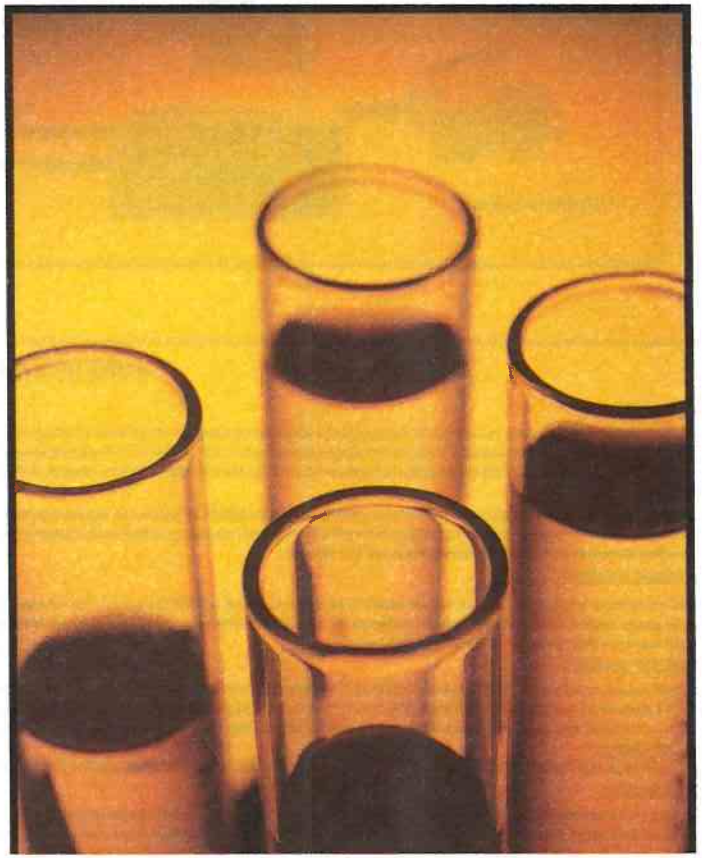
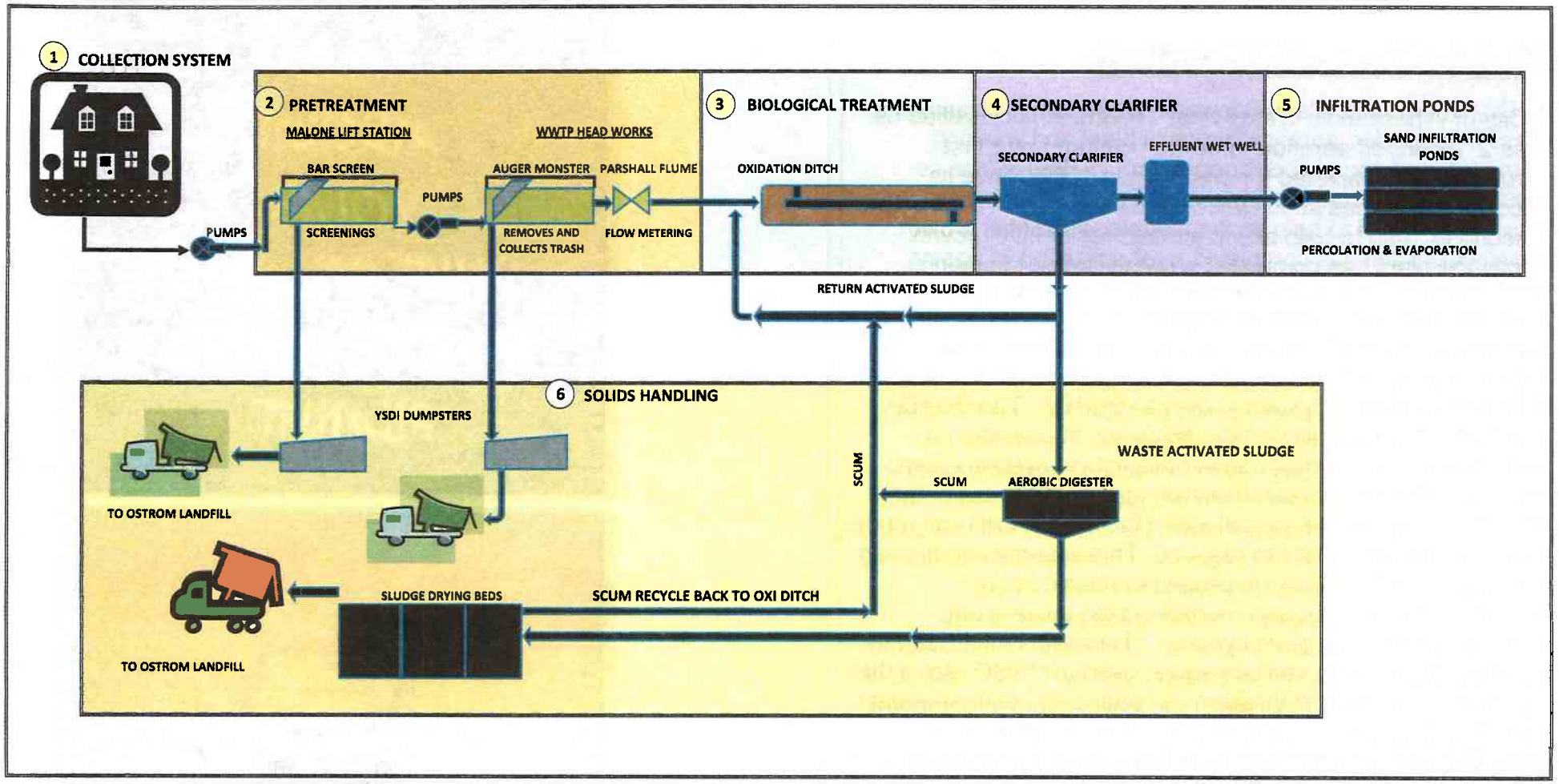
WASTEWATER PLANT OVERVIEW

The City of Wheatland's Wastewater Treatment is classified as a Class 2 "extended aeration" process plant and was first constructed and completed for operation in 1969. Since its inception the plant has seen two modifications first in1980 and the second in 1990 to help accommodate residential growth. Currently the plant has completed a rehabilitation of ageing equipment with funding provided by a United States Department Agriculture loan. Upgrades included new equipment starting at plant headwork's trash screening equipment, mechanical aerators, motors, pumps, valves and full automated Supervisory and Data Acquisition System known as SCADA. The SCADA system provides reliability for the efficiency of operation by monitoring both the sanitary sewer collections systems pump stations and the wastewater treatment plant. In the event there is an operational or mechanical alarm the SCADA will call up the stand-by operator on duty to respond. This essential monitoring technology aids operations to protect the quality of our environment by continuously monitoring the sewer pump stations and treatment plant systems. This helps minimizes the risks associated with a sanitary sewer overflow "SSO" spills that includes costly fines and threaten our public and environmental health. The City operates with a permit known as a" WDR" (Waste Discharge Regulation) which is issued and monitored by the CA Regional Water Quality Control Board (CARWQCB) in Sacramento. The City is required monthly to send in a treatment report to the CARWQCB and is expected to meet all WDR permit requirements and testing parameters. If any of these parameters are requirements are not meant it is considered a permit violation. The plant constantly exceeds the permit requirements and averages 99% solids removal or better of sewage solids to the final sewage discharging from the plant. CARWQCB requires a CA State Certified Operator Grade 2 or higher to operate and maintain the Wheatland wastewater plant system.

ALL ABOUT YOUR WHEATLAND WASTEWATER PLANT





Wheatland Wastewater Treatment Plant Flow Diagram

1. COLLECTIONS

Wastewater from homes, businesses and schools is conveyed to the wept through a network of 13.2 miles of underground pipeline ranging from 4" to 12 " in diameter. Most of the pipes slope downward to allow the wastewater to flow by gravity at velocities of 2' per second or greater. Proper flow velocities aid in odor control commonly caused by gases, decaying solids, and blockages caused by fats, oils, and grease. For areas where gravity cannot be relied on, the wastewater is lifted and pumped through a force main by five sewer pump station located through out the city. The collection system is continuously maintained to ensure the efficient transport of over 100 million gallons of wastewater annually. The City of Wheatland is currently in compliance with on line reporting for the SSO, regulated by the SWRCB for the SSMP.

2. PRETREATMENT

After the wastewater has traveled through the miles of pipe within the collection system its journey will end at the Malone lift station where the wastewater passes through a mechanical bar screen where large objects such as rags, sticks and bottles are removed. the solid waste is removed to Ostrom land fill. The journey then continues to the plant headworks. Arriving to the plant by force main the sewage is the passed through a grinder (Muffin Monster) and then augured (corkscrew device) to a bag for removal, the solid waste is removed weekly to landfill at an average total 20 cubic feet per month. The wastewater then flows through a parshall flume where the flow volume is measured and recorded.

3. BIOLOGICAL TREATMENT

Wastewater then flows by gravity force to a L shaped oxidation ditch, with a capacity of 5,000,000 gallons. The ditch uses disc aerators designed with nodules that circulate the wastewater to add lbs. of o2 "oxygen". Calculations are made daily with process control to ensure demand is met but not exceeded. Aeration demand is energy intense, conservation is essential to operations. In the ditch is a bio mass called mixed liquor, this mixed liquor contains millions of beneficial microscopic organisms, commonly called "bugs" by plant operators, break down and feed off dissolved organic wastes and material in the wastewater. As the "bugs" consume the organic material, they grow and reproduce.

4. SECONDARY CLARIFIER

Mixed liquor flows by gravity over the effluent weir of the ditch to and through the mixed liquor channel to a secondary clarifier water depth of 12-feet with a circular diameter of 50-feet. Rotating blades skim material that floats (scum) from the water surface to a scum trough, and scrape settled solids from the bottom of the tank. To maintain a F to M ratio (food to microorganism) ratio "population of bugs" in the ditch, a portion of the settled solids selectively controlled to be sent back as return activated sludge, the remainder is sent to the aerobic digester as waste activated sludge for continued processing. The clear liquid flows over several weirs that circle the clarifier into a launder where it flows to the effluent basin. This liquid is the final treated product known as "Plant Effluent". It is then pumped and metered for total flow to the infiltration ponds for percolation and evaporation.

5. INFILTRATION PONDS

There are 6 rapid sand infiltration ponds that sit parallel to the Bear River for a total of 4.5 acres of surface area. The ponds receive annually approximately 71.2 million gallons of flow. Hydraulic loading rate max is 0.6 ac/ft.per day.

6. SOLIDS HANDLING

Solids wasted from the secondary clarifier are sent to the aerobic digester where in the absence of external food source the "bugs" enter the" endogenous" or "death phase" of their life cycle. When no food is available endogenous phase the biomass begins to consume its own cellular material. Results are a conversion of the biomass to the end products of carbon dioxide and a water with a net decrease in the sludge mass. Periodically solids are settled to remove supernatant (liquid on surface) to make additional room for the process to continue or solids are transferred to drying beds and again they settle and another decanting process of supernatant occurs, after dried and a copper and metals analysis is complete the sludge is finally hauled to landfill. Thousand tons of bio solids are transported annually with no reuse.