



GROUP DELTA



Brinton Reservoir



Santa Ana River Trunk

Statement of Qualifications Water / Wastewater

Serving California Since 1986



Haynes Generating Station



Big Tujunga Dam

Irvine
32 Mauchly
Suite B
Irvine, CA 92618
(949) 450-2100

Ontario
1035 So. Milliken Avenue
Suite G
Ontario, CA 91761
(909) 295-5550

Anaheim
1320 South Simpson Circle
Anaheim, CA 92806
(714) 660-7500

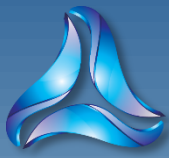
Torrance
370 Amapola Avenue
Suite 212
Torrance, CA 90501
(310) 320-5100

Victorville
12180 Ridgcrest Road
Victorville, CA 92395
(760) 881-3224

San Diego
9245 Activity Road
Suite 103
San Diego, CA 92126
(858) 536-1000

Oakland
1970 Broadway
Suite 1100
Oakland, CA 94612
(510) 671-0010

“Delta is the Difference”



GROUP DELTA

WHO WE ARE



Group Delta is a consulting geotechnical and environmental engineering firm with seven offices located in the counties of Orange, Los Angeles, San Bernardino, San Diego and Alameda. Our team consists of civil and geotechnical engineers, environmental engineers, engineering geologists, laboratory and field technicians, deputy inspectors, drafting/CADD technicians, and drilling and support personnel specialized in their respective fields. We offer a broad range of services to serve the needs of our clients.

GEOTECHNICAL ENGINEERING AND GEOLOGIC SERVICES

- Feasibility studies
- Third Party Reviews
- Foundation design
- Earth Retaining Structures Design
- Pavement Design
- Earthwork and Grading
- Earthquake and Fault Studies
- Geologic Hazard Evaluations
- Numerical Modeling Analyses
- Seismic Design & Hazard Assessments
- Hydrogeologic Evaluations
- Dewatering
- Ground Improvement Analysis & Design
- Laboratory Testing
- Slope Stability & Landslide Investigation & Mitigation
- Instrumentation and Ground Monitoring

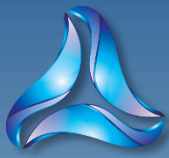


- Pile Drivability & Load Tests
- Seismic Retrofitting Design
- Geologic Reconnaissance & Mapping
- Geophysical Investigations
- Trenching Investigations

ENVIRONMENTAL SERVICES



- Phase I Initial Site Assessments (ISAs) / Environmental Site Assessments (ESAs)
- Hazardous Materials Management & Industrial Hygiene
 - Surveys and Investigations
 - Technical Abatement Specifications and Work Plans
 - Abatement and Remediation Monitoring Services
- Phase II Site Investigations (SIs)
- Construction Environmental Compliance
- Phase III Site Remediation
- Stormwater



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FORENSIC SERVICES

- Earthquake Damage Assessments: Causation studies and preparation of repair recommendations.
- Landslide Investigations: Causation studies and/or development of stabilization schemes.
- Construction Vibrations: Vibration monitoring and geotechnical testing.
- Dam Investigations
- Settlement Analyses: Floor level surveys, causation studies and/or preparation of repair recommendations.
- Expansive Soils: Subsurface investigations, preparation of repair recommendations.
- Groundwater: Subsurface investigations, preparation of subsurface drainage recommendation.

TESTING AND INSPECTION SERVICES

Group Delta has two materials testing laboratories located in Anaheim and San Diego, California. Our laboratories are licensed as an approved testing facility by various agencies including the Division of the State Architect (DSA), City of Los Angeles, Caltrans, CCRL and AASHTO. In addition, Group Delta's San Diego laboratory has been awarded accreditation to the technical competence and quality assurance requirements of ISO/IEC 17025:2005 as determined by AASHTO Highway Subcommittee on Materials.

Soils Testing

- Classification & Index
- Strength Tests
- Volumetric Change
- Permeability
- Compaction
- Aggregate/Subgrade

Materials Testing

- Asphalt Testing
- Concrete Aggregate
- Concrete Cylinders
- Concrete Beams
- Masonry
- Masonry Unit Cubes
- Masonry Prisms
- Grout/Mortar
- Dry Pack Blocks
- Shotcrete
- Batch Plant Inspections
- Reinforcing Steel
- Structural Steel
- Chemical Physical Properties
- AWS/CWI Welding
- Post-Tensioning
- Epoxy Dowels/Drilled in Anchors
- Pull Testing
- Non Destructive Testing – UT/MT
- High Strength Bolting
- Fireproofing Inspections and Sampling
- Concrete & Masonry Coring and Extraction
- Mix Design Reviews & Trial Batched
- Fiber Wrap Inspection
- Vapor Emissions Testing



Direct Shear, Consolidation & Sand Equivalent Testing



Asphalt & R-Value Testing



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Group Delta meets all the requirements as an approved testing agency with the following local and national accrediting/certification authorities:

- ISO 17025
- AASHTO (American Association of State Highway and Transportation Officials)
- ACI (American Concrete Institute)
- AMRL (AASHTO Materials Reference Laboratory)
- ANSI (American National Standards Institute)
- APWA (American Public Works Association)
- ASNT (American Society of Nondestructive Testing)
- ASTM (American Society for Testing and Materials)
- AWS/CWI (American Welding Society/Certified Welding Inspector)
- California Department of Transportation (Caltrans)
- CCRL (Cement and Concrete Reference Laboratory)



- City of Los Angeles
- DSA (Division of the State Architect)
- ICBO (International Conference of Building Officials)
- NICET (National Institute for Certification in Engineering Technologies)
- UBC (Uniform Building Code)

Inspection

Earthwork Inspection and Testing – Group Delta provides geotechnical observation and testing services for all stages of site grading. Our field compaction testing services are provided by experience soils technicians working under the supervision of licenses professional engineers.

Asphalt Inspection and Testing – Group Delta provides comprehensive asphalt testing and AC Mix Design Services. We are regularly certified by AMRL in our laboratories.

Concrete Inspection and Testing – Group Delta’s concrete inspection and testing staff is re-certified bi-annually by the Cement and Concrete Reference Laboratory (CCRL) and annually by Caltrans. Our ACI certified concrete technicians perform field and batch plan sampling of concrete materials to assure compliance with project specifications.

Specialty Construction Inspection – Group Delta provides experienced special inspectors licensed by the International Code Counsel (ICC) for Sprayed Applied Fireproofing, Structural Masonry, Structural Steel Bolting and Welding, Pre-Stressed Concrete, and Reinforced Concrete. Group Delta can also provide Certified Welding Inspectors (CWI) licensed by the American Welding Society (AWS) and non-destructive testing such as mag-particle and ultra-sonic testing.

Group Delta Technicians & Inspectors hold the following certifications:

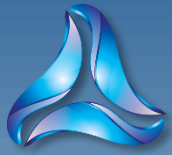
ICC Inspection

- Masonry
- Structural Steel/Welding
- Concrete
- Fireproofing
- Pre-Stressed Concrete

Caltrans Certified

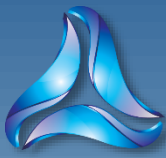
- Materials Testing
- Soils Testing
- Nuclear Gauge Safety
- ACI Certified Concrete
- Soils

City of LA Deputy Inspector



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PROJECT EXPERIENCE



BIG TUJUNGA DAM SEISMIC RETROFIT Los Angeles, CA

Project Highlights

- Largest infrastructure project in Los Angeles County history
- To limit thermal expansion, all concrete placements were performed at night
- Project included the addition of 80,000 cubic yards of concrete
- Complete seismic retrofitting of the dam was completed

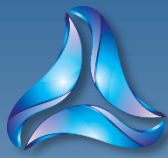
Group Delta Highlights

- Provided on-site materials evaluation and testing during construction of the retrofit
- Provided coring of the existing 1930 concrete for final materials evaluation
- Provided as-built materials analysis for the project site and all quality control for the project which was reviewed by the Division of Safety of Dams (DOSD)



Project Information

Client:	Shimmick Construction
Owner:	County of Los Angeles
Total Cost:	\$100 Million
Completed:	2012



SAN VICENTE DAM RAISE San Diego County, CA

Project Highlights

- San Diego County Water Authority Emergency Storage Project
- Dam raise increased height 117 feet, making it the tallest dam in the United States
- Project more than doubled the capacity with an additional 152,000 acre-feet
- Dam originally stood at 220-feet and stored up to 90,000 acre-feet of water

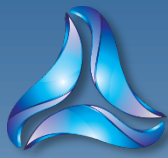
Group Delta Highlights

- Provided on-site laboratory for materials testing and inspection services
- Provided laboratory and field testing for on-site crushing of 1.1 million tons of mass aggregate
- Provided compaction testing of 650,000 cubic yards of roller compacted concrete
- Crews worked around the clock for 6 months, seven days/week, for placement of RCC



Project Information

Client:	Shimmick/Obayashi
Owner:	San Diego County Water Authority
Total Cost:	\$145 Million
Completed:	2012



BANNING RESERVOIR Banning, CA

Project Highlights

- City of Banning installed a new 8-million gallon water storage reservoir
- Project included 4700-feet of 30-inch pipeline

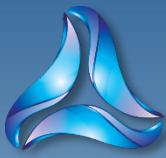
Group Delta Highlights

- Group Delta performed an extensive review of geotechnical data and performed geotechnical engineering analyses to develop recommendations for excavation and shoring and pipeline installation and design
- Performed laboratory tests to define the engineering properties of the foundation soils



Project Information

Client:	AECOM
Owner:	City of Banning
Completed:	1997



BLACK MOUNTAIN RANCH WATER RESERVIOR San Diego, CA

Project Highlights

- 25 million gallon new reservoir for the growing community of Black Mountain Ranch
- Below grade cast-in-place reinforced concrete reservoir poured over metavolcanic rock
- Project included inlet/outlet building, new pump station, piping and utilities, access roads
- Subject to review by the State of California- Division of Safety of Dams

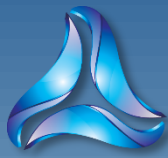
Group Delta Highlights

- Provided geotechnical design recommendations and plan review
- Provided quality assurance/quality control testing services during construction of the reservoir, pump stations and associated pipelines



Project Information

Client: Taylor Woodrow Homes
Owner: City of San Diego
Completed: 2007



PLANT 13 RESERVOIR PIPELINE Indio, CA

Project Highlights

- Construction of a new 10-MG buried concrete water storage reservoir in Indio Hills
- Project included a pump station and two pipelines
- Project located on a highly active seismic area of Southern California and is located within an Alquist-Priolo Special Studies Zone of Banning Field-a branch of the San Andreas Fault

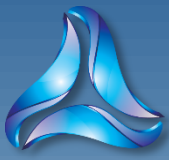
Group Delta Highlights

- Provided geotechnical engineering, materials testing and subsurface investigations
- Performed trenching at the site to determine whether or not active faulting was present
- Extensive trenching studies indicated no active faults were present within the tank areas



Project Information

Client:	AECOM
Owner:	City of Indio
Completed:	2010



PUMP STATION REHAB RESERVOIR NO. 1 Fountain Valley, CA

Project Highlights

- New masonry block pump station to be 20x70 ft. with reconstructed pavement and equipment.
- Three pumps with 12- to 15-foot length and 18-in. diameter suction cans. The pumps will be installed on 36-inch square concrete pedestals that will require an excavation of up to 15 feet below grade.

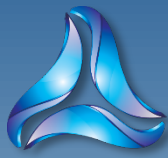
Group Delta Highlights

- Provided geotechnical laboratory materials testing for proposed pump station
- Provided foundation analysis and recommendations regarding geological and seismic hazards.



Project Information

Client: AECOM
Owner: City of Fountain Valley
Completed: 2009



RESERVOIR NO. 3 SEISMIC EVALUATION Fountain Valley, CA

Project Highlights

- New masonry block pump station is 20x70 ft. with reconstructed pavement and equipment.
- Three pumps with 12- to 15-foot length and 18-in. diameter suction cans. The pumps were installed on 36-inch square concrete pedestals and required an excavation of 15 feet below grade.

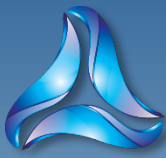
Group Delta Highlights

- Provided geotechnical laboratory materials testing for proposed pump station
- Provided foundation analysis and recommendations regarding geological and seismic hazards.



Project Information

Client: AECOM
Owner: City of Fountain Valley
Completed: 2009



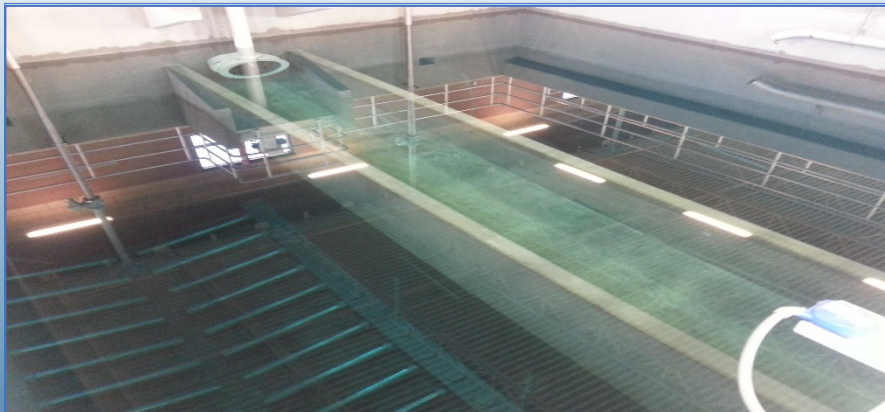
CUCAMONGA VALLEY WATER DISTRICT Lloyd W. Michael Water Treatment Plant

Project Highlights

- \$40M project brought new storage capacity and 2 new water-quality improvement processes to facility
- Largest capital improvement project for Cucamonga Valley Water District
- Project took 3 years to complete and met federal requirements from EPA

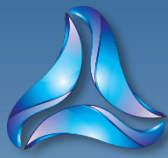
Group Delta Highlights

- Group Delta provided as-needed construction phase geotechnical engineering, materials testing and special inspection services during construction
- Group Delta provided quality assurance/quality control oversight during construction



Project Information

Client:	Cucamonga Valley Water District
Owner:	Cucamonga Valley Water District
Total Cost:	\$40 Million
Completion:	2015



EAST CENTRAL INTERCEPTOR SEWER (ECIS) Los Angeles, CA

Project Highlights

- ECIS is a major sewer tunnel approximately 11.5 miles long with an 11 ft. inside diameter pipe
- Corridor is located in a densely developed area within central and southern sections of the city
- Project constructed in soft ground conditions in primarily alluvial soil conditions

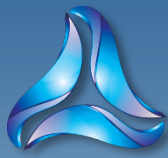
Group Delta Highlights

- Installed 270 multi-point extensometers, 19 inclinometers and 8 observation wells
- Responsibilities included initial readings of each instrument before turning instruments over to the City of Los Angeles for monitoring
- Responsible for instrumentation of shaft excavation struts with strain gauges and monitoring stresses on the struts



Project Information

Client:	Kenny/Shea/ Traylor/Fontier
Owner:	County of Los Angeles
Total Cost:	\$1.3 Million
Completed:	2003



NORTHEAST INTERCEPTOR SEWER (NEIS) Los Angeles, CA

Project Highlights

- Major sewer tunnel 8.5 km long extending from the terminus of the ECIS sewer
- Corridor located within the densely developed and populated area of the city
- Built to provide downstream outlet for the Eagle Rock Interceptor Sewer (ERIS)
- Project accomplished by tunneling with Earth Pressure Balance method

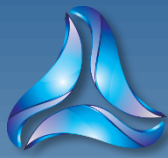
Group Delta Highlights

- Provided geotechnical instrumentation that included installation of 23 multi-point extensometers, 24 inclinometers, 220 borros type settlement points and 12 piezometers
- Tiltmeters were installed at critical historic bridge structures and buildings



Project Information

Client:	Kenny/Shea/ Traylor/Frontier
Owner:	County of Los Angeles
Total Cost:	\$1.5 Million
Completed:	2004



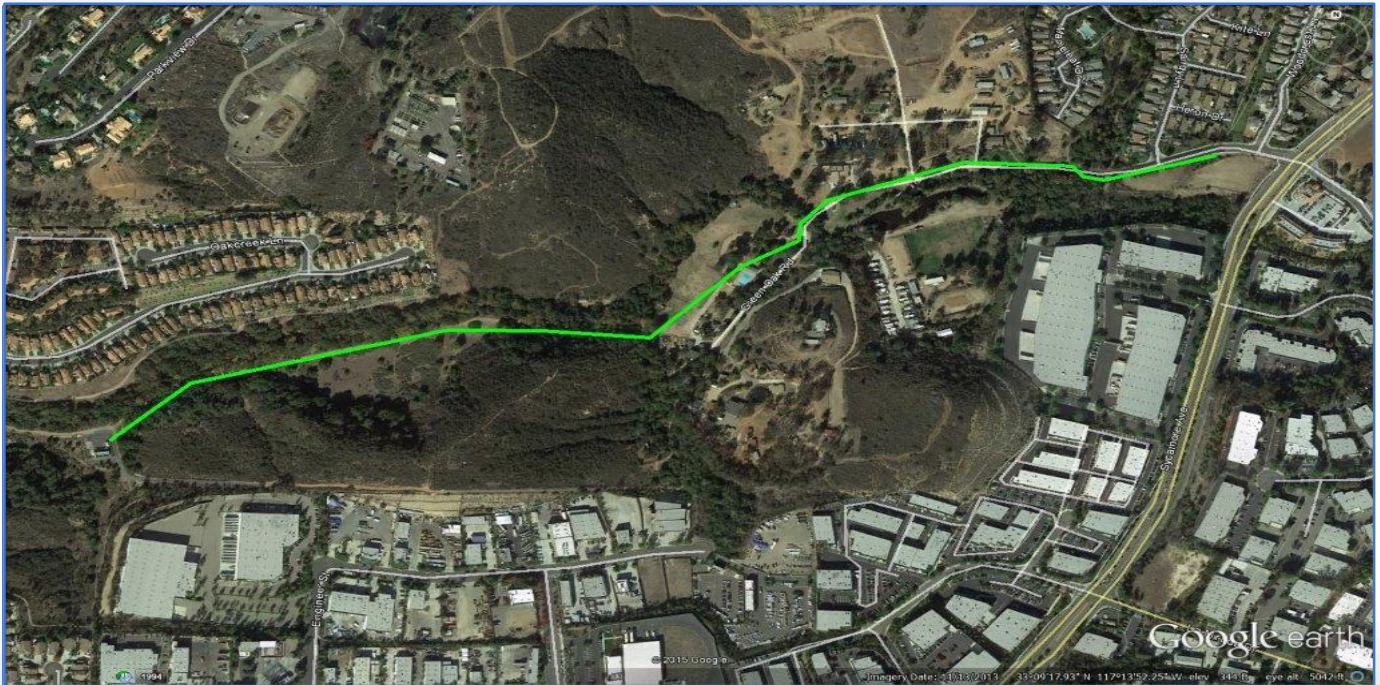
GREEN OAK TRUCK SEWER REPLACEMENT Vista, CA

Project Highlights

- Conversion of approximately 5,000 feet of existing pipeline to a larger diameter pipeline
- Existing sewer built in 1964 will be abandoned in place after new replacement is complete
- Sewer line upstream begins at Sycamore Avenue and Green Oak Road and the downstream limit is located on the south side of Agua Hedion Creek east of Melrose Dr.

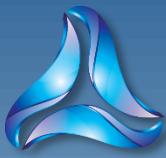
Group Delta Highlights

- Provided design geotechnical report
- Provided recommendations for pipe design and created seismic design parameters evaluated liquefaction potential and trench excavatability
- Provided evaluation for trenchless construction



Project Information

Client: Rick Engineering
Owner: City of Vista
Completed: 2015



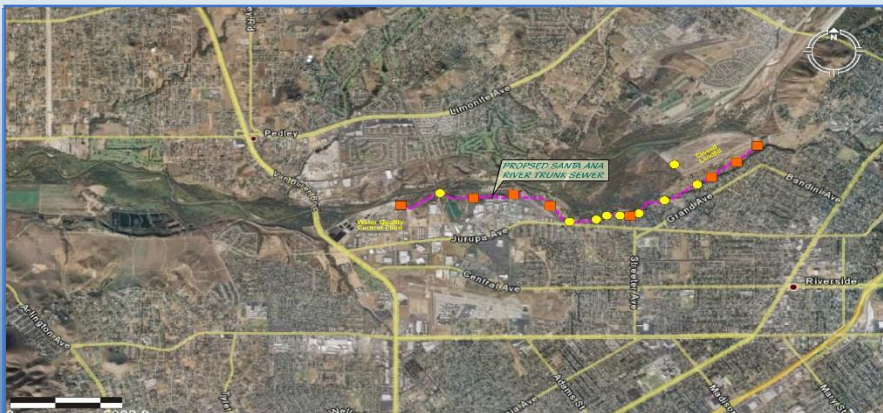
SANTA ANA RIVER TRUNK SEWER Riverside, CA

Project Highlights

- **New** sewer is four miles long beginning at the east end of the Water Quality Control Plant
- Sewer will be 4 to 5.5 feet in diameter and 10 to 20 feet deep
- Approximately 2,500 feet of the alignment is tunneled under the existing railroad and in an area where a park exists

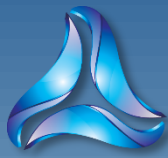
Group Delta Highlights

- Reviewed existing information and provided geotechnical engineering information for design of pipeline
- Evaluated liquefaction and lateral spreading potential along alignment
- Provided extensive field explorations and laboratory testing



Project Information

Client:	Brown & Caldwell
Owner:	County of Riverside
Total Cost:	\$11,660 Million
Completed:	2011



VICTOR VALLEY WASTEWATER RECLAMATION FACILITY Victorville, CA

Project Highlights

- Project included numerous percolation ponds that periodically impound water on the site
- Heavy seepages was observed during periods of water impoundment
- Seepage from the face of levee slope approximately 100 feet in length
- Findings concluded that top of the levee needed to be reconstructed

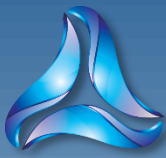
Group Delta Highlights

- Group Delta reviewed maps and reviewed Aerial photographs of the site
- Reviewed existing reports
- Developed Geotechnical Recommendations for Construction



Project Information

Client:	AECOM
Owner:	Victor Valley Wastewater Reclamation Authority
Completed:	2012



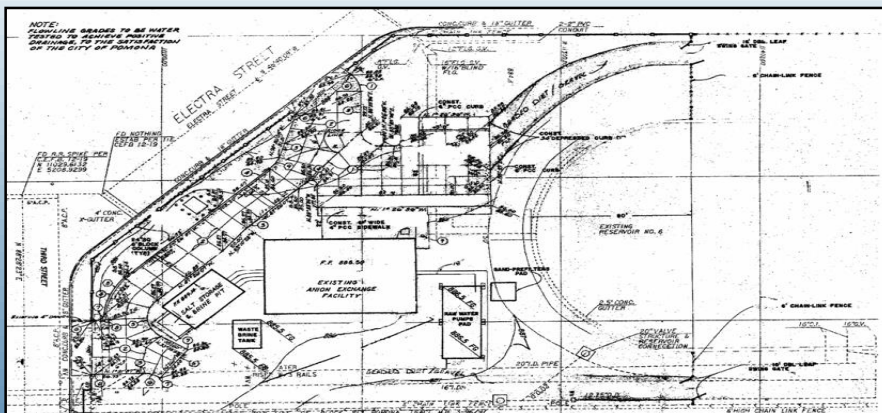
POMONA ANION PLANT EXPANSION Pomona, CA

Project Highlights

- Project consisted of capacity expansion of the existing Pomona Anion Exchange Water Treatment Plant
- Included construction of 4 new salt storage tanks, construction of 2 to 3 new anion exchange vessels, and partial demolition and abandonment of existing brine and dilution water tanks and pumps

Group Delta Highlights

- Provided geotechnical review of existing data on the site and performed engineering analyses to develop geotechnical recommendations for project construction and foundation design
- Provided construction support services



Project Information

Client	Montgomery Watson Harza
Owner	City of Pomona
Completed	2014