Key Issues
Groundwater Pollution at Puente Hills Landfill

G. Fred Lee, Ph.D., D.E.E. and Anne Jones-Lee, Ph.D.
G. Fred Lee & Associates
El Macero, CA
June 16, 1993

·Hydraulic Connection

Puente Hills Landfill is hydraulically connected to San Gabriel Basin aquifer through surficial alluvium and fractured rock aquifer system

Threat to groundwater quality of concern to Watermaster

·Leachate Production

Puente Hills Landfill has and will continue to produce leachate that will pollute the groundwater system under the landfill

·Pollution Potential

This leachate will contain a wide variety of conventional contaminants, non-conventional contaminants, and hazardous chemicals, small amounts of which can pollute large amounts of groundwater rendering it and the associated aquifer unusable for domestic water supply purposes

·Non-Conventional Pollutant Threat

Even if all chemicals in leachate-polluted groundwater were below MCL's, it is prudent public health policy to not use leachate-contaminated groundwater for domestic water supply purposes because of the large amounts of non-conventional pollutants in the leachate whose hazards are unknown

·Threat Forever

The waste in the Puente Hills Landfill will be a threat to groundwater quality in the San Gabriel Aquifer Basin forever

The existing Puente Hills Landfill is the second largest landfill in the USA and is a very great threat to groundwater quality

·Landfill Expansion Will Increase Pollution

The proposed Puente Hills Landfill expansion will significantly increase the threat to San Gabriel Basin aquifer quality

·Liner System Will Not Protect

The liner system proposed for the Puente Hills Landfill expansion will not prevent further groundwater pollution

At best it will postpone further pollution

·Existing Pollution

The existing Puente Hills Landfill has already polluted groundwater under the landfill

·Groundwater Barriers

The Districts and LA Regional Water Quality Control Board have been trying to stop the groundwater pollution that has already occurred under the landfill from migrating to the San Gabriel Basin aquifer by constructing groundwater barriers (slurry walls)

·Efficacy of Slurry Walls

Slurry walls of type developed by the Districts will not prevent groundwater pollution

Original slurry walls of clay have failed to prevent groundwater pollution downgradient from slurry walls

Replacement with cement/bentonite slurry wall will be ineffective in preventing groundwater pollution downgradient of slurry wall

High permeability

Develop cracks - physical and chemical processes that allow leachate passage through it

Fractures in rock will allow leachate to pass around slurry wall

·Groundwater Monitoring

Impossible to reliably monitor transport of leachate-polluted groundwater from existing Puente Hills Landfill to San Gabriel Basin

Landfill expansion will be even more difficult to monitor

·Reliability of Districts' Groundwater Monitoring Program

Districts' groundwater quality monitoring program poorly planned, executed, and regulated

Basically unreliable

Self-policing

Inadequate staff and funds

Not finding pollution is in Districts' staff interest in order to keep current waste "disposal" costs below real costs to use Puente Hills site for landfilling

·Unsuitability of Site for Landfill

Puente Hills site very poor for landfilling of municipal solid waste

Hydraulically connected to very high-value groundwater

Fractured rock aquifer system

Lack of adequate land buffer owned by Districts to protect adjacent properties

·Recommendations

Do not expand Puente Hills Landfill

Require Districts to start groundwater monitoring program that will have much higher degree of reliability in detecting groundwater pollution that is occurring, and a remediation program to prevent pollution of the San Gabriel Basin aquifer system to the maximum extent possible

Cannot rely on LA Regional Water Quality Control Board to protect groundwater quality

Need independent, detailed, day-to-day monitoring of Districts' operations to significantly improve groundwater quality protection - paid for by Districts