

# Activated Sludge-1 and Secondary Clarifier Rehabilitation

Project No. P1-140

Presented by:  
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Supervisor

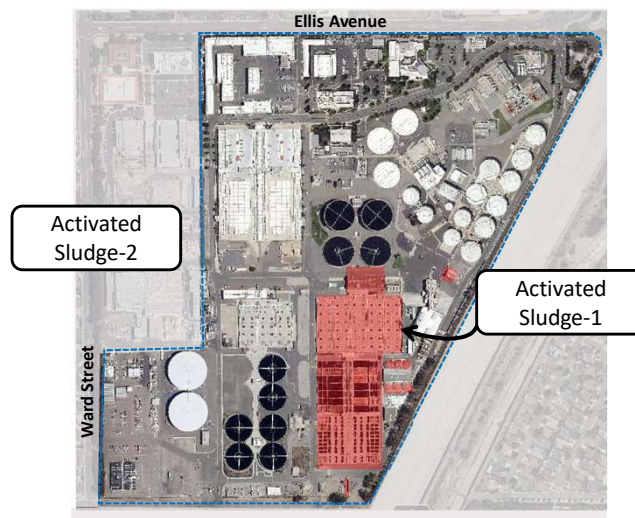
Operations  
Committee  
December 7, 2022

Consultant Design Award



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## Project Location: Plant No. 1



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## What is the Activated Sludge Process?

The diagram illustrates the activated sludge process. Influent enters the Aeration basin, where it is mixed with Return activated sludge. The mixture then moves to the Secondary clarifier, where the activated sludge settles and is returned to the aeration basin. The clear water, labeled as Effluent, is discharged. Waste activated sludge is also shown being removed from the clarifier. An inset photograph shows a close-up of the sludge blanket in a clarifier, appearing as a dense, brownish layer at the bottom.

Three beakers illustrate the stages of wastewater treatment. The first beaker, labeled 'Raw Sewage', contains dark brown, turbid water. The second beaker, labeled 'Primary Treated Effluent', contains a lighter, more uniform brown liquid. The third beaker, labeled 'Secondary Treated Effluent', contains clear, colorless water, which is highlighted with a dashed orange border.

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## Activated Sludge-1: >\$600M Asset Value

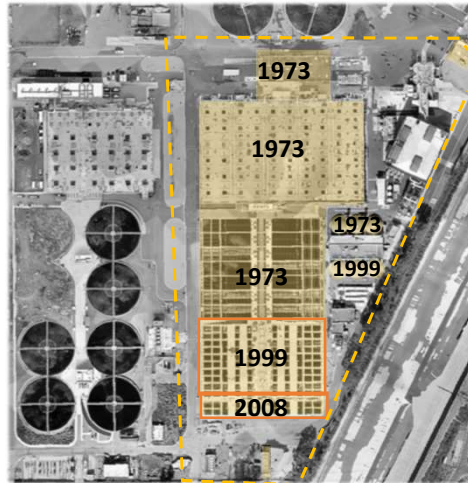
This slide provides a detailed view of the physical infrastructure of an activated sludge plant. The central aerial photograph shows the layout of the Aeration Basins and Secondary Clarifiers. Surrounding this are several inset photographs with labels: Blowers (large blue units), Diffusers (rows of circular components), Pumps (industrial machinery), Sludge Collectors (mechanical structures at the bottom of clarifiers), Aeration Deck (the top surface of the aeration basins), Secondary Clarifiers (large rectangular tanks), and Gates (metal structures for flow control). The total asset value is noted as >\$600M.

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## Reason for the Project

- Equipment passed useful life, obsolete, and difficult to maintain
- Auxiliary utilities are in poor condition



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## Equipment at the End of Life



*Blowers*

Parts difficult to obtain. Some parts are not readily available and can take 6 – 8 months to replace.



*Return Activated Sludge Pumps*



*Waste Activated Sludge Pumps*



*Drain Pumps*

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## Equipment at the End of Life



*Blower Switchgear*



*Return Activated Sludge Pump Station Electrical*



*Standby Power Turbine Generator*



*Transformers*

Switchgear, motor control centers, and standby generators are at or near the end of useful life. For end-of-life equipment, only reconditioned parts are available and are difficult to procure.

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## Poor Condition



*Corroded Piping*



*Corroded Slide Gates – Difficult to Open/Close*



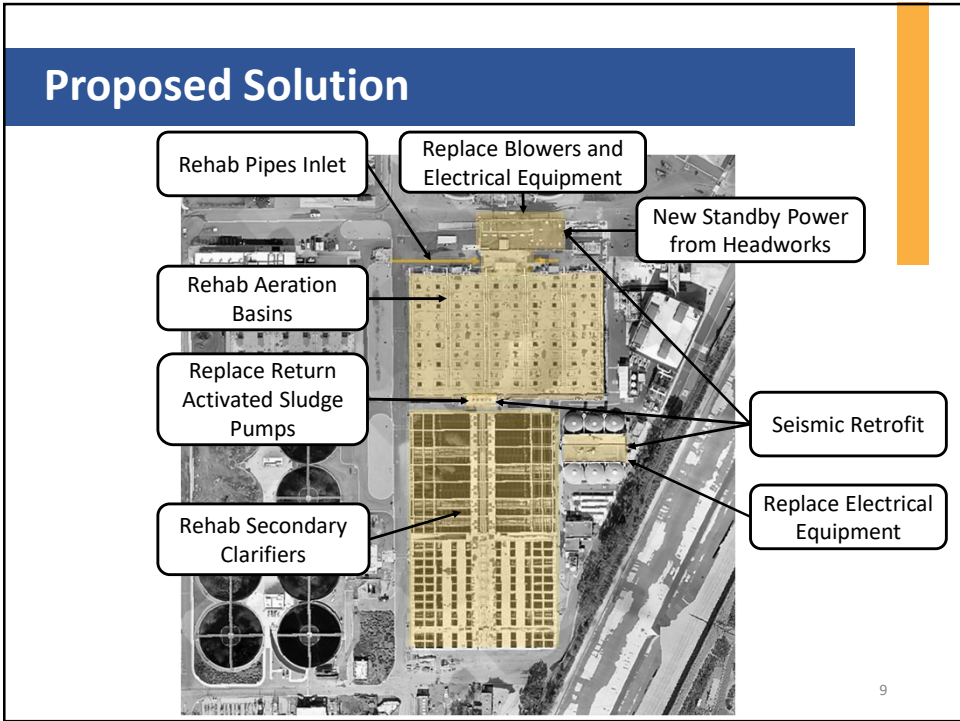
*Worn/Damaged Diffusers – Impacts Energy Consumption and Performance*



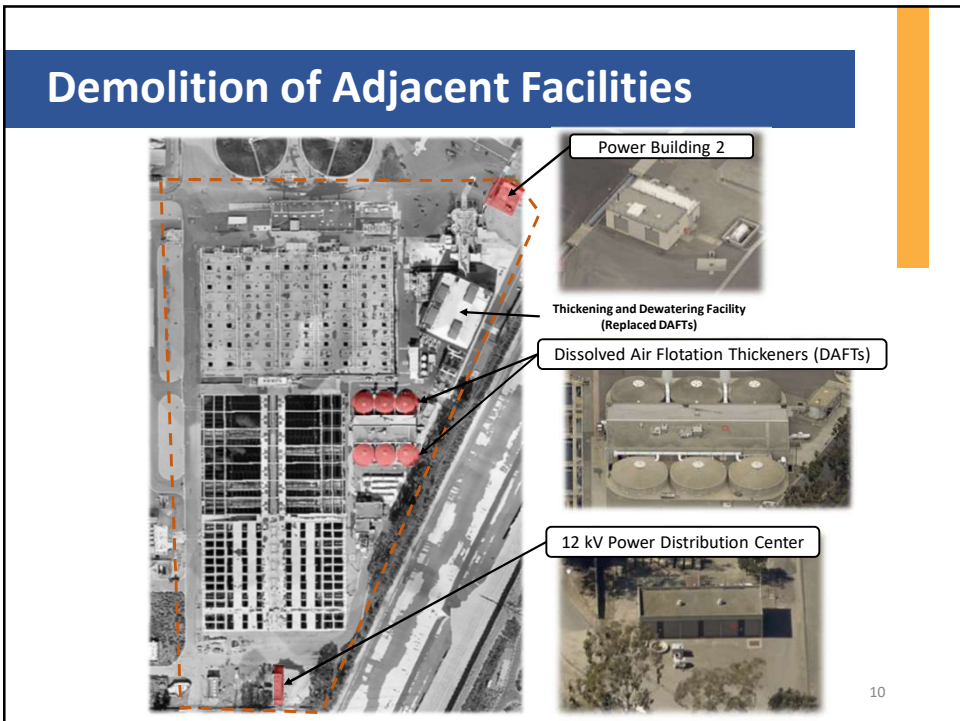
*Worn Sludge Collectors*

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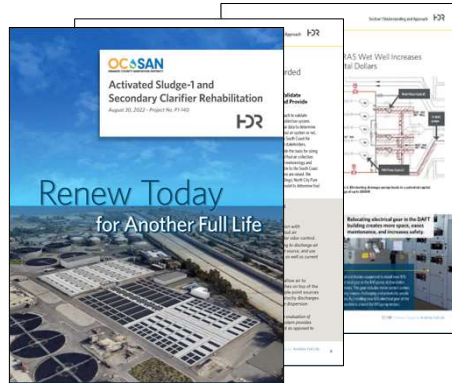
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## Selection Process

- Three proposals received
- Interviews conducted with three firms
- HDR Engineering, Inc. selected
  - Innovative approaches to complete project



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## Negotiations

	Original Proposal	Negotiated
<b>Total Hours</b>	82,810	82,145
<b>Total Fee</b>	\$18,023,825	\$18,462,443

- Increased condition assessment effort to match scope.
- Moved subcontractor hours to direct costs.
- Deputy project management hours adjusted to allocate less to workshops and meetings.
- Various minor adjustments to scope.

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## Recommendation

Recommend to the Board of Directors to:

- A. Approve a Professional Design Services Agreement with HDR Engineering, Inc., to provide engineering services for Activated Sludge-1 and Secondary Clarifier Rehabilitation, Project No. P1-140, for an amount not to exceed \$18,462,433; and
- B. Approve a contingency of \$1,846,244 (10%).

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## Questions



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