Parsons’ Advances in Water Reclamation/Advanced Purification Treatment and Delivery Methods

WaterReuse LA Chapter - BiMonthly Meeting

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About Parsons

Over 74 years of water/wastewater engineering and construction services

Integrated Engineering/Construction Firm

Over 120 offices worldwide

Over 16,000 people worldwide

Multiple local offices
- Pasadena (HQ) - San Diego
- Los Angeles - Ontario
- Manhattan Beach - Fresno
- Irvine - Bakersfield

Leader in Water, Wastewater, Recycled Water, Biosolids Management, Energy Recovery and Infrastructure

Inhouse capabilities for:
- Condition Assessments
- Planning
- Preliminary and Detailed Design
- Procurement and Purchasing
- Construction (Self-Perform)
- Construction Inspections, Training
- Construction Management
- Project and Program Management
- Commissioning and Validation
- Alternative Delivery – Design-Build and CM@Risk
Parsons brings unparalleled California wastewater/water design and construction experience

In past 20 years:

50+ Wastewater/water plants in California

20+ MBR/UV plants nation-wide
<table>
<thead>
<tr>
<th>Project and Location</th>
<th>Status</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 City of Fresno Airport Recycled Water Treatment Facility (IPR Project)</td>
<td>Ongoing</td>
<td>8 mgd IPR</td>
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<tr>
<td>2 Inland Empire Utilities Agency RP-1 &amp; RP-5 Upgrade &amp; Expansion, CA</td>
<td>Ongoing</td>
<td>RP-1: 28 to 40 mgd, RP-5: 15 to 30 mgd</td>
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<tr>
<td>3 Elsinore Valley Municipal Water District Regional Plant Upgrade, CA</td>
<td>Ongoing</td>
<td>12 mgd</td>
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<tr>
<td>4 Snapfinger Creek Advanced WWTP, DeKalb County, GA</td>
<td>Ongoing</td>
<td>54 mgd expanded capacity</td>
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<td>5 City of Banning WWTP, CA</td>
<td>Ongoing</td>
<td>Design of 1.5 mgd WRF</td>
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<tr>
<td>6 Pole Bridge Creek Advanced WWTP, DeKalb County, GA</td>
<td>Ongoing</td>
<td>39 mgd expanded capacity</td>
</tr>
<tr>
<td>7 San Antonio Water System, Brackish Groundwater Desalination Plant, TX</td>
<td>Completed 2017</td>
<td>CMAR 10 mgd</td>
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<td>8 City of Visalia Water Reclamation Facility, CA</td>
<td>Completed 2017</td>
<td>22 mgd</td>
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<tr>
<td>9 City of Fresno Tertiary Treatment &amp; Disinfection Facility, CA</td>
<td>Completed 2016</td>
<td>5 mgd</td>
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<tr>
<td>10 Central Oahu WWTP, Honolulu, HI</td>
<td>Completed 2015</td>
<td>Design of 2.5 mgd WRF</td>
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<td>11 West Basin MWD, Edward C. Little WRF Phase V Expansion, CA</td>
<td>Completed 2013</td>
<td>Design and Build 30 mgd</td>
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<td>12 Johns Creek Environmental Campus, Fulton County, GA</td>
<td>Completed 2010</td>
<td>PM/CM services of 15 mgd WRF</td>
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<td>Project and Location</td>
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<td>--------------------------------------------------</td>
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<tr>
<td>13 Amgen WRF, Juncos, Puerto Rico, PR</td>
<td>Completed 2006</td>
<td>0.5 mgd</td>
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<tr>
<td>14 Food and Beverage Company, Ireland</td>
<td>Completed 2005</td>
<td>Design of 0.2 mgd WRF</td>
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<tr>
<td>15 Pharmaceutical Project, Ireland</td>
<td>Completed 2005</td>
<td>Design, construction, startup, and operation of 0.3 mgd WRF</td>
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<tr>
<td>16 Perry Homes, Atlanta, GA</td>
<td>Completed 2005</td>
<td>Design of 1.0 mgd WRF</td>
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<tr>
<td>17 Upper Sweetwater WRF, Paulding County, GA</td>
<td>Completed 2005</td>
<td>Design of 1.0 mgd facility with provisions to expand to 4.0 mgd</td>
</tr>
<tr>
<td>18 Cauley Creek WRF, Fulton County, GA</td>
<td>Completed 2001 and 2004</td>
<td>DB of initial 2.5 mgd WRF in 2001 and expansion to 5.0 mgd in 2004</td>
</tr>
<tr>
<td>19 Pumpkinvine Creek WRF, Paulding County, GA</td>
<td>Completed 2004</td>
<td>Design and engineering services during construction for 0.5 mgd expansion to 1.0 mgd</td>
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<tr>
<td>20 Manor WRF, Fulton County, GA</td>
<td>Completed 2004</td>
<td>Design of 0.5 WRF</td>
</tr>
<tr>
<td>21 Hamptons WRF, Cumming, GA</td>
<td>Completed 2003</td>
<td>DB of 0.9 mgd (ADF) WRP and reuse facilities</td>
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</tbody>
</table>
Recent California Water Reclamation/Advanced Purification Design Projects

City of Corona, Water Reclamation Part 1 Treatment and Distribution System (5 mgd)
City of Bakersfield, Wastewater Plant 3 Upgrades and Expansion (32 mgd)
City of Fresno, Tertiary Treatment and Disinfection Facility (5 mgd)
City of Visalia, Water Reclamation Facility Upgrades and Expansion (22 mgd)
City of Fresno, Airport Recycled Water Treatment Facility (IPR Project) (8 mgd)
Inland Empire Utilities Agency, RP-5 Upgrades and Expansion (30 mgd)
Elsinore Municipal Water District, Regional Plant Upgrade and Expansion (12 mgd)
West Basin Municipal Water District, Edward C. Little WRF Phase V Expansion – Progressive Design Build (30 mgd)
RP-1 and RP-5 Upgrade and Expansion Project, Inland Empire Utilities Agency (IEUA), Chino, CA

RP-1:

• Preliminary design for 40-mgd RP-1 MBR system

RP-5:

• Preliminary and detailed design for 30-mgd RP-5 MBR+UV systems
• RP-5 expansion includes 40-mgd biosolids management system
• Design of food waste co-digestion at RP-5
• Evaluation of advanced water treatment for future total dissolved solids (TDS) reduction and IPR
• Business case evaluations (BCEs) of various technologies to select the most viable and cost-effective technologies and equipment
• Assistance in securing low-interest SRF loan and various grants

IEUA RP-5: 30 mgd Expansion
Water Reclamation Facility Upgrades and Expansion, Visalia, CA

- 22 mgd upgrade and expansion of WCP using MBR and UV technologies, recycled water distribution, and a 1-MW solar system
- Design and engineering services during construction
- Developed creative and cost-effective design resulting in WCP construction cost of $122 million – low cost for project with similar scope
- Visalia received $15 million in grants and $500,000 energy efficient design incentive
- High quality design documents resulted in tight bids with the top three bidders within 2% of each other, and ~1.5% change orders
- Our approach achieved Visalia’s goals and saved over $60 million in project cost (due to $155 million SRF loan at 2%)
City of Fresno Airport Recycled Water Treatment Facility (IPR Project)

- IPR and recycled water production
- Greenfield project
- Construction value $125M
- 8 MGD IPR facility
- Preliminary and final design
- Construction support services
- O&M, start-up, and commissioning
- Regulatory compliance and permitting assistance
Recent Alternative Project Delivery Experience

50+ Projects

$20B+ Value
West Basin Municipal Water District, Edward C. Little WRF Phase V Expansion – Design Build

- Ultra-high quality Title 22 recycled water for groundwater replenishment, seawater intrusion barrier, and various industrial uses.
- Completed 2013
- Construction value $63M
- 30 MGD
- Ozone, Microfiltration, RO, UV/AOP
- Design and Build self-performed
- O&M, start-up, and commissioning
- Regulatory compliance and permitting assistance

“The Parsons advanced water treatment (AWT) engineers designed the right solution for our highly complex Edward C. Little Water Recycling Facility Phase V Expansion. The Phase V AWT microfiltration, reverse osmosis, and ultraviolet advanced oxidation processes allow us to meet our stringent permit requirements and regularly produce flows in excess of expansion design capacity.”

Shivaji Deshmukh, Assistant General Manager, West Basin Municipal Water District
Silicon Valley Clean Water Front of Plant Project – Progressive Design Build

- 90 ft deep 100 mgd pump station with flow splitter structure
- Headworks, odor control facilities and centralized chemical storage
- Constructed in very challenging seismic, high groundwater and young bay mud conditions

- Pre-construction services consisting of Basis of Design Report (BODR)
- Final Design and construction
- Business Case Evaluation (BCE) for pump station configuration options
Thank You!

Questions?