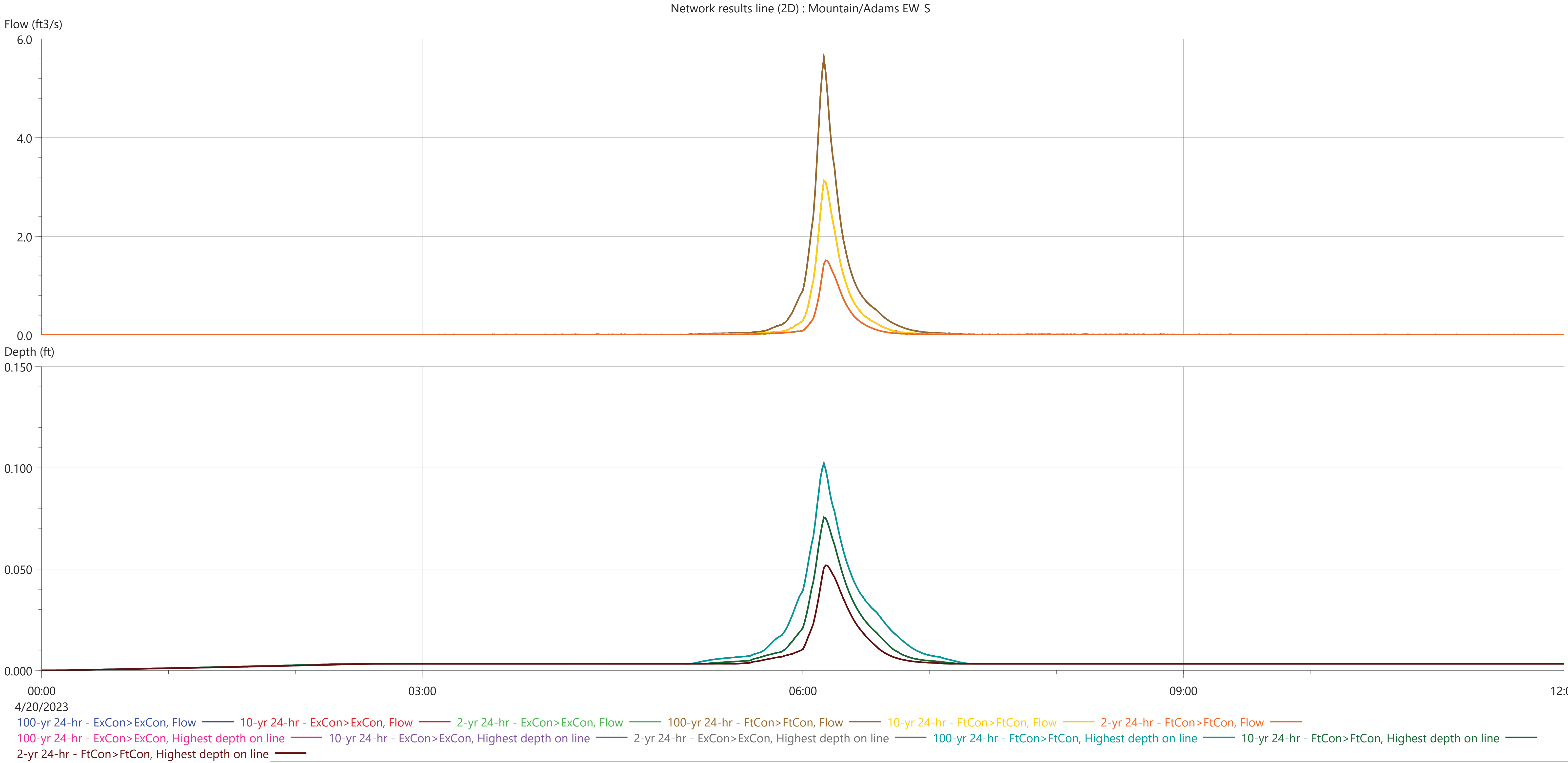

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	5.620	5514.972	0.000	0.102
10-yr 24-hr - ExCon>ExCon	0.000	3.137	2984.093	0.000	0.076
2-yr 24-hr - ExCon>ExCon	0.000	1.515	1515.420	0.000	0.052
100-yr 24-hr - FtCon>FtCon	0.000	5.620	5520.454	0.000	0.102
10-yr 24-hr - FtCon>FtCon	0.000	3.137	2984.381	0.000	0.076
2-yr 24-hr - FtCon>FtCon	0.000	1.515	1506.940	0.000	0.052

Existing Conditions (without GSI improvements) results from Network Results Lines

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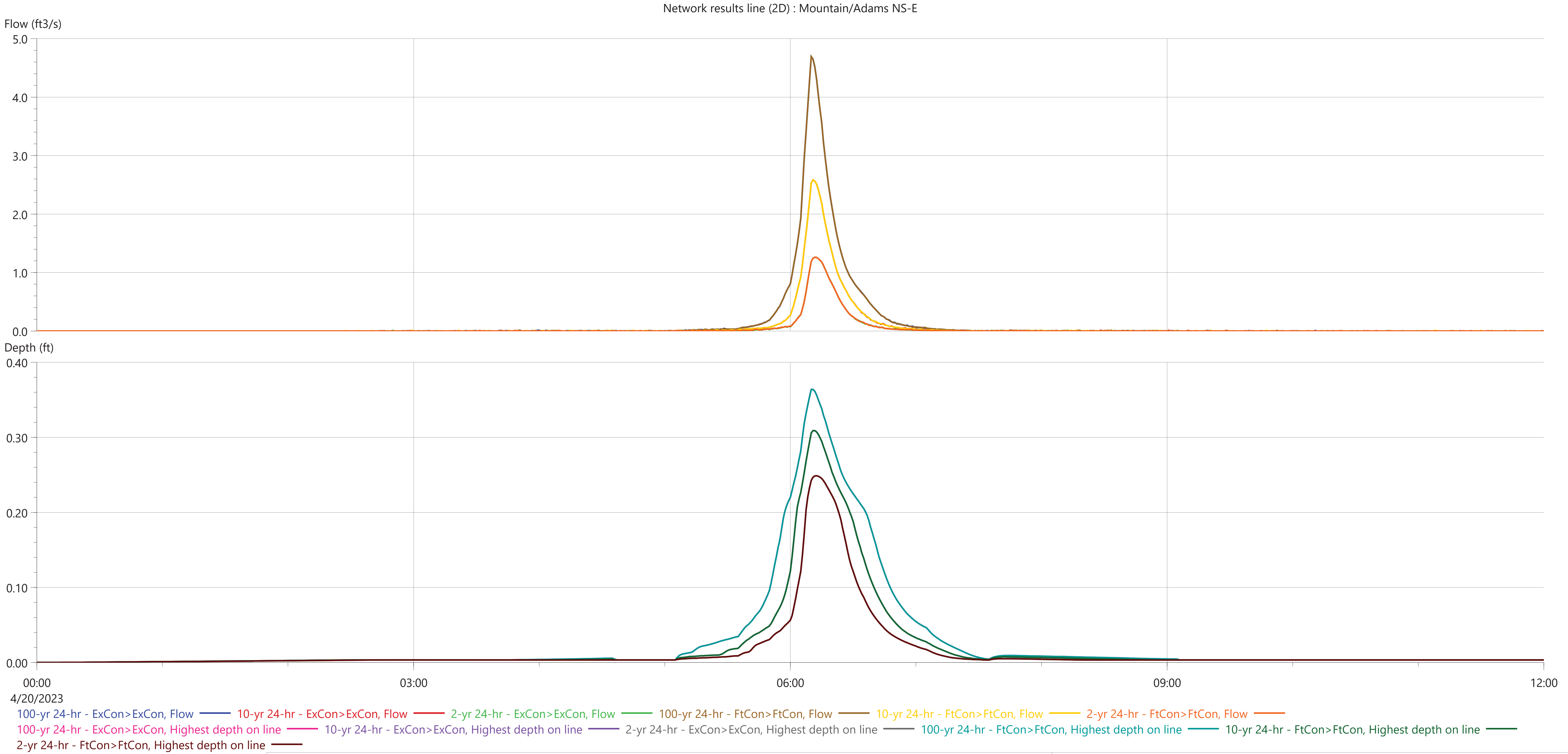

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	4.694	5378.587	0.000	0.364
10-yr 24-hr - ExCon>ExCon	0.000	2.585	2905.144	0.000	0.309
2-yr 24-hr - ExCon>ExCon	0.000	1.260	1440.827	0.000	0.249
100-yr 24-hr - FtCon>FtCon	0.000	4.694	5373.889	0.000	0.364
10-yr 24-hr - FtCon>FtCon	0.000	2.585	2906.821	0.000	0.309
2-yr 24-hr - FtCon>FtCon	0.000	1.262	1439.795	0.000	0.249

Existing Conditions (without GSI improvements) results from Network Results Lines

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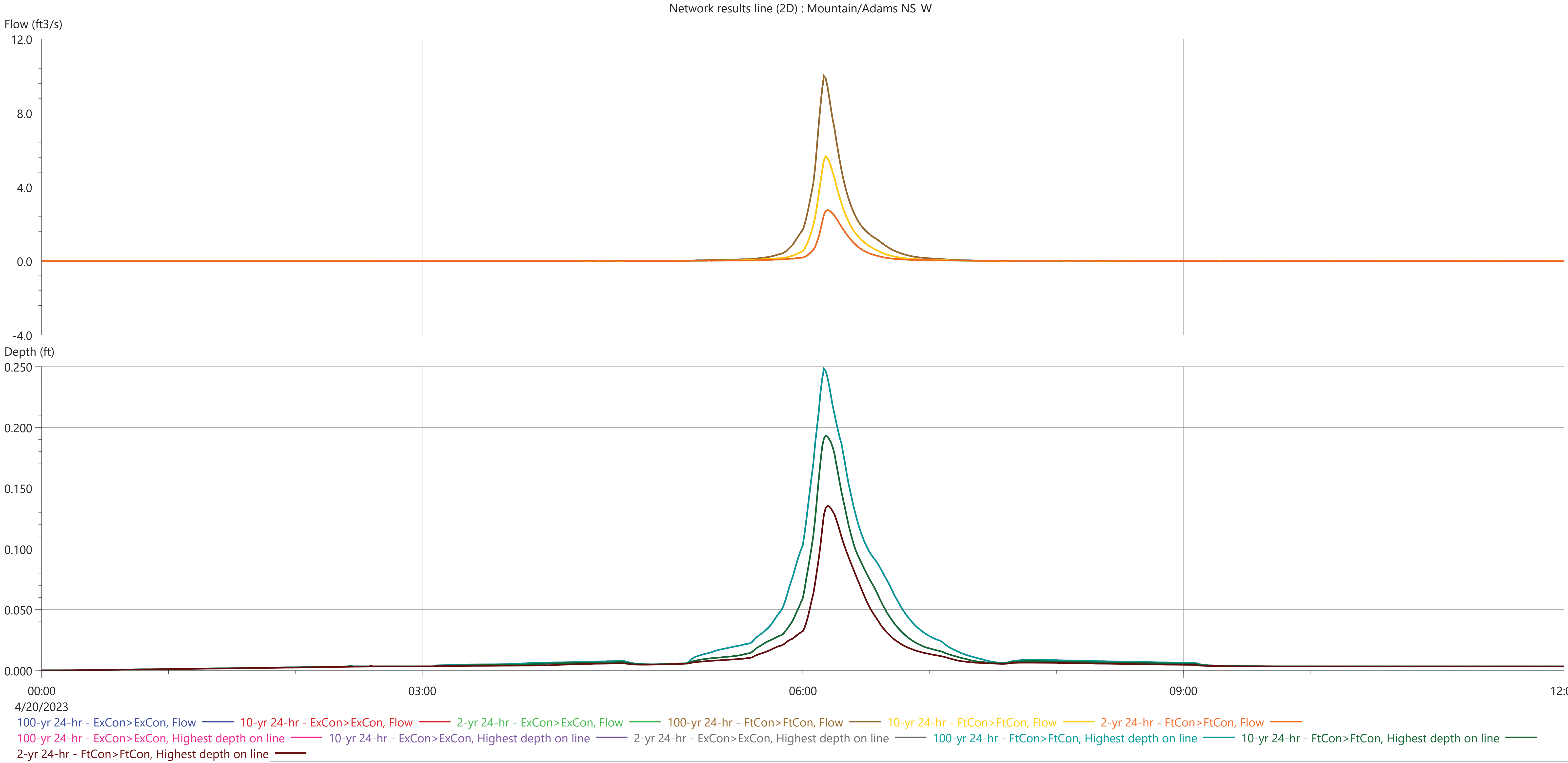

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.000	10.000	11145.436	0.000	0.248
10-yr 24-hr - ExCon>ExCon	-0.000	5.663	6111.161	0.000	0.193
2-yr 24-hr - ExCon>ExCon	-0.000	2.756	3127.175	0.000	0.135
100-yr 24-hr - FtCon>FtCon	-0.000	10.000	11146.451	0.000	0.248
10-yr 24-hr - FtCon>FtCon	-0.000	5.663	6113.927	0.000	0.193
2-yr 24-hr - FtCon>FtCon	-0.000	2.756	3130.130	0.000	0.135

Existing Conditions (without GSI improvements) results from Network Results Lines

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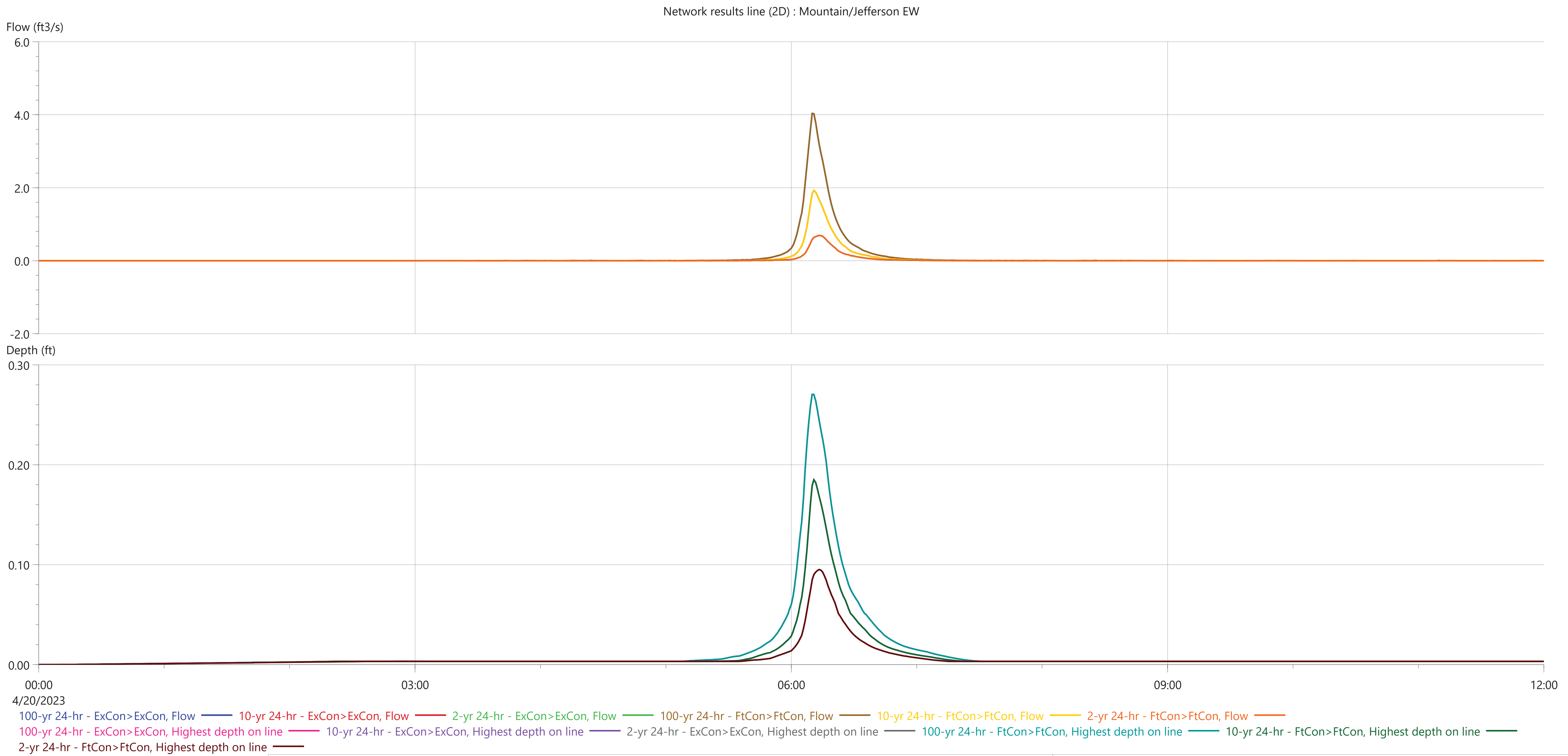

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	4.034	3610.163	0.000	0.270
10-yr 24-hr - ExCon>ExCon	-0.002	1.926	1734.660	0.000	0.185
2-yr 24-hr - ExCon>ExCon	-0.003	0.693	728.294	0.000	0.095
100-yr 24-hr - FtCon>FtCon	-0.002	4.034	3611.546	0.000	0.270
10-yr 24-hr - FtCon>FtCon	-0.003	1.926	1732.902	0.000	0.185
2-yr 24-hr - FtCon>FtCon	-0.003	0.696	728.049	0.000	0.095

Existing Conditions (without GSI improvements) results from Network Results Lines

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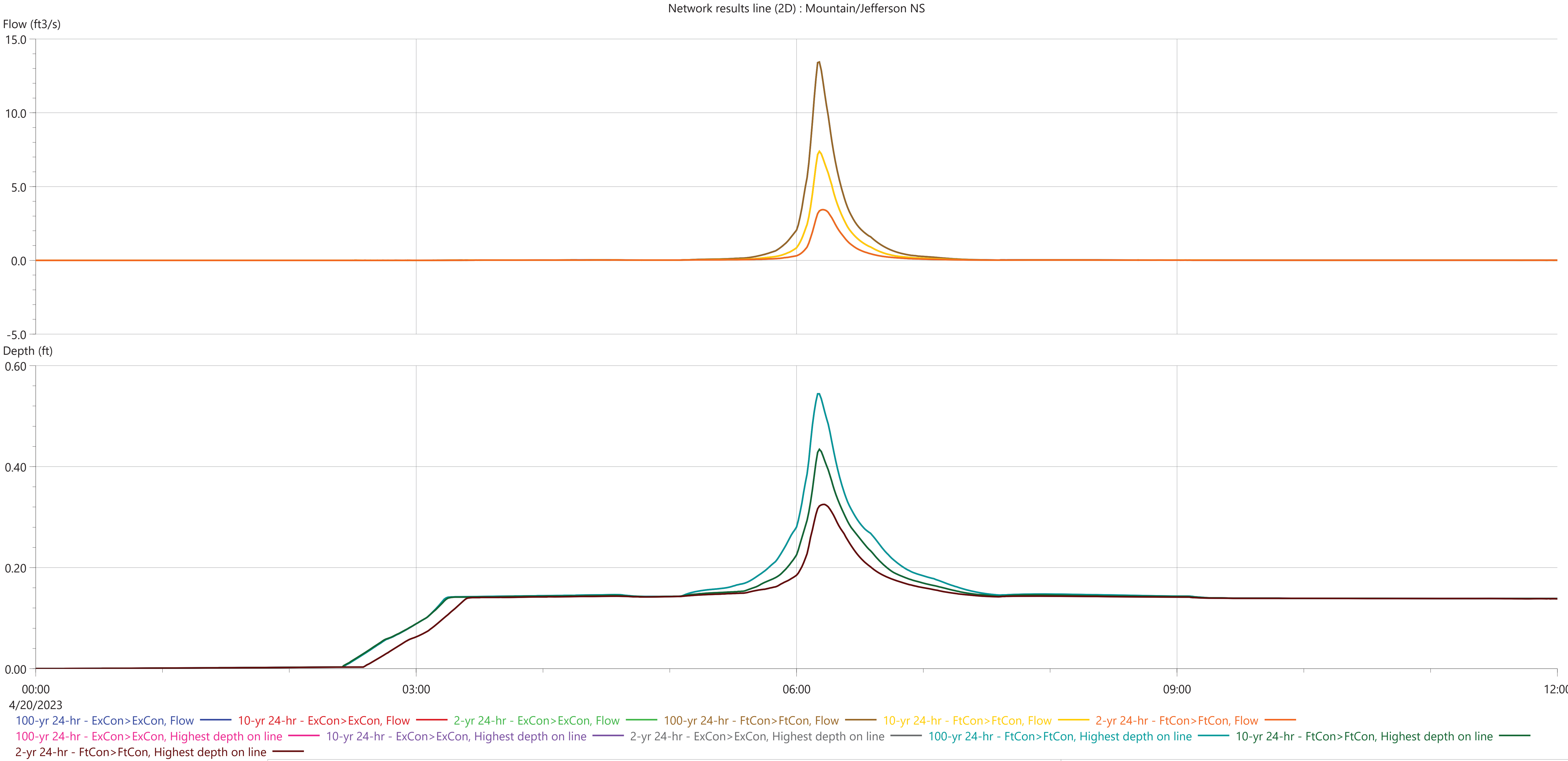

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	13.436	15241.584	0.000	0.544
10-yr 24-hr - ExCon>ExCon	-0.003	7.388	8439.075	0.000	0.434
2-yr 24-hr - ExCon>ExCon	0.000	3.438	4343.654	0.000	0.325
100-yr 24-hr - FtCon>FtCon	-0.003	13.436	15242.773	0.000	0.544
10-yr 24-hr - FtCon>FtCon	-0.003	7.388	8440.612	0.000	0.434
2-yr 24-hr - FtCon>FtCon	-0.003	3.440	4346.517	0.000	0.325

Existing Conditions (without GSI improvements) results from Network Results Lines

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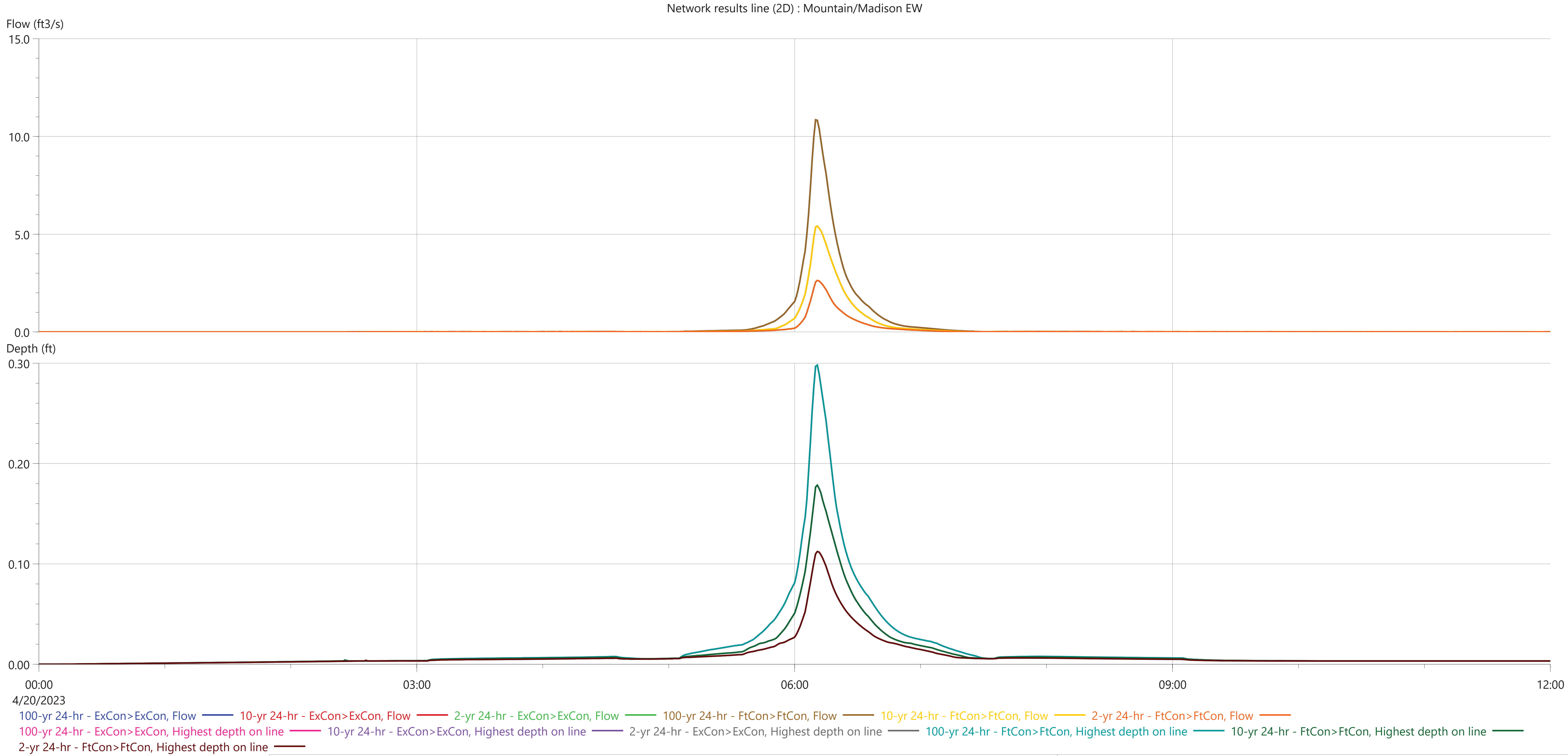

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	10.849	12194.029	0.000	0.298
10-yr 24-hr - ExCon>ExCon	0.000	5.413	6579.244	0.000	0.179
2-yr 24-hr - ExCon>ExCon	0.000	2.632	3143.268	0.000	0.112
100-yr 24-hr - FtCon>FtCon	0.000	10.849	12191.359	0.000	0.298
10-yr 24-hr - FtCon>FtCon	0.000	5.413	6575.884	0.000	0.179
2-yr 24-hr - FtCon>FtCon	0.000	2.632	3146.317	0.000	0.112

Existing Conditions (without GSI improvements) results from Network Results Lines

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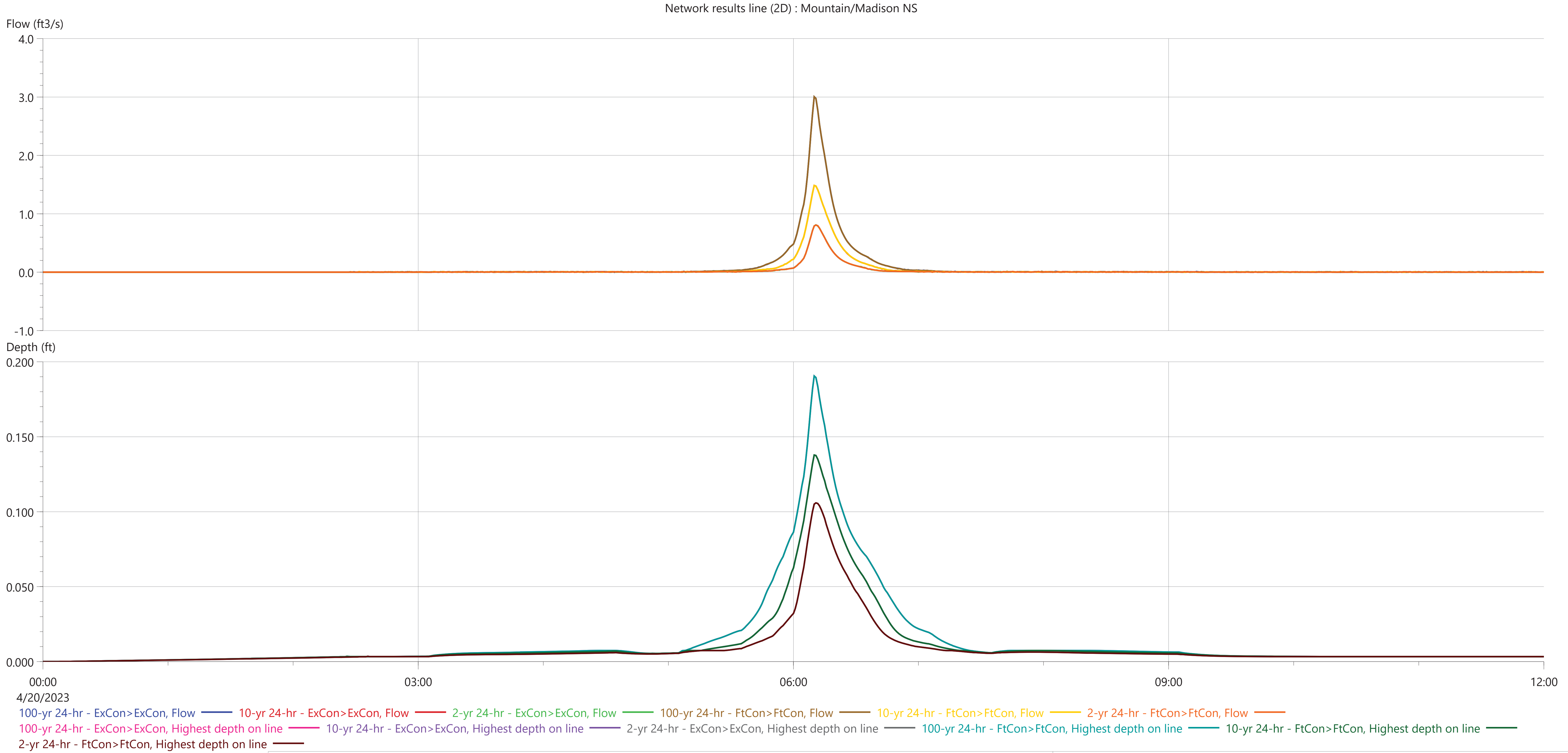

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	3.004	3079.394	0.000	0.191
10-yr 24-hr - ExCon>ExCon	-0.002	1.486	1633.661	0.000	0.138
2-yr 24-hr - ExCon>ExCon	-0.002	0.811	848.887	0.000	0.106
100-yr 24-hr - FtCon>FtCon	-0.002	3.004	3069.312	0.000	0.191
10-yr 24-hr - FtCon>FtCon	-0.002	1.486	1633.034	0.000	0.138
2-yr 24-hr - FtCon>FtCon	-0.002	0.807	840.949	0.000	0.106

Existing Conditions (without GSI improvements) results from Network Results Lines

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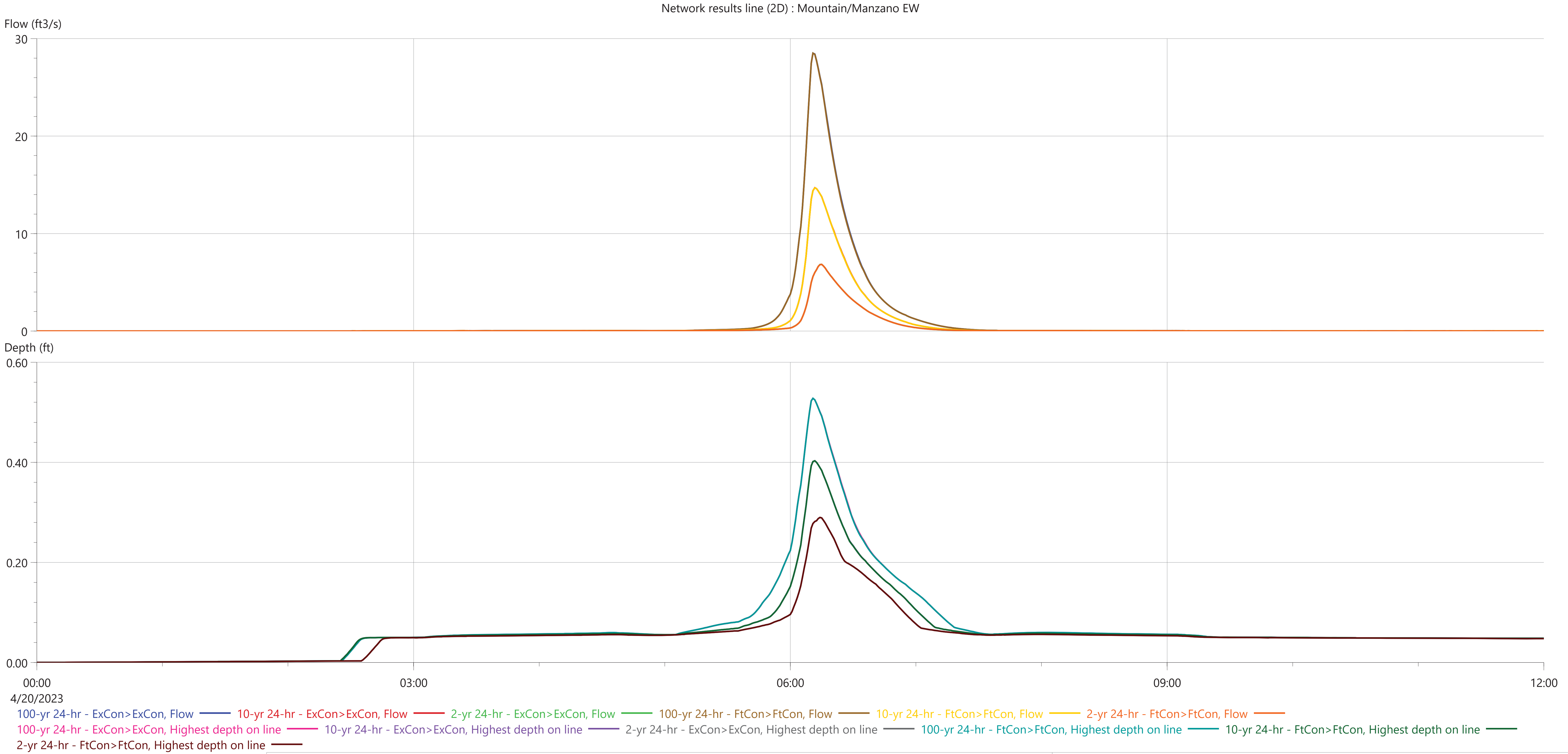

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	28.512	40134.451	0.000	0.528
10-yr 24-hr - ExCon>ExCon	0.000	14.700	21404.707	0.000	0.403
2-yr 24-hr - ExCon>ExCon	0.000	6.835	10652.065	0.000	0.290
100-yr 24-hr - FtCon>FtCon	0.000	28.508	39919.644	0.000	0.528
10-yr 24-hr - FtCon>FtCon	0.000	14.694	21361.217	0.000	0.403
2-yr 24-hr - FtCon>FtCon	0.000	6.834	10653.679	0.000	0.290

Existing Conditions (without GSI improvements) results from Network Results Lines

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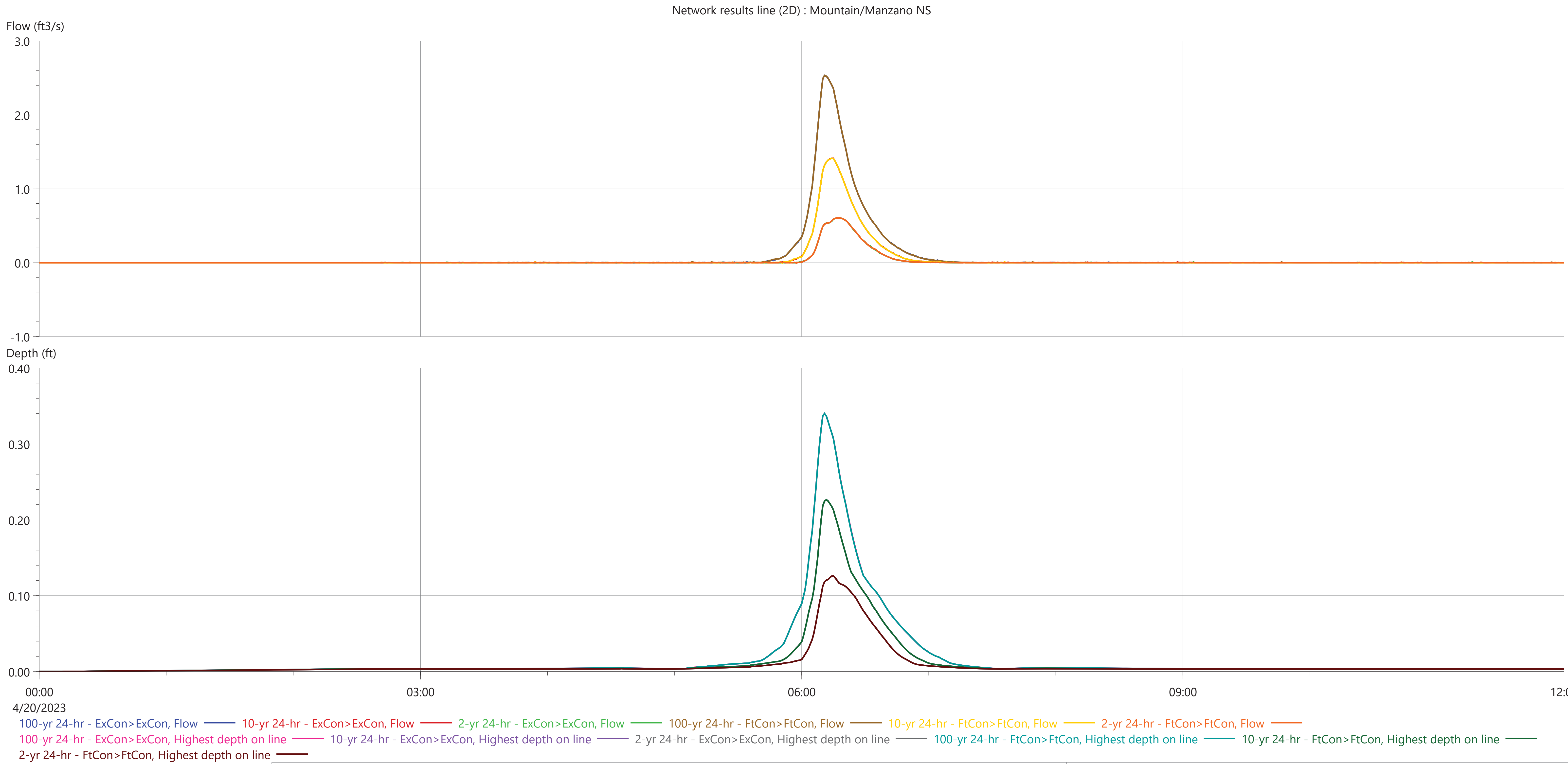

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.001	2.534	3363.086	0.000	0.340
10-yr 24-hr - ExCon>ExCon	-0.001	1.413	1839.084	0.000	0.227
2-yr 24-hr - ExCon>ExCon	-0.001	0.606	843.708	0.000	0.126
100-yr 24-hr - FtCon>FtCon	-0.001	2.534	3365.129	0.000	0.340
10-yr 24-hr - FtCon>FtCon	-0.004	1.413	1835.005	0.000	0.227
2-yr 24-hr - FtCon>FtCon	-0.004	0.606	844.410	0.000	0.126

Existing Conditions (without GSI improvements) results from Network Results Lines

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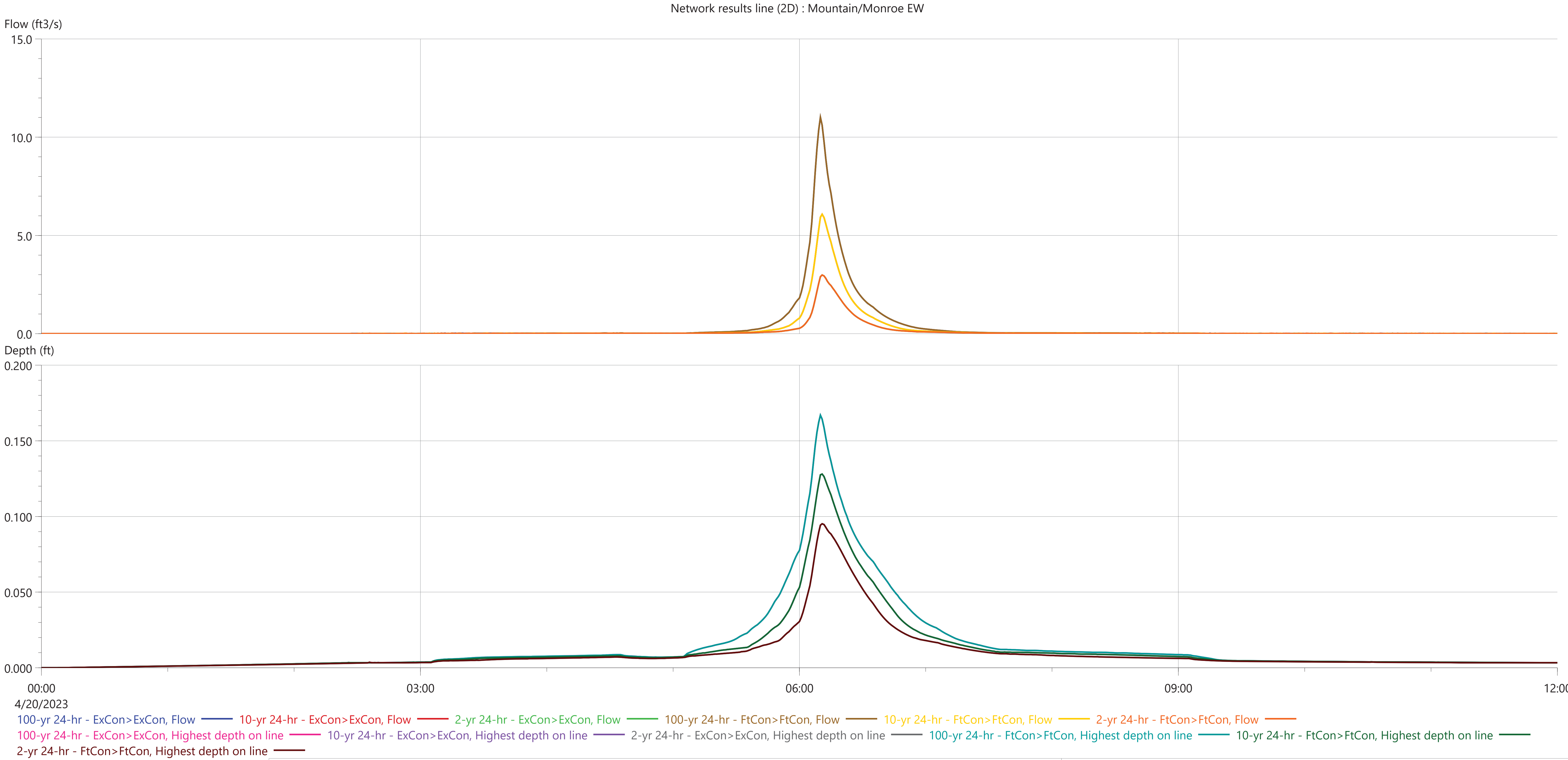

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	11.015	12537.237	0.000	0.167
10-yr 24-hr - ExCon>ExCon	0.000	6.077	7219.901	0.000	0.128
2-yr 24-hr - ExCon>ExCon	0.000	2.984	3845.103	0.000	0.095
100-yr 24-hr - FtCon>FtCon	0.000	11.015	12536.802	0.000	0.167
10-yr 24-hr - FtCon>FtCon	0.000	6.077	7219.896	0.000	0.128
2-yr 24-hr - FtCon>FtCon	0.000	2.984	3848.308	0.000	0.095

Existing Conditions (without GSI improvements) results from Network Results Lines

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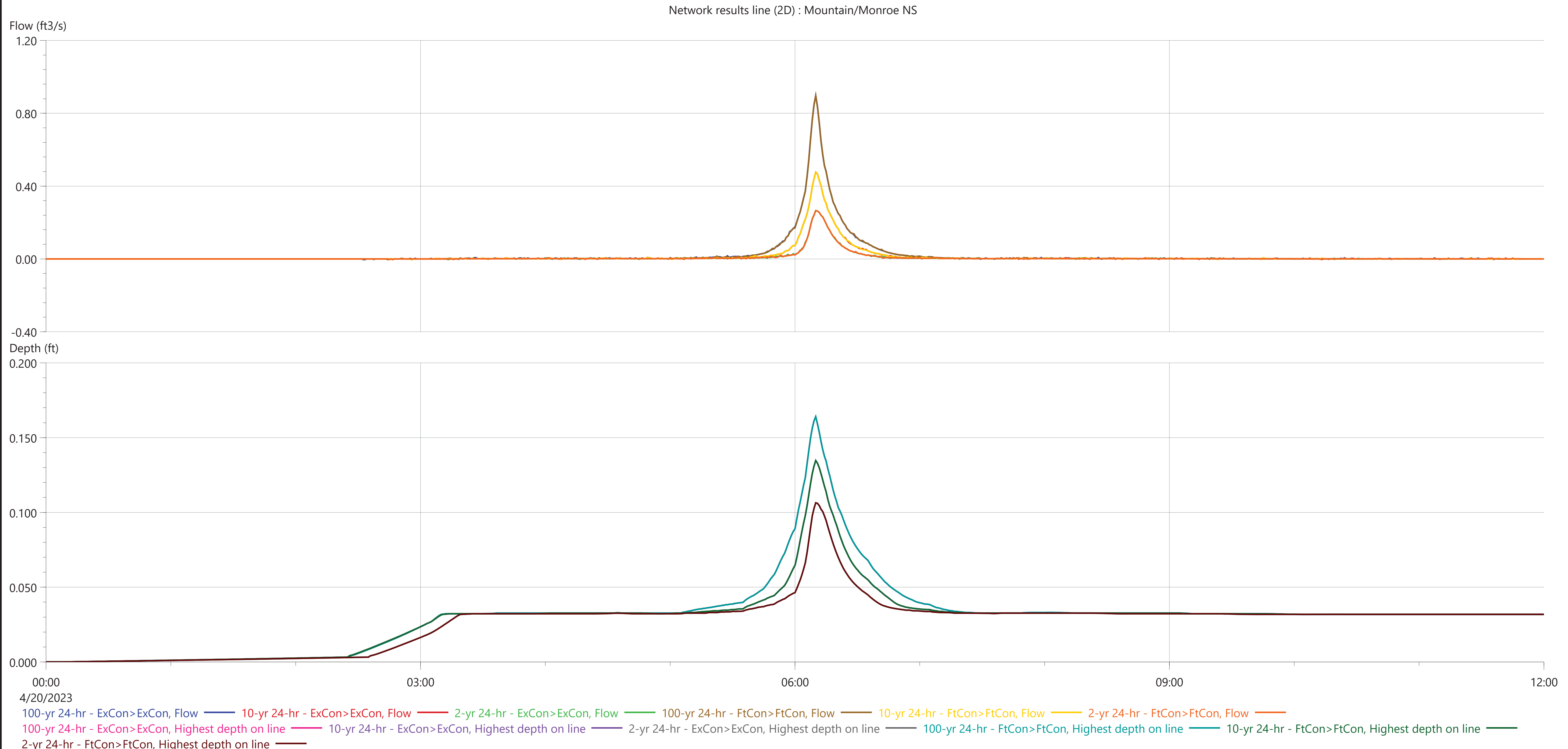

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	0.897	924.498	0.000	0.164
10-yr 24-hr - ExCon>ExCon	-0.003	0.476	523.296	0.000	0.135
2-yr 24-hr - ExCon>ExCon	-0.003	0.265	293.834	0.000	0.106
100-yr 24-hr - FtCon>FtCon	-0.003	0.897	925.428	0.000	0.164
10-yr 24-hr - FtCon>FtCon	-0.003	0.476	525.052	0.000	0.135
2-yr 24-hr - FtCon>FtCon	-0.003	0.265	289.999	0.000	0.106

Existing Conditions (without GSI improvements) results from Network Results Lines

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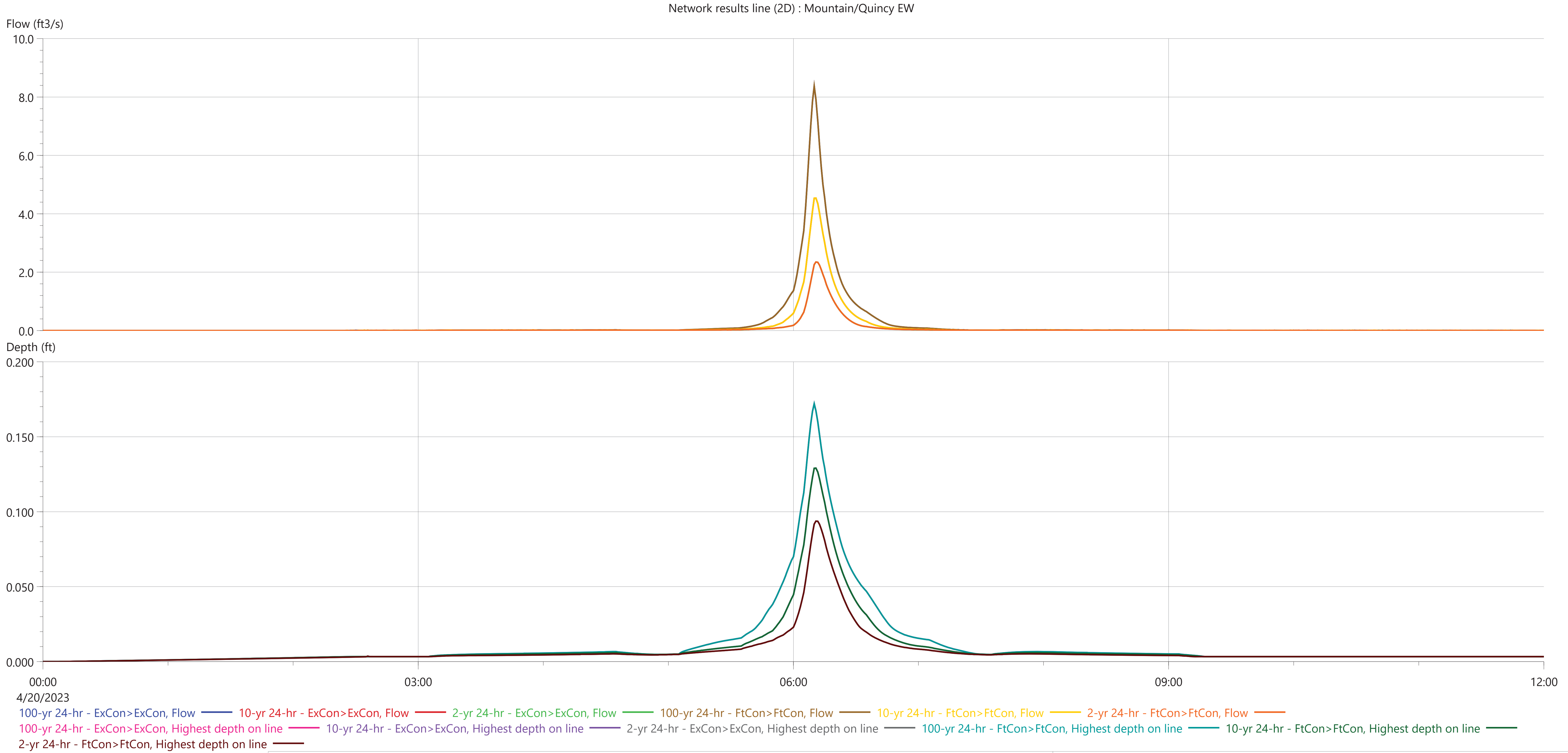

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	8.373	8066.791	0.000	0.172
10-yr 24-hr - ExCon>ExCon	0.000	4.537	4550.976	0.000	0.129
2-yr 24-hr - ExCon>ExCon	0.000	2.351	2416.328	0.000	0.094
100-yr 24-hr - FtCon>FtCon	0.000	8.373	8065.234	0.000	0.172
10-yr 24-hr - FtCon>FtCon	0.000	4.537	4550.577	0.000	0.129
2-yr 24-hr - FtCon>FtCon	0.000	2.351	2411.103	0.000	0.094

Existing Conditions (without GSI improvements) results from Network Results Lines

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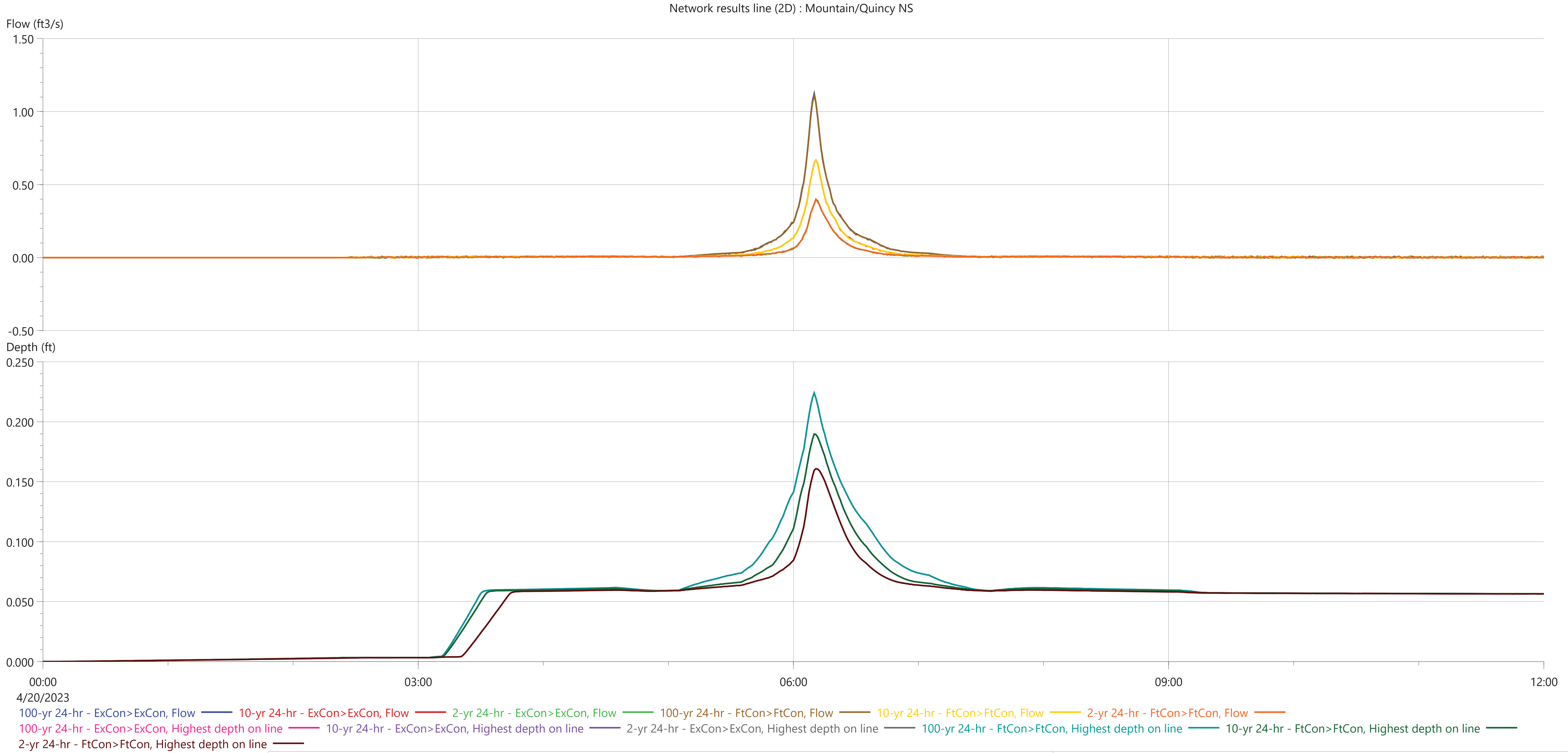

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	1.123	1394.595	0.000	0.224
10-yr 24-hr - ExCon>ExCon	-0.002	0.667	896.066	0.000	0.190
2-yr 24-hr - ExCon>ExCon	-0.003	0.399	560.871	0.000	0.161
100-yr 24-hr - FtCon>FtCon	-0.004	1.111	1395.462	0.000	0.224
10-yr 24-hr - FtCon>FtCon	-0.002	0.667	889.860	0.000	0.190
2-yr 24-hr - FtCon>FtCon	-0.002	0.399	556.338	0.000	0.161

Existing Conditions (without GSI improvements) results from Network Results Lines

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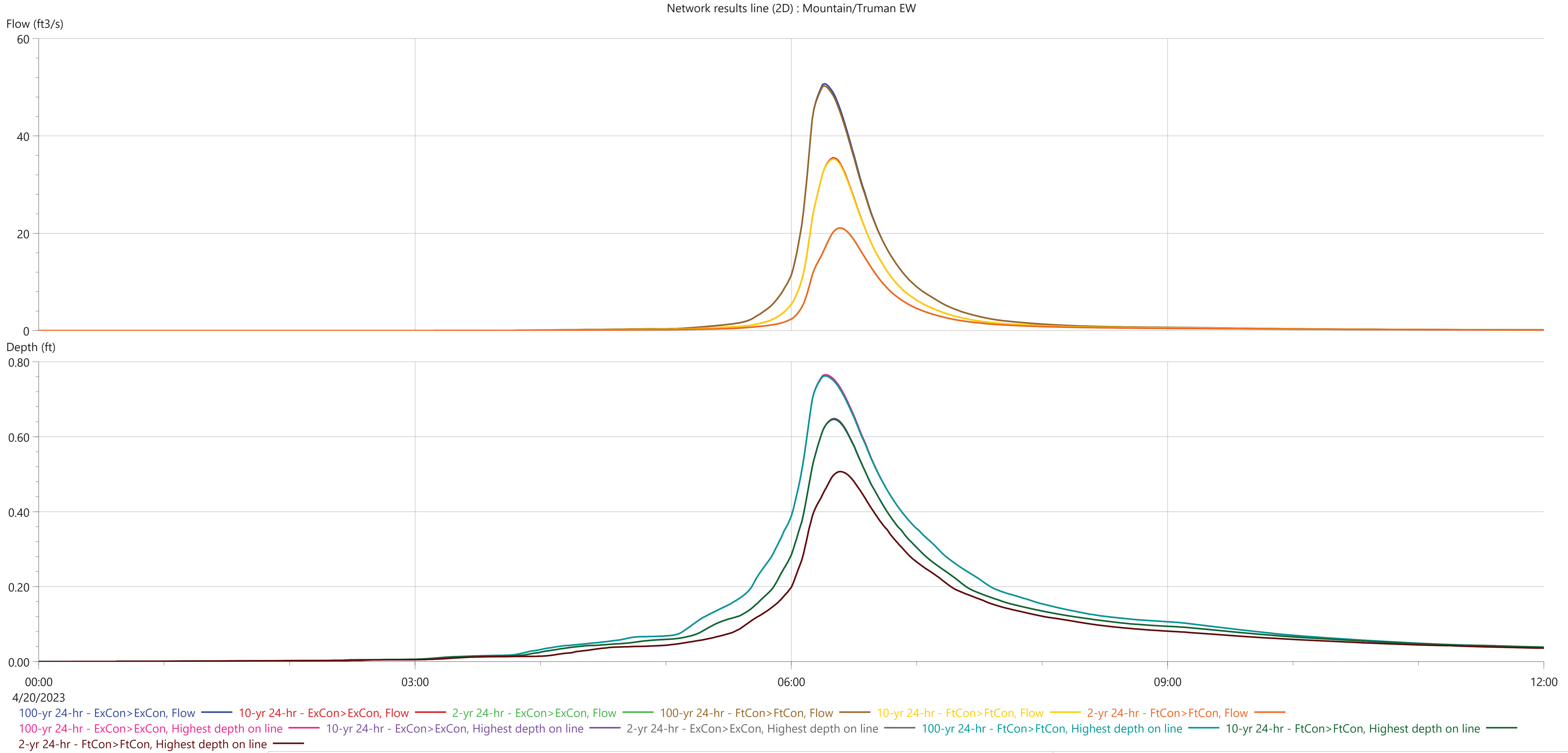

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	50.715	133939.432	0.000	0.766
10-yr 24-hr - ExCon>ExCon	0.000	35.491	90552.591	0.000	0.648
2-yr 24-hr - ExCon>ExCon	0.000	21.075	57947.704	0.000	0.507
100-yr 24-hr - FtCon>FtCon	0.000	50.268	133129.087	0.000	0.762
10-yr 24-hr - FtCon>FtCon	0.000	35.258	90342.146	0.000	0.646
2-yr 24-hr - FtCon>FtCon	0.000	21.073	57948.196	0.000	0.507

Existing Conditions (without GSI improvements) results from Network Results Lines

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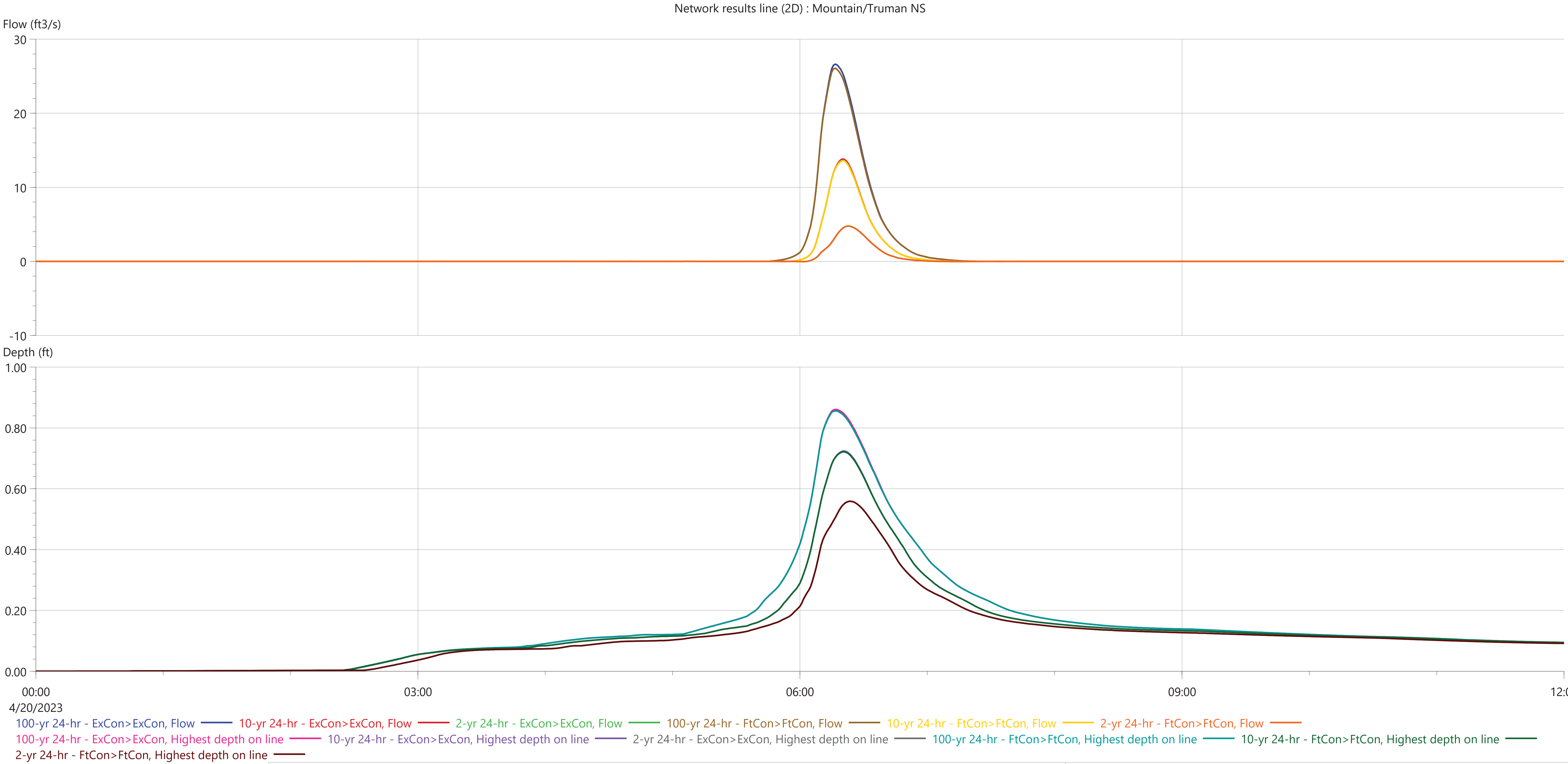

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.020	26.626	38692.985	0.000	0.861
10-yr 24-hr - ExCon>ExCon	-0.024	13.819	18090.300	0.000	0.724
2-yr 24-hr - ExCon>ExCon	-0.024	4.753	6193.857	0.000	0.559
100-yr 24-hr - FtCon>FtCon	-0.017	26.066	37953.154	0.000	0.856
10-yr 24-hr - FtCon>FtCon	-0.026	13.611	17931.981	0.000	0.721
2-yr 24-hr - FtCon>FtCon	-0.024	4.757	6193.813	0.000	0.559

Existing Conditions (without GSI improvements) results from Network Results Lines

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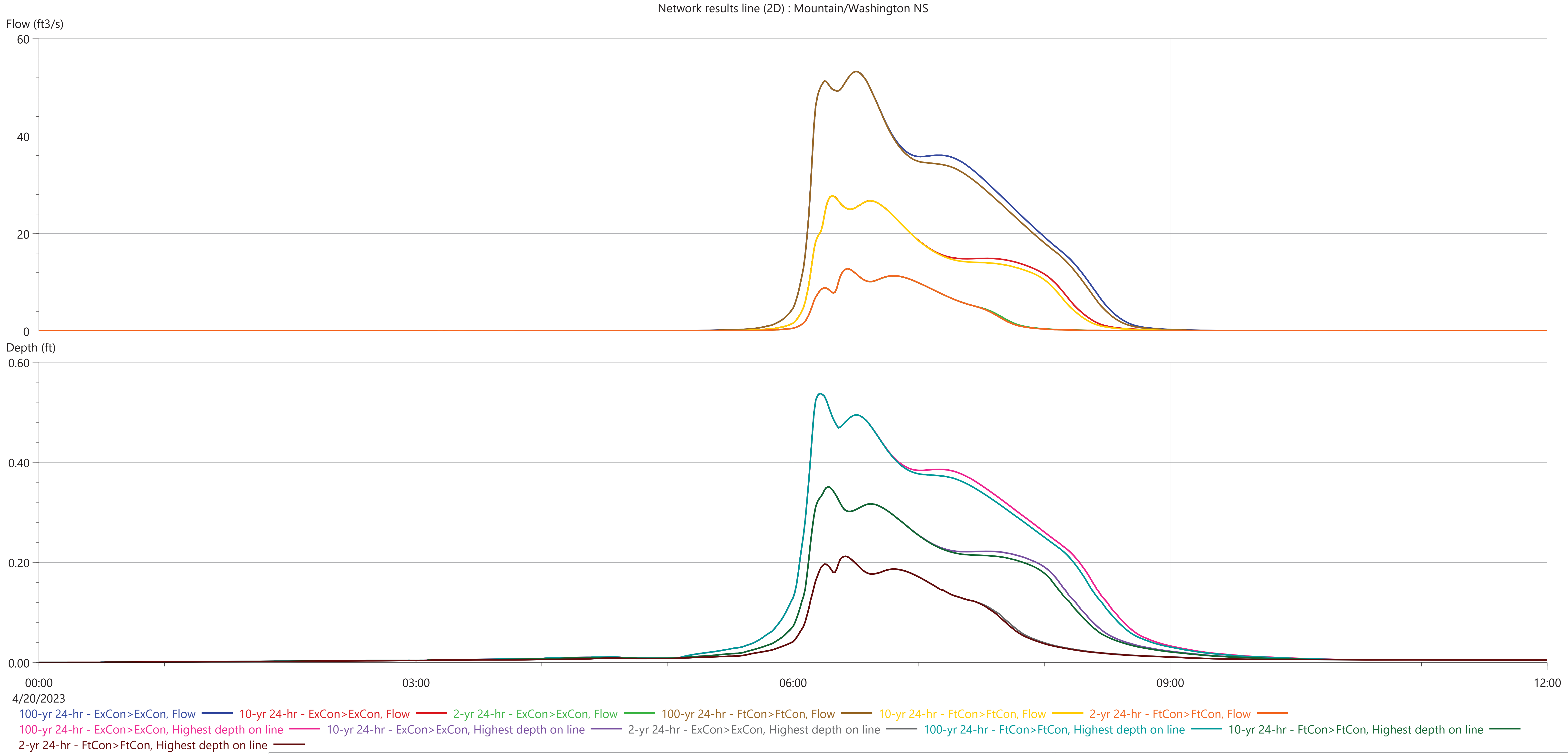

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	53.272	285972.822	0.000	0.537
10-yr 24-hr - ExCon>ExCon	0.000	27.715	141883.854	0.000	0.351
2-yr 24-hr - ExCon>ExCon	0.000	12.767	50289.187	0.000	0.212
100-yr 24-hr - FtCon>FtCon	0.000	53.273	276382.888	0.000	0.537
10-yr 24-hr - FtCon>FtCon	0.000	27.707	137414.864	0.000	0.351
2-yr 24-hr - FtCon>FtCon	0.000	12.769	49947.699	0.000	0.212

Existing Conditions (without GSI improvements) results from Network Results Lines

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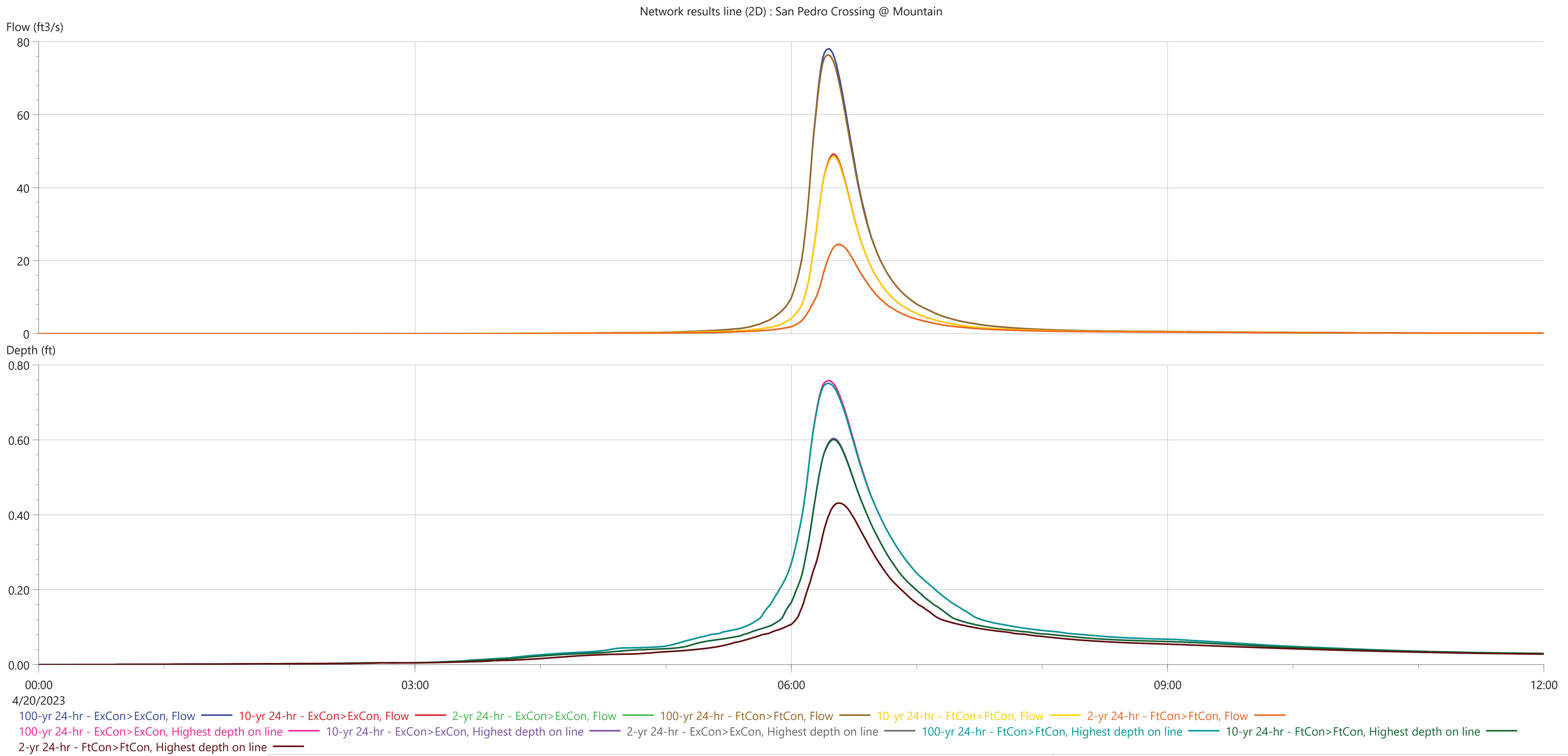

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	78.044	158544.132	0.000	0.758
10-yr 24-hr - ExCon>ExCon	0.000	49.203	97374.195	0.000	0.604
2-yr 24-hr - ExCon>ExCon	0.000	24.462	56137.862	0.000	0.431
100-yr 24-hr - FtCon>FtCon	0.000	76.390	156510.240	0.000	0.750
10-yr 24-hr - FtCon>FtCon	0.000	48.625	96920.199	0.000	0.601
2-yr 24-hr - FtCon>FtCon	0.000	24.450	56152.917	0.000	0.431

Existing Conditions (without GSI improvements) results from Network Results Lines

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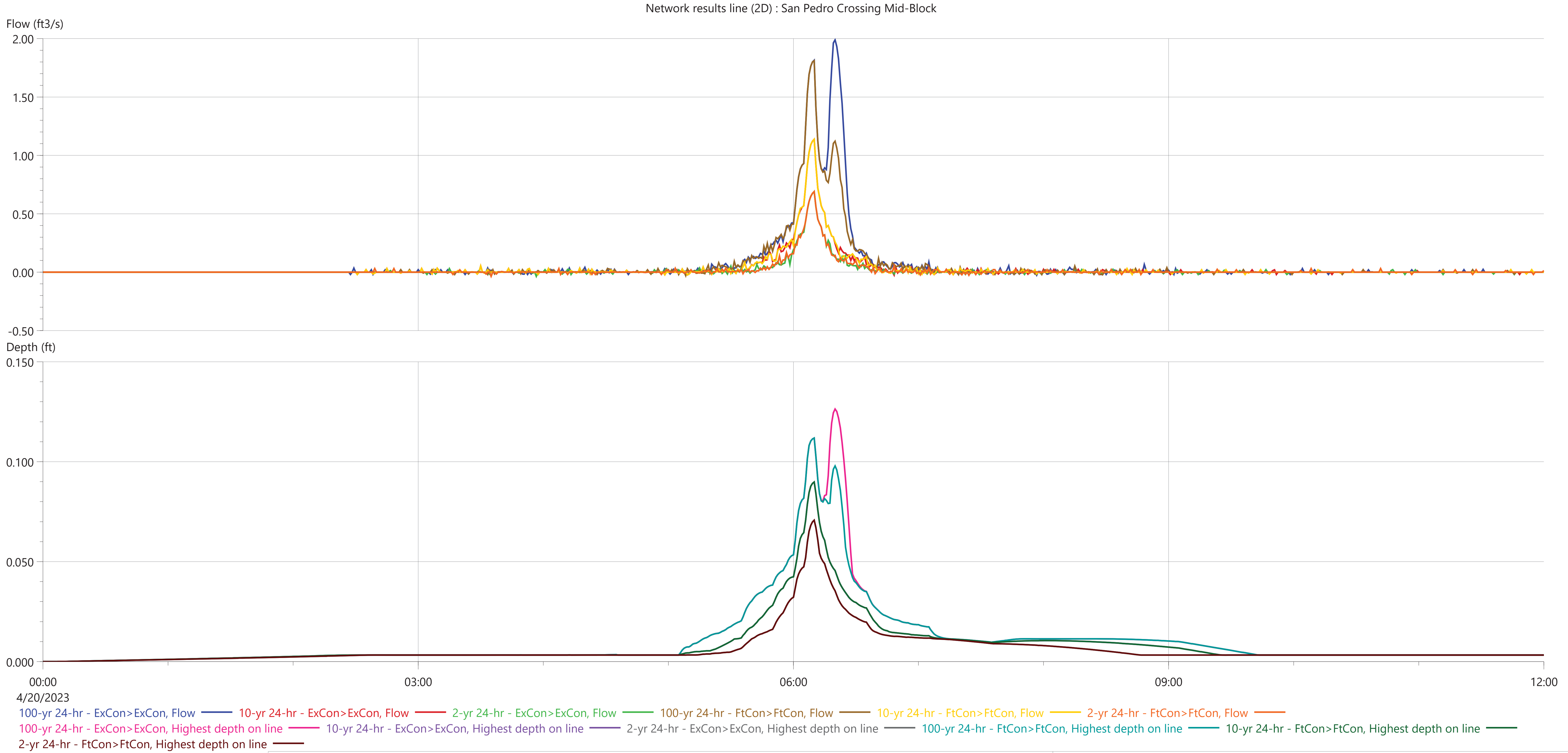

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.026	1.990	2636.455	0.000	0.126
10-yr 24-hr - ExCon>ExCon	-0.025	1.137	1159.249	0.000	0.090
2-yr 24-hr - ExCon>ExCon	-0.036	0.690	641.533	0.000	0.071
100-yr 24-hr - FtCon>FtCon	-0.029	1.811	2207.668	0.000	0.112
10-yr 24-hr - FtCon>FtCon	-0.023	1.137	1151.890	0.000	0.090
2-yr 24-hr - FtCon>FtCon	-0.036	0.690	653.696	0.000	0.071

Existing Conditions (without GSI improvements) results from Network Results Lines

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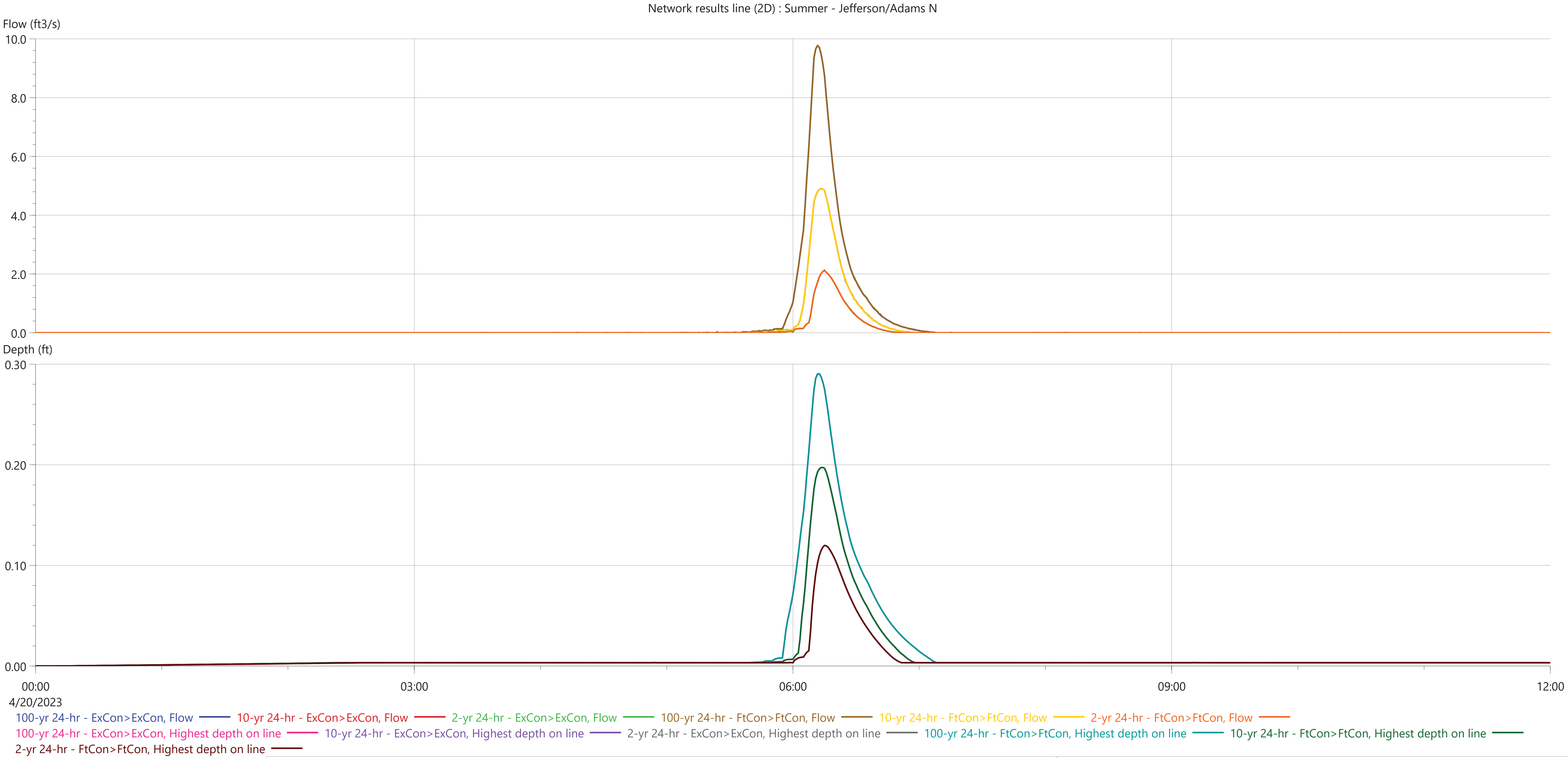

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	9.772	10616.852	0.000	0.291
10-yr 24-hr - ExCon>ExCon	0.000	4.905	5322.459	0.000	0.197
2-yr 24-hr - ExCon>ExCon	0.000	2.129	2224.422	0.000	0.120
100-yr 24-hr - FtCon>FtCon	0.000	9.772	10624.405	0.000	0.291
10-yr 24-hr - FtCon>FtCon	0.000	4.905	5319.895	0.000	0.197
2-yr 24-hr - FtCon>FtCon	0.000	2.121	2229.428	0.000	0.120

Existing Conditions (without GSI improvements) results from Network Results Lines

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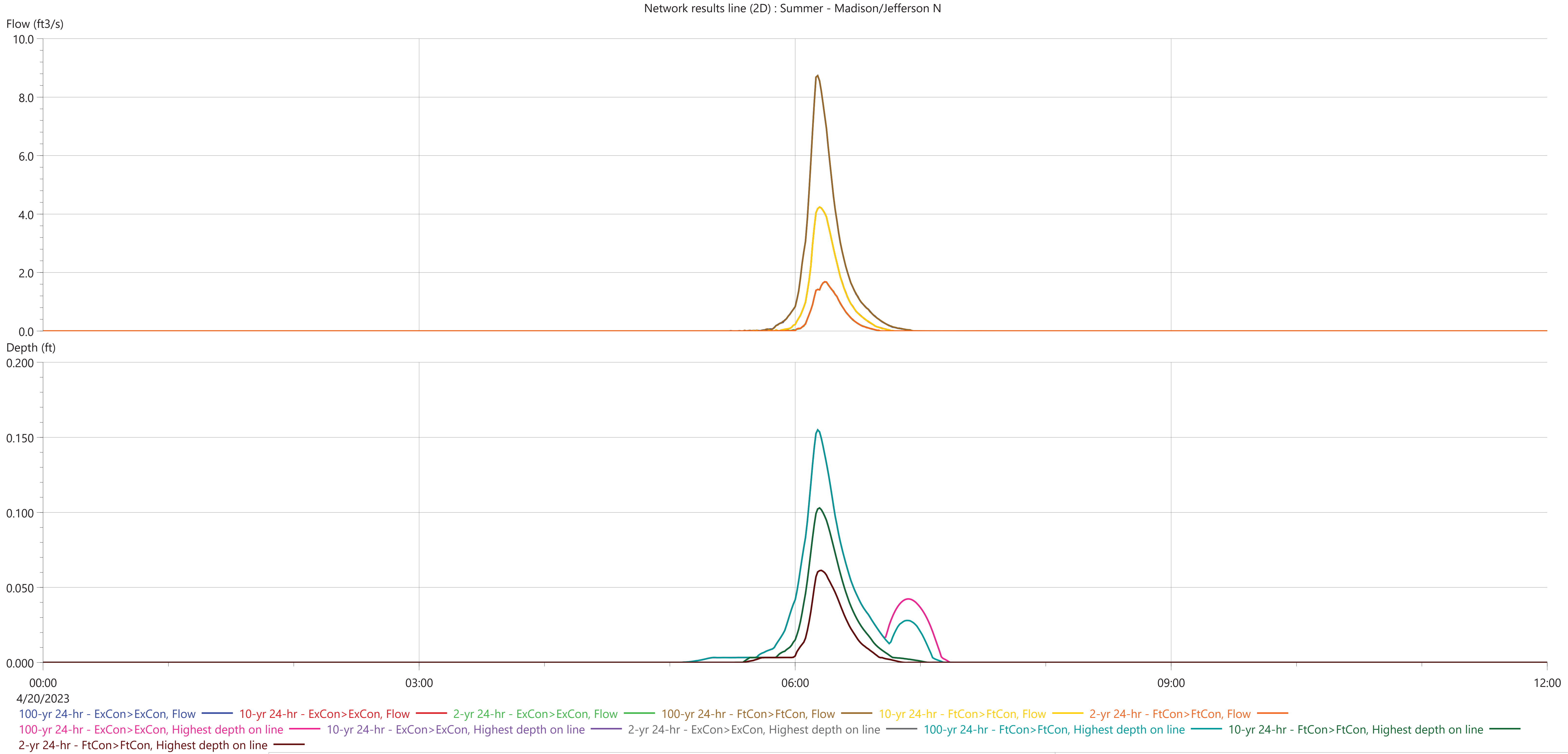

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	8.735	8461.056	0.000	0.155
10-yr 24-hr - ExCon>ExCon	0.000	4.239	4098.411	0.000	0.103
2-yr 24-hr - ExCon>ExCon	0.000	1.678	1607.531	0.000	0.061
100-yr 24-hr - FtCon>FtCon	0.000	8.735	8459.944	0.000	0.155
10-yr 24-hr - FtCon>FtCon	0.000	4.239	4097.767	0.000	0.103
2-yr 24-hr - FtCon>FtCon	0.000	1.689	1607.438	0.000	0.061

Existing Conditions (without GSI improvements) results from Network Results Lines

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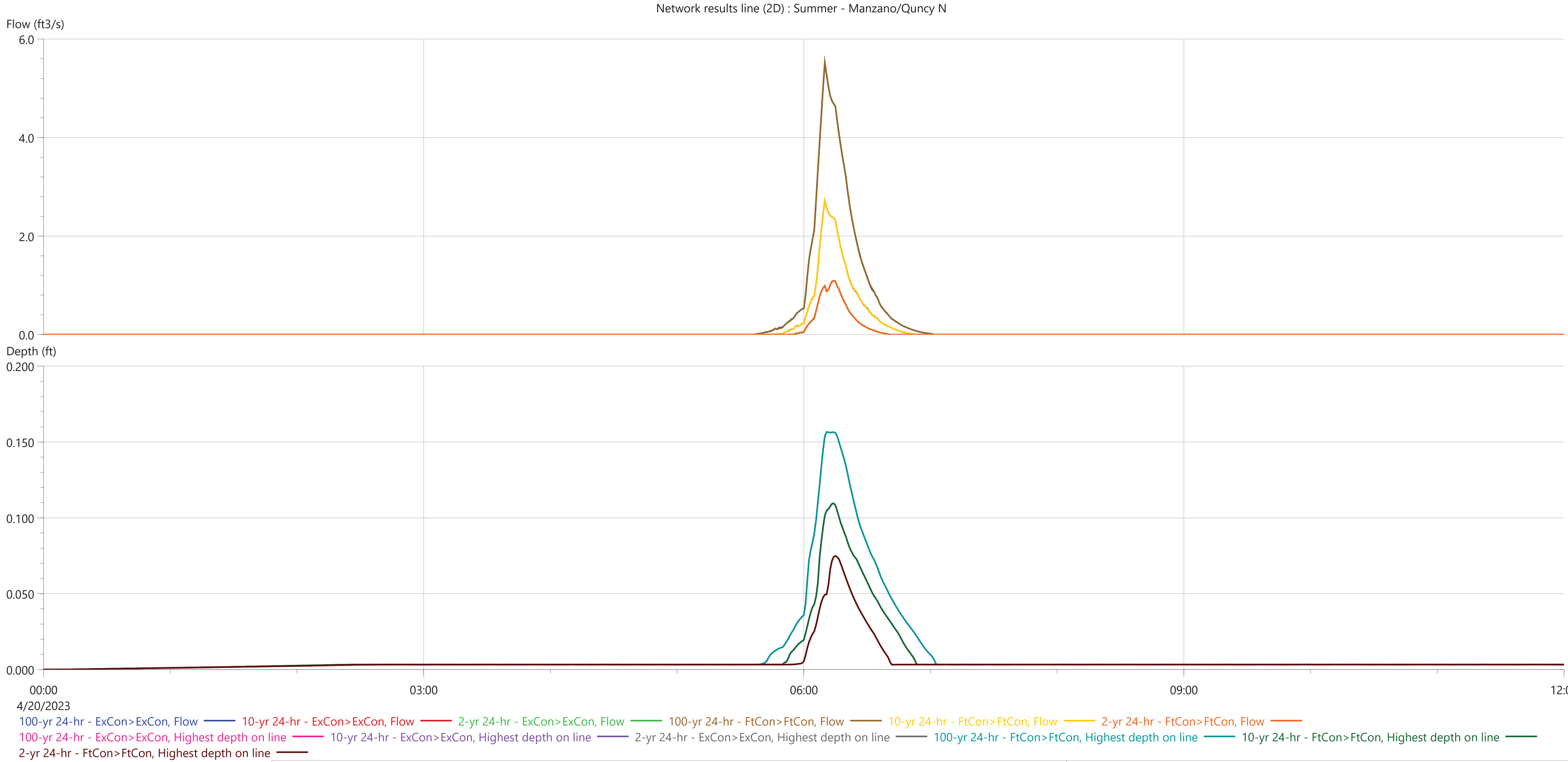

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	5.523	6302.808	0.000	0.157
10-yr 24-hr - ExCon>ExCon	0.000	2.719	2807.467	0.000	0.109
2-yr 24-hr - ExCon>ExCon	0.000	1.092	1065.129	0.000	0.075
100-yr 24-hr - FtCon>FtCon	0.000	5.523	6302.728	0.000	0.157
10-yr 24-hr - FtCon>FtCon	0.000	2.719	2806.660	0.000	0.109
2-yr 24-hr - FtCon>FtCon	0.000	1.093	1067.179	0.000	0.075

Existing Conditions (without GSI improvements) results from Network Results Lines

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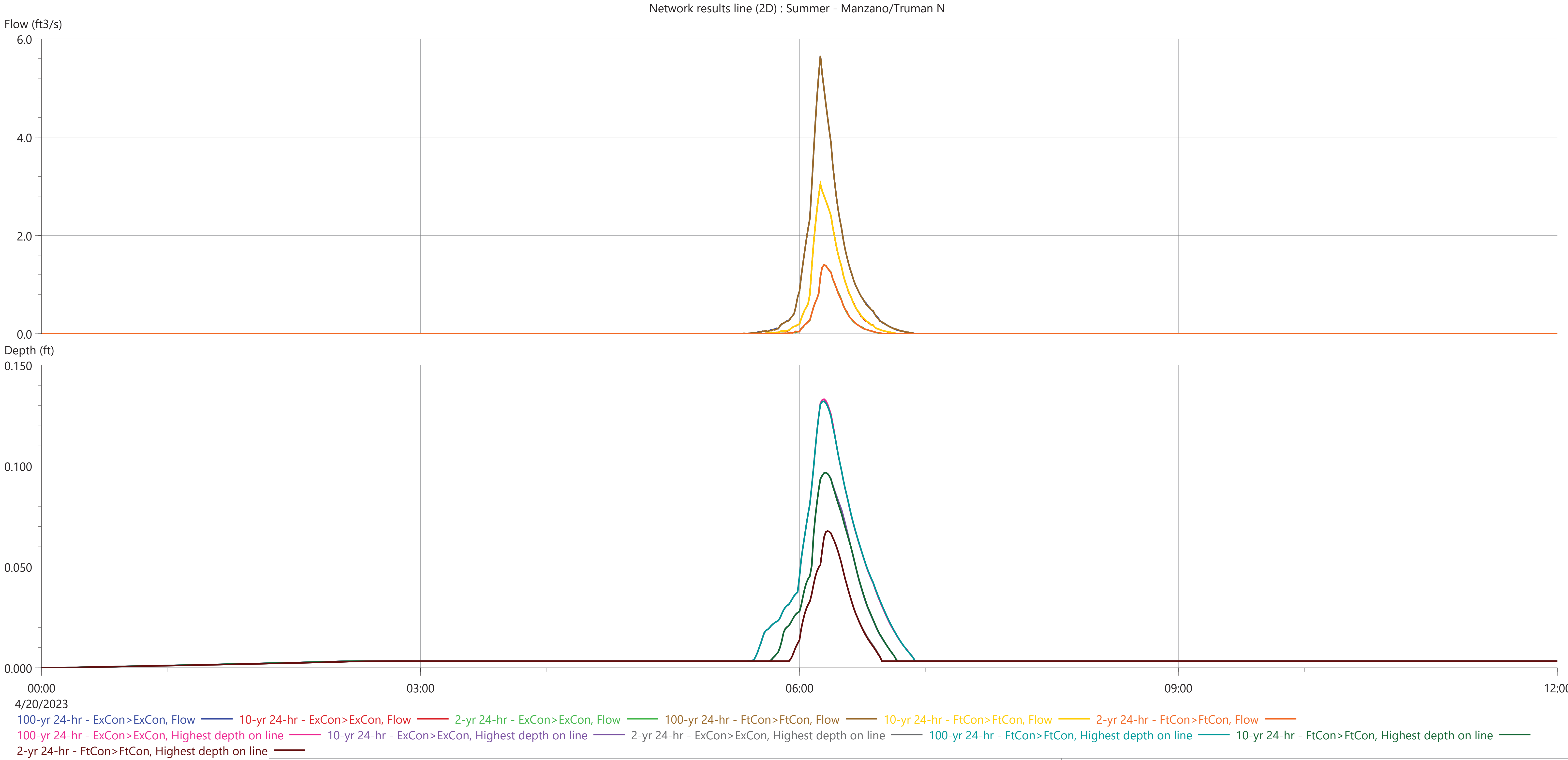

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	5.657	5371.042	0.000	0.133
10-yr 24-hr - ExCon>ExCon	0.000	3.050	2748.613	0.000	0.097
2-yr 24-hr - ExCon>ExCon	0.000	1.401	1154.465	0.000	0.068
100-yr 24-hr - FtCon>FtCon	0.000	5.657	5368.975	0.000	0.132
10-yr 24-hr - FtCon>FtCon	0.000	3.050	2752.374	0.000	0.097
2-yr 24-hr - FtCon>FtCon	0.000	1.401	1154.235	0.000	0.068

Existing Conditions (without GSI improvements) results from Network Results Lines

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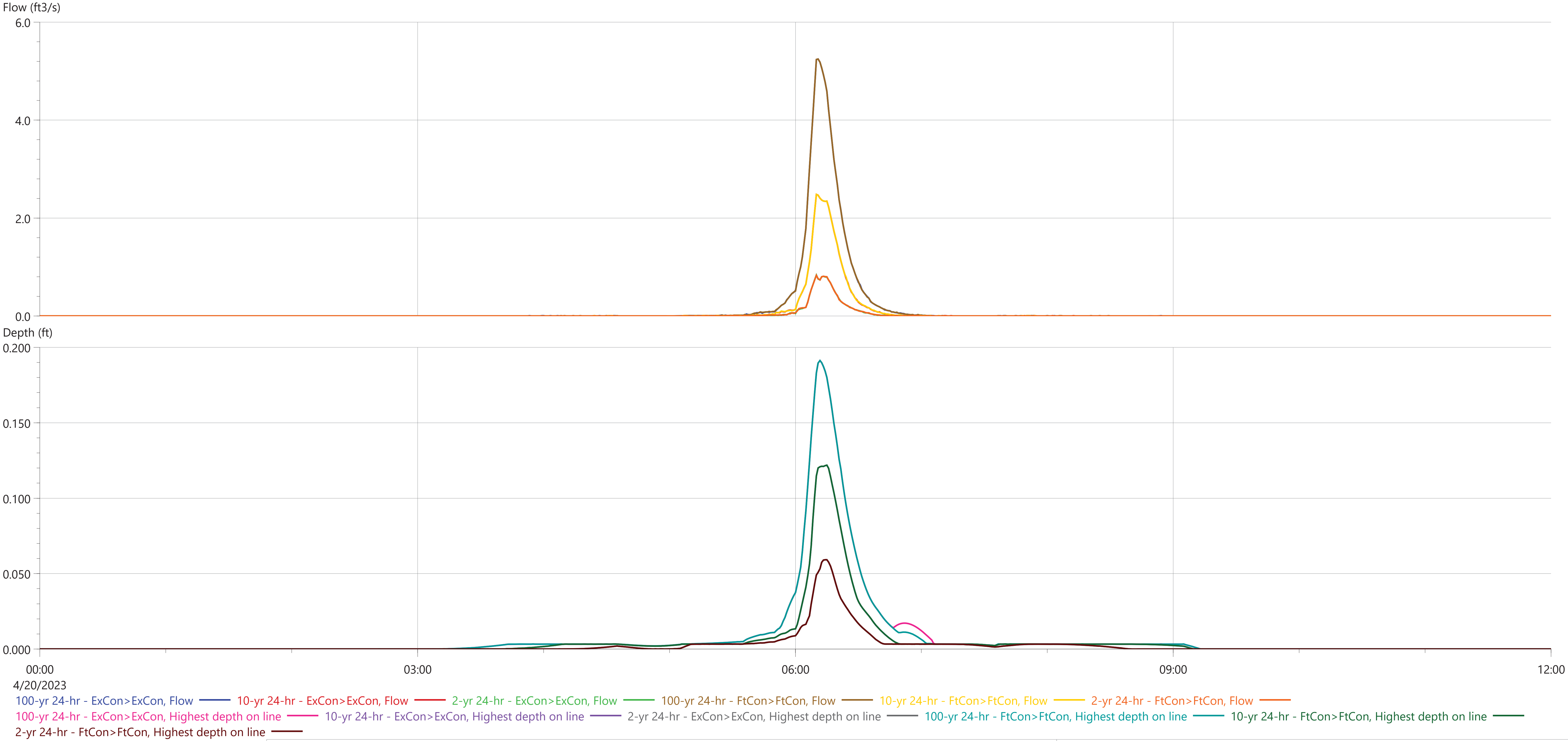
Network results line (2D) : Summer - Monroe/Madison N



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	5.247	5403.290	0.000	0.191
10-yr 24-hr - ExCon>ExCon	0.000	2.484	2494.729	0.000	0.122
2-yr 24-hr - ExCon>ExCon	0.000	0.836	813.766	0.000	0.059
100-yr 24-hr - FtCon>FtCon	0.000	5.247	5403.393	0.000	0.191
10-yr 24-hr - FtCon>FtCon	0.000	2.484	2499.135	0.000	0.122
2-yr 24-hr - FtCon>FtCon	0.000	0.830	818.851	0.000	0.059

Existing Conditions (without GSI improvements) results from Network Results Lines

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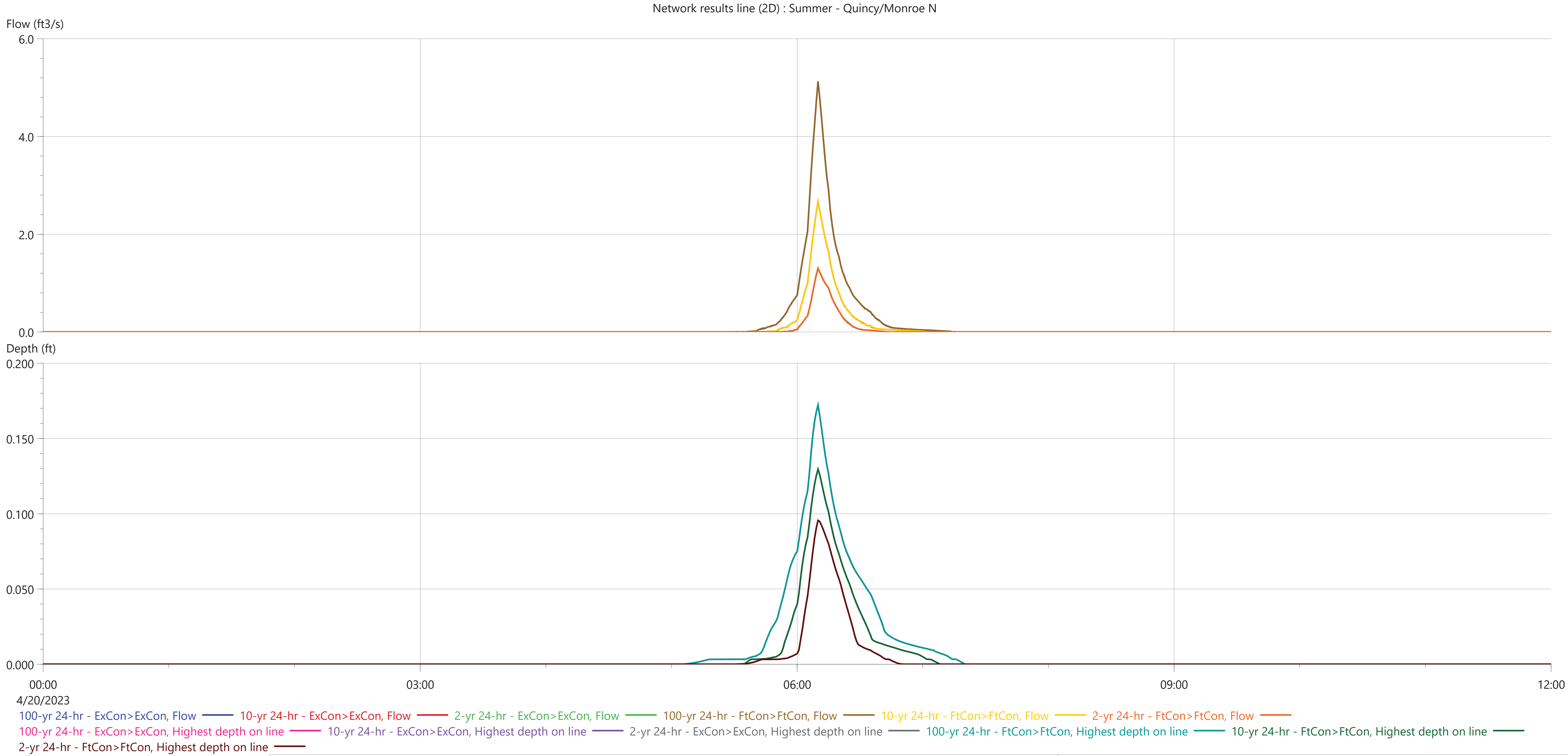

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	5.128	4575.913	0.000	0.172
10-yr 24-hr - ExCon>ExCon	0.000	2.668	2182.149	0.000	0.130
2-yr 24-hr - ExCon>ExCon	0.000	1.304	958.951	0.000	0.096
100-yr 24-hr - FtCon>FtCon	0.000	5.128	4579.175	0.000	0.172
10-yr 24-hr - FtCon>FtCon	0.000	2.668	2183.631	0.000	0.130
2-yr 24-hr - FtCon>FtCon	0.000	1.304	956.130	0.000	0.096

Existing Conditions (without GSI improvements) results from Network Results Lines

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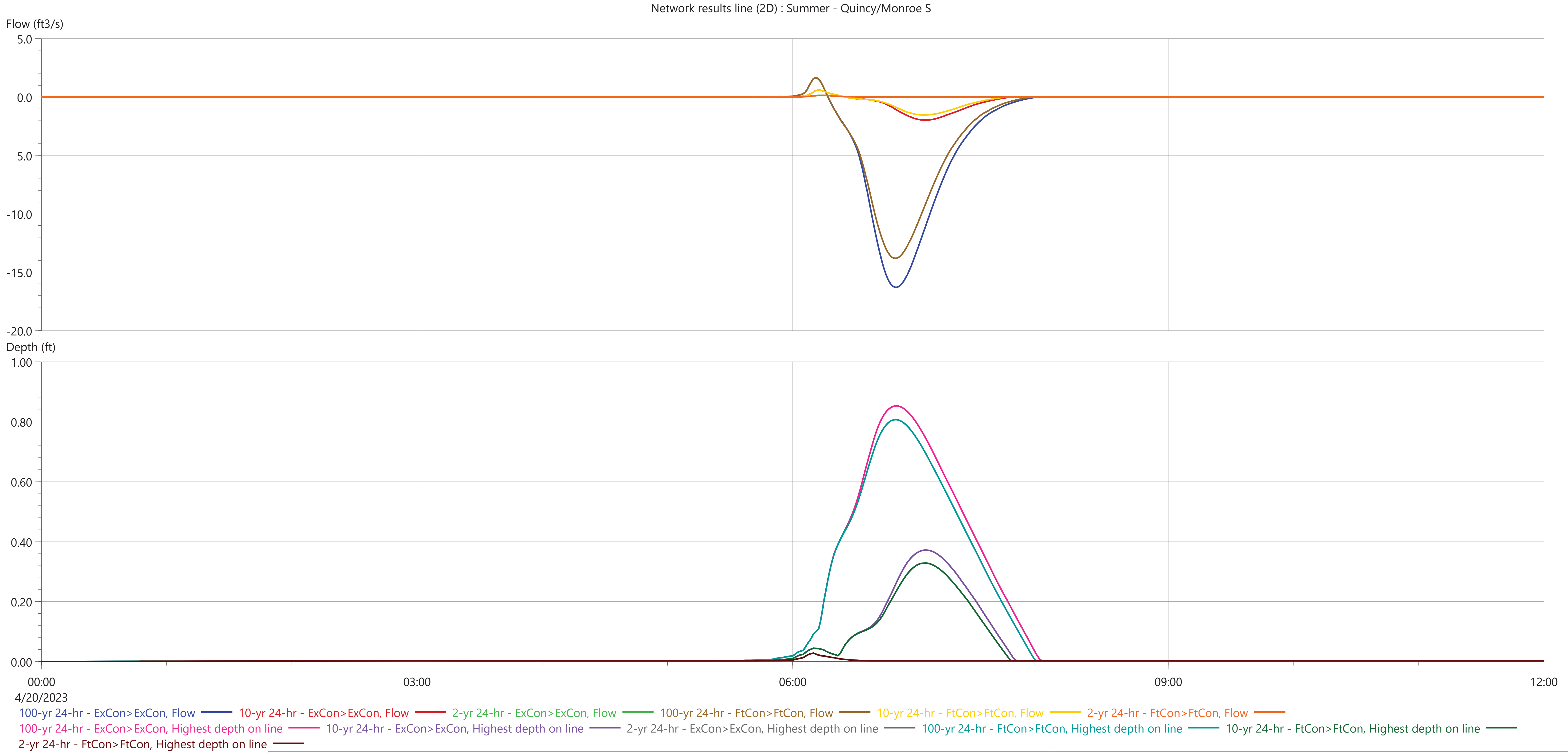

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-16.290	1.650	-36165.792	0.000	0.853
10-yr 24-hr - ExCon>ExCon	-1.982	0.590	-3866.681	0.000	0.372
2-yr 24-hr - ExCon>ExCon	-0.024	0.141	98.866	0.000	0.028
100-yr 24-hr - FtCon>FtCon	-13.813	1.656	-30523.706	0.000	0.807
10-yr 24-hr - FtCon>FtCon	-1.547	0.595	-2960.442	0.000	0.329
2-yr 24-hr - FtCon>FtCon	-0.012	0.147	103.111	0.000	0.028

Existing Conditions (without GSI improvements) results from Network Results Lines

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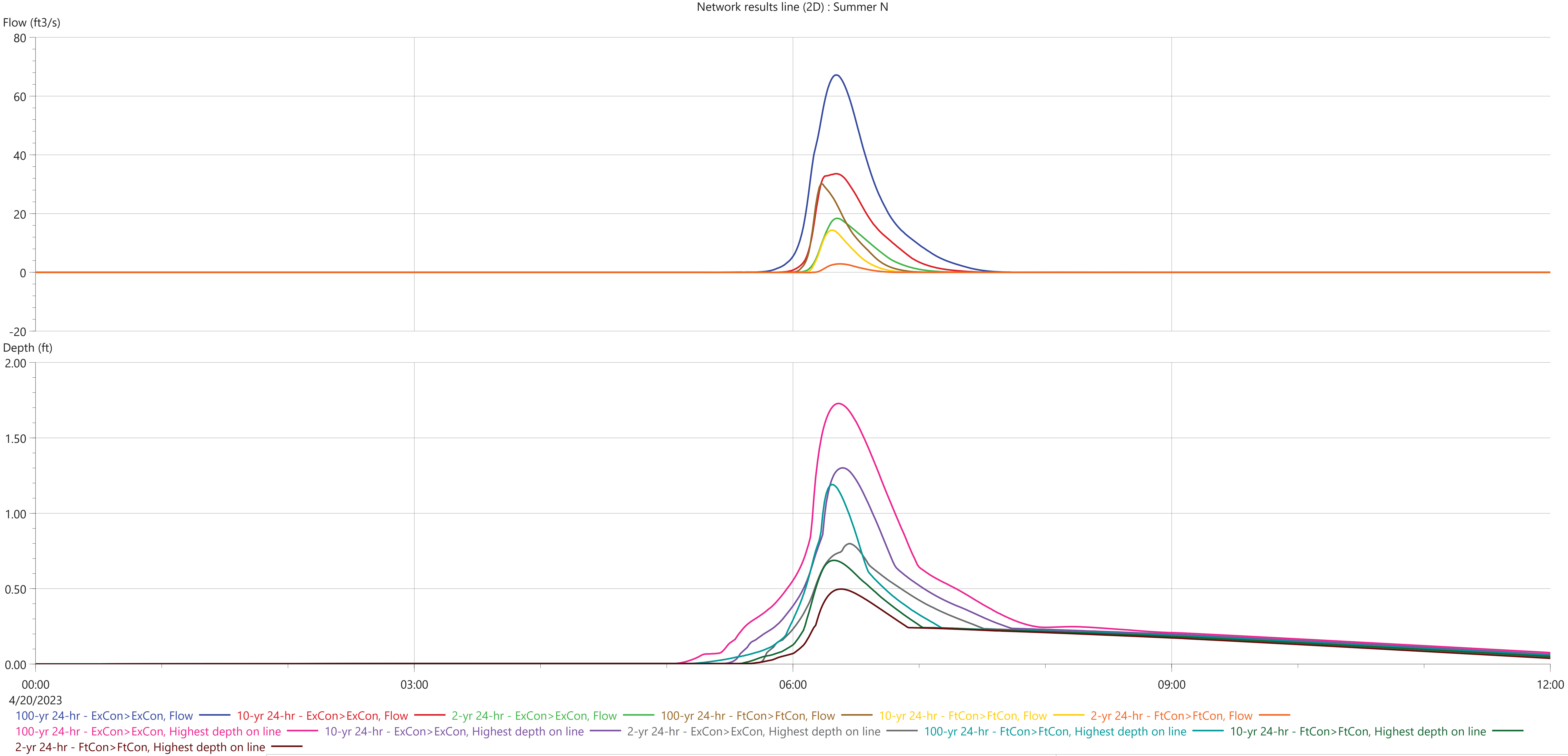

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.007	67.199	134381.672	0.000	1.728
10-yr 24-hr - ExCon>ExCon	-0.001	33.576	64360.160	0.000	1.301
2-yr 24-hr - ExCon>ExCon	0.000	18.383	28915.387	0.000	0.798
100-yr 24-hr - FtCon>FtCon	-0.046	30.167	35879.786	0.000	1.190
10-yr 24-hr - FtCon>FtCon	-0.065	14.376	15569.053	0.000	0.687
2-yr 24-hr - FtCon>FtCon	-0.090	2.881	3095.304	0.000	0.497

Existing Conditions (without GSI improvements) results from Network Results Lines

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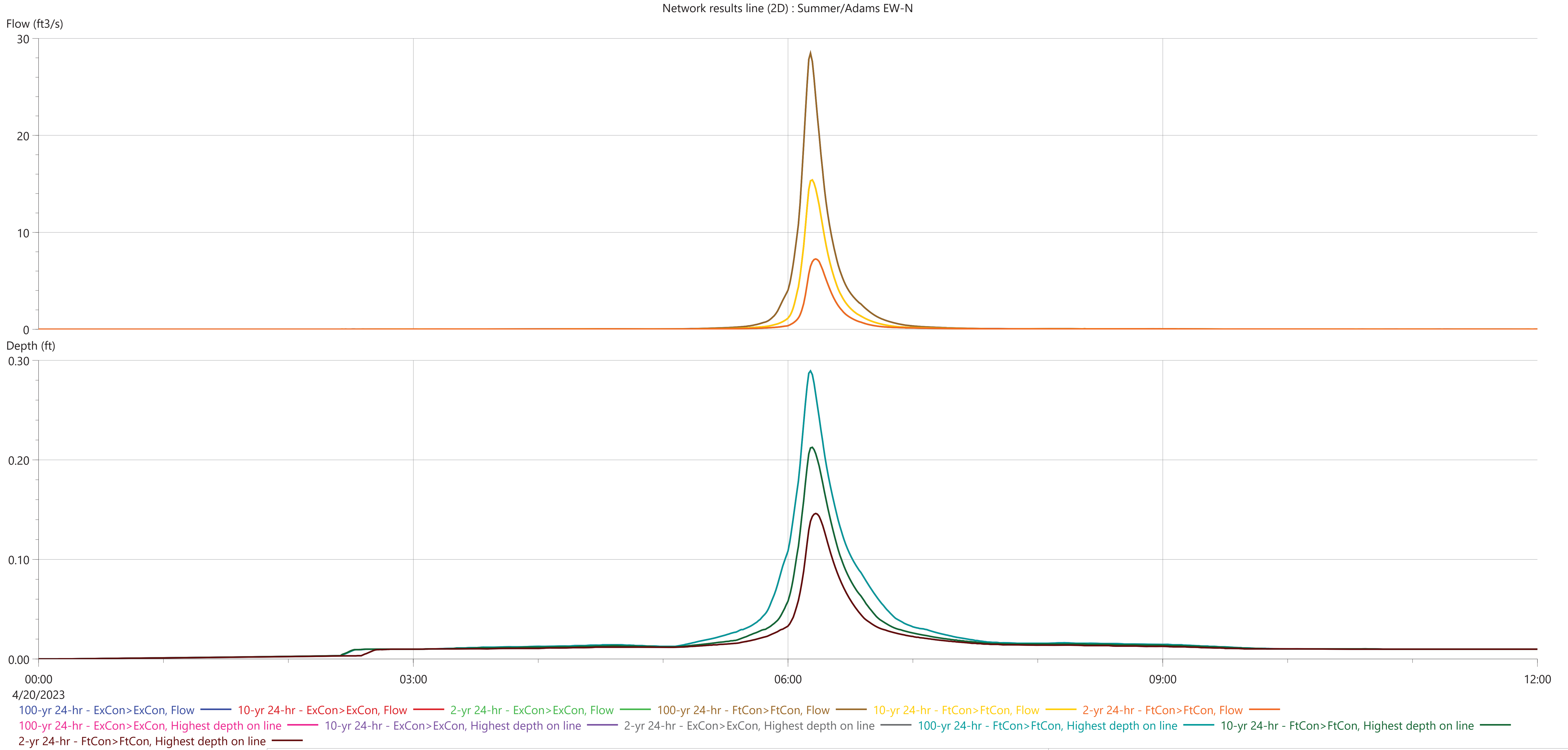

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	28.483	29072.102	0.000	0.289
10-yr 24-hr - ExCon>ExCon	0.000	15.402	15805.319	0.000	0.213
2-yr 24-hr - ExCon>ExCon	0.000	7.263	7859.930	0.000	0.146
100-yr 24-hr - FtCon>FtCon	0.000	28.483	29075.990	0.000	0.289
10-yr 24-hr - FtCon>FtCon	0.000	15.402	15806.115	0.000	0.213
2-yr 24-hr - FtCon>FtCon	0.000	7.263	7857.384	0.000	0.146

Existing Conditions (without GSI improvements) results from Network Results Lines

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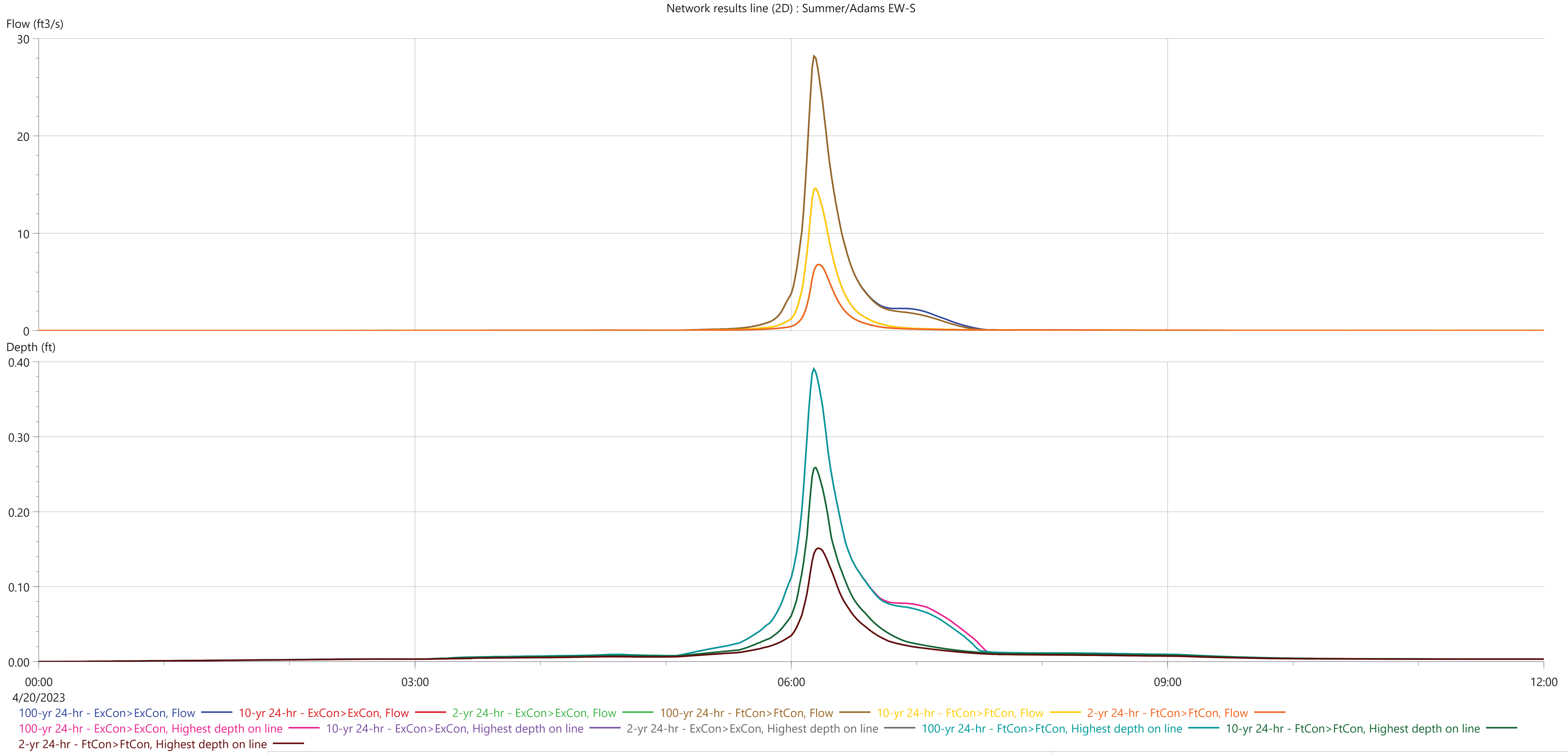

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	28.200	36843.942	0.000	0.391
10-yr 24-hr - ExCon>ExCon	0.000	14.631	15928.787	0.000	0.259
2-yr 24-hr - ExCon>ExCon	0.000	6.794	7865.644	0.000	0.151
100-yr 24-hr - FtCon>FtCon	0.000	28.201	35969.883	0.000	0.391
10-yr 24-hr - FtCon>FtCon	0.000	14.631	15926.703	0.000	0.259
2-yr 24-hr - FtCon>FtCon	0.000	6.794	7862.224	0.000	0.151

Existing Conditions (without GSI improvements) results from Network Results Lines

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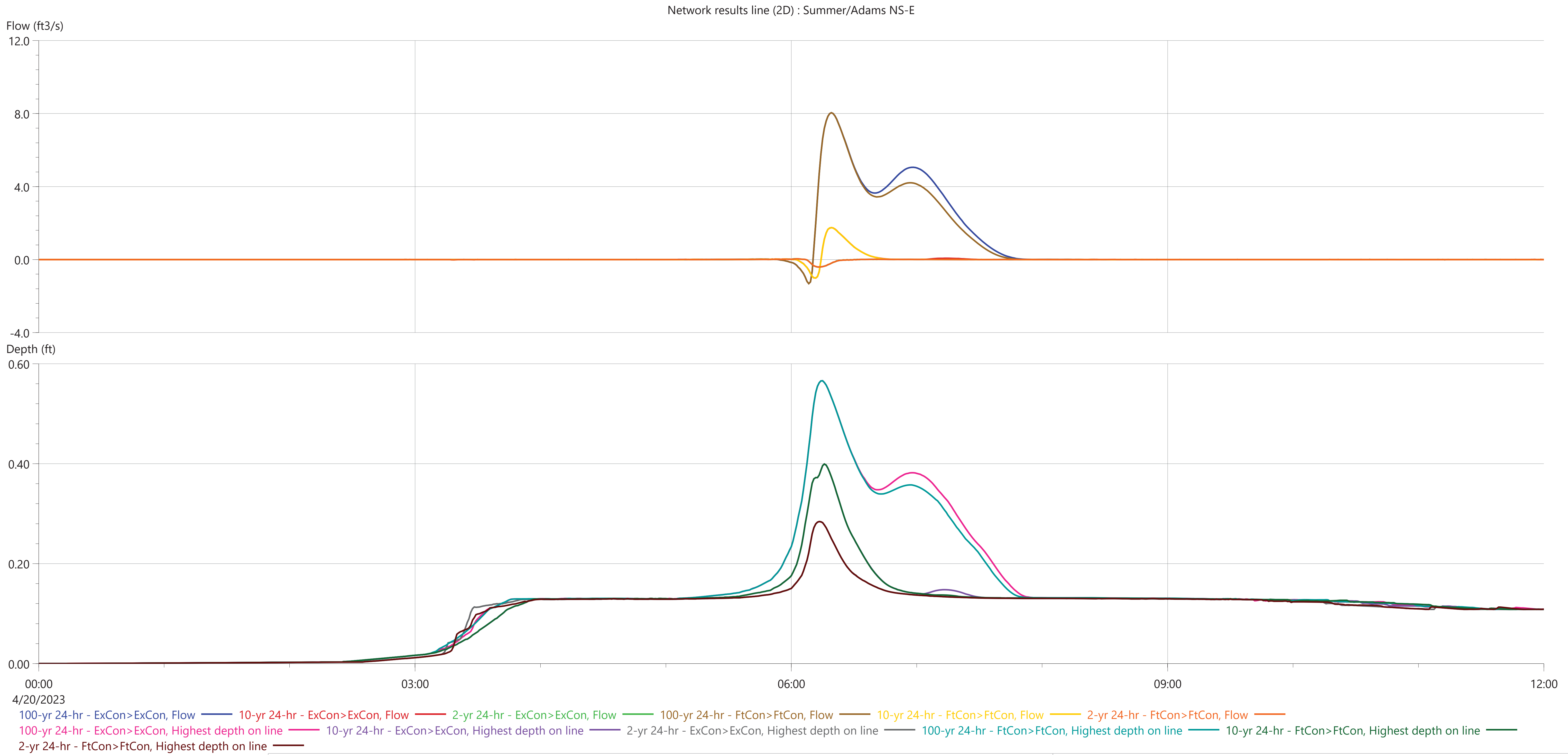

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-1.317	8.044	20890.006	0.000	0.566
10-yr 24-hr - ExCon>ExCon	-1.006	1.746	1198.318	0.000	0.399
2-yr 24-hr - ExCon>ExCon	-0.408	0.041	-184.120	0.000	0.284
100-yr 24-hr - FtCon>FtCon	-1.318	8.042	18777.707	0.000	0.566
10-yr 24-hr - FtCon>FtCon	-1.006	1.752	1135.035	0.000	0.400
2-yr 24-hr - FtCon>FtCon	-0.406	0.044	-188.501	0.000	0.284

Existing Conditions (without GSI improvements) results from Network Results Lines

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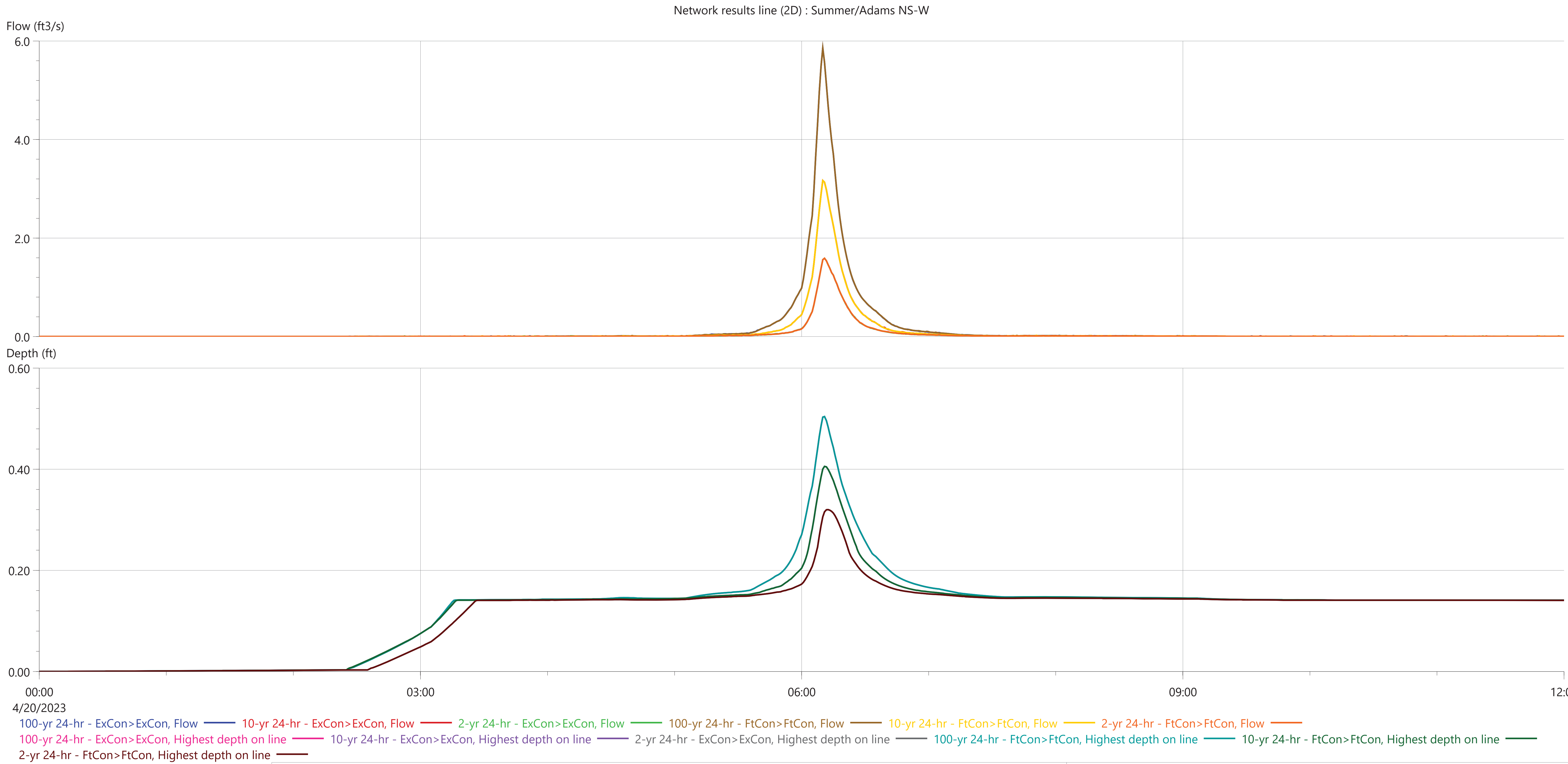

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	5.855	6063.338	0.000	0.504
10-yr 24-hr - ExCon>ExCon	0.000	3.169	3398.477	0.000	0.406
2-yr 24-hr - ExCon>ExCon	0.000	1.590	1806.433	0.000	0.320
100-yr 24-hr - FtCon>FtCon	0.000	5.855	6063.555	0.000	0.504
10-yr 24-hr - FtCon>FtCon	0.000	3.169	3396.125	0.000	0.406
2-yr 24-hr - FtCon>FtCon	0.000	1.590	1808.008	0.000	0.320

Existing Conditions (without GSI improvements) results from Network Results Lines

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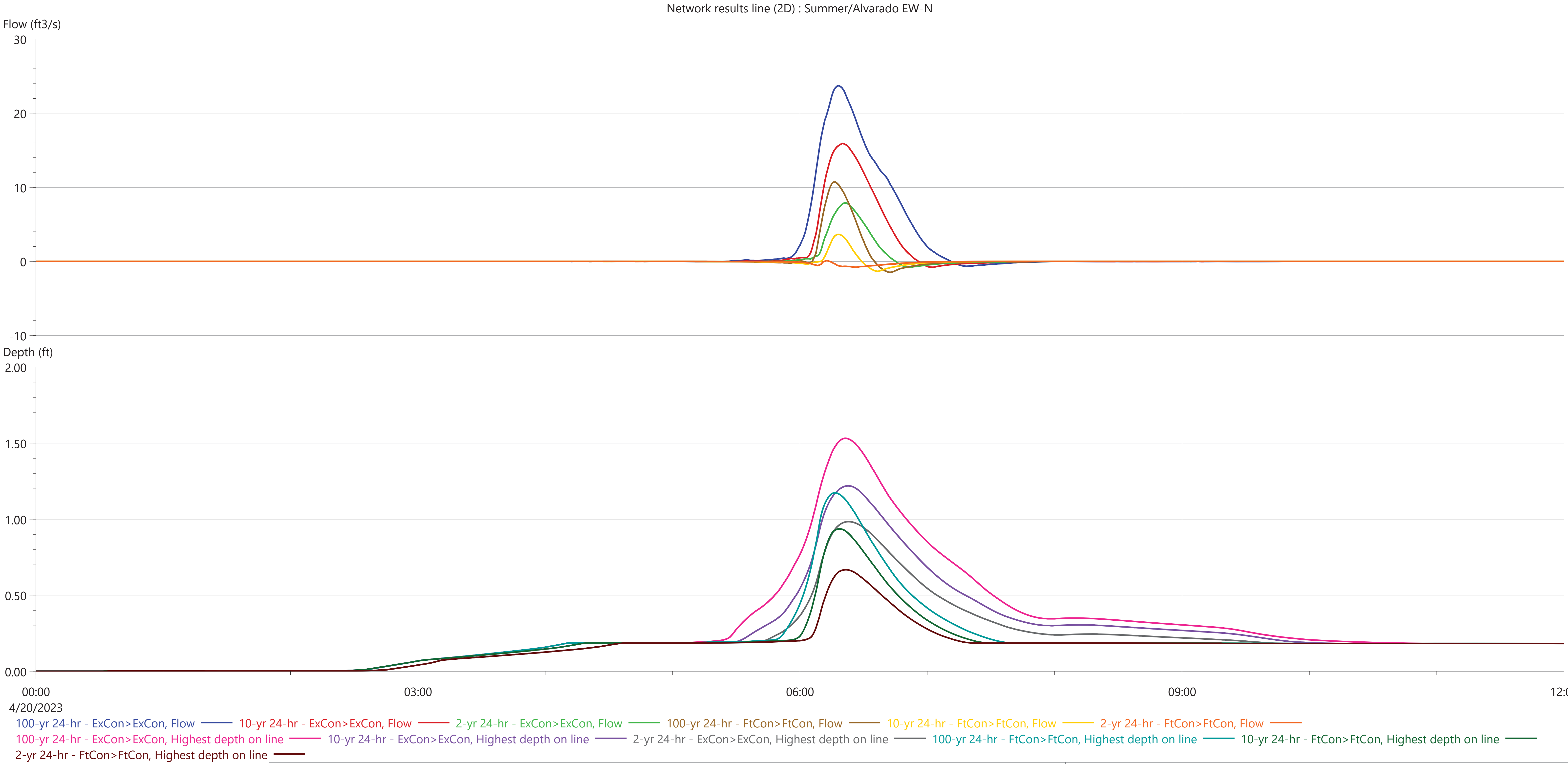

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.659	23.718	46050.023	0.000	1.531
10-yr 24-hr - ExCon>ExCon	-0.791	15.924	24934.542	0.000	1.220
2-yr 24-hr - ExCon>ExCon	-0.805	7.894	8533.321	0.000	0.984
100-yr 24-hr - FtCon>FtCon	-1.477	10.711	8291.495	0.000	1.173
10-yr 24-hr - FtCon>FtCon	-1.342	3.636	554.014	0.000	0.936
2-yr 24-hr - FtCon>FtCon	-0.769	0.102	-1661.542	0.000	0.667

Existing Conditions (without GSI improvements) results from Network Results Lines

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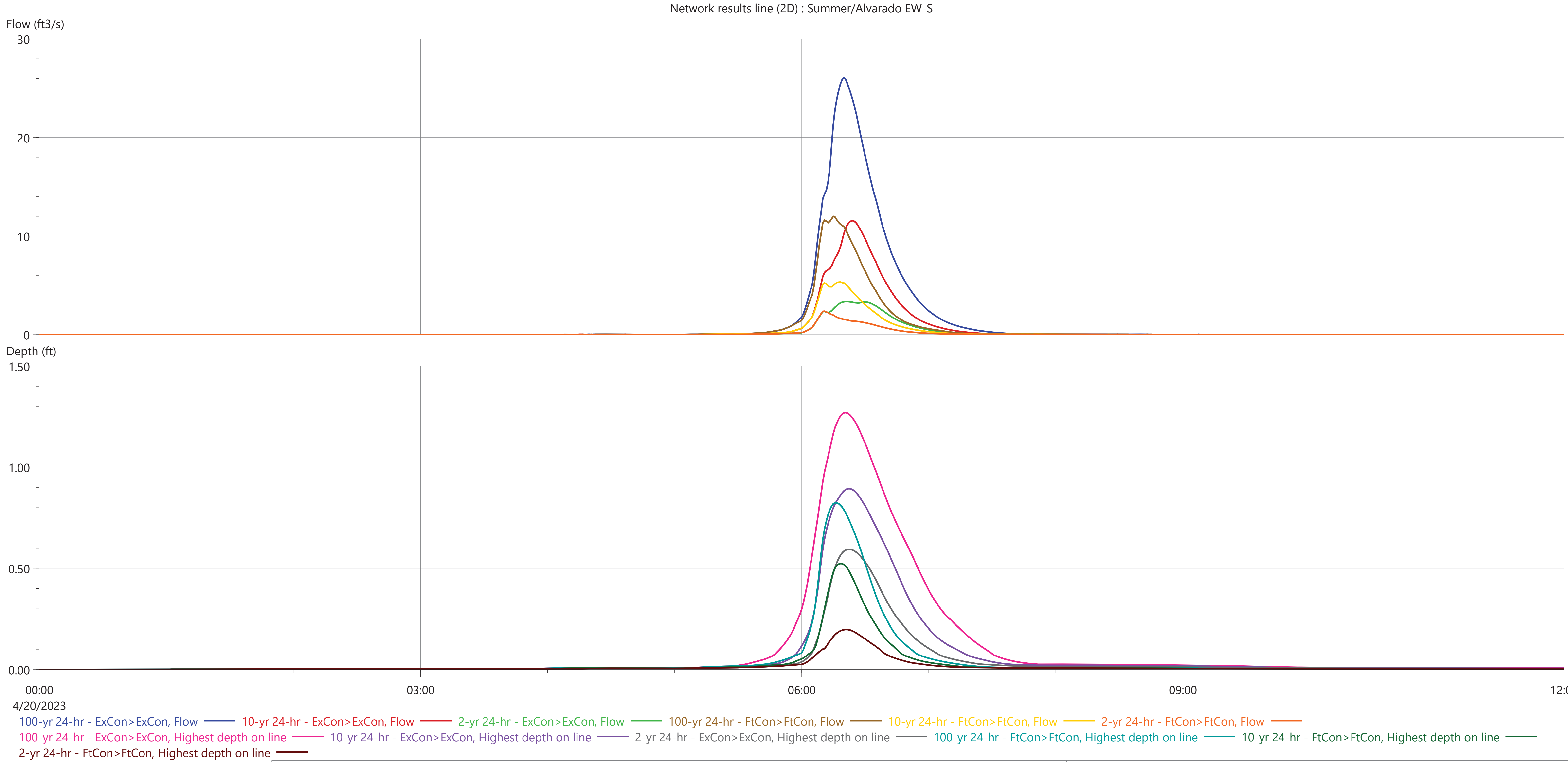

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	26.090	47495.241	0.000	1.270
10-yr 24-hr - ExCon>ExCon	0.000	11.561	21614.653	0.000	0.894
2-yr 24-hr - ExCon>ExCon	0.000	3.346	8002.725	0.000	0.594
100-yr 24-hr - FtCon>FtCon	0.000	12.001	21172.289	0.000	0.825
10-yr 24-hr - FtCon>FtCon	0.000	5.330	9966.798	0.000	0.523
2-yr 24-hr - FtCon>FtCon	0.000	2.378	4089.914	0.000	0.197

Existing Conditions (without GSI improvements) results from Network Results Lines

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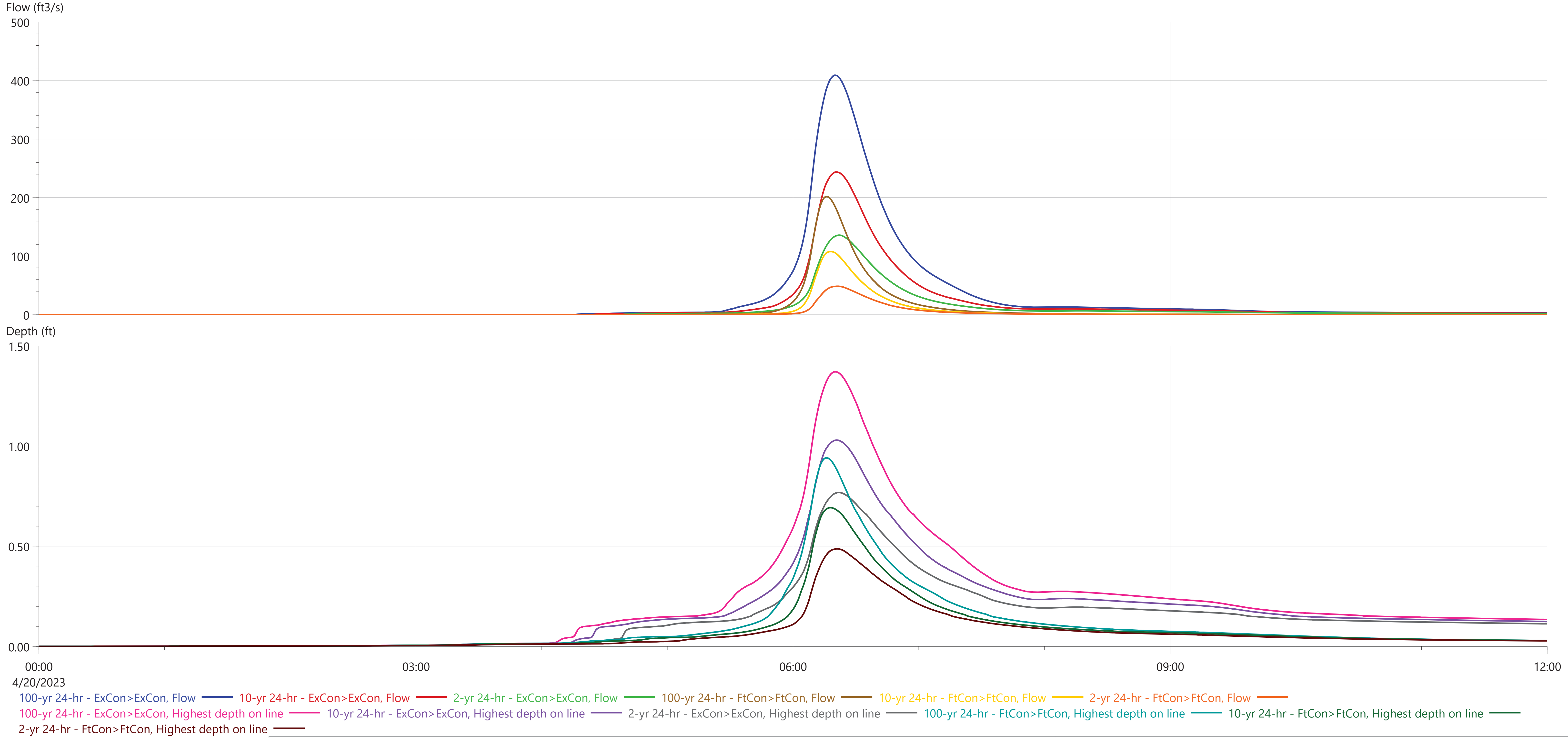
Network results line (2D) : Summer/Alvarado NS-E



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	409.186	1144441.039	0.000	1.371
10-yr 24-hr - ExCon>ExCon	0.000	243.816	686095.606	0.000	1.030
2-yr 24-hr - ExCon>ExCon	0.000	135.831	398139.366	0.000	0.768
100-yr 24-hr - FtCon>FtCon	0.000	201.908	356480.956	0.000	0.941
10-yr 24-hr - FtCon>FtCon	0.000	107.927	201508.041	0.000	0.693
2-yr 24-hr - FtCon>FtCon	0.000	48.652	106174.841	0.000	0.487

Existing Conditions (without GSI improvements) results from Network Results Lines

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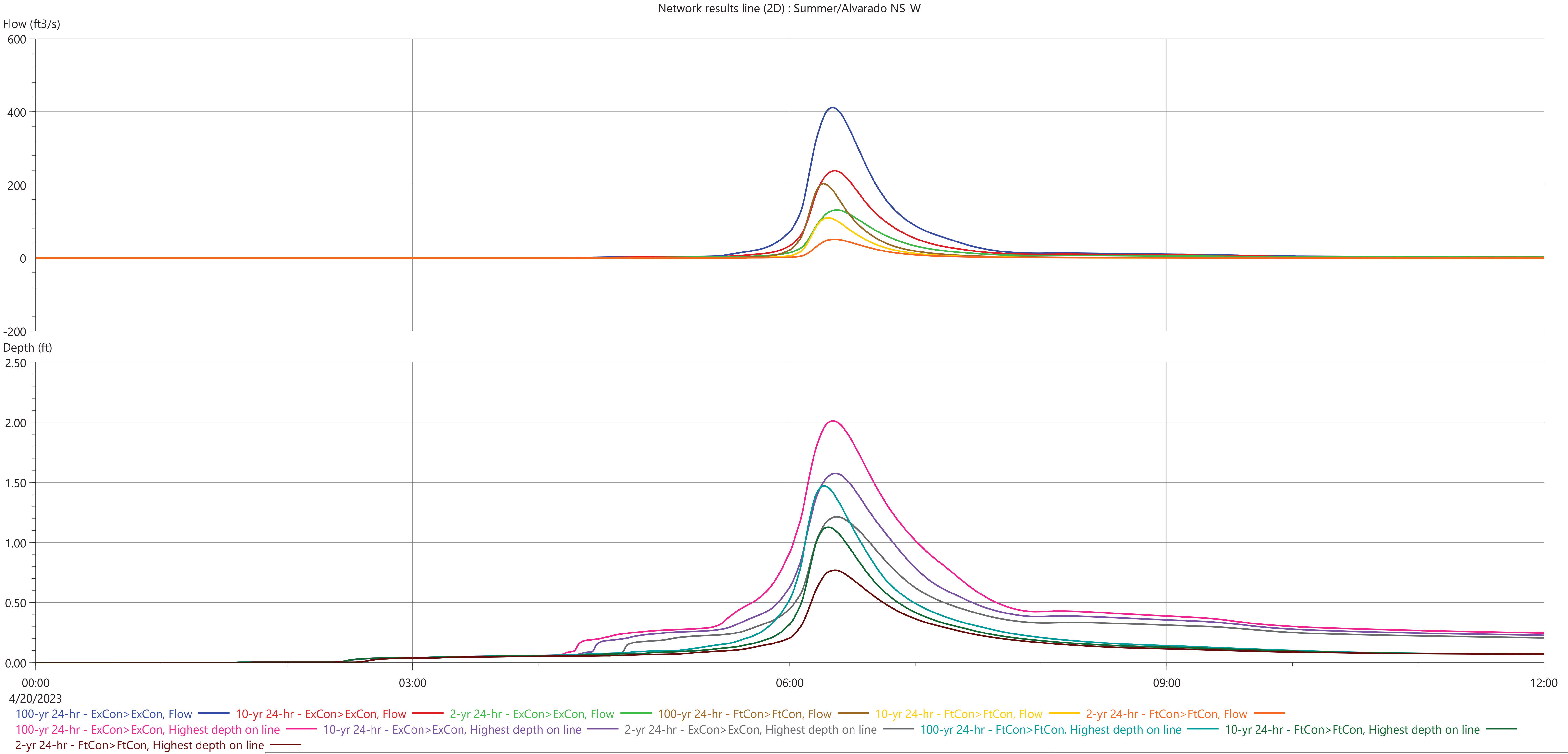

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	411.680	1146918.865	0.000	2.013
10-yr 24-hr - ExCon>ExCon	-0.001	238.612	683315.851	0.000	1.574
2-yr 24-hr - ExCon>ExCon	-0.001	131.281	397900.652	0.000	1.213
100-yr 24-hr - FtCon>FtCon	-0.001	203.061	370727.668	0.000	1.471
10-yr 24-hr - FtCon>FtCon	-0.001	109.755	211775.845	0.000	1.126
2-yr 24-hr - FtCon>FtCon	-0.001	50.866	112450.943	0.000	0.768

Existing Conditions (without GSI improvements) results from Network Results Lines

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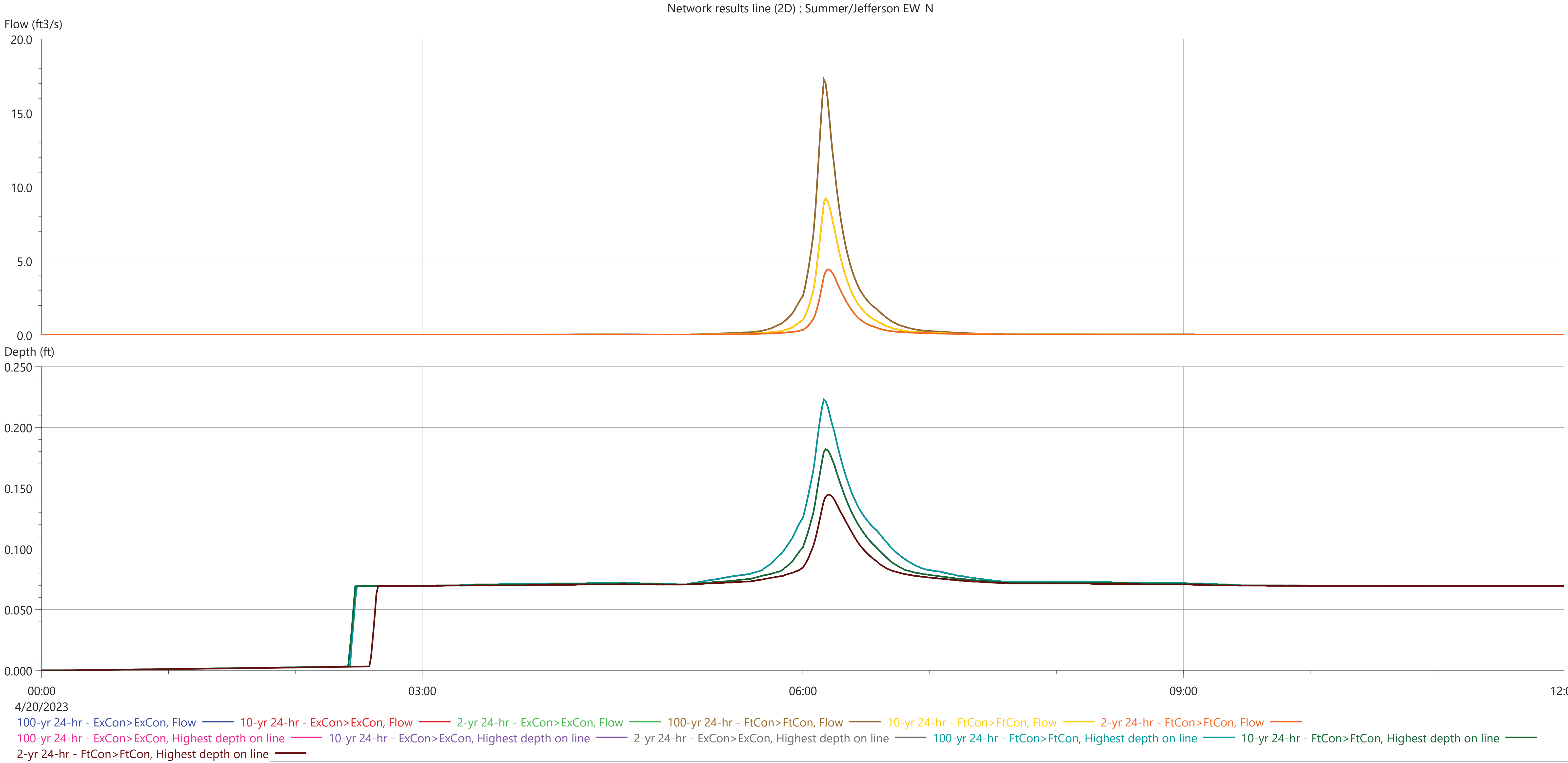

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	17.254	18333.669	0.000	0.223
10-yr 24-hr - ExCon>ExCon	0.000	9.216	10306.058	0.000	0.182
2-yr 24-hr - ExCon>ExCon	0.000	4.433	5430.412	0.000	0.145
100-yr 24-hr - FtCon>FtCon	0.000	17.254	18333.792	0.000	0.223
10-yr 24-hr - FtCon>FtCon	0.000	9.216	10304.754	0.000	0.182
2-yr 24-hr - FtCon>FtCon	0.000	4.433	5429.899	0.000	0.145

Existing Conditions (without GSI improvements) results from Network Results Lines

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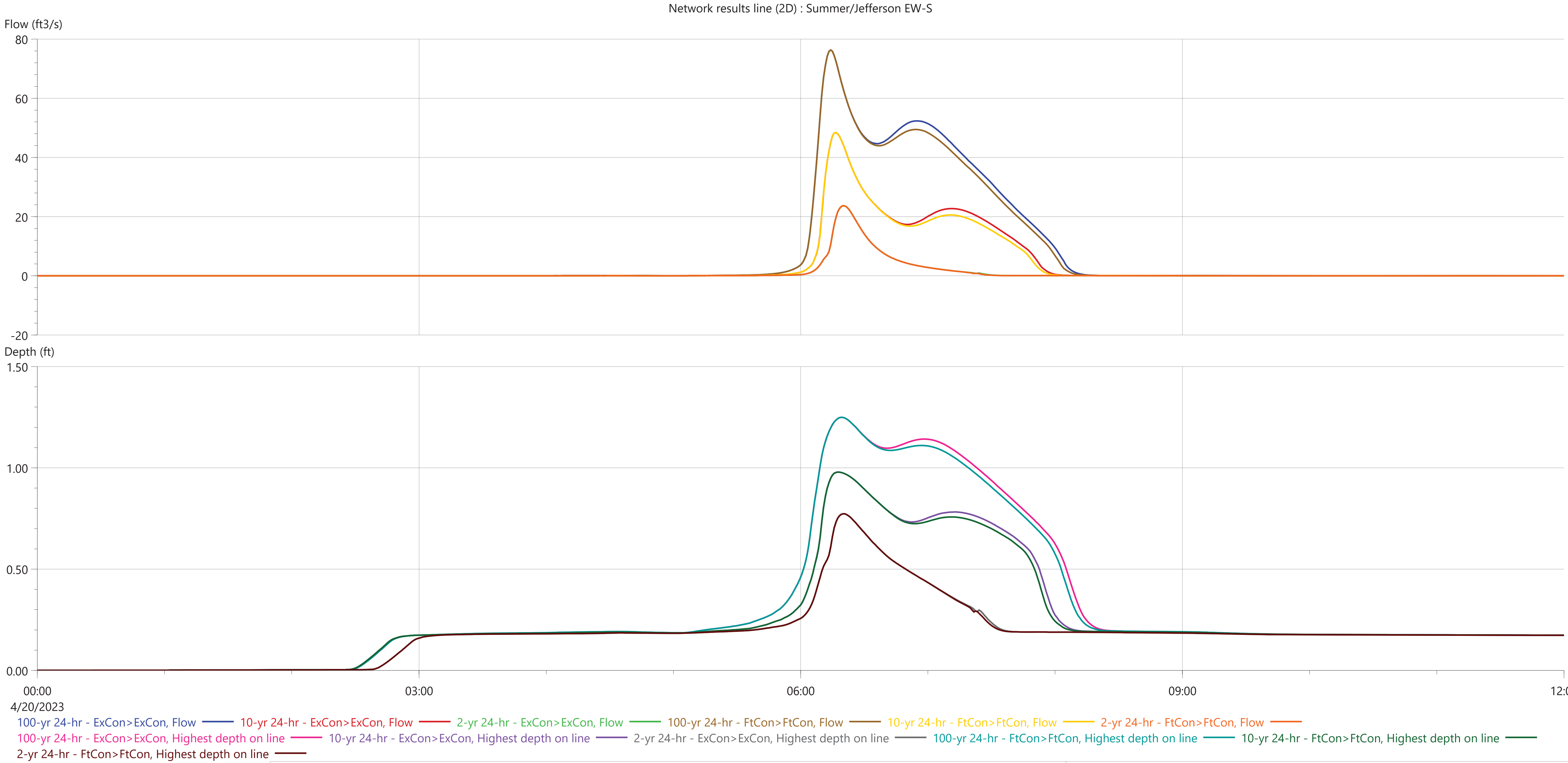

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	76.316	294160.711	0.000	1.249
10-yr 24-hr - ExCon>ExCon	-0.003	48.398	142749.069	0.000	0.979
2-yr 24-hr - ExCon>ExCon	-0.003	23.671	36600.773	0.000	0.773
100-yr 24-hr - FtCon>FtCon	-0.003	76.318	281022.631	0.000	1.249
10-yr 24-hr - FtCon>FtCon	-0.003	48.399	135429.001	0.000	0.979
2-yr 24-hr - FtCon>FtCon	-0.003	23.699	36516.396	0.000	0.773

Existing Conditions (without GSI improvements) results from Network Results Lines

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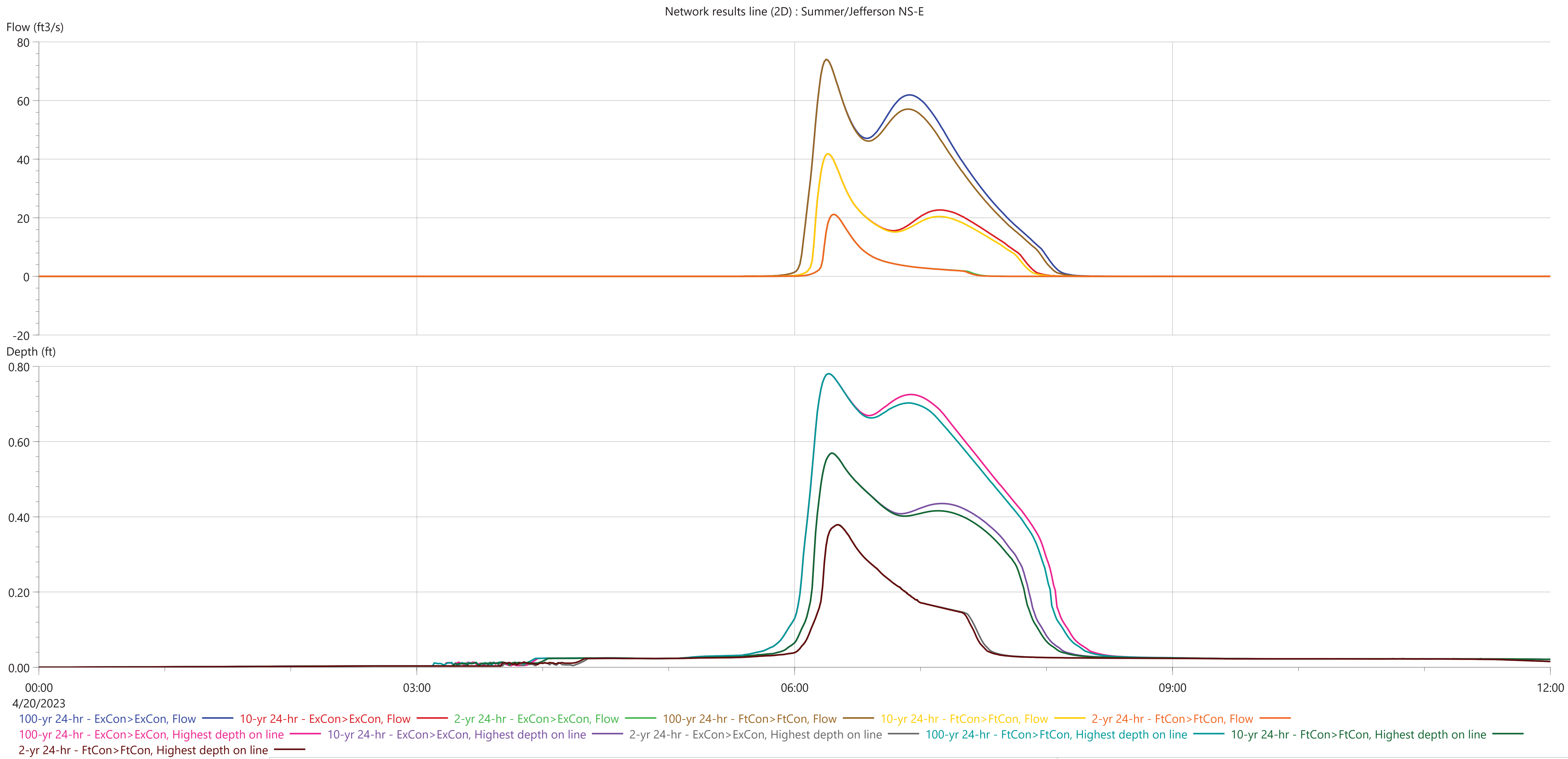

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.001	74.027	301806.930	0.000	0.780
10-yr 24-hr - ExCon>ExCon	-0.001	41.840	126148.828	0.000	0.569
2-yr 24-hr - ExCon>ExCon	-0.001	21.134	30624.235	0.000	0.379
100-yr 24-hr - FtCon>FtCon	-0.001	74.027	284195.216	0.000	0.780
10-yr 24-hr - FtCon>FtCon	-0.001	41.836	118995.760	0.000	0.569
2-yr 24-hr - FtCon>FtCon	-0.003	21.143	30457.648	0.000	0.379

Existing Conditions (without GSI improvements) results from Network Results Lines

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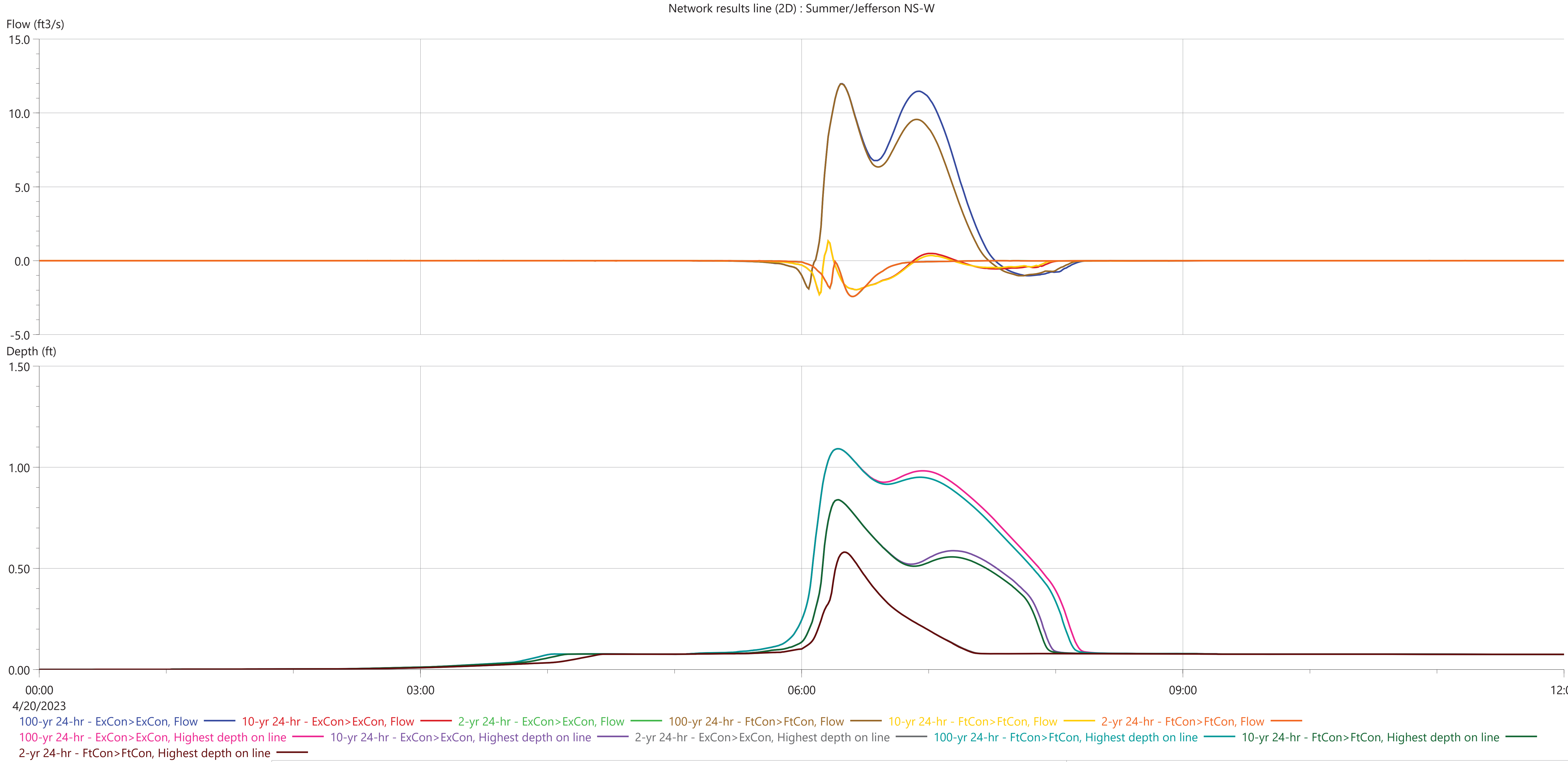

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-1.902	11.978	36016.708	0.000	1.091
10-yr 24-hr - ExCon>ExCon	-2.290	1.334	-4236.239	0.000	0.839
2-yr 24-hr - ExCon>ExCon	-2.426	0.004	-3243.519	0.000	0.580
100-yr 24-hr - FtCon>FtCon	-1.898	11.961	31035.742	0.000	1.091
10-yr 24-hr - FtCon>FtCon	-2.301	1.331	-4301.848	0.000	0.839
2-yr 24-hr - FtCon>FtCon	-2.421	0.006	-3239.655	0.000	0.580

Existing Conditions (without GSI improvements) results from Network Results Lines

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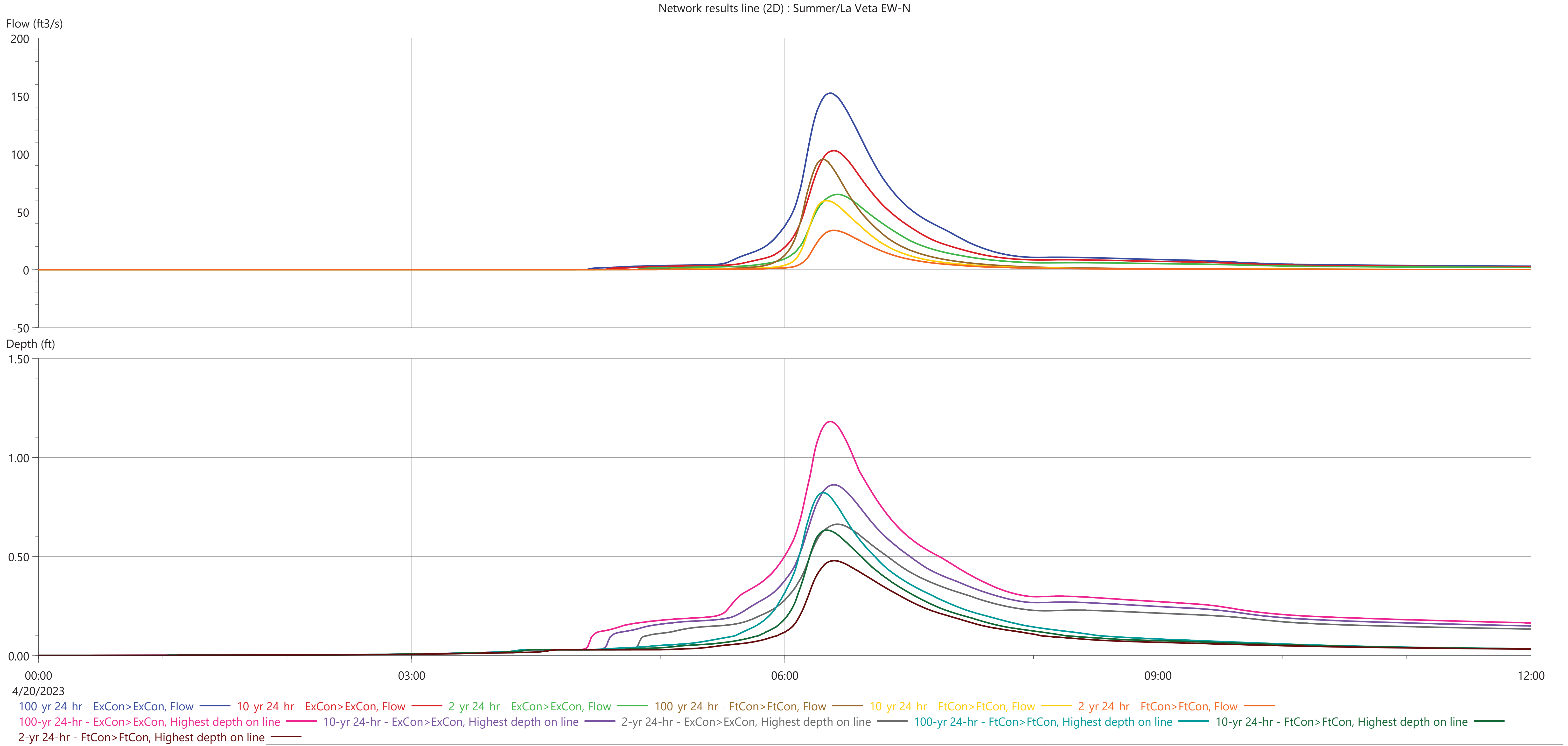

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	152.495	585985.443	0.000	1.181
10-yr 24-hr - ExCon>ExCon	0.000	102.866	400948.324	0.000	0.862
2-yr 24-hr - ExCon>ExCon	-0.003	65.076	265318.635	0.000	0.663
100-yr 24-hr - FtCon>FtCon	0.000	95.409	226515.997	0.000	0.822
10-yr 24-hr - FtCon>FtCon	0.000	59.694	146021.435	0.000	0.633
2-yr 24-hr - FtCon>FtCon	0.000	33.919	89136.595	0.000	0.479

Existing Conditions (without GSI improvements) results from Network Results Lines

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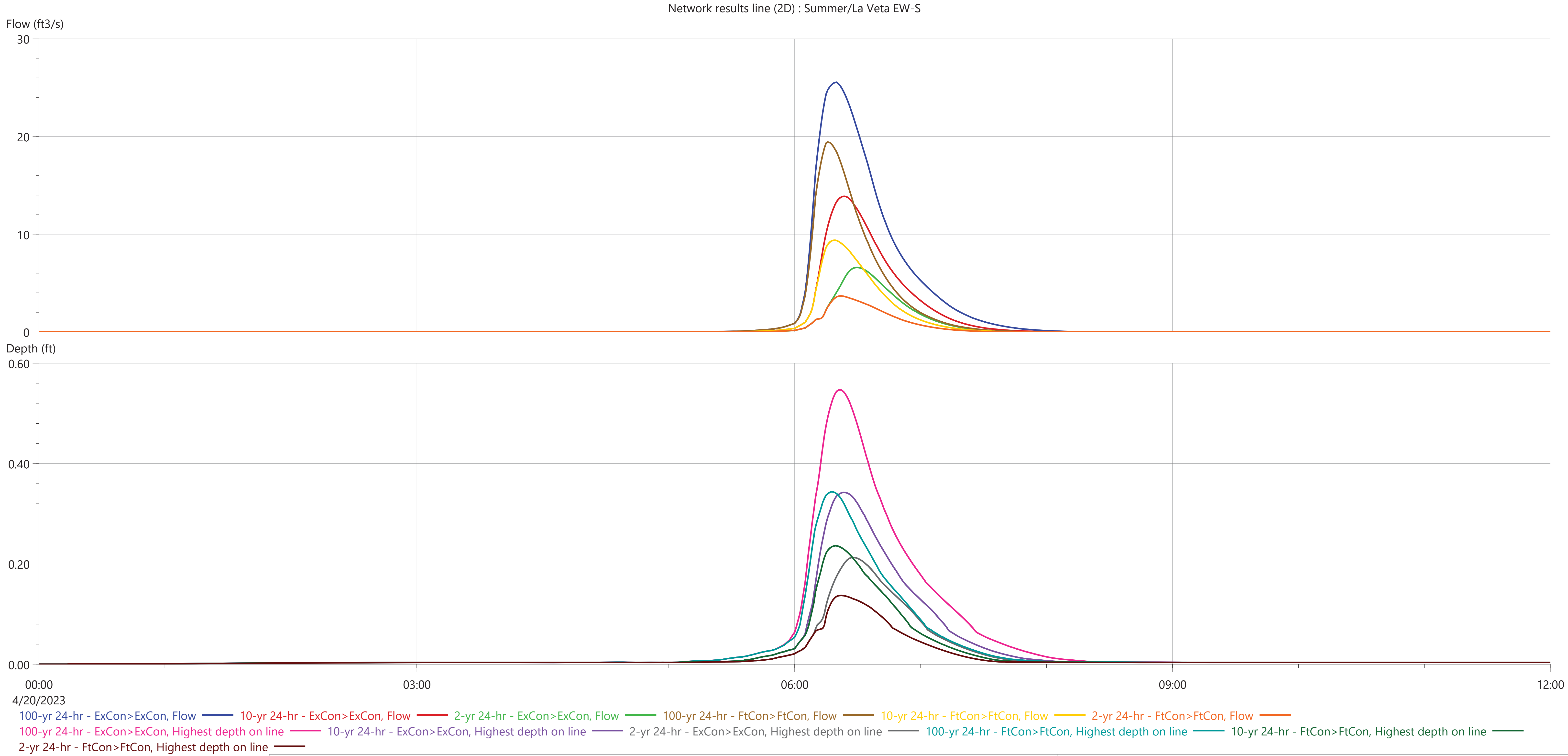

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	25.543	58312.557	0.000	0.547
10-yr 24-hr - ExCon>ExCon	0.000	13.877	30753.939	0.000	0.343
2-yr 24-hr - ExCon>ExCon	0.000	6.598	14435.918	0.000	0.213
100-yr 24-hr - FtCon>FtCon	0.000	19.423	35583.301	0.000	0.344
10-yr 24-hr - FtCon>FtCon	0.000	9.380	18440.867	0.000	0.236
2-yr 24-hr - FtCon>FtCon	0.000	3.677	7822.835	0.000	0.137

Existing Conditions (without GSI improvements) results from Network Results Lines

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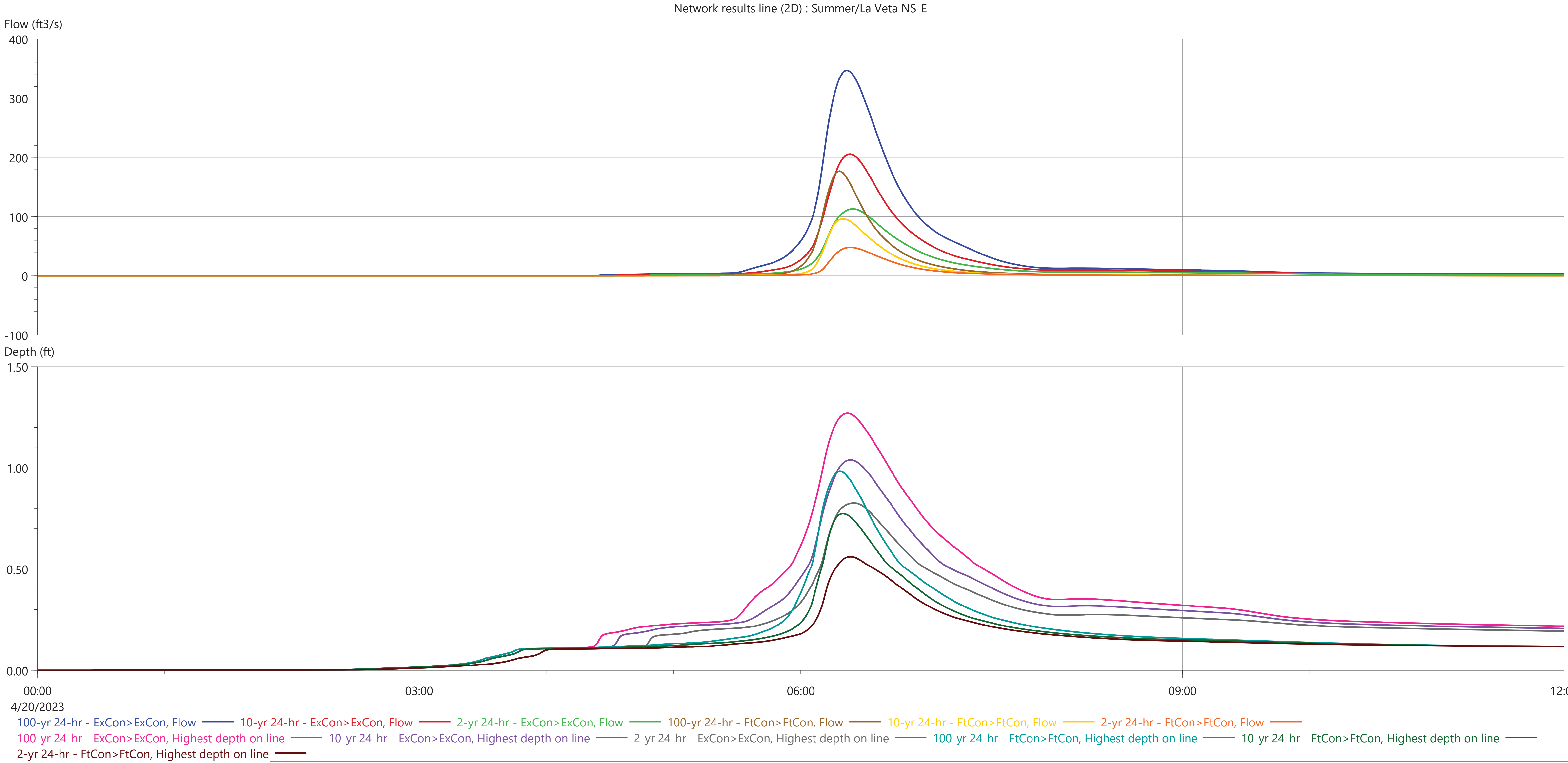

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.001	346.933	1021267.410	0.000	1.269
10-yr 24-hr - ExCon>ExCon	-0.002	205.752	622072.974	0.000	1.039
2-yr 24-hr - ExCon>ExCon	-0.002	112.930	369532.092	0.000	0.826
100-yr 24-hr - FtCon>FtCon	-0.002	176.837	343280.187	0.000	0.983
10-yr 24-hr - FtCon>FtCon	-0.002	96.252	200138.020	0.000	0.774
2-yr 24-hr - FtCon>FtCon	-0.001	47.980	110980.810	0.000	0.561

Existing Conditions (without GSI improvements) results from Network Results Lines

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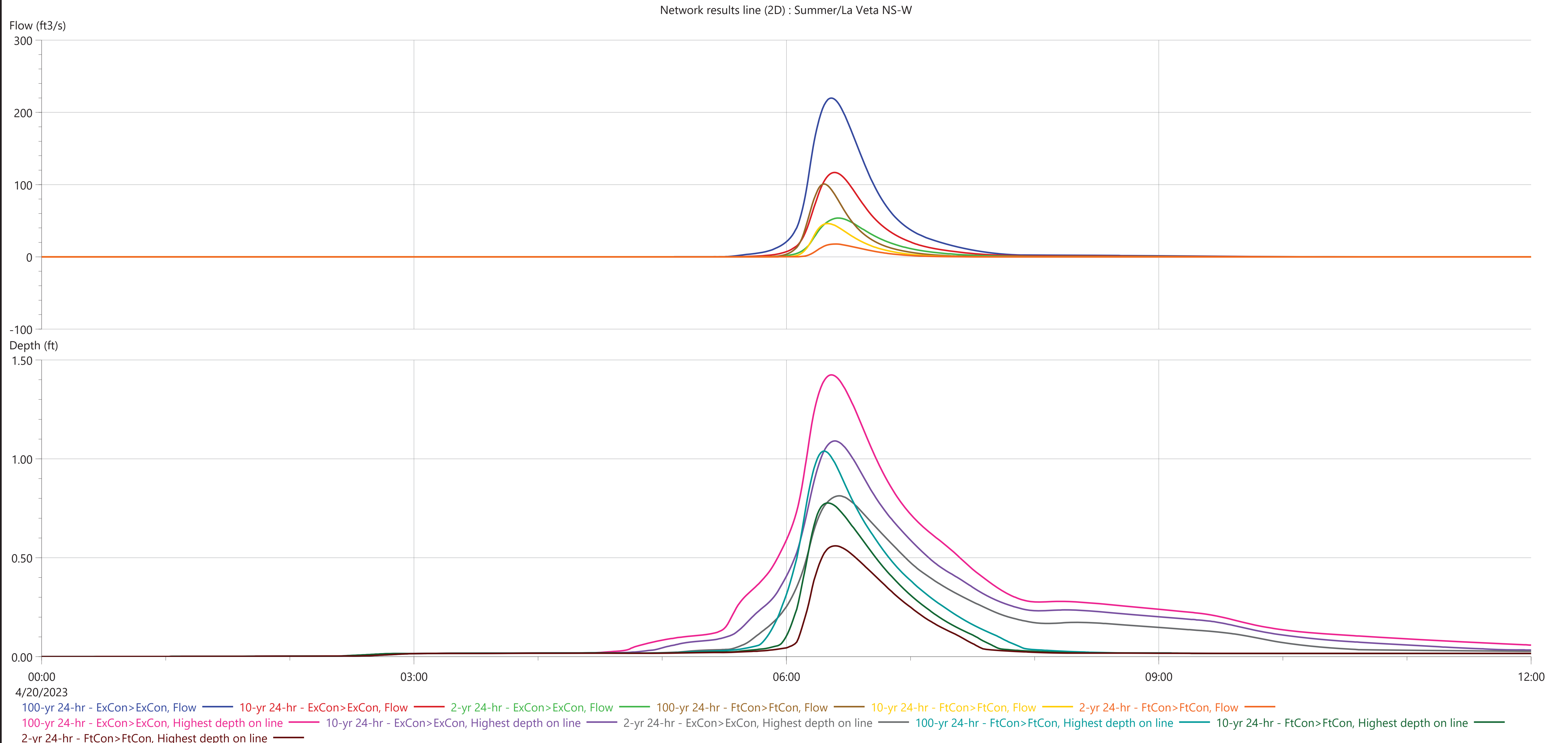

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	219.731	494719.048	0.000	1.424
10-yr 24-hr - ExCon>ExCon	-0.003	116.821	252452.500	0.000	1.090
2-yr 24-hr - ExCon>ExCon	-0.011	53.702	118950.739	0.000	0.813
100-yr 24-hr - FtCon>FtCon	-0.005	100.811	153776.487	0.000	1.039
10-yr 24-hr - FtCon>FtCon	-0.003	46.072	73404.687	0.000	0.777
2-yr 24-hr - FtCon>FtCon	-0.006	17.756	30145.485	0.000	0.560

Existing Conditions (without GSI improvements) results from Network Results Lines

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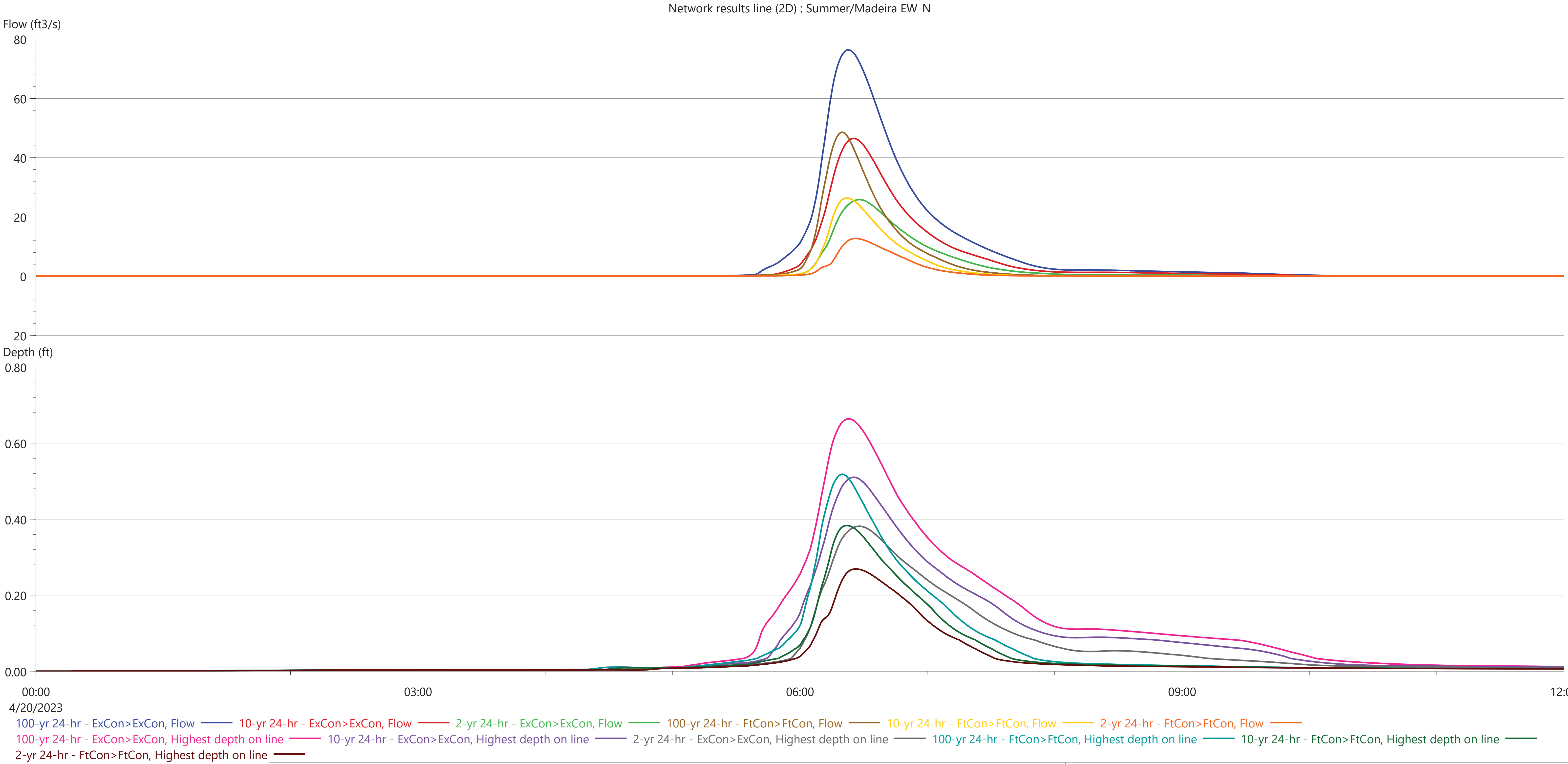

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	76.366	221704.040	0.000	0.664
10-yr 24-hr - ExCon>ExCon	-0.002	46.498	131629.332	0.000	0.510
2-yr 24-hr - ExCon>ExCon	0.000	25.838	73481.265	0.000	0.382
100-yr 24-hr - FtCon>FtCon	-0.002	48.616	97728.172	0.000	0.518
10-yr 24-hr - FtCon>FtCon	-0.002	26.342	55282.312	0.000	0.383
2-yr 24-hr - FtCon>FtCon	-0.002	12.716	28076.126	0.000	0.269

Existing Conditions (without GSI improvements) results from Network Results Lines

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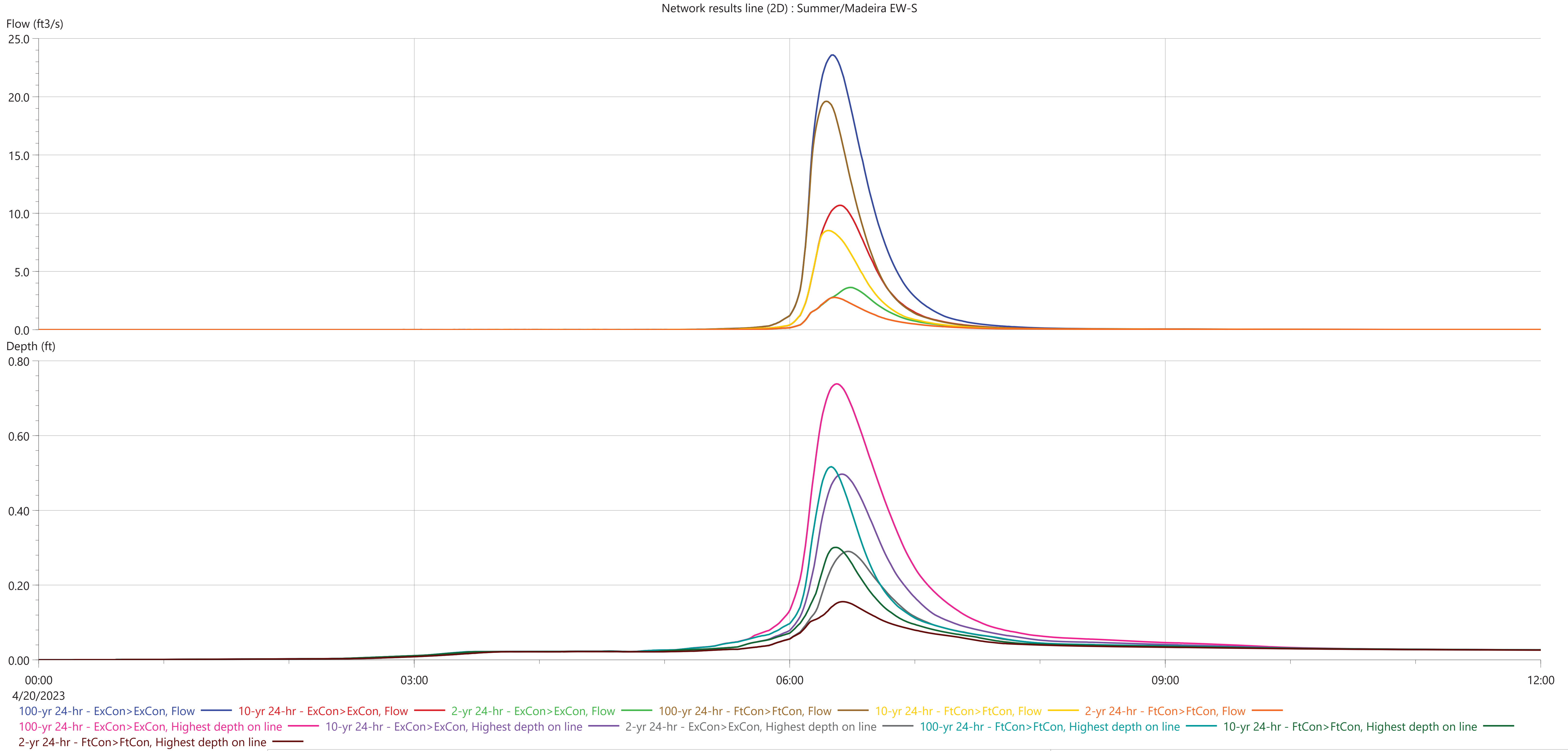

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	23.588	48198.063	0.000	0.738
10-yr 24-hr - ExCon>ExCon	0.000	10.679	22529.157	0.000	0.497
2-yr 24-hr - ExCon>ExCon	0.000	3.624	8583.845	0.000	0.290
100-yr 24-hr - FtCon>FtCon	0.000	19.612	35310.669	0.000	0.517
10-yr 24-hr - FtCon>FtCon	0.000	8.510	16601.851	0.000	0.301
2-yr 24-hr - FtCon>FtCon	0.000	2.771	6347.310	0.000	0.156

Existing Conditions (without GSI improvements) results from Network Results Lines

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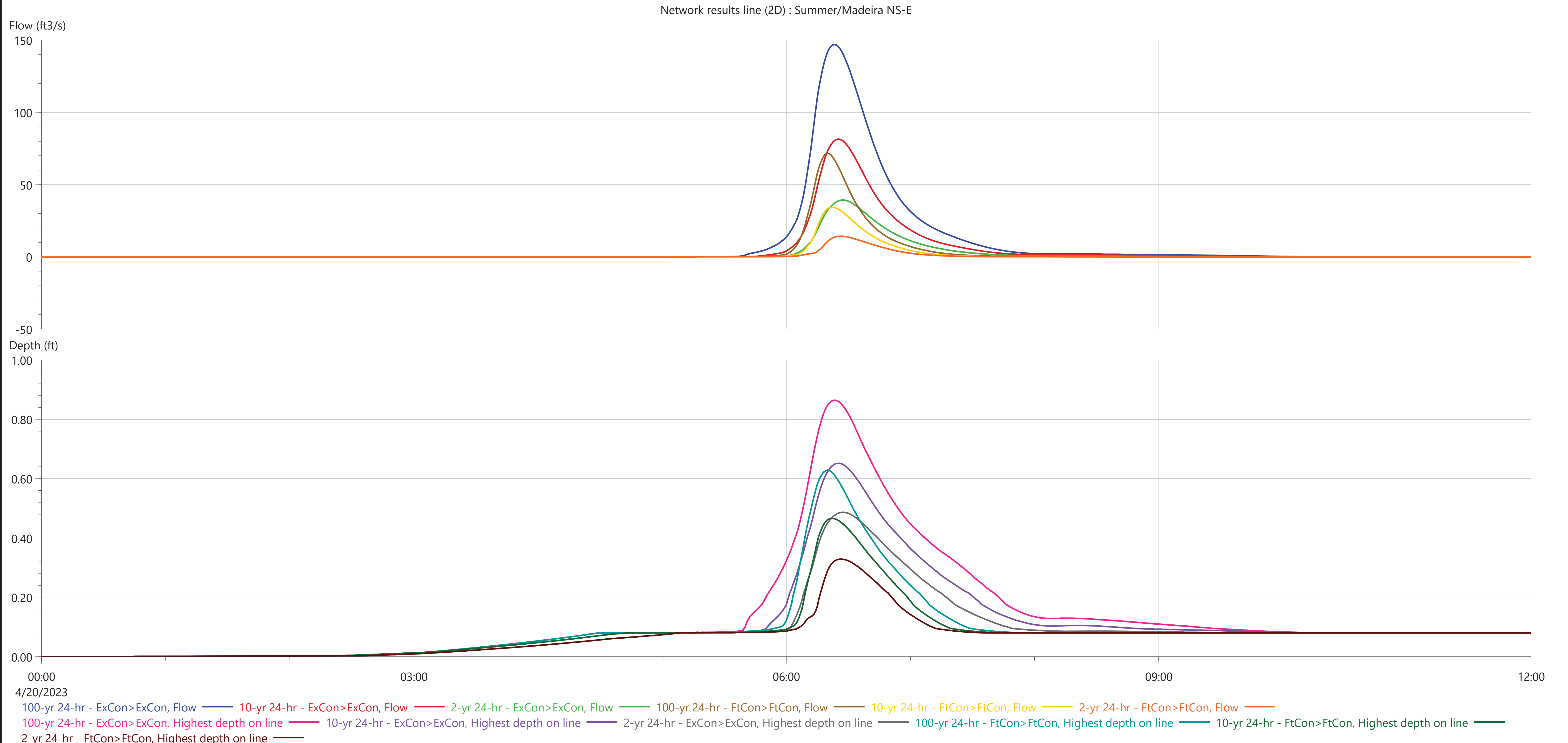

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.004	146.868	356725.615	0.000	0.864
10-yr 24-hr - ExCon>ExCon	-0.004	81.494	190609.455	0.000	0.652
2-yr 24-hr - ExCon>ExCon	-0.004	39.280	94311.175	0.000	0.487
100-yr 24-hr - FtCon>FtCon	-0.004	71.702	120401.699	0.000	0.629
10-yr 24-hr - FtCon>FtCon	-0.004	34.303	60849.195	0.000	0.466
2-yr 24-hr - FtCon>FtCon	-0.004	14.286	27230.204	0.000	0.329

Existing Conditions (without GSI improvements) results from Network Results Lines

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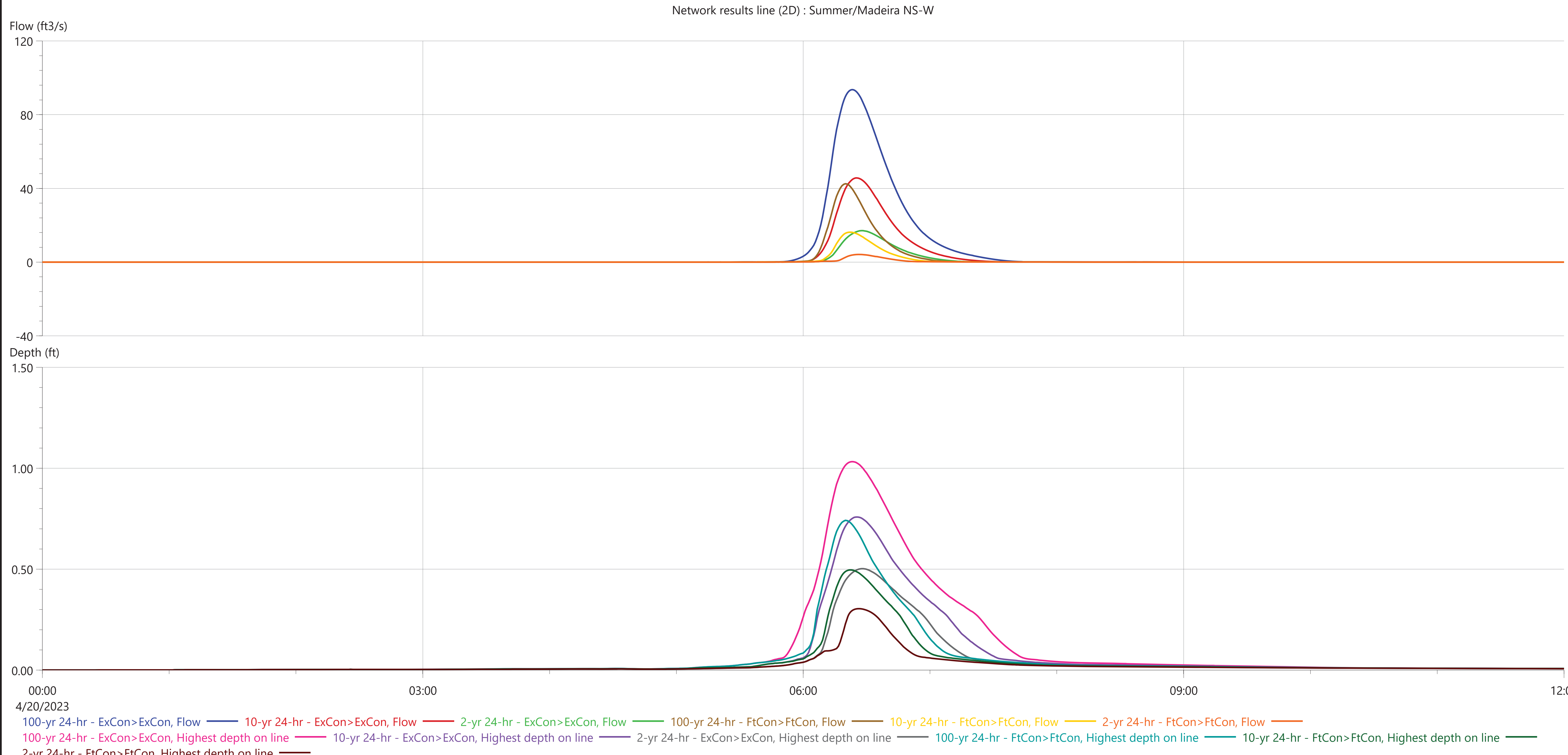

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	93.556	184220.106	0.000	1.033
10-yr 24-hr - ExCon>ExCon	-0.002	45.686	82205.015	0.000	0.758
2-yr 24-hr - ExCon>ExCon	-0.002	17.046	29865.765	0.000	0.502
100-yr 24-hr - FtCon>FtCon	-0.002	42.551	59089.423	0.000	0.742
10-yr 24-hr - FtCon>FtCon	-0.002	16.241	22881.710	0.000	0.496
2-yr 24-hr - FtCon>FtCon	-0.002	4.155	5956.350	0.000	0.304

Existing Conditions (without GSI improvements) results from Network Results Lines

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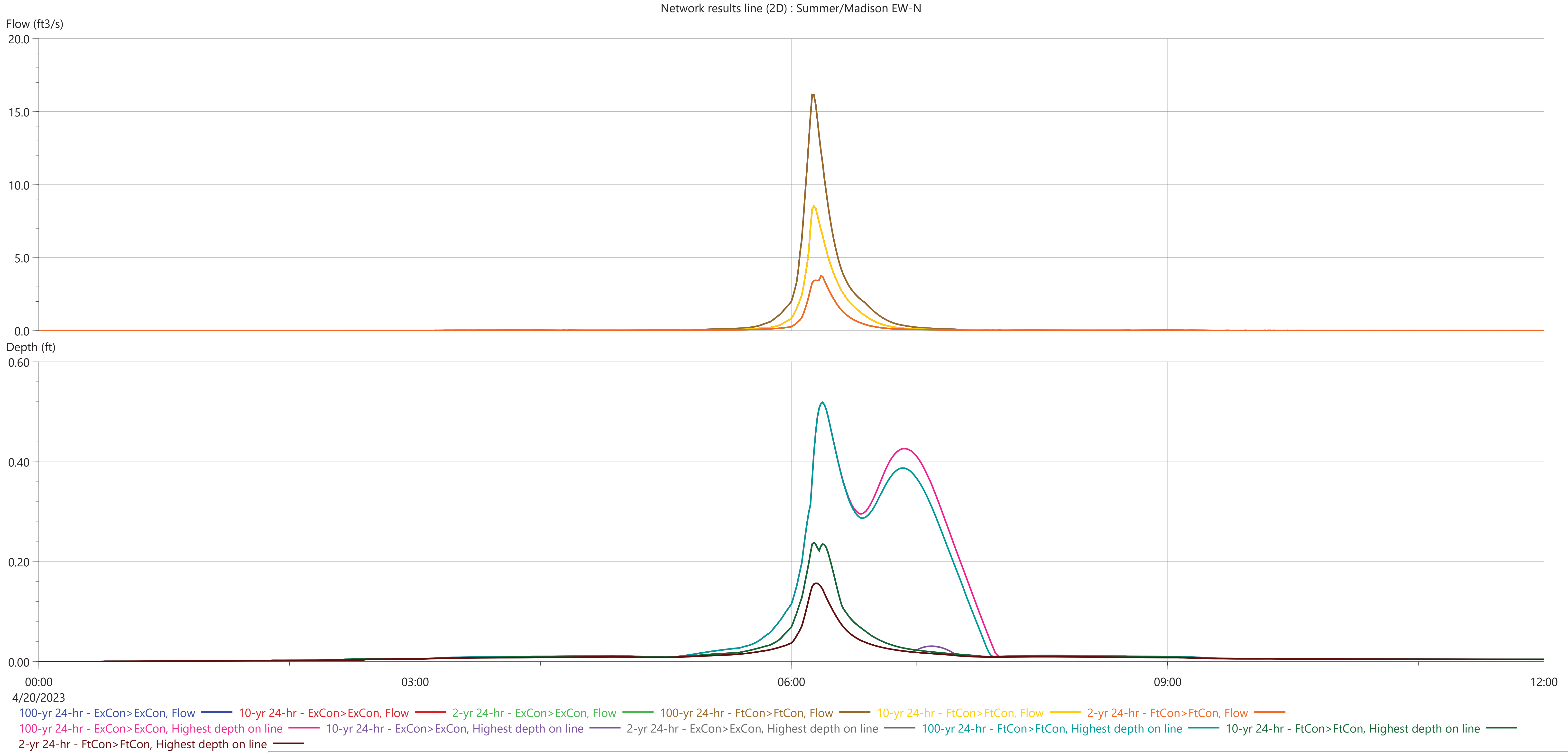

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	16.167	17507.262	0.000	0.519
10-yr 24-hr - ExCon>ExCon	0.000	8.532	9393.516	0.000	0.238
2-yr 24-hr - ExCon>ExCon	0.000	3.734	4617.933	0.000	0.157
100-yr 24-hr - FtCon>FtCon	0.000	16.167	17504.156	0.000	0.519
10-yr 24-hr - FtCon>FtCon	0.000	8.532	9399.978	0.000	0.238
2-yr 24-hr - FtCon>FtCon	0.000	3.734	4623.105	0.000	0.157

Existing Conditions (without GSI improvements) results from Network Results Lines

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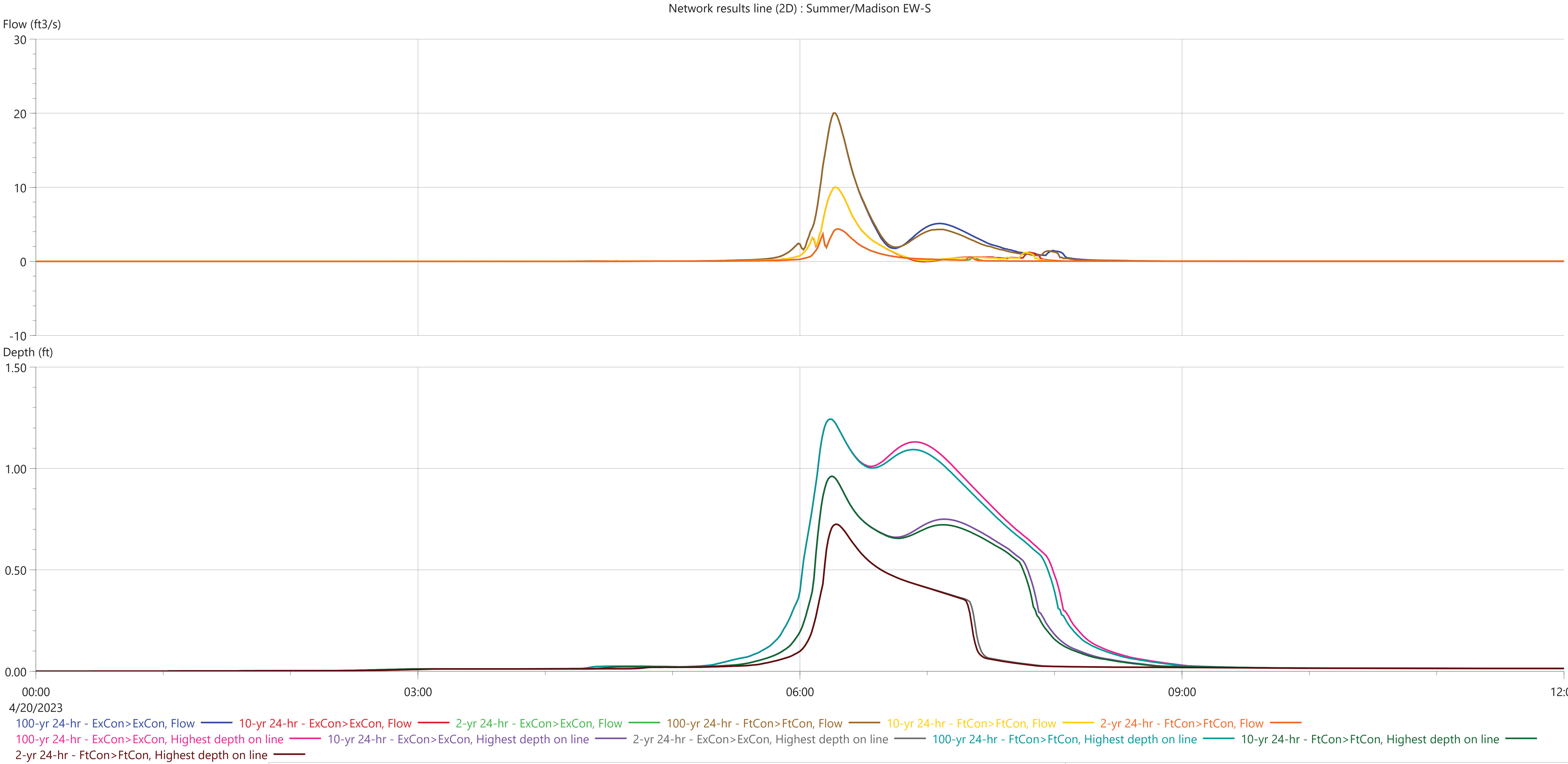

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	20.007	39096.511	0.000	1.244
10-yr 24-hr - ExCon>ExCon	-0.027	10.010	15133.177	0.000	0.962
2-yr 24-hr - ExCon>ExCon	0.000	4.374	6918.063	0.000	0.724
100-yr 24-hr - FtCon>FtCon	0.000	20.020	37474.515	0.000	1.244
10-yr 24-hr - FtCon>FtCon	0.000	10.008	15130.543	0.000	0.962
2-yr 24-hr - FtCon>FtCon	0.000	4.372	6920.344	0.000	0.725

Existing Conditions (without GSI improvements) results from Network Results Lines

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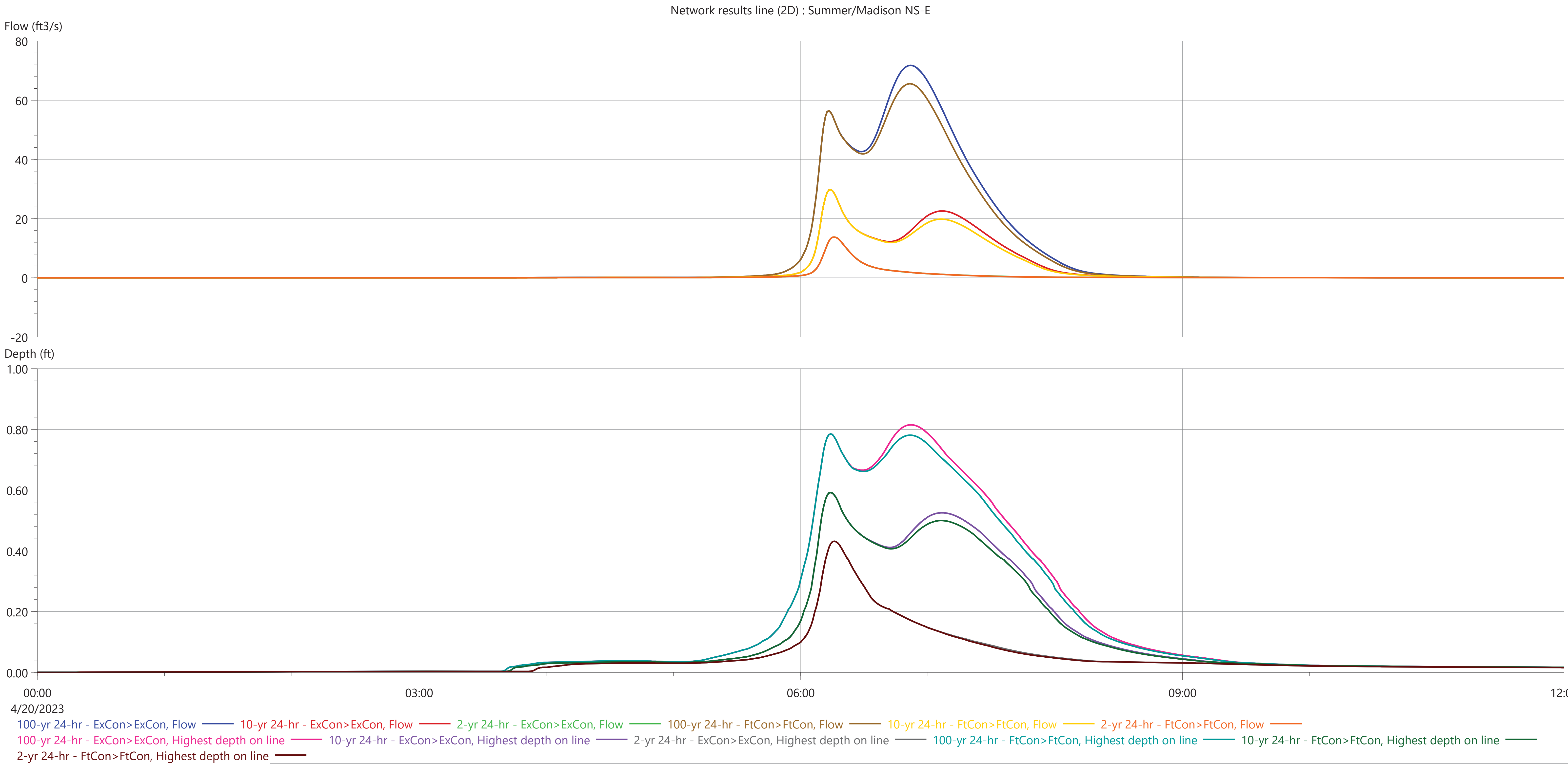

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	71.774	297778.391	0.000	0.815
10-yr 24-hr - ExCon>ExCon	-0.001	29.776	110777.893	0.000	0.592
2-yr 24-hr - ExCon>ExCon	-0.003	13.749	21840.245	0.000	0.432
100-yr 24-hr - FtCon>FtCon	0.000	65.566	277073.995	0.000	0.785
10-yr 24-hr - FtCon>FtCon	-0.001	29.776	102924.384	0.000	0.592
2-yr 24-hr - FtCon>FtCon	-0.003	13.754	21726.074	0.000	0.432

Existing Conditions (without GSI improvements) results from Network Results Lines

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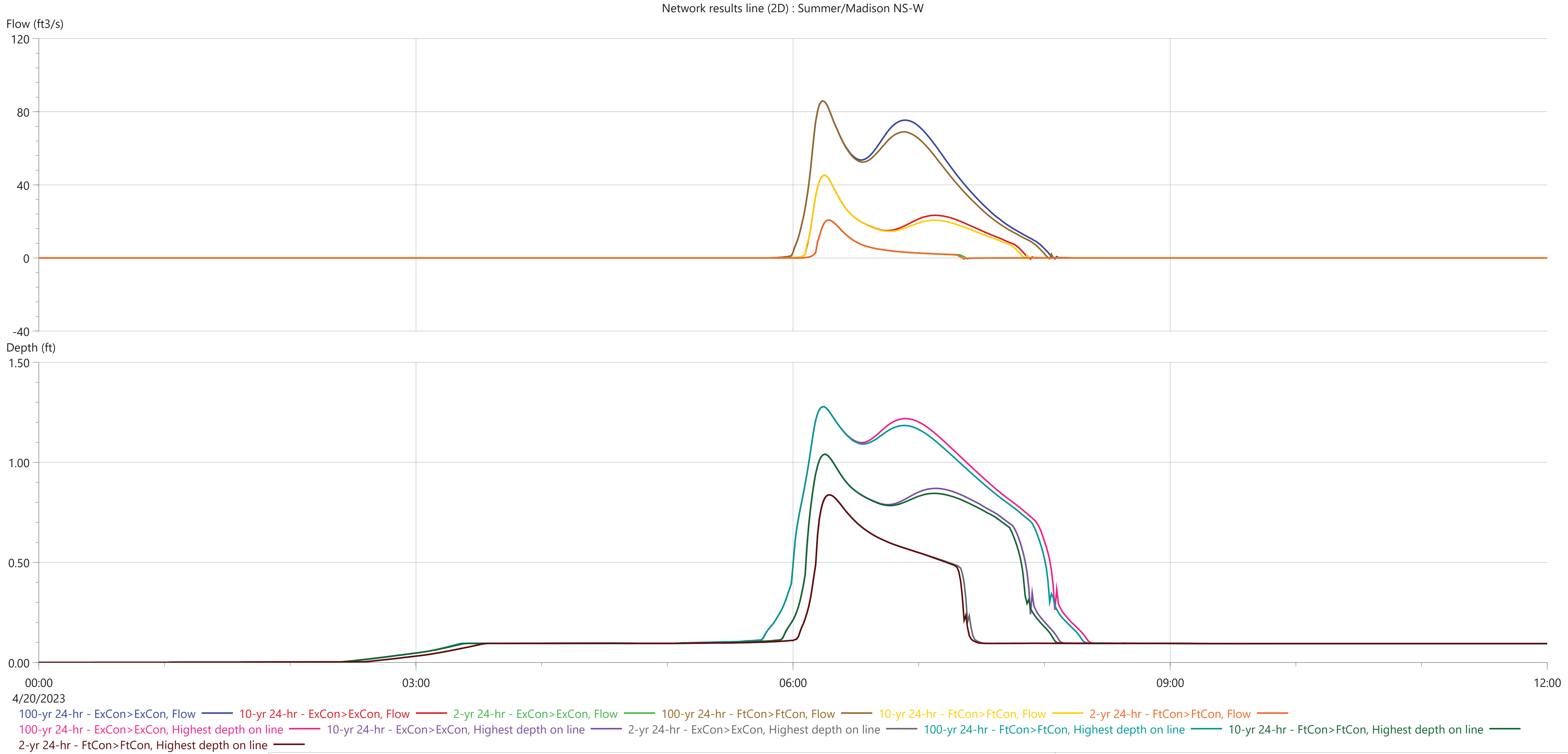

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.527	85.902	343362.029	0.000	1.278
10-yr 24-hr - ExCon>ExCon	-0.603	45.303	125953.978	0.000	1.040
2-yr 24-hr - ExCon>ExCon	-0.544	20.695	28421.273	0.000	0.837
100-yr 24-hr - FtCon>FtCon	-0.463	85.890	321130.968	0.000	1.278
10-yr 24-hr - FtCon>FtCon	-0.109	45.286	118297.062	0.000	1.040
2-yr 24-hr - FtCon>FtCon	-0.501	20.693	28249.978	0.000	0.838

Existing Conditions (without GSI improvements) results from Network Results Lines

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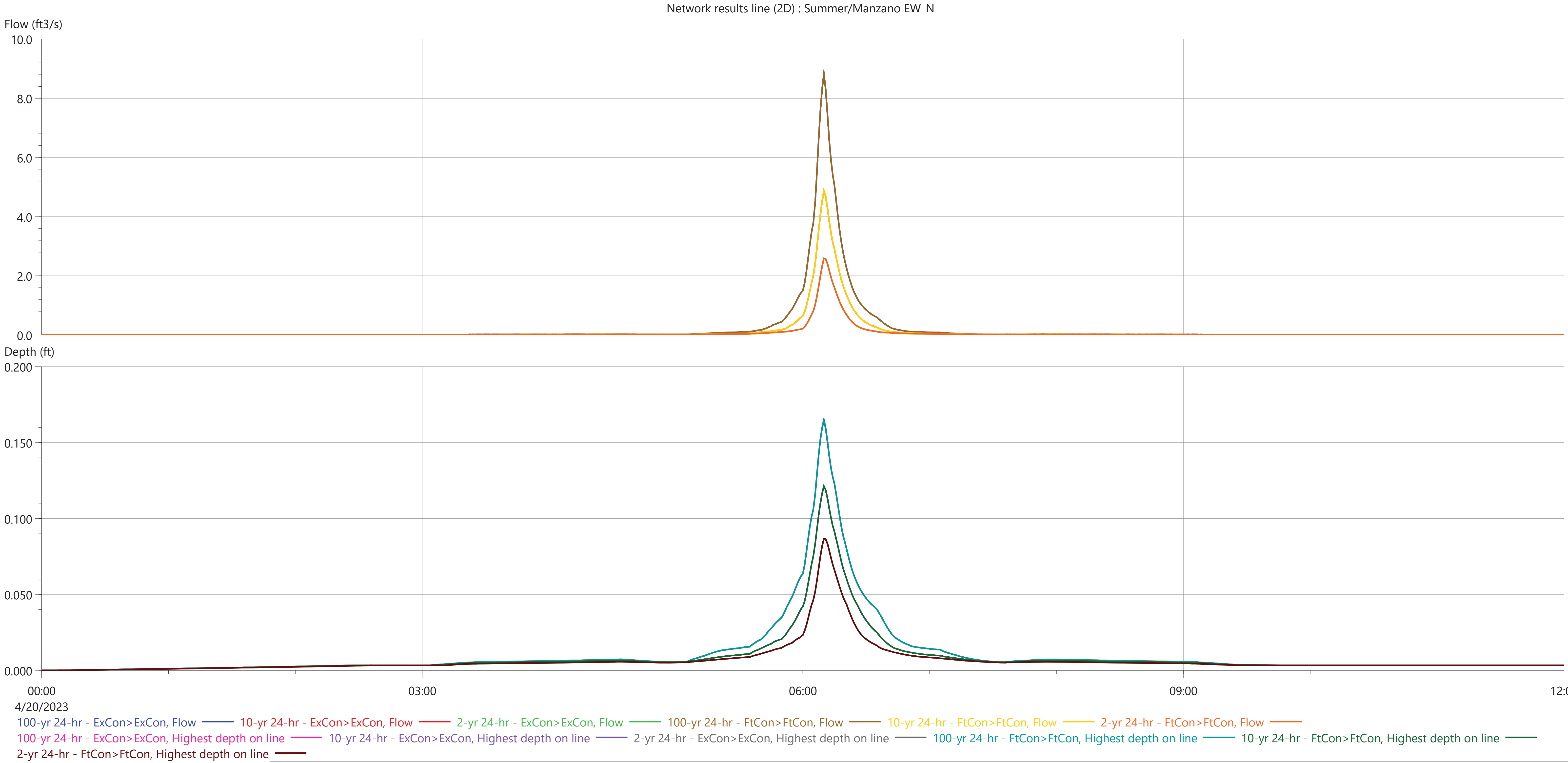

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	8.833	8589.955	0.000	0.165
10-yr 24-hr - ExCon>ExCon	0.000	4.863	4744.492	0.000	0.121
2-yr 24-hr - ExCon>ExCon	0.000	2.590	2518.975	0.000	0.087
100-yr 24-hr - FtCon>FtCon	0.000	8.833	8589.009	0.000	0.165
10-yr 24-hr - FtCon>FtCon	0.000	4.863	4745.628	0.000	0.121
2-yr 24-hr - FtCon>FtCon	0.000	2.590	2521.131	0.000	0.087

Existing Conditions (without GSI improvements) results from Network Results Lines

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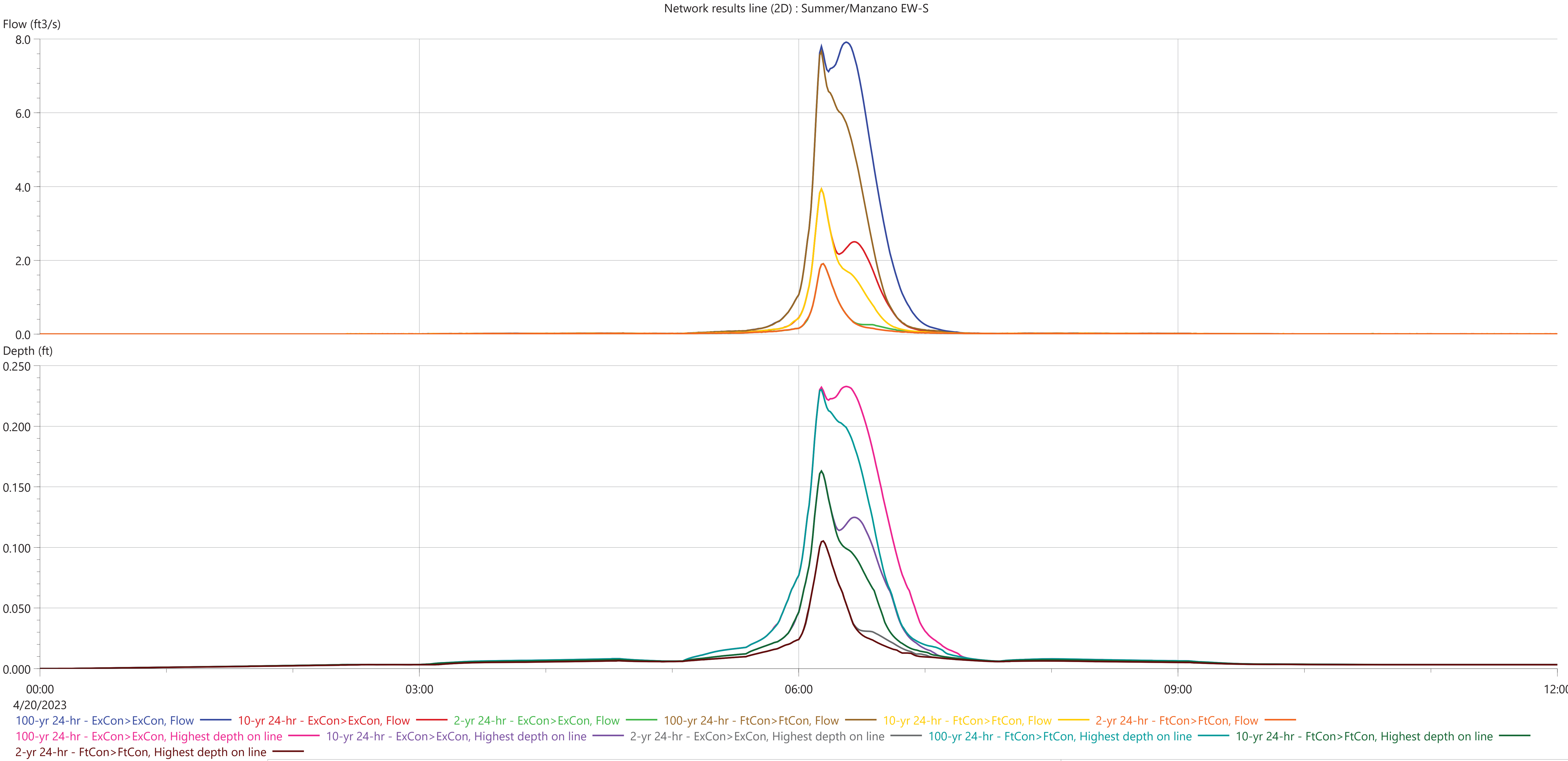

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	7.915	16528.497	0.000	0.233
10-yr 24-hr - ExCon>ExCon	0.000	3.933	6318.047	0.000	0.163
2-yr 24-hr - ExCon>ExCon	0.000	1.907	2214.687	0.000	0.105
100-yr 24-hr - FtCon>FtCon	0.000	7.658	12211.234	0.000	0.230
10-yr 24-hr - FtCon>FtCon	0.000	3.933	4958.291	0.000	0.163
2-yr 24-hr - FtCon>FtCon	0.000	1.907	2121.463	0.000	0.105

Existing Conditions (without GSI improvements) results from Network Results Lines

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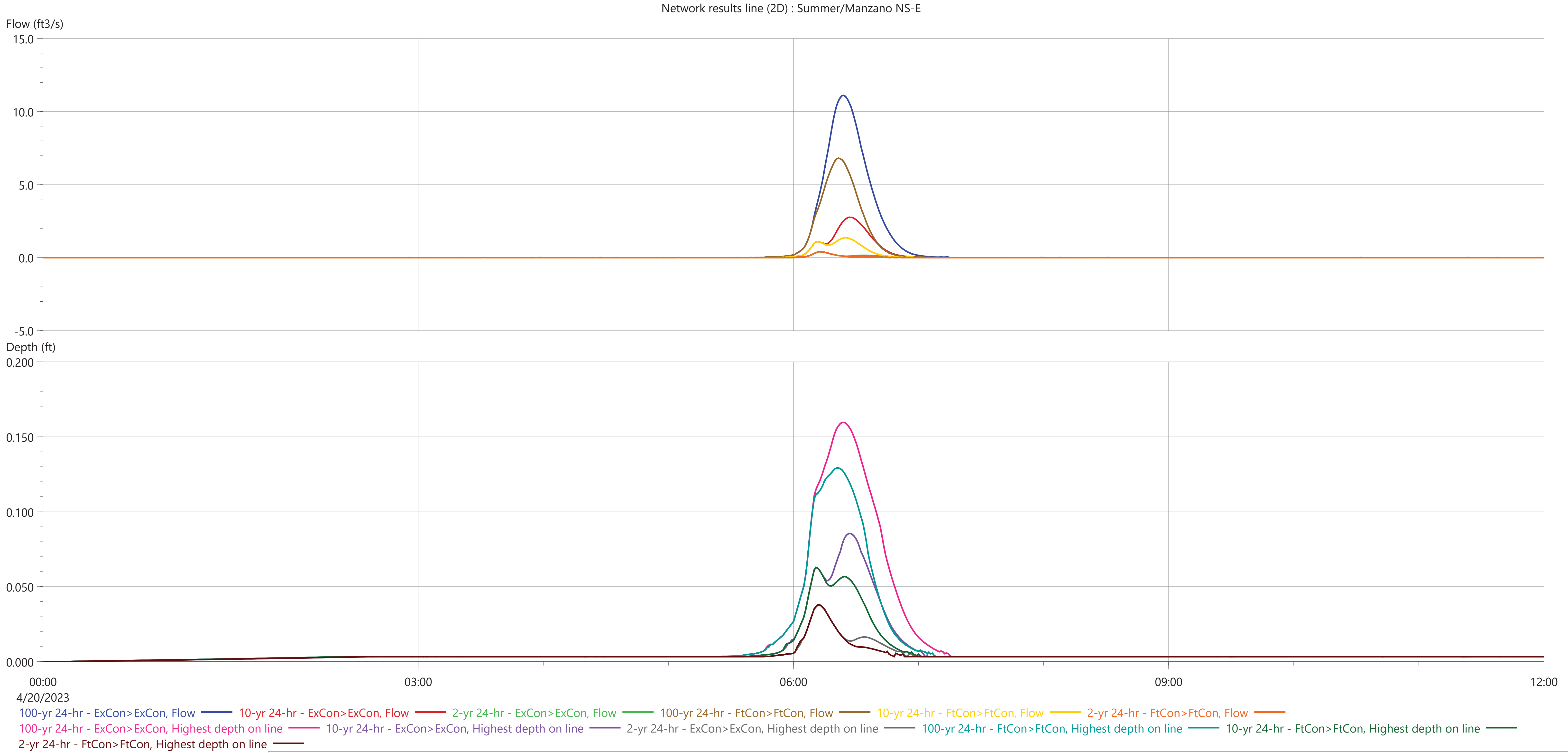

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.003	11.110	15978.529	0.000	0.160
10-yr 24-hr - ExCon>ExCon	-0.002	2.758	3781.917	0.000	0.086
2-yr 24-hr - ExCon>ExCon	-0.002	0.407	443.383	0.000	0.038
100-yr 24-hr - FtCon>FtCon	-0.002	6.811	8971.294	0.000	0.129
10-yr 24-hr - FtCon>FtCon	-0.002	1.369	1994.893	0.000	0.063
2-yr 24-hr - FtCon>FtCon	-0.002	0.405	348.094	0.000	0.038

Existing Conditions (without GSI improvements) results from Network Results Lines

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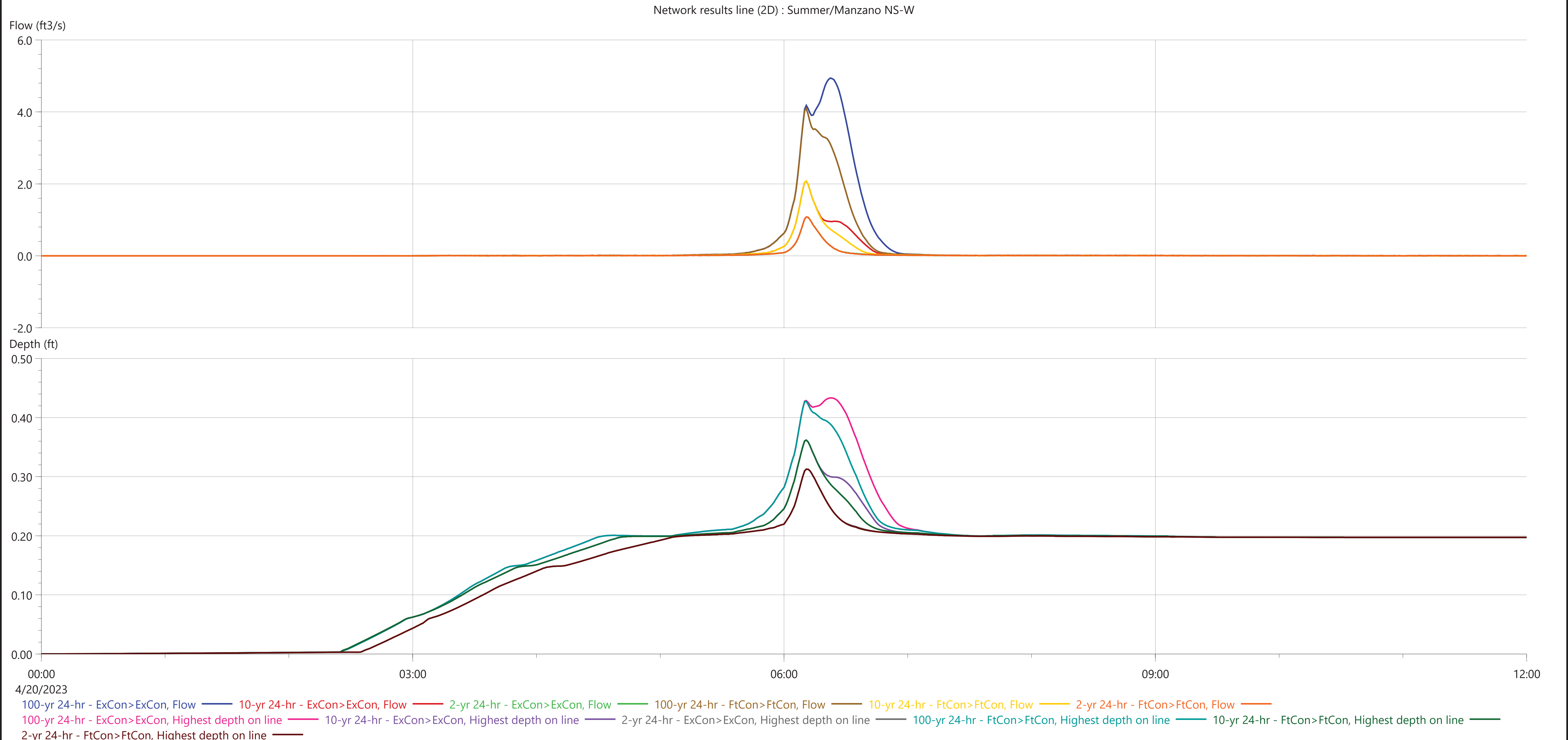

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	4.941	8837.939	0.000	0.433
10-yr 24-hr - ExCon>ExCon	-0.002	2.073	2723.464	0.000	0.362
2-yr 24-hr - ExCon>ExCon	-0.002	1.081	1092.716	0.000	0.313
100-yr 24-hr - FtCon>FtCon	-0.002	4.094	6148.971	0.000	0.427
10-yr 24-hr - FtCon>FtCon	-0.002	2.080	2297.409	0.000	0.362
2-yr 24-hr - FtCon>FtCon	-0.002	1.081	1088.847	0.000	0.313

Existing Conditions (without GSI improvements) results from Network Results Lines

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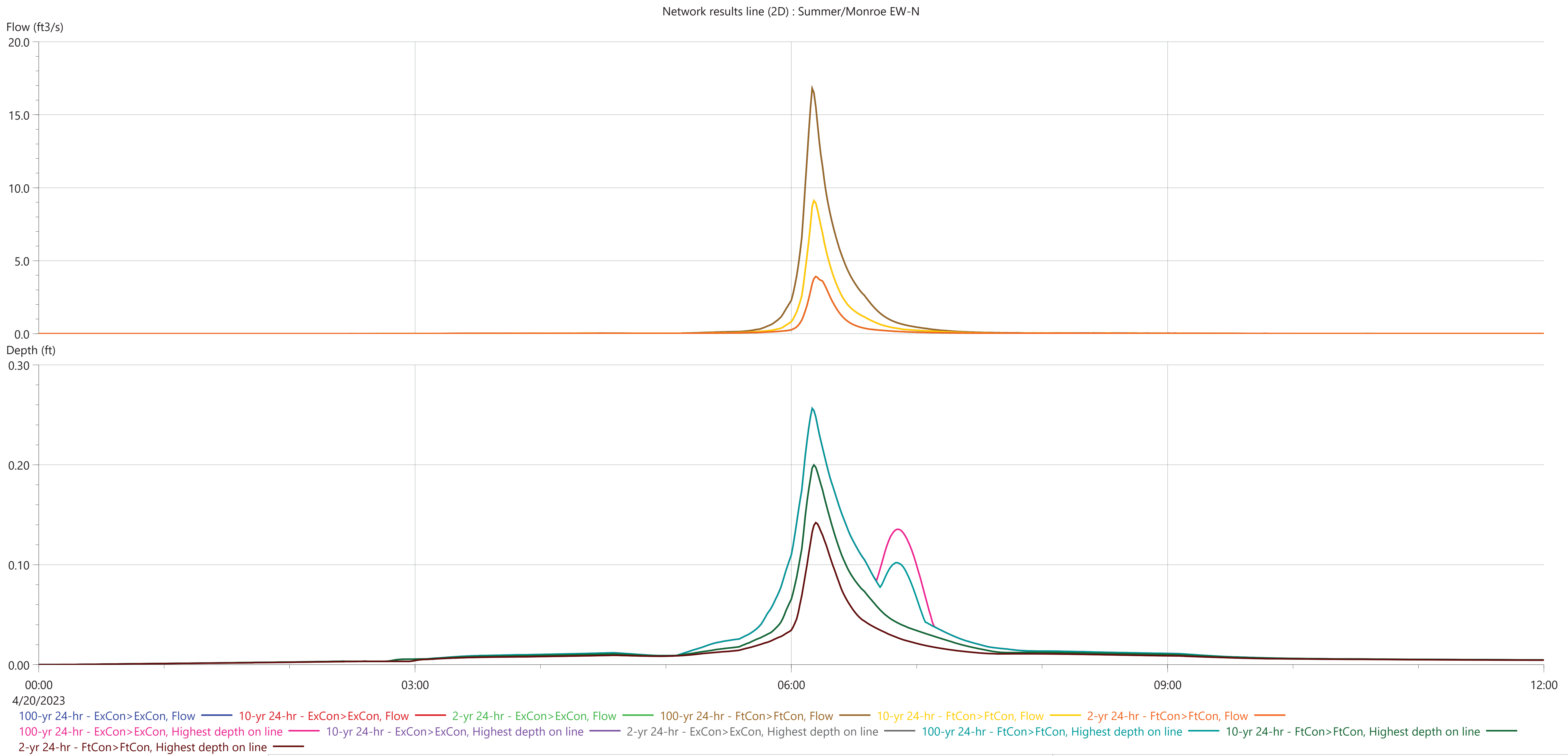

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	16.812	19765.296	0.000	0.256
10-yr 24-hr - ExCon>ExCon	0.000	9.123	10126.888	0.000	0.200
2-yr 24-hr - ExCon>ExCon	0.000	3.915	4701.892	0.000	0.142
100-yr 24-hr - FtCon>FtCon	0.000	16.812	19771.380	0.000	0.256
10-yr 24-hr - FtCon>FtCon	0.000	9.123	10128.233	0.000	0.200
2-yr 24-hr - FtCon>FtCon	0.000	3.915	4702.517	0.000	0.142

Existing Conditions (without GSI improvements) results from Network Results Lines

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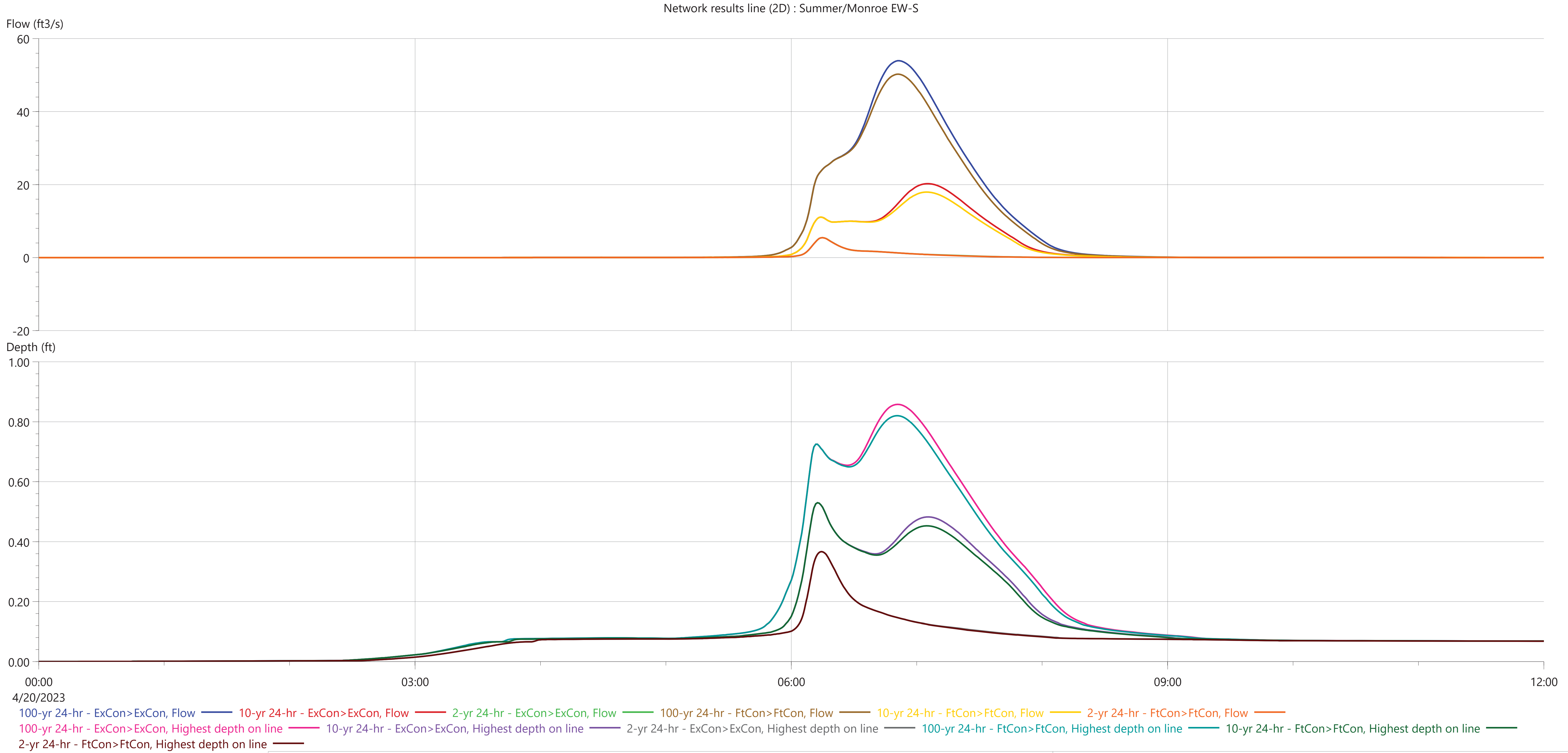

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	53.919	212361.885	0.000	0.858
10-yr 24-hr - ExCon>ExCon	-0.002	20.253	81939.505	0.000	0.530
2-yr 24-hr - ExCon>ExCon	-0.002	5.476	10161.054	0.000	0.366
100-yr 24-hr - FtCon>FtCon	0.000	50.259	198091.939	0.000	0.820
10-yr 24-hr - FtCon>FtCon	-0.002	17.950	75100.784	0.000	0.530
2-yr 24-hr - FtCon>FtCon	-0.002	5.468	10042.769	0.000	0.366

Existing Conditions (without GSI improvements) results from Network Results Lines

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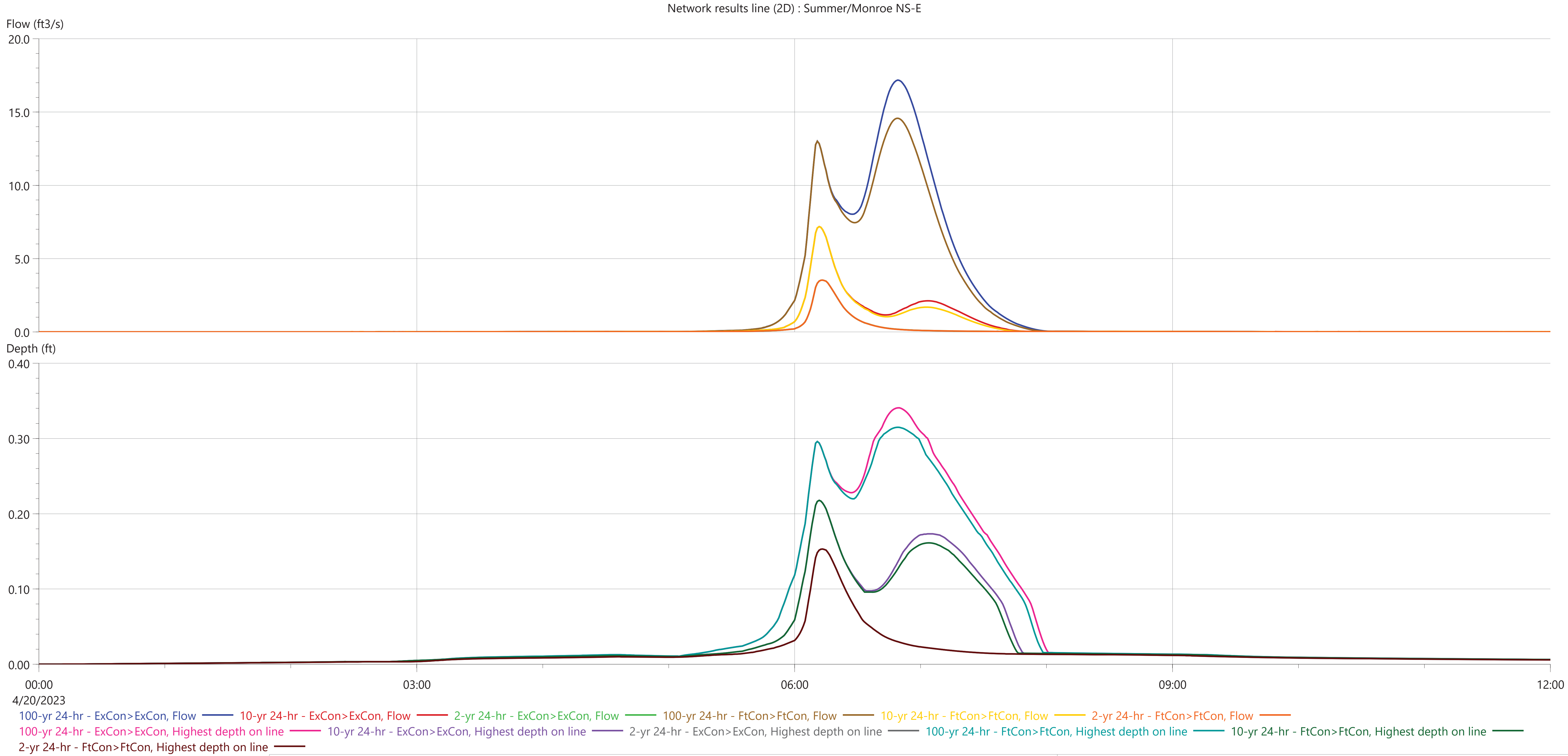

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	17.178	55927.627	0.000	0.341
10-yr 24-hr - ExCon>ExCon	0.000	7.190	13661.928	0.000	0.218
2-yr 24-hr - ExCon>ExCon	0.000	3.534	4657.975	0.000	0.153
100-yr 24-hr - FtCon>FtCon	0.000	14.571	49459.043	0.000	0.315
10-yr 24-hr - FtCon>FtCon	0.000	7.190	12633.840	0.000	0.218
2-yr 24-hr - FtCon>FtCon	0.000	3.534	4660.145	0.000	0.153

Existing Conditions (without GSI improvements) results from Network Results Lines

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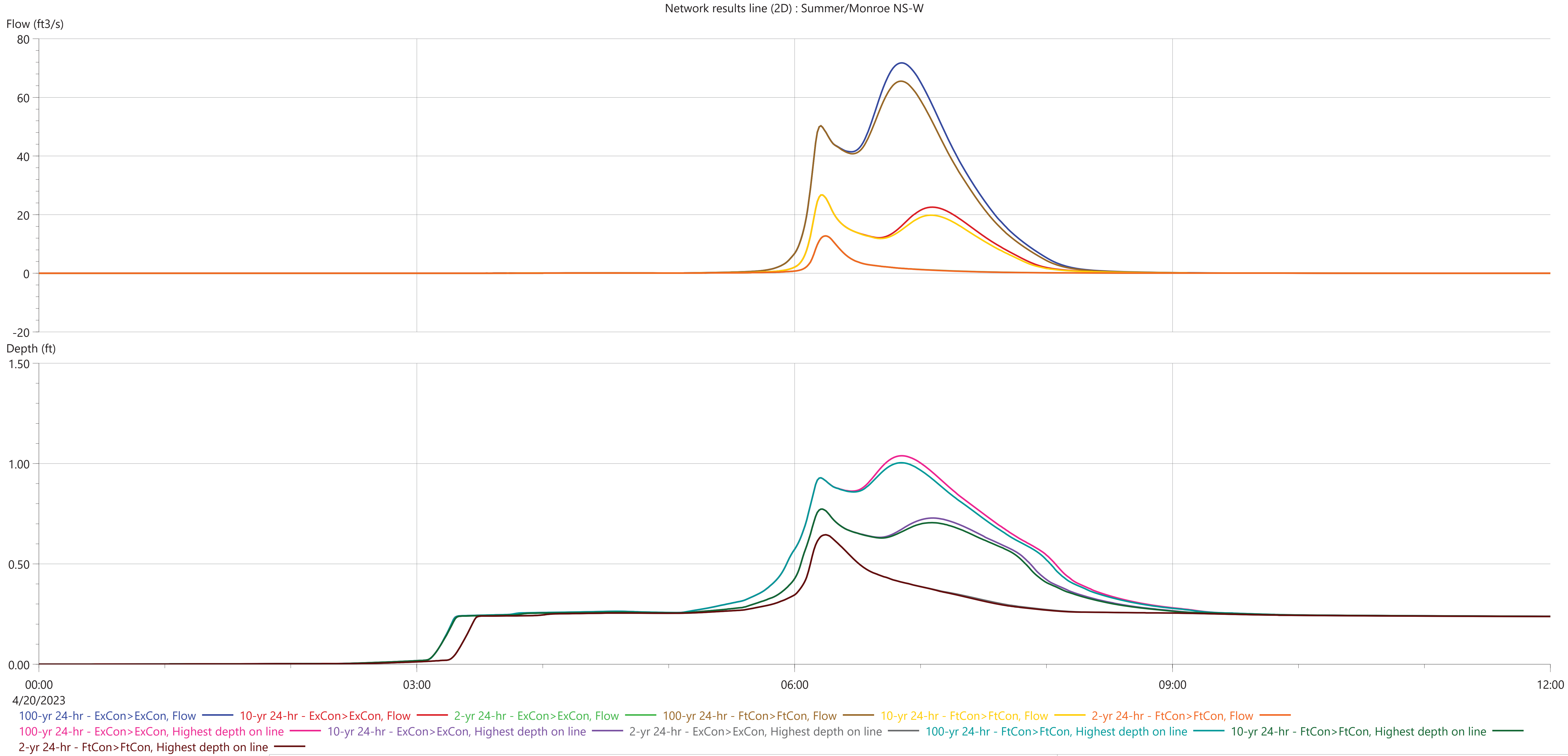

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.002	71.768	289685.625	0.000	1.039
10-yr 24-hr - ExCon>ExCon	-0.002	26.714	106711.071	0.000	0.773
2-yr 24-hr - ExCon>ExCon	-0.002	12.731	20135.367	0.000	0.645
100-yr 24-hr - FtCon>FtCon	-0.002	65.529	268959.208	0.000	1.004
10-yr 24-hr - FtCon>FtCon	-0.002	26.714	98857.279	0.000	0.773
2-yr 24-hr - FtCon>FtCon	-0.002	12.728	20018.532	0.000	0.645

Existing Conditions (without GSI improvements) results from Network Results Lines

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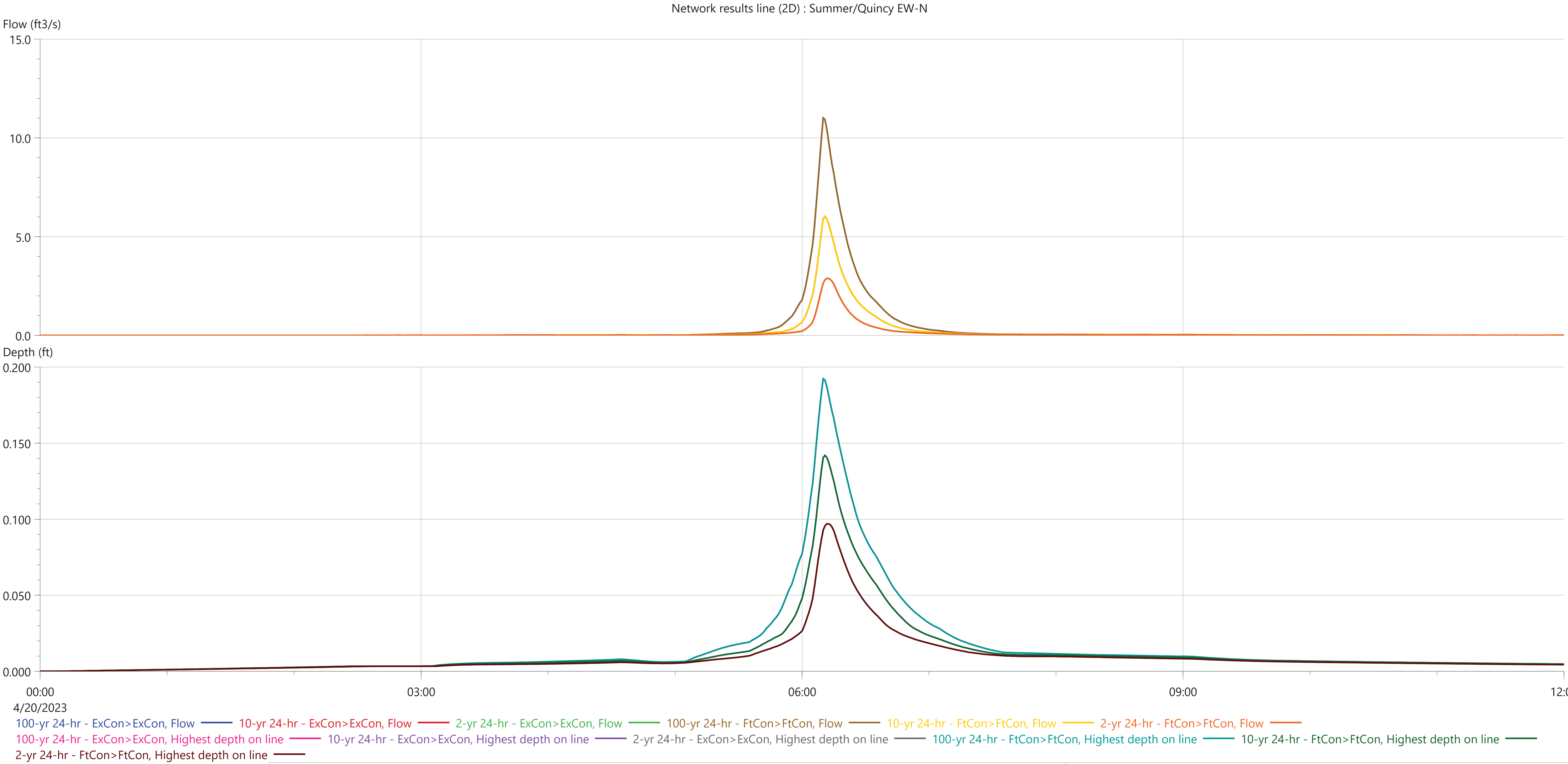

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	11.009	13877.309	0.000	0.192
10-yr 24-hr - ExCon>ExCon	0.000	6.028	7547.328	0.000	0.142
2-yr 24-hr - ExCon>ExCon	0.000	2.889	3831.016	0.000	0.097
100-yr 24-hr - FtCon>FtCon	0.000	11.009	13887.658	0.000	0.192
10-yr 24-hr - FtCon>FtCon	0.000	6.028	7546.688	0.000	0.142
2-yr 24-hr - FtCon>FtCon	0.000	2.889	3829.453	0.000	0.097

Existing Conditions (without GSI improvements) results from Network Results Lines

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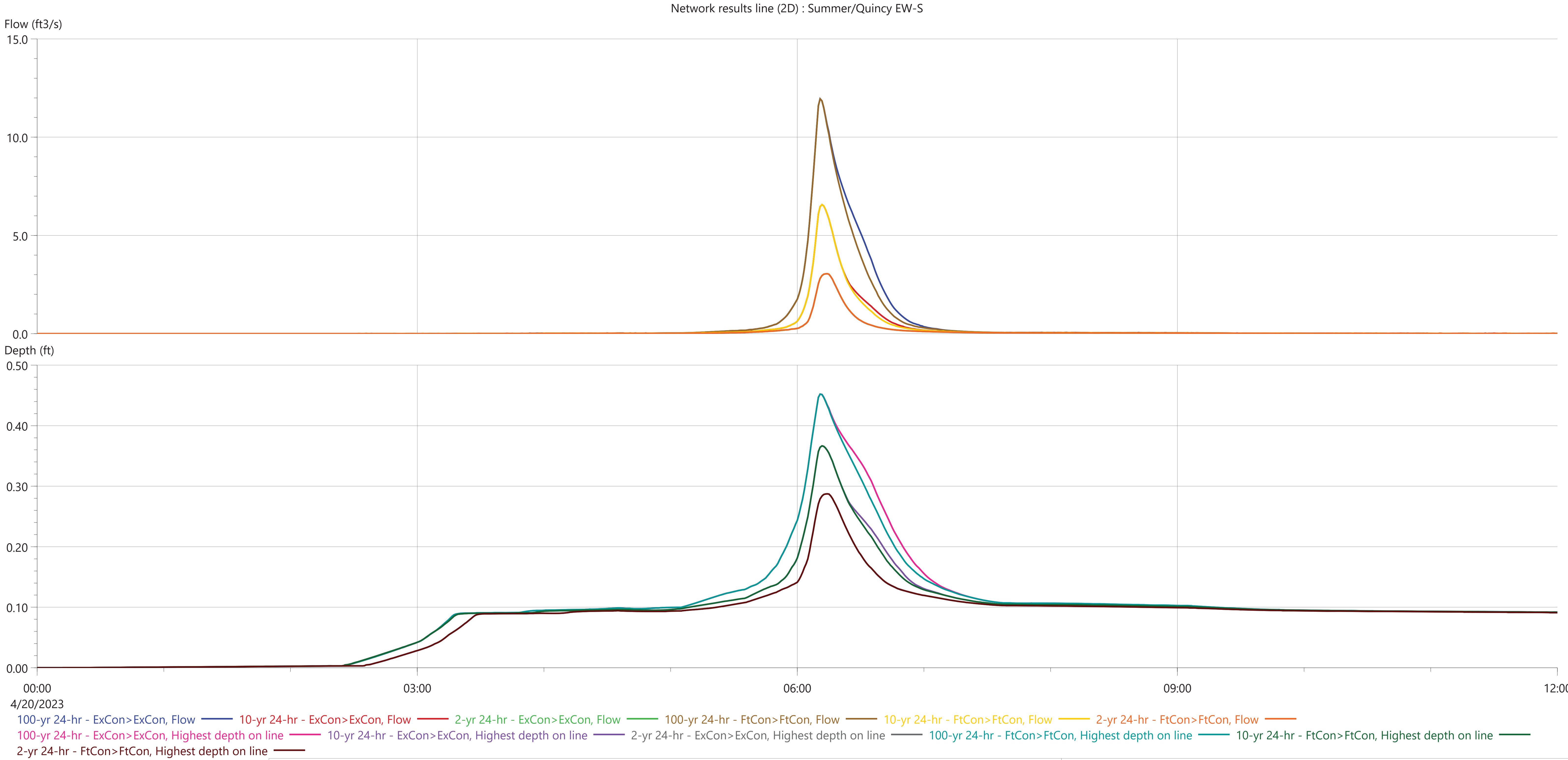

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	11.953	18672.911	0.000	0.452
10-yr 24-hr - ExCon>ExCon	0.000	6.564	8878.475	0.000	0.367
2-yr 24-hr - ExCon>ExCon	0.000	3.050	4241.352	0.000	0.287
100-yr 24-hr - FtCon>FtCon	0.000	11.949	17041.957	0.000	0.452
10-yr 24-hr - FtCon>FtCon	0.000	6.567	8575.404	0.000	0.367
2-yr 24-hr - FtCon>FtCon	0.000	3.051	4239.163	0.000	0.287

Existing Conditions (without GSI improvements) results from Network Results Lines

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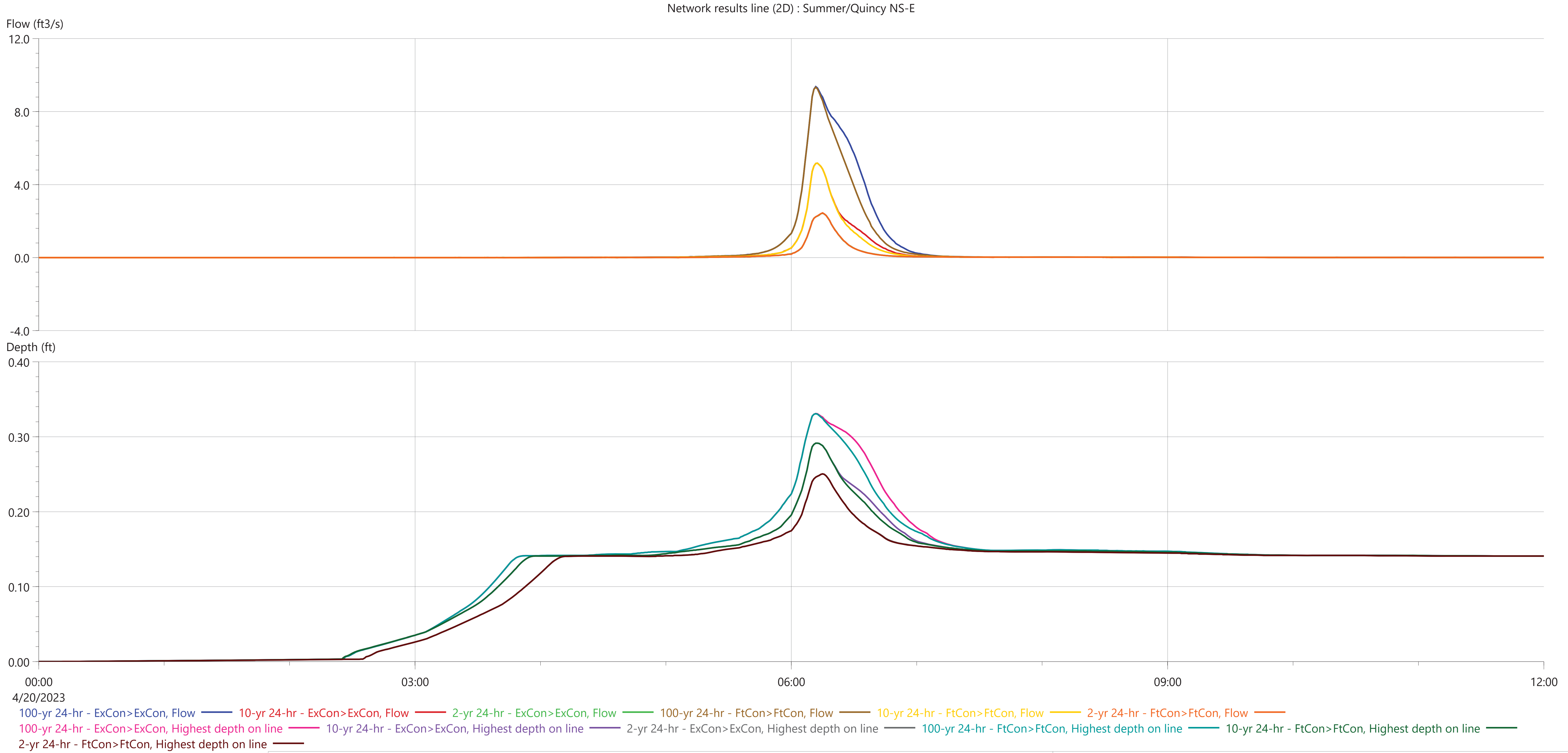

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.006	9.366	16676.091	0.000	0.331
10-yr 24-hr - ExCon>ExCon	-0.006	5.173	7064.884	0.000	0.291
2-yr 24-hr - ExCon>ExCon	-0.008	2.436	3130.355	0.000	0.251
100-yr 24-hr - FtCon>FtCon	-0.006	9.335	14266.799	0.000	0.331
10-yr 24-hr - FtCon>FtCon	-0.006	5.172	6648.869	0.000	0.291
2-yr 24-hr - FtCon>FtCon	-0.008	2.449	3123.030	0.000	0.251

Existing Conditions (without GSI improvements) results from Network Results Lines

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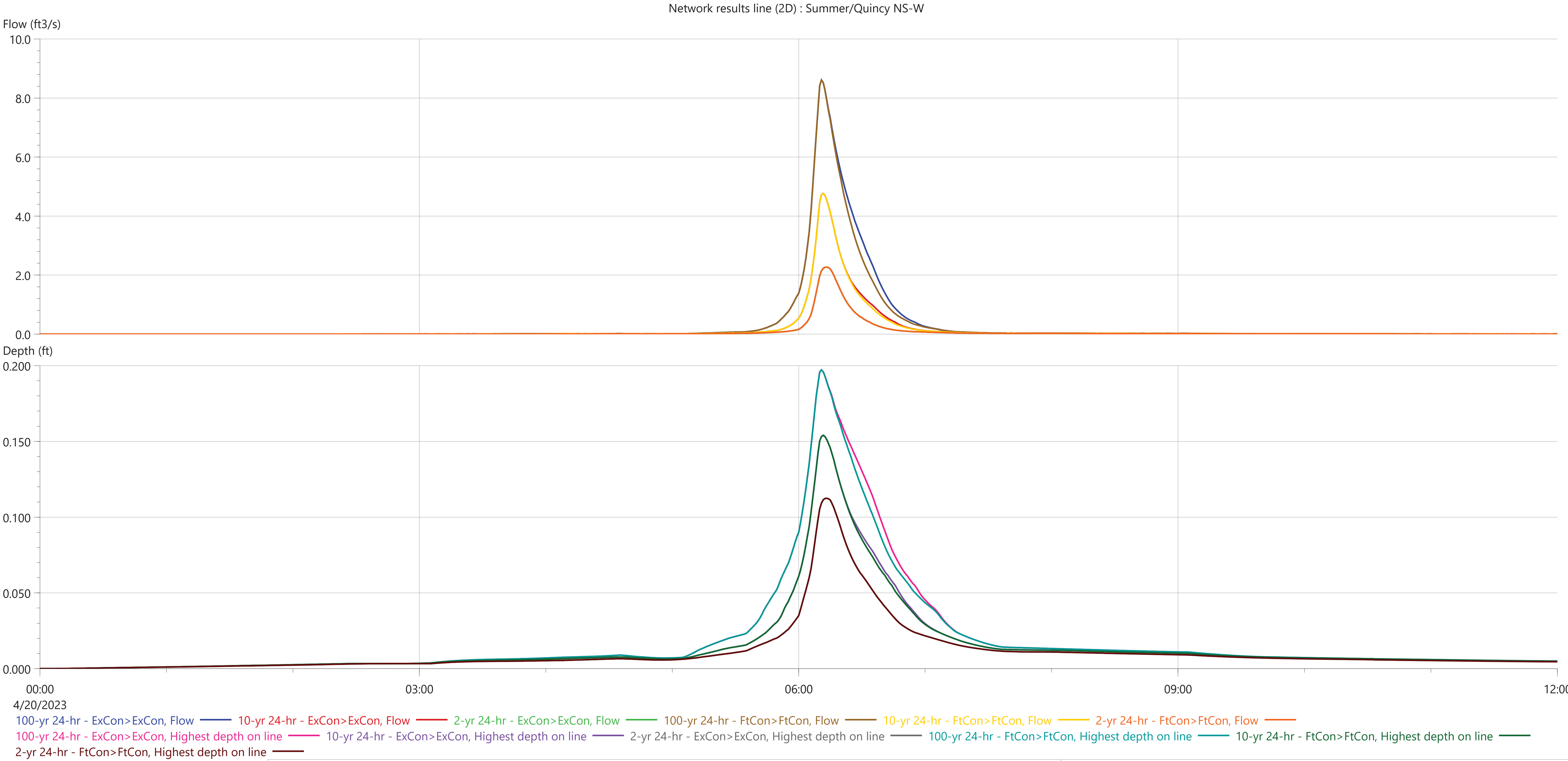

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	8.613	12879.337	0.000	0.197
10-yr 24-hr - ExCon>ExCon	0.000	4.769	6300.264	0.000	0.154
2-yr 24-hr - ExCon>ExCon	0.000	2.270	3060.566	0.000	0.112
100-yr 24-hr - FtCon>FtCon	0.000	8.610	12055.303	0.000	0.197
10-yr 24-hr - FtCon>FtCon	0.000	4.769	6171.928	0.000	0.154
2-yr 24-hr - FtCon>FtCon	0.000	2.270	3059.626	0.000	0.112

Existing Conditions (without GSI improvements) results from Network Results Lines

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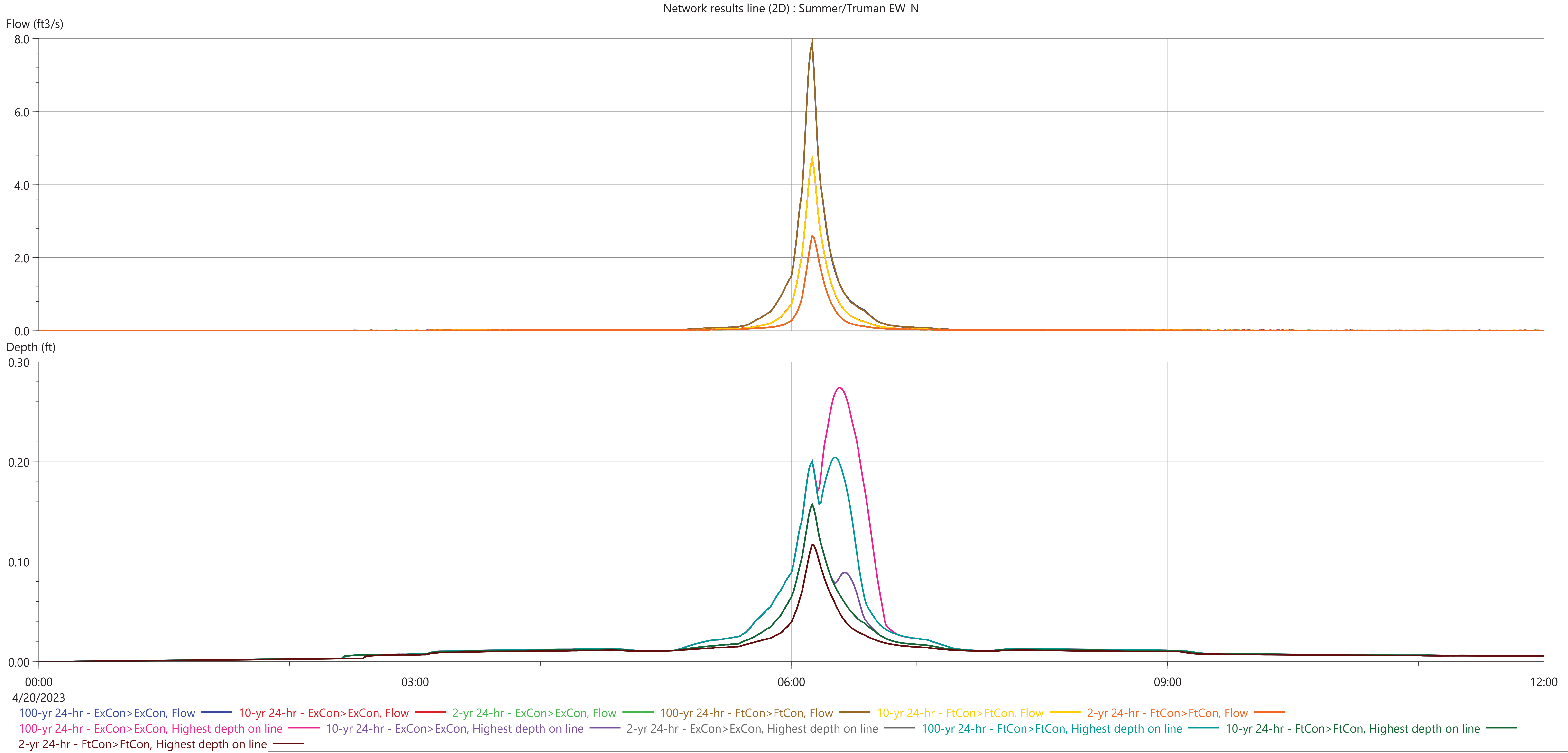

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	7.883	7507.816	0.000	0.274
10-yr 24-hr - ExCon>ExCon	0.000	4.721	4324.469	0.000	0.157
2-yr 24-hr - ExCon>ExCon	0.000	2.602	2397.136	0.000	0.117
100-yr 24-hr - FtCon>FtCon	0.000	7.885	7510.045	0.000	0.204
10-yr 24-hr - FtCon>FtCon	0.000	4.721	4326.396	0.000	0.157
2-yr 24-hr - FtCon>FtCon	0.000	2.602	2391.787	0.000	0.117

Existing Conditions (without GSI improvements) results from Network Results Lines

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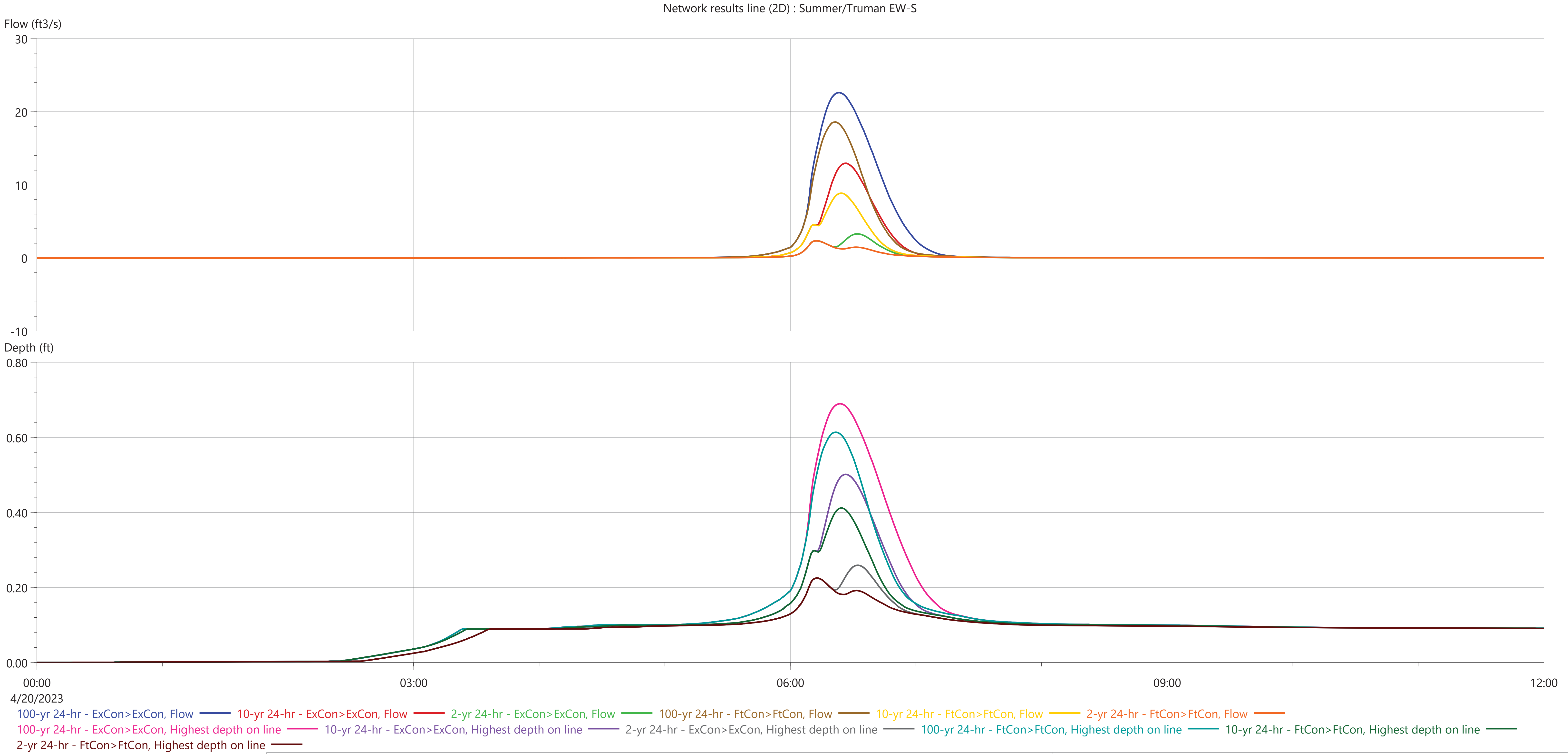

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	22.619	48026.404	0.000	0.689
10-yr 24-hr - ExCon>ExCon	-0.005	12.952	23378.466	0.000	0.501
2-yr 24-hr - ExCon>ExCon	-0.005	3.290	6732.582	0.000	0.259
100-yr 24-hr - FtCon>FtCon	-0.005	18.590	33769.020	0.000	0.614
10-yr 24-hr - FtCon>FtCon	-0.005	8.850	15445.768	0.000	0.412
2-yr 24-hr - FtCon>FtCon	0.000	2.340	4770.321	0.000	0.225

Existing Conditions (without GSI improvements) results from Network Results Lines

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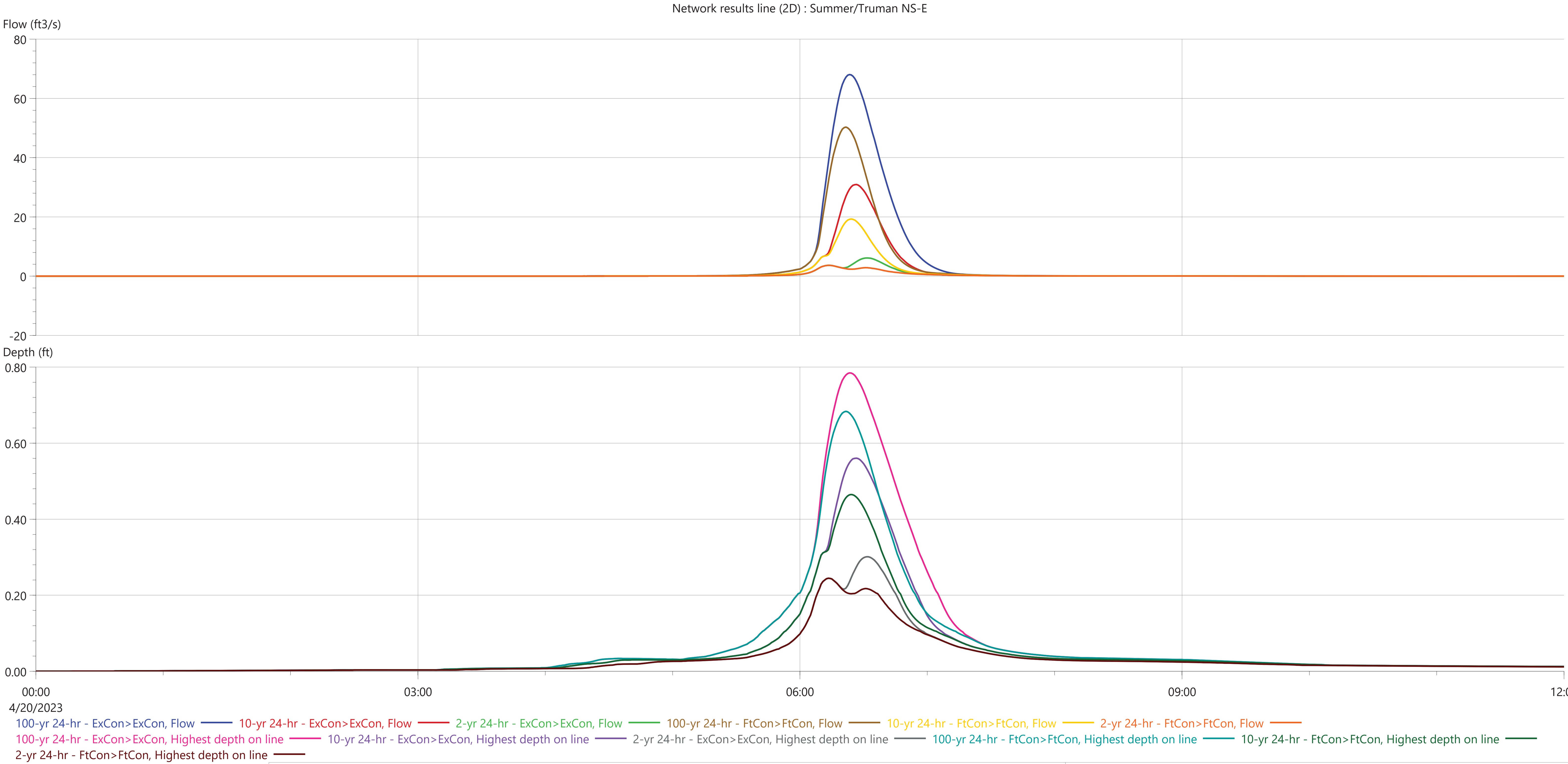

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.000	68.054	122228.087	0.000	0.785
10-yr 24-hr - ExCon>ExCon	-0.000	30.908	49968.947	0.000	0.560
2-yr 24-hr - ExCon>ExCon	-0.005	6.152	12663.998	0.000	0.301
100-yr 24-hr - FtCon>FtCon	-0.005	50.301	78421.716	0.000	0.683
10-yr 24-hr - FtCon>FtCon	-0.000	19.270	30492.106	0.000	0.465
2-yr 24-hr - FtCon>FtCon	-0.000	3.650	9094.934	0.000	0.245

Existing Conditions (without GSI improvements) results from Network Results Lines

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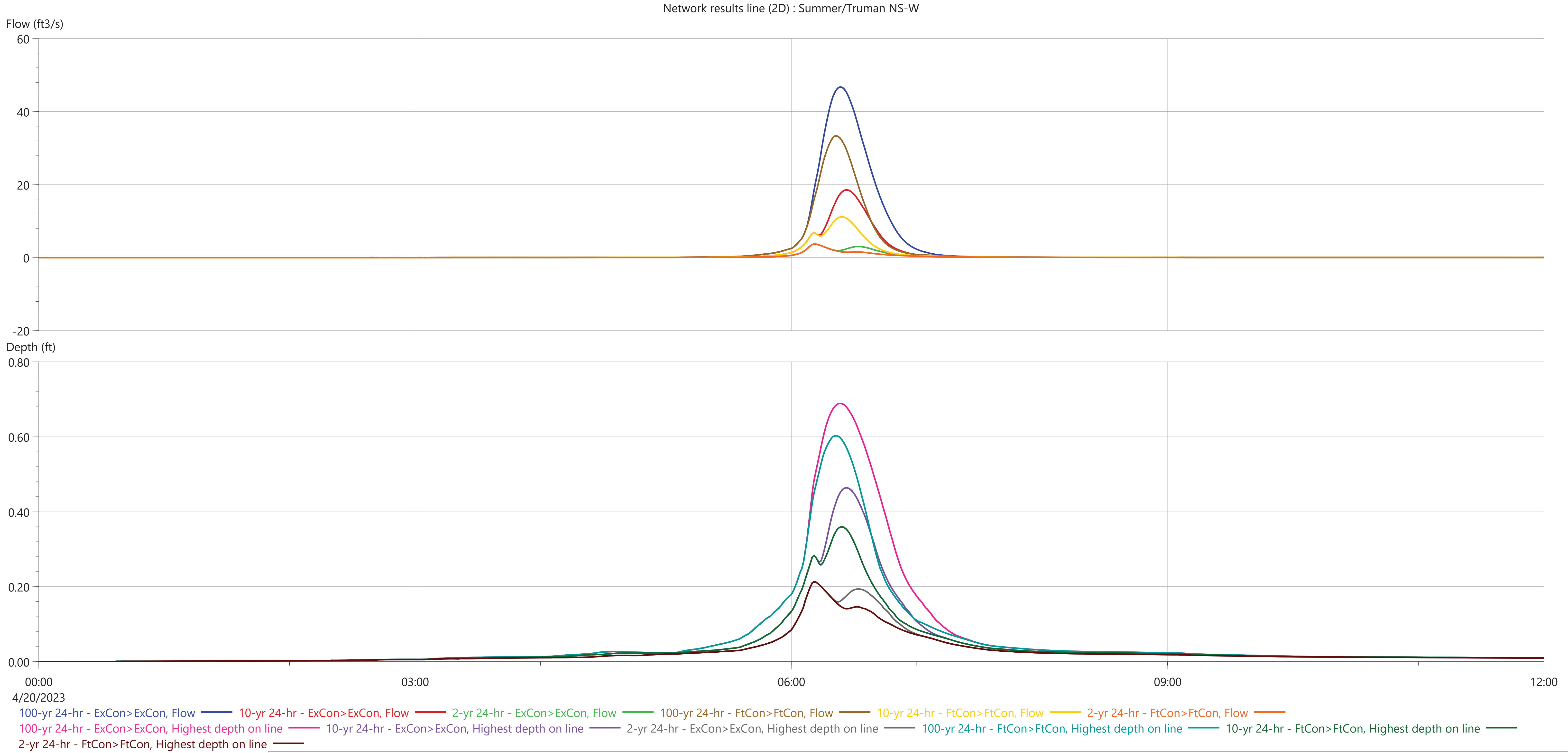

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.001	46.749	82580.031	0.000	0.689
10-yr 24-hr - ExCon>ExCon	0.000	18.543	31499.178	0.000	0.464
2-yr 24-hr - ExCon>ExCon	0.000	3.718	8703.871	0.000	0.213
100-yr 24-hr - FtCon>FtCon	0.000	33.368	53038.451	0.000	0.603
10-yr 24-hr - FtCon>FtCon	0.000	11.159	19955.929	0.000	0.359
2-yr 24-hr - FtCon>FtCon	0.000	3.718	7102.546	0.000	0.213

Existing Conditions (without GSI improvements) results from Network Results Lines

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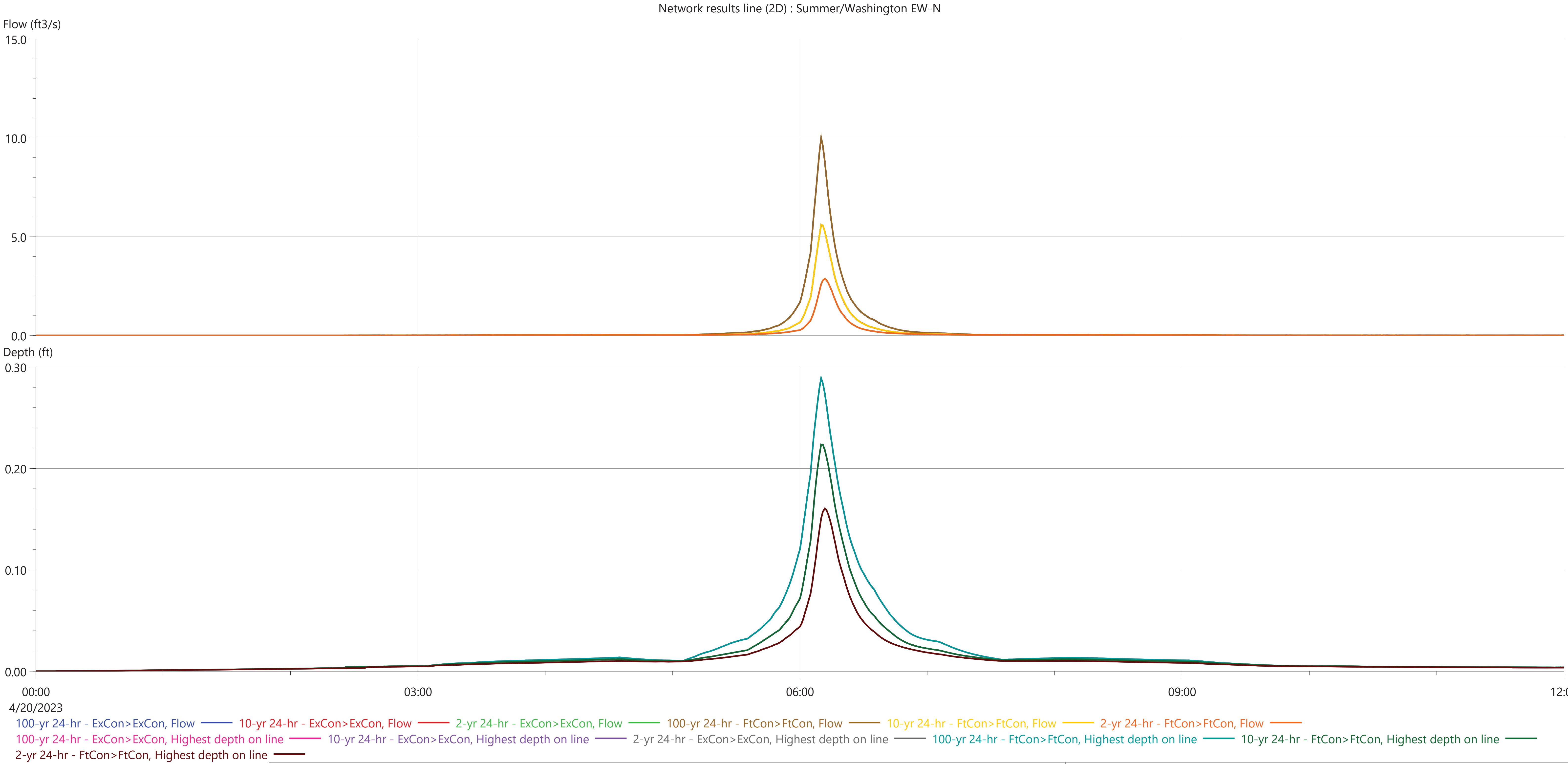

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	10.010	10045.791	0.000	0.289
10-yr 24-hr - ExCon>ExCon	0.000	5.605	5704.704	0.000	0.224
2-yr 24-hr - ExCon>ExCon	0.000	2.864	3098.844	0.000	0.160
100-yr 24-hr - FtCon>FtCon	0.000	10.010	10046.099	0.000	0.289
10-yr 24-hr - FtCon>FtCon	0.000	5.605	5699.954	0.000	0.224
2-yr 24-hr - FtCon>FtCon	0.000	2.864	3101.481	0.000	0.160

Existing Conditions (without GSI improvements) results from Network Results Lines

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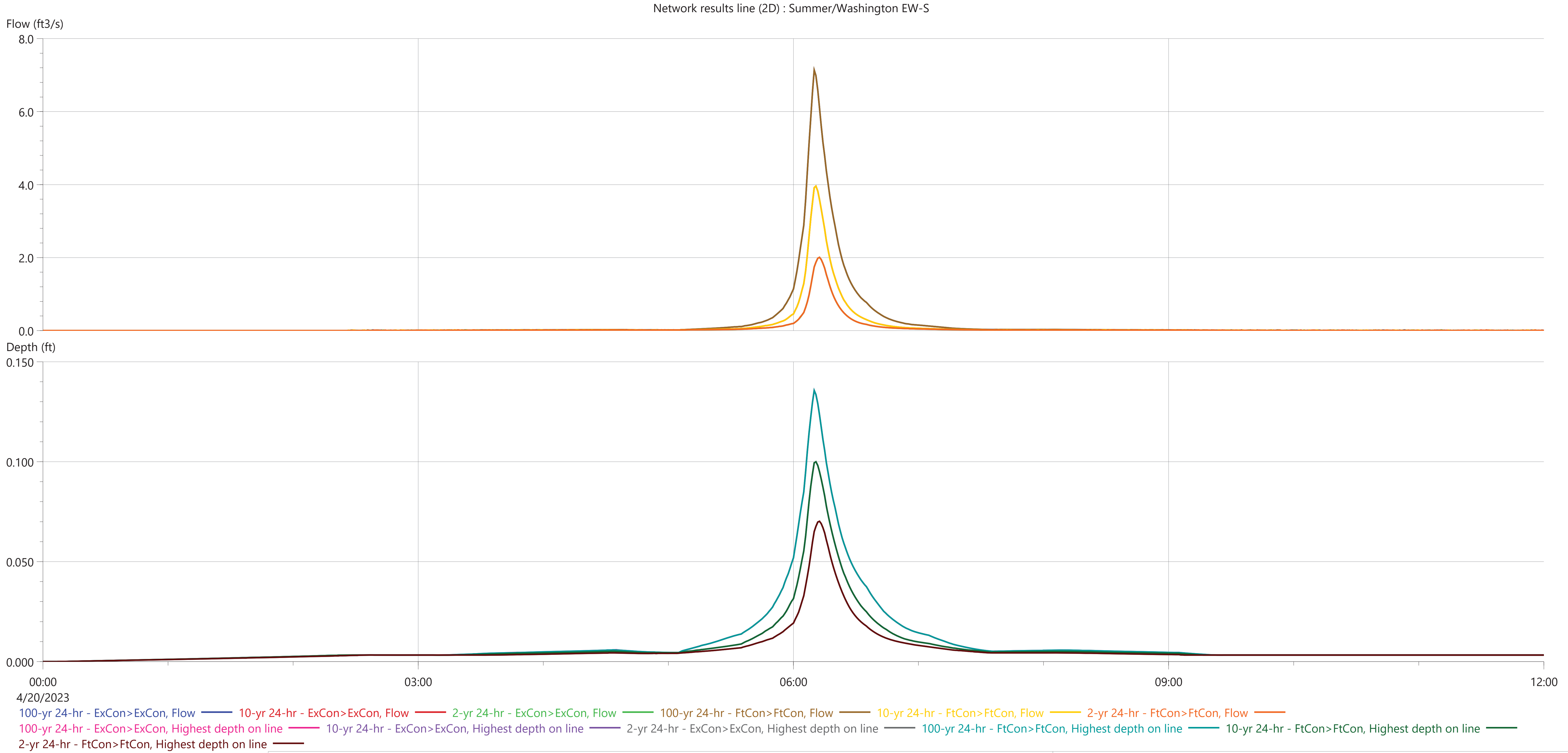

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	7.138	8085.597	0.000	0.136
10-yr 24-hr - ExCon>ExCon	0.000	3.959	4182.041	0.000	0.100
2-yr 24-hr - ExCon>ExCon	0.000	2.010	2296.458	0.000	0.070
100-yr 24-hr - FtCon>FtCon	0.000	7.138	8081.490	0.000	0.136
10-yr 24-hr - FtCon>FtCon	0.000	3.959	4184.264	0.000	0.100
2-yr 24-hr - FtCon>FtCon	0.000	2.007	2294.452	0.000	0.070

Existing Conditions (without GSI improvements) results from Network Results Lines

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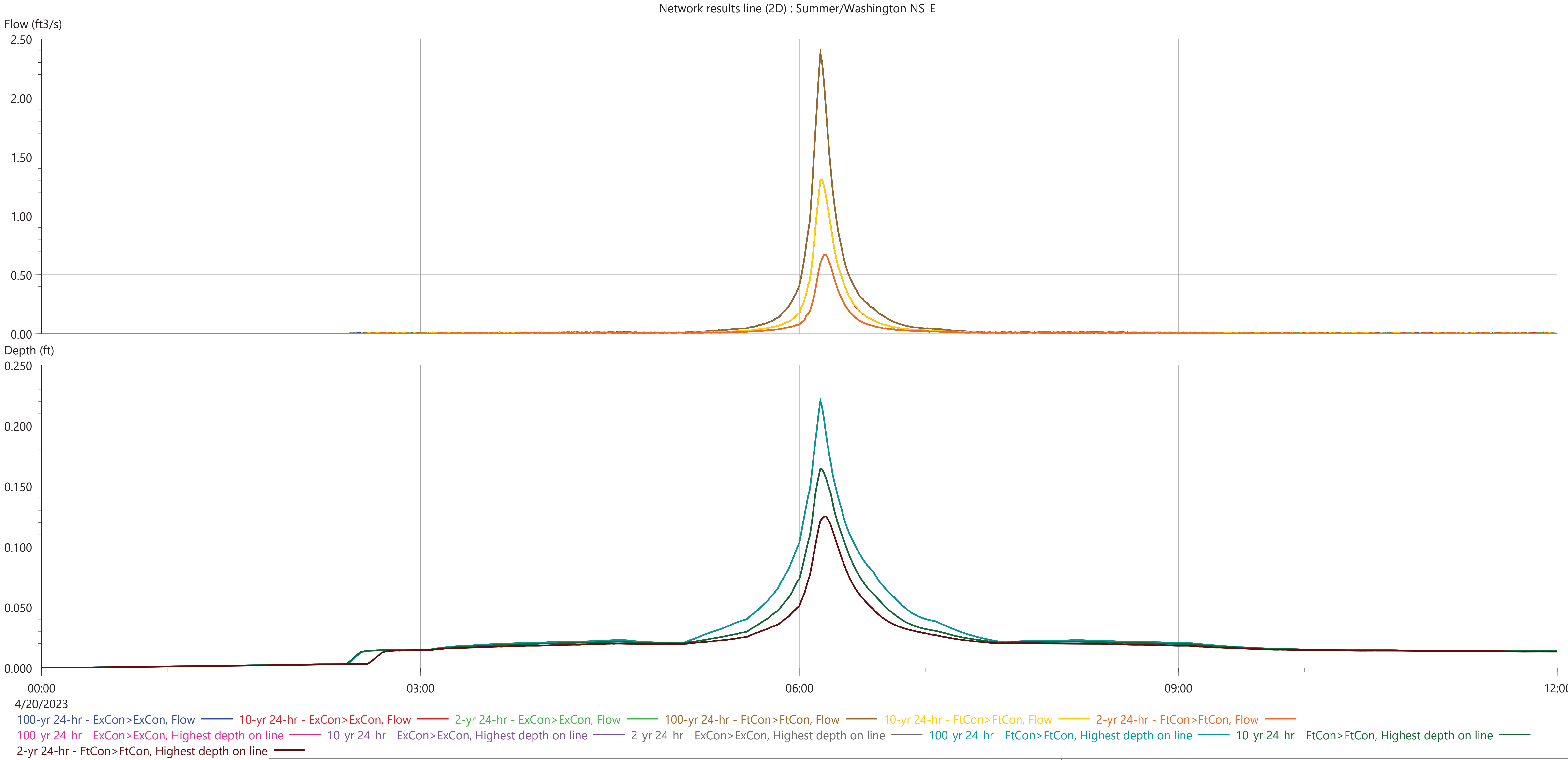

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	0.000	2.380	2547.356	0.000	0.221
10-yr 24-hr - ExCon>ExCon	0.000	1.303	1489.449	0.000	0.165
2-yr 24-hr - ExCon>ExCon	0.000	0.670	858.196	0.000	0.125
100-yr 24-hr - FtCon>FtCon	0.000	2.380	2545.792	0.000	0.221
10-yr 24-hr - FtCon>FtCon	0.000	1.303	1491.275	0.000	0.165
2-yr 24-hr - FtCon>FtCon	0.000	0.670	850.874	0.000	0.125

Existing Conditions (without GSI improvements) results from Network Results Lines

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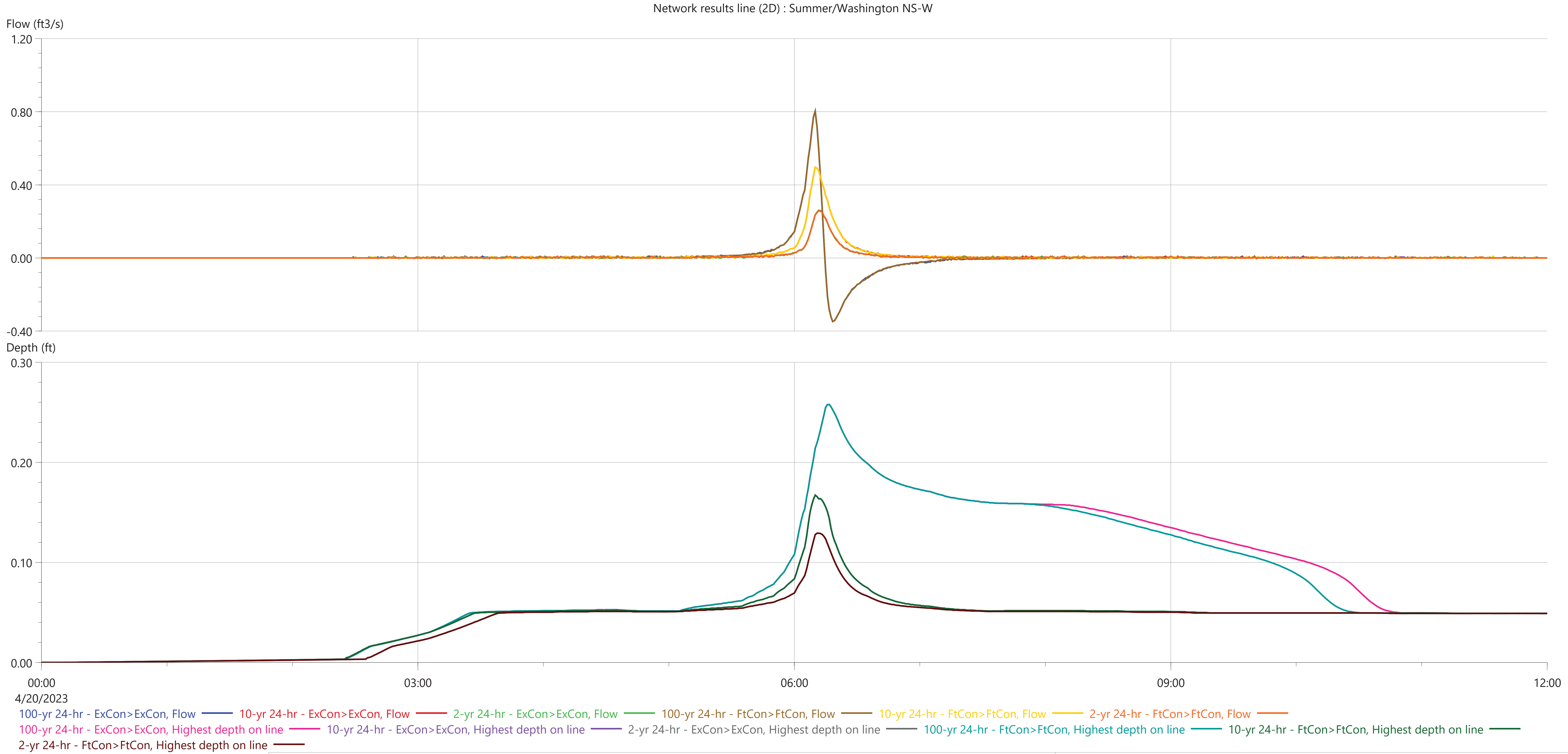

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.348	0.803	145.959	0.000	0.258
10-yr 24-hr - ExCon>ExCon	-0.002	0.496	521.080	0.000	0.167
2-yr 24-hr - ExCon>ExCon	-0.002	0.261	285.488	0.000	0.129
100-yr 24-hr - FtCon>FtCon	-0.348	0.803	151.223	0.000	0.258
10-yr 24-hr - FtCon>FtCon	-0.002	0.496	519.325	0.000	0.167
2-yr 24-hr - FtCon>FtCon	-0.002	0.259	288.556	0.000	0.129

Existing Conditions (without GSI improvements) results from Network Results Lines

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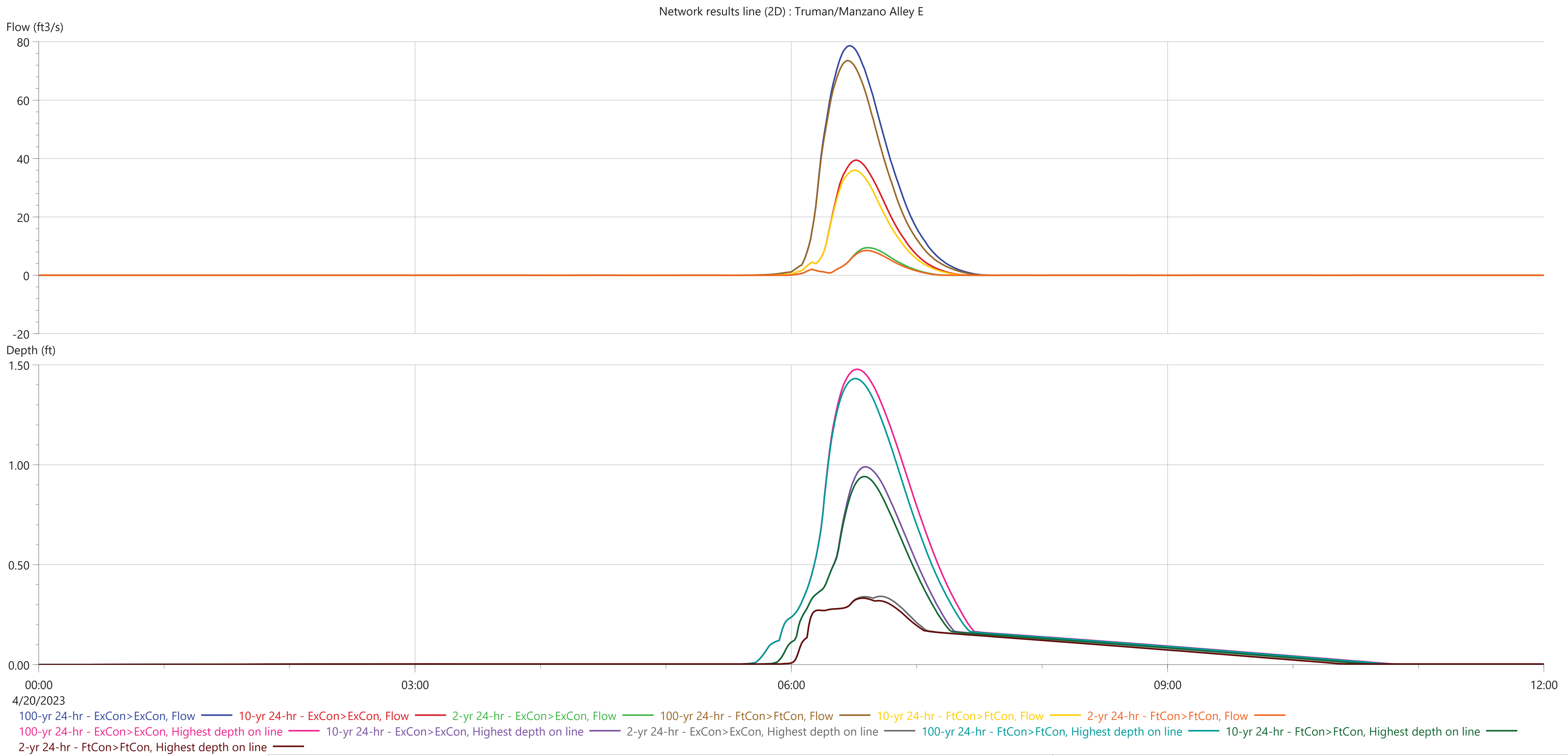

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.013	78.610	167742.034	0.000	1.478
10-yr 24-hr - ExCon>ExCon	-0.013	39.425	73692.357	0.000	0.990
2-yr 24-hr - ExCon>ExCon	-0.013	9.463	15606.359	0.000	0.342
100-yr 24-hr - FtCon>FtCon	-0.013	73.538	150577.789	0.000	1.432
10-yr 24-hr - FtCon>FtCon	-0.013	35.980	65870.957	0.000	0.941
2-yr 24-hr - FtCon>FtCon	-0.013	8.490	14069.641	0.000	0.333

Existing Conditions (without GSI improvements) results from Network Results Lines

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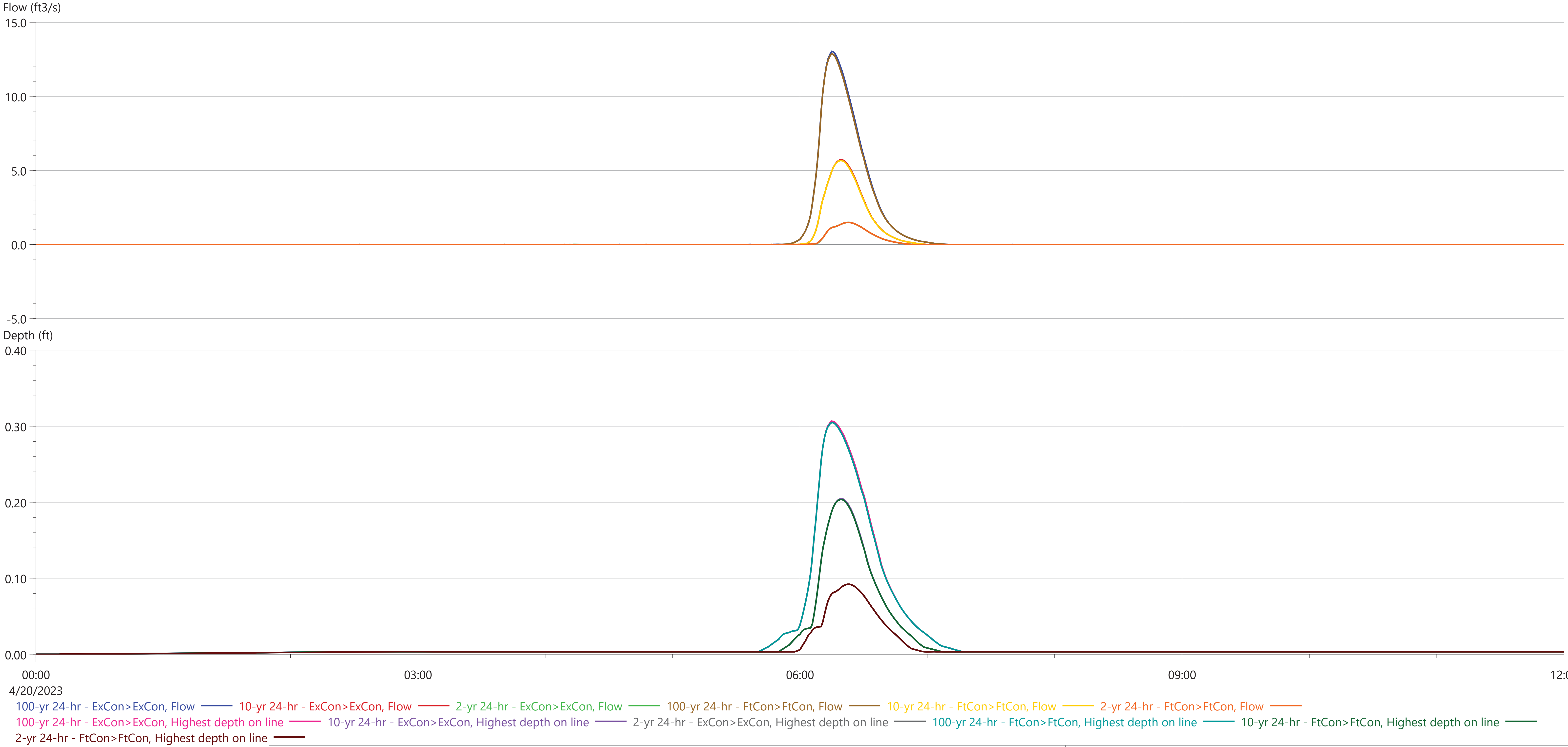
Network results line (2D) : Truman/Manzano Alley S



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.000	13.040	17452.782	0.000	0.307
10-yr 24-hr - ExCon>ExCon	-0.000	5.718	7278.449	0.000	0.205
2-yr 24-hr - ExCon>ExCon	-0.000	1.491	1961.868	0.000	0.092
100-yr 24-hr - FtCon>FtCon	-0.000	12.886	17164.137	0.000	0.305
10-yr 24-hr - FtCon>FtCon	-0.000	5.666	7218.513	0.000	0.204
2-yr 24-hr - FtCon>FtCon	-0.000	1.489	1959.858	0.000	0.092

Existing Conditions (without GSI improvements) results from Network Results Lines

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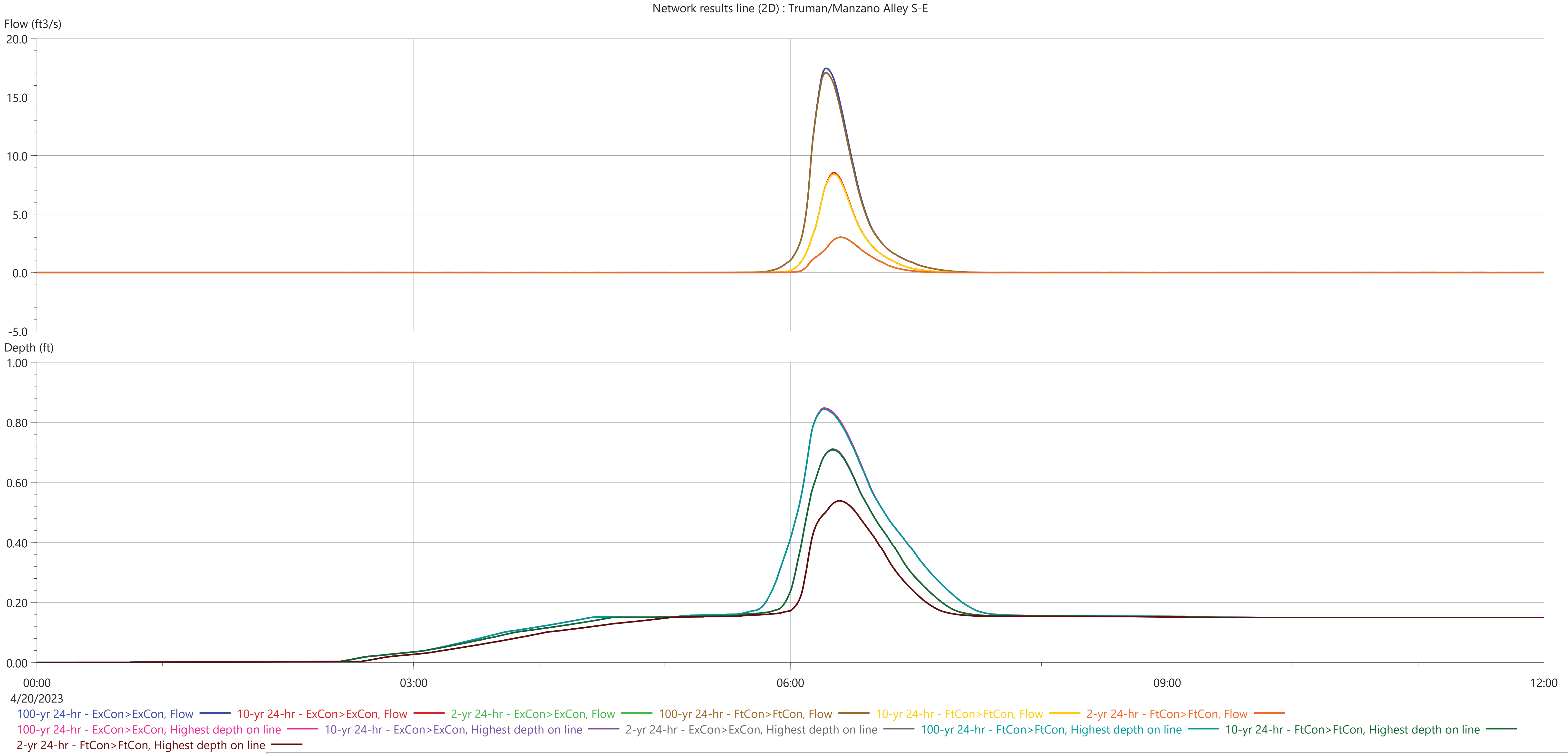

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.004	17.467	25890.844	0.000	0.847
10-yr 24-hr - ExCon>ExCon	-0.004	8.535	12023.013	0.000	0.711
2-yr 24-hr - ExCon>ExCon	-0.006	3.020	4729.198	0.000	0.539
100-yr 24-hr - FtCon>FtCon	-0.005	17.084	25384.483	0.000	0.844
10-yr 24-hr - FtCon>FtCon	-0.004	8.410	11921.855	0.000	0.708
2-yr 24-hr - FtCon>FtCon	-0.004	3.022	4733.953	0.000	0.539

Existing Conditions (without GSI improvements) results from Network Results Lines

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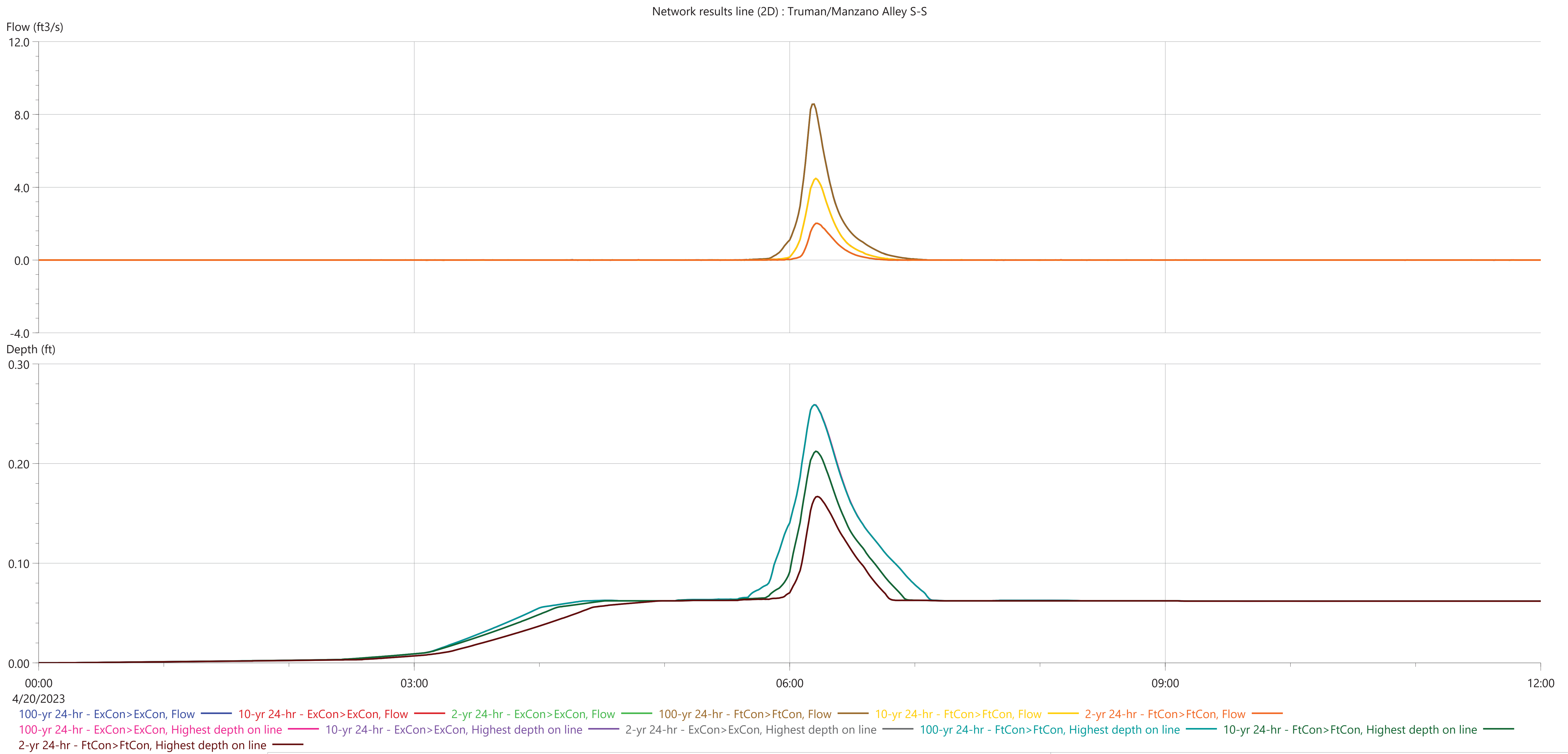

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.009	8.570	8862.040	0.000	0.259
10-yr 24-hr - ExCon>ExCon	-0.009	4.479	4366.537	0.000	0.212
2-yr 24-hr - ExCon>ExCon	-0.009	2.013	1870.109	0.000	0.167
100-yr 24-hr - FtCon>FtCon	-0.009	8.566	8856.463	0.000	0.259
10-yr 24-hr - FtCon>FtCon	-0.009	4.479	4364.918	0.000	0.212
2-yr 24-hr - FtCon>FtCon	-0.009	2.013	1868.675	0.000	0.167

Existing Conditions (without GSI improvements) results from Network Results Lines

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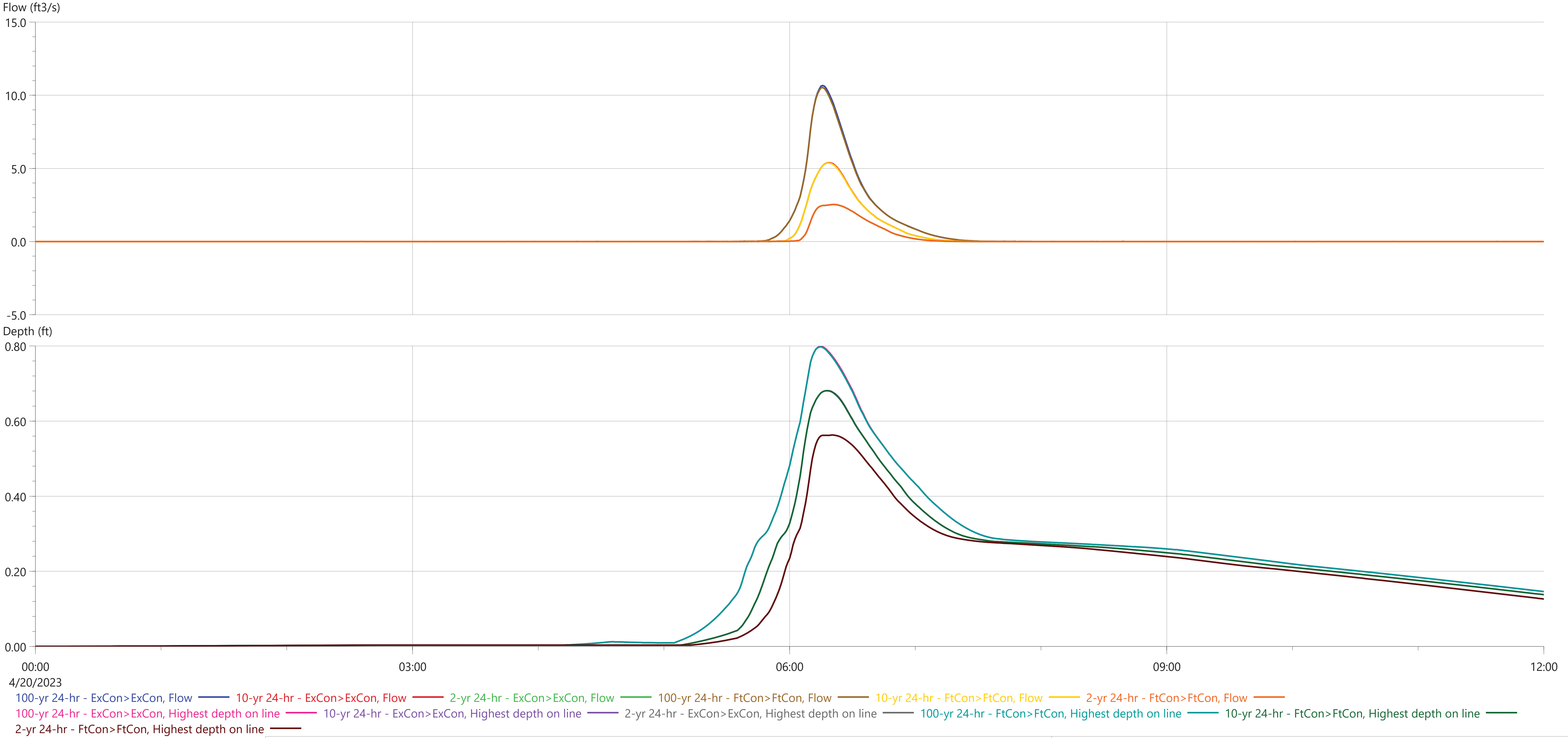
Network results line (2D) : Truman/Manzano Alley S-W



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
100-yr 24-hr - ExCon>ExCon	-0.001	10.663	17894.708	0.000	0.800
10-yr 24-hr - ExCon>ExCon	-0.001	5.385	9426.754	0.000	0.681
2-yr 24-hr - ExCon>ExCon	-0.001	2.533	4770.192	0.000	0.563
100-yr 24-hr - FtCon>FtCon	-0.001	10.528	17679.167	0.000	0.798
10-yr 24-hr - FtCon>FtCon	-0.001	5.363	9390.452	0.000	0.681
2-yr 24-hr - FtCon>FtCon	-0.001	2.529	4775.541	0.000	0.563

Existing Conditions (without GSI improvements) results from Network Results Lines

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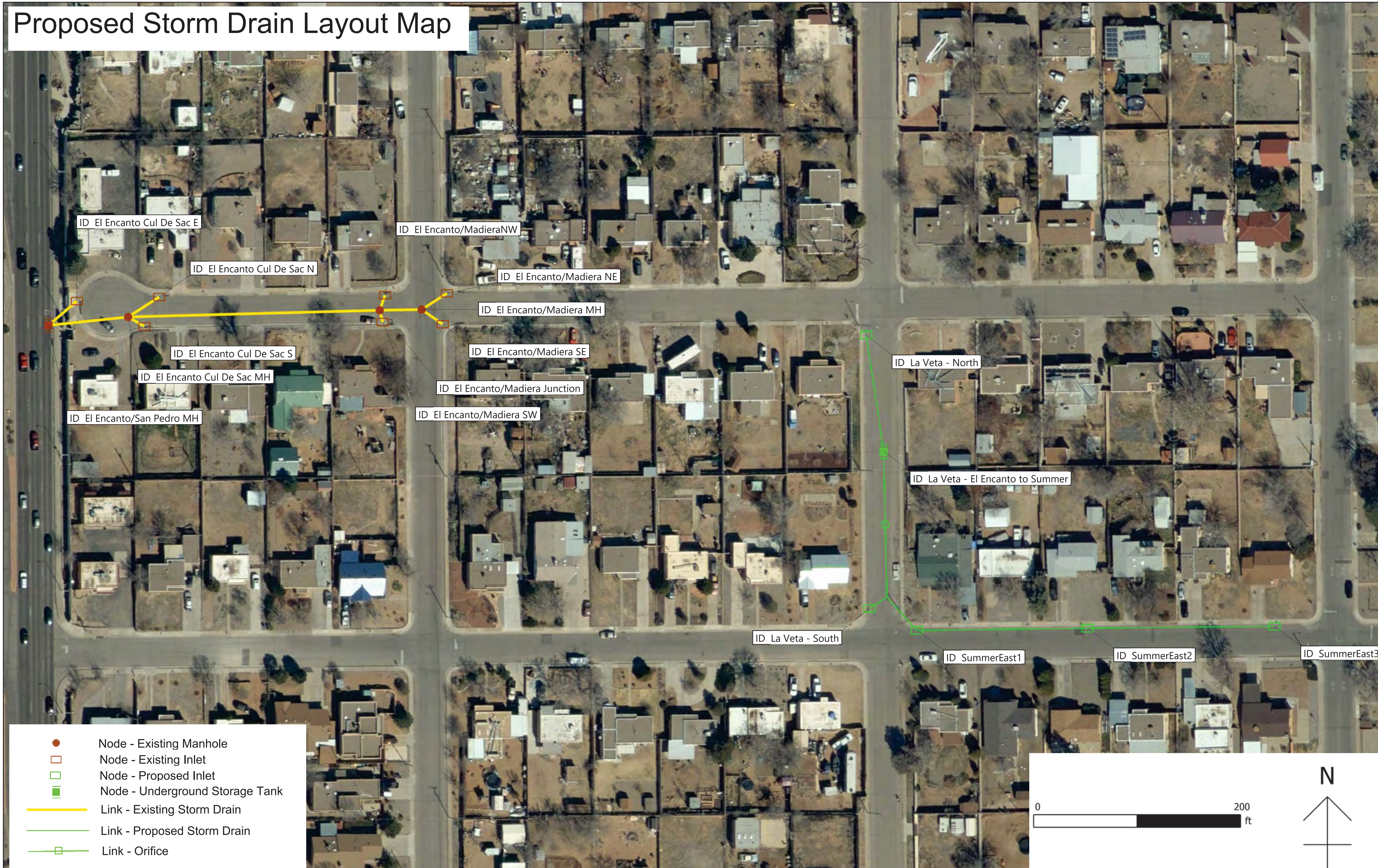
Proposed Storm Drain Layout Map

Proposed Storm Drain Layout Map



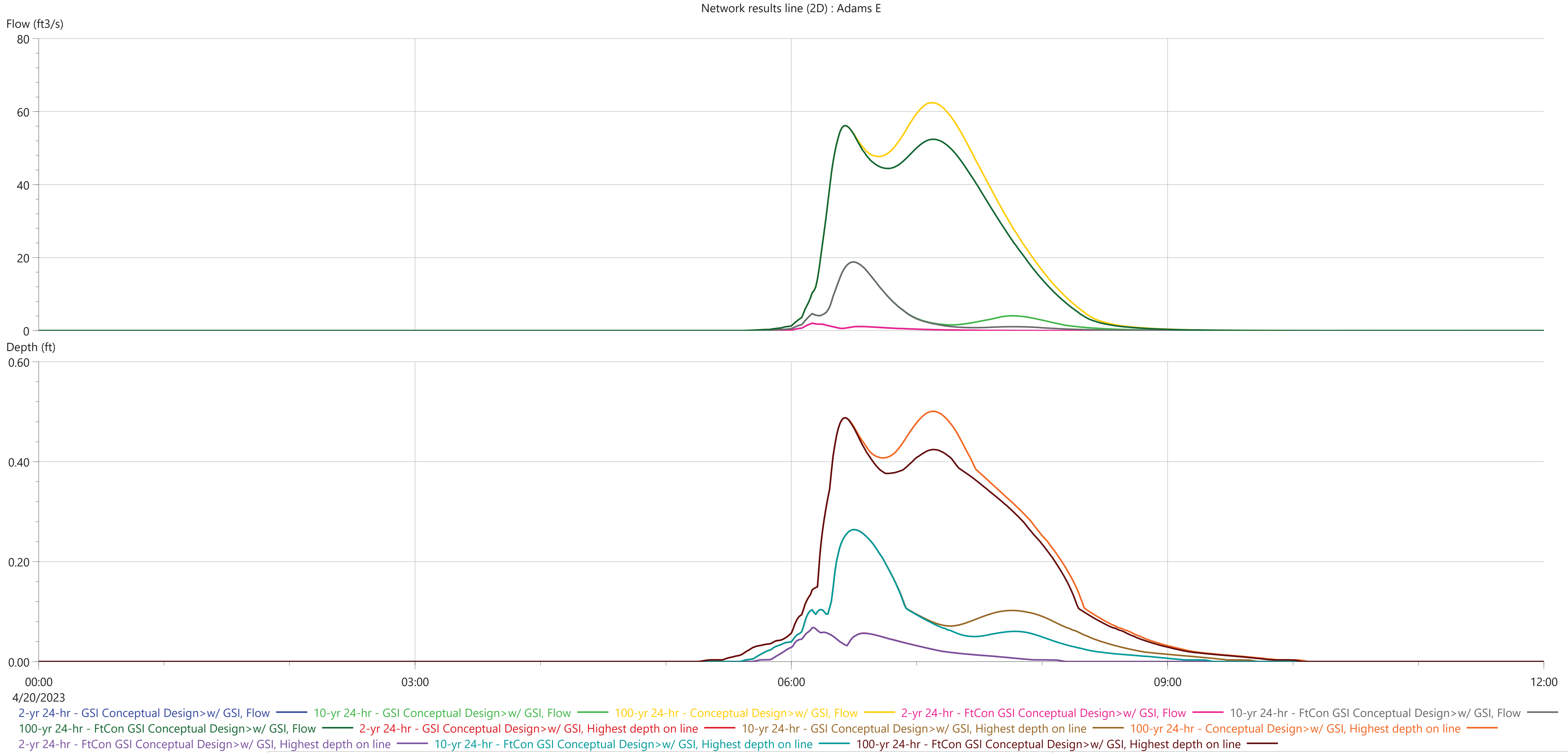
Proposed Conditions (with GSI Improvements) Node Results

Node ID (Inlets Only)	Cumulative flow from 2D zone (cfs)*						Cumulative flooding onto 2D zone (cfs)					
	100-yr		10-yr		2-yr		100-yr		10-yr		2-yr	
	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI
Adams E	-14.7	-15.1	-12.1	-15.6	0.2	0.2	14.7	15.1	12.1	15.6	0.1	0.1
Adams W	31.9	32.0	19.9	19.9	9.4	9.4	0.6	0.1	0.0	0.0	0.1	0.1
El Encanto Cul De Sac E	21.2	20.8	20.4	19.6	19.6	15.2	0.1	0.1	0.1	0.1	0.1	0.1
El Encanto Cul De Sac N	11.3	11.4	11.3	10.7	10.7	9.8	0.0	0.0	0.0	0.0	0.0	0.0
El Encanto Cul De Sac S	-4.1	-4.2	-5.8	-4.8	-4.6	-8.5	4.1	4.2	5.8	4.8	4.6	8.5
El Encanto/Madiera Junction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
El Encanto/Madiera NE	8.5	9.3	8.9	8.2	8.5	3.8	0.1	0.1	0.1	0.1	0.0	0.1
El Encanto/Madiera SE	9.3	10.0	11.4	2.6	2.5	0.9	0.1	0.1	0.1	0.1	0.1	0.1
El Encanto/Madiera SW	-3.9	-3.9	-3.7	-0.9	-1.7	0.0	3.9	3.9	3.7	0.9	1.7	0.0
El Encanto/MadieraNW	20.2	22.4	21.8	20.6	22.7	13.6	0.1	0.8	0.1	0.1	0.1	0.1
Jefferson E	-5.0	-5.0	-4.7	-4.7	3.6	3.4	5.0	5.0	4.7	4.7	2.7	2.6
Jefferson W	8.0	6.8	7.3	7.5	10.0	9.3	3.5	0.0	0.0	0.0	0.0	0.0
La Veta - North	-41.8	-41.1	-41.3	-46.1	-41.5	-37.8	41.8	41.1	41.3	46.1	41.5	37.8
La Veta - South	1.9	38.8	-5.9	35.3	25.3	5.0	1.7	3.3	5.9	0.3	4.5	1.2
Manzano E	8.2	8.2	8.0	8.0	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
Manzano W	13.2	13.4	12.2	12.2	6.2	6.2	0.4	1.2	1.4	5.8	0.0	0.0
Monroe to Quincy - Inlet	16.1	13.7	5.8	5.8	2.9	2.9	3.2	3.1	3.2	3.0	0.0	0.0
Quincy E	5.6	-17.6	-7.0	-6.3	2.3	2.3	2.7	17.6	7.0	6.3	0.0	0.0
Quincy to Manzano - Inlet	11.7	11.7	-10.3	6.1	2.8	2.8	4.3	5.8	10.3	3.0	0.0	0.0
Qunicy W	-10.4	-10.8	-29.9	-25.5	-5.4	-5.2	10.4	10.8	29.9	25.5	5.4	5.2
Summer/Adams SE	13.6	13.6	5.2	5.2	2.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0
Summer/Jefferson SE	5.9	6.0	6.3	6.1	2.0	2.0	0.0	0.0	0.1	0.1	0.0	0.0
Summer/Madison NW	11.7	11.7	5.0	5.0	0.0	-0.1	0.8	9.8	1.0	2.0	0.0	0.1
Summer/Madison SE	11.7	11.6	11.9	11.9	8.8	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Summer/Madison SW	11.3	11.3	11.9	11.4	10.5	10.5	0.0	0.0	0.0	0.0	0.0	0.0
Summer/Manzano Inlet	27.4	24.7	16.5	11.1	5.4	5.6	0.0	0.0	0.0	0.0	0.0	0.0
SummerEast1	21.1	-50.5	20.0	28.9	23.6	17.4	0.0	50.5	0.0	16.3	14.0	0.0
SummerEast2	11.5	14.4	12.4	13.0	14.5	12.9	0.0	0.1	0.0	1.0	0.6	0.0
SummerEast3	21.1	25.2	21.3	21.8	21.4	21.8	0.0	0.0	0.0	0.0	0.0	0.0
Truman	20.8	20.8	20.7	20.8	19.6	19.7	0.0	0.0	0.0	0.0	0.0	0.0
Truman/Manzano Alley	18.6	18.4	13.7	13.5	0.7	0.7	7.0	10.1	6.2	3.5	0.0	0.0
*Flow from 2D zone is "net" flow												

Proposed Conditions (with GSI Improvements) Node Results

Node ID (Inlets Only)	Cumulative flow from 2D zone (ft^3)*						Cumulative flooding onto 2D zone (ft^3)					
	100-yr		10-yr		2-yr		100-yr		10-yr		2-yr	
	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI	PropCon	FtCon w/ GSI
Adams E	-98977	-95529	-70939	-64984	423	426	101484	98063	72325	66291	8	4
Adams W	115958	116536	96481	89663	12000	11991	8	8	8	9	1	2
El Encanto Cul De Sac E	98565	52233	73299	34503	48595	18150	177	4	8	28	44	8
El Encanto Cul De Sac N	118140	56929	98594	45108	77527	31192	0	0	0	0	0	0
El Encanto Cul De Sac S	-10158	-7648	-11078	-5463	-8466	-3654	10722	8086	11621	5922	9019	3673
El Encanto/Madiera NE	46245	23998	41368	19703	35036	9692	3	7	4	6	2	4
El Encanto/Madiera SE	29951	14827	21147	3557	5612	925	1	4	2	5	3	1
El Encanto/Madiera SW	-7944	-3470	-4732	-254	-206	10	8065	3573	4815	297	342	0
El Encanto/MadieraNW	100260	50397	83059	43107	68666	36755	4	4	7	7	10	6
Jefferson E	-33638	-32835	-21327	-17972	-277	-173	34095	33282	21579	18088	1214	1218
Jefferson W	29962	29569	27779	27485	13261	13165	4	0	0	0	0	0
La Veta - North	-357883	-143218	-289056	-107896	-219215	-71215	358232	146789	289557	111673	220160	73030
La Veta - South	4144	9543	5364	10826	6349	4593	641	17	188	5	94	77
Manzano E	32452	32113	28440	27760	5776	5739	0	0	0	0	0	0
Manzano W	28126	28033	26668	26567	13217	13143	1	9	11	25	0	0
Monroe to Quincy - Inlet	-7849	-7561	-5169	-4904	3478	3478	20460	20085	14166	13156	0	0
Quincy E	-1530	-2479	899	718	9045	8808	11622	12619	8911	9170	3	4
Quincy to Manzano - Inlet	-3430	-1891	429	2242	2589	2586	11885	10397	5672	3754	0	0
Qunicy W	-53177	-51598	-43226	-41444	-4446	-3619	58392	56767	48479	46690	9415	8620
Summer/Adams SE	37298	30354	4908	4908	1903	1903	0	0	0	0	0	0
Summer/Jefferson SE	34359	34102	22561	16618	1869	1869	3	3	16	4	0	5
Summer/Madison NW	6795	6787	2987	2273	15	15	5068	5068	3077	2675	0	1
Summer/Madison SE	79966	79281	77059	78239	15488	15017	0	0	0	0	0	0
Summer/Madison SW	82476	81372	64202	59563	13268	13261	0	0	0	0	0	0
Summer/Manzano Inlet	39831	34784	28807	21870	8273	7549	0	0	0	0	0	0
SummerEast1	107627	51836	78779	37573	56893	18870	0	114	0	100	118	0
SummerEast2	43878	21642	39272	18896	32820	20621	0	1	0	15	3	0
SummerEast3	242833	100544	206031	81177	163854	67622	0	0	0	0	0	0
Truman	87354	87239	78451	78701	69985	69350	6	5	7	7	5	9
Truman/Manzano Alley	-5186	-2337	-44	3999	959	882	12828	10025	6919	3377	0	0

*Flow from 2D zone is "net" flow



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.054	3857.338	0.000	0.068
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	18.811	46247.661	0.000	0.264
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	62.436	315960.165	0.000	0.501
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.052	3856.216	0.000	0.068
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	18.810	38429.673	0.000	0.264
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	56.157	282814.087	0.000	0.488

Proposed Conditions (with GSI improvements) results from Network Results Lines

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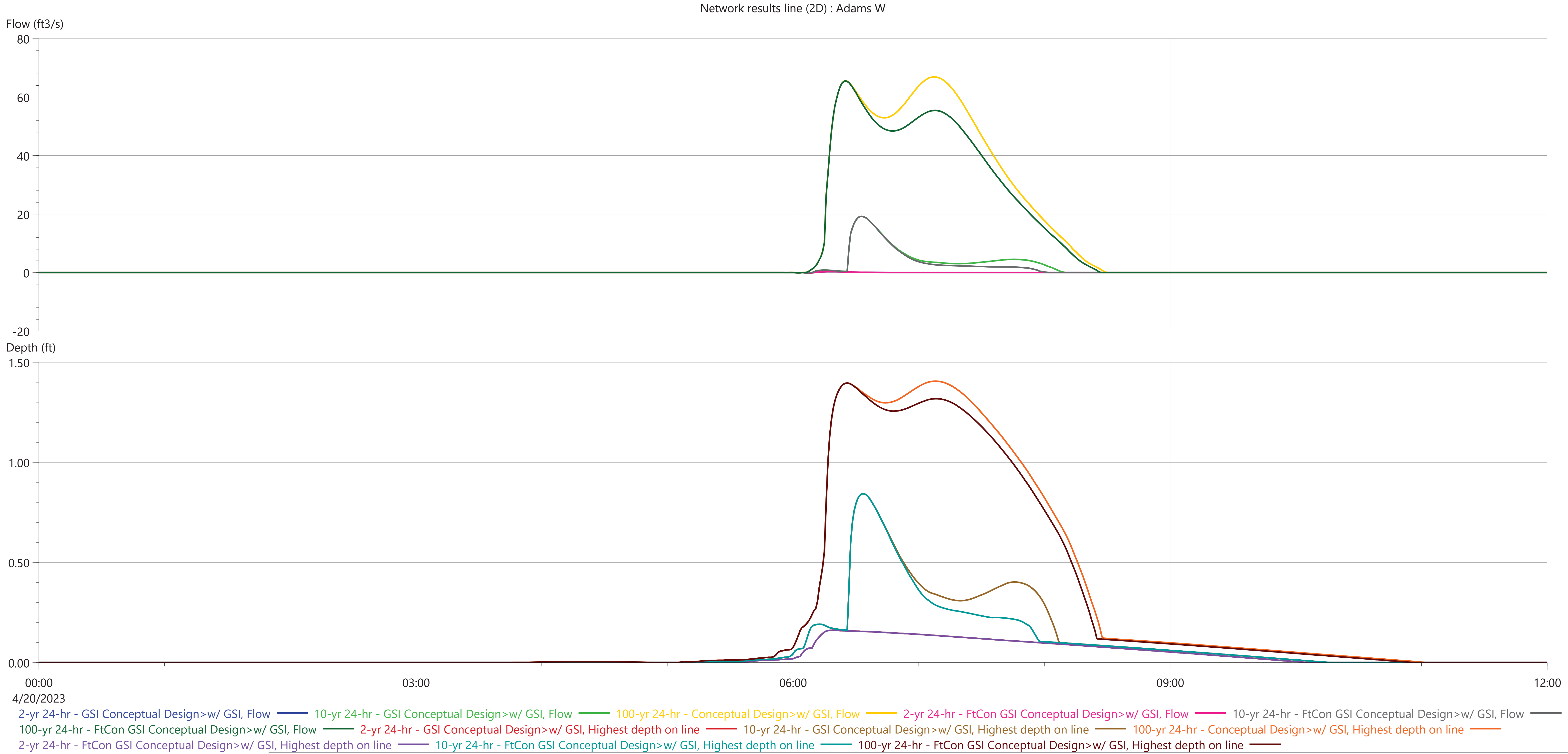

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.135	0.325	318.113	0.000	0.161
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.116	19.219	38785.118	0.000	0.844
100-yr 24-hr - Conceptual Design>w/ GSI	-0.067	66.900	332670.436	0.000	1.406
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.137	0.347	320.866	0.000	0.161
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.117	19.215	31869.901	0.000	0.843
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.073	65.573	295487.482	0.000	1.396

Proposed Conditions (with GSI improvements) results from Network Results Lines

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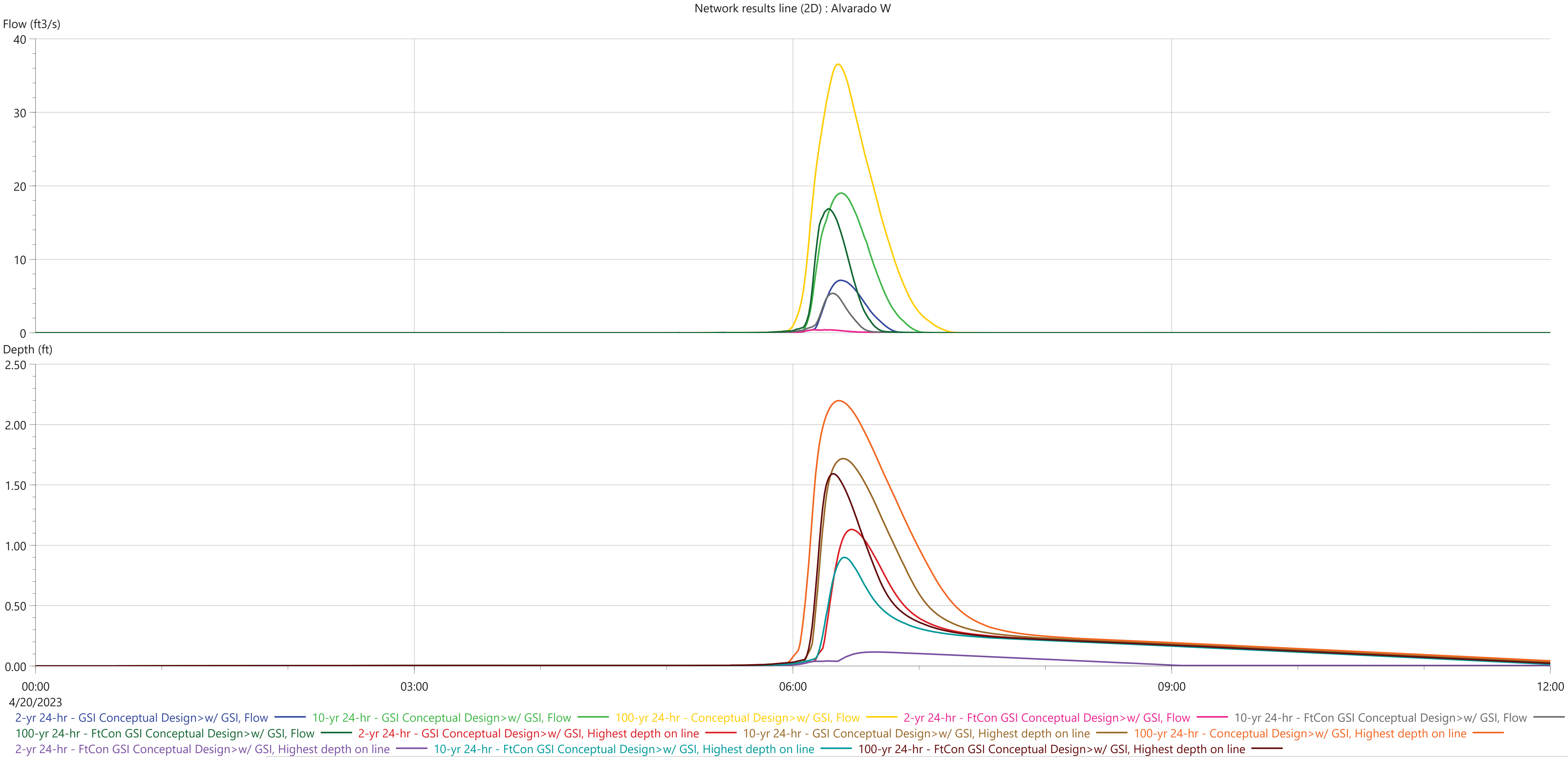

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	7.139	9210.520	0.000	1.131
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	19.016	31000.816	0.000	1.718
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	36.566	69030.824	0.000	2.198
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	0.433	587.152	0.000	0.116
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.367	4983.712	0.000	0.900
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	16.881	18954.151	0.000	1.593

Proposed Conditions (with GSI improvements) results from Network Results Lines

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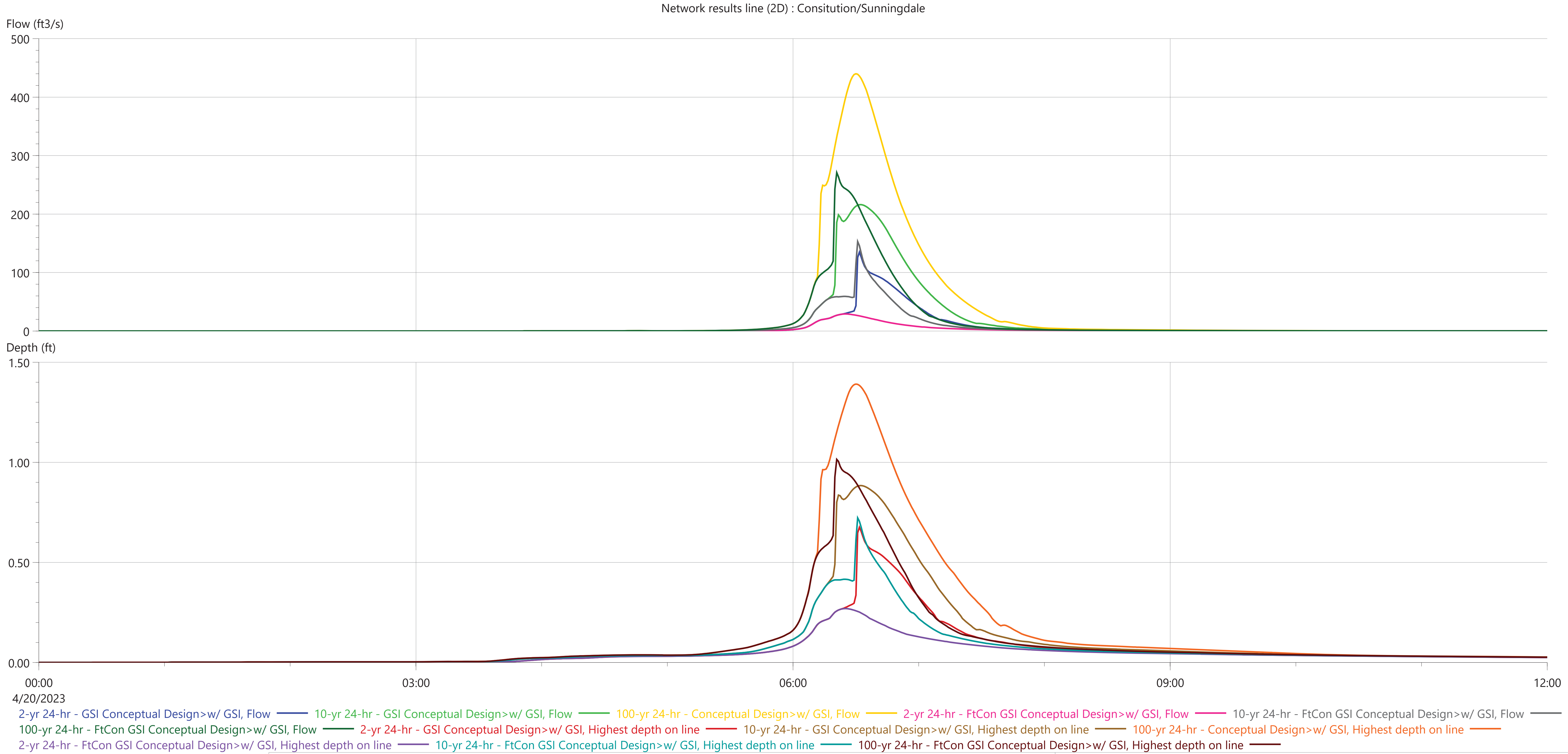

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	134.845	230862.777	0.000	0.676
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	216.115	546687.088	0.000	0.884
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	439.917	1108827.714	0.000	1.391
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	29.143	82050.986	0.000	0.269
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	153.046	231243.473	0.000	0.723
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	270.878	502631.742	0.000	1.015

Proposed Conditions (with GSI improvements) results from Network Results Lines

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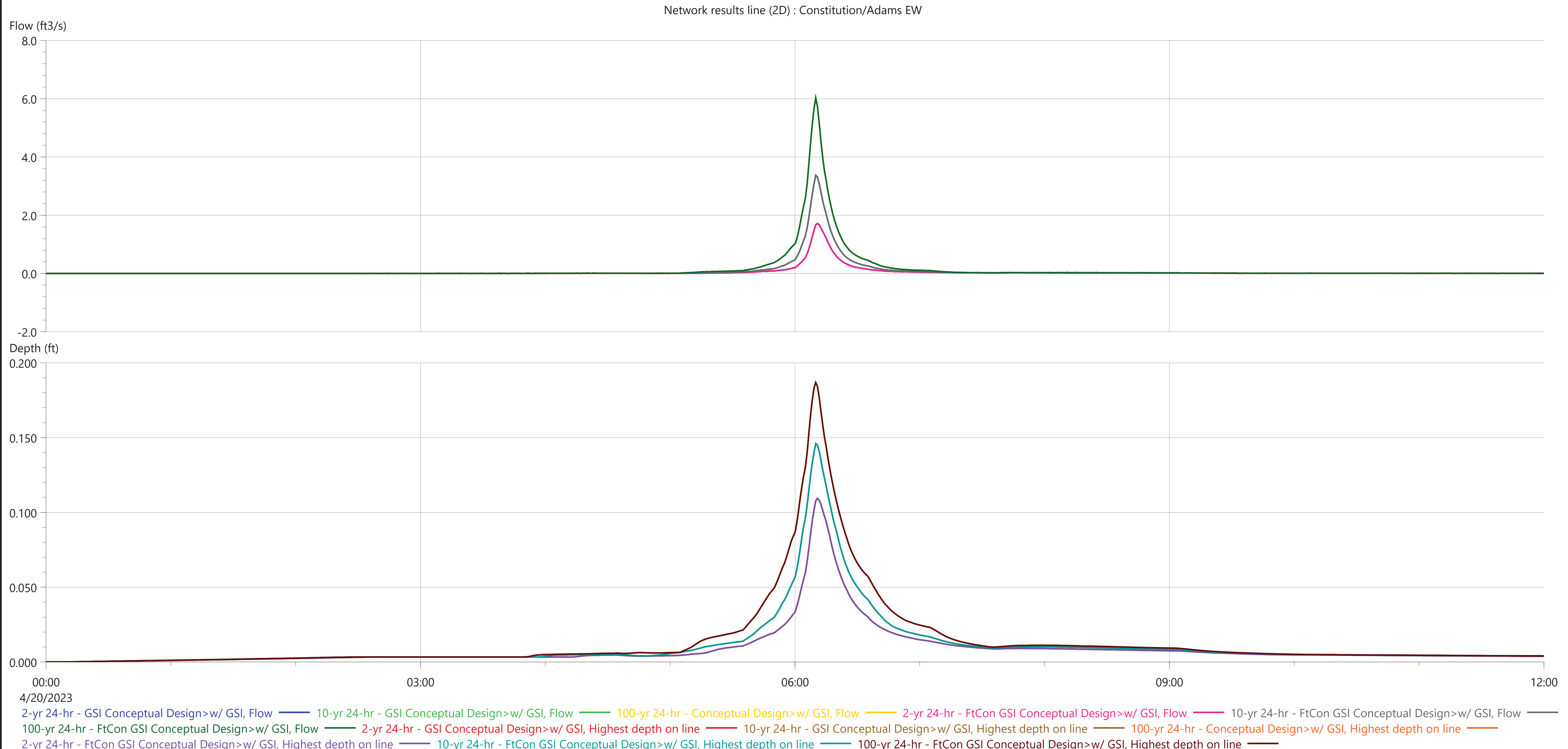

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	1.718	1950.553	0.000	0.109
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	3.369	3495.479	0.000	0.146
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	6.029	6058.679	0.000	0.187
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	1.718	1950.955	0.000	0.109
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	3.369	3492.107	0.000	0.146
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	6.029	6051.651	0.000	0.187

Proposed Conditions (with GSI improvements) results from Network Results Lines

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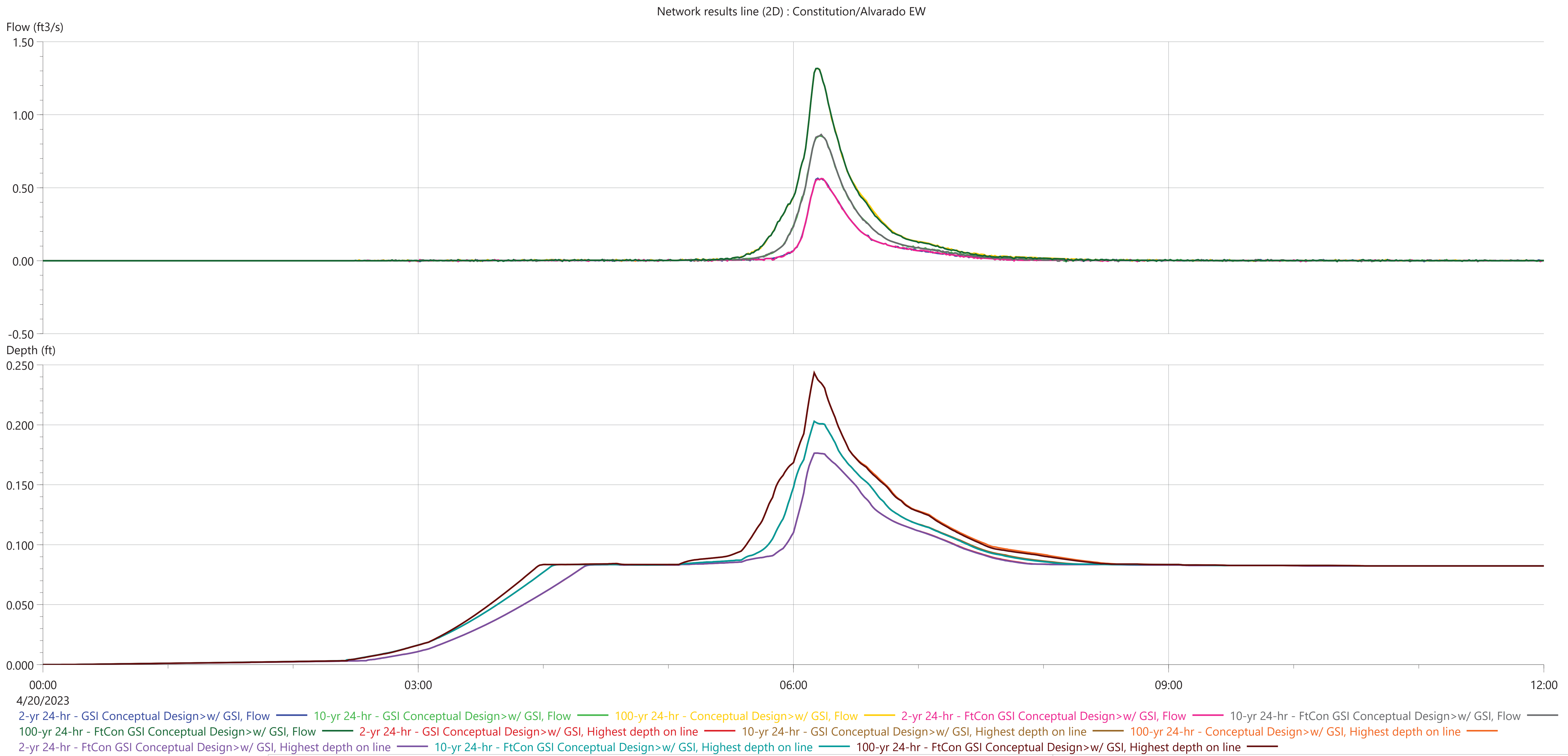

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.005	0.565	1045.232	0.000	0.176
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	0.855	1648.898	0.000	0.203
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	1.316	2577.506	0.000	0.243
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	0.562	1033.740	0.000	0.176
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	0.865	1642.051	0.000	0.203
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	1.317	2546.649	0.000	0.243

Proposed Conditions (with GSI improvements) results from Network Results Lines

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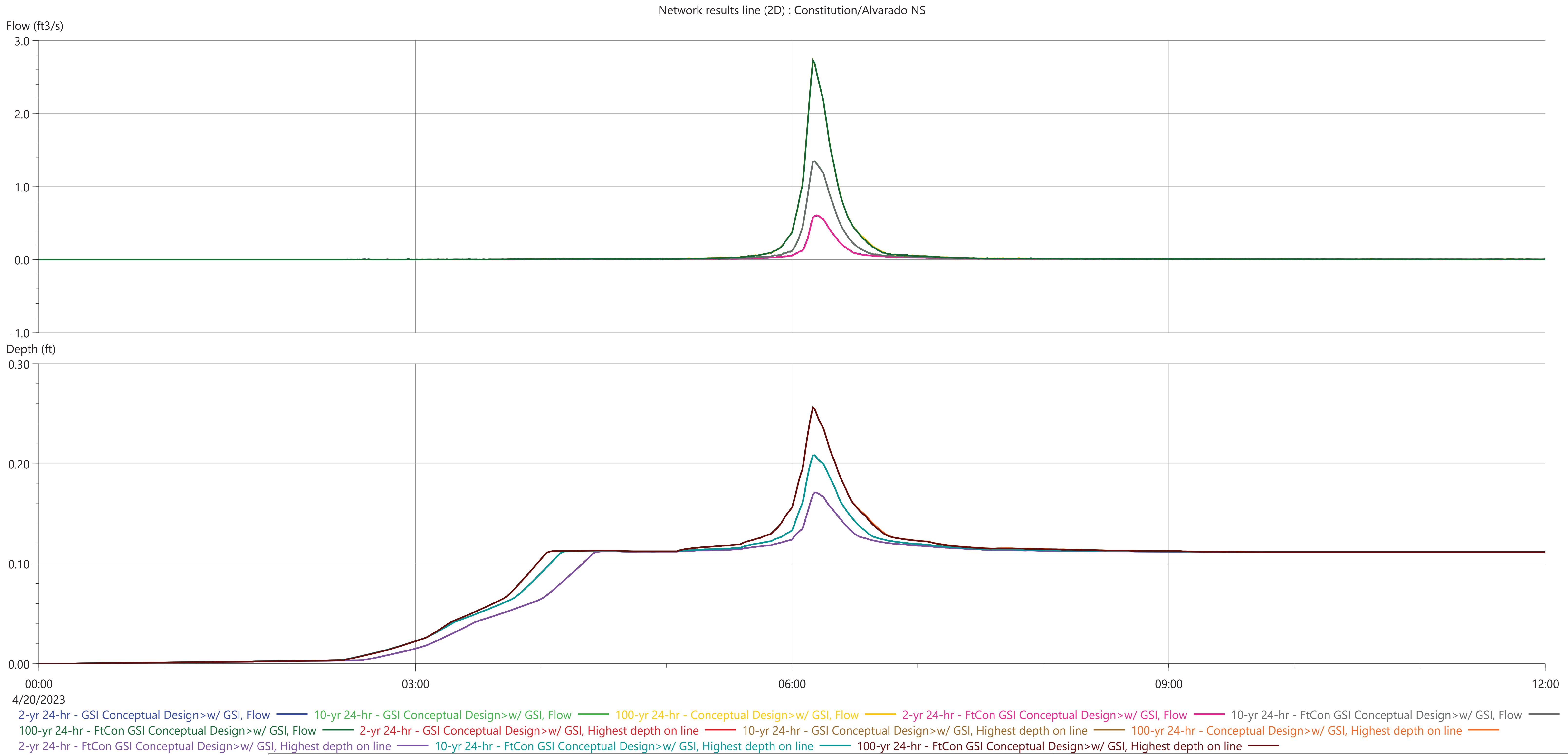

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	0.602	814.762	0.000	0.171
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	1.348	1642.709	0.000	0.208
100-yr 24-hr - Conceptual Design>w/ GSI	-0.000	2.727	3145.722	0.000	0.256
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	0.606	809.524	0.000	0.171
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	1.344	1637.337	0.000	0.208
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	2.727	3126.002	0.000	0.256

Proposed Conditions (with GSI improvements) results from Network Results Lines

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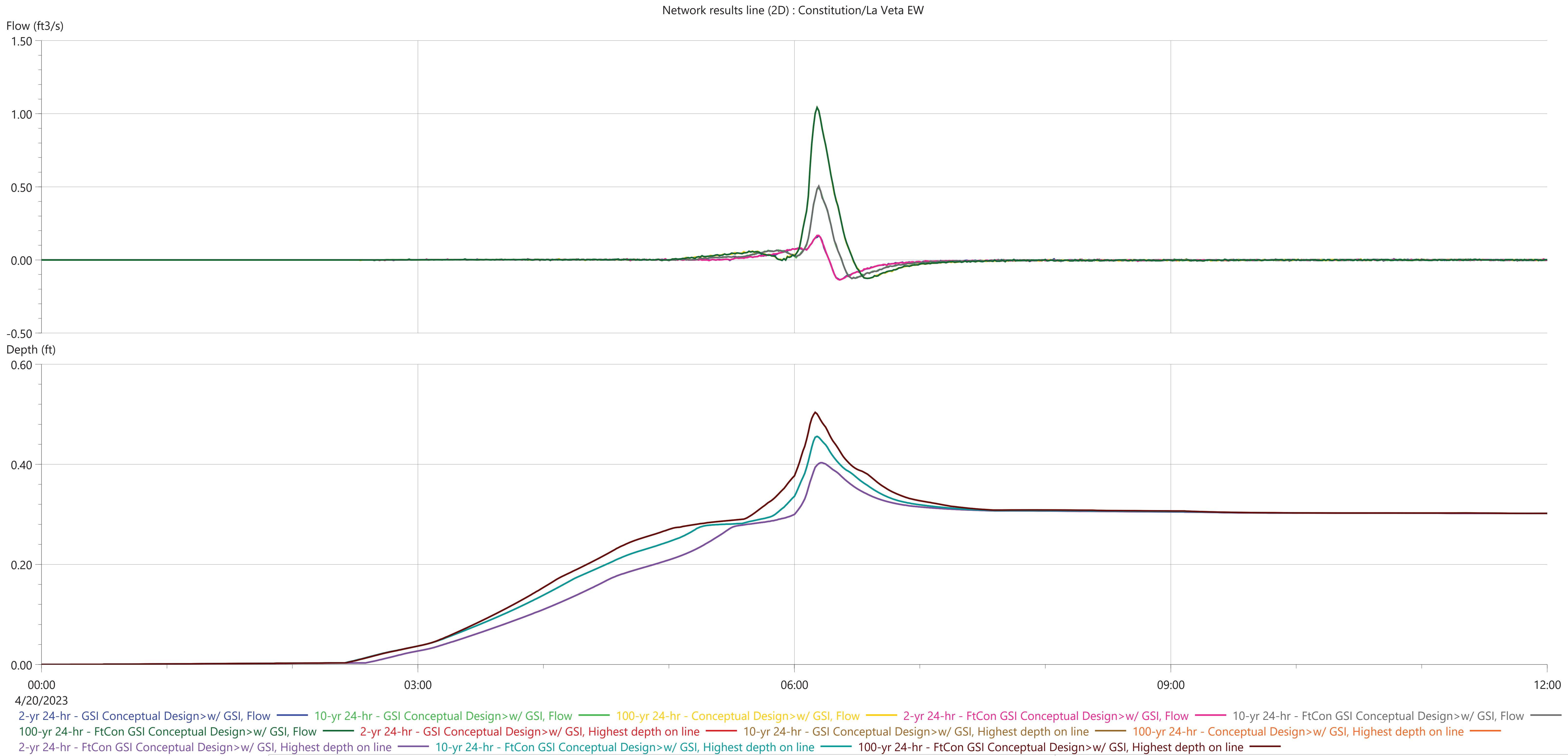

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.136	0.165	-11.743	0.000	0.403
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.127	0.490	211.473	0.000	0.456
100-yr 24-hr - Conceptual Design>w/ GSI	-0.127	1.043	684.709	0.000	0.504
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.137	0.167	-7.671	0.000	0.403
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.128	0.505	209.459	0.000	0.456
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.127	1.043	684.815	0.000	0.504

Proposed Conditions (with GSI improvements) results from Network Results Lines

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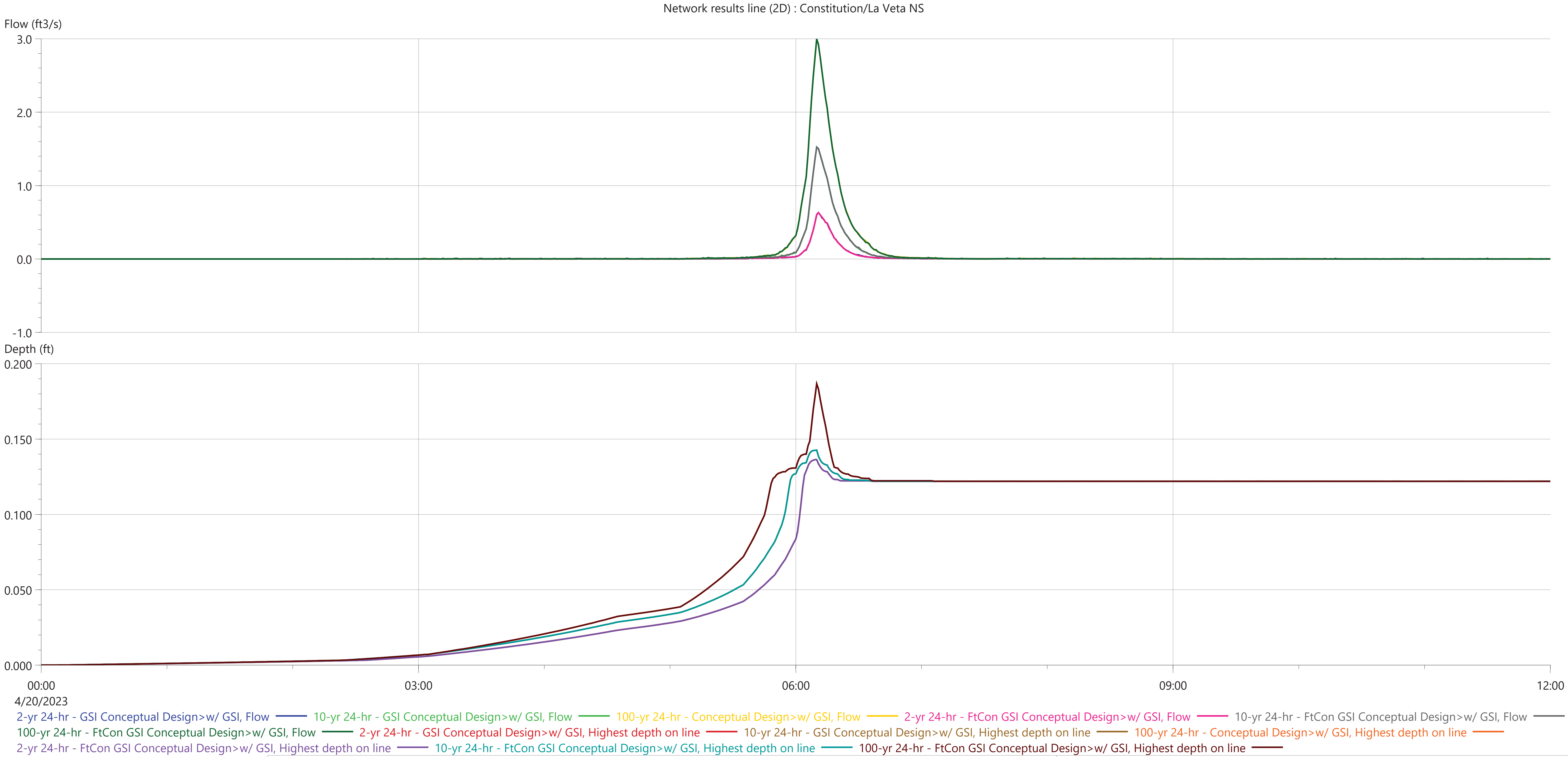

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	0.631	553.775	0.000	0.136
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	1.524	1348.036	0.000	0.143
100-yr 24-hr - Conceptual Design>w/ GSI	-0.000	2.999	2813.124	0.000	0.187
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	0.631	551.684	0.000	0.136
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	1.524	1351.790	0.000	0.143
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	2.999	2811.692	0.000	0.187

Proposed Conditions (with GSI improvements) results from Network Results Lines

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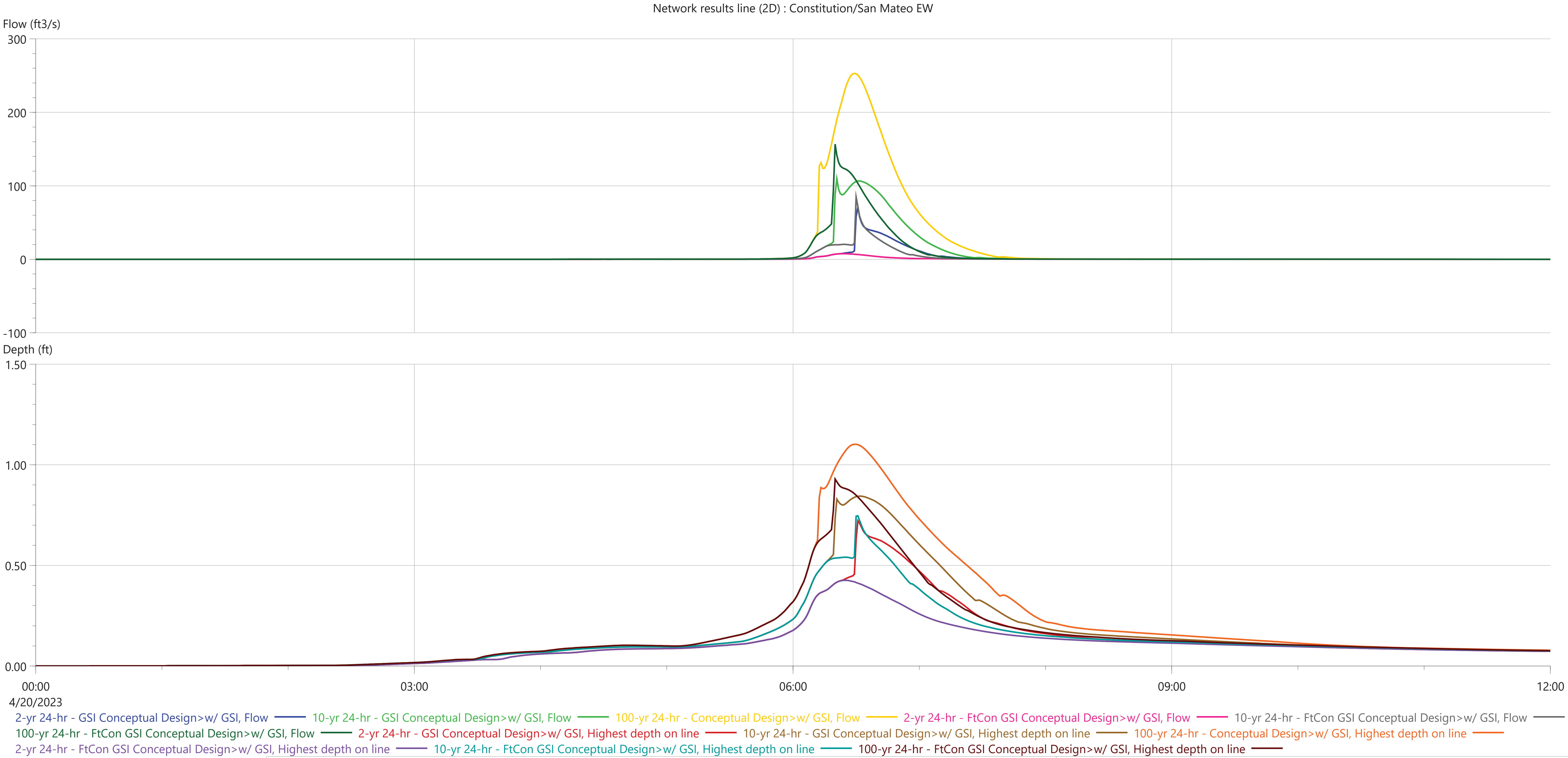

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.009	70.765	75815.097	0.000	0.722
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.006	109.410	229046.734	0.000	0.844
100-yr 24-hr - Conceptual Design>w/ GSI	-0.011	253.076	548843.745	0.000	1.102
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	7.711	16750.189	0.000	0.426
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	84.832	73978.262	0.000	0.747
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	156.767	208413.512	0.000	0.929

Proposed Conditions (with GSI improvements) results from Network Results Lines

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	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-2.168	3.096	-3014.466	0.000	0.505
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-3.844	4.672	1165.912	0.000	0.647
100-yr 24-hr - Conceptual Design>w/ GSI	-6.966	16.303	18398.602	0.000	0.934
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-2.168	0.000	-3368.632	0.000	0.126
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-3.844	1.246	-5314.104	0.000	0.538
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-7.019	11.537	-3299.072	0.000	0.711

Proposed Conditions (with GSI improvements) results from Network Results Lines

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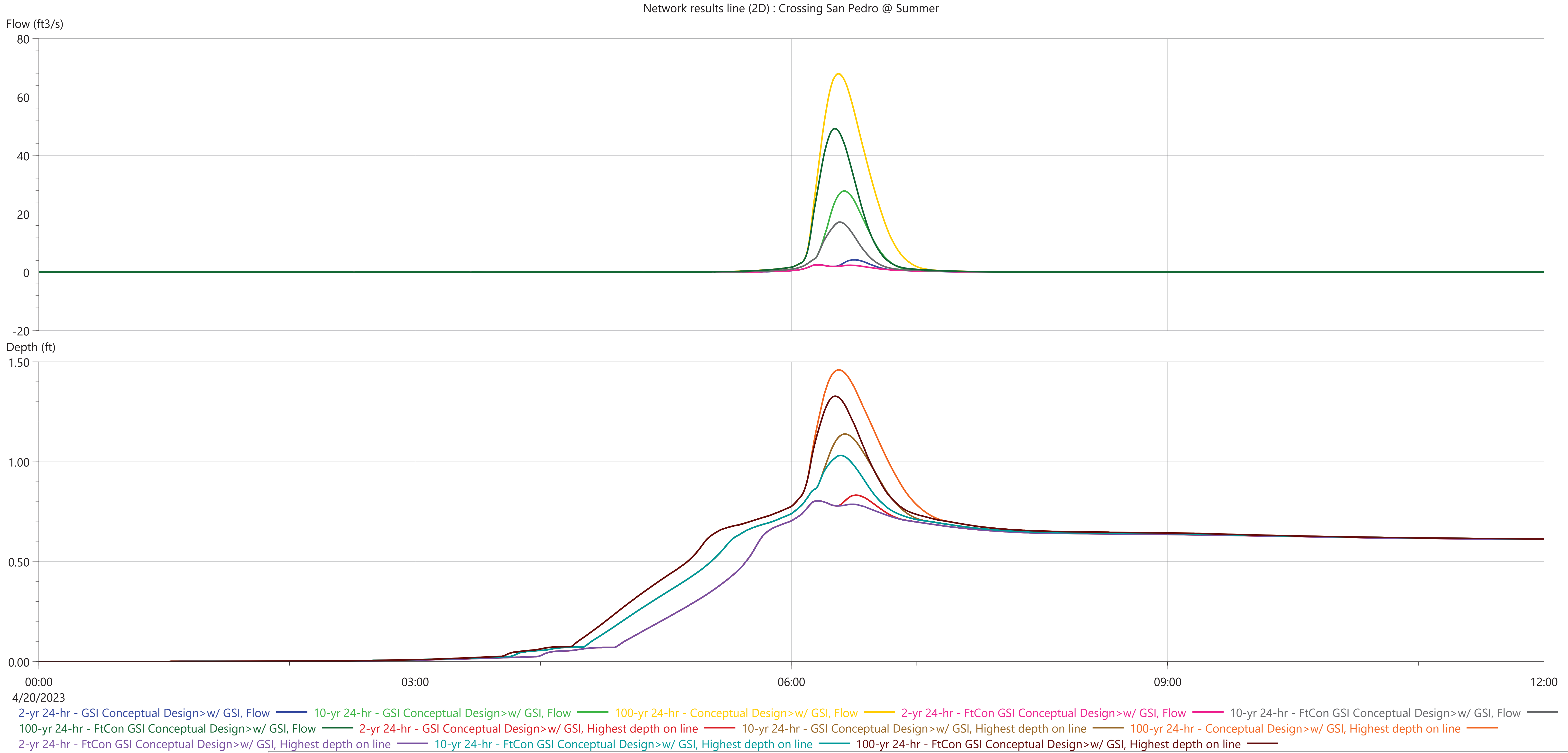

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.027	4.248	8368.392	0.000	0.833
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.008	27.767	40242.260	0.000	1.138
100-yr 24-hr - Conceptual Design>w/ GSI	-0.021	68.013	110362.233	0.000	1.459
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	2.473	6810.344	0.000	0.804
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.008	17.166	24771.307	0.000	1.031
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.028	49.205	69814.198	0.000	1.328

Proposed Conditions (with GSI improvements) results from Network Results Lines

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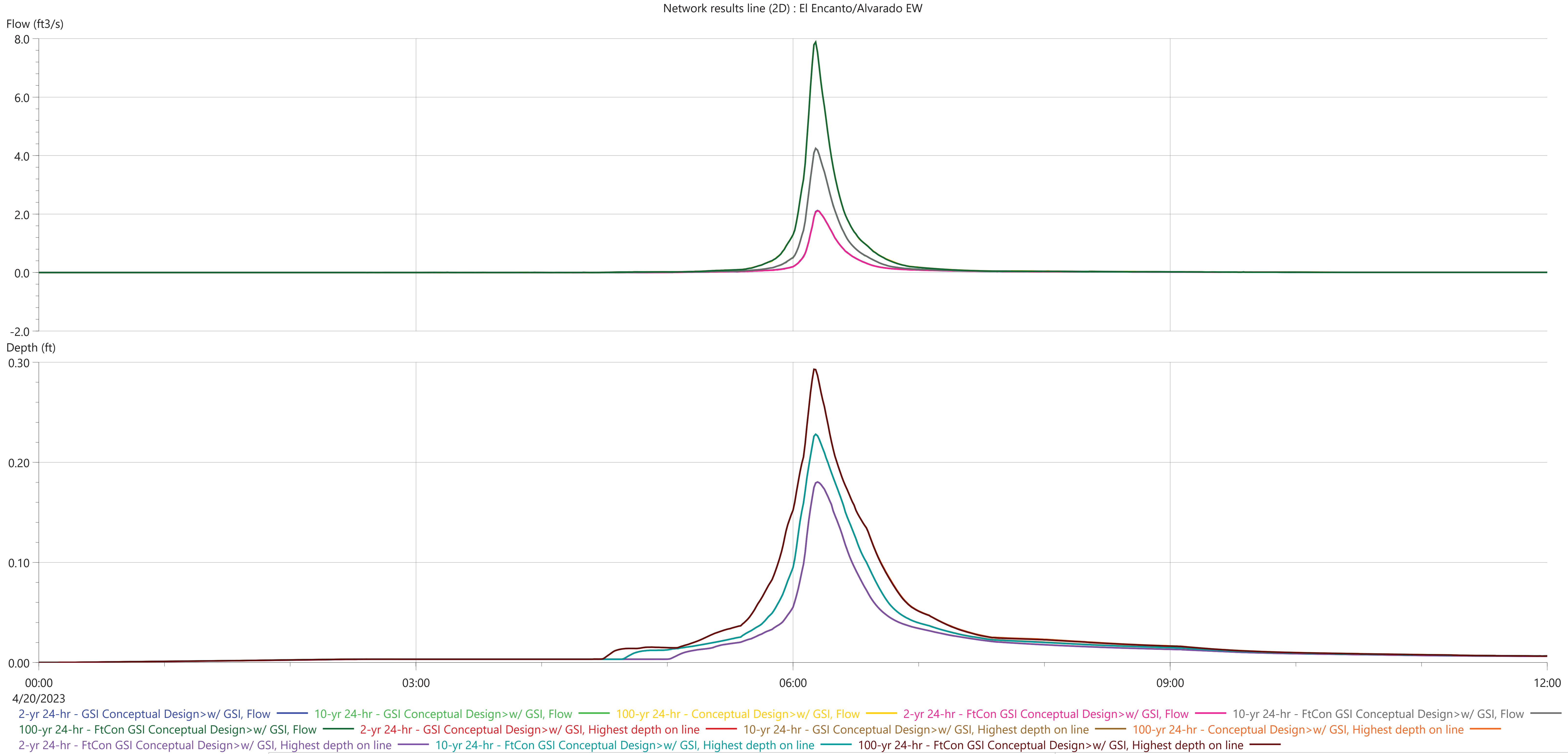

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	2.124	2852.044	0.000	0.180
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	4.246	5269.423	0.000	0.228
100-yr 24-hr - Conceptual Design>w/ GSI	-0.002	7.883	9268.169	0.000	0.293
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	2.111	2844.878	0.000	0.180
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	4.249	5266.164	0.000	0.228
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	7.883	9248.090	0.000	0.293

Proposed Conditions (with GSI improvements) results from Network Results Lines

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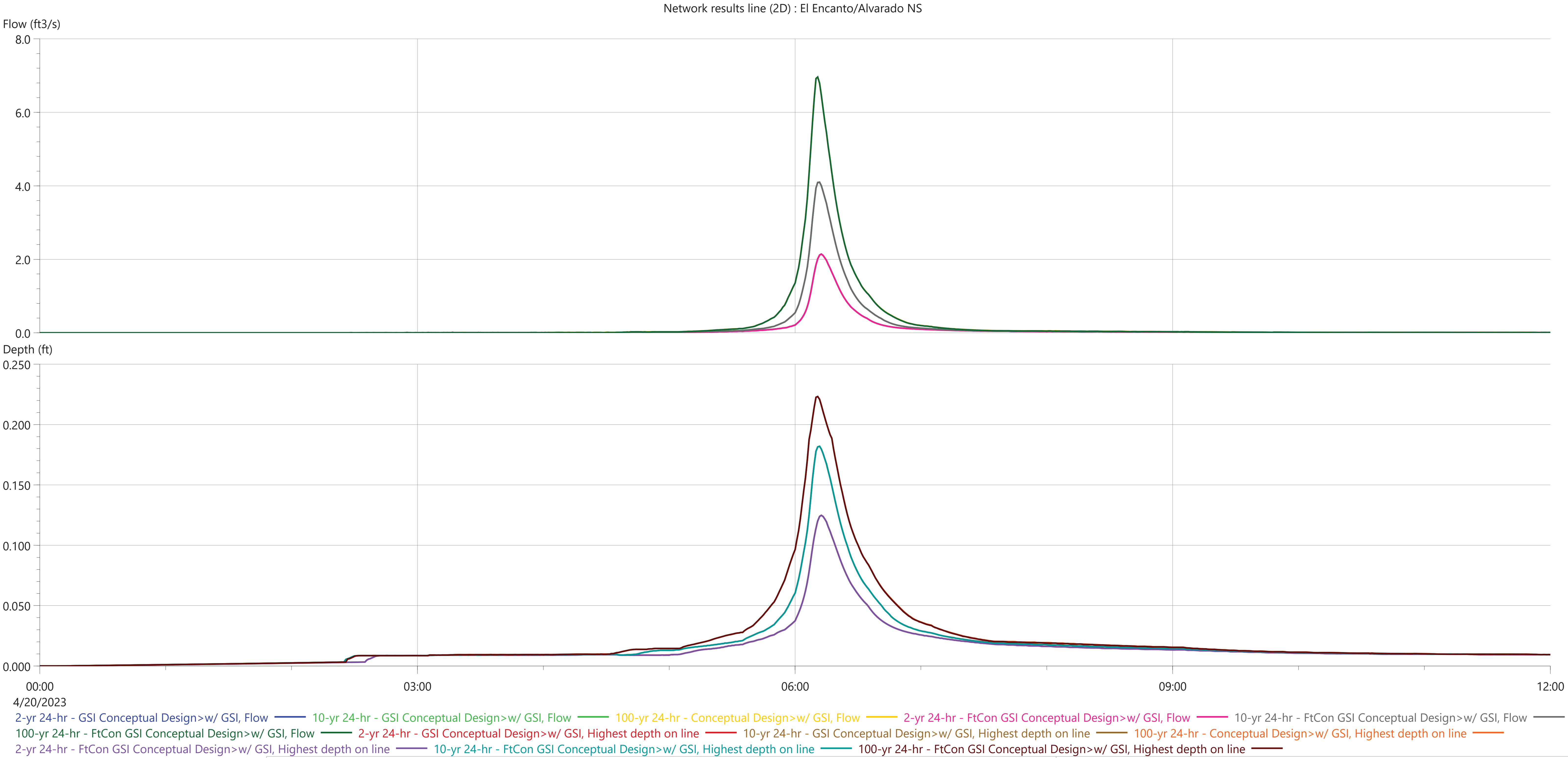

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.140	3098.735	0.000	0.125
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.094	5537.831	0.000	0.182
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	6.950	9304.515	0.000	0.223
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.145	3092.962	0.000	0.125
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.100	5533.231	0.000	0.182
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	6.963	9283.198	0.000	0.223

Proposed Conditions (with GSI improvements) results from Network Results Lines

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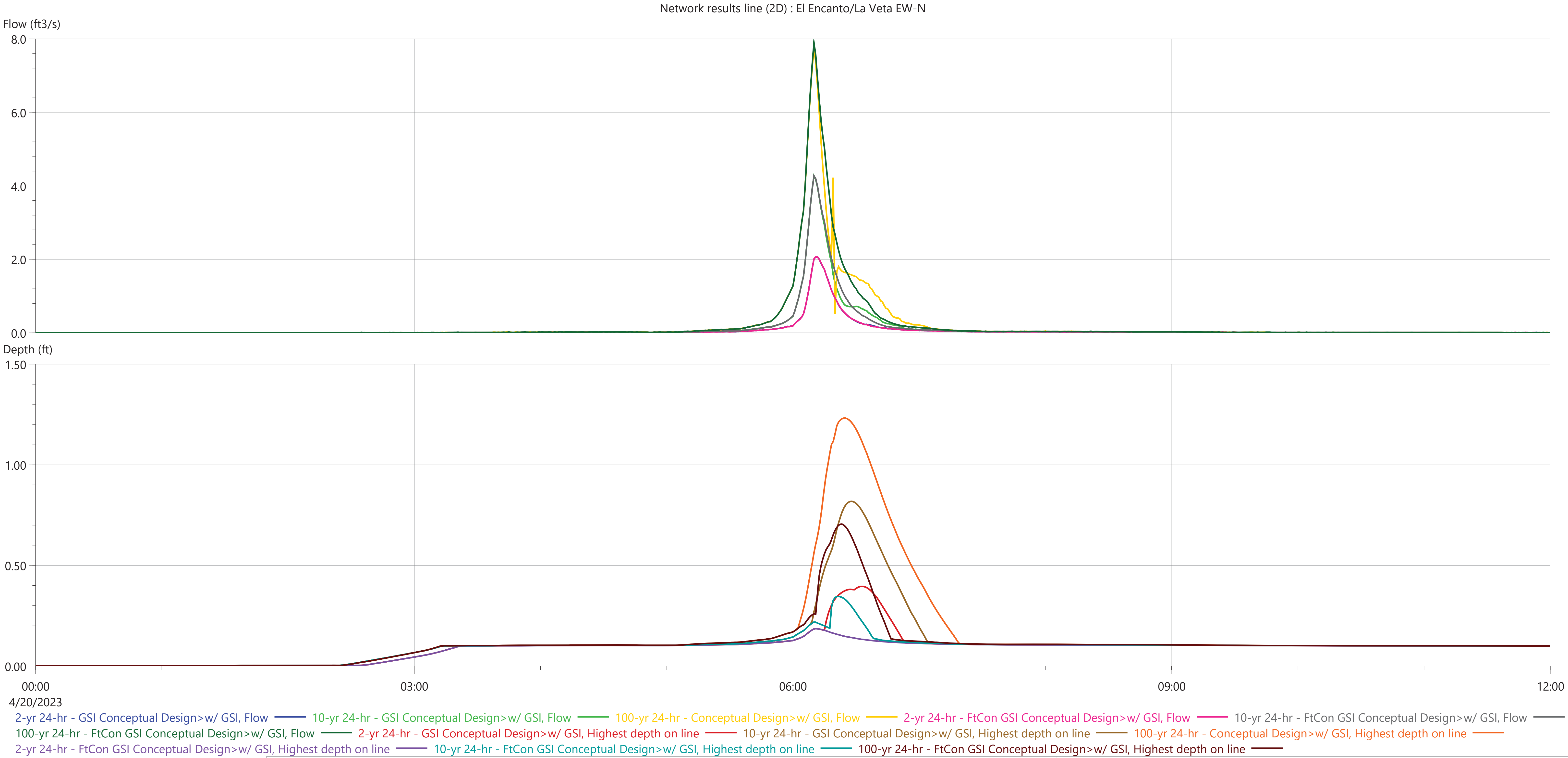

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.066	2593.724	0.000	0.395
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.270	4782.580	0.000	0.818
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	7.750	8628.527	0.000	1.232
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.066	2587.478	0.000	0.185
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.273	4778.527	0.000	0.345
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	7.890	8588.484	0.000	0.705

Proposed Conditions (with GSI improvements) results from Network Results Lines

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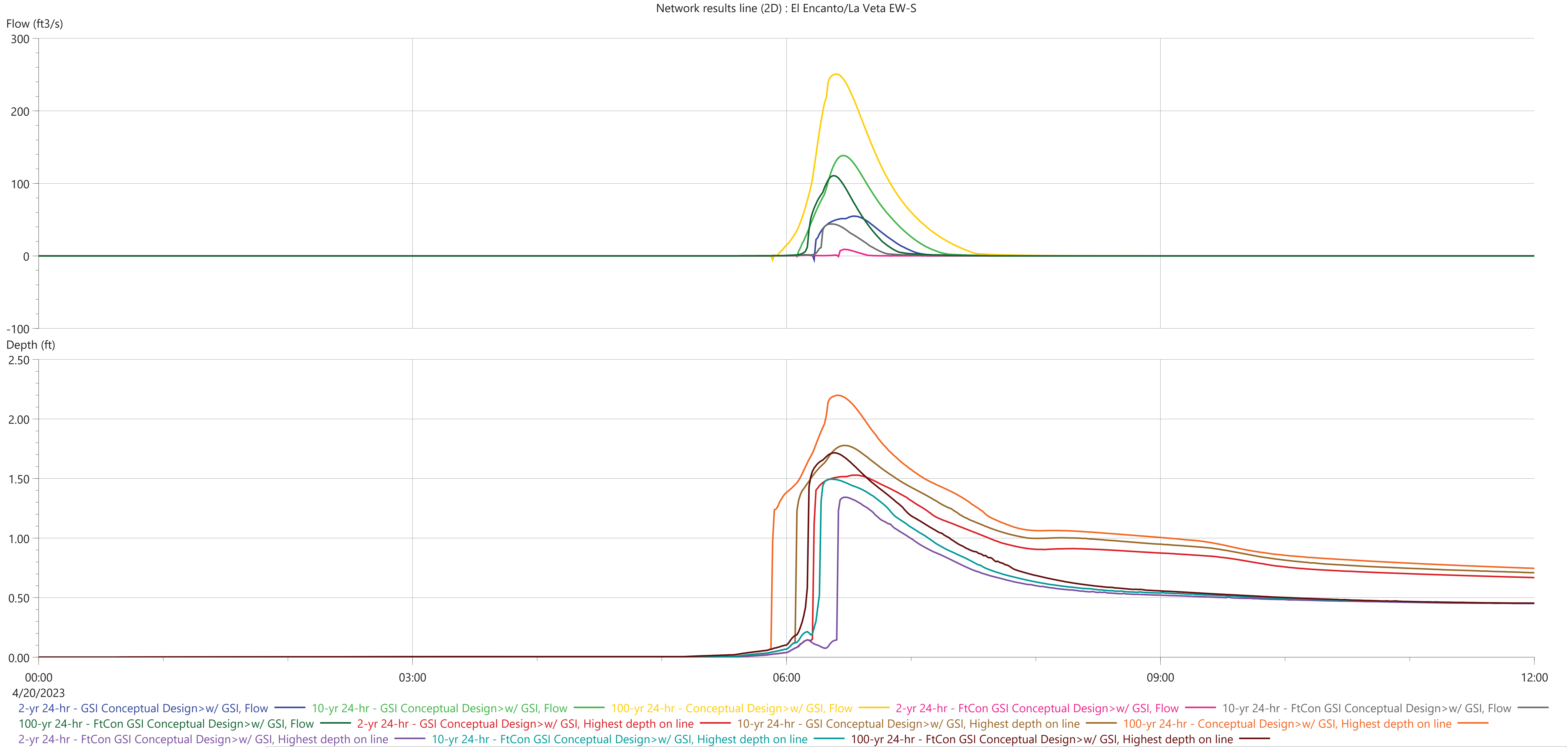

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-5.400	54.732	106718.526	0.000	1.529
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-1.097	138.286	272931.492	0.000	1.778
100-yr 24-hr - Conceptual Design>w/ GSI	-5.865	250.773	559031.599	0.000	2.199
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.881	8.988	5932.159	0.000	1.344
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.021	43.999	54581.261	0.000	1.494
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.023	110.536	164331.314	0.000	1.716

Proposed Conditions (with GSI improvements) results from Network Results Lines

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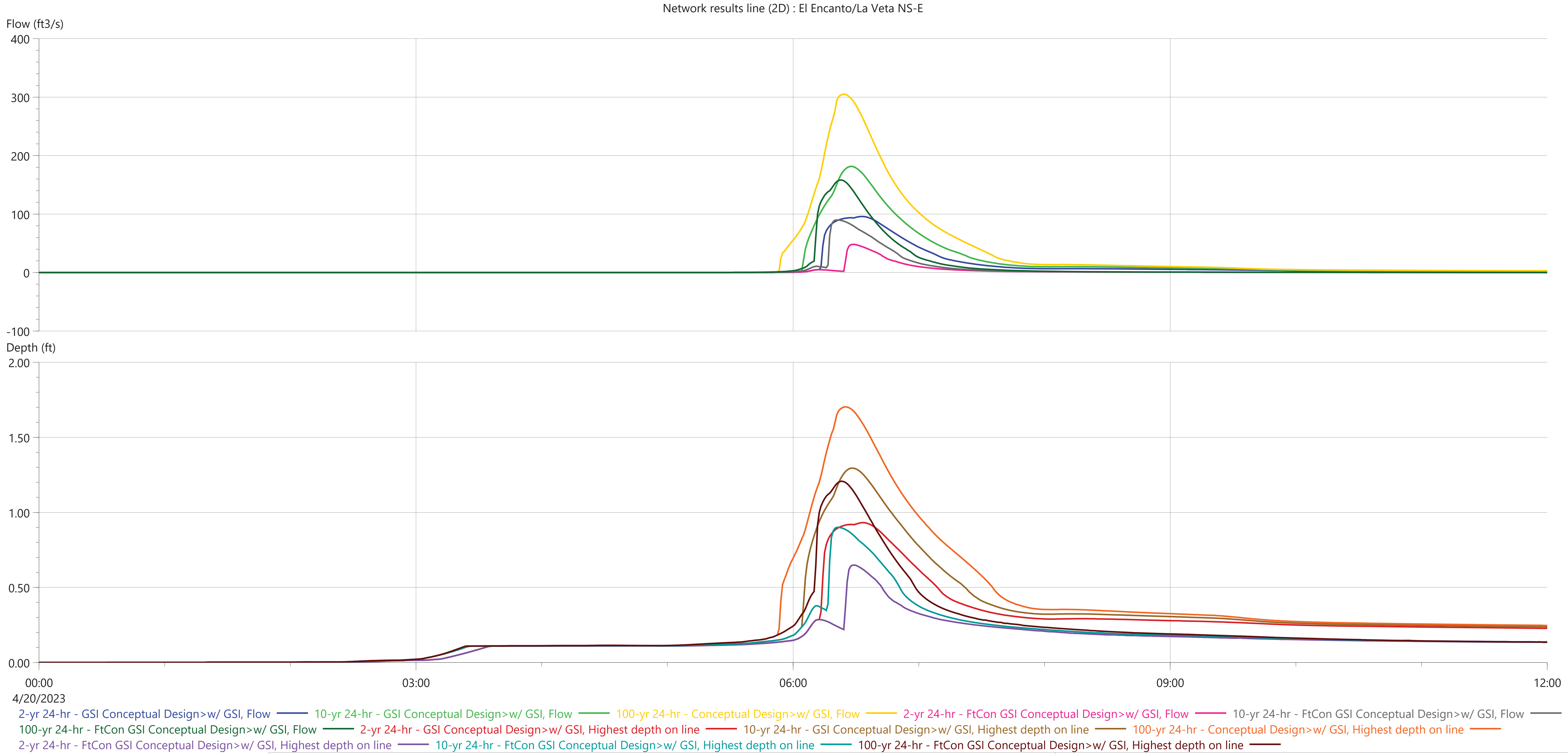

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	95.836	334487.871	0.000	0.931
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.006	181.502	577970.686	0.000	1.295
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	304.956	954314.593	0.000	1.703
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	48.156	85698.580	0.000	0.649
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	89.982	178808.827	0.000	0.900
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	158.225	336367.898	0.000	1.207

Proposed Conditions (with GSI improvements) results from Network Results Lines

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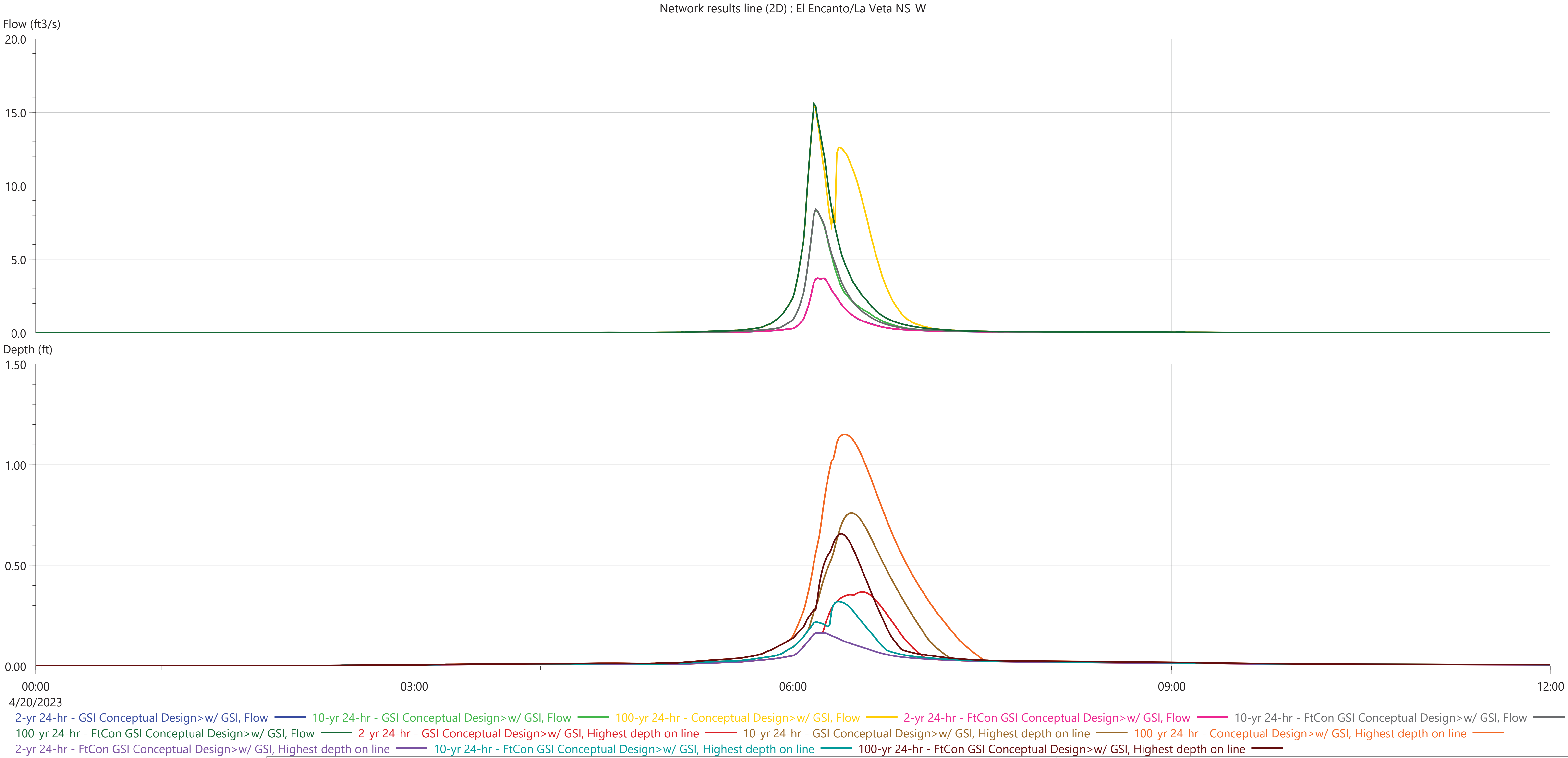

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.724	5620.187	0.000	0.368
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	8.380	10770.093	0.000	0.761
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	15.477	27767.180	0.000	1.152
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.724	5612.881	0.000	0.164
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.392	10768.713	0.000	0.321
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	15.565	19099.543	0.000	0.657

Proposed Conditions (with GSI improvements) results from Network Results Lines

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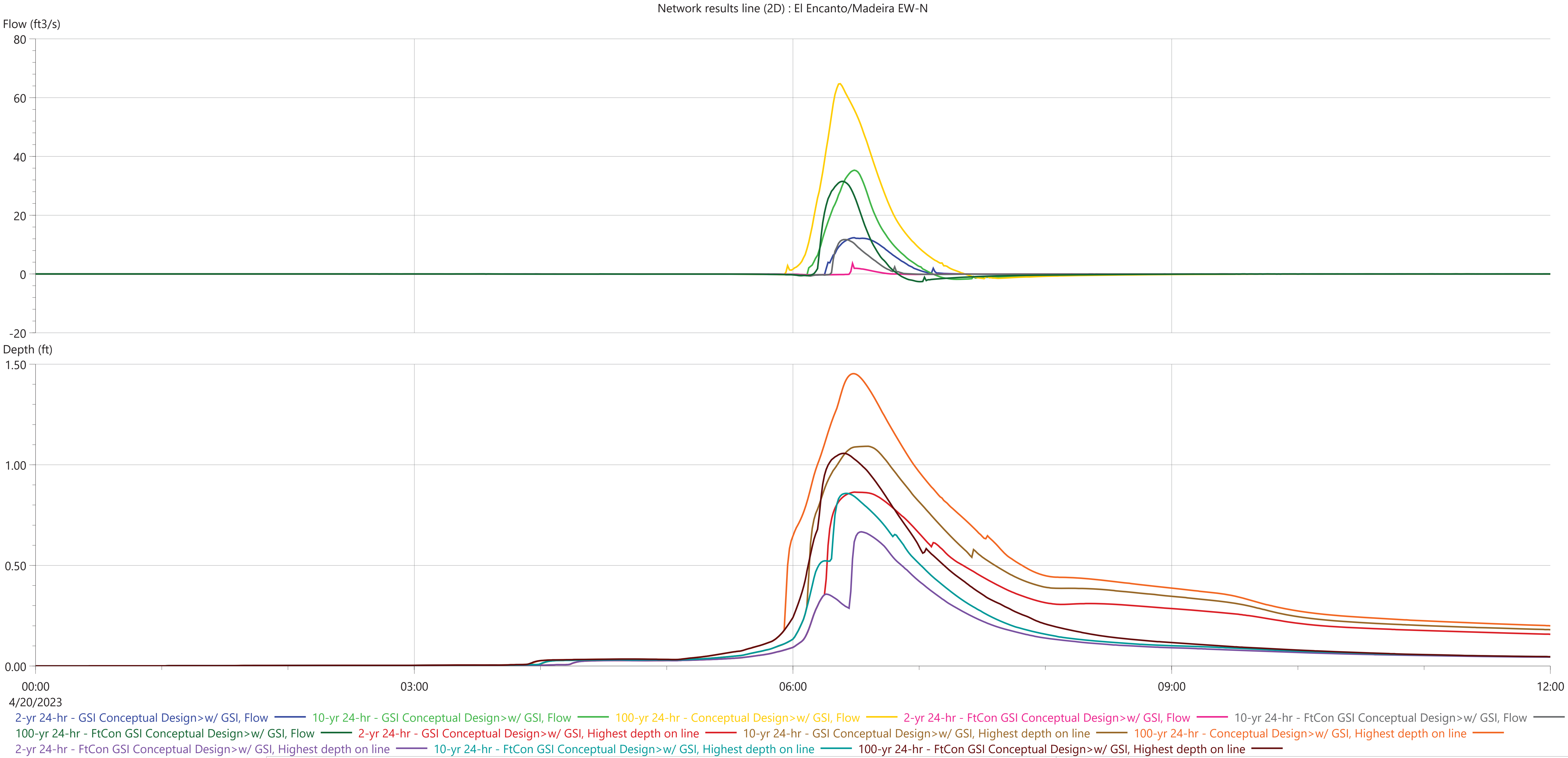

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.432	12.377	21254.044	0.000	0.865
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-1.816	35.292	50493.275	0.000	1.092
100-yr 24-hr - Conceptual Design>w/ GSI	-1.590	64.723	114833.496	0.000	1.452
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.432	3.600	570.660	0.000	0.667
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.646	11.715	11489.053	0.000	0.858
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-2.582	31.499	33790.515	0.000	1.057

Proposed Conditions (with GSI improvements) results from Network Results Lines

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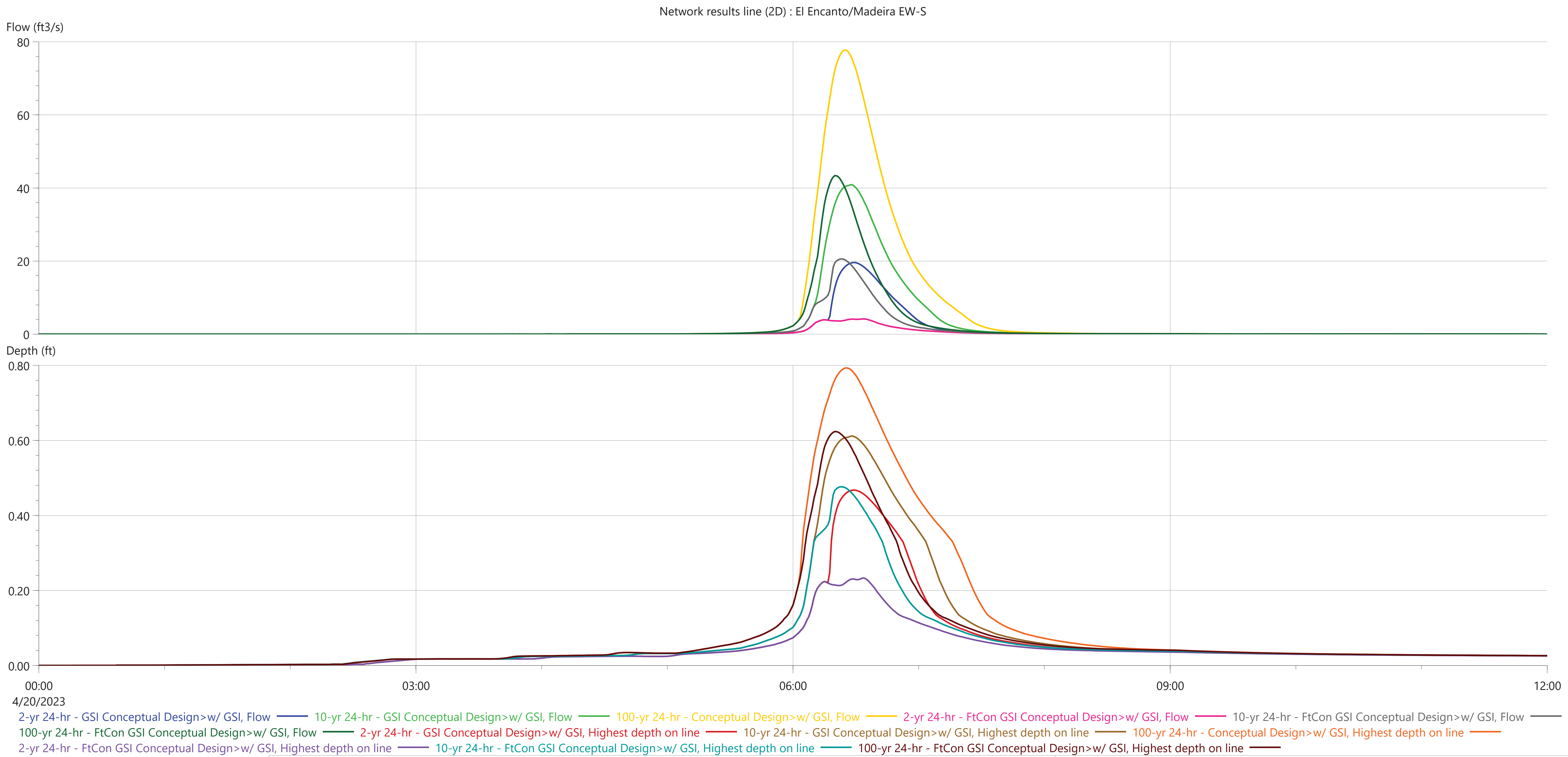

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	19.602	39554.434	0.000	0.468
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	40.881	88657.736	0.000	0.611
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	77.775	177250.495	0.000	0.793
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.172	12111.837	0.000	0.233
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	20.581	37133.505	0.000	0.476
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	43.390	76750.885	0.000	0.624

Proposed Conditions (with GSI improvements) results from Network Results Lines

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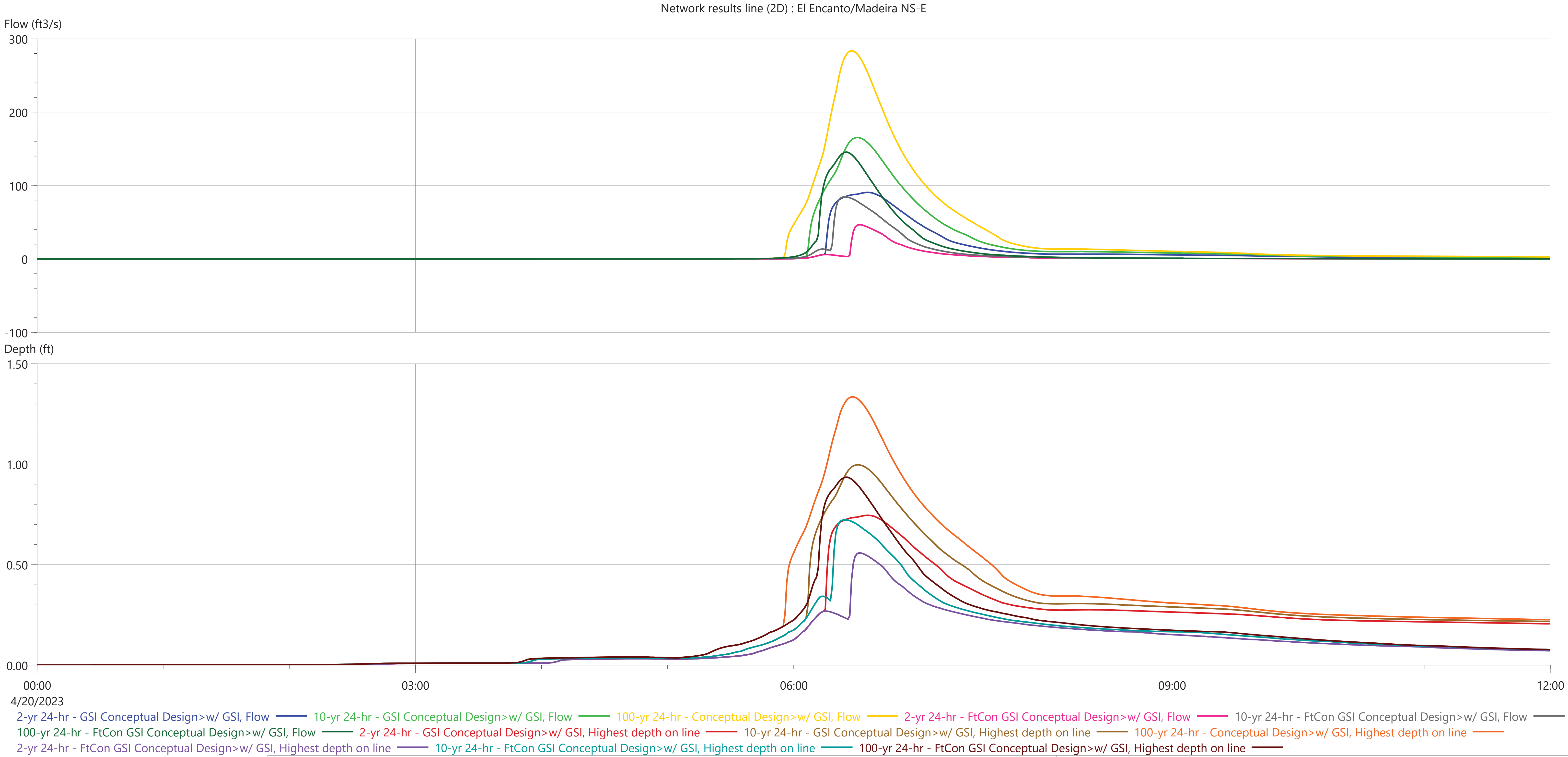

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	90.732	327562.707	0.000	0.746
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	165.449	561300.163	0.000	0.997
100-yr 24-hr - Conceptual Design>w/ GSI	-0.002	283.711	924650.982	0.000	1.335
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	46.623	87197.500	0.000	0.558
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	84.572	180999.181	0.000	0.723
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	145.568	332762.955	0.000	0.935

Proposed Conditions (with GSI improvements) results from Network Results Lines

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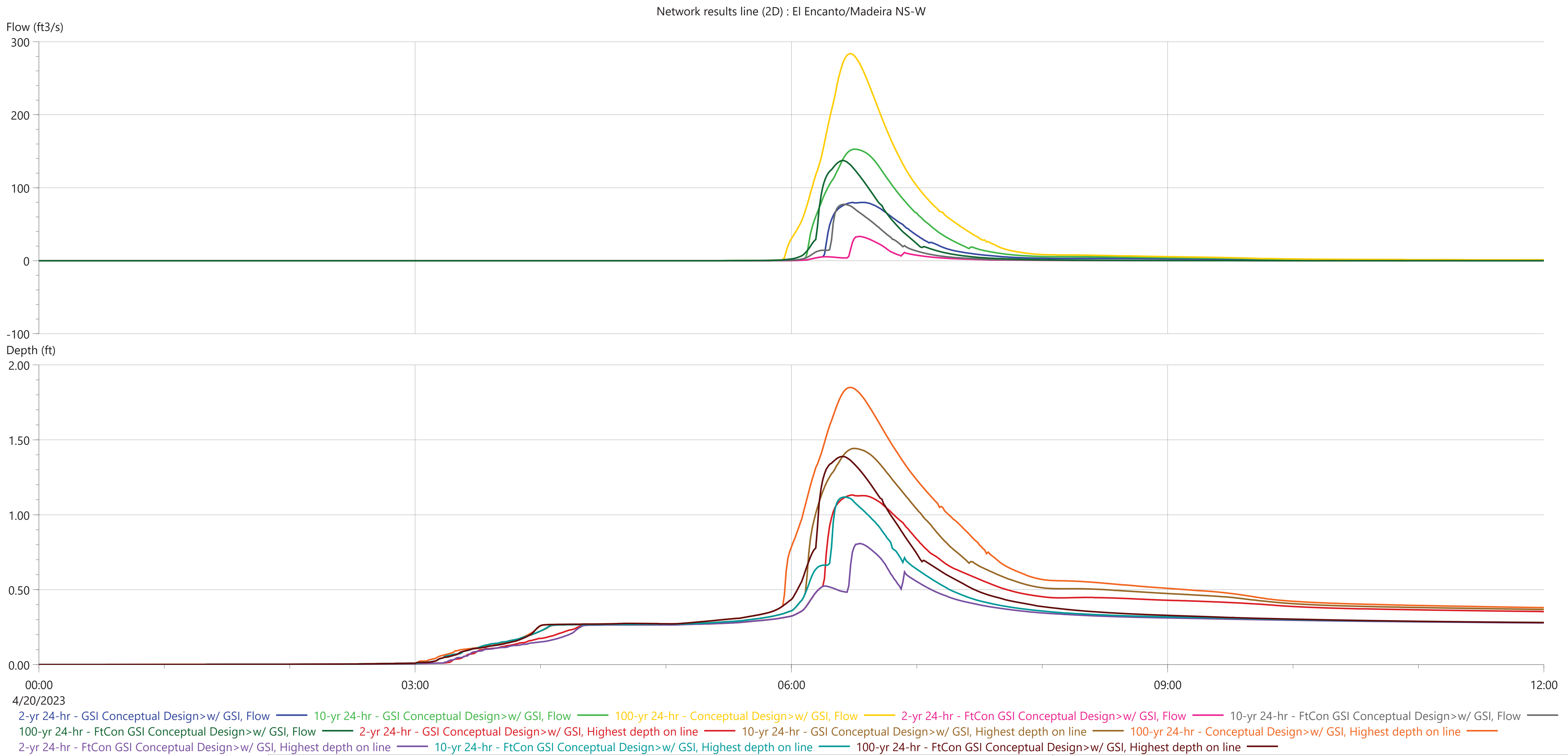

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	79.860	237071.737	0.000	1.132
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.006	152.771	459297.020	0.000	1.442
100-yr 24-hr - Conceptual Design>w/ GSI	-0.006	283.606	820133.169	0.000	1.849
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	33.234	51901.525	0.000	0.808
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	77.264	141383.285	0.000	1.118
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	137.191	291853.948	0.000	1.388

Proposed Conditions (with GSI improvements) results from Network Results Lines

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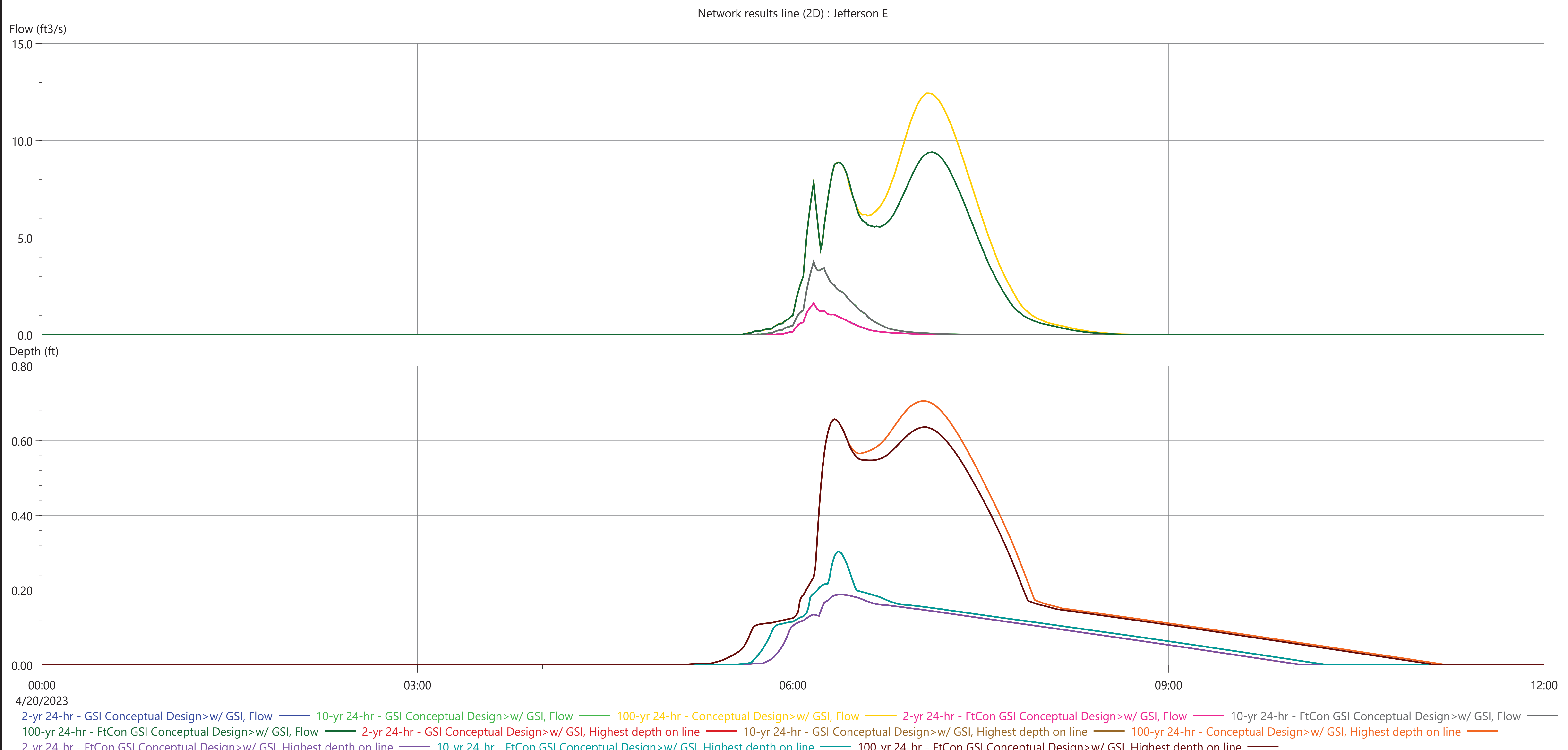

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.637	2086.130	0.000	0.188
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.767	5416.301	0.000	0.303
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	12.443	50402.866	0.000	0.706
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.637	2085.433	0.000	0.188
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.759	5416.869	0.000	0.303
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	9.411	41597.386	0.000	0.657

Proposed Conditions (with GSI improvements) results from Network Results Lines

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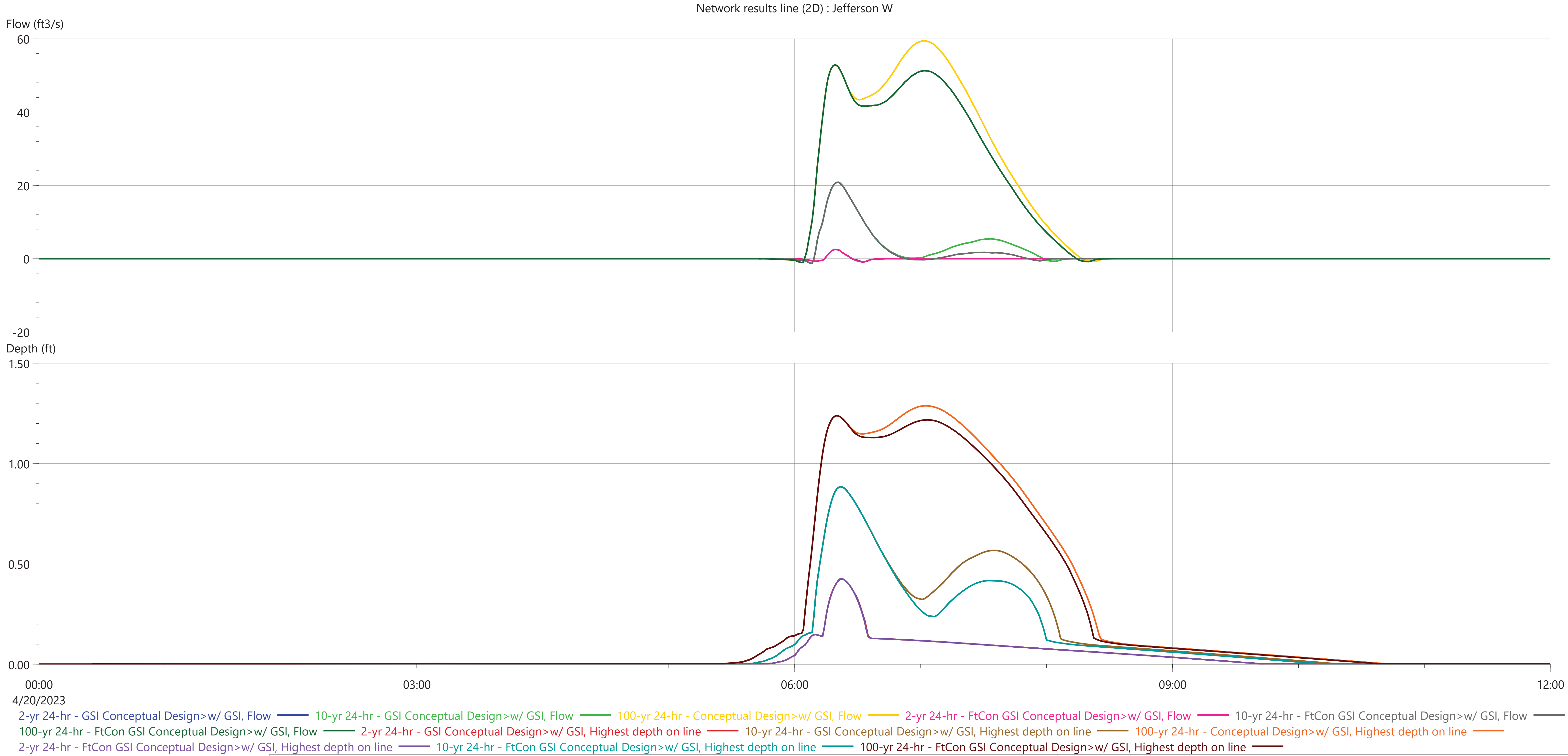

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.874	2.489	497.841	0.000	0.425
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-1.309	20.825	35875.647	0.000	0.885
100-yr 24-hr - Conceptual Design>w/ GSI	-1.061	59.443	281209.707	0.000	1.288
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.915	2.503	474.128	0.000	0.426
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.301	20.837	27371.913	0.000	0.884
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.062	52.883	252147.987	0.000	1.239

Proposed Conditions (with GSI improvements) results from Network Results Lines

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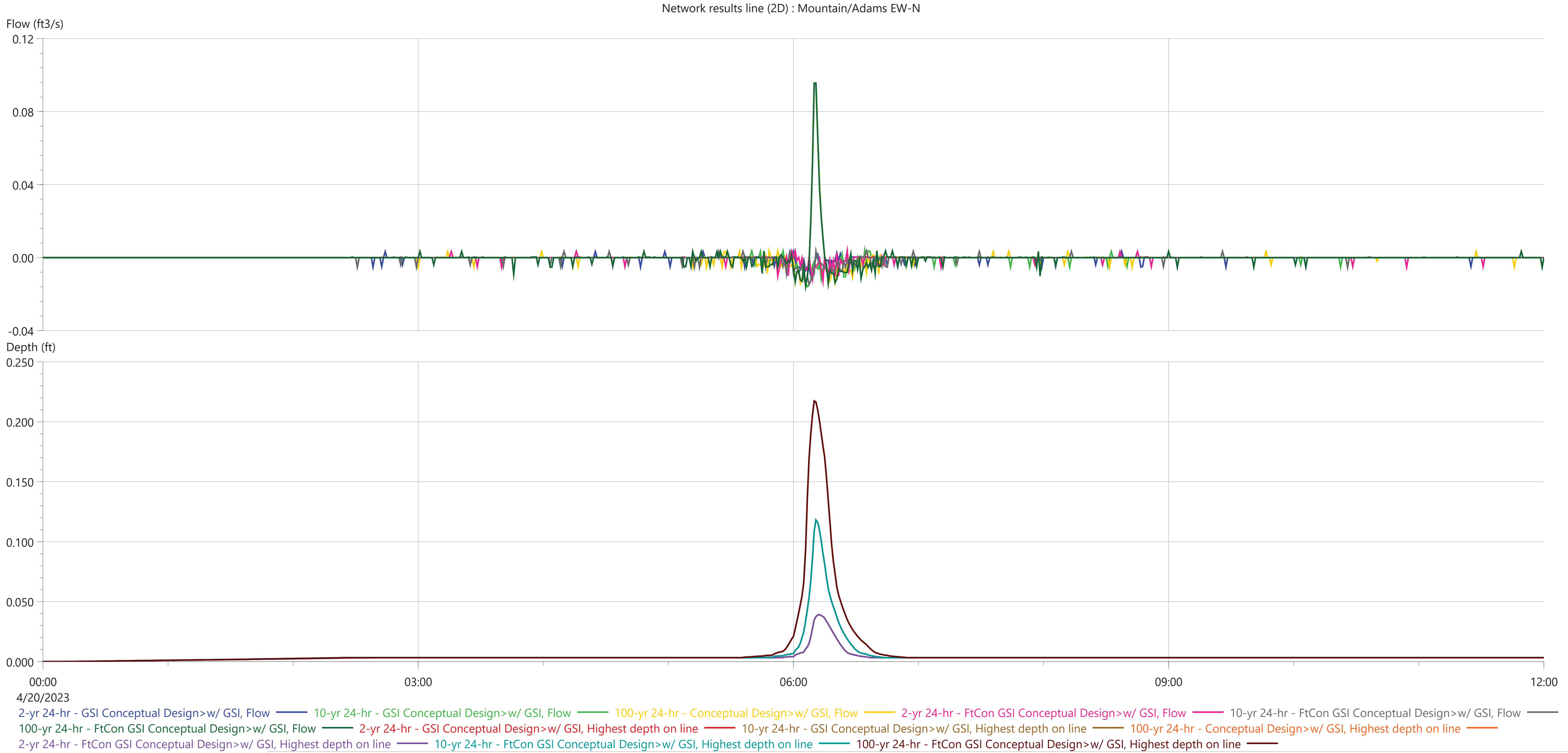

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.013	0.003	-10.809	0.000	0.039
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.016	0.004	-17.113	0.000	0.118
100-yr 24-hr - Conceptual Design>w/ GSI	-0.016	0.096	2.494	0.000	0.217
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.013	0.004	-10.625	0.000	0.039
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.015	0.004	-14.567	0.000	0.118
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.016	0.096	-0.986	0.000	0.217

Proposed Conditions (with GSI improvements) results from Network Results Lines

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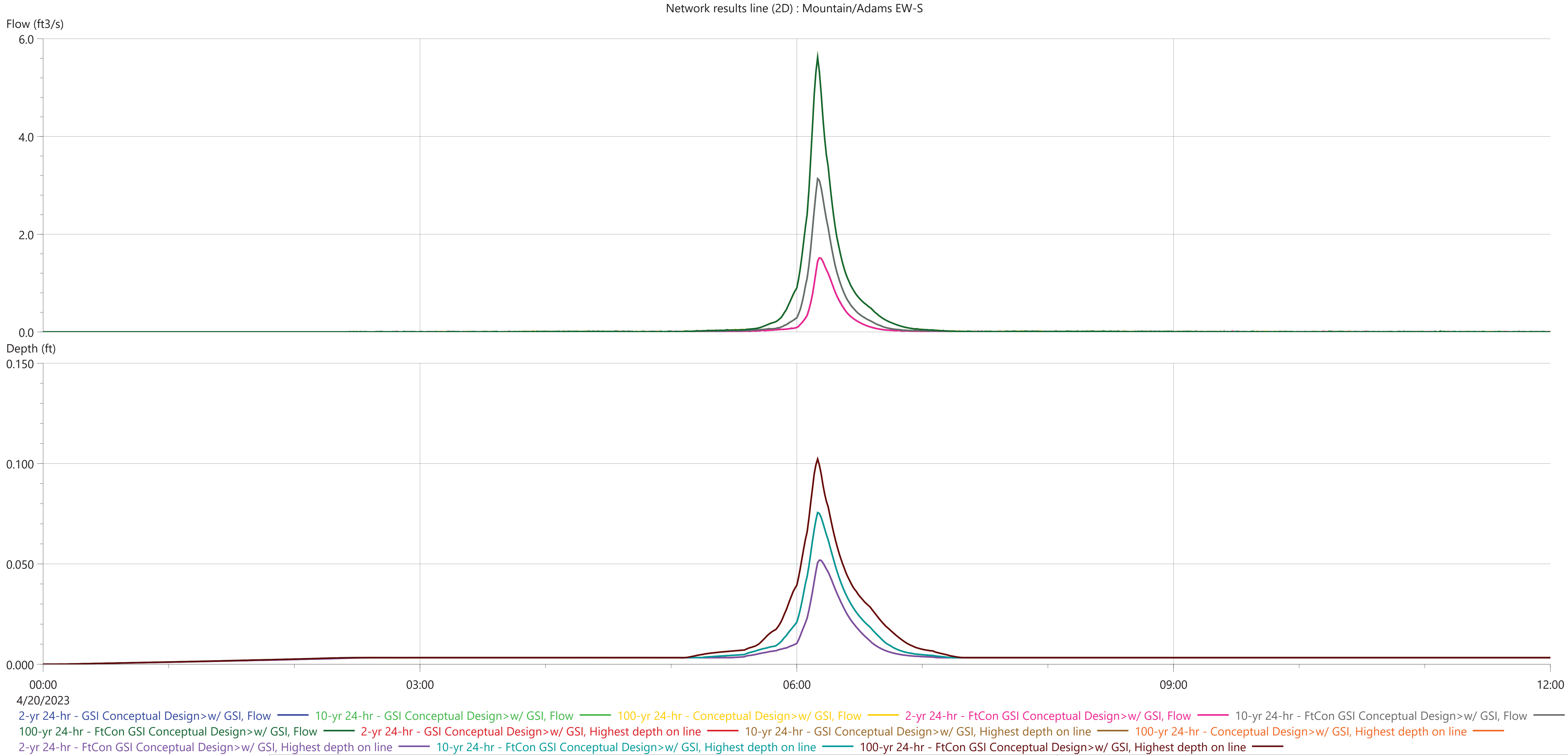

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.515	1506.712	0.000	0.052
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.137	2983.042	0.000	0.076
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	5.620	5504.986	0.000	0.102
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.515	1512.386	0.000	0.052
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.137	2981.275	0.000	0.076
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.620	5515.210	0.000	0.102

Proposed Conditions (with GSI improvements) results from Network Results Lines

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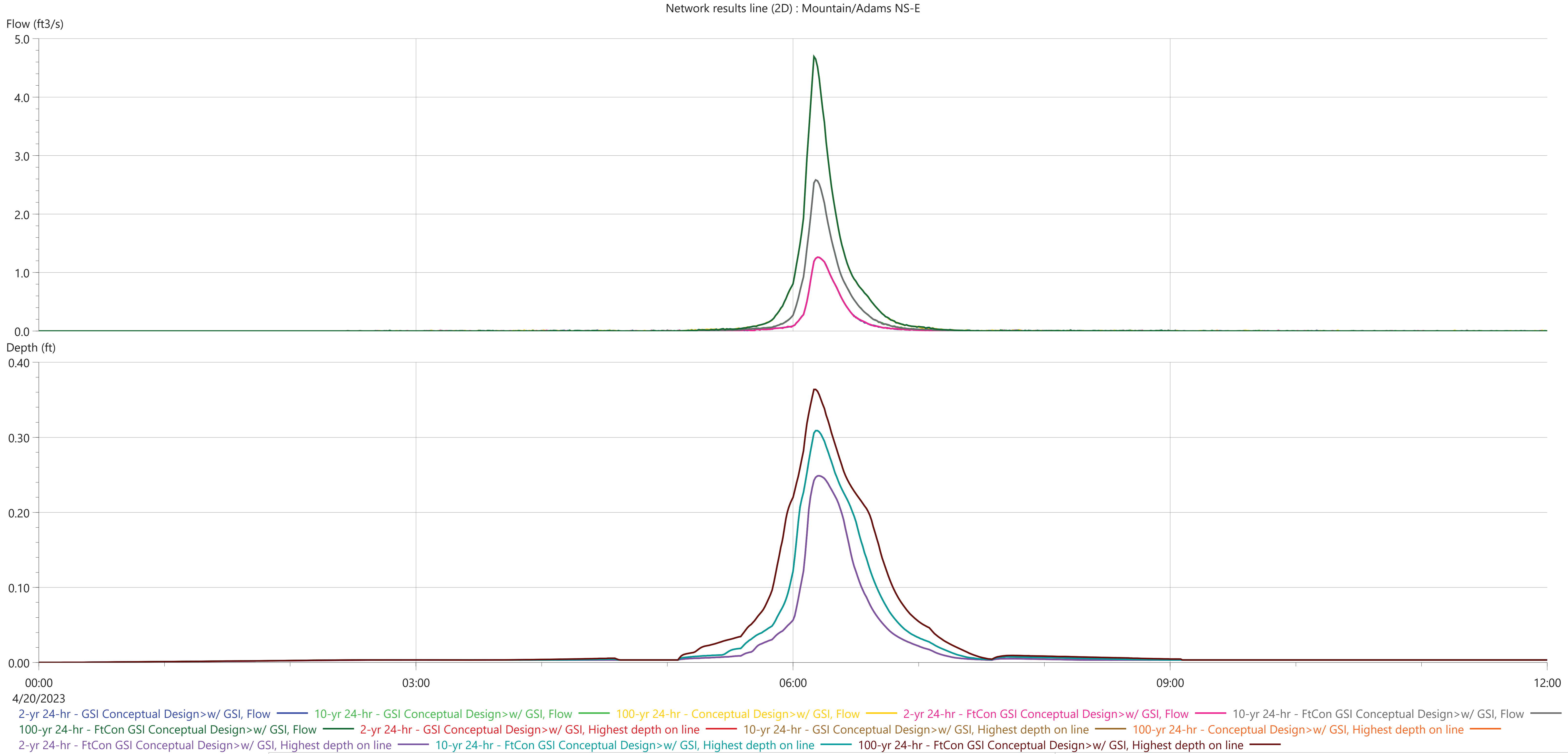

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.262	1444.698	0.000	0.249
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.585	2907.090	0.000	0.309
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	4.694	5375.332	0.000	0.364
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.262	1442.928	0.000	0.249
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.585	2901.728	0.000	0.309
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.694	5369.833	0.000	0.364

Proposed Conditions (with GSI improvements) results from Network Results Lines

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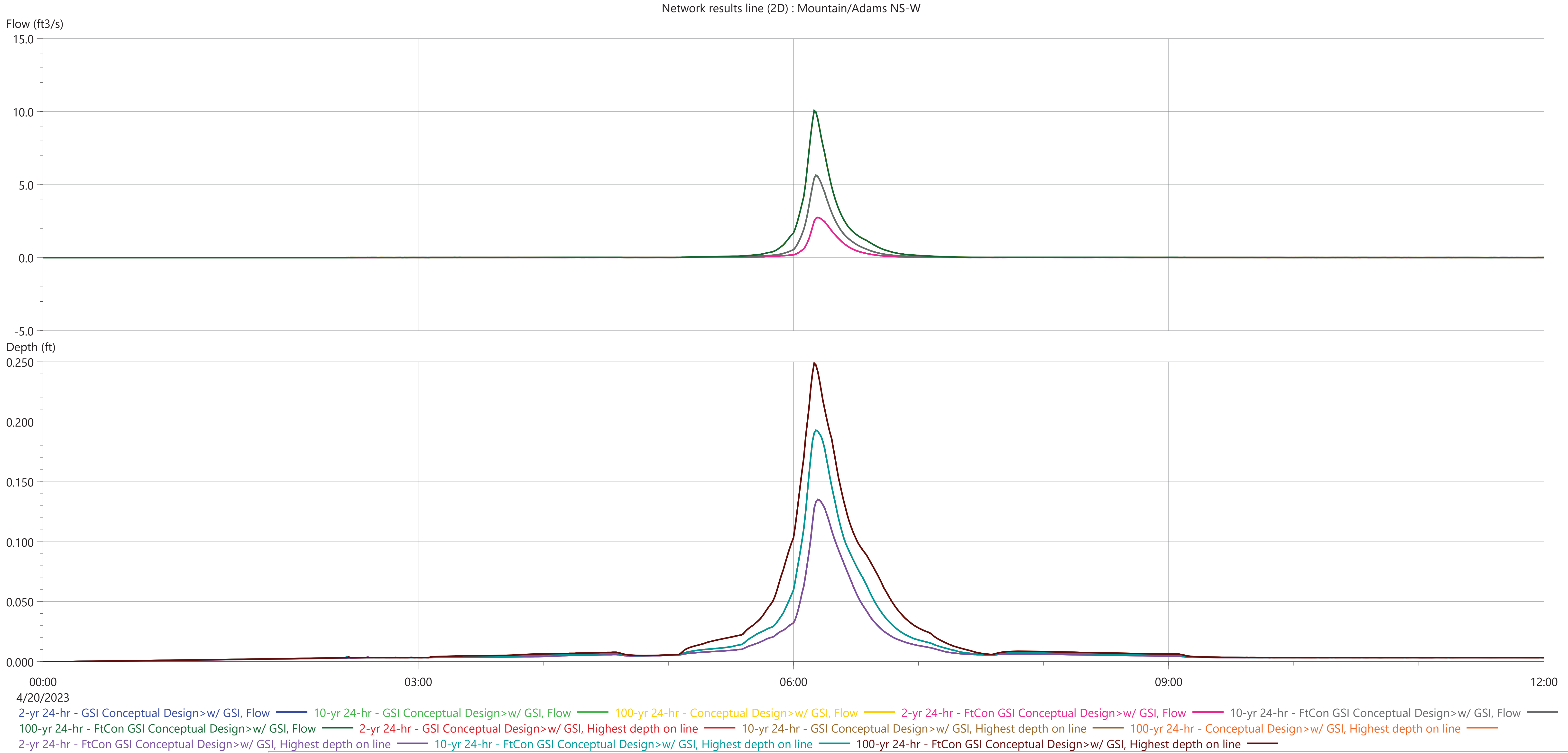

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	2.755	3124.752	0.000	0.135
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	5.645	6109.933	0.000	0.193
100-yr 24-hr - Conceptual Design>w/ GSI	-0.000	10.079	11149.887	0.000	0.249
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	2.755	3122.491	0.000	0.135
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.651	6106.612	0.000	0.193
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	10.079	11155.341	0.000	0.249

Proposed Conditions (with GSI improvements) results from Network Results Lines

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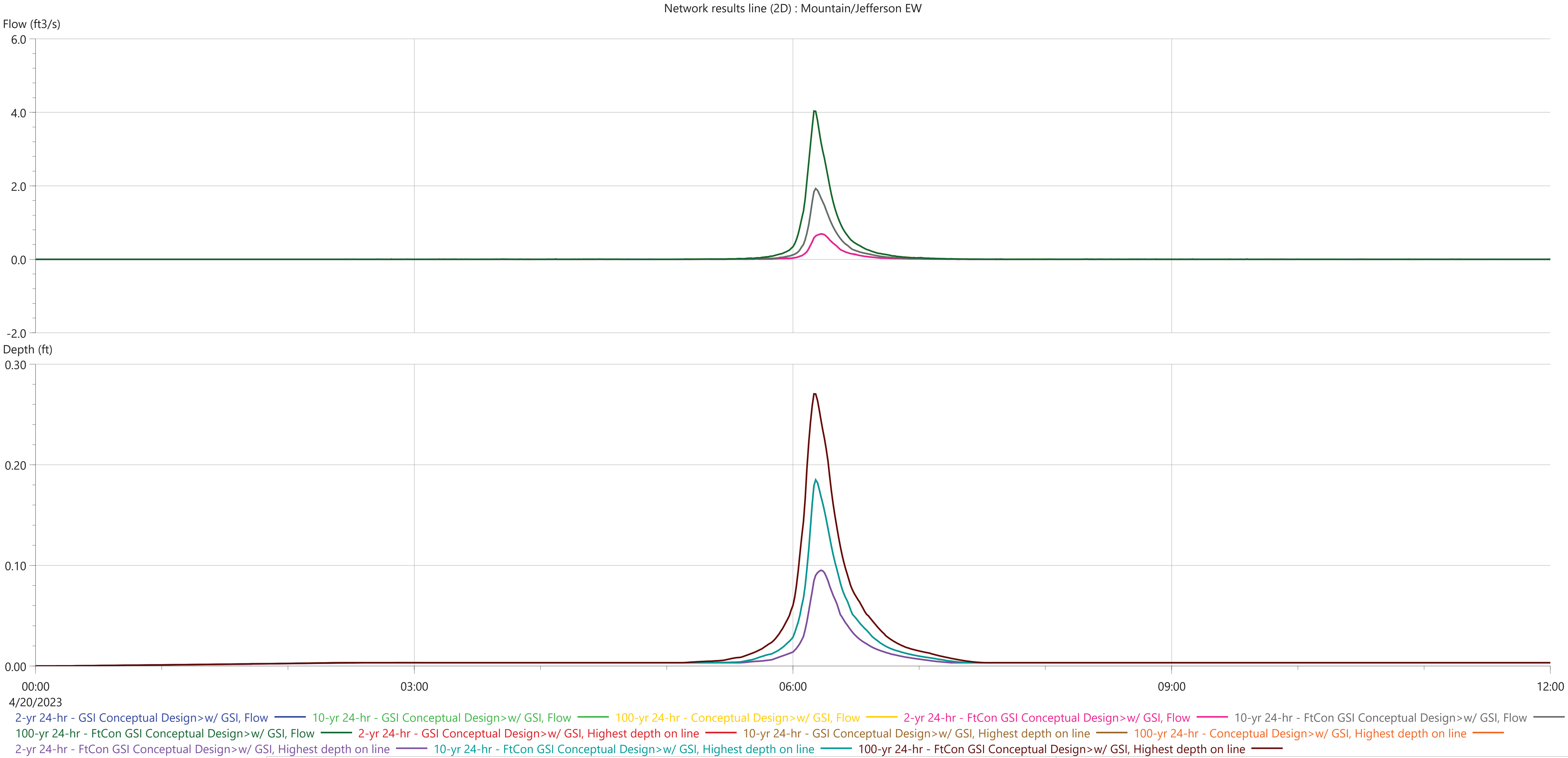

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	0.688	729.957	0.000	0.095
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	1.926	1735.597	0.000	0.185
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	4.034	3612.878	0.000	0.270
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	0.693	728.488	0.000	0.095
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	1.926	1734.793	0.000	0.185
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	4.034	3614.082	0.000	0.270

Proposed Conditions (with GSI improvements) results from Network Results Lines

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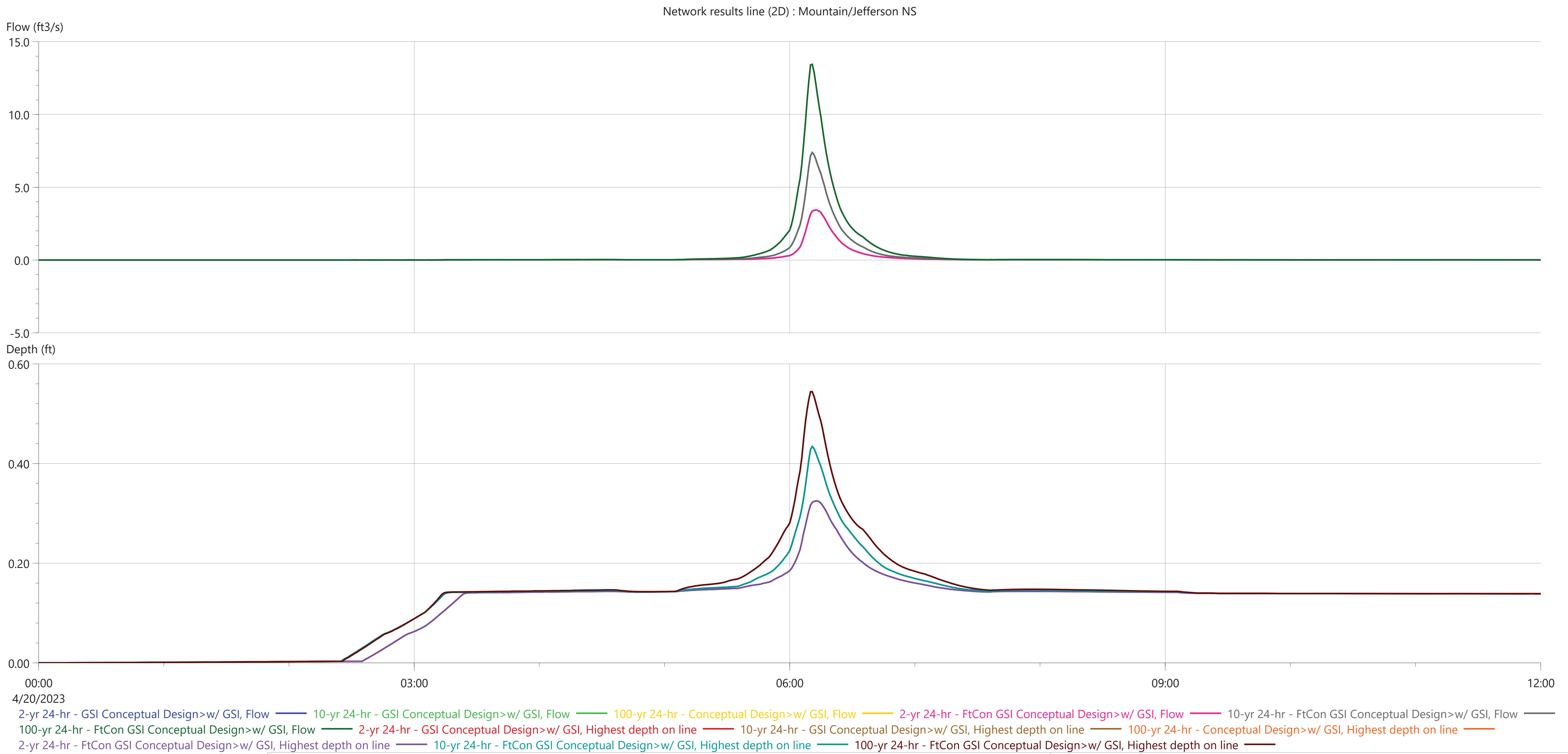

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	3.438	4349.067	0.000	0.325
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	7.383	8444.948	0.000	0.434
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	13.436	15240.659	0.000	0.544
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	3.438	4347.155	0.000	0.325
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	7.383	8443.529	0.000	0.434
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	13.436	15239.863	0.000	0.544

Proposed Conditions (with GSI improvements) results from Network Results Lines

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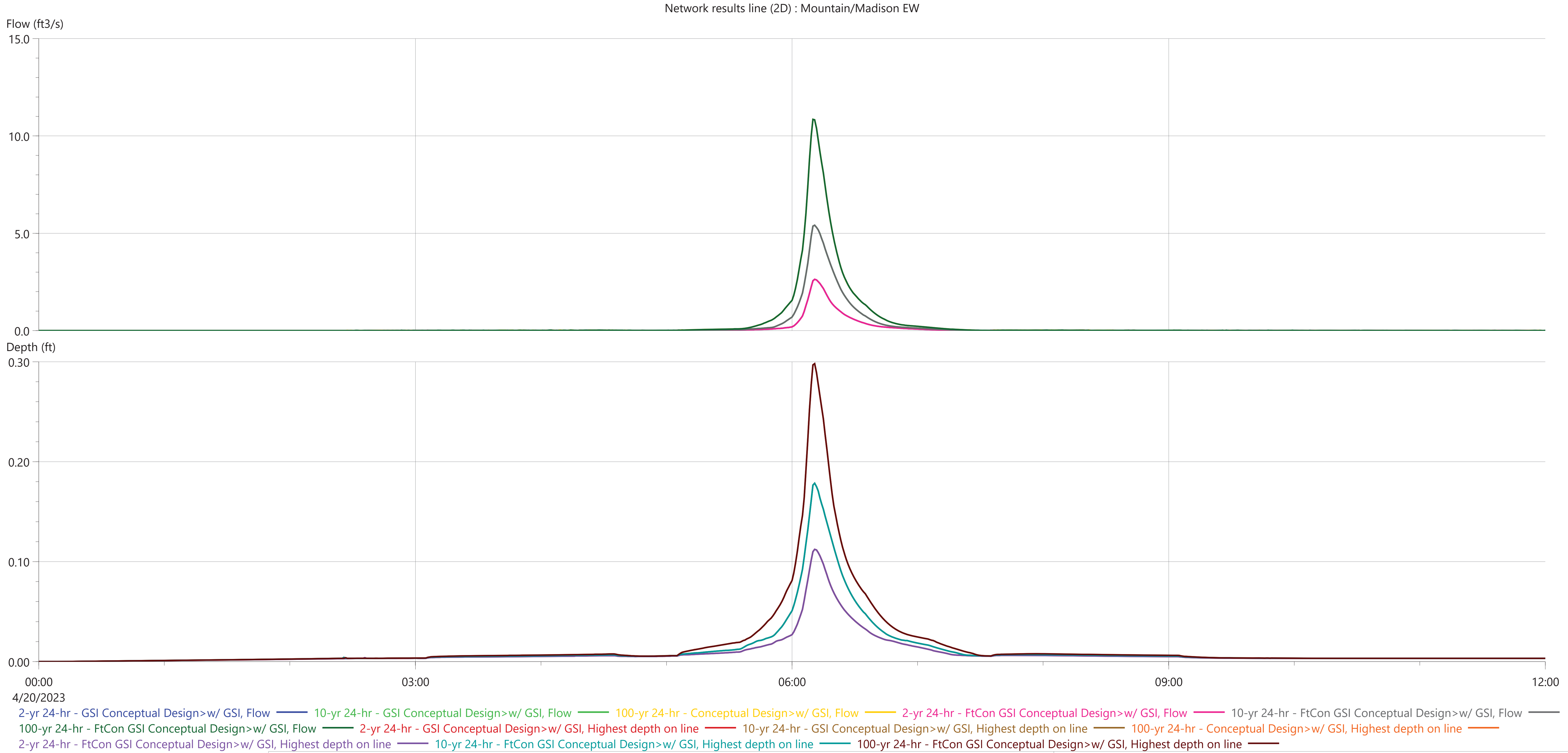

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.632	3148.971	0.000	0.112
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	5.413	6580.152	0.000	0.179
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	10.849	12195.207	0.000	0.298
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.632	3150.611	0.000	0.112
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.411	6585.944	0.000	0.179
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	10.849	12192.132	0.000	0.298

Proposed Conditions (with GSI improvements) results from Network Results Lines

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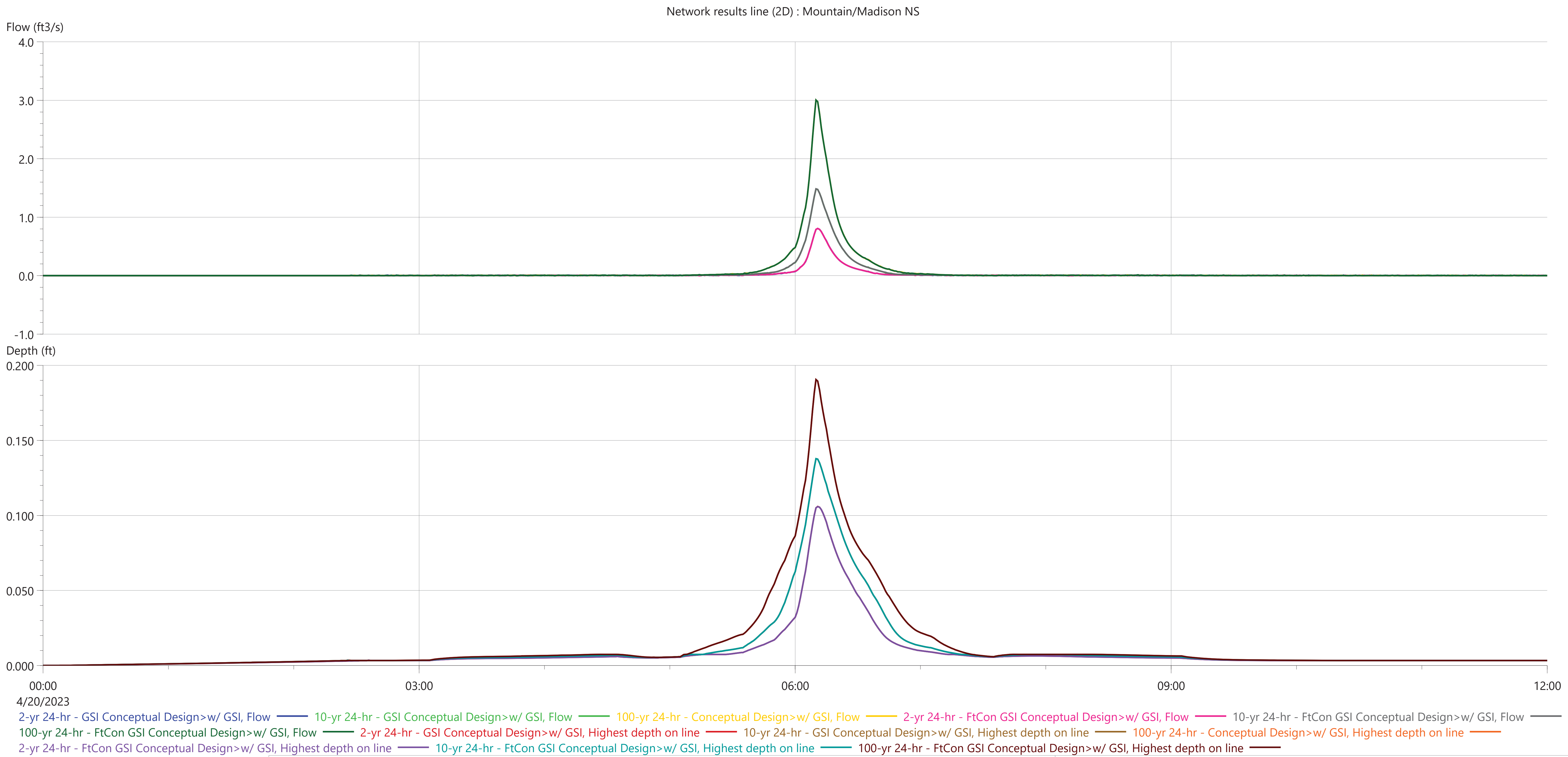

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	0.807	840.367	0.000	0.106
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	1.481	1632.183	0.000	0.138
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	3.004	3072.774	0.000	0.191
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	0.807	844.220	0.000	0.106
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	1.486	1633.170	0.000	0.138
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	3.004	3066.498	0.000	0.191

Proposed Conditions (with GSI improvements) results from Network Results Lines

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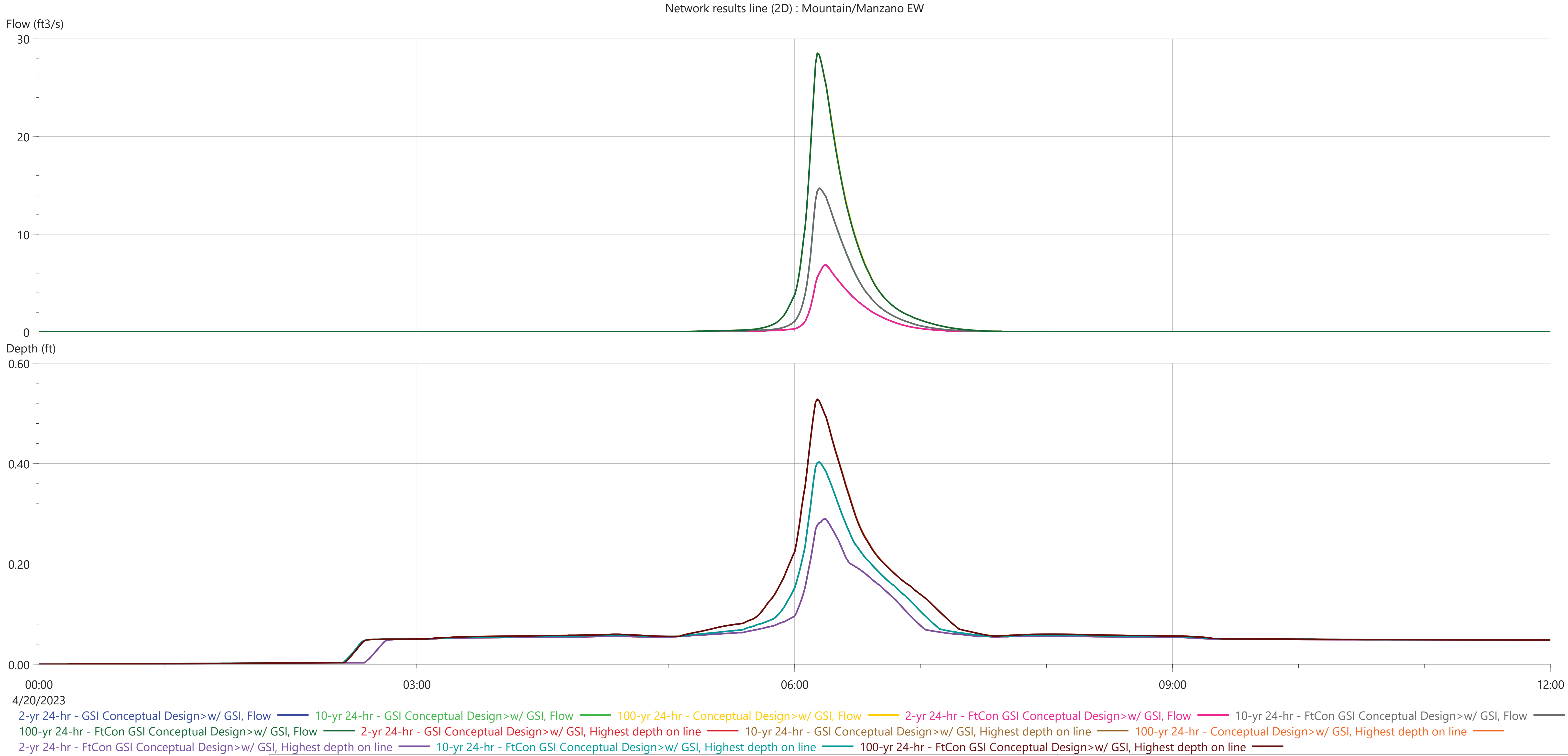

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	6.838	10655.294	0.000	0.290
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	14.703	21404.873	0.000	0.403
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	28.512	40133.209	0.000	0.528
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	6.838	10657.751	0.000	0.290
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	14.703	21360.372	0.000	0.403
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	28.508	39913.584	0.000	0.528

Proposed Conditions (with GSI improvements) results from Network Results Lines

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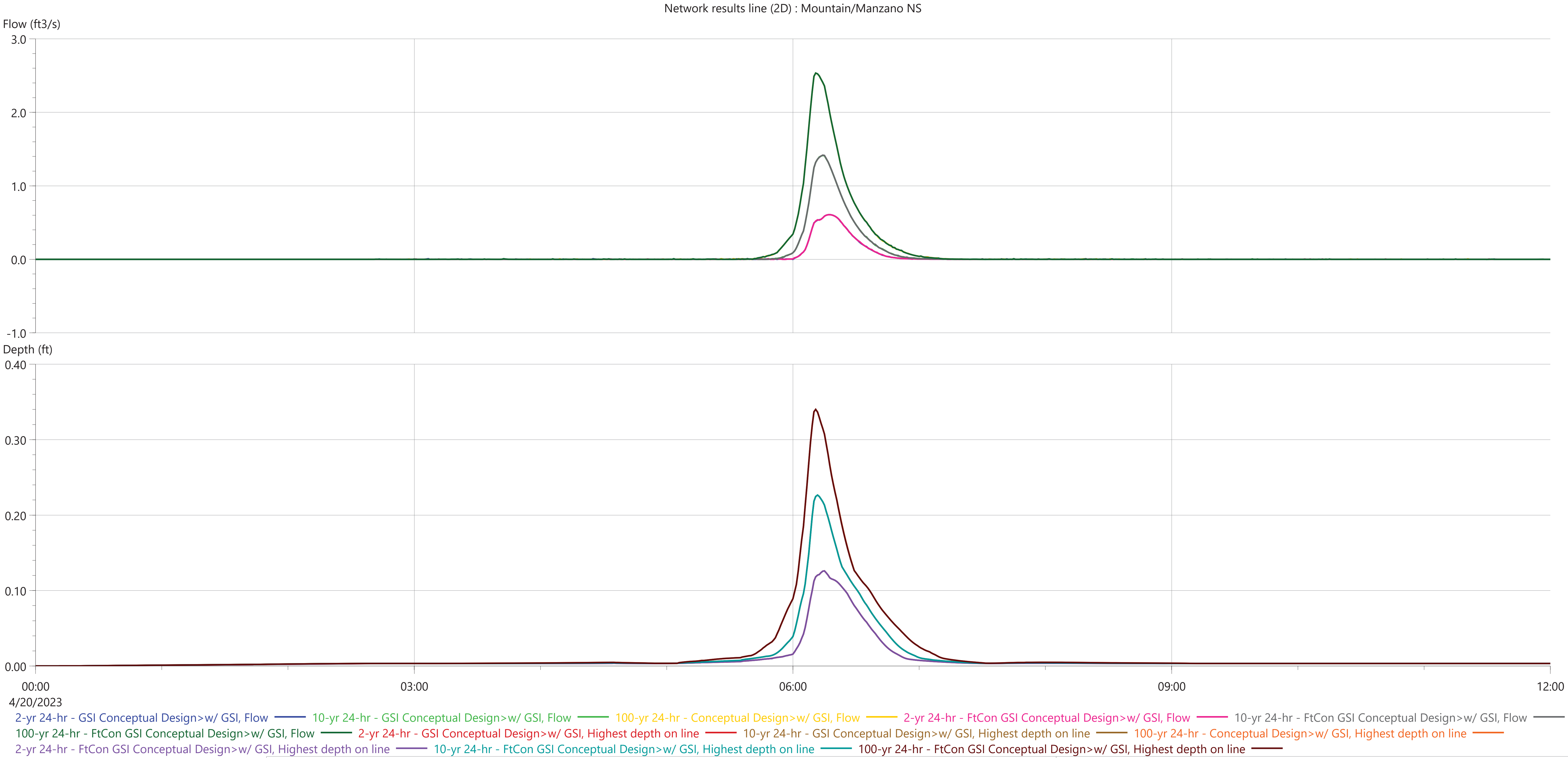

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	0.607	845.647	0.000	0.126
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	1.413	1833.864	0.000	0.227
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	2.534	3364.040	0.000	0.340
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	0.606	843.523	0.000	0.126
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	1.417	1832.898	0.000	0.227
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	2.534	3363.623	0.000	0.340

Proposed Conditions (with GSI improvements) results from Network Results Lines

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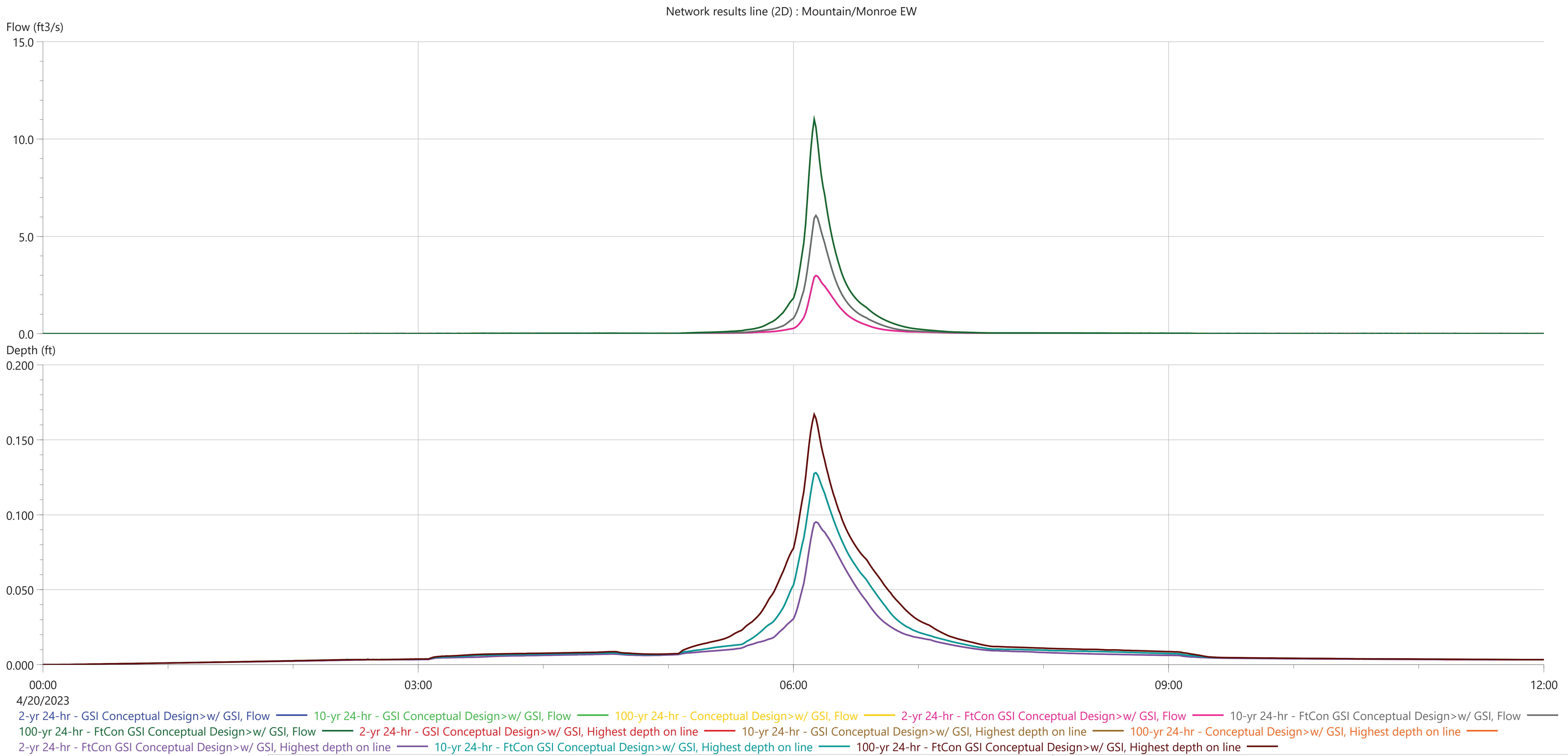

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.984	3852.730	0.000	0.095
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	6.077	7216.725	0.000	0.128
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	11.015	12539.082	0.000	0.167
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.984	3845.130	0.000	0.095
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	6.074	7217.586	0.000	0.128
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	11.015	12528.306	0.000	0.167

Proposed Conditions (with GSI improvements) results from Network Results Lines

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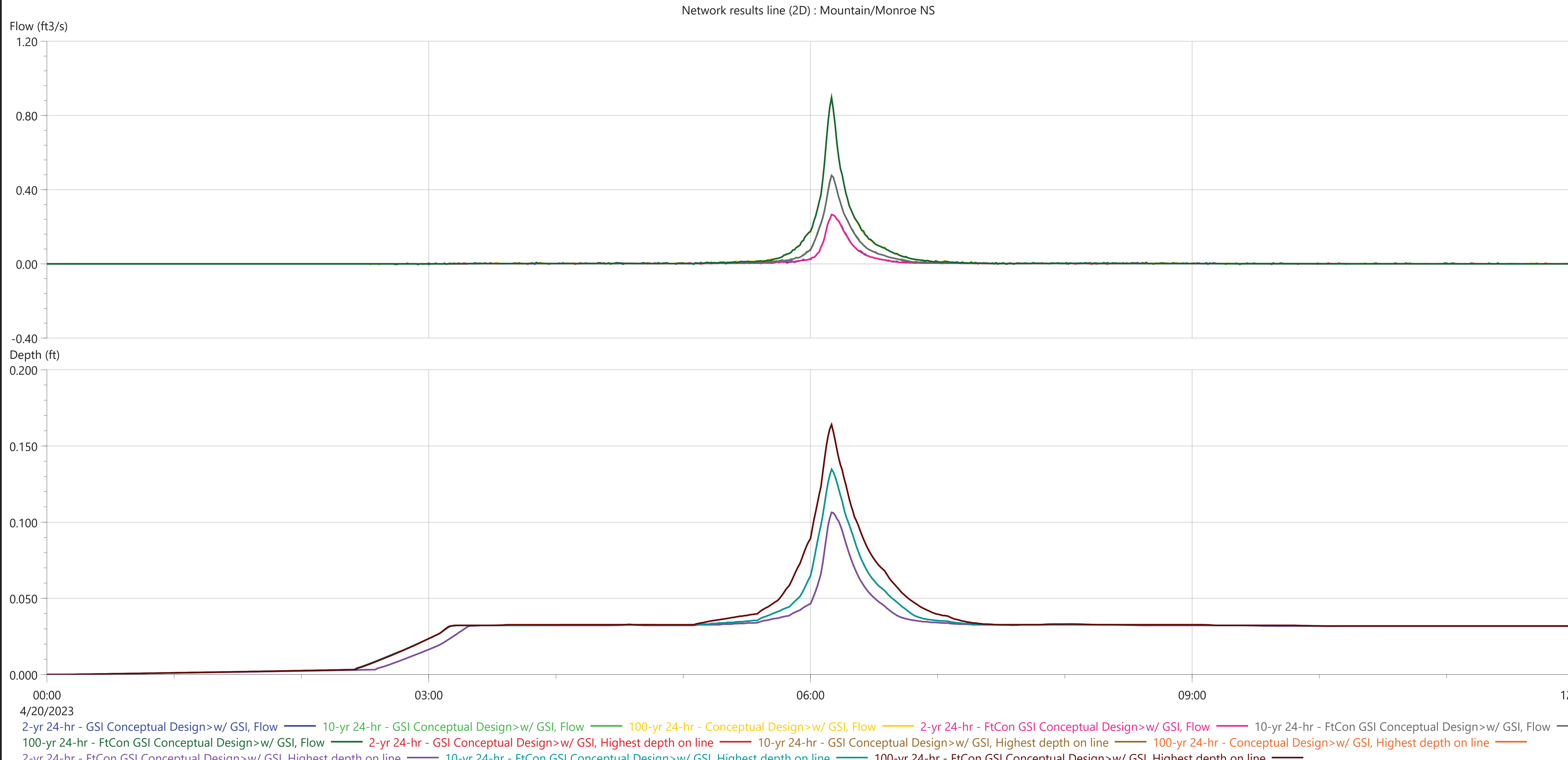

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	0.265	293.670	0.000	0.106
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	0.476	525.643	0.000	0.135
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	0.897	920.938	0.000	0.164
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	0.265	292.783	0.000	0.106
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	0.476	524.439	0.000	0.135
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	0.897	924.119	0.000	0.164

Proposed Conditions (with GSI improvements) results from Network Results Lines

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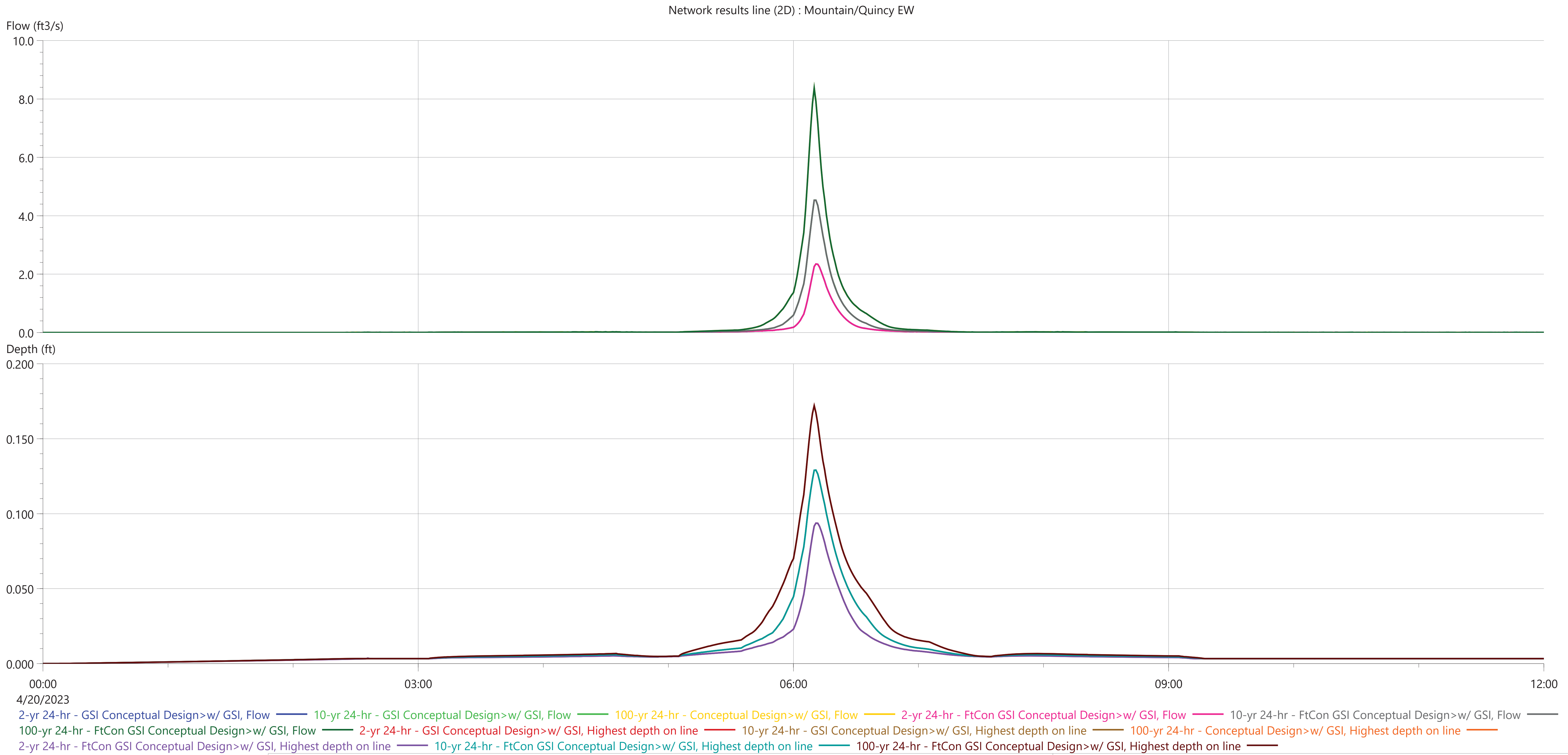

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.351	2416.781	0.000	0.094
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.535	4549.384	0.000	0.129
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	8.373	8071.830	0.000	0.172
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.351	2414.993	0.000	0.094
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.535	4550.415	0.000	0.129
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.373	8072.938	0.000	0.172

Proposed Conditions (with GSI improvements) results from Network Results Lines

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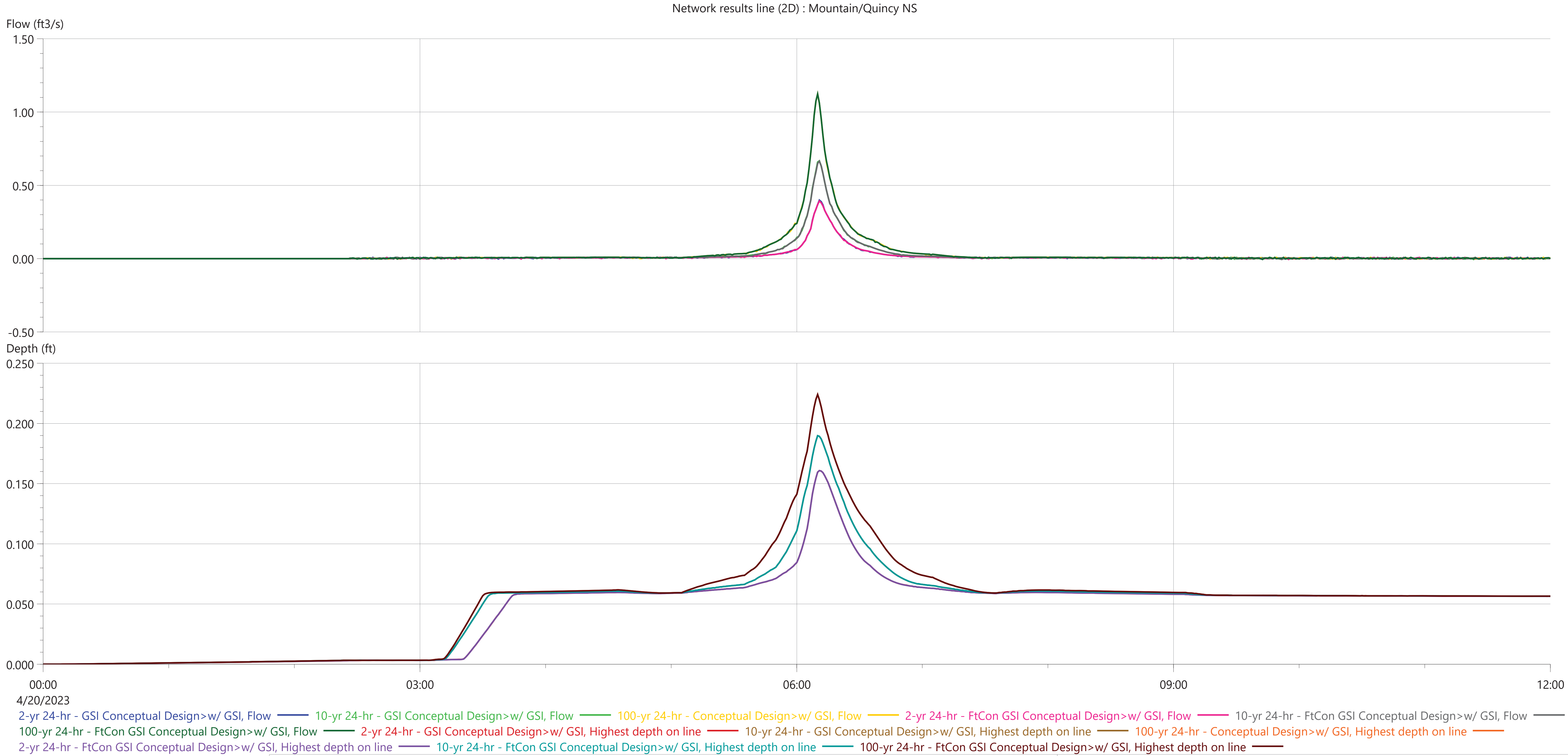

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	0.399	566.229	0.000	0.161
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.006	0.667	892.521	0.000	0.190
100-yr 24-hr - Conceptual Design>w/ GSI	-0.002	1.123	1394.804	0.000	0.224
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	0.392	561.452	0.000	0.161
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	0.665	888.762	0.000	0.190
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	1.123	1400.930	0.000	0.224

Proposed Conditions (with GSI improvements) results from Network Results Lines

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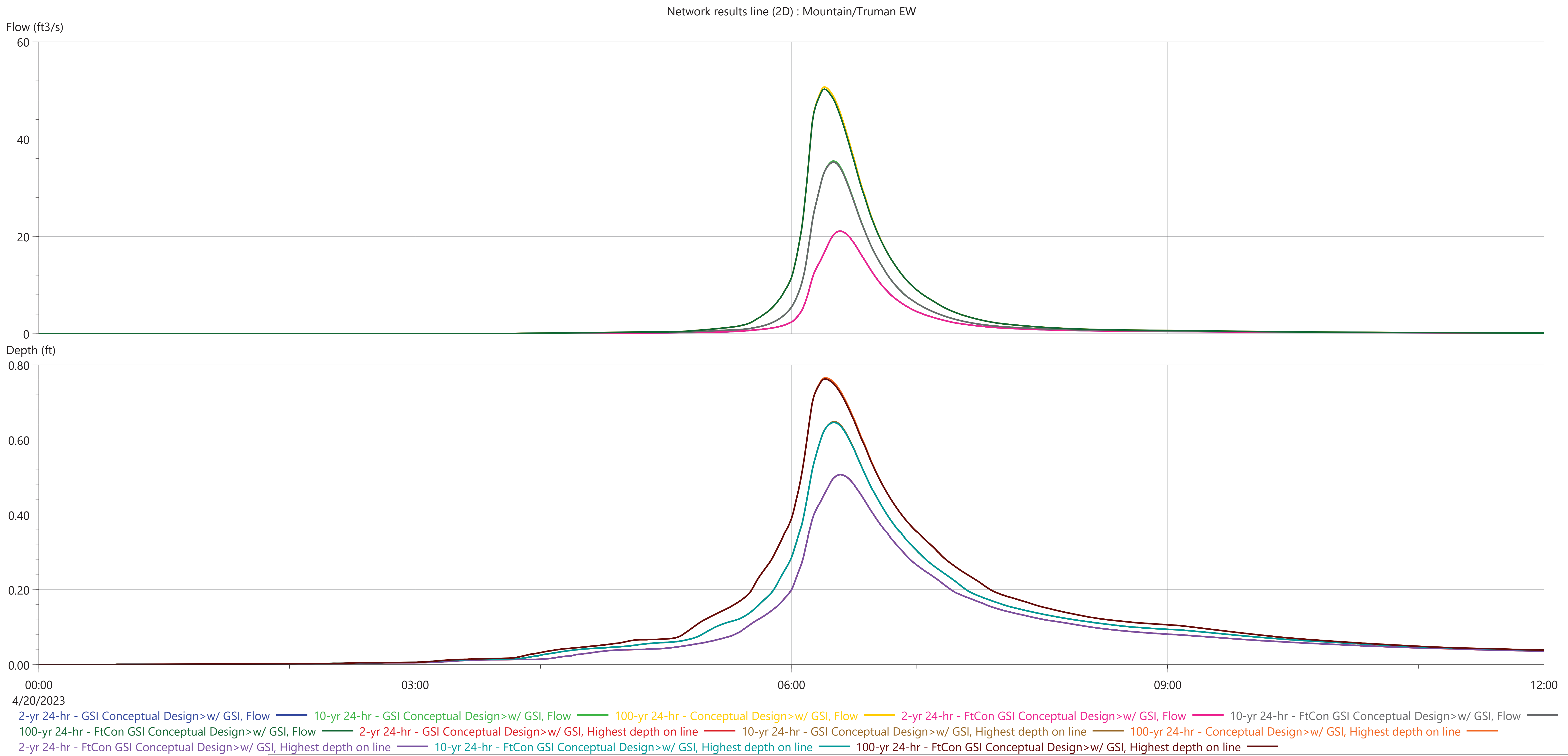

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	21.078	57945.813	0.000	0.507
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	35.489	90552.196	0.000	0.648
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	50.715	133939.820	0.000	0.766
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	21.072	57945.874	0.000	0.507
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	35.258	90340.235	0.000	0.646
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	50.269	133129.649	0.000	0.762

Proposed Conditions (with GSI improvements) results from Network Results Lines

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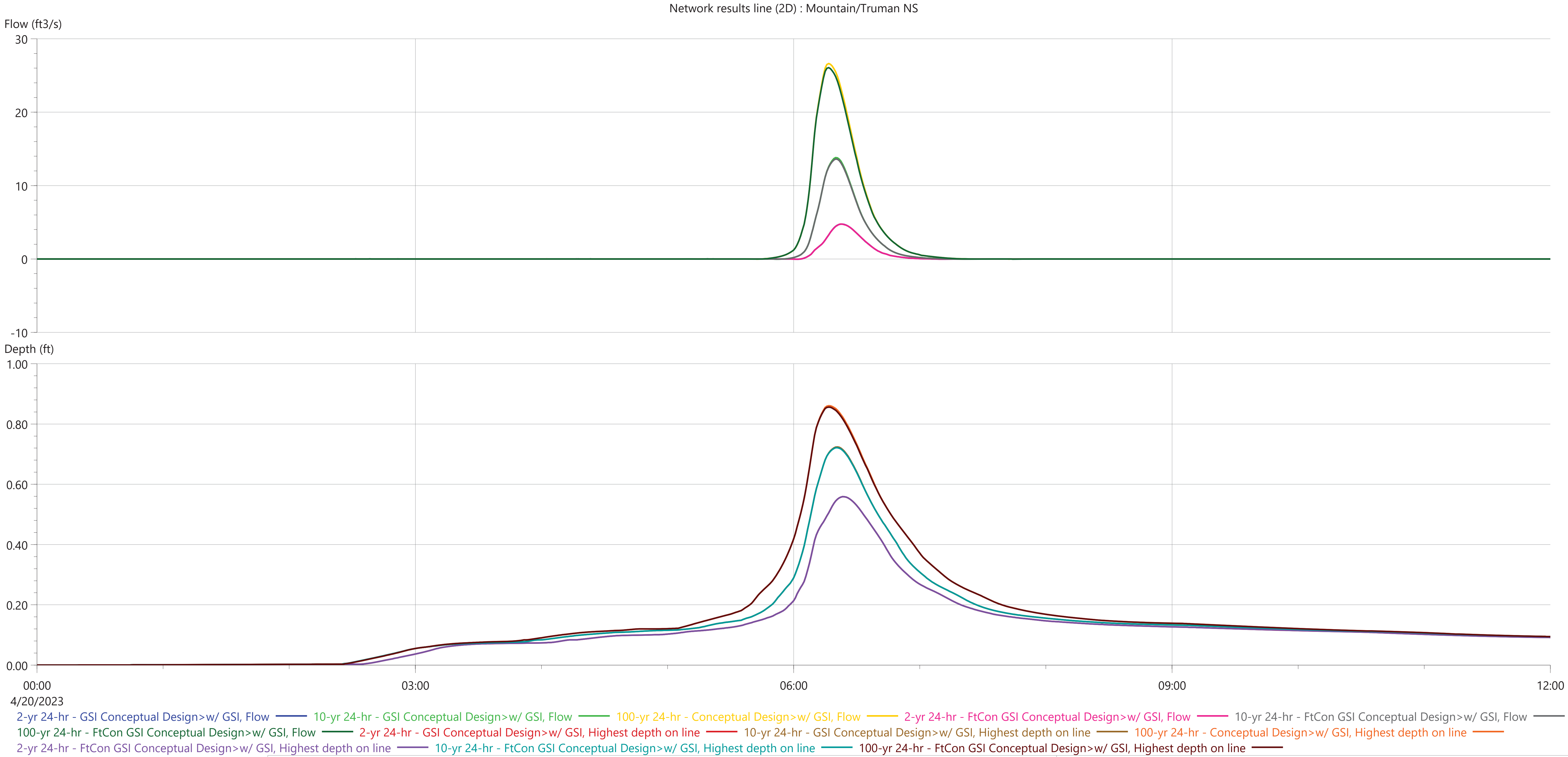

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.025	4.756	6191.292	0.000	0.559
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.024	13.819	18091.954	0.000	0.724
100-yr 24-hr - Conceptual Design>w/ GSI	-0.018	26.626	38696.087	0.000	0.861
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.024	4.757	6193.438	0.000	0.559
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.023	13.626	17936.576	0.000	0.721
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.018	26.066	37951.155	0.000	0.856

Proposed Conditions (with GSI improvements) results from Network Results Lines

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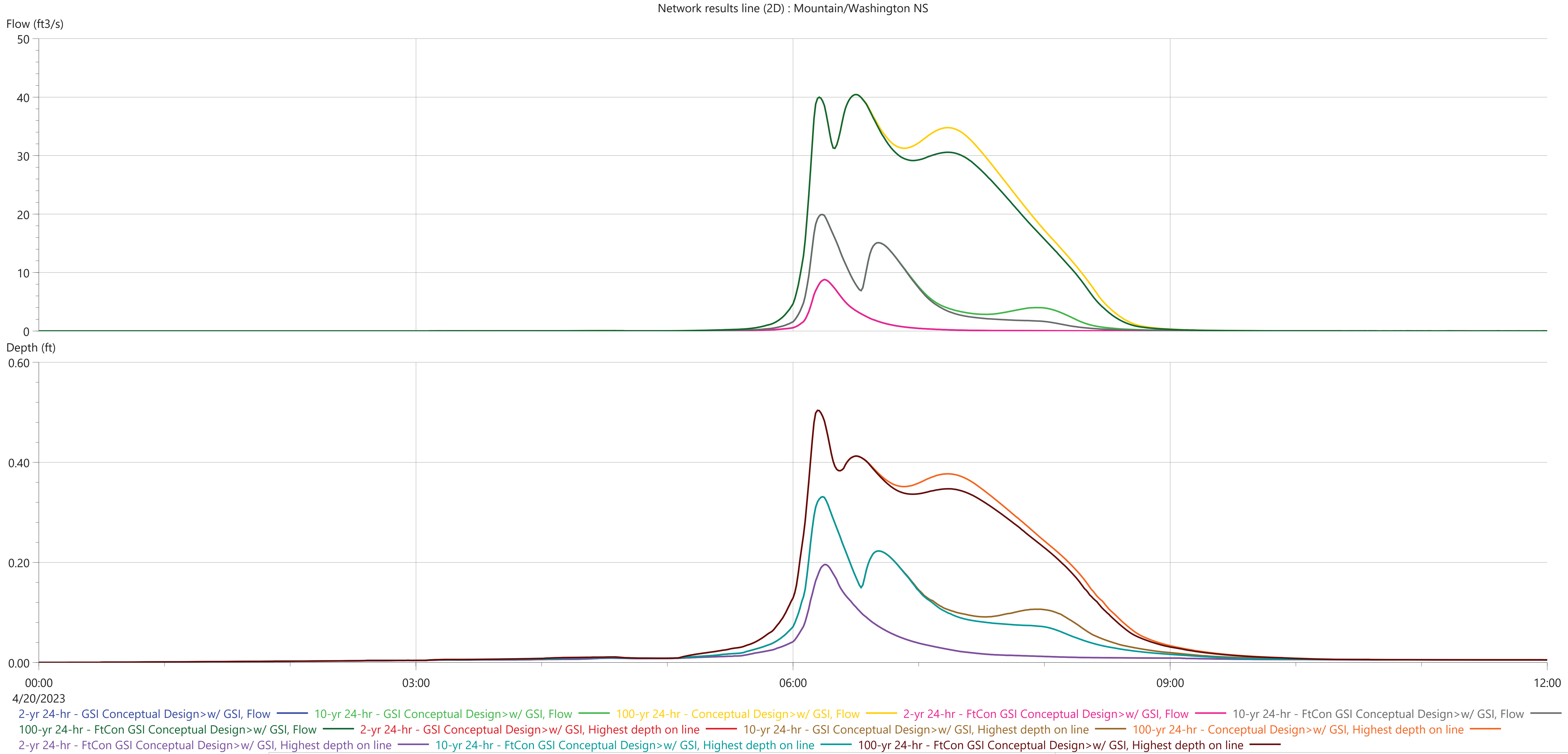

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	8.811	13255.626	0.000	0.196
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	19.909	62174.174	0.000	0.331
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	40.449	244448.597	0.000	0.504
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.807	13255.453	0.000	0.196
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	19.912	55868.805	0.000	0.331
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	40.443	228579.852	0.000	0.504

Proposed Conditions (with GSI improvements) results from Network Results Lines

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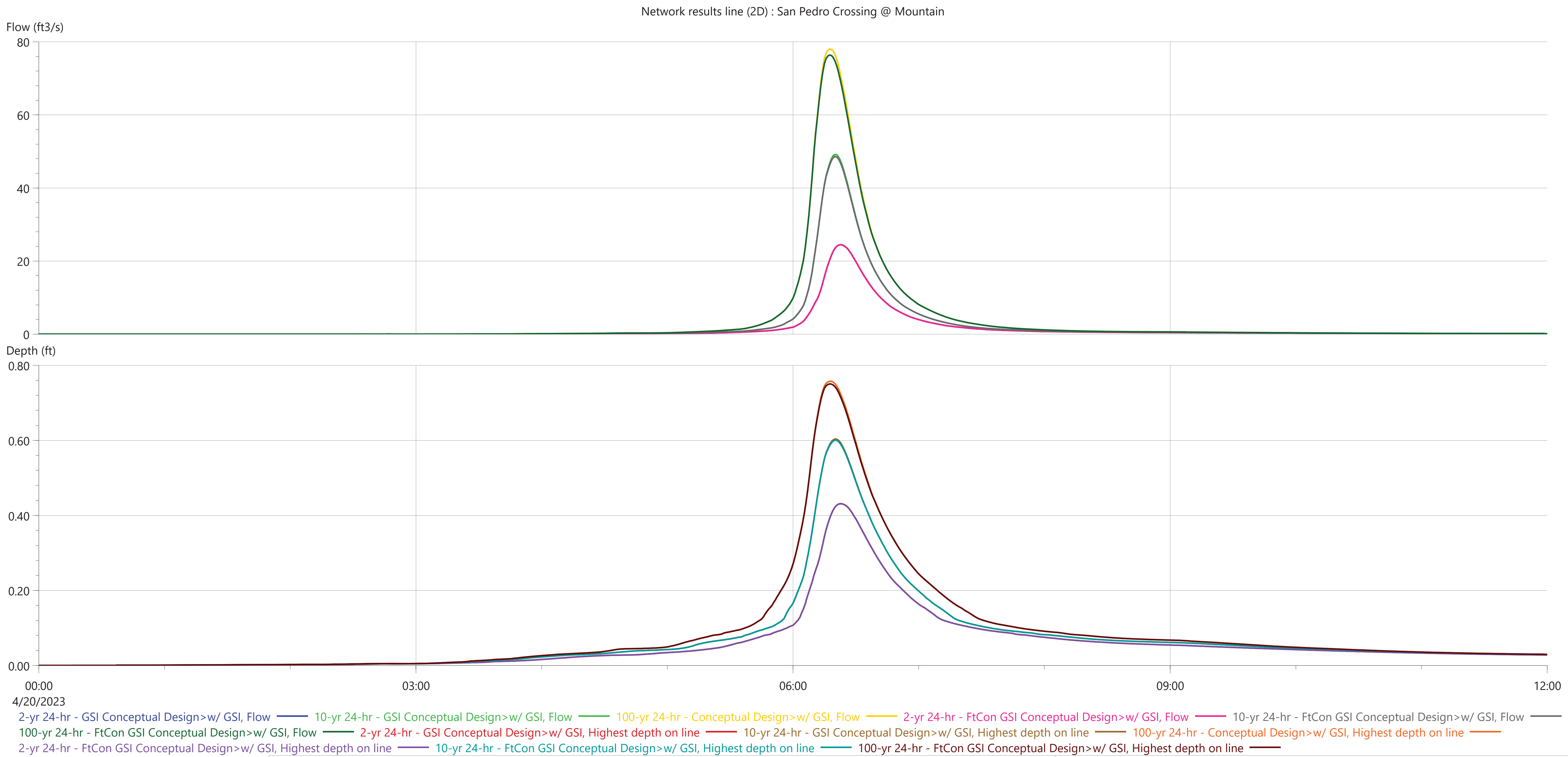

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	24.479	56139.766	0.000	0.431
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	49.176	97365.860	0.000	0.604
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	78.036	158555.143	0.000	0.758
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	24.470	56147.522	0.000	0.431
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	48.625	96913.084	0.000	0.601
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	76.390	156509.081	0.000	0.750

Proposed Conditions (with GSI improvements) results from Network Results Lines

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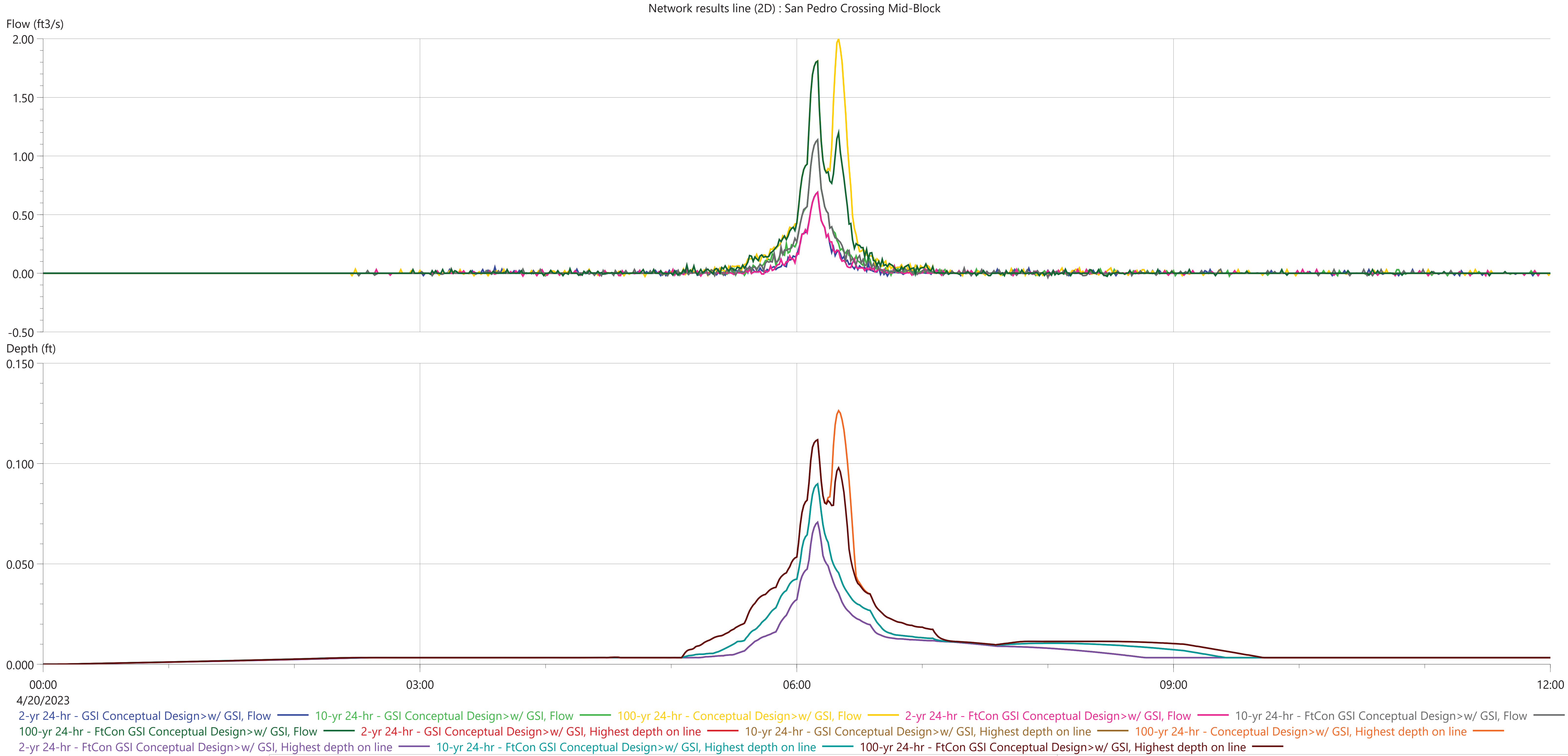

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.022	0.690	663.882	0.000	0.071
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.023	1.137	1146.782	0.000	0.090
100-yr 24-hr - Conceptual Design>w/ GSI	-0.027	1.998	2652.167	0.000	0.126
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.023	0.690	659.848	0.000	0.071
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.036	1.137	1148.732	0.000	0.090
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.027	1.810	2210.220	0.000	0.112

Proposed Conditions (with GSI improvements) results from Network Results Lines

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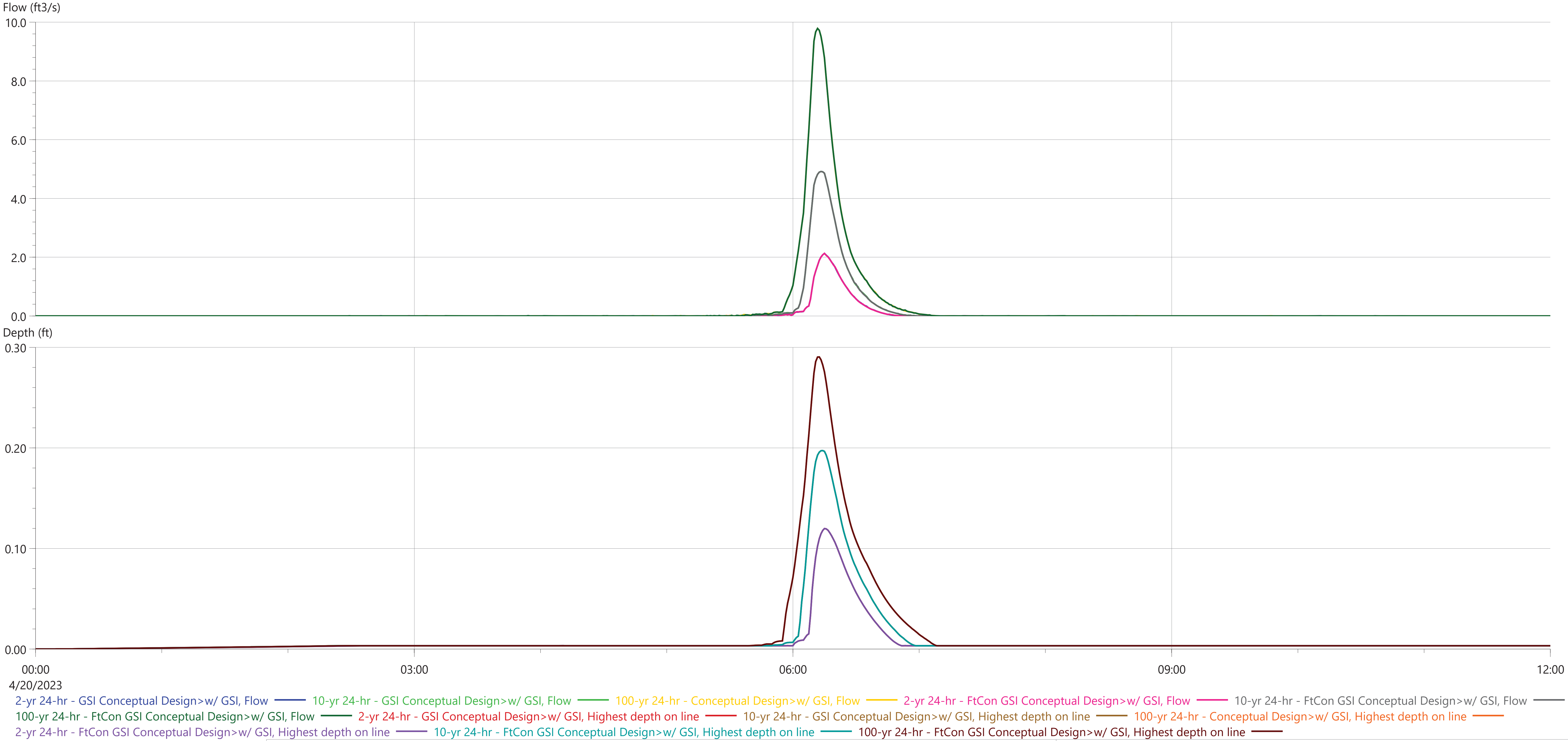
Network results line (2D) : Summer - Jefferson/Adams N



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.129	2229.103	0.000	0.120
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.919	5327.874	0.000	0.197
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	9.784	10639.358	0.000	0.291
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.129	2223.845	0.000	0.120
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.919	5321.739	0.000	0.197
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	9.784	10640.664	0.000	0.291

Proposed Conditions (with GSI improvements) results from Network Results Lines

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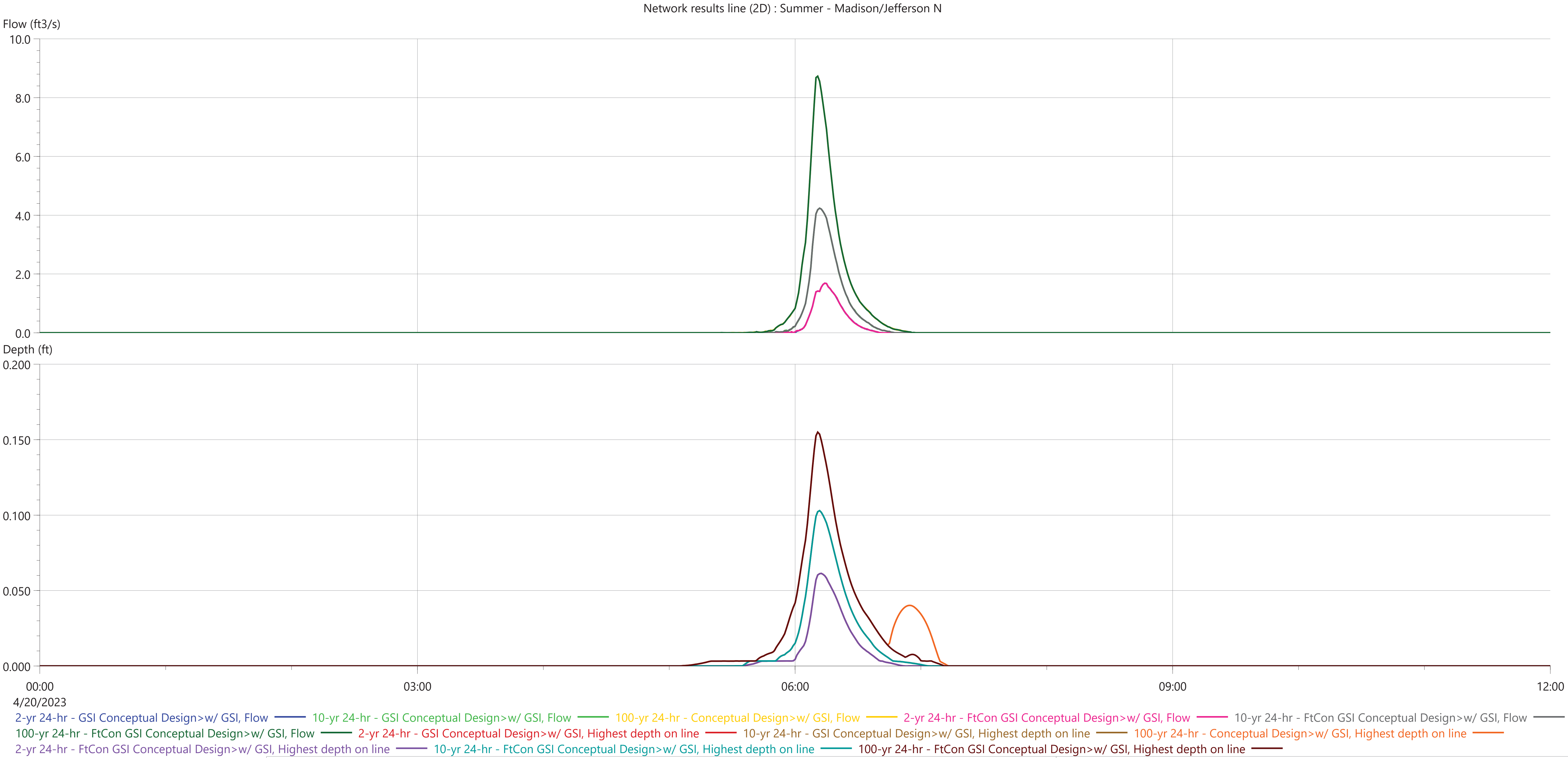

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.689	1601.469	0.000	0.061
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.239	4096.339	0.000	0.103
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	8.730	8457.187	0.000	0.155
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.689	1607.358	0.000	0.061
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.239	4100.306	0.000	0.103
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.730	8454.627	0.000	0.155

Proposed Conditions (with GSI improvements) results from Network Results Lines

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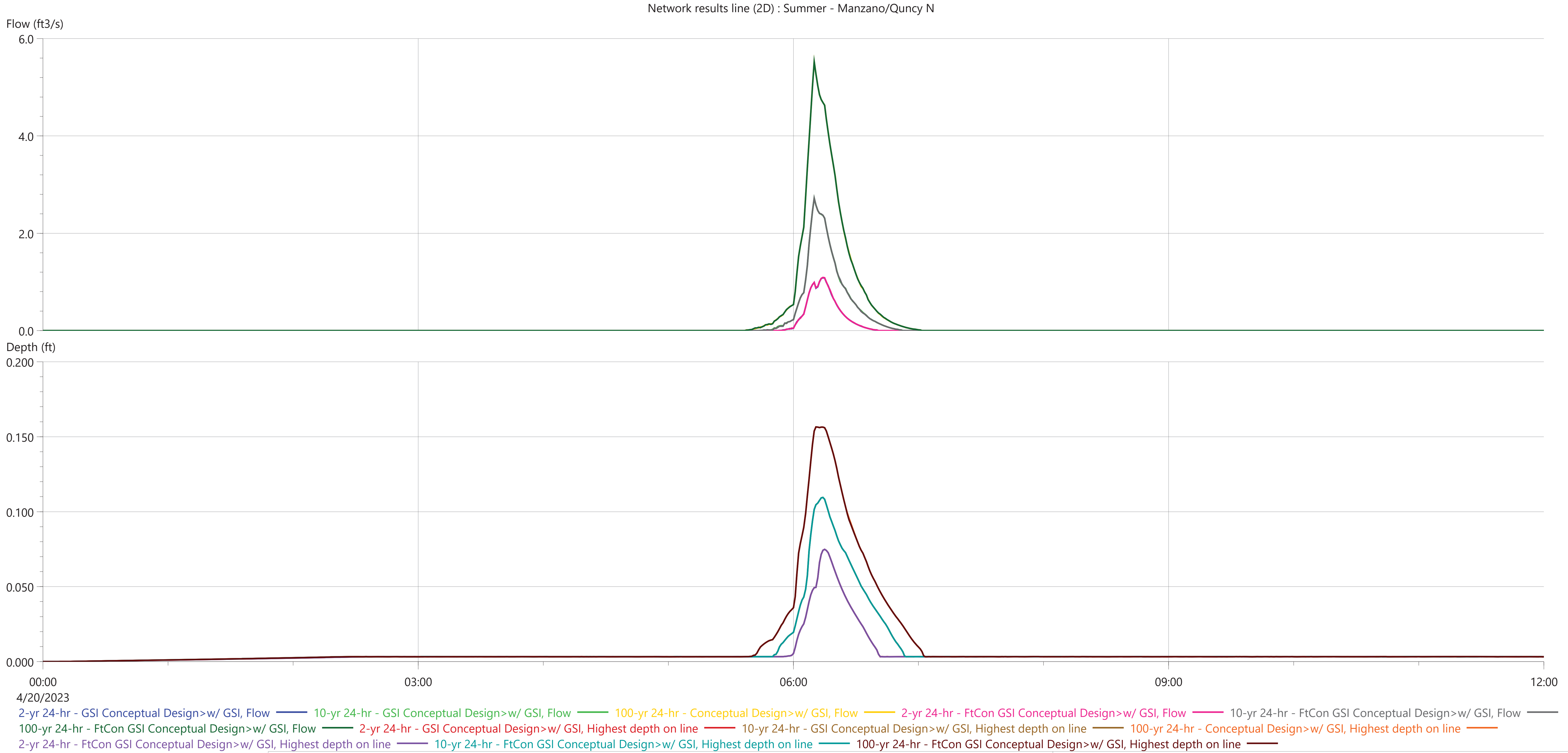

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.087	1064.921	0.000	0.075
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.719	2807.057	0.000	0.109
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	5.523	6301.217	0.000	0.157
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.092	1068.362	0.000	0.075
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.719	2801.610	0.000	0.109
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.523	6302.382	0.000	0.157

Proposed Conditions (with GSI improvements) results from Network Results Lines

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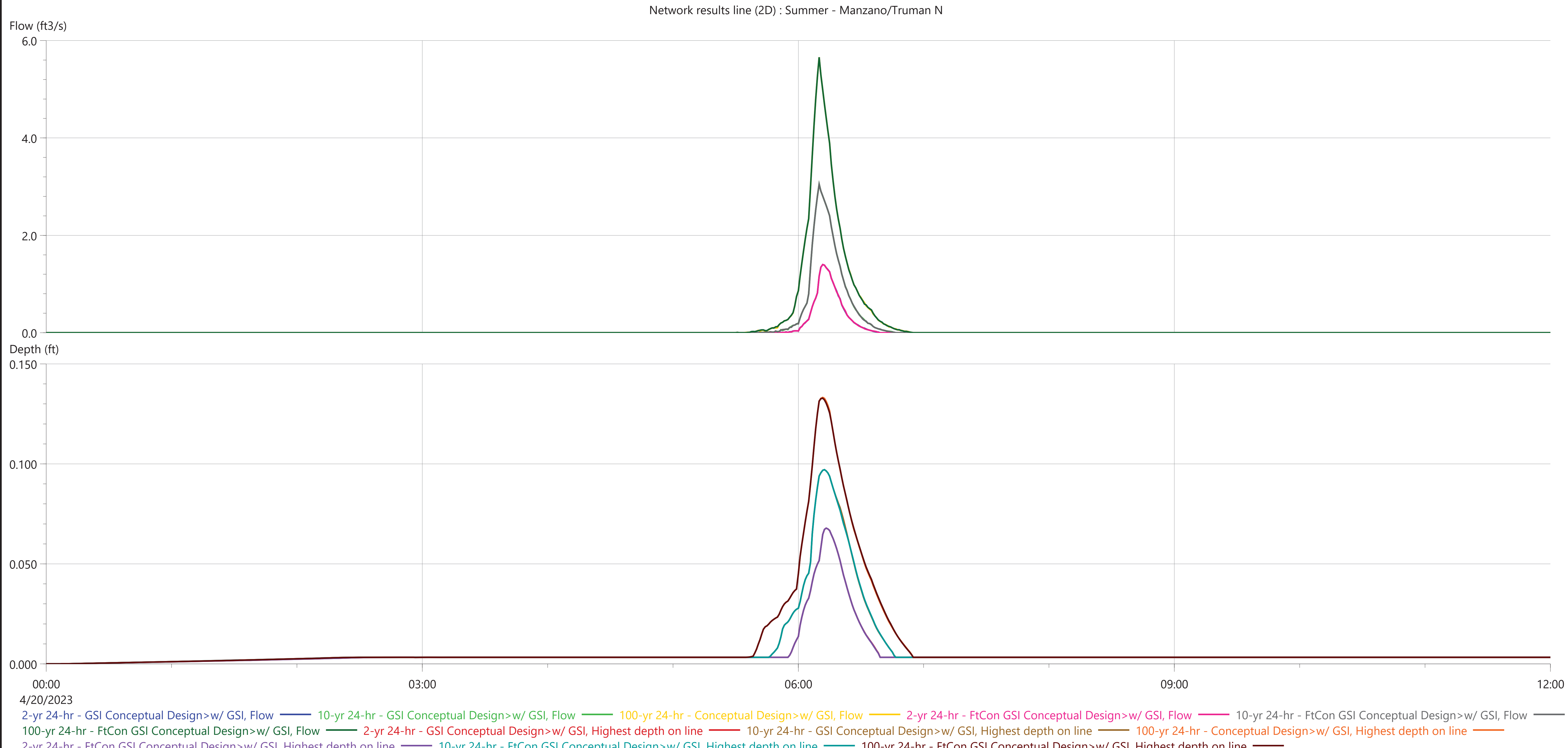

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.401	1153.449	0.000	0.068
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.050	2749.194	0.000	0.097
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	5.657	5371.061	0.000	0.133
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.401	1152.081	0.000	0.068
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.050	2747.202	0.000	0.097
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.657	5375.024	0.000	0.133

Proposed Conditions (with GSI improvements) results from Network Results Lines

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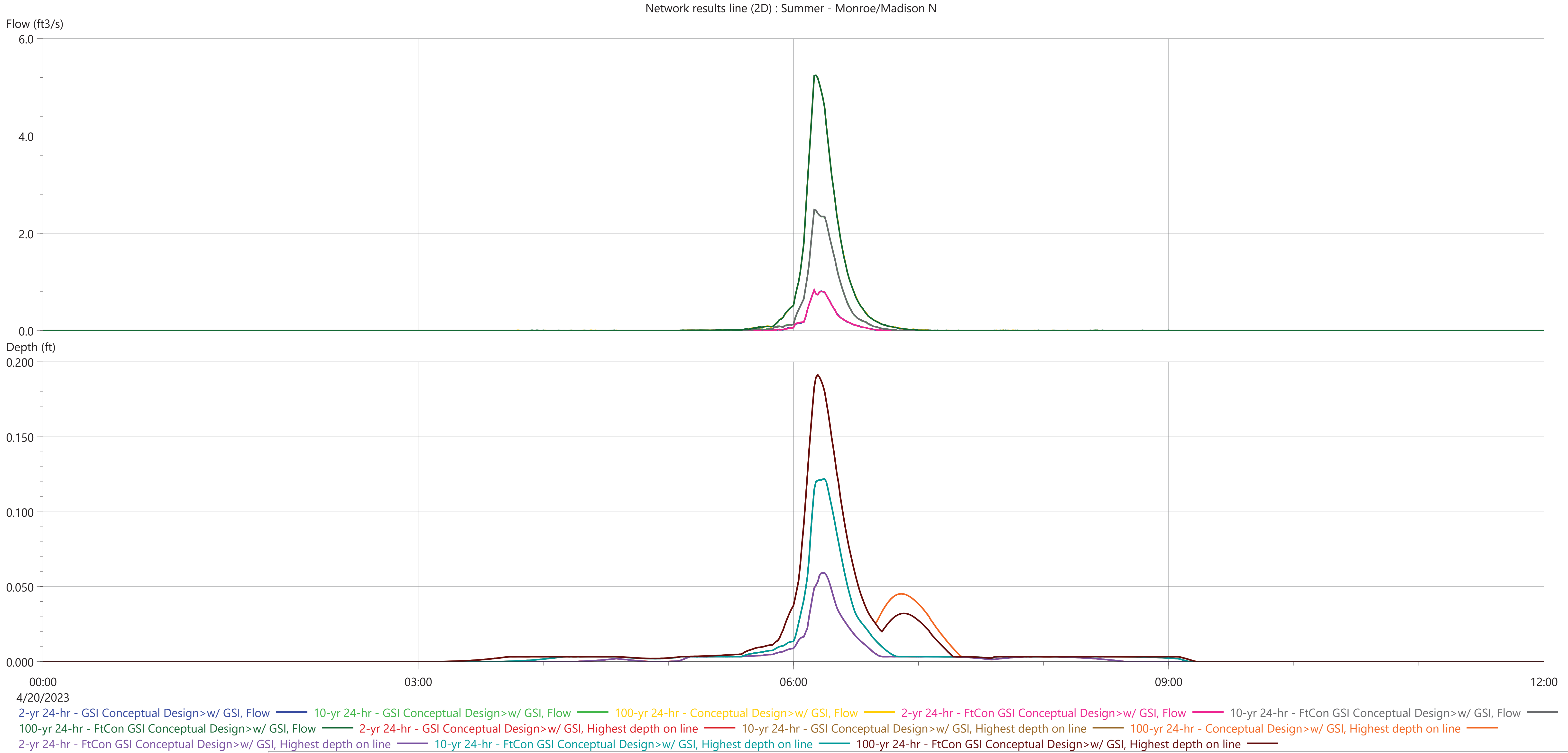

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	0.836	812.690	0.000	0.059
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.484	2496.673	0.000	0.122
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	5.247	5405.604	0.000	0.191
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	0.836	815.697	0.000	0.059
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.484	2494.639	0.000	0.122
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.247	5399.019	0.000	0.191

Proposed Conditions (with GSI improvements) results from Network Results Lines

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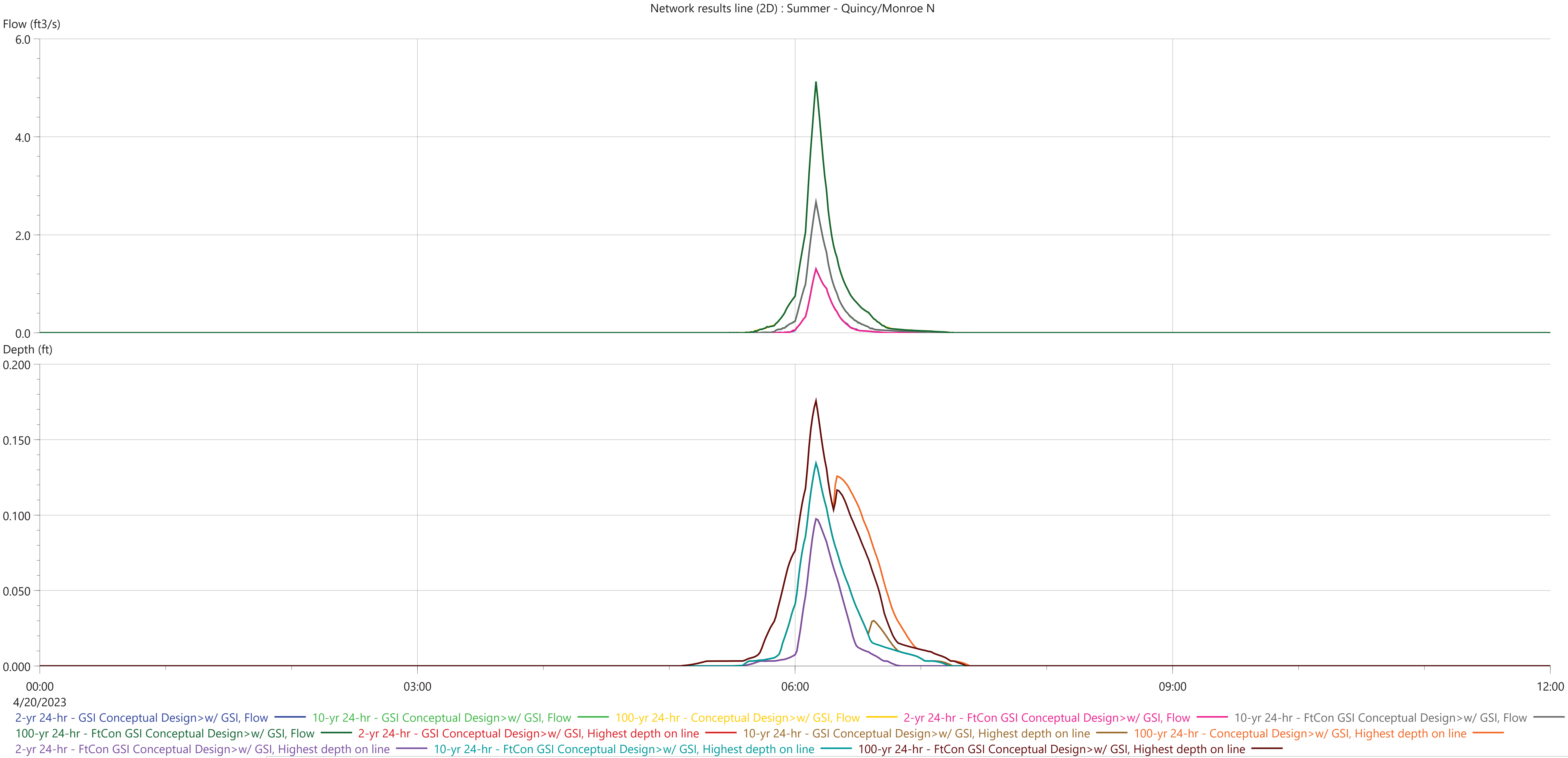

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.304	956.590	0.000	0.097
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.668	2185.317	0.000	0.134
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	5.128	4580.396	0.000	0.176
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.304	955.010	0.000	0.097
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.668	2182.837	0.000	0.134
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.128	4579.089	0.000	0.176

Proposed Conditions (with GSI improvements) results from Network Results Lines

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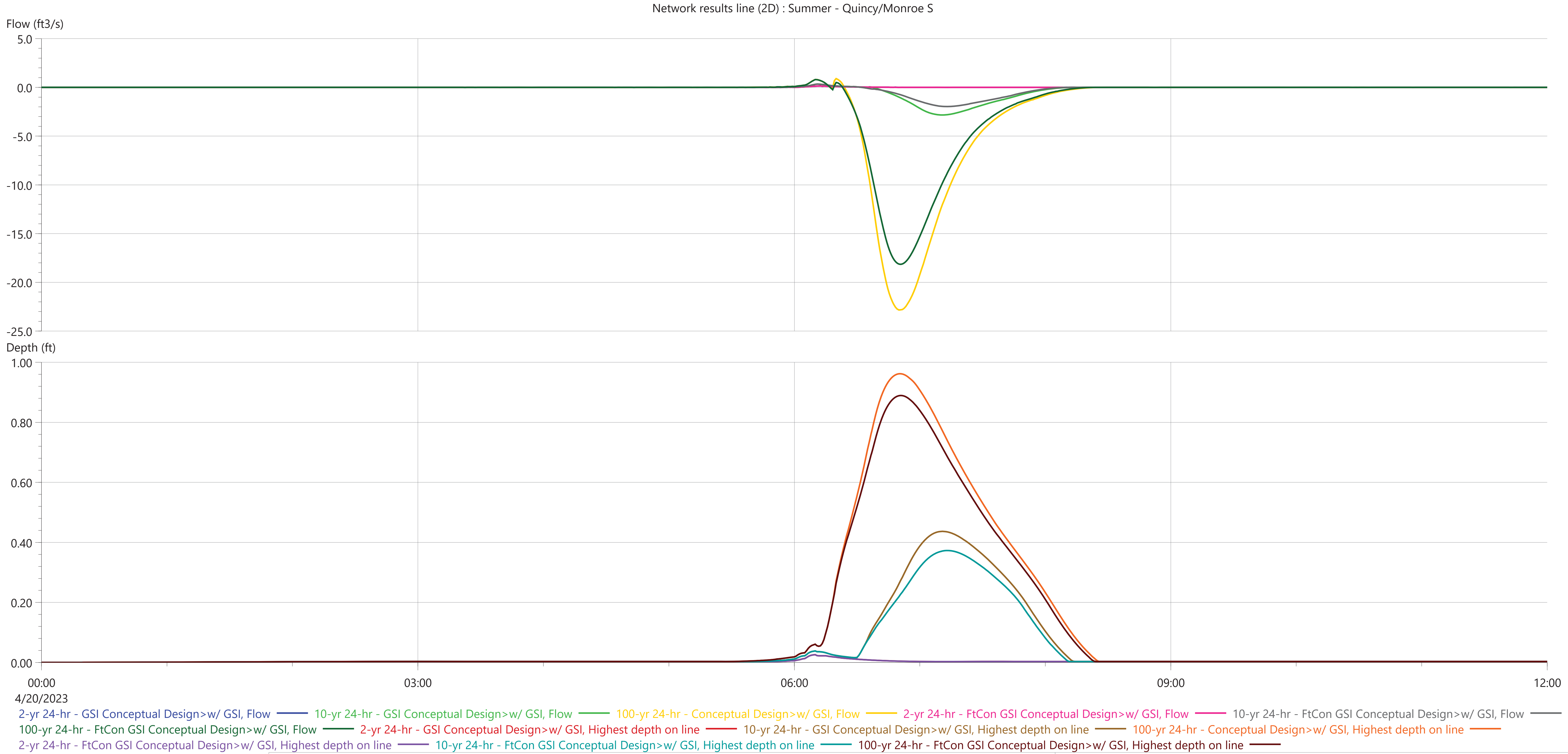

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.013	0.140	160.933	0.000	0.026
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-2.833	0.339	-7250.381	0.000	0.437
100-yr 24-hr - Conceptual Design>w/ GSI	-22.837	0.898	-53582.718	0.000	0.962
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.013	0.151	158.360	0.000	0.026
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.965	0.333	-5263.479	0.000	0.373
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-18.154	0.810	-43372.511	0.000	0.889

Proposed Conditions (with GSI improvements) results from Network Results Lines

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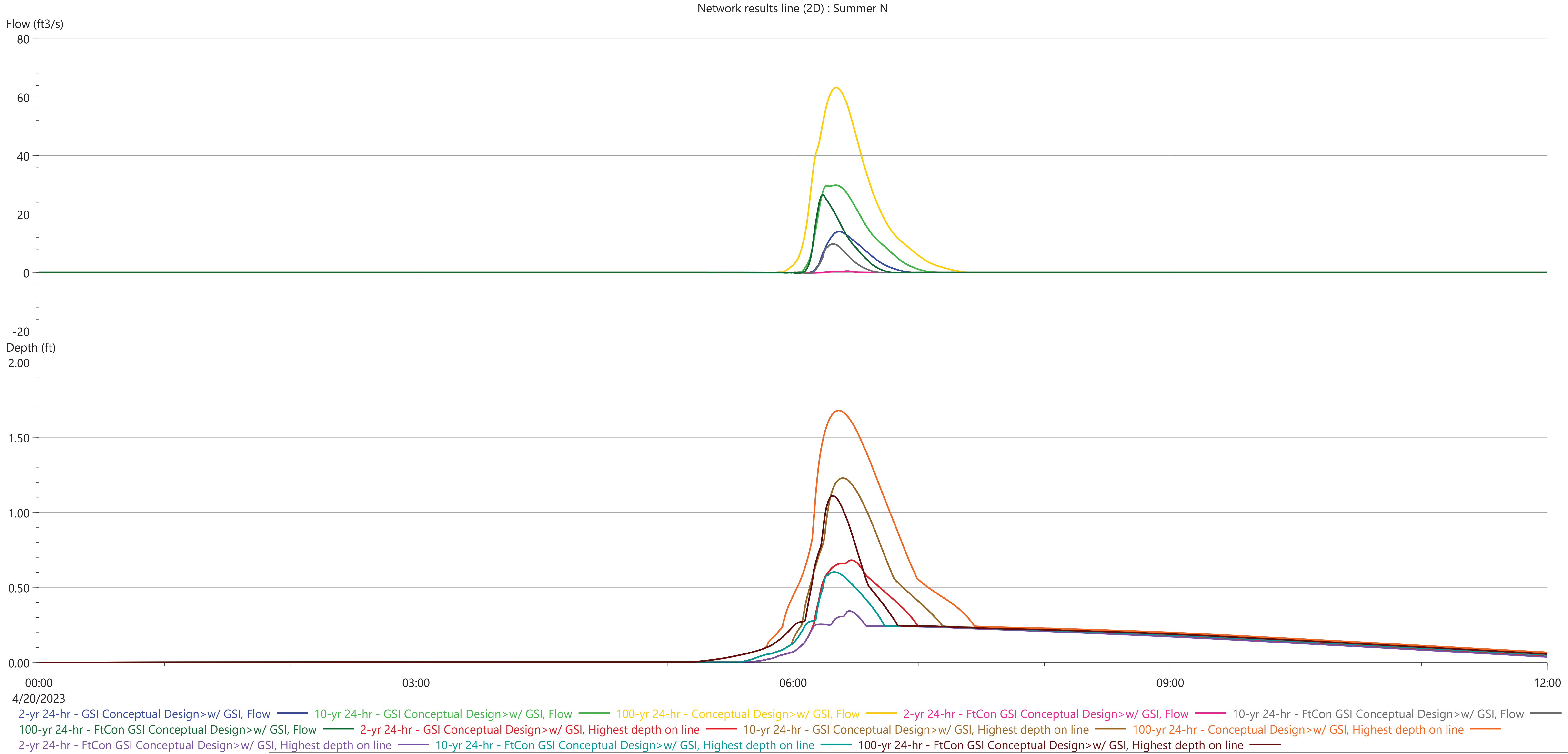

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.088	14.027	18034.454	0.000	0.681
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.049	29.886	49453.544	0.000	1.229
100-yr 24-hr - Conceptual Design>w/ GSI	-0.040	63.319	114134.703	0.000	1.679
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.119	0.510	244.088	0.000	0.344
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.236	9.789	8406.475	0.000	0.602
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.167	26.614	26178.576	0.000	1.111

Proposed Conditions (with GSI improvements) results from Network Results Lines

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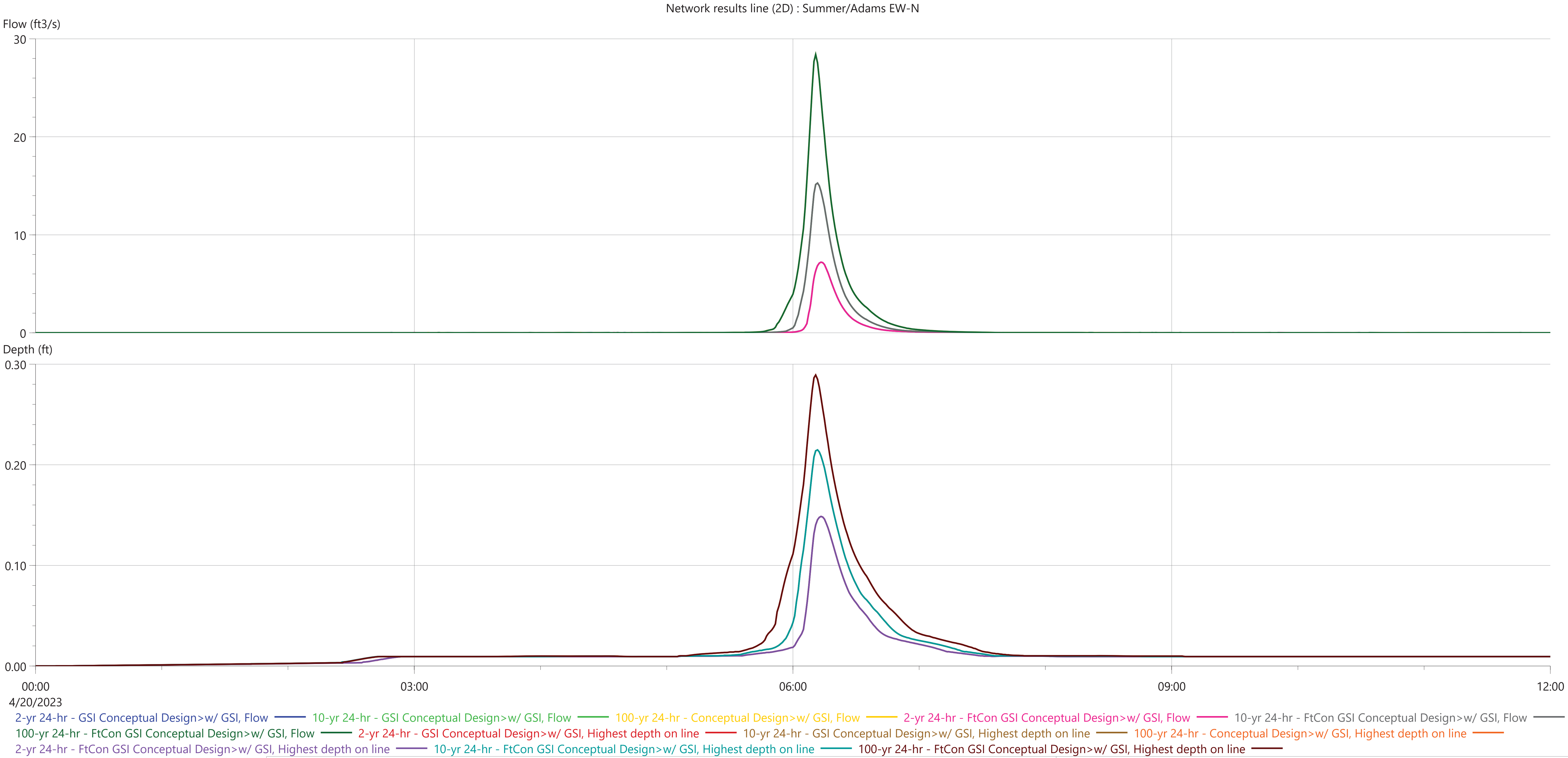

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	7.208	6686.927	0.000	0.149
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	15.279	14513.208	0.000	0.215
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	28.402	27718.796	0.000	0.289
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	7.208	6688.426	0.000	0.149
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	15.279	14513.239	0.000	0.215
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	28.402	27716.114	0.000	0.289

Proposed Conditions (with GSI improvements) results from Network Results Lines

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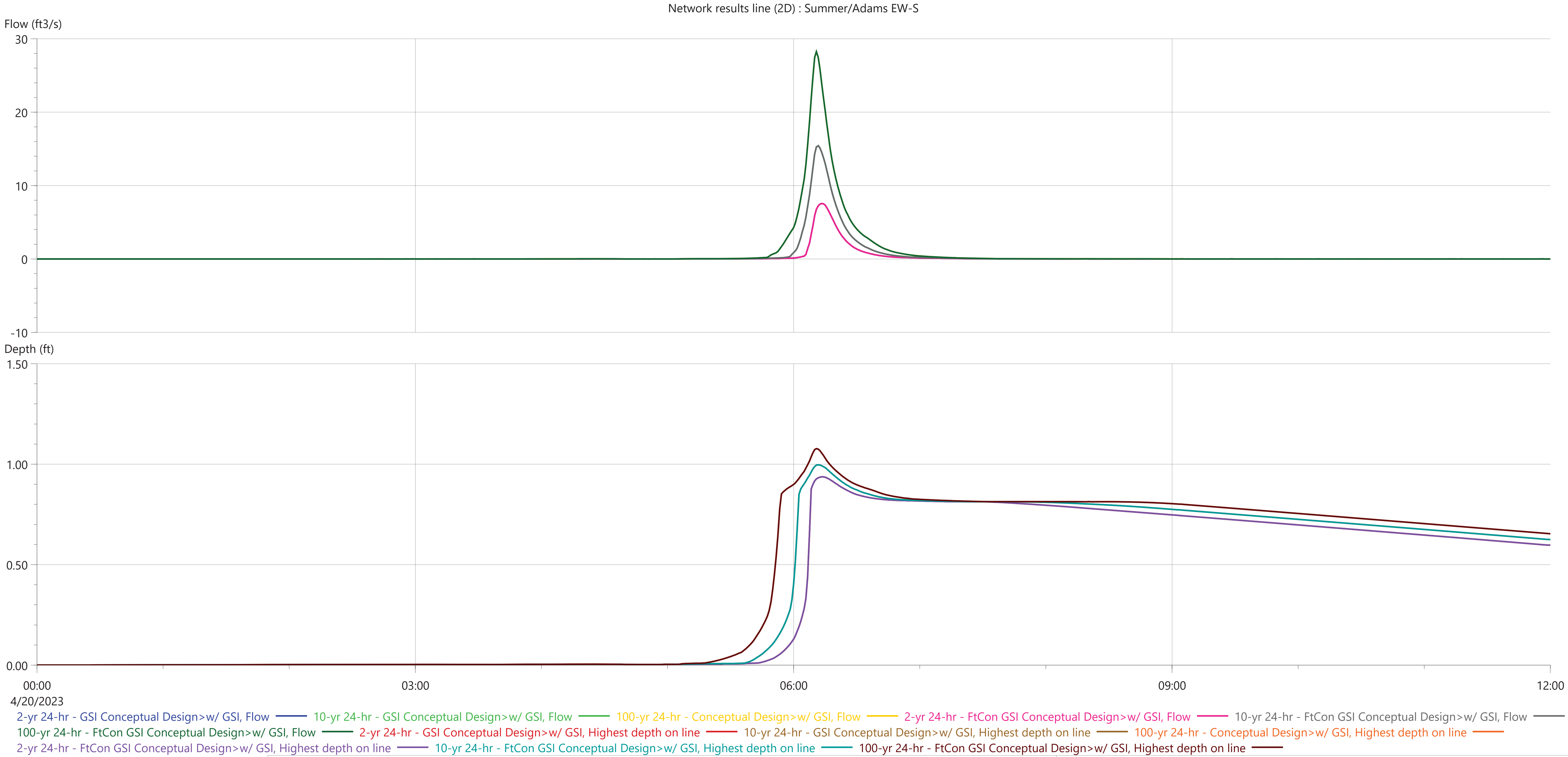

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	7.560	7507.582	0.000	0.937
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	15.432	15504.212	0.000	0.997
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	28.258	28902.778	0.000	1.078
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	7.557	7509.934	0.000	0.937
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	15.428	15498.941	0.000	0.997
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	28.255	28898.293	0.000	1.078

Proposed Conditions (with GSI improvements) results from Network Results Lines

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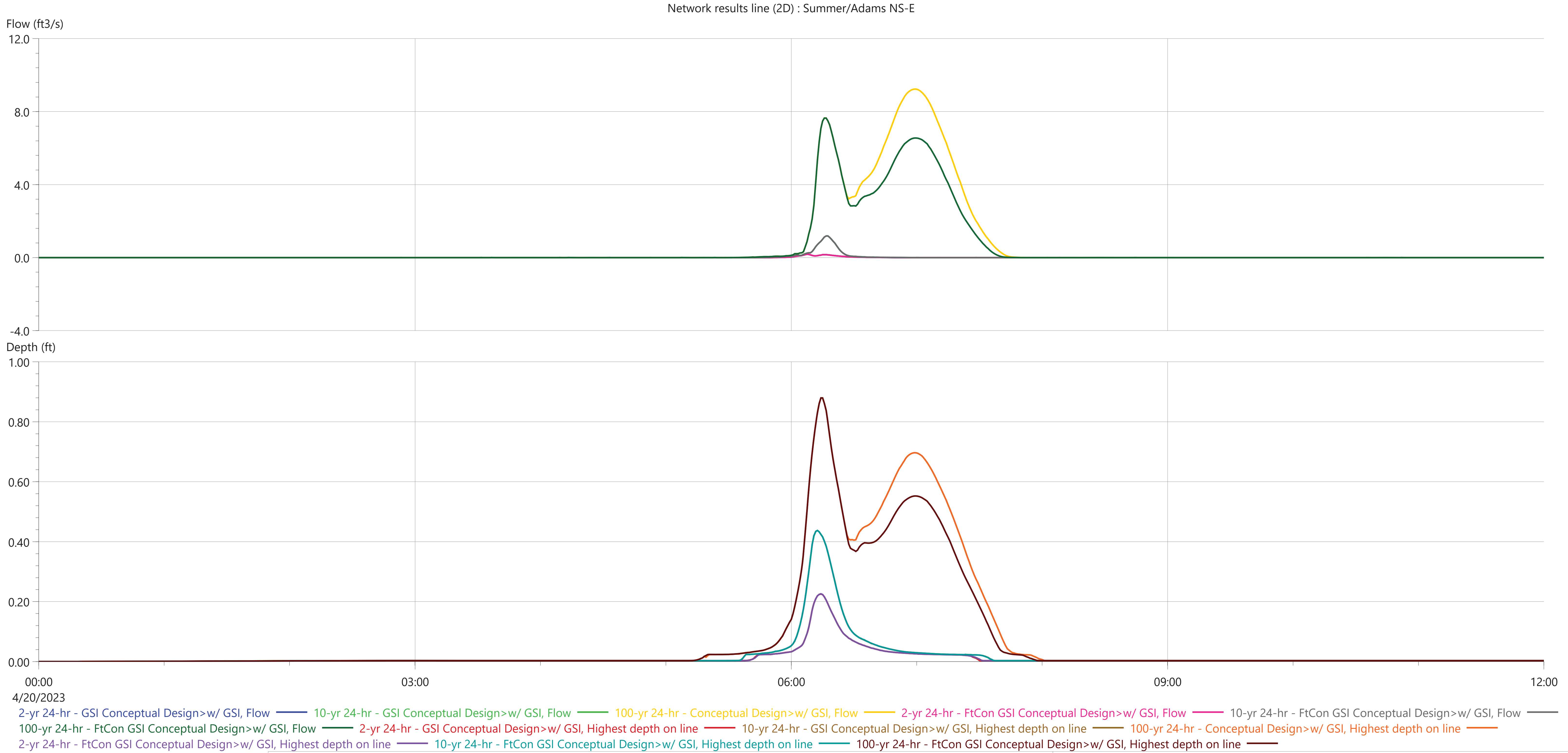

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	0.192	207.795	0.000	0.225
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	1.188	896.873	0.000	0.438
100-yr 24-hr - Conceptual Design>w/ GSI	-0.004	9.232	29447.253	0.000	0.880
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	0.190	204.364	0.000	0.226
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	1.187	898.044	0.000	0.438
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	7.647	22505.759	0.000	0.880

Proposed Conditions (with GSI improvements) results from Network Results Lines

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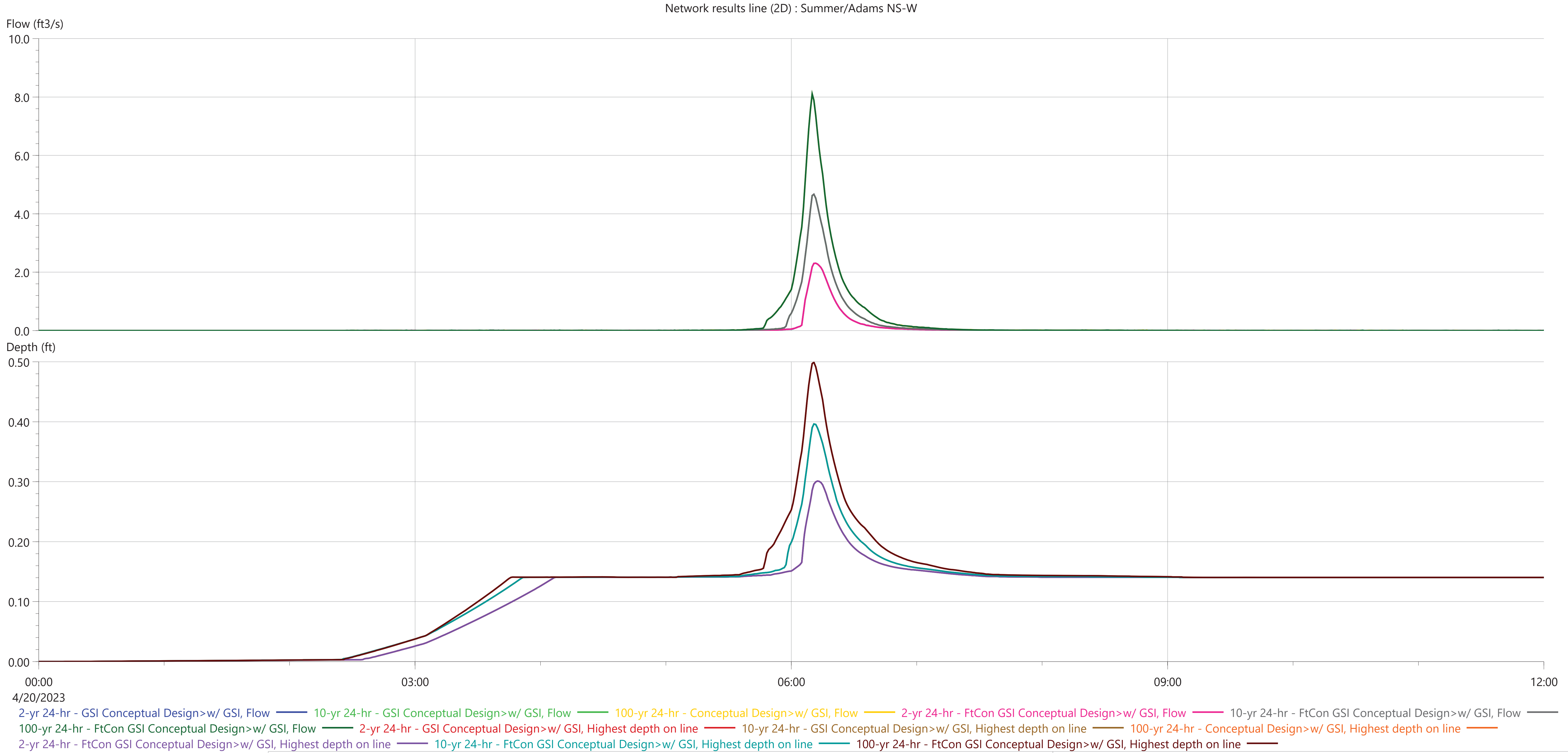

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.306	2285.704	0.000	0.301
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.669	4615.704	0.000	0.396
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	8.103	8386.735	0.000	0.499
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.306	2283.667	0.000	0.301
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.670	4613.441	0.000	0.396
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.103	8394.171	0.000	0.499

Proposed Conditions (with GSI improvements) results from Network Results Lines

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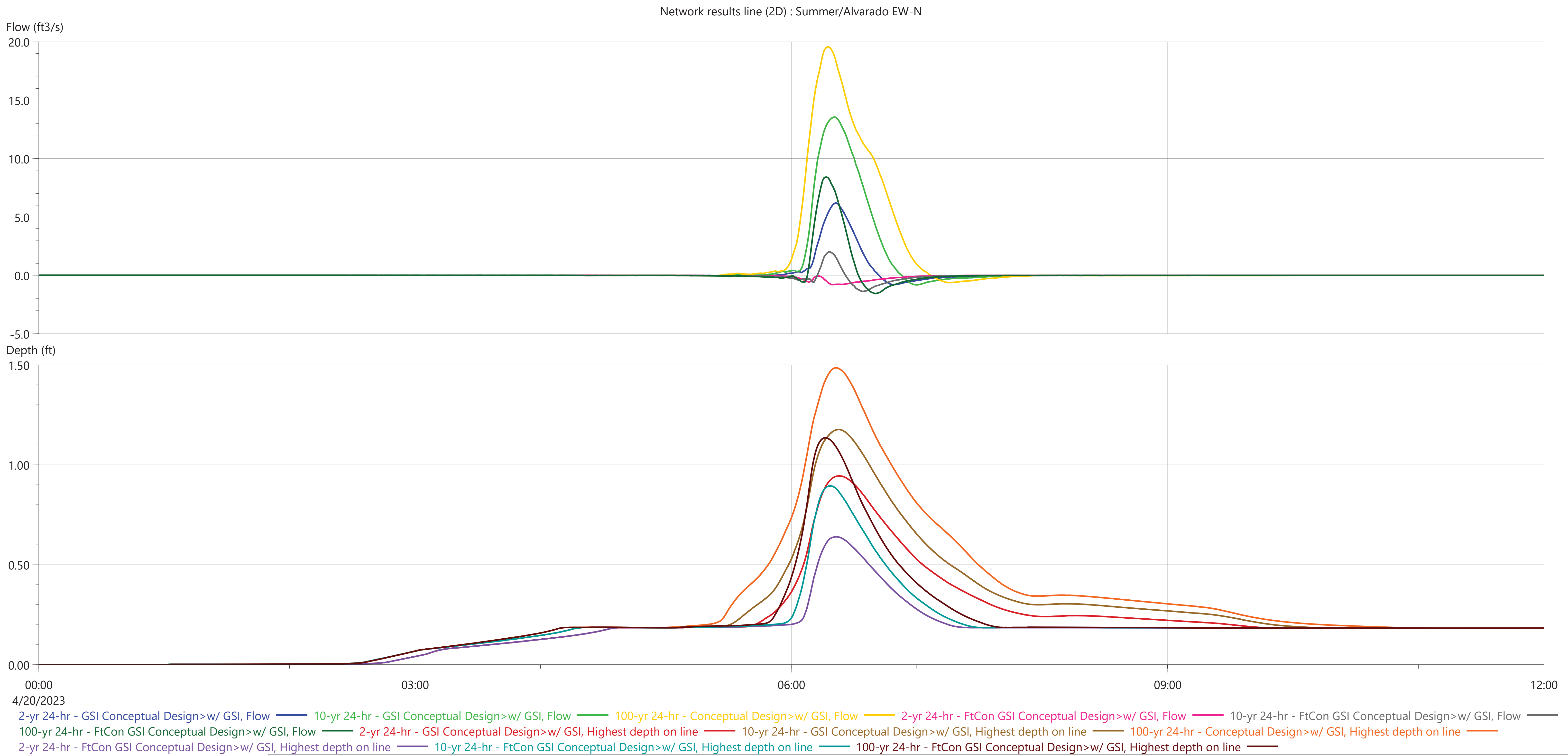

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.804	6.188	5654.043	0.000	0.944
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.823	13.547	19656.042	0.000	1.176
100-yr 24-hr - Conceptual Design>w/ GSI	-0.627	19.577	36372.795	0.000	1.485
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.794	0.004	-1696.840	0.000	0.639
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.384	2.016	-1126.906	0.000	0.894
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.571	8.420	4913.322	0.000	1.135

Proposed Conditions (with GSI improvements) results from Network Results Lines

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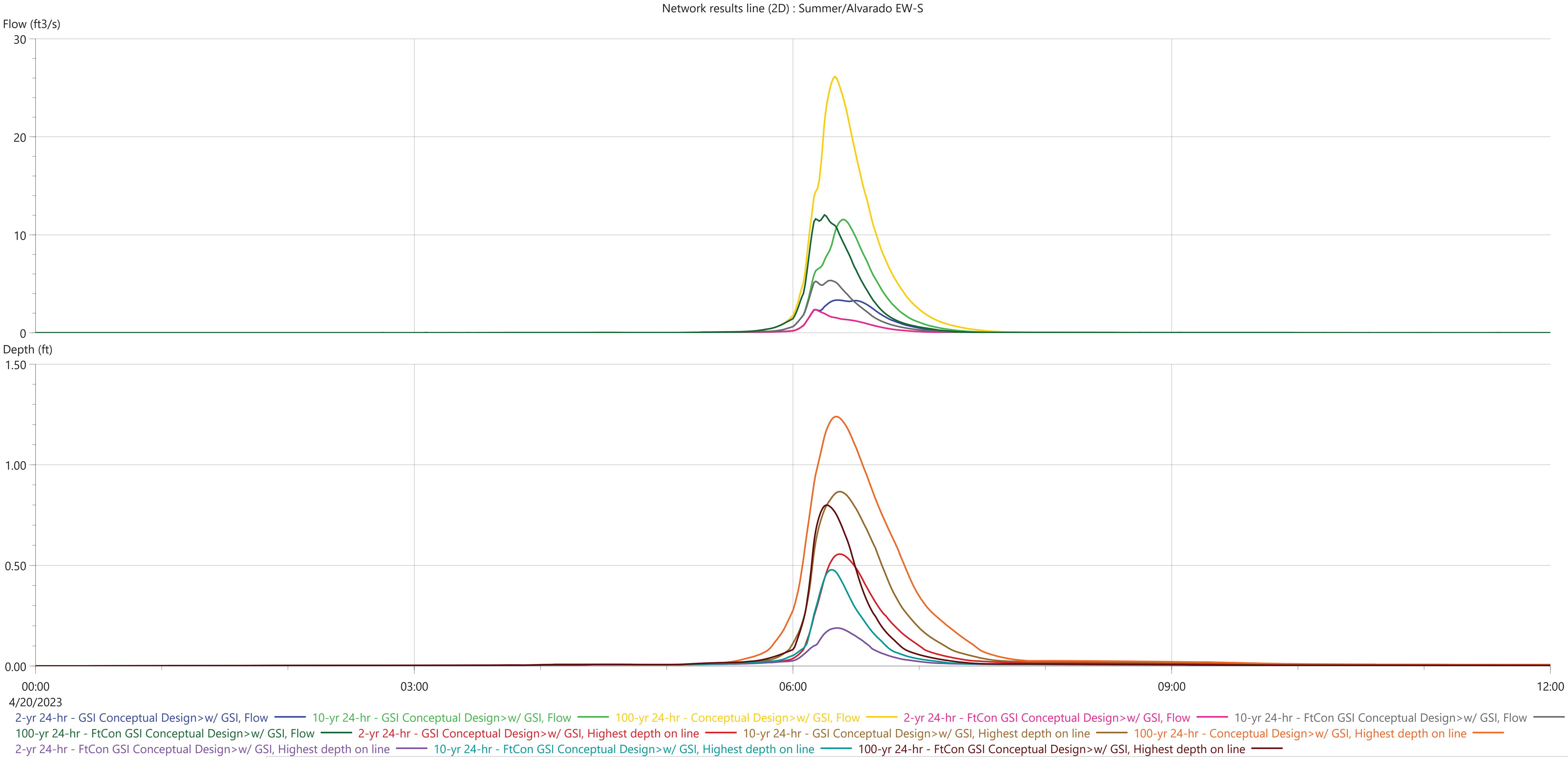

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.352	8003.674	0.000	0.556
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	11.558	21614.001	0.000	0.866
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	26.148	47504.427	0.000	1.240
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.376	4086.491	0.000	0.189
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.339	9970.542	0.000	0.478
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	12.026	21177.779	0.000	0.800

Proposed Conditions (with GSI improvements) results from Network Results Lines

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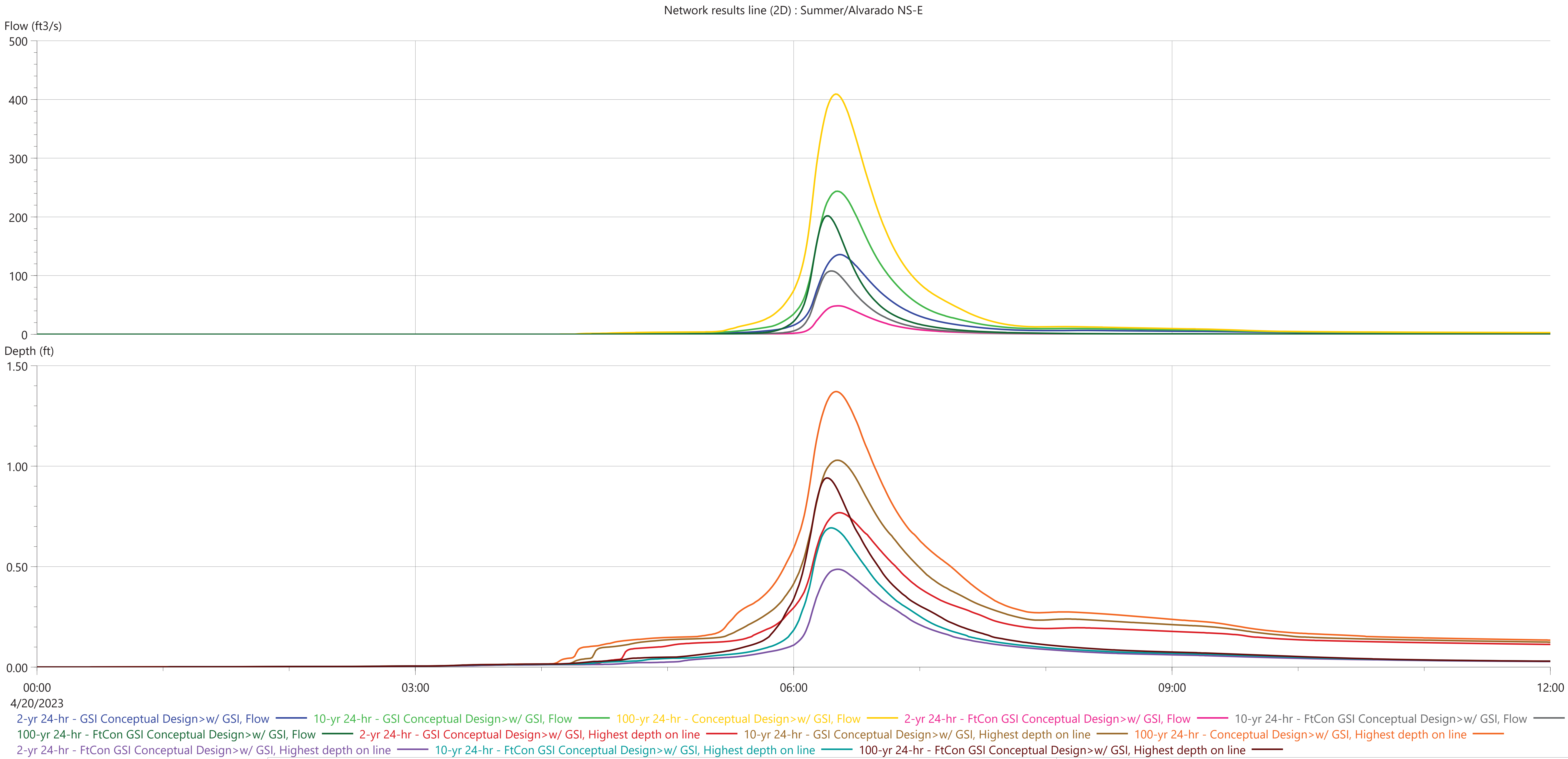

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	135.830	398132.451	0.000	0.768
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	243.800	686093.720	0.000	1.030
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	409.186	1144431.456	0.000	1.371
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	48.653	106175.466	0.000	0.487
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	107.932	201504.478	0.000	0.693
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	201.908	356484.937	0.000	0.941

Proposed Conditions (with GSI improvements) results from Network Results Lines

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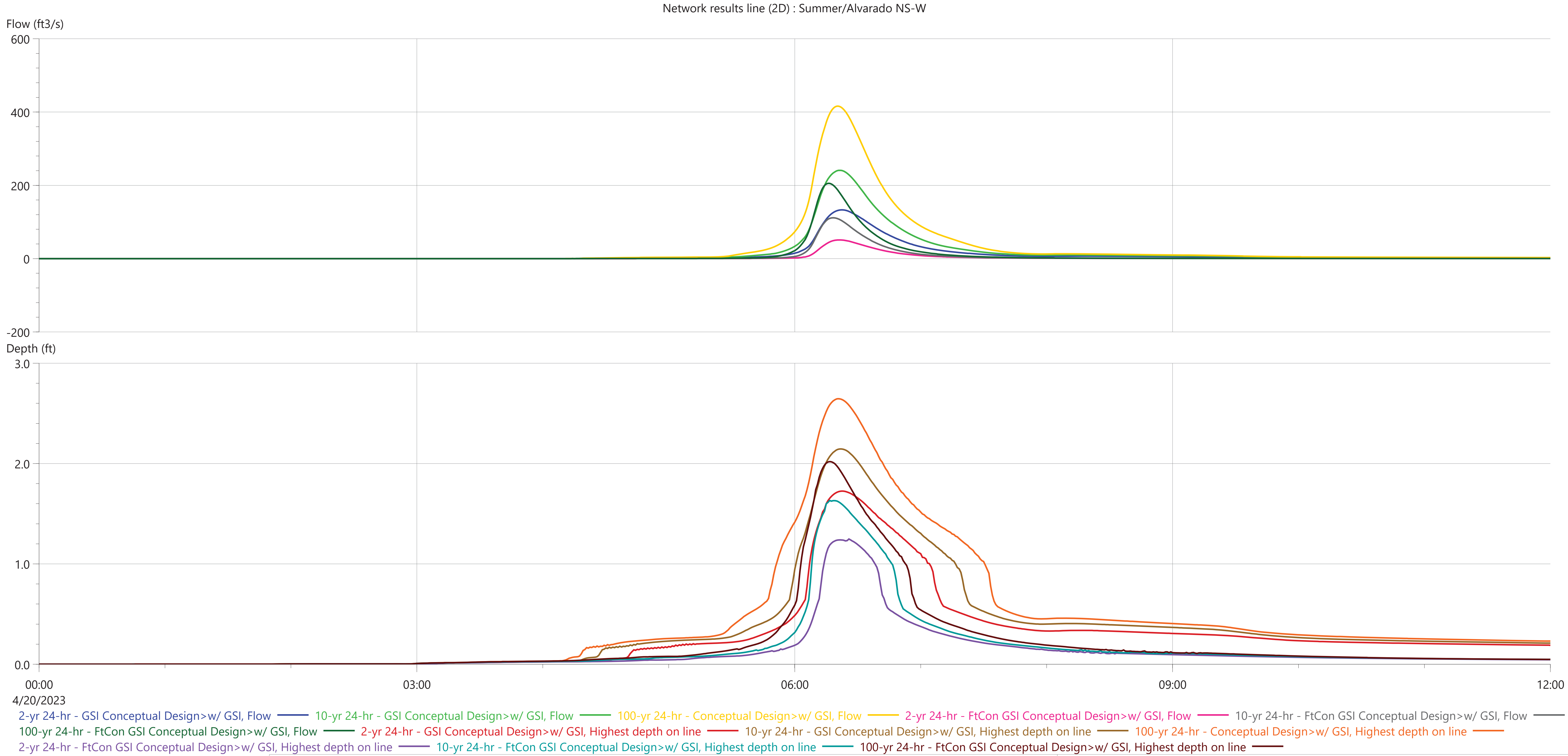

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	132.987	400687.233	0.000	1.725
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	240.949	688519.932	0.000	2.146
100-yr 24-hr - Conceptual Design>w/ GSI	-0.004	416.070	1156506.839	0.000	2.646
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	50.992	112434.778	0.000	1.248
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	111.387	213370.156	0.000	1.631
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	205.497	374062.306	0.000	2.019

Proposed Conditions (with GSI improvements) results from Network Results Lines

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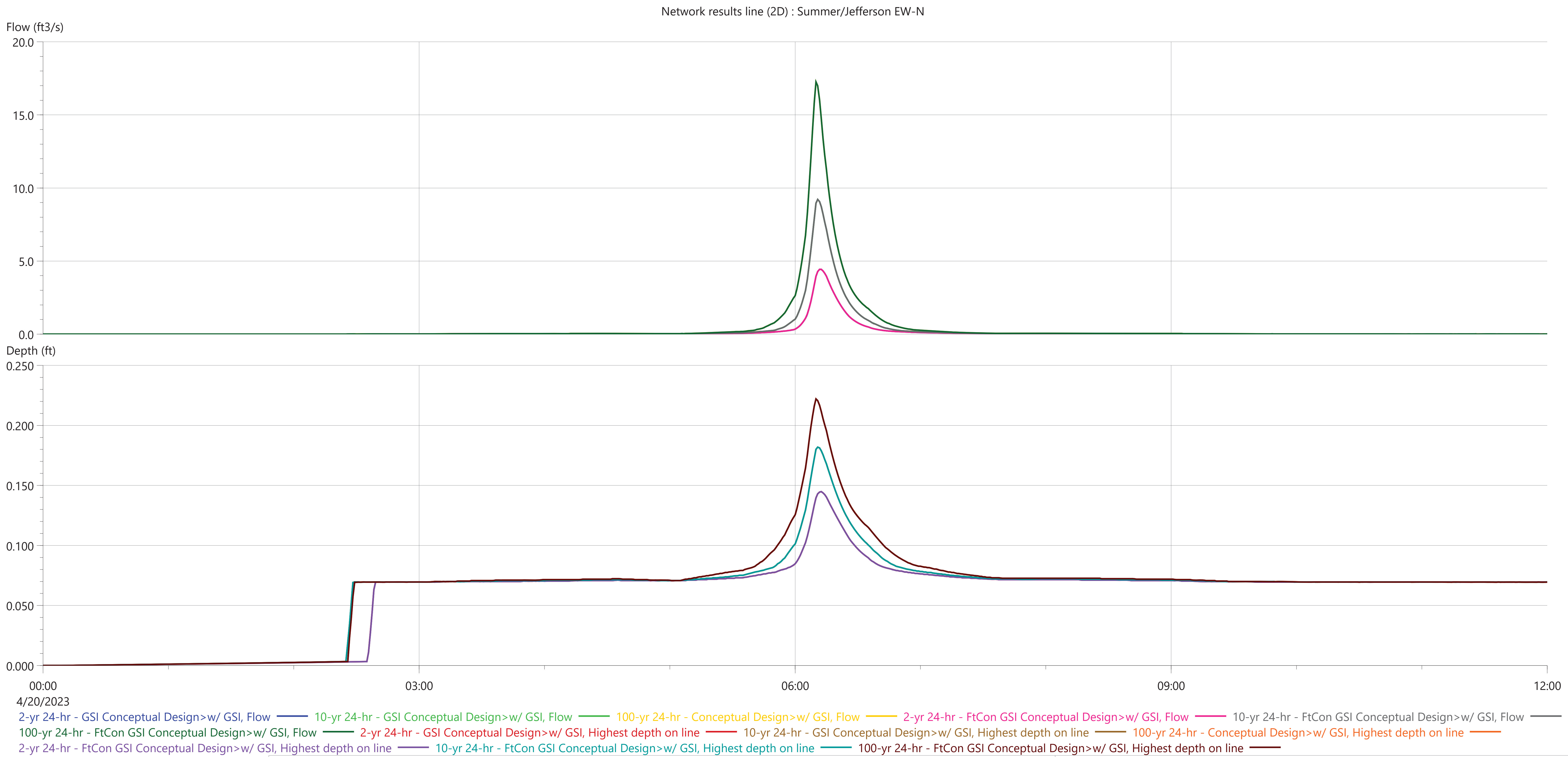

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.433	5426.753	0.000	0.145
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	9.216	10307.460	0.000	0.182
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	17.254	18333.649	0.000	0.222
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.433	5425.969	0.000	0.145
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	9.216	10306.239	0.000	0.182
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	17.254	18330.355	0.000	0.222

Proposed Conditions (with GSI improvements) results from Network Results Lines

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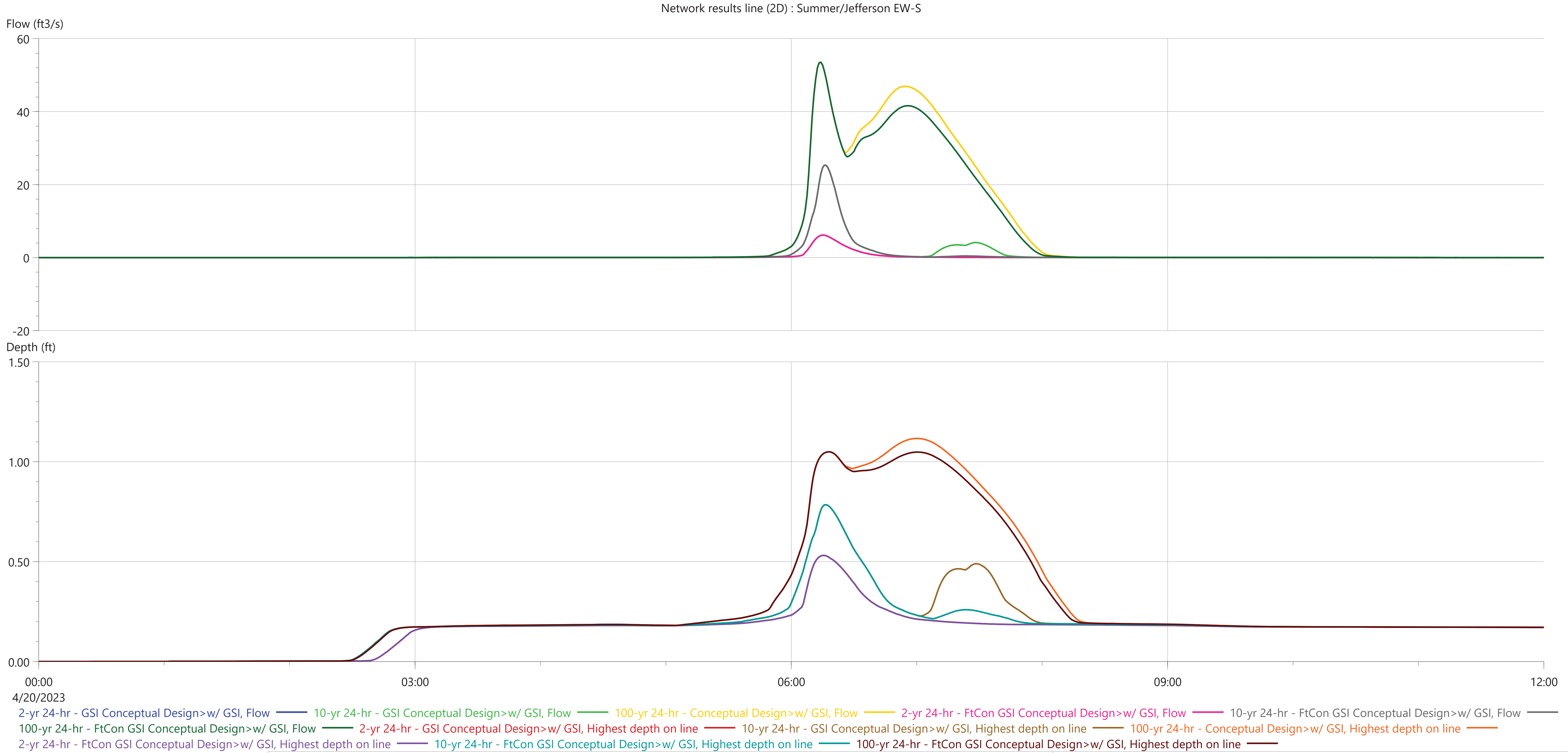

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	6.194	8286.737	0.000	0.531
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	25.319	31457.940	0.000	0.785
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	53.509	217570.219	0.000	1.116
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	6.190	8293.484	0.000	0.531
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	25.312	25918.524	0.000	0.785
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	53.509	197658.141	0.000	1.050

Proposed Conditions (with GSI improvements) results from Network Results Lines

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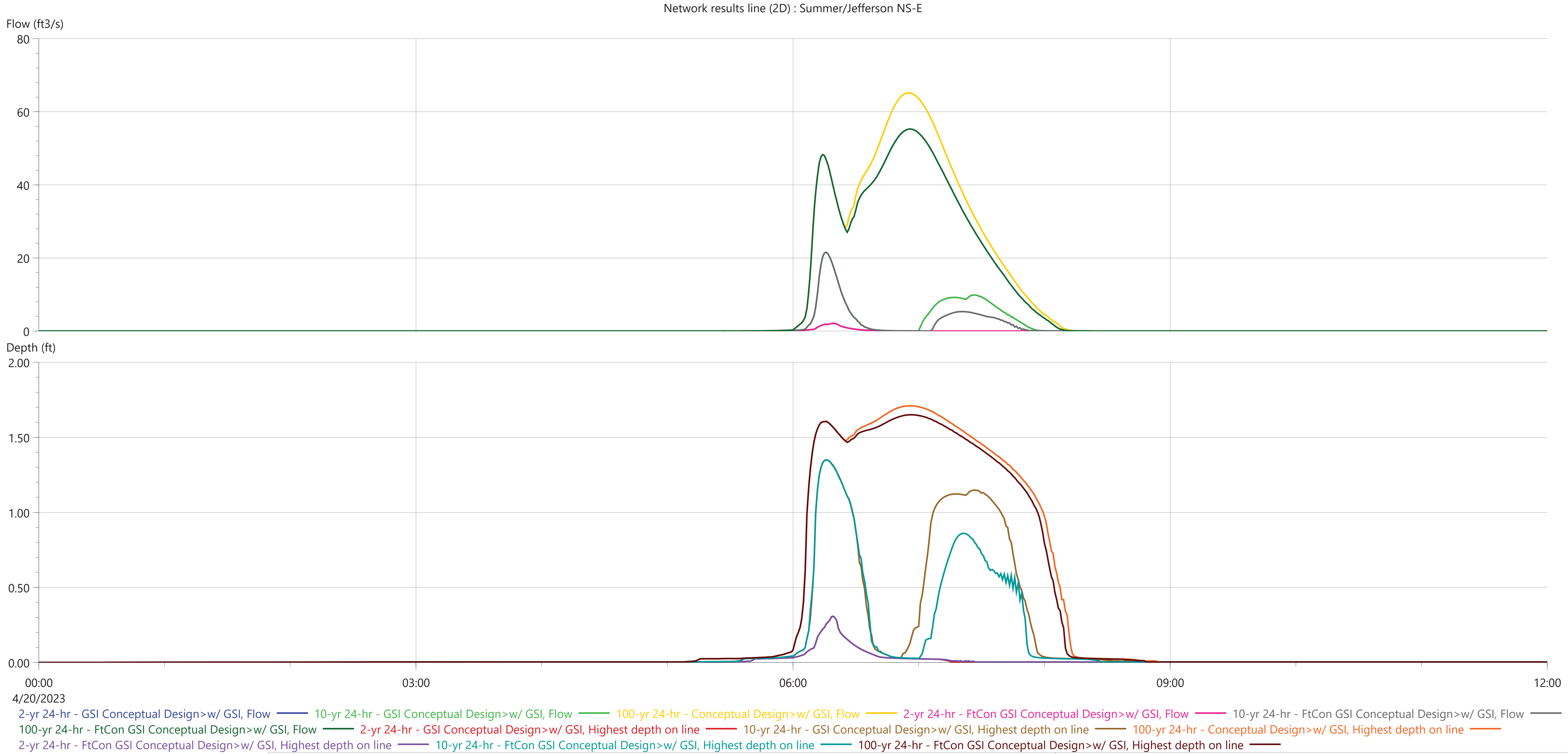

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.124	1979.960	0.000	0.308
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	21.512	37639.521	0.000	1.349
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	65.175	260017.824	0.000	1.710
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.129	1981.884	0.000	0.308
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	21.513	26161.001	0.000	1.349
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	55.268	228644.902	0.000	1.650

Proposed Conditions (with GSI improvements) results from Network Results Lines

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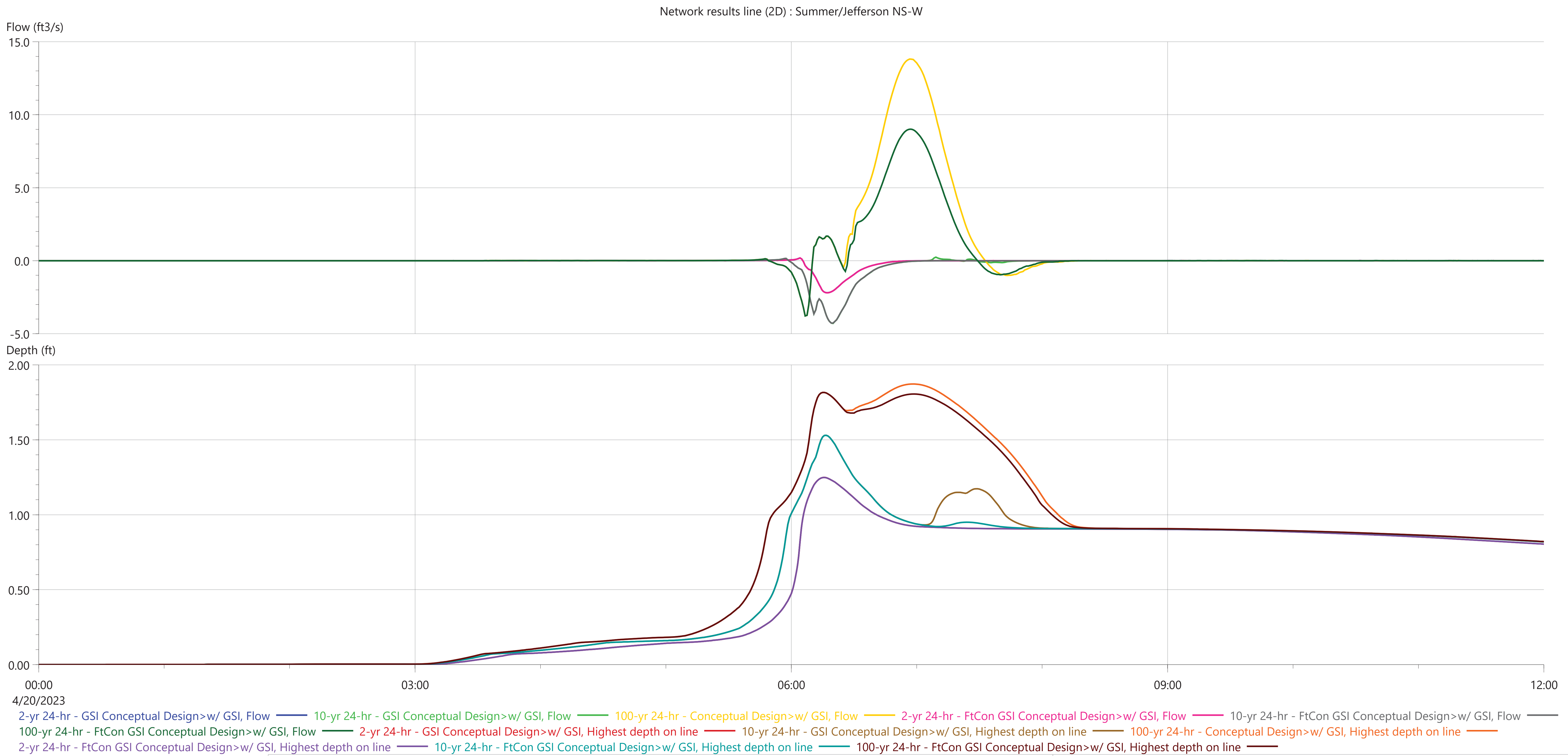

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-2.192	0.193	-2409.796	0.000	1.249
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-4.291	0.244	-5438.896	0.000	1.530
100-yr 24-hr - Conceptual Design>w/ GSI	-3.783	13.812	27530.580	0.000	1.872
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-2.195	0.193	-2409.686	0.000	1.249
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-4.279	0.162	-5445.223	0.000	1.530
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-3.784	9.009	16301.136	0.000	1.816

Proposed Conditions (with GSI improvements) results from Network Results Lines

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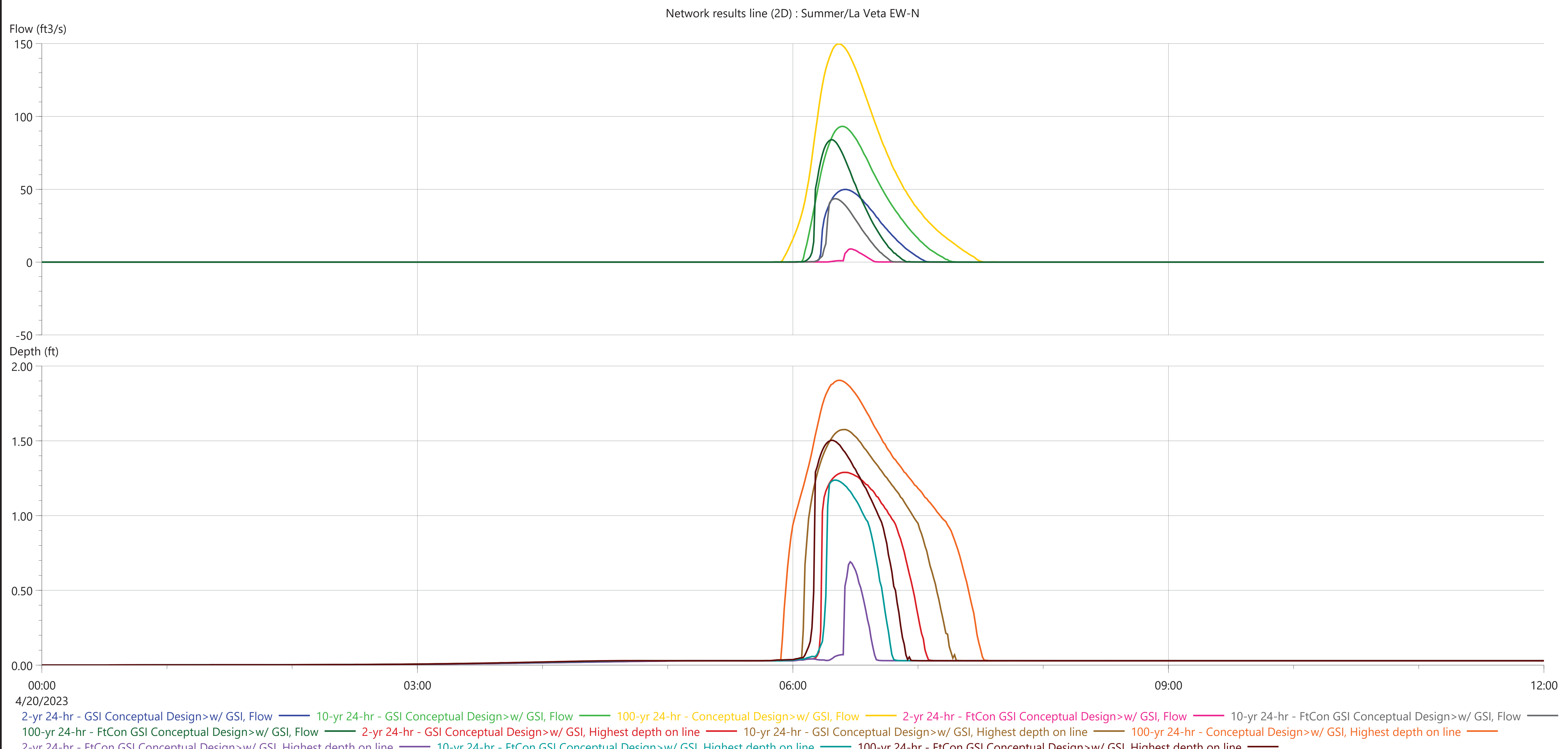

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	49.867	86437.433	0.000	1.289
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	93.165	192126.458	0.000	1.575
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	149.739	358027.896	0.000	1.904
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	9.025	5455.974	0.000	0.690
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	43.509	47131.485	0.000	1.237
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	83.984	116038.355	0.000	1.503

Proposed Conditions (with GSI improvements) results from Network Results Lines

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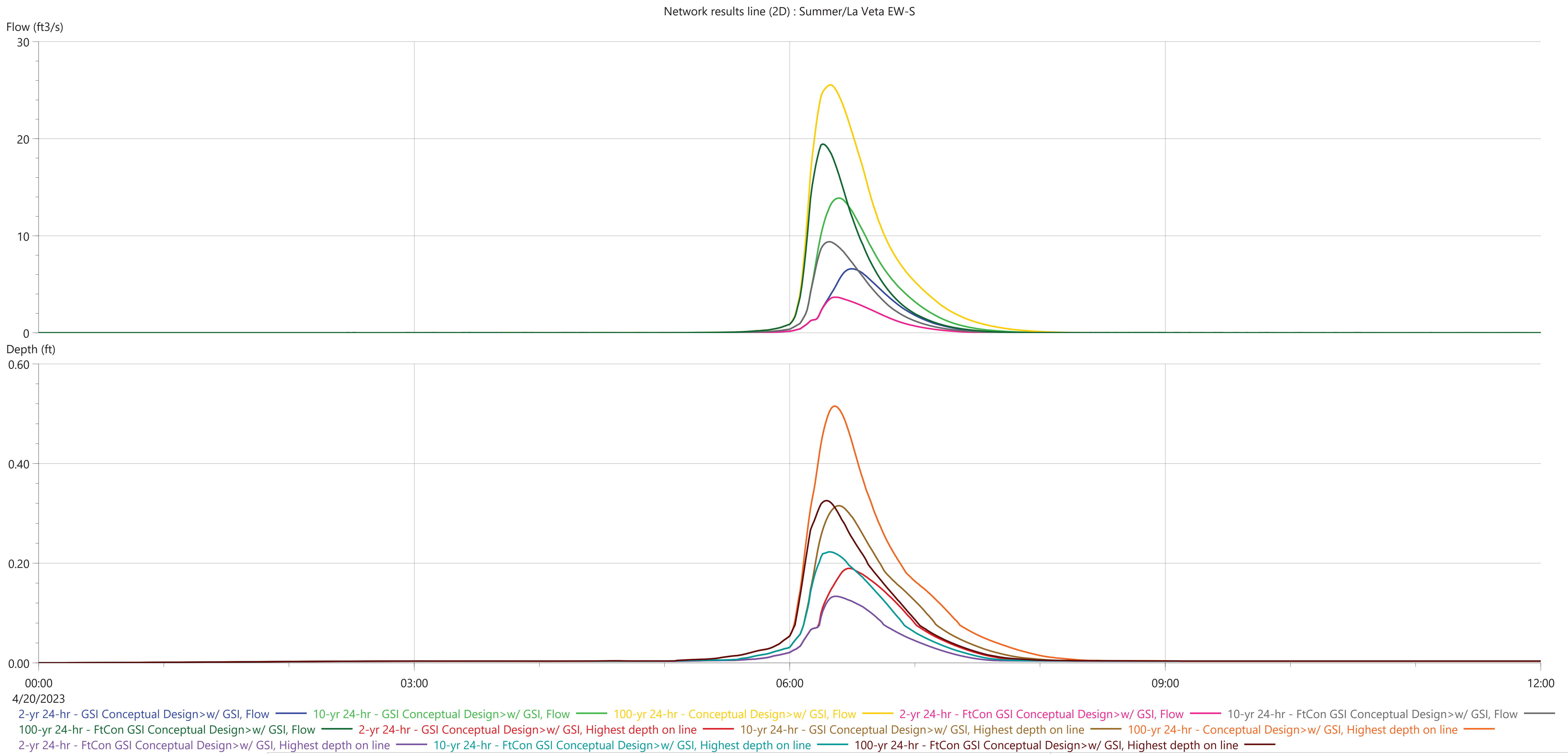

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	6.597	14442.581	0.000	0.190
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	13.879	30760.045	0.000	0.315
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	25.544	58300.800	0.000	0.515
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.675	7820.825	0.000	0.134
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	9.381	18437.652	0.000	0.223
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	19.440	35584.399	0.000	0.326

Proposed Conditions (with GSI improvements) results from Network Results Lines

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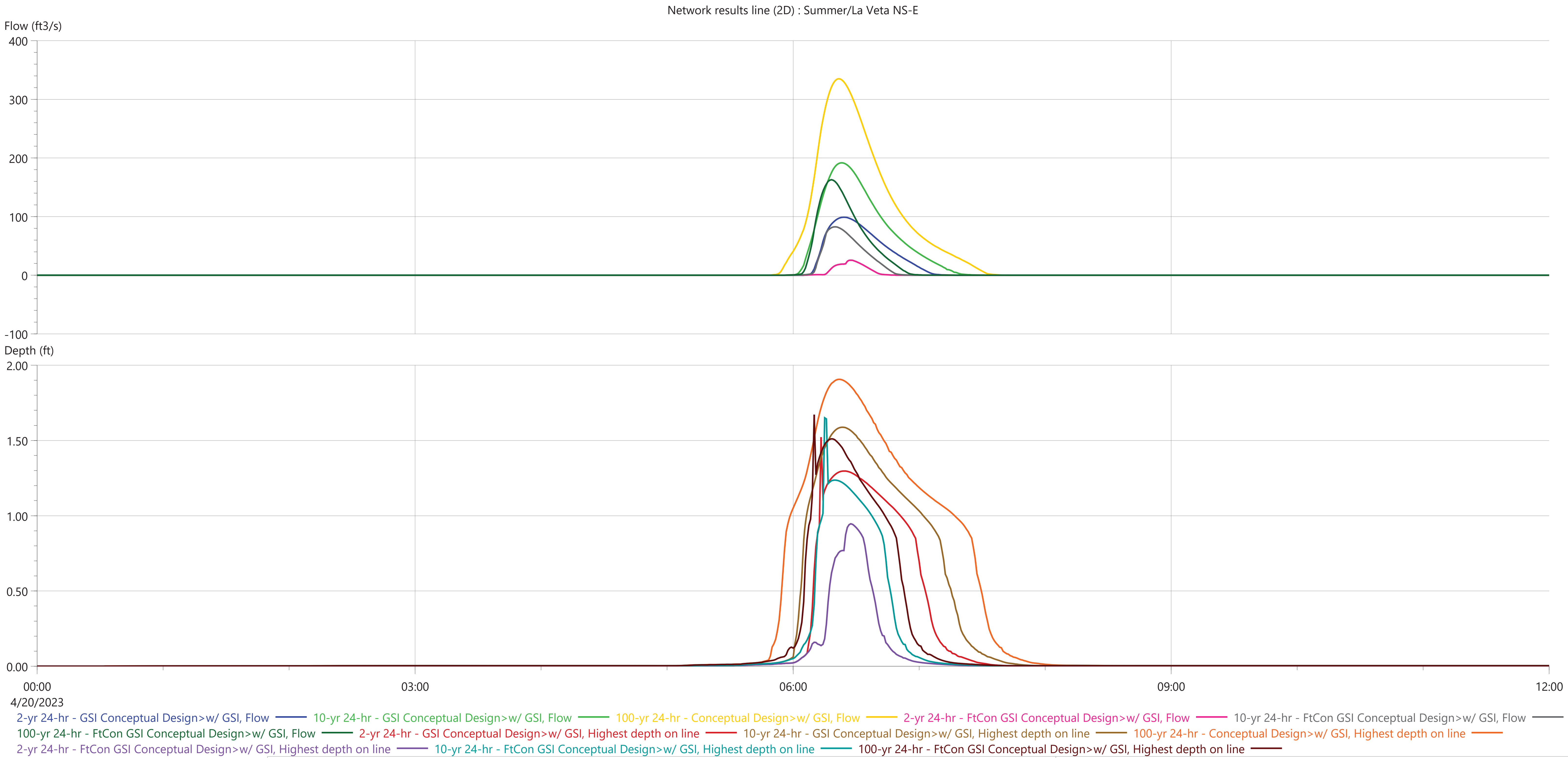

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	98.980	187112.168	0.000	1.522
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	191.821	397571.682	0.000	1.588
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	335.005	765377.128	0.000	1.906
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.007	25.828	25091.126	0.000	0.946
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.007	82.654	108327.778	0.000	1.651
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.008	162.851	233509.502	0.000	1.672

Proposed Conditions (with GSI improvements) results from Network Results Lines

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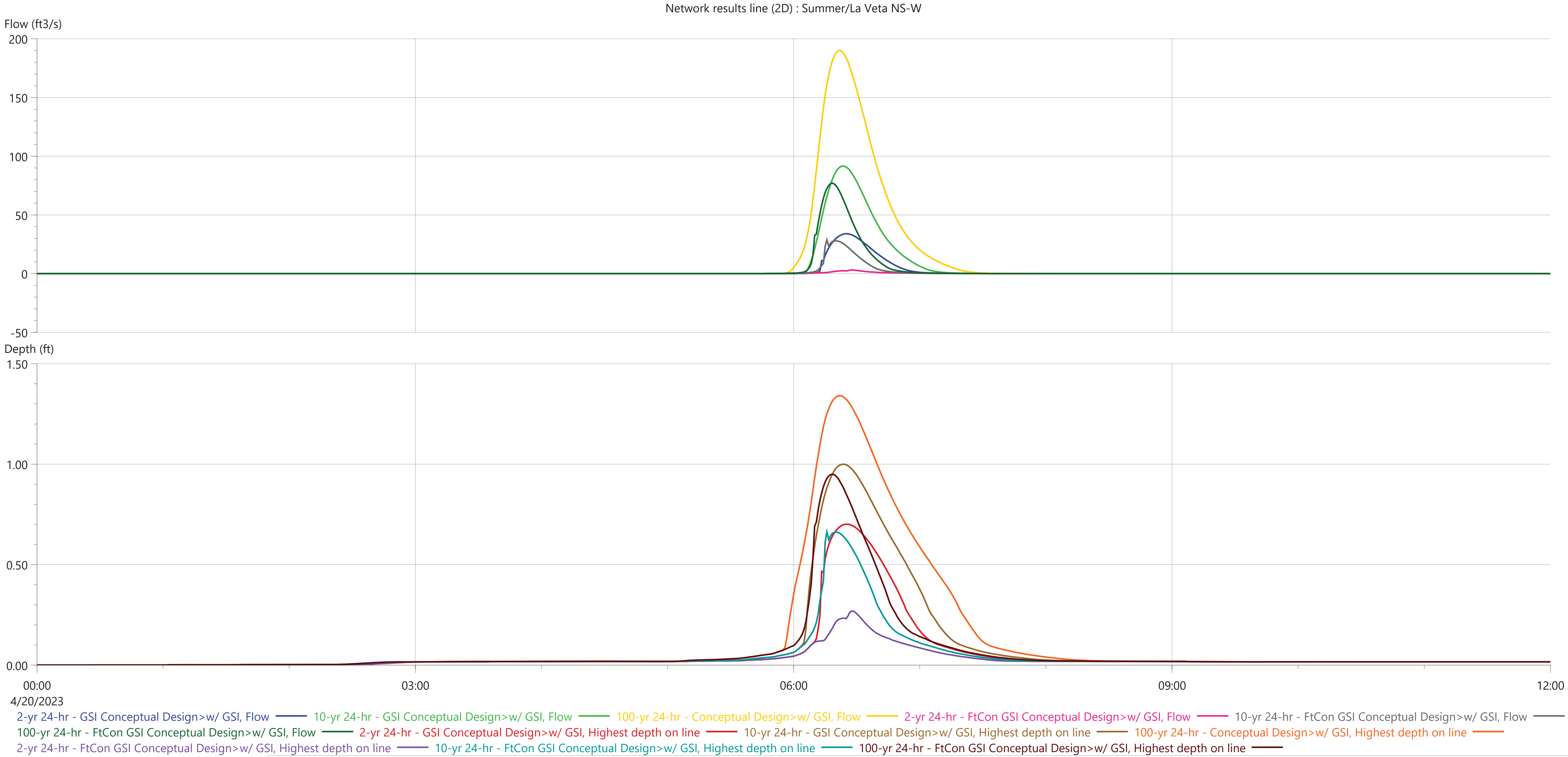

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.006	34.020	51837.651	0.000	0.701
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	91.575	152793.433	0.000	1.000
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	190.147	355158.620	0.000	1.341
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	3.113	4438.547	0.000	0.269
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.006	28.773	31866.930	0.000	0.663
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	77.022	92828.485	0.000	0.949

Proposed Conditions (with GSI improvements) results from Network Results Lines

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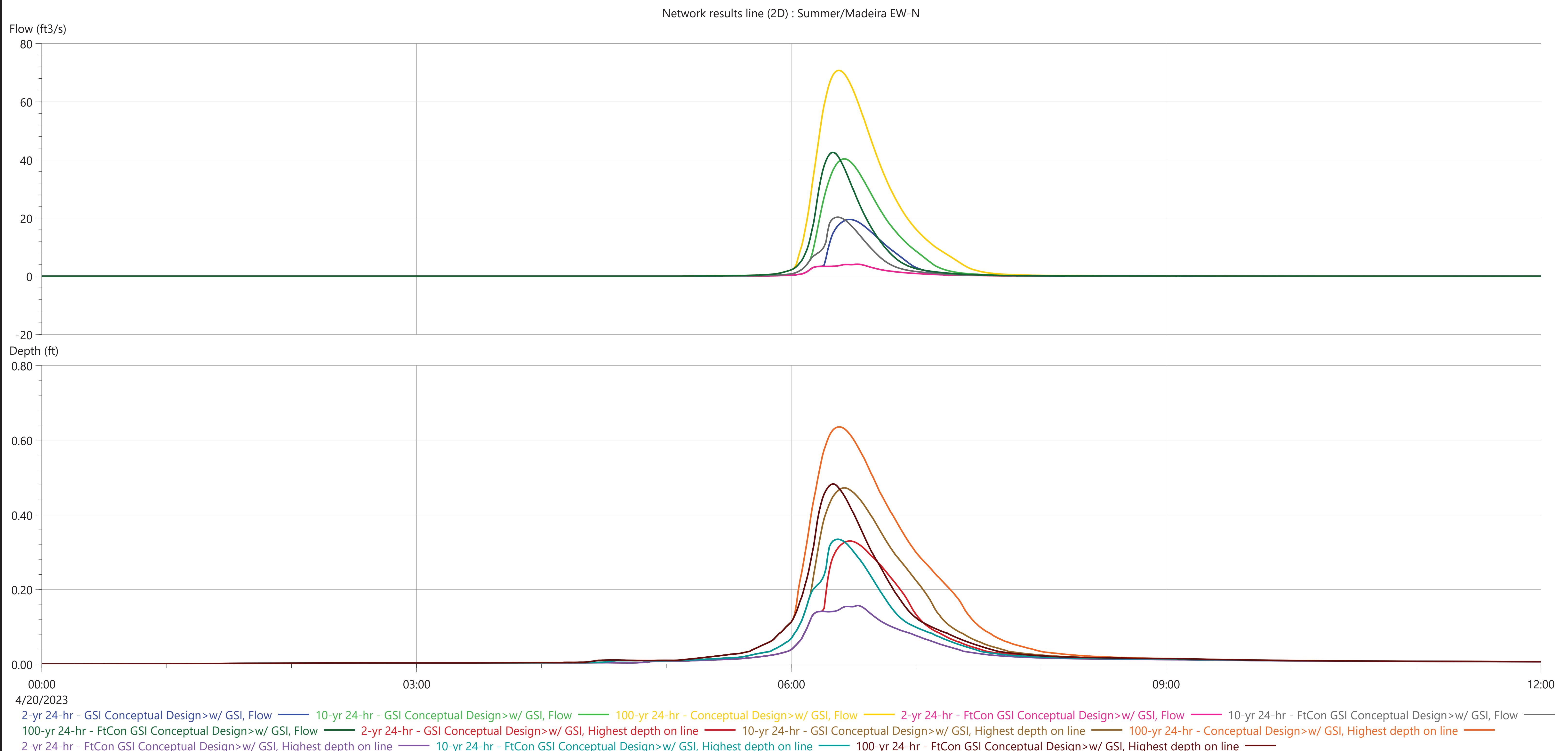

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	19.535	38437.045	0.000	0.330
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	40.326	85439.692	0.000	0.472
100-yr 24-hr - Conceptual Design>w/ GSI	-0.002	70.744	163789.057	0.000	0.635
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	4.125	11006.363	0.000	0.157
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	20.293	34972.238	0.000	0.334
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	42.597	72492.046	0.000	0.483

Proposed Conditions (with GSI improvements) results from Network Results Lines

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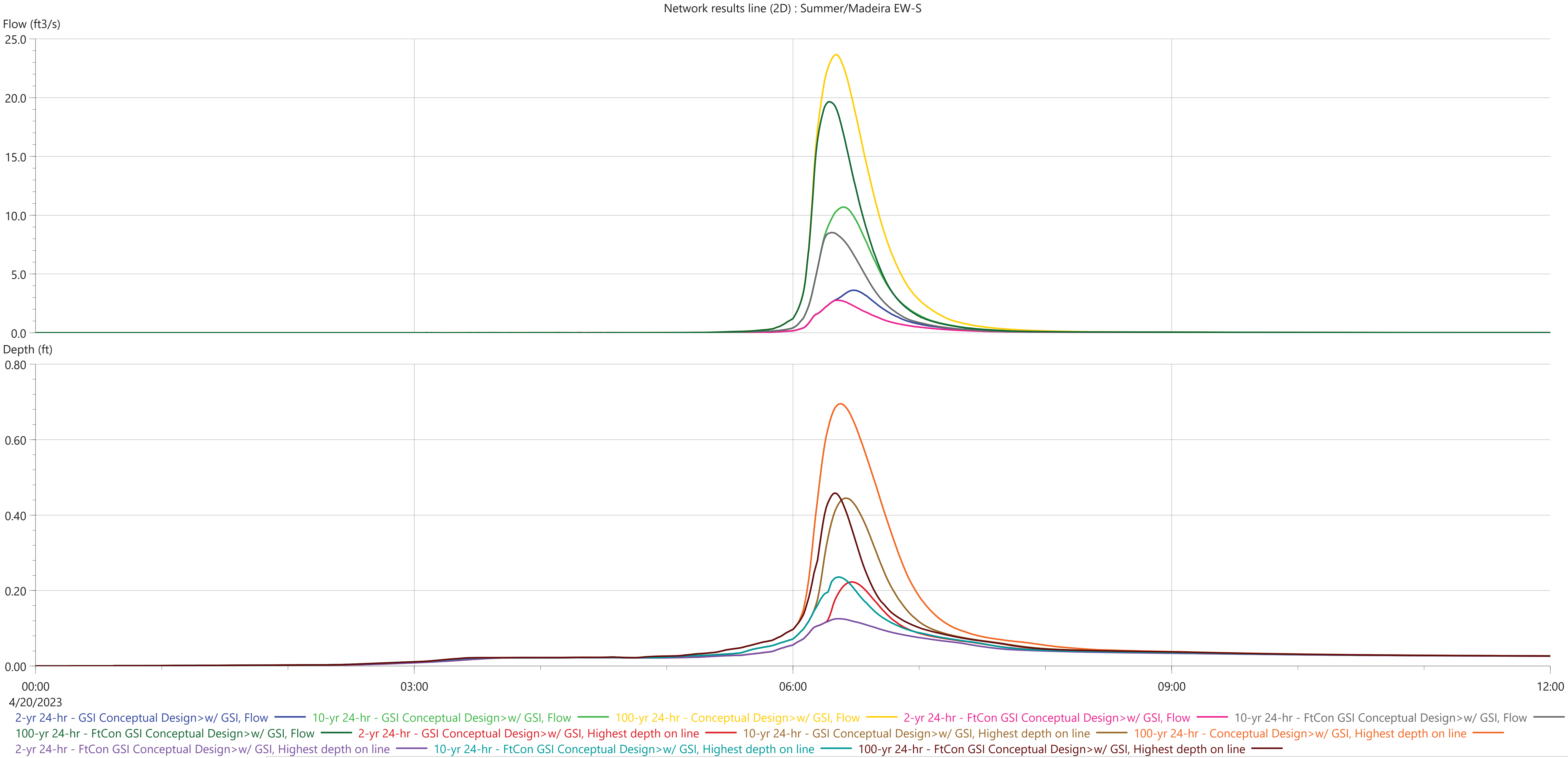

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.621	8577.548	0.000	0.222
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	10.688	22527.066	0.000	0.445
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	23.654	48195.125	0.000	0.695
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.769	6345.903	0.000	0.125
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.527	16599.856	0.000	0.236
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	19.653	35305.911	0.000	0.458

Proposed Conditions (with GSI improvements) results from Network Results Lines

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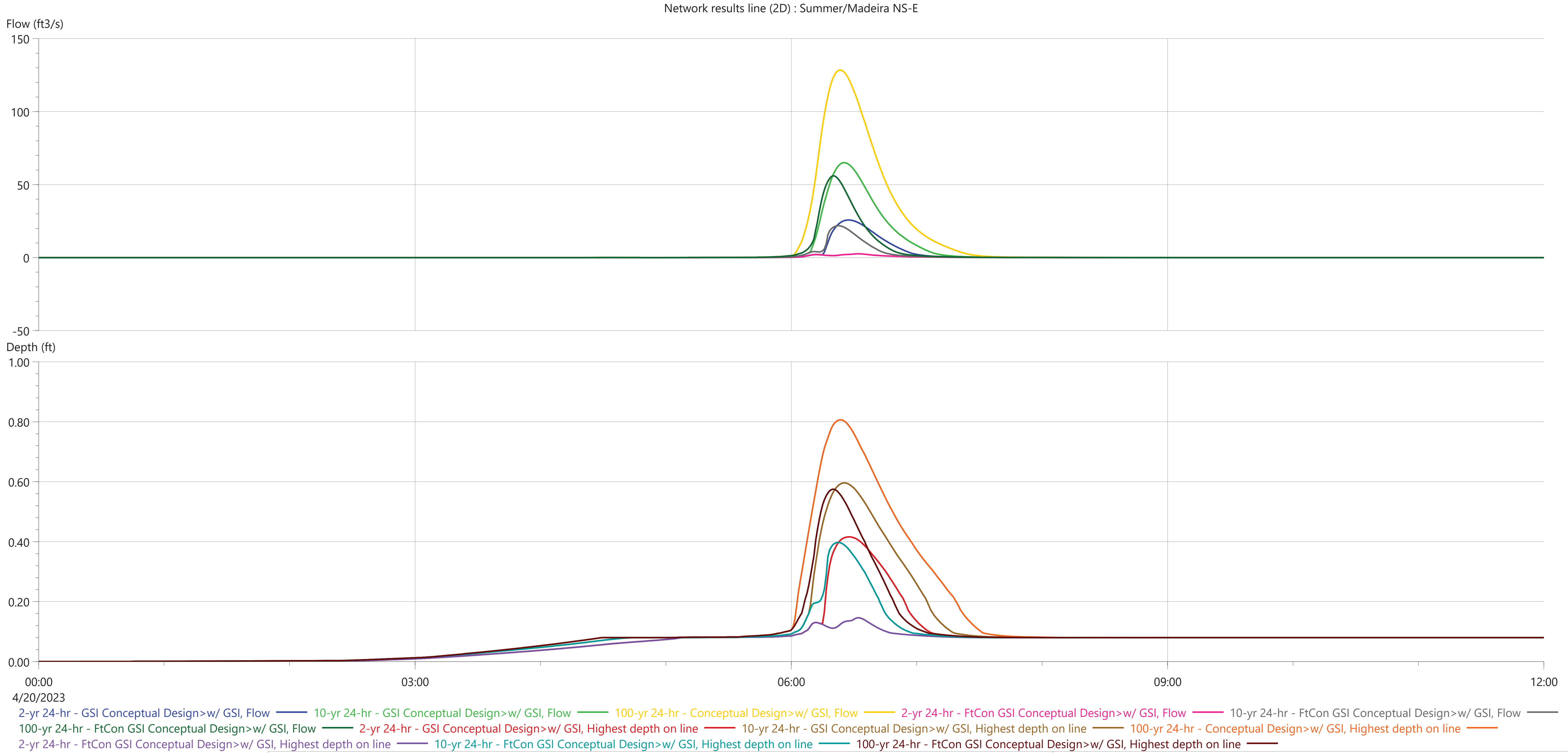

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	25.815	42917.593	0.000	0.416
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	64.971	116182.975	0.000	0.596
100-yr 24-hr - Conceptual Design>w/ GSI	-0.004	128.386	256014.060	0.000	0.807
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	2.627	6093.138	0.000	0.146
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	21.845	29454.753	0.000	0.398
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	56.013	75863.757	0.000	0.575

Proposed Conditions (with GSI improvements) results from Network Results Lines

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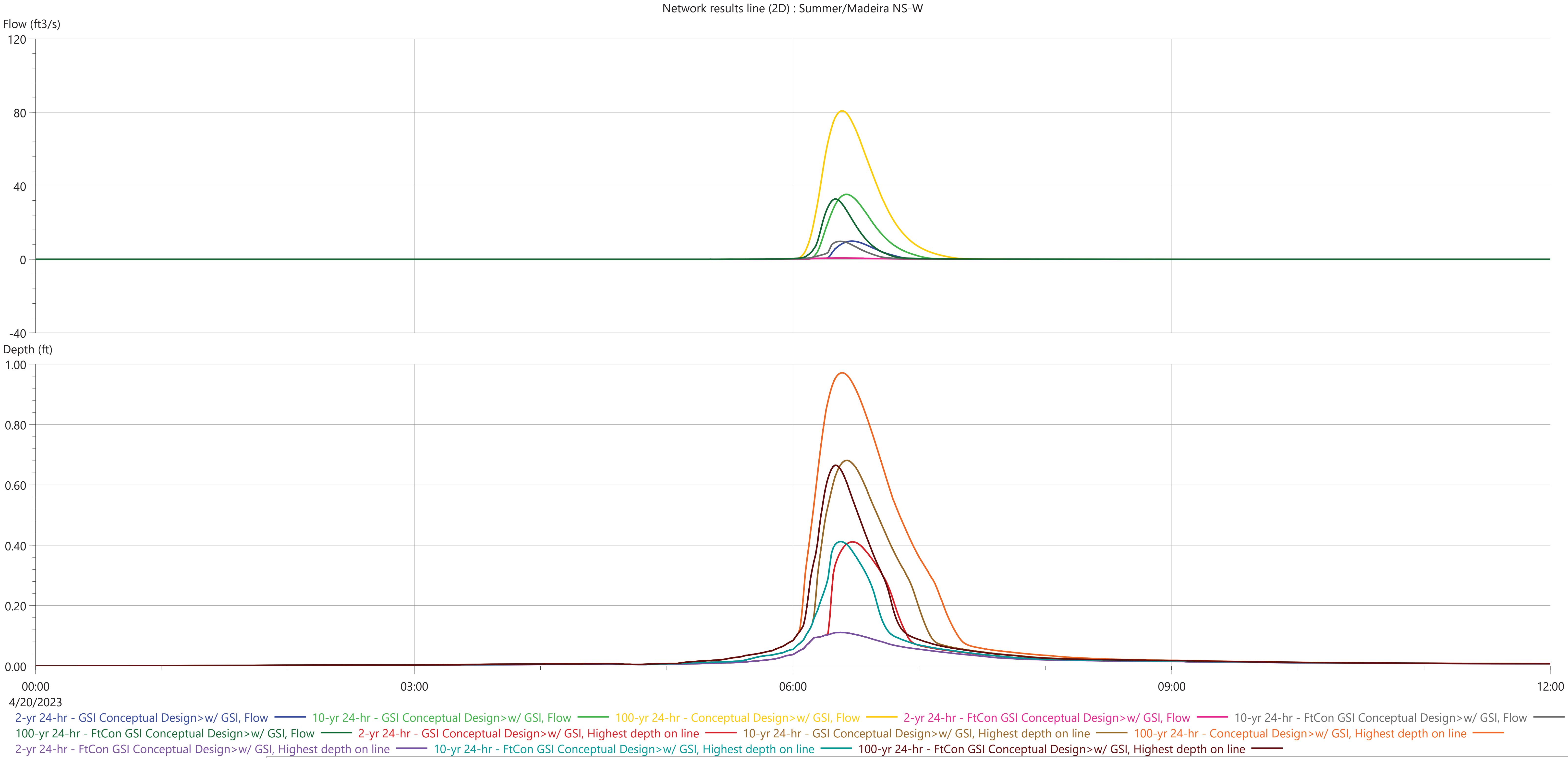

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.005	9.886	13523.395	0.000	0.411
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	35.307	53982.567	0.000	0.681
100-yr 24-hr - Conceptual Design>w/ GSI	-0.005	80.755	141500.747	0.000	0.971
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	0.710	1894.417	0.000	0.111
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	9.796	11792.441	0.000	0.412
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	32.848	39795.472	0.000	0.665

Proposed Conditions (with GSI improvements) results from Network Results Lines

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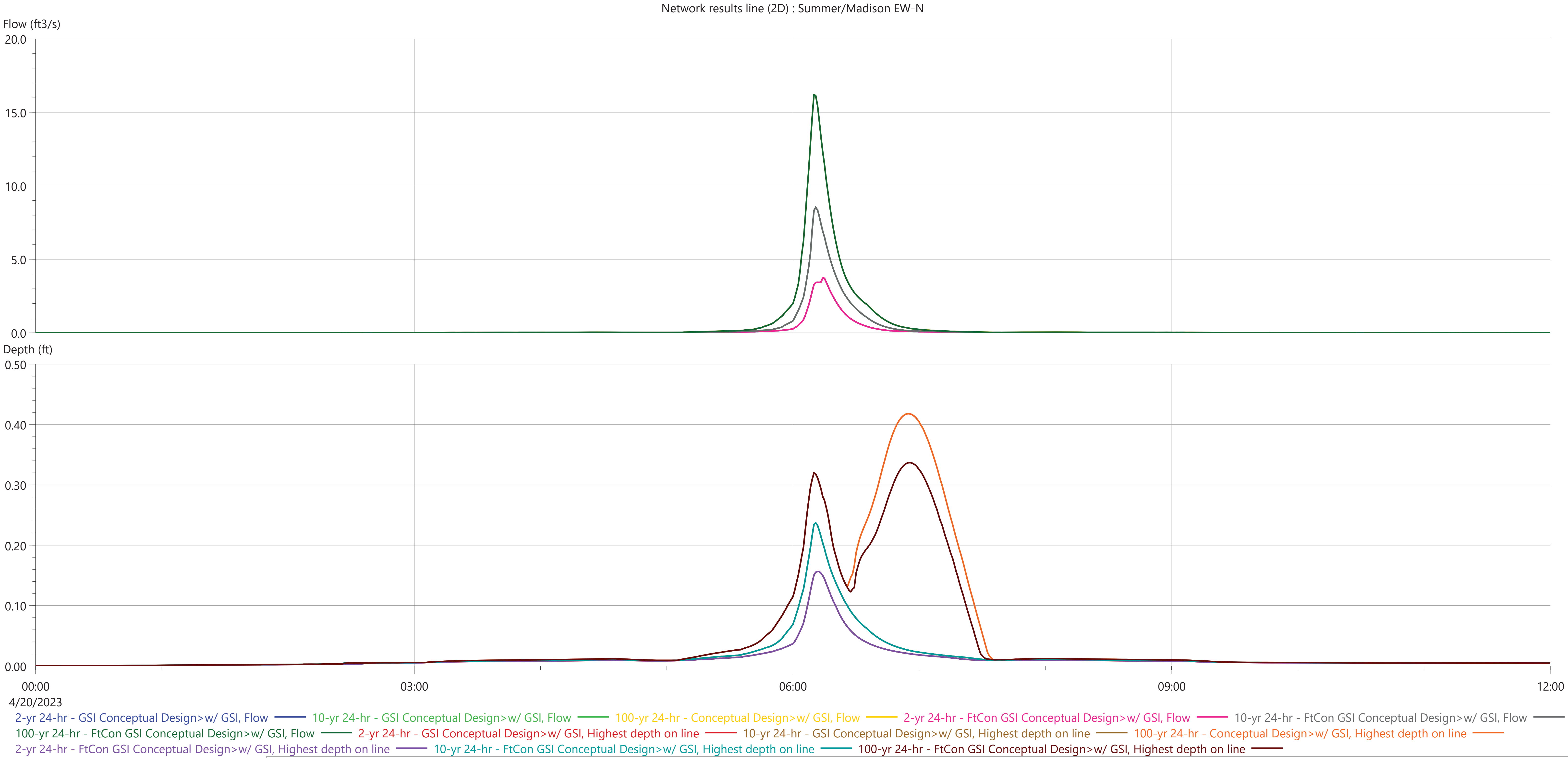

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.734	4614.782	0.000	0.157
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	8.534	9403.440	0.000	0.237
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	16.186	17499.575	0.000	0.418
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.734	4612.135	0.000	0.157
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.535	9398.794	0.000	0.237
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	16.186	17505.186	0.000	0.337

Proposed Conditions (with GSI improvements) results from Network Results Lines

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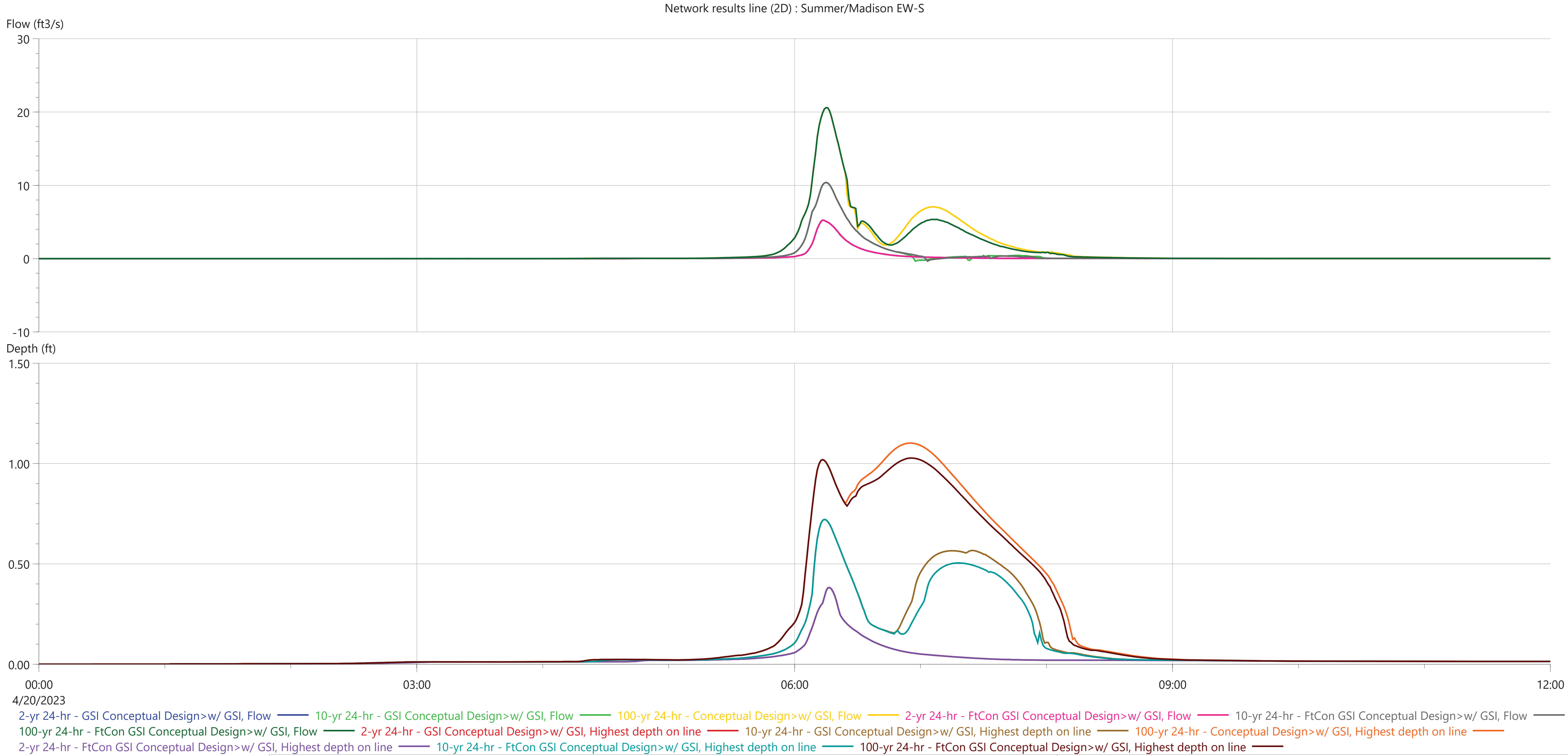

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	5.255	6925.540	0.000	0.382
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.343	10.391	15140.153	0.000	0.721
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	20.610	44052.838	0.000	1.102
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.255	6924.625	0.000	0.382
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.342	10.391	15139.952	0.000	0.721
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	20.609	40463.837	0.000	1.027

Proposed Conditions (with GSI improvements) results from Network Results Lines

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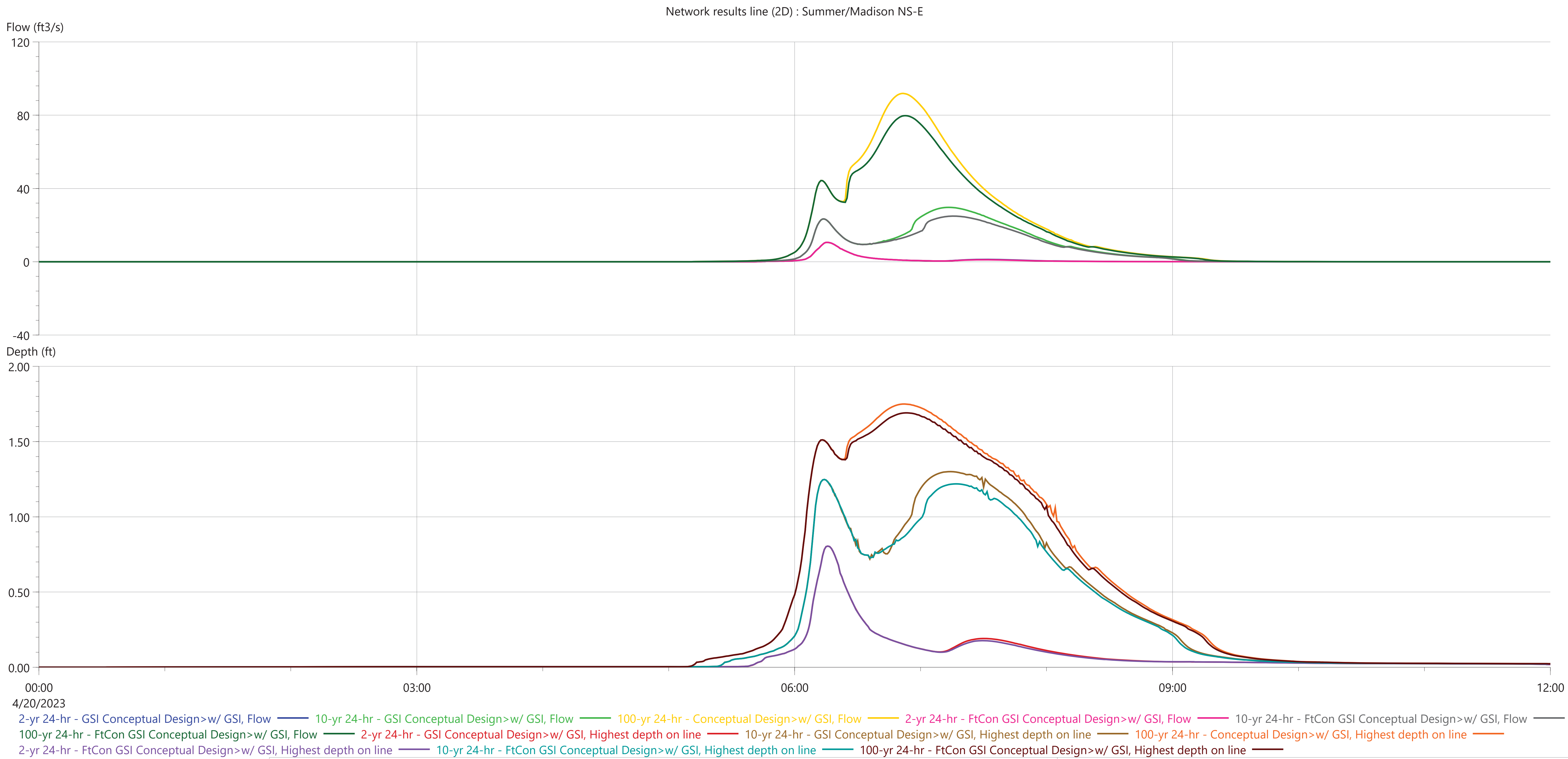

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.003	10.605	16859.055	0.000	0.805
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	29.675	151766.505	0.000	1.300
100-yr 24-hr - Conceptual Design>w/ GSI	-0.004	91.863	395786.518	0.000	1.749
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	10.601	16378.063	0.000	0.805
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	24.911	136103.162	0.000	1.248
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	79.729	357218.790	0.000	1.691

Proposed Conditions (with GSI improvements) results from Network Results Lines

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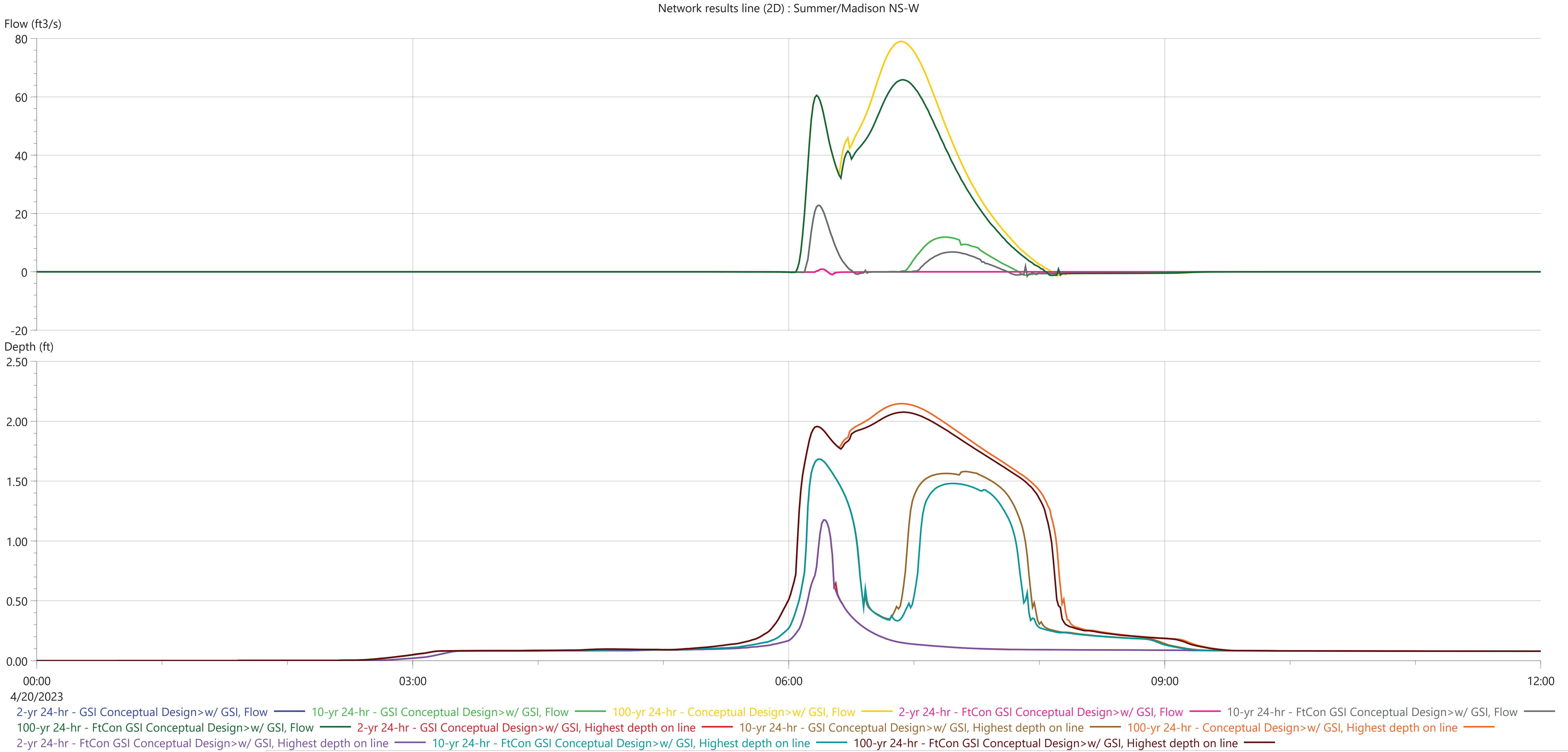

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.881	0.878	-25.098	0.000	1.175
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-1.174	22.829	35683.462	0.000	1.683
100-yr 24-hr - Conceptual Design>w/ GSI	-1.397	78.988	295939.992	0.000	2.146
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.989	0.875	-21.093	0.000	1.175
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.495	22.828	23527.008	0.000	1.683
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-1.232	65.872	255635.568	0.000	2.076

Proposed Conditions (with GSI improvements) results from Network Results Lines

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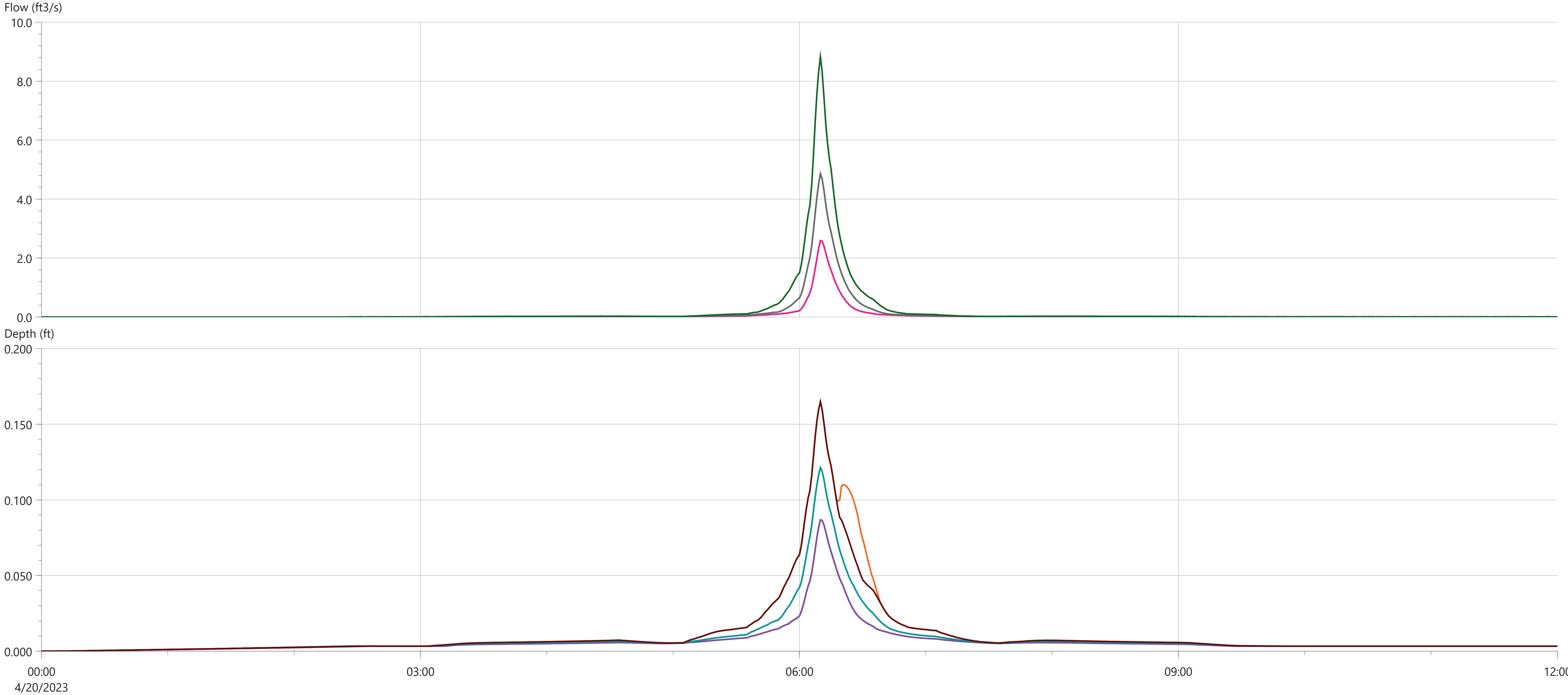
Network results line (2D) : Summer/Manzano EW-N



2-yr 24-hr - GSI Conceptual Design>w/ GSI, Flow; 10-yr 24-hr - GSI Conceptual Design>w/ GSI, Flow; 100-yr 24-hr - Conceptual Design>w/ GSI, Flow; 2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI, Flow; 10-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI, Flow; 100-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI, Flow; 2-yr 24-hr - GSI Conceptual Design>w/ GSI, Highest depth on line; 10-yr 24-hr - GSI Conceptual Design>w/ GSI, Highest depth on line; 100-yr 24-hr - Conceptual Design>w/ GSI, Highest depth on line; 2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI, Highest depth on line; 10-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI, Highest depth on line; 100-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI, Highest depth on line

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.590	2522.419	0.000	0.087
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.863	4740.833	0.000	0.121
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	8.833	8583.808	0.000	0.165
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.590	2515.432	0.000	0.087
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.863	4743.392	0.000	0.121
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	8.833	8589.349	0.000	0.165

Proposed Conditions (with GSI improvements) results from Network Results Lines

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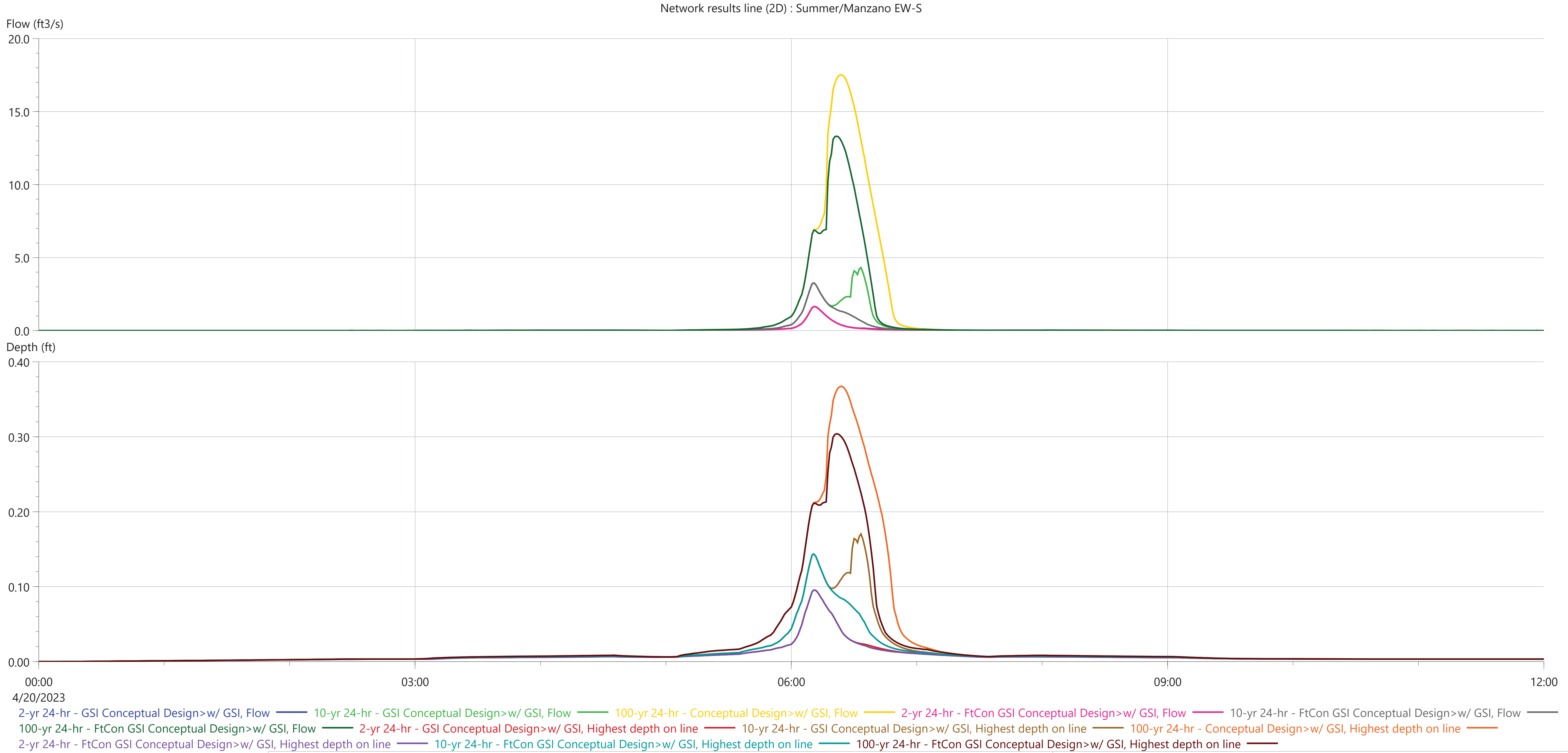

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.641	1959.128	0.000	0.095
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.312	6445.793	0.000	0.170
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	17.517	28555.445	0.000	0.367
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.641	1935.716	0.000	0.095
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.267	4177.828	0.000	0.144
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	13.315	19060.872	0.000	0.304

Proposed Conditions (with GSI improvements) results from Network Results Lines

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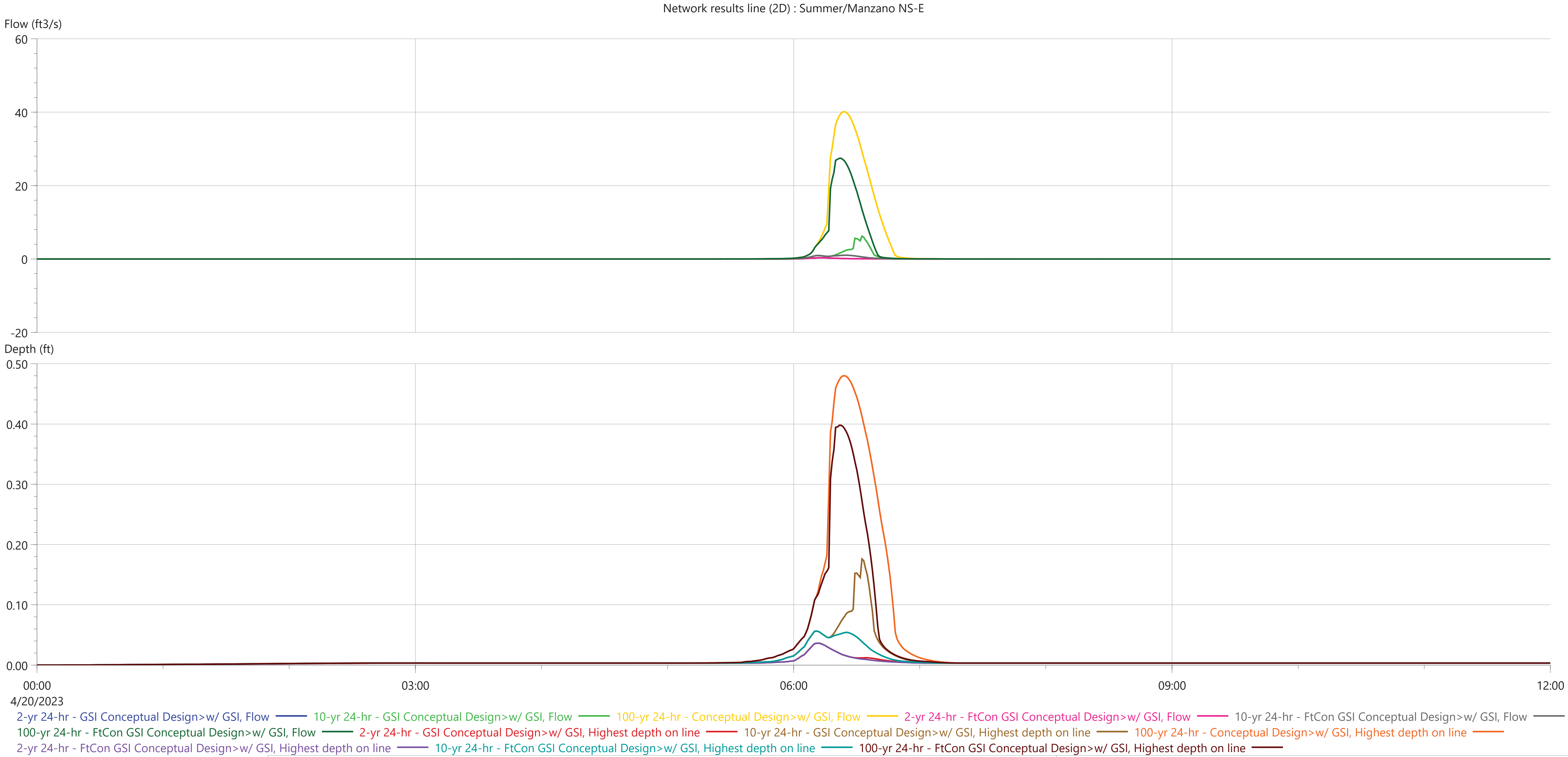

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	0.349	415.347	0.000	0.037
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	6.213	4771.850	0.000	0.176
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	40.118	50660.544	0.000	0.480
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	0.349	383.055	0.000	0.037
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	1.020	1619.815	0.000	0.056
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	27.441	27559.349	0.000	0.398

Proposed Conditions (with GSI improvements) results from Network Results Lines

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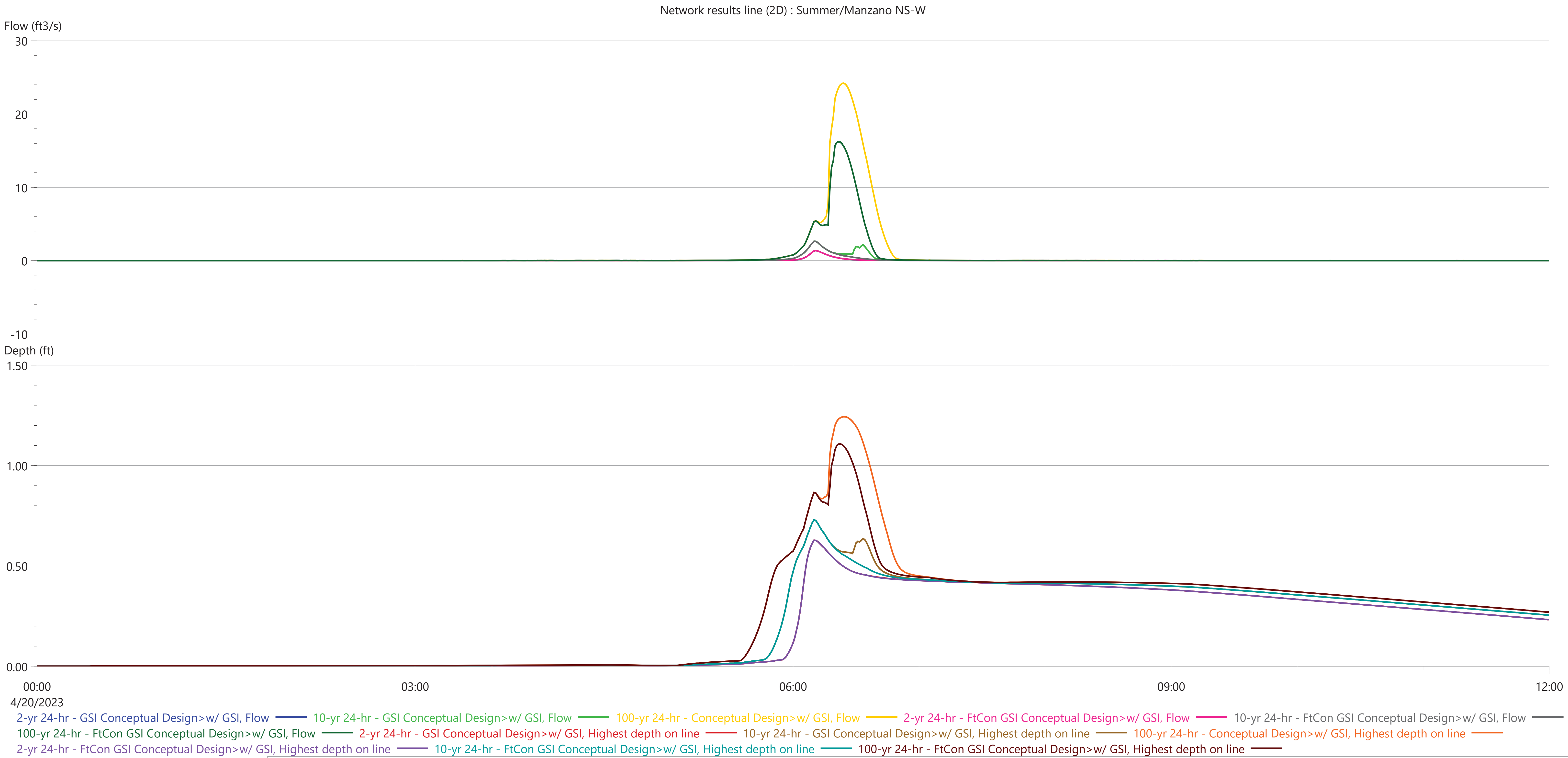

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	1.353	1218.495	0.000	0.628
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	2.635	3537.456	0.000	0.729
100-yr 24-hr - Conceptual Design>w/ GSI	-0.003	24.202	31320.041	0.000	1.243
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	1.353	1214.447	0.000	0.628
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	2.635	2611.470	0.000	0.729
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	16.224	17893.313	0.000	1.108

Proposed Conditions (with GSI improvements) results from Network Results Lines

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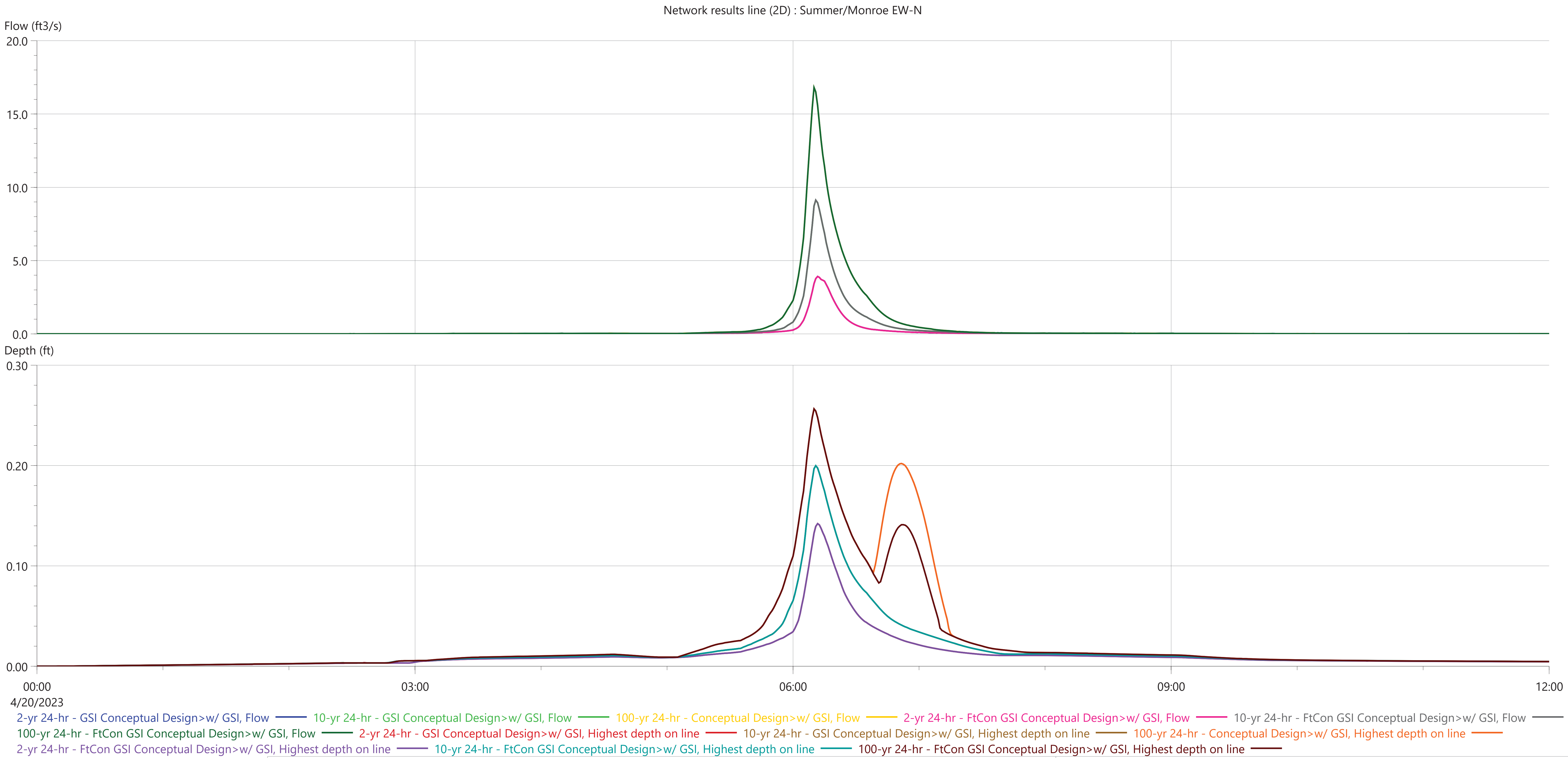

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.915	4700.364	0.000	0.142
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	9.123	10129.326	0.000	0.200
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	16.812	19768.892	0.000	0.256
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.915	4700.655	0.000	0.142
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	9.132	10132.439	0.000	0.200
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	16.812	19770.206	0.000	0.256

Proposed Conditions (with GSI improvements) results from Network Results Lines

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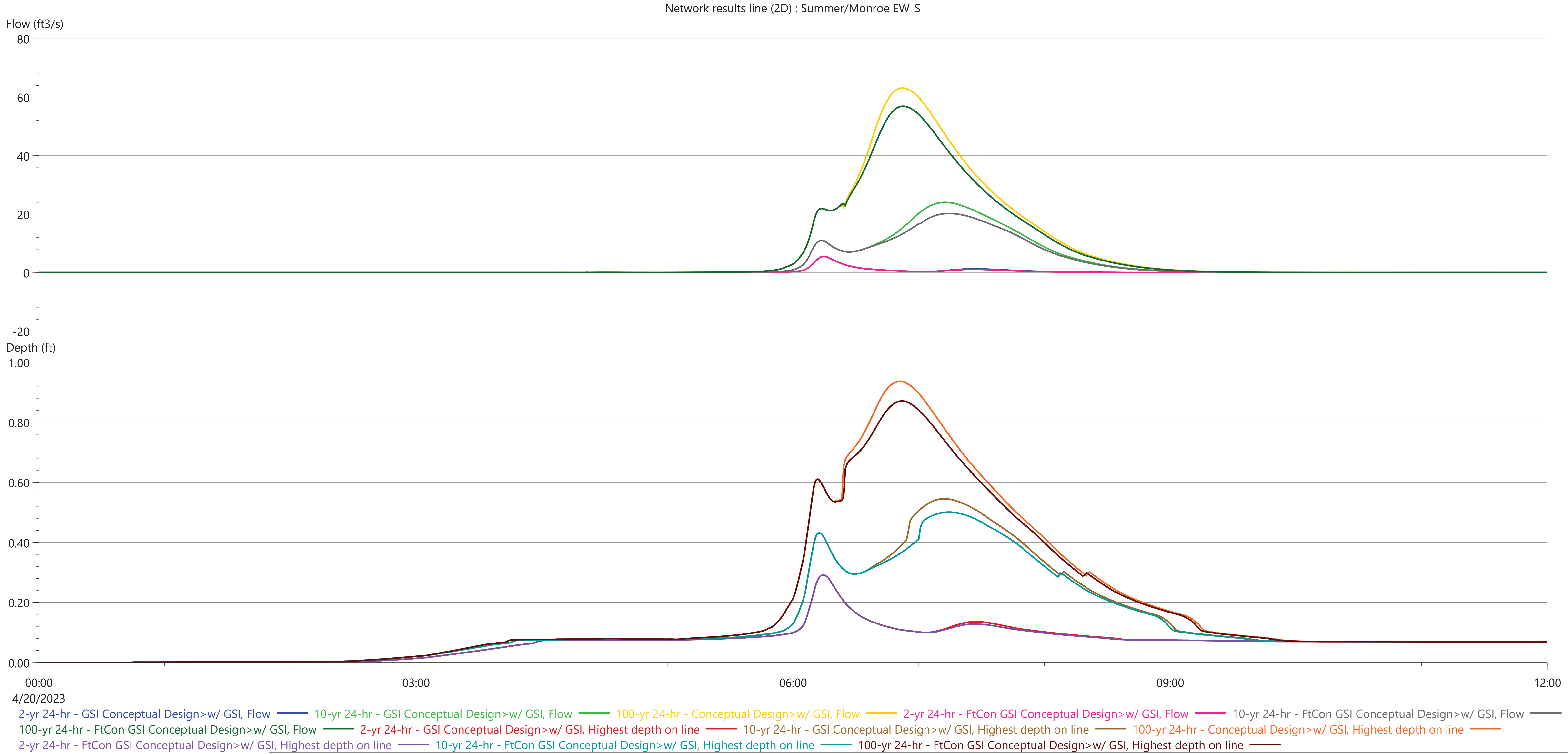

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	5.525	10531.285	0.000	0.291
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	24.018	114247.075	0.000	0.545
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	63.132	271031.459	0.000	0.937
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.524	10050.384	0.000	0.291
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	20.219	102171.226	0.000	0.501
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	56.897	249835.588	0.000	0.871

Proposed Conditions (with GSI improvements) results from Network Results Lines

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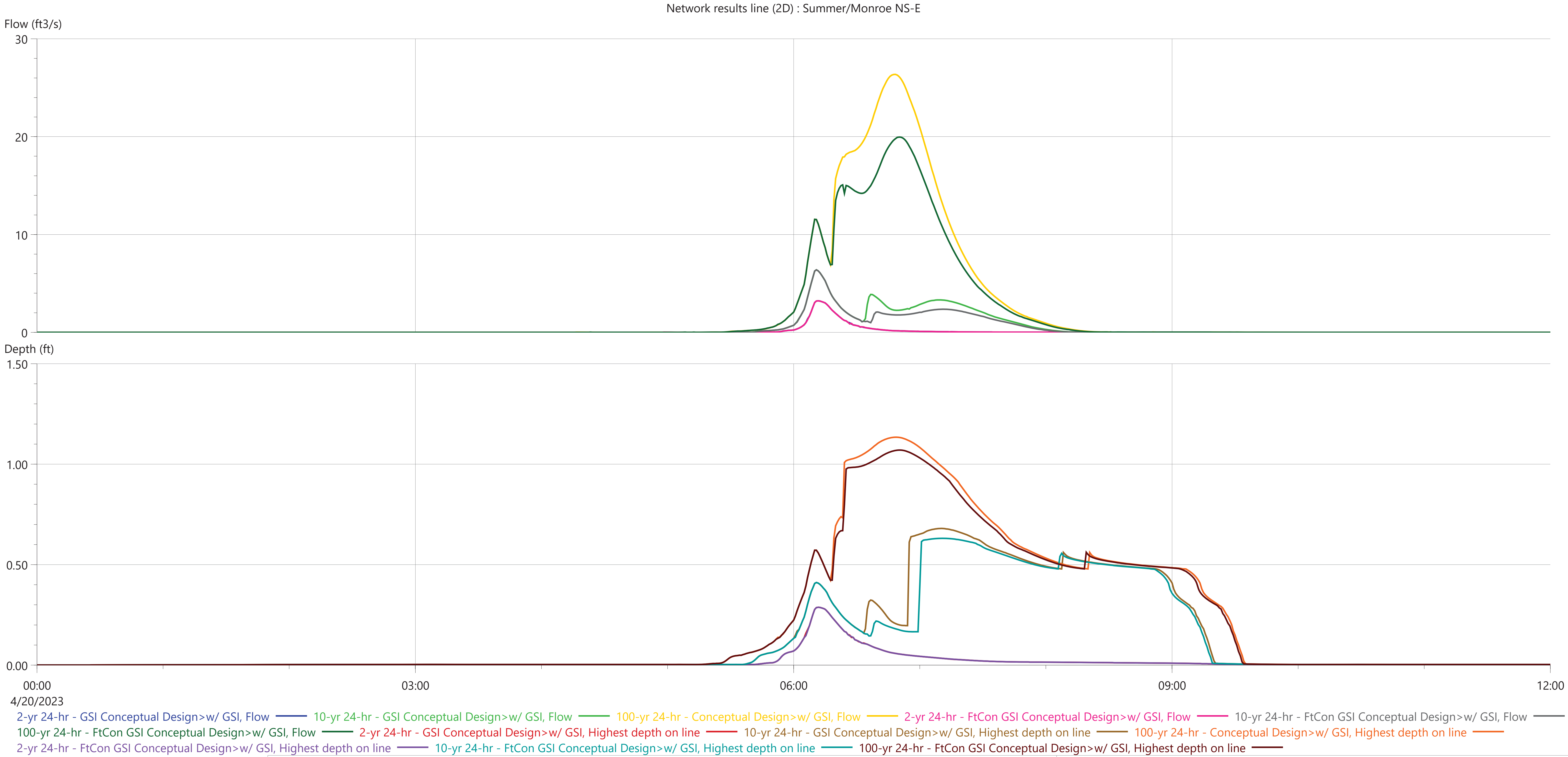

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	3.227	3839.392	0.000	0.288
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	6.392	18296.238	0.000	0.680
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	26.358	88910.213	0.000	1.134
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.227	3832.661	0.000	0.288
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	6.394	14946.692	0.000	0.631
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	19.960	71559.985	0.000	1.070

Proposed Conditions (with GSI improvements) results from Network Results Lines

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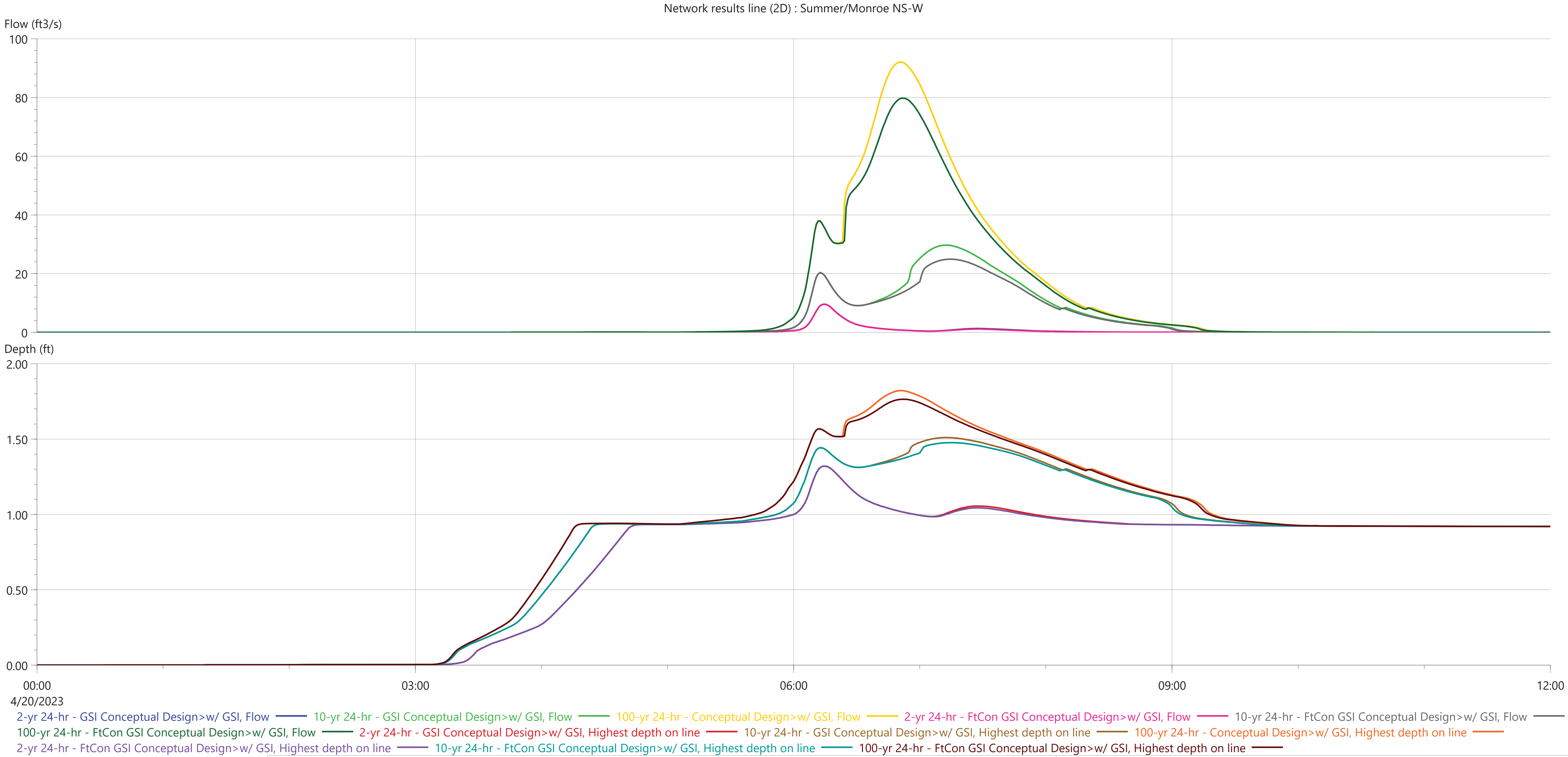

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	9.563	15920.129	0.000	1.320
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	29.710	148500.122	0.000	1.510
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	92.103	388713.489	0.000	1.822
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	9.560	15431.370	0.000	1.320
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	24.946	132816.335	0.000	1.476
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	79.778	349907.136	0.000	1.764

Proposed Conditions (with GSI improvements) results from Network Results Lines

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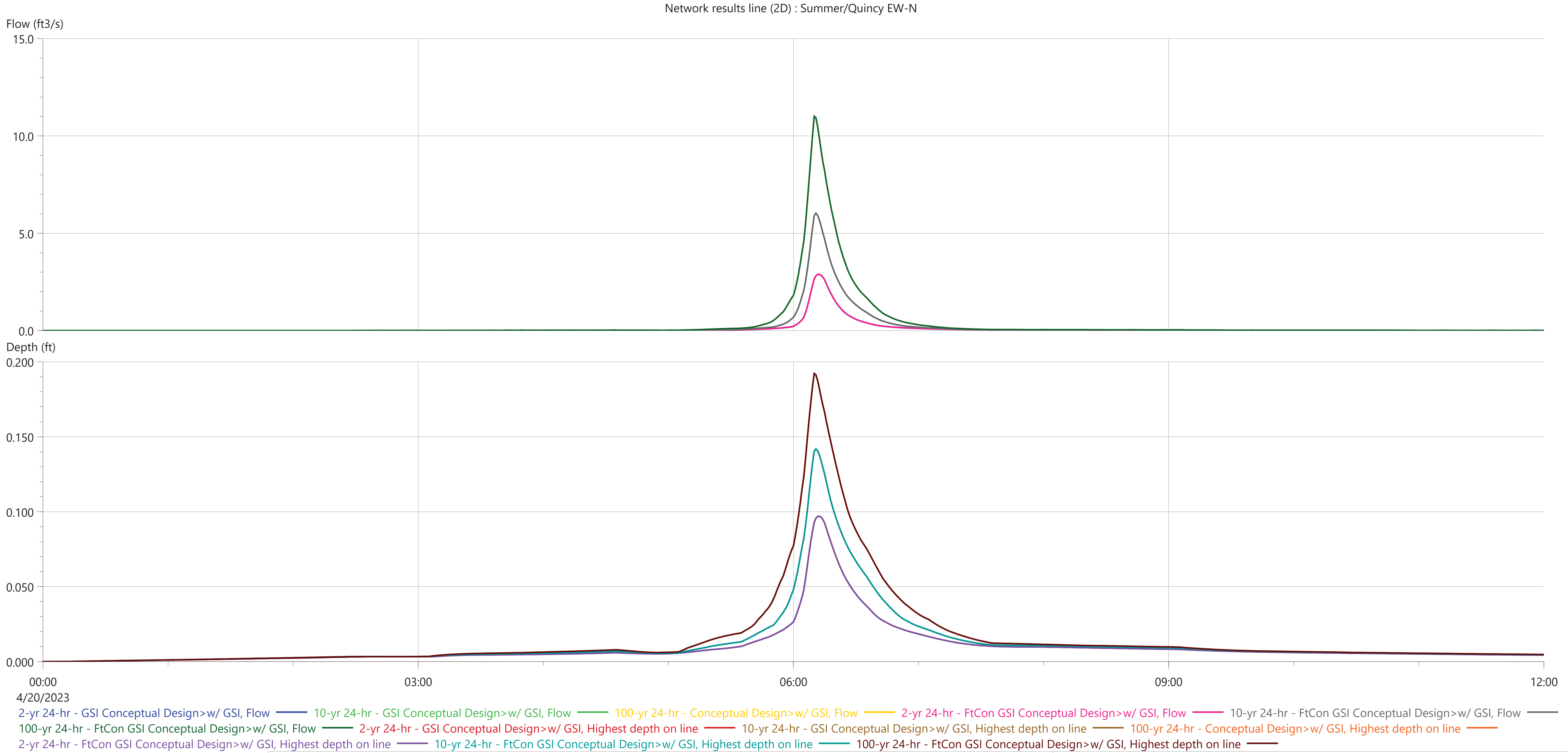

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.889	3828.636	0.000	0.097
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	6.028	7538.086	0.000	0.142
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	11.009	13874.392	0.000	0.192
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.889	3835.402	0.000	0.097
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	6.028	7545.497	0.000	0.142
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	11.009	13880.183	0.000	0.192

Proposed Conditions (with GSI improvements) results from Network Results Lines

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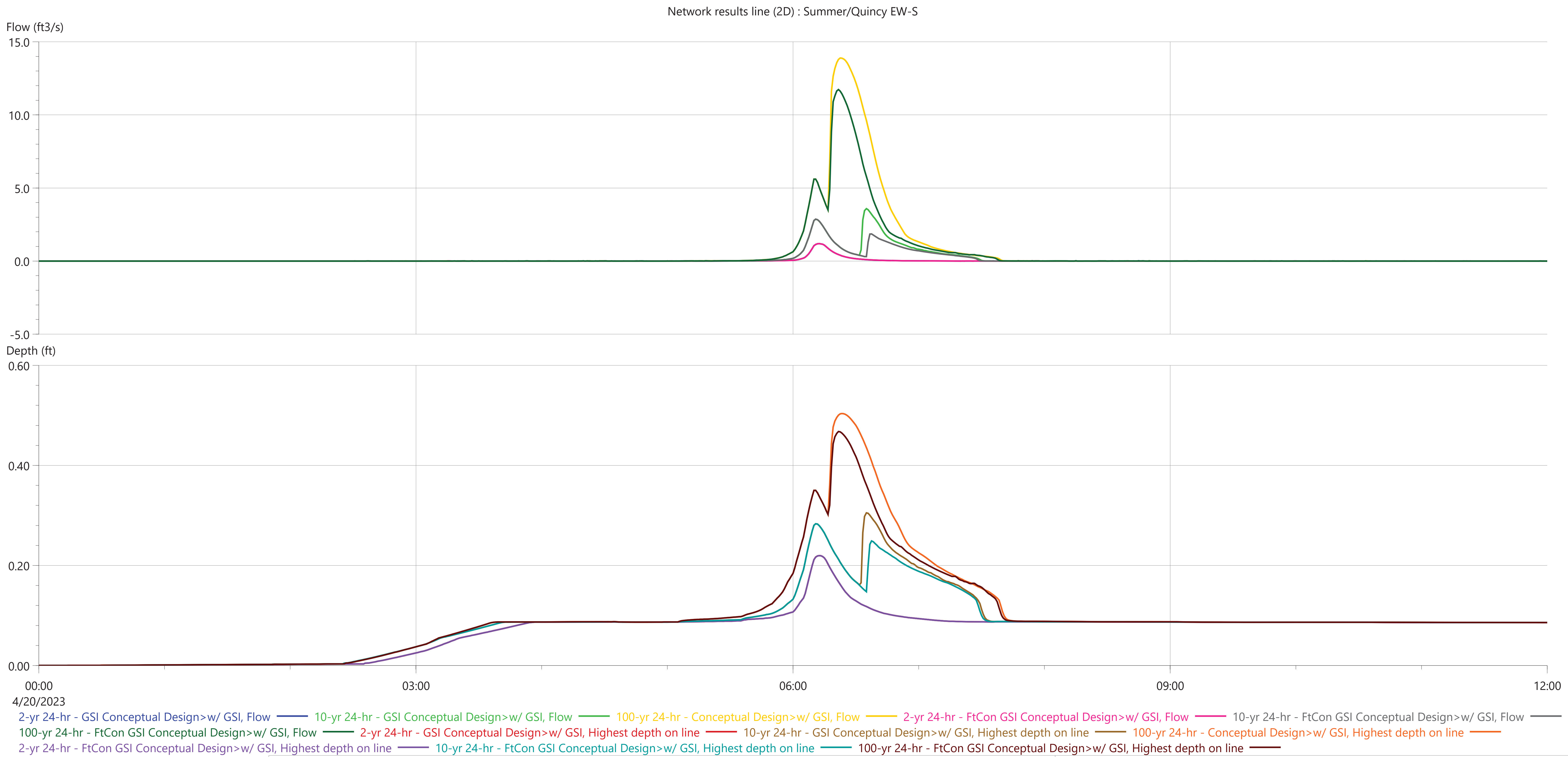

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	1.193	1154.454	0.000	0.220
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	3.584	6489.819	0.000	0.305
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	13.887	24509.451	0.000	0.504
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	1.198	1161.592	0.000	0.220
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	2.870	5134.643	0.000	0.283
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	11.729	18705.141	0.000	0.468

Proposed Conditions (with GSI improvements) results from Network Results Lines

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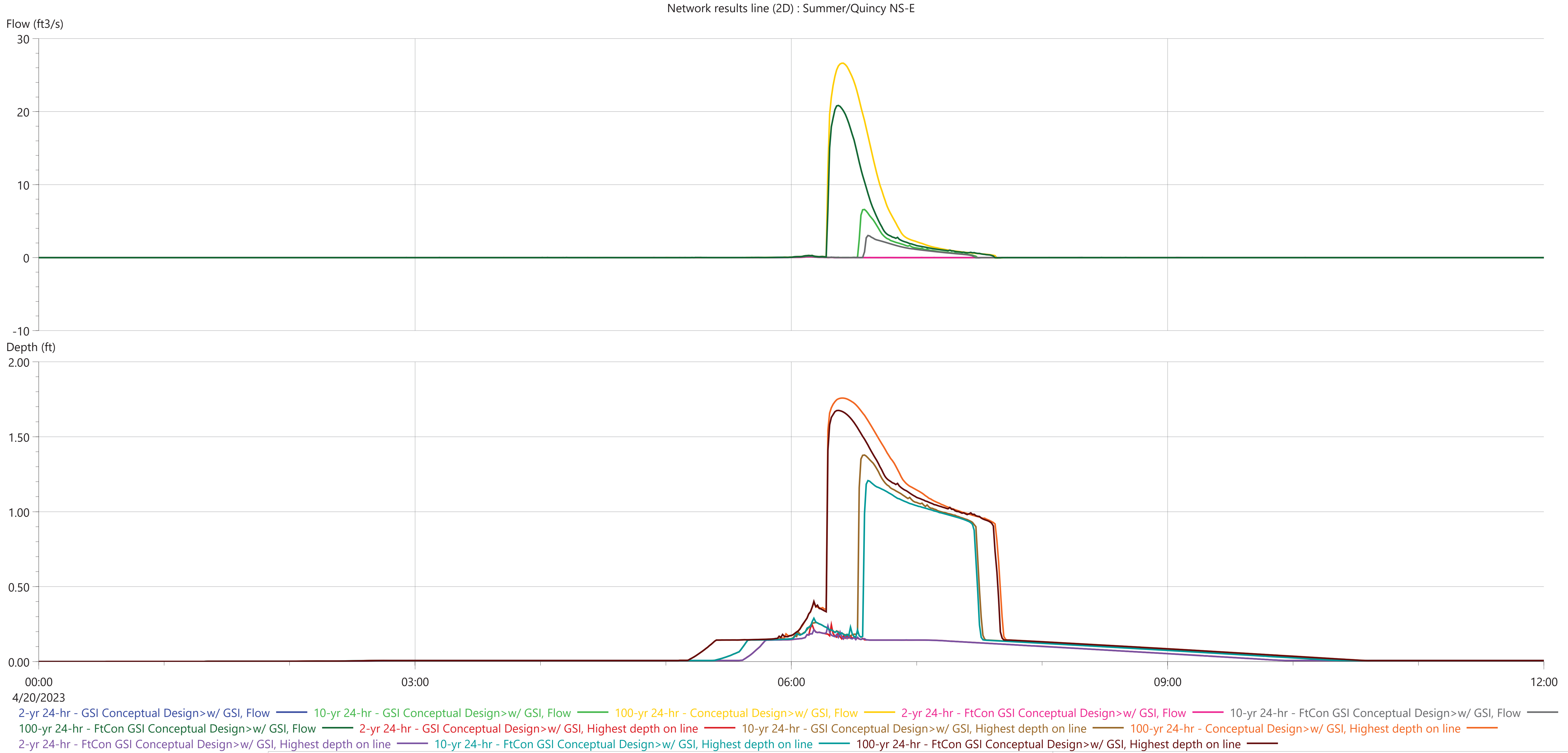

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.008	0.178	86.762	0.000	0.246
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.034	6.599	6893.275	0.000	1.378
100-yr 24-hr - Conceptual Design>w/ GSI	-0.040	26.632	38965.264	0.000	1.758
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.013	0.110	83.848	0.000	0.238
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.027	3.027	4143.473	0.000	1.207
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.029	20.835	26230.511	0.000	1.676

Proposed Conditions (with GSI improvements) results from Network Results Lines

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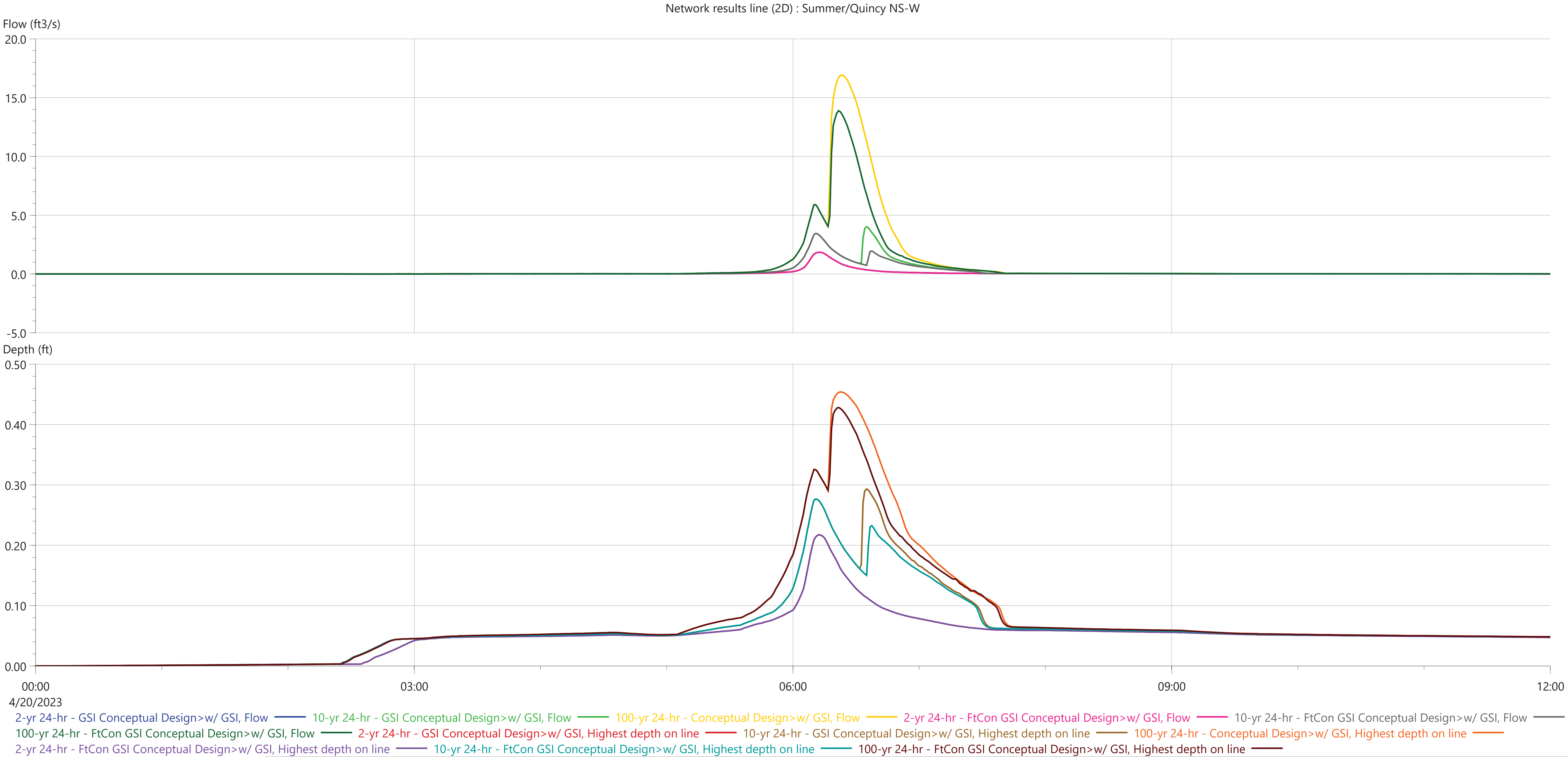

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	1.843	3029.000	0.000	0.217
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	4.023	8365.086	0.000	0.293
100-yr 24-hr - Conceptual Design>w/ GSI	-0.002	16.910	29265.811	0.000	0.454
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	1.845	3024.872	0.000	0.217
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	3.443	6995.057	0.000	0.277
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	13.886	22141.492	0.000	0.428

Proposed Conditions (with GSI improvements) results from Network Results Lines

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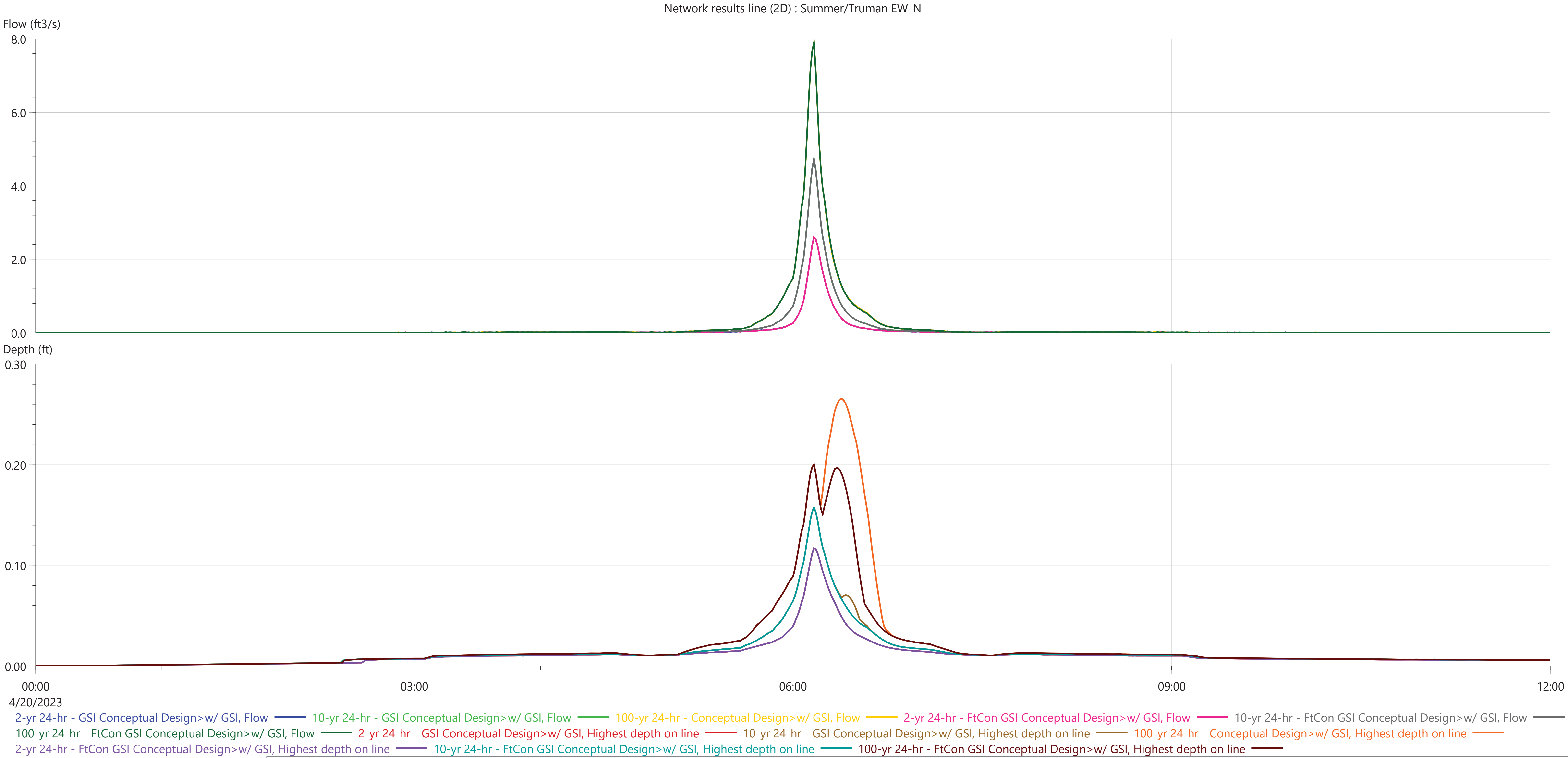

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.602	2398.349	0.000	0.117
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	4.721	4331.790	0.000	0.157
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	7.885	7510.625	0.000	0.265
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.602	2401.007	0.000	0.117
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	4.721	4327.769	0.000	0.157
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	7.886	7508.269	0.000	0.200

Proposed Conditions (with GSI improvements) results from Network Results Lines

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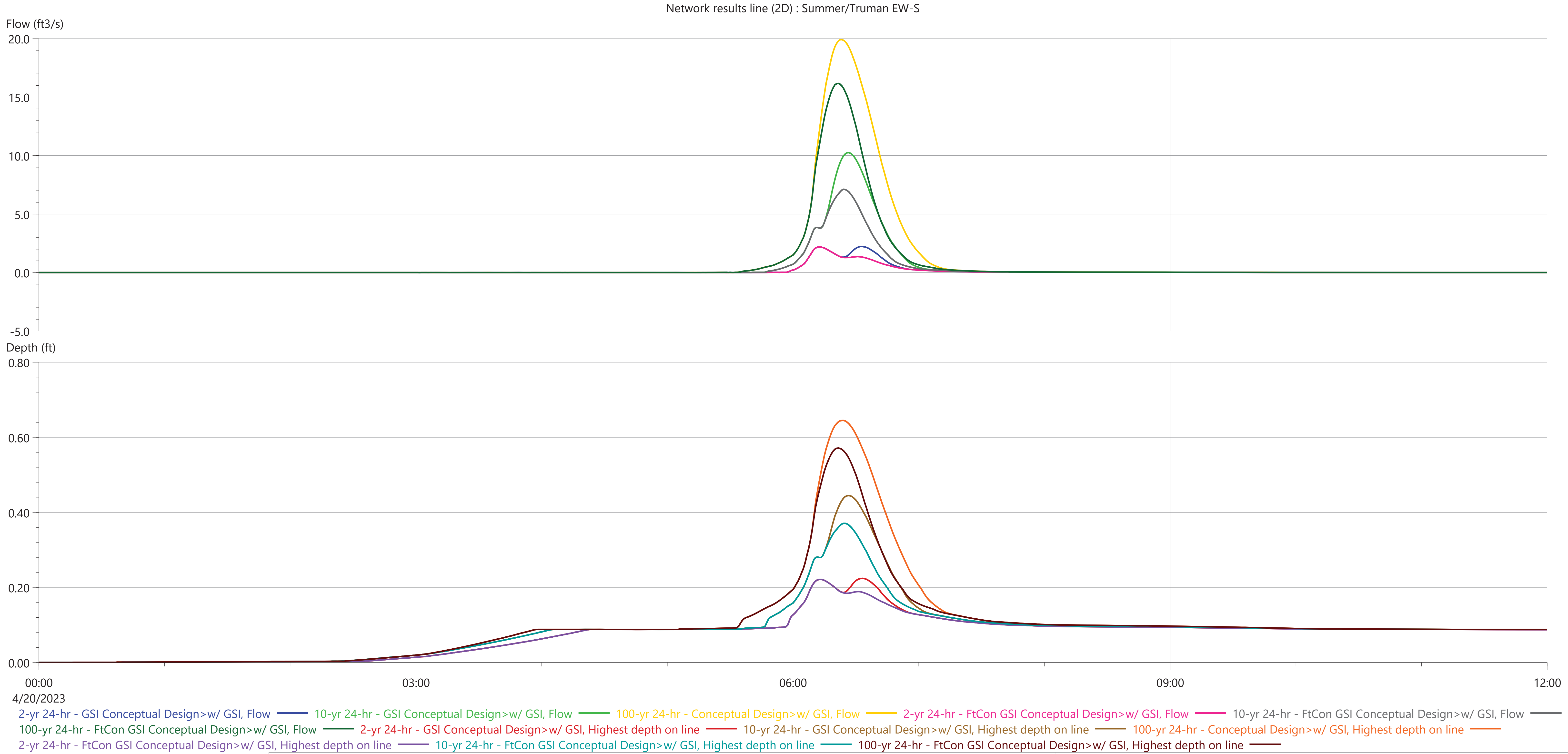

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.005	2.231	5086.913	0.000	0.224
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	10.254	17996.049	0.000	0.445
100-yr 24-hr - Conceptual Design>w/ GSI	-0.005	19.915	39826.080	0.000	0.645
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	2.190	4265.899	0.000	0.221
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	7.113	12651.115	0.000	0.371
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	16.168	28530.015	0.000	0.571

Proposed Conditions (with GSI improvements) results from Network Results Lines

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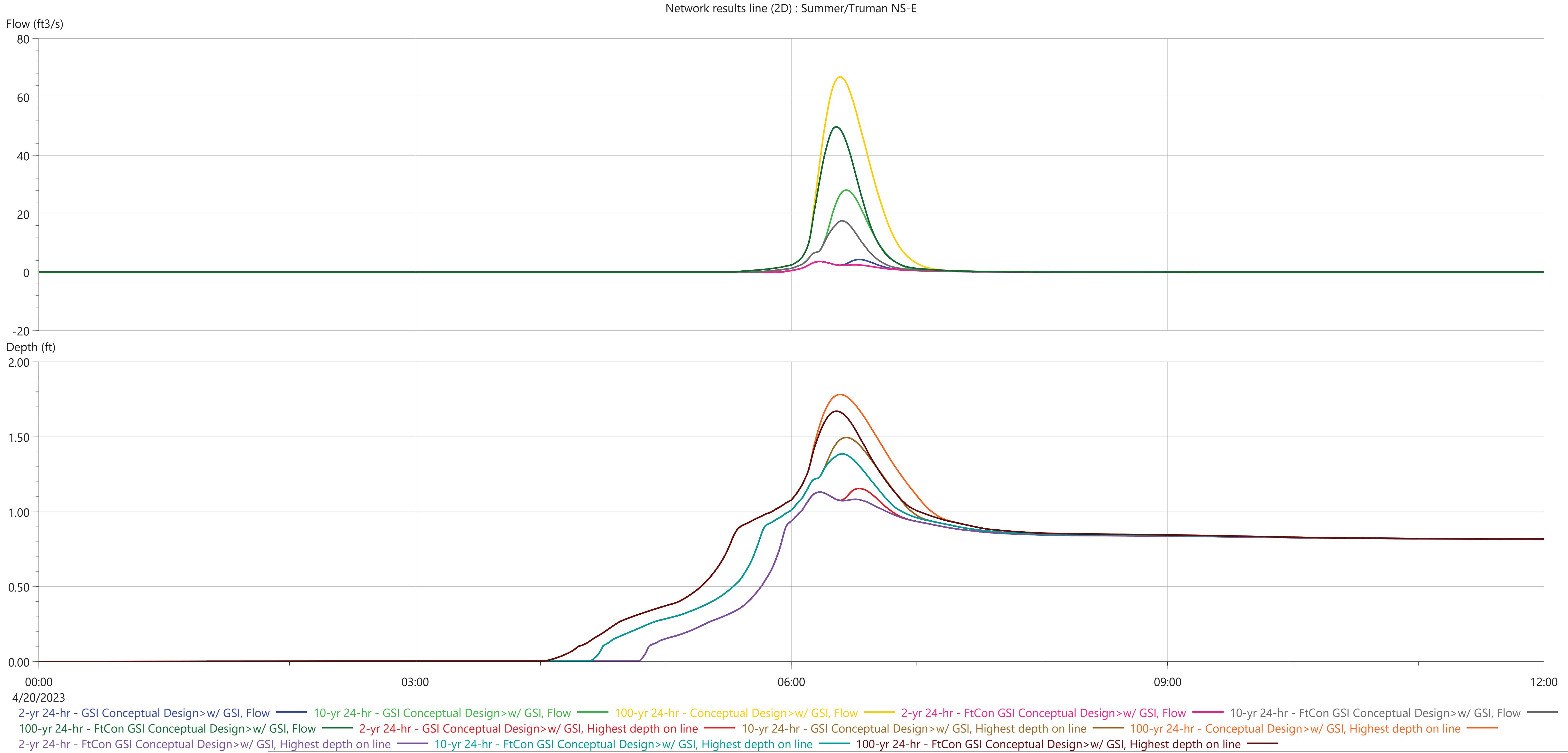

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	4.338	9518.288	0.000	1.155
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	28.130	42938.035	0.000	1.495
100-yr 24-hr - Conceptual Design>w/ GSI	-0.004	66.947	114368.827	0.000	1.781
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	3.637	7947.057	0.000	1.130
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	17.634	27476.794	0.000	1.386
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.003	49.796	75009.682	0.000	1.671

Proposed Conditions (with GSI improvements) results from Network Results Lines

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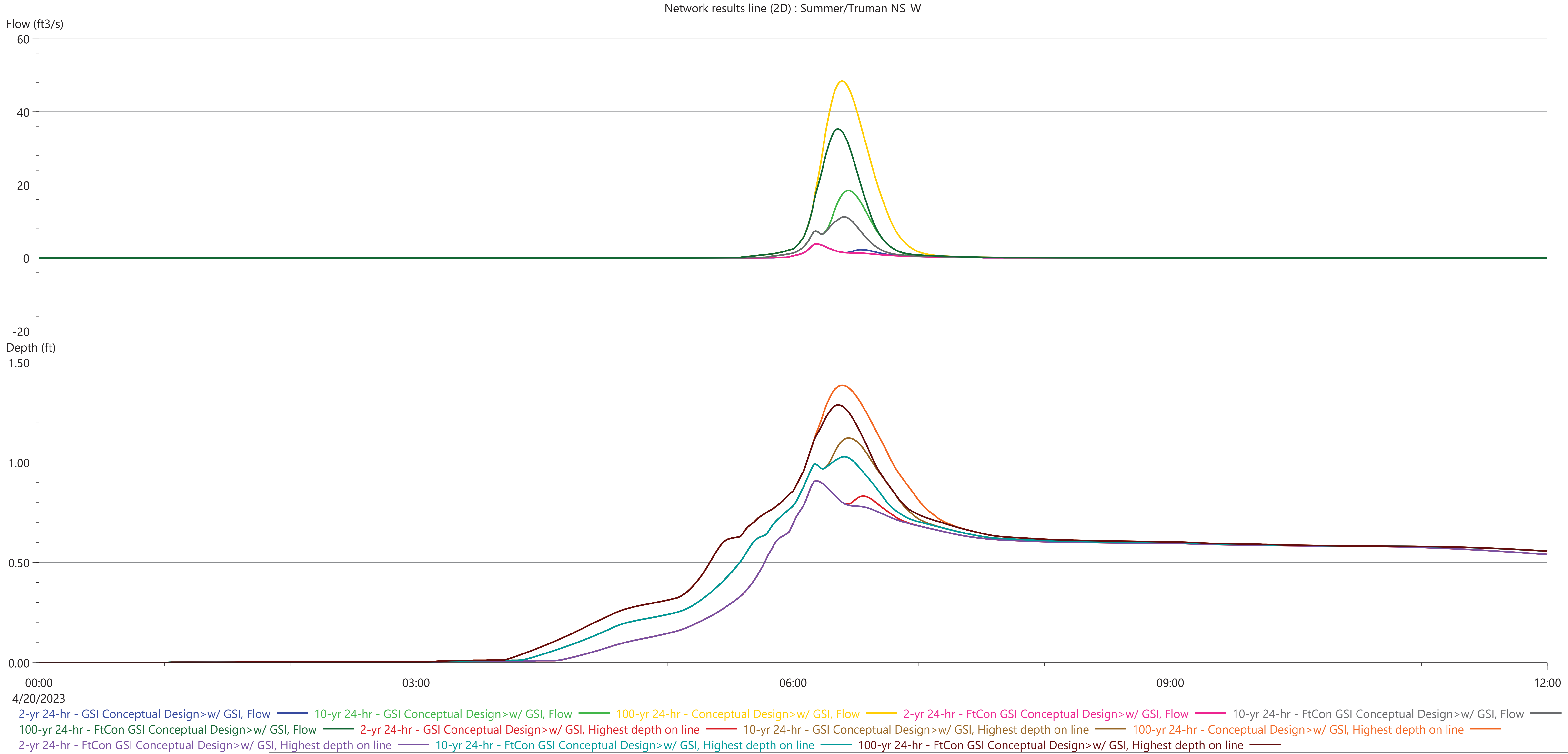

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	3.819	7049.397	0.000	0.908
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	18.444	29689.368	0.000	1.122
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	48.362	82757.443	0.000	1.385
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	3.819	6297.529	0.000	0.908
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	11.248	19570.563	0.000	1.028
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	35.296	54696.359	0.000	1.286

Proposed Conditions (with GSI improvements) results from Network Results Lines

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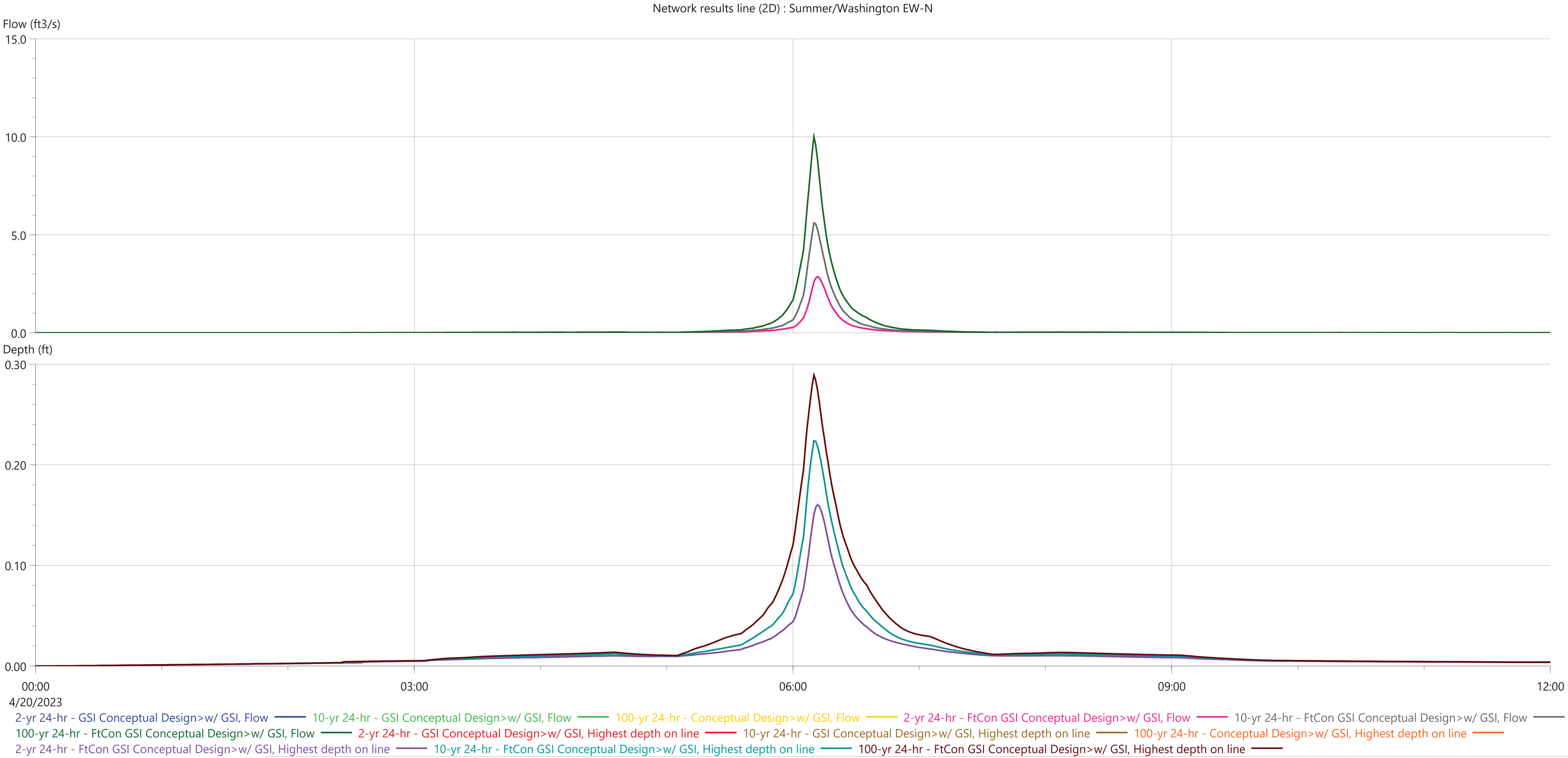

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.864	3103.873	0.000	0.160
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	5.597	5697.927	0.000	0.224
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	10.010	10044.040	0.000	0.289
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.864	3103.895	0.000	0.160
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.605	5704.002	0.000	0.224
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	10.010	10045.691	0.000	0.289

Proposed Conditions (with GSI improvements) results from Network Results Lines

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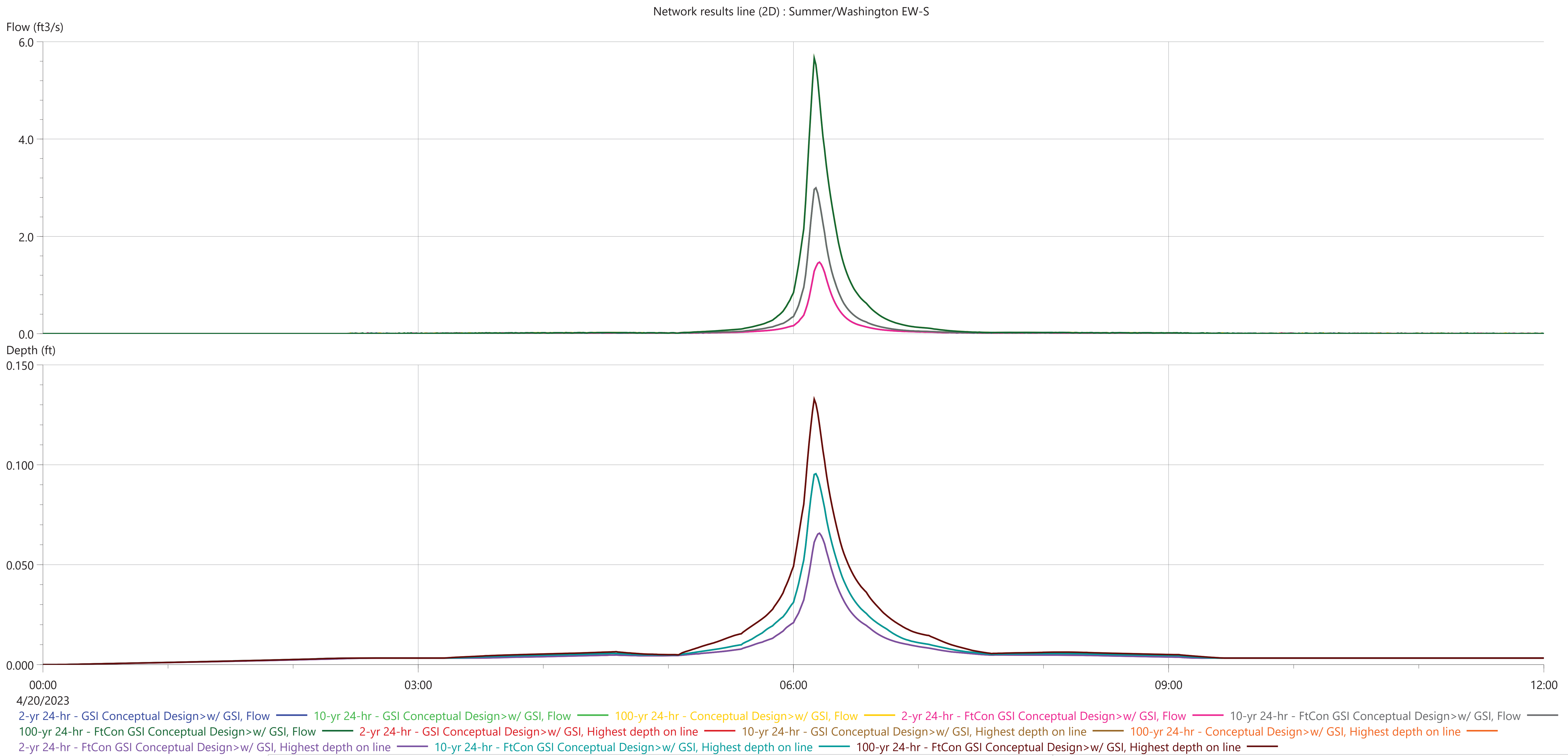
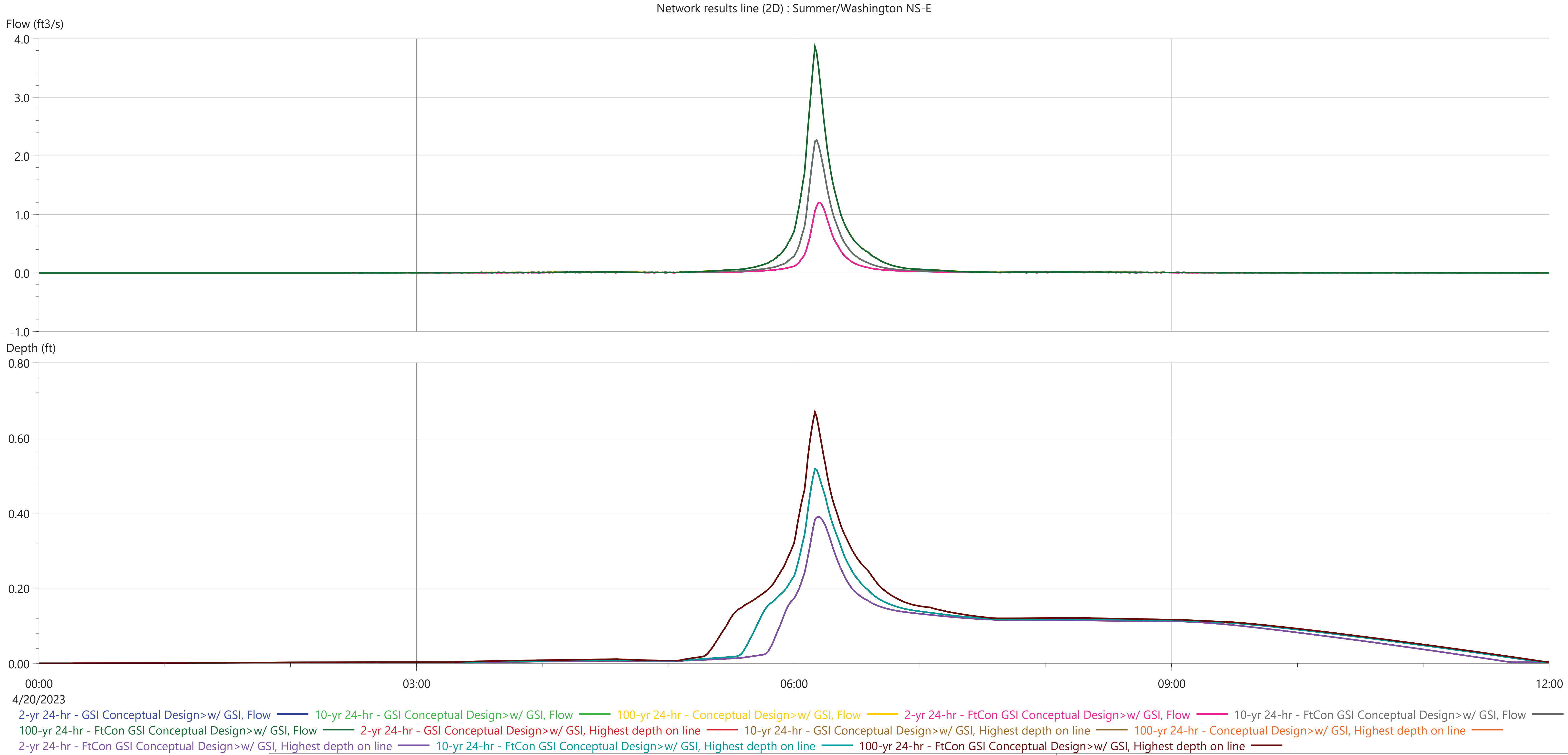


	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.471	1761.294	0.000	0.066
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.990	3186.315	0.000	0.095
100-yr 24-hr - Conceptual Design>w/ GSI	0.000	5.664	6395.186	0.000	0.133
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.469	1761.851	0.000	0.066
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.000	3192.541	0.000	0.096
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	5.664	6393.842	0.000	0.133

Proposed Conditions (with GSI improvements) results from Network Results Lines

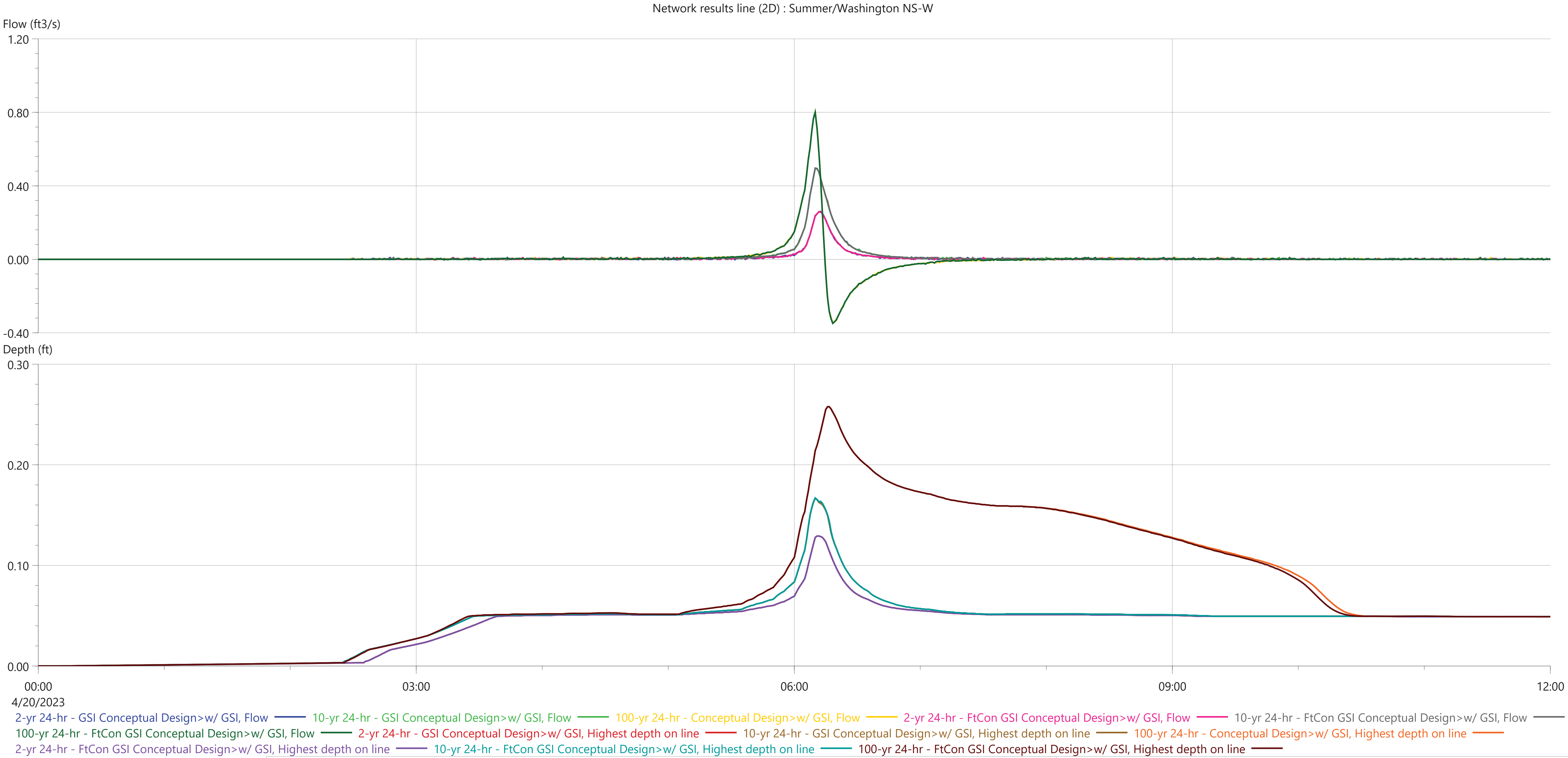
Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	1.202	1335.349	0.000	0.390
10-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.269	2418.608	0.000	0.517
100-yr 24-hr - Conceptual Design>w/ GSI	-0.002	3.861	4177.661	0.000	0.669
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.204	1329.765	0.000	0.390
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	2.267	2418.872	0.000	0.518
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	3.861	4180.608	0.000	0.669

Proposed Conditions (with GSI improvements) results from Network Results Lines

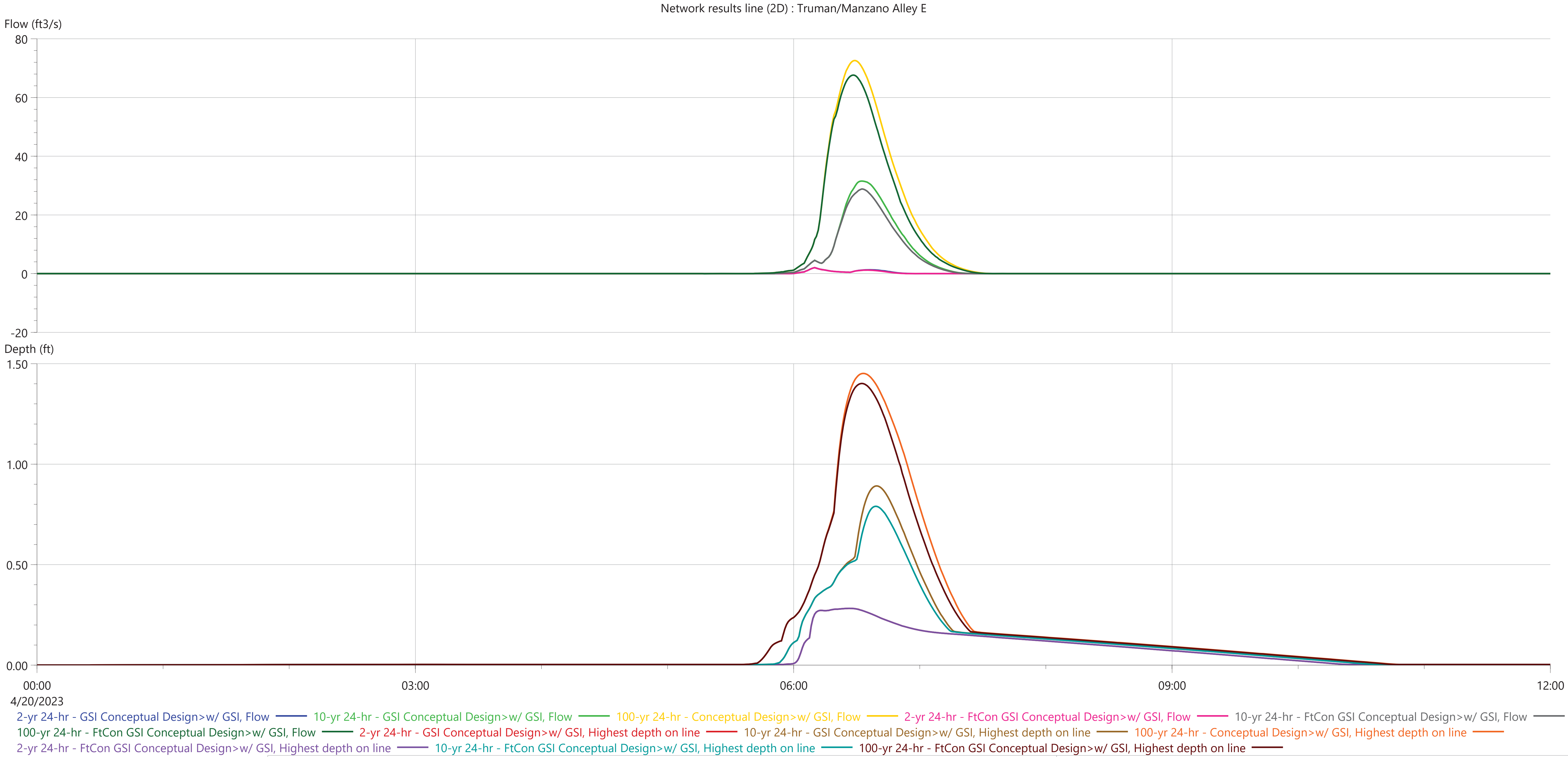
Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	0.260	281.084	0.000	0.129
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.002	0.496	519.448	0.000	0.167
100-yr 24-hr - Conceptual Design>w/ GSI	-0.346	0.801	149.752	0.000	0.258
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	0.258	286.246	0.000	0.129
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.002	0.496	521.700	0.000	0.167
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.348	0.801	147.774	0.000	0.258

Proposed Conditions (with GSI improvements) results from Network Results Lines

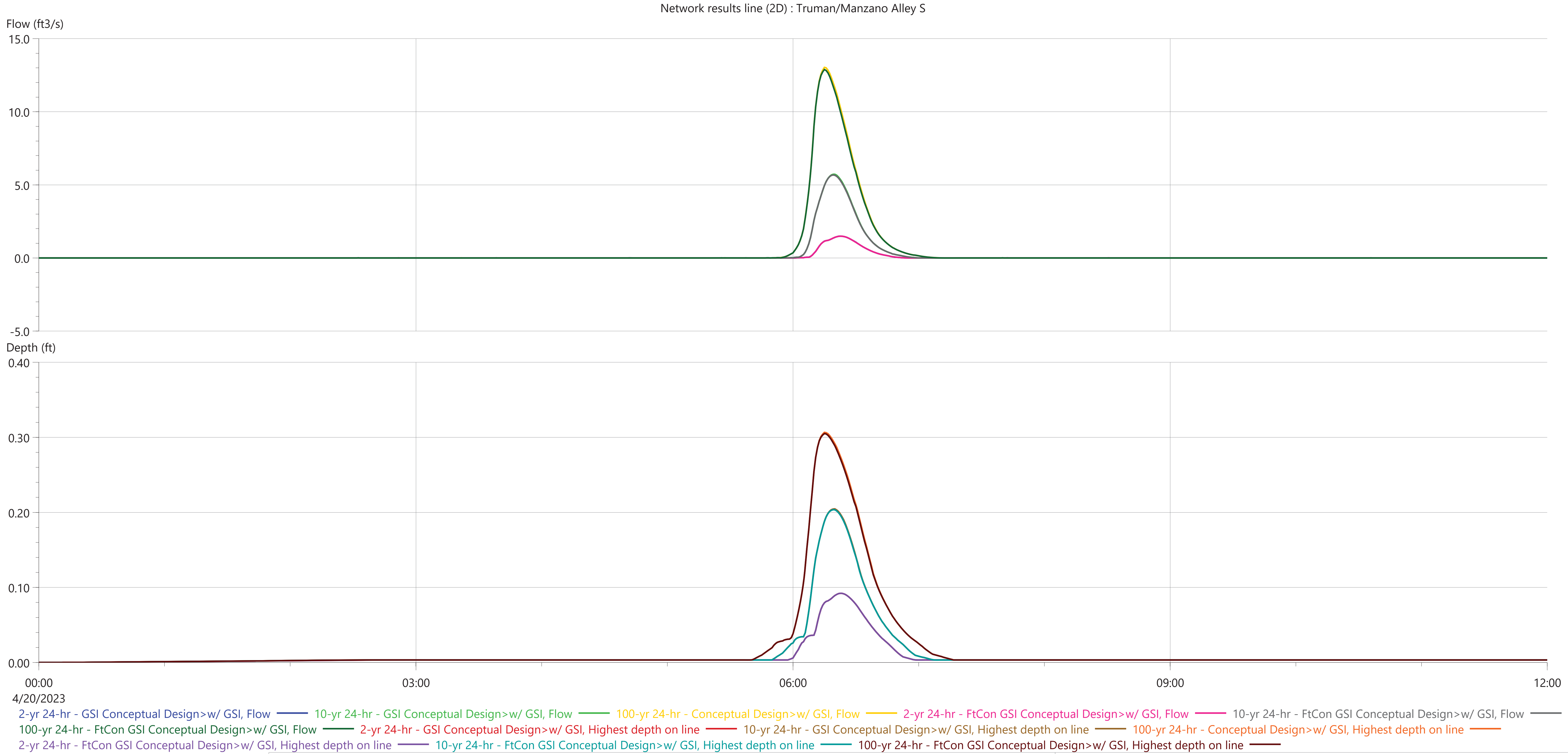
Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	2.048	2852.901	0.000	0.283
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	31.534	58336.871	0.000	0.892
100-yr 24-hr - Conceptual Design>w/ GSI	-0.013	72.584	151074.744	0.000	1.452
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	2.048	2670.215	0.000	0.283
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	28.873	52401.688	0.000	0.790
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.013	67.634	136729.119	0.000	1.402

Proposed Conditions (with GSI improvements) results from Network Results Lines

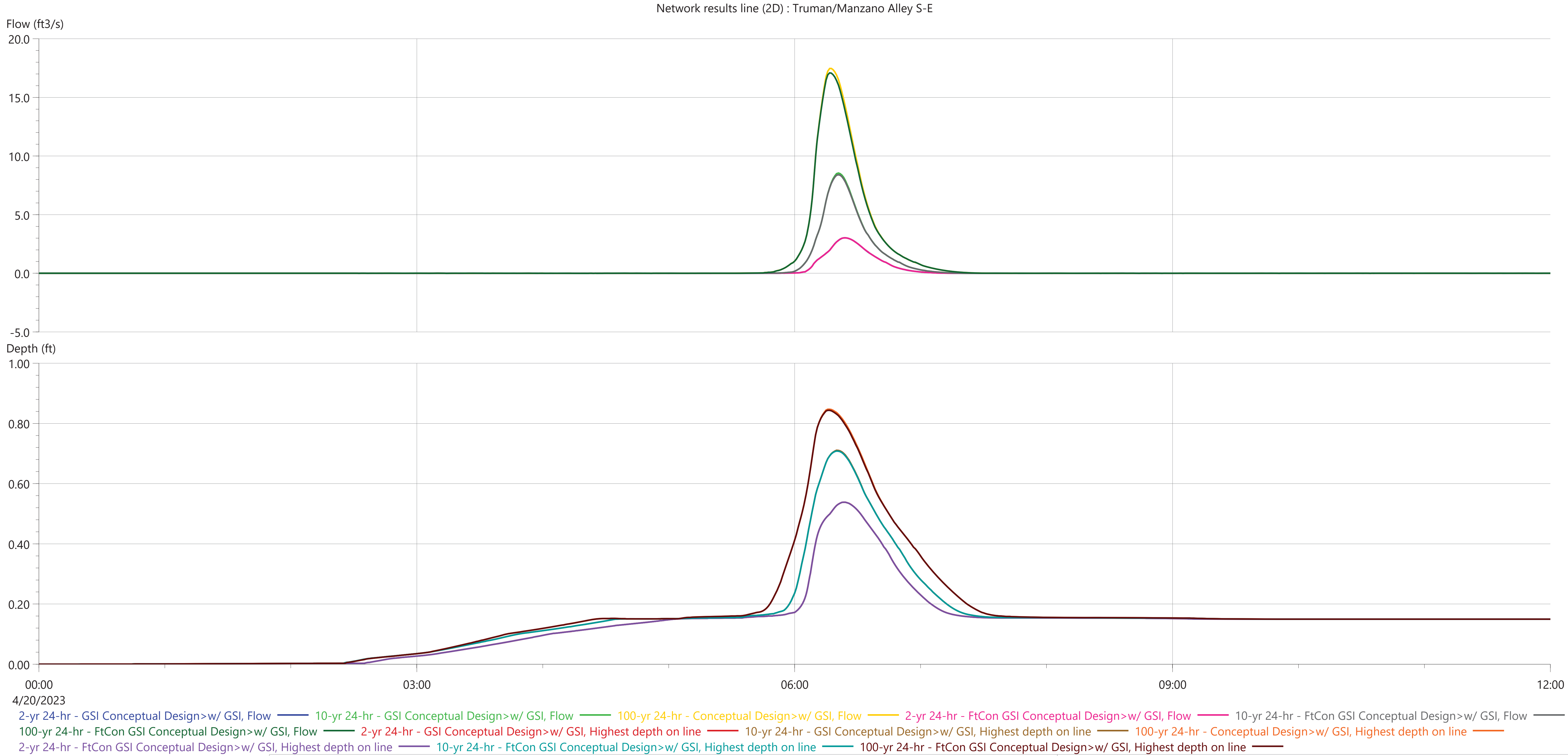
Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	1.489	1961.765	0.000	0.092
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.000	5.722	7278.868	0.000	0.205
100-yr 24-hr - Conceptual Design>w/ GSI	-0.000	13.040	17452.060	0.000	0.307
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	0.000	1.489	1961.338	0.000	0.092
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	5.665	7219.487	0.000	0.204
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.000	12.886	17165.673	0.000	0.305

Proposed Conditions (with GSI improvements) results from Network Results Lines

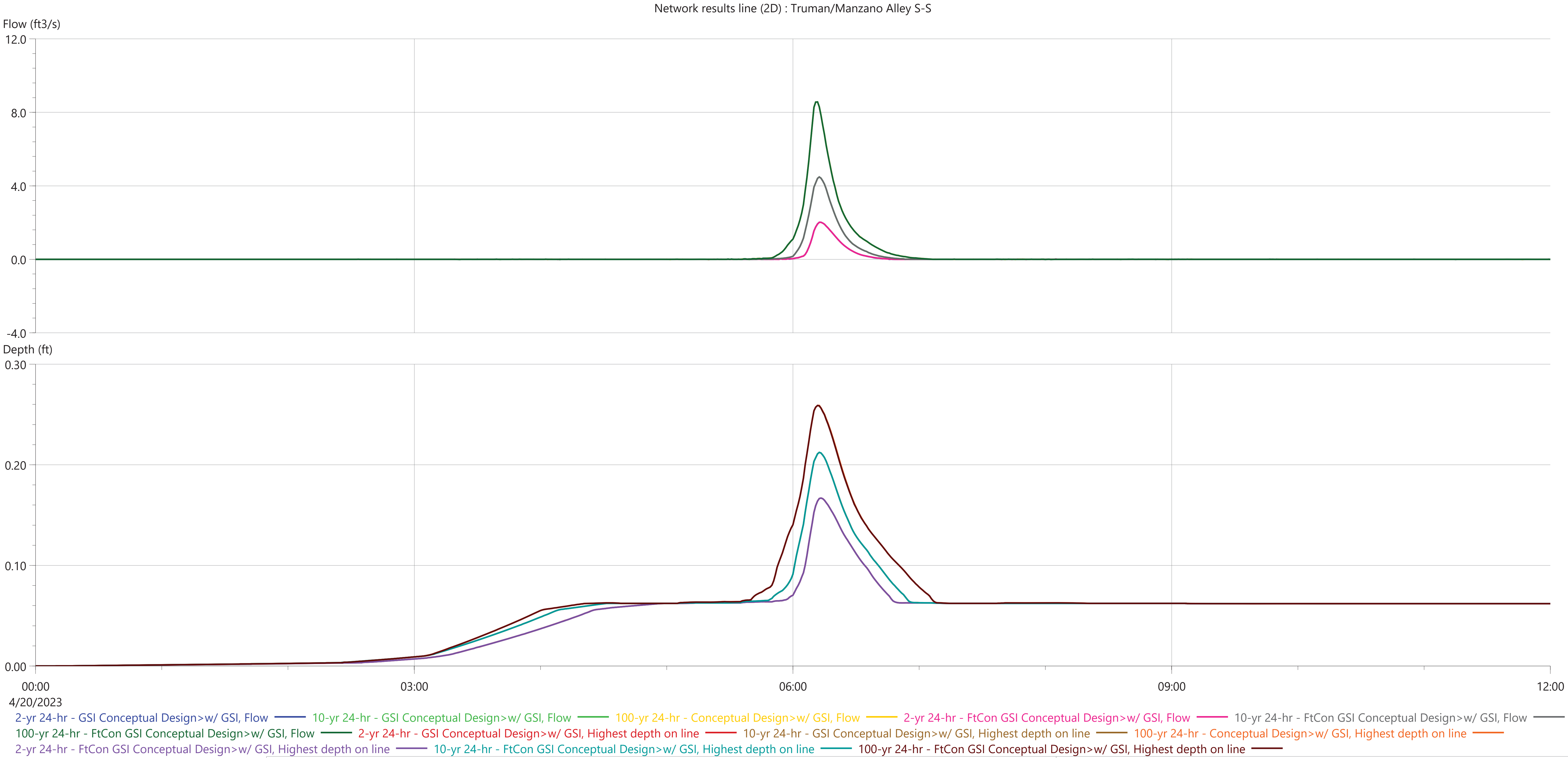
Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.005	3.026	4732.919	0.000	0.538
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.004	8.548	12021.489	0.000	0.711
100-yr 24-hr - Conceptual Design>w/ GSI	-0.004	17.466	25891.998	0.000	0.847
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	3.026	4729.971	0.000	0.538
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.004	8.404	11917.708	0.000	0.708
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.005	17.084	25381.694	0.000	0.844

Proposed Conditions (with GSI improvements) results from Network Results Lines

Powered by InfoWorks



	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	0.000	2.013	1873.142	0.000	0.167
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.009	4.479	4370.812	0.000	0.212
100-yr 24-hr - Conceptual Design>w/ GSI	-0.009	8.570	8866.809	0.000	0.259
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.009	2.013	1873.086	0.000	0.167
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.009	4.479	4366.943	0.000	0.212
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.009	8.566	8862.546	0.000	0.259

Proposed Conditions (with GSI improvements) results from Network Results Lines

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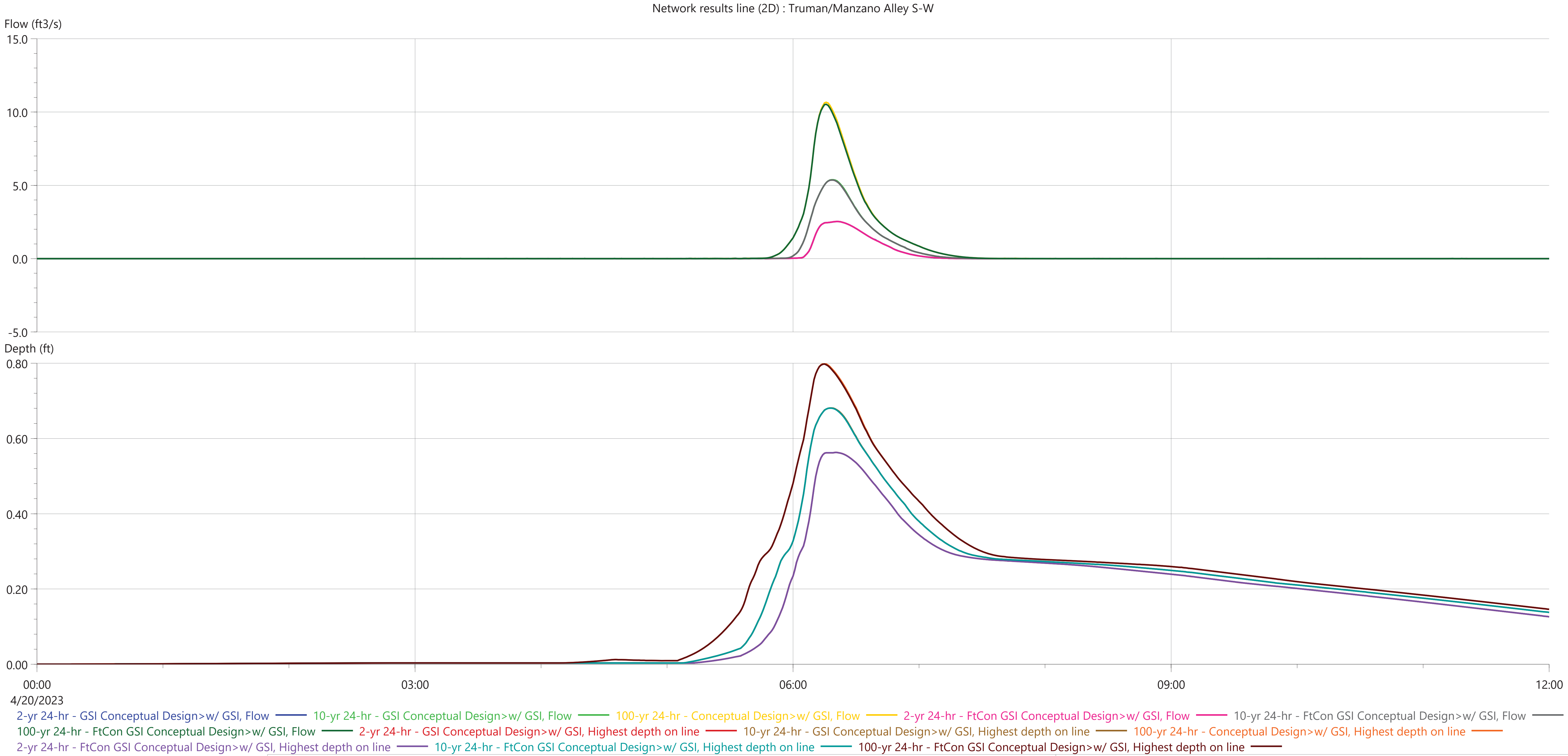

	Flow			Highest depth on line	
	Min (ft3/s)	Max (ft3/s)	Volume (ft3)	Min (ft)	Max (ft)
2-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	2.529	4769.329	0.000	0.563
10-yr 24-hr - GSI Conceptual Design>w/ GSI	-0.001	5.384	9424.750	0.000	0.681
100-yr 24-hr - Conceptual Design>w/ GSI	-0.001	10.663	17896.787	0.000	0.800
2-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	2.532	4772.725	0.000	0.563
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	5.359	9389.295	0.000	0.681
...-yr 24-hr - FtCon GSI Conceptual Design>w/ GSI	-0.001	10.528	17677.375	0.000	0.798

Proposed Conditions (with GSI improvements) results from Network Results Lines

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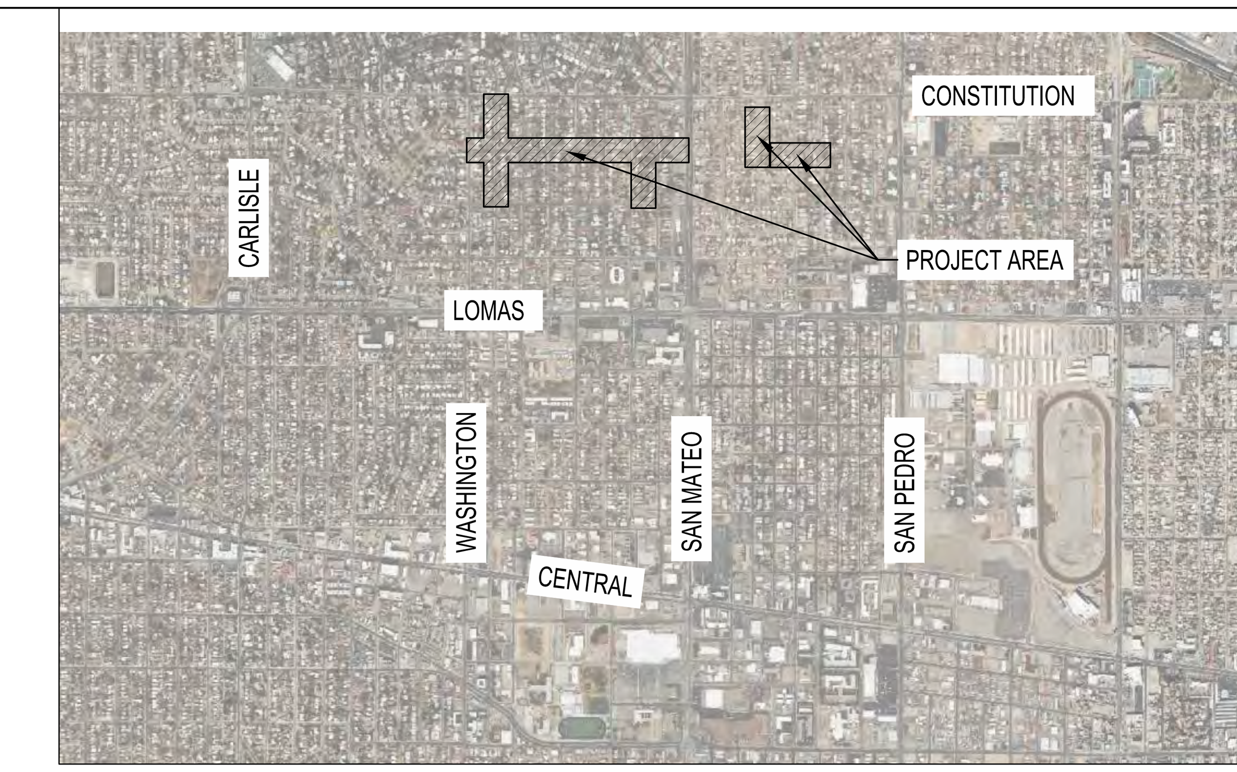
APPENDIX D – 30% DESIGN PLANS

CITY OF ALBUQUERQUE
NEW MEXICO
DEPARTMENT OF
MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION



VICINITY MAP

ZONE ATLAS MAP J-17, J-18
NTS

30% REVIEW
DECEMBER 2023

PUEBLO ALTO MILE HI
GSI PILOT PROJECT

631594

groundworkstudio

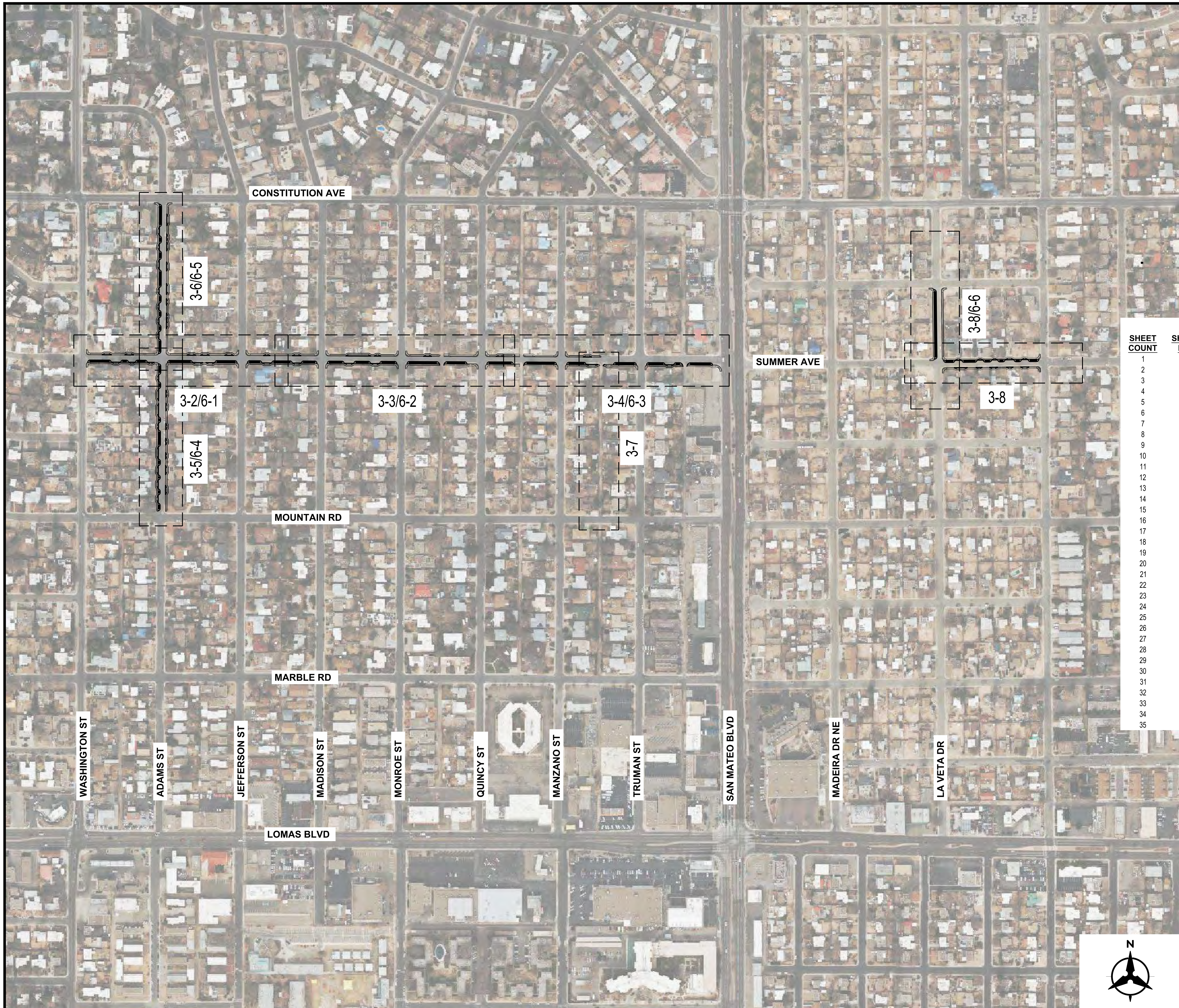
Bohannan Huston
www.bhinc.com 800.877.5332

Know what's below. Call before you dig.
CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

ENGINEER STAMP & SIGNATURE	APPROVALS	ENGINEER	DATE	***************************
30% FOR REVIEW ONLY	DRC CHAIRPERSON			APPROVED FOR CONSTRUCTION
	TRANSPORTATION			
	WATER/WASTEWATER			
	HYDROLOGY			
	PARKS			CITY ENGINEER DATE
	CONST. MGMT.			
	CONST. COORD.			
December 8, 2023	CITY PROJECT NO.			DWG NO. 1-1 / SHEET NO. 1 OF 35

PUEBLO ALTO MILE HI GSI PILOT PROJECT 631594 PROJECT LIMITS SUBMITTAL NUMBER

Fri, 8-Dec-2023 - 1:59:pm, Plotted by: VSTEINER
P:\20230388\WR\Design\plans\20230388_01_1-1 COVER SHEET.dwg



INDEX OF SHEETS

SHEET COUNT	SHEET NO.	SHEET NAME
1	1-1	COVER SHEET
2	1-2	SHEET INDEX
3	1-3	GENERAL NOTES / LEGEND
4	1-4	TYPICAL SECTIONS AND DETAILS
5	2-1	EXISTING RIGHT OF WAY
6	3-1	SURVEY CONTROL
7	3-2	SUMMER AVE. - GSI CONCEPT PLAN
8	3-3	SUMMER AVE. - GSI CONCEPT PLAN
9	3-4	SUMMER AVE. - GSI CONCEPT PLAN
10	3-5	ADAMS ST. - GSI CONCEPT PLAN
11	3-6	ADAMS ST. - GSI CONCEPT PLAN
12	3-7	ALLEY - GSI CONCEPT PLAN
13	3-8	LA VETA DR. - GSI CONCEPT PLAN
14	6-1	SUMMER AVE. - UNDERGROUND STORAGE SYSTEM PLAN
15	6-2	SUMMER AVE. - UNDERGROUND STORAGE SYSTEM PLAN
16	6-3	SUMMER AVE. - UNDERGROUND STORAGE SYSTEM PLAN
17	6-4	ADAMS ST. - UNDERGROUND STORAGE SYSTEM PLAN
18	6-6	ALLEY - UNDERGROUND STORAGE SYSTEM PLAN
19	6-7	LA VETA DR. - UNDERGROUND STORAGE SYSTEM PLAN
20	6-8	UNDERGROUND STORAGE SYSTEM DETAILS 1
21	6-9	UNDERGROUND STORAGE SYSTEM DETAILS 2
22	7-1	SUE - COVER SHEET
23	7-2	SUE - UTILITY SURVEY
24	7-3	SUE - UTILITY SURVEY
25	7-4	SUE - UTILITY SURVEY
26	7-5	SUE - UTILITY SURVEY
27	8-1	OVERALL LANDSCAPE PLAN AND GENERAL NOTES
28	8-2	PLANTING PLAN
29	8-3	PLANTING PLAN
30	8-4	PLANTING PLAN
31	8-5	PLANTING PLAN
32	8-6	PLANTING PLAN
33	8-7	PLANTING PLAN
34	8-8	PLANTING PLAN
35	8-9	PLANTING PLAN

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

N

BHI JOB NO. 20230388

PLAN DRAWING SCALE: 1" = 200'

CONSULTANTS

Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS

SEAL

30% FOR REVIEW ONLY

November 22, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
CONTRACTOR: DATE:
WORK STAKED BY: DATE:
INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

CITY OF ALBUQUERQUE NEW MEXICO 1706

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SHEET INDEX

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 1-2
SHEET NO. 2 OF 35

Wed, 22-Nov-2023 - 3:38 pm, Plotted by: RSALAZAR
\\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_02_1-2_SHEET INDEX.dwg

GENERAL NOTES

1. ALL WORK DETAILED ON THESE PLANS, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION THROUGH CURRENT UPDATE, AND WILL BE REFERRED TO HEREIN AS "STANDARD SPECIFICATIONS".

2. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.

3. CONTRACTOR SHALL ASSUME THE SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

4. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.

5. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION ENGINEER (OR PROJECT MANAGER) NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE CITY SURVEYOR MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE CITY SURVEYOR AND SHALL NOTIFY THE CITY SURVEYOR AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. ONLY THE CITY SURVEYOR SHALL REPLACE SURVEY MONUMENTS. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATIONS OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO STANDARD SPECIFICATIONS SECTION 4.4.

6. EXISTING UTILITY LINE LOCATIONS ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND LINES MAY EXIST WHERE NONE ARE SHOWN. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT NEW MEXICO ONE CALL SYSTEM (260-1990) FOR LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL THEN EXCAVATE AND VERIFY THE MATERIAL, AND HORIZONTAL AND VERTICAL LOCATIONS OF ALL PERTINENT EXISTING UTILITIES AND/OR OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY. CONTRACTOR SHALL THEN COORDINATE RELOCATION OF UTILITY LINES WITH UTILITY COMPANIES AS REQUIRED. ANY DAMAGE CAUSED BY FAILURE TO LOCATE, IDENTIFY, AND PRESERVE ANY EXISTING UTILITIES IS THE FULL RESPONSIBILITY OF THE CONTRACTOR. COST OF POTHOLING IS INCLUDED IN DRY UTILITY RELOCATION ALLOWANCE.

7. CONTRACTOR SHALL ASSIST THE ENGINEER/INSPECTOR IN THE RECORDING OF DATA ON ALL UTILITY LINES AND ACCESSORIES AS REQUIRED BY THE CITY OF ALBUQUERQUE FOR THE PREPARATION OF "AS BUILT" DRAWINGS. CONTRACTOR SHALL NOT COVER UTILITY LINES AND ACCESSORIES UNTIL ALL DATA HAS BEEN RECORDED.

8. CONTRACTOR SHALL ASSUME FINANCIAL RESPONSIBILITY FOR ANY DAMAGE TO EXISTING PAVEMENT, PAVEMENT MARKINGS, SIGNAGE, CURB AND GUTTER, HANDICAP RAMPS, AND SIDEWALK DURING CONSTRUCTION APART FROM THOSE SECTIONS INDICATED ON THE PLANS, AND SHALL REPAIR OR REPLACE, PER THE STANDARD SPECIFICATIONS, ANY SUCH DAMAGE.

9. CONTRACTOR SHALL MAINTAIN A GRAFFITI-FREE WORK SITE. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL GRAFFITI FROM EQUIPMENT, WHETHER PERMANENT OR TEMPORARY.

10. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND MAINTAIN ALL CONSTRUCTION SIGNING UNTIL THE PROJECT HAS BEEN ACCEPTED BY THE CITY AND OTHER JURISDICTIONAL AUTHORITIES WHERE APPLICABLE.

11. CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS SHOWN. ANY DAMAGE TO ADJACENT PROPERTIES RESULTING FROM THE CONSTRUCTION PROCESS IS THE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING ANY SUCH COSTS INCURRED.

12. REMOVALS SHALL BE DISPOSED OF OFF-SITE AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

WATER & SEWER

13. ALL UTILITIES AND UTILITY SERVICE LINES SHALL BE INSTALLED PRIOR TO PAVING. EXISTING VALVES AND MANHOLES SHALL NOT BE BURIED OR PAVED OVER BUT RIMS SHALL BE ADJUSTED TO MATCH NEW GRADE PER COA STANDARD DRAWINGS 2460 AND 2461.

14. MANHOLE RIMS, FIRE HYDRANT ELEVATIONS, AND FLANGE ELEVATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST TO FINAL PAVEMENT OR SURFACE GRADES.

15. THE CONTRACTOR SHALL COORDINATE WITH THE WATER AUTHORITY SEVEN (7) DAYS IN ADVANCE OF PERFORMING WORK THAT WILL AFFECT THE PUBLIC WATER OR SANITARY SEWER INFRASTRUCTURE. WORK REQUIRING SHUTOFF OF FACILITIES DESIGNATED AS MASTER PLAN FACILITIES MUST BE COORDINATED WITH THE WATER AUTHORITY 14 DAYS IN ADVANCE OF PERFORMING SUCH WORK. ONLY WATER AUTHORITY CREWS ARE AUTHORIZED TO OPERATE PUBLIC VALVES. SHUTOFF REQUESTS MUST BE MADE ONLINE AT HTTP://ABCWUA.ORG/WATER_SHUT_OFF_AND_TURN_ON_PROCEDURES.ASPX

16. PROPOSED WATERLINE MATERIALS SHALL BE PVC PIPE MEETING AWWA C-900: DR18 REQUIREMENTS (6" - 12") OR DUCTILE IRON PIPE MEETING AWWA C-150 REQUIREMENTS (6" - 48").

17. ALL WATERLINE FITTINGS, VALVES, BENDS, TEES, CROSSES AND APPURTENANCES SHALL HAVE RESTRAINED JOINTS UNLESS OTHERWISE NOTED ON THE PLANS. THE JOINT RESTRAINT REQUIREMENTS SHOULD BE DELINEATED WITHIN A JOINT RESTRAINT TABLE.

18. ALL FINAL BACKFILL FOR TRENCHES SHALL BE COMPACTED TO A MINIMUM OF 95% MAXIMUM DENSITY PER ASTM D-1557 AND AS DIRECTED BY STANDARD SPECIFICATIONS SECTION 701.14.2 AND STANDARD DRAWING NUMBER 2465.

19. SAS AND WATERLINE RELOCATION SHALL BE COORDINATED WITH ABCWUA.

20. CONTRACTOR SHALL SUBMIT A SAS MANHOLE PROTECTION PLAN PRIOR TO REMOVAL OF PAVEMENT ADJACENT TO EXISTING SAS MANHOLES. CONTRACTOR SHALL COORDINATE PROTECTION OF SAS MANHOLES WITH ABCWUA.

TRANSPORTATION

21. ANY STREET STRIPING ALTERED OR DESTROYED SHALL BE REPLACED WITH THERMO-PLASTIC REFLECTORIZED PAVEMENT MARKING BY CONTRACTOR TO THE SAME LOCATION AS EXISTING OR AS INDICATED BY THIS PLAN SET.

22. REMOVAL OF EXISTING CURB & GUTTER AND SIDEWALKS SHALL BE TO THE NEAREST JOINT.

23. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY.

24. THE SUBGRADE PREP SHALL EXTEND ONE FOOT BEYOND THE FREE EDGE OF NEW CURB AND GUTTER AND SIDEWALK.

25. CONTRACTOR TO TEST SUBGRADE R-VALUE PRIOR TO CONSTRUCTION. IN THE EVENT THE R-VALUE IS LESS THAN 50, REMOVE 2 FEET OF SUBGRADE MATERIAL AND IMPORT MATERIAL WITH R-VALUE GREATER THAN 50 OR CONTACT THE ENGINEER IMMEDIATELY SO THE PAVEMENT SECTION CAN BE MODIFIED.

26. AT ALL PAVEMENT REMOVAL AND REPLACEMENTS, SAW-CUT EDGES SHALL BE STRAIGHT AND CLEAN, AND LONGITUDINAL JOINTS SHALL NOT BE PLACED WITHIN WHEEL PATHS. PATCHES SHALL BE REGULAR AND SQUARE OR RECTANGULAR, WITH FOUR STRAIGHT SIDES. FINISHED PAVEMENT SURFACE SHALL BE FLUSH WITH EXISTING PAVEMENT SURFACE, WITH NO SPILLOVER OF ASPHALT OR TACK COAT. CARE MUST BE TAKEN TO AVOID DAMAGING THE INTEGRITY OR APPEARANCE OF SURROUNDING PAVEMENTS; IF DAMAGED, THE ENTIRE SURFACE PATCH MUST BE EXPANDED TO COVER DAMAGES.

27. CONTRACTOR WILL ENSURE THE ASPHALT HAS A SMOOTH, UNIFORM EDGE WHEN REMOVING AND REPLACING CURB AND GUTTER. IF THE ASPHALT EDGE IS NOT SMOOTH AND UNIFORM, CONTRACTOR WILL SAW CUT AND REPLACE A ONE-FOOT STRIP OF ASPHALT ALONG THE FULL SECTION BEING REPLACED; REFER TO C.O.A. STANDARD DRAWING # 2465 WITH THE APPROPRIATE PAVING SECTION BASED ON ROADWAY CLASSIFICATION.

STORM DRAINS

28. ALL STORM DRAIN LINE STATIONING REFERS TO STORM DRAIN CENTERLINE STATIONING.

29. ALL STORM DRAINS SHALL BE RCP CLASS III UNLESS OTHERWISE NOTED ON THE PLANS.

30. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATION. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AND WITH CITY APPROVAL.

OTHER

31. ALL EXCAVATION, TRENCHING, AND SHORING ACTIVITIES MUST BE ACCOMPLISHED IN ACCORDANCE WITH OSHA 29CFR 1926.650 SUBPART P.

32. IN ADVANCE OF CONSTRUCTION, CONTRACTOR SHALL DETERMINE IF OVERHEAD UTILITY LINES, SUPPORT STRUCTURES, POLES, GUYS, ETC. ARE AN OBSTRUCTION TO CONSTRUCTION OPERATIONS. IF ANY OBSTRUCTION TO CONSTRUCTION OPERATIONS IS EVIDENT, CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE APPROPRIATE UTILITY OWNER TO REMOVE OR SUPPORT THE UTILITY OBSTRUCTION, AND SHALL BE INCIDENTAL TO THE PROJECT.

33. PNM WILL PROVIDE AT NO COST TO THE CITY OR THE CONTRACTOR THE REQUIRED PERSONNEL FOR INSPECTION OR OBSERVATION DEEMED NECESSARY BY PNM WHILE THE CONTRACTOR IS EXPOSING PNM'S CABLES. HOWEVER, THE CONTRACTOR SHALL BE CHARGED THE TOTAL COST ASSOCIATED WITH REPAIRS TO ANY DAMAGED CABLES OR FOR ANY COST ASSOCIATED WITH SUPPORTING OR RELOCATING THE POLES AND CABLES DURING CONSTRUCTION.

34. CONTRACTOR SHALL SUPPORT AND PROTECT ALL EXISTING, UNDERGROUND UTILITY LINES WHICH BECOME EXPOSED DURING CONSTRUCTION. PAYMENT FOR SUPPORTING WORK SHALL BE INCIDENTAL TO THE PROJECT.

35. CONTRACTOR IS TO SUPPORT, PROTECT, AND MAINTAIN THE INTEGRITY OF ALL UNDERGROUND TELEPHONE, ELECTRIC CABLES AND CABLE TELEVISION UTILITIES AT NO ADDITIONAL COST TO THE OWNER. CABLE IS TO BE SUPPORTED AT A MAXIMUM SPACING OF FIFTEEN (15) FEET. CONTRACTOR SHALL COORDINATE WITH AND MAKE NECESSARY PAYMENT (IF ANY) TO UTILITY OWNER FOR DE-ENERGIZATION OF CABLES OR SUPPORT OF CABLES BY THE UTILITY OWNER.

36. CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY OR PRIVATE ROADWAY EASEMENTS TO PREVENT ANY EXCAVATED MATERIAL BEING WASHED DOWN THE STREET OR INTO ANY PUBLIC DRAINAGE FACILITY.

37. CONTRACTOR SHALL CONDUCT ALL WORK IN A MANNER WHICH WILL MINIMIZE INTERFERENCE WITH LOCAL TRAFFIC.

38. ALL EXISTING SIGNS, MARKERS, DELINEATORS, ETC., WITHIN THE CONSTRUCTION LIMITS SHALL BE REMOVED, STORED AND RE-SET BY THE CONTRACTOR.

39. DISPOSAL SITE FOR ALL EXCESS EXCAVATION MATERIAL AND UNSUITABLE MATERIAL SHALL BE ARRANGED BY THE CONTRACTOR IN COMPLIANCE WITH ALL APPLICABLE ENVIRONMENTAL REGULATIONS. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR COSTS ASSOCIATED WITH OBTAINING A DISPOSAL SITE AND HAUL THERETO.

40. IF CULTURAL RESOURCES, SUCH AS HISTORIC OR PREHISTORIC ARTIFACTS, OR HUMAN REMAINS ARE DISCOVERED DURING EXCAVATION OR CONSTRUCTION, WORK SHALL CEASE AND THE CONSTRUCTION ENGINEER SHALL NOTIFY THE COUNTY OFFICE OF THE MEDICAL EXAMINER AT (505) 272-3053. IF THE MEDICAL EXAMINER DETERMINES THAT HUMAN REMAINS ARE NOT PRESENT, THE CONSTRUCTION ENGINEER SHALL NOTIFY THE STATE HISTORIC PRESERVATION OFFICER (SHPO) AT 827-6320.

41. SEVEN (7) WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL SUBMIT TO DMD, CONSTRUCTION COORDINATION DIVISION, A DETAILED CONSTRUCTION SCHEDULE.

42. FIVE (5) WORKING DAYS PRIOR TO CONSTRUCTION, CONTRACTOR SHALL OBTAIN A BARRICADING PERMIT FROM THE DMD, CONSTRUCTION COORDINATION DIVISION. CONTRACTOR SHALL NOTIFY BARRICADE ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION. REFER TO SECTION 19 OF STANDARD SPECIFICATIONS. PERMIT REQUESTS MAY BE DENIED OR DELAYED DUE TO CONFLICTS WITH OTHER PROJECTS IN THE AREA.

LEGEND

PHON	EXISTING PHONE LINE
OVEL	EXISTING OVERHEAD ELECTRIC LINE
NG	EXISTING GAS LINE
SD	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN
SS	EXISTING SANITARY SEWER
W	EXISTING WATER LINE
	RIGHT-OF-WAY
	EXISTING / PROPOSED STORM DRAIN MANHOLE
	PROPOSED STORM DRAIN INLET
	EXISTING SANITARY MANHOLE
	PROPOSED UNDERGROUND STORAGE SYSTEM
	PROPOSED STORMWATER BUMPOUT

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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BENCH MARKS

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November 22, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
CONTRACTOR:
WORK STAKED BY: DATE:
INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

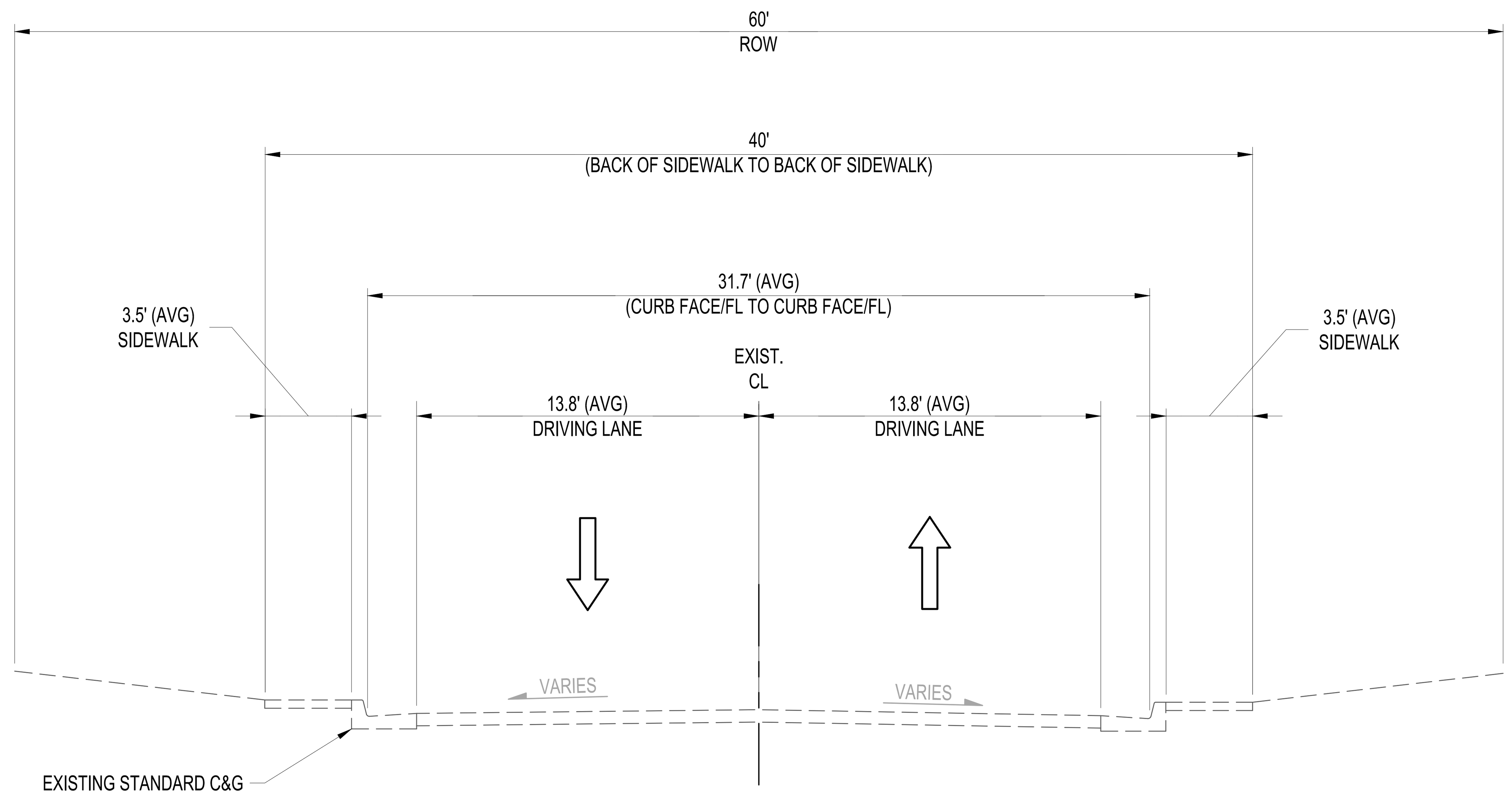
PUEBLO ALTO MILE HI GSI PILOT PROJECT
GENERAL NOTES
LEGEND

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 1-3
SHEET NO. 3 OF 35

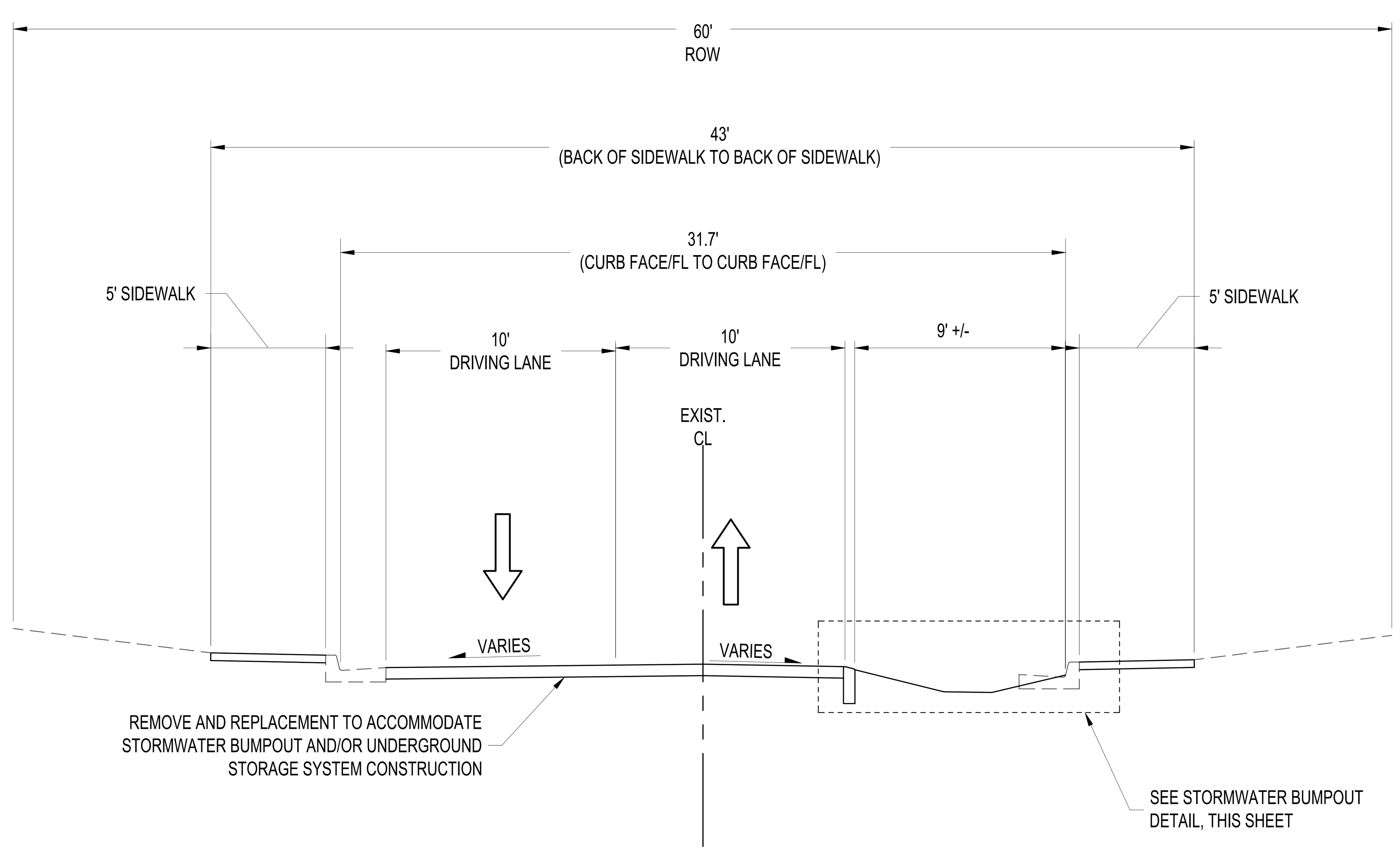
BHI JOB NO. 20230388
PLAN DRAWING SCALE: #########

Wed, 22-Nov-2023 - 3:38 pm, Plotted by: RSALAZAR
\\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_03_1-3_GENERAL NOTES - LEGEND.dwg



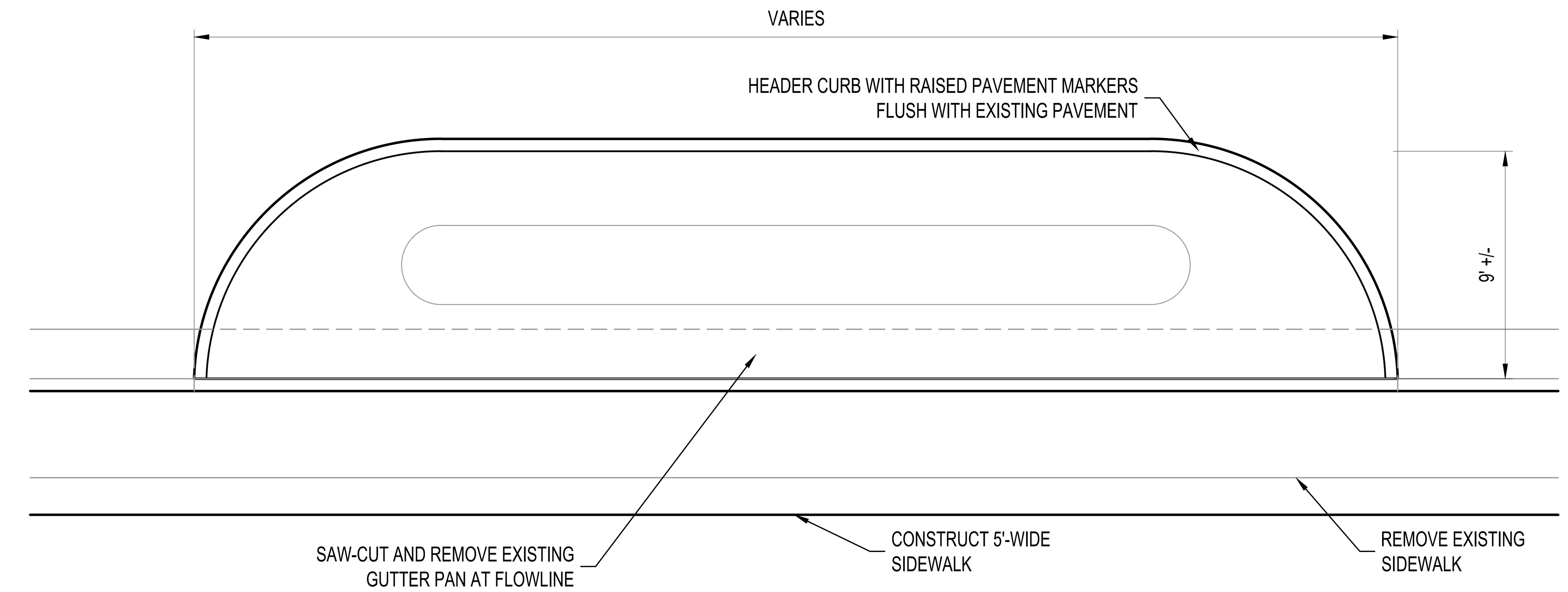
EXISTING TYPICAL SECTION

SUMMER AVE. - WASHINGTON ST. TO SAN MATEO BLVD.
ADAMS ST. NE - CONSTITUTION AVE. NE TO MOUNTAIN RD. NE
LA VETA DR. - EL ENCANTO PL. NE TO SUMMER AVE. NE

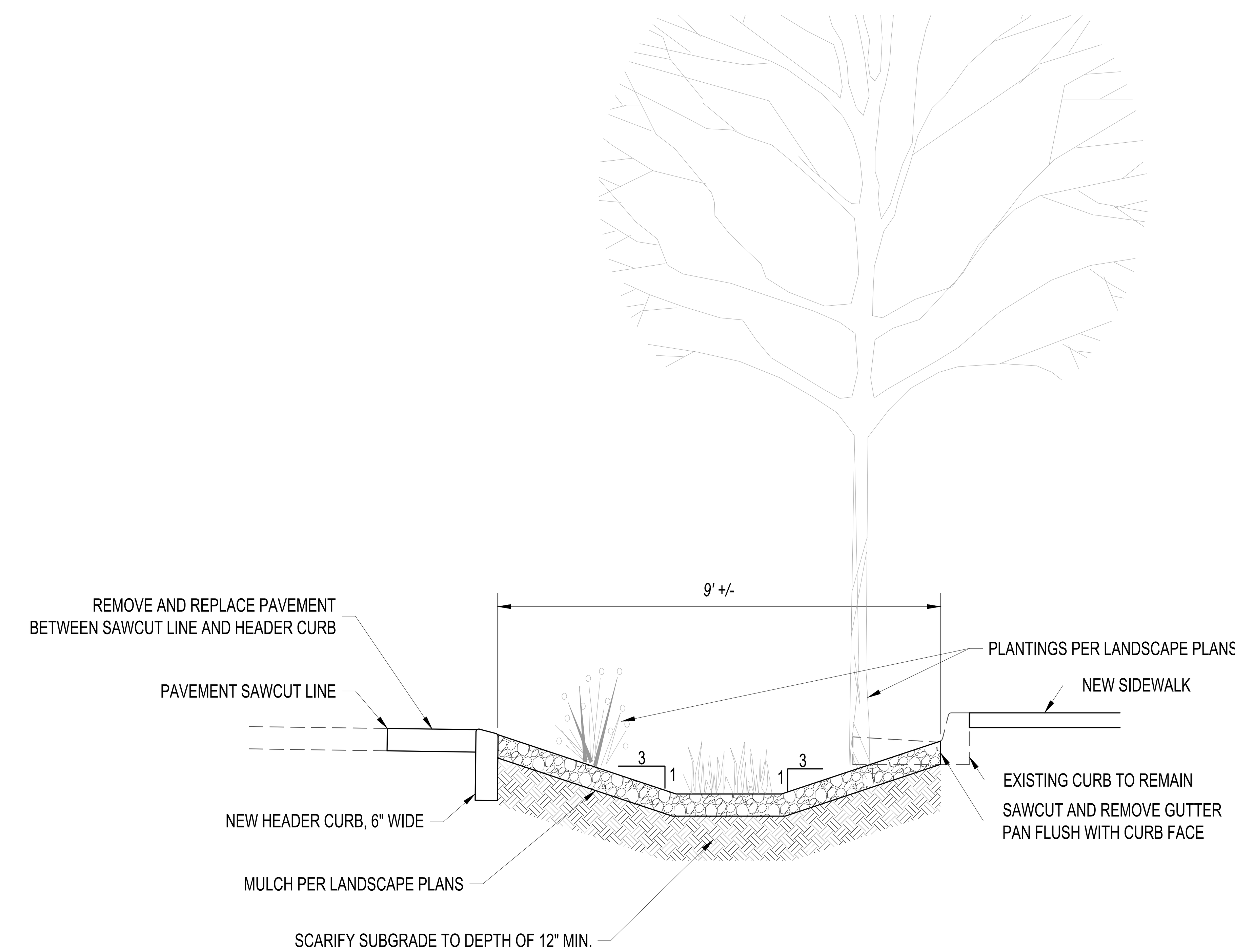


NOTES:
SEE DWG. NO. 6-7 AND 6-8 FOR UNDERGROUND STORAGE SYSTEM TYPICAL SECTIONS.

STORMWATER BUMPOUT ROADWAY RETROFIT TYPICAL SECTION



X
A00 A00
BUMPOUT DETAIL
SCALE: NOT TO SCALE



STORMWATER BUMPOUT DETAIL

CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

CONSULTANTS

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DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
TYPICAL SECTIONS
AND DETAILS

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 1-4
SHEET NO. 4 OF 35

BHI JOB NO. 20230388
PLAN DRAWING SCALE: N/A

Wed, 22-Nov-2023 - 3:38 pm, Plotted by: RSALAZAR
\\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_04_1-4_TYPICAL SECTIONS.dwg

BHI JOB NO. 20230388

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November 22, 2023

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FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

811
CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
EXISTING RIGHT OF WAY

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 2-1
SHEET NO. 5 OF 35

Wed, 22-Nov-2023 - 3:38 pm, Plotted by: RSALAZAR
\\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_05_2-1_EXISTING RIGHT OF WAY.dwg

Bohannan Huston

Introduction:

This control was established for the purposes of providing construction control for the City of Albuquerque Pueblo Alto Mile Hi GSI Pilot Project. Monuments were established with RTK as initialized through the Trimble Network. Checks were made to AGRS control monuments. Datasheets provide the specific metadata for each monument established.

Project Control Specifications:

Units:	US Survey Foot
Horizontal Datum:	NAD_83(2011)(EPOCH:2010.0000)
Vertical Datum:	NAVD88
Geoid Model:	GEOID18
Projection:	Transverse Mercator
State Plane and/or UTM Zone:	New Mexico Central Zone (3002)
Basis of Bearing:	Grid Bearings
Project Combined Factor:	0.99966640 Based on OPUS Solution for BH 19-293-01
Modification Method Used:	Scaled State Plane coordinates about origin (0,0) no truncation
Field Methodology:	RTK Solution
Equipment Used:	Trimble GPS Equipment
Control Set Date:	March 28, 2023
Observation Date:	March 28, 2023
Adjustment/ Publication Date:	April 12, 2023

I, Wyatt H. McMarlin, New Mexico Professional Surveyor No. 28508, do hereby certify that this Control Survey Report was prepared by me or under my direct supervision based on an actual survey on the ground as described herein; that I am responsible for this survey; and that the survey and report meets the minimum standards for surveying in New Mexico as defined by NMAC 12.8.2.7.B(9) – Control Surveying.

Wyatt McMarlin

Digitally signed by Wyatt McMarlin
DN: C=US, E=wmcmarlin@bhinc.com, O=Bohannan Huston, CN=Wyatt McMarlin
Date: 2023.04.12 09:58:49-06'00'

April 12, 2023

Wyatt H. McMarlin, PS, CFedS — Date

NMPS 28508
For and on Behalf of
Bohannan Huston, Inc.
Courtyard I / 7500 Jefferson St. NE
Albuquerque, NM 87109-4335
(505).823.1000

Wyatt McMarlin

WYATT H. McMARLIN — NEW MEXICO — 28508 — LICENSED PROFESSIONAL SURVEYOR — 4/12/23

Bohannan Huston

Adjusted Coordinate Listing:

POINT	LATITUDE	LONGITUDE	ELLIPSOID (US FT)	ORTHOMETRIC HEIGHT	MODIFIED NORTHING	MODIFIED EASTING	DESCRIPTION
BH 23-388-01	N 35° 05' 34.57406"	W 106° 35' 12.27847"	5162.191	5231.333	1489784.191	1540199.259	1" BRASS PLUG STAMPED 2338801
BH 23-388-02	N 35° 05' 37.36574"	W 106° 34' 59.99063"	5165.510	5234.569	1490063.081	1541221.574	1" BRASS PLUG STAMPED 2338802
BH 23-388-03	N 35° 05' 40.73630"	W 106° 35' 38.52454"	5164.752	5234.036	1490414.834	1538019.822	1" BRASS PLUG STAMPED 2338803

Geospatial Positional Accuracy Report:

POINT	HORIZONTAL POSITIONAL ACCURACY	VERTICAL POSITIONAL ACCURACY
BH 23-388-01	0.025	0.036
BH 23-388-02	0.039	0.077
BH 23-388-03	0.014	0.022

N

200 100 0 200
1"=200'
BHI JOB NO. 20230388

811
CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION
PLAN DRAWING SCALE: 1" = 200'

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November 22, 2023

NO.	DATE	DESCRIPTION	BY

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DRAWINGS CORRECTED BY: DATE:

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

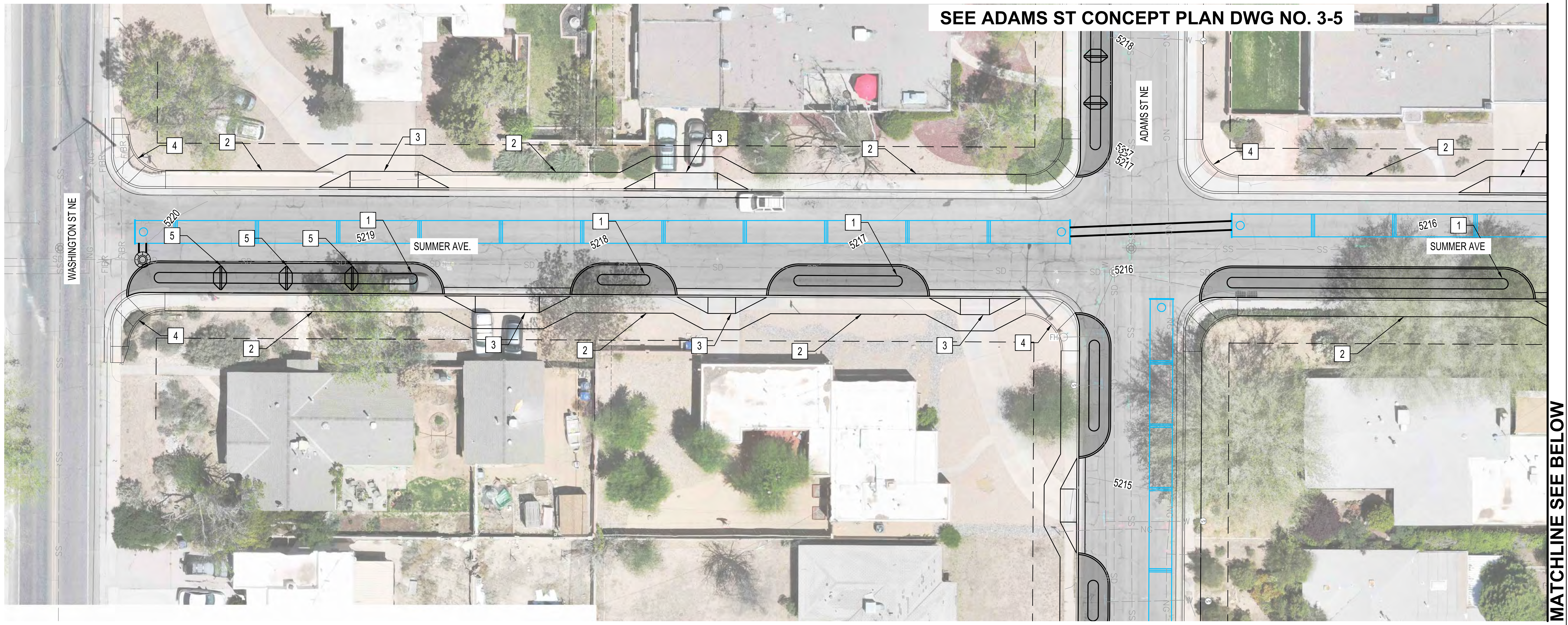
CITY OF ALBUQUERQUE 1706 NEW MEXICO

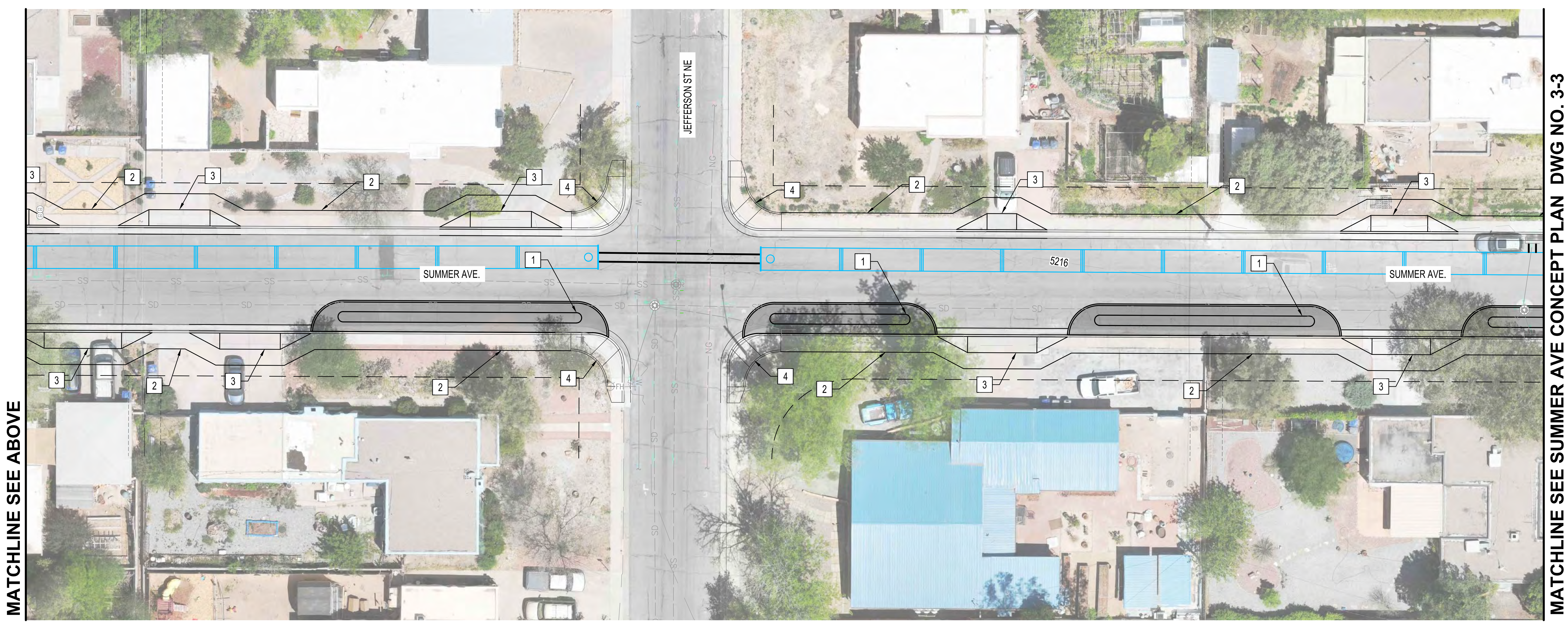
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SURVEY CONTROL

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-1
SHEET NO. 6 OF 35





GENERAL NOTES:

1. SEE LANDSCAPE PLANS (8-SERIES SHEETS) FOR PLANTINGS ON STORMWATER BUMPOUTS.
2. SEE UNDERGROUND STORAGE SYSTEM PLANS (6-SERIES SHEETS) FOR STORM DRAIN IMPROVEMENTS.

KEYED NOTES:

1. CONSTRUCT STORMWATER BUMPOUT, SEE DETAIL, DWG 1-4.
2. REMOVE AND REPLACE SIDEWALK WITH 5' WIDE SIDEWALK.
3. CONSTRUCT DRIVEPAD (ADA ACCESSIBLE) PER COA STD. DWG 2441.
4. CONSTRUCT ADA RAMP AT CORNER.
5. CONSTRUCT CHECK DAM.

N
20 10 0 20
1"=20'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS
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BENCH MARKS

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December 5, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
CONTRACTOR:
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DRAWINGS CORRECTED BY: DATE:

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DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SUMMMER AVE.
GSI CONCEPT PLAN

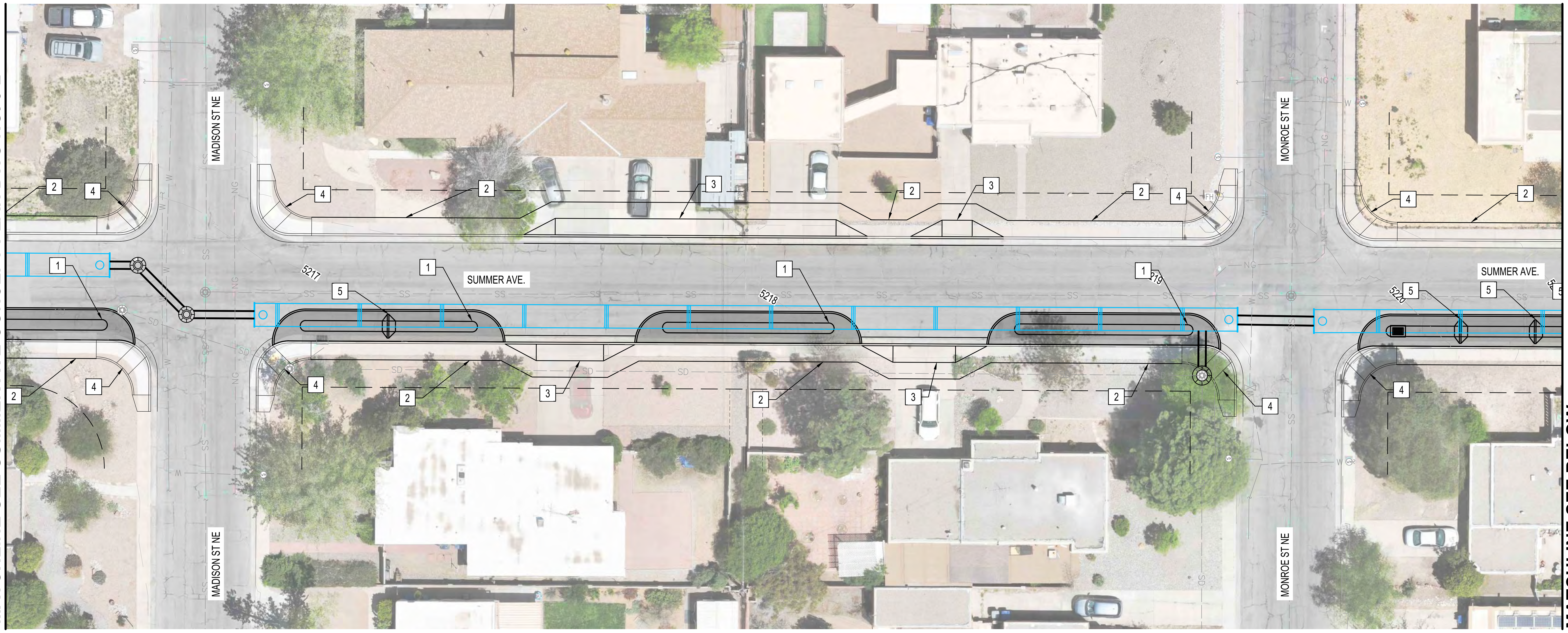
DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-2
SHEET NO. 7 OF 35

BHI JOB NO. 20230388

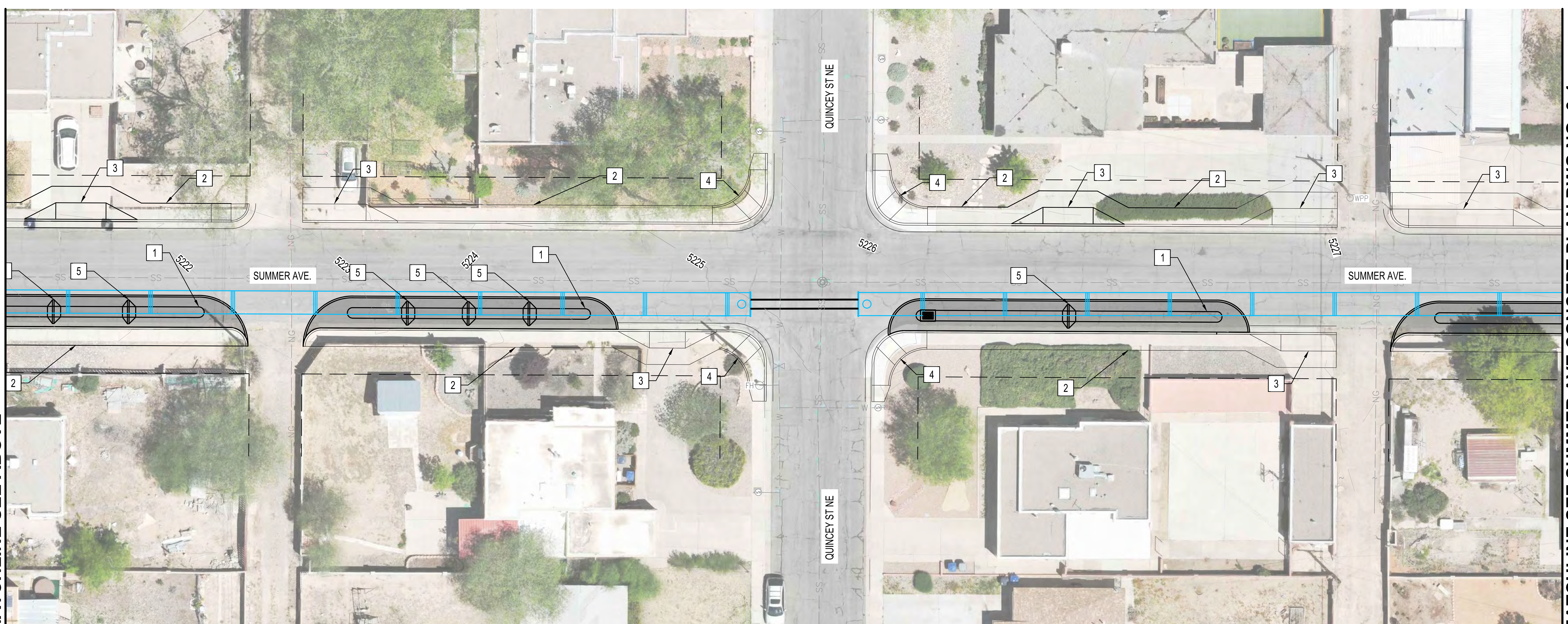
FILE PATH: \\A-ABQ-FS2\Projects\20230388\WR\Design\plans\20230388_07_3-2_SUMMER.dwg

MATCHLINE SEE SUMMER AVE CONCEPT PLAN DWG NO. 3-2



MATCHLINE SEE BELOW

MATCHLINE SEE ABOVE



MATCHLINE SEE SUMMER AVE CONCEPT PLAN DWG NO. 3-4

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5. CONSTRUCT CHECK DAM.

N

20 10 0 20

1"=20'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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BENCH MARKS

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December 5, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
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CHECKED BY: VCS
DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SUMMER AVE.
GSI CONCEPT PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-3
SHEET NO. 8 OF 35

BHI JOB NO. 20230388

Tue, 5-Dec-2023 - 12:11 pm, Plotted by: RSALAZAR
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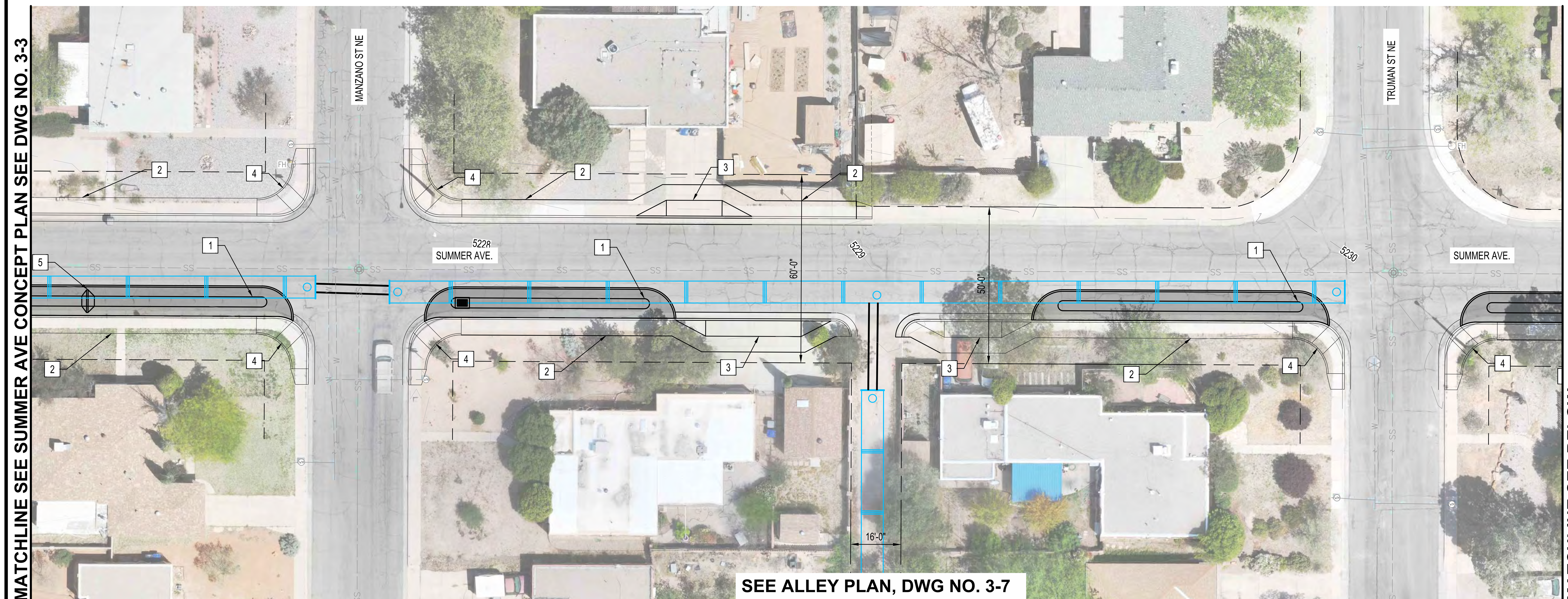

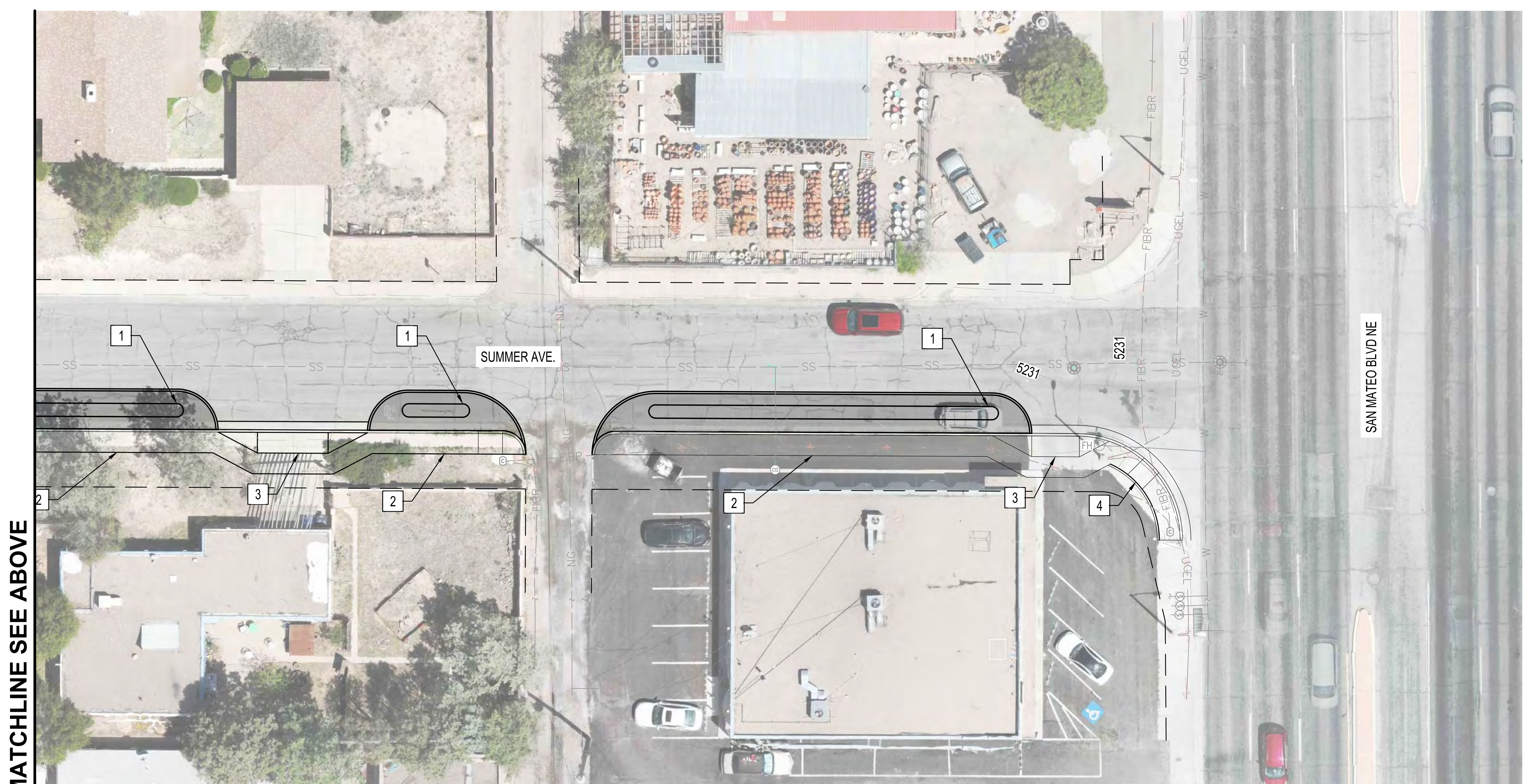

GENERAL NOTES:

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N

20 10 0 20

1"=20'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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SEAL

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DATE	08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SUMMER AVE.
GSI CONCEPT PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18

CITY PROJECT NO. 631594

DWG NO. 3-4

SHEET NO. 9 OF 35

BHI JOB NO. 20230388

Tue, 5-Dec-2023 - 12:11 pm, Plotted by: RSALAZAR
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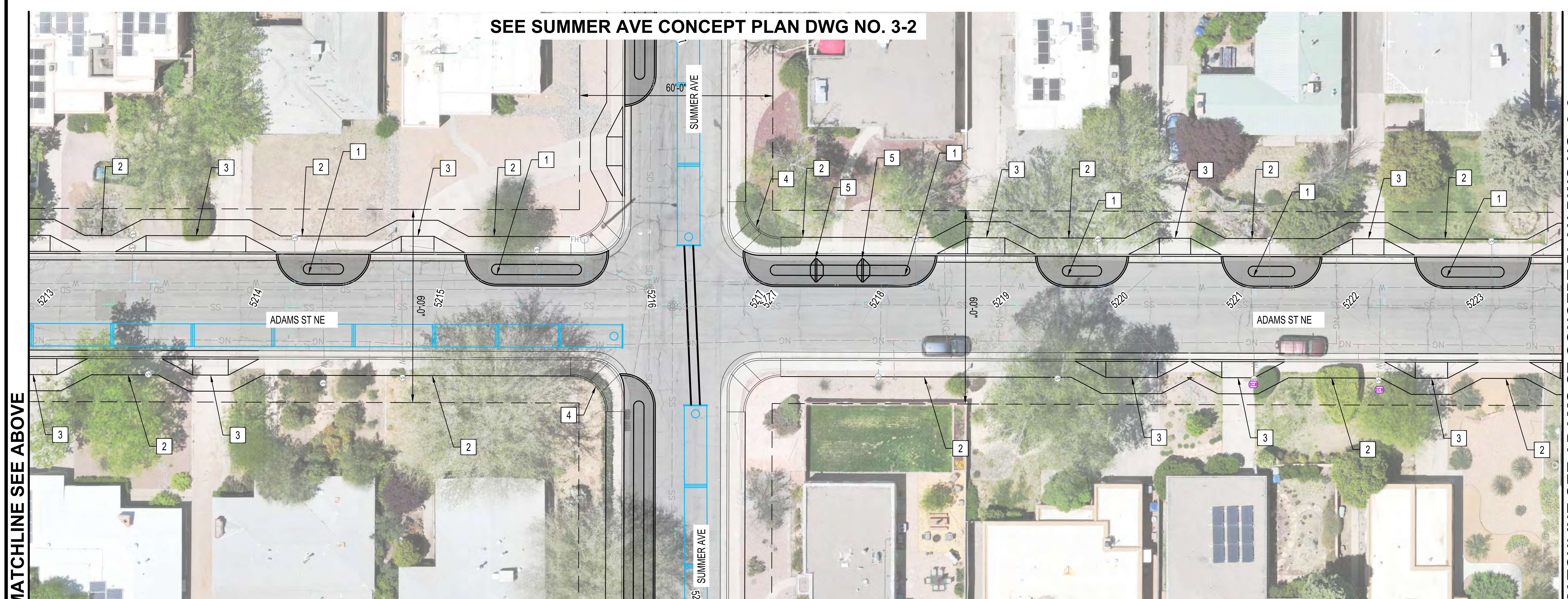
SEE SUMMER AVE CONCEPT PLAN DWG NO. 3-2



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BENCH MARKS

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FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

N

20 10 0 20
1"=20'

811
CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

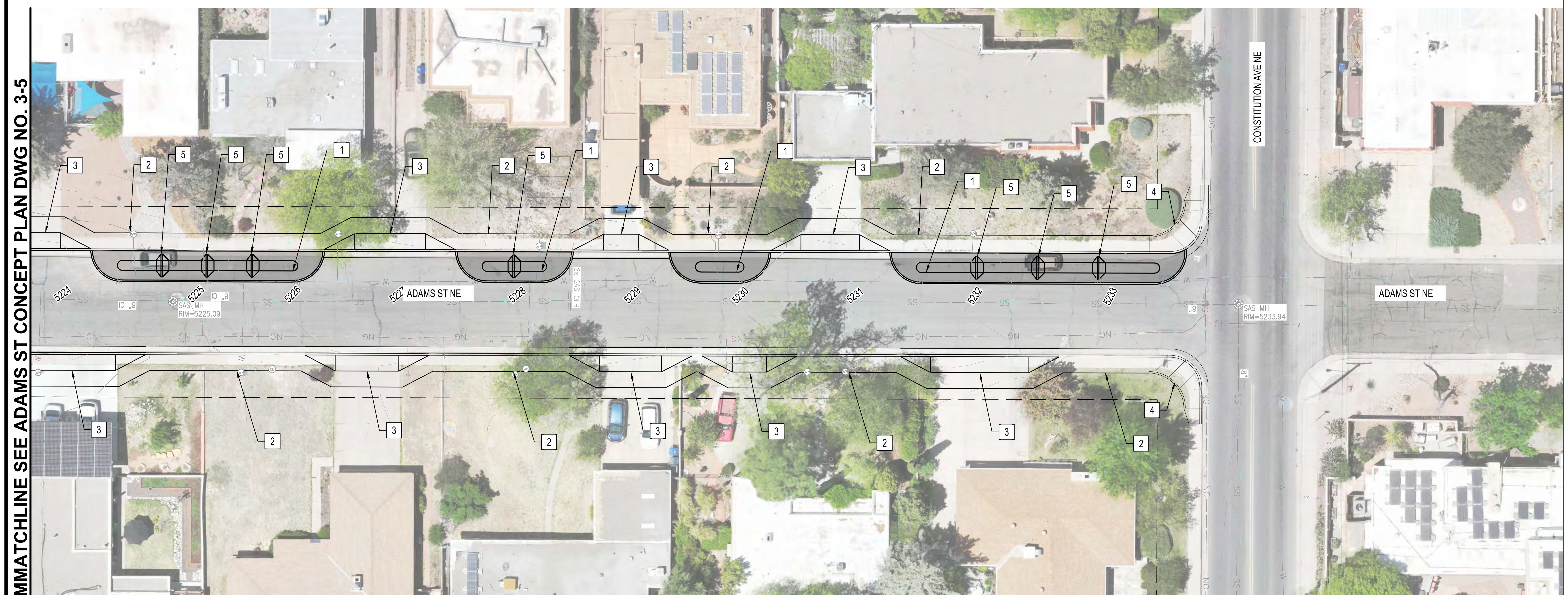
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
ADAMS ST.
GSI CONCEPT PLAN

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-5
SHEET NO. 10 OF 35

BHI JOB NO. 20230388



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FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

20 10 0 20
1"=20'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
ADAMS ST.
GSI CONCEPT PLAN

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-6
SHEET NO. 11 OF 35

BHI JOB NO. 20230388

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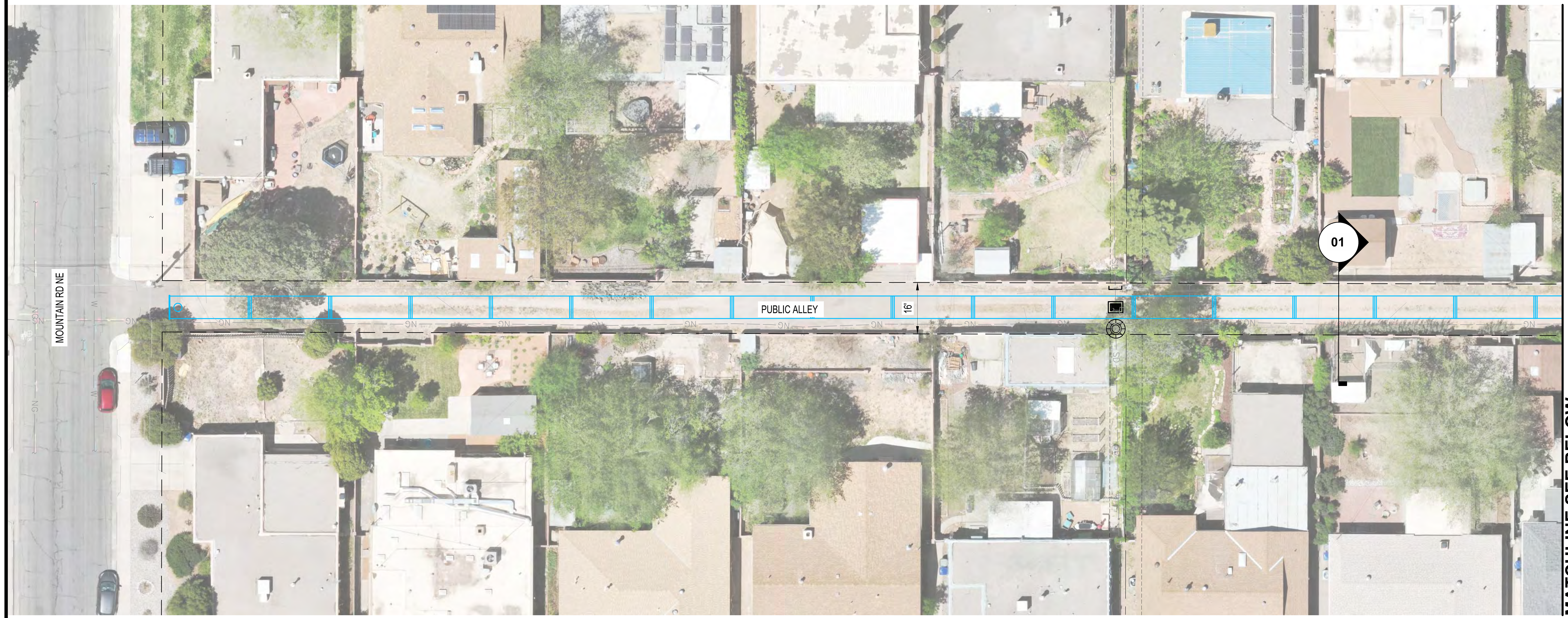
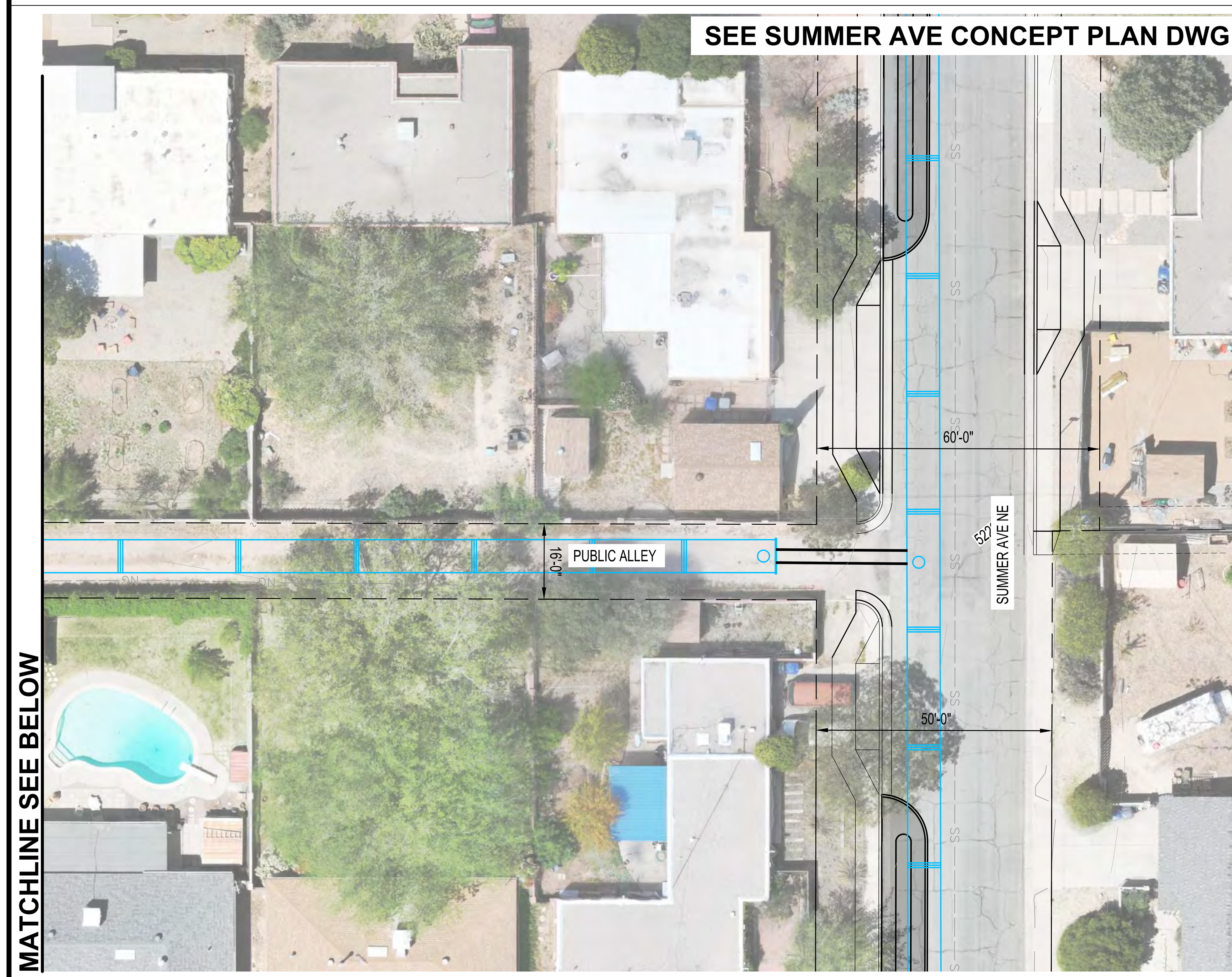
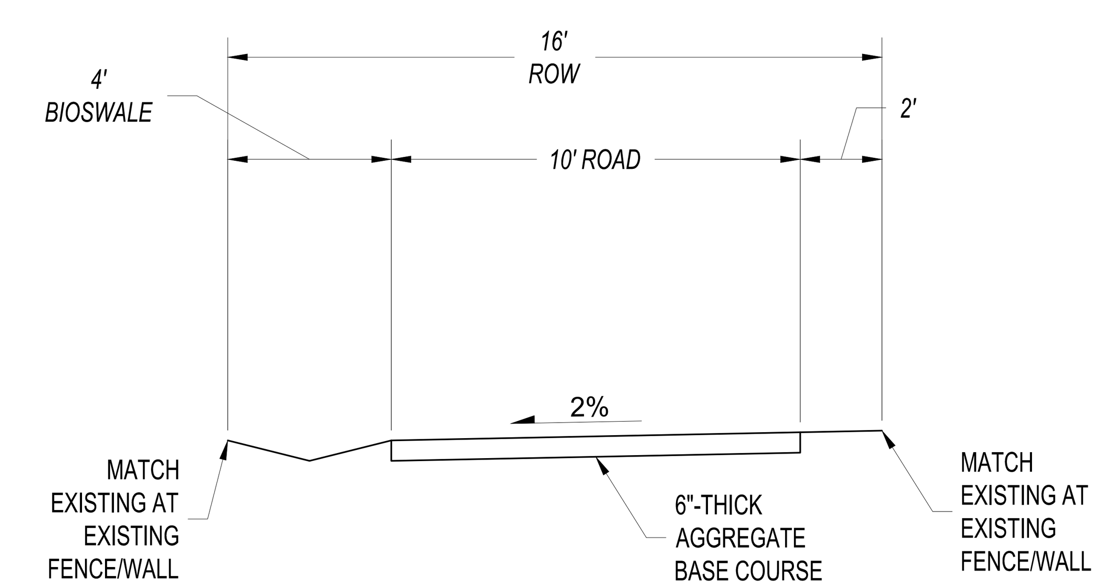


SEE SUMMER AVE CONCEPT PLAN DWG NO. 3-4





01 **ALLEY - TYPICAL SECTION**
SCALE: NOT TO SCALE

GENERAL NOTES:

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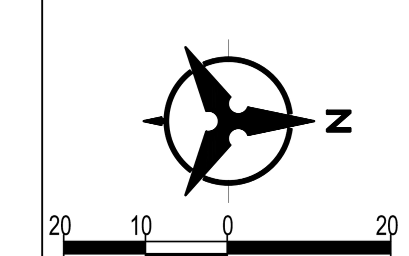
4. CONSTRUCT ADA RAMP AT CORNER.
5. CONSTRUCT CHECK DAM.



CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS

Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS

SEAL

30% FOR REVIEW ONLY

December 5, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
CONTRACTOR: DATE:
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INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

DESIGNED BY: RGS
DRAWN BY: NEC
CHECKED BY: VCS
DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

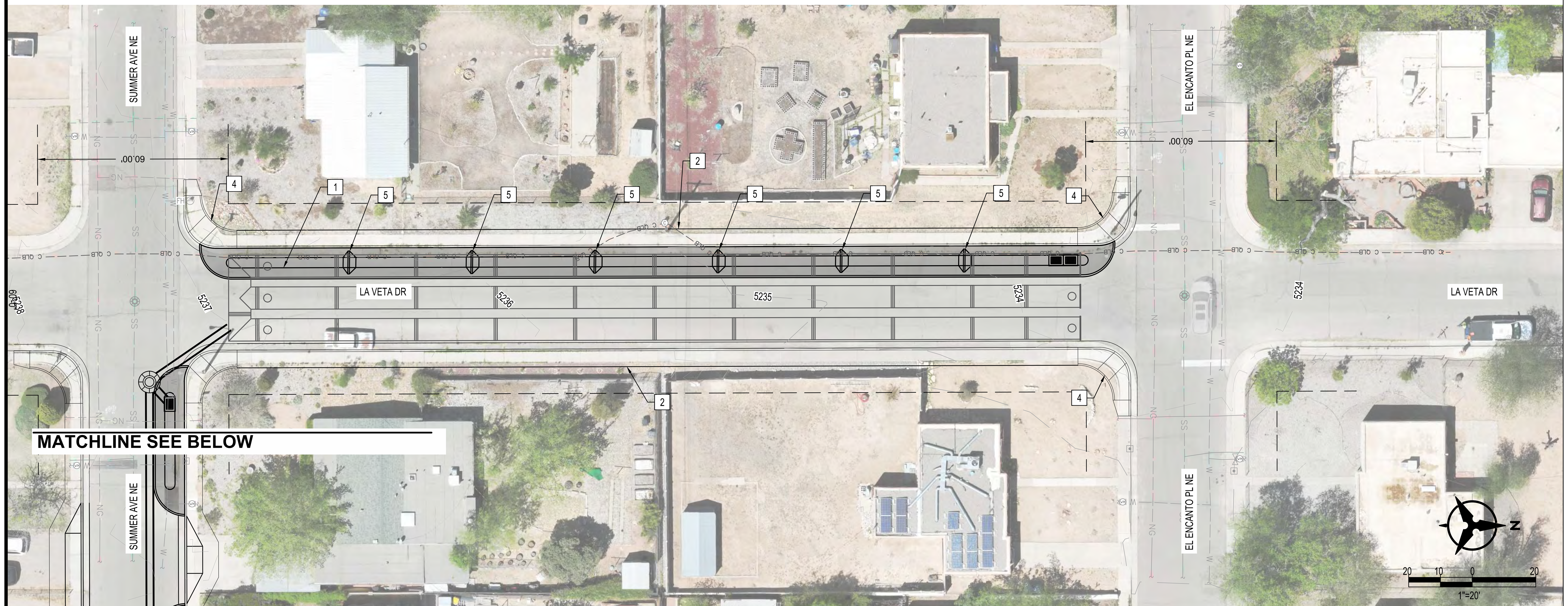
PUEBLO ALTO MILE HI GSI PILOT PROJECT
ALLEY
GSI CONCEPT PLAN

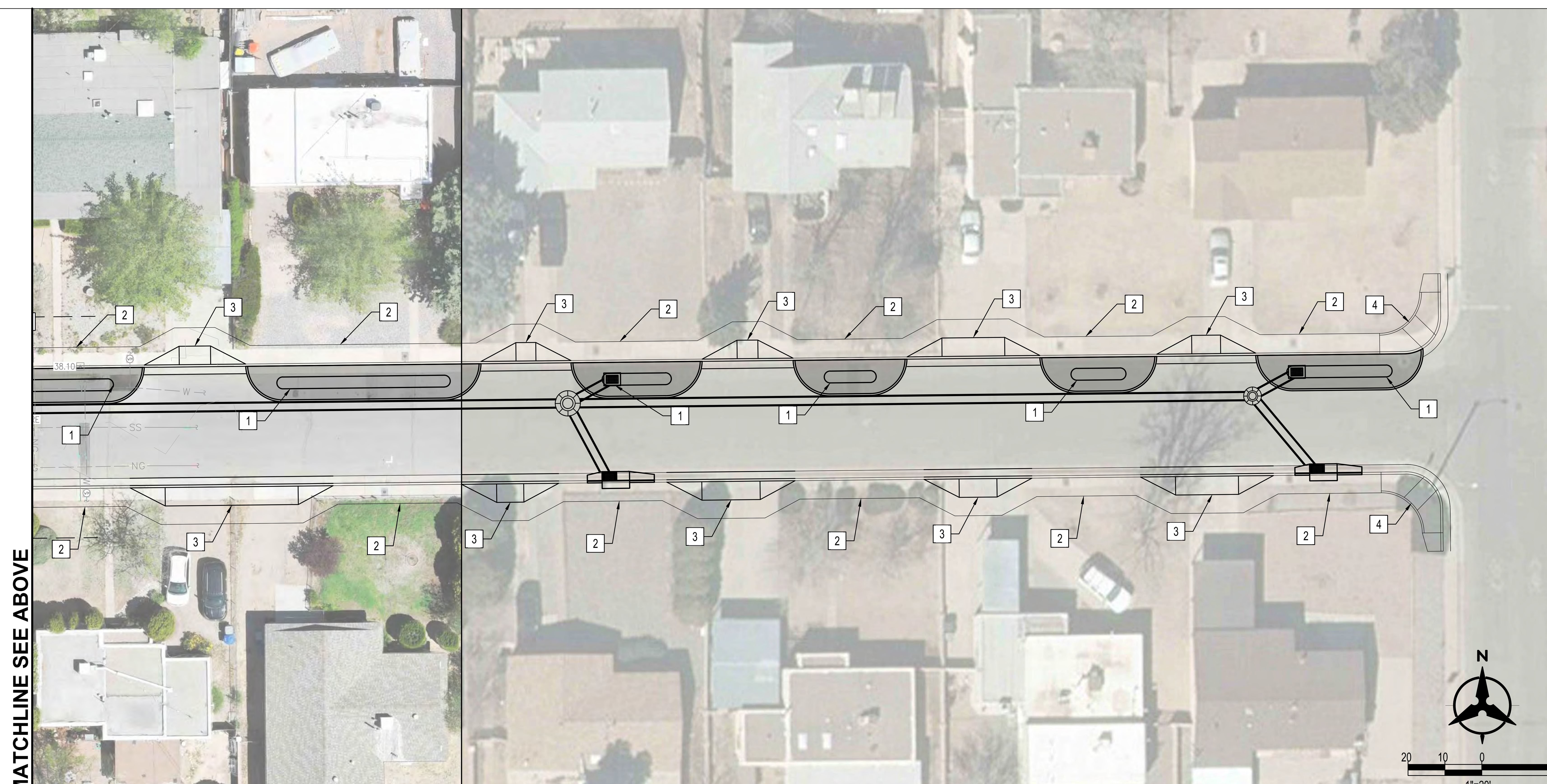
DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-7
SHEET NO. 12 OF 35

BHI JOB NO. 20230388

FILE PATH: \\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_11_3-7_ALLEY.dwg





GENERAL NOTES:

1. SEE LANDSCAPE PLANS (8-SERIES SHEETS) FOR PLANTINGS ON STORMWATER BUMPOUTS.
2. SEE UNDERGROUND STORAGE SYSTEM PLANS (6-SERIES SHEETS) FOR STORM DRAIN IMPROVEMENTS.

KEYED NOTES:

1. CONSTRUCT STORMWATER BUMPOUT, SEE DETAIL, DWG 1-4.
2. REMOVE AND REPLACE SIDEWALK WITH 5' WIDE SIDEWALK.
3. CONSTRUCT DRIVEPAD (ADA ACCESSIBLE) PER COA STD. DWG 2441.
4. CONSTRUCT ADA RAMP AT CORNER.
5. CONSTRUCT CHECK DAM.

811

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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

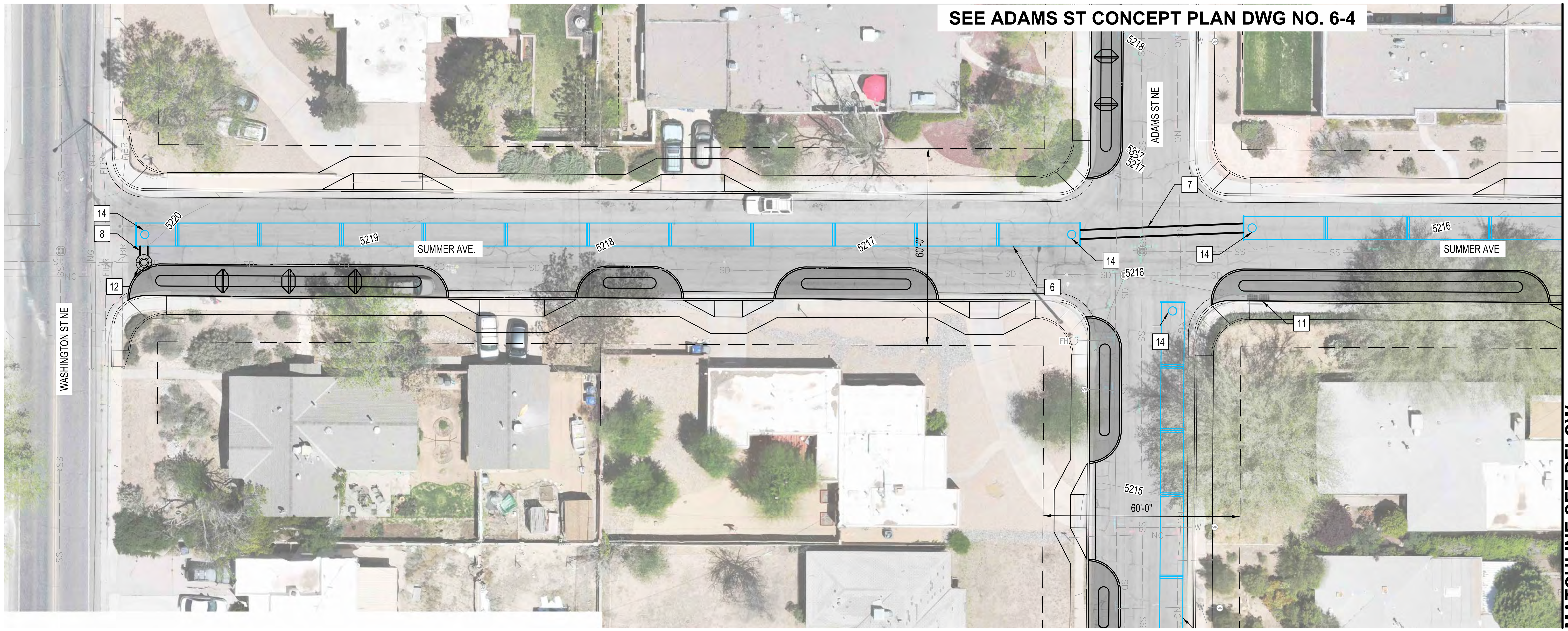
PUEBLO ALTO MILE HI GSI PILOT PROJECT
LA VETA DR
GSI CONCEPT PLAN

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 3-8
SHEET NO. 13 OF 35

BHI JOB NO. 20230388

FILE PATH: \\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_12_3-8_LA VETA.dwg



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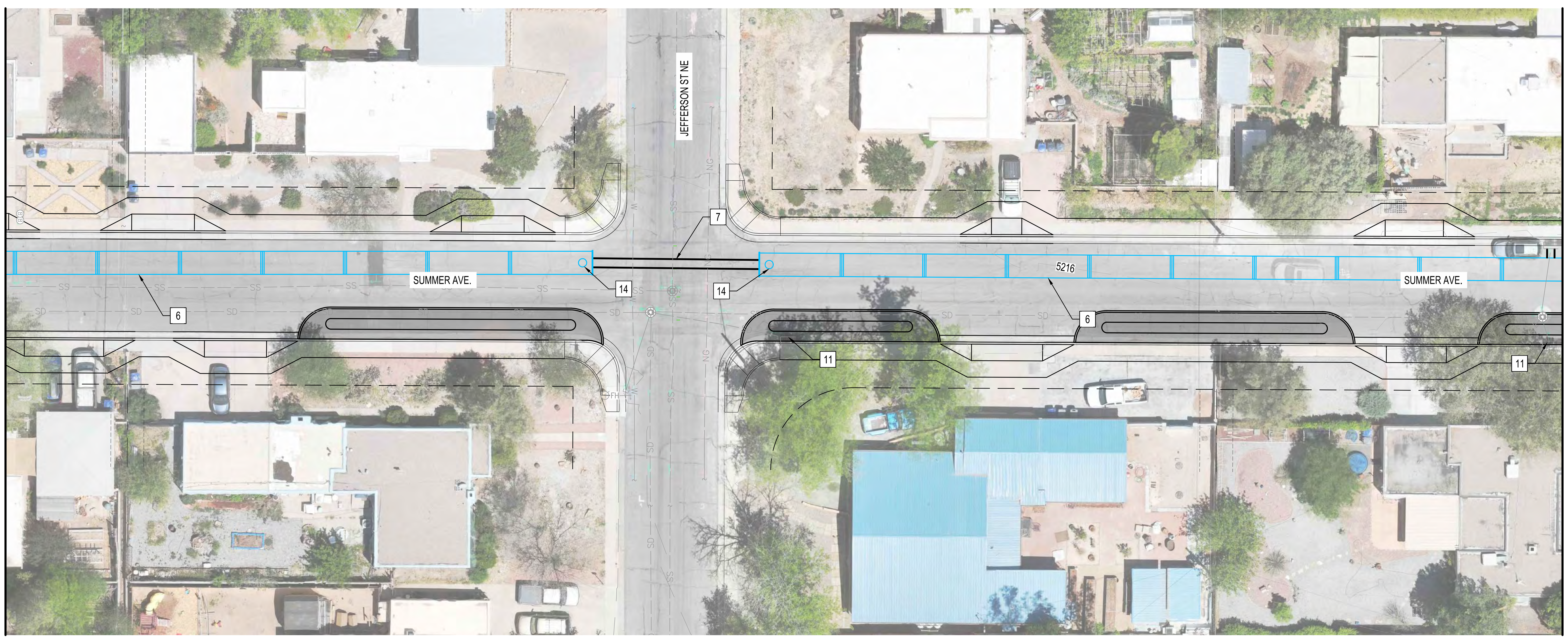

MATCHLINE SEE ABOVE

MATCHLINE SEE SUMMER AVE CONCEPT PLAN DWG NO. 6-2

GENERAL NOTES:

1. SEE LANDSCAPE PLANS (8-SERIES SHEETS) FOR PLANTINGS ON STORM WATER BUMP OUTS.
2. SEE GSI CONCEPT PLANS (3-SERIES SHEETS) FOR GSI IMPROVEMENTS.

KEYED NOTES:

6. INSTALL UNDERGROUND STORAGE SYSTEM (84" CMP WITH EXFILTRATION JOINTS)
7. INSTALL 30" STORM DRAIN PIPE
8. INSTALL 24" STORM DRAIN PIPE
9. INSTALL STORM DRAIN GRATE INLET TYPE D PER COA STD DWG 2206.
10. INSTALL STORM DRAIN CURB DROP INLET TYPE A PER COA STD DWG 2201.
11. EXISTING STORM DRAIN INLET TO REMAIN
12. INSTALL TYPE E MANHOLE PER COA STD DWG 2209. DIAMETER AS NOTED.
13. INSTALL PRE-TREATMENT (WATER QUALITY) MANHOLE.
14. INSTALL 48" CMP ACCESS RISER WITH MANHOLE LID AND FRAME IN CONCRETE COLLAR.

N

20 10 0 20

1"=20'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SUMMER AVE.
UNDERGROUND STORAGE SYSTEM PLAN

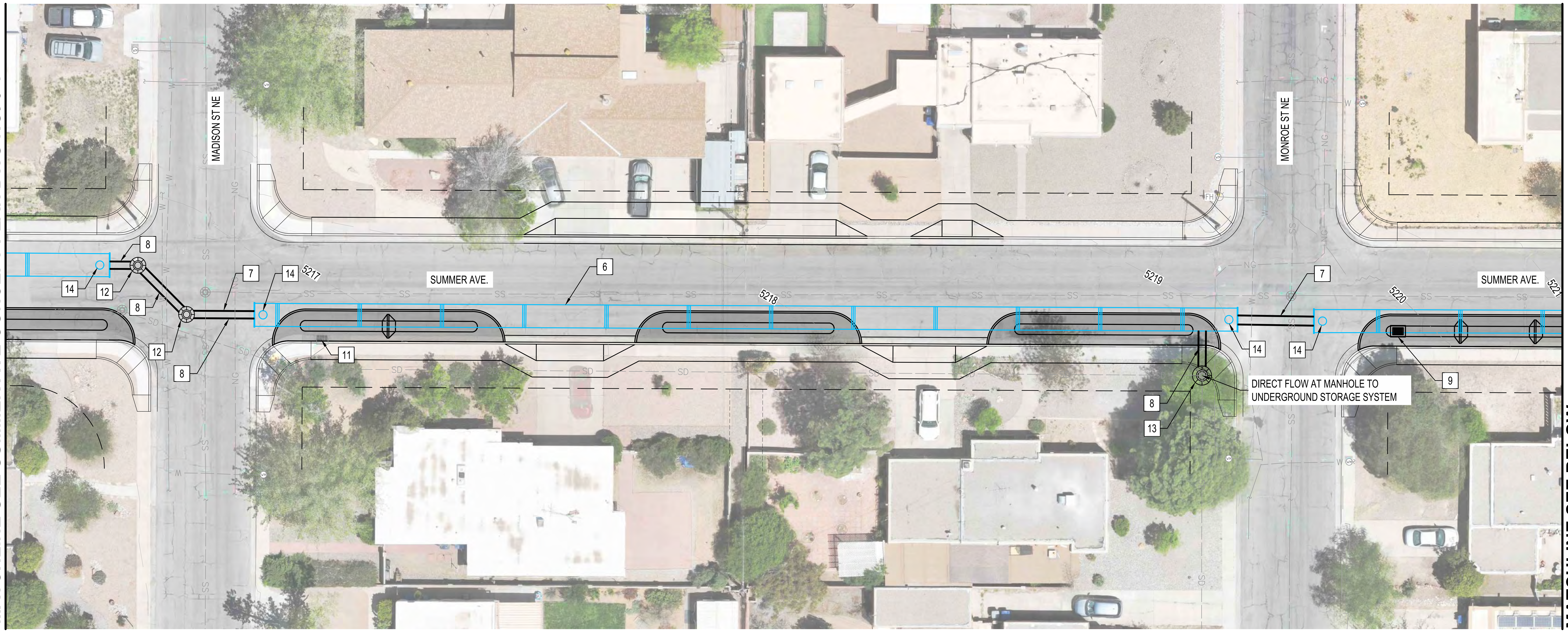
DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-1
SHEET NO. 14 OF 35

BHI JOB NO. 20230388

FILE PATH: \\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_15_6-1_SUMMER.dwg

MATCHLINE SEE SUMMER AVE CONCEPT PLAN DWG NO. 6-1



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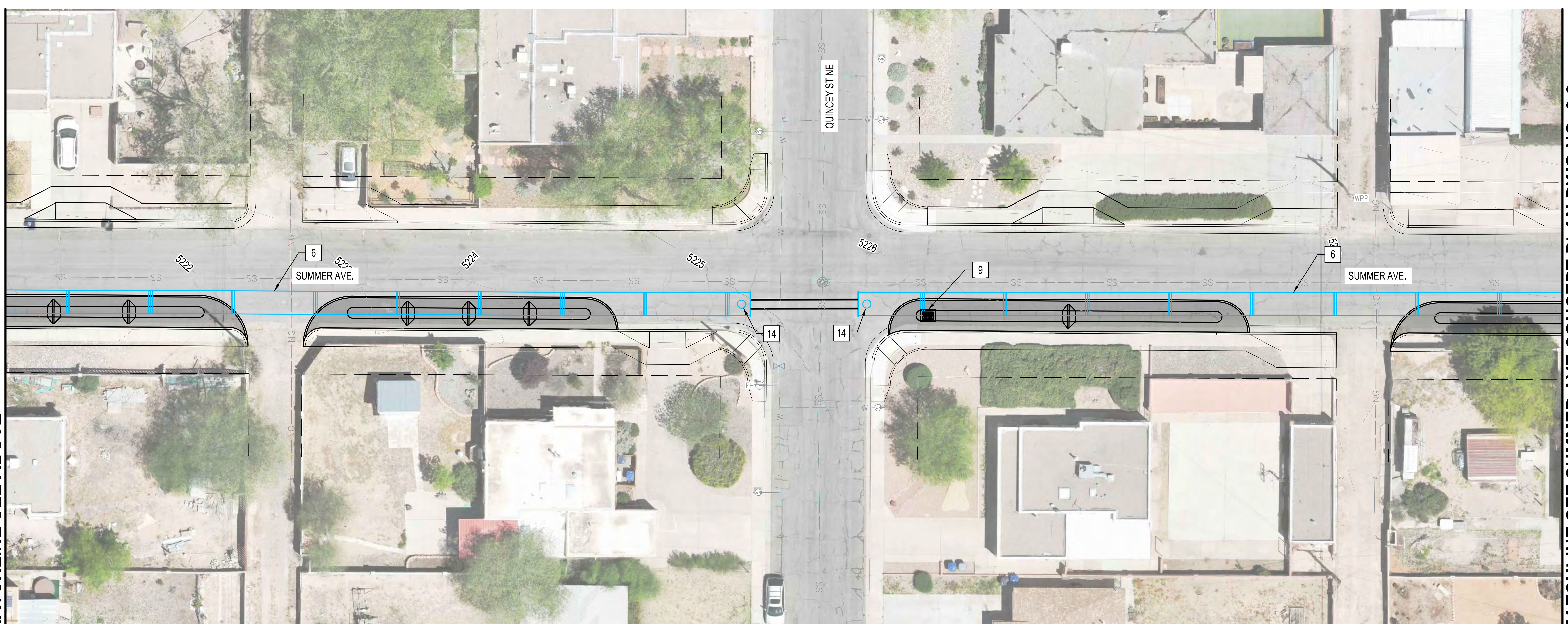

MATCHLINE SEE SUMMER AVE CONCEPT PLAN DWG NO. 6-3

GENERAL NOTES:

1. SEE LANDSCAPE PLANS (8-SERIES SHEETS) FOR PLANTINGS ON STORM WATER BUMP OUTS.
2. SEE GSI CONCEPT PLANS (3-SERIES SHEETS) FOR GSI IMPROVEMENTS.

KEYED NOTES:

6	INSTALL UNDERGROUND STORAGE SYSTEM (84" CMP WITH EXFILTRATION JOINTS)
7	INSTALL 30" STORM DRAIN PIPE
8	INSTALL 24" STORM DRAIN PIPE
9	INSTALL STORM DRAIN GRATE INLET TYPE D PER COA STD DWG 2206.
10	INSTALL STORM DRAIN CURB DROP INLET TYPE A PER COA STD DWG 2201.
11	EXISTING STORM DRAIN INLET TO REMAIN
12	INSTALL TYPE E MANHOLE PER COA STD DWG 2209. DIAMETER AS NOTED.
13	INSTALL PRE-TREATMENT (WATER QUALITY) MANHOLE.
14	INSTALL 48" CMP ACCESS RISER WITH MANHOLE LID AND FRAME IN CONCRETE COLLAR.

N

20 10 0 20

1"=20'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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November 22, 2023

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DATE	08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

CITY OF ALBUQUERQUE 1706 NEW MEXICO

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SUMMER AVE.
UNDERGROUND STORAGE SYSTEM PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	
		ZONE MAP NO. J-17/18
		CITY PROJECT NO. 631594
		DWG NO. 6-2 · SHEET NO. 15 OF 35

BHI JOB NO. 20230388

Wed, 22-Nov-2023 - 3:42 pm, Plotted by: RSALAZAR
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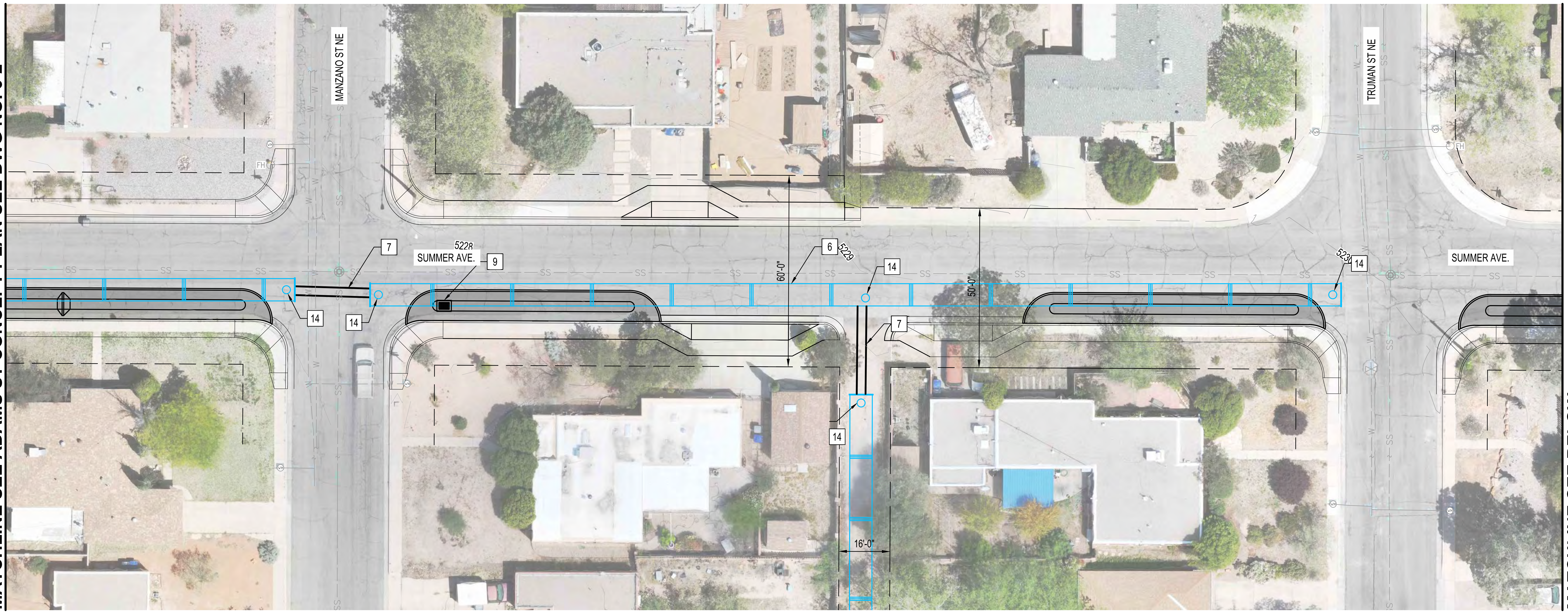
MATCHLINE SEE ADAMS ST CONCEPT PLAN SEE DWG NO. 6-2



MATCHLINE SEE BELOW

MATCHLINE SEE ABOVE

GENERAL NOTES:

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N

20 10 0 20
1"=20'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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November 22, 2023

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DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
SUMMER AVE.
UNDERGROUND STORAGE SYSTEM PLAN

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-3
SHEET NO. 16 OF 35

BHI JOB NO. 20230388

Wed, 22-Nov-2023 - 3:43 pm, Plotted by: RSALAZAR
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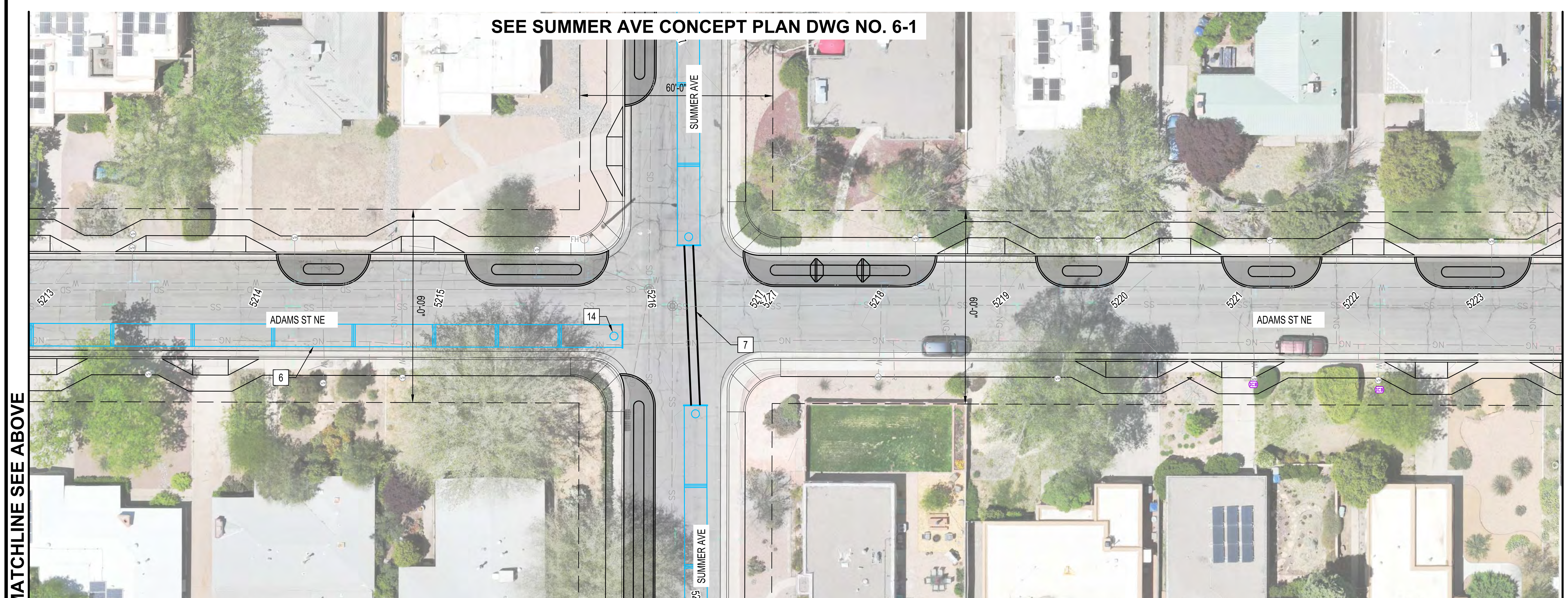

GENERAL NOTES:

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20 10 0 20
1"=20'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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DATE 08//2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
ADAMS ST.
UNDERGROUND STORAGE SYSTEM PLAN

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-4
SHEET NO. 17 OF 35

BHI JOB NO. 20230388

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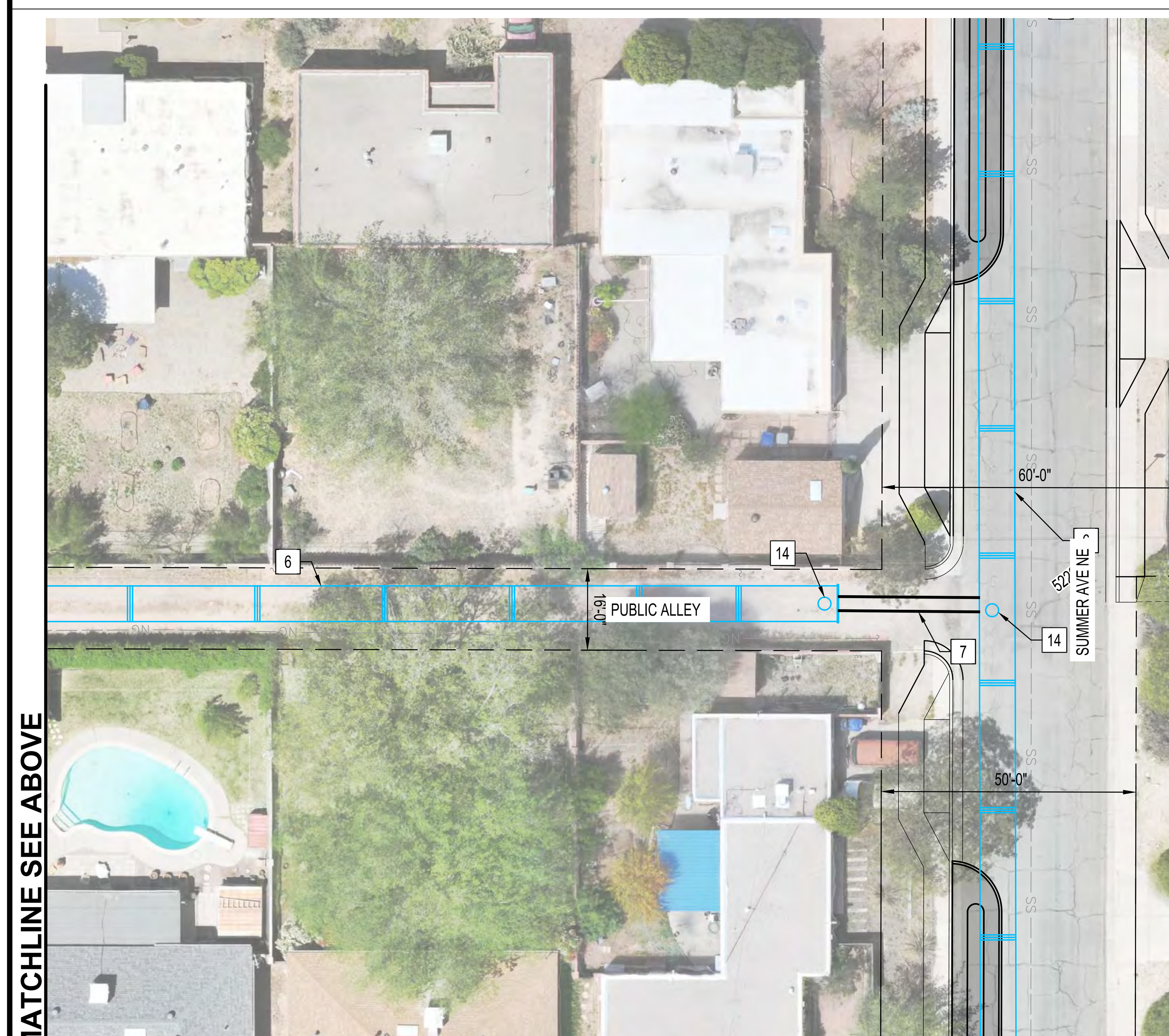

GENERAL NOTES:

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20 10 0 20
1"=20'

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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

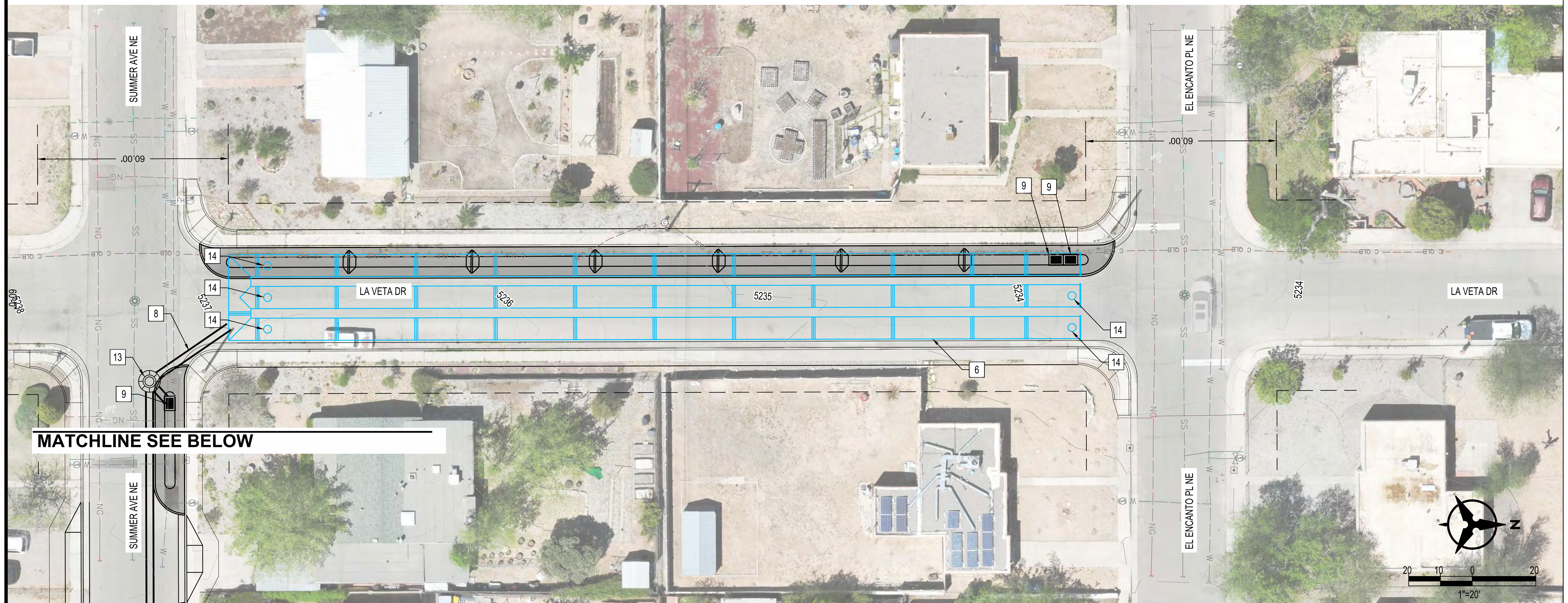
PUEBLO ALTO MILE HI GSI PILOT PROJECT ALLEY UNDERGROUND STORAGE SYSTEM PLAN

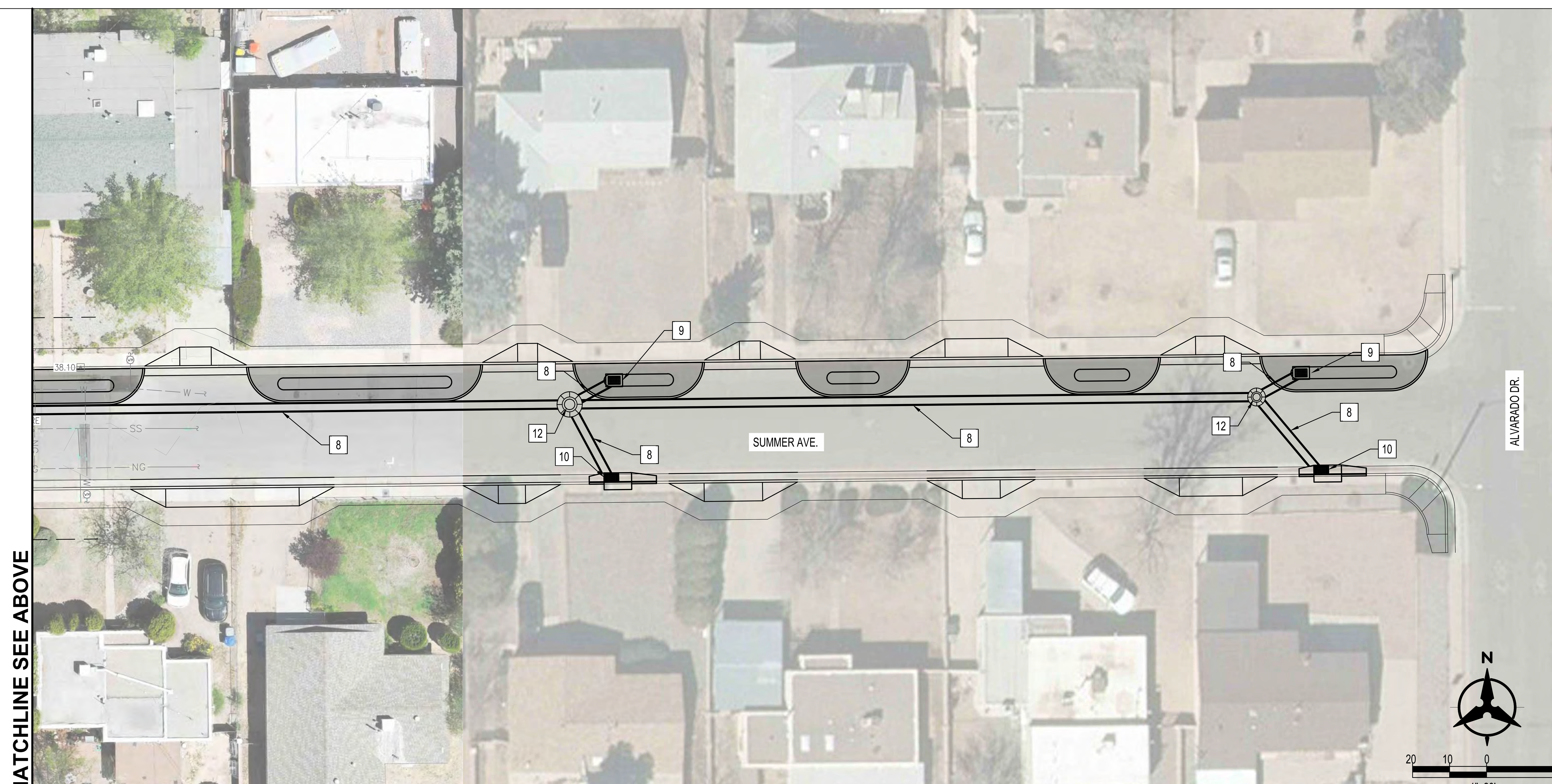
DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-5
SHEET NO. 18 OF 35

BHI JOB NO. 20230388

FILE PATH: \\A-ABQ-FS2\ABQ-Projects\20230388\WR\Design\plans\20230388_18_6-7_ALLEY.dwg





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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
LA VETA
UNDERGROUND STORAGE SYSTEM PLAN

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-6
SHEET NO. 19 OF 35

BHI JOB NO. 20230388

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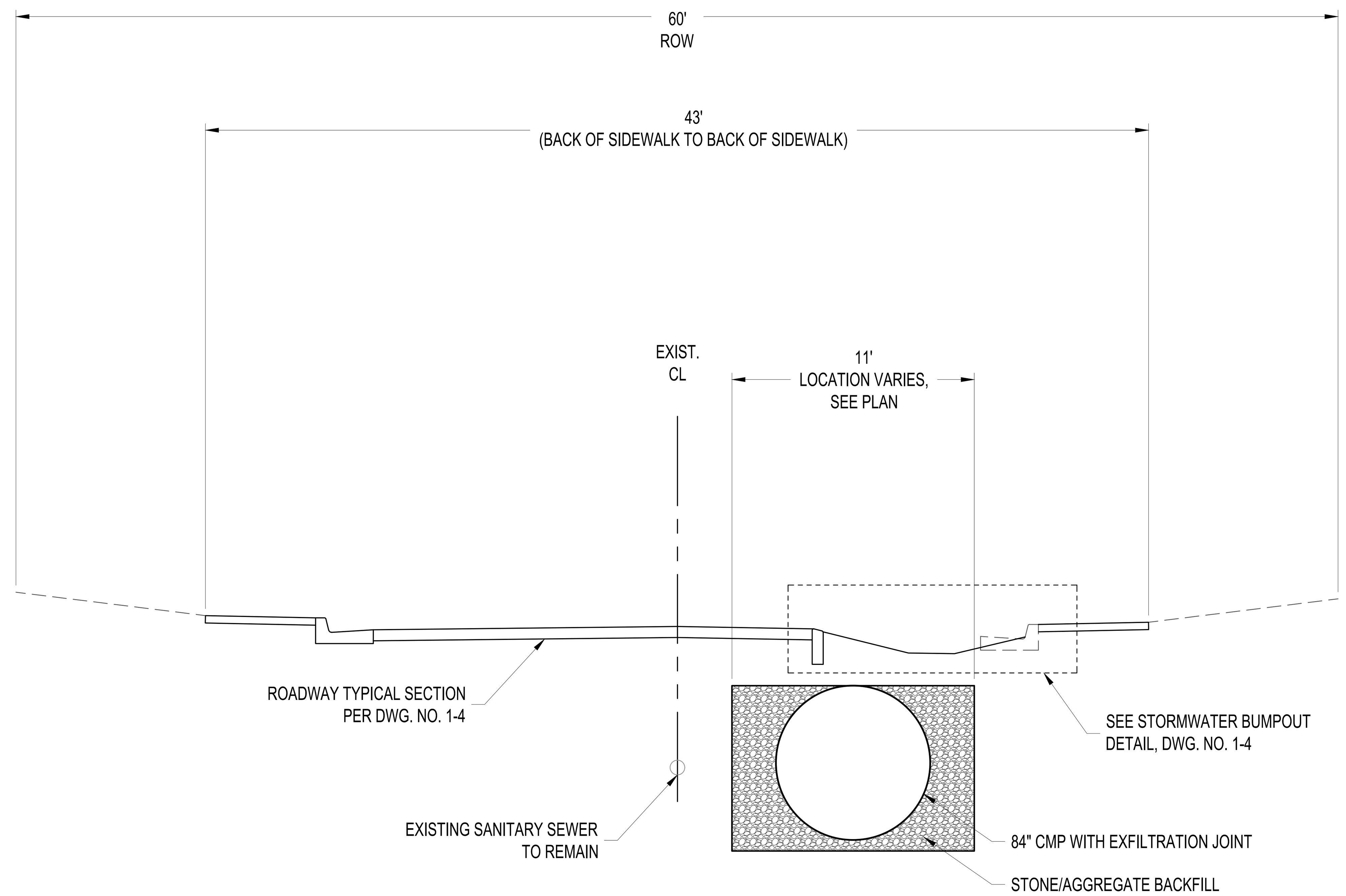
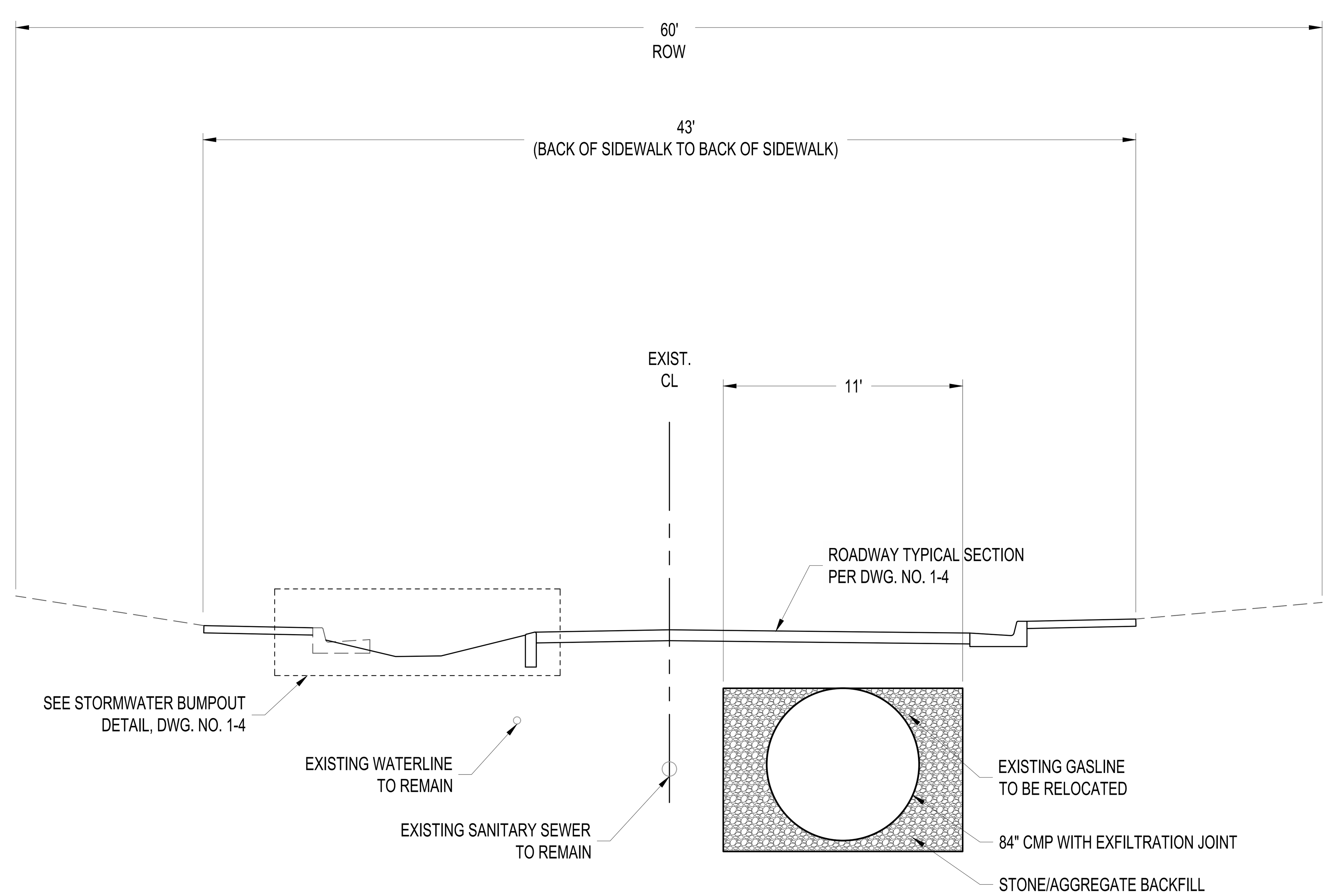


SUMMER AVE. UNDERGROUND STORAGE SYSTEM - TYPICAL SECTION



ADAMS AVE. UNDERGROUND STORAGE SYSTEM - TYPICAL SECTION

CONSULTANTS

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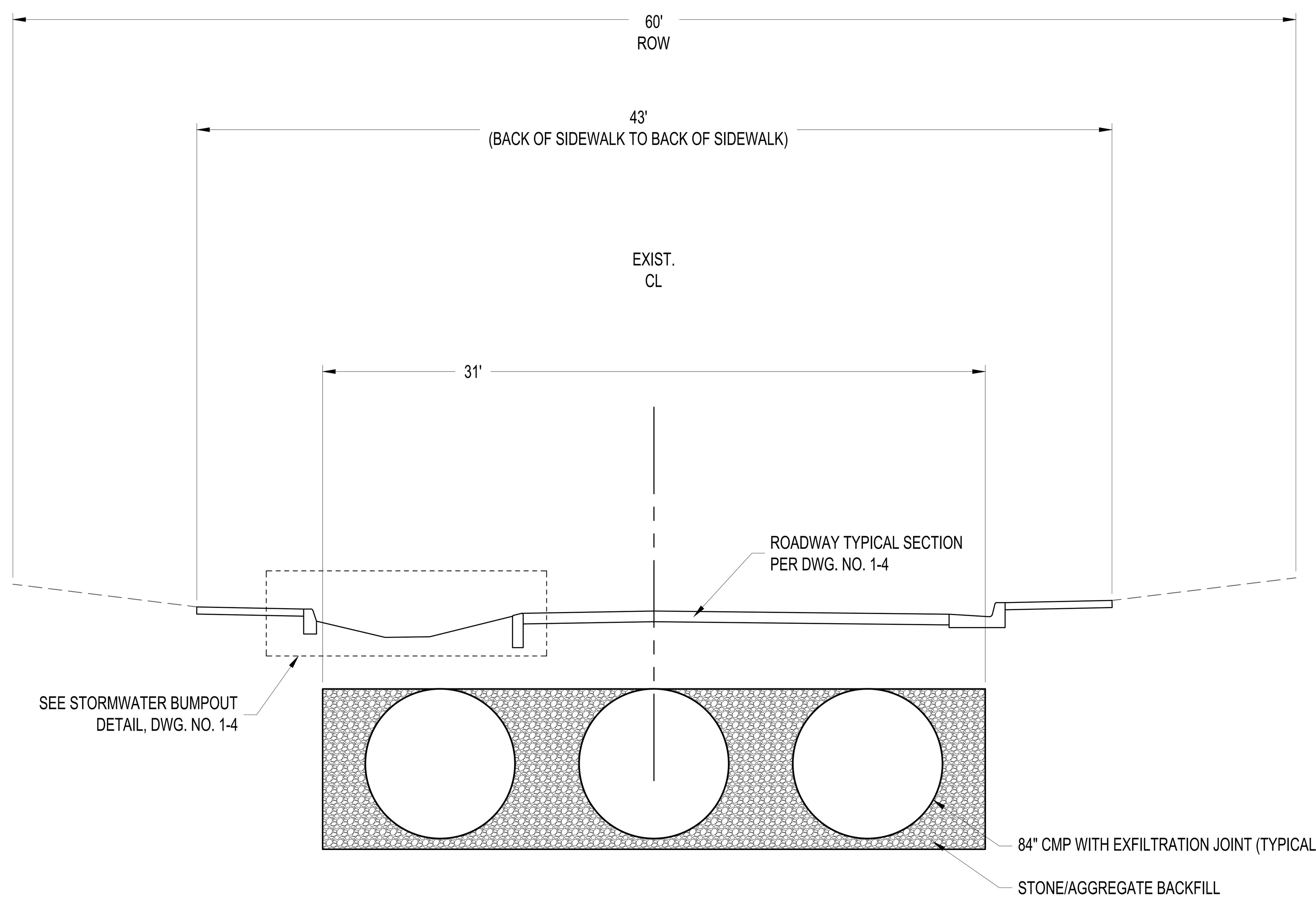
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
UNDERGROUND STORAGE
SYSTEM DETAILS 1

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-7
SHEET NO. 20 OF 35

BHI JOB NO. 20230388



LA VETA DR. UNDERGROUND STORAGE SYSTEM - TYPICAL SECTION

CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

CONSULTANTS

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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
UNDERGROUND STORAGE
SYSTEM DETAILS 2

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 6-8
SHEET NO. 21 OF 35

BHI JOB NO. 20230388

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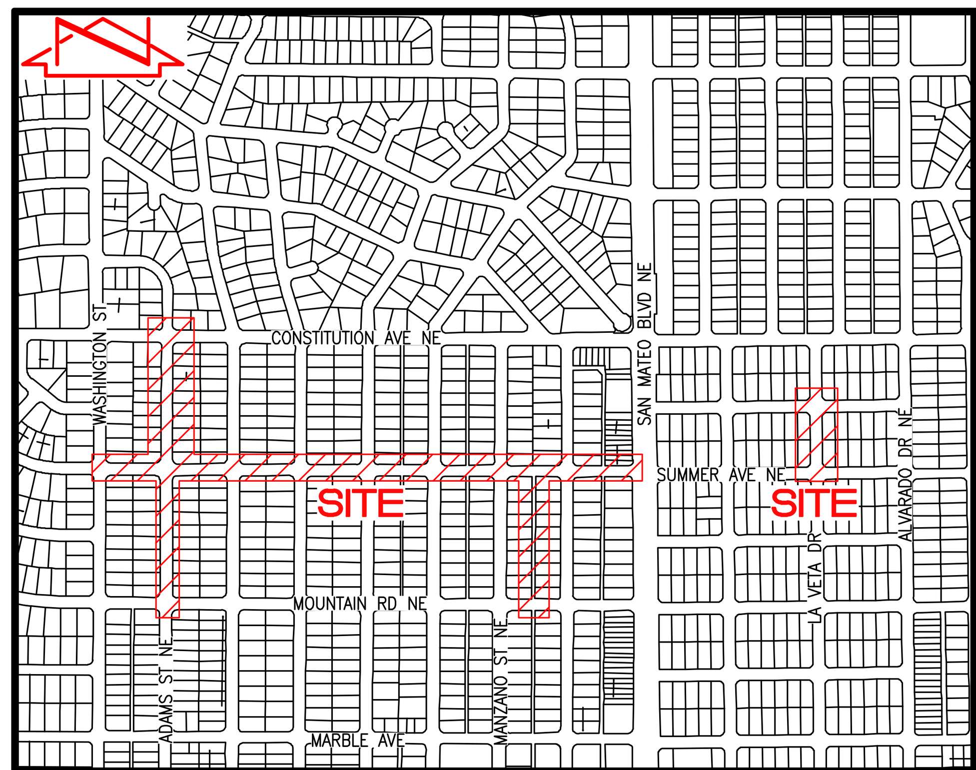

VICINITY MAP

N.T.S.

J-17 & J-18

GENERAL NOTES

1. A UTILITY SURVEY WAS PERFORMED IN MAY, 2023. THIS IS NOT A BOUNDARY SURVEY OR A RIGHT-OF-WAY SURVEY.
2. SITE LOCATED WITHIN PROJECTED SECTION 13 AND 14, TOWNSHIP 10 NORTH, RANGE 3 EAST, N.M.P.M.
3. ORTHOPHOTOGRAPHY WAS CAPTURED BY HMCG UNMANNED AERIAL VEHICLE (UAV) ON MAY 4, 2023.
4. ALL DISTANCES ARE GROUND DISTANCES.
5. **THIS SURVEY HAS BEEN PREPARED BASED UPON NAVD 88 DATUM. PREVIOUS SURVEYS OF THIS AREA CONDUCTED BY OTHER CONSULTANTS MAY HAVE BEEN CONDUCTED BASED UPON NGVD 29 DATUM. SPECIAL CARE SHOULD BE EXERCISED WHEN COMPARING ELEVATIONS FROM THIS SURVEY TO CURRENT AND PREVIOUS SURVEYS, PLANS AND AS-BUILT DOCUMENTS.**

INDEX OF DRAWINGS

LEGEND

INV	INVERT ELEVATION
TG	TOP OF GRATE
	COMM CONDUIT
	COMM MH
	COMM PULLBOX
	COMM RISER
	GAS VALVE BOX
	IRR CONTROL BOX
MLP	METAL LIGHT POLE
WLP	WOODEN LIGHT POLE
WPP	WOODEN POWER POLE
	SAS CURB SCRATCH
	SAS VALVE BOX
	SAS SINGLE CO
	SAS MANHOLE
	SD MANHOLE
	WATER METER BOX
	WATER VALVE BOX
FH	FIRE HYDRANT
	CONTROL POINT

APWA UTILITY COLOR CODE UTILITY LINE TYPES

SUE QUALITY LEVEL B (QLB)-SOURCE: DESIGATION/PAINT MARK

RED - ELECTRIC POWER LINES, CABLES, CONDUIT AND LIGHTING CABLES	E QLB — E QLB — E QLB
YELLOW - GAS, OIL, STEAM, PETROLEUM OR GASEOUS MATERIALS	G QLB — G QLB — G QLB
ORANGE - COMMUNICATION, ALARM OR SIGNAL LINES, CABLES OR CONDUIT	C QLB — C QLB — C QLB
ORANGE - COMMUNICATION, FIBER OPTIC LINES	FO QLB — FO QLB — FO QLB
BLUE - POTABLE WATER	W QLB — W QLB — W QLB
GREEN -SANITARY SEWER AND DRAIN LINES	SAS QLB — SAS QLB — SAS QLB
GREEN -STORM SEWER AND DRAIN LINES	SD QLB — SD QLB — SD QLB
OVERHEAD ELECTRIC	OHE — OHE — OHE — OHE

CONTROL SURVEY NOTE

A CONTROL SURVEY WAS CONDUCTED AT THE SITE BY BOHANNAN HUSTON INC IN MARCH 2023 (SURVEY CONTROL REPORT BHI PROJECT NO. 20230388.001.01 SRVABQ DATED APRIL 12, 2023) AND VERIFIED BY HMCG ON MAY, 3, 2023. CONTROL WAS PROJECTED ONTO THE SUBJECT SITE UTILIZING RTK GPS OBSERVATIONS COMBINED WITH GEOID MODEL 18 TO ESTABLISH HORIZONTAL AND VERTICAL POSITIONS BASED UPON NAD 83/NAVD 88 DATUM.

ALL HORIZONTAL COORDINATES ARE MODIFIED NAD 83 GRID VALUES AND HAVE BEEN ADJUSTED TO THE GROUND AT THE PROJECTION POINT 0,0 THE SCALE FACTOR USED IS 1/CF=1.00033371132610. THE ELEVATIONS ARE BASED UPON THE NAVD DATUM AND REQUIRE NO FURTHER ADJUSTMENT.

PROJECT BENCHMARK - #1

A BHI BRASS PLUG, STAMPED "23 388 01", SET IN CONCRETE IN THE NORTHERN CURB OF SUMMER AVE NE WEST OF SAN MATEO BLVD NE, AS SHOWN ON THIS SHEET AND SHEET 3B.

NORTHING = 1,489,784.19
EASTING = 1,540,199.26
ELEVATION = 5231.33 FEET (NAVD 1988)

PROJECT BENCHMARK - #2

A BHI BRASS PLUG, STAMPED "23 388 02", SET IN CONCRETE SIDEWALK IN THE SOUTH EAST CORNER OF THE EL ENCANTO PL NE AND LA VETA DR INTERSECTION, AS SHOWN ON THIS SHEET AND SHEET 5B.

NORTHING = 1,490,063.08
EASTING = 1,541,221.57
ELEVATION = 5234.57 FEET (NAVD 1988)

PROJECT BENCHMARK - #3

A BHI BRASS PLUG, STAMPED "23 388 03", SET IN CONCRETE SIDEWALK IN THE SOUTH EAST CORNER OF THE ADAMS ST NE AND CONSTITUTION AVE NE INTERSECTION, AS SHOWN ON THIS SHEET AND SHEET 4A.

NORTHING = 1,490,414.83
EASTING = 1,538,019.82
ELEVATION = 5234.04 FEET (NAVD 1988)

SUBSURFACE UTILITY ENGINEERING (SUE) QUALITY LEVEL DESCRIPTIONS

- QUALITY LEVEL B (QLB) - HORIZONTAL UTILITY LOCATIONS ASCERTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODOLOGIES AND UTILITY LOCATING TECHNIQUES. ALSO REFERRED TO AS DESIGNATION OR LINE-SPOTTING.
- QUALITY LEVEL C (QLC) - SURVEYING OF VISIBLE SURFACE FEATURES.
- QUALITY LEVEL D (QLD) - UTILITY INFORMATION DERIVED FROM EXISTING UTILITY RECORDS AND VARIOUS OTHER RESOURCES OF UTILITY INFORMATION INCLUDING BUT NOT LIMITED TO: RECORD OR AS-BUILT DRAWINGS, SITE UTILITY PLANS, DISTRIBUTION AND SERVICE MAPS, EXISTING GEOGRAPHIC INFORMATION SYSTEM (GIS) DATABASES, ORAL RECOLLECTIONS, ETC.

SUBSURFACE UTILITY NOTES

1. UTILITIES SHOWN ARE A DEPICTION OF VISIBLE UTILITY FEATURES AND ASCERTAINABLE SUBSURFACE UTILITY LOCATIONS THAT HAVE BEEN DESIGNATED AND/OR OBSERVED BY, AND SUBSEQUENTLY SURVEYED BY HIGH MESA CONSULTING GROUP. AS A GENERAL GUIDELINE, ASCE STANDARD 38-22 (STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES) HAS BEEN FOLLOWED FOR GATHERING AND PRESENTING THE LEVEL OF UTILITY INFORMATION THAT HAS BEEN REQUESTED FOR THIS PROJECT. SUBSURFACE UTILITY ENGINEERING (SUE) QUALITY LEVELS B, C AND D HAVE BEEN COMPLETED AT THIS TIME.
2. SURFACE GEOPHYSICAL LOCATING AND SUBSURFACE UTILITY DESIGNATION (SUE - QLB) EFFORTS HAVE BEEN BASED UPON VARIOUS RESOURCES OF UTILITY INFORMATION ALONG WITH CURRENT SITE CONDITIONS INCLUDING ACCESSIBLE SURFACE FEATURES OBSERVED WITHIN THE PROJECT LIMITS. RESULTS OF THIS EFFORT HAVE BEEN CORRELATED TO EXISTING RECORD DRAWINGS (OR OTHER RESOURCES OF UTILITY INFORMATION) THAT WERE AVAILABLE AT THE TIME THIS WORK WAS PERFORMED. UTILITY LOCATIONS THAT COULD NOT BE ASCERTAINED THROUGH SURFACE GEOPHYSICAL LOCATING METHODS, BUT WERE RECONCILED FROM UTILITY RECORDS, HAVE BEEN IDENTIFIED AND LABELED ON THIS SURVEY ACCORDINGLY. ADDITIONALLY, ANY DISCOVERED DISCREPANCIES RELATED TO THE RECORD DRAWINGS, UTILITY CONNECTIVITY OR PUBLIC UTILITY RESPONSE HAVE BEEN DOCUMENTED. REFER TO KEYED SUBSURFACE UTILITY NOTES ON THIS SHEET FOR LOCATIONS AND SUBSURFACE UTILITY KEYED NOTES BELOW FOR DETAILS.
3. PUBLICLY-OWNED UTILITIES REPRESENTED ON THIS SURVEY HAVE BEEN IDENTIFIED BY THE OWNER IN RESPONSE TO HMCG NM811 DESIGN LOCATE REQUEST (NM811 TICKET 23AP100207 04/10/23 9:15AM & NM811 TICKET 23AP100208 04/10/23 9:15AM) AND/OR THROUGH SUPPLEMENTAL DESIGNATION EFFORTS BY HMCG BASED UPON SURFACE EVIDENCE AND VARIOUS OTHER RESOURCES OF UTILITY INFORMATION OBTAINED FROM THE OWNER AT THE ONSET OF THE PROJECT. A LIST OF UTILITY OWNERS REGISTERED WITH NM811 HAS BEEN PROVIDED BELOW.
4.

A. NM811 UTILITY OWNER/OPERATOR LIST

NAME	*TELEPHONE NUMBER
ALBUQUERQUE/BERNALILLO COUNTY WUA	1-505-842-9287
CENTURYLINK LOCAL NETWORK CENTRAL	1-800-283-4237
CITY OF ALBUQUERQUE (C.O.A.)	1-505-857-8044
C.O.A.-STORM DRAINS	1-505-857-8022
COMCAST - ALBUQUERQUE	1-800-778-9140
MCI CABLE SEC	1-800-624-9675
NEW MEXICO GAS COMPANY - ALBUQUERQUE	1-505-934-5853
PNM ELECTRIC - ALBUQUERQUE	1-505-241-0577

*TELEPHONE NUMBERS OBTAINED THROUGH NM811 WEB PORTAL

5. THIS UTILITY SURVEY AND SUBSURFACE UTILITY ENGINEERING EFFORT IS NOT ALL-INCLUSIVE AND MAY NOT REPRESENT UTILITIES/INFRASTRUCTURE THAT HAVE BEEN ABANDONED-IN-PLACE, WERE INACCESSIBLE, OR OTHERWISE UNDETECTABLE DUE TO UNFORESEEN AND UNCONTROLLABLE SITE AND/OR UTILITY CONDITIONS. FURTHER, THIS UTILITY INVESTIGATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES, THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFORE. THE PROPERTY OWNER, DEVELOPER, OR CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUES, NEW MEXICO EXCAVATION LAWS (NM811), MUNICIPAL AND LOCAL ORDINANCES, SITE SPECIFIC RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE UTILITY LINES AND FACILITIES.

SUBSURFACE UTILITY KEY NOTES

1. GAS METER WAS NOT ACCESSIBLE TO DETERMINE LOCATION OF SERVICE LATERAL. DESIGNATION IS INCOMPLETE.
2. LOCATION OF WATER LINE (PRESUMED TO BE PVC) COULD NOT BE DETERMINED AT THIS LOCATION WHERE SURFACE EVIDENCE WAS DISCOVERED. DESIGNATION IS INCOMPLETE.
3. WATER LINE PAINT MARKS BY OTHERS. WATER LINE DESIGNATED BY HMCG SOUTH OF PAINT MARKS.
4. BASE OF MANHOLE IS DIRT/CONCRETE. NO PIPELINES WERE OBSERVED.
5. STORM DRAIN DROP INLETS HAS BEEN REMOVED AND THE PIPELINE HAS BEEN CAPPED AT THIS POINT.
6. OBSERVED A SINGLE PIPELINE CONTINUING SOUTH FROM STORM DRAIN DROP INLET. PIPELINE WAS FULL OF SILT AND DEBRIS. DESIGNATION IS INCOMPLETE.

SHEET LAYOUT

SURVEYORS CERTIFICATION

I, CHARLES G. CALA, JR., NEW MEXICO PROFESSIONAL SURVEYOR NO. 11184, DO HEREBY CERTIFY; THAT THIS UTILITY SURVEY AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

CHARLES G. CALA, JR., NMPS 11184

CHARLES G. CALA, JR. NEW MEXICO 11184 REGISTERED PROFESSIONAL SURVEYOR

May 22, 2023
DATE

HIGH MESA Consulting Group
Engineers, Surveyors & Subsurface Utility Consultants
6010-B Midway Park Blvd. NE • Albuquerque, New Mexico 87109
Phone: 505.345.4250 • Fax: 505.345.4254 • www.highmesacg.com

SCALE: 1" = 200'
200 0 400
100 200

COVER SHEET
PUEBLO ALTO GSI
ALBUQUERQUE, NM

SURVEYED BY M.V.Z.
DRAWN BY A.J.P.
APPROVED BY C.G.C.

NO.	DATE	BY	REVISIONS

JOB NO. 2023.015.1
DATE 05-2023
SHEET 1 OF 5

File Name: P:\data\2023\2023.015.1\SUR\20230151_TOPO.dwg - SH1 Plot Date: 5/22/23 Plot Time: 11:26

MATCHLINE SHEET 4A

MATCHLINE SHEET 4B

SHEET 2A

SCALE 1"=20'

SHEET 2B

SCALE 1"=20'

SUBSURFACE UTILITY KEY NOTES

1. GAS METER WAS NOT ACCESSIBLE TO DETERMINE LOCATION OF SERVICE LATERAL. DESIGNATION IS INCOMPLETE.
2. LOCATION OF WATER LINE (PRESUMED TO BE PVC) COULD NOT BE DETERMINED AT THIS LOCATION WHERE SURFACE EVIDENCE WAS DISCOVERED. DESIGNATION IS INCOMPLETE.
3. WATER LINE PAINT MARKS BY OTHERS. WATER LINE DESIGNATED BY HMCG SOUTH OF PAINT MARKS.
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SCALE: 1" = 20'

20 10 0 20 40

UTLITY SURVEY
PUEBLO ALTO GSI
ALBUQUERQUE, NM

SURVEYED BY M.V.Z.
DRAWN BY A.J.P.
APPROVED BY C.G.C.

NO.	DATE	BY	REVISIONS

JOB NO. 2023.015.1
DATE 05-2023
SHEET 2 OF 5

File Name: P:\data\2023\2023.015.1\SUR\20230151_TOPO.dwg - SH2 Plot Date: 5/22/23 Plot Time: 11:26

SHEET 3A
SCALE 1"=20'

SHEET 3B
SCALE 1"=20'

SUBSURFACE UTILITY KEY NOTES

1. GAS METER WAS NOT ACCESSIBLE TO DETERMINE LOCATION OF SERVICE LATERAL. DESIGNATION IS INCOMPLETE.
2. LOCATION OF WATER LINE (PRESUMED TO BE PVC) COULD NOT BE DETERMINED AT THIS LOCATION WHERE SURFACE EVIDENCE WAS DISCOVERED. DESIGNATION IS INCOMPLETE.
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SCALE: 1" = 20'

UTLITY SURVEY
PUEBLO ALTO GSI
ALBUQUERQUE, NM

SURVEYED BY	M.V.Z.
DRAWN BY	A.J.P.
APPROVED BY	C.G.C.

NO.	DATE	BY	REVISIONS

JOB NO.	2023.015.1
DATE	05-2023
SHEET	3 OF 5

File Name: P:\data\2023\2023.015.1\SUR\20230151_TOPO.dwg - SH3 Plot Date: 5/22/23 Plot Time: 11:26

SHEET 4A
SCALE 1"=20'

SHEET 4B
SCALE 1"=20'

SUBSURFACE UTILITY KEY NOTES

1. GAS METER WAS NOT ACCESSIBLE TO DETERMINE LOCATION OF SERVICE LATERAL. DESIGNATION IS INCOMPLETE.
2. LOCATION OF WATER LINE (PRESUMED TO BE PVC) COULD NOT BE DETERMINED AT THIS LOCATION WHERE SURFACE EVIDENCE WAS DISCOVERED. DESIGNATION IS INCOMPLETE.
3. WATER LINE PAINT MARKS BY OTHERS. WATER LINE DESIGNATED BY HMCG SOUTH OF PAINT MARKS.
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SCALE: 1" = 20'
20 0 10 20 40

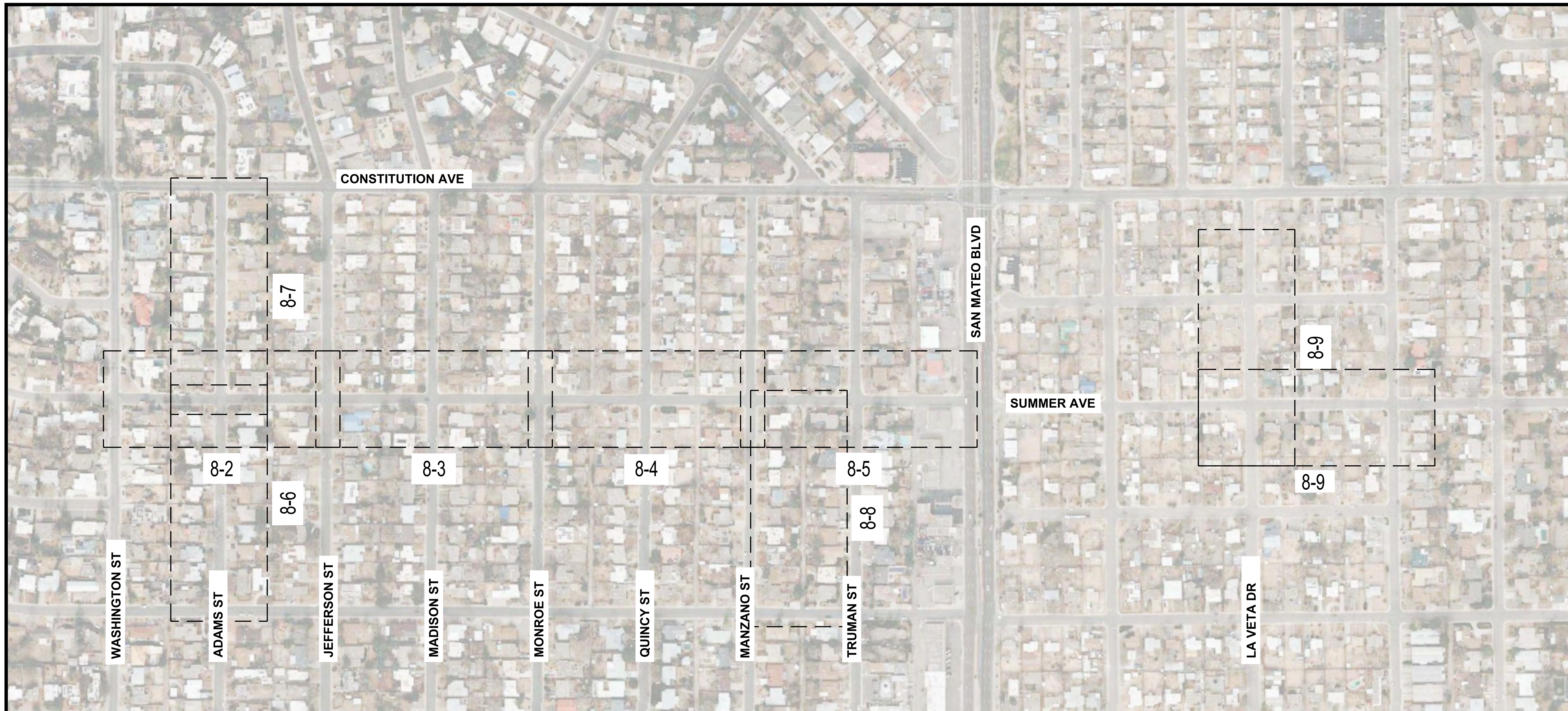
UTLITY SURVEY
PUEBLO ALTO GSI
ALBUQUERQUE, NM

SURVEYED BY	M.V.Z.
DRAWN BY	A.J.P.
APPROVED BY	C.G.C.

NO.	DATE	BY	REVISIONS

JOB NO.	2023.015.1
DATE	05-2023
SHEET	4 OF 5

File Name: P:\data\2023\2023.015.1\SUR\20230151_TOPO.dwg - SH4 Plot Date: 5/22/23 Plot Time: 11:26



A OVERALL PLAN

SCALE: 1" = 200'-0"

0 100' 200'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME	QTY	MIN. INSTALLED SIZE	CONTAINER	MATURE SIZE
	TREES					
	DESERT WILLOW	CHILOPSIS LINEARIS		2" CAL, 12'-14' HT		20' HT & SPD
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS	42	2" CAL, 12'-14' HT	B&B	20' HT & SPD
	HONEY MESQUITE	PROSOPIS GLANDULOSA		2" CAL, 12'-14' HT		20' HT & SPD
	GAMBEL OAK	QUERCUS GAMBELII		2" CAL, 12'-14' HT		20' HT & SPD
	DESERT LIVE OAK	QUERCUS TURBINELLA		2" CAL, 12'-14' HT		20' HT & SPD
	SHRUBS					
	CREOSOTE BUSH	LARREA TRIDENTATA		MIN 18" HT	5-GAL	4' HT & SPD
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS	88	MIN 18" HT	5-GAL	4' HT & SPD
	FRINGED SAGE	ARTEMISIA FRIGIDA		MIN 18" HT	5-GAL	4' HT & SPD
	PERENNIALS					
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES		MIN 18" SPD	1-GAL	2' HT & SPD
	CHOCOLATE FLOWER	BERLANDIERA LYRATA		MIN 12" HT	1-GAL	18" HT & SPD
	DESERT ZINNIA	ZINNIA GRANDIFLORA	347	MIN 18" HT	1-GAL	2' HT & SPD
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES'		MIN 18" SPD	1-GAL	2' HT & SPD
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS		MIN 18" SPD	1-GAL	2' HT & SPD
	DESERT MULE'S EAR	SCABRETHIA SCABRA		MIN 18" SPD	1-GAL	18" HT & SPD
	DESERT ACCENTS & GRASSES					
	SHARKSKIN AGAVE	AGAVE SCABRA		MIN 18" HT	1-GAL	5' HT & SPD
	SOAPWEED YUCCA	YUCCA GLAUCA		MIN 18" HT	1-GAL	5' HT & SPD
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS	138	MIN 12" HT	1-GAL	2' HT & SPD
	BROWN SPINED PRICKLY PEAR	OPUNTIA PHAEACANTHA		MIN 18" SPD	1-GAL	5' HT & SPD
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM		MIN 12" SPD	1-GAL	2' HT & SPD

GENERAL NOTES - PLANTING

A. IF THERE IS A DISCREPANCY BETWEEN PLANT QUANTITIES LISTED IN THE PLANT SCHEDULE AND THOSE SHOWN ON THE PLANTING PLAN, QUANTITIES SHOWN ON THE PLAN SHALL GOVERN. CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO BID. ADDITIONAL PAYMENT WILL NOT BE MADE FOR ANY DISCREPANCY IN QUANTITIES BETWEEN THE PLANTING PLAN AND THE PLANT SCHEDULE.

B. CONTRACTOR SHALL INSTALL A 4" DEPTH OF ⅜" GRAVEL MULCH. INSTALL MULCH OVER FILTER FABRIC. OVERLAP FABRIC ENDS 3", TURN DOWN EDGES 6". TOP OF GRAVEL MULCH SHALL BE 1" BELOW TOP OF ADJACENT PAVING. PROVIDE SAMPLE OF GRAVEL MULCH FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

C. CONTRACTOR SHALL INSTALL A SINGLE LAYER OF 2"-4" COBBLE MULCH. INSTALL MULCH OVER 4" DEPTH OF SHREDDED WOOD ON SCARIFIED EARTH. PROVIDE SAMPLE OF COBBLE MULCH FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

D. IF THERE IS A DISCREPANCY IN THE FIELD OR NURSERY BETWEEN THE CONTAINER SIZE LISTED UNDER "CONTAINER" AND HEIGHT & SPREAD LISTED UNDER "INSTALLED SIZE", THE SPECIFIED PLANT SHALL MEET HEIGHT & SPREAD REQUIREMENTS SPECIFIED UNDER "INSTALLED SIZE". IF A LARGER CONTAINER SIZE IS REQUIRED TO MEET THESE SPECIFICATIONS, IT SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

E. TREES AND SHRUBS SHALL BE PLANTED PER CABQ STANDARD LANDSCAPE DETAIL DWG. NO 2714 & 2716.

F. FURNISH AND INSTALL LANDSCAPE BOULDERS. BOULDERS SHALL BE MIN. 12-18 CUBIC FEET, LOCALLY AVAILABLE. BURY BOULDER TO MIN. 8" DEPTH.

GENERAL NOTES - IRRIGATION

A. THIS SYSTEM'S DESIGN APPROACH ASSUMES A MINIMUM STATIC PRESSURE BETWEEN 80-100 PSI AT THE POINT OF CONNECTION. THE ACTUAL PSI WILL BE DETERMINED WITH ABCWUA. THE SYSTEM REQUIRES THE INSTALLATION OF TWO 2" WATER METERS INCLUDING UEC'S, ALL REQUIRED PERMITS, REMOVAL AND REPLACE OF ASPHALT AND/OR CONCRETE, TAP, SERVICE LINE LESS THAN 40FT FROM MAIN TAP TO METER. COMPLETE IN PLACE PER EACH. POSSIBLE LOCATIONS INCLUDE NEAR THE INTERSECTION OF LA VETA DR. NE AND SUMMER AVE. NE, AND NEAR THE ALLEYWAY BETWEEN MANZANO ST. NE AND TRUMAN ST. NE ON SUMMER AVE. NE.

B. THE CONTRACTOR SHALL PROVIDE TWO 120V, 20 AMP CIRCUITS FROM THE ELECTRICAL PANEL TO 2" IRRIGATION BACKFLOW PREVENTER ENCLOSURE AND IRRIGATION CONTROLLER (ONE TO EACH). SEE ELECTRICAL DRAWINGS. WORK AND MATERIALS BE IN COMPLIANCE WITH LOCAL CODES AND THE NATIONAL ELECTRIC CODE (N.E.C.). POWER SOURCE WILL BE IDENTIFIED AND CONNECTION INFORMATION WILL BE PROVIDED WITH THE 65% SUBMITTAL.

C. THE CONTRACTOR SHALL PROVIDE AND INSTALL 2" MAIN LINE, LATERAL LINES, #10 IRRIGATION WIRE, 2" TWO-WIRE ISOLATION VALVES, AIR RELIEF VALVES, BUBBLERS AND ASSOCIATED IRRIGATION COMPONENTS INCLUDING CHECK VALVES IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD 2700 DETAILS. THE MAIN LINE MATERIAL TO BE DETERMINED WITH THE OWNER.

D. BASED ON MAINTENANCE OWNERSHIP OF THE PROJECT ALL IRRIGATION COMPONENTS, INCLUDING THE TWO-WIRE CONTROLLERS, WILL BE SELECTED IN COORDINATION WITH THE CITY OF ALBUQUERQUE PARKS OR SOLID WASTE STAFF. AT THIS TIME, THE MAINTENANCE OWNERSHIP HAS NOT BEEN DETERMINED.

E. ALL PLANT MATERIAL, WITH THE EXCEPTION OF PLANT MATERIAL LOCATED WITHIN THE ALLEY, WILL BE IRRIGATED USING THE AUTOMATED, IN-GROUND IRRIGATION SYSTEM.

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

groundworkstudio

BHI JOB NO. 20230388

CONSULTANTS

Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS

SEAL

30% FOR REVIEW ONLY

November 30, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
CONTRACTOR:
WORK STAKED BY: DATE:
INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

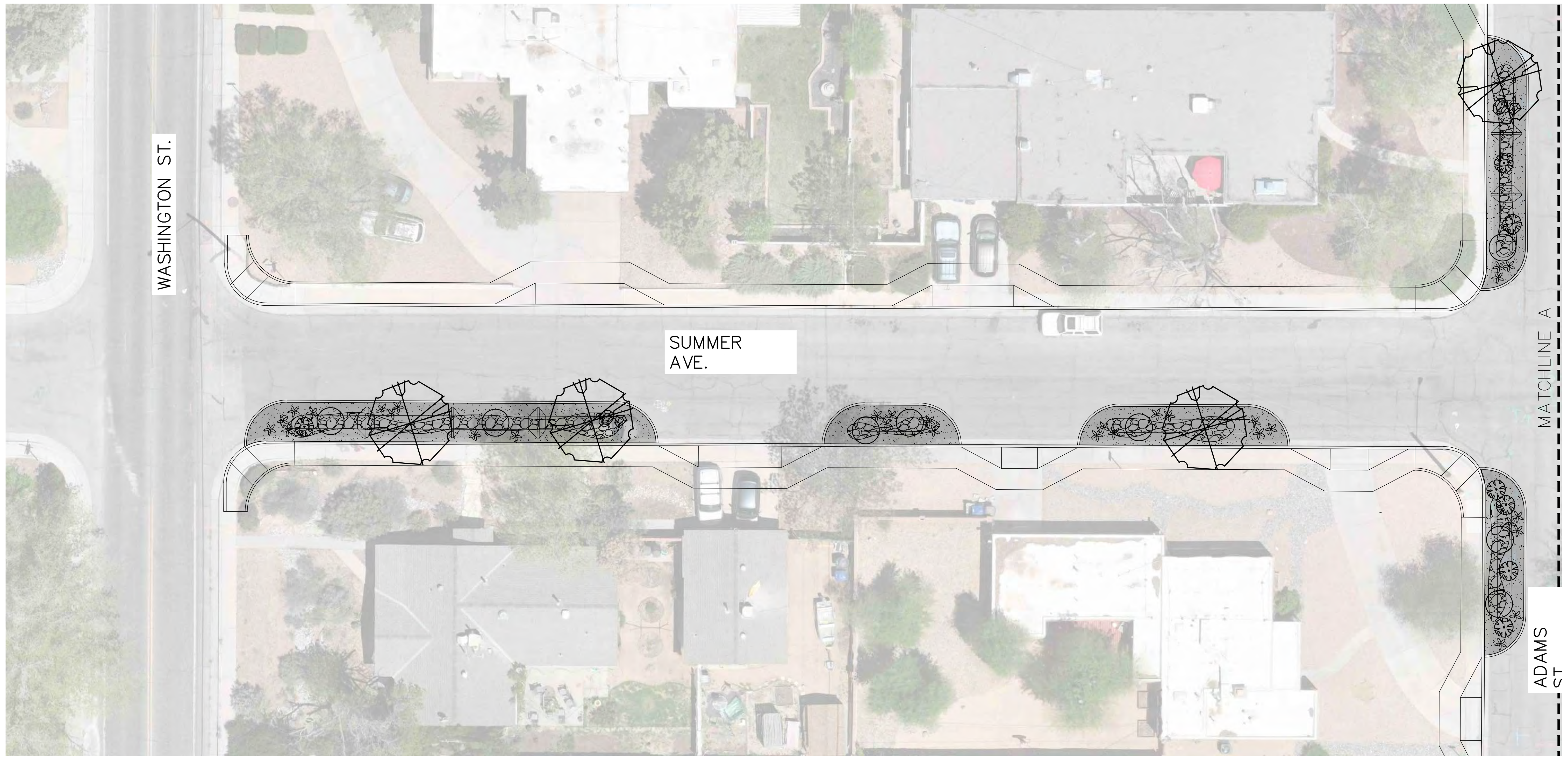
DESIGNED BY:
DRAWN BY: LBS
CHECKED BY: WM
DATE 11/30/2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT
OVERALL PLAN AND GENERAL NOTES

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18
CITY PROJECT NO. 631594
DWG NO. 8-1
SHEET NO. 27 OF 35

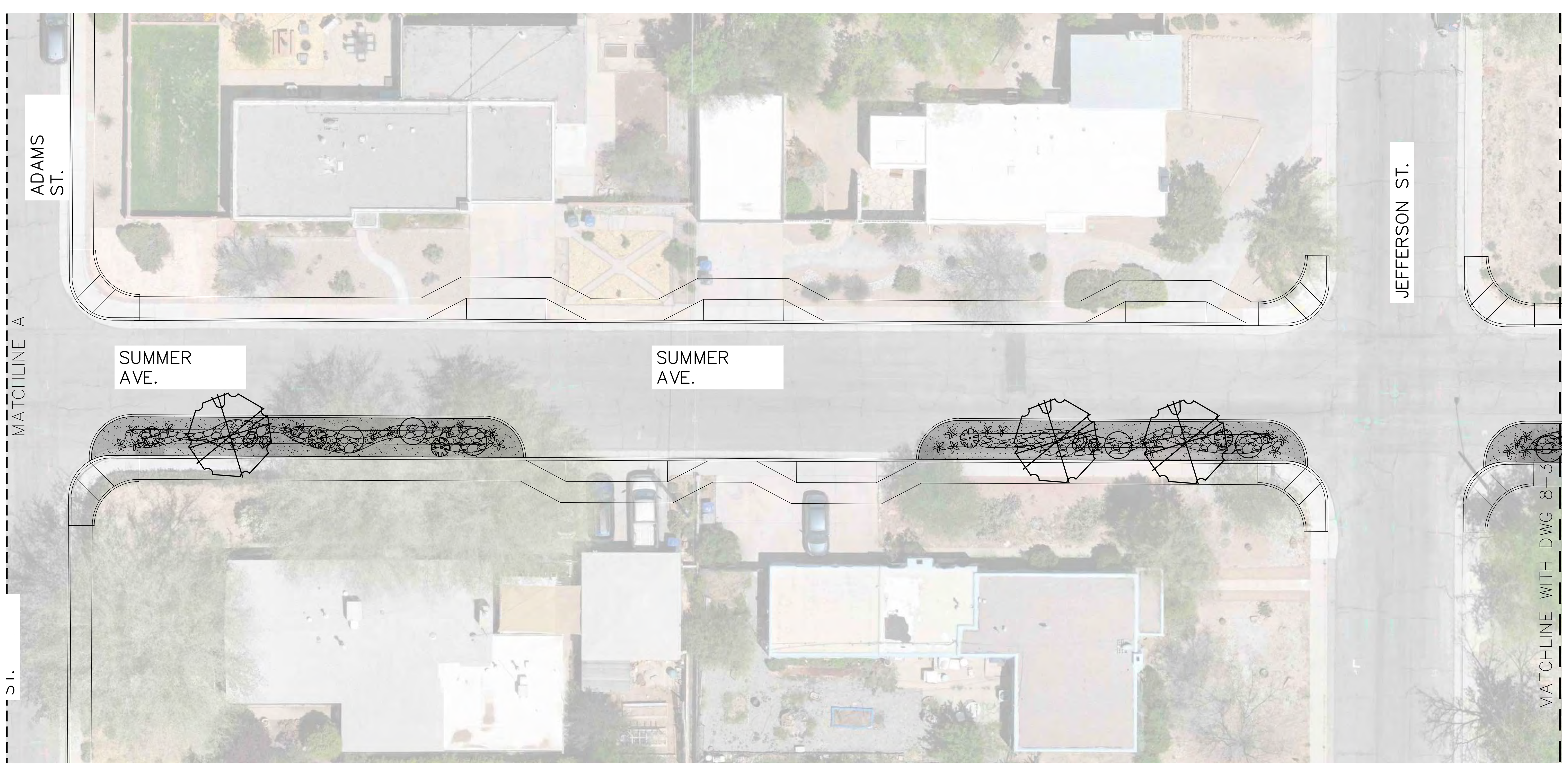


PLANTING PLAN 8-2

A

SCALE: 1" = 20'-0"

0 20' 40'



PLANTING PLAN 8-2

B

SCALE: 1" = 20'-0"

0 20' 40'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

COBBLE MULCH. SEE GENERAL NOTE C.

BOULDERS. SEE GENERAL NOTE F.

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

groundworkstudio

BHI JOB NO. 20230388

CONSULTANTS

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BENCH MARKS

SEAL

30% FOR REVIEW ONLY

November 30, 2023

NO.	DATE	DESCRIPTION	BY

AS-BUILT INFORMATION
CONTRACTOR: DATE:
WORK STAKED BY: DATE:
INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY:

DESIGNED BY:
DRAWN BY: LBS
CHECKED BY: WM
DATE 11/30/2023

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

PUEBLO ALTO MILE HI GSI PILOT PROJECT

PLANTING PLAN

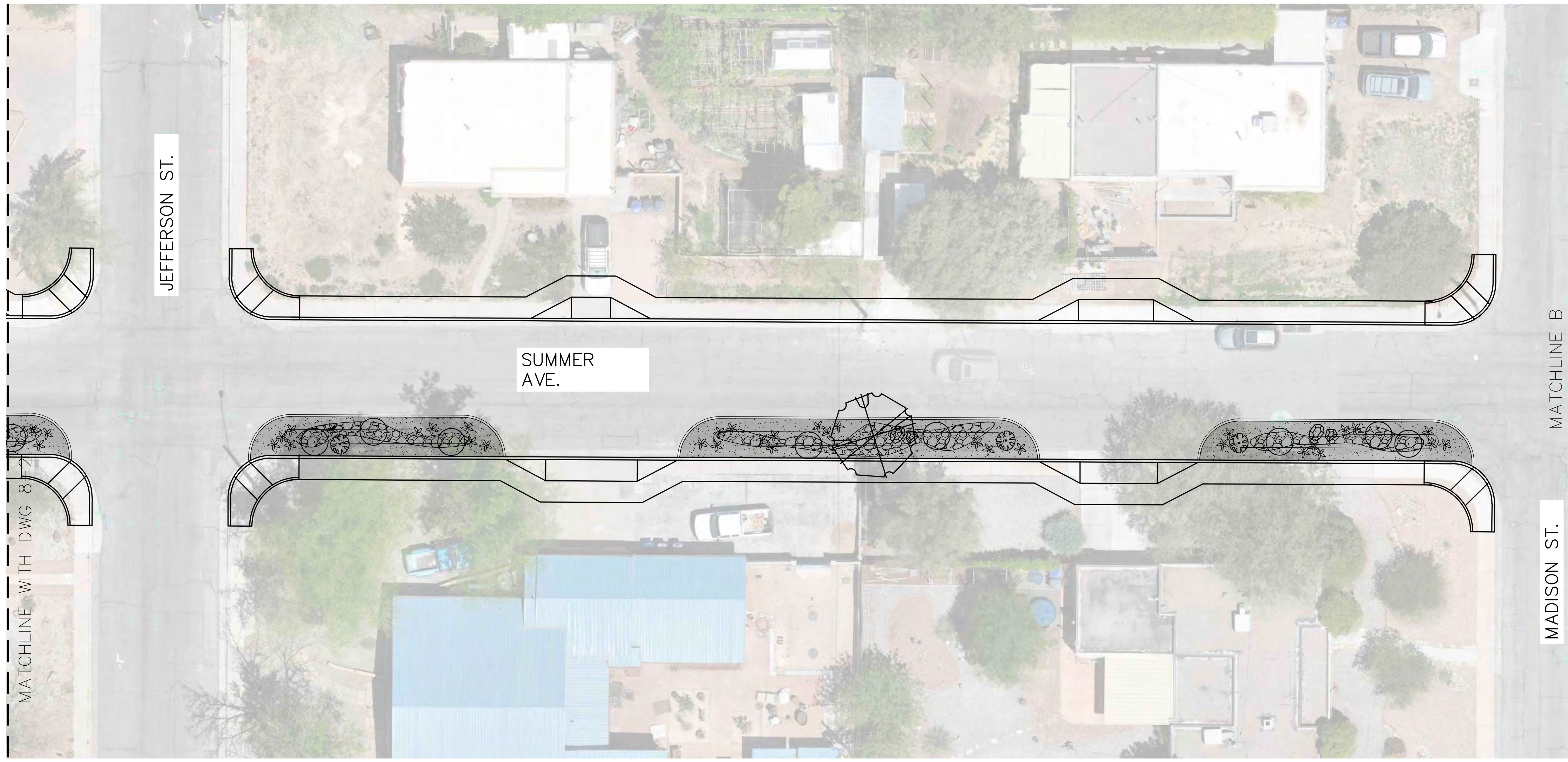
DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL

ZONE MAP NO. J-17/18

CITY PROJECT NO. 631594

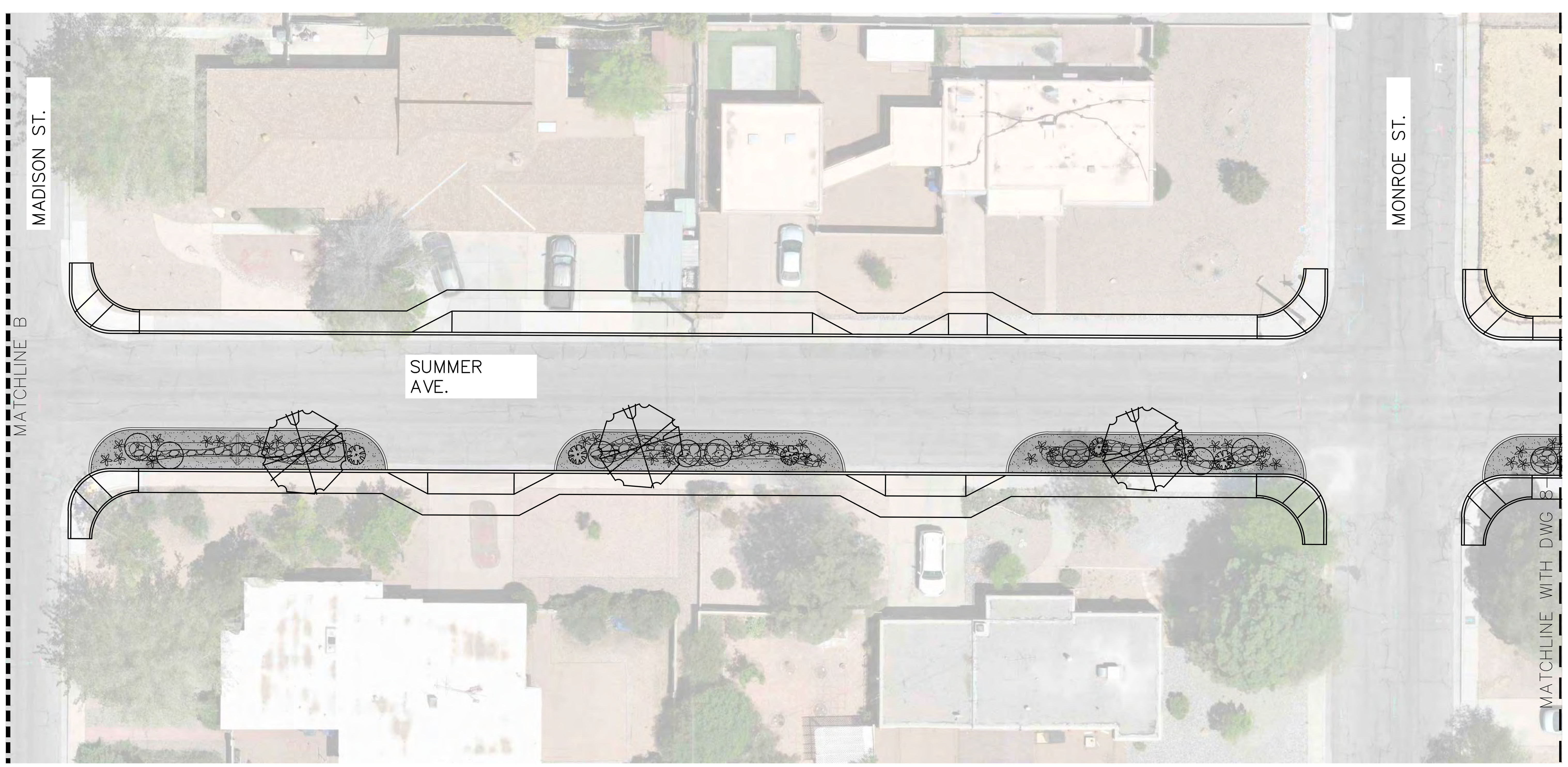
DWG NO. 8-2

SHEET NO. 28 OF 35



A PLANTING PLAN 8-3
SCALE: 1" = 20'-0"

0 20' 40'



B PLANTING PLAN 8-3
SCALE: 1" = 20'-0"

0 20' 40'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

COBBLE MULCH. SEE GENERAL NOTE C.

BOULDERS. SEE GENERAL NOTE F.

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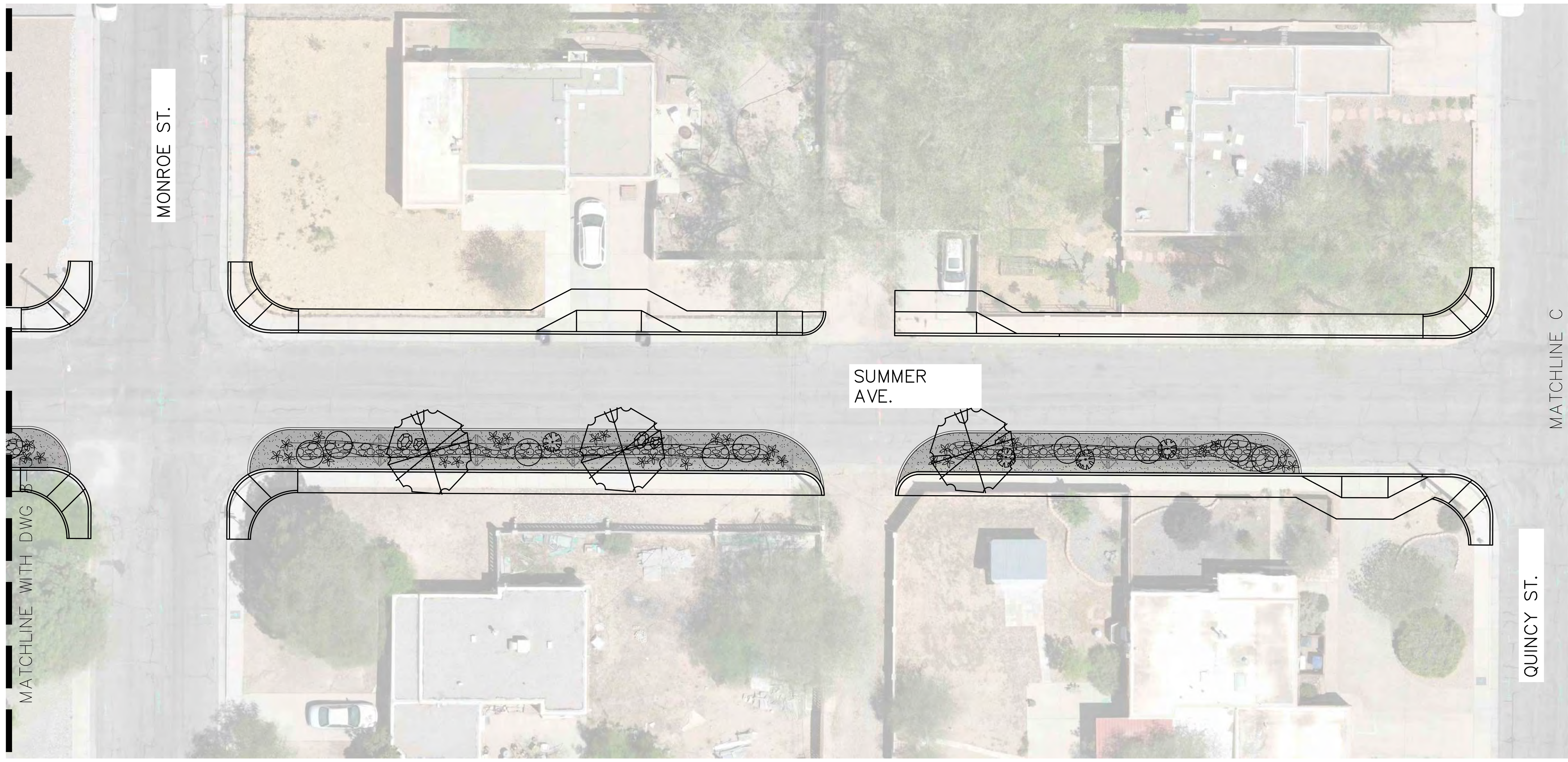
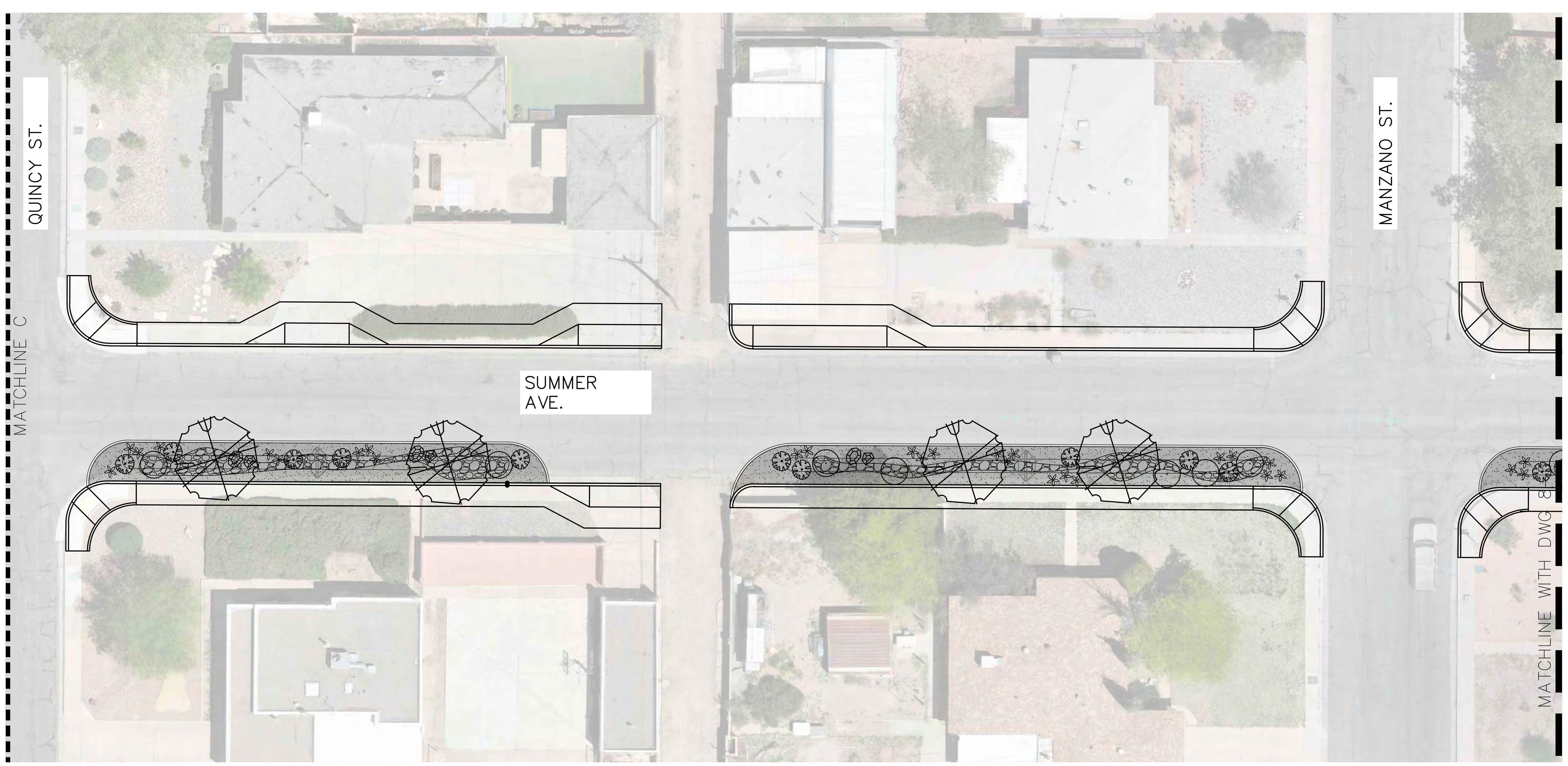
DWG NO. 8-3
SHEET NO. 29 OF 35



A PLANTING PLAN 8-4

SCALE: 1" = 20'-0"

0 20' 40'



B PLANTING PLAN 8-4

SCALE: 1" = 20'-0"

0 20' 40'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

- GRAVEL MULCH. SEE GENERAL NOTE B.
- COBBLE MULCH. SEE GENERAL NOTE C.
- BOULDERS. SEE GENERAL NOTE F.

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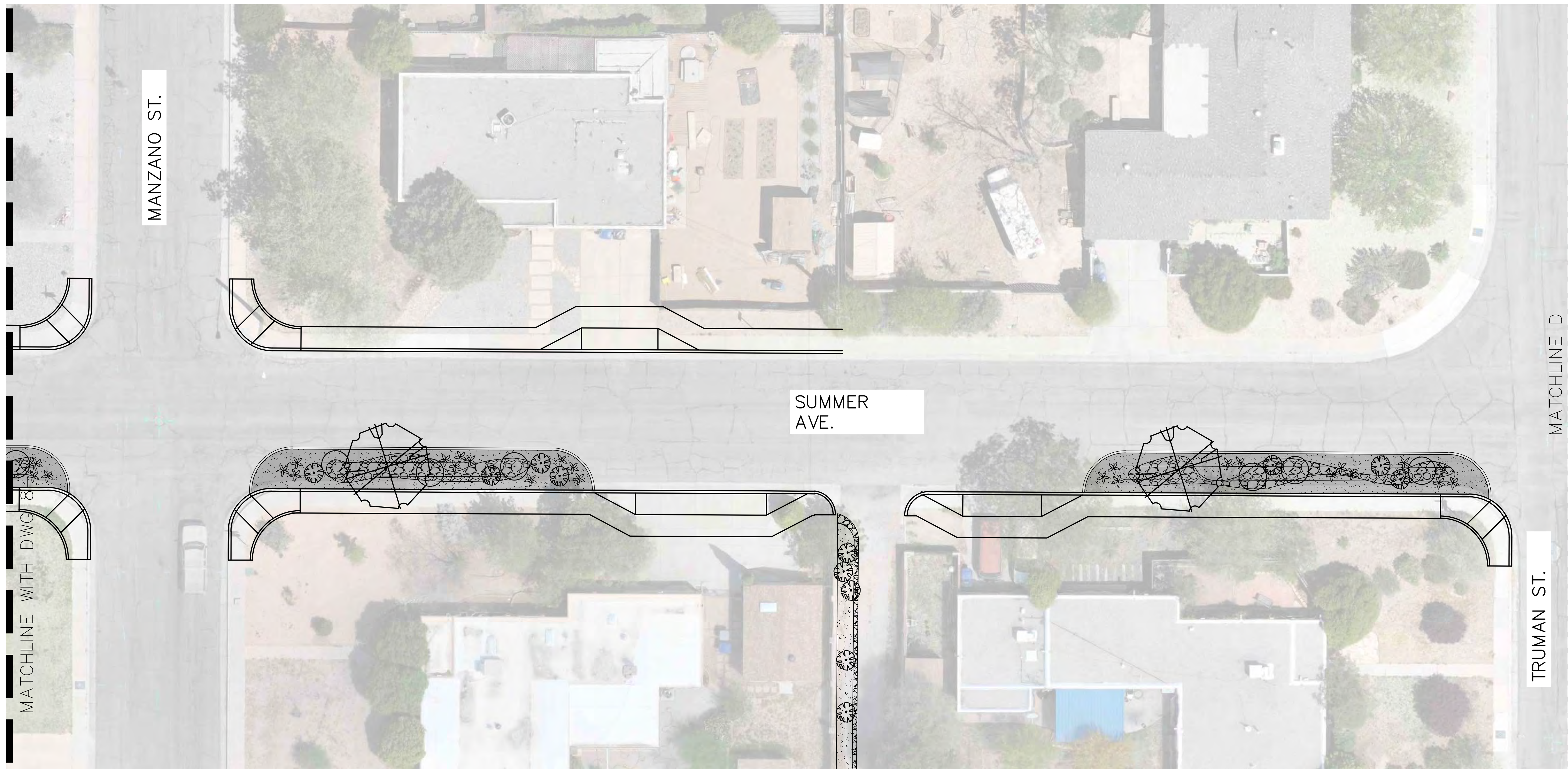
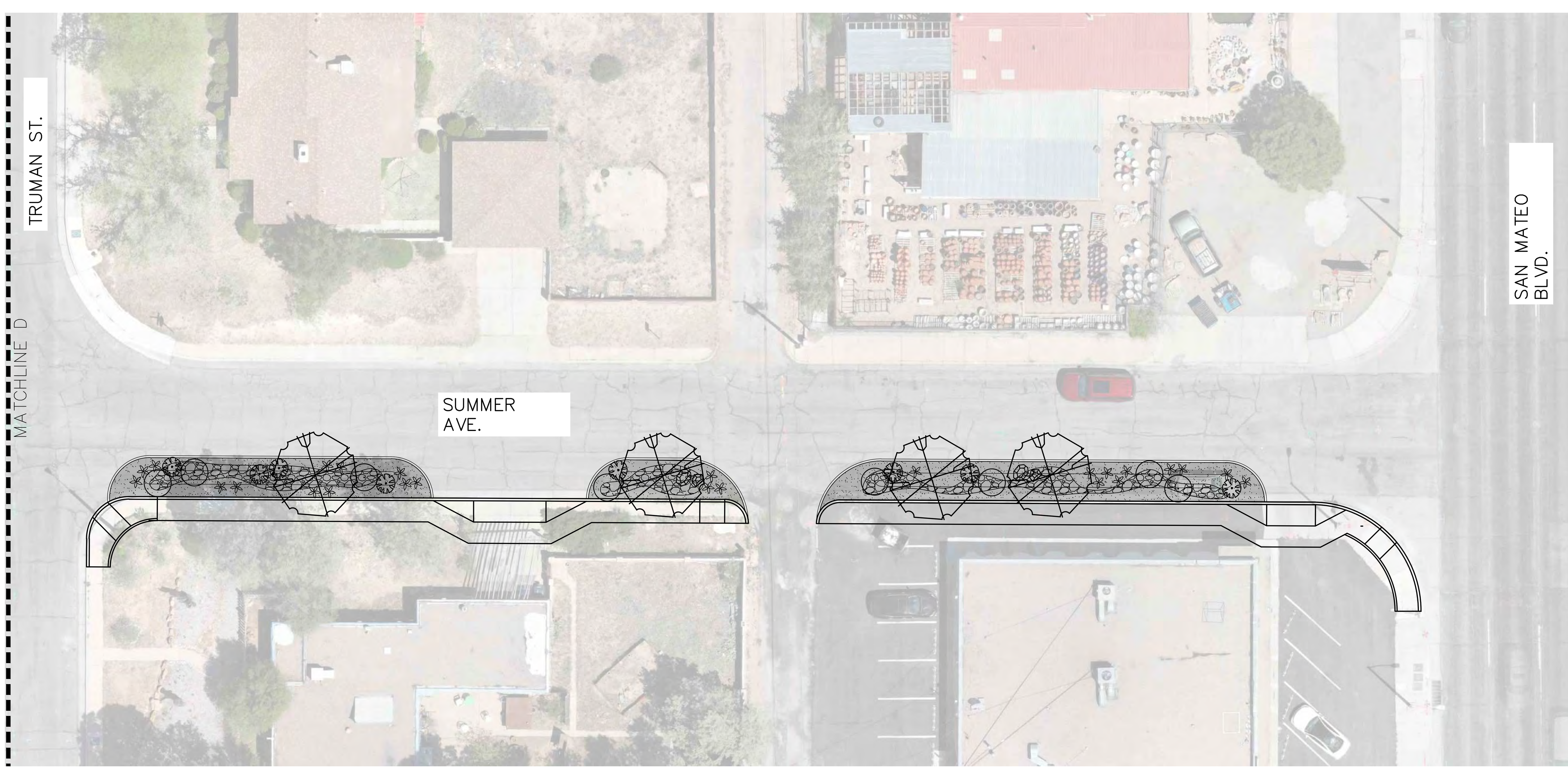
DWG NO. 8-4
SHEET NO. 30 OF 35



A — PLANTING PLAN 8-5
SCALE: 1" = 20'-0"



B — PLANTING PLAN 8-5
SCALE: 1" = 20'-0"

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

COBBLE MULCH. SEE GENERAL NOTE C.

BOULDERS. SEE GENERAL NOTE F.

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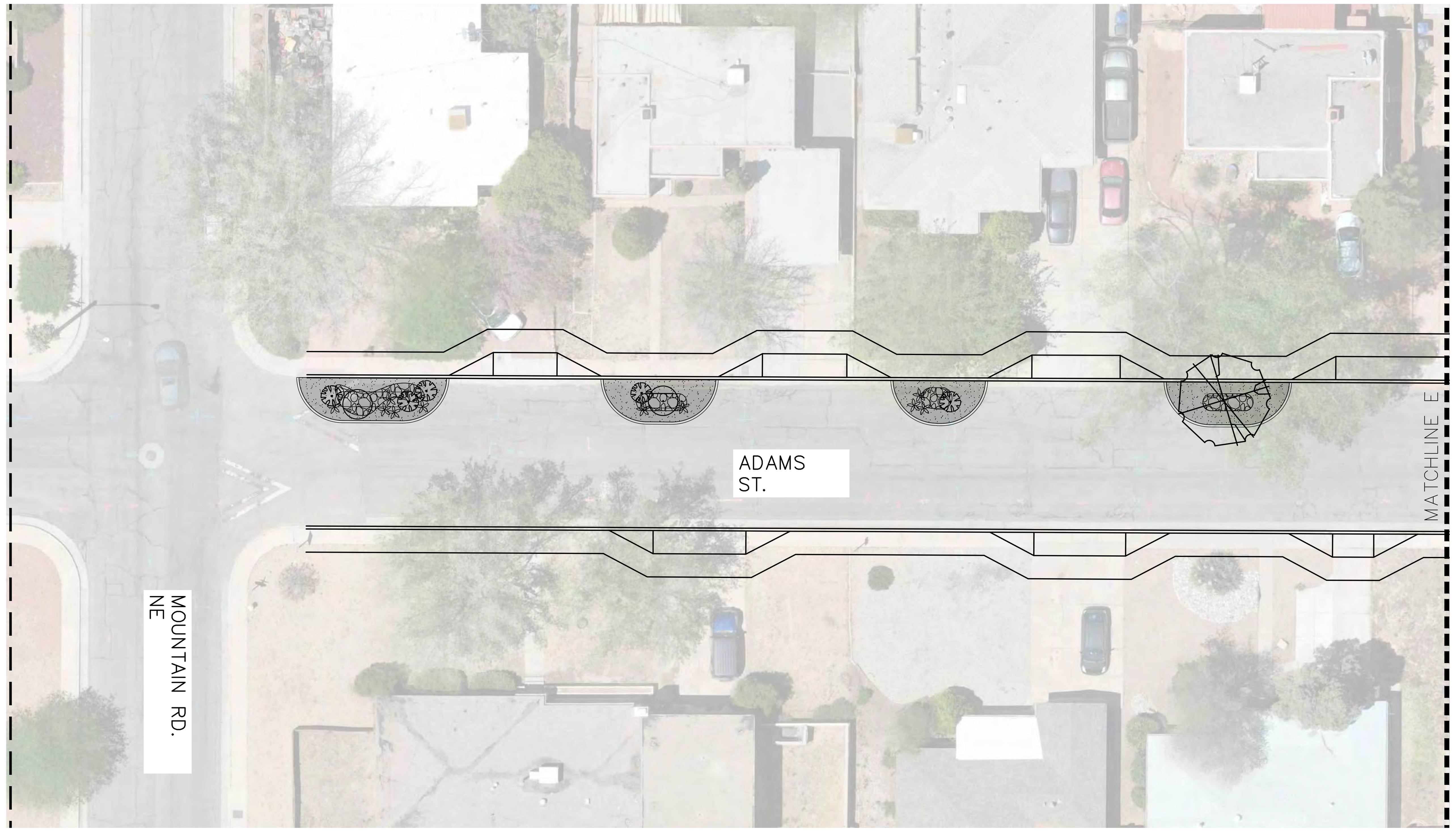
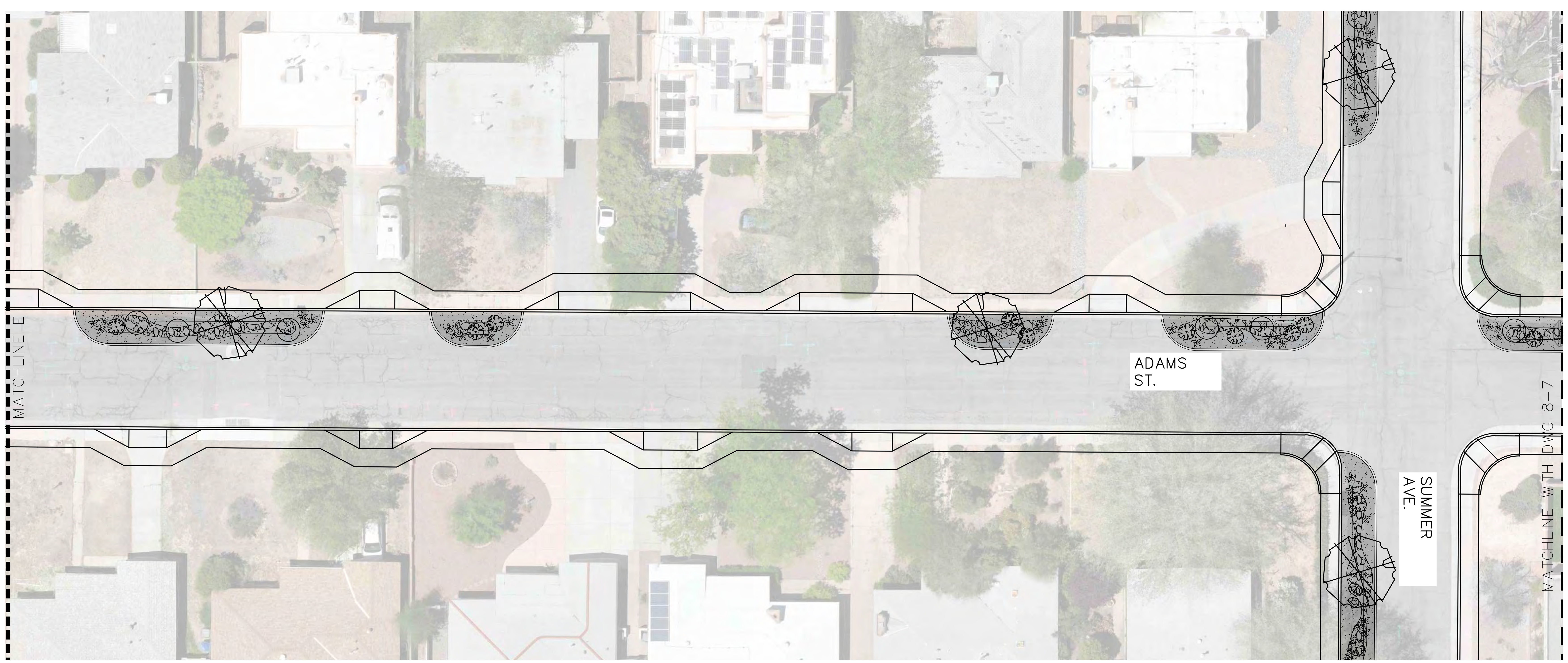
DWG NO. 8-5
SHEET NO. 31 OF 35



A PLANTING PLAN 8-6

SCALE: 1" = 20'-0"

0 20' 40'



B PLANTING PLAN 8-6

SCALE: 1" = 20'-0"

0 20' 40'

BHI JOB NO. 20230388

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

COBBLE MULCH. SEE GENERAL NOTE C.

BOULDERS. SEE GENERAL NOTE F.

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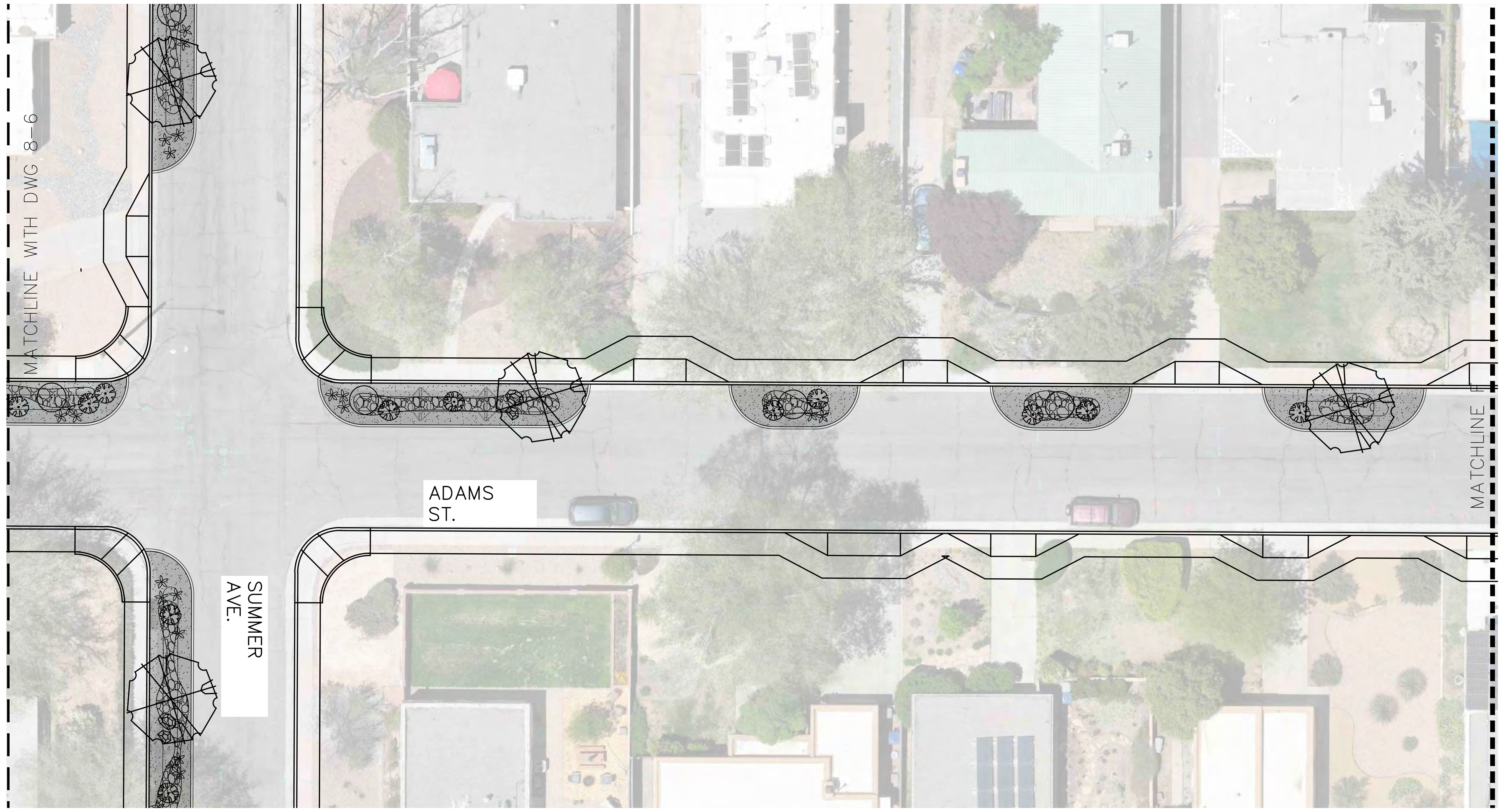
CITY PROJECT NO. 631594

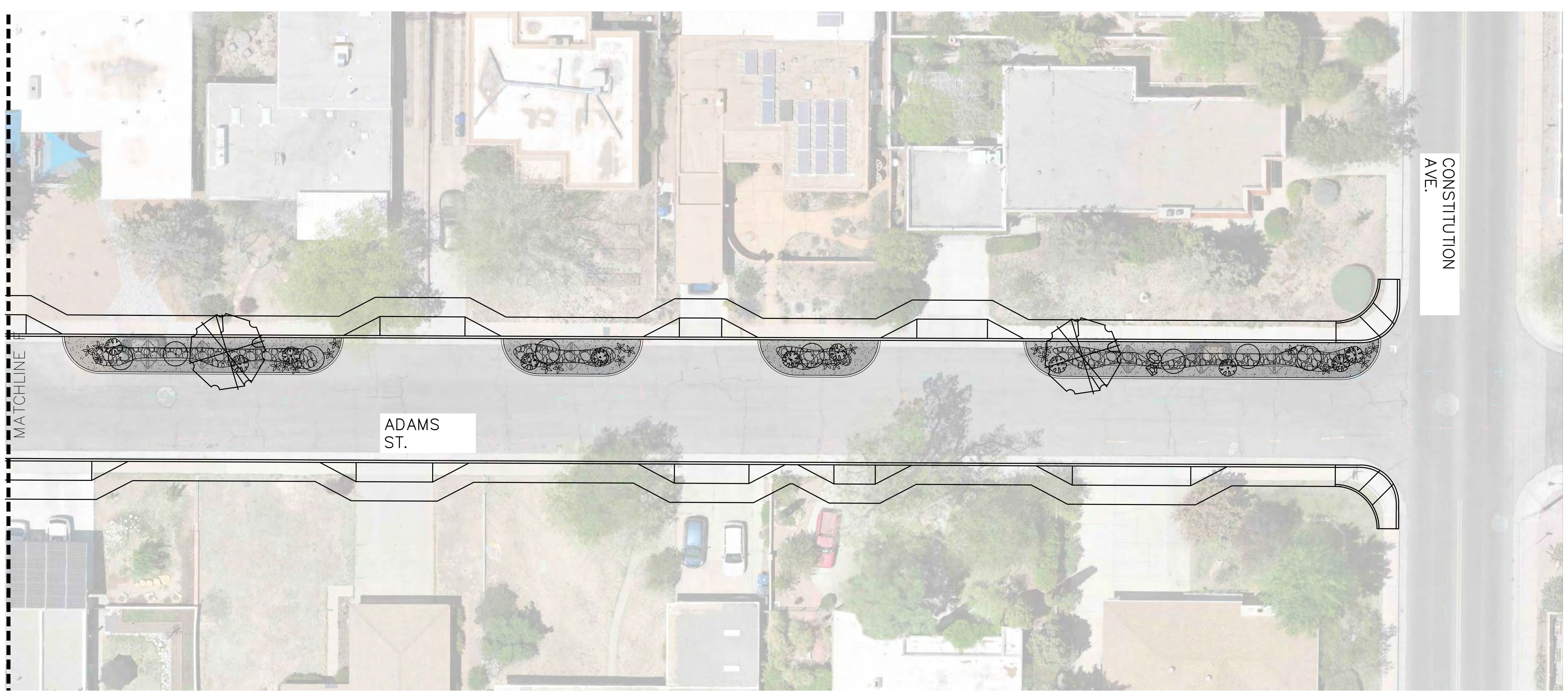
DWG NO. 8-6 | SHEET NO. 32 OF 35



A PLANTING PLAN 8-7

SCALE: 1" = 20'-0"

0 20' 40'



B PLANTING PLAN 8-7

SCALE: 1" = 20'-0"

0 20' 40'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

COBBLE MULCH. SEE GENERAL NOTE C.

BOULDERS. SEE GENERAL NOTE F.

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		CITY PROJECT NO. 631594
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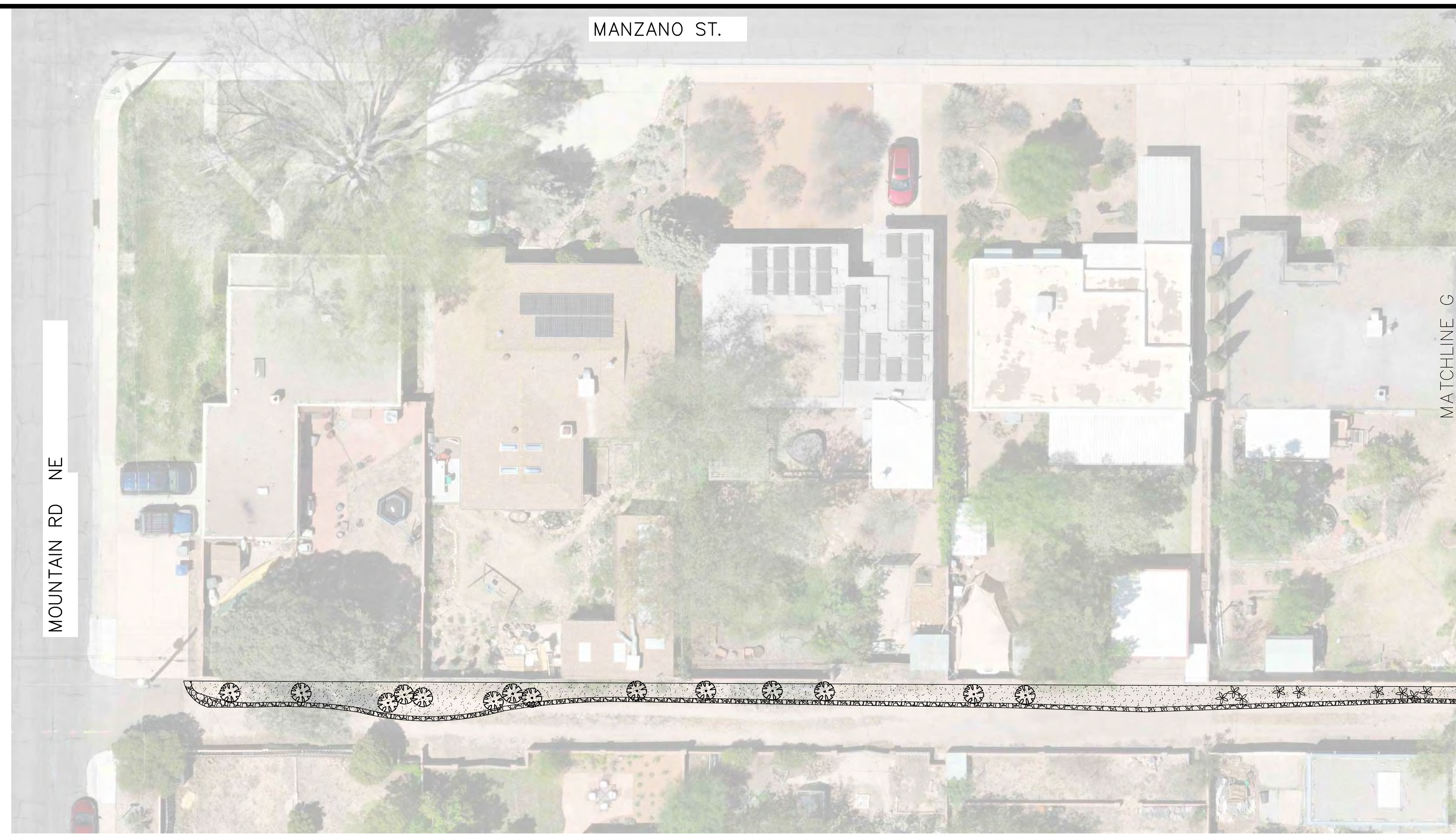

A PLANTING PLAN 8-8
SCALE: 1" = 20'-0"

0 20' 40'

B PLANTING PLAN 8-8
SCALE: 1" = 20'-0"

0 20' 40'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

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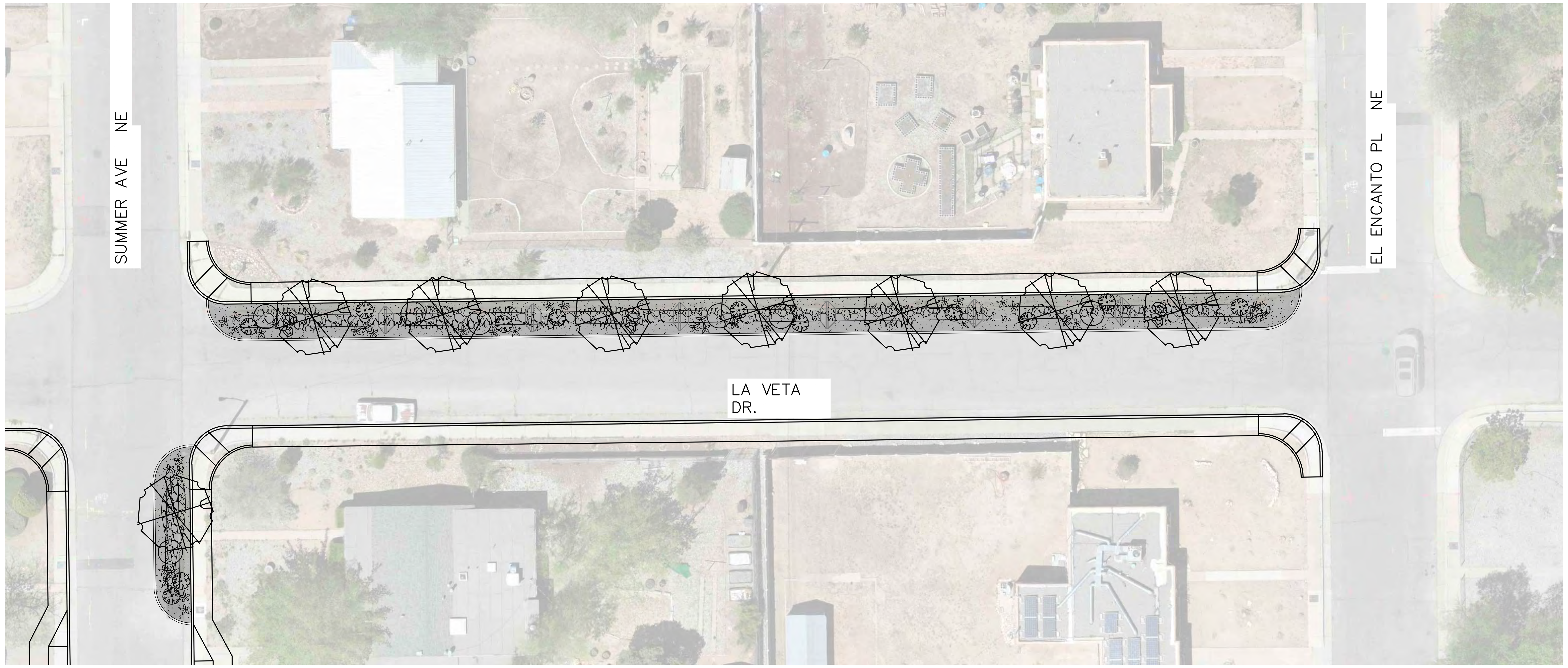
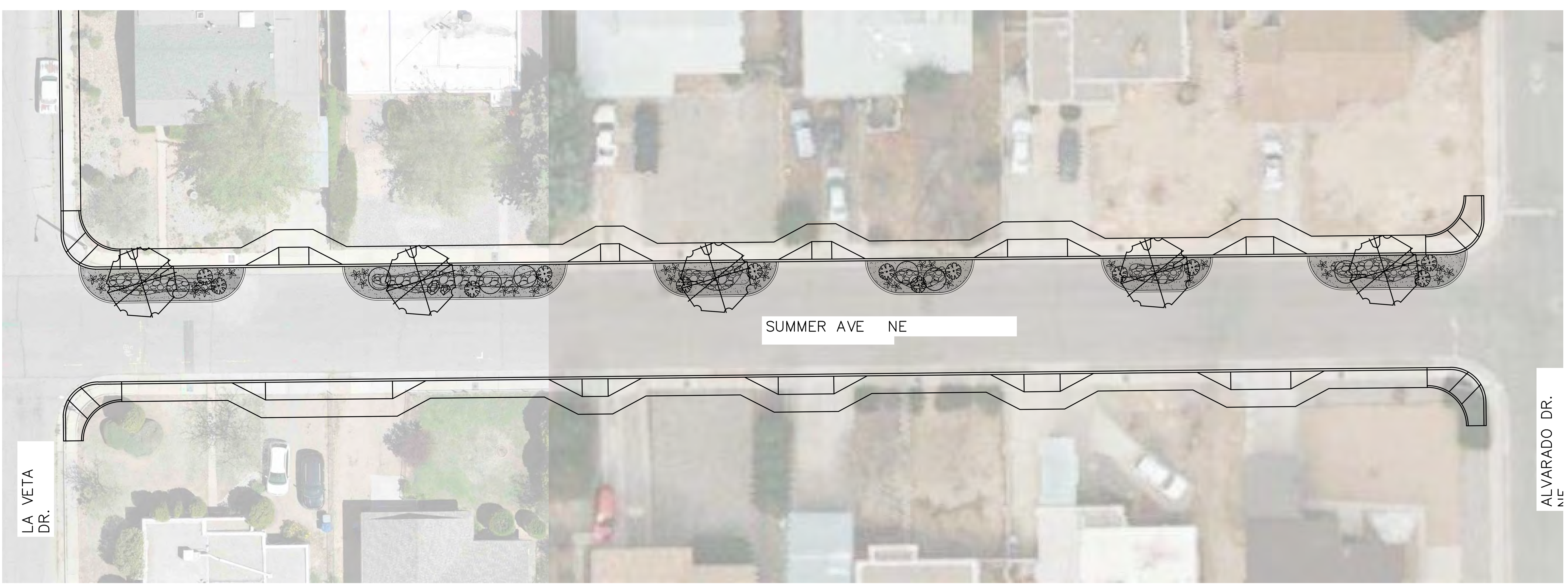
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. J-17/18
		CITY PROJECT NO. 631594
		DWG NO. 8-8 / SHEET NO. 34 OF 35



A PLANTING PLAN 8-9

SCALE: 1" = 20'-0"

0 20' 40'



B PLANTING PLAN 8-9

SCALE: 1" = 20'-0"

0 20' 40'

PLANT LEGEND

SYMBOL	COMMON NAME	BOTANICAL NAME
	TREES	
	DESERT WILLOW	CHILOPSIS LINEARIS
	SCREWBEAN MESQUITE	PROSOPIS PUBESCENS
	HONEY MESQUITE	PROSOPIS GLANDULOSA
	GAMBEL OAK	QUERCUS GAMBELII
	DESERT LIVE OAK	QUERCUS TURBINELLA
	SHRUBS	
	CREOSOTE BUSH	LARREA TRIDENTATA
	GREY SANTOLINA	SANTOLINA CHAMAECYPARISSUS
	FRINGED SAGE	ARTEMISIA FRIGIDA
	PERENNIALS	
	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES
	CHOCOLATE FLOWER	BERLANDIERA LYRATA
	DESERT ZINNIA	ZINNIA GRANDIFLORA
	WESTERN SANDCHERRY	PRUNUS BESSEYI 'PAWNEE BUTTES
	NARROWLEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
	DESERT MULE'S EAR	SCABRETHIA SCABRA
	DESERT ACCENTS & GRASSES	
	SHARKSKIN AGAVE	AGAVE SCABRA
	SOAPWEED YUCCA	YUCCA GLAUCA
	CLARET CUP CACTUS	ECHINOCERUS TRIGLOCHIDIATUS
	BROWN SPINED PRICKLY PEAR	
	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM

HATCH LEGEND

GRAVEL MULCH. SEE GENERAL NOTE B.

COBBLE MULCH. SEE GENERAL NOTE C.

BOULDERS. SEE GENERAL NOTE F.

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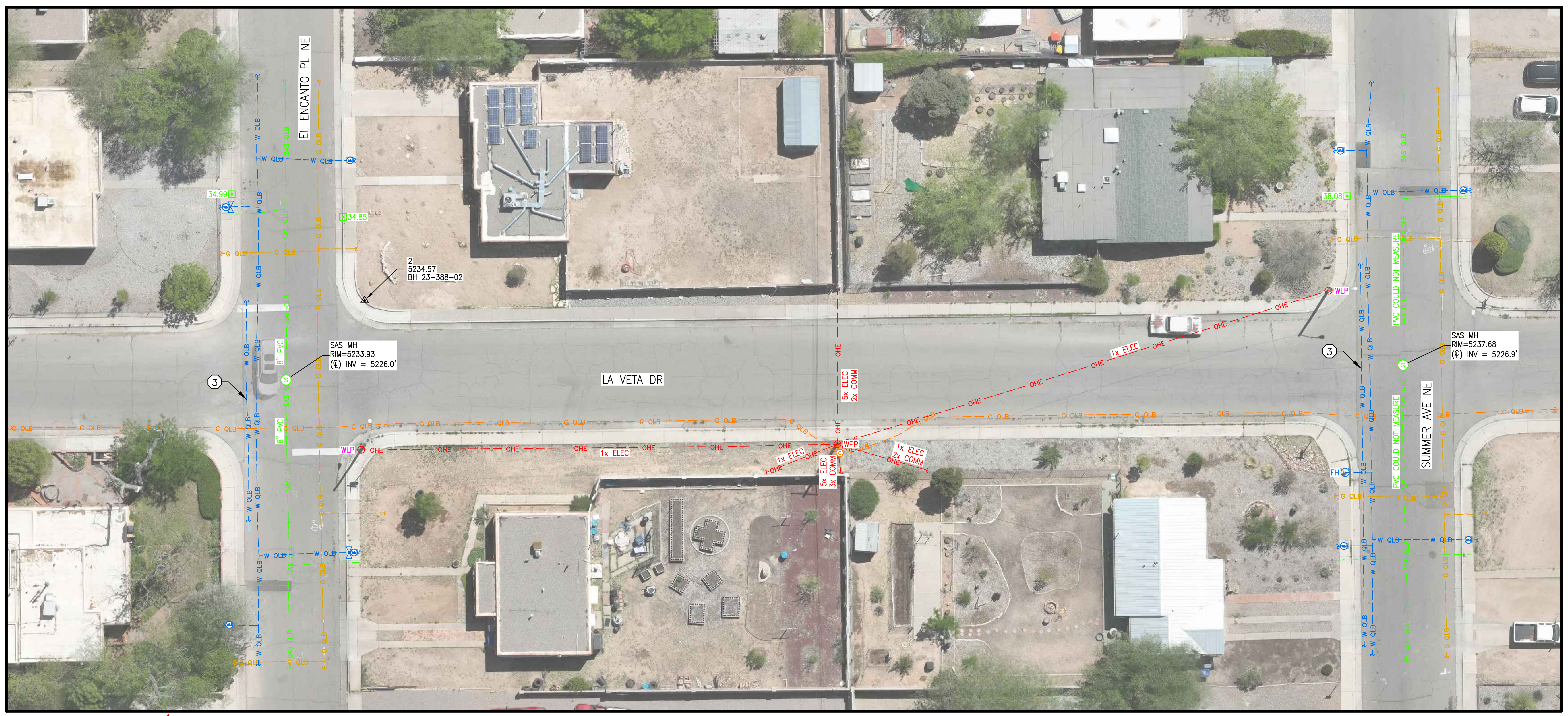
CITY PROJECT NO. 631594

DWG NO. 8-9

SHEET NO. 35 OF 35

SHEET 5A
SCALE 1"=20'



SHEET 5B
SCALE 1"=20'

SUBSURFACE UTILITY KEY NOTES

1. GAS METER WAS NOT ACCESSIBLE TO DETERMINE LOCATION OF SERVICE LATERAL. DESIGNATION IS INCOMPLETE.
2. LOCATION OF WATER LINE (PRESUMED TO BE PVC) COULD NOT BE DETERMINED AT THIS LOCATION WHERE SURFACE EVIDENCE WAS DISCOVERED. DESIGNATION IS INCOMPLETE.
3. WATER LINE PAINT MARKS BY OTHERS. WATER LINE DESIGNATED BY HMCG SOUTH OF PAINT MARKS.
4. BASE OF MANHOLE IS DIRT/CONCRETE. NO PIPELINES WERE OBSERVED.
5. STORM DRAIN DROP INLETS HAS BEEN REMOVED AND THE PIPELINE HAS BEEN CAPPED AT THIS POINT.
6. OBSERVED A SINGLE PIPELINE CONTINUING SOUTH FROM STORM DRAIN DROP INLET. PIPELINE WAS FULL OF SILT AND DEBRIS. DESIGNATION IS INCOMPLETE.

HIGH MESA Consulting Group
Engineers, Surveyors & Subsurface Utility Consultants
6010-B Midway Park Blvd. NE • Albuquerque, New Mexico 87109
Phone: 505.345.4250 • Fax: 505.345.4254 • www.highmesacg.com

SCALE: 1" = 20'

UTLITY SURVEY
PUEBLO ALTO GSI
ALBUQUERQUE, NM

SURVEYED BY	M.V.Z.
DRAWN BY	A.J.P.
APPROVED BY	C.G.C.

NO.	DATE	BY	REVISIONS

JOB NO.	2023.015.1
DATE	05-2023
SHEET	5 OF 5

File Name: P:\data\2023\2023.015.1\SUR\2023015_TOPO.dwg - SH5 Plot Date: 5/22/23 Plot Time: 11:26

APPENDIX E – COMMUNITY OUTREACH REPORT

PUEBLO ALTO / MILE HI GREEN STORMWATER INFRASTRUCTURE PILOT PROJECT: CONCEPTUAL DESIGN

COMMUNITY ENGAGEMENT REPORT

NOVEMBER 2023

PUEBLO ALTO / MILE HI GREEN STORMWATER INFRASTRUCTURE PILOT PROJECT: CONCEPTUAL DESIGN

COMMUNITY ENGAGEMENT REPORT

PREPARED FOR:

CITY OF ALBUQUERQUE

PREPARED BY:

Bohannan Huston   groundworkstudio

NOVEMBER 2023

GROUNDWORK STUDIO

ACKNOWLEDGMENTS

CABQ CITY COUNCIL & COUNCIL STAFF
Councilor Tammy Fiebelkorn, CABQ City Council
Justin Carmona, CABQ City Council
Tom Menicucci, CABQ City Council
Aziza Chavez, CABQ City Council

CABQ DEPARTMENT OF MUNICIPAL DEVELOPMENT STAFF
Shellie Eaton, CABQ DMD Engineering
Albert Palma, CABQ DMD Engineering
Paula Dodge-Kwan, CABQ DMD Engineering

OUTREACH COMMITTEE
Tina Valentine, Pueblo Alto Neighborhood Association
Tyler Richter, Pueblo Alto Neighborhood Association
Hope Nelson, Pueblo Alto Neighborhood Association
Cynthia Serna, Mile Hi Neighborhood Association
Joan Davis, Mile Hi Neighborhood Association
Jeffrey Holland, Mile Hi Resident
Greg Boyd, Pueblo Alto Resident
Jasen Christensen, Pueblo Alto Resident
Anne Christensen, Pueblo Alto Resident

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Pueblo Alto / Mile Hi
GSI Pilot Project
Walking Tour #1
Join us for our first walking tour!
We'll walk through the proposed Green
Stormwater Infrastructure Pilot Project
locations and conceptual designs!
WHEN & WHERE:
TUESDAY JUNE 27
6 PM @ LA VETA DR. NE & SUMMER AVE. NE
6:45 PM @ SUMMER AVE. NE & ADAMS ST. NE
Bohannan Huston
groundworkstudio
SLOW
DOWN
ALBUQUERQUE
SPEED ENFORCEMENT AREA
cabq.gov
GROUNDWORK STUDIO

OUTREACH SUMMARY

Meaningful community engagement is a critical component of this project, beginning with the initial Study Phase of the project and continuing through Conceptual Design. The consultant team utilized a framework consistent with successful neighborhood level engagement conducted during the Study Phase as well as other projects with the City of Albuquerque. This framework consists of seven outreach activities and tools:

- Outreach Committee
- Project website and social media
- Postcard mailers, flyers, and yard signs
- Neighborhood walking tours
- Digital surveys
- Community meeting
- “Frequently Asked Questions” answer sheets

Project conceptual designs were directly influenced by feedback received during the initial Study Phase and the Concept Design Phase. Community feedback will continue to be incorporated into the final design and implementation of the project.

OUTREACH COMMITTEE

During the initial Study Phase, an Outreach Committee was formed that included members of the Pueblo Alto and the Mile Hi Neighborhood Associations, interested neighbors, residents whose properties experience flooding, City of Albuquerque Council Services and Department of Municipal Development staff, and a representative from the Arid LID Coalition. The Outreach Committee reconvened for the Concept Design Phase, meeting monthly to advise on the best methods for engaging with the community.

PROJECT WEBSITE AND SOCIAL MEDIA

The project website offers an ongoing description of the project while retaining previous information to document the process. Early in the Study Phase, neighbors highlighted the importance of project transparency, and the website responds to that need, providing a reverse timeline of the project with the most recent events and materials available first. Website users then scroll backwards in time. The website also embeds an updated "Frequently Asked Questions" (FAQ) answer document, video recordings of community meetings, public presentations, display boards used on the walking tours, surveys and survey results, and project deliverables. The website was first published in October 2021 and has been consistently updated. Social media posts promoting project activities were posted on the City's accounts and emailed out to project and neighborhood association contact lists.

PROJECT WEBSITE SPLASH PAGE - GROUNDWORK STUDIO

POSTCARD MAILERS, FLYERS, AND YARD SIGNS

Outreach during the Study Phase proved that mailings announcing walking tours, meetings, and surveys are a successful way to reach the neighborhood and invite their participation. The team utilized a local vendor to print and mail postcards to all residences in Pueblo Alto, Mile Hi, Alvarado, and Twin Parks neighborhoods. The first mailing, during the Concept Design Phase, consisted of 2,232 postcards and the second mailing included additional outreach into the neighborhoods abutting Pueblo Alto and consisted of 2,619 postcards. The mailings help ensure that the neighborhood residents all receive a consistent message and an invitation to participate.

In addition to the mailings, the team provided approximately 1,000 flyers during the Conceptual Design phase for both the neighborhood associations to distribute door to door within the neighborhoods. The flyers were intended to reinforce the mailing message and to reach multifamily housing located in the neighborhood. The team also provided approximately 28 yard signs for community members to post in their yards to advertise the tours and community meeting.

PROJECT LAWN SIGNS - GROUNDWORK STUDIO

GROUNDWORK STUDIO

WALKING TOURS

The project team hosted two walking tours during the Concept Design Phase. Each walking tour was developed to provide information and generate community feedback in each of the neighborhoods. The first walking tour was centered on the specific sites chosen for the pilot areas. On the evening of June 27, 2023, we met at the intersection of La Veta Dr. NE and Summer Ave. NE in the Mile Hi neighborhood. The focus of this portion of the first tour was to show preliminary conceptual designs, answer questions, and hear feedback on community preferences. The second portion of the June 27th walking tour was at the intersection of Summer Ave. NE and Adams St. NE in the Pueblo Alto neighborhood. This portion focused on the conceptual designs for stormwater bumpouts along Adams St. NE and Summer Ave. NE, as well as underground detention in the alleyway between Truman St. NE and Manzano St. NE. The project team also assisted community members with the process of completing the digital survey. 45 people attended this walking tour.

The second walking tour was also held in two parts, one in each neighborhood, on the evening of August 15, 2023. Again, the focus area was on the specific proposed project areas, although this time the presentation began to concentrate on plant and material preferences, as well as concentrating on the co-benefits associated with Green Stormwater Infrastructure (GSI). Discussions encompassed parking, stormwater bumpout maintenance, sidewalk improvements for universal accessibility, protecting established trees, and potential plant palettes. Plant palettes were created to incorporate appropriate, climate resilient plant material as well as creating a unified planting framework to work from as the team moves into the next phase of the project. 48 people attended the second walking tour.

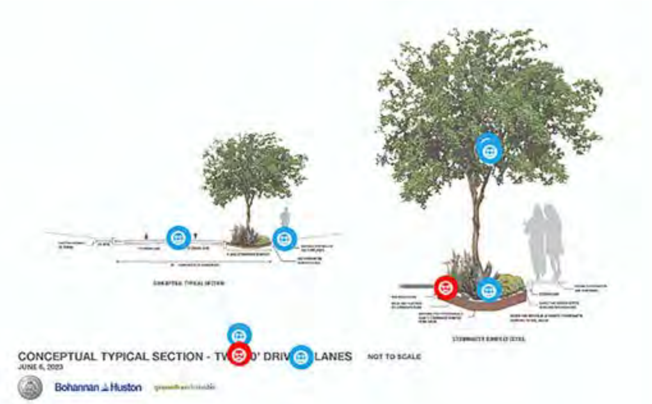
SURVEYS

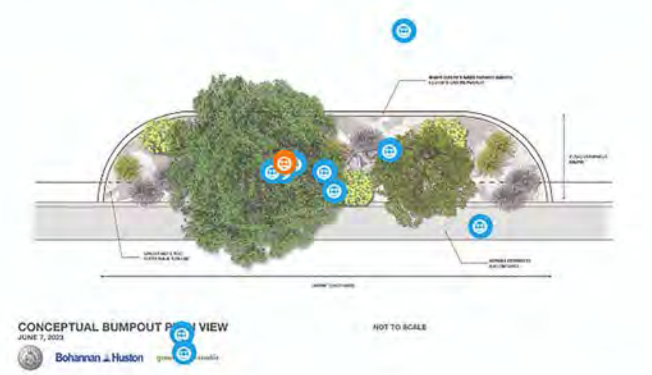
Two digital surveys were used to gather community feedback on the conceptual designs presented for the project.

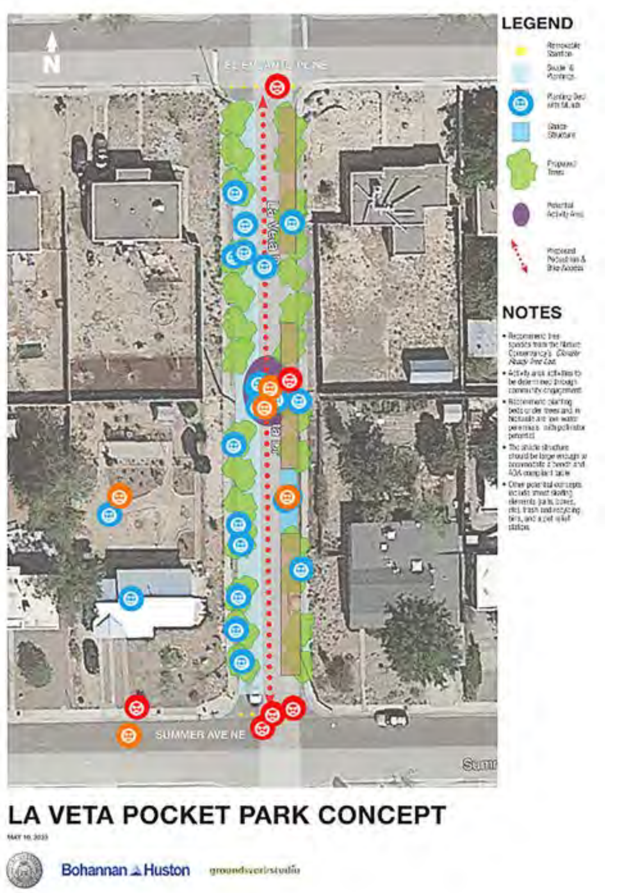
The first survey was generated in Maptionnaire, a digital survey platform that allows respondents to place specific comments and ranking preferences on images and maps.

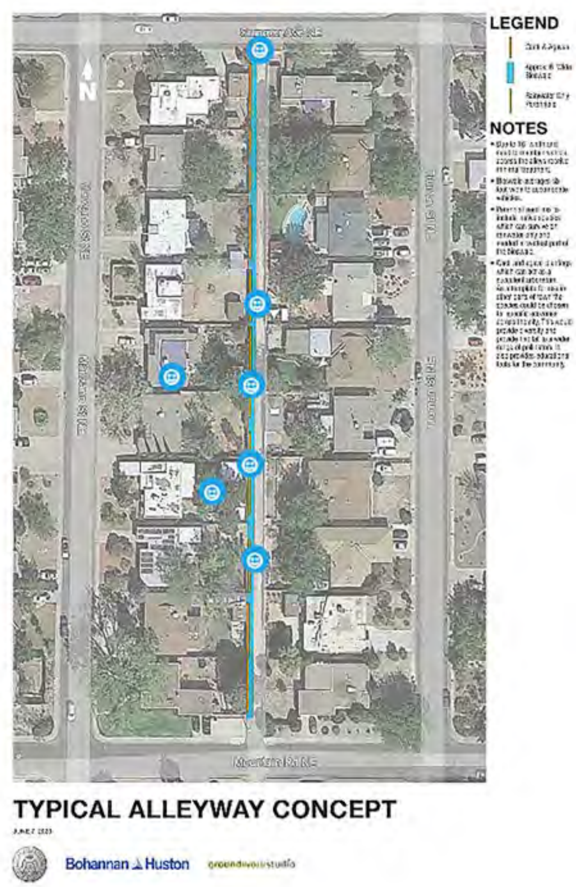
Responses in both neighborhoods voiced support, citing benefits such as more shade, beautification, traffic calming, and improved accessibility. Some concerns were expressed about reduction in parking spaces, responsibility for the cost of project implementation, maintenance, and closing off La Veta for a pocket park. Full community comments are included in the Appendices

Some community members found the survey map and image platform difficult to navigate, particularly if they were responding on a device with a smaller screen, such as a phone. Consequently, the project team shifted to another survey platform for the second survey.









SURVEY #1 MAPTIONNAIRE SCREENS WITH PREFERENCE VOTES

SURVEY #1 FACTS

53 RESPONDENTS

WOULD YOU PREFER A POCKET PARK ON LA VETA?

- 13 YES
- 5 MAYBE
- 3 NO
- 32 NO RESPONSE

WOULD YOU PREFER THE BUMPOUT ON LA VETA?

- 5 YES
- 4 MAYBE
- 7 NO
- 37 NO RESPONSE

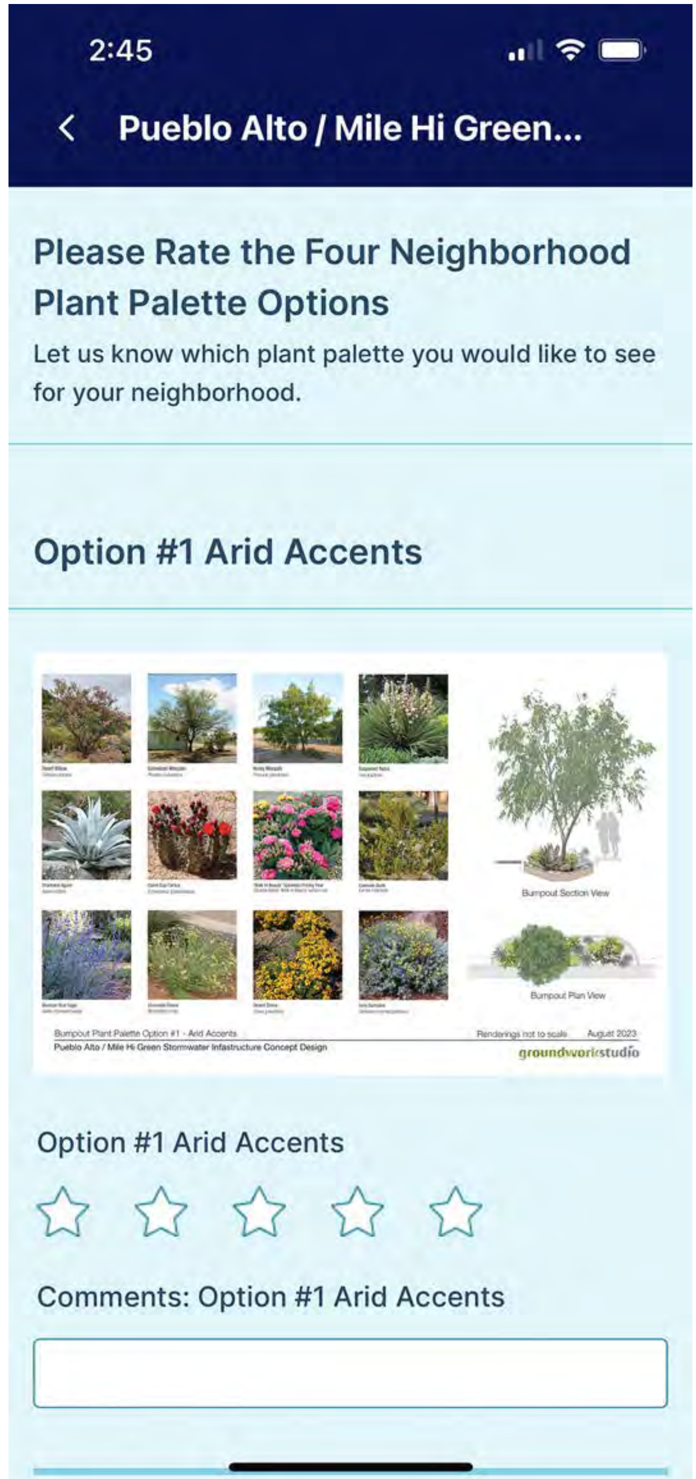
"I LIKE THE CONCEPT OF THE POCKET PARK FOR OUR NEIGHBORHOOD, AS IT WOULD ALLOW MORE TREES AND A PLEASANT PLACE TO GATHER, TO WALK, TO PAUSE. IT SEEMS RATHER INNOVATIVE. MAYBE OTHER COMMUNITIES WOULD WANT TO FOLLOW."

"I DONT LIVE ON LA VETA, BUT I IMAGINE THE RESIDENTS ARE AGAINST HAVING THEIR STREET CLOSED OFF. THE BUMPOUTS AND BIOSWALES ARE FINE..."

"I LIKE THIS AND IT SEEMS TO MAKE SENSE. WHAT'S NOT TO LIKE?"

The second survey was generated using JotForm, a more traditional digital survey platform. The survey included six questions and focused on ranking priorities within the co-benefits of GSI and their preference for plant palette. The plant palette rankings also allowed for participants to write in a comment if they chose to add more information than just the ranking. The survey asked respondents to identify their neighborhood, with an additional conditional question about the La Veta Pocket Park if the respondent lives in the Mile Hi neighborhood.

Generally, comments included preference for shade trees and some concern about the inclusion of cactus. Full community comments for survey #2 are also included in Appendix B.



SURVEY #2 SCREENS

SURVEY #2 FACTS

23 RESPONDENTS

- 19 PUEBLO ALTO NEIGHBORHOOD
- 3 MILE HI NEIGHBORHOOD
  - 2 BUMPOUT VOTES
  - 1 POCKET PARK VOTE
- 1 OTHER NEIGHBORHOOD

CO-BENEFIT PRIORITY RANKING SCORES

- 86 IMPROVED WATER QUALITY & WATER MANAGEMENT
- 83 REDUCED HEAT STRESS
- 81 REDUCED URBAN HEAT ISLAND EFFECT
- 79 INCREASED BIODIVERSITY
- 79 INCREASED AIR QUALITY & REDUCED NOISE POLLUTION
- 79 REDUCED GREENHOUSE GASSES
- 76 IMPROVED TRAFFIC CALMING & MULTIMODAL TRANSIT
- 72 IMPROVED COMMUNITY COHESION & MENTAL HEALTH

PLANT PALETTE RANKING SCORES

- 64 OAK ENVIRONMENTS
- 60 SHADE TREE: B
- 56 ARID ACCENTS
- 54 SHADE TREE: A

"I LOVE IT! THIS WOULD BE SO GREAT FOR NATIVE SPECIES. THE SLOWER GROWTH IS AN INVESTMENT."

"PLEASE NO MORE ELMS!! PLEASE NO."

"I DON'T LIKE CACTI WHERE PEOPLE CAN GET PRICKED."

"ALL GOOD CHOICES MOST ADAPTABLE TO LOW WATER OVER THE LONG TERM."

"I'D PREFER SHADE AND COLOR."

"THIS WILL HELP WITH HEAT, AND GREATLY BEAUTIFY THE NEIGHBORHOOD."

"PREFER TREES THAT OFFER BETTER SHADE."

"NO BUMP OUTS."

"GOOD SHADE TREES. CATMINT DOES WELL IN ABQ."

"NOT SURE WHAT ARE THE BEST LOW WATER OPTIONS."

"THE CHINESE PISTACH IS MY FAVORITE OF ALL."

"DOESNT SEEM AS PRETTY OR AS *SOUTHWEST.*"

"SEEMS LIKE THESE PLANTS WOULD NEED A LOT OF WATER TO THRIVE. SOUNDS NOT SO GREAT."

"I WOULD LOVE TO HAVE MORE VIBRANT COLORS."

"I WANT THE GSI PILOT PROJECT TO BE SPREAD OVER ADAMS AND JEFFERSON TO REDUCE THE IMPACT ON THE RESIDENTS OF ADAMS STREET."

COMMUNITY MEETING

The community meeting summarizing the outcomes from the Concept Design phase was held in person at the Jerry Cline Tennis Center on August 22 in the evening, with a zoom link to allow for virtual attendance. The presentation included a recap of the project process and outcomes to date, and provided a forum for questions and conversation surrounding the project. All questions asked both during the community meeting and after, via email and phone, were answered within the FAQ document posted on the website and emailed to the project contact list.

Many neighbors expressed excitement about the opportunity to participate in this important GSI pilot project, the first of its kind in Albuquerque. There was also support voiced for many of the projects co-benefits, including traffic calming, increased biodiversity, and improved walkability. Some concerns were raised regarding the impact of the project on flooding, effects of sidewalk improvements to yards and landscaping, and how construction might limit access for neighbors.

Nineteen participants signed into the community meeting in person and five participants joined the meeting virtually.

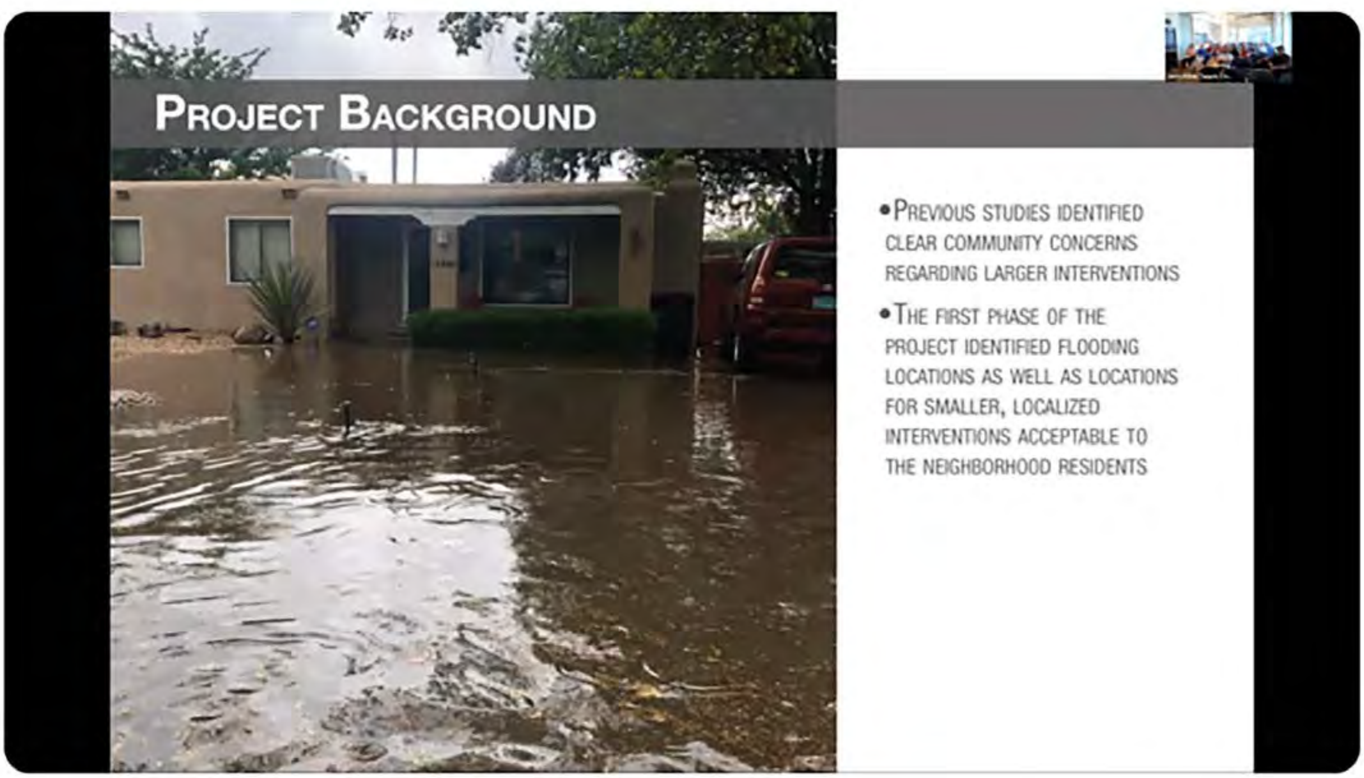
Walking Tour and Community Meeting Boards are shown in Appendix D.

FREQUENTLY ASKED QUESTIONS (FAQ)

The FAQ sheet was updated at the end of the Concept Design phase to provide consistent and accurate answers to questions and concerns. FAQs generally address questions and concerns in the following areas:

- Funding
- Pilot project scope and impact on flooding
- Stormwater bumpouts
- Underground detention
- Landscaping and irrigation
- Considerations for residents
- Maintenance
- Project schedule

Reference the Appendices for the complete FAQ answers.



COMMUNITY MEETING ZOOM IMAGE

CONCLUSION

The project team and Outreach Committee worked to increase interest in the project and incorporate community feedback provided through the tours, surveys, community meeting, and follow-up emails into conceptual designs. Ongoing community education and involvement is an integral factor for responsive design and successful implementation of the project. The City is committed to continuing to provide a high level of meaningful community engagement as the project moves forward. In the next phase of the project, it will be important to work with neighbors to increase awareness of the project, improve understanding of project scope, timeline and anticipated outcomes, and mitigate any potential impact on existing trees, neighborhood access, and safety.

APPENDICES

APPENDIX A: POSTCARD MAILERS, FLYERS, AND YARD SIGNS

Pueblo Alto / Mile Hi GSI Pilot Project Walking Tour #1

Join us for our first walking tour!
We'll walk through the proposed Green Stormwater Infrastructure Pilot Project locations and conceptual designs!

WHEN & WHERE:
TUESDAY JUNE 27
6 PM @ LA VETA DR. NE & SUMMER AVE. NE
6:45 PM @ SUMMER AVE. NE & ADAMS ST. NE

Bohannan Huston groundworkstudio

Contact Richard Perce: richard@groundworkstudionm.com

STORMWATER BUMPOUT DETAIL

To learn more about the project, scan the QR code

Pueblo Alto / Mile Hi Green Stormwater Infrastructure Pilot Project Walking Tour & Community Meeting

Join us for our second walking tour! We will be taking a deeper dive into the project components. Join us at the community meeting for a recap of our community efforts, learn more about the project details and find out what is next.

WALKING TOUR WHEN & WHERE:
TUESDAY AUGUST 15
6 PM @ LA VETA DR. NE & SUMMER AVE. NE
6:45 PM @ SUMMER AVE. NE & ADAMS ST. NE

COMMUNITY MEETING WHEN & WHERE:
TUESDAY AUGUST 22 - ***IN PERSON & HYBRID OPTIONS AVAILABLE***
5:30 PM JERRY CLINE TENNIS CENTER
ZOOM LINK: https://cabq.zoom.us/j/88072723243

Bohannan Huston groundworkstudio

Contact Richard Perce: richard@groundworkstudionm.com

APPENDIX B: SURVEY RESULTS

Respondent ID	Publication ID	Submitted	Submitted Time	Publication Consent	Participatory Consent	Can you explain what you liked about them?	Can you explain why you feel neutral about them?	Is there anything else that you would like to see in a pocket park located here?	Can you explain why you dislike them?	Would you prefer a Pocket Park?	Would you prefer a Pocket Park?	Would you prefer the bumpout on La Veta Dr.?	Would you prefer the bumpout on La Veta Dr.?	Please provide any comments you have on the ADA improvements.	Please feel free to add any additional comments here	Please feel free to add any additional comments here	Please feel free to add any additional comments here
						La-Veta-PP-Like_text-entry-1	La-Veta-PP-Neutral_text-entry-2	text-entry-1	La-Veta-PP-Dislike_text-entry-3	radio-button-poll-1: name	radio-button-poll-1: label en	radio-button-poll-2: name	radio-button-poll-2: label en	text-entry-20	text-entry-9	text-entry-5	text-entry-13
7g7ygn4pgz89	6nf23wgl4ua7	TRUE	2023-06-14 20:11:00	TRUE	TRUE												
8ym38tlc3y48	6nf23wgl4ua7	TRUE	2023-06-14 20:08:50	TRUE	TRUE	I like trees.	I don't know what a stantion is.		Shade is discriminatory toward melanoma.								
2t2ne8ouc9m9	6nf23wgl4ua7	TRUE	2023-06-14 20:06:51	TRUE	TRUE												
3wo39rpy8ev7	6nf23wgl4ua7	TRUE	2023-06-14 19:57:12	TRUE	TRUE												
3xh4fhu8m893	6nf23wgl4ua7	TRUE	2023-06-14 21:18:31	TRUE	TRUE												
748rw9ss4yj3	6nf23wgl4ua7	FALSE		TRUE	TRUE												
6ys4gi3ayu84	6nf23wgl4ua7	FALSE		TRUE	TRUE												
6y6iek7hf7oa	6nf23wgl4ua7	TRUE	2023-06-14 21:16:52	TRUE	TRUE												
9ep3ts9pnj24	6nf23wgl4ua7	TRUE	2023-06-14 22:10:46	TRUE	TRUE												
23u9udu3y7r9	3ts2mc8s2rg4	TRUE	2023-06-14 23:13:41	TRUE	TRUE												
2wg3z8v6k7i7	3ts2mc8s2rg4	TRUE	2023-06-26 22:42:09	TRUE	TRUE					option-identifier-ljd6yn94	Maybe						
4f28m34em7i8	2pn64b9n6xg8	TRUE	2023-06-26 23:04:38	TRUE	TRUE					option-identifier-ljd6r8gt	Yes	option-identifier-ljd71odw	No				
3g2waj6sba68	2pn64b9n6xg8	TRUE	2023-06-26 23:00:45	TRUE	TRUE					option-identifier-ljd6yn94	Maybe	option-identifier-ljd6ztlj	Yes				
6e6jf24yj9i3	2pn64b9n6xg8	FALSE		TRUE	TRUE					option-identifier-ljd6r8gt	Yes	option-identifier-ljd6ztlj	Yes				
4gx6lml6bsl7	2pn64b9n6xg8	TRUE	2023-06-27 05:31:58	TRUE	TRUE												
3ki7pgj933n9	2pn64b9n6xg8	TRUE	2023-06-27 20:43:27	TRUE	TRUE												
8uk4ts4hex37	2pn64b9n6xg8	TRUE	2023-06-27 15:27:40	TRUE	TRUE												
7wh4gww46wh 7	4tlp6wrs4yt9	TRUE	2023-06-27 19:26:13	TRUE	TRUE												
2ko9jfg6idg4	4tlp6wrs4yt9	FALSE		TRUE	TRUE												
3f29hdo4mki9	4tlp6wrs4yt9	TRUE	2023-06-27 21:44:38	TRUE	TRUE												
9jxu93jwj9y4	6pkn9xmd4uj6	FALSE		TRUE	TRUE												
4sn4brd46vl7	6pkn9xmd4uj6	TRUE	2023-06-28 03:22:14	TRUE	TRUE												
2z6ygz38dng2	6pkn9xmd4uj6	TRUE	2023-06-28 01:58:36	TRUE	TRUE					option-identifier-ljd6r8gt	Yes	option-identifier-ljd71odw	No	I support this and any improvements to mobility for all people		See comments from previous section	
36ru67iwz6n7	6pkn9xmd4uj6	FALSE		TRUE	TRUE			No		option-identifier-ljd6yn94	Maybe	option-identifier-ljd6ztlj	Yes				
76hry6a2fjm3	6pkn9xmd4uj6	TRUE	2023-06-28 02:07:57	TRUE	TRUE												
37rhi2sdu9w9	6pkn9xmd4uj6	TRUE	2023-06-28 03:35:06	TRUE	TRUE			I like the concept of the pocket park for our neighborhood, as it would allow more trees and a pleasant place to gather, to walk, to pause. It seems rather innovative. Maybe other communities would want to follow.		option-identifier-ljd6r8gt	Yes			These look like an asset to the community, not only for disabled, but also for anyone walking.			
3gp7nud2eed9	6pkn9xmd4uj6	TRUE	2023-06-28 04:11:36	TRUE	TRUE			Curved features. Met station.		option-identifier-ljd6r8gt	Yes			Newer more gradual driveways will be more heavily impacted. Can the homeowner elect (and cover the cost) to extend their driveway onto the old existing street as an alternative to losing front yard space?			
9xv3y2ajs7g6	6pkn9xmd4uj6	TRUE	2023-06-28 04:07:22	TRUE	TRUE									Better accessibility for all users			
43sf3if2b9i3	3vj3xig4ozg9	TRUE	2023-06-28 17:51:51	TRUE	TRUE										These bumpouts will improve the aesthetic of the neighborhood. They will slow traffic. They will primarily slow the movement of water and sequester water to reduce flooding in a large storm.		
4o8nvd7m7e84	3vj3xig4ozg9	TRUE	2023-06-28 18:53:04	TRUE	TRUE												
9aer3osb6ezi	3vj3xig4ozg9	FALSE		TRUE	TRUE												
2kml8yhn2bx4	3vj3xig4ozg9	TRUE	2023-06-28 20:44:01	TRUE	TRUE												
49yu44ppp63o	3vj3xig4ozg9	FALSE		TRUE	TRUE			While I do not live in the immediate neighborhood, I like this and it seems to make sense. What's not to like?									
99gvh2sf6rw7	3vj3xig4ozg9	TRUE	2023-06-28 23:17:51	TRUE	TRUE			What would the activity area look like? Cement, asphalt, brick, seating?		option-identifier-ljd6yn94	Maybe						
4hy8gw97gc49	3vj3xig4ozg9	TRUE	2023-06-28 23:15:22	TRUE	TRUE					option-identifier-ljd6r8gt	Yes	option-identifier-ljd71f8n	Maybe	It would be nice to have a wider place to walk and safer for running (less grade change and off the street)	Isn't the area of bumpouts related to the amount of runoff we want to reduce? Why are bumpouts covering every potential parking location?		
4lor7wdz8xl9	3vj3xig4ozg9	TRUE	2023-06-29 14:35:18	TRUE	TRUE			I'm not sure how to place points so I will comment instead. Since the city cannot address water runoff on a resident's property, such as gutters, water barrels, landscaping, etc., it looks like the bump outs and drainage underground are the best possible solution. I would not like for homeowners to have to pay for the sidewalk and driveway accommodations necessary for the bump outs. Can you explain what the charges will be for affected properties? Thank you, Barbara Wisoff 922 Adams NE						I haven't landscaped yet. When the plan is implemented, will I have to pay for the possible sidewalk and driveway work for the bump outs ?	I already commented on another page.		
4na9svu4fsf9	3vj3xig4ozg9	FALSE		TRUE	TRUE												

SURVEY #1 RESULTS

9wg8rlj9w4f3	3vj3xig4ozg9	TRUE	2023-07-02 17:42:09	TRUE	TRUE	Design and maintenance are the two most important parts of success for structures like these. Albuquerque is NOT good at either one. This plan must include unbiased research, not just "because I said so" statements, as to the effectiveness of detention ponds in neighborhoods. Mosquito monitoring must be part of this "project." Also, why are you beginning with the end of the flooding rather than the beginning? Marble presents a perfect place to Chanel the Fair Plaza runoff to the San Pedro storm drain and could eliminate the problem of flooding in the neighborhood on all levels, without tearing up our historic character in the process.	option-identifier-ljd6y2dw	No	option-identifier-ljd71odw	No	All sidewalks throughout the City are too narrow for functional use by a disabled person with an attendant. Someone has to walk in the gutter, no matter how the driveways will be modified. Unless you're going to widen all sidewalks to 6 feet, as they should be, all this disruption is irrelevant and off the point of defending the neighborhood against flooding. Rather than making a mosquito/detention pit with the water once/if the water arrives, the headwaters from Fair Plaza should be captured and redirected on Marble to the San Pedro storm drain. This would prevent flooding in our neighborhood in the first place. Given our global warming trends toward drought, the whole excessive project is in high question for validity and purpose other than being a money engine for Bohannan Houston. .			
99rdc3hs9wh4	3vj3xig4ozg9	TRUE	2023-06-30 19:03:47	TRUE	TRUE						ADA improvements are the law of the land and should be followed.			
7vy74kn4idk4	3vj3xig4ozg9	TRUE	2023-06-30 22:12:13	TRUE	TRUE									
7mzv4lij394a	3vj3xig4ozg9	TRUE	2023-07-01 01:21:10	TRUE	TRUE		option-identifier-ljd6y2dw	No	option-identifier-ljd6ztlj	Yes	It's good to modernize and be in compliance with standard practices.			
9klc9hju3284	3vj3xig4ozg9	TRUE	2023-07-01 15:09:19	TRUE	TRUE									
34dsm6ead8v6	3vj3xig4ozg9	TRUE	2023-07-02 21:58:20	TRUE	TRUE		option-identifier-ljd6r8gt	Yes	option-identifier-ljd71odw	No				
8p9r6kzt2cd8	3vj3xig4ozg9	TRUE	2023-07-03 02:52:10	TRUE	TRUE		option-identifier-ljd6r8gt	Yes	option-identifier-ljd71f8n	Maybe				The bump outs will be pretty. The alley seems very practical but expensive
7nx3z73wbn27	3vj3xig4ozg9	TRUE	2023-07-03 14:39:32	TRUE	TRUE		option-identifier-ljd6yn94	Maybe	option-identifier-ljd71f8n	Maybe	Happy to see this aspect is part of the plan. Our sidewalks have not always been user friendly, and I am in favor of a walkable neighborhood.			
7ya9ue4src89	3vj3xig4ozg9	FALSE		TRUE	TRUE									
87amw23gia94	3vj3xig4ozg9	TRUE	2023-07-08 13:58:23	TRUE	TRUE									
29n7z3fnk3v8	3vj3xig4ozg9	FALSE		TRUE	TRUE								I worry about the large storm drains on the south side of summer being replaced by bump outs. How does that work?	
2uo7c4r4m9ga	3vj3xig4ozg9	FALSE		TRUE	TRUE		option-identifier-ljd6r8gt	Yes	option-identifier-ljd71odw	No				
7vr46chg9tw7	3vj3xig4ozg9	TRUE	2023-07-08 19:25:51	TRUE	TRUE								I am thrilled with the concept and feel it will only enhance our neighborhood property values. Big plus is the Summer speedway will be basically disabled. I am a thumbs up in every aspect. I live on Summer and Monroe north side and will be happy to accept the curb and driveway improvements.	
2nn2oyt8zv2a	3vj3xig4ozg9	FALSE		TRUE	TRUE	I find this survey very confusing. I am unsure how to fill it out and make my voice heard. You considered survey monkey. Thanks, Paul								
98fzx969ond3	3vj3xig4ozg9	TRUE	2023-07-10 00:15:35	TRUE	TRUE									This is a tremendous waste of money when what we need is an overhaul of the drains in our neighborhood
87k7c7xm9ae3	3vj3xig4ozg9	TRUE	2023-07-08 20:19:04	TRUE	TRUE		option-identifier-ljd6r8gt	Yes						
77cb4lyx33k8	3vj3xig4ozg9	TRUE	2023-07-08 20:51:43	TRUE	TRUE		option-identifier-ljd6r8gt	Yes	option-identifier-ljd71odw	No				
4pc2pl9rof89	3vj3xig4ozg9	FALSE		TRUE	TRUE									
9s47viv9uss9	3vj3xig4ozg9	TRUE	2023-07-09 01:30:27	TRUE	TRUE		option-identifier-ljd6r8gt	Yes	option-identifier-ljd71odw	No	I am not in support of widening sidewalks			
9cm32j9uel27	3vj3xig4ozg9	TRUE	2023-07-09 20:34:05	TRUE	TRUE									
3fb74g6cd6is	3vj3xig4ozg9	TRUE	2023-07-09 21:55:53	TRUE	TRUE									
9ae6gef9whz8	3vj3xig4ozg9	FALSE		TRUE	TRUE	A place where								
3ie9pnj4c3d4	3vj3xig4ozg9	FALSE		TRUE	TRUE									
7nw42evm3hd4	3vj3xig4ozg9	FALSE		TRUE	TRUE						ADA improvements very important!			
6il2k6sle3p8	3vj3xig4ozg9	TRUE	2023-07-10 16:00:31	TRUE	TRUE	A dog watering fountain!	option-identifier-ljd6r8gt	Yes	option-identifier-ljd71f8n	Maybe	I love it!			
79v8w9nxp6n8	3vj3xig4ozg9	TRUE	2023-07-10 16:24:43	TRUE	TRUE							I like all the bump outs - placements and plantings	I like all of the plan for Summer as you have it.	
4pl8neo36kg6	3vj3xig4ozg9	TRUE	2023-07-10 20:49:37	TRUE	TRUE									
37bh99jp7983	3vj3xig4ozg9	TRUE	2023-07-10 21:23:48	TRUE	TRUE	I feel that a pocket park may not be the best idea for the La Veta location. I did attend the June 27th walking tour at La Veta and Summer. However, I got there 6 minutes late. Did the various speakers address costs and the pros and cons of the Pocket Park versus the Bump-out option? What is the specific difference - in terms of rapid water collection efficiency and storage capacity - of the two design concepts? How does a bioswale complement or enhance the capabilities of the Pocket Park? Why is a bioswale not part of a Bumpout? Finally, does a Pocket Park attract more homeless people to hang out in them and/or sleep in them? Will it encourage them to do so and leave their trash, personal waste, discarded clothing, etc? At this time, my preference is for Bump-outs in both locations. I live on Monroe Street and have not								

4b83yb8p4p28	3vj3xig4ozg9	TRUE	2023-07-18 17:09:04	TRUE	TRUE	i dont live on la veta, but i imagine the residents are against having their street closed off. the bumpouts and bioswales are fine...	option-identifier-ljd6y2dw	No	option-identifier-ljd6ztlj	Yes	folks, i'm not too concerned with the aesthetics. i just want it to alleviate the flooding	looks good to me

Submission Date	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Increased Biodiversity & Habitat creation		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Increased Air Quality & Reduced Noise Pollution		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Reduced Heat Stress		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Reduced Greenhouse Gasses		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Reduced Urban Heat Island Effect		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Improved Water Quality & Water Management		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Improved Community Cohesion & Mental Health		Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Improved Traffic Calming & Multimodal Transit		The Most Important Co-Benefit for Me is:	Option #1 Arid Accents	Comments: Option #1 Arid Accents
Sep 14, 2023	Important	3	More Important	4	More Important	4	More Important	4	More Important	4	Very Important	5	Important	3	Not As Important	2	Improved water quality and management	1	
Sep 9, 2023	More Important	4	More Important	4	More Important	4	More Important	4	More Important	4	More Important	4	Not As Important	2	More Important	4	Making neighborhood look nice	5	
Sep 7, 2023	More Important	4	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Biodiversity	4	
Sep 4, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	These are all such important issues! What else could I say?	4	I like it.
Sep 2, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Reduced urban heat	4	
Aug 28, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Improved community cohesion and mental health	4	
Aug 28, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Improved water quality and management	5	
Aug 27, 2023	Least Important	1	Least Important	1													Opposed to Pueblo Alto GSI		
Aug 27, 2023	Very Important	5	Very Important	5	Not As Important	2	Important	3	Not As Important	2	Very Important	5	Not As Important	2	Very Important	5	Traffic calming	1	
Aug 26, 2023	Important	3															You assume that the trees you destroy in the construction phase are less desirable than the ones you will plant and a lot of other assumptions are buried in this question		
Aug 24, 2023	Least Important	1	Least Important	1	Very Important	5	Least Important	1	Very Important	5	Not As Important	2	Not As Important	2	Least Important	1	Maintaining the integrity and value of our homes and our rights to a safe and peaceful environment without the incursion of unwanted, dangerous, and outrageously useless and expensive disruption of our neighborhood.		none
Aug 24, 2023			Important	3	Not As Important	2	More Important	4			Very Important	5	Least Important	1			civic responsibility via helping to solve the stormwater flooding problem	3	I don't like cacti where people can get pricked.
Aug 23, 2023	Least Important	1	Least Important	1	Least Important	1	Least Important	1	Least Important	1	Least Important	1	Least Important	1	Least Important	1	Shifting the project to Madison or Jefferson to capture inflows earlier before ponding areas.		
Aug 23, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Reduce heat stress		Image won't load
Aug 22, 2023	Important	3	Not As Important	2	Not As Important	2	Not As Important	2	Not As Important	2	Important	3	Not As Important	2	Very Important	5	Very doubtful, any financial consequences ?	5	
Aug 22, 2023	Very Important	5	More Important	4	Very Important	5	Very Important	5	Very Important	5	Very Important	5	More Important	4	More Important	4	reduced GHG	5	
Aug 21, 2023	Important	3	More Important	4	Very Important	5	Important	3	Very Important	5	Very Important	5	More Important	4	Very Important	5	reduced heat impact - stressing the effect on public health	2	
Aug 21, 2023																	None of these are proven.		Biased question sugar coating the project.
Aug 17, 2023	More Important	4	More Important	4	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	More Important	4	Reduced heat stress	1	Prefer not to have cactus
Aug 17, 2023	More Important	4	Important	3	Very Important	5	More Important	4	Very Important	5	Important	3	Important	3	Not As Important	2	Reduced heat stress	1	Prefer trees that offer better shade.
Aug 16, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Traffic calming	5	All good choices most adaptable to low water over the long term
Aug 16, 2023	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	Very Important	5	WTer quality & mgmt	5	
Aug 15, 2023	Important	3	Important	3	Important	3	Important	3	Important	3	Important	3	Important	3	Important	3	Community cohesion and mental health.	1	I'd prefer shade and color

Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Increased Biodiversity & Habitat creation	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Increased Air Quality & Reduced Noise Pollution	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Reduced Heat Stress	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Reduced Greenhouse Gasses	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Reduced Urban Heat Island Effect	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Improved Water Quality & Water Management	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Improved Community Cohesion & Mental Health	Please Rank Your Interest in the Co-Benefits of Green Stormwater Infrastructure >> Improved Traffic Calming & Multimodal Transit	Option #1 Arid Accents
79	79	83	79	81	86	72	76	56

SURVEY #2 RESULTS

Option #2 Oak Environment	Comments: Option #2 Oak Environment	Option #3 Shade Tree A	Comments: Option #3 Shade Tree A	Option #4 Shade Tree B	Comments: Option #4 Shade Tree B	The Option I Want in My Neighborhood is:	I live in the following neighborhood	Which option would you prefer for La Veta Dr. NE?
4		2		5		Option #4	Pueblo Alto	
5		1	my neighbor pointed out this involves Chinese elms. No more! there are too many already!!	2	Doesnt seem as pretty or as "southwest"	Option #2 Oak Environment	Pueblo Alto	
3		4		5	The chinese pistach is my favorite of all	I would love to have more vibrant colors	Mile Hi	Pocket Park
5	I love it! This would be so great for native species. The slower growth is an investment.	1	Please no more elms!! Please no.	2	Seems like these plants would need a lot of water to thrive. Sounds not so great.	Option 2. The oaks!!!	Pueblo Alto	
3		5		3		Option #3	Pueblo Alto	
3		4		5		#4	Pueblo Alto	
5		5		5		Oak	Pueblo Alto	
						Can't read screen	Pueblo Alto	
5		1		5		Option 4	Mile Hi	Bumpout
						I want the GSI Pilot Project to be spread over Adams and Jefferson to reduce the impact on the residents of Adams Street	Pueblo Alto	
	none		none		none	none	Pueblo Alto	
4	Not sure what are the best low water options.	5		5	I don't know enough to choose the best plantings.	Not sure at this point.	Pueblo Alto	
5	Should avoid obstructed sight lines.					Oak	Pueblo Alto	
	Image won't load		Image won't load		Image won't load	Fastest growing dense shade	Pueblo Alto	
						No bump outs	Pueblo Alto	
5		5		5		they are all beautiful!	Pueblo Alto	
3		5		4		3	Pueblo Alto	
						I want more facts and questions answered. This survey is presumptuous.	Pueblo Alto	
3	I can't see the names of the trees or plants (print is too small)	5	I can't see the names of the trees or plants but recognize some of the plants	3	I can't see the names of the trees or plants (print is too small)	Option #3 Shade Tree A	Pueblo Alto	
2	These trees tend to be more shrubs than shade trees.	2		4	Good shade trees. Catmint does well in ABQ.	Option #4	Pueblo Alto	
5	second on my list					low allergens, plants that can compete with the Bermuda grass, plants shrubs and trees with low water requirements that are not spiny, blues yellows and whites no reds	Mile Hi	Bumpout
2		4		2		1	Neither	
2		5	This will help with heat, and greatly beautify the neighborhood.	5		A	Pueblo Alto	

Option #2 Oak Environment	Option #3 Shade Tree A	Option #4 Shade Tree B
64	54	60

APPENDIX C: FREQUENTLY ASKED QUESTIONS

Pueblo Alto / Mile Hi GSI Pilot Project Conceptual Design FAQ’s

QUESTIONS ABOUT FUNDING

1. What is the estimated cost for the proposed project?

   Current (concept-level) project cost estimate for the Pueblo Alto/Mile Hi GSI Pilot Project locations is approximately $9.4 million. Estimated cost for proposed improvements in the Pueblo Alto neighborhood is approximately $7.4 million. Estimated cost for proposed improvements in the Mile Hi neighborhood is approximately $2.0 million.

2. Are all portions/phases of the proposed pilot project funded?

   The City of Albuquerque (City) is actively pursuing funding to support all of the proposed pilot installations. Funds deposited into City accounts for this project have primarily come from City General Obligation Bonds appropriated by the City Council, with some funding from 2022 and 2023 State Capital Outlay. The phasing of pilot project implementation will be determined after conclusion of the current Concept Design Phase based on funding availability.

3. Can the City get funding from IIJA?

   For the purposes of funding, the City is reviewing the potential for securing monies from multiple potential sources in the local, state, and federal funding programs, including the Infrastructure, Investment and Jobs Act (IIJA).

4. Have you tried to get funding or discounts from utility companies (Water Authority (ABCWUA), NM Gas, and PNM)?

   Any construction costs for relocating or replacing lines owned by the Water Authority, NM Gas, or PNM will be borne by those firms.

5. Will any entities profit unfairly from the project?

   No. Both the design engineering firm and the future construction contractor are private firms selected through either a public RFP process or public competitive bid for the entity best able to provide these types of design and construction services, just as firms would be chosen to upsize a conventional storm drain system.

QUESTIONS ABOUT PILOT PROJECT SCOPE

6. What criteria was used to select the street locations for the pilot project?

   The Pueblo Alto neighborhood has experienced recurring flooding for decades, especially on the 800 blocks of Adams and Jefferson Streets. About a decade ago, the City installed water blocks along Mountain Avenue to prevent some street flows from entering the 800 blocks of Adams and Jefferson Streets. Subsequently, the City improved the storm drain system through the replacement of storm drain inlets. In addition, the City committed to continue to pursue drainage improvements to reduce the persistent, recurring flooding. The City commenced with

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studies that reviewed installing a storm drain from Pueblo Alto to the North Diversion Channel, though this was prohibitively expensive. The City also reviewed constructing underground storage at the Del Sol Twin Parks, but that was concerning to the neighborhood. In 2021, the City chose to pursue a different strategy and work on a solution that could be constructed in the public rights-of-way and easements in the Pueblo Alto and Mile Hi neighborhoods and could quickly address the frequent spot flooding in these areas at a lower cost. The 2022 study phase of the current Green Stormwater Infrastructure (GSI) pilot project was an outgrowth of that commitment. Adams Street was identified through the study phase of this project as a feasible pilot project location, partly because the 800 block is one of many locations across the neighborhood that flood regularly. Jefferson Street and Madison Street are not part of the GSI pilot project currently in the Concept Design Phase but will need to be considered as part of future projects. GSI interventions will need to be installed on streets throughout the neighborhood in order to offer a complete solution that addresses flooding issues.

7. Why isn't a detention pond at Fair Plaza being considered in this phase of the pilot project?

   As shown by the 100-year Existing Conditions Flooding Extents map (available here: https://fbtcloud.com/s/miE5gTQjkxUFbn3), the main source of runoff affecting the Mile Hi and Pueblo Alto neighborhoods comes from the east across San Pedro. Stormwater detention at Fair Plaza would have minimal impact to flooding, where there are the most severe flooding issues and in proposed project locations.

8. Were there studies conducted by the City to address up-sizing the storm drain system in the Pueblo Alto & Mile Hi neighborhoods?

   When the City first began investigating drainage improvement needs in the Pueblo Alto Neighborhood in 2012, the thought was to expand the storm drain pipes. However, it was determined to bring the lines to capacity would require expanding the lines from the Pueblo Alto Neighborhood to the section of the Embudo Arroyo on the north side of the Green Jeans development at Carlisle and Interstate 40. This would be prohibitively expensive. To obtain better cost efficiency, the City is developing a suite of projects that will reduce stormwater peaks. The first of these projects is the Pueblo Alto/Mile Hi GSI Project, which will reduce the nearly annual flooding that impacts the homes at the low area on the 800 blocks of Adams and Jefferson. This will include building green stormwater infiltration and storage facilities that can remove stormwater from the street during a storm and detain it in underground storage until space becomes available in the existing storm drains to transport the water to the Embudo Arroyo. (See answer to question 18 for additional information on the strategy for addressing flooding in the Mile Hi and Pueblo Alto neighborhoods.)

Stormwater Bumpouts

9. Why are 9-foot-wide bump outs recommended as opposed to another width?

   Nine (9) feet is the optimal bumpout width for the low volume residential roadways where they are proposed for this project.

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The 9-foot width provides traffic calming benefits while also allowing for two-way traffic and the addition of street trees. The recommended roadway typical section, with 9-foot wide bumpouts, will be evaluated further during the next phase of design.

10. How will the bumpouts be designed to make sure they are not breeding grounds for mosquitos?

    Stormwater bumpouts will be designed using the following criteria and process:
    - The depth of stored/retained stormwater will be limited (6-inch to 9-inch maximum).
    - Soil infiltration rates will be evaluated based on site specific infiltration testing to ensure stormwater will infiltrate within 12 hours.
    - Plantings and soil preparation will be specified to maximize infiltration capacity.

11. Why do stormwater bumpouts clean stormwater and thus are an important part of meeting the EPA water quality requirements for the City of Albuquerque?

    Stormwater bumpouts capture debris and trash, providing a location where it can be collected through City maintenance operations and preventing it from discharging to the Rio Grande. The plants within stormwater bumpouts, which are an integral part of the system, provide biofiltration.

12. Will the design ensure that drivers', cyclists', and walkers' vision is not impaired by the bumpout plantings, especially at intersections?

    Yes. Vehicular and pedestrian safety will be accounted for by the design team, which includes experienced roadway engineers and streetscape designers, by ensuring the clear site triangles are maintained free of obstructions at each intersection and driveway. In addition, the project will be reviewed by the City Design Review Committee (DRC), which includes transportation and traffic engineering staff, to verify that the designs do not impair the visions of motorists, cyclists, and pedestrians.

13. Will making driving lanes narrower, because of the bumpouts, make our streets more dangerous?

    No. Bumpouts, or chicanes, are a Federal Highway Administration (FHWA) adopted safety measure that are widely used to reduce speeds, thus increasing safety for pedestrians and bicyclists. Also, the ADA sidewalk improvements will encourage pedestrians to use the sidewalk, rather than walking in the drive lanes.

Underground Storage

14. Where are the underground storage systems proposed?

    Underground storage systems are proposed to be installed in combination with most of the stormwater bumpouts and the alley pilot project location. The location of underground storage systems within each street segment will vary depending on the presence of existing utilities and the existing topography.

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15. Are the underground storage systems going to be self-contained and thus drain via infiltration, or will they outlet to the storm drain system? If they will outlet to the storm drain system, what is the expected storage period before they are completely emptied into the system?

    Proposed underground storage systems will outlet to adjacent, existing storm drain systems. The underground storage system proposed for the Mile Hi neighborhood (along La Veta Drive north of Summer Avenue) may be self-contained as it is not located immediately adjacent to an existing storm drain. In either case, underground storage systems will be designed to drain completely within 24 to 48 hours.

16. What is the benefit of underground tanks (i.e., underground storage systems)? Do they allow infiltration?

    Underground storage systems can reduce stormwater peak flow rates, which means storm drain pipes do not need to be as big to manage a given amount of rainfall or a particular storm event. They can be designed to allow for infiltration. The current concept, which will be further evaluated during the final design phase based on additional infiltration testing, is to allow infiltration and provide an outlet to existing storm drains where possible.

Landscaping

17. Because trees and shrubs are being considered for the bumpouts, will supplemental irrigation be required to keep them healthy?

    Yes. Supplemental irrigation will be required and provided by the City as a part of the project.

QUESTIONS ABOUT THE PROJECT'S IMPACT ON FLOODING

18. Will the GSI Pilot Project eliminate the two-year rainstorm flooding in Pueblo Alto or Mile Hi?

    The primary goal of this project, including the proposed Green Stormwater Infrastructure (GSI), is not to eliminate flooding but to find a means by which to quickly fund and implement measures that will reduce the chances of the nearly annual spot flooding from normal intense monsoon storms. The completed modeling suggests that during a 2-year storm event, the amount of water captured in the currently proposed stormwater bumpouts and underground storage would reduce the depth of flooding by 3-6 inches in some places and 6-9 inches in others. Please reference the "Depth Comparison – Existing to Proposed" board here: https://fbtcloud.com/s/miE5gTQjkxUFbn3. To remove the neighborhoods from the risk of 100-year storm floods, the City is working to design and fund a suite of large projects east and south of the neighborhoods. This would require large projects and many years to design and fund. The proposed GSI and underground storage will help mitigate local neighborhood flooding and can be funded and constructed within several years, addressing local flooding that homes have experienced for many decades.

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19. Is there analysis or modeling supporting the statement that the magnitude of runoff to the major ponding areas from the 900 blocks of Adams Street, Jefferson Street, and Madison Street is similar?

    These streets and associated drainage areas are incorporated into the hydrologic/hydraulic model prepared for the current concept design phase. The drainage areas and development density of those blocks are effectively the same, thus the runoff volume from each are effectively the same.

20. Would stormwater capture above (to the north and east of) the start of the ponding area near Madison and Summer be more beneficial in reducing ponding issues to the west and into the west side of 800 Adams?

    Additional stormwater bumpouts north of Summer Avenue along Madison Street or other streets to the east would reduce runoff volume in Summer Avenue, but additional ponding depth reductions in Summer and the 800 block of Adams would likely be minimal when compared to the benefit of a similar number/size of stormwater bumpouts elsewhere.

21. Is it possible that the rainfall will be heavy enough to wash out the dirt and plants in the bumpouts?

    Bumpouts and other proposed GSI improvements (mulch, plants, etc.) will be designed to withstand flow velocities associated with a 100-year design storm.

22. What is the difference, in terms of stormwater collection efficiency and storage capacity, between the pocket park and the bumpout considered on La Veta?

    There is essentially no difference in stormwater capacity and flood reduction benefits between the pocket park and bumpout concepts. The underground stormwater storage volume, which will provide most of the flood reduction benefits, would be effectively the same for each concept.

QUESTIONS ABOUT CONSIDERATIONS FOR RESIDENTS

23. Will homeowners be compensated for any damage done to yards within the public right-of-way because of the project construction?

    During the next phase of design, the City and the design team will evaluate how proposed improvements will affect individual homeowners and will work with the City Forester to identify how to protect and preserve mature trees. The design team will work closely with homeowners to identify and mitigate conflicts between the design and existing sidewalks, fencing, landscaping (including trees and bushes), irrigation systems, etc. During the next phase of design, the City plans to hold a public meeting to allow the residents to review and provide input on the 30% concept plans. The City will continue to work with the public and keep them informed as the project progresses.

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24. How will the ADA sidewalk improvements impact my yard or my driveway?

    Improvements behind the existing sidewalk impacted by the proposed project for universal accessibility will be evaluated on a case-by-case basis. Impacts to existing private improvements will be minimized as much as practicable. Improvements will be made within the existing City right-of-way (ROW).

25. Will my water bill increase? Is the ABCWUA (Water Authority) likely to assess each property for increased water usage/irrigation for the bumpout plantings?

    No. Water bills will not increase due to this project. Irrigation water usage will be paid for by the City and will likely be included in the City's Annual Citywide budget.

26. Will my property taxes increase overall?

    No. The project will not have a direct impact on property taxes.

27. Will I be assessed for any of the changes to my curb, sidewalk, and my yard's landscaping?

    No. The City maintains responsibility for costs associated with the project.

28. How will existing utility infrastructure be impacted?

    During the next phase of design, the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) and New Mexico Gas Company (NM Gas Co.) will conduct an inventory of their pipes in the area. The Pueblo Alto/Mile Hi design team will either design the project so as not to impact the pipelines or, if necessary, work with these utilities to relocate the lines. During the next phase of design, the project team will coordinate with utility owners (ABCWUA and NM Gas Co.) to determine which utilities intend to replace their underground piping/infrastructure in conjunction with, or in advance of, the drainage improvements. Water meters and hydrants will be moved in conjunction with the drainage and sidewalk improvements as needed. The construction contractor will be responsible for damage to existing utility infrastructure and if not considered as a part of the project, they will be required to repair it at their cost.

29. Will insufficient utility infrastructure be replaced as part of the project?

    The ABCWUA and NM Gas Co. will inventory their lines and if they need to be replaced, this project will be used as an opportunity to replace the lines with improved infrastructure that more appropriately addresses the needs of the neighborhood.

30. How will emergency vehicle access be affected with the bumpouts?

    The bumpouts will still allow for two-way traffic. There will be room for paramedic trucks and fire trucks to park in front of homes, as they can also park in front of the driveway and the yard. If needed, a fire truck may park on the outside of a bumpout as they are authorized to park in the middle of the street. For fire calls, it is standard procedure for fire apparatus to park in the middle of the street and close the street to provide appropriate clear space to deploy hoses and for firefighters to move equipment on and off the trucks.

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QUESTIONS ABOUT MAINTENANCE

31. How will long-term funding for maintenance (upkeep, repairs, problems, etc.) be contracted and/or achieved?

    After construction of the project, the contractor who constructed the project will maintain bumpouts and underground storage systems for a period of 3 to 5 years. The exact time will be determined near the end of the design process. Following this contractor warranty period, the City Storm Drain Maintenance staff will maintain storm drain infrastructure and underground structures, and Clean Cities staff of the Solid Waste Management Department will maintain the landscaping.

QUESTIONS ABOUT SCHEDULE

32. Is there a cutoff date for community input before you move forward on the chosen project?

    There is no cutoff date for community input. This stage of the project, which is referred to as “pilot project concept design” will conclude in October of this year, but community engagement will continue to be an important part of the project as additional funding sources are secured and it moves forward into the next phase of design.

33. When do you break ground on this project?

    A schedule for implementation/construction has not been developed yet, and will be dependent on several factors, including funding and project phasing.

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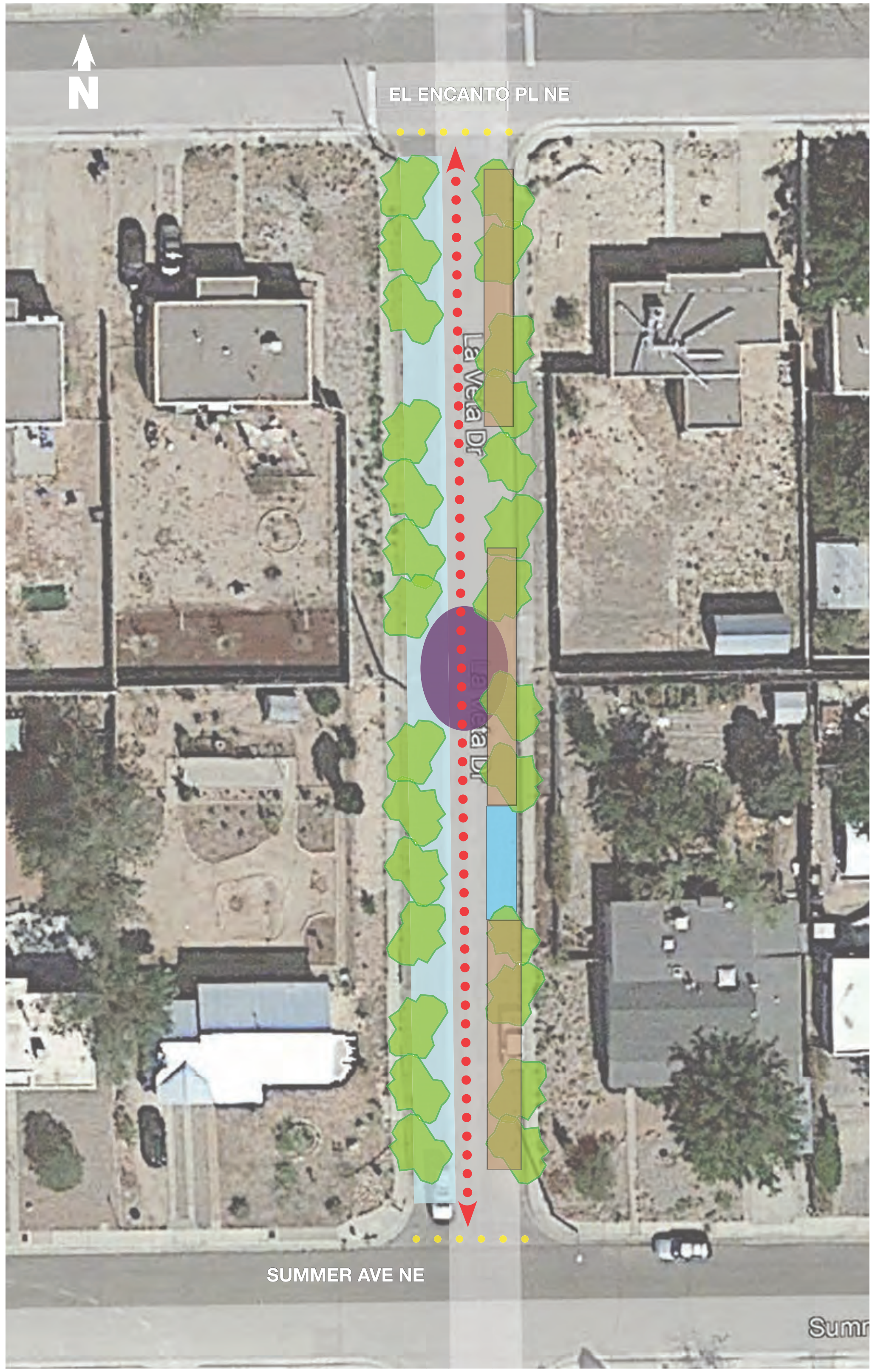
APPENDIX D: WALKING TOUR & COMMUNITY MEETING BOARDS



LEGEND

- Removable Stantion
- Swale & Plantings
- Planting Bed with Mulch
- Shade Structure
- Proposed Trees
- Potential Activity Area
- Proposed Pedestrian & Bike Access

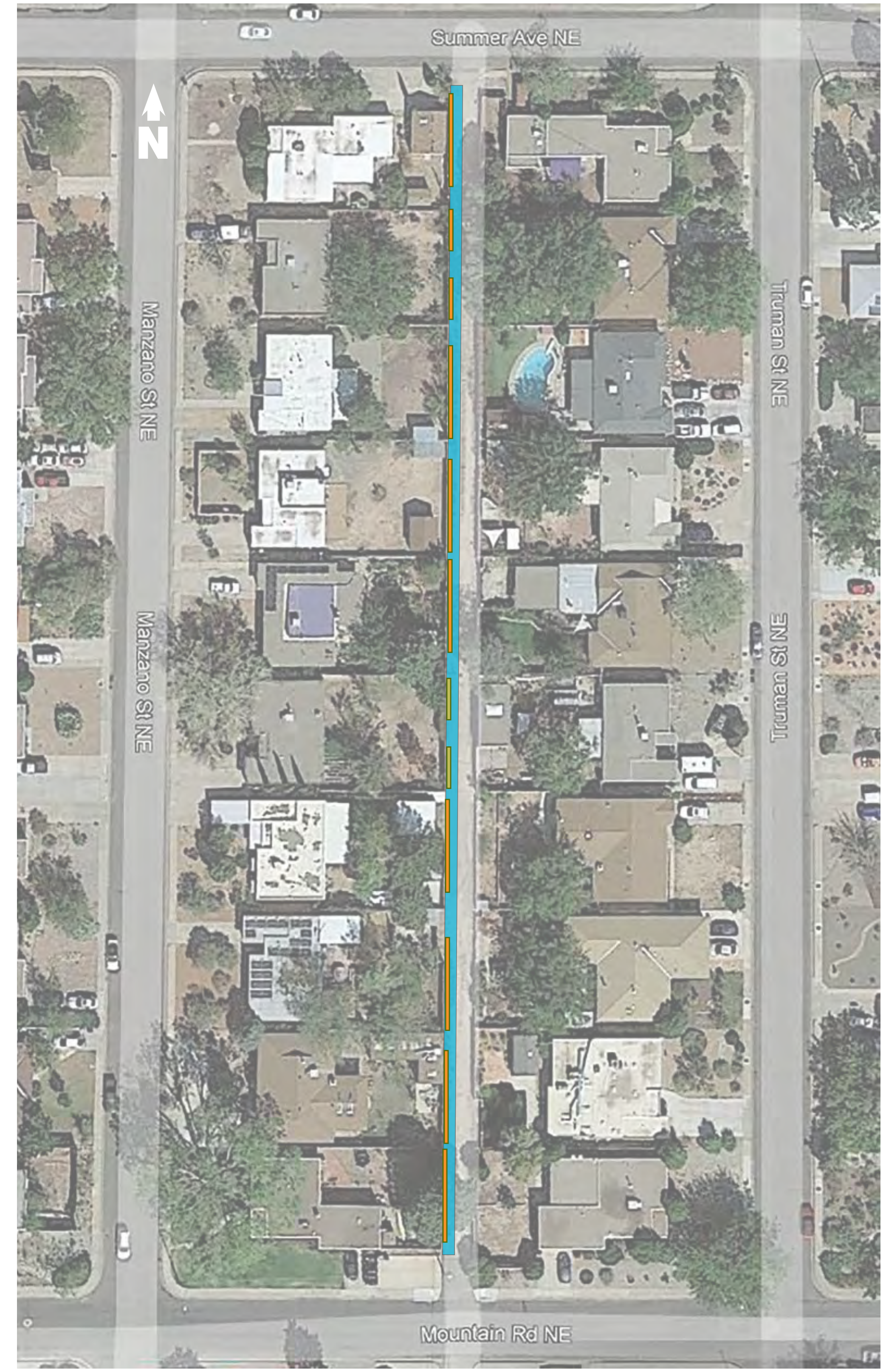
NOTES

- Recommend tree species from the Nature Conservancy's *Climate Ready Tree List.*
- Activity area activities to be determined through community engagement.
- Recommend planting beds under trees and in bioswale are low-water perennials with pollinator potential.
- The shade structure should be large enough to accomodate a bench and ADA compliant table.
- Other potential concepts include street skating elements (rails, boxes, etc), trash and recylcing bins, and a pet relief station.

LA VETA POCKET PARK CONCEPT

MAY 10, 2023

Bohannan Huston groundworkstudio



LEGEND

- Cacti & Agaves
- Approx. 6' Wide Bioswale
- Rainwater Only Perennials

NOTES

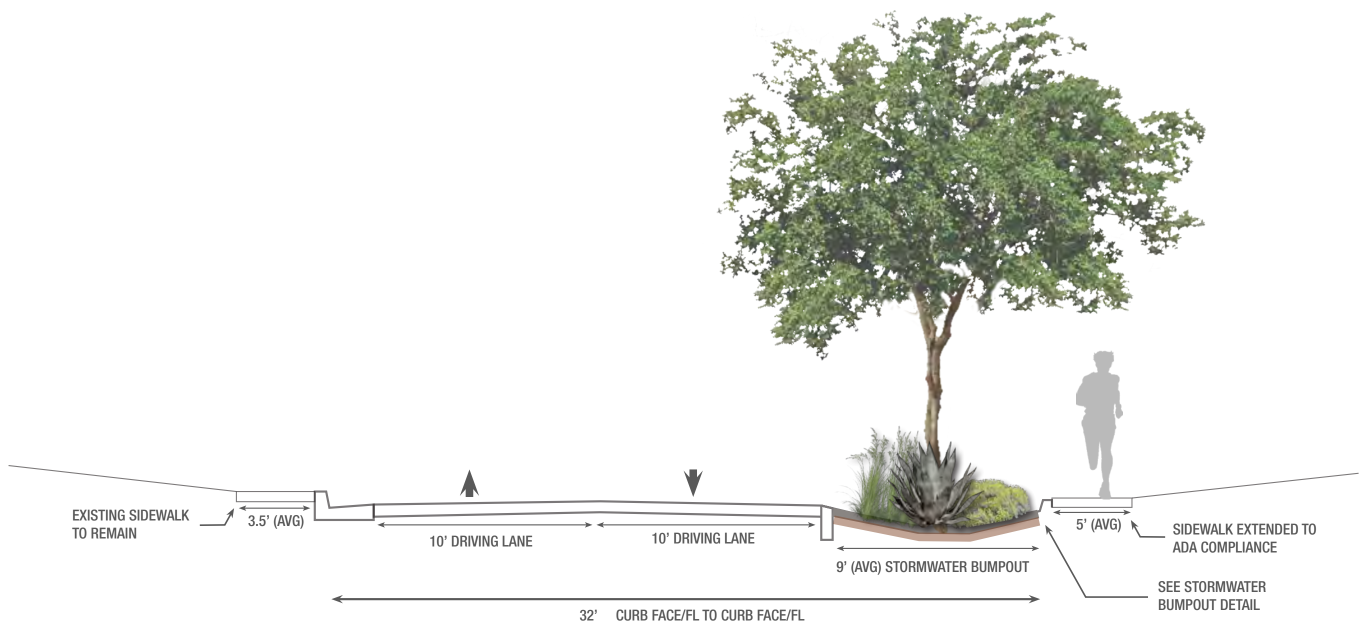
- Due to 16' width and need to maintain vehicle access the alleys receive minimal treatment.
- Bioswale averages six foot wide to accomodate vehicles.
- Perennial seed mix to include native species which can survive on rainwater only and seeded in wettest part of the bioswale.
- Cacti and agave plantings which can act as a succulent arboretum. As a template for use in other parts of town the species could be chosen for specific ecozones across the city. This would provide diversity and provide habitat to a wider range of pollinators. It also provides educational tools for the community.

TYPICAL ALLEYWAY CONCEPT

JUNE 7, 2023

Bohannan Huston groundworkstudio

PREFERENCE BOARDS - 1ST WALKING TOUR



CONCEPTUAL TYPICAL SECTION

STORMWATER BUMPOUT DETAIL

CONCEPTUAL TYPICAL SECTION - TWO 10' DRIVING LANES

NOT TO SCALE

JUNE 6, 2023

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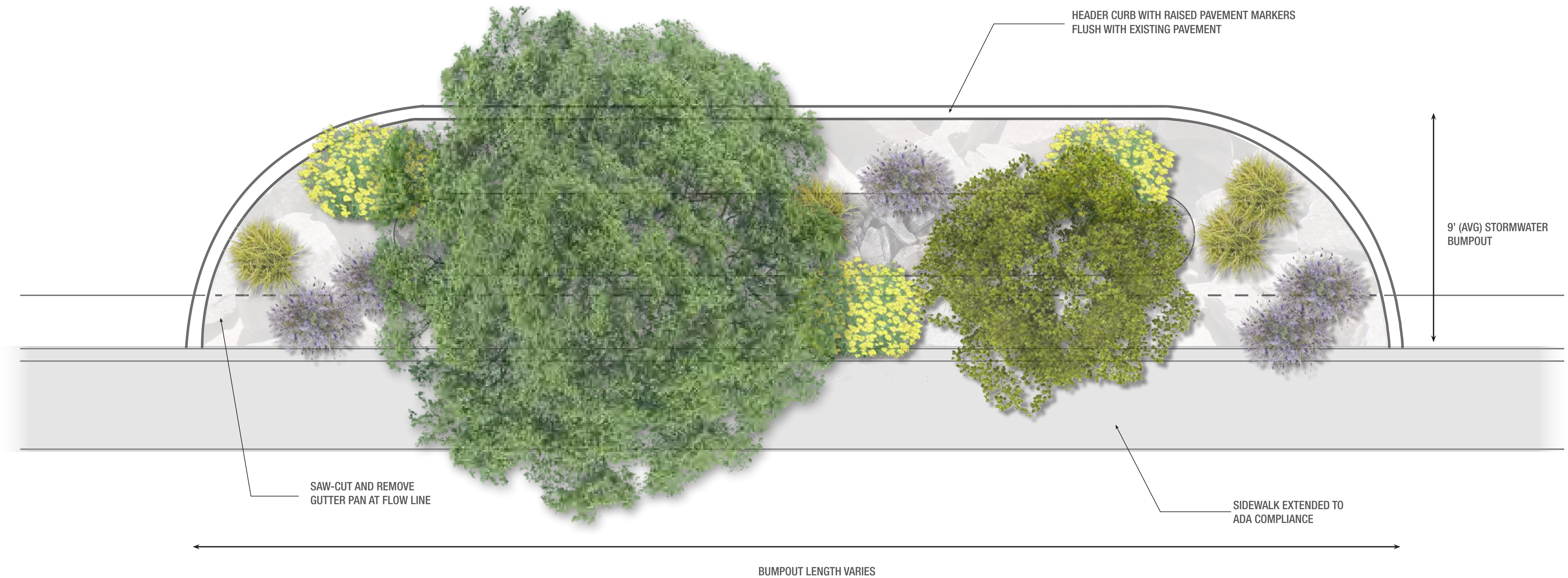

CONCEPTUAL BUMPOUT PLAN VIEW

JUNE 7, 2023

NOT TO SCALE

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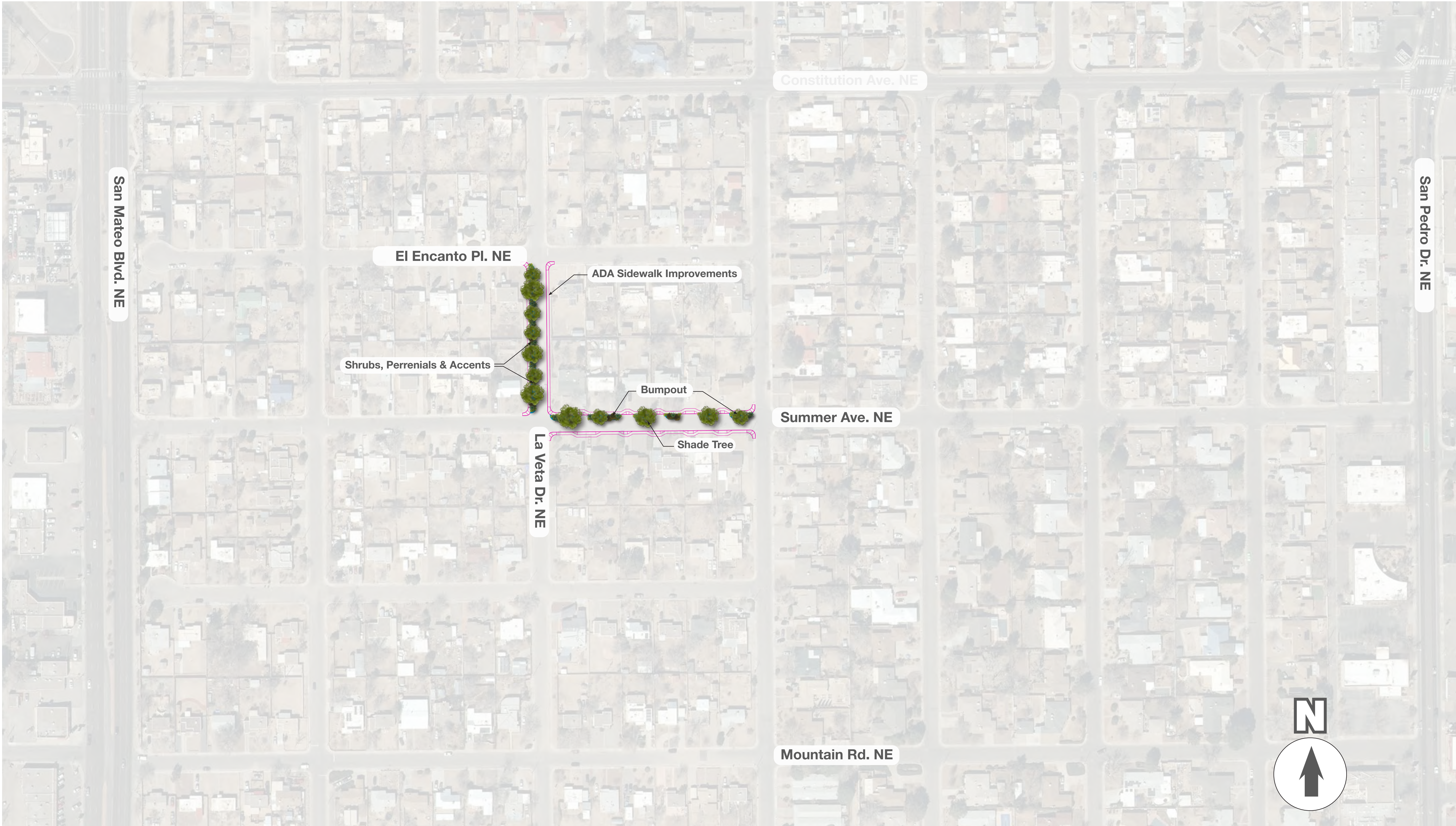

Mile Hi Bumpout Planting Plan Rendering

Plant renderings not to scale

August 2023

Pueblo Alto / Mile Hi Green Stormwater Infastructure Concept Design

groundworkstudio

Pueblo Alto Bumpout and Alleyway Planting Plan Rendering

Plant renderings not to scale

August 2023

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Desert Willow
Chilopsis linearis


Screwbean Mesquite
Prosopis pubescens


Honey Mesquite
Prosopis glandulosa


Soapweed Yucca
Yucca glauca


Sharkskin Agave
Agave scabra


Claret Cup Cactus
Echinocerus triglochidiatus


'Walk In Beauty' Spineless Prickly Pear
Opuntia hybrid 'Walk in Beauty' various var.


Creosote Bush
Larrea tridentata

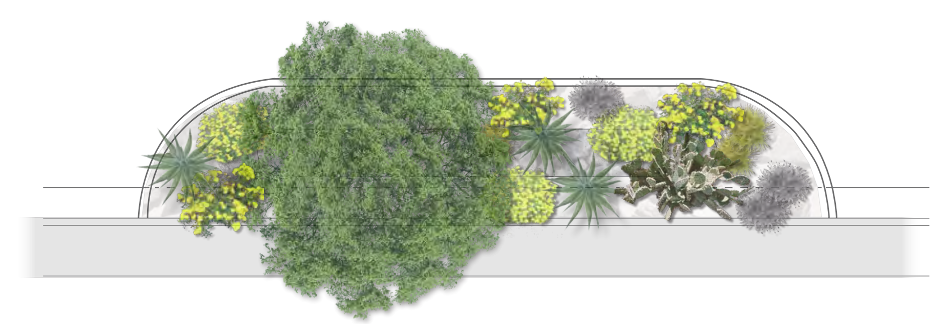

Mexican Blue Sage
Salvia chamaedryoides


Chocolate Flower
Berlandiera lyrata


Desert Zinnia
Zinnia grandiflora


Grey Santolina
Santolina chamaecyparissus


Bumpout Section View


Bumpout Plan View

Bumpout Plant Palette Option #1 - Arid Accents

Renderings not to scale August 2023

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Escarpment Live Oak
Quercus fusiformis

Desert Scrub Oak
Quercus turbinella

Gambel Oak
Quercus gambelii

Turpentine Bush
Ericameria laricifolia

'Pawnee Buttes' Sand Cherry
Prunus besseyi 'Pawnee Buttes'

Prairie Sage
Artemisia ludoviciana

Little Bluestem Grass
Schizachyrium scoparium

Purple Three Awn
Aristida purpurea

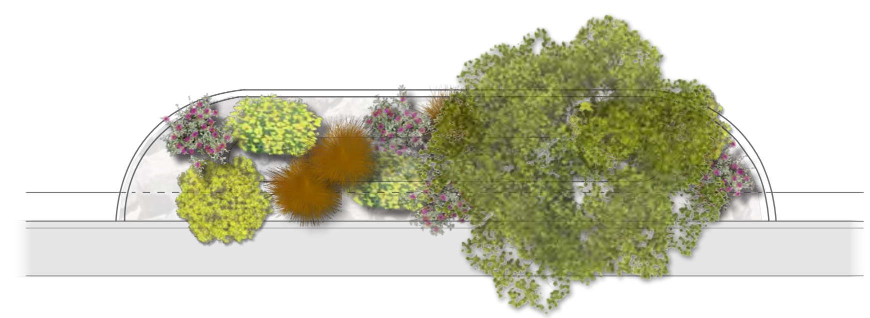
Mexican Blue Sage
Salvia chamaedryoides

Mojave Sage
Salvia pachyphylla

Sundrops
Calylophus hartwegii

White Desert Zinnia
Zinnia acerosa

Bumpout Section View



Bumpout Plan View

Bumpout Plant Palette Option #2 - Oak Environment

Renderings not to scale August 2023

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PREFERENCE BOARDS - 2ND WALKING TOUR


'Allee' Lacebark Elm
Ulmus parvifolia 'Allee'


Common Hackberry
Celtis occidentalis


Japanese Pagoda Tree
Styphnolobium japonicum


'Panchito' Manzanita
Arctostaphylos x coloradoensis 'Panchito'


Bumpout Section View


Prostrate Three-leaf Sumac
Rhus trilobata 'Autumn Amber'


Mariola
Parthenium incanum


Banana Yucca
Yucca baccata

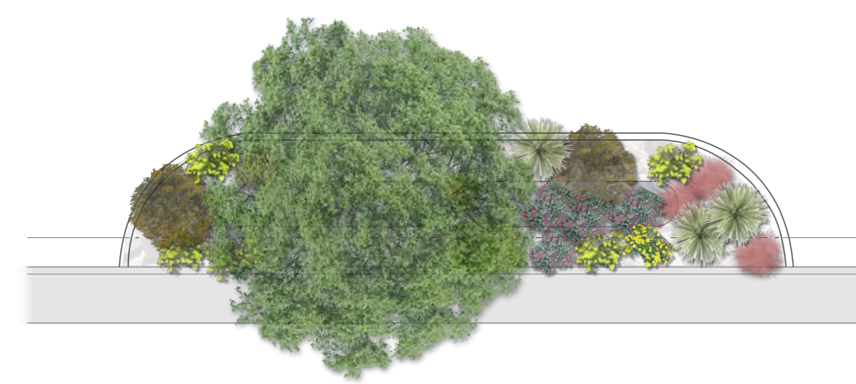

Little Bluestem Grass
Schizachyrium scoparium


Mexican Blue Sage
Salvia chamaedryoides


Chocolate Flower
Berlandiera lyrata


Gray Creeping Germander
Teucrium aroanium


Creeping Hummingbird Trumpet
Zauschneria garrettii 'Orange Carpet'


Bumpout Plan View

Bumpout Plant Palette Option #3 - Shade Tree A

Renderings not to scale August 2023

Pueblo Alto / Mile Hi Green Stormwater Infastructure Concept Design

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Kentucky Coffee Tree ‘Espresso’
Gymnocladus dioica ‘Espresso’

Western Soaptree
Sapindus saponaria var. drummondii

Chinese Pistach
Pistacia chinensis

Desert Honeysuckle
Anisacanthus quadrifidus ssp. wrightii

Prostrate Three-leaf Sumac
Rhus trilobata ‘Autumn Amber’

Prairie Sage
Artemisia ludoviciana

Little Bluestem Grass
Schizachyrium scoparium

Desert Mule’s Ear
Wyethia scabra

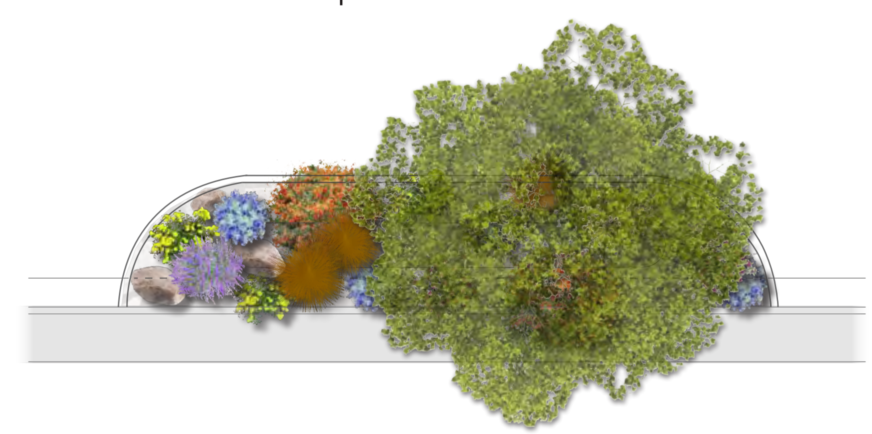
Catmint
Nepeta racemosa

Narrowleaf Penstemon
Penstemon angustifolius

Gray Creeping Germander
Teucrium aroanium

Sundrops
Calylophus hartwegii

Bumpout Section View



Bumpout Plan View

Bumpout Plant Palette Option #4 - Shade Tree B

Renderings not to scale August 2023

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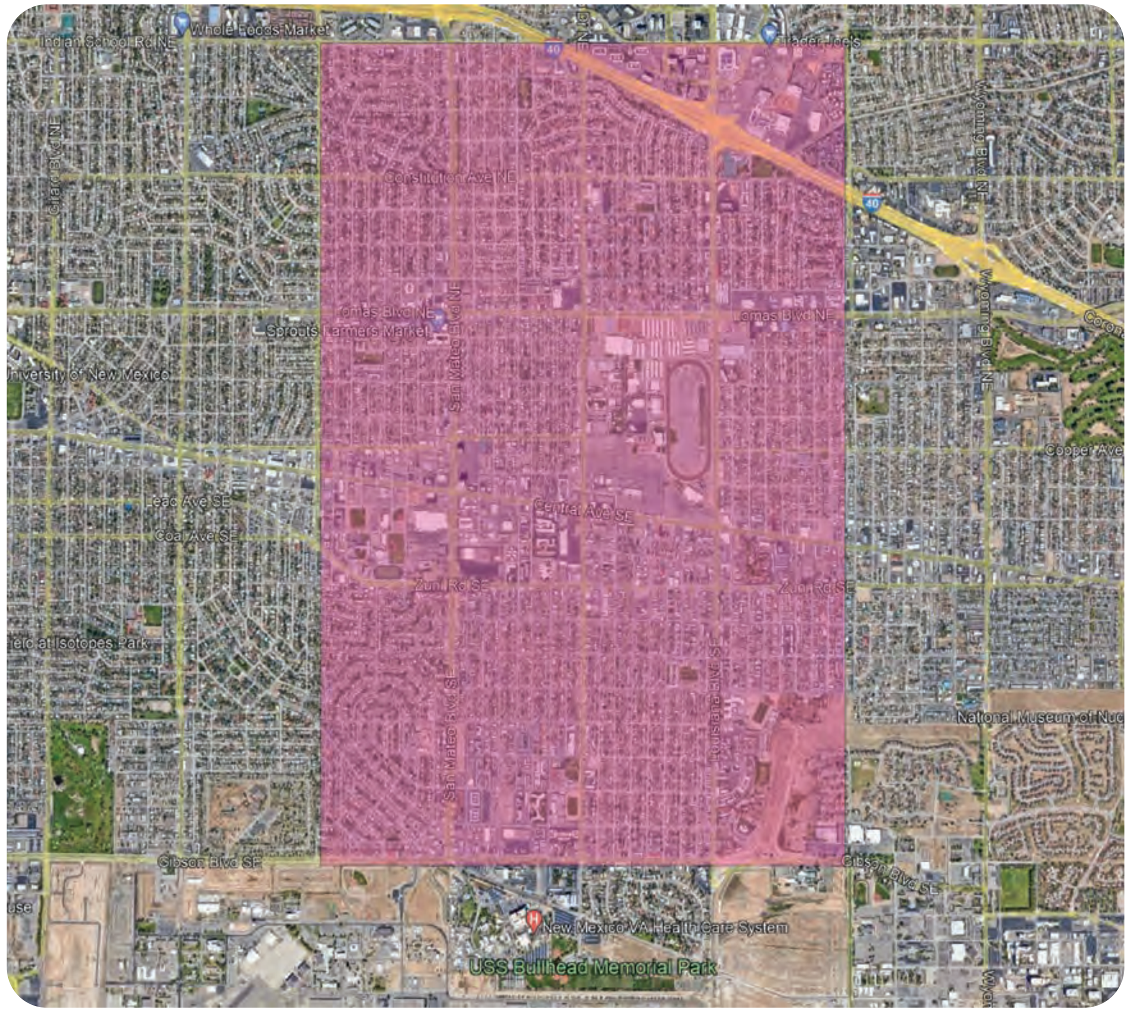

EPA
United States
Environmental Protection
Agency

FLOODING OVERVIEW & CONTRIBUTING AREAS TO PUEBLO ALTO / MILE HI

- The modeling results indicate that the flooding that occurs in the Pueblo Alto and Mile High Neighborhoods is the result of stormflows generated in an area that extends as far south as Gibson Blvd and as far east as Louisiana Boulevard.
- To address flooding in the Pueblo Alto/Mile High Area will require various projects throughout these larger basins, as well as localized neighborhood projects.

PROJECT COMBINATIONS

- The City is currently researching and in the planning stages for several other projects in conjunction with the Mile High and Pueblo Alto neighborhood projects, as part of a comprehensive approach to dealing with flooding challenges. These include projects at Memorial Park, in the Mark Twain and Jerry Kline neighborhoods, at Zuni-Pennsylvania and along San Pedro and Louisiana.

Pueblo Alto / Mile Hi Pilot Project

- The City is starting with the Pueblo Alto /Mile Hi Green Stormwater Improvements in combination with underground storage of stormwater in the project areas.

EPA COMPLIANT

- Green Storm Water Infrastructure, such as temporary storage and bulb outs, has been championed by the EPA because it delivers additional environmental, social, and economic benefits which enhance the quality of life in neighborhoods.

City of Albuquerque's Comprehensive Approach to Flooding Challenges — August 2023

Pueblo Alto / Mile Hi Green Stormwater Infastructure Concept Design

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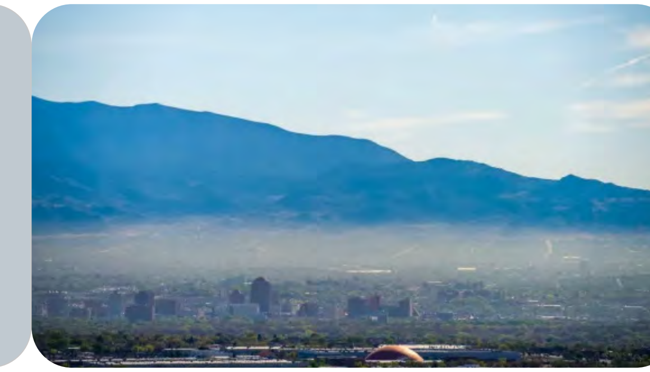
INCREASED BIODIVERSITY & HABITAT CREATION

- Increased biodiversity leads to increased climate resiliency
- Bumpouts planted with native and adaptive plants create more pollinator habitat
- Climate Ready Tree List guides tree choices for long term tree health

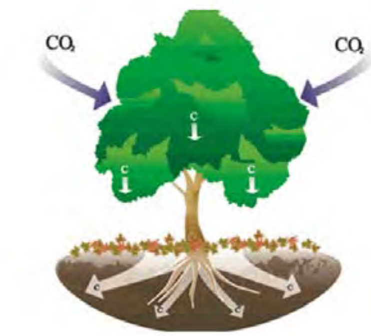
INCREASED AIR QUALITY & REDUCED NOISE POLLUTION

- Trees and plants absorb airborne pollutants including ozone, sulfur dioxide, and nitrogen dioxide in addition to particulate pollutants
- Planting strips help dampen road noise by at least 5 decibels



REDUCED HEAT STRESS

- Heat stress can worsen chronic conditions such as cardiovascular and respiratory disease
- Shade provides respite for community members and reduces anxiety and aggravated behaviors related to extreme heat stressors

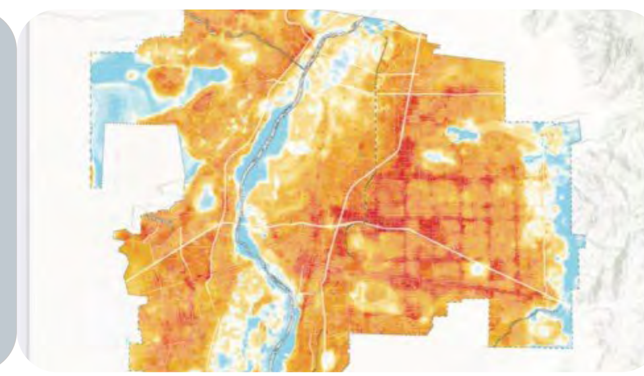


REDUCED GREENHOUSE GASSES

- Green Stormwater Infrastructure sequesters carbon dioxide and other forms of carbon
- Trees and other plants reduce energy usage associated with cooling. This reduces the consumption of fossil fuels and green house gas emissions

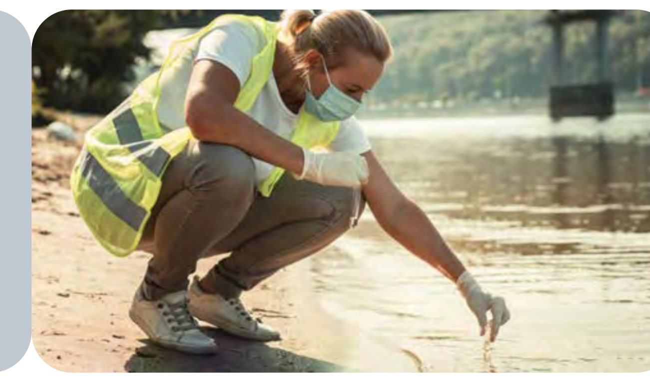
REDUCED URBAN HEAT ISLAND EFFECT

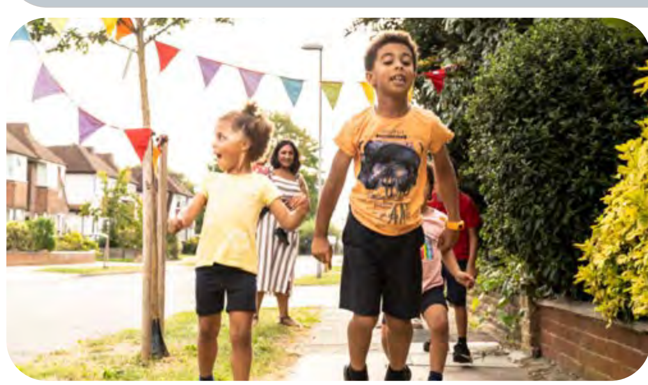
- Shaded surfaces can be 20-45 degrees cooler than unshaded areas
- Bumpout plants also cool the air through evapotranspiration



IMPROVED WATER QUALITY & WATER MANAGEMENT

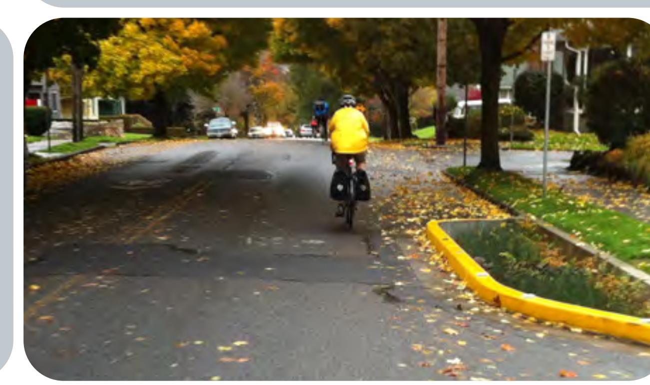
- Captures First Flush which reduces hazardous materials from entering the Rio Grande, helping meet EPA regulations
- Bio-remediation allows plant material & soils to breakdown some hazardous materials over time





IMPROVED COMMUNITY COHESION & MENTAL HEALTH

- Bumpouts strengthen neighborhoods by providing a visual identity as well as collaborating around a common goal
- The addition of green space has been linked to reduced crime, and lowers the risk of depression and general poor mental health



IMPROVED TRAFFIC CALMING & MULTIMODAL TRANSIT

- Bumpouts reduce vehicle speeds and allow for improved bicycle conditions with proper signage and road markings
- ADA sidewalk improvements will make pedestrian travel more accessible and safer

More in-depth and accessible information on the co-benefits of Green Stormwater Infrastructure can be found at the Center for Neighborhood Technology, American Rivers, the Environmental Protection Agency, and the Center for Watershed Protection

Green Stormwater Infrastructure Co-Benefits | August 2023

Pueblo Alto / Mile Hi Green Stormwater Infastructure Concept Design

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PREFERENCE BOARDS - 2ND WALKING TOUR


GROUNDWORK STUDIO

APPENDIX F – GEOTECHNICAL REPORT

GEO-TEST

GEOTECHNICAL ENGINEERING SERVICES REPORT NO. 1-30314

CITY OF ALBUQUERQUE PUEBLO ALTO – MILE HI GREEN STORMWATER PILOT PROJECT

ALBUQUERQUE, NEW MEXICO

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PREPARED FOR:

BOHANNAN HUSTON, INC

GEO-TEST

July 20, 2023
Job No. 1-30314

Bohannan Huston, Inc.
7500 Jefferson St. NE
Albuquerque, NM 87109

ATTN: Vincent Steiner, PE

RE: Geotechnical Engineering Services Report
City of Albuquerque Pueblo Alto – Mile Hi
Green Stormwater Infiltration (GSI) Pilot Project
Albuquerque, NM

Dear Mr. Steiner,

Submitted herein is the Geotechnical Engineering Services Report regarding the above referenced project. The report contains the results of our field investigation, laboratory testing and recommendations pertaining to drainage management.

It has been a pleasure to serve you on this project. If you should have and questions or concerns regarding the report or aspects of the investigation please contact our office.

Respectfully submitted:
GEO-TEST, INC.

PATRICK R. WHORTON
NEW MEXICO
26342
PROFESSIONAL ENGINEER

Patrick R. Whorton, PE

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INTRODUCTION

This report presents the results of the geotechnical engineering services investigation performed by this firm for the proposed City of Albuquerque Pueblo Alto – Mile Hi Green Stormwater Infiltration (GSI) Pilot Project in Albuquerque, New Mexico.

The objectives of this investigation were to:

1) Evaluate the nature and engineering properties of the subsurface soils underlying the site.
2) Provide discussion and recommendations pertaining to subsurface drainage characteristics.

The investigation includes subsurface exploration, selected soil sampling, laboratory testing of the samples, performing an engineering analysis and preparation of this report.

PROPOSED CONSTRUCTION

It is understood that the project will include improvements to storm water drainage within the Pueblo Alto and Mile Hi neighborhoods. This proposed investigation will provide preliminary subsurface data relative to infiltration and the hydraulic conductivity of subsurface soils at four locations:

1) Summer Ave. between Washington St. and San Mateo Blvd.
2) Adams St. between Mountain Rd. and Constitution Ave.
3) An alley between Summer Ave. and Mountain Rd.
4) La Veta Dr. between Summer Ave. and El Encantado Pl.

The exact configuration and location of the improvements was unknown at the time this proposal was drafted; however, it is understood that improvements will likely include the installation of a subsurface infiltration system.

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Should project details very significantly from those outlines above, this firm should be notified for review and possible revision of the recommendations contained herein.

FIELD EXPLORATION

A total of ten (10) exploratory borings were drilled at the site to a depth of 15 feet below existing grades. Locations of the borings are shown on the attached Boring Location Map, Figure 1. The soils encountered in the borings were continuously examined, visually classified and logged during the drilling operation. The boring logs are presented in a following section of this report. Drilling was accomplished using a truck mounted drill rig equipped with 2.25 and 3.25 inch inner diameter hollow stem auger. Subsurface soils were sampled at 2.5 foot intervals utilizing open tube split barrel samplers driven by a standard penetration test hammer.

LABORATORY TESTING

Selected samples were tested in Geo-Test, Inc. laboratories to determine certain engineering properties of the subsurface soils encountered in the field investigation. Moisture contents were determined to evaluate the various soil deposits with depth. The results of these tests are shown on the Boring Logs.

Sieve analysis and Atterberg limits testing was performed to aid in soils classification. Constant Head permeability testing was performed on relatively undisturbed tube samples. The results of these tests are presented in the Summary of Laboratory Results and on individual test reports presented in a following section of this report.

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SURFACE CONDITIONS

The two subject neighborhoods are located near the intersection of San Mateo Blvd. and Constitution Ave. and are fully developed residential neighborhoods populated with single family homes. The subject streets where this investigation was conducted are two lane residential roadways paved with 6 to 8 inches of asphalt.

SUBSURFACE SOIL CONDITIONS

As indicated by the exploratory borings, the subsurface soils beneath the site consisted primarily of 5 soils types:

1) Non-plastic Well and Poorly Graded (clean) Sands
2) Non-plastic Silty Sand
3) Low Plasticity Silty, Clayey Sand, Sandy Clay and Clayey Sand
4) Medium Plasticity Clayey Sand
5) Medium to High Plasticity Clay

These five soil types where encountered sporadically at varying depths throughout the area investigated. See Boring Logs in a later section of this report for site specific soil profiles.

No free groundwater was encountered in the borings and soil moisture contents were relatively low throughout the extent of the borings with the exception of the higher plasticity soils where moisture contents were generally found to be elevated.

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SUBSURFACE DRAINAGE

As discussed in the previous section, there are five (5) distinct soils types present throughout the project extents ranging from clean relatively course grained non-plastic sands to fine grained high plasticity clay. A consistent soil profile could not be established from the exploratory borings as profiles varied from each location explored, however, in general, finer grained silty and clayey sands (Types 2,3 &4) were encountered in the upper 10 feet and clean sands (Type 1) encountered below a depth of 10 feet. The medium to high plasticity clay (Type 5) was encountered sporadically and appears to be present as relatively thick lenses between the near surface silty/clayey soils and the deeper clean sands.

The hydraulic conductivity, or the measured rate of water travel through a particular soil matrix, was determined via constant head permeability testing of relatively undisturbed in-situ samples collected in brass tubes. As indicated by the laboratory testing, the conductivity of the subsurface soils varies with respect to soil type as presented in the table below.

Soil Type	Soil Classification	Sample Location	Hydraulic Conductivity (cm/s)
1	Well/Poorly Graded Sand	Boring 1 @ 13ft	1.40×10^{-2}
1	Well/Poorly Graded Sand	Boring 3 @ 13ft	1.48×10^{-2}
1	Well/Poorly Graded Sand	Boring 9 @ 15 ft	6.01×10^{-2}
2	Silty Sand	Boring 5 @ 12.5ft	1.03×10^{-4}
3	Silty, Clayey Sand	Boring 2 @ 3ft	3.66×10^{-4}
3	Silty, Clayey Sand	Boring 2 @ 10ft	1.91×10^{-4}
3	Silty, Clayey Sand	Boring 9 @ 3ft	7.02×10^{-4}
4	Clayey Sand	Boring 1 @ 5ft	1.47×10^{-5}
4	Clayey Sand	Boring 3 @ 7.5ft	3.09×10^{-5}
4	Clayey Sand	Boring 10 @ 5ft	5.21×10^{-5}
5	Clay	Boring 5 @ 7.5ft	4.48×10^{-7}

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The near surface silty/clayey sands were found to have a moderate conductivity on the order of 10^{-4} to 10^{-5} centimeters per second (cm/s). The deeper clean sands were found to have a relatively high conductivity on the order of 10^{-2} cm/s and the clay with a relatively low conductivity on the order of 10^{-7} cm/s.

Stormwater infiltration systems such as Harvesting Basins, Bioswales or Bumpouts would generally drain into the near surface silty/clayey soils (Types 2,3 &4). Given the measured conductivity of these soils, infiltration systems are feasible in the area, however, a large infiltration area may be required relative to anticipated flows as infiltration would be relatively slow. In addition, infiltration rates will likely slow over time as loose fine grained soil particles consolidate such that regular maintenance will likely be required to prevent extended ponding and overflow of the system.

The deeper clean sands (Type 1) have a relatively high conductivity and may be used to provide a considerable amount of drainage, however, these soils were generally encountered below the finer grained silty/clayey sands and low permeability clay such that they are not readily accessible in all areas for use as a drainage stratum. Drains may be installed to access these deeper high permeability soils to provide for additional drainage capacity.

The higher plasticity clay (Type 5) was found to have a very low conductivity meaning that groundwater will not readily move through these soils. Where present, these soils will act as moisture stop meaning that water infiltrating from the surface will move downward until it encounters the low permeability clay and then accumulate in the lower plasticity soils and eventually will begin to move laterally. This could result in excessive moisture buildup in the subsurface soils which may lead to the weakening of pavement subgrade or nearby foundation supporting soils potentially resulting in pavement failure or induced settlement. As such, areas where clay is present should be avoided as infiltration areas which may call for additional geotechnical investigations to ensure optimum drainage.

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REVIEW AND INSPECTION

This report has been prepared to aid in the evaluation of the subject site and to assist in the design of this project. It is recommended that the geotechnical engineer be provided the opportunity to review the final design drawings and specifications in order to determine whether the recommendations in the report are applicable to final design. Review of the final design drawings and specifications should be noted in writing by the geotechnical engineer.

CLOSURE

Our conclusions, recommendations and opinions presented herein are:

1) Based on our evaluation and interpretation of the findings of the field and laboratory programs.
2) Based on an interpolation of soil conditions between and beyond the explorations.
3) Subject to confirmation of the conditions encountered during construction.
4) Based upon the assumption that sufficient observation will be provided during construction.
5) Prepared in accordance with generally accepted professional geotechnical engineering principle and practice.

This report has been prepared for the sole use of Bohannan Huston, Inc. specifically to aid in the design of the Pueblo Alto – Mile Hi GSI Pilot Program in Albuquerque, NM and not for use by a third party without consent.

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We make no warranty, either expressed or implied. Any person using this report for bidding or construction purposes should perform such independent investigation as they deem necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project. If conditions encountered during construction appear to be different than indicated by this report, this office should be notified.

All soil samples will be discarded 60 days after the date of this report unless we receive a specific request to retain samples for a longer period of time.

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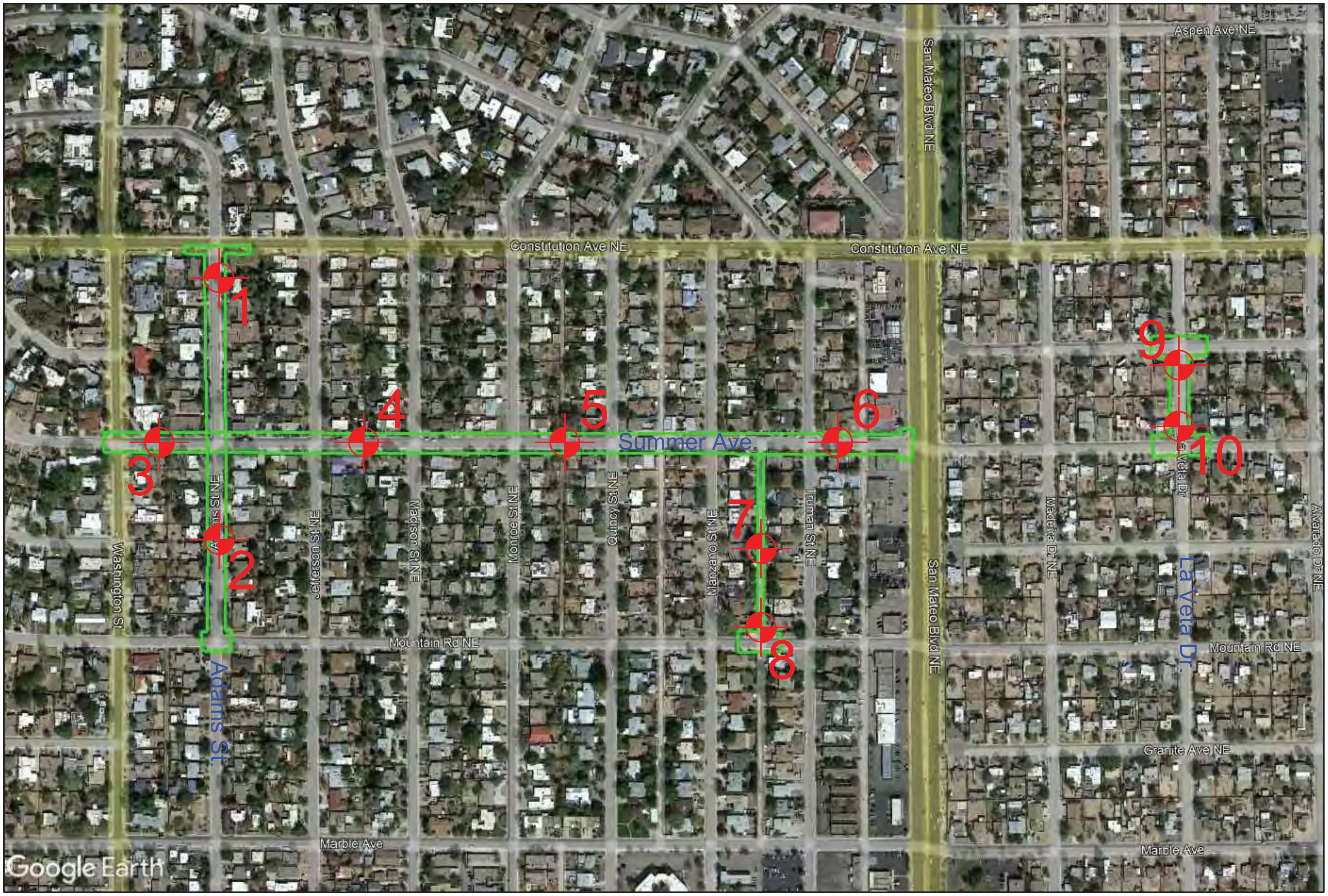
BORING LOCATION MAP



Pueblo Alto - Mile Hi GSI Pilot Project
Albuquerque, New Mexico
Job No. 1-30314

Figure 1

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GEO-TEST
GEOTECHNICAL ENGINEERING
AND MATERIAL TESTING

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/10/2023 Project No: 1-30314
Elevation: Type: 2.25" ID HSA

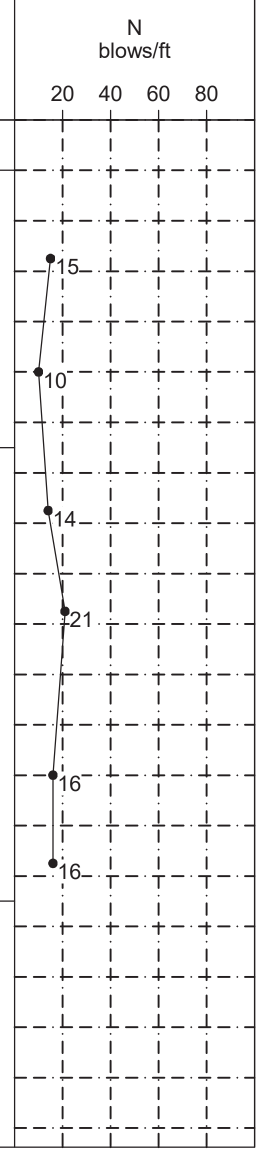
LOG OF TEST BORINGS

NO: 1

GROUNDWATER DEPTH

During Drilling: none After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0					AC	8 inches ASPHALT
	SS	5-7-8 15	12		SC	CLAYEY SAND, medium plasticity, moderately firm, moist, light brown
5	UD	4-6 10	11	120		
	SS	4-6-8 14	4		SW-SM	WELL GRADED SAND with SILT and GRAVEL, non-plastic, medium dense, dry, gray
10	SS	6-12-9 21	3			
	UD	7-9 16	4	116		
15	SS	6-9-7 16	6			
						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet
20						



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/10/2023 Project No: 1-30314
Elevation: Type: 3.25" ID HSA

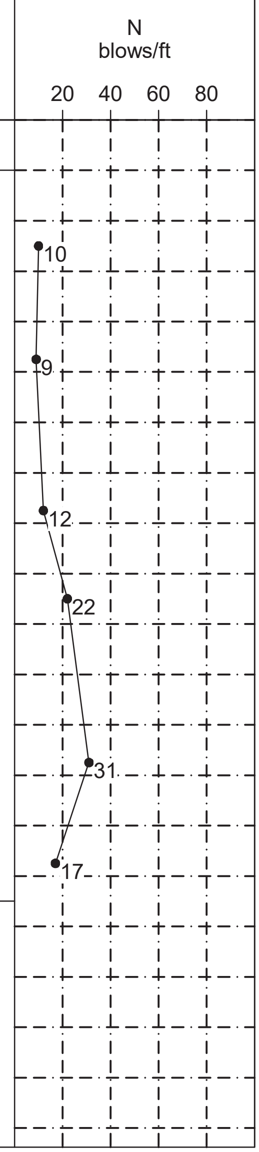
LOG OF TEST BORINGS

NO: 2

GROUNDWATER DEPTH

During Drilling: none After 24 Hours:

DEPTH (Ft)	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0					AC	8 inches ASPHALT
2-3	UD	5-5 10	9	115	SC-SM	SILTY, CLAYEY SAND, low plasticity, moderately firm to very firm, slightly moist, brown
4-5.5	SS	3-4-5 9	8			
7-8.5	SS	5-6-6 12	7			
9-10	UD	10-12 22	7	122		
12-13.5	SS	11-16-15 31	6			
14-15.5	SS	8-9-8 17	7			
15.5						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

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GEO-TEST

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/10/2023 Project No: 1-30314
Elevation: Type: 3.25" ID HSA

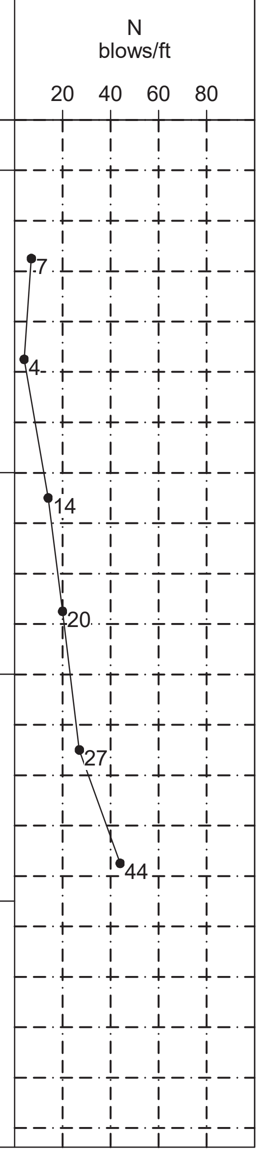
LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 3

During Drilling: none After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION (SUBSURFACE PROFILE)
0					AC	8 inches ASPHALT
	SS	2-3-4 7			SC-SM	SILTY, CLAYEY SAND, low plasticity, soft to very soft, slightly moist, light brown
5	SS	2-2-2 4	7			
	UD	6-8 14	25	97	CL	CLAY with SAND, low plasticity, moderately firm to firm, very moist, dark brown
10	SS	5-9-11 20	28			
	UD	12-15 27	3	95	SP-SM	POORLY GRADED SAND with SILT, non-plastic, medium dense to dense, dry, gray
15	SS	12-18-26 44	3			
						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet
20						



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
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GEO-TEST	Project:	Pueblo Alto - Mile Hi GSI Pilot Project
	Date:	07/10/2023
	Project No:	1-30314
	Elevation:	
	Type:	2.25" ID HSA

LOG OF TEST BORINGS

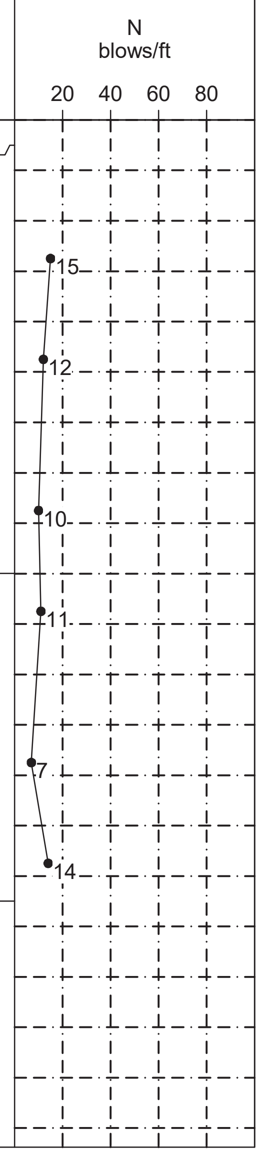
NO: 4

GROUNDWATER DEPTH

During Drilling: none

After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0–0.5					AC	6 inches ASPHALT
~3	SS	7-8-7 15	9		SC	CLAYEY SAND, low plasticity, moderately firm, moist, light brown
5	SS	4-5-7 12	8		SC	
~8	SS	5-5-5 10	7		SC	
10	SS	5-5-6 11	6		SM	SILTY SAND, non-plastic, loose to medium dense, dry, light brown
~13	SS	3-4-3 7	5		SM	
15	SS	4-6-8 14	5		SM	
						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
AMSL - Above Mean Sea Level
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GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project		
Date:	07/10/2023	Project No:	1-30314
Elevation:		Type:	3.25" ID HSA

LOG OF TEST BORINGS

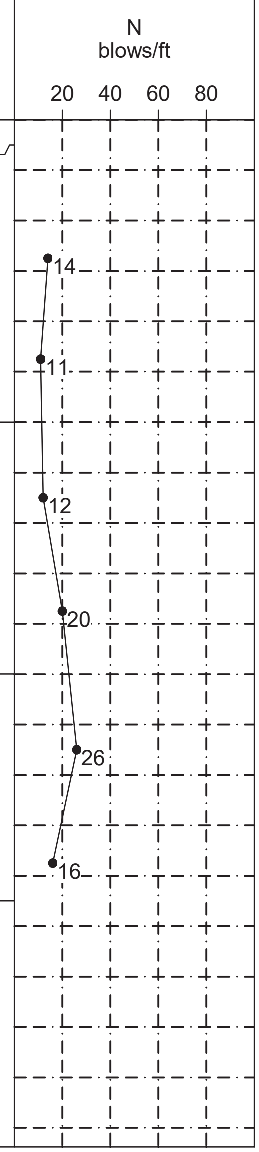
NO: 5

GROUNDWATER DEPTH

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
							AC	6 inches ASPHALT
			SS	4-6-8 14	9		SC-SM	SILTY, CLAYEY SAND, low plasticity, medium dense, slightly moist, light brown/white
5			SS	8-5-6 11	9			
			UD	4-8 12	26	99	CH	CLAY with SAND, high plasticity, moderately firm to firm, very moist, dark brown
10			SS	8-6-14 20	26			
			UD	12-14 26	2	115	SM	SILTY SAND with GRAVEL, non-plastic, medium dense, dry, gray
15			SS	6-7-9 16	2			
								Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet
20								



LOG OF TEST BORING 1-30314.GPJ GEO TEST.GDT 7/19/23

LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
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GEO-TEST

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/10/2023 Project No: 1-30314
Elevation: Type: 2.25" ID HSA

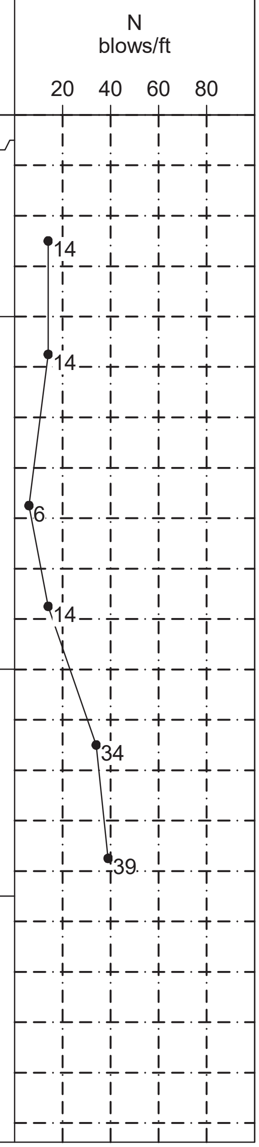
LOG OF TEST BORINGS

NO: 6

GROUNDWATER DEPTH

During Drilling: none After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0–0.5					AC	6 inches ASPHALT
	UD	7-7 14	11	120	SM	SILTY SAND, non-plastic, medium dense, dry, light brown
5	SS	5-6-8 14	4		SP-SM	POORLY GRADED SAND with SILT, non-plastic, loose to medium dense, dry, gray
	SS	3-3-3 6	4			
10	SS	4-5-9 14	5			
	UD	12-22 34	11	103	SP	POORLY GRADED SAND with GRAVEL, non-plastic, dense, dry, gray
15	SS	4-14-25 39	2			
20						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
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GEO-TEST

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/17/2023 Project No: 1-30314
Elevation: Type: 2.25" ID HSA

LOG OF TEST BORINGS

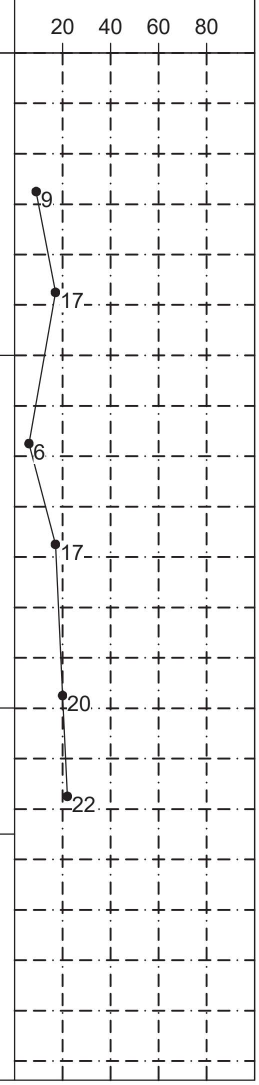
NO: 7

GROUNDWATER DEPTH

During Drilling: none After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0–6	SS	4-4-5 9			SM	SILTY SAND, non-plastic, loose to mediumm dense, slightly moist, brown
	SS	6-8-9 17				
6–13	SS	3-2-4 6			SC-SM	SILTY, CLAYEY SAND, low plasticity, soft to firm, slightly moist, light brown
	SS	7-8-9 17				
	SS	7-9-11 20				
13–15.5	SS	6-10-12 22			SP-SM	POORLY GRADED SAND with SILT, non-plastic, medium dense, dry, gray
						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet

N blows/ft



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
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GEO-TEST

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/17/2023 Project No: 1-30314
Elevation: Type: 2.25" ID HSA

LOG OF TEST BORINGS

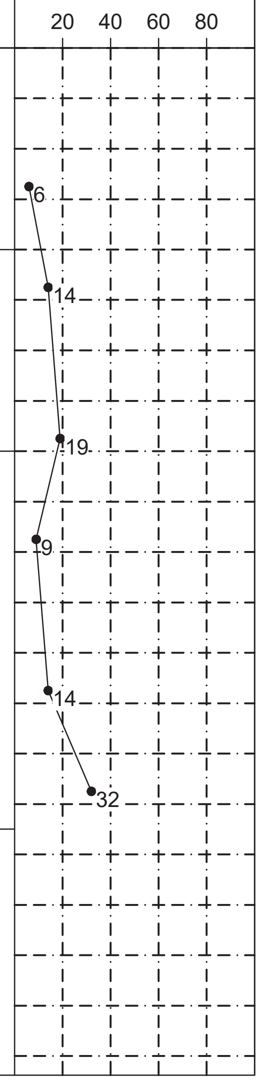
NO: 8

GROUNDWATER DEPTH

During Drilling: none After 24 Hours:

DEPTH (Ft)	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0–4	SS	2-3-3 6			SM	SILTY SAND, non-plastic, loose, slightly moist, brown
4–8	SS	6-6-8 14			SC-SM	SILTY, CLAYEY SAND, low plasticity, moderately firm to firm, slightly moist, light brown/white
	SS	4-9-10 19				
8–15.5	SS	3-3-6 9			SP-SM	POORLY GRADED SAND with SILT, non-plastic, loose to dense, dry, gray
	SS	7-7-7 14				
	SS	11-14-18 32				
						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet

N blows/ft



LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
AMSL - Above Mean Sea Level
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GEO-TEST

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/10/2023 | Project No: 1-30314
Elevation: | Type: 3.25" ID HSA

LOG OF TEST BORINGS

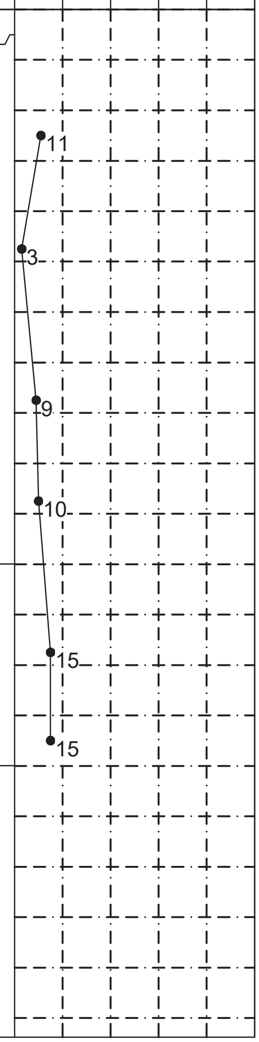
NO: 9

GROUNDWATER DEPTH

During Drilling: none | After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0–0.5					AC	6 inches ASPHALT
2–3	UD	6-5 11	7	118	SC-SM	SILTY, CLAYEY SAND, low plasticity, very soft to moderately firm, slightly moist, light brown/white
4–5.5	SS	2-2-1 3	9		SC-SM	
7–8.5	SS	4-6-3 9	8		SC-SM	
9–10.5	SS	5-4-6 10	8		SC-SM	
12–13.5	SS	6-7-8 15	3		SP-SM	POORLY GRADED SAND with SILT, non-plastic, medium dense, dry, gray
14–15	UD	6-9 15	3	106	SP-SM	
15						Stopped Auger @ 14 feet Stopped Sampler @ 15 feet

N blows/ft



LEGEND

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UD/SL - Undisturbed Sleeve
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GEO-TEST

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Date: 07/10/2023 Project No: 1-30314
Elevation: Type: 2.25" ID HSA

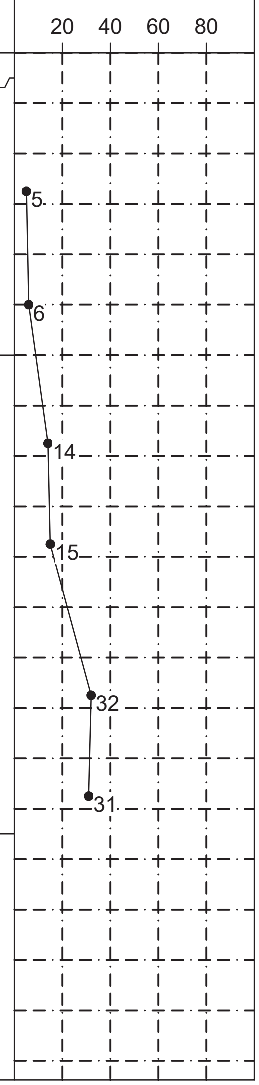
LOG OF TEST BORINGS

NO: 10

GROUNDWATER DEPTH

During Drilling: none After 24 Hours:

DEPTH (Ft)	SAMPLE TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
0–0.5					AC	6 inches ASPHALT
	SS	3-2-3 5	6		SC	CLAYEY SAND, medium plasticity, soft, slightly moist, light brown
5	UD	3-3 6	7	101	SC	
	SS	5-8-6 14	8		SP-SM	POORLY GRADED SAND with SILT, non-plastic, medium dense to dense, slightly moist to dry, gray
10	SS	5-7-8 15	4		SP-SM	
	SS	10-15-17 32	7		SP-SM	
15	SS	8-15-16 31	4		SP-SM	
						Stopped Auger @ 14 feet Stopped Sampler @ 15.5 feet



LEGEND

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UD/SL - Undisturbed Sleeve
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SUMMARY OF LABORATORY RESULTS

						SIEVE ANALYSIS PERCENT PASSING											
TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
1	3.0	SC	11.6	30	18	42	64	77	90	93	100						
1	5.0		11.2														
1	8.0		4.4														
1	10.0	SW-SM	3.2	NP	NP	6	9	15	61	81	96	98	100				
1	13.0		4.3														
1	15.0		5.8														
2	3.0		9.3														
2	5.0		7.7														
2	8.0		7.0														
2	10.0		7.1														
2	13.0		6.3														
2	15.0	SC-SM	6.5	23	7	29	52	70	86	89	92	92	100				
3	5.0	SC-SM	7.1	22	5	23	39	65	84	88	94	94	100				
3	7.5		25.1														
3	10.0	CL	27.5	32	10	77	85	97	100								
3	13.0		2.6														
3	15.0		3.5														
4	3.0		8.6														
4	5.0	SC	8.1	25	10	31	56	74	81	95	97	99	100				

GEO-TEST

LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Pueblo Alto - Mile Hi GSI Pilot Project
Location: Albuquerque, NM
Number: 1-30314

SUMMARY OF LABORATORY RESULTS

TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	SIEVE ANALYSIS PERCENT PASSING NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
4	8.0		6.8														
4	10.0		5.9														
4	13.0		4.6														
4	15.0	SM	4.6	NP	NP	24	53	74	93	98	99	99	100				
5	3.0		8.8														
5	5.0		9.2														
5	7.5		25.6														
5	10.0	CH	26.4	77	47	61	67	83	97	99	100						
5	12.5		1.9														
5	15.0	SM	1.6	NP	NP	32	35	48	60	72	83	85	100				
6	3.0	SM	11.0	NP	NP	12	29	51	87	94	99	99	100				
6	5.0		3.7														
6	8.0		3.6														
6	10.0	SP-SM	5.2	NP	NP	8	14	69	96	99	99	100					
6	13.0		10.9														
6	15.0	SP	2.4	NP	NP	4	6	17	49	64	79	83	100				
9	3.0		7.1														
9	5.0	SC-SM	8.9	22	5	39	64	77	91	97	99	100					
9	8.0		8.4														

GEO-TEST

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Project: Pueblo Alto - Mile Hi GSI Pilot Project

Location: Albuquerque, NM

Number: 1-30314

SUMMARY OF LABORATORY RESULTS

						SIEVE ANALYSIS PERCENT PASSING											
TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
9	10.0		7.9														
9	13.0		2.6														
9	15.0	SP-SM	2.8	NP	NP	7	20	39	85	91	94	95	100				
10	3.0		5.7														
10	5.0	SC	7.2	29	15	32	54	71	91	98	100						
10	8.0		7.7														
10	10.0		3.5														
10	13.0	SP-SM	6.9	NP	NP	6	23	44	88	95	97	97	100				
10	15.0		3.6														

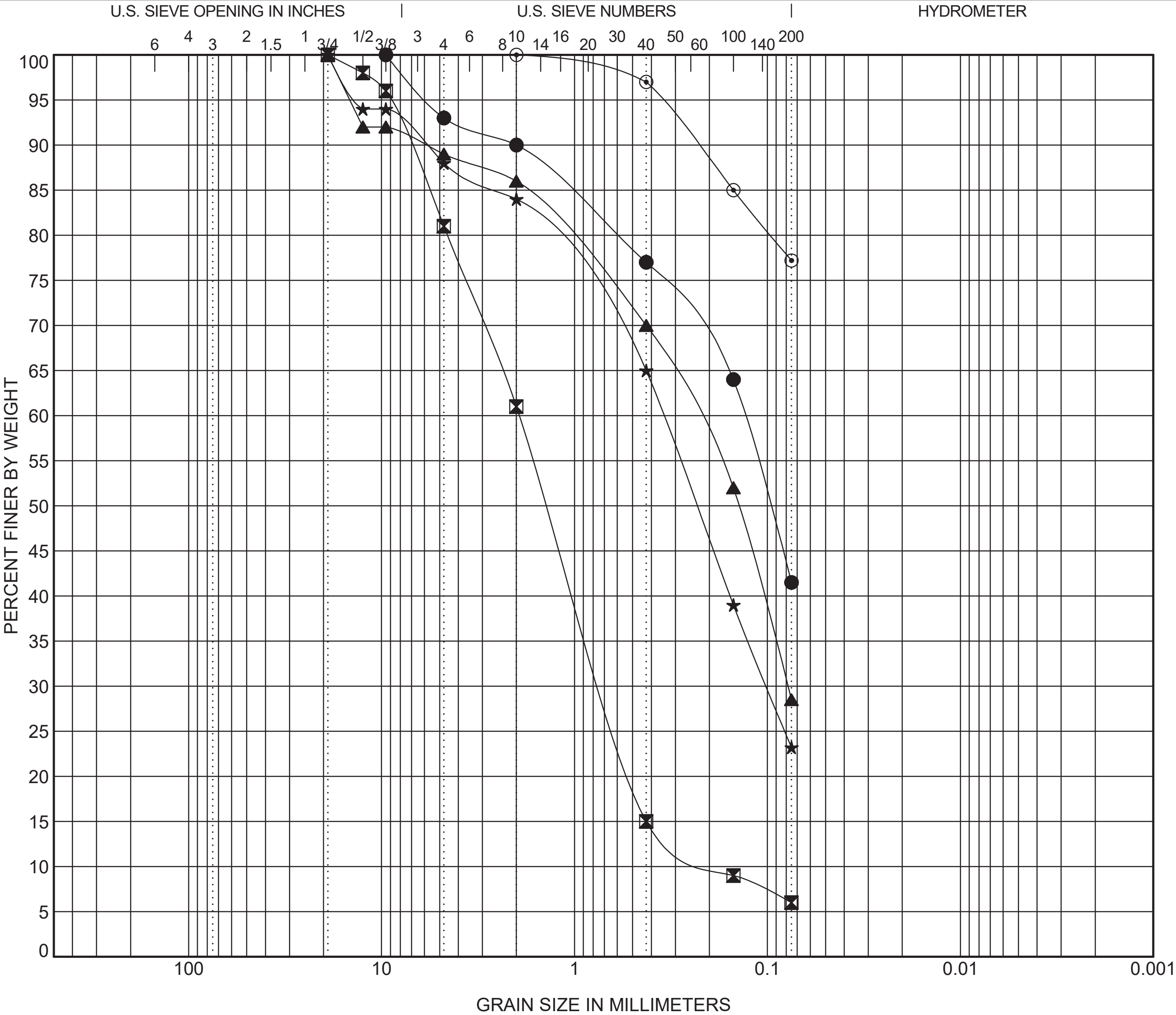
GEO-TEST

LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Pueblo Alto - Mile Hi GSI Pilot Project

Location: Albuquerque, NM

Number: 1-30314



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1	3.0	**CLAYEY SAND(SC)**	30	12	18		
⧗	1	10.0	**WELL-GRADED SAND with SILT and GRAVEL(SW-SM)**	NP	NP	NP	1.44	10.84
▲	2	15.0	**SILTY, CLAYEY SAND(SC-SM)**	23	16	7		
★	3	5.0	**SILTY, CLAYEY SAND(SC-SM)**	22	17	5		
⊙	3	10.0	**LEAN CLAY with SAND(CL)**	32	22	10		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1	3.0	9.5	0.133			7.0	51.5	41.5	
⧗	1	10.0	19	1.934	0.704	0.178	19.0	75.0	6.0	
▲	2	15.0	19	0.238	0.078		11.0	60.5	28.5	
★	3	5.0	19	0.348	0.101		12.0	64.8	23.2	
⊙	3	10.0	2				0.0	22.8	77.2	

GEO-TEST

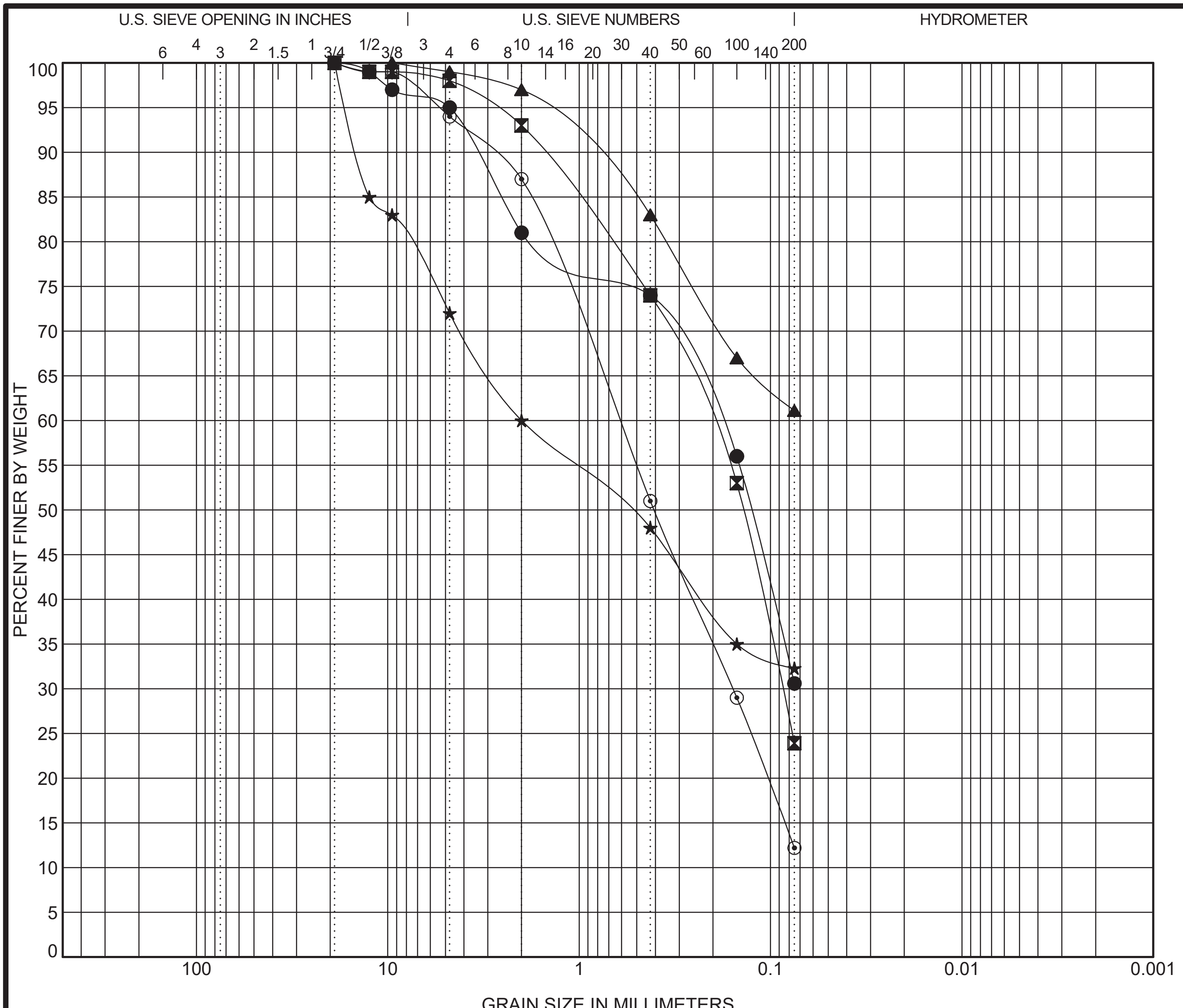
GRAIN SIZE DISTRIBUTION

Project: Pueblo Alto - Mile Hi GSI Pilot Project

Location: Albuquerque, NM

Number: 1-30314

US GRAIN SIZE 1-30314.GPJ GEO TEST.GDT 7/19/23



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	4	5.0	**CLAYEY SAND(SC)**	**25**	**15**	**10**		
⧗	4	15.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		
▲	5	10.0	**SANDY FAT CLAY(CH)**	**77**	**30**	**47**		
★	5	15.0	**SILTY SAND with GRAVEL(SM)**	**NP**	**NP**	**NP**		
⊙	6	3.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**	**0.58**	**9.14**

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	4	5.0	**19**	**0.189**			**5.0**	**64.4**	**30.6**	
⧗	4	15.0	**19**	**0.212**	**0.087**		**2.0**	**74.1**	**23.9**	
▲	5	10.0	**9.5**				**1.0**	**37.9**	**61.1**	
★	5	15.0	**19**	**2**			**28.0**	**39.7**	**32.3**	
⊙	6	3.0	**19**	**0.626**	**0.157**		**6.0**	**81.8**	**12.2**	

US GRAIN SIZE 1-30314.GPJ GEO TEST.GDT 7/19/23

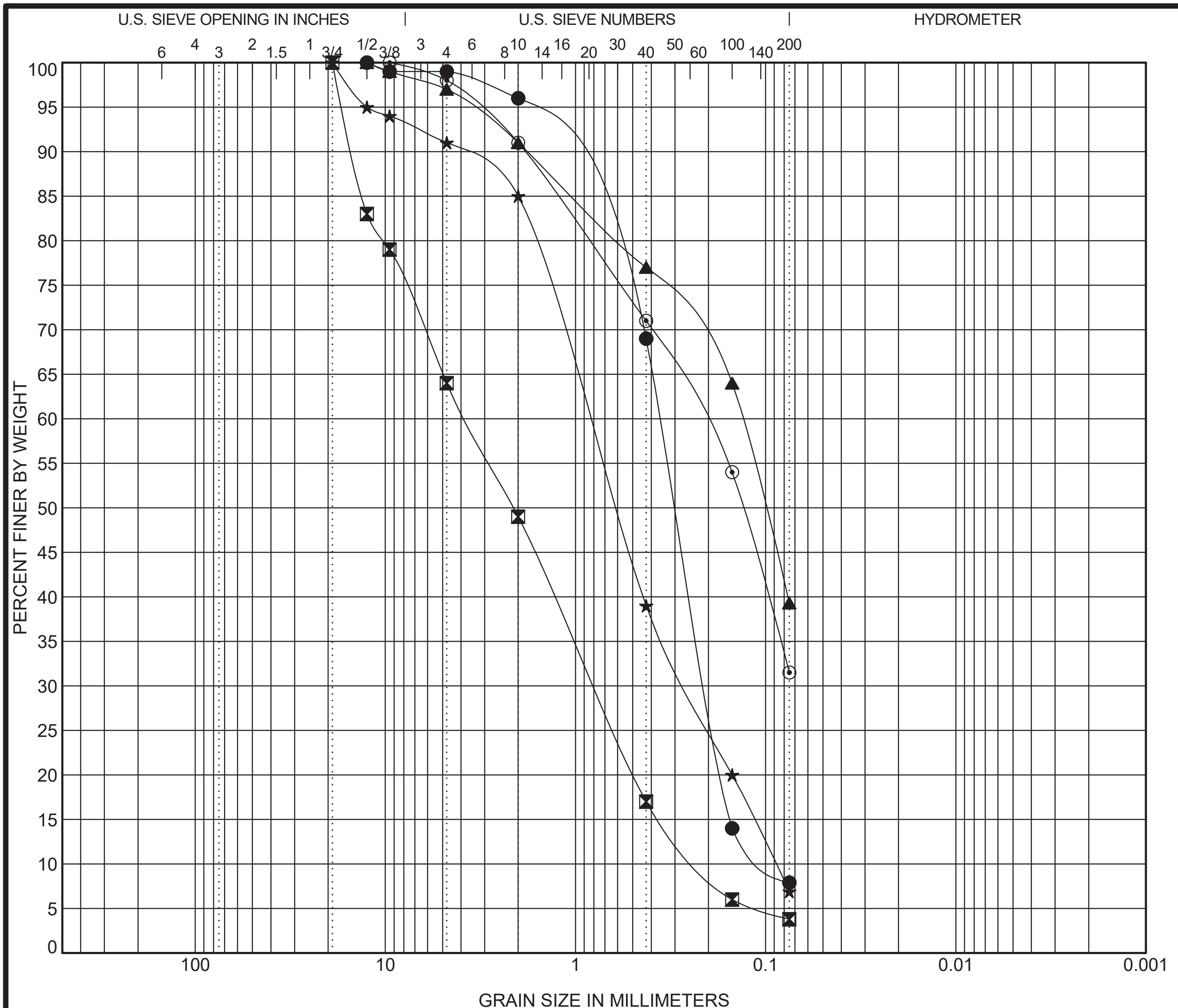
GEO-TEST

GRAIN SIZE DISTRIBUTION

Project: Pueblo Alto - Mile Hi GSI Pilot Project

Location: Albuquerque, NM

Number: 1-30314



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	6	10.0	**POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**	**1.21**	**3.76**
⧗	6	15.0	**POORLY GRADED SAND with GRAVEL(SP)**	**NP**	**NP**	**NP**	**0.77**	**17.22**
▲	9	5.0	**SILTY, CLAYEY SAND(SC-SM)**	**22**	**17**	**5**		
★	9	15.0	**POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**	**0.88**	**9.75**
⊙	10	5.0	**CLAYEY SAND(SC)**	**29**	**14**	**15**		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6	10.0	**12.5**	**0.358**	**0.203**	**0.095**	**1.0**	**91.1**	**7.9**	
⧗	6	15.0	**19**	**3.772**	**0.797**	**0.219**	**36.0**	**60.2**	**3.8**	
▲	9	5.0	**12.5**	**0.134**			**3.0**	**57.7**	**39.3**	
★	9	15.0	**19**	**0.862**	**0.26**	**0.088**	**9.0**	**84.1**	**6.9**	
⊙	10	5.0	**9.5**	**0.217**			**2.0**	**66.5**	**31.5**	

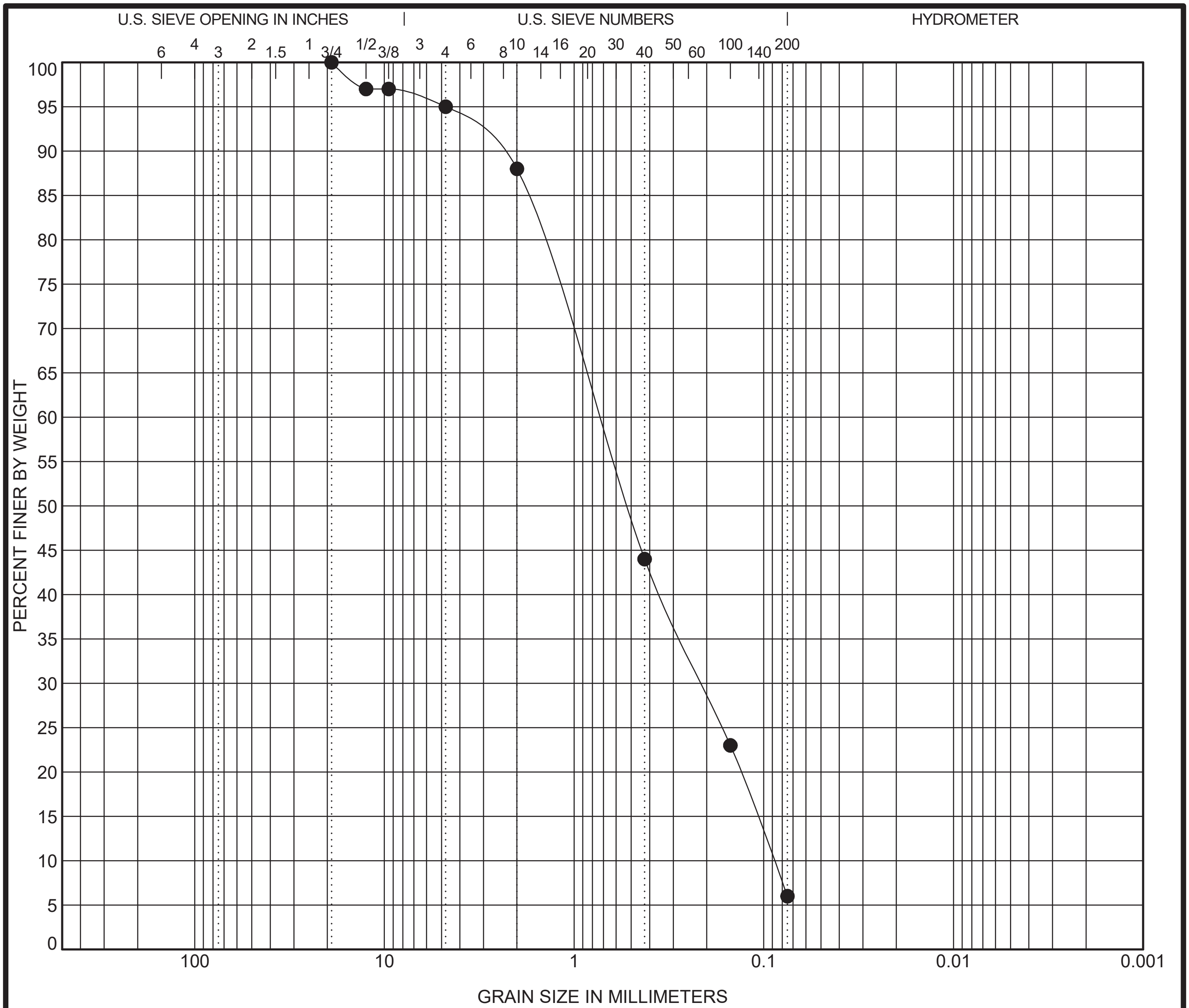
GEO-TEST

GRAIN SIZE DISTRIBUTION

Project: Pueblo Alto - Mile Hi GSI Pilot Project

Location: Albuquerque, NM

Number: 1-30314



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● 10	13.0	**POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**	**0.68**	**8.45**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 10	13.0	**19**	**0.746**	**0.212**	**0.088**	**5.0**	**89.0**	**6.0**	

US GRAIN SIZE 1-30314.GPJ GEO TEST.GDT 7/19/23

GEO-TEST

GRAIN SIZE DISTRIBUTION

Project: Pueblo Alto - Mile Hi GSI Pilot Project

Location: Albuquerque, NM

Number: 1-30314

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 1
Sample Depth:	5 feet
Soil Description:	Low Plasticity Clayey Sand (SC)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	247.6	grams	Weight of Sample:	481.5	grams
Apparatus Weight + Soil:	729.1	grams	Weight of Sample:	1.061508	lb
Mold Diameter:	6.413	cm	Mold Area:	32.30073	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	6.99	cm	Area Factor:	0.039218	
Pressure Head Applied 1psi = 70.34 cm:	1406.8	cm	Volume of Sample:	225.7821	cm^3
Can #:			Volume of Sample:	0.007973	ft^3
Wet Weight:	199.3	grams	**Unit Weight:**	**133.1**	**lb/ft^3**
Dry Weight:	179.6	grams	**Moisture Content:**	**11.0**	**%**
			Dry Unit Weight:	**120.0**	**lb/ft^3**

Time	Trial 1	Trial 2	Trial 3
Hour	0	0	0
Minute	11	11	11
Second	57	24	56
Total (hr)	0.199167	0.19	0.198889
h_0	65 cm	65 cm	65 cm
h_1	10 cm	10 cm	10 cm
$Head_0$	1478.79 cm	1478.79 cm	1478.79 cm
$Head_1$	1423.79 cm	1423.79 cm	1423.79 cm
Ks (cm/hour)	0.05 cm/hr	0.05 cm/hr	0.05 cm/hr
Ks (cm/sec)	1.45E-05 cm/s	1.52E-05 cm/s	1.45E-05 cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **0.05 cm/hr**

Saturated Hydraulic Conductivity, K_S: **1.47E-05 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 1
Sample Depth:	13 feet
Soil Description:	Non-plastic Well Graded Sand (SW)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	216.3	grams	Weight of Sample:	649.9	grams
Apartus Weight + Soil:	866.2	grams	Weight of Sample:	1.43276	lb
Mold Diameter:	6.187	cm	Mold Area:	30.06423	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.14	cm	Area Factor:	0.042135	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	334.9155	cm^3
Can #:			Volume of Sample:	0.011827	ft^3
Wet Weight:	373.7	grams	**Unit Weight:**	**121.1**	**lb/ft^3**
Dry Weight:	358.2	grams	**Moisture Content:**	**4.3**	**%**
			Dry Unit Weight:	**116.1**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	0		0		0	
Minute	0		0		0	
Second	45		42		42	
Total (hr)	0.0125		0.011667		0.011667	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	76.14	cm	76.14	cm	76.14	cm
$Head_1$	21.14	cm	21.14	cm	21.14	cm
Ks (cm/hour)	48.12	cm/hr	51.56	cm/hr	51.56	cm/hr
Ks (cm/sec)	1.34E-02	cm/s	1.43E-02	cm/s	1.43E-02	cm/s

Saturated Hydraulic Conductivity, K_S: **50.41 cm/hr**

Saturated Hydraulic Conductivity, K_S: **1.40E-02 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 2
Sample Depth:	3 feet
Soil Description:	Low plasticity Silty, Clayey Sand (SC-SM)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	211.9	grams	Weight of Sample:	676.3	grams
Apartus Weight + Soil:	888.2	grams	Weight of Sample:	1.490961	lb
Mold Diameter:	6.19	cm	Mold Area:	30.09339	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.2	cm	Area Factor:	0.042095	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	337.046	cm^3
Can #:			Volume of Sample:	0.011903	ft^3
Wet Weight:	194.1	grams	**Unit Weight:**	**125.3**	**lb/ft^3**
Dry Weight:	177.6	grams	**Moisture Content:**	**9.3**	**%**
			Dry Unit Weight:	**114.6**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	0		0		0	
Minute	27		27		27	
Second	35		23		28	
Total (hr)	0.459722		0.456389		0.457778	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	76.2	cm	76.2	cm	76.2	cm
$Head_1$	21.2	cm	21.2	cm	21.2	cm
Ks (cm/hour)	1.31	cm/hr	1.32	cm/hr	1.32	cm/hr
Ks (cm/sec)	3.64E-04	cm/s	3.67E-04	cm/s	3.66E-04	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **1.32 cm/hr**

Saturated Hydraulic Conductivity, K_S: **3.66E-04 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 2
Sample Depth:	10 feet
Soil Description:	Low plasticity Silty, Clayey Sand (SC-SM)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	213.2	grams	Weight of Sample:	714.7	grams
Aparartus Weight + Soil:	927.9	grams	Weight of Sample:	1.575617	lb
Mold Diameter:	6.198	cm	Mold Area:	30.17123	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.34	cm	Area Factor:	0.041986	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	342.1418	cm^3
Can #:			Volume of Sample:	0.012083	ft^3
Wet Weight:	218.3	grams	**Unit Weight:**	**130.4**	**lb/ft^3**
Dry Weight:	203.9	grams	**Moisture Content:**	**7.1**	**%**
			Dry Unit Weight:	**121.8**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	0		0		0	
Minute	52		53		52	
Second	36		29		53	
Total (hr)	0.876667		0.891389		0.881389	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	76.34	cm	76.34	cm	76.34	cm
$Head_1$	21.34	cm	21.34	cm	21.34	cm
Ks (cm/hour)	0.69	cm/hr	0.68	cm/hr	0.69	cm/hr
Ks (cm/sec)	1.92E-04	cm/s	1.89E-04	cm/s	1.91E-04	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **0.69 cm/hr**

Saturated Hydraulic Conductivity, K_S: **1.91E-04 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 3
Sample Depth:	7.5 feet
Soil Description:	Low Plasticity Clay with Sand (CL)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	213.4	grams	Weight of Sample:	652.8	grams
Apparartus Weight + Soil:	866.2	grams	Weight of Sample:	1.439153	lb
Mold Diameter:	6.187	cm	Mold Area:	30.06423	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.14	cm	Area Factor:	0.042135	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	334.9155	cm^3
Can #:			Volume of Sample:	0.011827	ft^3
Wet Weight:	332.1	grams	**Unit Weight:**	**121.7**	**lb/ft^3**
Dry Weight:	265.4	grams	**Moisture Content:**	**25.1**	**%**
			Dry Unit Weight:	**97.2**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	5		5		5	
Minute	34		15		22	
Second	45		35		31	
Total (hr)	5.579167		5.259722		5.375278	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	76.14	cm	76.14	cm	76.14	cm
$Head_1$	21.14	cm	21.14	cm	21.14	cm
Ks (cm/hour)	0.11	cm/hr	0.11	cm/hr	0.11	cm/hr
Ks (cm/sec)	2.99E-05	cm/s	3.18E-05	cm/s	3.11E-05	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **0.11 cm/hr**

Saturated Hydraulic Conductivity, K_S: **3.09E-05 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 3
Sample Depth:	13 feet
Soil Description:	Non-plastic Poorly Graded Sand (SP)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	203.5	grams	Weight of Sample:	534.2	grams
Apparartus Weight + Soil:	737.7	grams	Weight of Sample:	1.17769	lb
Mold Diameter:	6.203	cm	Mold Area:	30.21993	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.36	cm	Area Factor:	0.041918	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	343.2984	cm^3
Can #:			Volume of Sample:	0.012123	ft^3
Wet Weight:	175	grams	**Unit Weight:**	**97.1**	**lb/ft^3**
Dry Weight:	170.5	grams	**Moisture Content:**	**2.6**	**%**
			Dry Unit Weight:	**94.6**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	0		0		0	
Minute	0		0		0	
Second	41		41		41	
Total (hr)	0.011389		0.011389		0.011389	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	76.36	cm	76.36	cm	76.36	cm
$Head_1$	21.36	cm	21.36	cm	21.36	cm
Ks (cm/hour)	53.27	cm/hr	53.27	cm/hr	53.27	cm/hr
Ks (cm/sec)	1.48E-02	cm/s	1.48E-02	cm/s	1.48E-02	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **53.27 cm/hr**

Saturated Hydraulic Conductivity, K_S: **1.48E-02 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 5
Sample Depth:	7.5 feet
Soil Description:	High Plasticity Clay (CH)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	208.4	grams	Weight of Sample:	609.8	grams
Aparartus Weight + Soil:	818.2	grams	Weight of Sample:	1.344356	lb
Mold Diameter:	6.165	cm	Mold Area:	29.8508	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	10.25	cm	Area Factor:	0.042437	
Pressure Head Applied 1psi = 70.34 cm:	1406.8	cm	Volume of Sample:	305.9707	cm^3
Can #:			Volume of Sample:	0.010805	ft^3
Wet Weight:	347.6	grams	**Unit Weight:**	**124.4**	**lb/ft^3**
Dry Weight:	276.2	grams	**Moisture Content:**	**25.9**	**%**
			Dry Unit Weight:	**98.9**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	8		8		8	
Minute	0		0		0	
Second	0		0		0	
Total (hr)	8		8		8	
h_0	65	cm	65	cm	65	cm
h_1	24	cm	21	cm	20	cm
$Head_0$	1482.05	cm	1482.05	cm	1482.05	cm
$Head_1$	1441.05	cm	1438.05	cm	1437.05	cm
Ks (cm/hour)	0.00	cm/hr	0.00	cm/hr	0.00	cm/hr
Ks (cm/sec)	4.24E-07	cm/s	4.55E-07	cm/s	4.66E-07	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **0.00 cm/hr**

Saturated Hydraulic Conductivity, K_S: **4.48E-07 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 5
Sample Depth:	12.5 feet
Soil Description:	Non-plastic Silty Sand (SM)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	211.4	grams	Weight of Sample:	573.8	grams
Apapartus Weight + Soil:	785.2	grams	Weight of Sample:	1.264991	lb
Mold Diameter:	6.165	cm	Mold Area:	29.8508	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	10.25	cm	Area Factor:	0.042437	
Pressure Head Applied 1psi = 70.34 cm:	1406.8	cm	Volume of Sample:	305.9707	cm^3
Can #:			Volume of Sample:	0.010805	ft^3
Wet Weight:	216.3	grams	**Unit Weight:**	**117.1**	**lb/ft^3**
Dry Weight:	212.3	grams	**Moisture Content:**	**1.9**	**%**
			Dry Unit Weight:	**114.9**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	0		0		0	
Minute	2		2		2	
Second	48		38		32	
Total (hr)	0.046667		0.043889		0.042222	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	1482.05	cm	1482.05	cm	1482.05	cm
$Head_1$	1427.05	cm	1427.05	cm	1427.05	cm
Ks (cm/hour)	0.35	cm/hr	0.37	cm/hr	0.39	cm/hr
Ks (cm/sec)	9.79E-05	cm/s	1.04E-04	cm/s	1.08E-04	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **0.37 cm/hr**

Saturated Hydraulic Conductivity, K_S: **1.03E-04 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 9
Sample Depth:	3 feet
Soil Description:	Low Plasticity Silty, Clayey Sand (SC-SM)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	212.8	grams	Weight of Sample:	693.1	grams
Apparartus Weight + Soil:	905.9	grams	Weight of Sample:	1.527998	lb
Mold Diameter:	6.205	cm	Mold Area:	30.23942	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.32	cm	Area Factor:	0.041891	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	342.3102	cm^3
Can #:			Volume of Sample:	0.012089	ft^3
Wet Weight:	215.4	grams	**Unit Weight:**	**126.4**	**lb/ft^3**
Dry Weight:	201.1	grams	**Moisture Content:**	**7.1**	**%**
			Dry Unit Weight:	**118.0**	**lb/ft^3**

Time	Trial 1	Trial 2	Trial 3
Hour	0	0	0
Minute	14	14	14
Second	32	12	21
Total (hr)	0.242222	0.236667	0.239167
h_0	65 cm	65 cm	65 cm
h_1	10 cm	10 cm	10 cm
$Head_0$	76.32 cm	76.32 cm	76.32 cm
$Head_1$	21.32 cm	21.32 cm	21.32 cm
Ks (cm/hour)	2.50 cm/hr	2.56 cm/hr	2.53 cm/hr
Ks (cm/sec)	6.94E-04 cm/s	7.10E-04 cm/s	7.02E-04 cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **2.53 cm/hr**

Saturated Hydraulic Conductivity, K_S: **7.02E-04 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 9
Sample Depth:	15 feet
Soil Description:	Non-plastic Poorly Graded Sand (SP)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	211.6	grams	Weight of Sample:	585.8	grams
Apparartus Weight + Soil:	797.4	grams	Weight of Sample:	1.291446	lb
Mold Diameter:	6.187	cm	Mold Area:	30.06423	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	11.14	cm	Area Factor:	0.042135	
Pressure Head Applied 1psi = 70.34 cm:	0	cm	Volume of Sample:	334.9155	cm^3
Can #:			Volume of Sample:	0.011827	ft^3
Wet Weight:	187.1	grams	**Unit Weight:**	**109.2**	**lb/ft^3**
Dry Weight:	182	grams	**Moisture Content:**	**2.8**	**%**
			Dry Unit Weight:	**106.2**	**lb/ft^3**

Time	Trial 1	Trial 2	Trial 3
Hour	0	0	0
Minute	0	0	0
Second	10	10	10
Total (hr)	0.002778	0.002778	0.002778
h_0	65 cm	65 cm	65 cm
h_1	10 cm	10 cm	10 cm
$Head_0$	76.14 cm	76.14 cm	76.14 cm
$Head_1$	21.14 cm	21.14 cm	21.14 cm
Ks (cm/hour)	216.53 cm/hr	216.53 cm/hr	216.53 cm/hr
Ks (cm/sec)	6.01E-02 cm/s	6.01E-02 cm/s	6.01E-02 cm/s

Saturated Hydraulic Conductivity, $K_{S:}$ **216.53 cm/hr**

Saturated Hydraulic Conductivity, K_S: **6.01E-02 cm/s**

Rigid Wall Constant Head Permeability

GEO-TEST

Project:	Pueblo Alto - Mile Hi GSI Pilot Project
Job #:	1-30314
Boring/Location:	Boring 10
Sample Depth:	5 feet
Soil Description:	Low Plasticity Clayey Sand (SC)
Remolded to:	N/A Undisturbed Tube

Aparatus Weight Empty:	209.5	grams	Weight of Sample:	532.6	grams
Apparartus Weight + Soil:	742.1	grams	Weight of Sample:	1.174162	lb
Mold Diameter:	6.165	cm	Mold Area:	29.8508	cm^2
Pipe Diameter:	1.27	cm	Pipe Area:	1.266769	cm^2
Length of Sample	10.25	cm	Area Factor:	0.042437	
Pressure Head Applied 1psi = 70.34 cm:	1406.8	cm	Volume of Sample:	305.9707	cm^3
Can #:			Volume of Sample:	0.010805	ft^3
Wet Weight:	194.7	grams	**Unit Weight:**	**108.7**	**lb/ft^3**
Dry Weight:	181.7	grams	**Moisture Content:**	**7.2**	**%**
			Dry Unit Weight:	**101.4**	**lb/ft^3**

Time	Trial 1		Trial 2		Trial 3	
Hour	0		0		0	
Minute	5		5		5	
Second	21		12		15	
Total (hr)	0.089167		0.086667		0.0875	
h_0	65	cm	65	cm	65	cm
h_1	10	cm	10	cm	10	cm
$Head_0$	1482.05	cm	1482.05	cm	1482.05	cm
$Head_1$	1427.05	cm	1427.05	cm	1427.05	cm
Ks (cm/hour)	0.18	cm/hr	0.19	cm/hr	0.19	cm/hr
Ks (cm/sec)	5.12E-05	cm/s	5.27E-05	cm/s	5.22E-05	cm/s

Saturated Hydraulic Conductivity, $K_{S:}$	**0.19 cm/hr**
Saturated Hydraulic Conductivity, K_S:	**5.21E-05 cm/s**

Attachment 1
BOHANNAN HUSTON, INC.
SUBCONSULTANT QUALITY VERIFICATION FORM

Subconsultant must provide a signed copy of this form with each deliverable specified in the contract or the deliverable will not be accepted. A copy of Subconsultant's internal QA/QC review should be kept and may be requested by Bohannan Huston, Inc. for audit purposes.

This form must be signed by Subconsultant's Quality Reviewer.

Project Name: CABQ Pueblo Alto Mile Hi GSI Pilot Project

Bohannan Huston Project Number: 20230388

Deliverable Description: Geotechnical Report

I, Patrick Whorton, warrant and represent that the project deliverable described above and attached to this form was developed in accordance with the project scope of work, and is fully in compliance with the specifications or requirements. All elements relating to the quality of the deliverable were verified in accordance with the requirements of my firm's internal quality management/quality assurance system.

Signature: ______________________ Date: 7/20/23
(by QC Reviewer)

Subconsultant: Geo-Test, Inc.

APPENDIX G – COST ESTIMATES

ENGINEER'S OPINION OF PROBABLE COSTS
Pueblo Alto Mile Hi GSI Pilot Project

Item No.	Description	Unit Price	Quantity	Unit	Estimate Amount
	TOTAL PROJECT				
1	Construction Staking, Complete	1.43%	-	%	$ 79,000.00
2	Construction Surveying, compl.	0.74%	-	%	$ 44,000.00
3	Construction Mobilization, compl.	4.26%	-	%	$ 232,000.00
4	Construction Demobilization, compl.	1.00%	-	%	$ 56,000.00
5	Construction Traffic Control & Barricading, compl.	5.00%	-	%	$ 272,000.00
Roadway					
6	Excavate & Dispose of unsuitable material, compl.	$20.00	1,020	CY	$ 20,400.00
7	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	6,270	SY	$ 33,231.00
8	Aggregate Base Course, crushed, 6" at 95% compaction	$15.00	690	SY	$ 10,350.00
9	Prime Coat, emulsified asphalt, cip.	$1.10	5,580	SY	$ 6,138.00
10	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	11,160	SY	$ 178,560.00
11	Tack Coat	$1.00	5,580	SY	$ 5,580.00
12	Sidewalk, 4" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2430	$85.00	4,800	SY	$ 408,000.00
13	Drivepad, 6" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2425	$120.00	1,690	SY	$ 202,800.00
14	Header Curb, Portland Cement Concrete, incl. subgrade, cip., SD 2415	$38.00	3,410	LF	$ 129,580.00
15	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$50.00	7,550	SY	$ 377,500.00
16	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	$12.00	1,020	LF	$ 12,240.00
17	Existing Curb & Gutter, PC Concrete , saw to curb face, remove & dispose, compl.	$12.00	2,920	LF	$ 35,040.00
18	Existing Sidewalk, 4" PC Concrete, remove & dispose	$17.00	2,800	SY	$ 47,600.00
19	Remove and dispose existing PCC sidewalk and drivepad	$17.00	1,160	SY	$ 19,720.00
20	Plain Riprap, cip.	$210.00	86	CY	$ 18,060.00
21	Check dam	$52.00	203	LF	$ 10,556.00
				Roadway Subtotal	**$ 1,515,355.00**
Underground Storage					
22	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	5,730	SY	$ 30,369.00
23	Prime Coat, emulsified asphalt, cip.	$1.10	5,730	SY	$ 6,303.00
24	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	11,460	SY	$ 183,360.00
25	Tack Coat	$1.00	5,730	SY	$ 5,730.00
26	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$12.00	6,090	SY	$ 73,080.00
27	Stone/Aggregate Backfill	$90.00	6,450	CY	$ 580,500.00
28	Trenching, Backfilling, & Compaction, for 18" to 36" sewer pipe, over 12' to 16' in depth, pipe not incl., compl.	$70.00	760	LF	$ 53,200.00
29	Trenching, Backfilling, & Compaction, over 60" sewer pipe,12' to 16' in depth, pipe not incl., compl.	$100.00	4,040	LF	$ 404,000.00
30	24" RCP, Class III, furnish & place in open trench	$90.00	540	LF	$ 48,600.00
31	30" RCP, Class III, furnish & place in open trench	$130.00	220	LF	$ 28,600.00
32	84" CMP	$9.00	155,100	CF	$ 1,395,900.00
33	Catch Basin, Type "A", Double Grate, cip. SD 2201	$12,450.00	2	EA	$ 24,900.00
34	Catch Basin, Type "D", Single Grate, cip. SD 2206	$8,800.00	11	EA	$ 96,800.00
33	Manhole, 4' dia., Type "C" or "E", 6' to 10' deep, cip. SD 2101	$8,300.00	6	EA	$ 49,800.00
34	Water Quality Manhole	$52,000.00	4	EA	$ 208,000.00
35	Access Manhole, cip.	$2,800.00	25	EA	$ 70,000.00

				Underground Storage Subtotal	**$**	**3,259,142.00**
Landscaping						
36	GSI Landscaping, incl. plants and mulch, cip.	$178,270.00	1	LS	$	178,270.00
37	Irrigation	$440,000.00	1	LS	$	440,000.00
				Landscaping Subtotal	**$**	**618,270.00**
				CONSTRUCTION SUBTOTAL	**$**	**6,075,767.00**
				CONTINGENCY 30%	$	1,822,730.00
				FINAL DESIGN PHASE PROFESSIONAL SERVICES 10%	$	789,850.00
				CONSTRUCTION PHASE PROFESSIONAL SERVICES (CONST. ADMIN & OBSERVATION, MATERIALS QC TESTING, ETC.) 10%	$	789,850.00
				NON-CONSTRUCTION SUBTOTAL	**$**	**3,402,430.00**
				TOTAL ALL ITEMS (BEFORE NMGRT)	**$**	**9,478,197.00**
				NMGRT @ 7.6250% (EFFECTIVE NMGRT RATE FOR ALBUQUERQUE)	$	722,713.00
				ENTIRE PROJECT TOTAL	**$**	**10,201,000.00**

ENGINEER'S OPINION OF PROBABLE COSTS
Pueblo Alto Mile Hi GSI Pilot Project

Item No.	Description	Unit Price	Quantity	Unit	Estimate Amount	
SUMMER AVE. - WASHINGTON TO MADISON						
1	Construction Staking, Complete	1.43%	-	%	$	16,000.00
2	Construction Surveying, compl.	0.74%	-	%	$	9,000.00
3	Construction Mobilization, compl.	4.26%	-	%	$	47,000.00
4	Construction Demobilization, compl.	1.00%	-	%	$	12,000.00
5	Construction Traffic Control & Barricading, compl.	5.00%	-	%	$	56,000.00
Roadway						
6	Excavate & Dispose of unsuitable material, compl.	$20.00	180	CY	$	3,600.00
7	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	1,070	SY	$	5,671.00
8	Prime Coat, emulsified asphalt, cip.	$1.10	1,070	SY	$	1,177.00
9	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	2,140	SY	$	34,240.00
10	Tack Coat	$1.00	1,070	SY	$	1,070.00
11	Sidewalk, 4" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2430	$85.00	1,050	SY	$	89,250.00
12	Drivepad, 6" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2425	$120.00	370	SY	$	44,400.00
13	Header Curb, Portland Cement Concrete, incl. subgrade, cip., SD 2415	$38.00	680	LF	$	25,840.00
14	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$50.00	1,550	SY	$	77,500.00
15	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	$12.00	210	LF	$	2,520.00
16	Existing Curb & Gutter, PC Concrete , saw to curb face, remove & dispose, compl.	$12.00	590	LF	$	7,080.00
17	Existing Sidewalk, 4" PC Concrete, remove & dispose	$17.00	610	SY	$	10,370.00
18	Remove and dispose existing PCC sidewalk and drivepad	$17.00	200	SY	$	3,400.00
19	Plain Riprap, cip.	$210.00	16	CY	$	3,360.00
20	Check dam	$52.00	22	LF	$	1,144.00
				Roadway Subtotal	**$**	**310,622.00**
Underground Storage						
21	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	1,580	SY	$	8,374.00
22	Prime Coat, emulsified asphalt, cip.	$1.10	1,580	SY	$	1,738.00
23	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	3,160	SY	$	50,560.00
24	Tack Coat	$1.00	1,580	SY	$	1,580.00
25	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$12.00	1,580	SY	$	18,960.00
26	Stone/Aggregate Backfill	$90.00	1,370	CY	$	123,300.00
27	Trenching, Backfilling, & Compaction, for 18" to 36" sewer pipe, over 12' to 16' in depth, pipe not incl., compl.	$70.00	170	LF	$	11,900.00
28	Trenching, Backfilling, & Compaction, over 60" sewer pipe,12' to 16' in depth, pipe not incl., compl.	$100.00	840	LF	$	84,000.00
29	24" RCP, Class III, furnish & place in open trench	$90.00	60	LF	$	5,400.00
30	30" RCP, Class III, furnish & place in open trench	$130.00	110	LF	$	14,300.00
31	84" CMP	$9.00	32,300	CF	$	290,700.00
32	Catch Basin, Type "A", Double Grate, cip. SD 2201	$12,450.00	0	EA	$	-
33	Catch Basin, Type "D", Single Grate, cip. SD 2206	$8,800.00	3	EA	$	26,400.00
32	Manhole, 4' dia., Type "C" or "E", 6' to 10' deep, cip. SD 2101	$8,300.00	3	EA	$	24,900.00
33	Water Quality Manhole	$52,000.00	0	EA	$	-
34	Access Manhole, cip.	$2,800.00	6	EA	$	16,800.00
				Underground Storage Subtotal	**$**	**678,912.00**

Landscaping					
35	GSI Landscaping, incl. plants and mulch, cip.	$33,230.00	1	LS	$ 33,230.00
36	Irrigation	$78,000.00	1	LS	$ 78,000.00
				Landscaping Subtotal	**$ 111,230.00**
				CONSTRUCTION SUBTOTAL	**$ 1,240,764.00**
				CONTINGENCY 30%	$ 372,229.00
				FINAL DESIGN PHASE PROFESSIONAL SERVICES 10%	$ 161,299.00
				CONSTRUCTION PHASE PROFESSIONAL SERVICES (CONST. ADMIN & OBSERVATION, MATERIALS QC TESTING, ETC.) 10%	$ 161,299.00
				NON-CONSTRUCTION SUBTOTAL	**$ 694,827.00**
				TOTAL ALL ITEMS (BEFORE NMGRT)	**$ 1,935,591.00**
				NMGRT @ 7.6250% (EFFECTIVE NMGRT RATE FOR ALBUQUERQUE)	$ 147,589.00
				SUMMER TOTAL	**$ 2,083,180.00**

ENGINEER'S OPINION OF PROBABLE COSTS
Pueblo Alto Mile Hi GSI Pilot Project

Item No.	Description	Unit Price	Quantity	Unit	Estimate Amount	
	SUMMER AVE. - MADISON TO SAN MATEO					
1	Construction Staking, Complete	1.43%	-	%	$	24,000.00
2	Construction Surveying, compl.	0.74%	-	%	$	13,000.00
3	Construction Mobilization, compl.	4.26%	-	%	$	71,000.00
4	Construction Demobilization, compl.	1.00%	-	%	$	17,000.00
5	Construction Traffic Control & Barricading, compl.	5.00%	-	%	$	83,000.00
Roadway						
6	Excavate & Dispose of unsuitable material, compl.	$20.00	340	CY	$	6,800.00
7	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	2,080	SY	$	11,024.00
8	Prime Coat, emulsified asphalt, cip.	$1.10	2,080	SY	$	2,288.00
9	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	4,160	SY	$	66,560.00
10	Tack Coat	$1.00	2,080	SY	$	2,080.00
11	Sidewalk, 4" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2430	$85.00	1,540	SY	$	130,900.00
12	Drivepad, 6" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2425	$120.00	460	SY	$	55,200.00
13	Header Curb, Portland Cement Concrete, incl. subgrade, cip., SD 2415	$38.00	1,230	LF	$	46,740.00
14	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$50.00	2,970	SY	$	148,500.00
15	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	$12.00	210	LF	$	2,520.00
16	Existing Curb & Gutter, PC Concrete , saw to curb face, remove & dispose, compl.	$12.00	1,110	LF	$	13,320.00
17	Existing Sidewalk, 4" PC Concrete, remove & dispose	$17.00	920	SY	$	15,640.00
18	Remove and dispose existing PCC sidewalk and drivepad	$17.00	260	SY	$	4,420.00
19	Plain Riprap, cip.	$210.00	24	CY	$	5,040.00
20	Check dam	$52.00	72	LF	$	3,744.00
				Roadway Subtotal	**$**	**514,776.00**
Underground Storage						
21	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	2,010	SY	$	10,653.00
22	Prime Coat, emulsified asphalt, cip.	$1.10	2,010	SY	$	2,211.00
23	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	4,020	SY	$	64,320.00
24	Tack Coat	$1.00	2,010	SY	$	2,010.00
25	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$12.00	2,010	SY	$	24,120.00
26	Stone/Aggregate Backfill	$90.00	1,980	CY	$	178,200.00
27	Trenching, Backfilling, & Compaction, for 18" to 36" sewer pipe, over 12' to 16' in depth, pipe not incl., compl.	$70.00	80	LF	$	5,600.00
28	Trenching, Backfilling, & Compaction, over 60" sewer pipe,12' to 16' in depth, pipe not incl., compl.	$100.00	1,210	LF	$	121,000.00
29	24" RCP, Class III, furnish & place in open trench	$90.00	0	LF	$	-
30	30" RCP, Class III, furnish & place in open trench	$130.00	80	LF	$	10,400.00
31	84" CMP	$9.00	46,600	CF	$	419,400.00
32	Catch Basin, Type "A", Double Grate, cip. SD 2201	$12,450.00	0	EA	$	-
33	Catch Basin, Type "D", Single Grate, cip. SD 2206	$8,800.00	2	EA	$	17,600.00
32	Manhole, 4' dia., Type "C" or "E", 6' to 10' deep, cip. SD 2101	$8,300.00	0	EA	$	-
33	Water Quality Manhole	$52,000.00	1	EA	$	52,000.00
34	Access Manhole, cip.	$2,800.00	9	EA	$	25,200.00
				Underground Storage Subtotal	**$**	**932,714.00**

Landscaping					
35	GSI Landscaping, incl. plants and mulch, cip.	$61,470.00	1	LS	$ 61,470.00
36	Irrigation	$144,000.00	1	LS	$ 144,000.00
				Landscaping Subtotal	**$ 205,470.00**
				CONSTRUCTION SUBTOTAL	**$ 1,860,960.00**
				CONTINGENCY 30%	$ 558,288.00
				FINAL DESIGN PHASE PROFESSIONAL SERVICES 10%	$ 241,925.00
				CONSTRUCTION PHASE PROFESSIONAL SERVICES (CONST. ADMIN & OBSERVATION, MATERIALS QC TESTING, ETC.) 10%	$ 241,925.00
				NON-CONSTRUCTION SUBTOTAL	**$ 1,042,138.00**
				TOTAL ALL ITEMS (BEFORE NMGRT)	**$ 2,903,098.00**
				NMGRT @ 7.6250% (EFFECTIVE NMGRT RATE FOR ALBUQUERQUE)	$ 221,362.00
				SUMMER TOTAL	**$ 3,124,460.00**

ENGINEER'S OPINION OF PROBABLE COSTS
Pueblo Alto Mile Hi GSI Pilot Project

Item No.	Description	Unit Price	Quantity	Unit	Estimate Amount
	ADAMS ST.				
1	Construction Staking, Complete	1.43%	-	%	$ 16,000.00
2	Construction Surveying, compl.	0.74%	-	%	$ 9,000.00
3	Construction Mobilization, compl.	4.26%	-	%	$ 47,000.00
4	Construction Demobilization, compl.	1.00%	-	%	$ 11,000.00
5	Construction Traffic Control & Barricading, compl.	5.00%	-	%	$ 55,000.00
Roadway					
6	Excavate & Dispose of unsuitable material, compl.	$20.00	210	CY	$ 4,200.00
7	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	2,430	SY	$ 12,879.00
8	Prime Coat, emulsified asphalt, cip.	$1.10	2,430	SY	$ 2,673.00
9	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	4,860	SY	$ 77,760.00
10	Tack Coat	$1.00	2,430	SY	$ 2,430.00
11	Sidewalk, 4" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2430	$85.00	1,390	SY	$ 118,150.00
12	Drivepad, 6" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2425	$120.00	660	SY	$ 79,200.00
13	Header Curb, Portland Cement Concrete, incl. subgrade, cip., SD 2415	$38.00	840	LF	$ 31,920.00
14	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$50.00	2,940	SY	$ 147,000.00
15	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	$12.00	450	LF	$ 5,400.00
16	Existing Curb & Gutter, PC Concrete , saw to curb face, remove & dispose, compl.	$12.00	670	LF	$ 8,040.00
17	Existing Sidewalk, 4" PC Concrete, remove & dispose	$17.00	790	SY	$ 13,430.00
18	Remove and dispose existing PCC sidewalk and drivepad	$17.00	550	SY	$ 9,350.00
19	Plain Riprap, cip.	$210.00	32	CY	$ 6,720.00
20	Check dam	$52.00	65	LF	$ 3,380.00
				Roadway Subtotal	**$ 522,532.00**
Underground Storage					
21	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	950	SY	$ 5,035.00
22	Prime Coat, emulsified asphalt, cip.	$1.10	950	SY	$ 1,045.00
23	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	1,900	SY	$ 30,400.00
24	Tack Coat	$1.00	950	SY	$ 950.00
25	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$12.00	950	SY	$ 11,400.00
26	Stone/Aggregate Backfill	$90.00	960	CY	$ 86,400.00
27	Trenching, Backfilling, & Compaction, for 18" to 36" sewer pipe, over 12' to 16' in depth, pipe not incl., compl.	$70.00	20	LF	$ 1,400.00
28	Trenching, Backfilling, & Compaction, over 60" sewer pipe,12' to 16' in depth, pipe not incl., compl.	$100.00	590	LF	$ 59,000.00
29	24" RCP, Class III, furnish & place in open trench	$90.00	20	LF	$ 1,800.00
30	30" RCP, Class III, furnish & place in open trench	$130.00	0	LF	$ -
31	84" CMP	$9.00	22,500	CF	$ 202,500.00
32	Catch Basin, Type "A", Double Grate, cip. SD 2201	$12,450.00	0	EA	$ -
33	Catch Basin, Type "D", Single Grate, cip. SD 2206	$8,800.00	0	EA	$ -
32	Manhole, 4' dia., Type "C" or "E", 6' to 10' deep, cip. SD 2101	$8,300.00	1	EA	$ 8,300.00
33	Water Quality Manhole	$52,000.00	1	EA	$ 52,000.00
34	Access Manhole, cip.	$2,800.00	2	EA	$ 5,600.00
				Underground Storage Subtotal	**$ 465,830.00**

Landscaping					
35	GSI Landscaping, incl. plants and mulch, cip.	$33,150.00	1	LS	$ 33,150.00
36	Irrigation	$78,000.00	1	LS	$ 78,000.00
				Landscaping Subtotal	**$ 111,150.00**
				CONSTRUCTION SUBTOTAL	**$ 1,237,512.00**
				CONTINGENCY 30%	$ 371,254.00
				FINAL DESIGN PHASE PROFESSIONAL SERVICES 10%	$ 160,877.00
				CONSTRUCTION PHASE PROFESSIONAL SERVICES (CONST. ADMIN & OBSERVATION, MATERIALS QC TESTING, ETC.) 10%	$ 160,877.00
				NON-CONSTRUCTION SUBTOTAL	**$ 693,008.00**
				TOTAL ALL ITEMS (BEFORE NMGRT)	**$ 1,930,520.00**
				NMGRT @ 7.6250% (EFFECTIVE NMGRT RATE FOR ALBUQUERQUE)	$ 147,202.00
				ADAMS TOTAL	**$ 2,077,722.00**

ENGINEER'S OPINION OF PROBABLE COSTS
Pueblo Alto Mile Hi GSI Pilot Project

Item No.	Description	Unit Price	Quantity	Unit	Estimate Amount	
ALLEY						
1	Construction Staking, Complete	1.43%	-	%	$	7,000.00
2	Construction Surveying, compl.	0.74%	-	%	$	4,000.00
3	Construction Mobilization, compl.	4.26%	-	%	$	20,000.00
4	Construction Demobilization, compl.	1.00%	-	%	$	5,000.00
5	Construction Traffic Control & Barricading, compl.	5.00%	-	%	$	23,000.00
Roadway						
6	Excavate & Dispose of unsuitable material, compl.	$20.00	120	CY	$	2,400.00
7	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	690	SY	$	3,657.00
8	Aggregate Base Course, crushed, 6" at 95% compaction	$15.00	690	SY	$	10,350.00
				Roadway Subtotal	**$**	**16,407.00**
Underground Storage						
9	Stone/Aggregate Backfill	$90.00	970	CY	$	87,300.00
10	Trenching, Backfilling, & Compaction, for 18" to 36" sewer pipe, over 12' to 16' in depth, pipe not incl., compl.	$70.00	30	LF	$	2,100.00
11	Trenching, Backfilling, & Compaction, over 60" sewer pipe,12' to 16' in depth, pipe not incl., compl.	$100.00	590	LF	$	59,000.00
12	24" RCP, Class III, furnish & place in open trench	$90.00	0	LF	$	-
13	30" RCP, Class III, furnish & place in open trench	$130.00	30	LF	$	3,900.00
14	84" CMP	$9.00	22,700	CF	$	204,300.00
15	Catch Basin, Type "A", Double Grate, cip. SD 2201	$12,450.00	0	EA	$	-
16	Catch Basin, Type "D", Single Grate, cip. SD 2206	$8,800.00	1	EA	$	8,800.00
15	Manhole, 4' dia., Type "C" or "E", 6' to 10' deep, cip. SD 2101	$8,300.00	0	EA	$	-
16	Water Quality Manhole	$52,000.00	1	EA	$	52,000.00
17	Access Manhole, cip.	$2,800.00	2	EA	$	5,600.00
				Underground Storage Subtotal	**$**	**423,000.00**
Landscaping						
18	GSI Landscaping, incl. plants and mulch, cip.	$15,830.00	1	LS	$	15,830.00
				Landscaping Subtotal	**$**	**15,830.00**
				CONSTRUCTION SUBTOTAL	**$**	**514,237.00**
				CONTINGENCY 30%	$	154,271.00
				FINAL DESIGN PHASE PROFESSIONAL SERVICES 10%	$	66,851.00
				CONSTRUCTION PHASE PROFESSIONAL SERVICES (CONST. ADMIN & OBSERVATION, MATERIALS QC TESTING, ETC.) 10%	$	66,851.00
				NON-CONSTRUCTION SUBTOTAL	**$**	**287,973.00**
				TOTAL ALL ITEMS (BEFORE NMGRT)	**$**	**802,210.00**
				NMGRT @ 7.6250% (EFFECTIVE NMGRT RATE FOR ALBUQUERQUE)	$	61,169.00
				ALLEY TOTAL	**$**	**863,379.00**

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(12/5/2023)

ENGINEER'S OPINION OF PROBABLE COSTS
Pueblo Alto Mile Hi GSI Pilot Project

Item No.	Description	Unit Price	Quantity	Unit	Estimate Amount
	LA VETA				
1	Construction Staking, Complete	1.43%	-	%	$ 16,000.00
2	Construction Surveying, compl.	0.74%	-	%	$ 9,000.00
3	Construction Mobilization, compl.	4.26%	-	%	$ 47,000.00
4	Construction Demobilization, compl.	1.00%	-	%	$ 11,000.00
5	Construction Traffic Control & Barricading, compl.	5.00%	-	%	$ 55,000.00
Roadway					
6	Excavate & Dispose of unsuitable material, compl.	$20.00	170	CY	$ 3,400.00
7	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	0	SY	$ -
8	Prime Coat, emulsified asphalt, cip.	$1.10	0	SY	$ -
9	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	0	SY	$ -
10	Tack Coat	$1.00	0	SY	$ -
11	Sidewalk, 4" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2430	$85.00	820	SY	$ 69,700.00
12	Drivepad, 6" thick, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2425	$120.00	200	SY	$ 24,000.00
13	Header Curb, Portland Cement Concrete, incl. subgrade, cip., SD 2415	$38.00	660	LF	$ 25,080.00
14	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$50.00	90	SY	$ 4,500.00
15	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	$12.00	150	LF	$ 1,800.00
16	Existing Curb & Gutter, PC Concrete , saw to curb face, remove & dispose, compl.	$12.00	550	LF	$ 6,600.00
17	Existing Sidewalk, 4" PC Concrete, remove & dispose	$17.00	480	SY	$ 8,160.00
18	Remove and dispose existing PCC sidewalk and drivepad	$17.00	150	SY	$ 2,550.00
19	Plain Riprap, cip.	$210.00	14	CY	$ 2,940.00
20	Check dam	$52.00	44	LF	$ 2,288.00
				Roadway Subtotal	**$ 151,018.00**
Underground Storage					
21	Subgrade Prep. 12" at 95% compaction, cip.	$5.30	1,190	SY	$ 6,307.00
22	Prime Coat, emulsified asphalt, cip.	$1.10	1,190	SY	$ 1,309.00
23	Asphalt Concrete, 1-1/2 inch thick, superpave	$16.00	2,380	SY	$ 38,080.00
24	Tack Coat	$1.00	1,190	SY	$ 1,190.00
25	Existing Pavement, Asphalt Concrete, up to 4" thick, sawcut, remove & dispose, compl.	$12.00	1,550	SY	$ 18,600.00
26	Stone/Aggregate Backfill	$90.00	1,170	CY	$ 105,300.00
27	Trenching, Backfilling, & Compaction, for 18" to 36" sewer pipe, over 12' to 16' in depth, pipe not incl., compl.	$70.00	460	LF	$ 32,200.00
28	Trenching, Backfilling, & Compaction, over 60" sewer pipe,12' to 16' in depth, pipe not incl., compl.	$100.00	810	LF	$ 81,000.00
29	24" RCP, Class III, furnish & place in open trench	$90.00	460	LF	$ 41,400.00
30	30" RCP, Class III, furnish & place in open trench	$130.00	0	LF	$ -
31	84" CMP	$9.00	31,000	CF	$ 279,000.00
32	Catch Basin, Type "A", Double Grate, cip. SD 2201	$12,450.00	2	EA	$ 24,900.00
33	Catch Basin, Type "D", Single Grate, cip. SD 2206	$8,800.00	5	EA	$ 44,000.00
32	Manhole, 4' dia., Type "C" or "E", 6' to 10' deep, cip. SD 2101	$8,300.00	2	EA	$ 16,600.00
33	Water Quality Manhole	$52,000.00	1	EA	$ 52,000.00
34	Access Manhole, cip.	$2,800.00	6	EA	$ 16,800.00
				Underground Storage Subtotal	**$ 758,686.00**

Landscaping					
35	GSI Landscaping, incl. plants and mulch, cip.	$34,590.00	1	LS	$ 34,590.00
36	Irrigation	$140,000.00	1	LS	$ 140,000.00
				Landscaping Subtotal	**$ 174,590.00**
				CONSTRUCTION SUBTOTAL	**$ 1,222,294.00**
				CONTINGENCY 30%	$ 366,688.00
				FINAL DESIGN PHASE PROFESSIONAL SERVICES 10%	$ 158,898.00
				CONSTRUCTION PHASE PROFESSIONAL SERVICES (CONST. ADMIN & OBSERVATION, MATERIALS QC TESTING, ETC.) 10%	$ 158,898.00
				NON-CONSTRUCTION SUBTOTAL	**$ 684,484.00**
				TOTAL ALL ITEMS (BEFORE NMGRT)	**$ 1,906,778.00**
				NMGRT @ 7.6250% (EFFECTIVE NMGRT RATE FOR ALBUQUERQUE)	$ 145,392.00
				LA VETA TOTAL	**$ 2,052,170.00**