
Appendix L

Hydrology Drainage Study



March 2, 2023

Re: Hydrology Drainage Study Basis

PURPOSE

This document summarizes the bases and assumptions utilized in the development of the updated hydrology drainage plan provided by Burns & McDonnell as of the date of this report and represented on SoCalGas drawings 33900-7002-D-CIV and 33900-7003-D-CIV. The information obtained in this document is a conglomeration of data received as part of SoCalGas' Front End Engineering Design (FEED) (developed by Others) and incorporates data from Burns & McDonnell's Stormwater Management Report submitted in September 2021.

REFERENCES

- Burns & McDonnell's Stormwater Management Report for Ventura Compressor Modernization EPC dated 9/3/2021 ("**Stormwater Management Report**")
- Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, as in effect on 9/3/2021 ("**Guidance Manual**")

BASIS AND ASSUMPTIONS

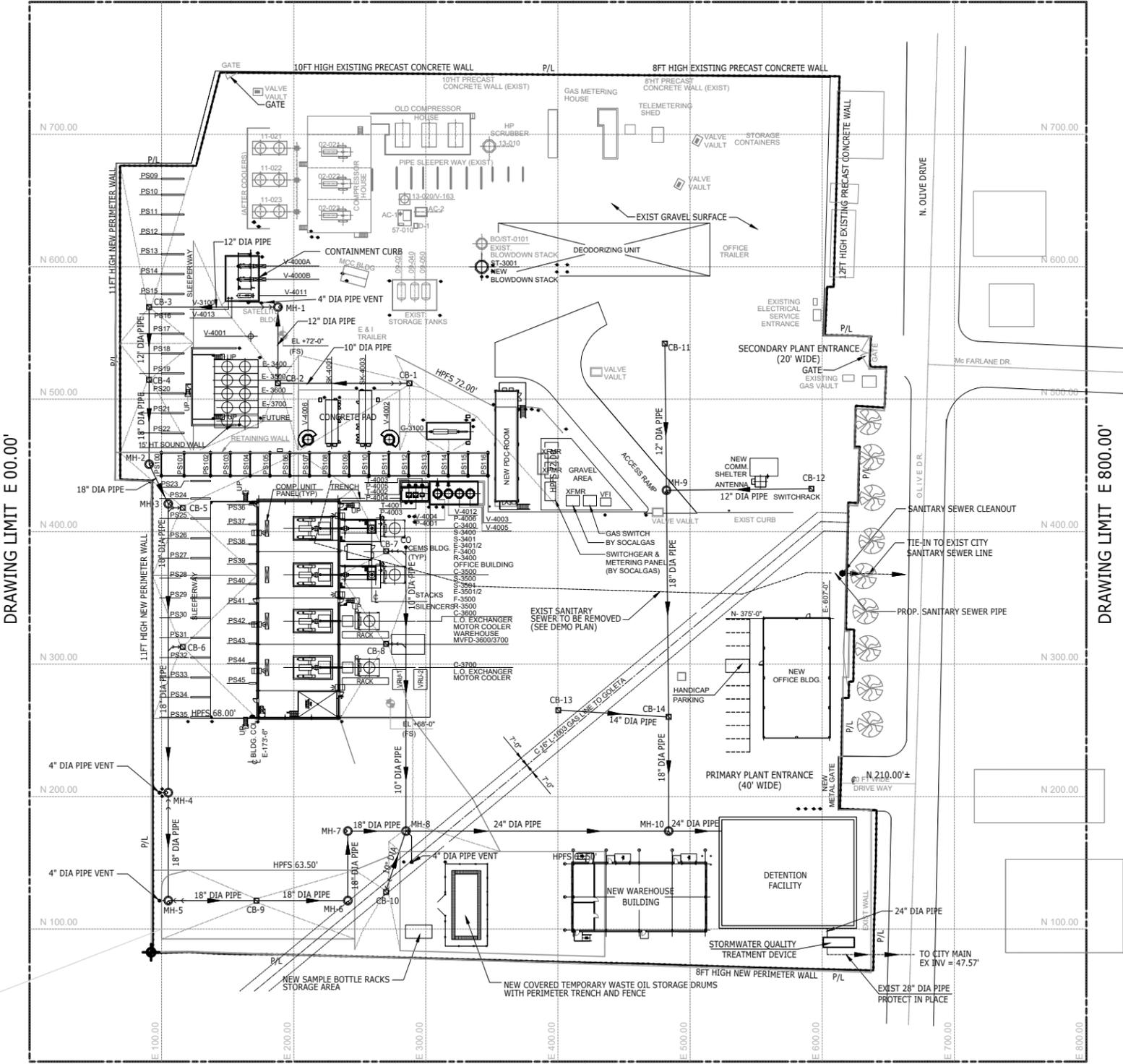
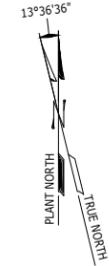
- FEED drawings 33900-7002-D-CIV & 33900-7003-D-CIV were modified to reflect the proposed plot plan and equipment configuration considering two (2) gas driven compressors and two (2) electric driven compressors. These modifications also include changes to supporting infrastructure (deletion of exhaust stacks for electric driven compressors, addition of Variable Frequency Drive (VFD) buildings, and increase in overall size of the proposed Plant 2 Power Distribution Center (PDC)).
- Method of stormwater management was updated from localized infiltration at several areas within the Site, to implementation of catch basins in those same areas. These catch basins are proposed to be connected to an underground gravity stormwater pipe system that ultimately drains into a new proposed detention basin at the southeast corner of the facility. Stormwater is then either treated using multiple gravity filters in the detention basin or is pumped through a mechanical water filtration/treatment system before flowing to the existing city stormwater sewer.
- It is assumed that City of Ventura will approve use of detention and discharge of stormwater to city stormwater sewer. Per the Guidance Manual, methods of stormwater management must be addressed in an iterative approach, starting with the most preferred (infiltration) and justification as to why that method would not be feasible. This approach continues to the next preferred option (per the Guidance Manual) until a feasible solution is reached and approved by the City.
- New catch basins have been implemented throughout the Site at the locations of existing or proposed new infiltration sites (as previously laid out in FEED). This approach allows implementation of the catch basins at proposed low points and detention without major modifications to the overall grading plan presented in FEED.

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- Overall Site disturbance area remains >50%. Therefore, the Stormwater Quality Design Volume must consider the full extent of the Site (whether or not impacted by the proposed Ventura Compressor Modernization Project. The calculated stormwater volume utilizes the 85th percentile method which (at the time of the Stormwater Management Report) was considered conservative compared to the other available methods. This approach yields a Stormwater Quality Design Volume of 1.72” per 24 hour period.
- Calculated detention volume is 46,000 cubic feet, with an additional volume of 20% recommended for sediment storage. For detained water to be discharged to the city stormwater sewer in a 24 hour period, a 240 gpm discharge rate must be maintained.
- Volumes and approach assume use of the City and County 2010 version of the “MS4” permit. The 2021 version of the “MS4” permit may not take effect until 2024. If this project is executed in 2024 (or beyond) it is recommended to verify with the City which version of MS4 would govern, and as such, Stormwater Quality Design Volume and other parameters must be revisited.
- It is assumed that the existing city stormwater sewer has sufficient existing capacity to handle the stormwater flow from Site. This must be validated with City of Ventura upon project restart.
- The post construction peak flows from the site are expected to be reduced from existing peak flows by the detention basin. Pre- and post-project peak flows will be determined during detailed engineering.

DRAWING LIMIT N 800.00'



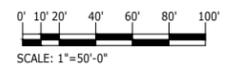
DRAWING LIMIT N 00.00'

BILL OF MATERIAL			
ITEM	QUANTITY	UNIT	DESCRIPTION
STORM SEWER SYSTEM			
14	EA		PRE-CAST CATCH BASIN TRAFFIC RATED HL-93
10	EA		PRE-CAST MANHOLE (5' DIA) TRAFFIC RATED HL-93
288	CY		EXCAVATION FOR CB AND MH
144	CY		BACKFILL FOR CB AND MH
48	CY		GRAVEL BEDDING FOR CB, MH LEVELING
150	LF		4" PIPE VENT
4	EA		4" - 90° - ELBOW
4	EA		FLAME ARRESTER
358	LF		10" DIA PIPE
16	EA		10" -45° - ELBOW
2	EA		10"x10" WYE
425	LF		12" DIA PIPE
8	EA		12" -45° - ELBOW
80	LF		14" DIA PIPE
900	LF		18" DIA PIPE
244	LF		24" DIA PIPE
1079	CY		EXCAVATION UG PIPE TRENCHING
120	CY		PIPE BEDDING
777	CY		BACKFILL
1	EA		TIE-IN CONNECTION
DETENTION BASIN			
1778	CY		EARTHWORK EXCAVATION
300	CY		CONCRETE 12" THK BOTTOM OF BASIN
5	CY		RIP RAP APRON AT INLET
STORMWATER QUALITY TREATMENT			
1	EA		MANUFACTURED TREATMENT DEVICE
50	CY		EARTHWORK EXCAVATION

NOTE: ALL QUANTITIES ARE NET AND FOR INFORMATION ONLY, EPC CONTRACTOR RESPONSIBLE FOR THEIR OWN QUANTITIES.

LEGENDS:

- PIPE SEAL
- FLOW DIRECTION
- CB
- CO
- MH
- P/L
- BOLLARDS
- RETAINING WALL



- NOTES:
- ALL COORDINATES, ELEVATIONS AND DIMENSIONS ARE IN FEET UNLESS NOTED OTHERWISE.
 - FOR PLOT PLAN SEE DRAWING 33900-3001-D-PIP (REV. D).
 - FOR DEMOLITION PLAN SEE 7002-D-DEM.
 - FOR PAVING AND GRADING PLAN SEE 7002-D-CIV.
 - FOR UNDERGROUND UTILITIES PLAN SEE 7004-D-CIV.

REV	DATE	DRAWN	CHECKED	PRJ. MGR.	SEC. MGR.	ENG. FILE NO.	DESCRIPTION	WDA	BY	DATE
-	-	-	-	-	-	-	-	-	DESIGNED: -	3/19/20
-	-	-	-	-	-	-	-	-	DRAWN: P. Teves	3/19/20
-	-	-	-	-	-	-	-	-	CHECKED: K. Khalili	3/19/20
C	1/20/23	SH	GP	-	-	E15043	ISSUED FOR USE	-	PROJ. MGR: B. Wirth	3/19/20
B	4/6/20	PT	KK	BW	-	E15043	ISSUED FOR USE	-	SEC. ENG. APV: -	-
A	3/19/20	PT	KK	BW	-	E15043	ISSUED FOR CLIENT REVIEW	-	ENG. FILE NO: E15043	-
REV	DATE	DRAWN	CHECKED	PRJ. MGR.	SEC. MGR.	ENG. FILE NO.	DESCRIPTION	WDA	WDA: 91651	-

VENTURA COMPRESSOR STATION
UPGRADE & MODERNIZATION
UNDERGROUND DRAINAGE
PLAN

ADDRESS: 33900-7003-D-CIV CITY: B

DWG CLASS: 30 DWG DIST: -
SCALE: 1"=50'-0"