Thursday, February 23, 2023 at 1:00 PM
Valley Sanitary District Board Room
45500 Van Buren Street, Indio, CA 92201

BOARD OF DIRECTORS
SPECIAL SESSION
AGENDA

Valley Sanitary District is open to the public and board meetings will be conducted in person. In addition to attending in person, members of the public may view and participate in meeting via the following:

Zoom link: https://us06web.zoom.us/j/81474680537

Meeting ID: 814 7468 0537

To address the Board of Directors during the virtual live session via zoom, please email the Clerk of the Board at hgould@valley-sanitary.org or, alternatively, during the specific agenda item or general comment period (i.e. non-agenda items), please use the "raise your hand" function in zoom in order to be recognized by the Clerk of the Board in order to provide comments in real time.

The Clerk of the Board will facilitate to the extent possible any email requests to provide oral testimony that are sent during the live meeting. Members of the public may provide Oral testimony in person or during the virtual live session and are limited to three minutes each. To address the Board in person please complete speaker request card located at in the Board Room and give it to the Clerk of the Board.

If you are unable to provide comments during the meeting, written public comments on agenda or non-agenda items may be submitted by email to the Clerk of the Board at hgould@valley-sanitary.org. Written comments must be received by the Clerk of the Board no later than 11:00 a.m. on the day of the meeting.

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **PLEDGE OF ALLEGIANCE**
4. **PUBLIC COMMENT**
5. **CONSENT CALENDAR**
   Consent calendar items are expected to be routine and noncontroversial, to be acted upon by the

Board of Directors at one time, without discussion. If any Board member requests that an item be removed from the consent calendar, it will be removed so that it may be acted upon separately.

5.1 Approve Annual Renewal of the Environmental Pollution Liability Coverage Through Desert Cornerstone Insurance in an Amount Not to Exceed $18,641
Recommendation: Approve

6. NON-HEARING ITEMS

6.1 Discuss 20-Year Financial Plan Presented by NBS and Provide Direction to Staff
Recommendation: Discuss

6.2 Authorize the General Manager to Execute a Contract (Task Order # 23-01) with Harris & Associates to Provide Design Plans for the Rehabilitation of the Calhoun Lift Station in an Amount Not to Exceed $140,474
Recommendation: Approve

6.3 Authorize President Canero and Secretary/Treasurer to Meet with State Legislators in Sacramento, CA on March 22, 2023, and Reimburse Related Expenses
Recommendation: Approve

7. PUBLIC COMMENT
This is the time set aside for public comment on any item to be discussed in Closed Session. Please notify the Secretary at the beginning of the meeting if you wish to speak on a Closed Session item.

8. CONVENE IN CLOSED SESSION

8.1 Public Employment Recruitment Pursuant to Government Code Section 54957 - Title: General Manager

8.2 Conference with Labor Negotiators Pursuant to Government Code Section 54957.6 - Unrepresented Employee: Interim General Manager

9. CONVENE IN OPEN SESSION

10. ADJOURNMENT

POSTED February 22, 2023
Holly Gould
Clerk of the Board
Valley Sanitary District

PUBLIC NOTICE

In compliance with the Americans with Disabilities Act, access to the Board Room and Public Restrooms has been made. If you need special assistance to participate in this meeting, please contact Valley Sanitary District (760) 235-5400. Notification 48 hours prior to the meeting will enable the District to make reasonable arrangements to ensure accessibility to this meeting (28 CFR 35.102-35.104 ADA TITLE II). All public records related to open session items contained on this Agenda are available upon request at the Administrative Office of Valley Sanitary District located at 45-500 Van Buren Street, Indio, CA 92201. Copies of public records are subject to fees and charges for reproduction.

ITEM 5.1
ACTION

Valley Sanitary District

DATE:	**February 23, 2023**
TO:	**Board of Directors**
FROM:	**Dr. Beverli A. Marshall, General Manager**
SUBJECT:	**Approve Annual Renewal of the Environmental Pollution Liability Coverage Through Desert Cornerstone Insurance in an Amount Not to Exceed $18,641**

Suggested Action
Approve

Strategic Plan Compliance
GOAL 6: Improve Planning, Administration and Governance

Fiscal Impact

Environmental Review
This item does not quality as a project as defined by the California Environmental Quality Act (CEQA).

Background

The Environmental Pollution product is offered by CalMutuals Joint Powers Risk & Insurance Management Authority (JPRIMA) and administered by Allied Community Insurance Services, LLC. This year's quote provides a $2,000,000 limit of liability. Coverage A is for on-site Pollution Liability and Coverage B provides off-site pollution activities. Piping infrastructure throughout the territory is deemed an onsite activity/insured location. This provides first and third-party coverage, direct damage coverage and third-party liability claim coverage.

Recommendation
Staff recommends that the Board of Directors approve the annual renewal of the Environmental Pollution Liability coverage through Desert Cornerstone Insurance in an Amount Not to Exceed $18,641.

Attachments

VSD Pollution Liability Renewal Quote.pdf
Valley Sanitary District Pollution letter.docx
Pollution Liability Invoice.pdf

ENVIRONMENTAL POLLUTION PROPOSAL
ONSITE & OFFSITE ACTIVITIES
TAILORED FOR WATER-RELATED ENTITIES

CalMutuals
JPRIMA
Joint Powers Risk and Insurance Management Authority

Offered by: CalMutuals JPRIMA
Fully Reinsured by Navigators Specialty Insurance Company
Administrator: Allied Public Risk, LLC
dba Allied Community Insurance Services, LLC
California License: 0L01269
National Producer Number: 17536322
www.alliedpublicrisk.com
www.waterinsuranceauthority.com

PROPOSAL TERMS	
MEMBER	Valley Sanitary District
COVERAGE	Environmental Pollution Product Onsite & Offsite Activities Tailored for Water-Related Entities
MASTER ANNIVERSARY DATE	March 1, 2023 – March 1, 2024 12 Month Coverage Period Pro-Rated for Members Enrolling Mid-Term
EFFECTIVE DATE	03/01/2023
ISSUER	CalMutuals Joint Powers Risk & Insurance Management Authority No Joint & Several Liability / No Assessments / No Financial Liability
REINSURER	Navigators Specialty Insurance Company AM Best Financial Rating: Excellent 100% Reinsured
FORM	Claims Made
LIMIT	$2,000,000
SUBLIMITS	$50,000 Fungus-Legionella $250,000 Environmental Crisis Management $50,000 Green Standards
DEDUCTIBLE	$10,000
RETROACTIVE DATE	07/01/2019
SCHEDULE OF INSURED SITES	All locations disclosed on application unless otherwise excluded All infrastructure piping; water or sewer pump stations; sewer lift stations or potable water tank locations
CONTRACTUAL LIABILITY	Blanket scheduling of any written agreement or contract associated with an easement and/or right-of-way or lease agreement regarding an insured site
PREMIUM	$16,946
ADMINISTRATIVE DUES*	$1,695
TOTAL AMOUNT DUE**	**$18,641***
*Administrative Dues comprises the cost to operate JPRIMA. **100% minimum earned and due upon binding. There is no return of premium or dues upon binding.	
SUBJECTIVITIES	See Navigators quote for details

NOTES: A specimen Memorandum of Coverage (MOC) is available for your review, as is the JPRIMA Member Agreement. Enrollment in the JPRIMA requires execution of the JPRIMA Member Agreement as well as membership in the California Association of Mutual Water Companies (CalMutuals).

Navigators Management Company, Inc.,
doing business in California as Navigators California
Insurance Services, Inc. (License #0D60850),
a subsidiary of The Hartford

From: Nathanial Hoerger
1-312-506-5250
Nathaniel.Hoerger@thehartford.com

Sharon Pratt
1-860-624-6139
Sharon.Pratt@thehartford.com

ONLY THOSE COVERAGES SCHEDULED BELOW WITH ACTUAL LIMITS OF LIABILITY ARE INCLUDED IN THIS PREMIUM INDICATION

Option 1: Coverages & Limits of Liability[1]

Policy Coverage Type:	Operational					
Coverage	**Each Occurrence**	**Coverage Section Aggregate**	**Policy Aggregate**	**Deductible**	**Policy Term (Yrs)**	**Premium Excluding TRIA**
A – Pollution Liability for Your Insured Sites	$2,000,000	$2,000,000	$2,000,000	$10,000	1 year	$16,946
B – Pollution Liability for Your Off-Site Activities	$2,000,000	$2,000,000		$10,000		
Supplemental Claim Expense Limit:	$250,000		Fungus/ Legionella Deductible:	$50,000		
Policy Period:	3/1/2023 to 3/1/2024					
Option 1 Comments:						

1: All coverages, limits, sub-limits and endorsements referenced herein are subject to (and not in addition to) the Policy Aggregate Limit shown above. The limits on multi-year policies do not reinstate annually.

Claims-Made Coverage Retroactive Date(s):

Coverage Elements	Retroactive Date(s)
Coverage A	7/1/2019
Coverage B	7/1/2019
Coverage A Fungus/Legionella	7/1/2019

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Sharon Pratt
1-860-624-6139
Sharon.Pratt@thehartford.com

Coverage A - Insured Site(s)		
Street Address	City	State
45-500 Van Buren	Indo	CA
Shields Rd & Avenue 46	Indio	CA
48630 Monroe St	Indio	CA
84229 Avenue 48 & Bataan	Indio	CA

Minimum Earned Premium: 25.00%

Option	Form Title	Form Number
All	NAV ENV Policy Jacket (Non NY)	NAV NSIC ENV POLICY JCKT (01/11)
All	Emergency Response Policy Holder Notice	NAV ENV ERS (02/11)
All	OFAC ENDORSEMENT	NAV-ML-002 (11/12)
All	Common Policy Declarations	NAV-ESP TLKT II DEC (5/19) FORM NO. DC01 (05/19)
All	Schedule of Forms and Endorsements	NENV FORMS LIST 01 (03/13)
All	Site Pollution Liability Toolkit II	NAV ESP TLKT II (05/19)
All	CALIFORNIA COMPLAINT NOTICE	NSIC CA NOTICE (09/16)
All	Notice of Claim Form	NENV CN 01 (04/17)
All	Policyholder Disclosure Notice of Terrorism	NAV-ML-TERRD (01/15)
All	JPRIMA Schedule of Insured Sites	NENV Manuscript (03/13)

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a subsidiary of The Hartford

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Nathaniel.Hoerger@thehartford.com

Sharon Pratt
1-860-624-6139
Sharon.Pratt@thehartford.com

Policy Forms and Endorsement Schedule List*:

The coverage descriptions provided herein are only a brief synopsis of the coverage being afforded, please refer to the actual policy and endorsements for coverage specifics.

Option	Form Title	Form Number
All	JPRIMA Program Coverage Amendatory Endorsement (With Odor Givebacks)	NENV Manuscript (03/13)
All	JPRIMA Program Other Insurance Amendatory Endorsement	NENV Manuscript (03/13)
All	JPRIMA Program Schedule of Insured Contract Endorsement	NENV Manuscript (03/13)
All	Absolute PFAS POA and AFFF Excl Endt	NENV 9221 (10/21)
All	Environmental Crisis Management Endorsement	NENV 9111 (05/19)
	$250,000 limit is scheduled.	
All	Full Terrorism Exclusion (Including Certified Act of Terrorism) Endorsement	NENV 9103 (05/19)
All	Terrorism Exclusion with Certified Act of Terrorism Exception Endorsement	NENV 9104 (05/19)
All	Global Specialty DEI Quote Proposal Flyer	22-GS-138600 (11/22)

PROPOSAL HIGHLIGHTS

Coverage Summary:

- Comprehensive solution for insuring the environmental pollution exposures of water-related entities.
- Policy form provides a combination of a first party *discovery* coverage trigger for cleanup costs along with a third-party *demand* trigger for claims alleging bodily injury, property damage, cleanup costs, and natural resources damage arising from new pollution incidents on a claims-made form that wraps around general liability and property policies.
- Pollution incident definition encompasses the discharge, dispersal, release, seepage, or escape of *any* solid, liquid, gaseous or thermal irritant or contaminant, including but not limited to, smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, hazardous substances, petroleum hydrocarbons, low level radioactive materials, medical waste, and waste materials. Definition also includes a sublimit for fungus and legionella.
- Broad policy form triggers comprising sudden & accidental, gradual, and/or time release of pollution incidents.
- Coverage extensions includes:
  - non-criminal civil fines & penalties;
  - natural resources damage;
  - third-party bodily injury including medical monitoring costs;
  - midnight dumping;
  - unintended lead-based paint & asbestos containing materials disturbance;
  - pollution incidents from cargo during transportation & hauling;
  - contracting pollution liability;
  - emergency cleanup costs;
  - waste disposal sites;
  - suits brought against an insured arising out of CERCLA liability;
  - underground storage tanks and piping apparatus for your products, byproducts, chemicals, treatment processes, and any other *non-petroleum*-based products;
  - blanket additional insured and waiver of subrogation; and
  - cleanup costs definition includes advice by environmental professionals absent applicable environmental laws.
- 24/7 emergency spill response support hotline encompassing guidance and advice as well as response oversight.
- 90-day automatic extended reporting period (ERP) & available 36-month supplemental ERP.
- No policy scheduling of contracting operations, transportation activities, or waste disposal facilities.
- Expanded definition of insured site to include all piping infrastructure as well as all physical property locations referenced on the application.
- Non-auditable premium.

Form:

- Coverage A: Pollution Liability for Your Insured Site(s)
- Coverage B: Pollution Liability for Your Off-site Activities
- Defense Costs Inside the Limit (after Supplemental Claim Expense Limit is exuasted)
- Supplemental Claim Expense Limit: $250,000

Limits / Sublimits:

- $2 Million Per Occurrence Limit
- $2 Million Policy Aggregate Limit
- $250,000 Crisis Management Event Sublimit
- $50,000 Green Standards Sublimit
- $50,000 Fungus/Legionella Sublimit

POLICY DETAILS

COVERAGE A: POLLUTION LIABILITY FOR YOUR INSURED SITE(S)

1. ***Cleanup Costs from the Discovery of a Pollution Incident***
   We will pay on behalf of the insured cleanup costs resulting from a pollution incident located:
   a. at, on or under an insured site; or
   b. beyond the legal boundaries of an insured site if the pollution incident emanated from an insured site, provided you discover the pollution incident during the policy period, and report the pollution incident to us in writing as soon as practicable following discovery, and, in any event, during the policy period; and
   c. that commences on or after the Coverage A Retroactive Date, provided you discover the pollution incident during the policy period, and report the pollution incident to us in writing as soon as practicable following discovery, and, in any event, during the policy period. The knowledge of a sudden pollution incident by a responsible insured constitutes discovery on your part.

2. ***Third-Party Claims for Bodily Injury, Property Damage or Cleanup Costs***
   We will pay on behalf of the insured those sums that the insured becomes legally obligated to pay as loss resulting from any claim(s) for bodily injury, property damage or cleanup costs caused by a pollution incident located at, on or under an insured site, or located beyond the boundaries of an insured site if the pollution incident migrated from an insured site, provided the pollution incident commences on or after the Coverage A Retroactive Date and provided such claims are first made against the insured and reported to us during the policy period, or, if applicable, during the extended reporting period.

COVERAGE B: POLLUTION LIABILITY FOR YOUR OFF-SITE ACTIVITIES

1. ***Third Party Claims for Bodily Injury, Property Damage or Cleanup Costs***
   We will pay on behalf of the insured those sums that the insured becomes legally obligated to pay as loss resulting from any claim(s) for bodily injury, property damage or cleanup costs caused by a pollution incident:
   a. resulting from the activities of your business;
   b. emanating from a location other than your property(ies), provided such claims are first made against the insured and reported to us during the policy period, or, if applicable, during the extended reporting period; and
   c. that commences on or after the Coverage B Retroactive Date, provided such claims are first made against the insured and reported to us during the policy period, or, if applicable, during the extended reporting period.

2. ***Emergency Cleanup Costs***
   We will pay those sums that you first incur as emergency cleanup costs caused by a sudden pollution incident:
   a. resulting from the activities of your business; and
   b. emanating from a location other than your property(ies), provided the sudden pollution incident is discovered by you no later than fifteen (15) calendar days after it begins and is reported to us no later than thirty (30) calendar days following discovery, and in any event reported during the policy period.

CLAIM EXAMPLES

The following claim examples are for illustrative purposes only. You must refer to the actual details of a particular claim and review the Memorandum of Coverage (MOC) for specificity of how coverage may or may not apply. All pollution MOCs will have a retroactive date, which limits coverage for historical releases.

RELEASE OF CHLORINE FROM A FAILURE IN PIPING INFRASTRUCTURE OR FROM PROCESS TANKS ON AN INSURED PROPERTY: Residual chlorine may be toxic to freshwater habitat. As such it can qualify as a pollutant. General liability and property policies frequently exclude cleanup of pollution incidents both onsite and offsite as well as natural resources damage and civil fines and penalties. Any ancillary pollution coverage that may be afforded within a general liability or property policy is generally confined to sudden & accidental and limited time releases. The JPRIMA environmental pollution product automatically defines water piping infrastructure as an insured site. Releases from process tanks on an insured site are also contemplated in the program. Moreover, our coverage applies to gradual pollution incidents, sudden & accidental and time-limited releases and includes noncriminal civil fines & penalties and natural resources damage resulting from such claims.

POLLUTION INCIDENTS FROM AGRICULTURAL CANALS OR BRINE LINES: First and third-party cleanup costs and third-party bodily injury and property damage, including natural resources damage, are likely loss scenarios from a leak or overflow of an agricultural canal or brine line. These types of claims are commonly excluded in a general liability policy unless the loss involves third party property damage resulting from a sudden & accidental release. Cleanup costs and natural resources damage are also routinely excluded under a general liability policy; irrespective if the loss resulted from a sudden & accidental release. Moreover, a property policy will invariably exclude cleanup costs that occur offsite. The JPRIMA environmental pollution product underwriter can schedule agricultural canals and brine lines as an insured site by endorsement. The program coverage also applies to gradual pollution incidents as well as sudden & accidental and time-limited pollution releases. Noncriminal civil fines & penalties, natural resources damages, cleanup costs, bodily injury, and property damage resulting from such claims are contemplated within the JPRIMA environmental pollution product.

CERCLA (SUPERFUND) IMPOSED LIABILITY FOR CLEANUP COSTS OF POTENTIALLY RESPONSIBLE PARTIES (PRP) FROM DISPOSAL OR TREATMENT OF HAZARDOUS SUBSTANCES AT A PREVIOUSLY CERTIFIED AND NOW BANKRUPT WASTE DISPOSAL FACILITY OR FROM ACTIVE WASTE DISPOSAL SITES WHICH DO NOT HAVE SUFFICIENT FINANCIAL CAPABILITIES TO ADDRESS THE CLEANUP COSTS: This loss scenario is excluded under most general liability and property policies. The JPRIMA environmental pollution product, however, is structured to protect the insured against such a loss. CERCLA regulations state that an owner, operator, transporter, or generator of hazardous wastes is responsible for such wastes from cradle-to-grave on a joint and several basis (i.e. any one may be held liable for the entire cleanup of the waste disposal site when the harm caused by multiple parties cannot be separated) and strict basis (i.e. a PRP cannot simply say that it was not negligent or that it was operating according to industry standards. If a PRP sent some amount of the hazardous waste found at the site, then it is liable). Even paying a waste disposal facility to treat or dispose of such waste does not exempt the insured from future cleanup costs, noncriminal civil fines and penalties and natural resources damages.

GRADUAL RELEASE AND SEEPAGE OF POLLUTION INCIDENTS FROM AN INSURED SITE THAT CONTAMINATES AN AQUIFER: General liability and property policies commonly exclude first or third-party cleanup costs for any gradual escape of pollution incidents that occur on an insured site. The JPRIMA environmental pollution product protects insureds against such losses and extends coverage beyond the insured site as long as the pollution incident originated from said location. Noncriminal civil fines & penalties, natural resources damage, cleanup costs, bodily injury, and property damage resulting from such claims are contemplated within the JPRIMA environmental pollution product.

CLEANUP COSTS AND THIRD-PARTY PROPERTY DAMAGE, INCLUDING NATURAL RESOURCES DAMAGE, INCURRED FROM A WASTEWATER RELEASE FROM SEWER MAIN BREAK OR TANK RELEASE ON AN INSURED SITE: Sewer main breaks are contemplated under general liability policies for third party bodily injury and property damage. Most general liability policies, however, exclude cleanup costs, natural resources damage, and noncriminal civil fines & penalties associated with such a release. This scenario gets more complicated if the release goes into a storm water drain or adjacent waterway. Piping infrastructure is automatically defined as an insured site on JPRIMA's environmental pollution product. Releases from process tanks on an insured site are also contemplated in the program. Noncriminal civil fines & penalties, natural resources damage, cleanup costs, third party bodily injury, and third party property damage resulting from such claims are contemplated in the JPRIMA environmental pollution product.

ILLEGAL DUMPING OR ABANDONMENT AT ANY INSURED SITE OF DRUM(S) OR CONTAINER(S) OF SUBSTANCES OR CHEMICALS REGULATED AS HAZARDOUS OR TOXIC UNDER FEDERAL, STATE, OR LOCAL ENVIRONMENTAL LAW, REGULATION, OR STATUTE: Cleanup costs and removal expenses of hazardous materials are commonly excluded under general liability and property policies. Unlike most pollution incident coverage where a release of a pollution incident is required, under this coverage enhancement, the mere presence of a container or drum of abandoned waste dumped on an insured site by a non-insured is covered. The JPRIMA environmental pollution product covers the removal and cleanup costs arising from illegal dumping of hazardous materials at an insured site by a non-insured.

INADVERTENT DISTURBANCE OF LEAD BASED PAINT OR ASBESTOS CONTAINING MATERIAL INCLUDING TRANSITE PIPING AT ANY INSURED SITE: Cleanup costs and third-party liability arising from inadvertent disturbance of lead-based paint or asbestos containing materials, including but not limited to lined piping, gaskets, and insulation, are commonly on an insured site. This exposure is regularly excluded under general liability and property policies. The JPRIMA environmental pollution product helps protect against such inadvertent disturbances on an insured site.

ACCIDENTAL RELEASE OF A SMALL CONTAINER OF LUBE OIL THAT OPENS INTO A WATERWAY: This scenario is frequently excluded by general lability and property policies, as it involves natural resources damage versus third party property damage. Such assessments are levied by trustees from the United States Department of Interior. These trustees comprise representation from the Departments of Agriculture, Conservation, Defense, Energy, and Interior along with a governor-appointed trustee for state resources and a tribal trustee from each tribe impacted by the alleged pollution spill. One such pollution incident involved a seven gallon container of lube oil that was promptly cleaned-up after releasing into a waterway. A year later, an assessment for several million dollars was levied against the entity for the spill's impact on fishing and aquatic resources. California trustees are active in seeking natural resources damage assessments against responsible parties. The JPRIMA environmental pollution product includes protection against defense related costs as well as settlement of noncriminal fines assessed.

ABOUT US

JPRIMA:
The California Association of Mutual Water Companies (CalMutuals) Joint Powers Risk and Insurance Management Authority (JPRIMA) was established in 2015 via the passage of AB 656 by the California legislature. This legislation was initiated by CalMutuals and supported by Valley (Central) Ag Water Coalition, California Firefighters' Association, and scores of mutual water companies. It allows mutual water companies to participate alongside water-related special districts, municipalities, and other public entities in a joint powers authority for purposes of insurance and supporting services. Technical resources and augmented advisory assistance are a critical component of this legislation and our JPRIMA. As a public entity, we are committed to providing quality insurance products that blend competitive rates with meaningful, value-added services and impeccable financial security. JPRIMA provides proprietary property & liability, workers' compensation, and environmental pollution products to its members. *There is no joint and several liability, financial liability, or assessments for participating members within JPRIMA.*

Reinsurer:
Our reinsurance partner is Navigators Specialty Insurance Company (Navigators). *They bear 100% of the risk and oversee the underwriting and claims operations.* Navigators is a specialist in environmental underwriting and offers experienced professionals, industry-leading policy forms, augmented pollution appetite, and flexibility to meet the needs of water-related entities. With expertise in environmental law, engineering, insurance, compliance, and regulation, Navigators is uniquely positioned to assist JPRIMA members with protecting their balance sheets against environmental liabilities. Navigator's is rated 'A' (Excellent) by A.M. Best and 'A+' (Strong) by Standard & Poor's.

Administrator:
Allied Public Risk (APR) is a full-service Managing General Underwriter (MGU) providing a broad spectrum of products and services to CalMutuals JPRIMA. *Our tenure with public water systems goes back 25 years, the longest of any specialty public entity program manager in California*. APR manages the property & liability, workers' compensation, and environmental pollution products for CalMutuals JPRIMA. All products are backed by 100% reinsurance from risk bearers that have financial security ratings of "A" and "A+" by AM Best and Standard & Poor's. There are over 3,000 water-related entities enrolled with APR throughout the United States.

CONTACT INFORMATION

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Allied Public Risk
(512) 409 – 6627
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Chase Gilmore
JPRIMA Assistant Manager
Allied Public Risk
(480) 268– 3065
cgilmore@alliedpublicrisk.com

CLAIMS REPORTING & EMERGENCY SPILL HOTLINE

Claims Reporting:
Email: newloss@navg.com with a copy to pfuller@alliedpublicrisk.com
Toll free: (855) 444 – 4796
Mail: Navigators · Attn: Claims Department · 83 Wooster Heights Road · Danbury, CT 06810 · USA
Refer to the MOC for claims information details

Emergency Spill Hotline:
(877) NAVG – ENV or (877) 628 – 4368

Desert Cornerstone
INSURANCE SERVICE INC.
Business Built on Trust

February 10, 2023

Valley Sanitary District
45-500 Van Buren
Indio, CA 92201

Dear Jeanette and Beverli:

Enclosed is the renewal quote for your Pollution Liability coverage. The quote provides a $2,000,000 limit of liability, per the expiring policy. Coverage A is for on-site Pollution Liability and Coverage B provides your off-site pollution activities cover. Piping Infrastructure throughout the territory is deemed an Onsite Activity/Insured Location. This provides first and third-party coverage (direct damage coverage and third-party liability claim coverage).

Coverage is written on a Claims-Made basis with a July 1, 2019 retroactive date.

We are including the proposal, which includes the coverage extensions and highlights. Due to recent class action lawsuits, PFOAs (perfluoroalkyl substances, polyfluoroalkyl substances and aqueous film-forming foam) are excluded from coverage again this year.

The Environmental Pollution product is written through Allied Public Risk's JPRIMA facility (CalMutuals Joint Powers Risk & Insurance Management Authority). It has its own Managing Director as well as a general counsel, regulatory counsel, CPA, and auditor.

Annual premium is quoted at $18,641, up from $17,758 last year. To bind coverage, please remit payment of $18,641 per the attached invoice..

Thank you for allowing me to provide this important coverage for you as I feel it is an important wrap around to your existing General Liability policy coverage.

Sincerely,

Hugh K. Curtis

81-713 Highway 111, Suite E, Indio, CA 92201-5496 Phone 760.347.7723 Fax 760.347.7725 CA License #0F15709

Desert Cornerstone INSURANCE SERVICE Inc.
Business Built on Trust

******INVOICE*****

CA License #0F15709
81-713 Highway 111, Ste E
Indio, CA 92201

Customer	Valley Sanitary District
Date	February 10, 2023

Valley Sanitary District
45-500 Van Buren,
Indio, CA 92201

Payment Information	
Invoice Amount	$18,641.00
Payment Amount	
Payment for:	Pollution Liability Renewal

Customer: Valley Sanitary District

Invoice	Effective	Transaction	Description	Amount
422	3/1/2022	Renewal	Renewal of Policy #: SF21ESPJP0002IC	$18,641.00

For online payments log on to www.desertcornerstoneins.com and click "make a payment"
Please note: all checks received will be processed electronically as an ACH.

Total
$18,641.00

Desert Cornerstone Insurance Service, Inc. (760) 347-7723
CA License #0F15709
81-713 Highway 111, Ste E
Indio, CA 92201

ITEM 6.1
DISCUSSION

Valley Sanitary District

DATE:	**February 23, 2023**
TO:	**Board of Directors**
FROM:	**Jeanette Juarez, Chief Administrative Officer**
SUBJECT:	**Discuss 20-Year Financial Plan Presented by NBS and Provide Direction to Staff**

Suggested Action
Discuss

Strategic Plan Compliance
GOAL 5: Long-Term Financial Strength

Fiscal Impact
There is no fiscal impact at this time. Future fiscal impacts will depend upon which alternative the Board selects and will be presented at a future meeting for discussion.

Environmental Review
This item does not qualify as a project as defined by the California Environmental Quality Act (CEQA).

Background

At the October 25, 2022, meeting, the Board authorized the General Manager to execute a contract with NBS to perform a Comprehensive Wastewater Rate Study. As part of the study, NBS was tasked to create a financial plan that includes all revenue sources, expenditures, reserves, capital improvement costs, repair and replacement costs, and net revenue requirements.

NBS has prepared a financial plan presentation (attached), that addresses three key issues.

- Develop net revenue requirements from Fiscal Year 2022-23 to Fiscal Year 2041-42
- Establish and maintain of reserve funds and targets
- Fund the Capital Improvement Program

To meet all three targets NBS developed three Financial Plan Alternatives for District staff and the Board of Director to consider.

- Alternative 1 Full funding of CIP with no debt
- Alternative 2 Full funding of CIP entering into $57 million in debt
- Alternative 3 Full funding of CIP entering into $1.14 million debt

The Financial Plan presentation examines the District's targets and establishes a baseline for each of the alternatives.

Recommendation
Staff recommends that the Board of Directors discuss 20-Year Financial Plan presented by NBS and provide direction to staff.

ITEM 6.2
ACTION

Valley Sanitary District

DATE:	**February 23, 2023**
TO:	**Board of Directors**
FROM:	**Ron Buchwald, District Engineer**
SUBJECT:	**Authorize the General Manager to Execute a Contract (Task Order # 23-01) with Harris & Associates to Provide Design Plans for the Rehabilitation of the Calhoun Lift Station in an Amount Not to Exceed $140,474**

Suggested Action
Approve

Strategic Plan Compliance
GOAL 3: Excellent Facilities

Fiscal Impact
The fiscal impact of this design project is $140,474 and is included as part of the FY 2022/23 Capital Improvement Project Budget. Staff will include funds to complete this project as part of the proposed CIP budget for 2023-24 Fiscal Year.

Environmental Review
This item does not qualify as a project as defined by the California Environmental Quality Act.

Background
On November 9, 2021, the Board authorized the execution of a contract with Harris & Associates (Harris) to perform a condition assessment on VSD's four lift stations. Harris, with the help of two subconsultants, completed the condition assessment report in June 2022. The Lift Station Condition Assessment report (attached) reflects the determination that the four lift stations are generally in moderate to good working condition.

The Calhoun Lift Station was one of the lift stations needing the more immediate repairs. Specifically, the concrete liner protecting the concrete still well has deteriorated and needs to be replaced with a new protective liner. Other improvements include upgrade of electrical panel and control panel, install new sump termination panel, paint above ground pipe and fixtures, upgrade/replace lighting both within and exterior to the wet well, add SCADA capability and provide other improvements as listed in

the report and proposal.

Harris was solicited for the Collection System Program Management through an RFP back in 2018. The contract was for a five-year period. Harris has performed well through this contract and is well equipped to perform this design work after completing the Lift Station Condition Assessment. The schedule for this design work will most likely carry on into next fiscal year.

Recommendation
Staff recommends that the Board of Directors authorize the General Manager to execute a contract with Harris & Associates to provide design plans for the rehabilitation of the Calhoun Lift Station in an amount not to exceed $140,474.

Attachments
23-0214 Calhoun LS Improvement Proposal.pdf
Lift Station Condition Assessment Report - Final.pdf

Harris & Associates

February 14, 2023

Ronald Buchwald, PE
Engineering Services Manager
Valley Sanitary District

CALHOUN LIFT STATION IMPROVEMENT PROJECTS – DESIGN SERVICES

Dear Mr. Buchwald:

Harris & Associates (Harris) appreciates the opportunity to present our proposal to the Valley Sanitary District (VSD) for the design of the Calhoun lift station improvement projects based on the recommendations outlined in the Lift Station Condition Assessment Memo dated June 20, 2022. The following proposal includes a suggested scope of work and fee estimate based on the lift station inspection.

PROJECT UNDERSTANDING

Harris and their subconsultants, V&A and TJC, performed a condition assessment and corrosion evaluation on the four active VSD lift stations: Barrymore, Carver, Calhoun, and Vandenberg. The condition assessments identified existing structural, electrical, and mechanical deficiencies through confined space entry inspection, visual analysis, and nondestructive testing. The inspections were performed between February 7th and 9th, 2022. A report on the condition assessment findings and improvement recommendations with cost estimates were provided to VSD. The final memo was dated June 20, 2022. Harris determined the four lift stations are in moderate to good condition with identified deficiencies that should be addressed within the next five years. The Calhoun station improvements had more immediate concerns, and improvements were recommended to be performed within the next two years.

The Calhoun station was given the highest priority over the other stations due to existing mechanical challenges and the existing condition of the wet well. The existing wet well liner was observed to be in a deteriorating condition with areas of substantial delamination, in addition to tear and split seams. Concrete scaling was observed behind the liner indicating that the poor liner condition has already impacted the concrete that the liner should be protecting.

Based on the report recommendations, Harris is proposing the following scope and fee for the preparation of construction documents for the Calhoun lift station improvements. The specific elements included in the design scope is as follows:

1. Upgrade the main electrical panel
2. Replace pump guiderails
3. Replace various existing valves and adding a new valve to assist with lift station bypass
4. Prepare preliminary lift station bypass plan to serve as a guide to the Contractor. Detailed bypass pumping plan will be prepared by the Contractor.

5. Upgrade the main control panel and autodialer
6. Replace sump termination panel and conduit seals
7. Remove existing liner and install full coating of wet well interior surface and install discharge piping with fusion epoxy coated
8. New coating on above ground piping
9. New coating on pad-mounted transformer enclosure
10. Replace interior fixtures with LED and exterior with LED motion-sensor lighting fixtures at electrical building
11. Perform arc flash study and provide labels
12. Perform structural analysis of the CMU control room
13. *Optional design task:* SCADA installation for remote monitoring and controls capability

The scope of work for the above lift station improvements include:

- Developing 65%, 95%, and final plans, specifications, and engineering opinion of construction cost estimate for lift station improvement construction

Our assumptions include:

- Additional condition assessments will not be needed
- Design elements are based on the recommendations of the Condition Assessment Report (dated and signed June 20, 2022)
- Bidding and construction period services are not included
- Harris participation in field testing, startup and commissioning is not included
- Preparation of operation and maintenance (O&M) manuals are not included
- All available station as-builts will be provided to Harris
- VSD standard specifications will be provided where available
- VSD will assist with obtaining utility contacts to obtain arc flash study parameters
- Arc flash study performed at the utility
- Structural improvements that may be identified through structural analysis is not included
- Harris attendance at pre-bid and pre-construction meetings is not included
- Hydraulic analysis and capacity improvements are not included. Pump performance is not included. Updating CMMS database is not included.
- It was noted during the condition assessment work that the existing pumps at the Calhoun lift station would frequently become plugged from wipes and other items. At the time, VSD mentioned that new chopper pumps were already being planned for replacement. The scope outlined in this work proposal assumes no support will be needed for the new pump selection and the construction plans will not include the new pump installation.

SCOPE OF SERVICES

The following outlines our scope of work for the Project.

Task 1: Project Management and Workshops: Harris shall provide project management and administration for proper planning, filing, execution, monitoring, quality control, and reporting of this project. Harris shall also prepare a brief monthly progress summary letter report for attachment to the monthly invoice to track status of budget expenditures (including showing percent completion for each task) and key work activities completed during that billing period. Harris shall prepare for and attend up to three workshops (including kickoff meeting)

to review the project progress and design submittals. We assume all meetings will be virtual. The kickoff meeting will review purpose of the project, scope of work and project goals.

Meetings and Workshops:

- Progress meetings/ submittal review workshops (up to 3 meetings)

Harris Deliverables:

- Monthly progress summary letter with each invoice
- Meeting agenda, presentation handouts, meeting minutes, and decision log

Information Provided by VSD:

- Input at workshops and meetings

Task 2: Prepare Plans, Specifications, & Engineer's Estimate (PS&E) (Draft 65%, 95%, and 100%): Harris shall prepare 65%, 95% and Final submittal packages. Each submittal package shall include specifications, drawings, and opinion of construction cost. Harris will also prepare Division 0 and 1 specification (front-end specifications) based on the VSD's standard documents.

The 65% submittal will include initial design drawings, specifications, schedule, and cost estimate. A preliminary construction sequencing plan will be developed and submitted for VSD staff input.

The 95% submittal will be prepared by including additional details to the design documents to progress the design and VSD's review comments on the 65% submittal package. The 95% will be an essentially complete package with all major design elements included and specifications completed. No new drawings or specifications will be anticipated after the 95% submittal. The 95% will include a construction cost estimate with basis of estimate.

The 100% package will be prepared after receipt of VSD comments on the 95% submittal. Harris will incorporate all comments from the 95% submittal and submit a final 100% check set including all documents for VSD review. Following VSDreview and approval, Harris will submit a final 100% package will all appropriate registration stamps and signatures.

Harris Deliverables:

- 65%, 95%, 100% Plans and Specifications (pdf)
- Opinion of construction cost with each progress submittal.

Information Provided by VSD:

- One collated set of marked up drawings and specifications within 2 weeks of receipt of the 65% design submittal
- One collated set of marked up drawings and specifications within 2 weeks of receipt of the 95% design submittal
- Final approval of the 100% check set with 1 week

Task 3: Arc Flash Studies: Harris and their electrical subconsultant TJC will perform arc flash hazard analysis at the Calhoun lift station. The arch flash study was recommended in the condition assessment report in accordance with the National Electrical Code, NFPA 70E (Standard for Electrical Safety in the Workplace), OSHA 29-CFR, Part 1910 Sb part S, and IEEE1584 Standards.

Harris Deliverables:

- Arc flash study report for Calhoun lift station

Information Provided by VSD:

- VSD will assist with obtaining utility contacts to obtain arc flash study parameters

Task 4: Structural Analysis Studies: As part of the previous condition assessment, a seismic risk screening of the Calhoun lift station was conducted. Further structural analysis was recommended to determine seismic demands. This task includes structural analysis of the pump control building at Calhoun. The design of any structural improvements that may be determined is not included in this scope.

Harris Deliverables:

- Structural analysis report for the pump control building at Calhoun

Optional Task 5: SCADA Design: As an optional task, Harris and subconsultant TJC, will develop SCADA design plans including developing the network diagram drawings and specifications. The SCADA system will allow for remote monitoring of the stations and remote controls capability.

PROJECT SCHEDULE

Harris proposes to provide the services outlined in accordance with the attached project schedule. The schedule would commence upon receipt of written Notice to Proceed (NTP).

PROPOSED FEES

Harris proposes to provide the scope of services outlined above for a total Not-to-Exceed fee budget of $112,842 per the attached fee breakdown. An additional optional task for SCADA system design is included in the attached fee; with this optional task the fee budget is $140,474. This is our estimated effort based on the scope provided above. Fees will be invoiced monthly based on the percentage of work completed. Our service would be accomplished per our existing agreement with VSD, where all terms and conditions are stated therein.

We look forward to working with VSD on this important project. Please feel free to call me directly should you have any questions.

Sincerely,
Harris & Associates, Inc.

Mark Nassar, PE, MBA
Director, Program Management
(619) 200-6442 ■ Mark.Nassar@weareharris.com

Zaheer Shaikh, PE, PMP
Director, Engineering Services
(925) 395-1928 ■ Zaheer.Shaikh@weareharris.com

Attachments:

- Estimated Level of Effort
- Proposed Project Schedule

FEE BUDGET

VALLEY SANITARY DISTRICT
CALHOUN LIFT STATION IMPROVEMENT DESIGN

Task	Task Description	PM	LD	Proj M	DE	TA	QA/QC	Harris Hours	Harris Cost	Subconsultants Cost		Total Cost
										TJCC	ODC Total[1]	
		$310	$267	$233	$150	$267	$267					
1	Project Management	4	2	24	0	0	0	30	$7,366	$0	$0	$7,366
2	Design and Construction Documents (65%, 95%, and 100%)	2	12	40	120	8	12	194	$36,484	$27,400	$30,140	$66,624
3	Arc Flash Study	1	2	4	4	0	0	11	$2,376	$16,900	$18,590	$20,966
4	Structural Analysis Study	1	2	4	4	0	0	11	$2,376	$14,100	$15,510	$17,886
	Tasks 1-4 Totals =	**8**	**18**	**72**	**128**	**8**	**12**	**246**	**$48,602**	**$58,400**	**$64,240**	**$112,842**
5	*OPTIONAL TASK:* SCADA Design	2	4	8	8	0	0	22	$4,752	$20,800	$22,880	$27,632
	Tasks 1-5 Totals (Optional task included) =	**10**	**22**	**80**	**136**	**8**	**12**	**268**	**$53,354**	**$79,200**	**$87,120**	**$140,474**

Legend:

PM Program Manager
LD Lead Design
Proj M Project Manager
DE Design Engineer
TA Technical Advisor

TJCC: Electrical and Structural Engineering

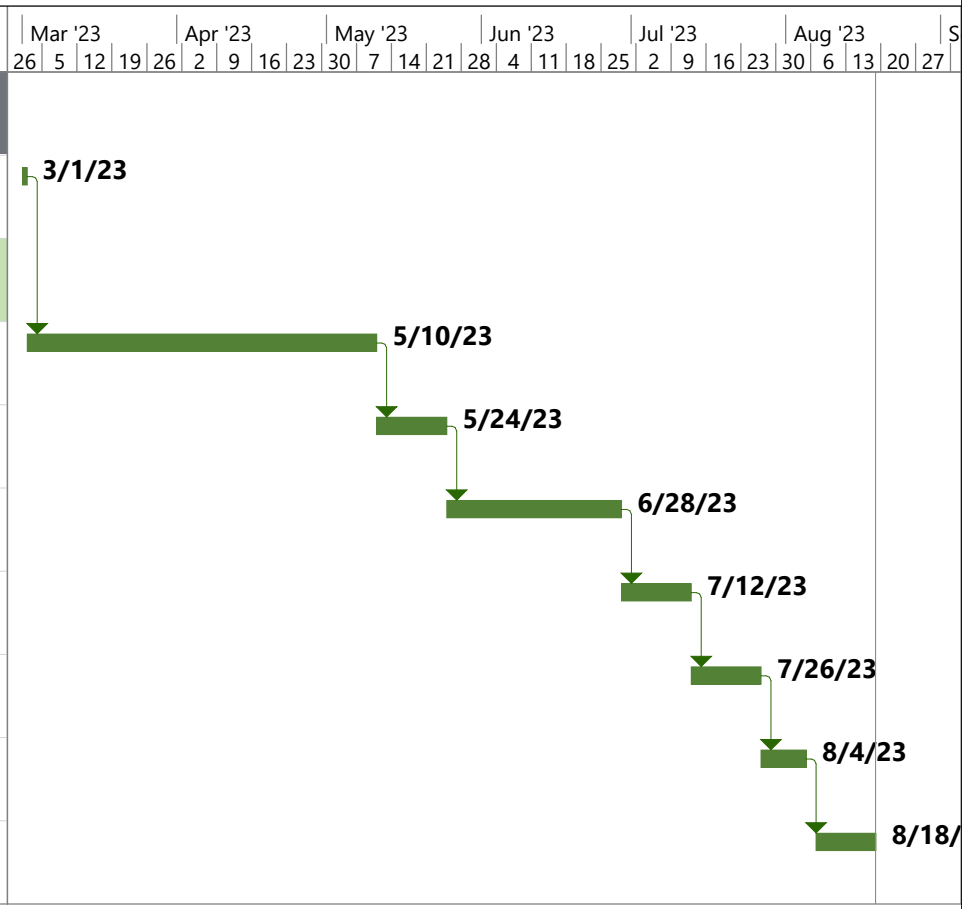
Notes/Assumptions:

1. Other Direct Cost (ODC) includes Subconsultants cost plus 10% markup.
2. All meetings except site visits will be virtual.
3. All submittals will be electronic (pdf).

Valley Sanitary District
Lift Station Improvements Design
PROPOSED PROJECT SCHEDULE

Harris & Associates

ID	Task Name	Duration	Start
1	**Lift Station Improvement - Design**	**1 day**	**Wed 3/1/23**
2	NTP / Kick-off meeting	1 day	Wed 3/1/23
3	**Design**	**122 days**	**Thu 3/2/23**
4	65% PSE Submittal to VSD	50 days	Thu 3/2/23
5	VSD Review	10 days	Thu 5/11/23
6	95% PSE Submittal to VSD	25 days	Thu 5/25/23
7	VSD Review	10 days	Thu 6/29/23
8	100% PSE Submittal to VSD	10 days	Thu 7/13/23
9	VSD Review	7 days	Thu 7/27/23
10	100% PSE Signed Submittal	10 days	Mon 8/7/23



Harris & Associates

LIFT STATION CONDITION ASSESSMENTS

VALLEY SANITARY DISTRICT

To: **Ronald Buchwald, PE**
Engineering Services Manager
Valley Sanitary District
(760) 238-5400 Office
(760) 238-5408 Direct

From: **Zaheer Shaikh, PE, PMP**
Director, Engineering Services
Regional Manager
Harris & Associates
Zaheer.Shaikh@WeAreHarris.com

Date: June 20, 2022

Executive Summary

The key objectives of the lift station condition assessment were to identify existing structural, electrical, and mechanical deficiencies, and to provide improvement recommendations with planning-level cost estimates for the four active Valley Sanitary District (VSD) lift stations: Barrymore, Carver, Calhoun, and Vandenberg. **T**he assessment included an investigation of the station assets through confined space entry inspection, visual analysis, and nondestructive testing. Harris engaged TJC and Associates, Inc (TJCAA) for their structural and electrical, instrumentation, and controls (EI&C) expertise and V&A Consulting Engineers (V&A) to assist with the condition assessment and perform a corrosion evaluation.

Pump performance and hydraulic capacity were not assessed. However, the three largest stations are equipped with overflow bypass piping to minimize the risk of sanitary sewer overflows (SSOs) and no problems were mentioned during site visits with VSD. The fourth station also has a bypass system but due to issues is currently not used. The stations do not have backup generators but the overflow bypass piping function as emergency backup.

Overall, the condition assessment did not find any issues that required immediate action to prevent imminent structural or critical equipment failure. The stations are generally in moderate to good working condition. The major recommendations across the four lift stations involve new wet well linings, new mechanical coatings, and upgrading outdated electrical equipment. Recommended improvements are based on deteriorating asset conditions, outdated equipment with increased failure and safety risk, and assets nearing their useful life. Recommended improvements aim to provide a more reliable system and meet VSD's needs for the future. Several maintenance items were identified and should be included in future regular maintenance work. Further structural analysis is recommended at the two older wet well/dry well style stations, and at the electrical building at Calhoun station.

Installing a SCADA system at all four stations is recommended to provide more reliability and real time system knowledge, which can help prevent longer downtimes and support the collections crew's efficiency. Although

listed as an individual recommendation at each station in the tables within this memo, SCADA installation can be designed, programmed, and installed system-wide, and is the recommended method, if budget allows. Also recommended at all four stations is performing an arc flash study to ensure compliance with current codes, regulations, and safe work practices.

Table E1 summarizes the total project costs for all recommended construction improvements at each station. Tables listing the individual projects are within the body of this memo. The timeframes listed in Table E1 reflect a recommended prioritization of work by station. Table E2 includes the total project costs for all recommended construction improvements and the additional recommended arc flash and structural studies. All estimates in Tables E1 and E2 are provided in 2022 dollars for cost comparison across stations. Escalated costs are included in the individual station recommendation tables within this memo.

Calhoun was given the highest priority due to existing mechanical challenges and the existing condition of the wet well coating. VSD stated that they are currently budgeting to purchase new chopper pumps to handle the frequent existing clogging issues. The new pump installation should be coordinated with the new well coating and new discharge pipe improvement recommendations. New wet well coating is recommended to replace the significantly torn and delaminated liner and new discharge piping is recommended to replace the severely corroded existing discharge pipes. Because of the challenges of this work including the wet well size, depth, and required bypass pumping, it is advised to coordinate and complete as one project.

The Carver and Barrymore station recommendations share the second priority level. These older wet well/dry well style stations both have their original electrical and controls equipment, which are now outdated and at higher risk of failure and safety incidents. The wet well liners at both stations were observed in a deteriorating condition and are recommended for replacement. New dry well coating is also recommended. If VSD can relocate the Carver station within the next 2 to 5 years, then many of the Carver recommendations are not needed or could be completed as part of the station relocation project.

Compared with the other stations, Vandenberg is the newest station and has fewer recommended improvements and is listed with the lowest priority level.

Combining the recommended construction projects together at each station into one station rehabilitation project is a suggested option for design and construction efficiency. However, there are alternative options that can be evaluated with the individual station recommendations discussed in this memo, if required for budgeting.

TABLE E1: Planning-Level Cost Estimate for Recommended Construction Projects

Lift Station	Recommended Timeframe	Estimated Cost for Recommended Construction Projects ($, 2022 Dollars)[1]
Calhoun	0 to 2 years	$ 400,200
Carver	2 to 5 years	$ 471,400
Barrymore	2 to 5 years	$ 445,500
Vandenberg	3 to 5 years	$ 82,200

TABLE E2: Planning-Level Cost Estimate for Recommended Construction Projects and Studies

Lift Station	Estimated Cost for Recommended Construction Projects and Studies ($, 2022 Dollars)[1]
Calhoun	$ 431,700
Carver	$ 507,600
Barrymore	$ 481,700
Vandenberg	$ 94,800

[1]Estimated cost is a planning-level project cost estimate and was estimated without detailed plans or drawings. The construction projects estimate in Table E1 are inclusive of material, labor, contractor costs, and project soft costs. A construction sub-total was first estimated with material and labor cost. Unit costs for these items were derived from a combination of recent construction bids, national estimating databases, and engineering judgement. A multiplier of 1.57 was applied to the sub-total to estimate a total construction cost inclusive of sales tax (9%), contractor profit and overhead (15%), contractor front end specs (12%), and contingency (30%-35%). A factor of 1.26 was then applied to the total construction estimate accounting for project management (6%), design, survey, miscellaneous (10%), and construction management, inspection, material testing (10%). For the studies, the estimated cost includes the cost of service and project management.

1. Introduction

Valley Sanitary District (VSD) provides wastewater collection, treatment, and water reclamation services for much of the City of Indio and portions of the surrounding communities within Coachella Valley. Founded in 1925, VSD continues to serve approximately 76,000 people within a service area of approximately 12,768 acres comprising residential, commercial, and industrial customers. The existing sewer infrastructure includes over 254 miles of pipes, four active lift station (LS), eight siphons, and a wastewater treatment plant (WWTP).

VSD is currently implementing a 12-year collection system improvement program to inspect and improve its sewer collection system pipes to ensure continued safe and cost-effective service. Adjacent to this effort, VSD has retained Harris & Associates to perform a condition assessment on four existing sewer lift stations (Figure 1): Barrymore, Calhoun, Carver, and Vanderburg.

FIGURE 1: Lift Station Locations

The two oldest stations, Barrymore and Carver, constructed in the 1960s and 1970s, have a wet well and dry well configuration. The two newer stations, Vandenberg and Calhoun, are submersible style and were built in the 2000s. The newest station at Vandenberg includes a separate valve vault. A summary of the station configurations is provided in Table 1.

The following sections of this memo summarize the condition assessment findings and details the recommended improvements with associated budgetary cost estimates. The detailed structural assessments for each station by TJCAA are attached as appendices.

TABLE 1: Lift Station Summary Table

Memo Section	Station Name	Location	Year Installed	Lift Station Style	No. of Pumps	Pump Capacity, gpm[1]
3.1	Calhoun	Intersection of 49th Ave and Calhoun St	2005	Submersible wet well	2	630
3.2	Barrymore	Intersection of Barrymore St and Garbo Dr	1979	Wet Pit/Dry Pit Style (Prefabricated dry pit)	2	800
3.3	Carver	Intersection of 48th Ave and Bataan St	1967	Wet Pit/Dry Pit Style (Prefabricated dry pit)	2	320
3.4	Vandenberg	Vandenburg Dr and Pic Way	2007	Submersible wet well (with valve vault)	2	110

[1] Pump information was based on VSD provided data. Pump testing was hydraulic capacity analysis was not performed.

2. Approach and Condition Assessment Scope

The scope of the lift station condition assessments consists of the identification and evaluation of mechanical, structural, and electrical, instruments, and controls (EI&C) assets within each of the four stations. This assessment does not address pump performance or hydraulic capacity improvements.

The following list summarizes the approach taken for the lift station condition assessments. Subconsultant reports from TJCAA further detailing their structural analysis is provided in Appendix A.

1. Review existing drawings and documents
2. Perform site visits with VSD staff between February 7 and February 9, 2022
    a. Confined space entry of well structures, which required bypass pumping
    b. Visual inspection and site photos
    c. Nondestructive testing on exposed surfaces by V&A Consulting Engineers
    d. Interviews with VSD about concerns, knows issues, and wants
3. Evaluate all observations and findings
4. Recommend improvements based on assessment
    a. TJCAA provided structural and EI&C evaluation and recommended improvements
    b. V&A Consulting engineers provided concrete, metals, and coatings condition assessment
5. Estimate planning-level cost and recommend prioritization for recommended improvements

3. Findings and Recommendations

The following section presents the observations, evaluation, and improvement recommendations for each station. A detailed structural assessment for each station was performed by TJC and is attached as Appendix A. The structural recommendations from those reports are summarized and included in the following sections.

3.1 Calhoun Lift Station

3.1.1 Station Description

The Calhoun lift station, built in 2005, is a submersible style lift station with an approximate 13-feet diameter precast concrete manhole and a 5-feet x 3-feet access hatch (Figure 2). The station is located within a residential neighborhood in the northwest corner of the 49th Avenue and Calhoun Street intersection inside a gated lot with concrete masonry unit (CMU) perimeter wall.

FIGURE 2: Calhoun Lift Station Schematic and Site Photo

The wet well collects flow from two incoming sewer mains and is then pumped through a 4-inch force main to a manhole in Calhoun Street. Provided drawings showed a 6-inch force main; however, from the site visits the visible piping was 4-inch. The station has two submersible pumps, each with a design capacity of 630 gpm and are operated in a duty/standby configuration. The wet well has a 15-inch PVC emergency overflow as shown on the drawings. The piping configuration is shown in Figure 2.

The electrical and control equipment is housed in a CMU electrical building. The utility power service equipment is located within the station lot and consists of a pad mounted transformer and meter/main load center panel mounted on the electrical building exterior in a security cage. An enclosure containing the electrical wiring terminations sits just outside the wet well pad in a lockable security cage.

The lift station equipment is fed from a 208 Volt, 3-phase control panel powered from a combination load center which is rated 200A, 208V, 3-phase fed from a 75kVA Imperial Irrigation District (IID) transformer. The wall-mounted control panel, Gorman-Rupp Pumps EPS 2000 Pump Control Panel, is rated 125A and supplies electrical power to two 10-horsepower (hp) submersible pumps and contains the station controls. The pump control system consists of a bubbler (primary) with float (backup) and a radio alarm autodialer. A 3kVA dry type distribution transformer and alarm autodialer are wall mounted adjacent to the control panel (Figure 3).

General station information for the Calhoun Lift Station is summarized is Table 2.

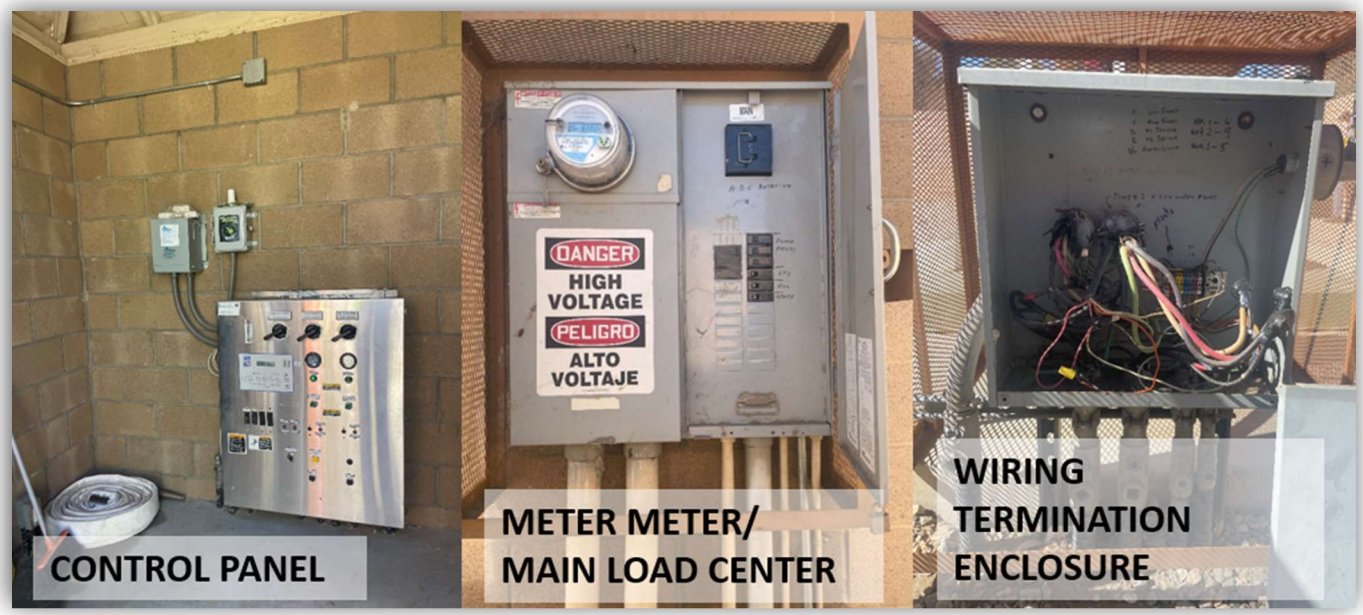


FIGURE 3: Calhoun Lift Station Photos

TABLE 2: Calhoun Lift Station General Information

Calhoun Lift Station	
Year Constructed	2005
Station Type	Submersible wet well
Wet Well	13-feet diameter wet well with 36-inch diameter access manhole; approximately 35-deep
Number of Pumps	Two pumps (duty/standby configuration)
Pump Design Capacity and TDH	630 gpm @ 15 feet (each pump; from VSD provided pump information) Serial number: #1809108 and #1809107
Pump speed	1150 rpm

Motor Hp	10 hp
Phase/Volts	3/208
Drive type	VFD
Pump Manufacturer/Model	Keen K4VB
Discharge Diameter	4-inch (observed during site visits; VSD provided drawings show a 6-inch)
Standby power	None; wet well has emergency overflow bypass pipe
Level Controls and backup	Bubbler (primary) and float (backup)
Alarms	Alarm auto dialer for high wet well and pump trip alerts
Control Panel	Above grade control panel within CMU electrical building
Valve location	Above ground

3.1.2 Observations and Findings

Condition assessment observations by asset group are provided in Table 3. The final table column associates the condition finding with recommended improvements in Table 4.

Overall, the control panel, transformer, autodialer, electrical wiring, and connections at Calhoun are original installation and are in good working condition. Several items were noted for electrical improvements and upgrades. Station structures are also in overall good condition with minimal deficiencies in structural elements. The major deficiency observed at the station was with the wet well liner, found to be substantially delaminated in numerous locations, in addition to tears and split seams. Concrete scaling was observed behind the liner.

The existing pumps get plugged often from wipes and other items. VSD has submitted new chopper pumps for this station in their future budget. VSD mentioned that the pump does not seal well on the base elbow. This could be caused from a misaligned rail system and recommend new guiderails are installed with the new pumps.

TABLE 3: Calhoun Lift Station Condition Assessment

Category	Asset	Condition Description	Recommendation
Civil/Mechanical/ Structural	**Site (General)**	• Unpaved; not noted issues • CMU perimeter wall and access gate observed in good condition • Coating deteriorated on pad-mounter transformer and minor corrosion	See Item 5, Table 4
	Site Security	• Site enclosed by CMU perimeter wall with locked gate access • Camera on building acts as visible deterrent, but is not connected • Exterior lights on electrical building do not work	See Item 6, Table 4
	Electrical Building	• 8'x8' Concrete CMU building with timber framed roof in good condition • Ventilation fan and fluorescent interior lights are working • No nesting problem under eaves	See Items 6 and 9, Table 4
	Above grade piping	Discharge piping and header in fair condition with minor corrosion	See Item 4, Table 4
	Wet Well Hoist	Hoist located on wet well concrete slab and is powered by running an extension cord to the electrical building	The electrical outlet should be 3-ft from wet well hatch opening or should be rated for hazardous location

Category	Asset	Condition Description	Recommendation
	Wet Well	• No ladder defects identified • Access hatch in good condition • Corrosion below bubbler to control panel • Delaminated liner throughout • Factory coating only in lower 6-feet • Liner tears observed at every seam • Medium scaling of concrete below liner	See Item 3, Table 4
	Pumps and Motors	• Pumps clog (from wipes and other items); moderate corrosion staining (VSD currently planning to replace with chopper pumps) • Pumps do not seal well on the base elbow • VSD has new chopper pumps in budget • SST guide rails and supports in good condition with minor staining; guide rails possibly misaligned and causing the poor seal between pump and base elbow	Consider coordinating new pump and guide rail system installation with Item 3 in Table 4
	Piping and valves	Moderate corrosion on discharge piping	See Item 3, Table 4
Electrical, Instrumentation, Controls (EI&C)	**Control Panel**	• Meter/main combination load center in good condition • Control panel does not have main circuit breaker • Circuit breaker presumed to feed panel does not have visible rating or a trip mechanism • No arc flash warning labels	See Items 1 and 8, Table 4
	Level Control, alarms, and monitoring	• No identified issues with level controls • Autodialer designed to alarm on high wet well level and motor overload, but does not alarm on motor overload • Alarm agent is one day behind • No emergency power backup but not necessarily needed due to low SSO potential • No SCADA	See Items 1 and 7, Table 4
	SSO potential	Emergency bypass piping at wet well; no identified issues	None
	Conduits	• Conduit sealant may be old • Wiring, terminations, and intrinsically safe barrier components are disorganized, improperly labeled and there is evidence of corrosion and deterioration	See Item 2, Table 4

3.1.3 Recommended Improvements

Table 4 lists the improvement recommendations with associated planning level project cost estimate. Construction project costs are provided separately from the estimated cost for recommended structural and arc flash studies. All projects should be considered within now and the next two years.

Modifications to the main panel, control panel, and autodialer should be performed to improve the functionality of the current control system. The upgrades will ensure the equipment is wired to function as intended. In addition, the control panel should have a main circuit breaker installed locally and the main panel outside should have a tripping mechanism installed at the circuit feeding the control panel. Upgrading the existing termination panel is also recommended and should be placed outside of the classified area boundary, which will improve the reliability of the current arrangement. Per NFPA 820, the wet well and surrounding area is

classified as Class I, Division 2 from 3 feet in all directions from any opening, hatch, or vent, and extends 18 inches above. It is recommended that proper signage also be provided as part of this or any lift station upgrade.

Issues such as site security can be addressed by adding an intrusion alarm to the electrical building doors. Installing additional site lighting and security cameras should be considered as overall site improvements and is not included in the lift station recommended improvements estimated cost.

Inside the wet well, the lining and discharge piping need replacement. VSD mentioned that the existing submersible pumps do not have a good seal with the base elbow. New guiderails are recommended when VSD purchases and installs new pumps. Since the wet well improvements will require bypass pumping for entry, it will be an ideal time to install the new pump guide rail system.

An arc flash hazard analysis should be performed for all equipment operating over 100V to ground in accordance with the National Electrical Code, NFPA 70E (Standard for Electrical Safety in the Workplace), OSHA 29-CFR, Part 1910 Sub part S, and IEEE1584 Standards. Permanent thermal transfer type factory manufactured arc flash warning labels in conformance with NFPA 70E and ANSI Z535 should be provided.

VSD's goal to add SCADA to their facilities is highly recommended. Adding SCADA would require detailed design and would provide the most benefit if SCADA capabilities were added to all four active lift stations at one time.

The interior and exterior lighting fixtures should be replaced with energy efficient LED type fixtures. The estimated cost is based on replacing one pendant-mounted fixture in the electrical building and two wall-mounted fixtures outside. The exterior lighting should be configured with photocell and motion detection for efficiency and to improve site security. In addition, the wiring to the exterior fixtures should be repaired to make operational.

Structural analysis of the pump control room found potentially non-compliant items from their ASCE/SEI 41 Tier 1 screening and noted lack of basic seismic detailing required for a structure of its size. It is recommended that a more detailed structural analysis be performed on the CMU pump control room. A structural analysis of the CMU pump control building is recommended to determine seismic demands at locations for stiffness (ASCE 41, Tier 3 Systematic Evaluation).

TABLE 4: Calhoun Recommendations and Cost Estimate

No.	Improvement Recommendations	Estimated Cost, $[1]
Construction Projects		
1	Install upgrades to main electrical panel, control panel, and autodialer	$ 47,500
2	Install new sump termination panel	$ 27,700
3	Remove existing liner and install full coating of wet well interior surface and install discharge piping with fusion epoxy coated	$ 266,900
4	New coating on above ground piping	$ 1,300
5	New coating on pad-mounted transformer enclosure	$ 1,300
6	Replace interior fixtures with LED and exterior with LED motion-sensor lighting fixtures at electrical building	$ 6,000
7	Install new SCADA system for remote monitoring and controls capability	$ 49,500
	Total for Items 1-7 (2022 Dollar value)	**$ 400,200**
	Total (in 2023 dollars)[2]	**$ 413,600**
	Total (in 2024 dollars) [2]	**$ 427,500**
	Total (in 2025 dollars) [2]	**$ 441,900**
Studies		

8	Perform arc flash study and provide labels	$ 12,600
9	Perform structural analysis of the CMU control room	$ 18,900
	Total for Items 1-9 (2022 Dollar value)	**$ 431,700**
	Total (in 2023 dollars) [2]	**$ 446,200**
	Total (in 2024 dollars) [2]	**$ 461,200**
	Total (in 2025 dollars) [2]	**$ 476,700**

[1]Estimated cost is a planning-level project cost estimate and was estimated without detailed plans or drawings. The project cost estimate for the listed construction projects is inclusive of material, labor, contractor costs, and project soft costs. A construction sub-total was first estimated with material and labor cost. Unit costs for these items were derived from a combination of recent construction bids, national estimating databases, and engineering judgement. A multiplier of 1.57 was applied to the sub-total to estimate a total construction cost inclusive of sales tax (9%), contractor profit and overhead (15%), contractor front end specs (12%), and contingency (30%-35%). A factor of 1.26 was then applied to the total construction estimate accounting for project management (6%), design, survey, miscellaneous (10%), and construction management, inspection, material testing (10%). For the studies, the estimated cost includes the cost of service and project management.

[2]An annual escalation of 3.36% is assumed.

3.2 Barrymore Lift Station

3.2.1 Station Description

The Barrymore lift station, built in 1979, is a pre-packaged Smith & Loveless lift station consisting of a concrete wet well and cylindrical steel dry well (Figure 4). The station is located on an easement within a gated residential community in the northwest corner of the intersection of Barrymore Street and Garbo Drive in Indio, California. The site is easily accessible from the road and is not enclosed by any fencing.

FIGURE 4: Barrymore Lift Station Schematic and Site Photo

The station has two pumps, each with a design capacity of 800 gpm that are operated in a duty/standby configuration. VSD has one backup pump on shelf. These pumps are oversized but are now controlled by VFDs installed about six years ago that lock the pumps at a lower speed. The lift station is controlled by a bubbler system with redundant air compressors. A bubbler system is VSD's preferred method for lift station controls.

The electrical and controls equipment is located primarily in the dry well. Outside of the dry well, the power utility meter and an alarm autodialer are stanchion-mounted in separate cabinets above grade and protected by a lockable security cage.

The lift station equipment is fed from a 240 Volt, 3-phase control panel powered from an Imperial Irrigation District power service. It is equipped with a 100 Amp main circuit breaker that supplies electrical power to two 10-horsepower variable frequency drive-driven pumps, two air compressors, a sump pump, a dehumidifier, a blower, lighting, and station controls (Figure 5).

General station information for the Barrymore Lift Station is summarized is Table 5.

FIGURE 5: Barrymore Lift Station Photos

TABLE 5: Barrymore Lift Station General Information

Barrymore Lift Station	
Year Constructed	1979
Station Type	Pre-packaged Smith & Loveless below ground lift station Above-ground utility meter and alarm auto-dialer
Wet Well	72-inch diameter cast-in-place concrete wet well with a 36-inch diameter access manhole; 15.5 feet deep
Dry Well	84-inch steel sphere with a 36-inch access tube; 16-feet deep
Number of Pumps	Two pumps (1 duty, 1 standby) Serial Numbers: 797307N-3 and 797307N-2 VSD has one backup pump on shelf
Pump Design Capacity and TDH	800 gpm @ 32 feet (each pump)
Pump speed	1170 rpm
Motor Hp	10 hp
Control Panel Phase/Volts	3/240; powered by Imperial Irrigation District
Circuit Breaker	100 amps
Drive type	VFD (installed around 2016)
Pump Manufacturer/Model	Smith & Loveless 6B3
Discharge Diameter	6-inch
Standby power	None
Level Controls and backup	Bubbler system (with redundant air compressors)
Alarms	Alarm auto dialer in above grade enclosure
Location of station controls	Electrical and pump controls in dry well Utility meter in above grade enclosure
Valve location	Dry well

3.2.2 Observations and Findings

Condition assessment observations by asset group are provided in Table 6. The final table column associates the condition finding with a recommended improvement in Table 7.

The Barrymore Lift Station structure is in overall good condition with minor noted deficiencies in structural elements. However, the electrical equipment is clearly outdated and in need of a complete upgrade to ensure system reliability and functionality. It is recommended to relocate the control panel above grade. Deterioration of the wet well liner was observed and is recommended for replacement.

Because the station is in a publicly accessible neighborhood, the equipment has an increased chance of vandalism and destruction.

TABLE 6: Barrymore Lift Station Condition Assessment

Category	Asset	Condition Description	Recommendation
Civil/Mechanical /Structural	**Pavement**	Small crack (approximately 0.06 inch) in exterior concrete slab-on-grade; not indicative of structural issues with station	See Item 12, Table 7
	Site Security	Outdoor equipment is not protected by fencing and is accessible to public	See Item 6, Table 7 (Consider intrusion alarms on cabinets and wells)

Category	Asset	Condition Description	Recommendation
	Pumps and Motors	• Minor wear on coatings and minor surface corrosion at pump and pump base. • Pump were original oversized. VFDs were installed around 2016 and now run pumps at lower speed. Pumps run well now. • Spare pump on shelf	None
	Dry Well	• Exterior riser in good condition • Minor exterior coating deterioration • No leakage issues • Corrosion floor pits up to 0.07 inch in depth • Walls and ceilings in overall good condition • Ladder in good condition; no defects identified • Broken latch on lid- temporary solution in place • Moderate corrosion observed on sump pump and surrounding submerged area • Constructed in 1979, the station pre-dates seismic codes and may not have been built to withstand earthquake ground motion • Monthly service and rigging challenging for the wet well/dry well configuration. • Fluorescent lighting fixture	See Items 6, 9 and 10, Table 7
	Piping and valves	• Minor wear on coating on inlet piping and valves • Minor coating wear at valve bolts and flanges on discharge piping	None
	Wet Well	• Rim severely corroded and lid may not fit soon • Overall good condition • Potential areas of hollow concrete sections • Corrosive environmental potential to corrode reinforcing steel bars within concrete structure • Liner begins 4-feet above finished floor • Blisters in liner coating	See Item 4 and 5, Table 7
Electrical, Instrumentation, Controls (EI&C)	**Overall**	Control panel, motors, transformer, electrical wiring, and connections are original installation and are reaching their end of life. Equipment condition and function are good, with minimal surface corrosion.	See Item 1 and 2, Table 7
	Control Panel	• Exterior control panel in good condition with minimal corrosion • No arc flash warning	See Item 1, 2 and 8, Table 7
	Level Control, alarms, and monitoring	• No identified issues with bubbler system • Redundant air compressors present, but no switch to change • No SCADA	See Item 7, Table 7
	SSO potential	Minimal risk	None
	Conduits	Exterior conduits to wet well were recently upgraded and are run exposed at grade	See Items 3 and 11, Table 7

3.2.3 Recommended Improvements

Table 7 lists the improvement recommendations and associated cost estimate. The construction projects and costs are listed separately from recommended structural and arc flash studies, and maintenance and monitoring items.

Recommended control panel replacement will maintain all the functionality of the current control strategies. It is recommended to add backup floats for redundancy and to relocate the existing autodialer and other controls wiring in the outdoor panel to the new above grade control panel. VSD easements should be clearly identified before the design and relocation of the control panel above grade. Concurrently with the control panel upgrade, a sump termination panel is recommended to isolate the electrical equipment terminations from the potentially hazardous atmosphere in the wet well. The sump termination cabinet is a system that simplifies removal of electrical equipment for maintenance when compared to traditional conduit seal fittings. It is recommended that proper signage also be provided as part of this or any lift station upgrade.

Per the National Fire Protection Association (NFPA) 820 (2020 edition) wastewater dry wells are either categorized as Class I, Division 2 or unclassified if the dry well is continuously ventilated at six air changes per hour. When categorized as Class I, Division 2 explosion proof gear is required. The surrounding area from three feet in all directions and extending 18 inches above from any opening, hatch, or vent would also be classified as Class 1, Division 2 so that any electrical equipment would be recommended to be installed outside the classified area.

The requirement for explosion proof gear is eliminated if continuous ventilation is provided and the wet well can be categorized as unclassified under NFPA 820 (2020 edition). During the station inspection, ventilation was observed; however, the exact blower was not confirmed. The existing blower is located beneath the ladder and was not accessible. Based on other Smith & Loveless dry well stations of this age, if the original blower is still installed, it could be assumed that the blower is rated at 110 cfm, meaning it can move 110 cubic feet of air per minute. Based on the estimated volume of the Barrymore dry pit (approximately 430 cubic feet), a blower rated at 110 cfm will provide the ventilation requirement to be an unclassified dry pit. Since the blower was not tested and the blower model was not verified, it is recommended to confirm the actual ventilation rate of the existing blower. Additionally, the existing blower appeared to turn on only when the hatch was opened. To be categorized as unclassified, the ventilation should be continuous and not turn on only upon entry.

An arc flash hazard analysis should be performed for all equipment operating over 100V to ground in accordance with the National Electrical Code, NFPA 70E (Standard for Electrical Safety in the Workplace), OSHA 29-CFR, Part 1910 Sub part S, and IEEE1584 Standards. Permanent thermal transfer type factory manufactured arc flash warning labels in conformance with NFPA 70E and ANSI Z535 should be provided.

VSD's goal to add SCADA to their facilities is highly recommended. Adding SCADA would require detailed design and would provide the most benefit if SCADA capabilities were added to all four active lift stations at one time.

Site security can be addressed by adding intrusion alarms to cabinet doors. Installing a fence or other protective barrier, site lighting, and security cameras could also be considered as overall site improvements. At a minimum, locks and intrusion alarms are recommended on all publicly accessible equipment.

Constructed in 1979, the station pre-dates the codifying of seismic design and construction techniques specific to this type of construction. As a pre-benchmark structure the Barrymore Lift Station may not remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code. A structural analysis of the entire structure is recommended to determine seismic demands at locations for stiffness (ASCE 41, Tier 3 Systematic Evaluation).

TABLE 7: Barrymore Lift Station Recommendations and Cost Estimate

No.	Improvement Recommendations	Estimated Cost, $[1]
Construction Projects		
1	Install new control panel above-grade	$ 227,500
2	Install new sump termination panel	$ 29,700

No.	Improvement Recommendations	Estimated Cost, $[1]
3	Install pipe covers over entire length of exposed conduits	$ 2,000
4	Remove and replace access wet well rim and cover; provide protective coating to prevent future deterioration due to H2S exposure	$ 22,700
5	Remove existing wet well liner and provide full coating of interior surface	$ 87,000
6	Clean and recoat pitted floor areas, exterior access riser, and interior riser joint in dry well; repair hatch	$ 22,100
7	Install new SCADA system for remote monitoring and controls	$ 49,500
8	Replace sump pump	$ 5,000
	Total for Items 1-8 (2022 Dollar value)	**$ 445,500**
	Total (in 2023 dollars)[2]	**$ 460,500**
	Total (in 2024 dollars) [2]	**$ 476,000**
	Total (in 2025 dollars) [2]	**$ 494,000**
	Total (in 2026 dollars) [2]	**$ 508,500**
Studies, Maintenance, and Monitoring		
9	Perform arc flash study and provide labels	$ 12,600
10	Perform structural analysis of entire structure (wet well and dry pit)	$ 23,600
11	Replace missing conduit elbow cover	In-house
12	Monitor slab crack	In-house
	Total for Items 1-12 (2022 Dollar value)	**$ 481,700**
	Total (in 2023 dollars) [2]	**$ 497,900**
	Total (in 2024 dollars) [2]	**$ 514,600**
	Total (in 2025 dollars) [2]	**$ 531,900**
	Total (in 2026 dollars) [2]	**$ 549,800**

[1]Estimated cost is a planning-level project cost estimate and was estimated without detailed plans or drawings. The project cost estimate for the listed construction projects is inclusive of material, labor, contractor costs, and project soft costs. A construction sub-total was first estimated with material and labor cost. Unit costs for these items were derived from a combination of recent construction bids, national estimating databases, and engineering judgement. A multiplier of 1.57 was applied to the sub-total to estimate a total construction cost inclusive of sales tax (9%), contractor profit and overhead (15%), contractor front end specs (12%), and contingency (30%-35%). A factor of 1.26 was then applied to the total construction estimate accounting for project management (6%), design, survey, miscellaneous (10%), and construction management, inspection, material testing (10%). For the studies, the estimated cost includes the cost of service and project management.

[2]An annual escalation of 3.36% is assumed.

3.3 Carver Lift Station

3.3.1 Station Description

The Carver lift station, built in 1966, is a pre-packaged Smith & Loveless lift station consisting of a concrete wet well and cylindrical steel dry well (Figure 6). The station is located within the westbound travel lane at the intersection of 48th Avenue and Bataan Street in Indio, California. Access to the wells requires partial lane closure and traffic control. Control equipment is in the dry well.

FIGURE 6: Carver Lift Station Schematic and Site Photo

The wet well collects flow from three incoming mains on 48th Avenue and Bataan Street. Water is then pumped through a 6-inch force main to a manhole south of the dry well in 48th Avenue. The wet well has a 10-inch overflow that leads to a second manhole south of the dry well in 48th Avenue. The piping configuration is shown on Figure 6.

There are two pumps, each with a capacity of 320 gpm that are operated in a duty/standby configuration. VSD has one backup pump for Carver Lift Station on shelf. The lift station is controlled by a bubbler system with redundant air compressors. The bubbler system is VSD's preferred method for lift station controls.

The lift station equipment is fed from a 240 Volt, 3-phase control panel powered from an Imperial Irrigation District (IID) power service. It is equipped with a 100 Amp main circuit breaker that supplies electrical power to two 5-horsepower pumps, an air compressor, a sump pump, a dehumidifier, a blower, lighting, and station controls. The power utility meter and a 50A main disconnect switch are mounted on a pole on a nearby sidewalk (Figure 7).

General station information for the Carver Lift Station is summarized is Table 8.

FIGURE 7: Carver Lift Station Photos

TABLE 8: Carver Lift Station General Information

Carver Lift Station	
Year Constructed	1966
Station Type	Pre-packaged Smith & Loveless below ground lift station
Wet Well	48-inch diameter wet well with 36-inch diameter access manhole Approximately 14-feet deep
Dry Well	84-inch steel sphere with a 36-inch access tube Approximately 16-feet deep
Number of Pumps	Two pumps (duty/standby)
Pump Manufacturer/Model	Smith & Loveless 4B2A*1 Serial Numbers #67240786 and 67240785 Spare Pump Serial Number: RA-02247-A

Pump Design Capacity and TDH	320 gpm @ 37 feet (each pump; from VSD provided pump info)
Pump speed	1200 rpm
Motor Hp	5 hp
Phase/Cycle/Volts	3/60/230
Drive type	Single speed
Discharge Diameter	6-inch
Standby power	None
Level Controls and backup	Bubbler only
Alarms	Alarm auto dialer
Control Panel	Pump controls in dry well; utility meter and disconnect switch located on service pole
Valve location	Dry well

3.3.2 Observations and Findings

Condition assessment observations by asset group are provided in Table 9. The final table column associates the condition finding with recommended improvements in Table 10.

The Carver Lift Station structure is in overall good condition with minor observed deficiencies in structural elements. However, the equipment at Carver Lift Station is visibly outdated and in need of a complete upgrade to ensure system reliability and functionality. Due to the exposure to moisture and age, the electrical equipment is at risk for failure.

Although the station is old and the controls are outdated, the bubbler system is reliable and does not give false alarms. The pumps work well despite their 1970s vintage.

Major rain events have led to corrosion due to moisture and rain entering the dry well. Additionally, maintenance and service at this station requires a planned city street lane closure. These are major concerns and is driving VSD's intent to relocate the Carver Lift Station and locate the control panel and associated equipment outside above grade. Additionally, VSD would like to disconnect the existing power utility service and apply for new underground service. Currently the power disconnect switch (power box) is publicly accessible on a nearby power pole.

TABLE 9: Carver Condition Assessment

Category	Asset	Condition Description	Recommendation
Civil/Mechanical /Structural	**Pavement**	Station within road	None
	Site Security	Assets underground in road travel lane; access is covered with manhole covers	None
	Pumps and Motors	• Minor surface corrosion • No identified issues with pumps • VSD has one backup pump on shelf	None

Category	Asset	Condition Description	Recommendation
	Dry Well	• Access framing has minor offset and moderate corrosion where interior lining has delaminated, and it allows water intrusion • Moderate corrosion on dry around ladder entry system • Minor localized corrosion on walls and ceiling • Moderation corrosion on floor – corrosion pits greater than 0.150 inch • Constructed in 1966, the station pre-dates seismic codes and may not have been built to withstand earthquake ground motion • Lighting fixture is fluorescent	See Item 6 and 8, Table 10
	Wet Well	• Cover in fair condition • Liner in lower 6-feet beneath drop in laterals heavily degraded, torn, and retaining water • Moderate corrosion at access framing	See Items 4 and 5, Table 10
	Piping and Valves	Minor surface corrosion on influent and discharge piping and valves	None
Electrical, Instrumentation, Controls (EI&C)	**Overall**	The control panel, motors, transformer, electrical wiring, and connections are original installation and are nearing their end of life. The equipment function is generally good, however there is evidence of surface corrosion and deterioration.	See Items 1 and 2, Table 10
	Control Panel	• In dry well and is exposed to moisture • No arc flash warning labels	See Items 1, 2 and 9, Table 10
	Level Control, alarms, and monitoring	• No issue with bubbler system • No emergency power backup but not necessarily needed due to low SSO potential • No SCADA	See Item 7, Table 10
	SSO potential	Minor risk as there is a 10-inch overflow pipe installed in wet well for emergency bypass	None
	Conduits	Missing conduit elbow cover at south quadrant	See Item 11, Table 10
	Other	Main power service equipment (power box) outside and accessible to public	See Item 3, Table 10

3.3.3 Recommended Improvements

Table 10 lists the improvement recommendations and associated cost estimate. The construction projects and costs and listed separately from recommended structural and arc flash studies, and maintenance and monitoring items. Majority of the recommendations can be done, preferably together, in 2 to 5 years and as part of an overall station upgrade to submersible style lift station. Additionally, some projects will not be needed if the relocation project can be completed in the next few years, for example, the dry well coating projects.

Per the National Fire Protection Association (NFPA) 820 (2020 edition) wastewater dry wells are either categorized as Class I, Division 2 or unclassified if the dry well is continuously ventilated at six air changes per hour. When categorized as Class I, Division 2 explosion proof gear is required. The surrounding area from three feet in all directions and extending 18 inches above from any opening, hatch, or vent would also be classified as Class 1, Division 2 so that any electrical equipment would be recommended to be installed outside the classified area.

With forced ventilation and an unclassified categorization, the explosion proof gear requirement is eliminated. During the station inspection, ventilation was observed; however, the exact blower was not confirmed. The existing blower is located underneath the ladder and due to limited access, a model number on the blower could not be confirmed. Based on other Smith & Loveless dry well stations of this age, if the original blower is still installed, it could be assumed that the blower is rated at 110 cfm, meaning it can move 110 cubic feet of air per minute. Based on the estimated volume of the Carver dry pit (approximately 380 cubic feet), a blower rated at 110 cfm will provide the ventilation requirement to be an unclassified dry pit. Since the blower was not tested and the blower model was not verified, it is recommended to confirm the actual ventilation rate on the existing blower. Additionally, the existing blower appeared to turn on only when the hatch was opened. To be categorized as unclassified, the ventilation should be continuous and not turn on only upon entry.

Like the Barrymore Lift Station, the control panel replacement and recommended above grade relocation will maintain all the functionality of the current control strategies. As with Barrymore, it is recommended to add backup floats for redundancy. A sump termination panel is recommended like the other stations to isolate electrical equipment terminations from the potentially hazardous atmosphere in the wet well. Again, this improvement is intended to be done concurrently with the control panel upgrade. It is also recommended that proper signage also be provided as part of this or any lift station upgrade.

An arc flash hazard analysis should be performed for all equipment operating over 100V to ground in accordance with the National Electrical Code, NFPA 70E (Standard for Electrical Safety in the Workplace), OSHA 29-CFR, Part 1910 Sub part S, and IEEE1584 Standards. Permanent thermal transfer type factory manufactured arc flash warning labels in conformance with NFPA 70E and ANSI Z535 should be provided.

VSD's goal to add SCADA to their facilities is highly recommended. Adding SCADA would require detailed design and would provide the most benefit if SCADA capabilities were added to all four active lift stations at one time.

Constructed in 1966, the station pre-dates the codifying of seismic design and construction techniques specific to this type of construction. As a pre-benchmark structure the Carver Lift Station may not remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code. A structural analysis of the entire structure is recommended to determine seismic demands at locations for stiffness (ASCE 41, Tier 3 Systematic Evaluation).

TABLE 10: Carver Lift Station Recommendations and Cost Estimate

No.	Improvement Recommendations	Estimated Cost, $[1]
Construction Projects		
1	Install new control panel above-grade	$ 227,500
2	Install new sump termination panel	$ 29,700
3	New underground utility service	$ 49,500
4	Remove corrosion on wet well cover rim and provide protective coating to prevent future deterioration due to H2S exposure	$ 4,400
5	Remove existing liner and provide full coating of wet well interior surface	$ 75,600
6	Clean and recoat pitted floor areas, walls, ceilings, ladder, and connection points in dry well	$ 30,200
7	Install new SCADA system for remote monitoring and controls	$ 49,500
8	Replace sump pump	$ 5,000
	Total for Items 1-8 (2022 Dollar value)	**$ 471,400**
	Total (in 2023 dollars)[2]	**$ 487,200**
	Total (in 2024 dollars) [2]	**$ 503,600**
	Total (in 2025 dollars) [2]	**$ 520,500**

	Total (in 2026 dollars)[2]	**$ 538,000**
Studies, Maintenance, and Monitoring		
9	Perform arc flash study and provide labels	$ 12,600
10	Structural analysis of entire structure	$ 23,600
11	Replace missing conduit elbow cover	In-house
	Total for Items 1-11 (2022 Dollar value)	**$ 507,600**
	Total (in 2023 dollars) [2]	**$ 524,700**
	Total (in 2024 dollars) [2]	**$ 542,300**
	Total (in 2025 dollars) [2]	**$ 560,500**
	Total (in 2026 dollars) [2]	**$ 579,300**

[1]Estimated cost is a planning-level project cost estimate and was estimated without detailed plans or drawings. The project cost estimate for the listed construction projects is inclusive of material, labor, contractor costs, and project soft costs. A construction sub-total was first estimated with material and labor cost. Unit costs for these items were derived from a combination of recent construction bids, national estimating databases, and engineering judgement. A multiplier of 1.57 was applied to the sub-total to estimate a total construction cost inclusive of sales tax (9%), contractor profit and overhead (15%), contractor front end specs (12%), and contingency (30%-35%). A factor of 1.26 was then applied to the total construction estimate accounting for project management (6%), design, survey, miscellaneous (10%), and construction management, inspection, material testing (10%). For the studies, the estimated cost includes the cost of service and project management.

[2]An annual escalation of 3.36% is assumed.

3.4 Vandenberg Lift Station

3.4.1 Vandenberg - Introduction

The Vandenberg lift station, built in 2007, is a submersible style lift station with a separate underground valve vault. The station is located within a gated residential community, underground in the center of the intersection of Vandenberg Drive and Pic Way (Figure 8). Access requires light traffic control. The electrical and controls equipment is located on the lawn of a private residence. The control panel is a freestanding single-door type stainless steel NEMA 3R rated enclosure mounted on a concrete pad. The utility power service meter/main pedestal is adjacent to the control panel. A metering pedestal for lighting sits behind the main metering pedestal.

FIGURE 8: Vandenberg Lift Station Schematic and Site Photo

The Vandenberg station serves six houses and operates once a day on average. The station has two submersible pumps, each with a design capacity 110 gpm and are operated in a duty/standby configuration. The wet well has a single 6-inch inlet pipe and pumps flow through a 4-inch PVC force main.

The lift station equipment is fed from a 240V, 1-phase control panel powered from a 200A Imperial Irrigation District service. The control panel supplies electrical power to two 2-horsepower submersible pumps and contains the station controls. The pump control system consists of a bubbler (primary) with float (backup), a Mercoid pump controller, and a radio alarm autodialer (Figure 9). VSD finds the controls and redundancy at this station favorable and especially likes the ability to control pump rotation.

General station information for the Vandenberg Lift Station is summarized is Table 11.

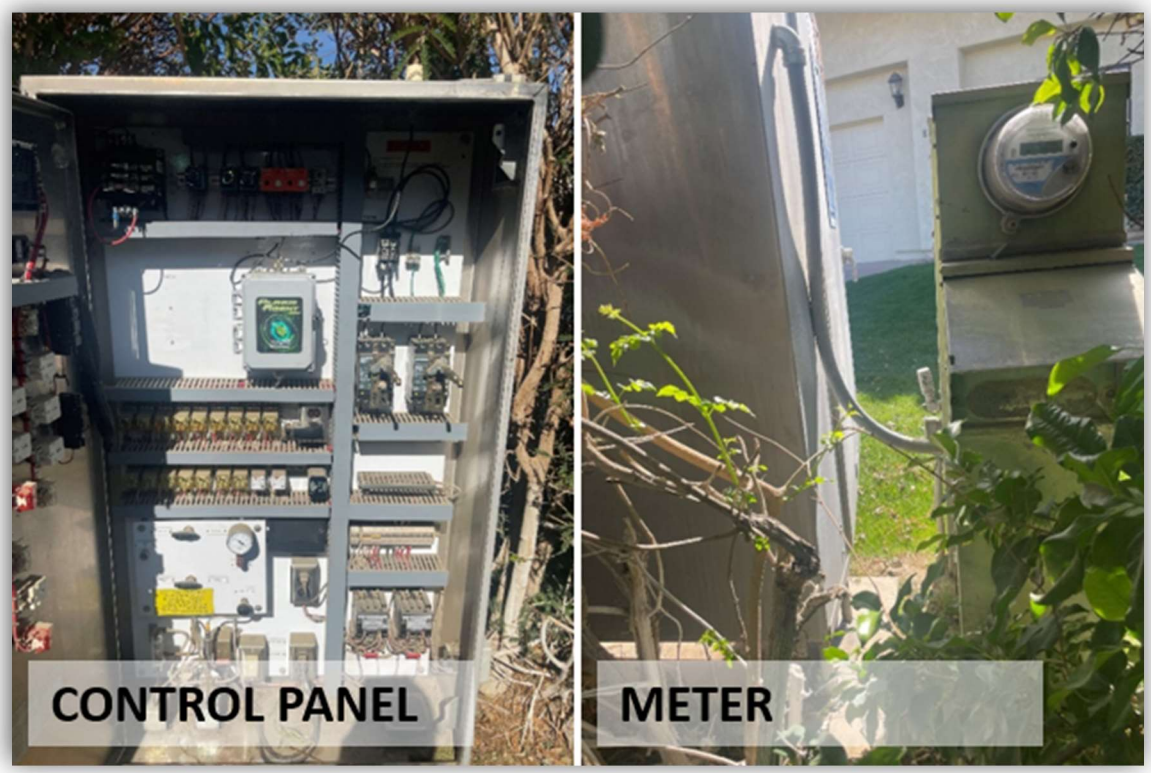


FIGURE 9: Vandenberg Lift Station Photos

TABLE 11: Vandenberg Lift Station General Information

Vandenberg Lift Station	
Year Constructed	2007
Station Type	Submersible wet well and valve vault
Wet Well	72-inch diameter precast wet well with access hatch; 15-feet deep
Number of Pumps	Two pumps (lead-lag)
Pump Design Capacity and TDH	110 gpm @ 20 feet (each pump; based on VSD provided pump information)
Pump speed	1750 rpm
Motor Hp	2 hp
Phase/Volts	1/240
Circuit Breaker	200 amps
Drive type	Constant speed
Pump Manufacturer/Model	Goulds 3SD
Discharge Diameter	4-inch

Standby power	None; minimal risk for overflow due to small flows
Level Controls and backup	Bubbler only
Alarms	Alarm auto dialer
Control Panel	Above grade control panel on lawn of private residence
Valve location	Separate underground concrete vault

3.4.2 Observations and Findings

Condition assessment observations by asset group are provided in Table 12. The final table column associates the condition finding with recommended improvements in Table 13.

The control panel and all interior components are original installation and are in good working condition. Discharge piping in the wet well is severely corroded and should be replaced to maintain efficient pump operation.

TABLE 12: Vandenberg Lift Station Condition Assessment

Category	Asset	Condition Description	Recommendation
Civil/Mechanical/ Structural	**Pavement**	No identified issue	None
	Station Security	Station underground in street, however access hatch to wet and valve can be opened with regular tools, and it is a street with little traffic	(Consider intrusion alarms or locks)
	Wet Well	• Access hatch in good condition • Interior walls and ceiling in good condition • Minor corrosion at top of structure • Minor liner delamination at ceiling	See Item 4, Table 13
	Pumps and Motors	• Minor corrosion on pumps • Moderate corrosion at steel supports for SST guide rails	See Item 1, Table 13
	Piping and valves	• Influent lateral pipes in good condition • Discharge piping in wet well has severe corrosion	See Item 1, Table 13
	Valve Vault	• Access hatch in good condition • Pre-cast walls, floor, ceiling, interior pipes in good condition • No flooding issues • No history of leaks	None
Electrical, Instrumentation, Controls (EI&C)	**Control Panel**	• Control panel and interior components are original installation and in good working condition • Interior is dirty (dusty and webs) • Working clearances around control panel and metering pedestals are obstructed by landscaping • No arc flash warning labels	See Items 3, 5, and 6, Table 13
	Level Control, alarms, and monitoring	• No issues with bubbler system with redundant air compressors • No issues with autodialer • No emergency power backup but not necessarily needed due to low SSO potential • No SCADA	See Item 2, Table 13
	SSO potential	Minimal risk due to small flow; station serves six houses	None
	Conduits	Electrical cables between wet well and valve box observed to be in good condition	None

3.4.3 Recommended Improvements

Table 13 lists the improvement recommendations and associated cost estimate. The arc flash study is separated from the wet well and SCADA recommended projects.

It is recommended that the control panel interior be dusted and cleaned on a regular basis to ensure proper functionality and prolong the life of the equipment.

Landscaping should be regularly maintained to provide a clear space around all three electrical panels, minimum 30 inches on the sides and 36 inches in front and a minimum of 6.5 feet horizontally.

As recommended with the other lift stations, performing an arc flash hazard analysis and providing arc flash warning labels will ensure compliance with current codes and regulations as well as safe work practices. An arc flash hazard analysis should be performed for all equipment operating over 100V to ground in accordance with the National Electrical Code, NFPA 70E (Standard for Electrical Safety in the Workplace), OSHA 29-CFR, Part 1910 Sub part S, and IEEE1584 Standards. Permanent thermal transfer type factory manufactured arc flash warning labels in conformance with NFPA 70E and ANSI Z535 should be provided.

Unlike the other three stations, a structural analysis is not recommended at Vandenberg. As the newest station, built in 2007 with no above grade structures, the station was constructed 13 years after seismic design and construction techniques specific to this type of construction were codified. Because of this, no additional structural analysis is recommended.

VSD's goal to add SCADA to their facilities is highly recommended. Adding SCADA would require detailed design and would provide the most benefit if SCADA capabilities were added to all four active lift stations at one time.

TABLE 13: Vandenberg Lift Station Recommendations and Cost Estimate

No.	Improvement Recommendations	Estimated Cost, $[1]
Construction Project		
1	Wet well: Replace 4-inch discharge piping with fusion bonded epoxy coated and lined pipe or stainless steel and replace supports for guide rails with stainless steel	$ 32,700
2	Install new SCADA system for remote monitoring and controls	$ 49,500
	Total for Items 1-2 (2022 Dollar value)	**$ 82,200**
	Total (in 2023 dollars)[2]	**$ 85,000**
	Total (in 2024 dollars) [2]	**$ 87,900**
	Total (in 2025 dollars) [2]	**$ 90,900**
	Total (in 2026 dollars) [2]	**$ 94,000**
Studies, Maintenance, and Monitoring		
3	Perform arc flash study and provide labels	$ 12,600
4	Perform regular maintenance on the control panel interior (dusting and clearing)	In-house
5	Remove landscaping around electrical and control panels for appropriate clearance	In-house
	Total for Items 1-5 (2022 Dollar value)	**$ 94,800**
	Total (in 2023 dollars) [2]	**$ 98,000**
	Total (in 2024 dollars) [2]	**$ 101,300**
	Total (in 2025 dollars) [2]	**$ 104,700**
	Total (in 2026 dollars) [2]	**$ 108,200**

[1]Estimated cost is a planning-level project cost estimate and was estimated without detailed plans or drawings. The project cost estimate for the listed construction projects is inclusive of material, labor, contractor costs, and project soft costs. A construction sub-total was first estimated with material and labor cost. Unit costs for these items were derived from a combination of recent construction bids, national estimating databases, and engineering judgement. A multiplier of 1.57 was applied to the sub-total to

estimate a total construction cost inclusive of sales tax (9%), contractor profit and overhead (15%), contractor front end specs (12%), and contingency (30%-35%). A factor of 1.26 was then applied to the total construction estimate accounting for project management (6%), design, survey, miscellaneous (10%), and construction management, inspection, material testing (10%). For the studies, the estimated cost includes the cost of service and project management.

[2]An annual escalation of 3.36% is assumed.

4. Conclusions

Overall, the condition assessment indicated that the four lift stations are in moderate to good condition with identified deficiencies that should be addressed within the next five years. The assessment did not find any issues that needed to be completed immediately to prevent structural or equipment failure. The major improvements include upgrading and relocating electrical equipment, installing a SCADA system, adding new mechanical coatings, and new wet well coatings. Specific upgrades at each station are recommended and some may be added to regular maintenance procedures going forward. Examples are covering exposed conduits with covers to prevent trip hazards, changing lighting fixtures to energy efficient LED types, and providing electric code required working clearances around electrical and control equipment whether by landscaping maintenance or other methods. Arc flash studies for all stations and further structural assessments for three stations are recommended.

The recommended construction projects listed at each station are advised to be done together for design and construction efficiency, if possible. Some projects, like the new SCADA system, should be designed considering the needs at four stations and can be programmed together.

VSD is currently considering relocating the Carver Lift Station. If the relocation project is completed within the next 2 to 5 years, then many of the recommended projects in this memo will not need to be completed.

For station prioritization, the recommendations at Calhoun are recommended to be completed first due to existing mechanical challenges, the existing deteriorated condition of wet well coating, and VSD intent to replace the existing pumps soon. These improvements should be performed together for efficiency and cost savings. The Barrymore and Carver Lift Stations are both Smith & Loveless packaged wet well and dry pit style stations and both have similar recommended improvements. Compared with the other station recommendations and condition, the Barrymore and Carver stations share the next priority level after Calhoun. Vandenberg is the newest station and compared with the other stations, the recommended improvements have the lowest urgency.

APPENDIX A – TJC STRUCTURAL ASSESSMENT REPORTS AND V&A FIELD REPORTS

TJC and ASSOCIATES, INC.

Structural Engineering

SCADA

Electrical Engineering

Instrumentation

Controls

Control Systems Programming

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Technical Memorandum

To:	*Elizabeth Reyes (Harris & Associates)*
From:	*Richard Thow, S.E.*
CC:	*file: 121076 – 4.8*
Date:	*May 6, 2022*
Project:	*Valley Sanitary District Lift Station Condition Assessment, Indio, California*
Subject:	*ASCE/SEI 41 Condition Screening Barrymore Pumping Station, Indio, California*

1. INTRODUCTION

TJC and Associates, Inc. (TJCAA) performed a desk top, ASCE/SEI 41-17, seismic screening of the Barrymore Lift Station, below grade pre-packaged Smith & Loveless lift station, comprising of a cast-in-place concrete wet well and cylindrical steel dry well, constructed in 1966, owned and operated by Valley Sanitary District, Indio, California. This technical memorandum presents our results.

During the period of February 7, 2022 through February 9, 2022, representatives from V&A Consulting Engineers (V&A) conducted a walk-through of the Barrymore Lift Station. V&A performed a visual inspection of structural systems and components, non-destructive testing of select items and took representative photographs.

TJCAA did not participate in this field assessment. TJCAA's review, assessment, findings and recommendations are based solely on field information gathered by V&A. Analysis of structural elements was limited to analysis against the 2019 California Building Code, ASTM C913, *Standard Specification for Precast Concrete Water and Wastewater Structures*, and ACI 350, Code *Requirements for Environmental Engineering Concrete Structures*.

TJCAA conducted a seismic risk screening in general conformance with the *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026), and *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41). The procedure adopted by TJCAA applies a modified Tier 1 Screening per ASCE/SEI 41-17, following the guidelines presented in ASTM E2026. Barrymore Lift Station was evaluated relative to the "Immediate Occupancy" structural performance level, which is defined as a post-earthquake damage state in which the Lift Station substantially retains original strength and stiffness, with continued functionality likely. The Lift Station was evaluated for a BSE-1E Basic Safety Earthquake, taken as a seismic hazard with a 20% probability of exceedance in 50-years at the site, commonly referred to as a 225-year earthquake.

The ASCE/SEI 41-17 Tier 1 procedure is a preliminary screening tool designed to quickly identify potential seismic deficiencies in the structural lateral force-resisting system. The Tier 1 evaluation procedure uses a series of checklists for rapid evaluation of the building while requiring only a minimum level of structural

calculations.
ASTM E2026 *Standard Guide for Seismic Risk Assessment of Buildings*, provides specific measures for assessing the possibility of future loss due to earthquake occurrences. The standard provides an approach that forms the basis for characterizing the seismic risk assessment of a structure, system, or component in an earthquake, whereas ASCE 41-17 is focused on a building's structural components. ASTM E2026 considers all external hazards that could result in potential losses due to an earthquake. These hazards include ground shaking, site instability, fault rupture, landslides and soil liquefaction, lateral spreading and settlement, and earthquake caused off-site response impacting the structure, including flooding from dam or levee failure, tsunamis and seiches.

DEFINITIONS

Active Fault – A fault with an average historic slip rate of at least 1 mm per year and geological evidence of seismic activity within the Holocene time, i.e., during the last 11,000 years

Benchmark Building – Structure designed and constructed to a building code that is expected to provide Life Safety level performance.

BSE-1E – Basic Safety Earthquake-1 for use with basic Performance Objective for Existing Structures taken as a seismic hazard with a 20% probability of exceedance in 50-years at a site, with a mean return period of 225-years.

Design Earthquake (DE) – Used by building codes as 2/3 of the Maximum Considered Earthquake (MCE)

Earthquake – Ground shaking caused by a sudden movement along a fault line

Fault – Fracture or crack along which two blocks of rock slide past one another

Intensity – The measure of ground shaking quantifying the local severity of an earthquake in terms of its effect on structures, systems, and components

Importance Factor – A factor that accounts for the degree of risk to human life, health, and welfare associated with damage to property or loss of use or function. (ASCE/SEI 7-16)

Magnitude – A number that represents the size of an earthquake at the source, as determined by seismographic observations. Although outdated, the Richter Scale is probably the best-known earthquake magnitude scale.

Maximum Considered Earthquake (MCE) – Used by Building Codes to define the maximum considered seismic event. For the Lift Station considered in this report, the MCE has a 2% probability of exceedance within a 50-year period, with a mean return period of 2,475-years. The MCE is the event considered to be applicable to building code design and is based on probabilistic methods.

Seismic Coefficient – Spectral response acceleration parameters for short periods (S_{XS}) and 1-second period (S_{X1}), adjusted for Site Class, provided by United States Geological Survey (USGS)

Seismic Hazard – The potential for damaging effects caused by an earthquake. Degree of damage is a function of magnitude, distance from the epicenter, type of subsurface soils, and duration of shaking.

Seismic Risk – The probability of damage, loss, or injury resulting from an earthquake

Site Class – A classification assigned to a site based on the types of soil present and their engineering properties (ASCE/SEI 7-16)

Strike-Slip Fault – Vertical fractures where tectonic plate movement is horizontal. This is typical for California faults.

2. REFERENCES

- *Smith & Loveless Physical Wiring Diagram Standard Two Pump Station Main Control Cabinet*; dated July 4, 1987.
- *2019 California Building Code California Code of Regulations*; Title 24, Part 2 (Volume 2) – International Code Council
- *Code Requirements for Environmental Engineering Concrete Structures (*ACI 350-06) – American Concrete Institute
- *Building Code Requirements for Structural Concrete* (ACI 318-14) – American Concrete Institute
- *Minimum Design Loads for Building and Other Structures* (ASCE/SEI 7-16) – American Society of Civil Engineers
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026)
- *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41) – American Society of Civil Engineers / Structural Engineering Institute
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026-16) – ASTM International
- *Standard Specification for Circular Precast Reinforced Concrete Manhole Sections* (ASTM C478-20) – ASTM International
- *Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures* (ASTM-C890-21) – ASTM International
- *Standard Specification for Precast Concrete Water and Wastewater Structures* (ASTM C913-21) – ASTM International

3. ASSESSMENT METHODS AND APPROACH (ASTM E2026)

3.1. SEISMIC GROUND MOTION HAZARD ASSESSMENT – LEVEL G1 INVESTIGATION

Project Address

Barrymore Lift Station,
intersection of Barrymore Street and Garbo Drive, Indio, California
(Latitude 33.6975ºN Longitude 116.2188ºW)

ASTM E2026, Section 7 states the following:

> "The objective of the seismic ground motion hazard assessment is to characterize the earthquake ground motions at the site with a specified probability of being exceeded in a given time period."

Fault and Seismic Sources – The Barrymore Lift Station is in a seismically active area of Southern California. California Geological Society identifies the Lift Station located within 3-miles of the San Andreas Fault. Other faults within 25-miles of the Lift Station include Indio Hill Fault (4-miles) Berdoo Canyon Fault (5-miles), NW Painted Canyon Fault (7-miles), Buck Ridge Fault (16-miles), Platform Fault (17-miles), San Jacinto Painted Canyon Fault (18-miles), Hidden Springs Fault (23-miles), Clark Fault (20-miles), Eureka Peak Fault (22-miles) and Thomas Mountain Fault (24-miles).

Finding – Seismic Ground Motion Hazard Assessment

California Geological Society identifies eleven active faults within 25-miles of the Barrymore Lift Station. According to the Applied Technology Council, BSE-1E Short Period (S_s) and 1-second Period (S_1) Site-Specific Spectral Response Accelerations for Barrymore Lift Station are 0.727*g* and 0.252*g,* respectively.

Barrymore Lift Station
Fault Sources

3.2. BUILDING STABILITY ASSESSMENT – LEVEL BSE-1E INVESTIGATION

ASTM E2026, Section 8*; ASCE/SEI 41*state the following:

> "The objective of the building stability assessment is to determine if the "building" can be reasonably expected to remain stable under earthquake loadings. A building should be deemed stable if it is able to maintain the vertical load carrying-capacity of its structural system under the inelastic deformations caused by the earthquake ground motion prescribed for the building and site by the California Building Code."

The Lift Station was constructed in 1966 and was most likely designed against the 1964 Uniform Building Code. The Lift Station wet-well is 72-inch diameter precast concrete manhole with a 36-inch diameter access manhole. Dry Well is a Smith & Loveless steel 84-inch sphere with 36-inch access tube. Invert of the Lift Station is 11.55-feet below grade.

Finding – Building Stability Assessment

Due to the lack of as-built drawings construction material and detailing was not available. ASCE/SEI 41-17 lists default lower bound material properties for various construction time frames. Precast reinforced concrete circa 1966 was "most likely" constructed with concrete with a 28-day compressive strength in the range of 2,500 psi to 4,000 psi and reinforcing steel with a minimum yield stress of 40,000 psi.

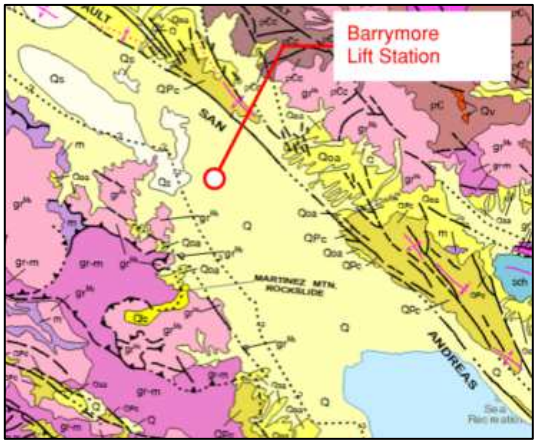
From historical observed earthquake damage, it can be inferred that certain building types designed and constructed to recent building codes can be expected to provide Life Safety-level performance. The Barrymore Lift Station was constructed in 1966, making it a pre-benchmark structure. As such, the Barrymore Lift Station may not remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code.

3.3. SITE STABILITY ASSESSMENT

ASTM E2026, Section 9 states the following:

> "The objective of the site stability assessment is to determine if the building is located on a site that may be subjected to instability due to earthquake-induced surface fault or soil liquefaction."

Site Geology – The Lift Station was constructed on Alluvium, lake, playa, and terrace deposits of the Quaternary period (USGS).



Site Geology (USGS)

Fault Rupture – Damage associated with fault-related ground rupture is normally confined to a fairly narrow zone along the trend of the primary fault, and to a lesser extent along secondary faults. Because the Lift Station is approximately 4-miles from the San Andreas Fault, it does not lie within the Alquist-Priolo Special Study Zone. In addition, no known active faults traverse Lift Station site; as such, surface fault rupture is not anticipated.

Liquefaction – Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure and decreased effective stress. Liquefaction is the result of cyclic ground vibrations that occur during a seismic event. The probability that the Lift Station is located on liquefiable soils is considered very low.

Seismic Settlement – Due to the low probability of liquefaction, ground settlement is unlikely as a result of a seismic event.

Tsunami – A major hazard associated with earthquakes is water inundation resulting from a tsunami (seismic sea wave). Because the Lift Station is located 76-miles inland from the Pacific Ocean, damage to the facility resulting from flooding caused by a tsunami is unlikely.

Slope Instability/Landslide – Slope instability and landslides produced by seismically induced strong ground motions are likely to occur in the eastern, San Bernardino Mountains. The Lift Station's location in the Coachella Valley means that the potential for lateral spreading landslides is unlikely.

Finding – Site Stability Assessment

The potential for the Lift Station to be founded on liquefiable soils is considered very low. Consequently, seismic settlement resulting from liquefied soil is also unlikely. Lift Station is 76-miles inland from the Pacific Ocean and is therefore not within a tsunami inundation zone. Finally, the Lift Station's location in the Coachella Valley places it outside areas susceptible to landslides produced by seismically induced ground motion.

3.4. BUILDING DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 10 states the following:

> "The objective of the building damageability assessment is to characterize expected earthquake losses associated with earthquake ground shaking and possible other earthquake hazards as prescribed

by the User by performing an engineering analysis and evaluation of the damageability characteristics of the building at a given level of earthquake ground motions."

Due to a lack of as-built information, accurately assessing the damage likely to occur due to BSE-1E level earthquake is not possible. Although earthquake forces were a design consideration under the 1979 Uniform Building Code seismic force coefficients were more prescriptive, based on general geographical locations and predefined seismic zones. However, for purposes of seismic design, standard practice for fully or partially buried structures less than 10 feet in any dimension is to assume that such structures are not subjected to the additional lateral seismic soil load resulting from seismically induced lateral earth pressures.

3.5. BUILDING CONTENT DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 11 states the following:

> "The objective of the building content damageability assessment is to perform an analysis of the earthquake performance of contents within the building. This analysis is concerned with contents that are not part of the building system."

Seismic ruggedness of systems, structures, and components within and attached to the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Building Content Damageability Assessment.

3.6. BUSINESS INTERRUPTION ASSESSMENT

ASTM E2026, Section 12 states the following:

> "The objective of the business interruption assessment is to perform an analysis of the site, building equipment, contents, inventory systems, infrastructure, interdependent businesses, and all other relevant parameters to determine if the building will suffer business interruption from onsite effects such as direct damage to buildings and equipment or loss of critical content and supplies."

Seismic ruggedness of systems, structures, and components associated with the day-to-day operations of the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Business Interruption Assessment.

3.7. V&A CONSULTING ENGINEERS CONDITION ASSESSMENT

V&A was contracted to perform the following non-destructive tests on the Barrymore Lift Station:

- Sounding – Non-scientific application of hammer strike of the concrete surface to locate voids, delamination, and/or honeycombing.
- Penetration Test – Estimates the depth of degradation (if any) from the existing surface of the concrete.
- Surface pH Measurements – In-situ pH measurements of exposed concrete using a pH sensitive pencil.
- Surface Penetrating Radar – Measures concrete cover depth to reinforcing steel.
- Ultrasonic Testing – In-situ determination of metal thickness.

- Dry Film Thickness – In-situ determination of coating thickness.
- Visual Assessment – Visual inspection of Systems, Structures and Components of the Lift Station.

The following table summarizes V&A's findings:

Table 1 – V&A Findings

Non-Destructive Tests	**Finding**
Sounding	Sounding of exposed concrete in the lower section of the Lift Station wet wall indicated areas of potentially hollow concrete sections.
Penetration Test	Penetration and pH measurements of the north and south walls indicate medium to severe scaling with penetrations depths up to 3/8-inch. A concrete pH of less than 10 was measured at the surface, which creates an environment for corrosion of the reinforcing steel if the pH at the surface is representative of the pH of the concrete in the vicinity of the rebar.
Surface pH Measurements	Not performed, no exposed concrete within the wet-well.
Surface Penetrating Radar	Minimum depth of rebar exceeded 1½-inches. Circumferential rebar spacing did not exceed 6-inches, as mandated by ASTM C478.
Ultrasonic Testing	See Mechanical write-up for discussions on piping.
Dry Film Thickness	Dry Film Thickness of concrete liner was not established. Refer to mechanical write-up for discussions on piping measurements.
Visual Assessment	At-grade concrete pad was found to be in fair condition with a 0.06-inch crack centered on the walkway with no other obvious defects. Dry-Well exterior riser was found to be in good condition. However, the exterior coating was deteriorated. Dry well floor plate and sump areas showed moderate corrosion, with pitting up to 0.07-inches in depth. Wet well access frame was severely corroded. Wet well epoxy liner was in fair overall condition with localized blistering near the lower termination point. Additional areas of blistering were present approximately 4-feet below the rim.

4. CONCLUSION

TJCAA's recommendations are based on generally accepted standards of engineering practice. Structural as-built drawings for the Lift Station were not provided. TJCAA relied on field information provided by V&A Consulting Engineers; as such, the opinions presented herein are reflective of the information contained in the field data. Errors, omissions, or deviations that exist could affect the opinions presented below.

Barrymore Lift Station, below grade pre-packaged Smith & Loveless lift station, comprising of a cast-in-place concrete wet well and cylindrical steel dry well, constructed in 1966, pre-dates the codifying of seismic design and construction techniques specific to this type of construction. As a pre-benchmark structure the Barrymore Lift Station may not remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code.

V&A Consulting Engineers site assessment found the Lift Station to be in overall good condition with minor deficiencies in structural elements.

Information about deficient elements is presented in Table 2 below on the following pages. Table 2 also describes the potential consequences or damage to the Lift Station and proposes, where appropriate, mitigation measures.

In addition to the items identified above, the following item should be addressed:

Housekeeping:

- Monitor the wet-well liner to ensure that areas of liner delamination (blistering) do not propagate, leading to cracking and spalling of the liner, exposing the concrete to carbonation and/or hydrogen sulfide induced acid attack (biogenic corrosion).

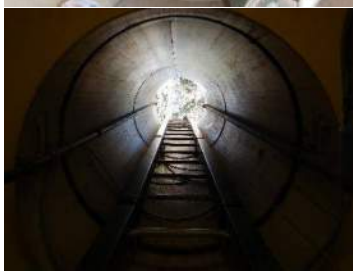
ATTACHMENT A

V&A Field Report
(Extract)

Valley Sanitary District

(Barrymore Lift Station Extract)

Lift Station Condition Assessment Report



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Date:

March 25, 2022

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V&A consulting engineers

V&A Project No. 21-0287

3 Findings

3.1 Barrymore LS

The Barrymore LS is located at the northwest corner of the Barrymore St and Garbo Dr intersection inside of a gated community in Indio, CA. A diagram of the site configuration at the Barrymore LS is presented below in Figure 3-1.

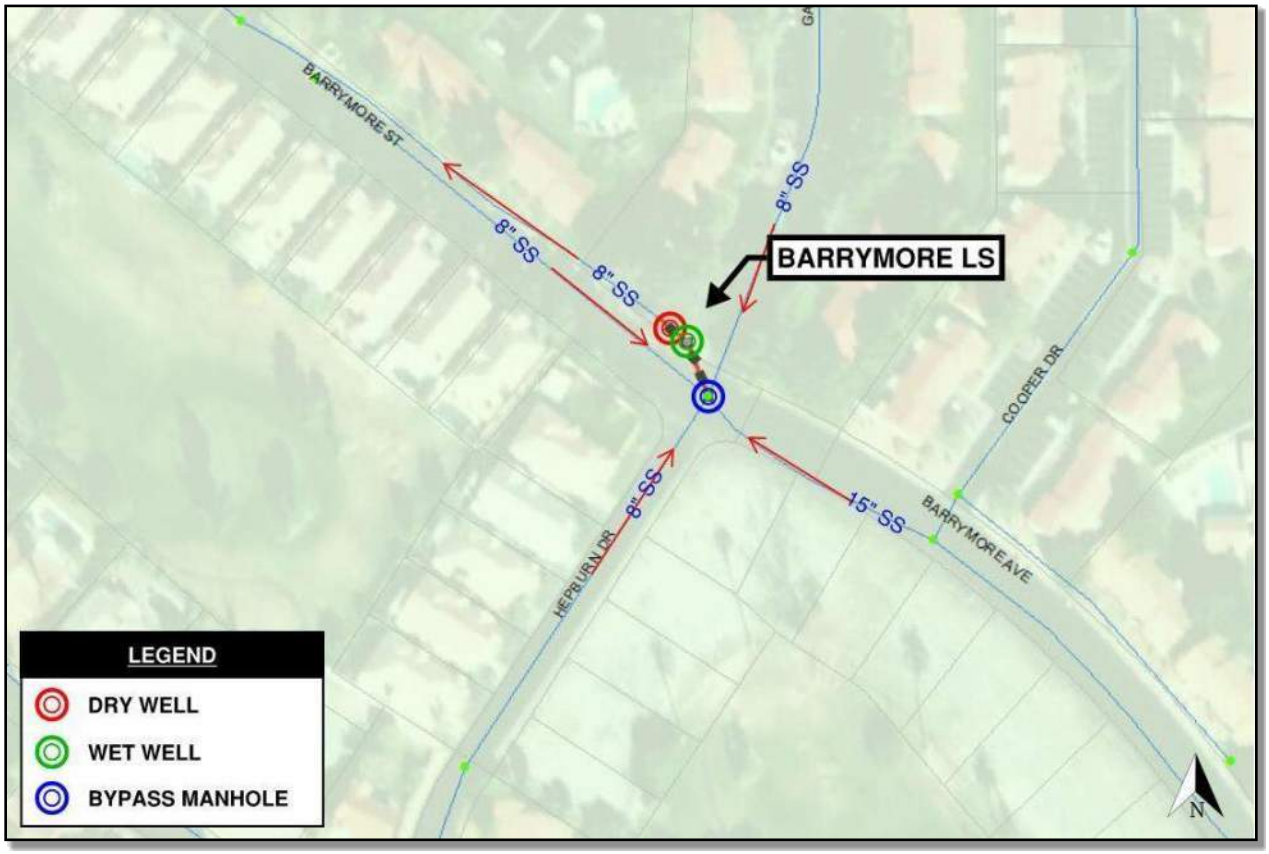


Figure 3-1. Barrymore LS Overview Map

The Barrymore LS is a pre-packaged lift station manufactured by Smith & Loveless. The LS consists of a cylindrical steel dry well and adjacent cylindrical reinforced concrete wet well. Smith & Loveless pump stations are typically installed with a galvanic cathodic protection system to provide soil-side corrosion protection for the steel dry well. The sacrificial anodes for these galvanic systems typically last approximately 20 years, so it is reasonable to assume that the anodes are depleted and no longer providing protection. The dry well at the Barrymore LS is approximately 16.5-feet deep and 7-feet in diameter. The wet well is approximately 15.5-feet deep and 6-feet in diameter. To isolate the wet well for the assessment, inflatable plugs were installed in the upstream manhole located in the center of the intersection, and flow was diverted through the overflow. Valley Sanitary then performed confined space entry into the dry well to operate the pumps and draw flow down prior to having a vactor truck wash down and remove the remaining sewage.

3.1.1 Visual Assessment

3.1.1.1 Site

The exterior concrete slab at the Barrymore LS was observed to be in fair overall condition with a large crack spanning in the northeast-southwest direction. The crack was approximately 0.60-inches wide and it was centered in the walkway between the wet well and dry well (VANDA 3). The exterior control panel at the site was found to be in good overall condition with minimal surface corrosion (VANDA 2). Refer to Photo 3-1 through Photo 3-4 below.

Photo 3-1. Barrymore LS site

Photo 3-2. Cracking on exterior slab, facing east

Photo 3-3. Barrymore LS control panel

Photo 3-4. Barrymore LS control panel (open)

3.1.1.2 Dry Well

The exterior riser to the dry well was found to be in good overall condition, however, the exterior coating has become deteriorated (VANDA 2). The ladder entry system into the dry well was found to be in good condition with no defects noted (VANDA 1). The pumps, motors, and internal suction piping were found to be in good overall condition with minor wear on the coatings and surface corrosion typical throughout (VANDA 2). The discharge piping showed no signs of corrosion and minor wear was observed at the valve bolts and flanges (VANDA 1). The dry well floor plate and sump area, including the sump pump, showed moderate corrosion throughout with corrosion pits up to 0.07-in in depth at the slab (VANDA 3). Refer to Photo 3-5 through Photo 3-14 below.

Photo 3-5. Dry well access hatch exterior

Photo 3-6. Dry well interior, topside

Photo 3-7. Dry well interior walls and access ladder

Photo 3-8. Dry well interior, 360 view (cropped)

Photo 3-9. Pump No. 1, suction piping and valves

Photo 3-10. Pump No. 1, discharge piping and valves

Photo 3-11. Pump No. 2, suction piping and valves

Photo 3-12. Pump No. 2, discharge piping and valves

Photo 3-13. Moderate corrosion at floor plate, pits up to 0.07-in

Photo 3-14. Moderate corrosion below waterline in sump area & sump pump

3.1.1.3 Wet Well

The frame for the wet well access cover was found to be severely corroded. According to Valley Sanitary operations staff, the manhole lid is close to falling in to the structure due to the metal loss of the rim (VANDA 4). The epoxy liner begins approximately 4-ft above the floor of the wet well and was found to be in fair overall condition with blistering (2-in in height) near the lower termination point of the wet well at approximate EL = 486-ft. There were also blisters at two locations approximately 6”x6” in area and located 4-ft below the rim in the east and west quadrants. Refer to Photo 3-15 through Photo 3-22 below.

Photo 3-15. Wet well access

Photo 3-16. Severe corrosion & metal loss at the rim

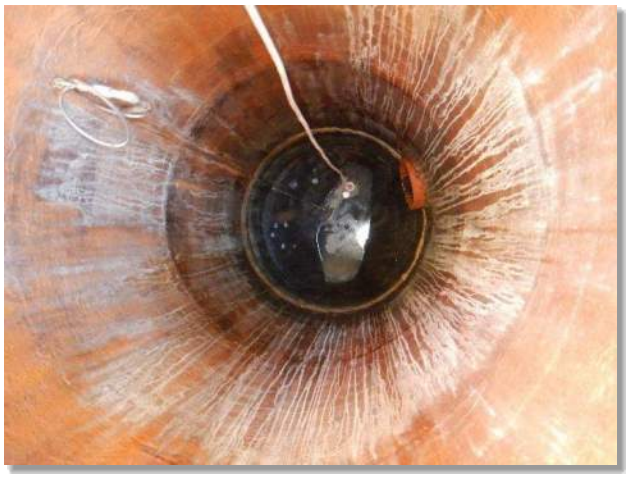


Photo 3-17. Wet well interior, topside

Photo 3-18. Wet well interior, epoxy liner at ceiling

Photo 3-19. Lower 4-ft of wet well unlined

Photo 3-20. Blistering in liner (approximately 2-in) around circumference near lower termination point

Photo 3-21. Blistering in liner, typical of 2 locations approximately 4-ft below the rim

Photo 3-22. Wet well influent pipe

3.1.2 Sounding, Penetration and Surface pH

Sounding was performed on the bare, unlined concrete in the lower section of the Barrymore LS wet well. Hollow sounding concrete was detected at the sloped section of the concrete wall, indicating that there is likely a void between the fillet and the vertical pre-cast concrete wall. Because this section was poured separately and its purpose is only to direct flow, the potential delamination is not of high concern.

Penetration and pH measurements were taken at the north wall and south wall of the wet well. Both testing locations were approximately 3.5 feet above the finished floor and beneath the lower limit of the epoxy lining. The concrete penetration measurements indicate medium to severe scaling with penetrations up to 3/8-in in depth. The surface and at-depth pH measurements indicate a negligible potential for corrosion of the reinforcing steel. A concrete pH of less than 10 was measured, which can induce corrosion of reinforcing steel depending on factors such as the presence of moisture, exposure to the service environment, and chlorides; however, it is likely that pH remains at or above 10 in the vicinity of the reinforcement. Section 3.1.3 presents the concrete cover depth over the reinforcing steel. Table 3-1 below presents the penetration depth and pH measurements collected at the Barrymore LS wet well.

Table 3-1. Barrymore LS Wet Well In-Situ Surface pH and Penetration Measurements

Location:	Penetration Depth (inch)	Surface pH	Depth pH
South wall, below waterline	0.200 (~3/16)	8	9
North wall, above waterline	0.350 (~3/8)	7	9

3.1.3 Surface Penetrating Radar

Table 3-2 summarizes the results of the SPR scans for Barrymore LS. The minimum depths of scanned reinforcement exceed V&A's minimum recommendation of 1.5-inch. The recommended maximum spacing of 6-inches for circumferential reinforcement as required by ASTM C478 was also met.

Table 3-2. Barrymore LS Wet Well SPR Summary

Location:	Bar Direction	Depth Max (in)	Depth Avg (in)	Depth Min (in)	Space Max (in)	Space Avg (in)	Space Min (in)
East Wall, 6.5' above finished floor	Circumferential	3.4	3.1	2.8	3.2	2.8	2.3
South wall, 13' above finished floor	Circumferential	2.9	2.7	2.6	2.9	2.7	2.6

3.1.4 Ultrasonic Thickness

UT measurements were recorded on the piping within the Barrymore LS dry well. Measurements were recorded in bands of four equidistant points around the circumference of the suction and discharge piping. The thickness measurements and associated conclusions only apply to where the readings were taken. The metal thickness and potential metal loss may vary at other locations on the piping. The nominal thickness of the ductile iron piping was assumed to be 0.33 inches (Class 52) for the 8-in suction piping and 0.39 inches (Class 54) for the 8-in discharge piping per AWWA C151-09.

UT measurements are summarized in Table 3-3. Overall, the metal loss on the pipes represented VANDA Level 2 condition with minor thickness loss. The measured metal loss was similar for each of the tested locations with a maximum metal loss of 8%, which is considered minor.

Table 3-3. Barrymore LS Dry Well UT Summary

Pipe/UT Location	Min. Thickness (in.)	Avg. Thickness (in.)	Max. Thickness (in.)	Assumed Nominal Thickness (in.)	Max. Metal Loss (%)
Pump 1 suction (8-inch)	0.305	0.310	0.313	0.33(1)	8%
Pump 2 suction (8-inch)	0.312	0.315	0.320	0.33(1)	5%
Discharge header (8-inch)	0.360	0.385	0.428	0.39(1)	8%

(1) AWWA C151-2009 American National Standard for Centrifugally Cast Ductile Iron Pipe.

3.1.5 Dry Film Thickness

DFT measurements were recorded on the piping within the Barrymore LS dry well. Typically, 8 to 12 mils is recommended for vault piping that is not submerged. The average DFT on the suction piping for each pump was either equal to or below the recommended DFT. The DFT summary is presented in Table 3-4 below.

Table 3-4. Barrymore LS Dry Well DFT Summary

Location	No. of Meas.	Min. (mil)	Avg. (mil)(1)	Max. (mil)	Recommended Thickness (mils)
Pump 1 suction piping	10	0.4	7.5	18.2	8 to 12
Pump 2 suction piping	10	1.3	3.6	6.0	8 to 12
Pump 1	10	0.4	7.5	18.2	8 to 12
Pump 2	13	5.7	12.9	20.9	8 to 12
Discharge header	11	3.8	12.3	27.5	8 to 12

(1) Average DFT measurements less than the recommended values are highlighted in red text.

3.1.6 Conclusions

Table 3-5 through Table 3-7 summarizes the overall condition of the major assets assessed by V&A at the Barrymore LS. Corresponding recommendations are presented in detail in Section 4 of this report.

Table 3-5. Barrymore LS Condition Summary - Site

Asset Description	Comments	VANDA® Rating
Pavement (concrete slab)	Concrete slab in good overall condition, 0.06" crack centered between the wet well and dry well	VANDA 3
Control Panel	Good overall condition, minimal surface corrosion	VANDA 2
Access to Dry Well	Exterior riser in good overall condition, coating is deteriorated	VANDA 2

Table 3-6. Barrymore LS Condition Summary – Dry Well

Asset Description	Comments	VANDA® Rating
Ladder & Entry System	Good condition, no defects noted	VANDA 1
Pumps/Motors (surface condition)	Minor wear on coating and surface corrosion at pump and pump base.	VANDA 2
Sump Pump	Moderate corrosion throughout submerged section	VANDA 3
Inlet piping, valves	Minor wear on coating	VANDA 2
Discharge piping	Minor wear on coating at bolts/flanges	VANDA 1
Interior dry well walls and ceiling	Good overall condition, minor corrosion at riser joints	VANDA 1
Dry well floor plate	Corrosion pits up to 0.07-inch	VANDA 3

Table 3-7. Barrymore LS Condition Summary – Wet Well

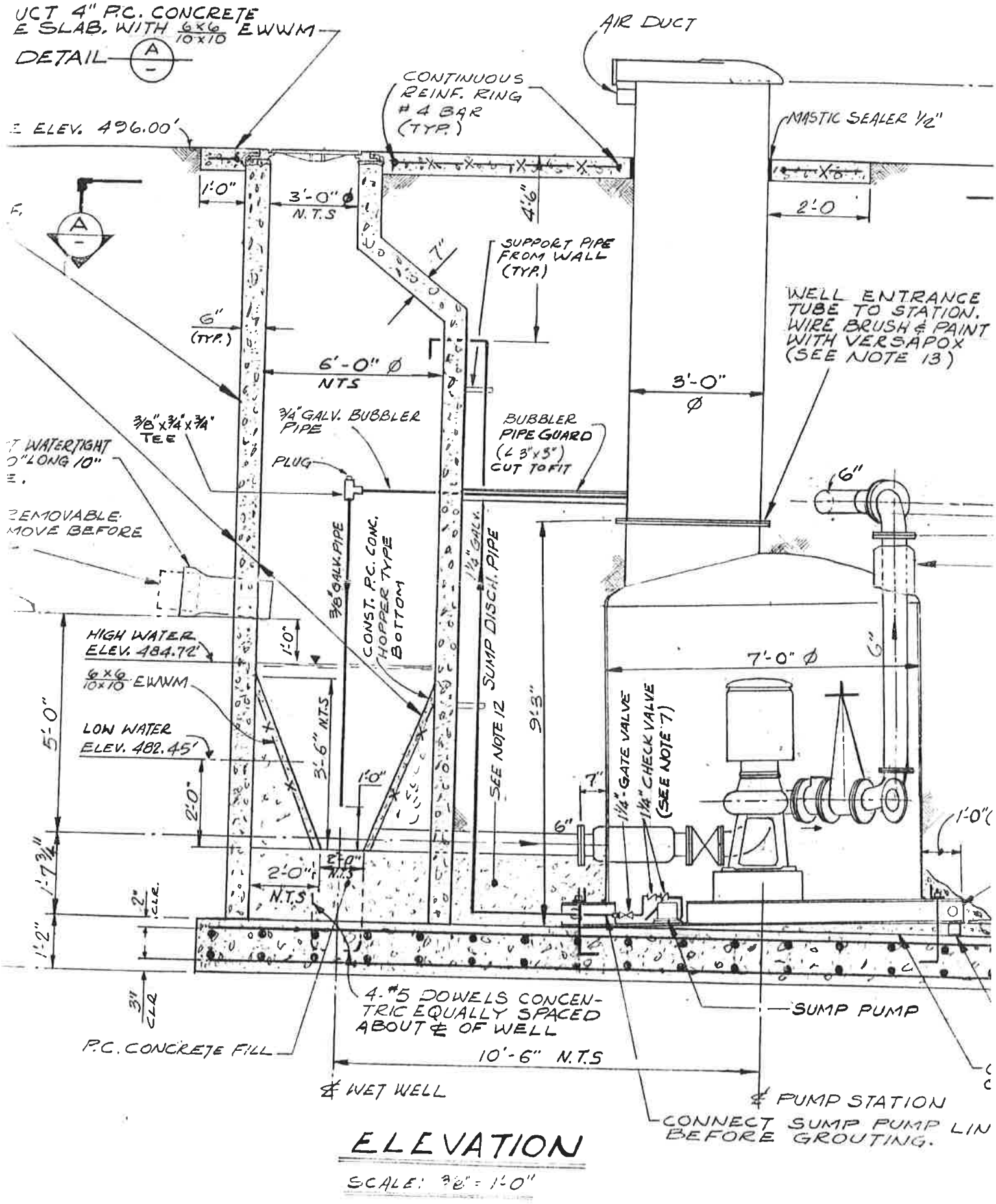
Asset Description	Comments	VANDA® Rating
Access	Rim is corroded from H2S and has undergone significant metal loss; lid may not fit soon	VANDA 4
Interior wet well walls and ceiling	Liner begins 4-ft above finished floor Blisters in coating at upper pre-cast section (x2), 1 each at east and west quadrants: approximate 6" x 6" area. Blistering (2-inch) around interior circumference at EL 486-FT	VANDA 2
Wet well floor	Good overall condition Sounding detected hollow concrete at sloped section,	VANDA 2

ATTACHMENT B

As-Built Drawing(s)

Barrymore

$$V = \frac{\pi}{3} R^2 \times H$$



ELEVATION

SCALE: 3/8" = 1'-0"

TJC and ASSOCIATES, INC.

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Technical Memorandum

To: *Elizabeth Reyes (Harris & Associates)*

From: *Richard Thow, S.E.*

CC: *file: 121076 – 4.8*

Date: *May 6, 2022*

Project: *Valley Sanitary District Lift Station Condition Assessment, Indio, California .*

Subject: *ASCE/SEI 41 Condition Screening Calhoun Pumping Station, Indio, California*

1. INTRODUCTION

TJC and Associates, Inc. (TJCAA) performed a desk top, ASCE/SEI 41-17, seismic screening of the Calhoun Lift Station, below grade precast concrete wet well and above grade pump control room, constructed in 2004, owned and operated by Valley Sanitary District, Indio, California. This technical memorandum presents our results.

During the period of February 7, 2022 through February 9, 2022, representatives from V&A Consulting Engineers (V&A) conducted a walk-through of the Calhoun Lift Station. V&A performed a visual inspection of structural systems and components, non-destructive testing of select items and took representative photographs.

TJCAA did not participate in this field assessment. TJCAA's review, assessment, findings, and recommendations are based solely on field information gathered by V&A. Analysis of structural elements was limited to analysis against the 2019 California Building Code, ASTM C913, *Standard Specification for Precast Concrete Water and Wastewater Structures*, and ACI 350, Code *Requirements for Environmental Engineering Concrete Structures*.

TJCAA conducted a seismic risk screening in general conformance with the *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026), and *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41). The procedure adopted by TJCAA applies a modified Tier 1 Screening per ASCE/SEI 41-17, following the guidelines presented in ASTM E2026. Calhoun Lift Station was evaluated relative to the "Immediate Occupancy" structural performance level, which is defined as a post-earthquake damage state in which the Lift Station substantially retains original strength and stiffness, with continued functionality likely. Lift Station was evaluated for a BSE-1E Basic Safety Earthquake, taken as a seismic hazard with a 20% probability of exceedance in 50-years at the site, commonly referred to as a 225-year earthquake.

The ASCE/SEI 41-17 Tier 1 procedure is a preliminary screening tool designed to quickly identify potential seismic deficiencies in the structural lateral force-resisting system. The Tier 1 evaluation procedure uses a series of checklists for rapid evaluation of the building while requiring only a minimum level of structural calculations.

ASTM E2026 *Standard Guide for Seismic Risk Assessment of Buildings*, provides specific measures for assessing the possibility of future loss due to earthquake occurrences. The standard provides an approach that forms the basis for characterizing the seismic risk assessment of a structure, system, or component in an earthquake, whereas ASCE 41-17 is focused on a building's structural components. ASTM E2026 considers all external hazards that could result in potential losses due to an earthquake. These hazards include ground shaking, site instability, fault rupture, landslides and soil liquefaction, lateral spreading and settlement, and earthquake caused off-site response impacting the structure, including flooding from dam or levee failure, tsunamis and seiches.

DEFINITIONS

Active Fault – A fault with an average historic slip rate of at least 1 mm per year and geological evidence of seismic activity within the Holocene time, i.e., during the last 11,000 years

Benchmark Building – Structure designed and constructed to a building code that is expected to provide Life Safety level performance.

BSE-1E – Basic Safety Earthquake-1 for use with basic Performance Objective for Existing Structures taken as a seismic hazard with a 20% probability of exceedance in 50-years at a site, with a mean return period of 225-years.

Design Earthquake (DE) – Used by building codes as 2/3 of the Maximum Considered Earthquake (MCE)

Earthquake – Ground shaking caused by a sudden movement along a fault line

Fault – Fracture or crack along which two blocks of rock slide past one another

Intensity – The measure of ground shaking quantifying the local severity of an earthquake in terms of its effect on structures, systems, and components

Importance Factor – A factor that accounts for the degree of risk to human life, health, and welfare associated with damage to property or loss of use or function. (ASCE/SEI 7-16)

Magnitude – A number that represents the size of an earthquake at the source, as determined by seismographic observations. Although outdated, the Richter Scale is probably the best-known earthquake magnitude scale.

Maximum Considered Earthquake (MCE) – Used by Building Codes to define the maximum considered seismic event. For the Lift Station considered in this report, the MCE has a 2% probability of exceedance within a 50-year period, with a mean return period of 2,475-years. The MCE is the event considered to be applicable to building code design and is based on probabilistic methods.

Seismic Coefficient – Spectral response acceleration parameters for short periods (S_{XS}) and 1-second period (S_{X1}), adjusted for Site Class, provided by United States Geological Survey (USGS)

Seismic Hazard – The potential for damaging effects caused by an earthquake. Degree of damage is a function of magnitude, distance from the epicenter, type of subsurface soils, and duration of shaking.

Seismic Risk – The probability of damage, loss, or injury resulting from an earthquake

Site Class – A classification assigned to a site based on the types of soil present and their engineering properties (ASCE/SEI 7-16)

Strike-Slip Fault – Vertical fractures where tectonic plate movement is horizontal. This is typical for California faults.

2. REFERENCES

- *Valley Sanitary District Tract 30684 Sewer Lift Station Pump Schematic*; dated April 28 2004
- *Valley Sanitary District Tract 30684 Sewer Lift Station Pump Control Room*; dated April 28 2004
- *2019 California Building Code California Code of Regulations*; Title 24, Part 2 (Volume 2) – International Code Council
- *Code Requirements for Environmental Engineering Concrete Structures (*ACI 350-06) – American Concrete Institute
- *Building Code Requirements for Structural Concrete* (ACI 318-14) – American Concrete Institute
- *Minimum Design Loads for Building and Other Structures* (ASCE/SEI 7-16) – American Society of Civil Engineers
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026)
- *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41) – American Society of Civil Engineers / Structural Engineering Institute
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026-16) – ASTM International
- *Standard Specification for Circular Precast Reinforced Concrete Manhole Sections* (ASTM C478-20) – ASTM International
- *Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures* (ASTM-C890-21) – ASTM International
- *Standard Specification for Precast Concrete Water and Wastewater Structures* (ASTM C913-21) – ASTM International

3. ASSESSMENT METHODS AND APPROACH (ASTM E2026)

3.1. SEISMIC GROUND MOTION HAZARD ASSESSMENT – LEVEL G1 INVESTIGATION

Project Address

Calhoun Lift Station,
intersection of Calhoun Street and Avenue 49, Indio, California
(Latitude 33.6932ºN Longitude 116.2076ºW)

ASTM E2026, Section 7 states the following:

> "The objective of the seismic ground motion hazard assessment is to characterize the earthquake ground motions at the site with a specified probability of being exceeded in a given time period."

Fault and Seismic Sources – The Calhoun Lift Station is in a seismically active area of Southern California. California Geological Society identifies the Lift Station located within 3-miles of the San Andreas Fault. Other faults within 24.5-miles of the Lift Station include Indio Hill Fault (3.5-miles) Berdoo Canyon Fault (4.5-miles), NW Painted Canyon Fault (6.5-miles), Buck Ridge Fault (15.5-miles), Platform Fault (16.5-miles), San Jacinto Painted Canyon Fault (17.5-miles), Hidden Springs Fault (24.5-miles), Clark Fault (19.5-miles), Eureka Peak Fault (22.5-miles) and Thomas Mountain Fault (25.5-miles).

Finding – Seismic Ground Motion Hazard Assessment

California Geological Society identifies eleven active faults within 25-miles of the Calhoun Lift Station. According to the Applied Technology Council, BSE-1E Short Period (S_s) and 1-second Period (S_1) Site-Specific Spectral Response Accelerations for Calhoun Lift Station are 0.73*g* and 0.254*g,* respectively.

Calhoun Lift Station
Fault Sources

3.2. BUILDING STABILITY ASSESSMENT – LEVEL BSE-1E INVESTIGATION

ASTM E2026, Section 8*; ASCE/SEI 41* state the following:

> "The objective of the building stability assessment is to determine if the "building" can be reasonably expected to remain stable under earthquake loadings. A building should be deemed stable if it is able to maintain the vertical load carrying-capacity of its structural system under the inelastic deformations caused by the earthquake ground motion prescribed for the building and site by the California Building Code."

The Lift Station was constructed in 2004 and was most likely designed against the 2001 California Building Code. The Lift Station wet-well is 120-inch diameter precast concrete manhole with a 5x3 access hatch. Pump Control Room is 8x8 Concrete Masonry Building with timber framed roof.

Finding – Building Stability Assessment

TJCAA performed a Tier 1 screening of the facility, applying the appropriate checklist in ASCE/SEI 41 for concrete and masonry structures. Attachment C presents the checklists for the Calhoun Lift Station.

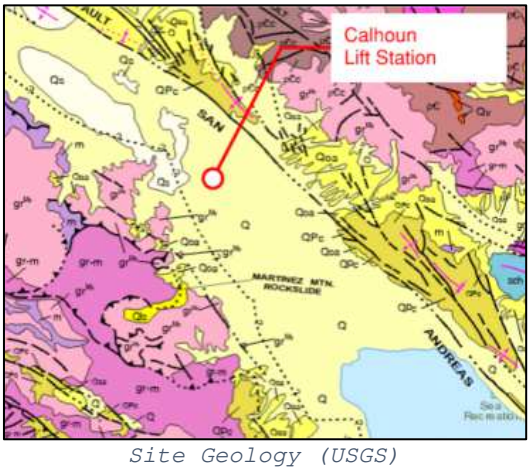
From historical observed earthquake damage, it can be inferred that certain building types designed and constructed to recent building codes can be expected to provide Life Safety-level performance. The Calhoun Lift Station wet well was constructed in 2004, making it a post-benchmark structure. As such, the Calhoun Lift Station wet well can be reasonably expected to remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code.

3.3. SITE STABILITY ASSESSMENT

ASTM E2026, Section 9 states the following:

> "The objective of the site stability assessment is to determine if the building is located on a site that may be subjected to instability due to earthquake-induced surface fault or soil liquefaction."

Site Geology – The Lift Station was constructed on Alluvium, lake, playa, and terrace deposits of the Quaternary period (USGS).



Site Geology (USGS)

Fault Rupture – Damage associated with fault-related ground rupture is normally confined to a fairly narrow zone along the trend of the primary fault, and to a lesser extent along secondary faults. Because the Lift Station is approximately 3.5-miles from the San Andreas Fault, it does not lie within the Alquist-Priolo Special Study Zone. In addition, no known active faults traverse Lift Station site; as such, surface fault rupture is not anticipated.

Liquefaction – Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure and decreased effective stress. Liquefaction is the result of cyclic ground vibrations that occur during a seismic event. The probability that the Lift Station is located on liquefiable soils is considered very low.

Seismic Settlement – Due to the low probability of liquefaction, ground settlement is unlikely as a result of a seismic event.

Tsunami – A major hazard associated with earthquakes is water inundation resulting from a tsunami (seismic sea wave). Because the Lift Station is located 76-miles inland from the Pacific Ocean, damage to the facility resulting from flooding caused by a tsunami is unlikely.

Slope Instability/Landslide – Slope instability and landslides produced by seismically induced strong ground motions are likely to occur in the eastern, San Bernardino Mountains. The Lift Station's location in the Coachella Valley means that the potential for lateral spreading landslides is unlikely.

Finding – Site Stability Assessment

The potential for the Lift Station to be founded on liquefiable soils is considered very low. Consequently, seismic settlement resulting from liquefied soil is also unlikely. Lift Station is 76-miles inland from the Pacific Ocean and is therefore not within a tsunami inundation zone. Finally, the Lift Station's location in the Coachella Valley places it outside areas susceptible to landslides produced by seismically induced ground motion.

3.4. BUILDING DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 10 states the following:

> "The objective of the building damageability assessment is to characterize expected earthquake losses associated with earthquake ground shaking and possible other earthquake hazards as prescribed by the User by performing an engineering analysis and evaluation of the damageability characteristics of the building at a given level of earthquake ground motions."

Detailed analysis (ASCE/SEI 41, Tier 3) of the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Building Damageability Assessment.

3.5. BUILDING CONTENT DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 11 states the following:

> "The objective of the building content damageability assessment is to perform an analysis of the earthquake performance of contents within the building. This analysis is concerned with contents that are not part of the building system."

Seismic ruggedness of systems, structures, and components within and attached to the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Building Content Damageability Assessment.

3.6. BUSINESS INTERRUPTION ASSESSMENT

ASTM E2026, Section 12 states the following:

> "The objective of the business interruption assessment is to perform an analysis of the site, building equipment, contents, inventory systems, infrastructure, interdependent businesses, and all other relevant parameters to determine if the building will suffer business interruption from onsite effects such as direct damage to buildings and equipment or loss of critical content and supplies."

Seismic ruggedness of systems, structures, and components associated with the day-to-day operations of the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Business Interruption Assessment.

3.7. V&A CONSULTING ENGINEERS CONDITION ASSESSMENT

V&A was contracted to perform the following non-destructive tests on the Calhoun Lift Station:

- Sounding – Non-scientific application of hammer strike of the concrete surface to locate voids, delamination, and/or honeycombing.
- Penetration Test – Estimates the depth of degradation (if any) from the existing surface of the concrete.
- Surface pH Measurements – In-situ pH measurements of exposed concrete using a pH sensitive pencil.
- Surface Penetrating Radar – Measures concrete cover depth to reinforcing steel.
- Ultrasonic Testing – In-situ determination of metal thickness.
- Dry Film Thickness – In-situ determination of coating thickness.
- Visual Assessment – Visual inspection of Systems, Structures and Components of the Lift Station.

The following table summarizes V&A's findings:

Table 1 – V&A Findings

Non-Destructive Tests	Finding
Sounding	Sounding of exposed concrete in two locations of the wet wall indicated areas of potentially hollow concrete sections.
Penetration Test and pH measurements	Penetration and pH measurements of the north and south walls indicate medium scaling of the concrete. A concrete pH of less than 10 was measured at the surface, which creates an environment for corrosion of the reinforcing steel if the pH at the surface is representative of the pH of the concrete in the vicinity of the rebar.
Surface Penetrating Radar	Due to extreme delamination of the liner, Surface Penetrating Radar scanning was not viable.
Ultrasonic Testing	See Mechanical write-up for discussions on piping.
Dry Film Thickness	Dry Film Thickness of concrete liner was not established. Refer to mechanical write-up for discussions on piping measurements.
Visual Assessment	Access gate and Concrete Masonry screen wall were found to be in good condition. Stainless steel access hatch and fiber reinforced plastic cover were found to be in good condition. The interior lining of the wet well is delaminated in numerous locations. In numerous locations the liner is protruding beyond the concrete substrate by as much as 12-inches and the liner seams have separated.

4. CONCLUSION

TJCAA's recommendations are based on generally accepted standards of engineering practice. Structural as-built drawings for the Lift Station were not provided. TJCAA relied on field information provided by V&A Consulting Engineers; as such, the opinions presented herein are reflective of the information contained in the field data. Errors, omissions, or deviations that exist could affect the opinions presented below.

Calhoun Lift Station, below grade precast concrete wet well and above grade pump control room, constructed in 2004, post-dates by 10-years the codifying of seismic design and construction techniques specific to this type of construction. However, the pump control room lack some of the basic seismic detailing required for a structure of this age.

Pump Control Room (2004) – of the 19 applicable "checks" from the ASCE/SEI 41 Tier 1 screening, 9 were found to be potentially non-compliant and 2 were "unknown."

V&A Consulting Engineers site assessment found the Lift Station to be in overall good condition with minor deficiencies in structural elements. However, the wet well liner was delaminated in numerous locations, in addition to tears and split seams.

Information about deficient elements is presented in Table 2 below on the following pages. Table 2 also describes the potential consequences or damage to the Lift Station and proposes, where appropriate, mitigation measures.

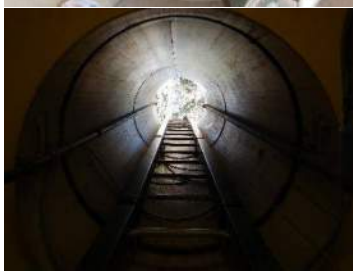
ATTACHMENT A

V&A Field Report
(Extract)

Valley Sanitary District

(Calhoun Lift Station Extract)

Lift Station Condition Assessment Report



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V&A consulting engineers

V&A Project No. 21-0287

3.2 Calhoun LS

The Calhoun LS was constructed in 2004 and is located west of the Avenue 49 and Calhoun St. intersection in Indio, CA. The lift station is located inside of a gated lot with a concrete masonry units (CMU) perimeter wall. A diagram of the configuration at Calhoun LS is presented in Figure 3-1 below.

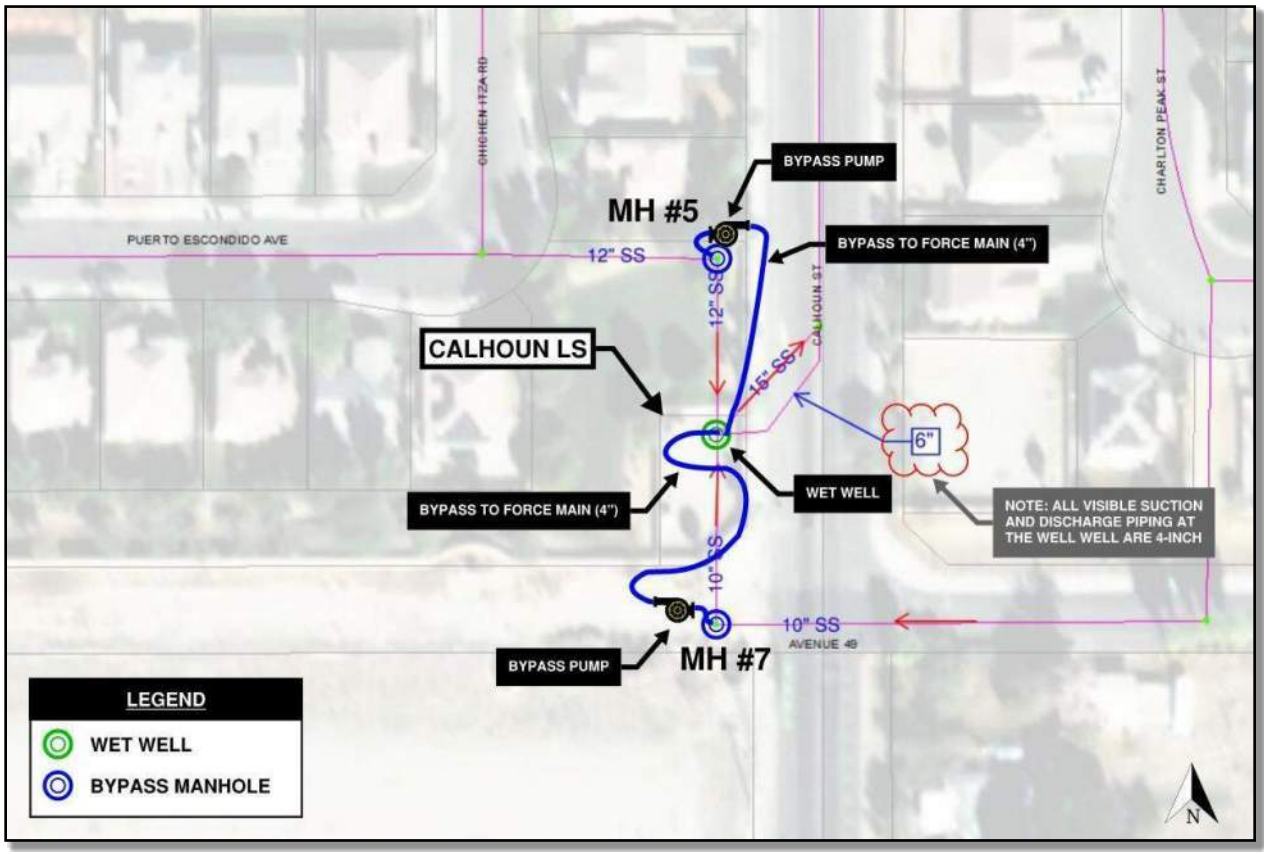


Figure 3-2. Calhoun LS Overview Map

The Calhoun LS is a submersible pump lift station that is approximately 35-ft deep and 12-ft in diameter and required isolation at opposing upstream manholes MH #5 and MH #7 before confined space entry could be performed. Flow from the isolated manholes were bypassed to an aboveground connection (tee) to the 4-in force main[1] at the wet well. Bypass piping was routed to allow for Valley Sanitary District's vactor truck to access the wet well. Following the isolation (plugging) and start of the bypass pumping operations, Valley Sanitary staff operated the Calhoun LS pumps manually from the aboveground control panel to draw flow down prior to using the vactor truck to wash down and remove the remaining sewage. Refer to Figure 3-3 for an overview of the bypass pumping plan.

[1] The provided record drawings and pipe network diagrams indicated 6-in DIP discharge piping at the wet well; however, all piping observed in the field aboveground and within the wet well were 4-in DIP.

Figure 3-3. Calhoun LS Bypass Plan

3.2.1 Visual Assessment

3.2.1.1 Site

The access gate and CMU perimeter wall at the Calhoun LS were observed to be in good condition with no defects noted (VANDA 1). The CMU electrical building and the interior lift station control panel were found to be in good condition with no defects noted (VANDA 1). Coating deterioration was observed on the pad-mounted transformer along with minor corrosion (VANDA 2). Refer to Photo 3-23 through Photo 3-30 below.

Photo 3-23. Calhoun LS site

Photo 3-24. CMU perimeter wall

Photo 3-25. Access gate

Photo 3-26. CMU mortar pointing in good condition

Photo 3-27. Electrical building exterior

Photo 3-28. Electrical building interior

Photo 3-29. Lift station control panel

Photo 3-30. Coating deterioration at pad-mounted transformer

3.2.1.2 Wet Well

The stainless steel access hatch and fiber reinforced plastic (FRP) cover to the Calhoun LS wet well were found to be in good condition with no defects noted (VANDA 1). A spall was observed on the exterior of the wet well concrete pad, likely to be from impact damage (VANDA 2). The interior lining of the wet well has become delaminated throughout and was protruding approximately 1-ft from the wall, typical from the bottom of the wet well up to 6-ft below the ceiling. Approximately 10 to 15 tears were observed in the liner at each seam (seams spaced approximately 3-feet apart), with the average size of each tear approximately 6-inches W x 3-inches H.

The stainless steel pump guide rails, supports, and hardware were found to be in good overall condition with minor corrosion staining (VANDA 2). Both of the submersible pumps were found to be in good condition with minor surface corrosion (VANDA 2). The interior pump discharge piping was epoxy coated (similar to the wet well lining) above the waterline, with only factory-coating in the lower 6-ft of the wet well; moderate corrosion was evident at several locations throughout both the epoxy coated and factory coated segments of the piping (VANDA 3). The aboveground pump discharge piping and header were found to be in fair condition with minor corrosion typical (VANDA 2). Refer to Photo 3-31 through Photo 3-52 below.

Photo 3-31. Wet well exterior

Photo 3-32. SST access hatch

Photo 3-33. Minor spalling on exterior concrete pad, likely due to impact damage

Photo 3-34. Wet well interior, topside

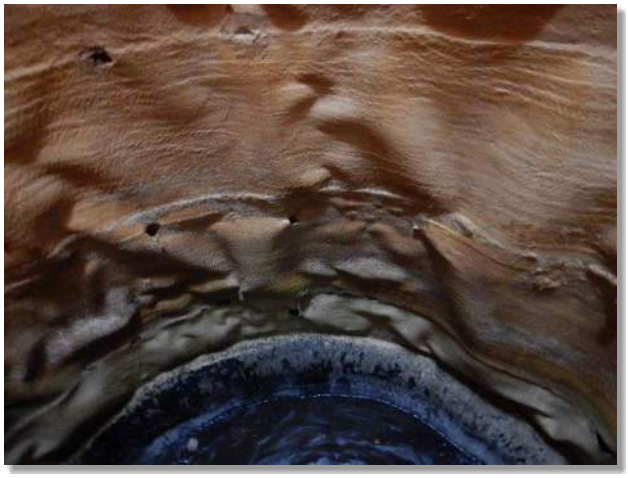


Photo 3-35. Severe delamination typical throughout wet well interior

Photo 3-36. Severe delamination, closeup at lower section of wet well

Photo 3-37. Tearing in liner, typical throughout

Photo 3-38. Close-up of concrete behind liner

Photo 3-39. SST guide rail supports & hardware

Photo 3-40. Emergency PVC overflow

Photo 3-41. Influent from MH #5

Photo 3-42. Influent from MH #7

Photo 3-43. Epoxy coating on pump discharge piping above 6-ft

Photo 3-44. Epoxy coating begins at 6-ft from floor

Photo 3-45. Moderate corrosion between 5-ft to 6-ft level of the wet well, typical both discharge pipes

Photo 3-46. Corrosion staining evident throughout discharge piping

Photo 3-47. Pump 1 (south)

Photo 3-48. Pump 1 discharge piping

Photo 3-49. Pump 2 (north)

Photo 3-50. Pump 2 discharge piping

Photo 3-51. Minor surface corrosion at Pump 2

Photo 3-52. Pump base in good condtion, typical

3.2.2 Sounding, Penetration and Surface pH

Penetration and surface pH measurements were collected at two locations within the wet well where the concrete had been exposed due to the torn epoxy liner. The concrete penetration measurements indicate medium scaling of the concrete beneath the liner. The pH measurements collected at the surface and at-depth of the testing locations indicate a negligible potential for corrosion of the reinforcing steel. Section 3.2.3 presents the concrete cover depth over the reinforcing steel. Table 3-8 below presents the penetration depth and pH measurements collected at the Calhoun LS wet well.

Table 3-8. Calhoun LS Wet Well In-Situ Surface pH and Penetration Measurements

Location:	Penetration Depth (inch)	Surface pH	Depth pH
West wall, 2-ft from finished floor	0.100 (1/8 to 1/16)	8	10
North wall, 3-ft from finished floor	0.150 (~1/8)	9	10

3.2.3 Surface Penetrating Radar

Due to the extreme delamination of the epoxy lining within the Calhoun LS, the SPR could not be used to produce reliable results with respect to bar spacing. As a result, Table 3-9 below only presents the estimated depth of reinforcement at the scanned locations. The concrete cover over the horizontal reinforcement at the south wall was slightly below the minimum 1.5-inch requirement discussed in Section 2.4.4.

Table 3-9. Calhoun LS Wet Well SPR Summary

Location:	Bar Direction	Depth Max (in)	Depth Avg (in)	Depth Min (in)
Wet well (East Wall)	Vertical	2.54	2.53	2.08
	Horizontal	2.69	2.35	2.08
Wet well (South Wall)	Vertical	2.84	2.38	2.08
	Horizontal	1.62	1.53	1.46

Shallow (<1.5 inches) concrete cover over the reinforcing steel is highlighted in red text.

3.2.4 Ultrasonic Thickness

UT measurements were recorded on the piping within the Calhoun LS wet well. Measurements were recorded in bands of four equidistant points around the circumference of the discharge piping approximately 5-ft from the floor. The thickness measurements and associated conclusions only apply to where the readings were taken. The metal thickness and potential metal loss may vary at other locations on the piping. The nominal thickness of the ductile iron piping was assumed to be 0.26 inches (Class 51) for the 4-inch discharge piping per AWWA C151-09.

UT measurements are summarized in Table 3-10 below. Overall, the metal loss on the pipes represented VANDA Level 3 condition with a maximum metal loss of 30%, which is considered moderate.

Table 3-10. Calhoun LS Wet Well UT Summary

Pipe/UT Location	Min. Thickness (in.)	Avg. Thickness (in.)	Max. Thickness (in.)	Assumed Nominal Thickness (in.)	Max. Metal Loss (%)
Pump 1 discharge (4-inch), 5-ft from floor	0.242	0.242	0.242	0.25(1)	3%
Pump 2 discharge (4-inch), 5-ft from floor	0.213	0.242	0.255	0.25(1)	15%
Discharge header (4-inch), aboveground	0.182	0.182	0.182	0.25(1)	27%

(1) AWWA C151-2009 American National Standard for Centrifugally Cast Ductile Iron Pipe.

3.2.5 Dry Film Thickness

DFT measurements were recorded on the piping on the interior and exterior of the Calhoun LS wet well. Typically, 30 to 40 mils is recommended for immersed piping and 6 to 10 mils is recommended for piping exposed to the sun. The average DFT on both pumps, the pump 2 discharge piping, and the aboveground discharge piping was below the recommended DFT. The DFT summary is presented in Table 3-11 below.

Table 3-11. Calhoun LS Wet Well DFT Summary

Location	No. of Meas.	Min. (mil)	Avg. (mil)	Max. (mil)	Recommended Thickness (mils)
Pump 1 discharge piping (Wet Well, factory coating)	10	21.2	34.5	53.0	30 to 40
Pump 1 discharge piping (Wet Well, epoxy coating)	8	82.0	136.8	189.0	30 to 40
Pump 2 discharge piping (Wet Well, factory coating)	11	2.4	18.7	46.3	30 to 40
Pump 2 discharge piping (Wet Well, epoxy coating)	10	119.0	154.7	185.0	30 to 40
Pump 1	10	3.8	6.3	8.4	30 to 40
Pump 2	10	7.7	8.7	9.9	30 to 40
Discharge piping (aboveground)	10	0.6	1.7	3.4	6 to 10

3.2.6 Conclusions

Table 3-12 and Table 3-13 summarize the overall condition of the major assets assessed by V&A at the Calhoun LS. Corresponding recommendations are presented in detail in Section 4 of this report.

Table 3-12. Calhoun LS Condition Summary - Site

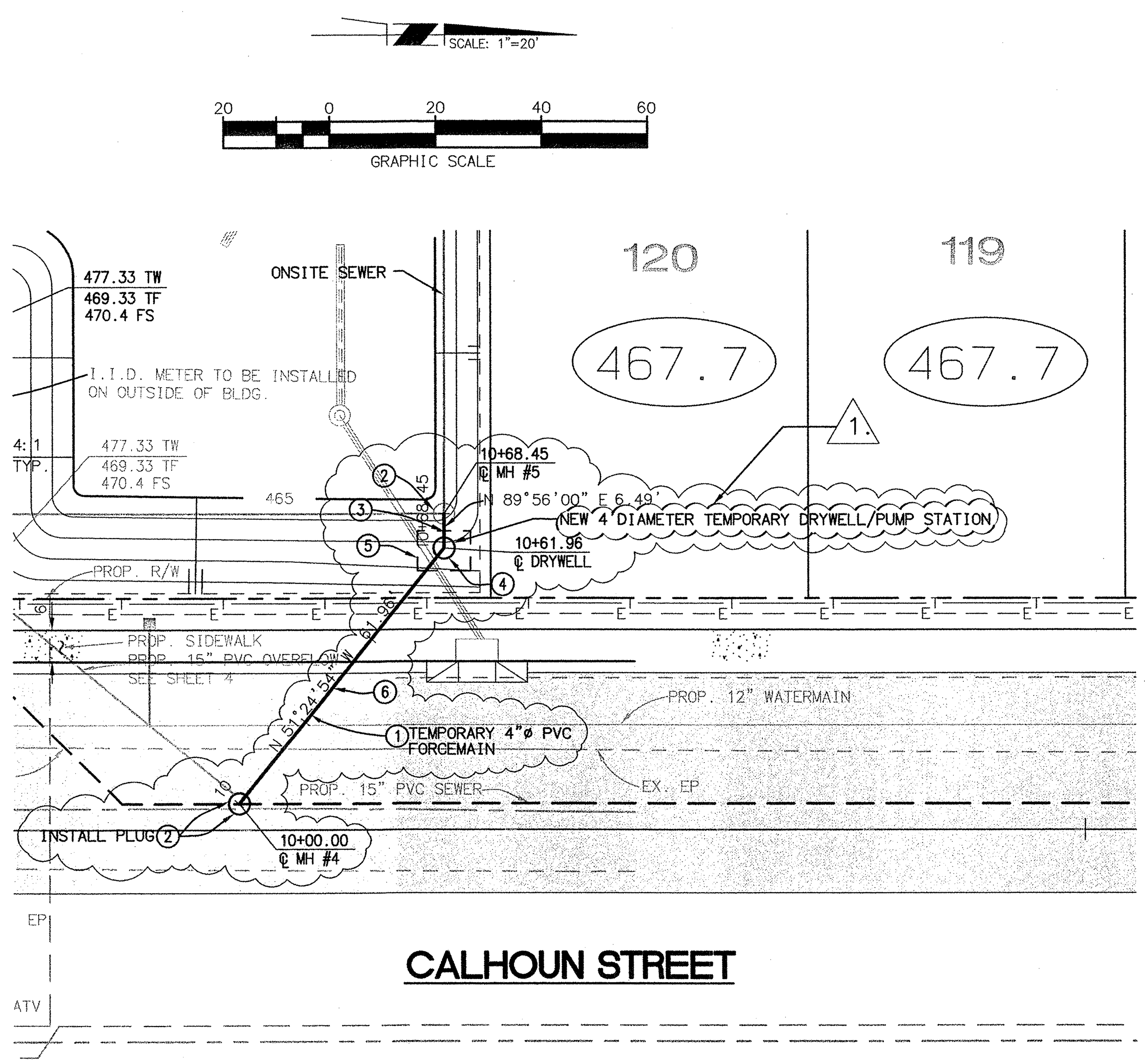
Asset Description	Comments	VANDA® Rating
Access	Access gate in good condition	VANDA 1
CMU perimeter wall	Good condition, no defects noted	VANDA 1
Electrical building (CMU)	Good condition, no defects noted	VANDA 1
Control panel	Good condition, no defects noted	VANDA 1
Transformer	Coating deterioration, minor corrosion	VANDA 2
Pavement	Gravel	N/A

Table 3-13. Calhoun LS Condition Summary – Wet Well

Asset Description	Comments	VANDA® Rating
Access	Access hatch in good condition, no defects noted.	VANDA 1
Concrete pad	Minor exposed aggregate on outer edge of concrete pad, likely from impact damage (does not appear to be from H_2S attack)	VANDA 2
Interior walls and ceiling	Lining at ceiling and upper 6-ft of walls in fair condition Interior lining warped throughout, not adhering to concrete below 6-ft from ceiling. Lining is protruding approximately 1-ft from the concrete wall (typical) Approximately 10-15 tears in liner at every seam (10 seams); average size of tear = 6-inch W x 3-inch H Concrete penetration depth indicates medium scaling of concrete beneath liner.	VANDA 3
Pumps	SST guide rails in good condition, minor corrosion staining SST supports and hardware in good condition Pumps in good condition, minor surface corrosion observed	VANDA 2
Interior piping	DIP, factory coating only in lower 6-ft moderate corrosion evident at several locations.	VANDA 3
Aboveground piping	Fair condition, minor corrosion typical throughout	VANDA 2

ATTACHMENT B

As-Built Drawing(s)



CONSTRUCTION NOTES

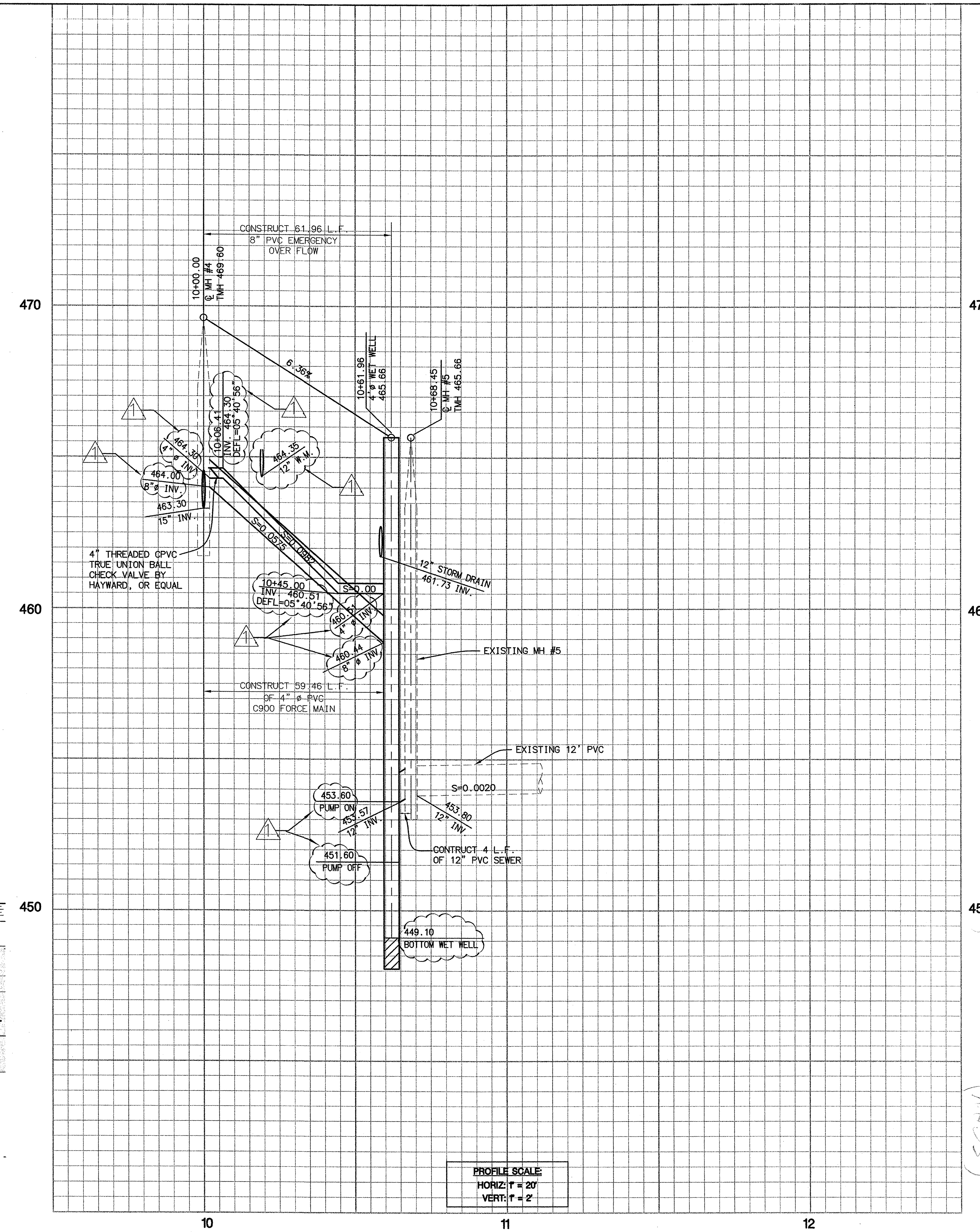
1. CONSTRUCT 4" ø PVC C900 FORCE MAIN
2. INSTALL PLUG IN EXISTING SEWER
3. CONSTRUCT 12" ø PVC SDR-35 SEWER PIPE
4. CONSTRUCT 4' ø PRECAST CONCRETE SEWER DRYWELL WITH GTS MH FRAME AND COVER ASSEMBLY
5. CONSTRUCT 6' HIGH 10'X10' CHAIN LINK FENCE WITH WARNING SIGN (ENGLISH AND SPANISH)
6. CONSTRUCT 8" PVC EMERGENCY OVERFLOW

PUMP SPECIFICATIONS

2- SUBMERSIBLE SEWAGE PUMP, GOULDS MODEL 3887BHF, ORDER NO. WS0712BHF 3/4 HP 1HP/230V

2 INCH SOLIDS CAPACITY 100 GPM @ 15 TDH, EACH PUMP

PUMP ON AT ELEVATION 453.60
PUMP OFF AT ELEVATION 451.60



FILE DRAWING 15-323.01

DIG ALERT DIAL TOLL FREE 1-800-227-2600 AT LEAST TWO DAYS BEFORE YOU DIG UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA	**BENCHMARK: BM #127** DESCRIPTION: RIVERSIDE COUNTY BRASS DISC ON A CONCRETE POST NEAR THE INTERSECTION OF AVENUE 48 AND VAN BUREN STREET. (BM ELEVATION IS BASED ON U.S.C.& G.S. DATUM W/ MEAN SEA LEVEL ELEV. +500.00) ELEV. = 464.82	**BASIS OF BEARINGS:** THE BEARINGS SHOWN HEREON ARE BASED UPON THE SOUTHERLY LINE OF THE NW 1/4 OF SEC. 31, T 5 S, R 8 E, SBBM, AS SHOWN ON TRACT NO. 23911, MB 253, PAGE 49, BEING N 89°42'38"W, ADJUSTED TO N 89°46'37" W.

REVISIONS

DATE	BY	DESCRIPTION	APP'D	DATE
11/17/04	JNC	⚠1 REVISED TO AS-BUILT		

REGISTERED PROFESSIONAL ENGINEER JOSEPH N. CICCHINI No. 35727 Exp. 6-30-2007 CIVIL STATE OF CALIFORNIA

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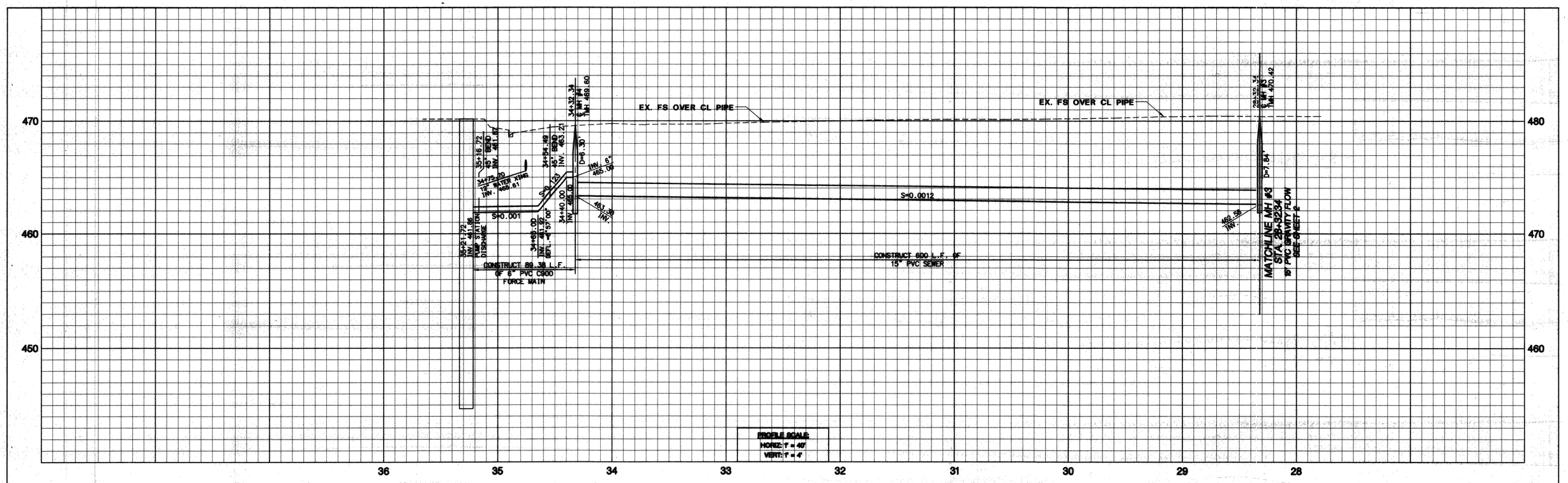
760.346.7481 ▪ FAX 760.346.8315 ▪ www.RBF.com
PREPARED UNDER THE DIRECT SUPERVISION OF:
JOSEPH N. CICCHINI
DATE:
R.C.E. 35727 EXP. 06-30-2007

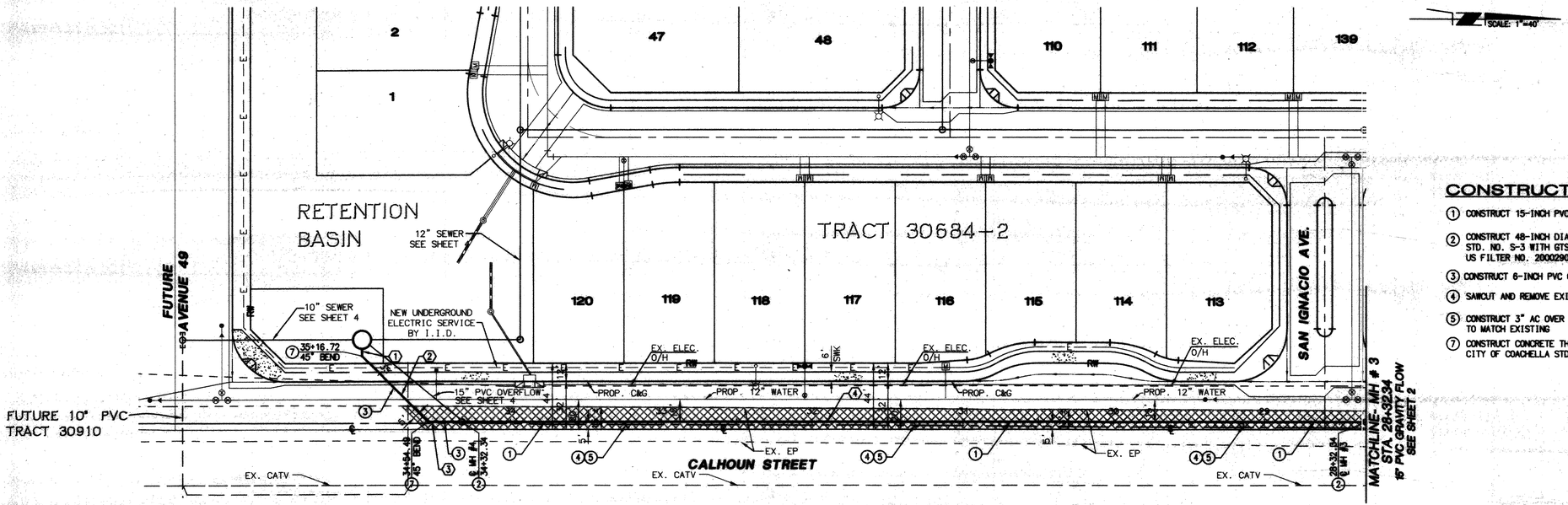
APPROVED BY:
VALLEY SANITARY DISTRICT
DATE

DRAWN	JC
SCALE	1"= 20'
DESIGNED	JNC
CHECKED	JNC
JOB NUMBER	20100329
DATE	NOVEMBER, 2004

VALLEY SANITARY DISTRICT
OFFSITE SEWER IMPROVEMENTS
TRACT 30684
TEMPORARY DRYWELL/PUMP STATION
OF SECTION 36, T.5S., R7E., SAN BERNARDINO MERIDIAN
FOR: INNOVATIVE RESORT COMMUNITIES

SHEET 1 OF 1 SHEETS
DWG. NAME 329SSTEMP01.DWG
FILE NO.





CONSTRUCTION NOTES

1. CONSTRUCT 15-INCH PVC SDR-35 SEWER PIPE
2. CONSTRUCT 48-INCH DIA. SEWER MANHOLE PER V.S.D. STD. NO. S-3 WITH GTS MH FRAME AND COVER ASSEMBLY, US FILTER NO. 2000290257B OR APPROVED EQUAL.
3. CONSTRUCT 6-INCH PVC C900 FORCE MAIN
4. SAWCUT AND REMOVE EXISTING AC PAVEMENT
5. CONSTRUCT 3" AC OVER 10" AG BASE (CLASS 2) TO MATCH EXISTING
7. CONSTRUCT CONCRETE THRUST BLOCKS PER CITY OF COACHELLA STD. DWG. W-5

SAWCUT AND REMOVE AC

SEWER DATA (C900 FORCE MAIN)					
◯	DELTA/BRG	RADIUS	LENGTH	TANGENT	REMARK
1	N89°56'00"E	---	5.00'	---	6" PVC FM
2	N44°56'00"E	---	62.23'	---	" "
3	N00°04'00"W	---	20.15'	---	" "
4	N00°04'00"W	---	600.00'	---	15" PVC

40 0 40 80 120
GRAPHIC SCALE

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BENCHMARK: BM #127
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(BM ELEVATION IS BASED ON U.S.C.& G.S. DATUM W/ MEAN SEA LEVEL ELEV. +500.00)
ELEV. = 464.82

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DATE	BY	DESCRIPTION	APP'D	DATE

REVISIONS

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JOSEPH N. CICCHINI
DATE: 4/28/04
R.C.E. 35727 EXP. 06-30-2007

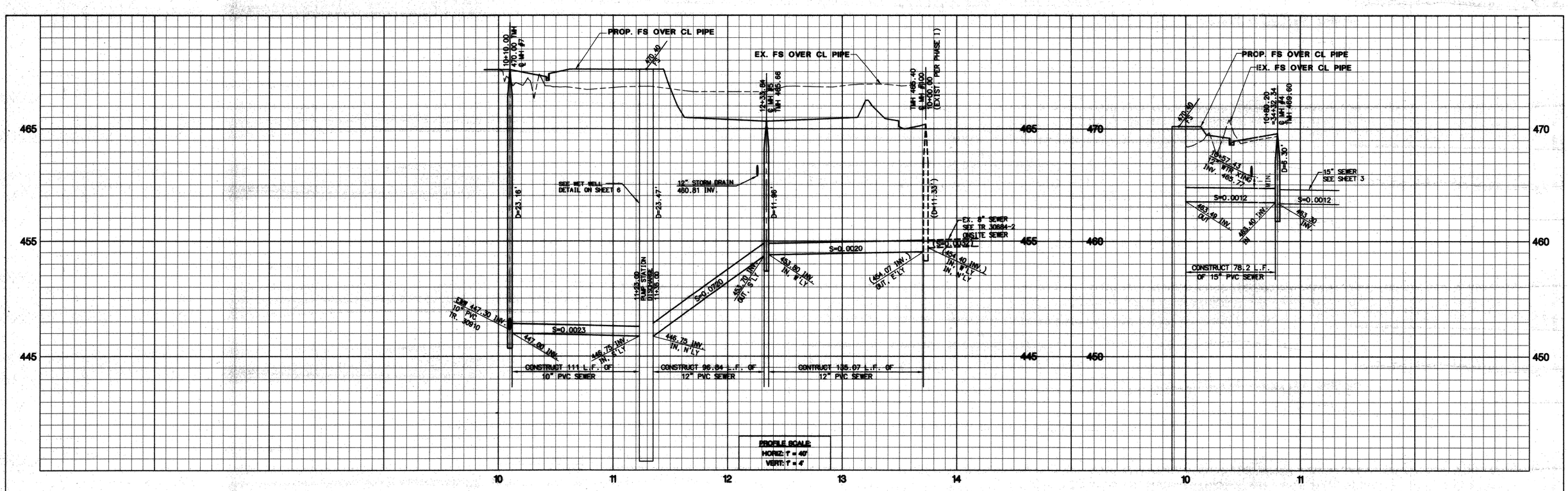
APPROVED BY:
VALLEY SANITARY DISTRICT
DATE 04/29/04

DRAWN	JCJ/JM
SCALE	1"= 40'
DESIGNED	JNC
CHECKED	JNC
JOB NUMBER	20100329
DATE	NOVEMBER, 2001

VALLEY SANITARY DISTRICT
OFFSITE SEWER IMPROVEMENTS
TRACT 30684
CALHOUN STREET
OF SECTION 36, T.5S., R7E., SAN BERNARDINO MERIDIAN
FOR: INNOVATIVE RESORT COMMUNITIES

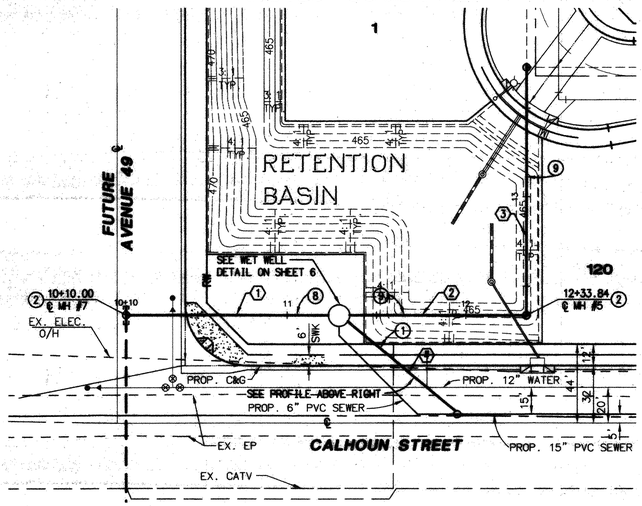
SHEET 3 OF 7 SHEETS
DWG. NAME 329SSOFF03.DWG
FILE NO.

FILE DRAWING 15-324.03



TRACT 30684-2

SCALE: 1"=40'



SEWER DATA				
⬡	DELTA/BRG	RADIUS	LENGTH	REMARK
1	N00°00'00"E	—	123.00'	10" PVC
2	N00°00'00"E	—	98.84'	12" PVC
3	N90°00'00"E	—	139.07'	" "
4	N39°29'42"E	—	78.19'	15" PVC

40 0 40 80 120
GRAPHIC SCALE

CONSTRUCTION NOTES

1. CONSTRUCT 15-INCH PVC SDR-35 SEWER PIPE
2. CONSTRUCT 48-INCH DIA. SEWER MANHOLE PER V.S.D. STD. NO. S-3 WITH GTS MH FRAME AND COVER ASSEMBLY, US FILTER NO. 20002902578 OR APPROVED EQUAL.
8. CONSTRUCT 10-INCH PVC SDR-35 SEWER PIPE
9. CONSTRUCT 12-INCH PVC SDR-35 SEWER PIPE

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AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

BENCHMARK: BM #127
DESCRIPTION:
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(BM ELEVATION IS BASED ON U.S.C.& G.S. DATUM W/ MEAN SEA LEVEL ELEV. +500.00)
ELEV. = 464.82

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DATE	BY	DESCRIPTION	APP'D	DATE

REVISIONS

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PREPARED UNDER THE DIRECT SUPERVISION OF:
JOSEPH N. CICCHINI
DATE: 4/28/04
R.C.E. 35727 EXP. 06-30-2007

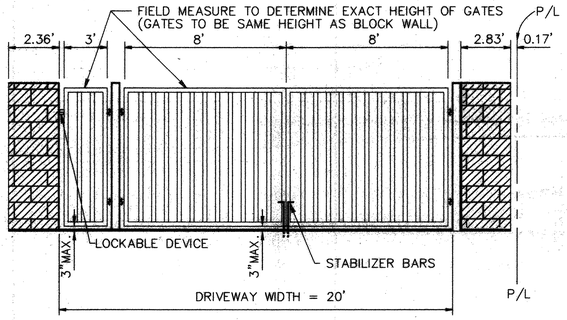
APPROVED BY:
VALLEY SANITARY DISTRICT
DATE 04/29/04

DRAWN	JFR
SCALE	1"= 40'
DESIGNED	JNC
CHECKED	JNC
JOB NUMBER	20100829
DATE	NOVEMBER, 2003

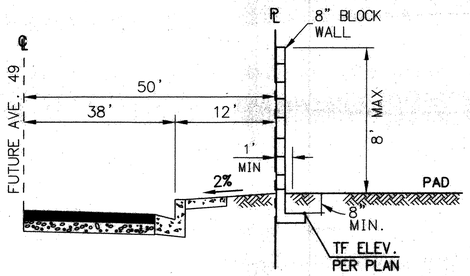
VALLEY SANITARY DISTRICT
OFFSITE SEWER IMPROVEMENTS
TRACT 30684
WET WELL
OF SECTION 36, T.5S., R7E., SAN BERNARDINO MERIDIAN
FOR: INNOVATIVE RESORT COMMUNITIES

SHEET 4 OF 7 SHEETS
DWG. NAME 329SSOFF04.DWG
FILE NO.

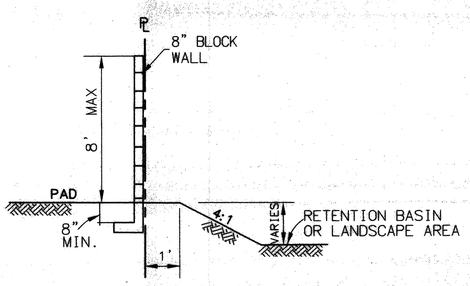
FILE DRAWING 15-324.04



GATE DETAIL
NTS



1 SECTION
NTS



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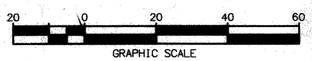

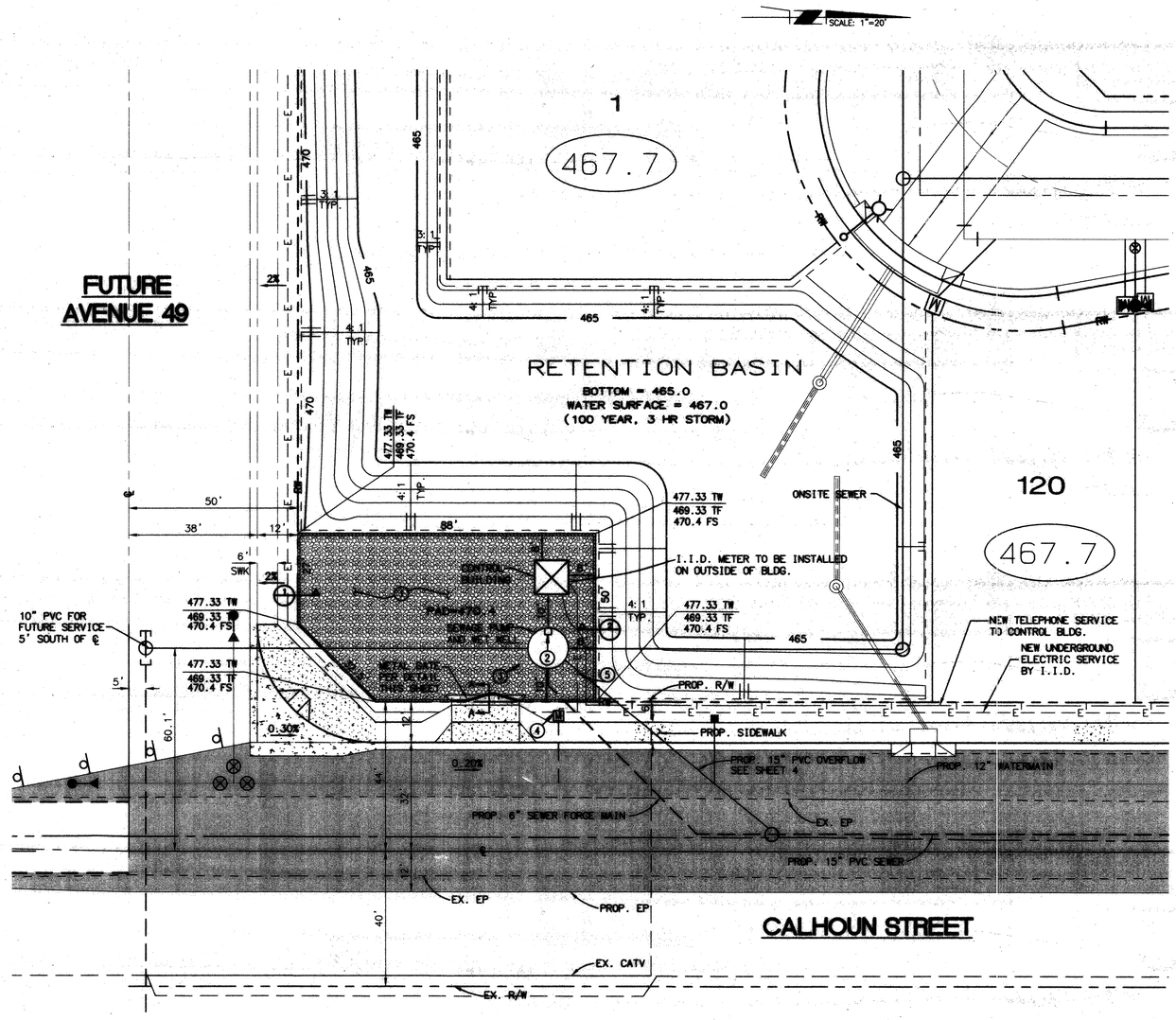

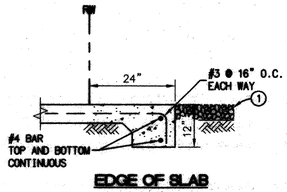

EDGE OF SLAB
SECTION A-A
N.T.S.

NOTES
1. 3/4" ROCK, MINIMUM 4" THICK, ON COMPACTED SOIL.
2. AUTOCRANE LIFTING DEVICE (ELECTRICAL).
3. POWER METER READABLE FROM OUTSIDE.
4. 2" WATER METER W/2" SERVICE AND RP-2 BACKFLOW PREVENTER
5. ELECTRIC SERVICE

DIG ALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

BENCHMARK: BM #127
DESCRIPTION:
RIVERSIDE COUNTY BRASS DISC ON A CONCRETE POST NEAR THE INTERSECTION OF AVENUE 48 AND VAN BUREN STREET.
(BM ELEVATION IS BASED ON U.S.C.& G.S. DATUM W/ MEAN SEA LEVEL ELEV. +500.00)
ELEV. = 464.82

BASIS OF BEARINGS:
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DATE	BY	DESCRIPTION	APP'D	DATE

REVISIONS

REGISTERED PROFESSIONAL ENGINEER JOSEPH N. CICCHINI No. 35727 Exp. 6-30-2007 CIVIL STATE OF CALIFORNIA

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PREPARED UNDER THE DIRECT SUPERVISION OF:
JOSEPH N. CICCHINI
DATE: 4/29/04
R.C.E. 35727 Exp. 06-30-2007

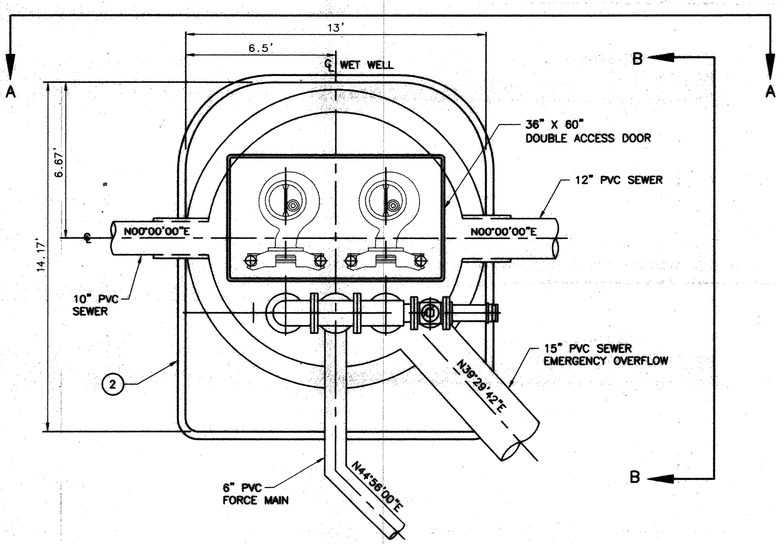
APPROVED BY:
VALLEY SANITARY DISTRICT
DATE 04/29/04

DRAWN	JFR
SCALE	1"= 20'
DESIGNED	JNC
CHECKED	JNC
JOB NUMBER	20080829
DATE	NOVEMBER, 2008

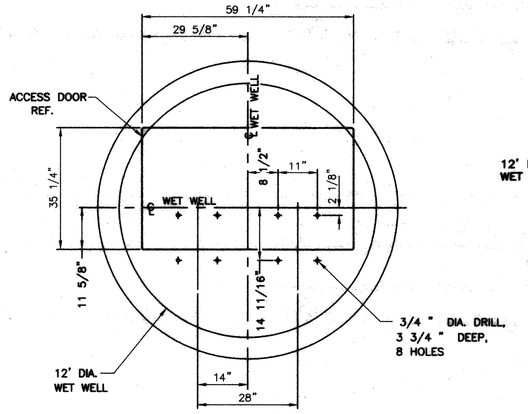
VALLEY SANITARY DISTRICT
TRACT 30684
SEWER LIFT STATION
SITE PLAN
OF SECTION 36, T.5S., R7E., SAN BERNARDINO MERIDIAN
FOR: INNOVATIVE RESORT COMMUNITIES

SHEET 5 OF 7 SHEETS
DWG. NAME 329SSOFF05.DWG
FILE NO.

FILE DRAWING 15-324.05

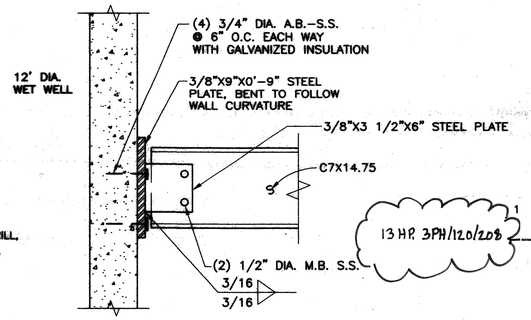


PLAN VIEW
NTS



PLAN VIEW
(BASE PLATE ANCHOR LOCATIONS)
NTS

NOTE: COAT STEEL WITH INORGANIC ZINC-RICH PAINT, DO NOT COAT S.S. BOLTS.



DETAIL "B", 6" D.I.P. SUPPORT AND BRACE
NTS

ITEM	DESCRIPTION	MAT'L & SIZE
1	PUMP	CAST IRON
2	BASE	CAST CONCRETE
3	PLUG VALVE	CAST IRON 6"
4	CHECK VALVE	CAST IRON 6"
5	WETWELL VENT	PVC 4"
6	CONTROL PANEL	STEEL
7	PLUG VALVE	CAST IRON 4"
8	OPW ADAPTER	ALUMINUM 4"
9	COMPACTED BASE 95% DENSITY	CLASS II AGGREGATE BASE

DUPLEX J-SERIES
FOR 12' DIA. WET WELL
6" PIPING W/ 4" BYPASS CONNECTION (JS4F-E13)

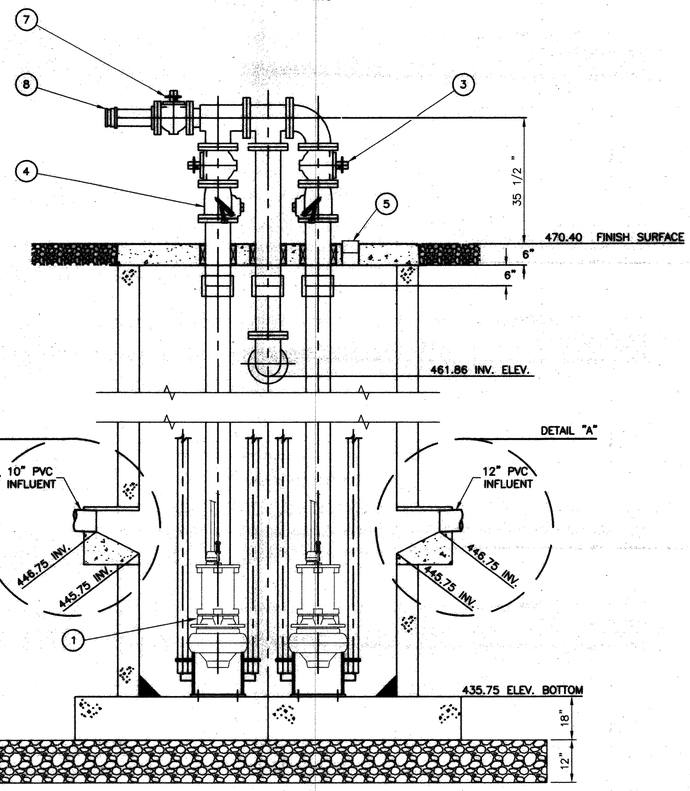
2 GORMAN-RUPP MODEL ~~J34M60-E11~~ (OR EQUAL) SUBMERSIBLE PUMPS, INCLUDING:
- ~~11 HP, 3PH/230/460~~ VAC 1750 RPM MOTOR ~~6CS NOTE #1~~
- 3" SOLIDS CAPACITY
- 637 GPM @ 34.9 FT. TDH
- 100FT. POWER/CONTROL CABLE (STD)
- 40 FT. LIFTING CABLE
- STAINLESS STEEL SHAFT
- SLIDE RAIL GUIDE SHOE WITH NEOPRENE SEAL
- 90° BASEPLATE ELBOW
- SLIDE RAIL INSTALLATION KIT (SEE NOTE NO. 2 BELOW)

13 HP 3PH/120/208

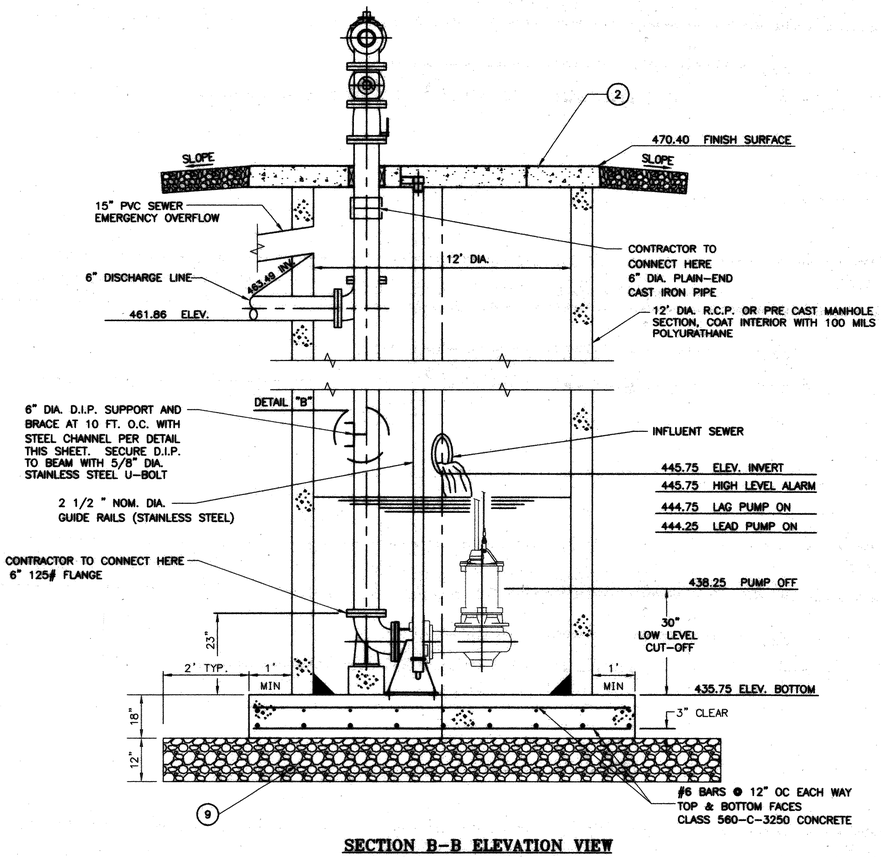
NOTES:
1. REFER TO GORMAN-RUPP SPECIFICATION DATA SHEET SECTION 138 PAGE 400 FOR PUMP/MOTOR SPECIFICATION, AND HYDRAULIC CURVES.
2. 2.5" STAINLESS STEEL GUIDE RAILS (2 PER PUMP) ARE TO BE PROVIDED BY CONTRACTOR.
3. WET WELL BY CONTRACTOR.
4. ~~CONTRACTOR TO PROVIDE PHASE CONVERTOR~~

1 PUMP STATION CONTROL PANEL, INCLUDING:
- NEMA 1 STAINLESS STEEL ENCLOSURE
- THERMAL MAGNETIC BRANCH CIRCUIT BREAKERS
- MAINTENANCE TERMINAL BLOCKS
- FULL VOLTAGE NEMA RATED STARTERS WITH OVERLOAD PROTECTION ON ALL PHASES (CLASS 10)
- PANEL CORROSION INHIBITOR
- POWER TRANSFORMER, 3 KVA
- ALARM SILENCE SWITCH
- H-O-A SWITCH
- MOTOR OVERLOAD RESETTERS
- GFI RECEPTACLE
- PUMP MOTOR MOISTURE/THERMAL SHUTDOWN INDICATOR
- EPS 2000 MICROPROCESSOR-BASED LIQUID LEVEL CONTROL INCLUDING:
  - ... WATER LEVEL SIMULATOR
  - ... PUMP START DELAY
  - ... 4-20 MADC LEVEL SIGNAL
  - ... TWO (2) AIR PUMPS WITH SELECTOR SWITCH
  - ... INTERNAL TRANSDUCER
  - ... AIR PUMP FLOW INDICATOR
  - ... AIR BELL, SHIPPED LOOSE
  - ... HIGH/LOW WATER ALARM CIRCUIT
  - ... LEAD PUMP/LAG PUMP ALTERNATOR

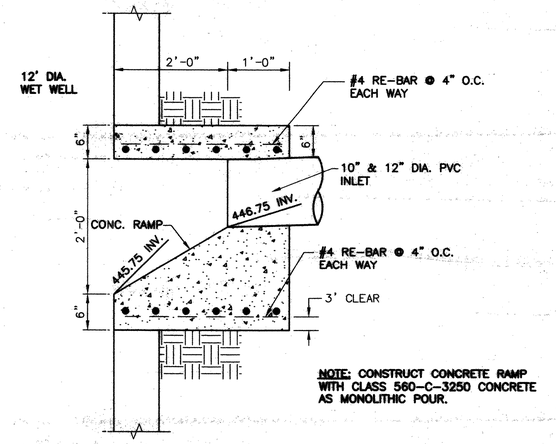
3 1 LOT, STATION PIPING INCLUDING:
- TWO (2) INDIVIDUAL SWING CHECK VALVES
- 3-WAY PLUG VALVE



SECTION A-A ELEVATION VIEW
NTS



SECTION B-B ELEVATION VIEW
NTS



NOTE: CONSTRUCT CONCRETE RAMP WITH CLASS 560-C-3250 CONCRETE AS MONOLITHIC POUR.

DETAIL "A", INFLUENT CONNECTION
NTS

DIG ALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

BENCHMARK: BM #127
DESCRIPTION:
RIVERSIDE COUNTY BRASS DISC ON A CONCRETE POST NEAR THE INTERSECTION OF AVENUE 48 AND VAN BUREN STREET.
(BM ELEVATION IS BASED ON U.S.C.& G.S. DATUM W/ MEAN SEA LEVEL ELEV. +500.00)
ELEV. = 464.82

BASIS OF BEARINGS:
THE BEARINGS SHOWN HEREON ARE BASED UPON THE SOUTHERLY LINE OF THE NW 1/4 OF SEC. 31, T 5 S, R 8 E, SBBM, AS SHOWN ON TRACT NO. 23911, MB 253, PAGE 49, BEING N 89°42'38"W, ADJUSTED TO N 89°46'37" W.

DATE	BY	DESCRIPTION	APP'D	DATE
7/29	JC	REVISE PUMP SPEC'S, ADD PHASE CONVERTOR	MHB	8/4/4

REVISIONS

REGISTERED PROFESSIONAL ENGINEER JOSEPH N. CICCHINI No. 39727 Exp. 6-30-2007 CIVIL STATE OF CALIFORNIA

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74-410 HIGHWAY 111
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PREPARED UNDER THE DIRECT SUPERVISION OF:
JOSEPH N. CICCHINI
DATE: 4/20/04
R.C.E. 39727 EXP. 06-30-2007

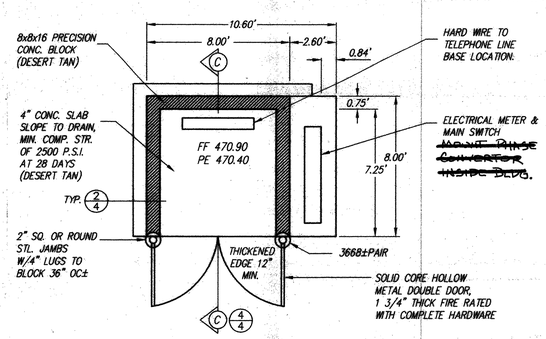
APPROVED BY:
VALLEY SANITARY DISTRICT
DATE 04/20/04

DRAWN
SCALE NTS
DESIGNED JNC
CHECKED JNC
JOB NUMBER 20100329
DATE NOVEMBER, 2003

VALLEY SANITARY DISTRICT
TRACT 30684
SEWER LIFT STATION PUMP SCHEMATIC
OF SECTION 36, T.5S., R7E., SAN BERNARDINO MERIDIAN
FOR: INNOVATIVE RESORT COMMUNITIES

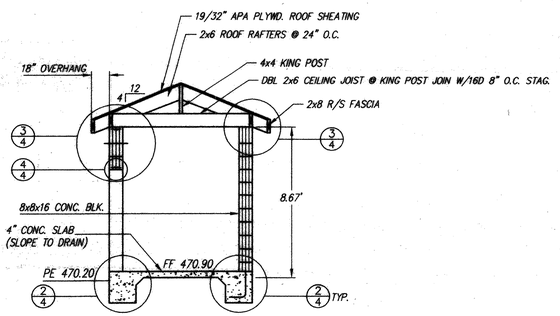
SHEET 6 OF 7 SHEETS
DWG. NAME 329SSOFF06.DWG
FILE NO.

FILE DRAWING 15-324.06



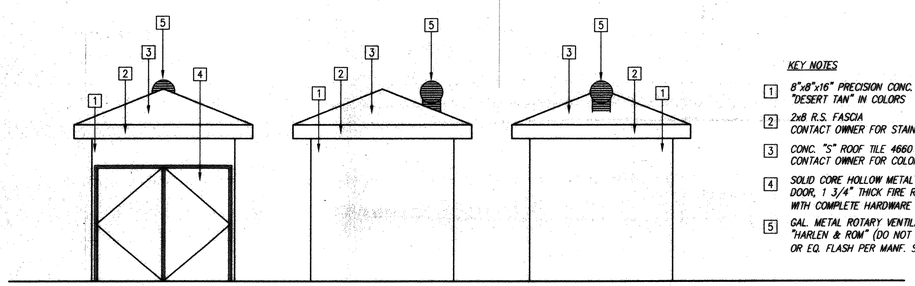
FLOOR/FOUNDATION PLAN

SCALE: 1/4"=1.0'



SECTION "C"

SCALE: 1/4"=1.0'

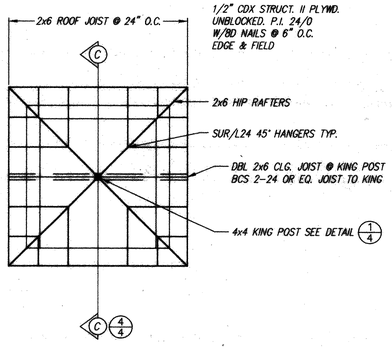


EXTERIOR ELEVATIONS

SCALE: 1/4"=1.0'

KEY NOTES

1. 8"x8"x16" PRECISION CONC. BLOCK "DESERT TAN" IN COLORS
2. 2x8 R.S. FASCIA CONTACT OWNER FOR STAIN COLOR APPROVED
3. CONC. "S" ROOF TILE 4660 ICBO OR EQ. CONTACT OWNER FOR COLOR
4. SOLID CORE HOLLOW METAL DOUBLE DOOR, 1 3/4" THICK FIRE RATED WITH COMPLETE HARDWARE
5. GAL. METAL ROTARY VENTILATOR "HARLEN & ROM" (DO NOT PAINT) OR EQ. FLASH PER MANF. SPEC.

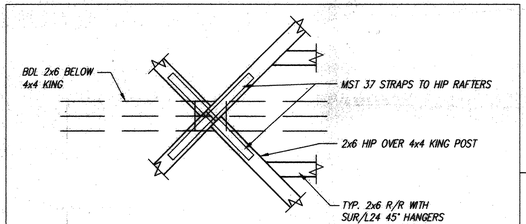


ROOF SHEETING SCHED.

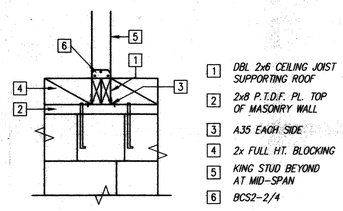
1/2" CDX STRUCT. II PLYWD. UNBLOCKED. P.L 24/0 W/8D NAILS @ 6" O.C. EDGE & FIELD

FRAMING PLAN

SCALE: 1/4"=1.0'

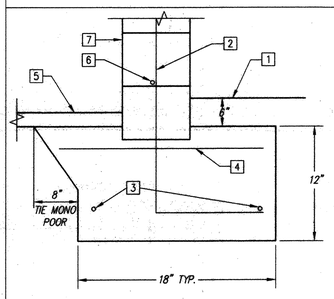


CONNECTION PLAN DETAIL



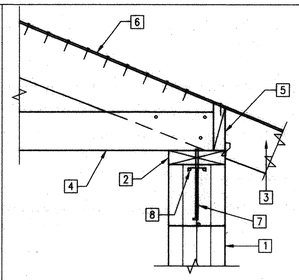
1. DBL 2x6 CEILING JOIST SUPPORTING ROOF
2. 2x8 P.T.D.F. PL. TOP OF MASONRY WALL
3. A35 EACH SIDE
4. 2x FULL HT. BLOCKING
5. KING STUD BEYOND AT MID-SPAN
6. BCS2-2/4

CONNECTION ELEVATION DETAIL 1/4



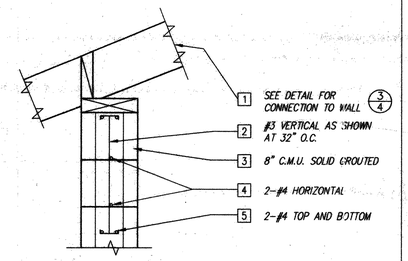
1. FINISH GRADE
2. #4 @ 24" O.C.
3. 2 #4 CONT. 3" MIN. COVER
4. #4 AT 16" TIE TO #3-24" LAP
5. SLAB ON GRADE #3 RB @ 16" O.C. TIE TO 4
6. #4 HORIZ. AT 24" O.C. (TYP.) CONTINUOUS
7. C.M.U. SOLID GROUTED WITH #4 VERT. AT CENTER OF WALL AT 24" O.C. TYP. HORIZONTAL & VERTICAL

MASONRY WALL DETAIL 2/4



1. 8" C.M.U. SOLID GROUTED. SEE DETAILS FOR REINF.
2. 2x8 P.T.D.F. PL. WITH 1/2"x10" A.B. AT 24" O.C. PLACED AT CENTER OF PL. 12" FROM CORNERS
3. 2x6 R/R AT 24" O.C. WITH (1) H2.5 ANCHOR TO PL.
4. 2x6 CEILING JOIST AT 24" O.C. NAIL TO SIDE OF EACH R/R WITH 3-16D'S COMMON NAILS
5. 2x BLK'G WITH 16D'S AT 3" O.C. TOE NAILING W/A35@32"
6. ROOF SHT'G EDGE NAILED ALONG EACH R/R 8D@6" EDGE FIELD.
7. 1/2"x10" AB 2'-0" O.C. MIN. 12" FROM END
8. SEE OTHER DETAIL FOR BOND BEAM

CONN. OF ROOF TO MASONRY WALL 3/4



1. SEE DETAIL FOR CONNECTION TO WALL 3/4
2. #3 VERTICAL AS SHOWN AT 32" O.C.
3. 8" C.M.U. SOLID GROUTED
4. 2-#4 HORIZONTAL
5. 2-#4 TOP AND BOTTOM

MASONRY LINTEL SECTION 3/4

CONSTRUCTION NOTES

GENERAL

1. CONSTRUCTION SHALL CONFORM TO THE 1997 UNIFORM BUILDING CODE, AND THE 2001 CALIFORNIA BUILDING CODE.
2. CONNECTORS AND HARDWARE – SIMPSON COMPANY OR EQUAL.

BOLTS

1. ANCHOR BOLTS IN CONCRETE AND MASONRY SHALL BE ASTM, A-307
2. PLATE BOLTING USE ⅝" X 2" SQ. WASHER.
3. BOLTS IN STEEL CONNECTIONS A-307, A-325.

CONCRETE

1. COMPRESSIVE STRENGTH 2500 PSI AT 28 DAYS.
2. CONFORM TO A.C.I. 318-95.
3. READY MIX CONCRETE SHALL COMPLY WITH ASTM C-94
4. CEMENT SHALL CONFORM TO ASTM C-150. TYPE V.
5. AGGREGATES – ASTM C-33.
6. CONCRETE AND ASSOCIATED CONSTRUCTION SHALL CONFORM TO U.B.C. CHAPTER 19.

TYPICAL FOUNDATION NOTES

1. REFER TO AND CHECK WITH DRAWINGS FOR VARIOUS FLOOR SLOPES, DROPPED SLABS, DEPRESSIONS, CURBS, STEPS, WALKS, DRAINS, DEPRESSED FLOOR, ETC., AND DIMENSIONS NOT SHOWN.
2. NO CONCRETE SHALL BE POURED IN ANY FOUNDATION UNTIL EXCAVATION HAS BEEN INSPECTED AND APPROVED BY THE SOILS ENGINEER.
3. ALL SLEEVES THROUGH FOUNDATION WALLS AND UNDER FOOTING TO BE INSTALLED PRIOR TO FOUNDATION POUR. SEE DETAIL.
4. THE STRUCTURAL ENGINEER HAS NO CONTROL OR RESPONSIBILITY FOR THE DESING OF TEMPORARY SHORING, SCAFFOLDING, FORMING, UNDERPINNING, ETC., NOT DETAILED ON THESE PLANS.
5. ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE (OR GROUT) HAS ATTAINED FULL DESIGN STRENGTH. CONTRACTOR SHALL BRACE OR PROTECT ALL BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL STRENGTH. CONTRACTOR SHALL PROVIDE FOR DESIGN, PERMITS AND INSTALLATION OF SUCH BRACING.
6. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS AND ELEVATIONS WITH DRAWINGS. NOTIFY STRUCTURAL ENGINEER, PRIOR TO FABRICATION OR ERECTION, WHEN DISCREPANCIES ARE FOUND.

TYPICAL FRAMING NOTES

1. REFER TO AND CHECK WITH MECHANICAL DRAWINGS FOR DUCT OPENINGS, EQUIPMENT SIZE AND LOCATION, ETC., LOCATE SUPPORTING MEMBERS ACCORDINGLY.
2. OPENINGS IN MASONRY WALLS, CONCRETE AND/OR PLYWOOD SHEAR PANELS NOT SHOWN ON STRUCTURAL DRAWINGS REQUIRIES REVIEW AND APPROVAL FROM STRUCTURAL ENGINEER EVEN THOUGH THEY MAY BE SHOWN ON DRAWINGS BY OTHERS.
3. ALL WOOD MEMBERS THAT RECEIVE SHEATHING AND ALL WOOD MEMBER WHERE THE SHEATHING IS NAILED THERETO SHALL BE CONTINOUSLY SHAPED TO FIT THE SLOPE OF THE ROOF. SHAPING OF THESE MEMBERS WILL NOT BE REQUIRED WHEN THE SLOPE OF THE ROOF IS LESS THAN 1" TO 12" PITCH.
4. PROVIDE ADEQUATE DEFLECTION SPACE UNDER ALL BEAMS AND LINTELS WHERE DOOR/WINDOWS OCCUR BELOW.

PLYWOOD

1. COMPLY WITH AMERICAN PLYWOOD ASSOC. PERFORMANCE STANDARDS APA PRP-108 AND PS 1-95, DOUGLAS FIR.
2. OSB SHALL COMPLY WITH APA STANDARDS PS 2-92 AND PRP 108.
3. PLYWOOD AND OSB PANELS SHALL HAVE APA APPROVAL STAMPS FOR USE.

NAILS

1. NAILS USED IN STRUCTURAL FRAMING SHALL BE COMMON NAILS.
2. NAILS SHALL CONFORM TO UBC SEC. 2340.

FRAMING LUMBER

1. ALL FRAMING LUMBER SHALL BE GRADE MARKED DOUGLAS FIR-LARCH (GRADING RULE NO.17). FRAMING LUMBER:
   JOISTS & PLANKS – NO. 1 (123-B).
   BEAMS AND STRINGERS– SELECT STRUCTURAL (130-a)(1600Fb).
   POST AND TIMBERS – NO. 1 (130-b)(1200Fb).
   ALL OTHER LUMBER: "NO. 1 STRUCTURAL" LIGHT FRAMING (124-b).
2. SILL PLATES SHALL BE PRESSURE TREATED DOUGLAS FIR UNLESS OTHERWISE NOTED. INSTALL PLATE WASHERS UNDER BOLT HEADS AND NUTS THAT BEAR ON MUDSILL (ALL ANCHOR BOLTS).
3. NO STRUCTURAL MEMBER SHALL BE CUT FOR PIPES, VENTS, DUCTS, & OTHER SIMILAR OPENING'S EXCEPT AS DETAILED OR SPECIFIED.
4. JOISTS & RAFTERS SHALL BE BUTTED AND SPLICED WITH PLYWOOD SCABS AT SUPPORTS UNLESS OTHERWISE DETAILED. WHERE JOISTS ARE BUTTED SPLICE ONE SIDE WITH A PIECE OF 1/2" PLYWOOD, 12" LONG X DEPTH OF JOIST WITH 4-8d MINIMUM INTO EACH JOIST OR 2X JOIST DEPTH X12" LONG SCAB WITH 4-16d MINIMUM INTO EACH JOIST.
5. 2X SOLID BLOCKING SHALL BE PLACED BETWEEN ALL JOISTS AND RAFTERS AT ALL POINTS SUPPORT AND UNDER ALL SUPPORTED TRANSVERSE PARTITIONS. 2X3 OR 1X4 CROSS BRIDGING OR 2" SOLID BLOCKING FULL DEPTH SHALL BE PLACED BETWEEN ALL JOIST AND RAFTERS (GREATER THAN 8" IN DEPTH) AT 8'-0" INTERVALS. APPROVED NAILABLE TYPE METAL CROSS BRIDGING OF EQUAL STRENGTH MAY BE USED IN LIEU OF CROSS BRIDGING.
6. PLYWOOD SHALL CONFORM TO PS 1-95 STRUCTURAL I UNLESS NOTED OTHERWISE.
7. MINIMUM NAILING SHALL BE PER TABLE 23A-II-B-1 IN THE CBC. USE ONLY COMMON NAILS. ALL NAILS LARGER THAN 16d TO BE PREDRILLED. DRILL DIAMETER TO BE 50% OF NAIL SHANK DIAMETER.
8. FASTNERS SUCH AS NIALS, BOLTS, SCREWS, ANCHOR BOLTS, ETC FOR PRESSURE-PRESERVATIVE TREATED AND FIRE-RETARDANT TREATED WOOD SHALL BE OF HOT-DIPPED ZINC COATED GALVANIZED OR STAINLESS STEEL.

MASONRY

1. GROUT SHALL BE 2500 PSI AT 28 DAYS.
2. MASONRY STRENGTH F'M = 1500 PSI, SPECIAL INPECTION REQUIRED.
3. ALL CONCRETE BLOCK SHALL CONFORM TO ASTM C90, GRADE N-1 OPEN END BLOCK. FILL ALL CELLS WITH GROUT.
4. ALL BRICKS SHALL CONFORM TO ASTM C62, GRADE MW.
5. GROUT SHALL DEVELOP 2000 PSI. IN 28 DAYS. MORTOR SHALL BE TPE "S".
6. REINFORCING STEEL EXCEPT MINIMUM LAP SHALL BE 48 DIAMETERS. VERTICAL STEEL SHALL BE CONTINOUS FROM FLOOR TO ROOF UNLESS SHOWN OTHERWISE.
7. ALL ISOLATED BOLTS EMBEDDED IN MASONRY SHALL BE GROUTED SOLIDLY IN PLACE WITH NOT LESS THAN 1" OF GROUT SURROUNDING EACH BOLT. CLUSTER OF BOLTS SHALL BE GROUTED AS A UNIT WITH A MIN. OF 2" OF GROUT SURROUNDING EACH BOLT. MINIMUM SPACING BETWEEN BOLTS IN CLUSTER SHALL BE 8 DIAMETERS.
8. VERTICAL BOLTS SET ON TOP OF THE WALL SHALL BE SET ON CENTER LINE OF WALL UNLESS DETAILED OTHERWISE. BOLTS ON TOP OF PIERS OR COLUMNS SHALL BE SET INSIDE OF ANY HORIZONTAL TIES.
9. ALL WOOD PLATES BOLTED ON TOP OF MASONRY WALLS BE SET ON A MORTAR BED TO PROVIDE UNIFORM BEARING.
10. CONTINOUS INSPECTION IS REQUIRED.

REINFORCED CONCRETE

1. NO BRICK OR POROUS MATERIAL SHALL BE USED TO SUPPORT FOOTING STEEL OFF THE GROUND. (PRECAST CONCRETE DOBIES ARE APPROVED).
2. ALL CONCRETE SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. (4" MAXIMUM SLUMP FOR FLAT WORK.)
3. ANCHOR BOLTS AND DOWELS SHALL BE SECURELY HELD IN PLACE BEFORE CONCRETE IS POURED.
4. ALL REINFORCING STEEL SHALL BE ASTM A-615 GRADE 60. SPLICES IN REINFORCING STEEL SHALL LAP AS FOLLOWS: #6 AND SMALLER = 60 DIA. UNLESS NOTED OTHERWISE. ALL REINFORCING STEEL TO BE WELDED SHALL BE ASTM A706. HORIZONTAL SPLICES SHALL BE STAGGERED. WELDED OR MECHANICAL SPLICES MAY BE USED AND SHALL BE STAGGERED 24" MIN. U.N.O. SPLICES BY NONCONTACT LAP SPLICES SHALL NOT BE SPACED TRASNVERSELY FARTHER APART THAN 1/5 THE REQUIRED LAP SPLICE, OR 6". AT SPLICES AND LAP FOR BEAMS, BARS SHALL BE SEPARATED ONE BAR DIAMETER BUT LESS THAN 1-1/2" CLEAR. HOWEVER COLUMN BARS MAY BE IN CONTACT AND WALL BARS BE WIRED TOGETHER AT SPLICES. LAP SPLICES W.W.F. ONE CROSS BAR +2".
5. THE CLEAR DISTANCE BETWEEN PARALLEL BARS SHALL BE TWO BAR DIAMETERS BUT NO LESS THAN 1-1/2 U.N.O.
6. REINFORCING STEEL SHALL HAVE A PROTECTED CONCRETE COVERING AS FOLLOWS UNLESS NOTED OTHERWISE.
   WALL STEEL BELOW GRADE: ON DIRT SIDE WHEN POURED AGAINTS DIRT =3"
   ON DIRT SIDE WHEN FORMED = 2"
   IN ALL OTHER CASES = 1-1/2"
   FOOTING PADS = 2"
   SLABS (ON EARTH) =2"
7. DOWEL REINFORCED SLABS TO WALLS AND OTHER EDGE MEMBER PER TYPICAL DETAIL.
8. SEE MECH'L DRAWINGS FOR LOCATION OF PIPES, VENTS, DUCTS, AND OTHER SIMILAR OPENINGS.
9. ALL REINFORCING STEEL IS TO BE PLACED IN RELATIVE POSITIONS SHOWN ON DRAWINGS. NO SPLICES IN ANY REINFORCING WILL BE PERMITTED EXCEPT THOSE SHOWN ON THE STRUCTURAL DRAWINGS.
10. CONDUITS MAY BE PLACED IN CONCRETE SLABS IF THEY ARE PLACED A MIN. OF 4 DIAMETERS APART AND ARE NO LARGER THAN 1/3 TH SLAB THICKNESS (EXCEPT IF THE CONDUIT IS PASSING THRU).

REINFORCING STEEL

1. STEEL SHALL BE ASTM A-615.
   #5 BARS OR LESS GRADE 60.
   #6 BARS OR GREATER GRADE 60.
2. WIRE MESH – WWF SHALL BE ASTM A-185.

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DESCRIPTION:
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BASIS OF BEARINGS:
THE BEARINGS SHOWN HEREON ARE BASED UPON THE SOUTHERLY LINE OF THE NW 1/4 OF SEC. 31, T 5 S, R 8 E, SBBM, AS SHOWN ON TRACT NO. 23911, MB 253, PAGE 49, BEING N 89°42'38"W, ADJUSTED TO **N 89°46'37" W.**

DATE	BY	DESCRIPTION	APP'D	DATE
7/29	JC	REVISE PUMP SPEC'S, ADD PHASE CONVERTER	MB	8/6/4

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — JOSEPH N. CICCHINI — No. 35727 Exp. 6-30-2007 — CIVIL — STATE OF CALIFORNIA

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PREPARED UNDER THE DIRECT SUPERVISION OF:
JOSEPH N. CICCHINI — DATE: 4/28/04 — R.C.E. 35727 EXP. 06-30-2007

APPROVED BY:
VALLEY SANITARY DISTRICT
DATE 04/29/04

DRAWN	JFR
SCALE	NTS
DESIGNED	JNC
CHECKED	JNC
JOB NUMBER	20100329
DATE	NOVEMBER, 2003

VALLEY SANITARY DISTRICT
TRACT 30684
SEWER LIFT STATION
PUMP CONTROL ROOM
OF SECTION 36, T.5S., R7E., SAN BERNARDINO MERIDIAN
FOR: INNOVATIVE RESORT COMMUNITIES

SHEET 7 OF 7 SHEETS
DWG. NAME 329SSOFF07.DWG
FILE NO.

FILE DRAWING 15-324.07

TJC and ASSOCIATES, INC.

Structural Engineering

SCADA

Electrical Engineering

Instrumentation

Controls

Control Systems Programming

Technical Memorandum

To:	*Elizabeth Reyes (Harris & Associates)*
From:	*Richard Thow, S.E.*
CC:	*file: 121076 – 4.8*
Date:	*May 9, 2022*
Project:	*Valley Sanitary District Lift Station Condition Assessment, Indio, California*
Subject:	*ASCE/SEI 41 Condition Screening Carver Pumping Station, Indio, California*

1. INTRODUCTION

TJC and Associates, Inc. (TJCAA) performed a desk top, ASCE/SEI 41-17, seismic screening of the Carver Lift Station, below grade pre-packaged Smith & Loveless lift station, comprising of a cast-in-place concrete wet well and cylindrical steel dry well, constructed in 1966, owned and operated by Valley Sanitary District, Indio, California. This technical memorandum presents our results.

During the period of February 7, 2022 through February 9, 2022, representatives from V&A Consulting Engineers (V&A) conducted a walk-through of the Carver Lift Station. V&A performed a visual inspection of structural systems and components, non-destructive testing of select items and took representative photographs.

TJCAA did not participate in this field assessment. TJCAA's review, assessment, findings and recommendations are based solely on field information gathered by V&A. Analysis of structural elements was limited to analysis against the 2019 California Building Code, ASTM C913, *Standard Specification for Precast Concrete Water and Wastewater Structures*, and ACI 350, Code *Requirements for Environmental Engineering Concrete Structures*.

TJCAA conducted a seismic risk screening in general conformance with the *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026), and *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41). The procedure adopted by TJCAA applies a modified Tier 1 Screening per ASCE/SEI 41-17, following the guidelines presented in ASTM E2026. Carver Lift Station was evaluated relative to the "Immediate Occupancy" structural performance level, which is defined as a post-earthquake damage state in which the Lift Station substantially retains original strength and stiffness, with continued functionality likely. Lift Station was evaluated for a BSE-1E Basic Safety Earthquake, taken as a seismic hazard with a 20% probability of exceedance in 50-years at the site, commonly referred to as a 225-year earthquake.

The ASCE/SEI 41-17 Tier 1 procedure is a preliminary screening tool designed to quickly identify potential seismic deficiencies in the structural lateral force-resisting system. The Tier 1 evaluation procedure uses a series of checklists for rapid evaluation of the building while requiring only a minimum level of structural

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Walnut Creek Office:
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calculations.
ASTM E2026 *Standard Guide for Seismic Risk Assessment of Buildings*, provides specific measures for assessing the possibility of future loss due to earthquake occurrences. The standard provides an approach that forms the basis for characterizing the seismic risk assessment of a structure, system, or component in an earthquake, whereas ASCE 41-17 is focused on a building's structural components. ASTM E2026 considers all external hazards that could result in potential losses due to an earthquake. These hazards include ground shaking, site instability, fault rupture, landslides and soil liquefaction, lateral spreading and settlement, and earthquake caused off-site response impacting the structure, including flooding from dam or levee failure, tsunamis and seiches.

DEFINITIONS

Active Fault – A fault with an average historic slip rate of at least 1 mm per year and geological evidence of seismic activity within the Holocene time, i.e., during the last 11,000 years

Benchmark Building – Structure designed and constructed to a building code that is expected to provide Life Safety level performance.

BSE-1E – Basic Safety Earthquake-1 for use with basic Performance Objective for Existing Structures taken as a seismic hazard with a 20% probability of exceedance in 50-years at a site, with a mean return period of 225-years.

Design Earthquake (DE) – Used by building codes as 2/3 of the Maximum Considered Earthquake (MCE)

Earthquake – Ground shaking caused by a sudden movement along a fault line

Fault – Fracture or crack along which two blocks of rock slide past one another

Intensity – The measure of ground shaking quantifying the local severity of an earthquake in terms of its effect on structures, systems, and components

Importance Factor – A factor that accounts for the degree of risk to human life, health, and welfare associated with damage to property or loss of use or function. (ASCE/SEI 7-16)

Magnitude – A number that represents the size of an earthquake at the source, as determined by seismographic observations. Although outdated, the Richter Scale is probably the best-known earthquake magnitude scale.

Maximum Considered Earthquake (MCE) – Used by Building Codes to define the maximum considered seismic event. For the Lift Station considered in this report, the MCE has a 2% probability of exceedance within a 50-year period, with a mean return period of 2,475-years. The MCE is the event considered to be applicable to building code design and is based on probabilistic methods.

Seismic Coefficient – Spectral response acceleration parameters for short periods (S_{XS}) and 1-second period (S_{X1}), adjusted for Site Class, provided by United States Geological Survey (USGS)

Seismic Hazard – The potential for damaging effects caused by an earthquake. Degree of damage is a function of magnitude, distance from the epicenter, type of subsurface soils, and duration of shaking.

Seismic Risk – The probability of damage, loss, or injury resulting from an earthquake

Site Class – A classification assigned to a site based on the types of soil present and their engineering properties (ASCE/SEI 7-16)

Strike-Slip Fault – Vertical fractures where tectonic plate movement is horizontal. This is typical for California faults.

2. REFERENCES

- *Smith & Loveless Physical Wiring Diagram Standard Two Pump Station Main Control Cabinet*; dated July 4, 1987.
- *2019 California Building Code California Code of Regulations*; Title 24, Part 2 (Volume 2) – International Code Council
- *Code Requirements for Environmental Engineering Concrete Structures (*ACI 350-06) – American Concrete Institute
- *Building Code Requirements for Structural Concrete* (ACI 318-14) – American Concrete Institute
- *Minimum Design Loads for Building and Other Structures* (ASCE/SEI 7-16) – American Society of Civil Engineers
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026)
- *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41) – American Society of Civil Engineers / Structural Engineering Institute
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026-16) – ASTM International
- *Standard Specification for Circular Precast Reinforced Concrete Manhole Sections* (ASTM C478-20) – ASTM International
- *Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures* (ASTM-C890-21) – ASTM International
- *Standard Specification for Precast Concrete Water and Wastewater Structures* (ASTM C913-21) – ASTM International

3. ASSESSMENT METHODS AND APPROACH (ASTM E2026)

3.1. SEISMIC GROUND MOTION HAZARD ASSESSMENT – LEVEL G1 INVESTIGATION

Project Address

Carver Lift Station,
intersection of Carver Street and Garbo Drive, Indio, California
(Latitude 33.6975ºN Longitude 116.2188ºW)

ASTM E2026, Section 7 states the following:

> "The objective of the seismic ground motion hazard assessment is to characterize the earthquake ground motions at the site with a specified probability of being exceeded in a given time period."

Fault and Seismic Sources – The Vandenburg Lift Station is in a seismically active area of Southern California. California Geological Society identifies the Lift Station located within 0.75-miles of the San Andreas Fault. Other faults within 21.75-miles of the Lift Station include Indio Hill Fault (1.75-miles) Berdoo Canyon Fault (2.75-miles),NW Painted Canyon Fault (5.25-miles), Buck Ridge Fault (13.25-miles), Platform Fault (14.75-miles), San Jacinto Painted Canyon Fault (15.75-miles), Hidden Springs Fault (24.25-miles), Clark Fault (17.75-miles), Eureka Peak Fault (19.75-miles) and Thomas Mountain Fault (26.25-miles).

Finding – Seismic Ground Motion Hazard Assessment

California Geological Society identifies eleven active faults within 25-miles of the Carver Lift Station. According to the Applied Technology Council, BSE-1E Short Period (S_s) and 1-second Period (S_1) Site-Specific Spectral Response Accelerations for Carver Lift Station are 0.75*g* and 0.26*g,* respectively.

Carver Lift Station
Fault Sources

3.2. BUILDING STABILITY ASSESSMENT – LEVEL BSE-1E INVESTIGATION

ASTM E2026, Section 8*; ASCE/SEI 41*state the following:

> "The objective of the building stability assessment is to determine if the "building" can be reasonably expected to remain stable under earthquake loadings. A building should be deemed stable if it is able to maintain the vertical load carrying-capacity of its structural system under the inelastic deformations caused by the earthquake ground motion prescribed for the building and site by the California Building Code."

The Lift Station was constructed in 1966 and was most likely designed against the 1964 Uniform Building Code. The Lift Station wet-well is 72-inch diameter precast concrete manhole with a 36-inch diameter access manhole. Dry Well is a Smith & Loveless steel 84-inch sphere with 36-inch access tube. Invert of the Lift Station is 11.55-feet below grade.

Finding – Building Stability Assessment

Due to the lack of as-built drawings construction material and detailing was not available. ASCE/SEI 41-17 lists default lower bound material properties for various construction time frames. Precast reinforced concrete circa 1966 was "most likely" constructed with concrete with a 28-day compressive strength in the range of 2,500 psi to 4,000 psi and reinforcing steel with a minimum yield stress of 40,000 psi. Load.

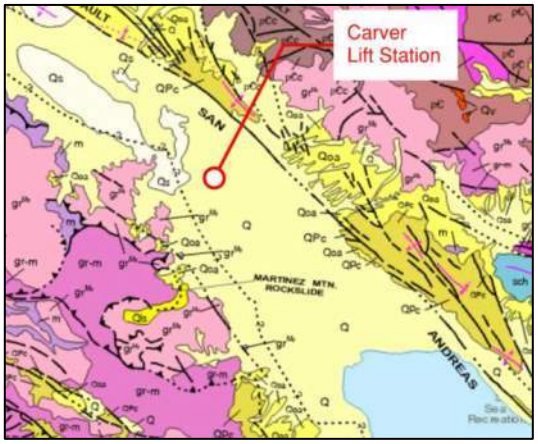
From historical observed earthquake damage, it can be inferred that certain building types designed and constructed to recent building codes can be expected to provide Life Safety-level performance. The Carver Lift Station was constructed in 1966, making it a pre-benchmark structure. As such, the Carver Lift Station may not remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code.

3.3. SITE STABILITY ASSESSMENT

ASTM E2026, Section 9 states the following:

> "The objective of the site stability assessment is to determine if the building is located on a site that may be subjected to instability due to earthquake-induced surface fault or soil liquefaction."

Site Geology – The Lift Station was constructed on Alluvium, lake, playa, and terrace deposits of the Quaternary period (USGS).



Site Geology (USGS)

Fault Rupture – Damage associated with fault-related ground rupture is normally confined to a fairly narrow zone along the trend of the primary fault, and to a lesser extent along secondary faults. Because the Lift Station is approximately 4-miles from the San Andreas Fault, it does not lie within the Alquist-Priolo Special Study Zone. In addition, no known active faults traverse Lift Station site; as such, surface fault rupture is not anticipated.

Liquefaction – Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure and decreased effective stress. Liquefaction is the result of cyclic ground vibrations that occur during a seismic event. The probability that the Lift Station is located on liquefiable soils is considered very low.

Seismic Settlement – Due to the low probability of liquefaction, ground settlement is unlikely as a result of a seismic event.

Tsunami – A major hazard associated with earthquakes is water inundation resulting from a tsunami (seismic sea wave). Because the Lift Station is located 76-miles inland from the Pacific Ocean, damage to the facility resulting from flooding caused by a tsunami is unlikely.

Slope Instability/Landslide – Slope instability and landslides produced by seismically induced strong ground motions are likely to occur in the eastern, San Bernardino Mountains. The Lift Station's location in the Coachella Valley means that the potential for lateral spreading landslides is unlikely.

Finding – Site Stability Assessment

The potential for the Lift Station to be founded on liquefiable soils is considered very low. Consequently, seismic settlement resulting from liquefied soil is also unlikely. Lift Station is 76-miles inland from the Pacific Ocean and is therefore not within a tsunami inundation zone. Finally, the Lift Station's location in the Coachella Valley places it outside areas susceptible to landslides produced by seismically induced ground motion.

3.4. BUILDING DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 10 states the following:

> "The objective of the building damageability assessment is to characterize expected earthquake losses associated with earthquake ground shaking and possible other earthquake hazards as prescribed

by the User by performing an engineering analysis and evaluation of the damageability characteristics of the building at a given level of earthquake ground motions."

Due to a lack of as-built information, accurately assessing the damage likely to occur due to BSE-1E level earthquake is not possible. Although earthquake forces were a design consideration under the 1979 Uniform Building Code, seismic force coefficients were more prescriptive, based on general geographical locations and predefined seismic zones. However, for purposes of seismic design, standard practice for fully or partially buried structures less than 10 feet in any dimension is to assume that such structures are not subjected to the additional lateral seismic soil load resulting from seismically induced lateral earth pressures.

3.5. BUILDING CONTENT DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 11 states the following:

> "The objective of the building content damageability assessment is to perform an analysis of the earthquake performance of contents within the building. This analysis is concerned with contents that are not part of the building system."

Seismic ruggedness of systems, structures, and components within and attached to the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Building Content Damageability Assessment.

3.6. BUSINESS INTERRUPTION ASSESSMENT

ASTM E2026, Section 12 states the following:

> "The objective of the business interruption assessment is to perform an analysis of the site, building equipment, contents, inventory systems, infrastructure, interdependent businesses, and all other relevant parameters to determine if the building will suffer business interruption from onsite effects such as direct damage to buildings and equipment or loss of critical content and supplies."

Seismic ruggedness of systems, structures, and components associated with the day-to-day operations of the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Business Interruption Assessment.

3.7. V&A CONSULTING ENGINEERS CONDITION ASSESSMENT

V&A was contracted to perform the following non-destructive tests on the Carver Lift Station:

- Sounding – Non-scientific application of hammer strike of the concrete surface to locate voids, delamination, and/or honeycombing.
- Penetration Test – Estimates the depth of degradation (if any) from the existing surface of the concrete.
- Surface pH Measurements – In-situ pH measurements of exposed concrete using a pH sensitive pencil.
- Surface Penetrating Radar – Measures concrete cover depth to reinforcing steel.
- Ultrasonic Testing – In-situ determination of metal thickness.

- Dry Film Thickness – In-situ determination of coating thickness.
- Visual Assessment – Visual inspection of Systems, Structures and Components of the Lift Station.

The following table summarizes V&A's findings:

Table 1 – V&A Findings

Non-Destructive Tests	**Finding**
Sounding	Not performed due to lack of exposed concrete.
Penetration Test	Not performed due to lack of exposed concrete.
Surface pH Measurements	Not performed due to lack of exposed concrete.
Surface Penetrating Radar	Minimum depth of rebar exceeded 1½-inches. Circumferential rebar spacing did not exceed 6-inches, as mandated by ASTM C478.
Ultrasonic Testing	See Mechanical write-up for discussions on piping.
Dry Film Thickness	Dry Film Thickness of concrete liner was not established. Refer to mechanical write-up for discussions on piping measurements.
Visual Assessment	Dry well access framing has minor offset and moderate corrosion where the interior lining has delaminated Dry well ladder has moderate corrosion at interface with the dry well wall. Dry well interior walls and ceiling have minor, localized corrosion. Dry well floor plate has minor, localized, corrosion. Pitting upwards of 0.15-inches was observed. Wet well access has moderate corrosion where lining has deteriorated. Wet well liner below laterals was torn and retaining water.

4. CONCLUSION

TJCAA's recommendations are based on generally accepted standards of engineering practice. Structural as-built drawings for the Lift Station were not provided. TJCAA relied on field information provided by V&A Consulting Engineers; as such, the opinions presented herein are reflective of the information contained in the field data. Errors, omissions, or deviations that exist could affect the opinions presented below.

Carver Lift Station, below grade pre-packaged Smith & Loveless lift station, comprising of a cast-in-place concrete wet well and cylindrical steel dry well, constructed in 1966, pre-dates the codifying of seismic design and construction techniques specific to this type of construction. As a pre-benchmark structure the Carver Lift Station may not remain stable under the inelastic deformations caused by

the earthquake ground motion prescribed for this structure type and site by the California Building Code.

V&A Consulting Engineers site assessment found the Lift Station to be in overall good condition with minor deficiencies in structural elements. However, the wet well liner was delaminated below the laterals.

Information about deficient elements is presented in Table 2 below on the following pages. Table 2 also describes the potential consequences or damage to the Lift Station and proposes, where appropriate, mitigation measures.

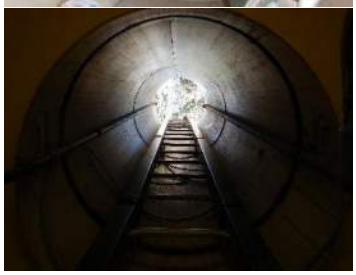
ATTACHMENT A

V&A Field Report
(Extract)

Valley Sanitary District

(Carver Lift Station Extract)

Lift Station Condition Assessment Report



Prepared for:

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Date:

March 25, 2022

Prepared by:

Farshad Malek, P.E.

Reviewed by:

Noy Phannavong, P.E.
Jessica Mullins, P.E.

V&A consulting engineers

V&A Project No. 21-0287

3.3 Carver LS

The Carver LS was constructed in 1966 and is located at the 48th Avenue and Bataan St. intersection in Indio, CA. The lift station wet well and dry well are both located in the center of the westbound lane on 48th Avenue. A diagram of the configuration at the Carver LS is presented below in Figure 3-1.

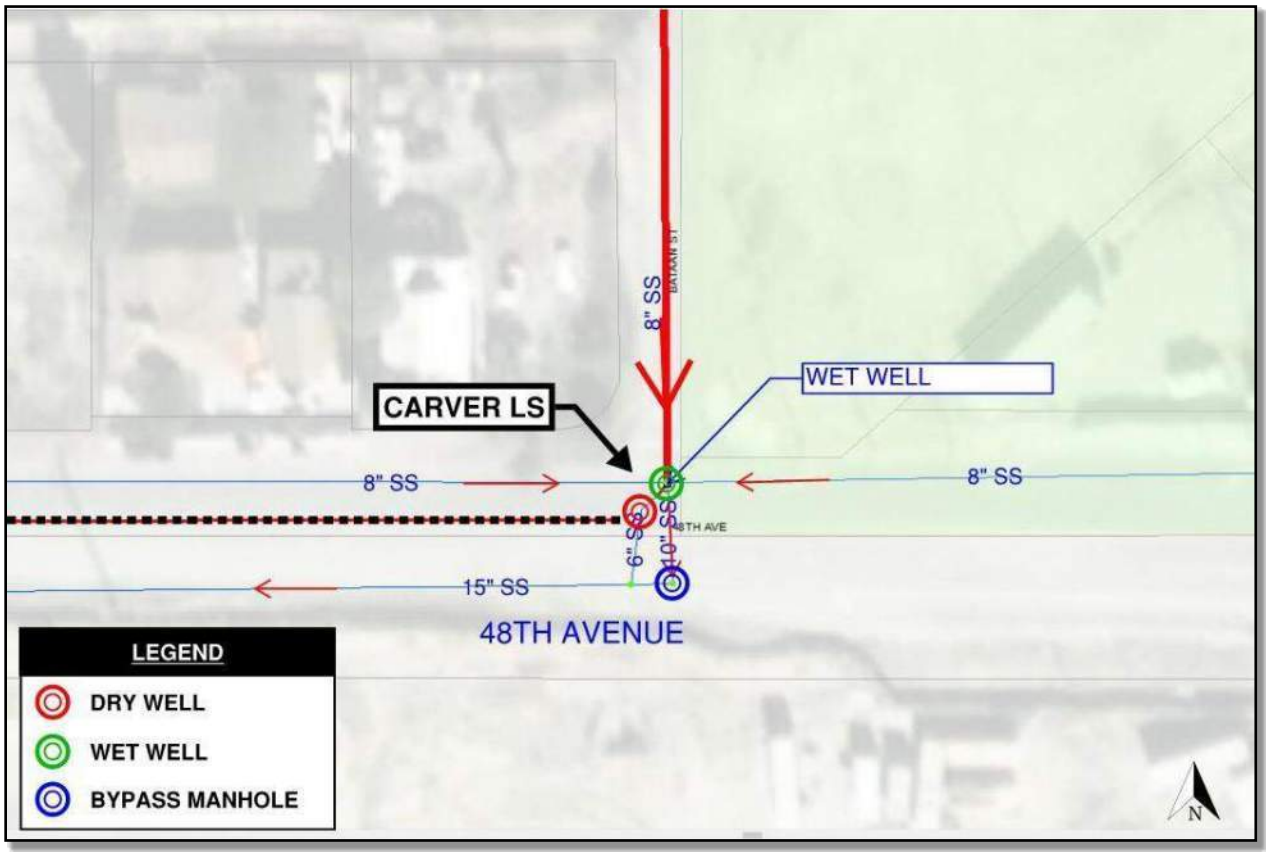


Figure 3-4. Carver LS Overview Map

The Carver LS is a pre-packaged lift station manufactured by Smith & Loveless. The LS consists of a cylindrical steel dry well and adjacent cylindrical reinforced concrete wet well. Smith & Loveless pump stations are typically installed with a galvanic cathodic protection system to provide soil-side corrosion protection for the steel dry well. The sacrificial anodes for these galvanic systems typically last approximately 20 years, so it is reasonable to assume that the anodes are depleted and no longer providing protection. The wet well at the Carver LS is approximately 14-feet deep and 4-feet in diameter with three 8-inch drop-in laterals and a 10-inch overflow that leads to the Bypass Manhole on the southern side of 48th avenue (refer to Figure 3-4). Valley Sanitary District coordinated to provide traffic control on the westbound lane of 48th Ave at the Carver LS in order to provide access into the wet well and dry well. To facilitate entry into the wet well, flow-through plugs with hoses were installed to divert flow to the bottom of the wet well and prevent flow from cascading over the entrant.

3.3.1 Visual Assessment

3.3.1.1 Dry Well

The framing for access into the dry well has a minor offset and moderate corrosion where the interior lining has delaminated (VANDA 3). The ladder entry system was found to have moderate corrosion at the interface with the dry well wall (VANDA 3). The pumps, motors, suction piping, and discharge piping within the dry well exhibited minor surface corrosion throughout (VANDA 2). The interior walls and ceiling of the dry well were found to have minor, localized corrosion where the coating has delaminated (VANDA 2). Moderate corrosion was observed throughout the floor plate with corrosion pits up to 0.150-inch, as well as at the sump and sump pump (VANDA 3). Refer to Photo 3-53 through Photo 3-70 below.

Photo 3-53. Traffic conrol on 48th Avenue

Photo 3-54. Dry well exterior framing

Photo 3-55. Dry well topside, minor offset in framing

Photo 3-56. Moderate corrosion on framing where coating has delaminated

Photo 3-57. Moderate corrosion at ladder entry system interface with wall

Photo 3-58. Dry well interior, 360 view (cropped)

Photo 3-59. Dry well Interior

Photo 3-60. Pump No. 1

Photo 3-61. Pump No. 1 suction piping & valve

Photo 3-62. Pump No. 1 discharge piping & valves

Photo 3-63. Pump No. 2

Photo 3-64. Pump No. 2 suction piping & valve

Photo 3-65. Pump No. 2 discharge piping and valves

Photo 3-66. Discharge piping and header

Photo 3-67. Discharge header, minor corrosion at flange

Photo 3-68. Discharge header, minor corrosion at ceiling penetration

Photo 3-69. Moderate corrosion at floor plate

Photo 3-70. Moderate corrosion at sump

3.3.1.2 Wet Well

The framing for access into the wet well exhibited moderate corrosion where the lining has deteriorated (VANDA 3). Otherwise, the interior lining was in good overall condition above the waterline, however, the liner beneath the laterals was torn and retaining water in multiple locations. Refer to Photo 3-71 through Photo 3-76 below.

Photo 3-71. Wet well framing

Photo 3-72. Moderate corrosion at rim where lining has deteriorated

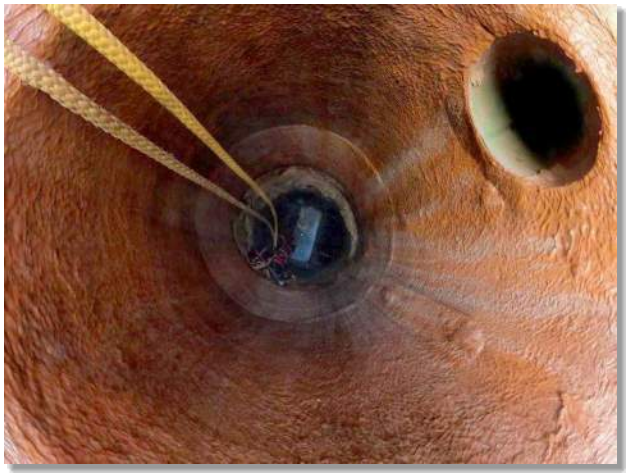


Photo 3-73. Wet well interior, overflow pipe

Photo 3-74. Wet well interior, liner degraded below waterline

Photo 3-75. Wet well sloped walls, channel

Photo 3-76. Liner torn and retaining water beneath drop-in laterals

3.3.2 Sounding, Penetration and Surface pH

Sounding, penetration depth, and surface pH measurements were not performed in the Carver LS wet well due to the absence of exposed concrete.

3.3.3 Surface Penetrating Radar

Table 3-14 summarizes the results of the SPR scans for Carver LS. The minimum depths of scanned reinforcement meet V&A's minimum recommendation of 1.5-inch. The recommended maximum spacing of 6-inches for circumferential reinforcement as required by ASTM C478 was also met.

Table 3-14. Carver LS Wet Well SPR Summary

Location:	Bar Direction	Depth Max (in)	Depth Avg (in)	Depth Min (in)	Space Max (in)	Space Avg (in)	Space Min (in)
4 to 6-ft below the rim	Vertical	2.84	2.45	2.23	7.60	7.27	6.95
5-ft below the rim	Circumferential	2.54	2.18	1.85	4.55	3.39	2.65

3.3.4 Ultrasonic Thickness

UT measurements were recorded on the piping within the Carver LS dry well. Measurements were recorded in bands of four equidistant points around the circumference of the suction and discharge piping. The thickness measurements and associated conclusions only apply to where the readings were taken. The metal thickness and potential metal loss may vary at other locations on the piping. The nominal thickness of the ductile iron piping was assumed to be 0.25 inches (standard) for the 6-inch suction piping, and 0.43 inches (Class 56) for the 6-inch discharge piping within the vault per AWWA C151-09.

UT measurements are summarized in Table 3-15 below. Overall, the metal loss on the pipes represented VANDA Level 2 condition with a maximum metal loss of 17%, which is considered minor.

Table 3-15. Carver LS Dry Well UT Summary

Pipe/UT Location	Min. Thickness (in.)	Avg. Thickness (in.)	Max. Thickness (in.)	Assumed Nominal Thickness (in.)	Max. Metal Loss (%)
Pump 1 suction (6-in)	0.223	0.235	0.245	$0.25_{(1)}$	11%
Pump 2 suction (6-in)	0.230	0.234	0.239	$0.25_{(1)}$	8%
Discharge header (6-in)	0.355	0.432	0.478	$0.43_{(1)}$	17%

(1) AWWA C151-2009 American National Standard for Centrifugally Cast Ductile Iron Pipe.

3.3.5 Dry Film Thickness

DFT measurements were recorded on piping within the Carver LS dry well. Typically, 8 to 12 mils is recommended for vault piping that is not submerged. The average DFT on Pump 1 and Pump 2 as well as the suction piping for both pumps were below the recommended DFT. The DFT summary is presented in Table 3-16 below.

Table 3-16. Carver LS Dry Well DFT Summary

Location	No. of Meas.	Min. (mil)	Avg. (mil)(1)	Max. (mil)	Recommended Thickness (mils)
Pump 1 suction piping (upstream of Gate Valve)	9	10.8	21.7	34.8	8 to12
Pump 1 suction piping (downstream of Gate Valve)	10	2.4	2.9	3.9	8 to12
Pump 1	11	4.0	7.8	11.4	8 to12
Pump 2 suction piping (upstream of Gate Valve)	12	13.6	28.2	71.0	8 to12
Pump 2 suction piping (downstream of Gate Valve)	11	1.6	3.6	13.0	8 to12
Pump 2	15	0.1	3.5	13.6	8 to12
Discharge header	12	8.9	14.3	22.6	8 to12

(1) Average DFT measurements less than the recommended values are highlighted in red text.

3.3.6 Conclusions

Table 3-17 and Table 3-18 summarize the overall condition of the major assets assessed by V&A at the Carver LS. Corresponding recommendations are presented in detail in Section 4 of this report.

Table 3-17. Carver LS Condition Summary – Dry Well

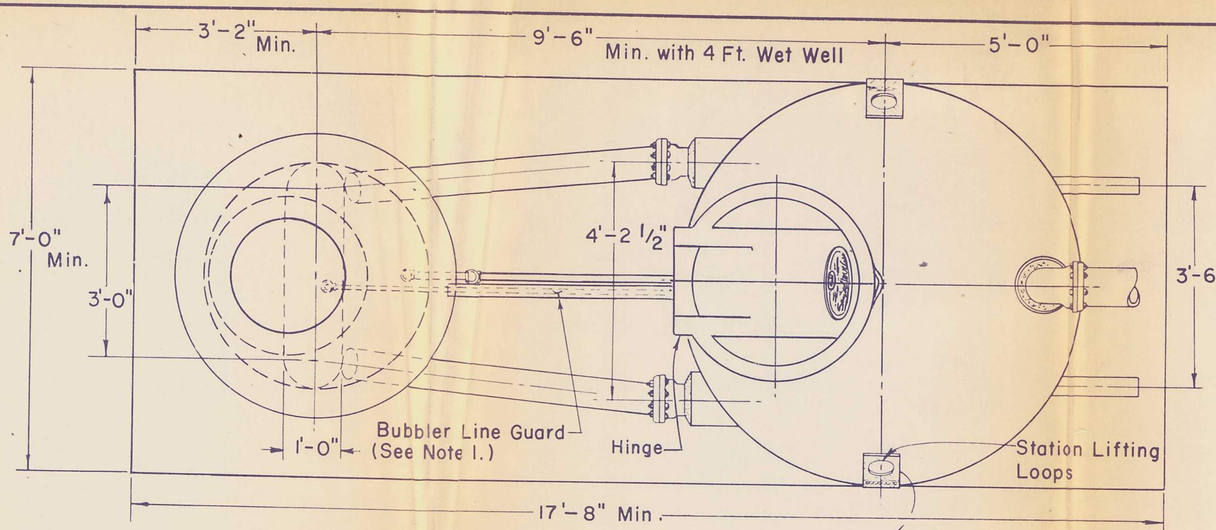
Asset Description	Comments	VANDA® Rating
Access	Minor offset in framing, moderate corrosion where coating has delaminated	VANDA 3
Ladder & Entry System	Moderate corrosion	VANDA 3
Pumps/Motors (surface condition)	Minor surface corrosion typical throughout	VANDA 2
Sump Pump	Moderate corrosion throughout submerged section	VANDA 3
Influent piping, valves	Minor surface corrosion typical throughout	VANDA 2
Discharge piping	Minor surface corrosion typical throughout	VANDA 2
Interior dry well walls and ceiling	Minor localized corrosion Coating peeling, not locked in place beneath rim	VANDA 2
Dry well floor	Moderate corrosion throughout, corrosion pits greater than 0.150-inch	VANDA 3
Other	Missing conduit elbow cover at south quadrant	N/A

Table 3-18. Carver LS Condition Summary – Wet Well

Asset Description	Comments	VANDA® Rating
Access	Cover is in fair condition Degraded liner and with moderate corrosion at the rim	VANDA 3
Interior wet well walls and ceiling	Liner in lower 6-ft beneath drop-in laterals heavily degraded Liner is torn and retaining water	VANDA 2
Wet well floor	Good condition, no defects noted	VANDA 1

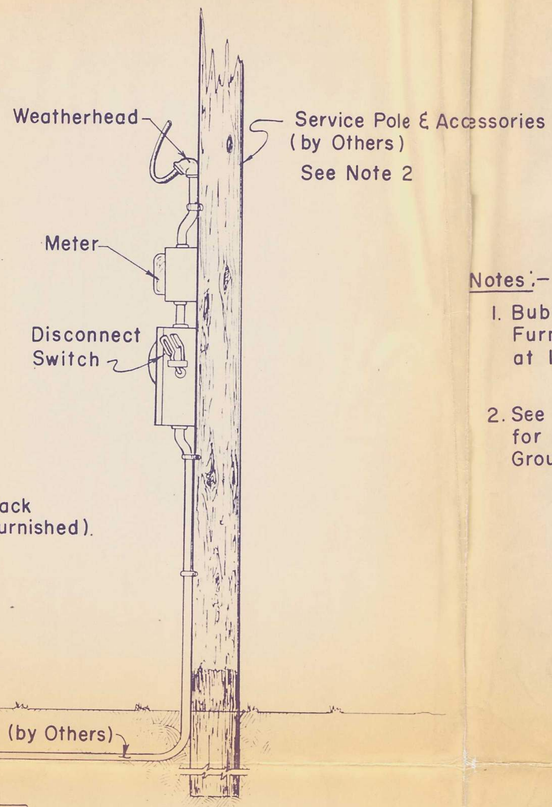
ATTACHMENT B

As-Built Drawing(s)



SETTING PLAN

17 Lb. Magnesium Anode Pack
One Installed Ea. Side (2 Furnished).



Shop Drawing Review by Koebig & Koebig, Inc.
For general method of construction and detailing in accordance with specifications. (Dimensions not checked)
DATE RECD 2 MAR 67 K & K
K & K FILE NO. 1-343
Seq. Dept. Reviewer Date out
CIVIL — E.C. 8 MAR 67
ARCH
STRUC
MECH — R.C. 8 MAR 67
ELECT
SANI
✓ APPROVED
APPROVED AS NOTED
DISAPPROVED
By Ed Tolaney for CRM
DATE LEFT 8 MAR. 67 K & K
TRANSM. NO.

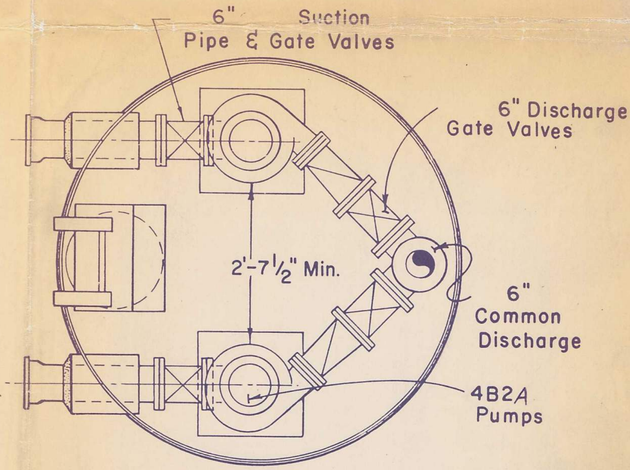
Notes:-

1. Bubbler Line Guard (∠-3" x 3" x 5Ft. Long) Furnished by S & L and Cut to Req'd. Length at Installation.

2. See Engineer's Plans & Specifications for Details of Wet Well, Concrete Foundation, Grout Under Station and Electrical Service.

TYPICAL WET WELL (by Others)
See Note 2

ELEVATION
(CROSS SECTION)



STATION PLAN

SECTION 600 PAGE D-0.2 AUG. 15, 1965

DWG. NO. 75 D 1

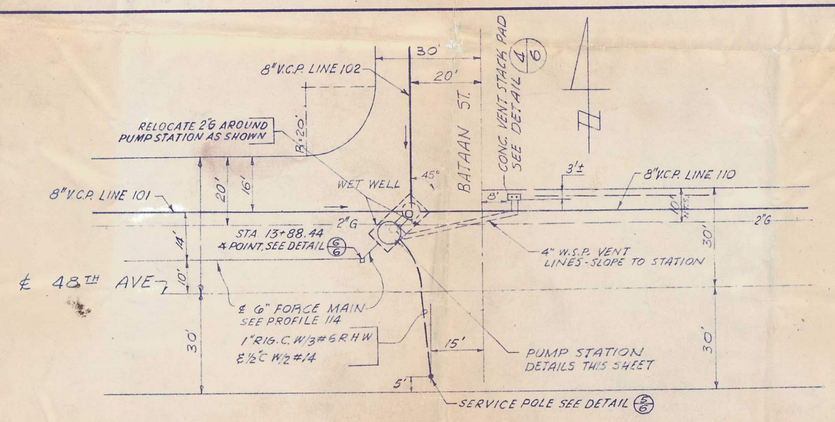
DIMENSIONS ARE IN INCHES UNLESS NOTED.					
TOLERANCES UNLESS OTHERWISE STATED. FRACT. ~ DECIMALS ~ ANGLES ~					
E	N-65 274	8/65	REH CEW	DRAWN BY: HASLAM	DATE 4/63
D	N-65 31	1/65	REH CEW	CHKD. BY: WAAGE	DATE 4/63
C	N-64 931	11/64	REH CEW		
B	NOTE NO. 1	4/64	REH CEW		
A	GEN'L	3/64	REH CEW	APPVD. BY: PARKS	DATE 4/63
LT.	NO.	DATE	BY		
REVISIONS			CHK'D	SCALE NONE	

Smith & Loveless
DIVISION—UNION TANK CAR COMPANY
Manufacturing Plant • Lenexa, Kansas

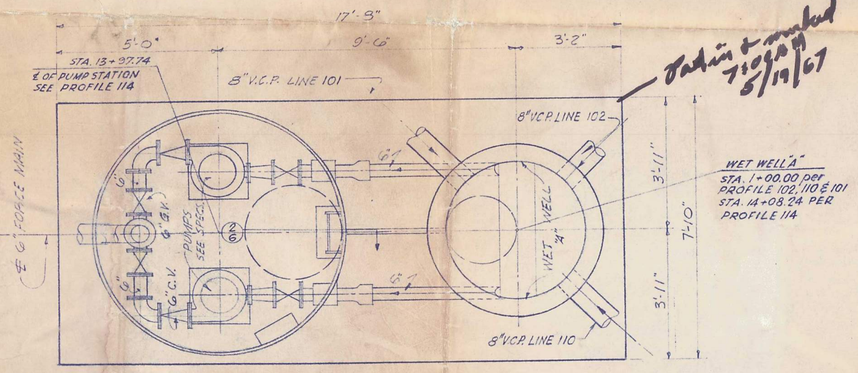
FOR: Indio, California

FACTORY—BUILT
UNDERGROUND DUPLEX SEWAGE
PUMPING STATION
7'-0 DIAMETER—36" ENTRANCE TUBE

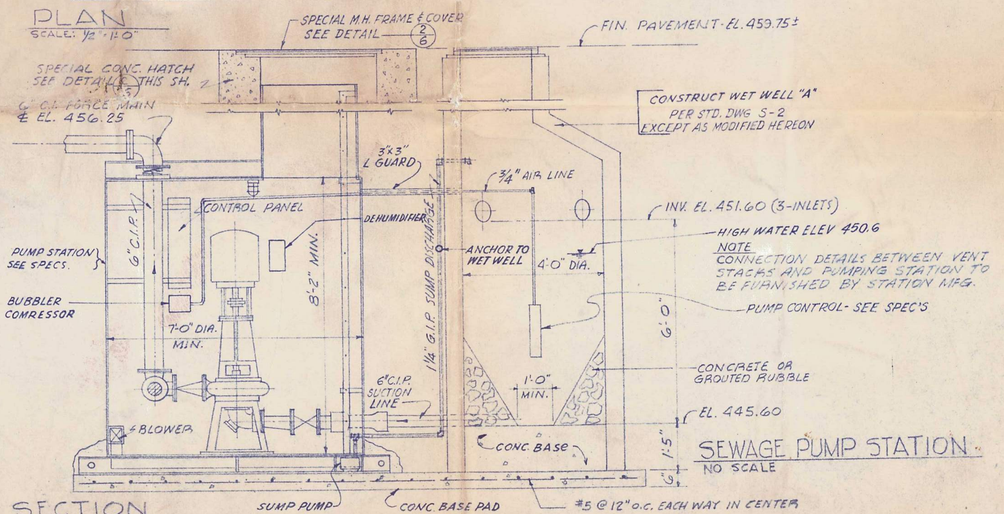
SERIAL NO. 07-4187 DRWG. NO. 81D2569



SITE PLAN - 48TH AVE. PUMP STATION
SCALE: 1"=20'

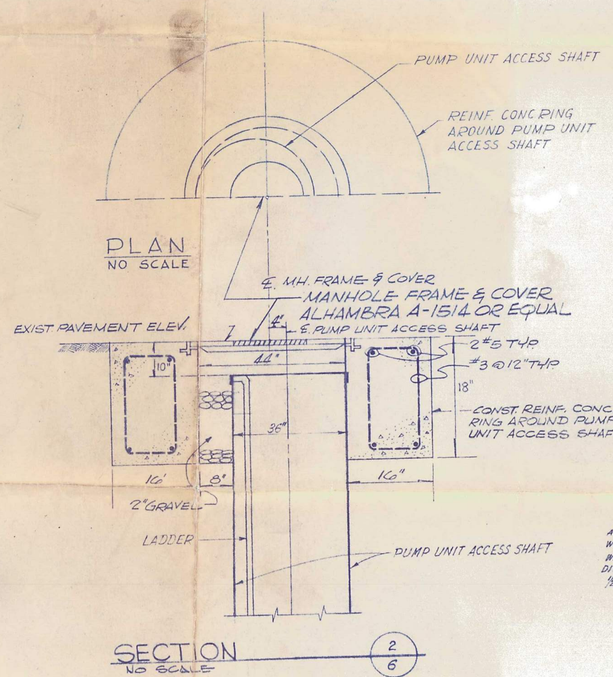


PLAN
SCALE: 1/2" = 1'-0"



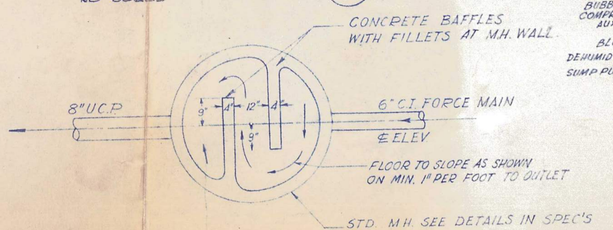
SEWAGE PUMP STATION
NO SCALE

SECTION
SCALE: ½" = 1'-0"

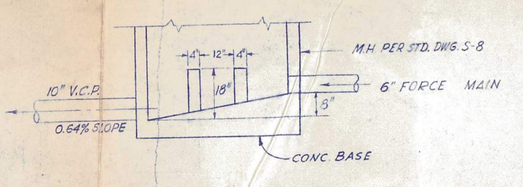


PLAN
NO SCALE

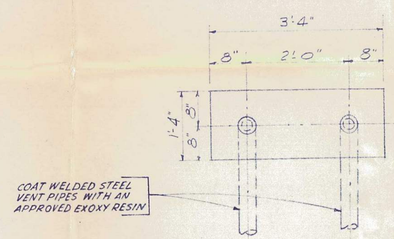
SECTION
NO SCALE (2/6)



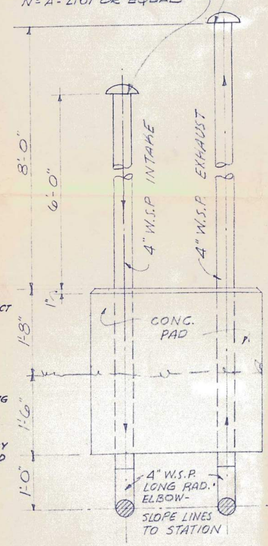
PLAN
SCALE: 1/2" = 1'-0" (1A/6)



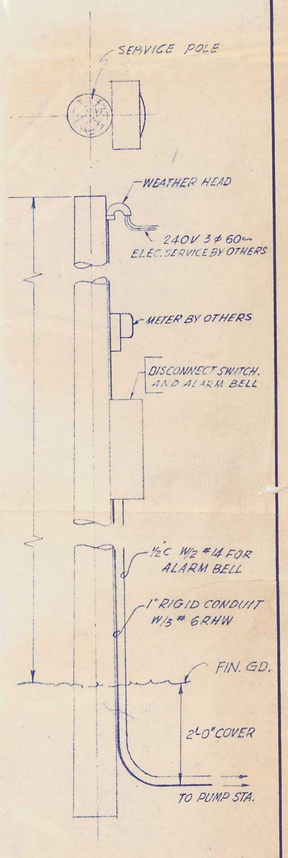
SECTION
SCALE: 1/2" = 1'-0" (1B/6)



PLAN
4" PIPE VENTS ALHAMBRA FOUNDARY CATALOG Nº A-2161 OR EQUAL



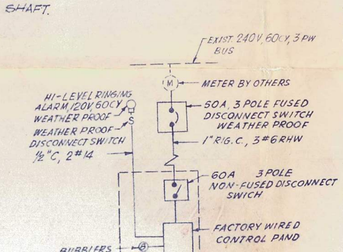
ELEVATION
VENT STACK



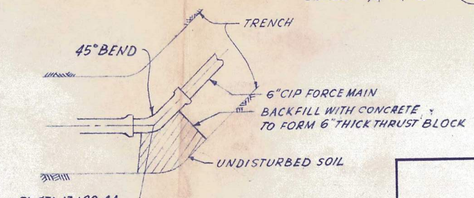
SERVICE POLE

DETAIL (4/6)
SCALE: 3/4" = 1'-0"

DETAIL (5/6)



SINGLE LINE-ELEC-DIAGRAM
PUMP STATION



DETAIL (6/6)
NO SCALE

PLANS PREPARED BY
KOEBIG & KOEBIG, INC.
ENGINEERING-ARCHITECTURE
DATE December 2, 1966
BY R.J. THEROUX R.C.E. 8865

VALLEY SANITARY DISTRICT
INDIO, CALIFORNIA
SANITARY SEWERS FOR
CARVER TRACT ASSESSMENT DISTRICT
PUMP STATION DETAILS

KOEBIG & KOEBIG INC. ENGINEERING & ARCHITECTURE
1053 SUNSET BLVD. LOS ANGELES, CALIF. 90053

SCALE:	DRAWN:	CHECKED:	DATE:	
AS NOTED			NOV. '66	6 OF 6

Technical Memorandum

To:	*Elizabeth Reyes (Harris & Associates)*
From:	*Richard Thow, S.E.*
CC:	*file: 121076 – 4.8*
Date:	*May 6, 2022*
Project:	*Valley Sanitary District Lift Station Condition Assessment, Indio, California*
Subject:	*ASCE/SEI 41 Condition Screening Vandenburg Lift Station, Indio, California*

1. INTRODUCTION

TJC and Associates, Inc. (TJCAA) performed a desk top, ASCE/SEI 41-17, seismic screening of the Vandenburg Lift Station, below grade precast concrete wet well and adjacent valve vault, constructed in 2007, owned and operated by Valley Sanitary District, Indio, California. This technical memorandum presents our results.

During the period of February 7, 2022 through February 9, 2022, representatives from V&A Consulting Engineers (V&A) conducted a walk-through of the Vandenburg Lift Station. V&A performed a visual inspection of structural systems and components, non-destructive testing of select items and took representative photographs.

TJCAA did not participate in this field assessment. TJCAA's review, assessment, findings and recommendations are based solely on field information gathered by V&A. Analysis of structural elements was limited to analysis against the 2019 California Building Code, ASTM C913, *Standard Specification for Precast Concrete Water and Wastewater Structures*, and ACI 350, Code *Requirements for Environmental Engineering Concrete Structures*.

TJCAA conducted a seismic risk screening in general conformance with the *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026), and *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41). The procedure adopted by TJCAA applies a modified Tier 1 Screening per ASCE/SEI 41-17, following the guidelines presented in ASTM E2026. Vandenburg Lift Station was evaluated relative to the "Immediate Occupancy" structural performance level, which is defined as a post-earthquake damage state in which the Lift Station substantially retains original strength and stiffness, with continued functionality likely. Lift Station was evaluated for a BSE-1E Basic Safety Earthquake, taken as a seismic hazard with a 20% probability of exceedance in 50-years at the site, commonly referred to as a 225-year earthquake.

The ASCE/SEI 41-17 Tier 1 procedure is a preliminary screening tool designed to quickly identify potential seismic deficiencies in the structural lateral force-resisting system. The Tier 1 evaluation procedure uses a series of checklists for rapid evaluation of the building while requiring only a minimum level of structural calculations.

ASTM E2026 *Standard Guide for Seismic Risk Assessment of Buildings*, provides specific measures for assessing the possibility of future loss due to earthquake occurrences. The standard provides an approach that forms the basis for characterizing the seismic risk assessment of a structure, system, or component in an earthquake, whereas ASCE 41-17 is focused on a building's structural components. ASTM E2026 considers all external hazards that could result in potential losses due to an earthquake. These hazards include ground shaking, site instability, fault rupture, landslides and soil liquefaction, lateral spreading and settlement, and earthquake caused off-site response impacting the structure, including flooding from dam or levee failure, tsunamis and seiches.

DEFINITIONS

Active Fault – A fault with an average historic slip rate of at least 1 mm per year and geological evidence of seismic activity within the Holocene time, i.e., during the last 11,000 years

Benchmark Building – Structure designed and constructed to a building code that is expected to provide Life Safety level performance.

BSE-1E – Basic Safety Earthquake-1 for use with basic Performance Objective for Existing Structures taken as a seismic hazard with a 20% probability of exceedance in 50-years at a site, with a mean return period of 225-years.

Design Earthquake (DE) – Used by building codes as 2/3 of the Maximum Considered Earthquake (MCE)

Earthquake – Ground shaking caused by a sudden movement along a fault line

Fault – Fracture or crack along which two blocks of rock slide past one another

Intensity – The measure of ground shaking quantifying the local severity of an earthquake in terms of its effect on structures, systems, and components

Importance Factor – A factor that accounts for the degree of risk to human life, health, and welfare associated with damage to property or loss of use or function. (ASCE/SEI 7-16)

Magnitude – A number that represents the size of an earthquake at the source, as determined by seismographic observations. Although outdated, the Richter Scale is probably the best-known earthquake magnitude scale.

Maximum Considered Earthquake (MCE) – Used by Building Codes to define the maximum considered seismic event. For the Lift Station considered in this report, the MCE has a 2% probability of exceedance within a 50-year period, with a mean return period of 2,475-years. The MCE is the event considered to be applicable to building code design and is based on probabilistic methods.

Seismic Coefficient – Spectral response acceleration parameters for short periods (S_{XS}) and 1-second period (S_{X1}), adjusted for Site Class, provided by United States Geological Survey (USGS)

Seismic Hazard – The potential for damaging effects caused by an earthquake. Degree of damage is a function of magnitude, distance from the epicenter, type of subsurface soils, and duration of shaking.

Seismic Risk – The probability of damage, loss, or injury resulting from an earthquake

Site Class – A classification assigned to a site based on the types of soil present and their engineering properties (ASCE/SEI 7-16)

Strike-Slip Fault – Vertical fractures where tectonic plate movement is horizontal. This is typical for California faults.

2. REFERENCES

- *Valley Sanitary District Vandenburg Lift Station Replacement Indian Palms Country Club*; dated April 4, 2007.
- *2019 California Building Code California Code of Regulations*; Title 24, Part 2 (Volume 2) – International Code Council
- *Code Requirements for Environmental Engineering Concrete Structures (*ACI 350-06) – American Concrete Institute
- *Building Code Requirements for Structural Concrete* (ACI 318-14) – American Concrete Institute
- *Minimum Design Loads for Building and Other Structures* (ASCE/SEI 7-16) – American Society of Civil Engineers
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026)
- *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41) – American Society of Civil Engineers / Structural Engineering Institute
- *Standard Guide for Seismic Risk Assessment of Buildings* (ASTM E2026-16) – ASTM International
- *Standard Specification for Circular Precast Reinforced Concrete Manhole Sections* (ASTM C478-20) – ASTM International
- *Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures* (ASTM-C890-21) – ASTM International
- *Standard Specification for Precast Concrete Water and Wastewater Structures* (ASTM C913-21) – ASTM International

3. ASSESSMENT METHODS AND APPROACH (ASTM E2026)

3.1. SEISMIC GROUND MOTION HAZARD ASSESSMENT – LEVEL G1 INVESTIGATION

Project Address

Vandenburg Lift Station,
intersection of Vandenburg Drive and Pic Way, Indio, California
(Latitude 33.6987°N Longitude 116.2337°W)

ASTM E2026, Section 7 states the following:

> "The objective of the seismic ground motion hazard assessment is to characterize the earthquake ground motions at the site with a specified probability of being exceeded in a given time period."

Fault and Seismic Sources – The Vandenburg Lift Station is in a seismically active area of Southern California. California Geological Society identifies the Lift Station located within 4-miles of the San Andreas Fault. Other faults within 25-miles of the Lift Station include Indio Hill Fault (5-miles) Berdoo Canyon Fault (6-miles), NW Painted Canyon Fault (8-miles), Buck Ridge Fault (17-miles), Platform Fault (18-miles), San Jacinto Painted Canyon Fault (19-miles), Hidden Springs Fault (21-miles), Clark Fault (21-miles), Eureka Peak Fault (23-miles) and Thomas Mountain Fault (23-miles).

Finding – Seismic Ground Motion Hazard Assessment

California Geological Society identifies eleven active faults within 25-miles of the Vandenburg Lift Station. According to the Applied Technology Council, BSE-1E Short Period (S_s) and 1-second Period (S_1) Site-Specific Spectral Response Accelerations for Vandenburg Lift Station are 0.72*g* and 0.25*g,* respectively.

Vandenburg Lift Station
Fault Sources

3.2. BUILDING STABILITY ASSESSMENT – LEVEL BSE-1E INVESTIGATION

ASTM E2026, Section 8*; ASCE/SEI 41*state the following:

> "The objective of the building stability assessment is to determine if the "building" can be reasonably expected to remain stable under earthquake loadings. A building should be deemed stable if it is able to maintain the vertical load carrying-capacity of its structural system under the inelastic deformations caused by the earthquake ground motion prescribed for the building and site by the California Building Code."

The Lift Station was constructed in 2007 and was most likely designed against the 2001 California Building Code. The Lift Station wet-well is 72-inch diameter precast concrete manhole with a two-leaf access hatch cast into the precast concrete top slab. Lift Station floor slab invert elevation is 15.25-feet below grade.

Finding – Building Stability Assessment

Due to the lack of as-built drawings construction material and detailing was not available. ASCE/SEI 41-17 lists default lower bound material properties for various construction time frames. Precast reinforced concrete circa 2007 was "most likely" constructed with concrete with a 28-day compressive strength in the range of 3,000 psi to 5,000 psi and reinforcing steel with a minimum yield stress of 60,000 psi.

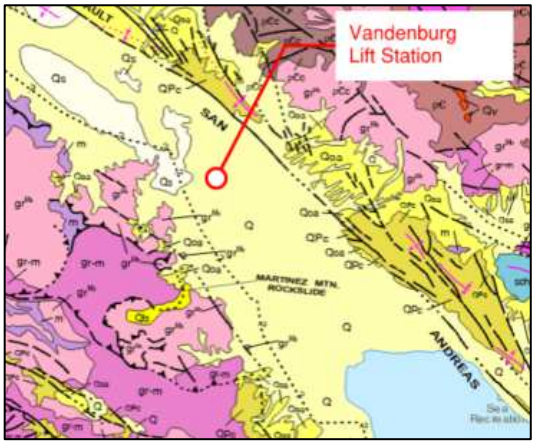
From historical observed earthquake damage, it can be inferred that certain building types designed and constructed to recent building codes can be expected to provide Life Safety-level performance. The Vandenburg Lift Station was constructed in 2007, making it a post-benchmark structure. As such, the Vandenburg Lift Station can be reasonably expected to remain stable under the inelastic deformations caused by the earthquake ground motion prescribed for this structure type and site by the California Building Code.

3.3. SITE STABILITY ASSESSMENT

ASTM E2026, Section 9 states the following:

> "The objective of the site stability assessment is to determine if the building is located on a site that may be subjected to instability due to earthquake-induced surface fault or soil liquefaction."

Site Geology – The Lift Station was constructed on Alluvium, lake, playa, and terrace deposits of the Quaternary period (USGS).



Site Geology (USGS)

Fault Rupture – Damage associated with fault-related ground rupture is normally confined to a fairly narrow zone along the trend of the primary fault, and to a lesser extent along secondary faults. Because the Lift Station is approximately 4-miles from the San Andreas Fault, it does not lie within the Alquist-Priolo Special Study Zone. In addition, no known active faults traverse Lift Station site; as such, surface fault rupture is not anticipated.

Liquefaction – Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure and decreased effective stress. Liquefaction is the result of cyclic ground vibrations that occur during a seismic event. The probability that the Lift Station is located on liquefiable soils is considered very low.

Seismic Settlement – Due to the low probability of liquefaction, ground settlement is unlikely as a result of a seismic event.

Tsunami – A major hazard associated with earthquakes is water inundation resulting from a tsunami (seismic sea wave). Because the Lift Station is located 76-miles inland from the Pacific Ocean, damage to the facility resulting from flooding caused by a tsunami is unlikely.

Slope Instability/Landslide – Slope instability and landslides produced by seismically induced strong ground motions are likely to occur in the eastern, San Bernardino Mountains. The Lift Station's location in the Coachella Valley means that the potential for lateral spreading landslides is unlikely.

Finding – Site Stability Assessment

The potential for the Lift Station to be founded on liquefiable soils is considered very low. Consequently, seismic settlement resulting from liquefied soil is also unlikely. Lift Station is 76-miles inland from the Pacific Ocean and is therefore not within a tsunami inundation zone. Finally, the Lift Station's location in the Coachella Valley places it outside areas susceptible to landslides produced by seismically induced ground motion.

3.4. BUILDING DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 10 states the following:

> "The objective of the building damageability assessment is to characterize expected earthquake losses associated with earthquake ground shaking and possible other earthquake hazards as prescribed by the User by performing an engineering analysis and evaluation of the damageability characteristics of the building at a given level of earthquake ground motions."

Due to a lack of as-built information, accurately assessing the damage likely to occur due to BSE-1E level earthquake is not possible. Although earthquake forces were a design consideration under the 2001 California Building Code seismic force coefficients were more prescriptive, based on general geographical locations and predefined seismic zones. However, for purposes of seismic design, standard practice for fully or partially buried structures less than 10 feet in any dimension is to assume that such structures are not subjected to the additional lateral seismic soil load resulting from seismically induced lateral earth pressures.

3.5. BUILDING CONTENT DAMAGEABILITY ASSESSMENT

ASTM E2026, Section 11 states the following:

> "The objective of the building content damageability assessment is to perform an analysis of the earthquake performance of contents within the building. This analysis is concerned with contents that are not part of the building system."

Seismic ruggedness of systems, structures, and components within and attached to the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Building Content Damageability Assessment.

3.6. BUSINESS INTERRUPTION ASSESSMENT

ASTM E2026, Section 12 states the following:

> "The objective of the business interruption assessment is to perform an analysis of the site, building equipment, contents, inventory systems, infrastructure, interdependent businesses, and all other relevant parameters to determine if the building will suffer business interruption from onsite effects such as direct damage to buildings and equipment or loss of critical content and supplies."

Seismic ruggedness of systems, structures, and components associated with the day-to-day operations of the Lift Station was not within TJCAA's Scope of Work. As such, TJCAA did not perform a Business Interruption Assessment.

3.7. V&A CONSULTING ENGINEERS CONDITION ASSESSMENT

V&A was contracted to perform the following non-destructive tests on the Vandenburg Lift Station:

- Sounding – Non-scientific application of hammer strike of the concrete surface to locate voids, delamination, and/or honeycombing.
- Penetration Test – Estimates the depth of degradation (if any) from the existing surface of the concrete.
- Surface pH Measurements – In-situ pH measurements of exposed concrete using a pH sensitive pencil.
- Surface Penetrating Radar – Measures concrete cover depth to reinforcing steel.
- Ultrasonic Testing – In-situ determination of metal thickness.
- Dry Film Thickness – In-situ determination of coating thickness.
- Visual Assessment – Visual inspection of Systems, Structures and Components of the Lift Station.

The following table summarizes V&A's findings:

Table 1 – V&A Findings

Non-Destructive Tests	Finding
Sounding	Not performed, no exposed concrete within the wet-well.
Penetration Test	Not performed, no exposed concrete within the wet-well.
Surface pH Measurements	Not performed, no exposed concrete within the wet-well.
Surface Penetrating Radar	Minimum depth of rebar exceeded 1½-inches. Circumferential rebar spacing did not exceed 6-inches, as mandated by ASTM C478.
Ultrasonic Testing	See Mechanical write-up for discussions on piping.
Dry Film Thickness	Dry Film Thickness of concrete liner was not established. Refer to mechanical write-up for discussions on piping measurements.
Visual Assessment	At-grade concrete pad was found to be in good condition with no obvious defects. Access hatch to the valve vault and wet-well were found to be in good condition with no obvious defects. Valve vault interior concrete surfaces were found to be in good condition with no obvious defects or cracking. Wet-well interior liner was intact and found to be in good condition, except for minor delamination of the liner at the ceiling.

4. CONCLUSION

TJCAA's recommendations are based on generally accepted standards of engineering practice. Structural as-built drawings for the Lift Station were not provided. TJCAA relied on field information provided by V&A Consulting Engineers; as such, the opinions presented herein are reflective of the information contained in the field data. Errors, omissions, or deviations that exist could affect the opinions presented below.

Vandenburg Lift Station, a precast concrete wet-well and valve vault constructed in 2007, post-dates by 13-years the codifying of seismic design and construction techniques specific to this type of construction. As a post-benchmark structure and with no above grade structures, ASCE/SEI 41 Tier 1 screening of structural elements is not required and was not performed.

V&A Consulting Engineers site assessment found the Lift Station to be in overall good condition with no obvious deficiencies in structural elements. Valve vault exposed concrete showed no obvious cracking or deterioration. Wet-well liner was intact with no delamination except for localized areas on the ceiling.

In addition to the items identified above, the following item should be addressed:

Housekeeping:

- Monitor the wet-well liner to ensure that areas of liner delamination do not propagate, leading to cracking and spalling of the liner, exposing the concrete to carbonation and/or hydrogen sulfide induced acid attack (biogenic corrosion).

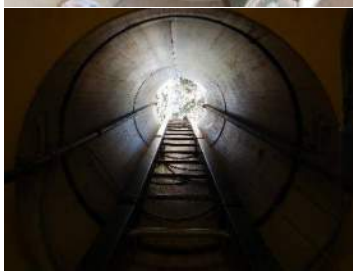
ATTACHMENT A

V&A Field Report
(Extract)

Valley Sanitary District

(Vandenburg Lift Station Extract)

Lift Station Condition Assessment Report



Prepared for:

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Date:

March 25, 2022

Prepared by:

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Reviewed by:

Noy Phannavong, P.E.
Jessica Mullins, P.E.

V&A consulting engineers

V&A Project No. 21-0287

3.4 Vandenberg LS

The Vandenberg LS was constructed in 2007 and is located in the center of the intersection between Vandenberg Dr and Pic Way inside of a gated community in Indio, CA. A diagram of the site configuration at the Vandenberg LS is presented below in Figure 3-5.

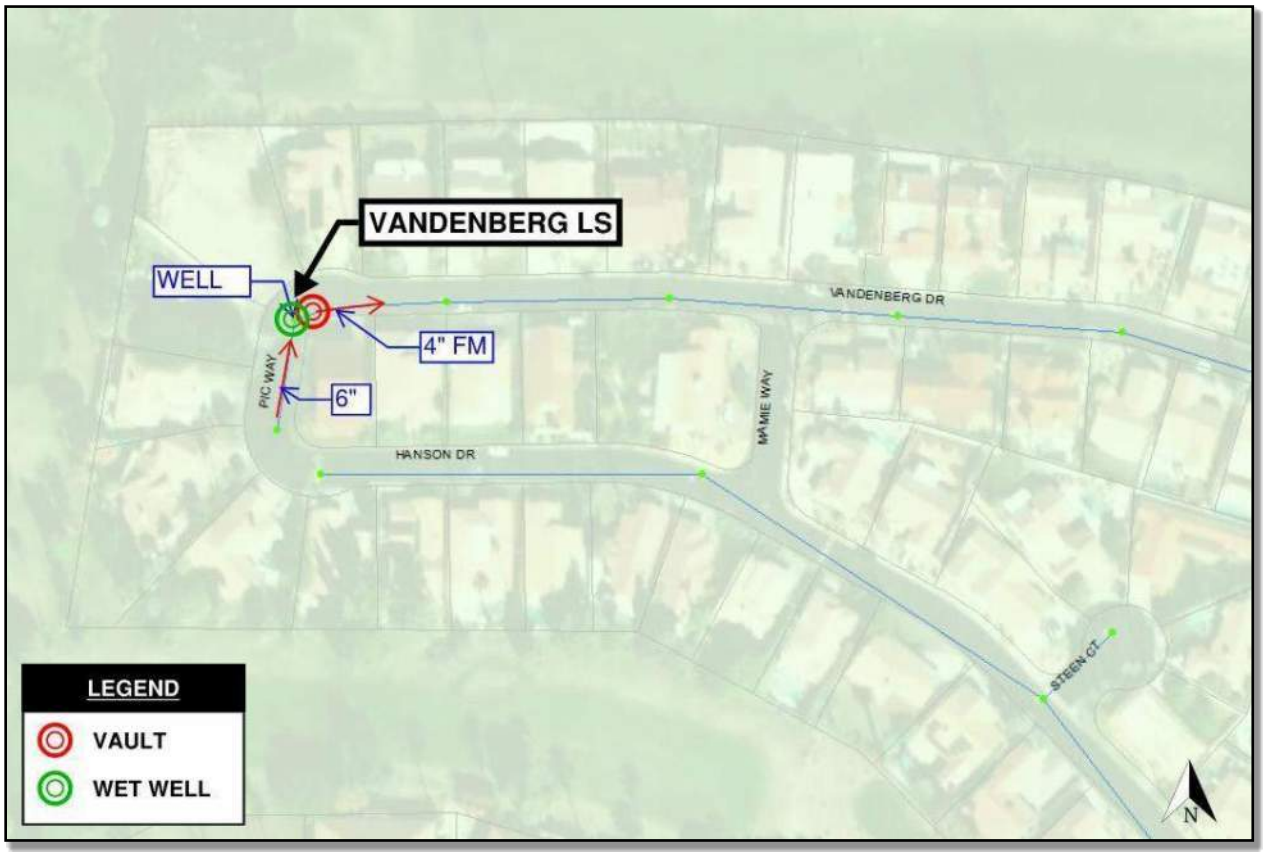


Figure 3-5. Vandenberg LS Overview Map

The wet well at the Vandenberg LS contains one 6-in gravity influent and two 4-in pumps that combine into a single 4-in PVC force main. The wet well is approximately 15.5-ft deep and did not require isolation due to being near the upstream end of the pipe network. Prior to confined space entry, Valley Sanitary staff operated the pumps at the aboveground control panel to draw flow down prior to having a vactor truck wash down and remove the remaining sewage.

3.4.1 Visual Assessment

3.4.1.1 Site

The exterior of the wet well and vault at the Vandenberg LS are enveloped by a single concrete pad which was found to be in good condition with no defects noted (VANDA 1). The stainless steel motor control panel is located aboveground on a residential lawn and was found to be in good condition with no defects noted (VANDA 1). Refer to Photo 3-77 and Photo 3-78 below.

Photo 3-77. Vandenberg LS site

Photo 3-78. Pump control panel

3.4.1.2 Vault

The access hatch to the valve vault at the Vandenberg LS was found to be in good condition with no defects noted (VANDA 1). The interior surface of the pre-cast structure including the walls, floor, ceiling, and interior discharge piping and valves were also found to be in good condition with no defects noted (VANDA 1). Refer to Photo 3-79 and Photo 3-80 below.

Photo 3-79. Vault exterior

Photo 3-80. Vault interior

3.4.1.3 Wet Well

The access hatch to the wet well at the Vandenberg LS was found to be in good condition with no defects noted (VANDA 1). The interior wet well walls and ceiling were in good condition with the coating intact, except for minor delamination at the ceiling (VANDA 1). Both pumps were in good condition with minor surface corrosion (VANDA 2). The influent PVC piping consisted of a 6-in inlet and 4-in lateral. The 4-in DIP discharge piping was observed to have minor corrosion at the upper section of the wet well and severe corrosion in the splash zone, between 3 to 5-feet from the finished floor (VANDA 4). Moderate corrosion was observed at the mild steel supports for the SST guide rails (VANDA 3). Refer to Photo 3-81 through Photo 3-94 below.

Photo 3-81. Wet well access hatch

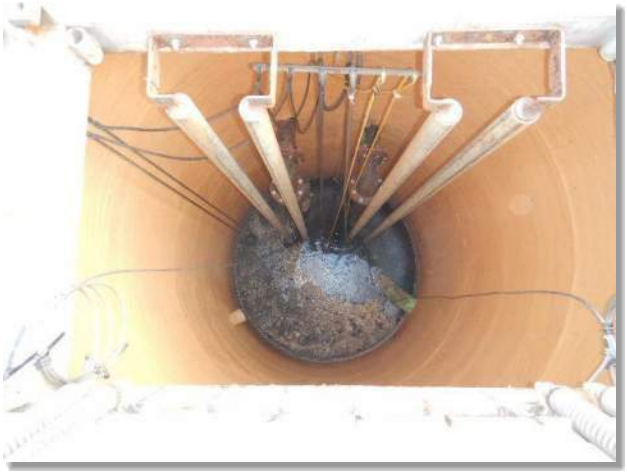


Photo 3-82. Wet well interior, topside

Photo 3-83. 6-in PVC inlet pipe

Photo 3-84. 4-in PVC lateral

Photo 3-85. Pump No. 1 (south)

Photo 3-86. Pump No. 2 (north)

Photo 3-87. Moderate corrosion at elevated pump discharge piping

Photo 3-88. Pump discharge piping wall penetration, wet well interior lining in good condition.

Photo 3-89. SST guide rails in good overall condition

Photo 3-90. Severe corrosion of DIP discharge piping at operating level

Photo 3-91. Severe corrosion at Pump 1 discharge piping, close-up

Photo 3-92. Severe corrosion at Pump 2 discharge piping

Photo 3-93. Moderate corrosion at mild steel supports

Photo 3-94. Minor delamination of liner at the ceiling

3.4.2 Sounding, Penetration and Surface pH

Sounding, penetration depth, and surface pH measurements were not performed in the Vandenberg LS wet well due to the absence of exposed concrete.

3.4.3 Surface Penetrating Radar

Table 3-19 summarizes the results of the SPR scans for the Vandenberg LS. The minimum depths of scanned reinforcement exceed V&A's minimum recommendation of 1.5-inch. The recommended maximum spacing of 6-inches for circumferential reinforcement as required by ASTM C478 was also met.

Table 3-19. Vandenberg LS Wet Well SPR Summary

Location:	Bar Direction	Depth Max (in)	Depth Avg (in)	Depth Min (in)	Space Max (in)	Space Avg (in)	Space Min (in)
West wall, 6-ft from finished floor	Vertical	5.4	5.11	4.58	5.5	5.29	5.1
West wall, 6-ft from finished floor	Circumferential	4.5	4.41	4.28	5.7	3.26	2.35
South wall, 6-ft from finished floor	Vertical	4.8	4.53	4.28	5.7	5.32	4.55
South wall, 6-ft from finished floor	Circumferential	4.35	4.04	3.83	5.75	3.24	2.45

3.4.4 Ultrasonic Thickness

UT measurements were recorded on the piping within the Vandenberg LS dry well and wet well. Measurements were recorded in bands of four equidistant points around the circumference of the discharge piping. The thickness measurements and associated conclusions only apply to where the readings were taken. The metal thickness and potential metal loss may vary at other locations on the piping. The nominal thickness of the ductile iron piping was assumed to be 0.25 inches (standard) for the 4-inch discharge piping within the wet well, and 0.29 inches (Class 52) for the 4-inch discharge piping within the vault per AWWA C151-09.

UT measurements are summarized in Table 3-20 below. The piping within the wet well represented VANDA Level 4 condition with severe metal loss up to 58%; the piping within the vault represented VANDA Level 1 condition with minimal metal loss up to 10%.

Table 3-20. Vandenberg LS UT Summary

Pipe/UT Location	Min. Thickness (in.)	Avg. Thickness (in.)	Max. Thickness (in.)	Assumed Nominal Thickness (in.)	Max. Metal Loss (%)
Pump 1 discharge (wet well)	0.199	0.220	0.244	0.25(1)	20%
Pump 2 discharge (wet well)	0.104	0.195	0.277	0.25	58%
Pump 1 discharge (vault)	0.262	0.293	0.315	0.29(1)	10%
Pump 2 discharge (vault)	0.282	0.292	0.300	0.29(1)	3%

(1) AWWA C151-2009 American National Standard for Centrifugally Cast Ductile Iron Pipe.

3.4.5 Dry Film Thickness

DFT measurements were recorded on piping within the Vandenberg LS wet well and dry well. Typically, 30 to 40 mils is recommended for immersed piping and 8 to 12 mils is recommended for vault piping that is not submerged. The average DFT on all of the discharge piping was below the recommended DFT. The DFT summary is presented in Table 3-21 below.

Table 3-21. Vandenberg LS Wet Well and Dry Well DFT Summary

Location	No. of Meas.	Min. (mil)	Avg. (mil)(1)	Max. (mil)	Recommended Thickness (mils)
Pump 1 discharge piping (wet well)	11	0.90	2.26	5.00	30 to 40
Pump 2 discharge piping (wet well)	10	0.40	1.93	3.70	30 to 40
Discharge piping (vault)	11	1.30	3.65	8.30	8 to 12

(1) Average DFT measurements less than the recommended values are highlighted in red text.

3.4.6 Conclusions

Table 3-22 through Table 3-24 summarizes the overall condition of the major assets assessed by V&A at the Vandenberg LS. Corresponding recommendations are presented in detail in Section 4 of this report.

Table 3-22. Vandenberg LS Condition Summary - Site

Asset Description	Comments	VANDA® Rating
Access	Light traffic control	N/A
Pavement	Concrete pad at wet well and vault	VANDA 1
Control panel	Good condition, minimal surface corrosion on utility meter box	VANDA 1

Table 3-23. Vandenberg LS Condition Summary – Valve Vault

Asset Description	Comments	VANDA® Rating
Access	Access hatch in good condition, no defects noted	VANDA 1
Discharge piping, valves	Good condition, no defects noted	VANDA 1
Interior vault walls and ceiling	Good condition, no defects noted	VANDA 1
Vault floor	Good condition, no defects noted	VANDA 1

Table 3-24. Vandenberg LS Condition Summary – Wet Well

Asset Description	Comments	VANDA® Rating
Access	Access hatch in good condition, no defects noted	VANDA 1
Interior wet well walls and ceiling	Coating in good overall good condition Coating delamination at ceiling	VANDA 1
Pumps	Minor surface corrosion on pumps	VANDA 2
Influent Piping	6-in PVC inlet pipe in good condition (green) [3674] 4-in PVC lateral in good condition (white) [3677]	VANDA 2
Discharge Piping	4-in DIP Mild corrosion at top of structure Severe corrosion at waterline (splash zone)	VANDA 4
Other	Moderate corrosion at mild steel supports for SST guide rails	VANDA 3

ATTACHMENT B

As-Built Drawing(s)

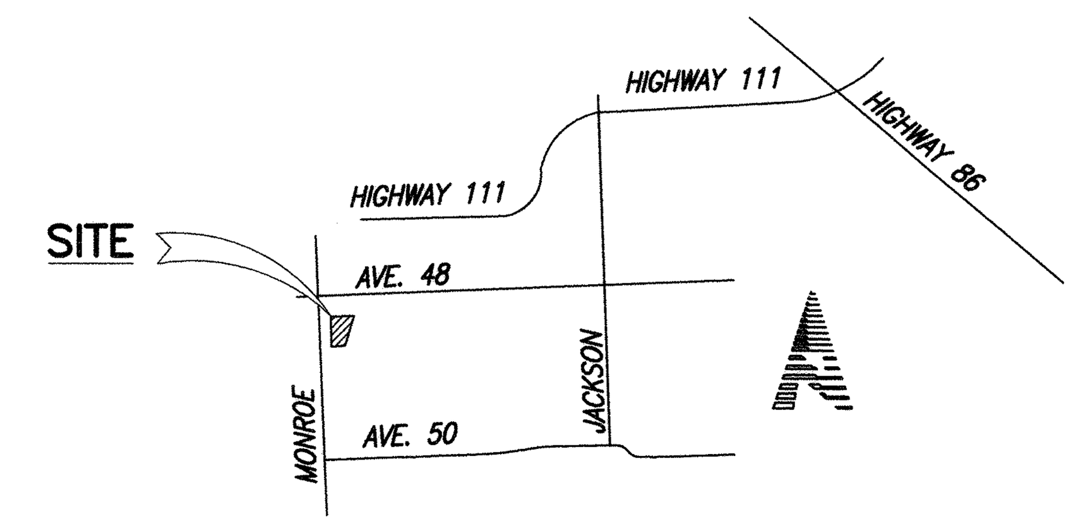
IN THE CITY OF INDIO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

VALLEY SANITARY DISTRICT VANDENBERG PUMPING STATION REPLACEMENT

INDIAN PALMS COUNTRY CLUB

VALLEY SANITARY DISTRICT SEWER NOTES

1. CONSTRUCTION AND MATERIALS FOR THE ONSITE AND OFFSITE SEWER SYSTEM IN PUBLIC RIGHT-OF-WAY SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS OF THE VALLEY SANITARY DISTRICT AND IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE ONSITE SEWER SYSTEM ON PRIVATE PROPERTY SHALL CONFORM TO THE CURRENT EDITIONS OF THE "UNIFORM PLUMBING CODE" AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. PIPE MATERIALS FOR THE SEWER SHALL BE SDR 35 PVC, OR ABS SCHEDULE 40 FOR 4" AND 6" ONLY. PIPE SIZES LARGER THAN 6" SHALL BE SDR 35 PVC, OR C905 DR25 AS SPECIFIED.
3. IT SHALL BE THE RESPONSIBILITY OF THE SEWER CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, VERIFY ELEVATIONS AND NOTIFY ALL UTILITY COMPANIES AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO CONSTRUCTION.
4. ALL SEWER MANHOLE FRAMES AND COVERS SHALL BE LEFT 6" BELOW SUBGRADE. SEWER CONTRACTOR SHALL RAISE THE FRAMES AND COVERS TO FINISH GRADE UPON COMPLETION OF SURFACING AS PER VALLEY SANITARY DISTRICT STANDARDS DRAWING S-3.
5. ALL SEWER LATERALS SHALL BE CONSTRUCTED TO A POINT WITHIN THE PUBLIC RIGHT OF WAY AT THE PROPERTY LINE AND CAPPED FOR FUTURE CONNECTION TO EXISTING LATERALS.
6. THE VALLEY SANITARY DISTRICT SHALL BE NOTIFIED TWENTY-FOUR (24) HOURS PRIOR TO CONSTRUCTION AND A TWENTY-FOUR (24) HOUR NOTICE FOR INSPECTION IS REQUIRED.
7. NO TRENCH WORK SHALL BE COVERED UNTIL APPROVAL TO DO SO HAS BEEN GIVEN BY VALLEY SANITARY DISTRICT INSPECTOR.
8. AS-BUILT PLANS TO BE SUBMITTED TO VALLEY SANITARY DISTRICT AND THE ENGINEER OF RECORD PRIOR TO FINAL ACCEPTANCE.
9. THE CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION CONFERENCE AT THE DISTRICT OFFICE AT LEAST THREE WORKING DAYS PRIOR TO BEGINNING ANY SEWER WORK ON THE PROJECT.
10. THE CONTRACTOR SHALL PRESENT THE DISTRICT WITH A COPY OF HIS VALID OSHA TRENCHING PERMIT PRIOR TO BEGINNING ANY SEWER WORK ON THE PROJECT.
11. ENTRY INTO ALL MANHOLES MUST BE IN ACCORDANCE WITH CAL-OSHA CONFINED SPACE STANDARDS.
12. MANHOLE COVERS SHALL BE CLEANED TO REMOVE ANY DEBRIS. COVERS SHALL HAVE A BITOMASTIC SEALER APPLIED TO THE SURFACE OF THE MANHOLE FRAME AND COVER.
13. CLEANOUTS LOCATED IN TRAFFIC AREAS SUCH AS STREETS, DRIVEWAYS AND SIDEWALKS SHALL HAVE A CAST IRON FRAME AND COVER TRAFFIC BOX. CLEANOUTS LOCATED IN NON-TRAFFIC AREAS, SUCH AS LAWNS, SHALL HAVE A CONCRETE BOX. NO PLASTIC BOXES SHALL BE PERMITTED.
14. FITTINGS FOR SDR 35 PVC SEWER PIPE SHALL BE SCHEDULE 40 PVC.



VICINITY MAP

(NO SCALE)

THOMAS BROS. GUIDE EDITION 2004
PAGE 5470 / QUAD E-4

GENERAL SUMMARY

NOTE: CONTRACTOR IS ADVISED TO PERFORM HIS OWN ESTIMATES FOR BIDDING PURPOSES.

NO.	DESCRIPTION	QUANTITIES
1	INSTALL 6 FOOT DIAMETER PRE-CAST WET WELL	1 EACH
2	INSTALL 110 GPM SEWAGE PUMPS AND CONTROLS	2 EACH
3	INSTALL PRE-CAST VALVE BOX	1 EACH
4	INSTALL DISCHARGE PIPING AND VALVES	1 EACH
5	INSTALL 6" OVERFLOW PIPELINE	51.80 LF
6	INSTALL BACKFLOW PREVENTION DEVICE	1 EACH
7	REMOVE AND REPLACE AC PAVEMENT AND STRIPING	1 LUMP SUM
8	STARTUP AND TEST PUMP STATION AND CONTROLS	1 EACH

PROJECT OWNER

VALLEY SANITARY DISTRICT
45500 VAN BUREN STREET
INDIO, CALIFORNIA, CA. 92201
TEL. (760) 347-2356 FAX.
(760) 347-9979

ENGINEER

DUDEK & ASSOCIATES, INC.
75-150 SHERYL AVENUE, SUITE C
PALM DESERT, CA. 92211
TEL (760)341-6660
FAX (760)346-6118

LEGEND

Symbol	Description
———	PROPOSED PVC SEWER MAIN (SIZE PER PLAN)
——O——	PROPOSED SEWER MANHOLE
— — O — —	EXISTING SEWER MANHOLE
\	EXISTING SEWER LATERAL
—S—	EXISTING VCP SEWER MAIN (SIZE PER PLAN)
—G—	EXISTING GAS MAIN
—E—	EXISTING ELECTRIC
—W—	EXISTING WATER MAIN
—CATV—	EXISTING U/G CABLE TV LINE
—TELE—	EXISTING U/G TELEPHONE LINE
= = =	EXISTING PCC CURB & GUTTER
— - —	R/W LINE
— — // — —	EXISTING EDGE OF PAVEMENT

SHEET INDEX

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*** UNDERGROUND UTILITIES ***

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DATE	BY	MARK	REVISIONS	APPR.	DATE
ENGINEER			REVISIONS	CITY	

DRAWN BY: DESIGNED BY: CHECKED BY:

SEAL
REGISTERED PROFESSIONAL ENGINEER
WM P. SIMONS
No. 37814
Exp. 12/31/08
CIVIL
STATE OF CALIFORNIA

DUDEK & ASSOCIATES
Professional Teams for Complex Projects
Palm Desert Office:
75-150 Sheryl Avenue,
Suite C
Palm Desert, CA 92211
Tel. 760.341.6660
Fax 760.346.6118

SCALE:
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MB 99 / 53-55 ELEV: 100.00

IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

VALLEY SANITARY DISTRICT
VANDENBURG PUMPING STATION
REPLACEMENT
INDIAN PALMS COUNTRY CLUB
TITLE SHEET

SHEET No. G-1 OF 3 SHTS.

FOR VALLEY SANITARY DISTRICT

W.O. 5151-G-1

P:\101-10 Projects\101-10-Valley Sanitary District\4811 Monroe Street Interceptor\4811-4 Monroe Street Interceptor Design\cad\SHEET G-1.dwg 1/10/2006 8:58:44 AM PST

IN THE CITY OF INDIO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT

INDIAN PALMS COUNTRY CLUB

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ELECTRICAL

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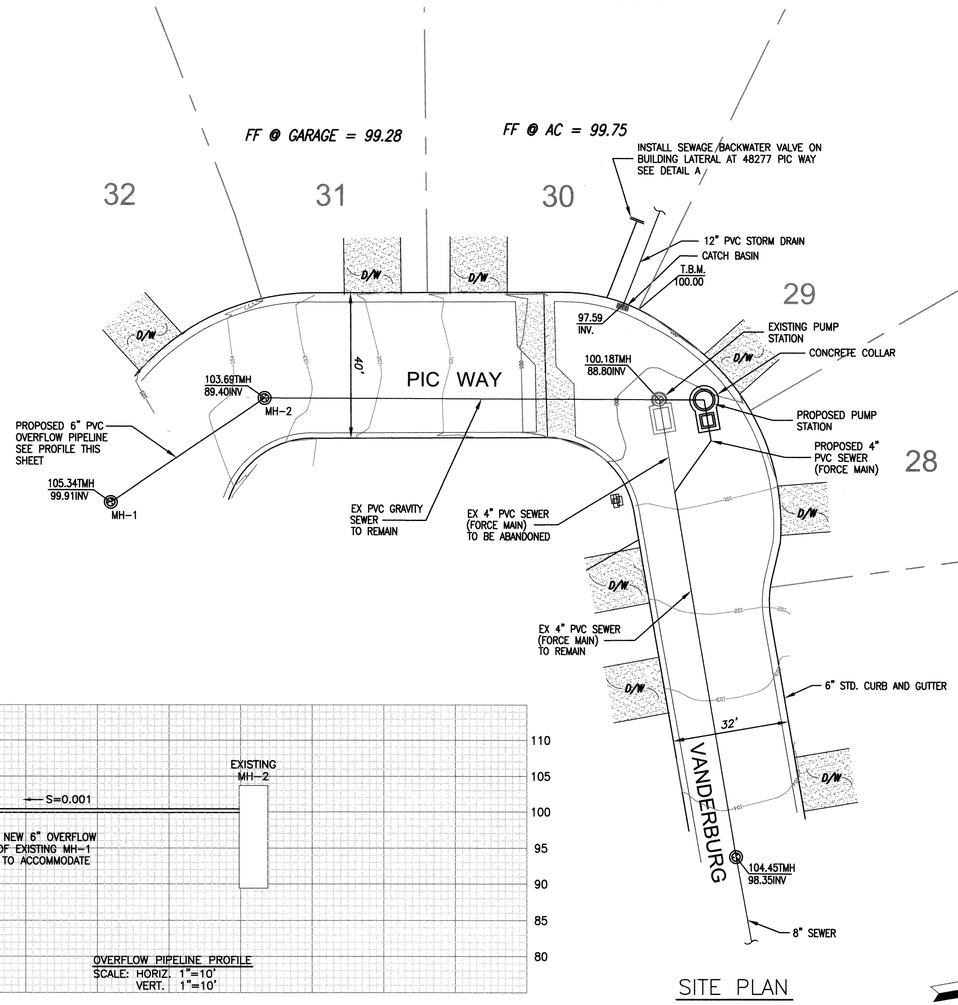
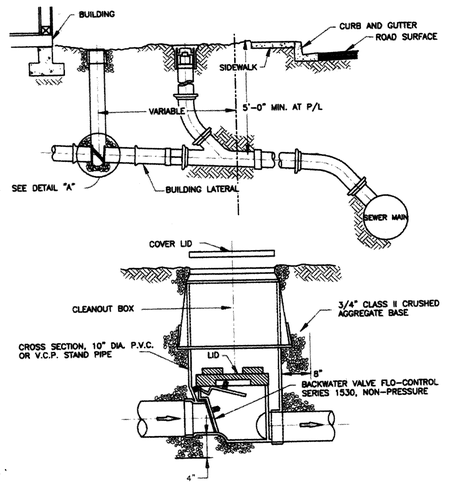


SITE PLAN

OVERFLOW PIPELINE PROFILE
SCALE: HORIZ. 1"=10'
VERT. 1"=10'



DETAIL A

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch =20 ft.
Contour Interval = 1 ft.

SURVEY DONE BY:

Warner engineering
CIVIL ENGINEERING / PLANNING / LAND SURVEYING

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REVIEWED BY: VALLEY SANITARY DISTRICT

4/4/07
DATE

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DATE	BY	MARK	REVISIONS	APPR.	DATE

ENGINEER | CITY

DRAWN BY: | DESIGNED BY: | CHECKED BY:

SEAL

REGISTERED PROFESSIONAL ENGINEER — WM. P. SIMONS — No. 37814 Exp. 12/31/08 CIVIL — STATE OF CALIFORNIA

DUDEK & ASSOCIATES
Professional Teams for Complex Projects

Palm Desert Office:
75-150 Sheryl Avenue, Suite C
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IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT
INDIAN PALMS COUNTRY CLUB

SITE PLAN AND DETAILS

FOR VALLEY SANITARY DISTRICT

SHEET No. SHT-2 OF 3 SHTS.

W.O. 5151-C-1

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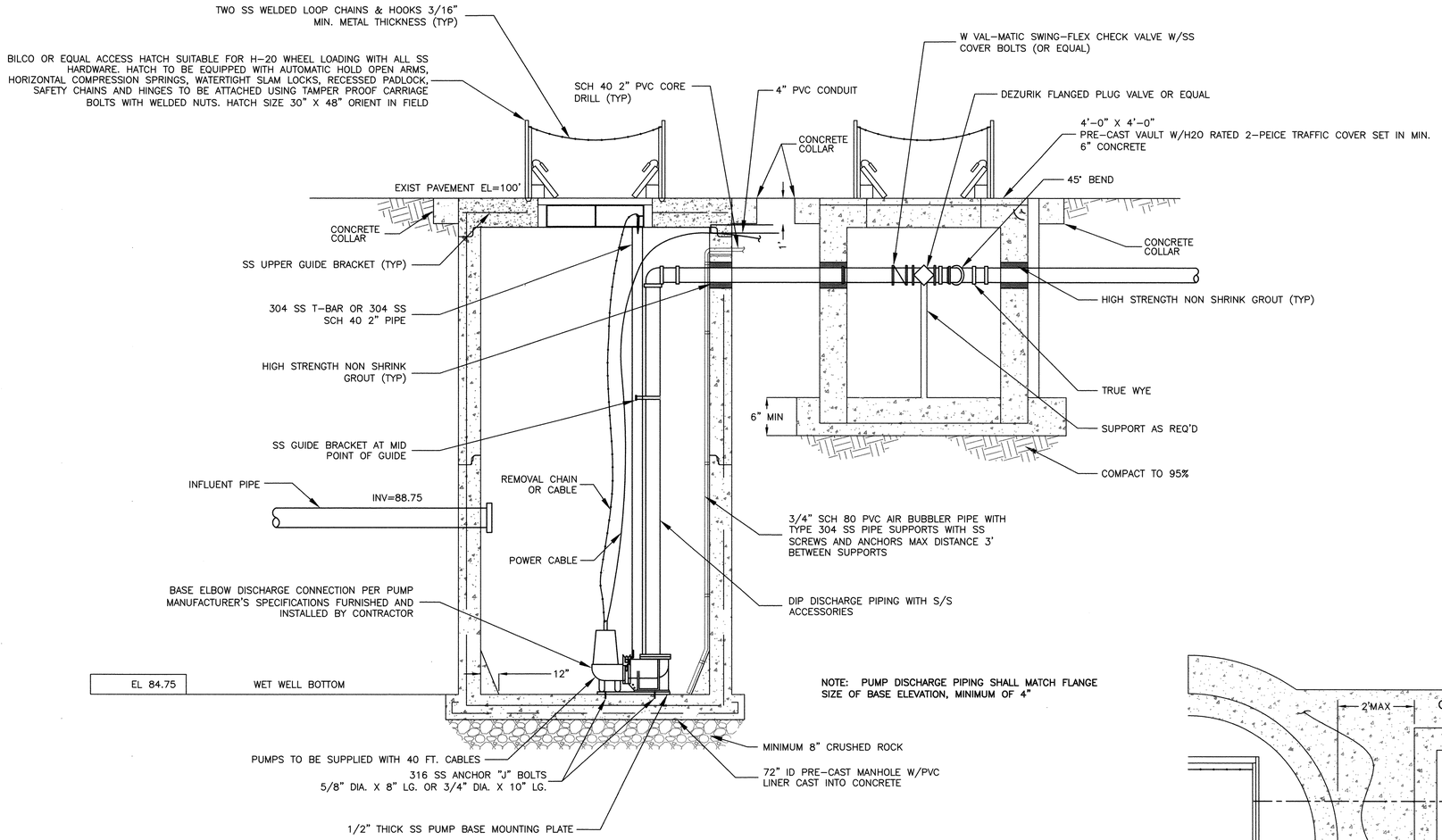
IN THE CITY OF INDIO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

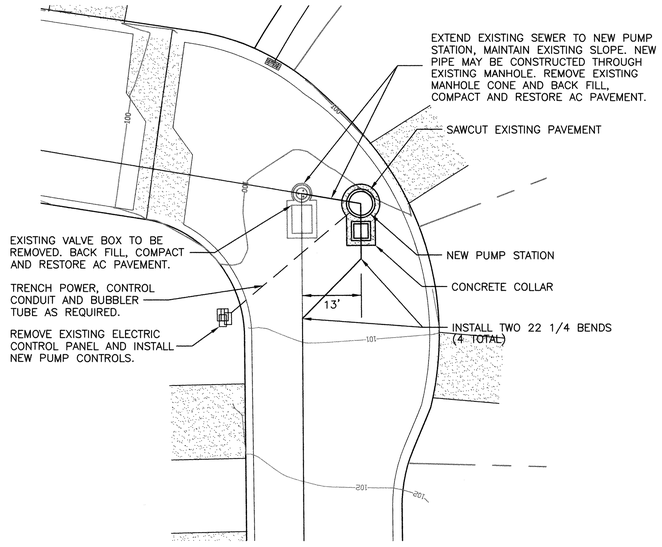
VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT

INDIAN PALMS COUNTRY CLUB

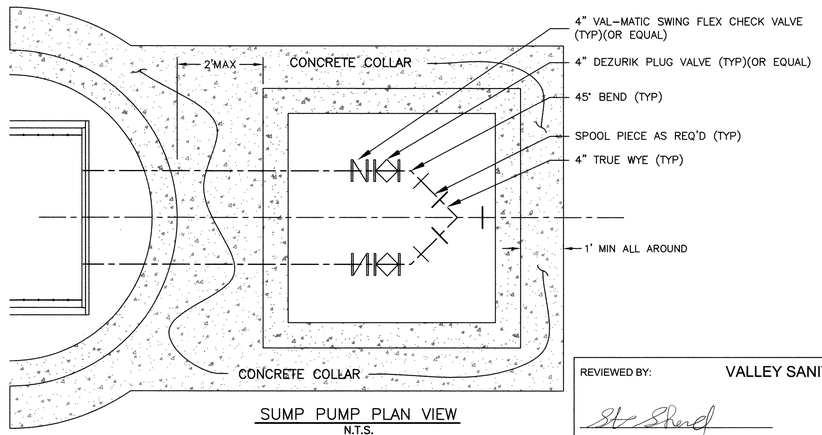


NOTE: PUMP DISCHARGE PIPING SHALL MATCH FLANGE SIZE OF BASE ELEVATION, MINIMUM OF 4"

ELEVATION
N.T.S.



PUMP STATION PLAN
N.T.S.



SUMP PUMP PLAN VIEW
N.T.S.

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REVIEWED BY: VALLEY SANITARY DISTRICT
DATE: 4/4/07

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ENGINEER				CITY	

DRAWN BY: DESIGNED BY: CHECKED BY:

SEAL
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ELEV: 100.00

IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT
INDIAN PALMS COUNTRY CLUB
PUMP STATION ELEVATION AND MISC. PLANS

SHEET No. SHT-3 OF 3 SHTS.

FOR VALLEY SANITARY DISTRICT
W.O. 5151-C-2

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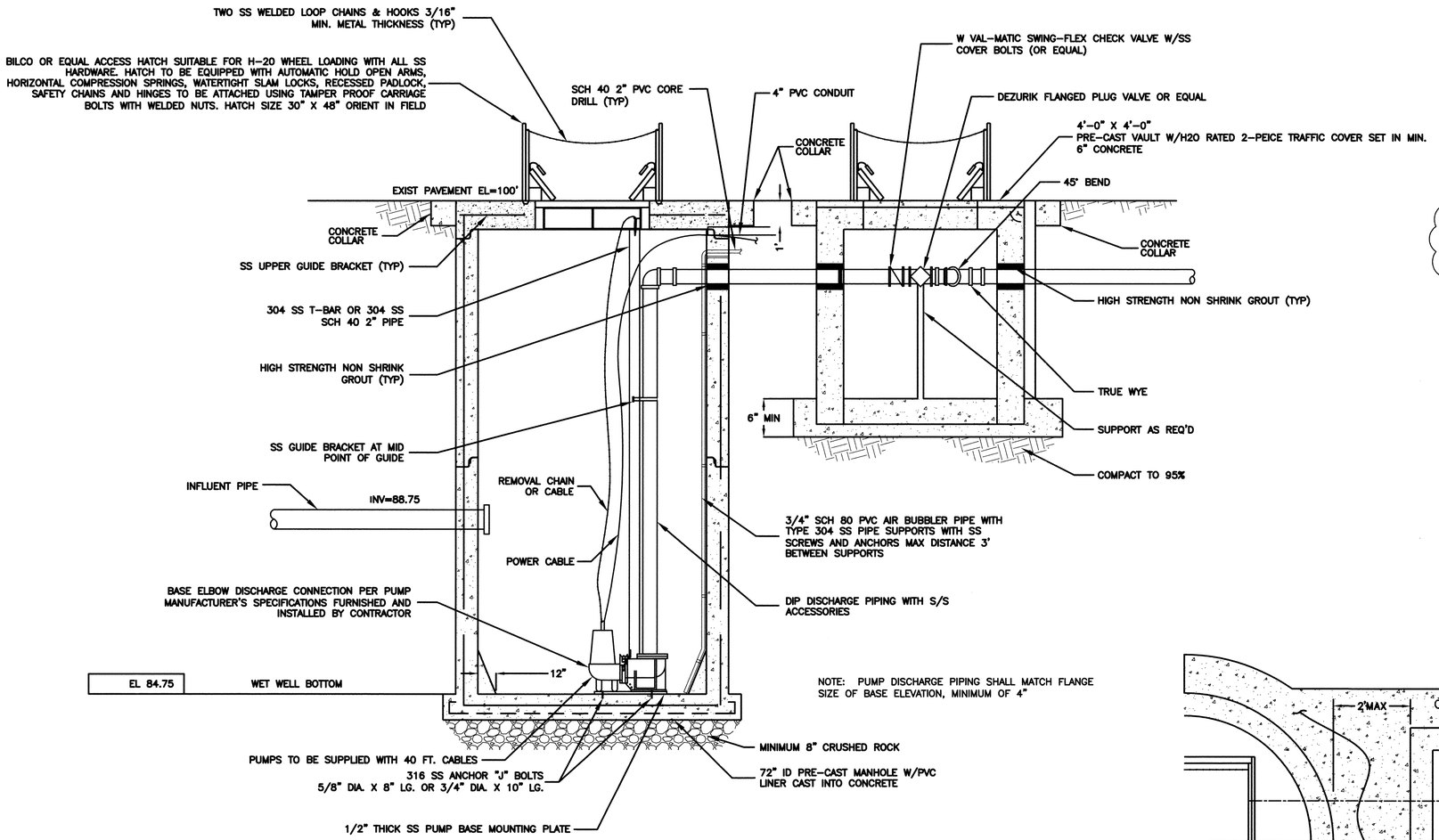
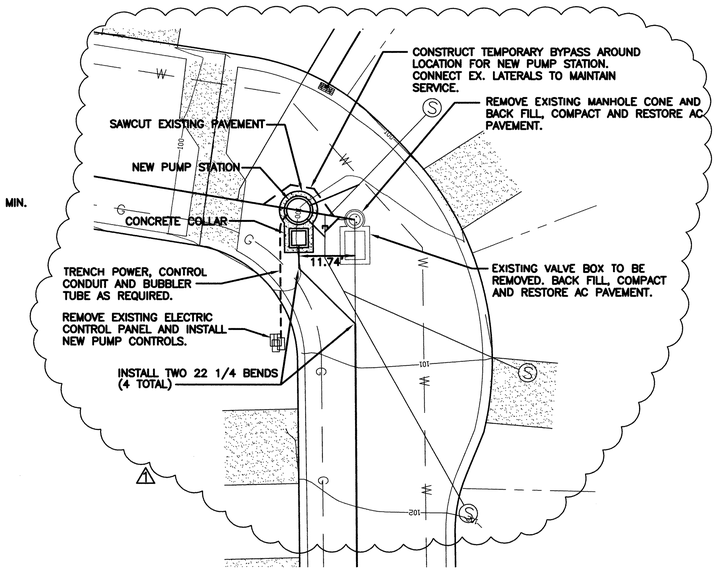
IN THE CITY OF INDIO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

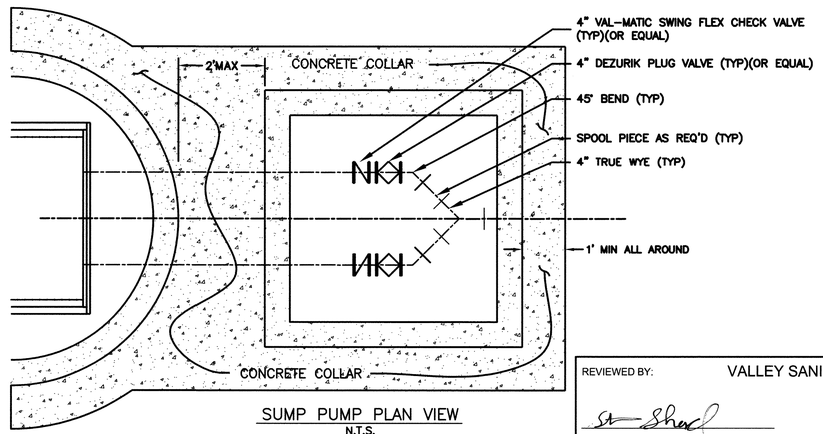
VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT
INDIAN PALMS COUNTRY CLUB



ELEVATION
N.T.S.



PUMP STATION PLAN
N.T.S.



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		1	ADDENDUM #1		
DATE	BY	MARK	REVISIONS	APPR.	DATE
ENGINEER				CITY	
DRAWN BY:			DESIGNED BY:	CHECKED BY:	

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INDIAN PALMS COUNTRY CLUB
PUMP STATION ELEVATION AND MISC. PLANS

SHEET No. SHT-3 OF 3 SHTS.

FOR VALLEY SANITARY DISTRICT
W.O. 5151-C-2

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15-563.01

IN THE CITY OF INDIO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT
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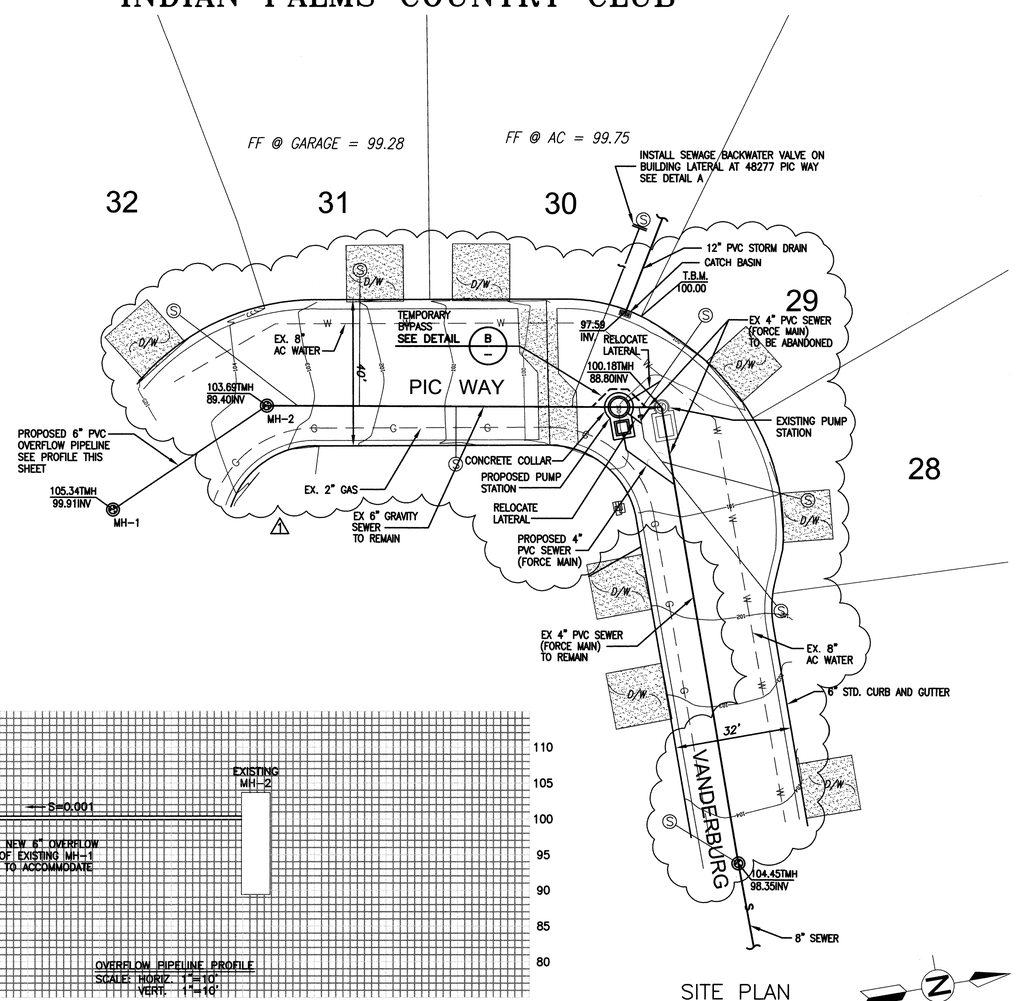
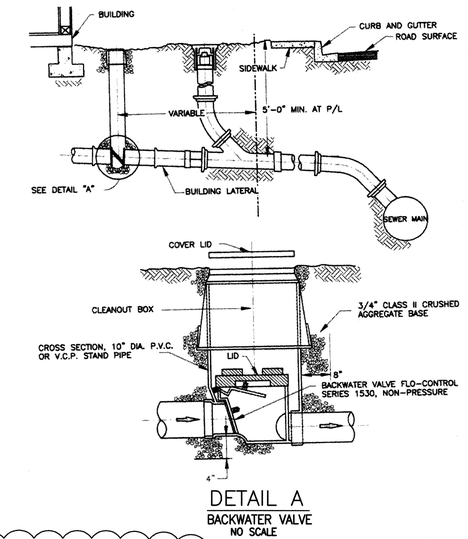
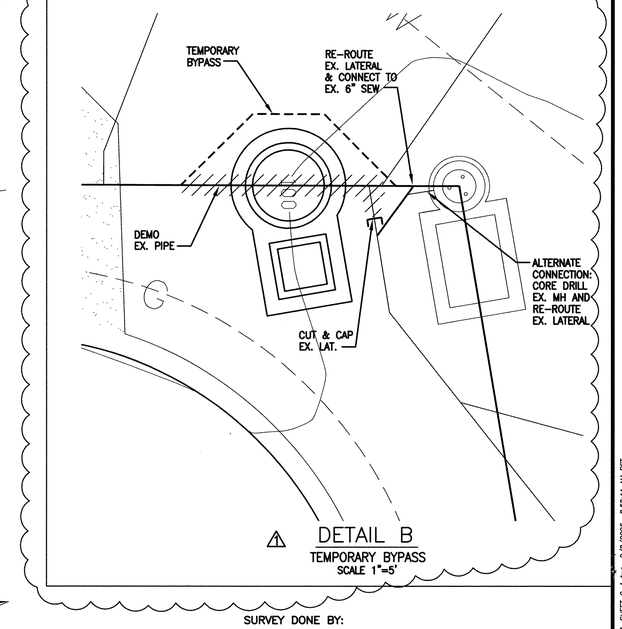


SITE PLAN



DETAIL A
BACKWATER VALVE
NO SCALE



⚠ DETAIL B
TEMPORARY BYPASS
SCALE 1"=5'

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.
Contour Interval = 1 ft.

SURVEY DONE BY:
Warner engineering
CIVIL ENGINEERING / PLANNING / LAND SURVEYING

*** UNDERGROUND UTILITIES ***

DIGALERT Call: TOLL FREE 1-800-227-2600
FOR THE LOCATION OF BURIED UTILITY LINES.
DON'T DISRUPT VITAL SERVICES.
TWO WORKING DAYS BEFORE YOU DIG

ALL UNDERGROUND UTILITIES OR STRUCTURES REPORTED BY THE DISTRICT OR OTHERS AND THOSE SHOWN ON THE RECORDS EXAMINED ARE INDICATED WITH THEIR APPROXIMATE LOCATION AND EXTENT. THE DISTRICT, BY ACCEPTING THESE PLANS OR PROCEEDING WITH IMPROVEMENTS PURSUANT THERETO, AGREES TO ASSUME LIABILITY AND TO HOLD UNDERSIGNED HARMLESS FOR ANY DAMAGES RESULTING FROM EXISTENCE OF UNDERGROUND UTILITIES OR STRUCTURES NOT REPORTED TO THE UNDERSIGNED, NOT INDICATED OR SHOWN ON THE RECORDS EXAMINED. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES SHOWN AND ANY OTHER UTILITIES OR STRUCTURES FOUND AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK.

REVIEWED BY: VALLEY SANITARY DISTRICT
5/2/07 DATE

DATE	BY	MARK	REVISIONS	APPR	DATE
		⚠	ADDENDUM #1		

ENGINEER | CITY
DRAWN BY: | DESIGNED BY: | CHECKED BY:

SEAL
REGISTERED PROFESSIONAL ENGINEER WM P. SIMONS No. 37814 Exp. 12/31/08 CIVIL STATE OF CALIFORNIA

DUDEK & ASSOCIATES
Professional Teams for Complex Projects
Palm Desert Office:
75-150 Sheryl Avenue, Suite C
Palm Desert, CA 92211
Tel. 760.341.6660
Fax 760.346.6118

SCALE:
DATE:
BENCHMARK: ASSUMED 100.00 @ TOP OF CURB @ PROPERTY LINE EXTENDED BETWEEN LOTS 29 & 30 MB 99 / 53-55 ELEV: 100.00

IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
VALLEY SANITARY DISTRICT
VANDENBERG PUMPING STATION REPLACEMENT
INDIAN PALMS COUNTRY CLUB
SITE PLAN AND DETAILS
FOR VALLEY SANITARY DISTRICT

SHEET No. SHT-2 OF 3 SHTS.
W.O. 5151-C-1

15-563.03

P:\101-10 Projects\101-10-Valley Sanitary District\5151 Vandenberg- pumpsta station\cad\dwg\5151-SHEET G-1.dwg 9/8/2008 8:58:44 AM PST

ITEM 6.3
ACTION

Valley Sanitary District

DATE:	**February 23, 2023**
TO:	**Board of Directors**
FROM:	**Dr. Beverli A. Marshall, General Manager**
SUBJECT:	**Authorize President Canero and Secretary/Treasurer to Meet with State Legislators in Sacramento, CA on March 22, 2023, and Reimburse Related Expenses**

Suggested Action
Approve

Strategic Plan Compliance
GOAL 6: Improve Planning, Administration and Governance

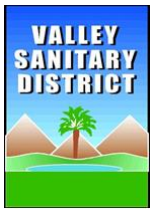
Fiscal Impact
The estimated cost for the trip to Sacramento is approximately $500 per director, which includes travel and related expenses and on day of service.

Environmental Review
This item does not qualify as a project for the purposes of the California Environmental Quality Act (CEQA).

Background
The District has identified increasing legislative advocacy as a goal in the adopted Strategic Plan. With new legislators this term, it is even more important for directors to meet with them to advocate for District needs. The directors will be accompanied by a representative from the Townsend Public Affairs consulting firm.

Recommendation
Staff recommends that the Board of Directors Authorize President Canero and Secretary/Treasurer to meet with state legislators in Sacramento, CA on March 22, 2023, and reimburse related expenses.

Attachments
Travel Policy.pdf



TRAVEL APPROVAL & REIMBURSEMENT POLICY

Adopted: 07/23/19

I. PURPOSE

To establish guidelines for reimbursing travel expenses associated with the performance of District business. Reimbursement for expenses is predicated on the understanding that each attendee is returning with knowledge that will be of benefit to the District and/or to individual job performance.

II. POLICY

It is the policy of the Valley Sanitary District (District) to authorize its employees and Directors to attend seminars, conferences, workshops, and other professional meetings to encourage professional development and the improved performance of their duties. Employees and Directors may also be required to travel to conduct official District business.

All employees and Directors who attend meetings, conferences or other functions are expected to be present at all of the scheduled working sessions unless otherwise authorized. Directors and employees shall not attend professional events if it is apparent that there is no significant benefit to District.

Directors and employees are expected to exercise good judgement and a proper regard for economy when incurring expenses. Employees and Directors are responsible for making their own travel arrangements.

Directors or employees may be accompanied by a companion who is not a Director or District employee if their presence does not detract from the attendee's performance of District duties. The District will not reimburse any expenses attributable to any companion.

A Director or employee shall not attend an event for which there is an expense to District if it occurs after the Director or employee has announced their pending resignation or if it occurs after an election in which it has been determined that the Director will not retain their seat on the Board.

In situations where extraordinary travel expenses are expected to be incurred, or where this Policy does not adequately cover the situation or would cause an undue hardship, exception may be made with prior approval of the General Manager for such extraordinary travel expenses for District employees or by the Board President for the General Manager and Directors.

III. AUTHORIZATION FOR TRAVEL AND EXPENSES

Directors are authorized to travel anywhere in the local area (defined as Coachella Valley) for the purpose of conducting District business as assigned by the Board President. Directors are authorized to travel to local functions sponsored by local associations in which District maintains a membership without prior approval. Other travel on District business by Directors shall be undertaken only with the prior approval of the Board of Directors.

The General Manager is authorized to travel anywhere in the local area (defined as Coachella Valley) for the purpose of conducting District business. The General Manager is authorized to participate in conferences, seminars, and events sponsored by professional associations in which District maintains a membership without prior approval. Participation by the General Manager in conferences and seminars conducted by professional associations in which District does not maintain a membership must be approved in advance by the Board of Directors.

A District employee may travel on District business anywhere within Coachella Valley if authorized by their supervisor. With approval of the supervisor, employees are authorized to travel to local functions sponsored by local associations in which the District maintains a membership. Other travel on District business by employees shall be undertaken only with the prior approval of the General Manager or their designee. Employees must complete a Training & Travel Request Form for travel outside of Coachella Valley.

A. Event Registration
   The cost of registration, including special events described in the agenda that contribute to educational or professional development, is eligible for reimbursement. Whenever possible, registration expenses are to be pre-paid by District in the form of District check or credit card.

B. Compensation
   Directors shall be compensated at the relevant rate for each day of attendance at an approved conference, seminar or workshop, up to the allowable limit.

   Employees shall be paid for time actually attending professional conferences, seminars, workshops or meetings. Attendance work time includes the time it takes to travel to and from the event. Attendance at voluntary social events or events that are not of a benefit to District (mixers, golf tournaments, tours, etc.) will not be compensated as time worked.

C. Meals for Non-Overnight Travel
   For non-overnight business travel, reimbursement will be made for meals, including beverages and tips. If a meal is provided as part of non-overnight business travel, reimbursement will not be provided for an attendee choosing to skip that meal.

Reimbursements for meals not provided as part of a non-overnight business travel will be made up to the limits listed below. Receipts are required and no amounts in excess of the limits below will be reimbursed.

Breakfast	$16.00
Lunch	$17.00
Dinner	$28.00

If a meal is provided as part of non-overnight business travel but the cost of the meal is not included in the event price, the amount reimbursed will be the actual cost of the meal and not subject to the limits above. The meal reimbursement amounts shall be adjusted to conform with the applicable IRS rates, as amended from time to time. Snacks or refreshments outside of regular meal times are not eligible for reimbursement.

Alcoholic beverages may be served at business meetings. The consumption of alcohol is guided by applicable District policies. District will not reimbursement employees or Directors for the purchase of alcoholic beverages.

D. Per Diem

Meals and incidental expenses incurred for overnight business travel away from home are governed by the applicable per diem rate, which will be based on the Internal Revenue Service using the Specific Locality Method for Meals and Incidental Expenses (laundry, fees and tips for baggage handlers, etc.) only. Incidental expenses do not include fees imposed by a commercial travel carrier, taxi fares, or parking.

Per diem rates for meals and incidental expenses are calculated by determining the total number of eligible days, which is the total number of overnight stays plus one additional day to allow for travel. The eligible days are multiplied by the identified per diem rate. The per diem rate is identified on the specific locality table located at http://www.gsa.gov/portal/content/104877.

Receipts are not required for meals and incidental expenses when using the per diem method. Per diem expenses are ***not*** allowed to be charged to District issued credit cards.

E. Lodging

Whenever possible, lodging should be arranged at the facility where the event is being held at the event rate. If lodging at the event facility is not available, or if a different facility is needed, reimbursement will be limited to the event facility rate, or the available government rate, whichever is greater, for a double-person occupancy basic room. Exceptions to this limit must be approved, in advance, by the Board.

Lodging shall not be authorized unless one of the following criteria is met:

- The destination is at least 100 miles, one way, from District's office.

- There is a very early (before 9:00 a.m.) or late (after 5:00 p.m.) official meeting (excludes social events) that could justify the attendee staying overnight at the destination.

- The total event time per day, including commute or travel time, would result in a workday of more than 10 hours per day. For the purpose of determining total event time per day, the hours of work for the day of the event attendance will be the same as the hours of the official event, excluding social events.

- The event lasts for more than one day and the commute expense, including overtime pay, is more expensive than the cost of the lodging, parking and per diem.

Payment for lodging shall be limited to the minimum number of nights required for attendance at the event. An additional night at the conclusion of the event may be authorized if one of the following criteria is met:

- ✓ The total event time per day, including commute or travel time, would result in a workday of more than 10 hours per day and the commute or travel time required to return home would result in an arrival time at home after 9:00 p.m. For the purpose of determining total event time, the hours of work for the day of the event attendance will be the same as the hours of the official event, excluding social events.

- ✓ There are no flights available within a reasonable time after the conclusion of the official event.

- ✓ The event lasts for more than one day and the overtime pay for the commute or travel time is more expensive than the cost of the extra night of lodging, parking and per diem.

Whenever reasonably possible, the justification for the request for an additional night of lodging must be submitted to, and approved by, the General Manager (or their designee) in the case of employees or the Board President, in the case of the General Manager and Directors, in advance of the event. An additional night of lodging due to the cancellation of the return flight by the carrier or other unforeseen emergency does not require advance approval.

Charges imposed by the hotel for the use of internet service may be paid by District if the General Manager has authorized the employee to access their District email account or files during their travel or, in the case of a Director, the

Board President has authorized the expense. If the employee or Director has not been approved for this expense, they must pay for any internet access charges.

Charges imposed by the hotel for local and long-distance phone calls will be reimbursed when such calls are made in conducting official District business or essential personal calls such as a “safe arrival call.”

F. Commercial Travel
Air travel reimbursement shall be limited to economy or coach fares. Travel shall be by the most direct, cost-effective route. If an indirect route is used, any additional costs shall be at the Director’s or employee’s personal expense. Additional charges for “Friends Fly Free” or other companion fares must be paid by the attendee. Travel arrangements should be made with sufficient lead time to take advantage of the lowest possible rates.

When taking into consideration all travel-related expenses, if it is more cost effective to fly to or from the destination on an earlier or later date, this may be allowed. If an attendee chooses to arrive earlier or stay later for personal convenience, the additional lodging and other related expenses will not be reimbursed by District.

The use of taxis or car services is permissible when shuttles are not available or it is a cost-effective alternative to renting a car.

G. Rental Car
Rental car expenses will be reimbursed if the expense is less than other surface methods of transportation (shuttles, cabs, etc.). Rental car expenses may be reimbursed when an indirect air travel arrangement in combination with a rental car is more cost effective than a direct air travel arrangement. District will not pay for or reimburse pre-paid fuel charges, upgrades or other additional costs not necessary to the rental of the vehicle. District will pay for the cost of, and the attendee should accept, the standard liability insurance coverage on the rental vehicle.

In the event that a rental car is necessary, the cost shall ordinarily be limited to the commercial car rental contract rates established by the State of California Department of General Services (DGS) Statewide Travel Program, which may be found at: http://www.dgs.ca.gov/travel/Programs/RentingaVehicle.aspx.

Absent unusual circumstances, the vehicle size shall be no larger than mid-size (intermediate). For purposes of this policy, “unusual circumstances” may include, but are not limited to, multiple employees or Directors sharing the same vehicle, unavailability of a mid-size (intermediate) vehicle, need for a larger vehicle to accommodate an individual with a disability, the availability of a larger vehicle or upgrade that does not increase the cost of the vehicle rental

and other circumstances that warrant renting a larger size vehicle. If a larger size vehicle is needed, its rental must be approved in advance by the General Manager for District employees or, for Directors, by the Board President. Attendees are required to share the use of a rented car. Attendees are required to use a District credit card when renting automobiles if they haves been issued a District credit card.

H. Use of Personal Vehicle
Reimbursement for the use of private cars shall be at the rate established by the Internal Revenue Service (IRS). Mileage reimbursement shall not exceed the lowest available fare for air travel. Parking charges necessary for the business purpose of the trip will be reimbursed.

The distance traveled from an employee's primary residence to their primary work site will not be reimbursed, as this is considered a personal expense. An employee driving a personal vehicle from their primary residence to an event site shall be reimbursed only for mileage that **exceeds** the round-trip distance from their primary residence to their primary work site. If an employee utilizes rideshare, the employee shall be reimbursed only for mileage that exceeds the round-trip distance he/she would have travelled the day of the event attended.

An employee driving to and from the airport when traveling on business will be reimbursed only for mileage that **exceeds** the round-trip distance from their primary residence to their primary work site. If an employee is driving a personal vehicle from their primary residence to an event site on their normal day off, the employee shall be reimbursed for the total distance driven.

Employees who utilize personal vehicles for business purposes are required to have a valid driver's license and at least the minimum insurance coverage required by law. Primary insurance for use of a personal vehicle for business purposes shall be through the employee's personal automobile insurance policy and will be responsible for any damage to the vehicle, as well as for liability. The owner/driver of the vehicle is responsible for all parking fines and moving violation tickets.

Travel in District vehicles may be approved when circumstances warrant it. When traveling in a District vehicle, receipts shall be secured for the purchase of gas, oil and other supplies necessary. These amounts shall be shown on the expense reimbursement form with a notation that a District vehicle was used, indicating the unit number of the vehicle. If emergency repairs are necessary, they shall be paid for by the person to whom the car is assigned. All receipts for such payment must be furnished in order to obtain reimbursement.

I. Reimbursements
Directors and employees are required to complete a Travel & Training Expense Reimbursement Form when incurring expenses. Requests for reimbursement

should be made as soon as possible following the seminar or conference or by the end of the month in which the expenses were incurred. Claims must be clear, listing the following (certain data may be listed on the attached receipt).

- The amount of the expense
- The time and place of travel or expense
- The business purpose of the expense
- In the case of business-related expenses incurred on behalf of others, the name and business relationship of the individuals.

Receipts, paid bills, etc. must be attached to each expense claim form regardless of amount for the following expenses:

- Registration
- Travel (including air fare, taxi, shuttle, etc.)
- Lodging (hotel bills, etc.);
- Mileage
- Parking
- Meals related to non-overnight travel

Prior to processing requests for reimbursement, the Board of Directors shall approve all Travel & Training Expense Reimbursement Forms for Directors as well as all reimbursement requests for the General Manager when the expenses exceed $250. The General Manager, or their designee, shall approve all Travel & Training Expense Reimbursement Forms for employees.

Personal or unauthorized expenses are not allowed to be charged on District credit cards. When more than one employee or Director attends the same function, one person may pay the bill for the group, provided a receipt and list of names are included. Any personal or unauthorized expenses charged on the District credit card shall be paid by the employee or Director incurring the charge.

In circumstances where the use of personal credit cards and/or cash is deemed impractical, and where the total expense is expected to exceed fifty dollars ($50.00), District may provide an advance of funds. Such advance will not exceed one hundred percent (100%) of the anticipated out-of-pocket expense, less those items that are required to be pre-paid. All such payment requests must allow sufficient time for normal processing and approval prior to payment.

If a District credit card was used to pay for the travel and related expenses, requests for reimbursement will not be processed until District is able to reconcile the District credit card statement with the reimbursement form.

No additional reimbursements will be made for personal expenses such as newspapers, laundry and dry cleaning, magazines, haircuts, shoeshines,

excess personal telephone calls and other personal expenses. These are included in the per diem incidental expenses allowance

This policy is intended to comply with all Internal Revenue Service requirements for an accountable plan so that reimbursements are not treated as part of wages for tax purposes.

It is against the law to falsify expense reports. Penalties for misuse of public resources or violating this policy may include, but are not limited to the following.

- The loss of reimbursement privileges.
- Restitution to District.
- Civil penalties for misuse of public resources pursuant to Government Code Section 8314.
- Prosecution for misuse of public resources, pursuant to Section 424 of the Penal Code.
- For employees, disciplinary action, up to and including termination.

IV. DEFINITIONS

As used in this policy, the following words and phrases shall have the following definitions.

Incidental Expenses: minor expenses that are incurred while travelling. These often include the purchase of personal items (toiletries, reading material, snacks, etc.), laundry and dry cleaning, haircuts, shoeshines, excess personal telephone calls and other personal expenses.

Per diem: a daily allowance or payment made for expenses incurred each day of travel.

Travel: attendance at meetings, conferences, events or other functions on District business at other than the District's offices or facilities.