

# *Data Usability*

## *A Small Town Case Study*

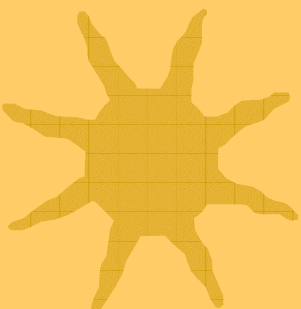
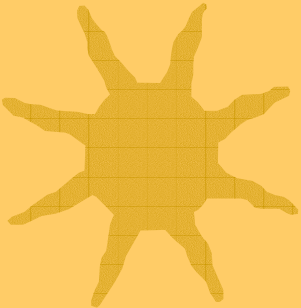
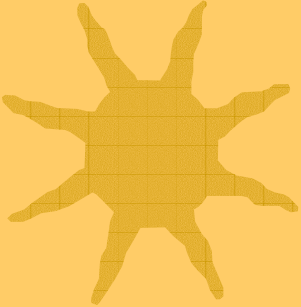
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Quality Systems Director  
Flowers Chemical Laboratories, Inc.



## *Typical Small Town Environmental Study*

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- ★ Years ago on city-owned property stood a shed used by the utilities department. This property is located downtown, and is a perfect site for a shopping center and a parking lot.
- ★ Developer A offers to redevelop and purchase this property from the city, so soil testing was performed to test for suspected contaminants.



## *Site Information*

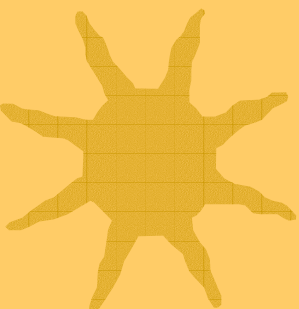
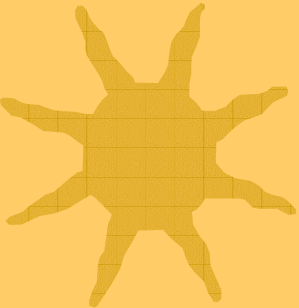
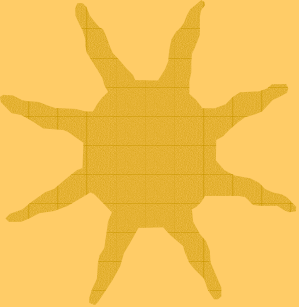
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- ★ Shed area - suspected contamination source, is now under a grocery store interior meat cooler
- ★ Monitoring wells - 35 temporary wells surrounding <1 square acre property
- ★ Developer B wishes to build 300 Condos + 40000 SF retail shops/restaurants



## *Contamination Identified*

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- ★ Dieldrin was detected in the soil above FDEP cleanup standard levels, so the contaminated soil was excavated and removed.
- ★ Temporary monitoring wells were placed around the site, and low level detection of dieldrin was found away from the site.
- ★ Interested parties were concerned, so further studies were performed to define the source and delineate the plume.



## *Discussion*

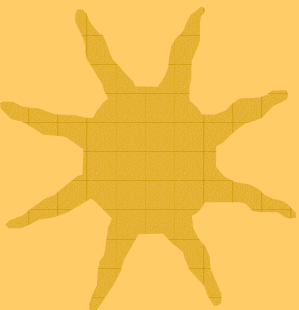
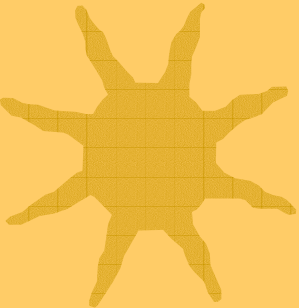
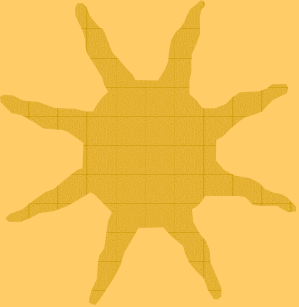
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- ★ It is obvious that pesticides were used in the past to eliminate termites and other insects.
- ★ The developer may not want to purchase this property from the city if it is contaminated.
- ★ FDEP has concerns and requests for the consultant to delineate the plume and determine the extent of the contamination.
- ★ City staff and council are concerned about the cost of the ongoing monitoring and clean-up. (\$600-800K)



## *Dieldrin - Chlorinated Hydrocarbon*

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- ★ Produced in 1948 to replace DDT
- ★ Banned in the 70's due to toxicity studies
  - Neurotoxin
  - Linked to Parkinson's disease
- ★ Is a Priority Pollutant for effluent monitoring (Clean Water Act)
- ★ Is now on the “Unregulated” drinking water pesticide list



## *Diieldrin Detection*

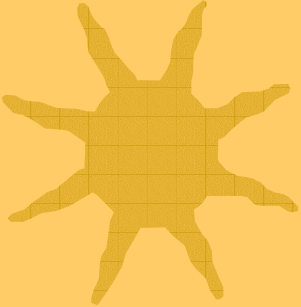
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- ★ In the 22 wells around the site, there was detection in 5 wells that were confirmed on several sampling dates. Additional wells were constructed on adjacent property.
- ★ 0.017 ug/L was the highest concentration detected on the city “shed” site.
- ★ 0.05 ug/L was detected on the adjacent property where a strip mall used to be.



# *Diieldrin, “Unregulated” DW SOC - Method Detection Limits*

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★ EPA 505            0.012 ug/L

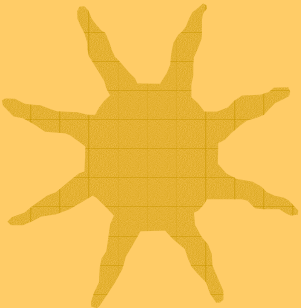
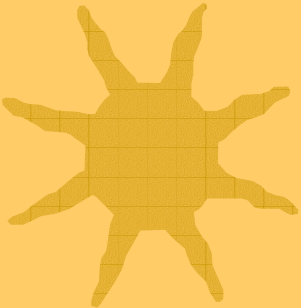
★ EPA 508.1        0.010 ug/L

★ EPA 525.2        0.120 ug/L

★ No DW Maximum Contaminant Limit

★ EPA 608            0.002 ug/L

★ FL-DEP GW      0.002 ug/L

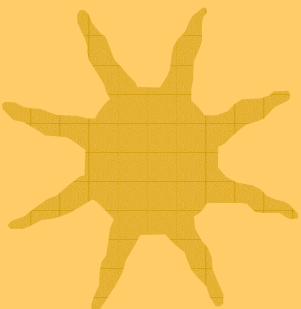






## *Analytical Approach to 2ppt*

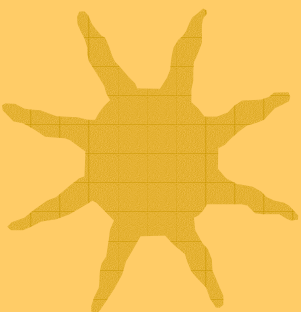
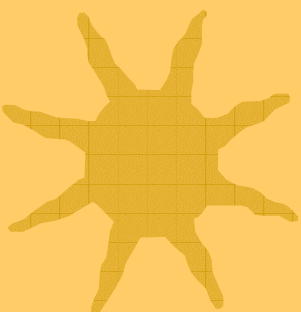
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★ Extract greater sample volume

★ Concentrate extract

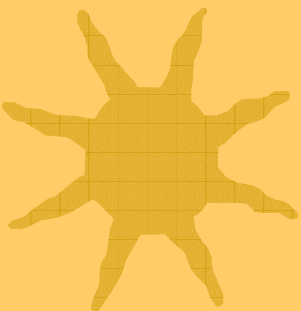
★ Calibrate to limit of instrument detection





# *GC/ECD Chromatography*

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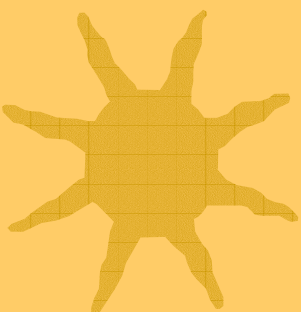


★ Dual Column, or 2nd column confirmation

★ Typical Retention Times

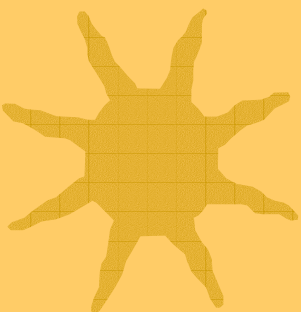
– 6.73

– 6.77



★ Consider chlordane peaks

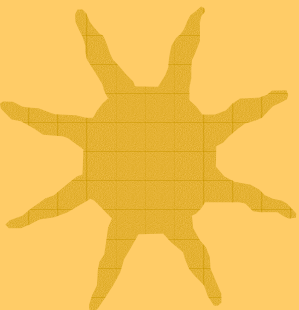
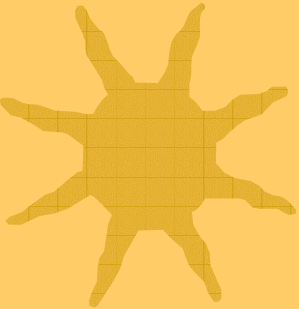
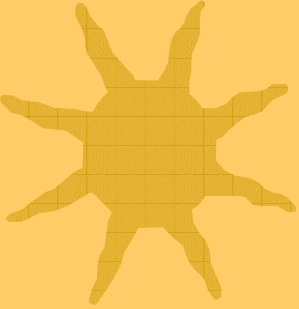
– 5.5 - 7.26





## *Data Validation*

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- ★ Verify dieldrin peaks are not actually chlordane (requested analysis was for dieldrin only, but there is calibration curve data).
- ★ No scientific certainty that it is dieldrin because the concentrations are too low for GC/MS confirmation.
- ★ EPA method criteria were met by GC/ECD to call it dieldrin.
- ★ Prove that extraction and analytical scheme can detect these low levels.



## *Who's Dieldrin is this?*

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- ★ Since the concentration is higher on the neighboring property, the city doesn't want to continue paying for remediation.
- ★ The plume is not migrating, nor is the high concentration well downgradient from the city site.
- ★ The strip mall most likely had its own pesticide treatment in the 1950's and 60's, and it is not the city's concern.



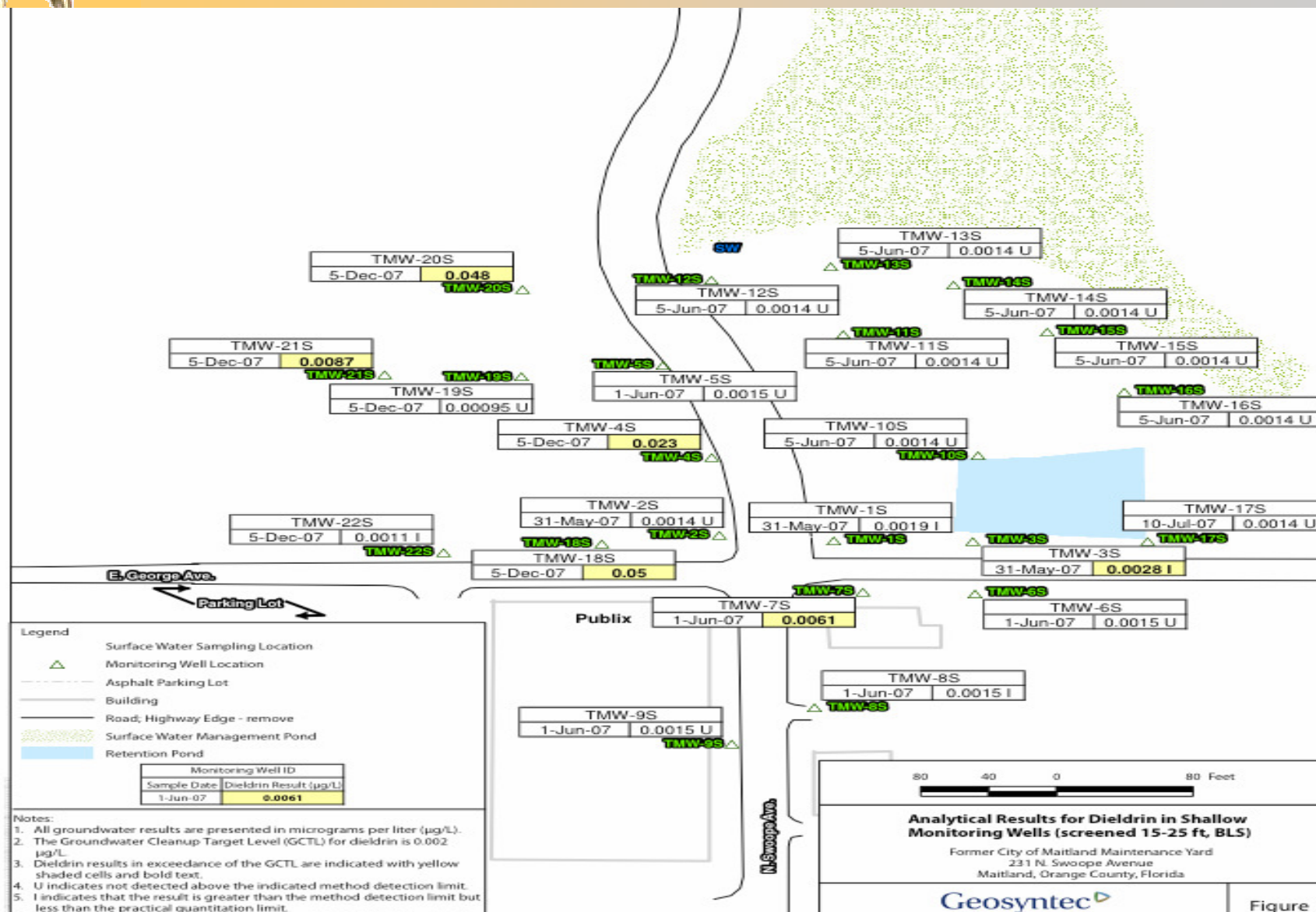
## *Options for Resolution*

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- ★ Continue to clean-up the ‘plume’ (est. total mass to be 0.114 grams with >\$1MM devoted to clean up, may not be enough.
- ★ Use Institutional Controls:
  - Deed restriction to never place a potable well on-site.
  - If there was a well, it may meet DW standards but you are not permitted to use the water for irrigation.



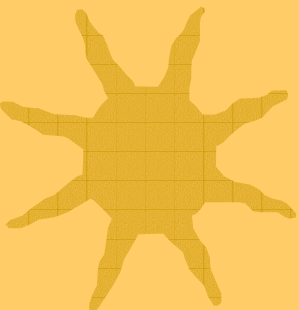
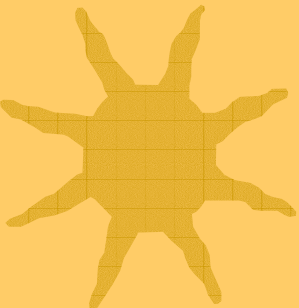
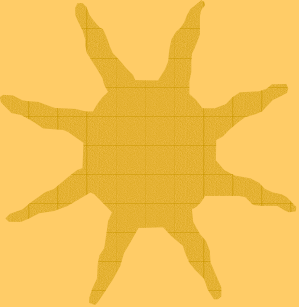
# Site Schematic





## *Data Review*

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- ★ City staff are not educated to question the consultant regarding detection levels.
- ★ Could the dieldrin peaks at this low concentration actually be chlordane?
- ★ Must state clean-up standards be the sole source of direction for projects?



## *Someone has to decide*

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- ★ Sometimes Cleanup is not the right option. That is why other avenues are available.
- ★ At this level of detection, laws allow you to drink this water, but not discharge it back on the ground.





## *Hopeful Resolution*

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- ★ Use the deed restriction approach to save time and city/tax payer dollars.