

DRAFT FEASIBILITY REPORT

To: Latif Laari, M.Eng PMP
From: Russ Bergholz, PE
Subject: VVWRA Regional WWTP Water Pipeline Feasibility Study
Date: June 2023
cc: Darron Poulsen
Attachment(s): Attachment A – VVWRA Potable Water Consumption Data
Attachment B – Reclaimed Water Supply Analysis
Attachment C – Preliminary Estimate of Probable Construction Cost
Attachment D – Preliminary Schedule

The following report investigates the details and feasibility of constructing a new dedicated potable water pipeline from the City of Victorville to service the Victor Valley Wastewater Reclamation Authority (VVWRA) Regional Treatment Plant property. Due to the plant's location relative to the nearest potable water supply source, construction of a potable water supply will be a significant effort and cost, considering the minimal distance of the new pipeline will be over one mile. This feasibility report will provide the background, connection locations, alignment, stakeholders, general project description, and estimated cost to be provided to VVWRA with the funding requirements and information necessary to proceed with the environmental permitting phase of the project.

Background

The VVWRA Regional Treatment Plant is currently operating two groundwater wells to provide potable water to support both the VVWRA Regional treatment plant located at 20111 Shay Rd Victorville, CA 92394, and a separate private business, American Organics, leasing land from VVWRA along Shay Road. The existing wells supply water to sinks, showers, eye washes, seal water, the digester heat loop, and other minor demands. The wells provide potable water via a 3-inch pipe along Shay Road to American Organics.

These two potable water wells are located immediately near wastewater treatment plant facilities, posing a higher risk of contamination, and based on several water sampling results and annual inspections results, the Regional Water Quality Control Board has informed VVWRA on many occasions to take corrective actions and address the fact that the existing wells are borderline not suitable for potable water production. These corrective actions will require the complete rehabilitation of the current potable water system and possibly the installation of a costly treatment system. To eliminate any risk to its employees, visitors, or neighbors, VVWRA chooses to find another safe and reliable potable water supply source to meet all local and state regulations.

VVWRA has conducted an initial inquiry with the City of Victorville (City) to identify a potable water source connection point. The closest connection point is adjacent to the High Desert Power Plant on the George Air Force Base airport property, approximately one mile south of VVWRA. A 12-inch recycled water pipeline extending between VVWRA and the airport was constructed about 20 years ago. This pipeline both provides American Organics with fire hydrant supply/dust mitigation water and the City of Victorville with recycled water to offset potable water usage.

VVWRA also plans to add an anaerobic digestion solution provider, Anaergia, to transform waste into renewable fuel, clean water, and fertilizer. Therefore, water supply needs as part of this project will include Anaergia.

Goals/Objectives

The following are the goals and objectives of this feasibility report:

Goals

- Identify and describe a feasible project description that will successfully provide VVWRA and American Organics with a City of Victorville potable water supply source.
- Include in this project description the ability for the City of Victorville to provide fire flow to service the American Organics buildings.
- Include in the project the ability for VVWRA and American Organics to have separate service meters for potable water supply.

Objectives:

- Identify the appropriate pipeline size for servicing VVWRA and American Organics.
- Identify the requirements of the City of Victorville to connect to its existing potable water infrastructure.
- Identify the requirements from the Air Force Base to acquire construction and permanent access easements for the construction within Air Force property.
- Locate the recommended water meter and hydrant locations to serve VVWRA and American Organics.
- Provide an estimate of the potential construction cost and schedule to complete the infrastructure improvements.

Stakeholders

The following table provides contact information for stakeholders on the project:

Table 1. Contacts for Easement Process

Name	Affiliation	Title	Contact	Role in this Project
Latif Laari	VVWRA	Environmental Compliance Manager	(760) 954-5083 llaari@vwwraca.gov	▪ Project Manager for the proposed waterline project
Don Gronstal	George Air Force Base	Project Manager	donald.gronstal@us.af.mil	▪ Project Manager for the Air Force Base
Calvin Cox	Cherokee Nation Businesses	Senior Environmental Scientist	(760) 246-5360 Calvin.cox@cn-bus.com	▪ Environmental and permitting liaison between the City and the Air Force Base

Eric Ray	Southern California Logistics Airport	Airport Director	(760) 243-1900	- Responsible for managing airport property leased by the Air Force - The lease agreement contains requirements for activities on the land (coordination for access, environmental requirements, etc.)
Brian Baumer	City of Victorville, Planning Department	Legal Attorney	Cell: (214) 475-9249 Office: (210) 395-0413	Will need to legally establish easement
Keith Metzler	City of Victorville, Planning Department	City Manager	(760) 955-5029	- City Engineers will need his approval. - Coordination between the City and the Air Force

Research

The following materials were collected and reviewed as part of the project investigation:

Table 2. Reference Materials

Document	Description	Provided By
Southern California Logistics Airport Reclaimed Water Pipeline Drawings	Record drawings for the City of Victorville's existing 16" recycled waterline	VVWRA
VVWRA Wastewater Reclamation Plant Expansion Drawings	Record drawings for VVWRA's 24" pipeline from the secondary effluent equipment to the south percolation ponds	VVWRA
Victor Valley Regional Water Reclamation Plant Record Drawings	Original 1976 drawings for the VVWRA treatment plant	VVWRA
VVWRA Sewer Master Plan Interceptor Condition Assessment Field Data Sheet Figure	Figure showing the alignment of the VVWRA sewer interceptor	VVWRA
Schedules 1 & 2 Relief Interceptor Sewer Drawing	Plan and profile drawings for the VVWRA sewer interceptor	VVWRA
Athens Victor Valley Organics Figure	Figure showing site plan of American Organics facilities	VVWRA
Reclaimed Water Supply Analysis Report	A report analyzing VVWRA's recycled water supply to American Organics in terms of fire flow and water quality	VVWRA
Water Quality Management Plan for American Organics Composting Facility	American Organics facilities' WQMP document	VVWRA
American Organics Concept Plan Figure	Site plan of current and future planned American Organics areas and facilities	VVWRA
Final Initial Study for the American Organics Victor Valley Regional Composting Facility Modification Project	Environmental document for American Organics development	VVWRA

Water Improvement Plan Re-Zone 1A, Fire Flow 29,30 Pipeline – Partial Build Hesperia Road & Green Tree Boulevard Drawings	Drawings showing examples of the City's standard connection details and pressure-reducing valve (PRV)	City of Victorville
Potable Water Consumption 1-1-22 to 12-31-22	Excel file showing VVWRA's and American Organics' potable water demands for 2022	VVWRA
W-28 RPDA and W-39 RP	Standard details for a fire service reduced pressure detector assembly and a meter reduced pressure backflow device.	City of Victorville

Water Demands and Pipe Sizing

Existing potable water demands at VVWRA, American Organics, and Anaergia were analyzed to determine a preliminary size for the proposed pipeline. The upstream portion of the pipeline from the City of Victorville connection point to the VVWRA property line will convey water that will serve the WWTP, American Organics, and Anaergia. This pipeline reach must provide daily water demands and hydrant fire flow. After passing the American Organics site near the VVWRA property line, the pipeline will be downsized for the remainder of the alignment to the WWTP for only daily water demands since the WWTP has fire flow capability on-site. A summary of the potable water demands upstream of the meter is shown in Table 3 below.

Table 3. Potable Water Demand Summary Upstream of the Meter

	VVWRA WWTP	American Organics	Anaergia
2022 Daily Maximum Flow	20.4 gpm ⁽¹⁾	3.6 gpm ⁽¹⁾	34.7 gpm ⁽³⁾
TOTAL for all sites	58.7 gpm		
Assumed Fire Flow	0 gpm	3,000 gpm ⁽²⁾	0 gpm ⁽³⁾
Daily Flow + Fire Flow	20.4 gpm	3,003.6 gpm	34.7 gpm
TOTAL with Fire Flow for all sites	3,058.7 gpm		

⁽¹⁾ Potable water consumption data provided by VVWRA (see Attachment A)

⁽²⁾ Jensen Hughes Reclaimed Water Supply Analysis (see Attachment B)

⁽³⁾ Estimates provided by Andrew Dale at Anaergia

Given a total assumed maximum daily demand *with* a fire flow of approximately 3,060 gpm, a 12-inch pipeline would experience a flow velocity of 8.7 feet per second (fps). At the daily maximum flow without fire flow (~60 gpm), the flow velocity in the pipe would be approximately 0.2 fps. Although it is advantageous to keep flow velocity in the pipe below 7.5 fps to avoid wear and tear on the pipe, a fire flow scenario is a rare occurrence, so this sizing is acceptable. Therefore, the installation of a 12-inch pipeline is recommended from the City connection to the VVWRA meter.

North of the VVWRA meter, the pipeline will decrease in size to serve the WWTP and Anaergia. Neither will require fire service from the potable connection. A summary of the potable water demands downstream of the meter is shown in Table 4 below.

Table 4. Potable Water Demand Summary Downstream of the VVWRA Meter

	VVWRA WWTP	Anaergia
2022 Daily Maximum Flow	20.4 gpm ⁽¹⁾	34.7 gpm ⁽³⁾
TOTAL for both sites	55.1 gpm	

⁽¹⁾ Potable water consumption data provided by VVWRA (see Attachment A)

⁽³⁾ Estimates provided by Andrew Dale at Anaergia

Given a total assumed maximum daily demand of approximately 55 gpm, a 4-inch pipeline would experience a velocity of 1.4 fps. At this velocity, the water would take approximately 27 hours to travel from the City connection point to the VVWRA treatment plant. An 8-inch pipeline would take 30.5 hours. A 4-inch pipeline would decrease the travel time by 3.5 hours, which is advantageous for water quality as there is less time for decay of chlorine residual. However, the additional 3.5 hours may be a reasonable tradeoff for additional capacity for fire flow. VVWRA and the City will decide which scenario is preferred.

The City of Victorville has verbally confirmed that they have the available capacity within their system to provide the above demands. It is assumed the City will conduct an internal evaluation (potentially through hydraulic modeling) to validate this condition during the design review and permitting process.

Project Location and Alignment

A vicinity map showing the project location is shown in Figure 1.



Figure 1 Vicinity Map

The proposed alignment for the potable waterline is shown in Figure 2.

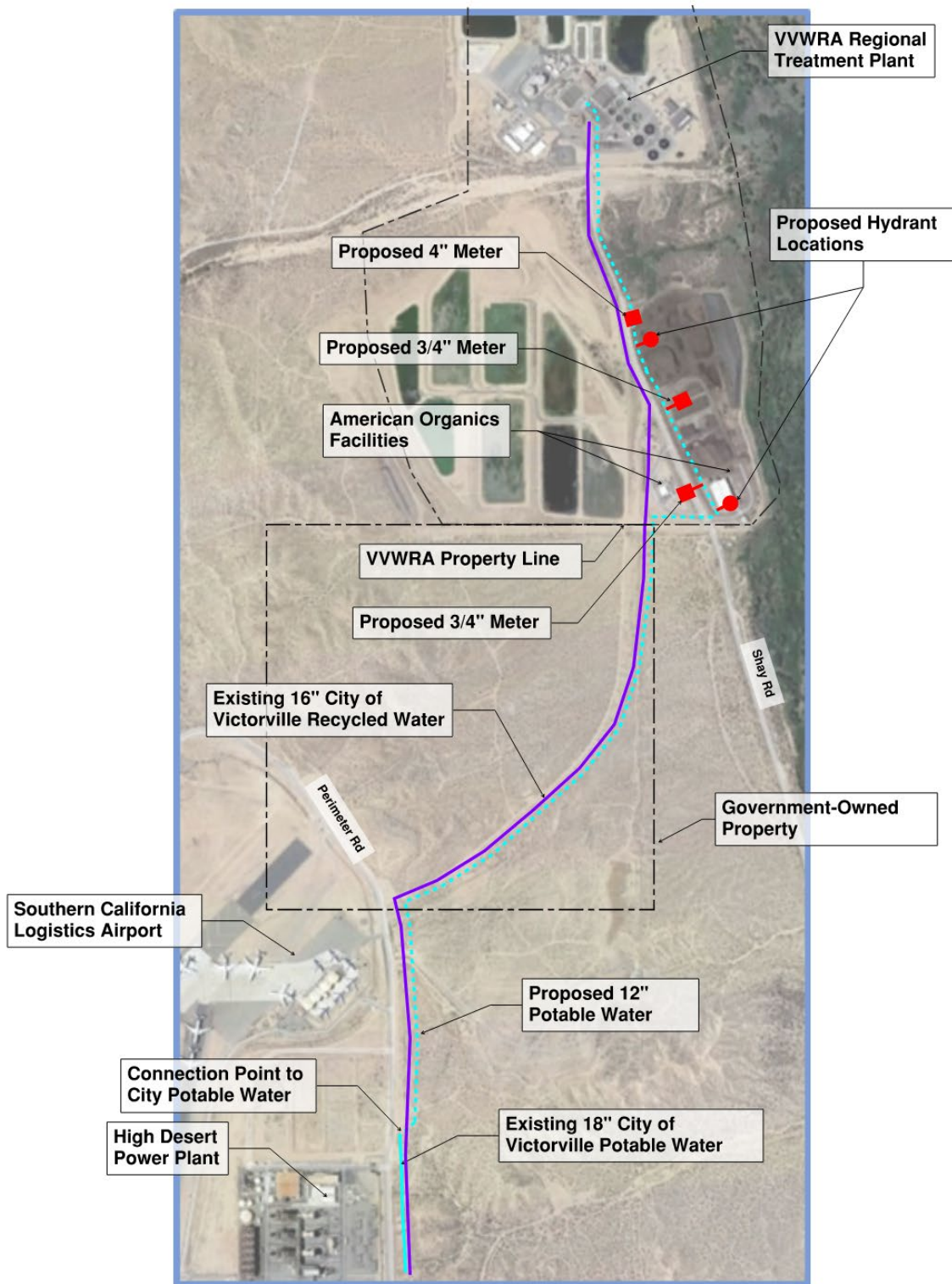


Figure 2 Proposed Alignment

City Connection

The proposed point of connection to the 18-inch City of Victorville potable water line is shown in Figure 3.

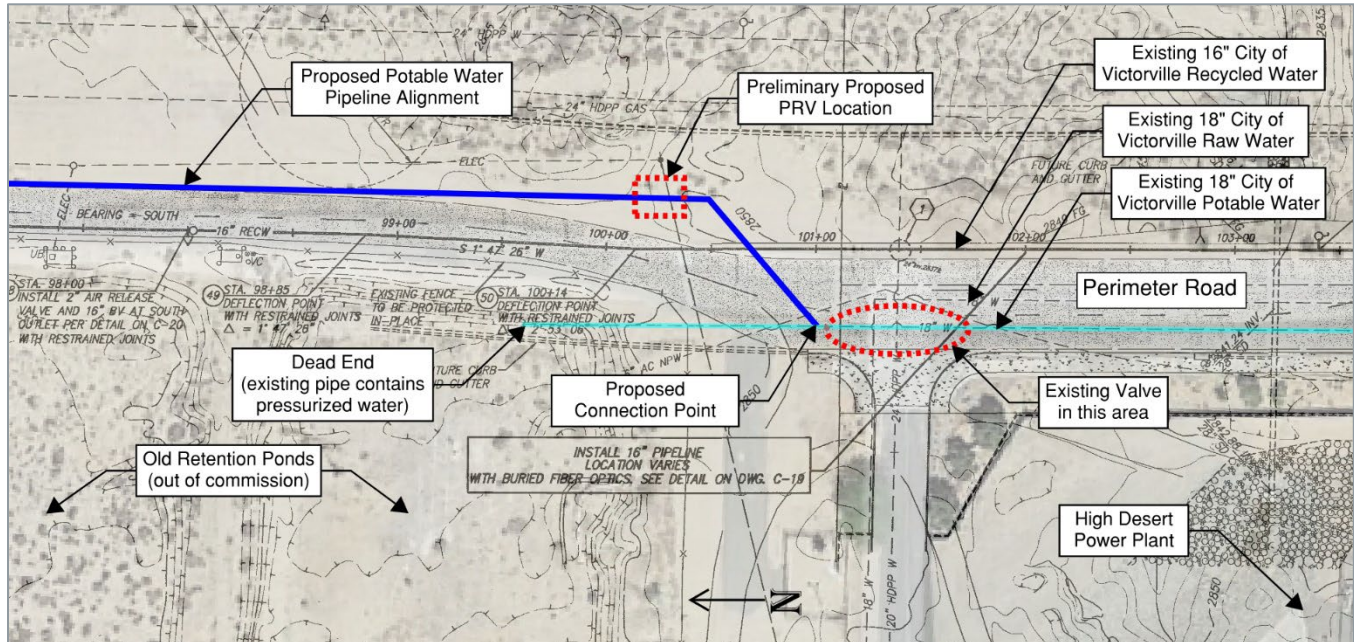


Figure 3 Connection to Existing City of Victorville 18-inch Waterline

The connection to the City of Victorville potable water system will be made at an existing 18-inch waterline on the west side of Perimeter Road by the High Desert Power Plant. This waterline was previously used to discharge into now-decommissioned retention ponds. The waterline currently is a dead end, but it contains pressurized water in order to provide pressure to the upstream system. The City indicated during the site visit that there is an existing valve upstream of the proposed connection point, near the entrance to the power plant. To make the connection, the existing valve will be closed, the downstream portion of the pipe will be drained, and an 18" x 12" wye will be installed. The connection will adhere to the City of Victorville's standards.

A PRV will be required near the connection point to adhere to the City's desired maximum pressure at the meters. During the site visit, the City expressed their preference that the PRV station be on the east side of the road after the connection. The proposed location is shown in Figure 3. The PRV station design will adhere to the City's standards. An example of a standard PRV station detail used by the City is shown in Figure 4.

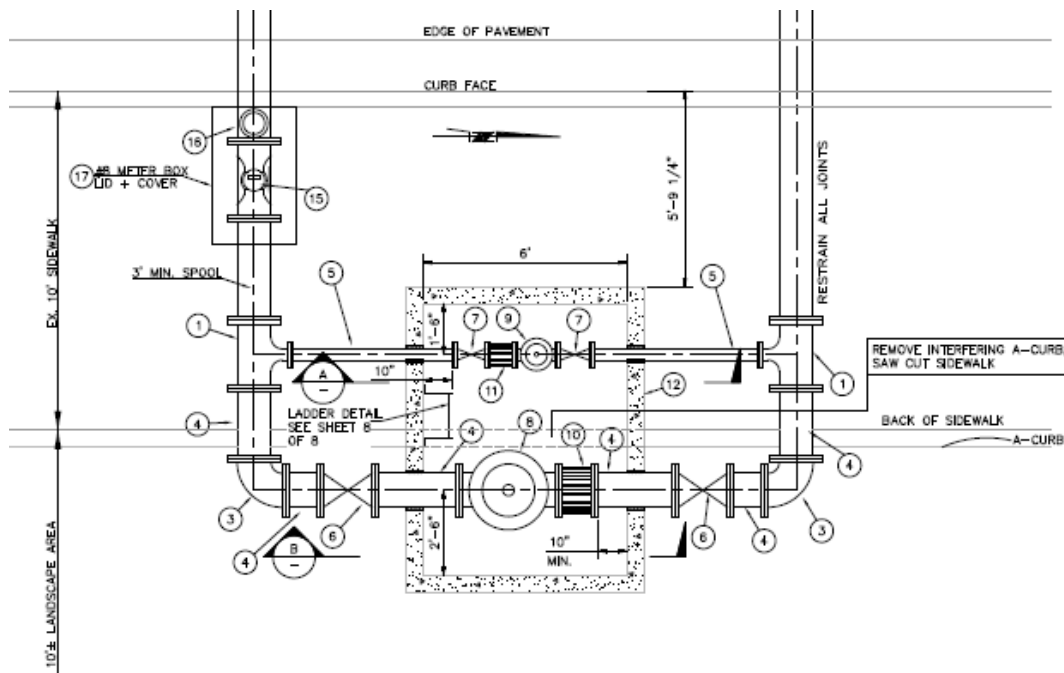


Figure 4 City of Victorville Standard PRV Station Detail

Alignment Constraints and Easements

After leaving Perimeter Road, the pipeline will follow parallel to the existing recycled water pipeline along a gentle arc down grade to the VVWRA property line; a distance of approximately 6,000 linear feet and vertical drop of approximately 200 feet. City of Victorville standards require that the new potable water line maintains a minimum of 4 feet of horizontal separation and is installed 1 foot above the existing recycled water pipeline (unless the pipeline is installed with 10 feet of separation, in which case there is no vertical requirement).

The Air Force indicated that there are existing landfills in the vicinity, but that the proposed alignment will not cross any of them. There is a high likelihood environmental mitigation will be necessary when working in this area, most notably protection from the desert tortoise.

Water Service Meters and Hydrants

It is assumed the potable water pipeline will be installed east of Shay Road in the shoulder. Two ¾-inch meters will be installed on the east and west side of Shay Road to service American Organics' Materials Processing Building and Administrative Building. Two fire hydrants will also be installed to service American Organics. Each new fire hydrant will be installed with a reduced pressure detector assembly, and each meter will be installed with a reduced pressure backflow device per the City's standards. After the northernmost potable water fire hydrant, the pipeline will decrease in size from 12 inches to 4 inches. A 12" x12" x12" tee will be installed with a blind flange on the south side of the site to allow the City to easily connect into the pipeline to create a looped system down Shay Road in the future (see Figure 5).

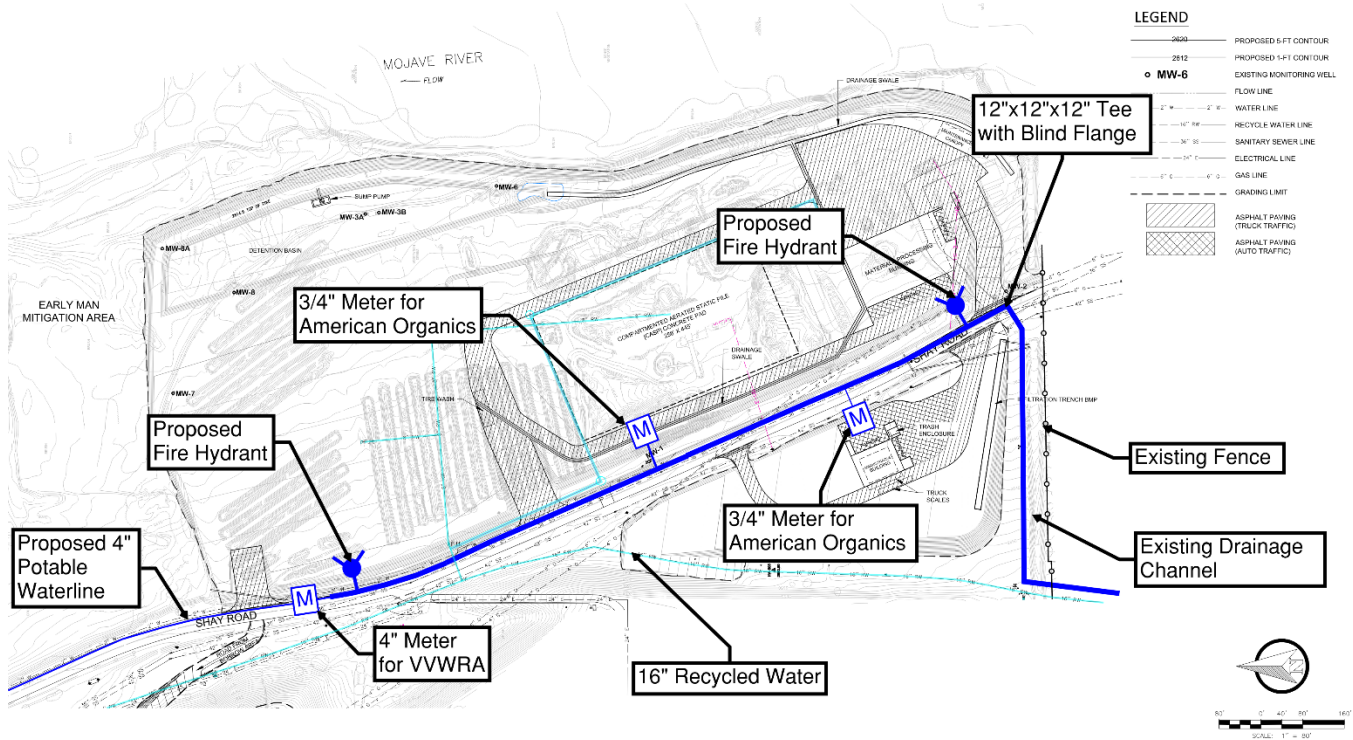


Figure 5 Proposed Meter and Hydrant Locations

On-site Infrastructure

Once the pipeline reaches the VVWRA property line, it will connect into the VVWRA treatment plant, American Organics, and the Anaergia site to provide potable water. Potable water will be used for the following purposes at each site:

- VVWRA Regional WWTP: Sinks, showers, eye washes, seal water, digester head loop, and other minor demands
- American Organics: Drinking water, fire service
- Anaergia: Bathrooms, showers, potable backup for recycled water used for chemical scrubbers and make down

American Organics currently has existing fire hydrants on-site that are supplied by VVWRA recycled water. There will be no interconnection between the new potable water system and the existing recycled water system. Hydrants supplied by recycled water hydrants are clearly marked.

All new potable water pipe from the connection at the High Desert Power Plant to the second hydrant in Shay Road will be owned by the City of Victorville. An easement will be required to be granted to the City of Victorville for access and maintenance of pipe within VVWRA property. As part of the construction of the pipeline within the Federal lands, a temporary construction easement will be necessary, granted to VVWRA. Post construction, a permanent access and maintenance easement within Federal lands will be necessary, granted to the City of Victorville.

Environmental/Permitting

Because of the high potential for multiple protected species and the landfills in the area, it is assumed this project will not qualify for a Notice of Exemption, and a full environmental report will be required. Additionally, a City of Victorville utility permit (including a stormwater inspection form and traffic control plans) will be required for any work done within the City's right-of-way. The Contractor will also be required to complete a Stormwater Pollution Prevention Plan (SWPPP) in accordance with State Water Resources Control Board (SWRCB) guidelines.

Coordination with SCE and the High Desert Power Plant may be required to ensure all separation and protection requirements are met for the nearby power poles and gas line, respectively.

Coordination and documentation will be required with the Air Force and the City of Victorville to establish a utility easement for the proposed pipeline.

Project Feasibility

The completion of a successful project includes construction of an approximately 6,000-linear foot, 12-inch potable water pipeline from Perimeter Road to the VVWRA property line, a PRV and vault, an approximately 4,000-linear foot, 6-inch waterline connecting to the VVWRA treatment plant, two fire hydrants and two meters to serve American Organics, and one meter for VVWRA. There is sufficient land space, a location for connection, and capacity within the City's system to incorporate the above elements into a constructible design.

In order to successfully construct this project, there will likely need to be formal environmental permitting for working on federal lands. Additionally, formal documentation of easements has not been located, and will need to be defined prior to construction.

Estimate of Probably Construction Cost

The preliminary estimate of probable construction cost is \$2.4 million. This is a Class 4 Construction Cost Estimate based on the Feasibility of Design Level, using vendor/supplier/manufacturer quotations and recent contract bid award data. A more detailed breakdown of this total cost and a definition of the estimate classes is included in Attachment C.

Estimate of Project Schedule

The preliminary project schedule is provided in Attachment D. It shall be noted that until discussions begin with the Air Force Base, the time it will take to obtain an easement is unknown. The schedule is currently estimating 200 days for this task, in parallel with the estimated duration for the preparation of the environmental documents. This number can be refined and updated as discussions proceed with the Air Force Base.

The preliminary proposed construction phasing is as follows:

1. Construct 12-inch and 4-inch potable water line from the High Desert Power Plant to the VVWRA Treatment Plant.
2. Install fire hydrants and meters on VVWRA property.
1. Coordinate with the City of Victorville to close existing valve on the 18-inch City of Victorville potable waterline on Perimeter Road.
2. Drain 18-inch waterline downstream of valve.
3. Complete tie-in of new 12-inch waterline to existing 18-inch waterline by installing 18" x 12" wye.
4. Open existing valve.
5. Perform hydrostatic testing and disinfection.

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ATTACHMENT A – VVWRA Potable Water Consumption Data

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1/1/2022-12/31/2022	VVWRA Est Water Usage GPD	American Organics Est Water Usage GPD
1/1/2022	4007	118
1/2/2022	3193	231
1/3/2022	4959	670
1/4/2022	4914	626
1/5/2022	5036	695
1/6/2022	4017	634
1/7/2022	4155	947
1/8/2022	3563	369
1/9/2022	6631	386
1/10/2022	4503	707
1/11/2022	3488	691
1/12/2022	3626	736
1/13/2022	3465	814
1/14/2022	3237	1240
1/15/2022	5044	400
1/16/2022	3191	359
1/17/2022	4042	807
1/18/2022	3652	779
1/19/2022	3913	900
1/20/2022	3876	822
1/21/2022	2705	641
1/22/2022	1908	26
1/23/2022	3895	156
1/24/2022	4188	843
1/25/2022	4024	945
1/26/2022	3894	839
1/27/2022	3922	819
1/28/2022	2326	632
1/29/2022	2552	36
1/30/2022	5216	155
1/31/2022	4577	853
2/1/2022	4179	811
2/2/2022	4150	756
2/3/2022	4014	814
2/4/2022	2331	567
2/5/2022	2154	32
2/6/2022	3862	164
2/7/2022	4182	789
2/8/2022	4948	789
2/9/2022	5200	781
2/10/2022	5095	932
2/11/2022	3875	796
2/12/2022	3299	15
2/13/2022	5726	154
2/14/2022	4834	1318
2/15/2022	3912	972

2/16/2022	3386	776
2/17/2022	2713	830
2/18/2022	3104	937
2/19/2022	3064	321
2/20/2022	3338	474
2/21/2022	4048	1584
2/22/2022	4862	1262
2/23/2022	5501	2533
2/24/2022	5864	1580
2/25/2022	3897	1295
2/26/2022	3697	284
2/27/2022	5212	1127
2/28/2022	5873	1208
3/1/2022	6154	3243
3/2/2022	4376	2650
3/3/2022	3747	1225
3/4/2022	3266	2433
3/5/2022	2179	192
3/6/2022	3246	722
3/7/2022	3918	1826
3/8/2022	4425	1134
3/9/2022	3764	754
3/10/2022	6585	2754
3/11/2022	2588	1214
3/12/2022	1905	228
3/13/2022	2880	605
3/14/2022	4048	1336
3/15/2022	4038	1163
3/16/2022	3100	686
3/17/2022	2992	1104
3/18/2022	1939	638
3/19/2022	1655	41
3/20/2022	3336	1016
3/21/2022	4322	2112
3/22/2022	3266	1069
3/23/2022	4127	1498
3/24/2022	3273	1394
3/25/2022	3499	2470
3/26/2022	3319	2086
3/27/2022	4587	2487
3/28/2022	6616	4172
3/29/2022	6023	4162
3/30/2022	6002	4041
3/31/2022	13961	4686
4/1/2022	6600	3796
4/2/2022	4877	4081
4/3/2022	6419	4695

4/4/2022	7929	4486
4/5/2022	13199	4428
4/6/2022	11116	4280
4/7/2022	8978	4345
4/8/2022	6826	3725
4/9/2022	9029	4215
4/10/2022	13177	5237
4/11/2022	11189	4475
4/12/2022	10155	3848
4/13/2022	9068	3597
4/14/2022	9715	4307
4/15/2022	9455	4994
4/16/2022	9527	3626
4/17/2022	10966	5219
4/18/2022	10795	4471
4/19/2022	9633	4289
4/20/2022	9808	3990
4/21/2022	11250	4630
4/22/2022	8525	3341
4/23/2022	9815	3907
4/24/2022	11050	4792
4/25/2022	10817	4974
4/26/2022	10431	4333
4/27/2022	7364	4877
4/28/2022	12729	3035
4/29/2022	7375	3169
4/30/2022	8810	4276
5/1/2022	11375	4838
5/2/2022	8305	4280
5/3/2022	16061	4692
5/4/2022	10691	3427
5/5/2022	15841	4826
5/6/2022	10012	4447
5/7/2022	12766	3433
5/8/2022	13118	4264
5/9/2022	21555	1190
5/10/2022	27131	851
5/11/2022	23273	780
5/12/2022	24725	1134
5/13/2022	19295	417
5/14/2022	24399	558
5/15/2022	25896	844
5/16/2022	24330	769
5/17/2022	24651	754
5/18/2022	23929	512
5/19/2022	23391	818
5/20/2022	22625	925

5/21/2022	29233	56
5/22/2022	29301	652
5/23/2022	27347	1175
5/24/2022	18665	862
5/25/2022	17120	259
5/26/2022	20971	942
5/27/2022	15156	77
5/28/2022	19872	686
5/29/2022	16925	631
5/30/2022	21381	551
5/31/2022	19928	983
6/1/2022	21353	1981
6/2/2022	19112	1424
6/3/2022	14874	611
6/4/2022	20220	1197
6/5/2022	20535	1213
6/6/2022	17873	1297
6/7/2022	23328	1382
6/8/2022	18752	800
6/9/2022	26691	1998
6/10/2022	16741	1069
6/11/2022	18462	1074
6/12/2022	22582	1512
6/13/2022	18446	694
6/14/2022	23754	522
6/15/2022	22262	1305
6/16/2022	21806	732
6/17/2022	19351	426
6/18/2022	23860	182
6/19/2022	24398	457
6/20/2022	26575	885
6/21/2022	23402	596
6/22/2022	20384	167
6/23/2022	23623	853
6/24/2022	19918	339
6/25/2022	25137	179
6/26/2022	25317	500
6/27/2022	25020	629
6/28/2022	26111	701
6/29/2022	23362	678
6/30/2022	25856	278
7/1/2022	19270	486
7/2/2022	24302	37
7/3/2022	28248	421
7/4/2022	23041	532
7/5/2022	24792	546
7/6/2022	20404	602

7/7/2022	22206	690
7/8/2022	16525	321
7/9/2022	21972	193
7/10/2022	25046	620
7/11/2022	20471	1168
7/12/2022	18944	610
7/13/2022	22424	291
7/14/2022	24951	622
7/15/2022	17027	879
7/16/2022	21043	106
7/17/2022	26851	265
7/18/2022	21371	654
7/19/2022	20674	571
7/20/2022	21607	187
7/21/2022	23249	676
7/22/2022	15799	548
7/23/2022	22493	89
7/24/2022	24940	630
7/25/2022	22125	646
7/26/2022	19182	560
7/27/2022	17477	303
7/28/2022	25869	303
7/29/2022	19944	669
7/30/2022	21930	672
7/31/2022	24565	672
8/1/2022	24694	735
8/2/2022	18369	687
8/3/2022	24258	458
8/4/2022	19685	680
8/5/2022	18358	193
8/6/2022	24045	330
8/7/2022	25184	584
8/8/2022	22579	598
8/9/2022	24863	881
8/10/2022	20647	584
8/11/2022	19345	560
8/12/2022	22295	719
8/13/2022	21204	93
8/14/2022	26274	420
8/15/2022	23632	1032
8/16/2022	22435	854
8/17/2022	19920	157
8/18/2022	25846	670
8/19/2022	14381	459
8/20/2022	24514	42
8/21/2022	24272	509
8/22/2022	23175	630

8/23/2022	21927	618
8/24/2022	18092	669
8/25/2022	3715	1179
8/26/2022	3975	552
8/27/2022	3111	194
8/28/2022	5310	739
8/29/2022	4714	538
8/30/2022	5078	583
8/31/2022	4942	454
9/1/2022	6449	473
9/2/2022	3230	148
9/3/2022	4151	356
9/4/2022	4902	421
9/5/2022	4856	596
9/6/2022	5725	523
9/7/2022	5511	302
9/8/2022	3691	446
9/9/2022	4068	256
9/10/2022	4007	100
9/11/2022	5141	856
9/12/2022	5486	706
9/13/2022	4512	647
9/14/2022	8660	354
9/15/2022	11015	512
9/16/2022	11871	488
9/17/2022	11755	88
9/18/2022	15488	542
9/19/2022	11045	493
9/20/2022	5213	623
9/21/2022	2429	613
9/22/2022	3923	318
9/23/2022	3957	734
9/24/2022	3520	58
9/25/2022	5929	344
9/26/2022	4909	640
9/27/2022	4205	437
9/28/2022	5504	470
9/29/2022	4210	590
9/30/2022	4495	657
10/1/2022	8011	450
10/2/2022	4652	595
10/3/2022	5856	273
10/4/2022	5174	666
10/5/2022	4752	288
10/6/2022	4126	215
10/7/2022	4216	896
10/8/2022	3948	125

10/9/2022	5053	520
10/10/2022	9834	1226
10/11/2022	6197	677
10/12/2022	4567	233
10/13/2022	4842	627
10/14/2022	4403	942
10/15/2022	6224	320
10/16/2022	5958	529
10/17/2022	13098	1248
10/18/2022	5604	548
10/19/2022	7299	443
10/20/2022	5619	634
10/21/2022	5987	354
10/22/2022	3759	152
10/23/2022	7262	571
10/24/2022	9708	560
10/25/2022	7098	541
10/26/2022	6994	1340
10/27/2022	5969	641
10/28/2022	5746	95
10/29/2022	9137	377
10/30/2022	4771	468
10/31/2022	15588	1018
11/1/2022	5164	482
11/2/2022	5202	361
11/3/2022	3813	503
11/4/2022	4331	685
11/5/2022	4277	160
11/6/2022	6142	601
11/7/2022	5030	635
11/8/2022	15195	2372
11/9/2022	4093	751
11/10/2022	4136	703
11/11/2022	0	257
11/12/2022	0	236
11/13/2022	0	452
11/14/2022	0	634
11/15/2022	5246	1029
11/16/2022	4006	630
11/17/2022	2621	521
11/18/2022	3890	86
11/19/2022	4024	543
11/20/2022	4490	554
11/21/2022	5556	636
11/22/2022	4447	609
11/23/2022	3973	135
11/24/2022	4293	687

11/25/2022	2918	348
11/26/2022	3007	196
11/27/2022	4766	623
11/28/2022	4743	624
11/29/2022	3739	618
11/30/2022	3752	1052
12/1/2022	4123	428
12/2/2022	2267	65
12/3/2022	2484	323
12/4/2022	4275	475
12/5/2022	3765	689
12/6/2022	5070	707
12/7/2022	3571	173
12/8/2022	3045	578
12/9/2022	6264	1001
12/10/2022	4664	44
12/11/2022	4105	558
12/12/2022	4506	842
12/13/2022	3841	900
12/14/2022	4248	323
12/15/2022	0	1458
12/16/2022	0	744
12/17/2022	4194	1261
12/18/2022	5305	1819
12/19/2022	5075	662
12/20/2022	4267	628
12/21/2022	5212	565
12/22/2022	2804	664
12/23/2022	0	675
12/24/2022	2993	371
12/25/2022	3560	275
12/26/2022	4781	654
12/27/2022	4464	679
12/28/2022	4049	371
12/29/2022	1978	339
12/30/2022	7104	1247
12/31/2022	2601	593
Totals	3790522	403837
Average Daily	10385	1106

ATTACHMENT B – Reclaimed Water Supply Analysis

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2099 S. State College Boulevard | Suite 540
Anaheim, CA 92806 USA
jensenhughes.com
+1 714-450-1700

RECLAIMED WATER SUPPLY ANALYSIS

**AMERICAN ORGANICS
VICTOR VALLEY REGIONAL COMPOSTING
FACILITY
20055 SHAY ROAD
VICTORVILLE, CA 92394**

Prepared For:

Athens Services SBC Office
2151 E. Convention Center Way, Suite 211
Ontario, CA 91764

Date:

September 11, 2018

Project No.:

1NBF00004.000.000

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2. APPLICABLE CODES AND STANDARDS.....

3. FACILITY DESCRIPTION

4. FIRE FLOW AND FIRE DURATION

5. VVWRA WATER SUPPLY INFORMATION.....

6. CONCLUSION AND RECOMMENDATIONS

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ATTACHMENT C

ATTACHMENT D

VVWRA 2017 ANNUAL RECYCLED WATER REPORT

RELOCATED WATER LINE PLAN

FIRE HYDRANTS TEST LOCATION

WATER FLOW TEST REPORT

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1. INTRODUCTION

JENSEN HUGHES, Inc. has prepared this reclaimed water supply analysis for American Organics located in Victorville, California. The consulting service included code research to identify the on-site fire flow, maximum distance between hydrants and the type of water the Victor Valley Wastewater Reclamation Authority (VWWRA) supplies. The intent of this report is to determine whether the available reclaimed water supply is suitable and adequate for the fire protection systems. JENSEN HUGHES has also analyzed the need for a fire water storage tank based on the reliability of the proposed water supply.

2. APPLICABLE CODES AND STANDARDS

The following codes and standards are referenced throughout this analysis.

- California Fire Code 2016
- Report/Recommendation to The Board of Directors of The San Bernardino County Fire Protection District and Record of Action
- California Code of Regulations State Board, Division of Drinking Water, Recycled Water Regulations, Title 22

3. FACILITY DESCRIPTION

The building information is as provided in the table below.

Property Address:	20055 Shay Road, Victorville
Occupancies:	Factory F-1
Applicable Codes:	2016 California Fire Code
Type of Construction:	II-B
Number of Stories	1-Story
Building Height to Roof	33'-8"
Gross Building Area	21,600 S.F.
Sprinklered	Yes

American Organics produces compost products in accordance with the U.S. Composting Council quality standards, disclosures, and composting procedures. The processing building is a 1-story agricultural facility of Type IIB construction covering 21,600 square feet. A maintenance canopy, also of Type IIB construction, and two modular structures of Type VB construction constitute the remaining buildings with areas of 2,625, 3,000, and 288 square feet, respectively. All on-site structures are protected by a wet pipe sprinkler system throughout. A consistent water supply is to be provided by dedicated fire protection water supply tanks at the VWWRA.

4. FIRE FLOW AND FLOW DURATION

According to the 2016 California Fire Code Appendix B Table B105.1(2), the requirement for on-site hydrant fire flow for a Type IIB 18,401 – 21,800 square foot building is 3,000 gallons per minute for a duration of 3 hours. In a report/recommendation to The Board of Directors of The San Bernardino County Fire Protection District and a Record of Action approved on July 8, 2014, a reduction in required fire flow of up to 75 percent is allowed for a building with a fully automatic sprinkler system. The resulting reduced fire flow shall not be less than 1,500 gallons per minute for a duration of 2 hours, at a minimum residual pressure of 20 psi.

In addition, the processing building is considered as an agricultural facility which is classified as an Ordinary Hazard Group 2 occupancy. According to NFPA 13 Table 11.2.3.1.2, the building requires a

hydraulic calculation based on the reclaimed water supply to meet a hose stream allowance of 250 gallons per minute for a duration of 60-90 minutes. Furthermore, based on the density/area curves in NFPA 13 Figure 11.2.3.1.1, a design density of 0.20 gpm/ft² over a 1500 ft² area is required for the building. Therefore, the on-side hydrant fire flow demands are greater than the sprinkler demands and will be used as the basis for this analysis.

5. VVWRA WATER SUPPLY INFORMATION

From Title 22 California Code of Regulations State Board, Division of Drinking Water, Recycled Water Regulations, the requirement for reclaimed water used in structural firefighting is indicated below.

“Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes.”

JENSEN HUGHES confirmed with VVWRA that the reclaimed water to be used for fire protection is qualified per the above requirements. VVWRA collected recycled water NTU data from January 1st, 2017 to December 31st, 2017. The data collected shows that the highest value is 1.1 NTU which meets the restrictions of Title 22 CCR. As a result, the reclaimed water may be utilized.

Based on the information received from VVWRA, three tanks are provided to store reclaimed water. The catalog shows that no flow was diverted to three tanks 25 days out of 365 days. This does not affect the recycled water flows out of the tanks. Because the tanks contain sufficient recycled water for usage, they can be considered a reliable primary fire protection water supply. By calculation the required minimum size fire protection water supply tank for the American Organics system is 180,000 gallons. Per information provided via email on August 28, 2018, the VVWRA site is provided with three tanks each capable of holding 14,060 ft³ (105,176 gallons). This corresponds to a total capacity of 315,530 gallons. Therefore, a secondary water storage tank would not be required for American Organics fire protection water supply.

6. CONCLUSION AND RECOMMENDATIONS

The water provided by VVWRA was determined to meet the turbidity requirements of Title 22 CCR. Water from VVWRS can therefore be used for fire protection purposes. Three storage tanks are available with a combined capacity of 315,530 gallons, a volume in excess of that required for American Organics. From the provided water flow test data, it was concluded that the capacity and pressure of the available water supplies would be sufficient for the fire suppression system demands.

If there are any questions or concerns, please contact me at 714.450.1700.

Submitted by:

JENSEN HUGHES

Prepared by



Noah Fisher
Associate

Reviewed by



Mike Amar, SET
Senior Fire Protection Consultant

ATTACHMENT A: VVWRA 2017 ANNUAL RECYCLED WATER REPORT

Victor Valley Wastewater Reclamation Authority
A Joint Powers Authority and Public Agency of the State of California



20111 Shay Road, Victorville, CA 92394
Telephone: (760) 246-8638
Fax: (760) 246-2895
e-mail: mail@vwwra.com

March 28, 2018

Ms. Patty Z. Kouyoumdjian, Executive Officer
Lahonton Regional Water Quality Control Board
14440 Civic Drive, Suite 200
Victorville, CA 92392

RE: 2017 Annual Recycled Water Report
Water Reclamation Requirements General Order WQ 2016-0068-DDW;
Water Recycling Requirements Order No. R6V-2003-028, WDID No. 6B360207001

Dear Ms. Kouyoumdjian,

Enclosed please find the 2017 Annual Recycled Water Monitoring Report for the Victor Valley Wastewater Reclamation Authority. During 2017, 54.8 million gallons (168.1 acre-feet) of tertiary treated water was sent to recycling, to the High Desert Power Project via the Southern California Logistics Airport Pond and to the American Organics Compost Facility.

We are pleased to report that the treatment facility and related systems performed well within permit requirements during 2017, with no violations. As required by the General Order (MRP page B-6), the following statement has been included in this transmittal letter:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of the those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

If you should have any questions, please contact me at your convenience.

Sincerely,

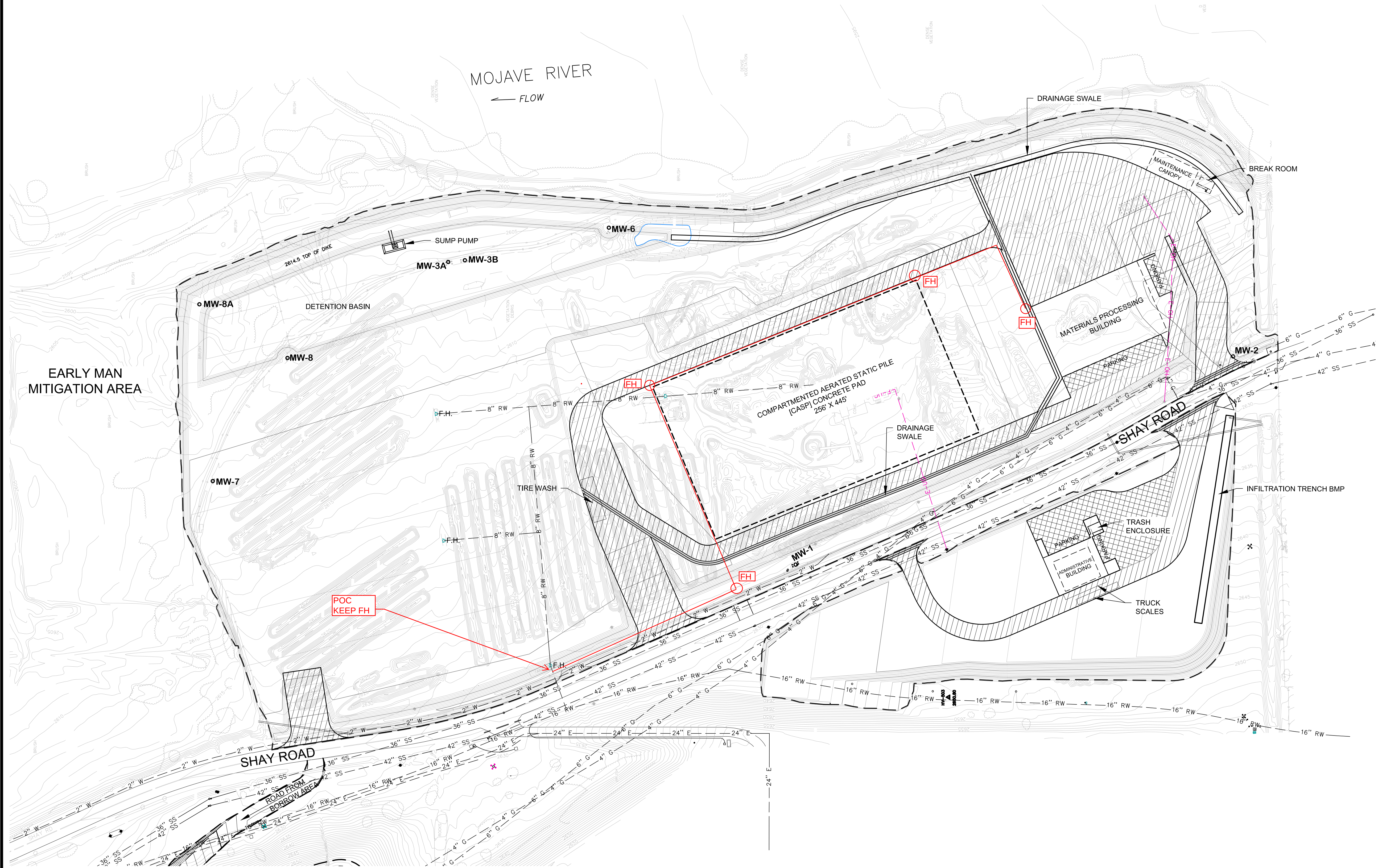
Logan Olds
General Manager

Enclosure: **2017 Annual Recycled Water Report**

Cc: SWRCB Discharge Monitoring Report Processing Center
Eugene Davis, Operations Supervisor - VVWRA
Brad Davis, Lead Operator - VVWRA
Operations/Control Room Posting - VVWRA

ATTACHMENT B: RELOCATED WATER LINE PLAN

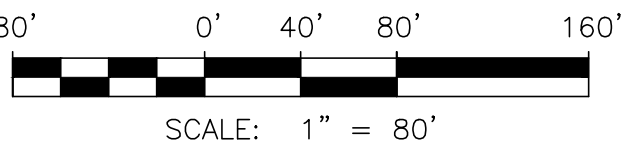
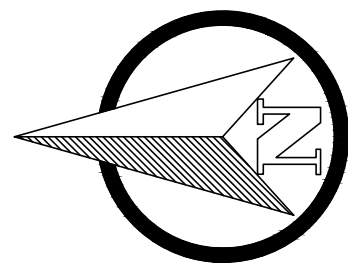
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LEGEND

- 2620 PROPOSED 5-FT CONTOUR
- 2612 PROPOSED 1-FT CONTOUR
- MW-6 EXISTING MONITORING WELL
- FLOW LINE
- 2" W 2" W WATER LINE
- 16" RW RECYCLE WATER LINE
- 36" SS SANITARY SEWER LINE
- 24" E ELECTRICAL LINE
- 6" G 6" G GAS LINE
- GRADING LIMIT
- ASPHALT PAVING (TRUCK TRAFFIC)
- ASPHALT PAVING (AUTO TRAFFIC)
- NEW PVC WATER LINE PER CITY OF VICTORVILLE STD
- RELOCATED FH

TEMPORARY ABOVE-GROUND SYSTEM MAY BE UTILIZED DURING PHASED CONSTRUCTION TO MAINTAIN WATER TO THE EXISTING OPERATION.



This drawing has not been published but rather has been prepared by Geo-Logic Associates, Inc. for use by the client named in the title block, solely in respect of the construction operation, and maintenance of the facility named in the title block. Geo-Logic Associates, Inc. shall not be liable for the use of this drawing on any other facility or for any other purpose.

REFERENCE AERIAL TOPO BASED ON JAN 29, 2018 AERIAL SURVEY BY DON READ CORP FLIGHT

REV. NO.	DATE	DESCRIPTION	APPROVED BY

DATE OF ISSUE: MAY 2018
DESIGNED BY: R JOHNSON
DRAWN BY: L PADILLA
CHECKED BY: C BARRET
APPROVED BY: R JOHNSON



Geo-Logic
ASSOCIATES

2777 EAST GUASTI ROAD
SUITE 1
ONTARIO, CA 91761
(909) 626-2282
www.geo-logic.com



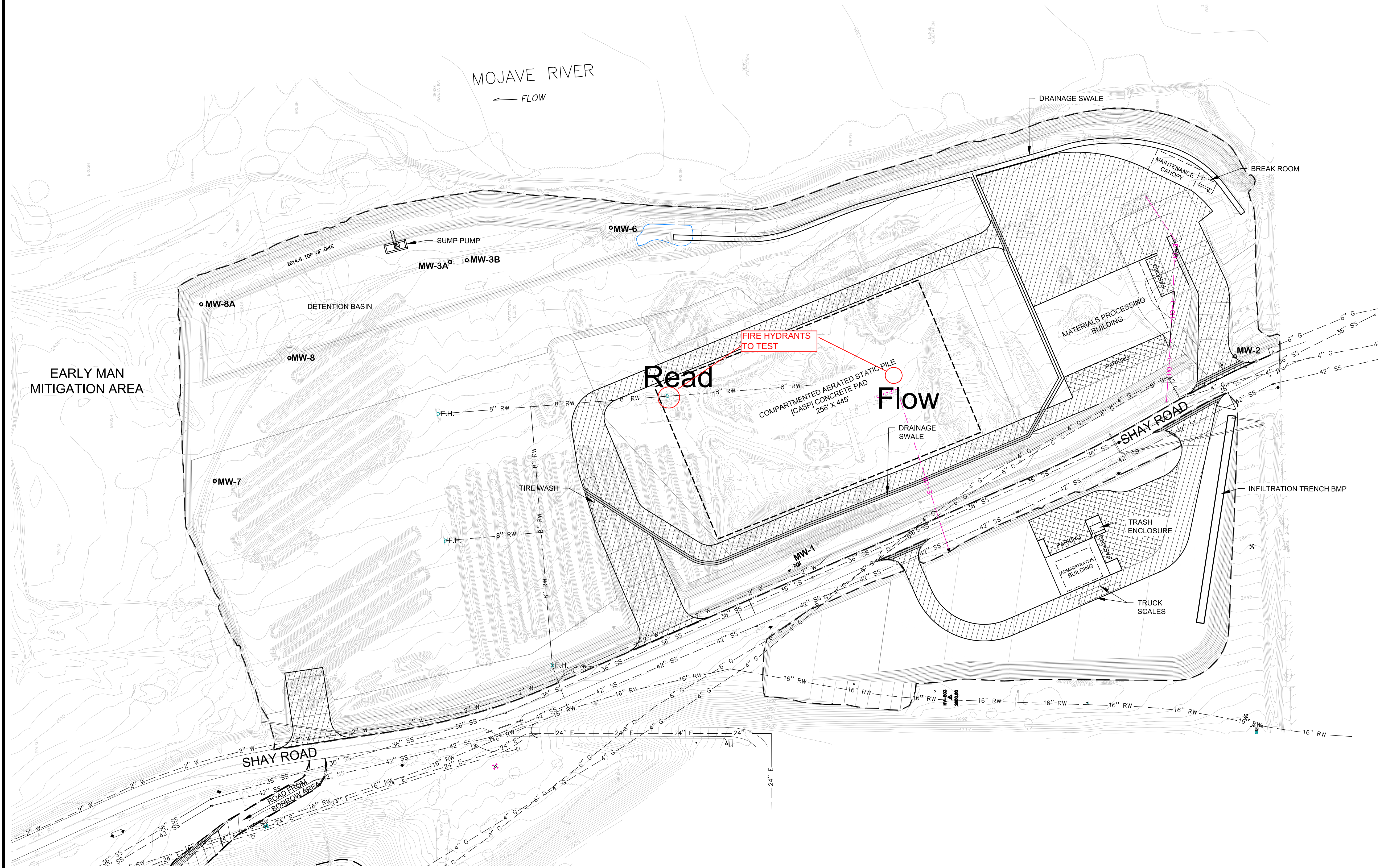
AMERICAN ORGANICS
VICTOR VALLEY REGIONAL COMPOSTING FACILITY
20055 SHAY ROAD, VICTORVILLE CA 92394
RELOCATED WATER LINE PLAN

SITE PLAN

DWG NO.
02
PROJECT NO.
SO18.1022

ATTACHMENT C: FIRE HYDRANTS TEST LOCATION

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LEGEND

- 2620 PROPOSED 5-FT CONTOUR
- 2612 PROPOSED 1-FT CONTOUR
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- 2" W 2" W WATER LINE
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- ASPHALT PAVING (TRUCK TRAFFIC)
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VICTOR VALLEY REGIONAL COMPOSTING FACILITY
20055 SHAY ROAD, VICTORVILLE CA 92394
GRADING & DRAINAGE

SITE PLAN

DWG NO.
02

PROJECT NO.
SO18.1022

ATTACHMENT D: WATER FLOW TEST REPORT

Daart Engineering Flow Test

Water System Fire Flow Calculation Work Sheet

LOCATION: **20055 Shay Road Victorville, Ca.**

DATE: **5/30/2018**

0

Conducted by Chris Cassady

Fill in the required info in the blue blocks

Read Baseline Pressures at Hydrant # : 1					
Static pressure:	100	Residual pressure:	80	Psi Drop:	20
				Total Flow:	1220
Percent Drop:		20%			
City Hydrant Number		Pitot	Opening	Coefficient	Flow
Example: C427		30	2.5	1	1021
0	1	55	2.5	1	1383
	2				
	3				0
	4				0
	5				0
Desired Residual:		20	Flow at Desired 20psi residual:		2579
			Flow at Desired 10psi residual:		2748

10 psi	1220	90	11.35771	2748
		20	5.041459	
20 psi	1220	80	10.65783	2579
		20	5.041459	
Hazen - Williams Computations				

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**ATTACHMENT C – Preliminary Estimate of Probable
Construction Cost**

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Engineer's Opinion of Probable Cost

Victor Valley Wastewater Reclamation			
Client:	Authority	Date:	June 2023
Project:	Water Pipeline Feasibility Study	Estimator:	KLH
Submittal:	Preliminary	Checker:	RB
Job No.:	15221	Cost Index:	12113 - July 2019 (LA)

Summary of Costs		Total
Specification Division		
Division 1 - General Requirements	\$	194,000
Division 2 - Sitework	\$	416,600
Division 3 - Concrete	\$	64,100
Division 4 - Masonry	\$	-
Division 5 - Metals	\$	-
Division 6 - Wood and Plastics	\$	-
Division 7 - Thermal and Moisture Protection	\$	-
Division 8 - Doors, Windows, and Hardware	\$	-
Division 9 - Finishes	\$	-
Division 10 - Specialties	\$	-
Division 11 - Equipment	\$	-
Division 12 - Furnishings	\$	-
Division 13 - Special Construction	\$	-
Division 14 - Conveying Systems	\$	-
Division 15 - Mechanical	\$	921,900
Division 16 - Electrical	\$	-
Division 17 - Instrumentation	\$	-
Totals	\$	1,597,000

Project Level Allowance	15%	\$	239,550
Insurance	1.50%	\$	23,955
Profit and Overhead	20%	\$	319,400
Market Uncertainty Factor	5%	\$	79,850
Bond	1%	\$	15,970
Escalation to Midpoint (5%/yr x 1 yrs)	5.0%	\$	79,850
Total		\$	759,000
Grand Total		\$	2,356,000

Class 4 Estimate:	-25%	\$1,767,000
	30%	\$3,063,000

<u>Client:</u> Victor Valley Wastewater Reclamation Authority	<u>Job No.</u> 15221
<u>Project:</u> Water Pipeline Feasibility Study	<u>Estimator:</u> KLH
<u>Submittal:</u> Preliminary	<u>Checker:</u> RB

<u>Client:</u> Victor Valley Wastewater Reclamation Authority	<u>Job No.</u> 15221
<u>Project:</u> Water Pipeline Feasibility Study	<u>Estimator:</u> KLH
<u>Submittal:</u> Preliminary	<u>Checker:</u> RB

Item	Item Description	Qty	Unit	Materials \$/Unit	Labor \$/Unit	Equipment \$/Unit	Subs \$/Unit	Other \$/Unit	Total \$/Unit	Total Net Cost \$
Division 1 - General Requirements									\$	194,000
1	Mobilization/Demobilization	1	LS					\$	50,000	\$ 50,000
2	Surveying	1	LS					\$	20,000	\$ 20,000
3	Clean-up and Disposal	1	LS					\$	15,000	\$ 15,000
4	Startup, Testing, and Disinfection	1	LS					\$	20,000	\$ 20,000
5	Traffic Control	1	LS					\$	5,000	\$ 5,000
5	Potholing (assumed 15)	1	LS					\$	24,000	\$ 24,000
6	Prepare and Implement Stormwater Requirements	1	LS					\$	20,000	\$ 20,000
6	Clearing and Grubbing	1	LS					\$	20,000	\$ 20,000
7	Permitting	1	LS					\$	20,000	\$ 20,000
Division 2 - Sitework									\$	416,600
1	Pavement Sawcut and Removal	1420	LF		\$ 9			\$	9	\$ 12,399
2	Open Trench Excavation, Backfill and Compaction	5389	CY		\$ 45			\$	45	\$ 242,500
3	Pipe Bedding Material	2694	CY	\$ 50	\$ 10			\$	60	\$ 161,667
Division 3 - Concrete									\$	64,100
1	Pavement Replacement	2840	SF	\$ 11	\$ 11			\$	23	\$ 64,041
Division 15 - Mechanical									\$	921,900
1	12" Class 305 (DR 14) PVC Pipe	6700	LF	\$ 57	\$ 23			\$	79	\$ 531,377
2	4" Class 305 (DR 14) PVC Pipe	3000	LF	\$ 15	\$ 6			\$	21	\$ 64,050
3	6" RW Gate Valve Class 350	1	EA	\$ 2,400	\$ 960			\$	3,360	\$ 3,360
4	12" Butterfly Valve (Class 150B)	1	EA	\$ 2,500	\$ 1,000			\$	3,500	\$ 3,500
5	4" Blow-off Assembly	1	EA	\$ 5,400	\$ 2,500			\$	7,900	\$ 7,900
6	2" Combination Air Release & Air/Vac Valve Assembly	1	EA	\$ 4,320	\$ 2,000			\$	6,320	\$ 6,320
7	Fire Hydrant	3	EA	\$ 3,742	\$ 1,871			\$	5,613	\$ 16,840
8	6" Reduced Pressure Detector Assembly (FH)	3	EA	\$ 8,916	\$ 3,566			\$	12,482	\$ 37,446
9	3/4" Reduced Pressure Backflow Device (AO meters)	2	EA	\$ 794	\$ 318			\$	1,112	\$ 2,223
10	6" Reduced Pressure Backflow Device (VWVRA meter)	1	EA	\$ 7,994	\$ 3,198			\$	11,192	\$ 11,192
11	3/4" Meter	2	EA	\$ 1,500	\$ 600			\$	2,100	\$ 4,200
12	12"x12"x12" Tee	1	EA	\$ 1,900	\$ 570			\$	2,470	\$ 2,470
13	4" Meter	1	EA	\$ 10,000	\$ 4,000			\$	14,000	\$ 14,000
14	Connection at Perimeter Rd	1	LS	\$ 5,000	\$ 5,000			\$	10,000	\$ 10,000
15	PRV and Vault	1	LS	\$ 128,000	\$ 64,000			\$	192,000	\$ 192,000
16	Bridge Attachment	1	LS	\$ 10,000	\$ 5,000			\$	15,000	\$ 15,000
Total									\$	1,597,000

Estimate Class	Primary Characteristic	Secondary Characteristic			
	Level of Project Definition Expressed as % of Complete Definition	End Usage Typical Purpose of Estimate	Methodology Typical estimating method	Expected Accuracy Range Typical Variation In Low And High ranges ^(a)	Preparation Effort Typical Degree of effort relative To Least Cost Index of 1 ^(b)
Class 5	0% to 2%	Concept Screening	Capacity Factored. Parametric Models. Judgment or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Model	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/ Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

Notes: (a) The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.

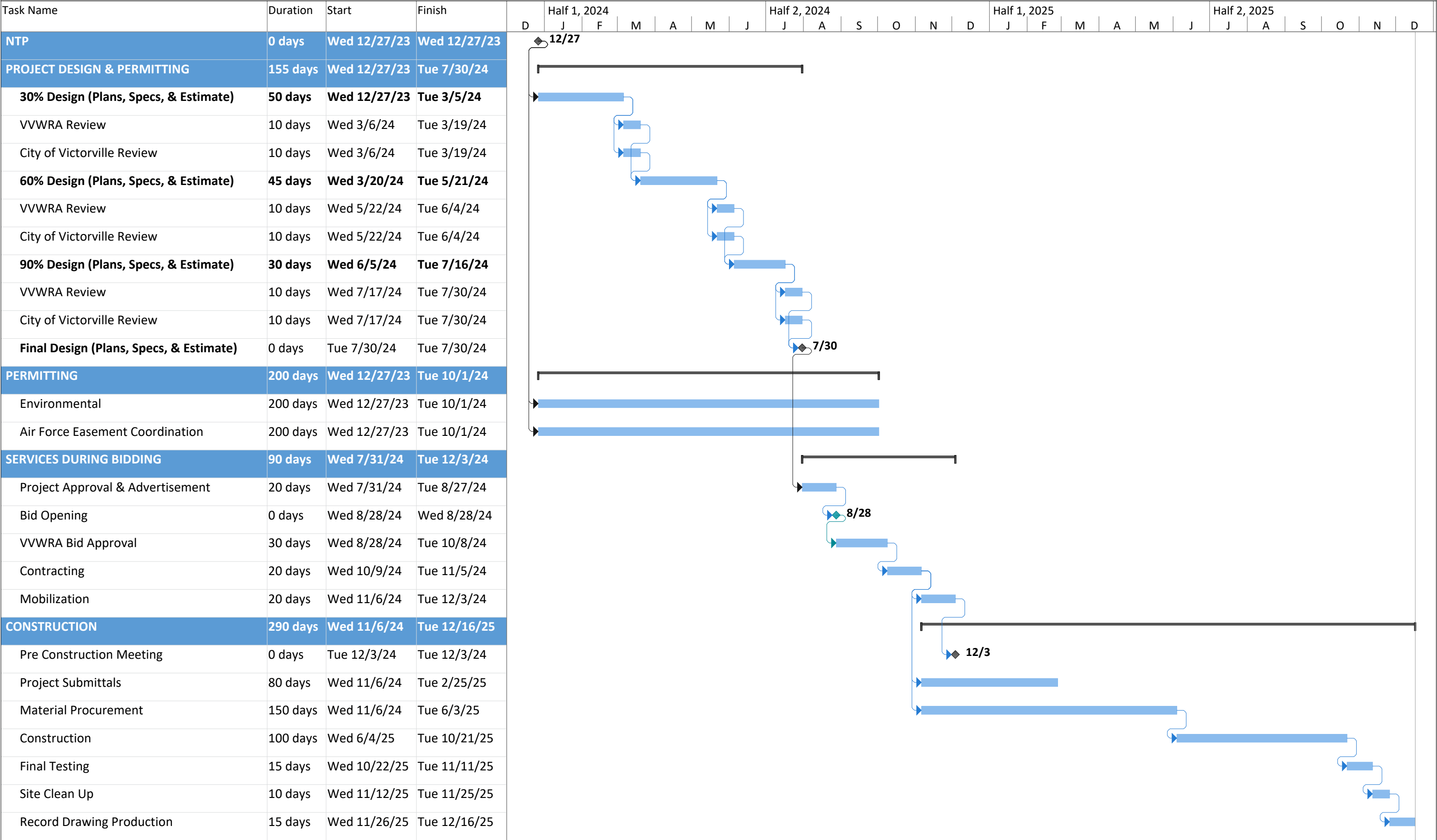
(b) If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the Project and the quality of estimating data and tools.

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ATTACHMENT D – Preliminary Schedule

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Water Pipeline Feasibility Study - VVWRA - Preliminary Schedule



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