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IWS Renovates Aging Wastewater Collection, Treatment, and Dispersal Infrastructure at Regional Mall

Paradise, CA – IWS completed a major wastewater infrastructure project at the Paradise Plaza in Paradise, CA in the Spring of 2005. The regional mall is based on a 12 acre site and is home to major retailers (Kmart, Albertsons, Rite-Aide) and restaurants. The facility had a number of septic systems in operation which were unable to accommodate the wastewater load which caused the leach fields to fail and resulted in septage surfacing in some areas of the parking lots. The property is owned by a publicly traded REIT.



Close coordination was required by IWS with tenants and owner to execute the complex scope of work in this active regional mall.

IWS provided a complete solution for the client which included installing and testing: a) over 20,000 linear feet of new collection and distribution piping; b) two new lift stations with grinder pumps; c) a series of pre-treatment tanks; d) a modified SBR unit treating up to 20,000 GPD with control building; f) a dosing tank to a series

of 24 distribution valves; and g) more than 12,000 feet of new drain line that was slip fitted into the existing dispersal lines which avoided excavation of the area. IWS also upgraded the water supply system for the retail complex, installing new pressure reducing valves and associated piping.

The project was completed in approxi-



IWS installed the modified SBR as part of the new treatment system.

mately four months, and included work on-site during the busy holiday shopping season. IWS was able to execute the work with minimal disruption to ongoing commercial businesses. All surfaces were repaired as the work was completed. IWS provided traffic control and worked with the tenants to limit the impact to their business. The completed wastewater treatment system met all the regulatory discharge requirements.

IWS worked closely with Mark Adams and Nick Weigel of NorthStar Engineering during the pre-construction planning and construction phase. Nick Weigel said "IWS was able to self-perform a diverse range of construction activities to complete this complex and difficult project on schedule".

Design Build Waterline Extension for Upscale Residential Development in Maricopa County, AZ

Cave Creek, AZ – IWS has completed the first phase of a Design/Build project which includes a water system for a 230 estate home residential housing development outside of Phoenix. The initial phase included a comprehensive water model analysis for transmission, distribution, and fire flow, as well as designs for pump stations, reservoirs, and disinfection. The development is located on nearly 1,000 acres of very challenging rocky and hilly terrain.



Preserving the desert terrain and environment are key aspects of the project.

The water line project includes over 6 miles of 8" and 12" piping with two new pump stations to transport the water to a 250,000 gallon central storage facility. The water line extension includes work in the public right of way to make the connection with the local municipal water system as well as private property access. IWS is working with Maricopa County, ADEQ, and the Town of Cave Creek to obtain permits.

IWS also completed a wastewater feasibility study for the development and

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Rocky and hilly terrain presents project design and construction opportunities

geotechnical engineering for individual advanced treatment wastewater systems. IWS is currently in the process of obtaining County Permission to construct the wastewater treatment systems.

Construction of Water, Wastewater, and Reuse System for New Mexico School District

Ojo Caliente, NM – IWS completed a water, wastewater, and reuse infrastructure construction project in late 2005 at two Mesa Vista Consolidated Schools in Northern New Mexico. The two schools are located fifteen miles apart and were constructed concurrently with different scopes of work. The project was part of the district's facilities upgrade program for water and wastewater systems. In addition, recycled water from the wastewater system at Mesa Vista Elementary school was reused to irrigate their athletic field. IWS self-performed all the construction work with the exception of the electrical installation.



Reuse of treated wastewater for irrigation of sports field.

The work at Mesa Vista Elementary School required work on both the water, wastewater, and reuse system, and included constructing the following: a) a 10,000 GPD recirculating sand filter (40' by 50' by 4') using a masonry wall with PVC lining; b) a 60,000 gallon cast in place concrete tank and lid – 60' by 10' by 10' with interior walls and set at a depth of 15 ft; c) subsurface irrigation piping under the football field and interior of the track area – forced dosing with PVC piping in pea gravel trench at 9" depth; d) a 34,000 gallon above ground water storage tank with Grunfos Triplex booster pump and control system for domestic water and fire lines.



60,000 gal cast in place concrete tank formed by IWS crew.



Constructing 10,000 GPD lined sand filter.

The work completed at El Rito Elementary School included modifying the existing water supply system to connect to an on-site well and to eliminate the reliance on a more expensive community water supply system. IWS upgraded the pumps and control system for the domestic water supply system which included installing the associated piping, installing a chlorination system with injection pump, and remodeling the existing pump house.

On-site hazards included rattle snakes and the hot desert sun, but the work was completed on schedule without any incidents. IWS worked closely with Andy Torres, School Superintendent, and Gilbert Ferran the Regional Supervisor with the New Mexico Public Schools Facility Authority.

Construction Retrofit of Industrial Wastewater Pre-treatment System in Pharmaceutical Facility

Denver, CO – IWS recently completed the construction of an industrial pre-treatment system at a world class pharmaceutical facility with over 600 employees in the Denver, CO area. IWS completed a comprehensive upgrade to the facility's industrial pre-treatment system while the manufacturing plant was in full production. IWS worked closely with the plant personnel to co-ordinate construction activities to minimize impact to the ongoing manufacturing operations. IWS worked at times during off-hours and low flow periods during the construction phase to accommodate the manufacturing schedule and plant operations.

The project involved the following IWS scope of work: construct a new reagent room in the existing building including two



The project required coordinating multiple construction activities

containment pods for acid and caustic supply tanks, pumps and controls, and a new HVAC system; install new 8' diameter, 17' deep, concrete lift station with pumps and associated piping; modify existing blending manhole with connecting piping; install concrete pre-treatment vault (16' by 12' by 17' deep) with a 3,500 gallon poly tank; install all associated piping for acid and

caustic mixing system; install pH control system including injection and mixing pumps; and constructed outfall to POTW. Construction included box type shoring of excavations adjacent to the building to depths of twenty feet.

While working in confined space locations with acid and caustic materials, IWS followed all OSHA requirements which included continuous air, tyvek suits, face shields, gloves, and other appropriate safety equipment.



Box shoring was utilized to assure a safe work environment

Wastewater System for Echo Mountain Snowboard and Ski Park in Colorado

Echo Mountain, CO – IWS constructed an on-site wastewater system for Echo Mountain Snowboard and Ski Park (www.echomtnpark.com) in Colorado this past fall. The system serves this new snow board and ski park, which is located at 10,000 feet about 45 miles from Denver. The ski area was formerly named Squaw Pass and open from 1962 - 73, and was



The green arrow indicates the location of the Advantex AX-100 treatment unit

redeveloped under a new ownership with all new facilities, including state of the art snow making equipment, high speed triple chair lift, roads and parking areas, and lodge facilities.

IWS installed the collection, treatment, and dispersal system which included: a primary tank; recirculating tank; dosing tank; two, Orenco Advantex (AX-100) systems; and a combination pressure dosed/gravity flow distribution (due to the higher elevation of the drainfield) to a subsurface Infiltrator drainfield. Construction required unique approaches to working in snow conditions, traversing steep grades, and dealing with low temperatures and high altitudes. The ski area opened in March 2006, with the wastewater system fully operational.

Design/Build On-site Wastewater System for California Central Valley Community

Central Valley, CA – IWS has completed the initial phase of a design/build project for an on-site wastewater system to accommodate a 27 home subdivision in California's growing Central Valley. IWS will utilize a community treatment system and will meet regulatory discharge requirements for the treated effluent.

The proposed community will utilize STEP collection, followed by treatment using the Orenco AX-100 units. The treated water will be dispersed subsurface in a community/public area using drip dispersal. The system is designed for over 12,000 GPD flow.

IWS worked closely with the developer and regulators in the feasibility phase of the project to determine the most cost effective approach to meet all the stakeholders needs. Field work was conducted to confirm the subsurface conditions and evaluate disposal options for the site. The site has elevated groundwater and required detailed groundwater level monitoring to define an area with acceptable separation. A community collection system was selected based on economic and geological considerations.

Design Build of Wastewater and Reuse System for Subdivision in Arizona

Payson, AZ – IWS has completed geotechnical engineering and design of an on-site wastewater system for a 28 home subdivision in the Payson, AZ area. The site is located on a granite shelf requiring an innovative drainfield design that will utilize recycled water from the wastewater treatment system for subsurface irrigation in common areas of the development.

Each home will have an individual STEP collection tank. The wastewater effluent will flow from each STEP tank, under pressure, to the central treatment area. The treatment system will include a recirculation tank, dosing tank, and four, Orenco Advantex AX-100 treatment units. The treated effluent will be pressure dosed to common areas through subsurface drip irrigation using perforated PVC pipe. The total capacity of the treatment system will be 10,000 GPD.

The developer selected IWS and the Design/Build approach for several reasons: a) IWS is a leader in the construction of on-site systems; b) the design/build approach reduced the overall project schedule by 33% and reduced overall project costs by 25%; c) the design/build approach provided a single source of responsibility from conceptual design, through permitting, final design, construction, and start-up.

Design Build of Wastewater and Reuse System for Mobile Home Park in Arizona

Star Valley, AZ – IWS has completed the design and engineering of a 22,000 GPD wastewater system for a mobile home park near Payson, AZ. The site is located on mountainous, rocky terrain. Effluent from the treatment system will be reused in the mobile home park to irrigate trees and landscape vegetation.

A "clustered" collection system is planned so that multiple homes will be connected to STEP collection tanks located in the common areas of the community. The wastewater effluent will flow from each STEP tank, under pressure, to the central treatment area. The treatment system will include a 30,000 gallon recirculation tank, dosing tanks, and nine Orenco Advantex AX-100 treatment units. The

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treated effluent will be pressure dosed to common areas through subsurface irrigation using perforated PVC pipe.



A STEP collection system will be used to accommodate the hilly terrain

IWS COMPANY ANNOUNCEMENTS/NEWS

New COWA Board Member Peter C. Balas (IWS) recently joined the board of directors of the California Onsite Wastewater Association (COWA).

State of California Professional Engineers License Granted Peter C. Balas (IWS) was granted a Professional Engineers License in March 2006 by the State of California.

Local Water Company Names Alman to Board Jay Alman (IWS) was re-elected to the board of Vine Hill Vistas Mutual Water Company, located in Sebastopol, CA.

Partner Obtains Pilot's License Dave Patton (IWS) received his FAA pilots license which will now allow him to better service our rural clients throughout the Western US.

Jamie Cribbs, P.E. has joined the IWS team as a principle engineer in Denver, CO. Ms Cribbs has extensive experience in water and wastewater infrastructure projects.

Mark (Ray) Rayome has joined as a Project Manager in Denver, CO. Ray has extensive experience in managing the operation, maintenance, and the construction of municipal wastewater treatment plants.

Career Opportunities at IWS IWS seeks Construction Superintendents, Field Supervisors, Project Managers, and other professionals to support our Arizona, California, and Colorado operations. If you know of qualified candidates we would appreciate your referral.

About Us

INTEGRATED WATER SERVICES, INC. (IWS) provides services to municipalities, developers, communities, and businesses to help them address their water and wastewater needs. IWS leverages its extensive experience in construction, site development, and project finance to provide a range of services to its clients, with the ultimate objective of providing a water or wastewater system that meets all stakeholders' needs.

IWS partners with industry leading manufacturers and technology providers to offer our customers a solution tailored to their unique water and wastewater technical, economic and environmental needs. Partnering with multiple industry leaders ensures that IWS recommends solutions based on objectivity and the customer's best interests.

IWS project approaches include:

- Turn-key (Financing through Start-up)
- Design/Build
- Construction (Self Perform)
- Operation & Maintenance

Dick Bartholomew joins the IWS team

IWS and Dick Bartholomew have reached an agreement to work together on water and wastewater projects in the Southwest. Mr. Bartholomew has over 43 years experience in civil and environmental engineering and holds P.E. licenses in Arizona, California, Colorado and Nevada. Based in Carefree, Arizona, Mr. Bartholomew has completed over 900 water supply projects as well as numerous wastewater and environmental projects. Mr. Bartholomew will be responsible for engineering and permitting activities in Arizona as well as other significant projects. Mr. Bartholomew brings valuable knowledge and experience to the IWS team as it expands throughout the Southwestern US. We welcome Dick Bartholomew to our team and look forward to working together.

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